U. S.
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL. 931
FEBRUARY
1975

MICRO PHOTO DIVISION

BELL & HOWELL

A UNITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION

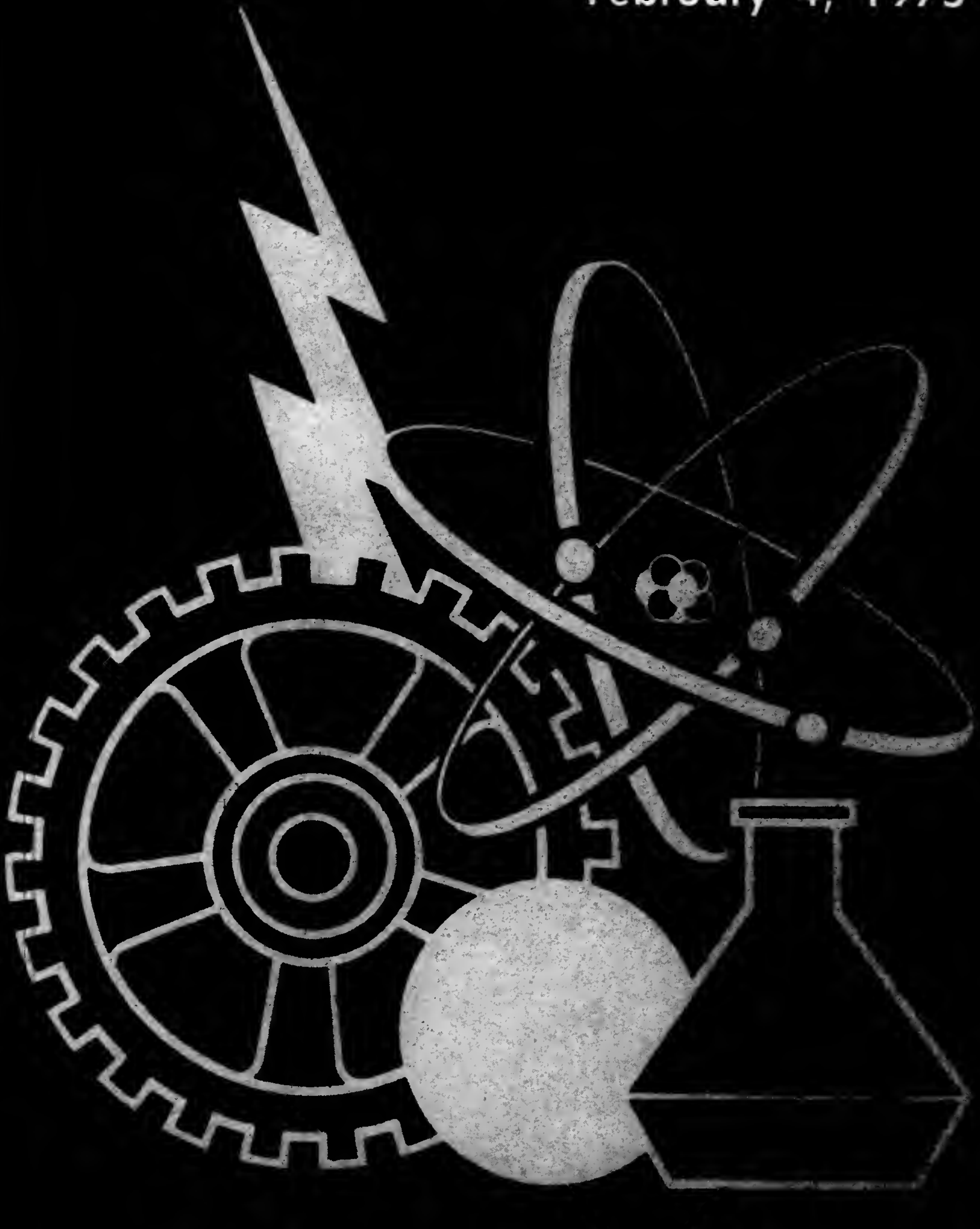
Vol. 931 Number 1

OFFICIAL GAZETTE

of the UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 4, 1975



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Patent
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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

February 4, 1975 Volume 931 Number 1

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of December 1974

Examiner affirmed	195
Examiner affirmed in part	25
Examiner reversed	64
Total	284

National Inventors Day

The Patent and Trademark Office will be observing National Inventors Day in the Public Search Room on Saturday and Sunday, February 8 and 9, 1975, between the hours of 1:00 p.m. and 5:00 p.m. The public is invited to view the exhibits on these days and to attend a formal program at 2:00 p.m. on Sunday.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5:00 p.m. on Friday, February 7, 1975.

We would appreciate the cooperation of all users of the Search Room facilities in removing all personal items and belongings in order to permit the early closing time.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Availability of U.S. Patent Reclassification Microfilm.

The Patent Office announces the availability of its new microfilm publication "Reclassification Transfer Records."

This official record lists all the Original and Cross-reference Patent classification changes which occur in a reclassification project. This publication begins with the December 1973, reclassification and will be available for all subsequent reclassification projects.

The film is available as separately listed Original and Cross-reference transaction records in three sequences, from old classification to new, in (1) new class/subclass order, (2) Patent number order and (3) old class/subclass order.

The entire publication for December 1973 (Reclassification Order #413) consists of 3 reels of 16mm negative microfilm. This set is available as follows:

Form of Microfilm	Accession No.	Price
Plain 16 mm Film Reel	COM–74–11750–P	$14.00 Domestic 22.00 Foreign
Recordak Cartridge	COM–74–11750–R	20.00 Domestic 28.00 Foreign
3M Cartridge	COM–74–11750–M	20.00 Domestic 28.00 Foreign
Thread Easy	COM–74–11750–T	20.00 Domestic 28.00 Foreign

Also available at this time is the *March 1974* reclassification publication (Reclassification Order #414), of 2 reels of 16mm negative microfilm. This film is available as follows:

Form of Microfilm	Accession No.	Price
Plain 16mm Film Reel	COM–74–11751–P	$10.00 Domestic 15.00 Foreign
Recordak Cartridge	COM–74–11751–R	14.00 Domestic 19.00 Foreign
3M Cartridge	COM–74–11751–M	14.00 Domestic 19.00 Foreign
Thread Easy	COM–74–11751–T	14.00 Domestic 19.00 Foreign

Orders must specify the NTIS accession number given above and the form in which the buyer desires to receive the microfilm (also given above). Address orders to:

National Technical Information Service
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ALFRED C. MARMOR,
Jan. 17, 1974. *Acting Administrator for Documentation.*

Removal From Register

Pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases, a letter was directed on November 18, 1974, to Mr. Andrew G. Pullos at 714–716 Bank of America Bldg., 12 South First Street, San Jose, Calif. 95113, the last post office address furnished by him to the Committee on Enrollment. No reply was received within the period of thirty days therein set. Accordingly, his name is being removed from the Register of Agents.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before February 28, 1975.

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Certifiicates of Correction for the Week of Feb. 4, 1975

3,645,599
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3,853,713

Patents Available for Licensing or Sale

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court E., Syosset, N.Y., 11791.

3,415,339. FORK LIFT ATTACHMENT. Wilbur G. Hallauer, P.O. Box 70, Oroville, Wash., 98844.

3,461,565. MASON'S LINE STRETCHER. George T. Harris, 411 E. 20th St., Safford, Ariz., 85546.

3,774,193. WATCHMAN'S TOUR ALARM SYSTEM. Tulio Vasquez Restrepo, Carrera 43A No. 30–91, Medellin, Colombia.

3,776,795. METHOD OF JOINING THE ENDS OF MULTILAYER PRINTING FORMS. Elbert H. Stevenson, 415 Overland Drive, Stratford, Conn., 06497.

3,806,399. MECHANICAL CHRISTMAS TREE MANIFESTED BY ITS ROTATING MOTION AND THE UNDULATION OF ITS BRANCHES. Diosdado L. Cocjin, Philippines. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,811,169. ARRANGEMENT FOR INSERTING PREFABRICATED COILS OF WIRE INTO THE SLOT OF ELECTRICAL MACHINES. VEB Elektromat, Dresden, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,813,662. ELECTRICAL ALARM SYSTEMS. Nigel W. Lewis, Buckinghamshire, England. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,818,387. CURRENT GAIN FILTER. James J. Murphy, 2070 Latham St., Apt. 4, Mountain View, Calif., 94040.

3,824,538. MOTOR VEHICLE OPERATOR MONITORING SYSTEM. Cecil Slemp, Rte. 1, Box 120–A, Jarretsville, Md., 21084.

3,830,399. CONTAINER CLOSURE. Frederick W. Hill, Box 143, Palermo, W. Va., 25546.

3,836,051. OUTDOOR SALT DISPENSER. Robert W. Schmechel, 3454 W. Wrightwood Ave., Chicago, Ill., 60647.

3,843,178. OVER HEAD HAND OPERATED DOOR LOCK. Alexander Eskoff, 4214 Euclid Ave., East Chicago, Ind., 46312.

3,846,640. ELECTRICAL - COMBINATION KEY LOCK. Nicholas W. Mihlhauser, 4514 Abbott, Apt. 12, Dallas, Tex., 75205.

3,850,379. BRAKE ACCESSORY FOR ROLLS OF TOILET PAPER AND THE LIKE. Mitchel Stern. Correspondence to: Sherman Levy, Suite 635, Washington Bldg., 15th & New York Ave., N.W., Washington, D.C., 20005.

The following 2 patents are offered by: Susan M. Peoples, 5201 Belleville Ave., Baltimore, Md., 21207.

D. 213,627. PORTABLE TWO-WAY COIN OPERATED TELEPHONE FOR INSTITUTIONS AND HOSPITALS.

D. 217,156. PORTABLE TWO-WAY COIN OPERATED TELEPHONE.

The following 2 patents are offered by: John O. Richards, 980 Mill Circle, Apt. 99, Alliance, Ohio, 44601.

3,578,840. REVOLVING REFLECTOR.

3,835,507. ROPE HOLDING DEVICE.

The following 2 patents are offered by: Betty Lasiter, % Bradshaw & Albright, 1003 Plaza Blvd., Suite 229, National City, Calif., 92050.

3,391,778. VEHICLE UNLOADER.

3,563,342. STOWABLE TRUCK LADDER.

Eastman Kodak Company announces that, in accordance with its policy, nonexclusive licenses upon reasonable terms are available to responsible applicants under the following U.S. Patent.

This offer is consistent with the practice of Eastman Kodak Company generally to grant non-exclusive licenses under unexpired U.S. patents issued to Kodak prior to 1970 on photographic inventions and on inventions made in the course of research or development work for the U.S. Government.

Inquiries regarding the availability of such licenses may be addressed to Director, Patent Department, Eastman Kodak Company, 343 State Street, Rochester, N.Y., 14650.

3,420,154. EASILY LOADED CAMERA WITH OPEN ENDED SPOOL.

The following 17 patents are offered by: R. S. Pauliukonis, 6660 Greenbriar, Parma Heights, Ohio, 44130.

3,412,573. CRYOGENIC QUICK FREEZING APPARATUS

3,309,884. DEWAR DESIGN FOR STORAGE AND TRANSPORTATION OF CRYOGENIC FLUIDS.

3,570,523. SELF-REGULATING RECIPROCATOR DEVICE.

3,572,362. SELF-RECIPROCATING FOUR-WAY VALVE.

3,666,230. ELASTOMATIC VALVE.

3,672,396. METERING VALVE.

3,676,022. PNEUMATIC/HYDRAULIC PRESSURE ACTUATED POSITIVE DISPLACEMENT PUMP.

3,680,582. QUICK EXHAUST VALVE.

3,696,835. CONTROL VALVE.

3,703,125. PLASTIC ACTUATING CYLINDER.

3,706,325. SIMPLE CONTROL VALVES.

3,749,353. MEMBRANE SHUT-OFF VALVE.

3,761,204. POSITIVE DISPLACEMENT BOOSTERS.

3,768,517. SOLENOID OPERATED SIMPLE CONTROL VALVES.

3,815,481. POWER CYLINDER W/PISTON RETURN BY OWN VACUUM FORCE.

3,824,898. ENERGY CONSERVING DIRECTIONAL VALVE-CYLINDER COMBINATION.

3,831,816. CHEMICAL SYRINGE/DILUTER MIXER.

The following 23 patents are offered by: Walter S. Pawl, Adelphi, Md. Correspondence to: Paul J. Schmitz, 1121 University Blvd., W., #1105, Silver Spring, Md., 20902.

D. 198,671. CABANA.

3,143,939. LANDING MAT STRUCTURE.

3,225,504. LOCKED WALL PANEL JOINT FASTENER.

3,228,162. BUILDING PANEL ASSEMBLY.

3,226,907. PREFABRICATED ROOF STRUCTURE.
3,274,739. SHEET PANEL ASSEMBLY AND SUPPORTING MEMBERS THEREFOR.
3,241,284. MULTI-PANEL STRIP AND JOINT.
3,283,462. SEALING EXTRUSION FOR PANEL JOINT.
3,293,818. PANEL SEAL AND LOCK.
3,294,040. LEAD CARRYING PALLETT.
3,306,487. KNOCKED DOWN CARGO SHIPPING CONTAINER.
3,349,533. CHANNEL EXTRUSION AND SEAL FOR FRAMING PANEL EDGES.
3,376,679. SHEET PANEL WALL ASSEMBLY.
3,350,249. METHOD OF MAKING IMPREGNATED PLASTIC RIVET REINFORCED LAMINATED FIBRE SHEETS.
3,483,663. BUILDING WALL CONSTRUCTION.
3,462,819. SHEET PANEL WALL ASSEMBLY.
3,447,823. ANCHOR CLIP.
3,486,262. POST SIGN.
3,486,281. COMMODITY SHEET PANEL.
3,512,494. SUBMERSIBLE WATERCRAFT.
3,543,456. TOTAL LOCK BUILDING STRUCTURE.
3,677,212. SUBMERSIBLE WATERCRAFT.
3,221,452. FROST BARRIER AND VENT.

General Electric Company is prepared to grant non-exclusive licenses under the following 3 patents upon reasonable terms to domestic manufacturers.

Application for licenses under the following patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Avenue, Bridgeport, Conn., 06602.

3,722,117. STEAM NOZZLE IRON.
3,685,180. ADJUSTABLE SPRAYER IRON.
3,685,181. ADJUSTABLE MANUAL SPRAY IRON.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 110 patents.

Inquiries respecting licenses under these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 30 Rockefeller Plaza, New York, N.Y., 10036.

3,828,121. COLOR SIGNAL PRODUCING SYSTEM UTILIZING SPATIAL COLOR ENCODING AND COMB FILTERING.
3,828,206. HIGH SPEED DRIVING CIRCUIT FOR PRODUCING TWO IN-PHASE AND TWO OUT-OF-PHASE SIGNALS.
3,828,234. MOTOR SPEED CONTROL SYSTEM.
3,828,258. SIGNAL DURATION SENSING CIRCUIT.
3,828,996. RECORD WEB CONTROL AND DRIVE APPARATUS.
3,829,612. VIDEO DISC PLAYBACK EDDY CURRENT SPEED CONTROL SYSTEM.
3,829,716. WIDE RANGE MONOSTABLE MULTIVIBRATOR CIRCUIT HAVING A CONSTANT CURRENT SOURCE.
3,829,853. HIGH - SPEED ANALOG - TO - DIGITAL CONVERTER.
3,830,447. ACTIVE NUTATION DAMPING IN DUAL-SPIN SPACECRAFT.
3,830,959. AUTOMATIC CENTERING CONTROL SYSTEM FOR TELEVISION APPARATUS.
3,831,037. PARAMETRIC AMPLIFIER HAVING AN IDLER CIRCUIT REDUCING SPURIOUS IDLER SIGNAL MAGNITUDE.
3,831,054. STORAGE TUBE ERASE CONTROL.
3,831,056. BEAM CURRENT STABILIZATION AND BLANKING APPARATUS.
3,831,074. ROTATOR SYSTEM INCLUDING A REMOTE DRIVE MOTOR AND A LOCAL INDICATOR-CONTROL MOTOR.
3,831,113. RELAXATION OSCILLATOR.
3,831,114. ENCAPSULATED MICROSTRIP CIRCULATOR WITH MODE ELIMINATION MEANS.
3,831,187. THYRISTOR HAVING CAPACITIVELY COUPLED CONTROL ELECTRODE.
3,832,495. INFORMATION TRANSFER SYSTEM FOR A PBX.
3,832,595. HORIZONTAL DEFLECTION SYSTEM WITH BOOSTED B PLUS.
3,832,651. DYNAMIC DIVIDING CIRCUIT FOR DIVIDING AN INPUT FREQUENCY BY TWO.
3,832,652. DYNAMIC DIVIDING CIRCUIT FOR DIVIDING AN INPUT FREQUENCY BY AT LEAST THREE.
3,833,375. METHOD OF REPAIRING AN IMPREFECT PATTERN OF METALIZED PORTIONS ON A SUBSTRATE.
3,833,383. HOLOGRAPHIC RECORDING MEDIUM.
3,833,408. VIDEO DISCS HAVING A METHYL ALKYL SILICONE COATING.
3,833,893. HOLOGRAPHIC MEMORY INCLUDING CORNER REFLECTORS.
3,834,653. CLOSED LOOP ROLL AND YAW CONTROL FOR SATELLITES.
3,834,905. METHOD OF MAKING ELLIPTICALLY OR RECTANGULARLY GRADED PHOTOPRINTING MASTERS.
3,835,248. KEYED AGC CIRCUIT.
3,835,253. TELEVISION COMMUNICATION SYSTEM WITH TIME DELAY COMPENSATION.
3,835,336. PULSE WIDTH SENSING CIRCUIT.
3,835,410. CURRENT AMPLIFIER.
3,835,421. MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS.
3,836,825. HEAT DISSIPATION FOR POWER INTEGRATED CIRCUIT DEVICES.
3,836,845. APPARATUS FOR TESTING THE LINEARITY OF A CIRCUIT BY USING RATIO DETERMINING MEANS.
3,836,969. GEO-SYNCHRONOUS SATELLITES IN QUASI-EQUATORIAL ORBITS.
3,836,995. SEMICONDUCTOR DARLINGTON CIRCUIT.
3,836,996. SEMICONDUCTOR DARLINGTON CIRCUIT.
3,836,997. SEMICONDUCTOR DARLINGTON CIRCUIT.
3,837,071. METHOD OF SIMULTANEOUSLY MAKING A SIGFET AND A MOSFET.
3,837,656. CHIP REMOVAL IN THE MASTERING OF FINE-GROOVED DISCS.
3,838,240. BONDING TOOL AND METHOD OF BONDING THEREWITH.
3,838,304. METHOD OF MAKING A BIALKAI PHOTOCATHODE WITH IMPROVED SENSITIVITY AND HIGH TEMPERATURE OPERATING CHARACTERISTICS.
3,838,311. STORAGE TUBE FOCUS CONTROL.
3,838,834. SOLAR TORQUE COMPENSATION FOR A SATELLITE.
3,838,908. GUIDED LIGHT STRUCTURES EMPLOYING LIQUID CRYSTAL.
3,839,111. METHOD OF ETCHING SILICON OXIDE TO PRODUCE A TAPERED EDGE THEREON.
3,839,644. LABEL WRITING APPARATUS.
3,839,906. APPARATUS FOR ENGINE COMPRESSION TESTING.
3,839,907. ENGINE PERFORMANCE ANALYZER USING SIMULATED LOAD.
3,840,174. PRECISION DIGITAL INTERPOLATOR.
3,840,819. SIGNAL COMBINING CIRCUIT.
3,840,826. VARIABLE DELAY DEVICES USING FERROELASTIC-FERROELECTRIC MATERIALS.
3,840,889. LASER DIODE PACKAGE FORMED OF CERAMIC AND METAL MATERIALS HAVING HIGH ELECTRICAL AND THERMAL CONDUCTIVITY.
3,840.893. TRACK FOLLOWING SERVO SYSTEM.
3,841,881. METHOD FOR ELECTROLESS DEPOSITION OF METAL USING IMPROVED COLLOIDAL CATALYZING SOLUTION.
3,841,904. METHOD OF MAKING A METAL SILICIDE-SILICON SCHOTTKY BARRIER.
3,842,189. CONTACT ARRAY AND METHOD OF MAKING THE SAME.
3,842,194. INFORMATION RECORDS AND RECORDING/PLAYBACK SYSTEMS THEREFOR.
2,842,199. TELEPHONE IMAGE TRANSMISSION SYSTEM.
3,842,217. RECORD FABRICATION OF A CAPACITIVE TYPE STORAGE MEDIUM.
3,842,276. THERMAL RADIATION DETECTOR.

3,843,399. METALLIZED VIDEO DISC HAVING AN INSULATING LAYER THEREON.
3,843,420. SPUTTERED GRANULAR FERROMAGNETIC IRON-NICKEL-SILICA FILMS.
3,843,425. OVERLAY TRANSISTOR EMPLOYING HIGHLY CONDUCTIVE SEMICONDUCTOR GRID AND METHOD FOR MAKING.
3,843,836. COLOR MOTION PICTURE FILM PLAYBACK SYSTEM.
3,843,837. APPARATUS FOR GENERATING SAMPLE PULSES IN A TELEPHONE IMAGE TRANSMISSION SYSTEM.
3,843,843. TIME DIVISION MULTIPLE ACCESS SYNCHRONIZATION TECHNIQUE.
3,843,846. DEMOUNTABLE CAPACITIVE PROTECTIVE COUPLING FOR PICKUP TRANSDUCERS.
3,843,933. CURRENT AMPLIFIER.
3,845,295. CHARGE-COUPLED RADIATION SENSING CIRCUIT WITH CHARGE SKIM-OFF AND RESET.
3,845,328. TRI-STATE LOGIC CIRCUIT.
3,845,403. AMPLIFIER FOR AMPLITUDE MODULATED WAVES WITH MEANS FOR IMPROVING SIDEBAND RESPONSE.
3,845,405. COMPOSITE TRANSISTOR DEVICE WITH OVER CURRENT PROTECTION.
3,845,496. INFRARED PHOTOCATHODE.
D. 233,496. BAGGER STATION OR SIMILAR ARTICLE.
D. 233,668. CONTROL UNIT FOR AN ANTENNA ROTATOR.
3,845,530. METHOD FOR RENDERING CATHODE-RAY TUBE MORE RESISTANT TO IMPLOSION AND PRODUCT THEREOF.
3,845,738. VAPOR DEPOSITION APPARATUS WITH PYROLYTIC GRAPHITE HEAT SHIELD.
3,845,916. CARTRIDGE FOR ELONGATED RECORD MEDIUM.
3,846,165. METHOD OF APPLYING AN ANTI-REFLECTIVE COATING ON A SEMICONDUCTOR LASER.
3,846,198. METHOD OF MAKING SEMICONDUCTOR DEVICES HAVING THIN ACTIVE REGIONS OF THE SEMICONDUCTOR MATERIAL.
3,846,294. METHOD OF COATING THE INTERIOR WALLS OF THROUGH-HOLES.
3,846,328. METHOD FOR SEPARATING SULFIDE PHOSPHOR PARTICLES FROM MIXTURES.
3,846,649. PIEZOELECTRICAL TRANSDUCER COMPRISING ORIENTED ZINC OXIDE FILM AND METHOD OF MANUFACTURE.
3,846,674. OVERCURRENT PROTECTION CIRCUIT INCLUDING A HEAT SENSITIVE ELEMENT AND A THYRISTOR.
3,846,696. CURRENT ATTENUATOR.
3,846,819. METHOD FOR RECORDING TWO SEPARATE SIGNALS.
3,847,394. BOWLING PIN DETECTOR.
3,847,703. METHOD OF ALIGNING A LASER TUBE WITHIN AN ENVELOPE.
3,848,084. STORAGE TUBE CONTROL APPARATUS FOR A TELEPHONE IMAGE TRANSMISSION SYSTEM.
3,848,087. OPTICAL SCANNER CONTROL SYSTEM.
3,848,123. AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIER TUBE.
3,848,141. SEMICONDUCER DELAY LINES USING THREE TERMINAL TRANSFERRED ELECTRON DEVICES.
3,848,146. AC MOTOR.
3,848,191. ASYNCHRONOUS PULSE RECEIVER.
3,848,196. BROADBAND TRAPATT DIODE AMPLIFIER.
3,848,198. MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS.
3,848,301. METHOD OF DIRECTLY SPACING A CATHODE-TO-GRID ASSEMBLY FOR A CATHODE-RAY TUBE.
3,849,635. HIGH SPEED PROGRAMMABLE COUNTER.
3,849,644. ELECTRON DISCHARGE DEVICE HAVING ELLIPSOID-SHAPED ELECTRODE SURFACES.
3,849,696. VERTICAL CONVERGENCE CIRCUITS.
3,849,782. COLLISION PREVENTION.
3,850,637. METHOD OF DENSIFYING SILICATE GLASSES.
3,850,710. METHOD OF MAKING A QUASI-MONOLITHIC INTEGRATED CIRCUIT STRUCTURE.
3,851,241. TEMPERATURE DEPENDENT VOLTAGE REFERENCE CIRCUIT.
3,851,258. GATELESS LOGIC FOR PRODUCING SELECTABLE PHASE CLOCK PULSES.
3,851,276. OSCILLATOR USING CONTROLLABLE GAIN DIFFERENTIAL AMPLIFIER WITH THREE FEEDBACK CIRCUITS.
3,851,298. WRAPPED WIRE CONNECTION.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 4, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-31-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-12-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-28-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-29-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio Active Material.	7-10-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-16-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	7-27-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-1-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-17-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod. Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-3-74

Expiration of patents: The patents within the range of numbers indicated below expire during December 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,814,802 to 2,818,566, inclusive
Plant Patents	Numbers 1,661 to 1,671, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED FEBRUARY 4, 1975

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T931,001

PROCESS OF DYING USING MONOAZO DISPERSE DYES

Abraham Reife, 60 Oakside Drive, Toms River, N.J. 06042, and Grady Malcolm O'Neal, 188 Garfield Ave., Island Heights, N.J. 07904

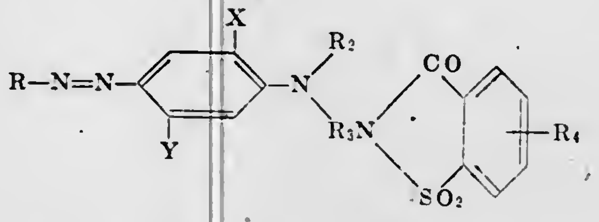
Continuation of application Ser. No. 88,240, Nov. 9, 1970, which is a continuation-in-part of application Ser. No. 773,325, Nov. 4, 1968, both now abandoned. This application Jan. 16, 1973, Ser. No. 394,377

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C

No Drawing. 31 Pages Specification

Improvement in dyeing permanent press fabrics which comprises using a dyestuff of the formula



wherein R is the residue of a diazotizable amine free from water solubilizing groups, X is hydrogen, alkyl, alkoxy or halogen; Y is hydrogen, alkyl, alkoxy, halogen or acylamino and R_2 is hydrogen or alkyl, hydroxy alkyl, cyano alkyl, alkoxy alkyl, aryloxy alkyl, acyloxy alkyl or halo alkyl; R_3 is an alkylene and R_4 is hydrogen, nitro, halogen or —CH=CH—CH=CH—. The fabrics thus dyed have excellent fastness properties.

T931,002

DRY SPINNING PROCESS

William Kenneth Wilkinson, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Co., Wilmington, Del.

Filed Sept. 18, 1973, Ser. No. 398,302

Int. Cl. D01f *7/00*

U.S. Cl. 264—206

No Drawing. 10 Pages Specification

Process for providing acid-dyeability to acrylic fibers that have been dry spun. The process comprises dry spinning in dimethylformamide a polymer blend of

(a) a terpolymer of at least 75% acrylonitrile, at least 8% of a vinylpyridine and at least 2% of a neutral ethylenically unsaturated monomer copolymerizable with acrylonitrile, by weight, and

(b) a terpolymer of at least 85% acrylonitrile, up to 1% of a vinylarenesulfonic acid, and up to 14% of a neutral ethylenically unsaturated monomer copolymerizable with acrylonitrile, by weight,

the sum of the components of each terpolymer being 100%, and the terpolymers being mixed in amounts to provide at least about 5% by weight vinylpyridine in polymerized form in the polymer blend.

T931,003

POLYMERIC SOAPS

Michael Fryd, Philadelphia, and Achim R. Krueger, Upper Darby, Pa.

Continuation of application Ser. No. 372,844, June 22, 1973, which is a continuation of application Ser. No. 91,536, Nov. 20, 1970, both now abandoned. This application Dec. 17, 1973, Ser. No. 425,074

Int. Cl. C08f *15/02*

U.S. Cl. 260—79.3 M

No Drawing. 15 Pages Specification

Polymeric soaps, useful as thickeners in paints, which are random copolymers of at least two monomers, one bearing a pendant radical which solubilizes the polymer in whatever liquid is used as a carrier, and the other bearing a pendant long-chain radical which gives the soap its thickening effect.

T931,004

RECONSTITUTED TOBACCO

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 8, 1974, Ser. No. 459,248

Int. Cl. A24b *3/14*

U.S. Cl. 131—17 A

No Drawing. 4 Pages Specification

Reconstituted tobacco compositions are prepared using a tertiary amine group substituted ethyl cellulose, preferably diethylaminoethyl ethyl cellulose as a binder. The tertiary amine substituted ethyl cellulose dissolves in a slurry of tobacco fines acidified to a slightly acid pH. Upon drying of the slurry and removal of the acid, the diethylaminoethyl ethyl cellulose forms a binder for the tobacco which is insoluble and resistant to swelling in water. When the tobacco product is smoked, the binder does not dissolve or become slimy in the user's mouth.

T931,005

METHOD OF MONITORING PLASTICIZER CONCENTRATION IN FILTER TOW BY MEASURING FLUORESCENCE INTENSITY

Ethbert S. Carr, Jr., 4043 Skyland Drive 37664, and Gerald P. Morie, 2317 Briar Cliff Road 37660, both of Kingsport, Tenn.

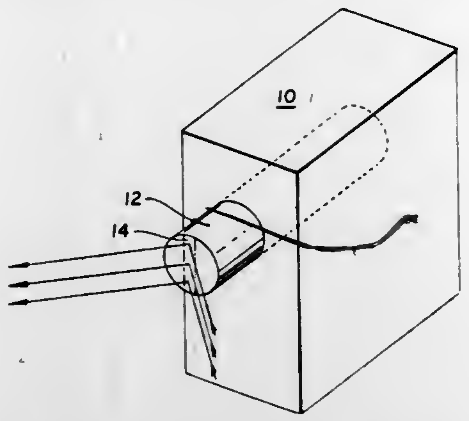
Filed May 6, 1974, Ser. No. 467,523

Int. Cl. G01n *21/16*

U.S. Cl. 250—302

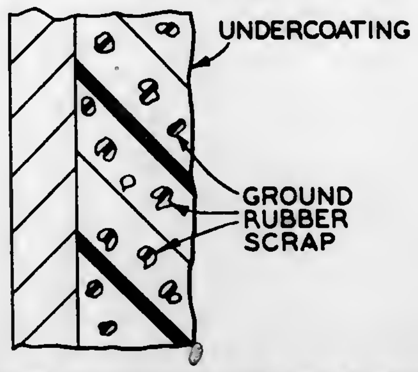
1 Sheet Drawing. 12 Pages Specification

Method of monitoring the bonding plasticizer concentration in the filter tow of a tobacco smoke filter rod by adding a predetermined amount of fluorescent agent to a predetermined amount of plasticizer; applying to the filter tow prior to its being formed into a filter rod the bonding plasticizer and the added fluorescent agent; and measuring the intensity of fluorescence from a predetermined portion of one end of the subsequently formed filter rod. The measurement made has thus been found to be representative of a percentage of bonding plasticizer in the entire length of filter rod. The bonding plasticizer applied to the filter tow may be preferably triacetin and the fluorescent agent added to the bonding plasticizer may be preferably butylated hydroxyanisole (BHA). More specifically, the bonding plasticizer may be a member of a group consisting of glyceryl triacetate (triacetin), ethylene glycol diacetate, triethylene glycol diacetate, propylene glycol diacetate, di(methoxyethyl)phthalate, dimethyl phthalate, and triethyl citrate. The fluorescent agent may be a member of the group consisting of propyl 3,4,5-trihydroxybenzoate, 3,5-di-t-butyl-4-hydroxymethyl benzene, 2,5-bis(5,7-di - tert - amylbensonasol-2-yl) thiophene, riboflavin, butylated hydroxyanisole, benzoic acid, 2-acetonaphthone, benzophenone, propyl p-hydroxybenzoate and 2,4,5-trihydroxybutyrophenone. With respect to the composition of glyceryl triacetate (triacetin) and butylated hydroxyanisole (BHA), 1000 parts of BHA may be added to one million parts of triacetin.



T931,006
SOUND-ATTENUATING COATINGS AND COATED PRODUCTS

Joseph R. Laman, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of abandoned application Ser. No. 355,363, Apr. 27, 1973. This application May 30, 1974, Ser. No. 474,649
Int. Cl. B32b *15/06, 25/04*
U.S. Cl. 117—132
1 Sheet Drawing. 10 Pages Specification



Scrap tires are ground or otherwise reduced to small size particles and 5 to 95 parts by volume were used in 100 parts by volume of noise-attenuating coatings, mixed with the coatings or applied to their surface. The coating vehicles will vary widely in properties, and the invention includes both water-base coatings and organic-base coatings. The invention includes not only the coatings but coated products such as auto fenders, hoods, truck covers, auto floors, under-the-floor mats, the ceilings of rooms, factory ceilings and walls, and many other sheet-metal, etc., products and parts, etc.

REISSUE PATENTS

GRANTED FEBRUARY 4, 1975

ERRATA

For CLASS	See PATENT NO.
219-137	28,326
073-181	28,327
339-091	28,328
267-065	28,329

REISSUES

FEBRUARY 4, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,326

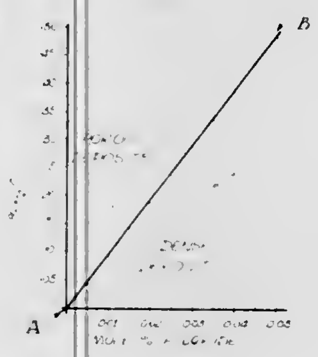
ARC WELDING ELECTRODE AND PROCESS FOR STAINLESS STEEL

Albert J. Zvanut, Whittier, Calif., assignor to Stoody Company

Original No. 3,670,135, dated June 13, 1972, Ser. No. 149,271, June 2, 1971, which is a continuation-in-part of Ser. No. 879,045, Nov. 24, 1969, now Patent No. 3,585,352, which is a continuation-in-part of Ser. No. 777,405, Nov. 20, 1968, now abandoned. Application for reissue May 20, 1974, Ser. No. 471,416

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **38 Claims**



1. A process for forming a stainless steel weld on a workpiece, comprising:

providing an arc welding electrode comprising a hollow tube of steel having as filler slag-forming material including a slag-forming first component and a derivative of a metal having an oxide form when molten different from said first component and soluble in said slag, said electrode being formulated with one or more alloying metals in amount sufficient to form a stainless weld of desired composition, *said slag-forming material being fused into vitreous particles prior to incorporation into said steel tube;*

said steel tube having a diameter of 0.045 to 0.30 inches, the weight ratio of said filler to said steel tube being 0.2/1 to 1.5/1 and the weight ratio of said slag-forming material to said alloying metals being 0.15/1 to 0.65/1;

electrically energizing said electrode; and

mechanically feeding said electrode toward said workpiece while maintaining an arc between the end of the electrode and the workpiece;

the components of said filler being chosen so that said filler, or fusion or decomposition derivative thereof, has an equilibrium moisture content at 70° F. and 90 percent relative humidity of less than 2.0 weight percent;

said filler including a fluoride, or a fusion or decomposition derivative thereof, in at least an amount corresponding to the level of moisture content of said filler as defined by the line A–B of FIG. 2 in the accompanying drawing, said fluoride comprising 5–100 weight percent of a compound selected from lithium fluoride, sodium fluoride, barium fluoride, magnesium fluoride, aluminum fluoride, potassium silicofluoride, sodium silicofluoride, and combinations thereof.

28,327

FARADAY EFFECT SPEEDOMETER

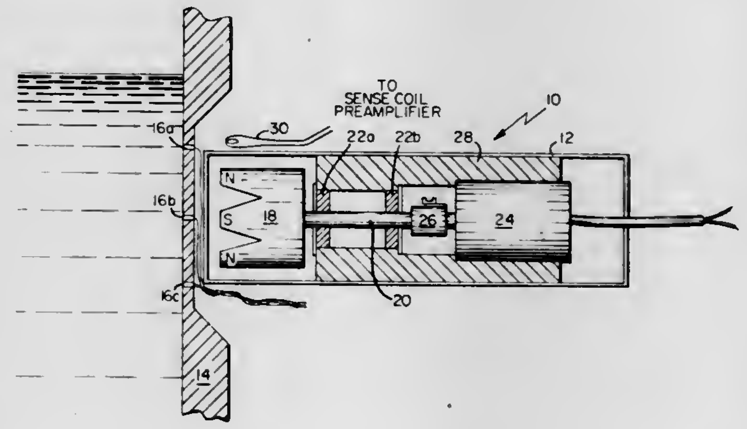
John R. Lewis, Framingham, Mass., by Safe Flight Instrument Corp., White Plains, N.Y., assignee.

Original No. 3,777,561, dated Dec. 11, 1973, Ser. No. 223,119, Feb. 3, 1972. Application for reissue Apr. 10, 1974, Ser. No. 459,543

(Filed under Rule 47(b) and 35 U.S.C. 118)

Int. Cl. G01p *5/08*

U.S. Cl. 73—181 **22 Claims**



1. A speedometer device adapted to measure the relative motion between a vessel and the water in which the vessel is disposed, which device comprises in combination:

a. a permanent magnet having at least one set of alternating north and south poles at one end thereof;

b. means to rotate the permanent magnet about its axis, and to provide an alternating magnetic field, the axis of the magnet adapted to be disposed generally perpendicular to the wall of the vessel whose motion relationship to the water is to be determined, the one end of the magnet in such a relationship to the wall of the vessel so that the alternating magnetic fields extend beyond the wall of the vessel and into the water in which the vessel is disposed;

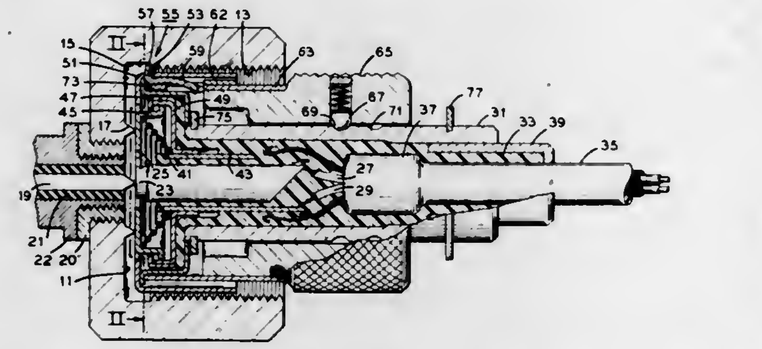
c. means disposed in the alternating magnetic field and in contact with the water to measure the change in potential caused by motion of the vessel through the water, and to provide an alternating signal corresponding to the change in potential by such motion;

d. sensing means disposed in and responsive to the alternating magnetic field to provide a sensing signal; and

e. means to combine the alternating signal and the sensing signal to yield a signal value corresponding to the rate of movement of the vessel through the water.

28,328
LATCH TYPE PYROTECHNIC DETONATOR CIRCUIT TEST PROBE

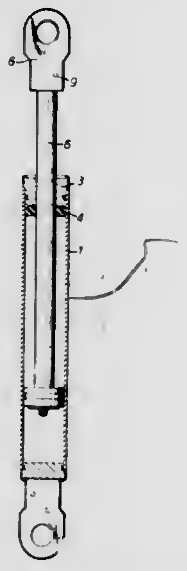
Robert A. Williams, Fort Worth, Tex., assignor to Williams Instruments, Inc., Fort Worth, Tex.
Original No. 3,555,490, dated Jan. 12, 1971, Ser. No. 777,674, Nov. 21, 1968, which is a continuation-in-part of Ser. No. 756,085, Aug. 14, 1968. Application for reissue June 16, 1971, Ser. No. 153,906
Int. Cl. H01r *13/24, 17/18, 33/14*
U.S. Cl. 339—91 R **12 Claims**



1. A pyrotechnic detonator circuit test probe comprising:
- an elongated body;
- a pair of electrical contacts secured to an end region of the body;
- two electrical conductors extending through the body and communicating respectively with said contacts;
- a shell secured to the end region of the body generally circumscribing the contacts, and having a plurality of radially oriented apertures;
- a movable sleeve carried by the body to move between forward and rearward positions and having a portion extending between the shell and the body;
- latch elements carried between the [body] *shell* and the sleeve, each having a radially extending finger mounted to extend through one of said apertures and an axially extending base connected with and actuated by the movable sleeve resulting in selective protrusion of each finger through the associated aperture.

28,329
PNEUMATIC SPRINGS

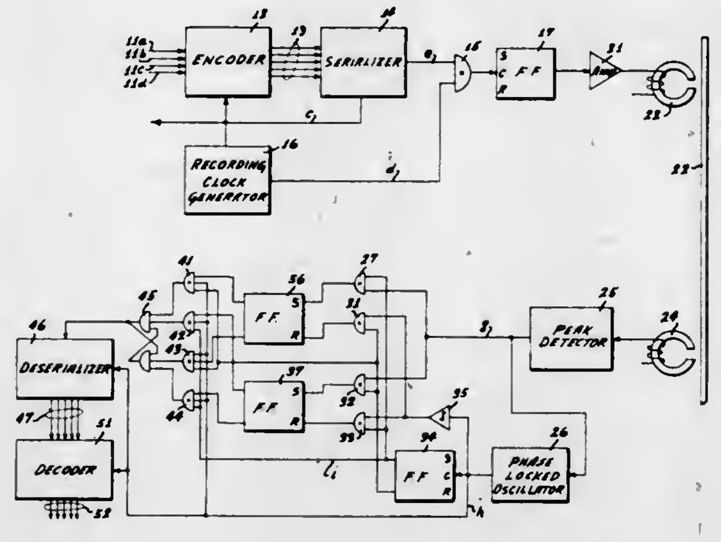
Lawrence G. Nicholls, Birmingham, England, assignor to Girling Limited
Original No. 3,595,552, dated July 27, 1971, Ser. No. 825,186, May 16, 1969. Application for reissue Apr. 18, 1973, Ser. No. 352,257
Claims priority, application Great Britain, May 21, 1968, 24,216/68
Int. Cl. B60c *9/36*
U.S. Cl. 267—65 **6 Claims**



1. A pneumatic spring comprising a cylinder having a pressure seal at its outer end, a piston and a piston rod extending slidingly and sealingly through the pressure seal, said piston rod having near its outer end a portion of reduced cross section less than the inner diameter of said seal, the relative dimensions of said seal and said portion of reduced diameter being such that when said portion is aligned with said seal the space between said seal and said portion of reduced cross section defines a passage for the flow of gas into or out of said cylinder without deflection of said seal, and a removable end fitting secured to the outer end of said piston rod to prevent inward movement of said rod sufficient for said reduced portion to be aligned with said pressure seal except when said fitting is removed from the outer end of said piston rod.

28,330
SELF-CLOCKING FIVE BIT RECORD-PLAYBACK SYSTEM

Gene E. Milligan, Torrance, Calif., assignor to NCR Corporation, Dayton, Ohio
Original No. 3,641,525, dated Feb. 8, 1972, Ser. No. 64,355, Aug. 17, 1970. Application for reissue Jan. 30, 1974, Ser. No. 438,027
Int. Cl. G11b *5/02*
U.S. Cl. 360—48 **13 Claims**



1. A system for magnetically recording and reproducing digital data comprising:
- [an encoder for converting a four-bit binary code to a five-bit binary code allowing combination of two successive bits only as like binary digits;]
- a recording medium;
- recording means [connected to said encoder] for recording digital data in [said] *a* five-bit binary code on said recording medium, whereby the polarity of said recording medium is reversed to record only one of a pair of binary digits;
- *an encoder connected to said recording means for converting a four-bit binary code to said five-bit binary code allowing combination of only two successive bits as the second of said pair of binary digits;*
- playback means for sensing said reversals of polarity of said recording medium and generating pulses in response thereto;
- an oscillator connected to said playback means effective to generate a wave having a frequency determined by said pulses;
- and logic means connected to said playback means and to said oscillator for recovering said digital data.

PLANT PATENTS

GRANTED FEBRUARY 4, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,678
JUNIPER PLANT

Peter Mordigan, Sylmar, Calif., assignor to Select Nurseries, Inc., Brea, Calif.
Filed Mar. 26, 1973, Ser. No. 345,247
Int. Cl. A01h *7/00*
U.S. Cl. Plt.—50 **1 Claim**

1. A new and distinct variety of juniper plant substantially as shown and described, characterized by its very dwarfed size, its hardy slow prostrate growth habit forming a tightly compact ground covering shrub, its thin needle-like Cyprus Green juvenile leaves which are present all of the time, the leaves being resinous in texture, and by the absence of cones and seed.

3,679
AZALEA PLANT

Raymond Yoshimura, 827 S. Gladys, San Gabriel, Calif. 91772
Filed Aug. 2, 1973, Ser. No. 385,073
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—57 **1 Claim**

1. The new and distinct variety of azalea plant substantially as herein shown and described, characterized particularly as to novelty by the double, campanulate, predominantly Delft Rose blooms that have Garnet Lake dots borne in great profusion during cooler weather with many blooms on a stem, by its medium semi-upright growth habit, and by the dark green leaves that are wider compared to the length of the leaves than those of its parent plants.

3,680
AZALEA PLANT

Raymond Yoshimura, 827 S. Gladys, San Gabriel, Calif. 91772
Filed Aug. 2, 1973, Ser. No. 385,074
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. The new and distinct variety of azalea plant substantially as herein shown and described, characterized particularly as to novelty by the single to semidouble, campanulate, medium sized blooms that are predominantly Persian Rose in color having splotches that are Magenta Rose and spots that are small and are colored Chrysanthemum Crimson borne in great profusion during the cooler months with many blooms on a stem, by the long life of the blooms particularly during the cooler months, and by its large leaves and vigorous growth habit.

3,681
ST. AUGUSTINEGRASS

Jake T. Gruis, Apopka, and Terrance P. Riordan, Altamonte Springs, Fla., assignors to The O. M. Scott & Sons Company, Marysville, Ohio
Filed Oct. 2, 1973, Ser. No. 402,717
Int. Cl. A01h *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A St. Augustinegrass, substantially as herein illustrated and described.

PATENTS

GRANTED FEBRUARY 4, 1975

ERRATA

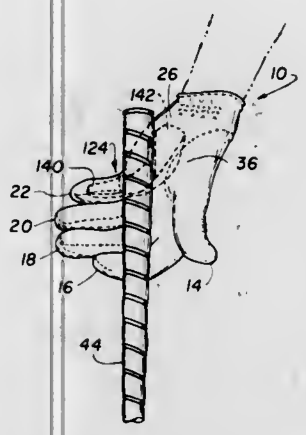
For CLASS	See PATENT NO.
071-100	3,863,474
074-347	3,863,503
264-047	3,863,908
251-138	3,864,031
356-074	3,864,037
252-051	3,864,099
261-142	3,864,326
426-284	3,864,494
313-390	3,864,585

PATENTS

GRANTED FEBRUARY 4, 1975

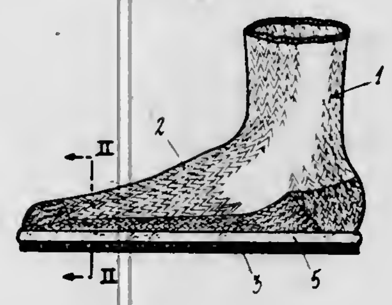
GENERAL AND MECHANICAL

3,863,271
ATHLETE'S GLOVE AND PAD
Martin A. Moroney, 269 Whitter Ave., Levittown, N.Y. 11756
Filed Jan. 2, 1974, Ser. No. 429,787
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **3 Claims**



1. A hand glove for golfers and the like having finger stalls and a palm area including glove portions to cover the palm of a hand including the thenar and heel of the hand,
   the invention comprising an elongated pad of pliable material connected to the glove palm extending along the heel portion thereof from the thenar portion to and along at least a portion of the extent of the smallest glove finger stall,
   and a recess defined in said pad extending in a direction from the heel portion of the glove toward an opening between the thumb and forefinger of the glove when the same are wrapped about a club handle.

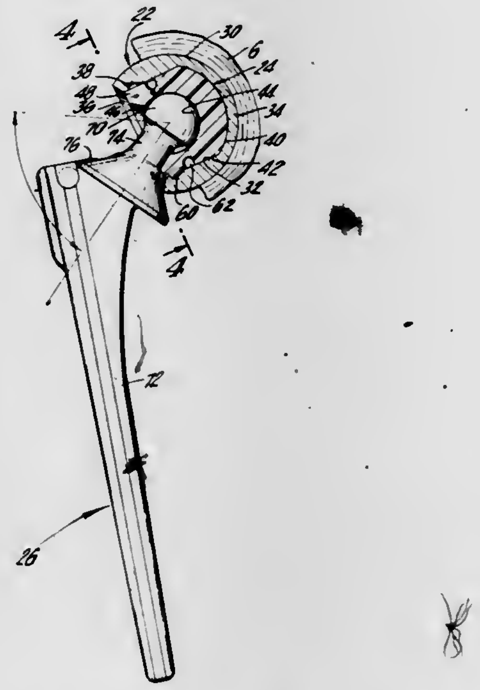
3,863,272
ARTICLE OF FOOTWEAR AND A METHOD FOR THE MANUFACTURE OF SAID ARTICLE
Robert Guille, Briatexte, France, assignor to Etablissements Oliver Guille & Fils S. A., Briatexte, Tarn, France
Filed Sept. 6, 1973, Ser. No. 394,812
Claims priority, application France, Sept. 21, 1972, 72.33443
Int. Cl. A43b *17/00, 17/18*
U.S. Cl. 2—239 **3 Claims**



1. Article of footwear comprising a sock of knitted textile material, a sole of flexible material having a fibrous structure selected among the group consisting of velvet-pile fabrics, felt fabrics and tagged carpet fabrics, a molded side portion of plastic material selected among the group consisting of polyvinyl chloride, polyurethane resin and rubber which covers at least part of the periphery of the foot of the sock and the periphery of the sole and attaches the sole to the sock, said part of the periphery of the sock which is covered by the plastic material being knitted in sufficiently close stitches to prevent the penetration of the plastic material through the stitches.

2. A method for the manufacture of an article of footwear comprising:
   a. fitting a sock of knitted textile material over a rigid forming-block having the general shape of a foot, at least part of the periphery of the foot of the sock being knitted in close stitches;
   b. placing on the bottom of a mold a sole of flexible material having a fibrous structure selected among the group consisting of velvet-pile fabrics, felt fabrics and tagged carpet fabrics;
   c. engaging in said mold the end of the forming-block which carries the foot of the sock;
   d. maintaining the bottom portion of the foot of the sock applied against the sole;
   e. injecting into the mold a hardenable plastic material selected among the group consisting of a polyvinyl chloride, polyurethane resin and rubber, in order to form on said part of the periphery of the foot of the sock which is knitted in close stitches and on the periphery of said sole of flexible material a molded side portion;
   f. and after the plastic material has hardened removing the article of footwear from the mold.

3,863,273
ORTHOPEDIC PROSTHETIC IMPLANT DEVICES
Robert G. Averill, Ringwood, N.J., assignor to Meditec, Inc., Fair Lawn, N.J.
Filed Sept. 20, 1973, Ser. No. 398,925
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **11 Claims**

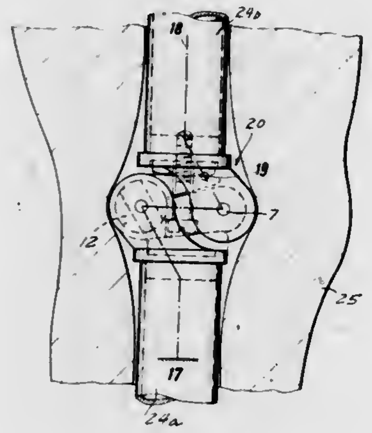


1. An implantable prosthetic joint for use in replacement of the ball end of defective biological joints, said prosthetic joint including a head for insertion into and unattached seating in the socket member of the biological joint being partially replaced by said prosthesis, a bearing insert in said head, said bearing insert having a spherical seat, a ball shaped member seated in said spherical seat in said bearing insert, said bearing insert including means for engaging said ball shaped member and for retaining said ball shaped member in said bearing insert while permitting pivotal universal movement of said ball shaped member, means for engaging and retaining said ball shaped member in said bearing insert including a one-piece

insert having a plurality of arcuate sections at the open edge of said insert which, when said head is removed, are flexible outwardly to allow said ball shaped member to be inserted into said spherical seat and which, when said ball shaped member is in said spherical seat, and said head is placed over said bearing insert, are engaged by said head for retaining said ball shaped member in said bearing insert, attaching means in said bearing insert and means for attaching said ball shaped member to the shaft of the second anatomical member of the joint being partially replaced.

3,863,274
ARTICULATE JOINT FOR PROSTHETIC DEVICES

Richard Glabiszewski, Duderstadt, Germany, assignor to Otto Boch Orthopadische Industries KG, Duderstadt, Germany
Filed June 6, 1973, Ser. No. 367,420
Claims priority, application Germany, June 10, 1972, 2228391
Int. Cl. A61f *1/04, 1/08*
U.S. Cl. 3—27 **11 Claims**

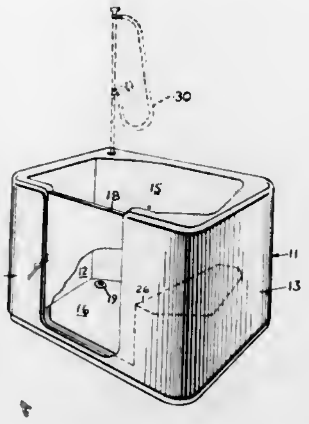


1. An articulated joint, particularly a knee joint for an artificial leg, comprising a pair of substantially parallel transversely spaced shafts, the axes of which are located when a force is applied to said joint in a substantially horizontal plane; collar means having one portion substantially surrounding one of said shafts and having an upper and a lower portion laterally projecting from said one portion and being separated by a slot having a predetermined width in the absence of a force applied to said joint and said lever portions being elastically yieldable toward each other upon application of a force to said joint, said lower lever portion being pivotally connected to the other of said shafts; a lower joint member connected to said one shaft for turning therewith; and an upper force transmitting joint member turnably carrying the other shaft and engaging said upper lever portion for pressing the latter towards said lower lever portion to cause said collar means to frictionally engage said one shaft.

3,863,275
SIT-UP BATHTUB AND SHOWER

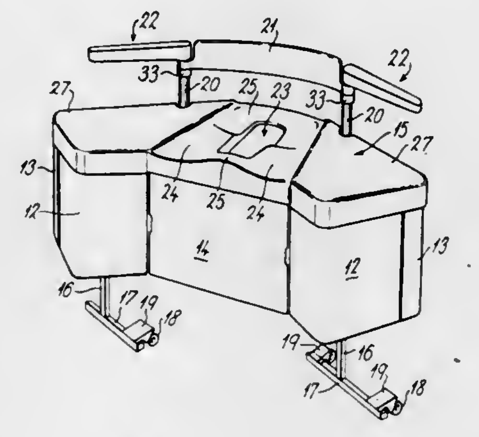
Thomas Brendgord, and Robert D. Copeland, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.
Continuation of Ser. No. 234,701, March 15, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,380
Int. Cl. A47k *3/022*
U.S. Cl. 4—173 **5 Claims**

1. A bath structure comprising a door and a tub having a bottom, four side walls, a door opening in one of said side walls,
said door hinged to one said wall and swingable to close said door opening,
and a latch means on said door for fastening the said door in closed position in said opening,
a flat platelike jamb member extending around the sides and bottom of said door opening,
and an inflatable seal fixed to said door and extending around said door,
pump means,
said pump means having a cylinder connected to said seal, said inflatable seal terminating on said door at a position below said latch means whereby said latch means can engage said tub above said inflatable seal,
said pump means being built into said door and having a handle extending upward from said door for inflating said seal to bring said seal into sealing engagement with said platelike jamb member.



3,863,276
COMMODES

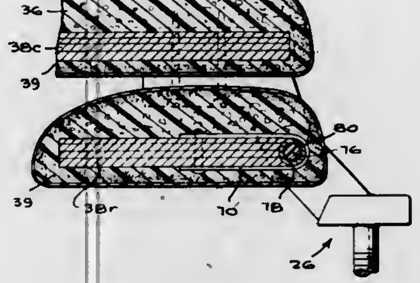
Kenneth Malcolm Agnew; Timothy Coward, and Douglas Frazer Tomkin, all of London, England, assignors to National Research Development Corporation, London, England
Filed Feb. 17, 1972, Ser. No. 227,528
Claims priority, application Great Britain, Feb. 18, 1971, 4939/71
Int. Cl. G03d *9/00, 11/00;* **A47k** *11/02*
U.S. Cl. 4—237 **10 Claims**



1. A unitary moulded seat for sanitary equipment, which seat has an upper surface at least partially defined by:
an elongate aperture wholly bounded by said surface, and extending longitudinally between the front and rear of said seat;
two elongated thigh-supporting first profiled areas individually laterally dished to a concave trough form and positioned to extend longitudinally, in mutually spaced manner, from the front periphery of said seat to corresponding locations in the central region along respectively opposite sides of said aperture; and
a generally U-shaped buttock-clearance second profiled area extending around the rear and partway along the sides of said aperture to join said first areas, said second area being concavely dished in both the longitudinal and lateral directions and extending to a greater extent in said seat than said first areas, and said second area being joined to each of said first areas by respective similar abrupt changes of profile.

3,863,277
SOFT TOILET SEAT

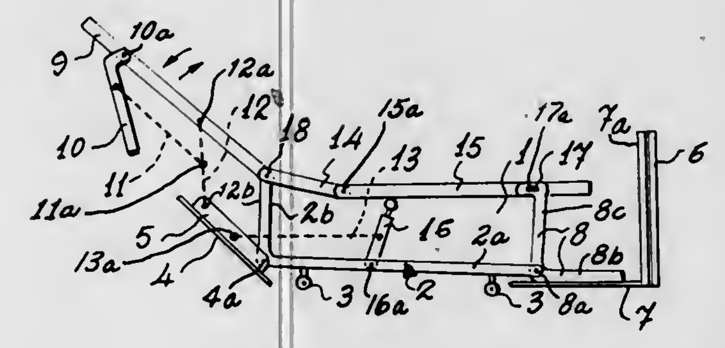
David E. Harrison, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Miss.
Division of Ser. No. 278,862, Aug. 8, 1972,. This application July 20, 1973, Ser. No. 381,060
Int. Cl. A47k *13/02*
U.S. Cl. 4—237 **13 Claims**



1. A soft, substantially gas and liquid impervious, sanitary toilet seat assembly comprising:
a seat having an integral outer skin consisting essentially of an impervious film former,
a core of polyurethane foam having an integral high density tough skin and an inner core of lower density soft foam containing cells at least partially filled with a gas, a substantially rigid insert positioned within and surrounded by said inner core and said high density tough skin,
and hinge means secured to said seat to permit pivotal movement of said seat whereby in use said gas is displaced wholly within said outer skin to provide a soft surface without transmitting odors.

3,863,278
PERFECTED DEVICE: A FOLDING SPRING BED CONVERTIBLE INTO A TABLE

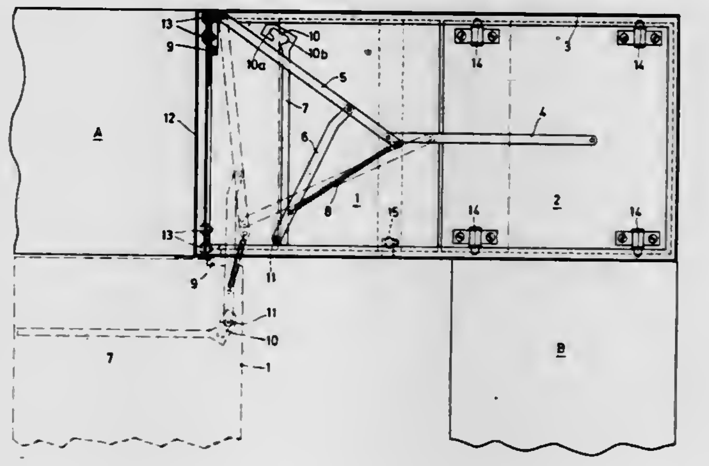
Jose Pardo Herrera, Carretera de Lograno, Kilometro 1,7000, Zaragoza, Spain
Filed Aug. 3, 1973, Ser. No. 385,426
Claims priority, application Spain, Aug. 4, 1972, 182970
Int. Cl. A47c *13/38*
U.S. Cl. 5—3 **6 Claims**



1. An article of furniture in the form of a convertible table and bed comprising a pair of fixedly spaced apart, parallel vertical side panels having inner surfaces, frame members mounted on said inner surfaces, an articulated spring bed unit having a head section, a foot section and an intermediate section pivotally connected together for movement from a coplanar horizontal position into a folded position collapsed within the confines of the space between the side panels, said head and intermediate sections being pivotally supported by the frame members, said bed section being movable about said pivots from a collapsed position between the side panels in one longitudinal direction paralleling the longitudinal axis of the side panels with the intermediate and front sections unfolding outwardly and downwardly about the head section which swings upwardly, a first end panel pivotally connected to the frame members, a second end panel pivotally connected to the frame members, said end panels being movable from lowered substantially horizontal positions when the bed unit is in an open horizontal placement into raised vertical positions wherein they complement the side panels in enclosing the folded bed unit, and a top panel carried by the second end panel and adapted to be positioned in a horizontal position resting on the upper edges of the end and side panels and completely overlying the folded bed unit to form the top of the table and complete the enclosure for the folded bed unit which is completely hidden from view in any direction by the assembled panels.

3,863,279
PIECE OF FURNITURE FOR A RIGHT-ANGLED CORNER OF A ROOM

Fritz Stalder, Burgdorf, Switzerland, assignor to Ulrich Oppliger, Burgdorf (Canton of Berne), Switzerland, a part interest
Filed Oct. 15, 1973, Ser. No. 406,623
Claims priority, application Switzerland, Oct. 24, 1972, 15488/72
Int. Cl. A47c *17/14*
U.S. Cl. 5—8 **8 Claims**



1. Piece of furniture to be located in a right-angled corner of a room comprising at least two bodies shiftably arranged in a horizontal plane, said bodies being disposed side-by-side in a common frame, characterized by a draw and push mechanism fixed to the outside of said bodies, said draw and push mechanism connecting both the bodies in such a way that by swivelling the first body which has been drawn out of the frame by 90° about its vertical hinges the second body is shifted to occupy the vacant place or to leave it.

3,863,280
SETTEE-BED WITH BACKREST CONVERTIBLE TO AN UPPER BED

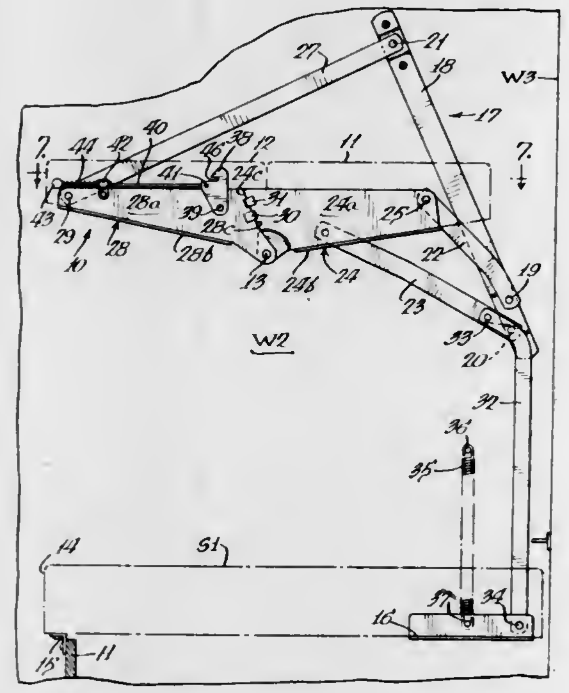
Ned W. Mizelle, High Point, N.C., assignor to Hoover-Seng Company, Chicago, Ill.
Filed Dec. 6, 1973, Ser. No. 422,534
Int. Cl. A47c *17/40*
U.S. Cl. 5—9 R **18 Claims**

1. In a settee which is installed between a pair of fixed structural members that are at opposite ends of the settee, said settee including a seat adapted to serve as a bed, a backrest structure convertible to an upper bed spaced above the seat, said backrest structure comprising, in combination:
a first backrest member which occupies an upright settee position above the rearward portion of the seat and has an upper side and a forwardly facing cushioned surface; a second backrest member which occupies an upright settee position behind said first backrest member and has an upper side and a rearwardly facing cushioned surface; hinge means connecting said backrest members at their lower sides;
a pair of mounting brackets, one on each of the structural members, said mounting brackets having aligned first and second lower pivots which are adjacent the upper sides of

the backrest members when said members are in their settee positions, and said mounting brackets having aligned upper pivots above the upper bed position of the backrest;
- a pair of first lower link members each pivotally connected at one end to said first lower pivots and at the other end to the upper side portion of the first backrest member;
- a pair of second lower link members each pivotally connected at one end to said second lower pivots and at the other end to the lower side portion of the first backrest member,

said first and second lower link members, said brackets between said first and second lower pivots, and said first backrest member forming a four bar linkage which has a swinging movement from said settee position to a position in which said second backrest member is horizontal with its cushioned surface uppermost;

and a pair of hanger links each pivotally connected at one end to an upper pivot and at the other end to the upper side portion of the first backrest member, said hanger links turning about the upper pivots during said swinging movement to guide the second backrest member to a position with its cushioned surface uppermost and coplanar with the cushioned surface of the first backrest member.



3,863,281
FOLDING BED

Milorad Tosic, 11, Avenue Grammont, CH-Lausanne, Switzerland

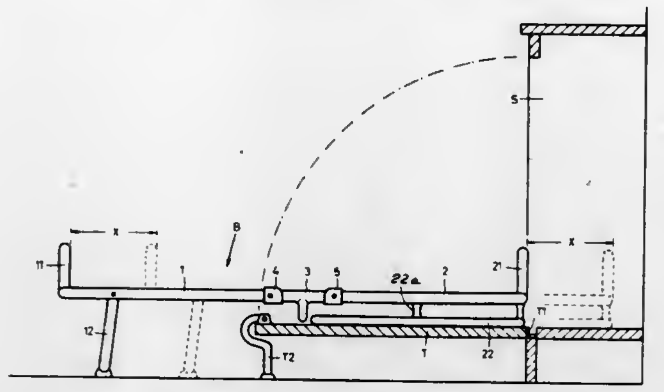
Filed May 31, 1973, Ser. No. 365,447

Claims priority, application Switzerland, June 1, 1972, 8173/72

Int. Cl. A47c *19/06*

U.S. Cl. 5—136 **9 Claims**

1. A folding bed adapted to be stored in a wall opening, comprising a bed frame having a plurality of sections, link means pivotally joining said sections together to be folded transversely to its longitudinal axis into a compact assembly having a width equal to its length, a panel hinged along a horizontal axis at said wall opening, and means for rotatably mounting one section of said frame to said panel to permit said frame to be swivelled about an axis perpendicular with respect to said panel allowing said bed to be opened with its longitudinal axis selectively perpendicular to and parallel to the horizontal hinge axis.



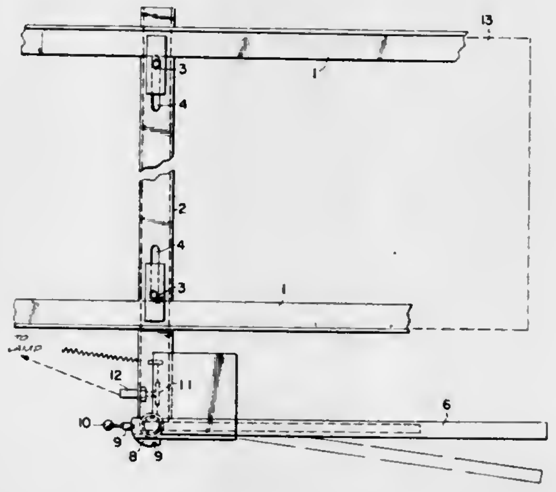
3,863,282
SUPPORT BAR FOR BEDS

Elbert M. Stillwell, Bryson City, N.C., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 4, 1974, Ser. No. 430,900

Int. Cl. A47c *21/00;* **A61g** *7/08*

U.S. Cl. 5—317 B **2 Claims**



1. A device for use by an invalid in leaving a bed and returning thereto, said device comprising:
- a horizontal bracket extending transversely underneath said bed with one end extending past one side of the bed;
- means securing said bracket to said bed;
- a vertical hollow stand secured at its bottom end to said one end of the bracket and extending upward therefrom;
- a vertical post disposed rotatably in the stand and extending thereabove;
- a horizontal arm secured at one end to the top of the post and rotatable therewith;
- a spring loaded lock arm disposed in a vertical plane and rigidly attached to the stand; and
- a horizontal lock plate having two lock notches spaced by 90° of arc and rigidly secured to the post, the plate and lock arm cooperating, with the spring in the lock arm causing the lock arm to engage one of the notches of the plate when the horizontal arm is swung to a first position at which the horizontal arm is parallel to the longitudinal axis of the bed and to engage the other notch when the horizontal arm is swung to a second position at which the horizontal arm is perpendicular to said axis whereby the horizontal arm once placed in either position will be locked therein until the lock arm is manually released to allow further movement.

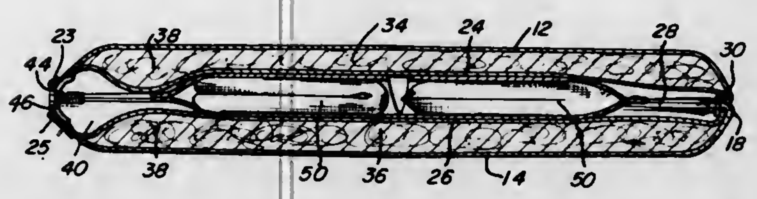
3,863,283
PILLOW WITH INTERIOR STORAGE COMPARTMENT

Carsten Mohr, 1550 Yellowstone, Space 97, Pocatello, Idaho 83201

Filed June 14, 1973, Ser. No. 369,931

Int. Cl. A47g *9/00*

U.S. Cl. 5—341 **6 Claims**



1. A pillow having space therein for the storage of first-aid equipment comprising:
- a. an outer pillow envelope comprising first and second outer panels having substantially identical peripheries joined along said peripheries and including a non-joined portion for access to the interior of said envelope;
- b. first and second liner panels disposed between said outer panels and having peripheries substantially identical to said panel peripheries, each said liner panel joined about its entire periphery to one of said first and second panels and defining therewith an enclosed pocket, said liner panels defining therebetween an interior storage compartment adapted to receive first-aid equipment therein;
- c. pillow filler material in each said enclosed pocket, said filler material sufficient to comprise comfortable padding for a head thereon when first-aid equipment is in said storage compartment; and
- d. releasable closure means closing said non-joined portion.

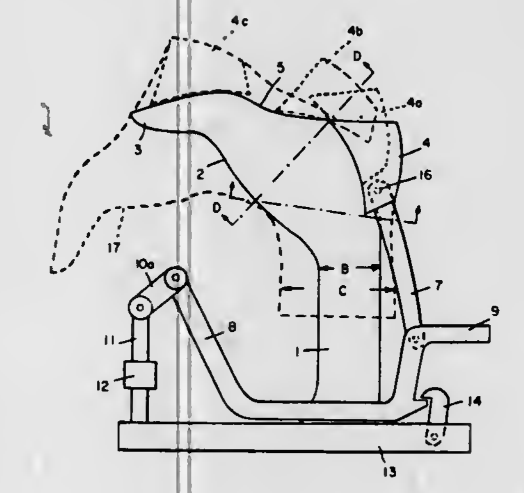
3,863,284
LAST AND APPARATUS FOR REMOVING FOOTWEAR THEREFROM

Anton I. Liebscher, Waynesville, N.C., assignor to Ro-Search, Incorporated, Waynesville, N.C.

Division of Ser. No. 299,130, Oct. 19, 1972, Pat. No. 3,803,657. This application Jan. 29, 1974, Ser. No. 437,675

Int. Cl. A43d *3/00*

U.S. Cl. 12—135 A **3 Claims**



1. Apparatus for manufacture of footwear comprising a collapsible last having a main portion and a sole plate, means to collapse said last after footwear including a sole has been formed thereon, means within said finished footwear to move the same relative to said last, and means to move said sole plate in relation to said main portion.

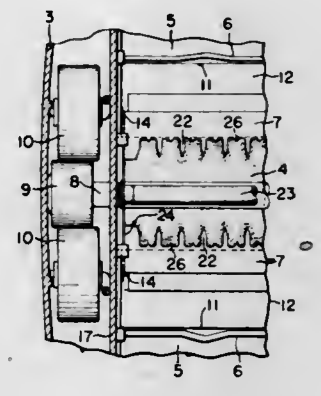
3,863,285
CARPET SWEEPER

Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama-shi, Chiba-ken, Japan

Filed July 5, 1973, Ser. No. 376,700

Int. Cl. A47l *11/33*

U.S. Cl. 15—48 **3 Claims**



1. A carpet sweeper, comprising in combination: a rotating brush supported transversely within the lower portion of a housing to sweep up the dust on the floor during movement of said housing along the floor surface; a cleaning comb attached to said housing in parallel with the axis of said rotating brush in such a manner that it is positioned above and behind the rotating brush relative to the direction of movement along the floor, the comb having elongated teeth and being positioned so that the teeth penetrate deeply into the rotating brush to rake therefrom the dust clinging thereto; and a dust receiver disposed just behind said cleaning comb for reception of the dust raked away from the rotating brush by said cleaning comb; the improvement wherein said cleaning comb has a substantially flat base plate with a plurality of said elongated teeth projecting outwardly from one edge thereof, the adjacent teeth being spaced apart by a space having a width several times greater than the width of a single tooth, a plurality of small triangular-shaped projections projecting outwardly from said one edge of said base plate, said projections being spaced between said teeth and projecting into said spaces, said projections having a length which is extremely small in comparison to the length of said teeth, and said projection having a width at the base end thereof which is substantially less than the width of said space so that there remains a substantially straight base edge of substantial length extending between the base end of the projection and the base end of an adjacent tooth, said comb being positioned adjacent said brush so that the teeth penetrate deeply into said brush while the tips of the projections slide along the periphery of the brush and the base edge of each space barely comes into contact with the periphery of the brush.

3,863,286
SPARK PLUG CLEANER

James E. Puckett, 14495 S.W. Barlow Rd., Beaverton, Oreg. 97005

Filed Nov. 12, 1973, Ser. No. 414,739

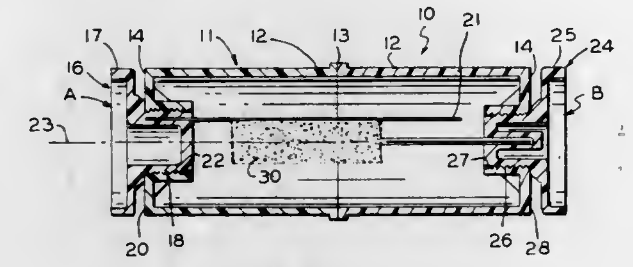
Int. Cl. H01t *21/04*

U.S. Cl. 15—104.01 R **4 Claims**

1. A spark plug cleaning device comprising:
- a cylindrical container adapted to contain a cleaning fluid; end closure means for each end of said container;
- a first internally threaded aperture axially disposed in one of said end closure means;
- first externally threaded plug means adapted to be removably received in said first internally threaded aperture;
- generally axially extending file means mounted in said first externally threaded plug means and adapted to be disposed internally of said container;
- a second internally threaded aperture axially disposed in the other of said end closure means;

second externally threaded plug means adapted to be removably received in said second internally threaded aperture;

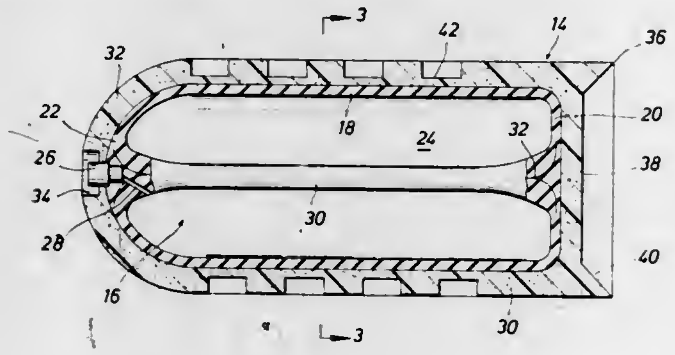
generally axially extending brush means mounted in said second externally threaded plug means and adapted to be disposed internally of said container;



said file means and said brush means being axially offset with respect to each other to permit the same to nest together and mutually clean each other as they are replaced in said container;

each of said internally threaded apertures in said end closure means being adapted to receive a threaded end portion of a spark plug to be cleaned.

3,863,287
PIPELINE PIG
Kenneth M. Knapp, and Charles C. Knapp, Jr., both of 1209 Hardy St., Houston, Tex. 77020
Filed July 9, 1973, Ser. No. 377,389
Int. Cl. B08b *9/04*
U.S. Cl. 15—104.06 R **10 Claims**



1. A pipeline pig which comprises:

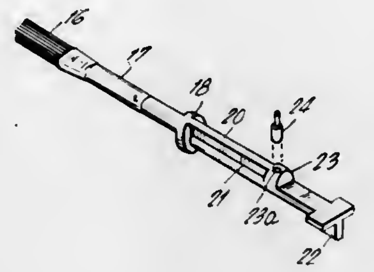
an inflatable elongate bladder means formed of a resilient wall which encloses a cavity;

an outer body portion adapted to be placed about said bladder means and having an outer wall which is adapted to contact a pipeline and which is further adapted to be worn away by contact therewith; and,

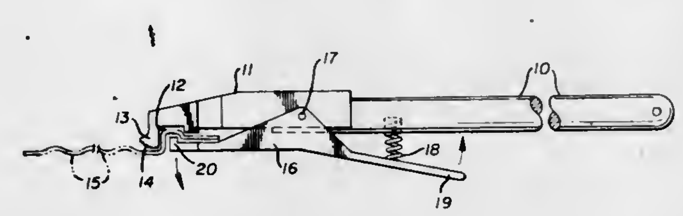
wherein said bladder means tends to expand on inflation and further including means limiting increases in length thereof.

3,863,288
COSMETIC BRUSH DEVICE
Joseph Aversa, Scarsdale, N.Y., assignor to Aversa and Martin, Inc., New York, N.Y.
Filed June 18, 1973, Ser. No. 371,147
Int. Cl. A46b *9/10*
U.S. Cl. 15—184 **2 Claims**

1. A cosmetic brush applicator comprising: a cylindrical housing having a first opening at one end and having a diminished portion at the other end terminating in a second smaller opening; said housing formed with a longitudinal slot in its wall; an elongated stem within said casing supporting a brush at one end and terminating in a flexible T-shaped cross sectional portion at the other end formed by a depending tab normal to said flexible T-shaped portion for aligning the stem within the housing; a pin secured to the elongated stem adjacent the flexible portion of said stem and projecting outwardly through the slot in the housing for limiting the travel of the stem and brush; and a hollow cap slidably received upon the housing for engaging the pin to extend the brush through the second opening.

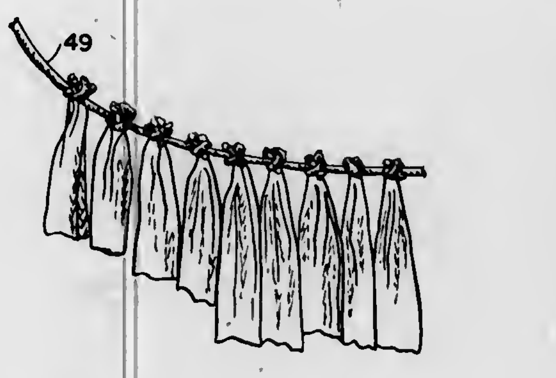


3,863,289
FLOOR MOP WITH SINGLE USE PAPER MOPPING ELEMENT
Richard E. Whittaker, 302 S. Croton Ave., New Castle, Pa. 16101
Filed July 23, 1973, Ser. No. 382,081
Int. Cl. A47l *13/24, 13/46*
U.S. Cl. 15—228 **3 Claims**



1. A floor mop and a single use paper mop element therefor, said mop comprising an elongate handle, a mop clamping element on one end of the handle, said clamping element including a first jaw member fixed to said one end of the handle, said first jaw member having an elongate channel in a bottom surface portion thereof extending transversely relative to the axis of the handle, an elongate, downturned mop engaging flange along a forward edge of said first jaw member at one side of the channel and extending downwardly from said first jaw member and having an arcuate, ribbed lower edge portion, a second jaw member pivotally connected to said one end of said handle for pivotal movement thereof relative to said first jaw member and having an upturned elongate flange along a forward edge thereof substantially parallel with said downturned flange and movable toward and away from said first jaw member and registerable with said channel for clamping engagement with a mop element held between said first and second jaw members, said downturned flange on said first jaw member extending downwardly beyond said upturned flange on the second jaw member and into close proximity with a floor surface when the handle is disposed with its axis at an angle to the plane of the floor surface, and a paper mop element clamped at a transverse portion thereof between the upturned flange and the channel and extending beneath the arcuate lower edge of said downturned flange, whereby the point of clamping of the mop element is spaced upwardly from the floor surface and thus spaced from the area of contact of the mop element with water and the like, and said arcuate lower edge of said downward flange pressing said mop element against the floor surface in various angular positions of the handle relative to the floor.

3,863,290
FLEXIBLE SCRUBBING MEANS
Jerome M. Lesser, 713 Parkway, Fultondale, Ala. 35068
Division of Ser. No. 139,151, April 30, 1971, Pat. No. 3,765,043. This application Aug. 2, 1973, Ser. No. 385,039
Int. Cl. B60s *3/04*
U.S. Cl. 15—229 R **1 Claim**



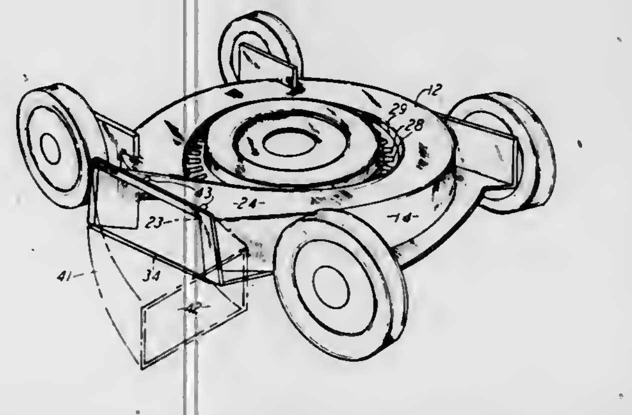
1. Flexible scrubbing means adapted to clean a vehicle comprising:

a strand of non-water absorbing material, and

a plurality of doubled, flexible absorbent cleaning strips suspended from and spaced along said strand,

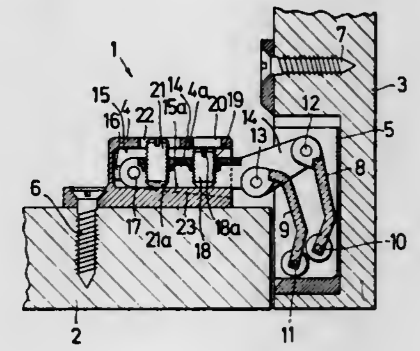
each of said strips being attached to said strand at a different position on said strand by a slip knot in said strand at approximately the center bight portion of each strip.

3,863,291
CONVERTIBLE ROTARY LAWN MOWER AND AIR BLOWER
Neill C. Woelffer, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.
Filed Nov. 26, 1973, Ser. No. 418,833
Int. Cl. A47l *5/02*
U.S. Cl. 15—328 **5 Claims**



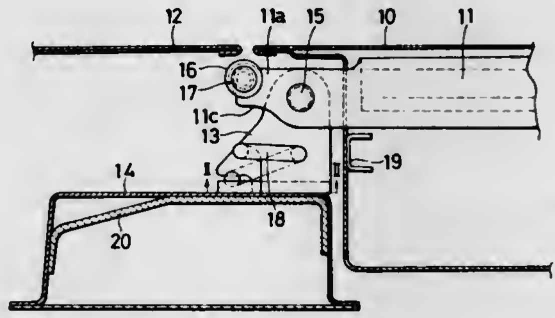
1. A convertible rotary lawn mower and air blower, comprising a rotary lawn mower housing including a top portion and including a skirt portion depending from said top portion and extending along the periphery of said housing and having an air outlet opening therein and terminating in a lower edge extending along a horizontal plane, a circular wall depending from said top portion and spaced radially inwardly from said skirt portion and defining an air channel with said skirt portion, a prime mover mounted on said housing, an air-fanning member supportedly mounted on said prime mover and being rotated thereby and including air-fanning blades disposed in said air channel for movement of air through said air channel and out said air outlet opening upon rotation of said air-fanning member, said housing top portion having air inlet opening therein disposed at locations spaced radially inwardly from said circular wall for the flow of air into said housing and into said air channel and out said air outlet opening, and a cover removably attached to said housing and extending fully across said skirt portion to be air-tight therewith at said lower edge thereof and defining the bottom of said air channel and enclosing the bottom of said housing to confine the flow of air in said air channel and thereby convert the rotary mower into an air blower.

3,863,292
CONCEALED HINGE FOR FURNITURE
Hellmuth Grunert, Hoffnungsthal, and Theodor Vitt, Porz-Eil, both of Germany, assignors to Prameta Prazisionsmetall-und Kunststofferzeuginsse G. Baumann & Co., Cologne, Germany
Filed Mar. 15, 1974, Ser. No. 451,561
Claims priority, application Germany, Mar. 17, 1973, 2313451; Feb. 11, 1974, 2406438
Int. Cl. E05d *3/06*
U.S. Cl. 16—164 **19 Claims**



1. A hinge comprising a pair of hinge elements, a pair of connecting rods having first and second opposite ends, first pivot means connecting first ends of said rods to a first of said hinge elements, an arm having first and second ends, second pivot means connecting second ends of said rods to said first arm end, third pivot means connecting said second arm end to said second hinge element, means mounting said second hinge element and arm for relative sliding movement in a direction generally normal to the axis of said third pivot means, and means for selectively adjusting the angular relationship between said arm and said second hinge element.

3,863,293
DOOR HINGE MECHANISM
Ryoichi Eukumoto, Nagoya City, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan
Filed Mar. 14, 1973, Ser. No. 341,267
Claims priority, application Japan, Mar. 14, 1972, 47-30712; Apr. 3, 1972, 47-39273
Int. Cl. E05d *11/10*
U.S. Cl. 16—191 **6 Claims**



1. A door hinge mechanism provided between a movable door and a door pillar rigid with a chassis of a vehicle, comprising in combination:

a reinforcement member fixedly attached to an inner portion of said door,

a fixed member rigidly mounted on said pillar,

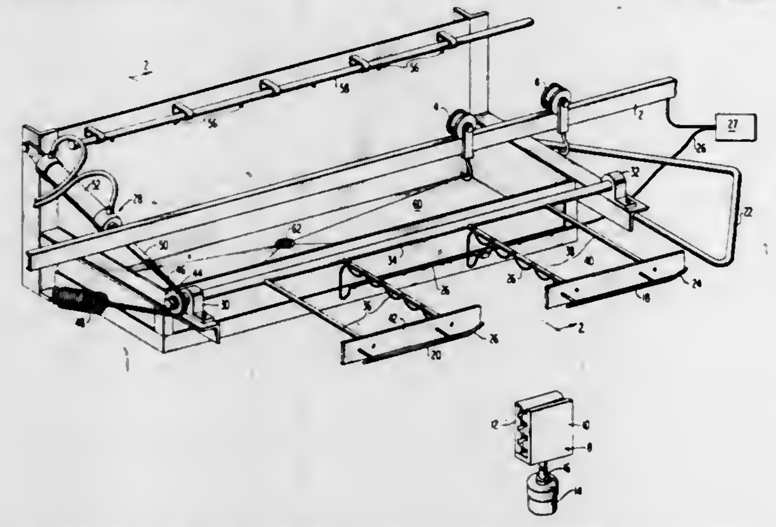
a stopper means provided on said fixed member, and

a hinge pin member for pivotally mounting said reinforcement member and said fixed member and being serratedly connected with said reinforcement member,

said reinforcement member having first and second extended portions integrally formed thereon and parallel to one another, and stopper faces formed on said first and second extended portions being connected with said stopper means upon door opening, whereby the open angle of said door is limited.

3,863,294
APPARATUS FOR APPLYING ELECTRICAL CURRENT TO LIVESTOCK CARCASSES DURING HIDE PULLING OPERATIONS

Wilford O. Barbee, Charter Oak, Iowa, assignor to Iowa Beef Processors, Inc., Dakota City, Nebr.
Filed May 4, 1972, Ser. No. 250,210
Int. Cl. A22b ***05/16***
U.S. Cl. 17—21 **8 Claims**

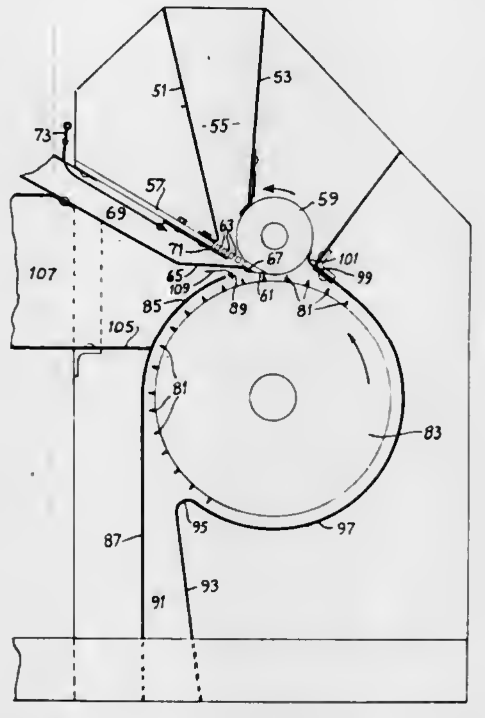


1. Apparatus for applying electrical current to livestock carcasses during hide pulling operations, comprising
  support means for supporting a carcass, said support means being maintained at a given electrical potential, said support means being a rail having trolleys movable therealong in a prescribed path,
  mechanical means for gripping the hide of the carcass and for pulling the hide from the carcass,
  a movably mounted electrode for contacting a carcass on the support means, said electrode being elongated in the direction of the prescribed path,
  means for maintaining the electrode and the support means at different electrical potentials,
  means for moving the electrode between a retracted position and an extended position where it is in contact with a carcass on the support means, and
  means for sterilizing the electrode when it is in its retracted position.

3,863,295
APPARATUS FOR PRODUCING CAST FABRICS

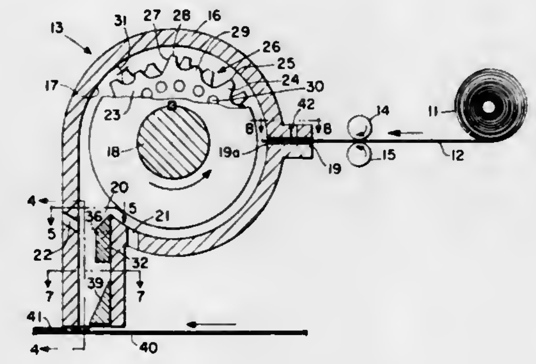
Richard R. Castor, Fairport, N.Y., assignor to Cast Fabrics Inc., Fairport, N.Y.
Division of Ser. No. 185,736, Oct. 1, 1971, abandoned. This application Feb. 9, 1973, Ser. No. 330,923
Int. Cl. D01g ***25/00***
U.S. Cl. 19—89 **4 Claims**

1. A casting head for preparing random-oriented air-borne fibers and casting such fibers onto a receiving surface, said casting head comprising a rapidly rotating beater roll having a multiplicity of teeth on the periphery thereof, a snubber member having a relatively sharp angular edge formed between two surfaces at an acute angle to each other, said edge extending parallel to the axis of rotation of said beater roll and facing in a direction opposite to the rotation of said beater roll, the second one of said two surfaces extending from said edge in the direction of rotation of said beater roll and in close proximity to the other ends of said teeth, a housing enclosing and approximately concentric with said beater roll and relatively close to the outer ends of said teeth throughout a substantial part of the circumference of the beater roll and having a flying bridge exit conduit arranged approximately tangentially to said beater roll at a location spaced circumferentially from said snubber member, means for feeding masses along the first one of said two surfaces toward said angular edge at a relatively slow rate compared to the peripheral speed of rotation of said beater roll, so that subh fibers will project beyond said angular edge into the path of travel of said teeth and be bent thereby around said angular edge and will tend to be forced against said second surface of said snubber member and be subjected to the action of said teeth to be combed thereby to separate masses of fibers into individual fibers, and means for introducing air under pressure into said housing adjacent the trailing edge of said second surface of said snubber member to supply a stream of air to assist in maintaining the fibers in individual spaced relation to each other and in pressing the fibers into cooperative relation to said teeth and in carrying the fibers around part of the circumference of the beater roll and out through said flying bridge exit conduit in random-oriented relation to each other, said feeding means comprising a feed roll cooperating with said first surface of said snubber member relatively close to the angular edge thereof, said feed roll including a fluid tight elastic periphery capable of expanding and contracting in response to variations of fluid pressure within said feed roll, to vary the diameter of the feed roll and vary the relation of the periphery thereof to said first surface.



3,863,296
PROCESS FOR PREPARING AIRFELT

Kenneth B. Buell, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio
Division of Ser. No. 182,795, Sept. 22, 1971, Pat. No. 3,825,194. This application June 22, 1973, Ser. No. 372,728
Int. Cl. D01g ***25/00***
U.S. Cl. 19—156.3 **1 Claim**

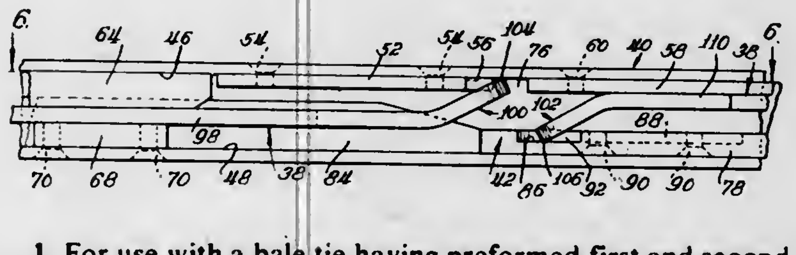


1. A process of disintegrated dried cellulosic fibrous sheet material and laying an airfelt therefrom comprising the steps of:

A. Feeding said fibrous sheet into a disintegrator comprising a disintegrating element having a plurality of impacting elements which have tips and a casing having a slotted opening terminating in a sheet support element, said casing defining, in combination with said disintegrating element, a restricted channel;
B. Supporting said sheet in said slotted opening;
C. Moving said disintegrating element such that the tips of said impacting elements move at a velocity of at least about 6,000 feet/minute;
D. Impacting said tips against the end of said fibrous sheet so that impact is substantially normal to the plane of said sheet whereby said fibrous sheet is disintegrated into individual fibers;
E. Mixing said fibers with air in said restricted channel with said impacting elements to complete disintegration while maintaining a relatively even fiber density gradient and air flow velocity gradient across the axial width of said channel; and
F. Removing the fiber/air mixture from the disintegrator along a tangent to the direction of motion of said impacting elements at the point of removal to a foraminous support positioned no more than about 3 feet away from said point at which the fiber/air mixture leaves said impacting elements so that said fiber/air mixture retains sufficient kinetic energy imparted thereto by the impacting elements to form an airfelt on said foraminous support, said air passing through said foraminous support and leaving said fibers on said foraminous support in the form of an airfelt.

3,863,297
BALE TIE INTERLOCK DEVICE

Emil Simich, Chicago, Ill., assignor to A. J. Gerrard & Company, Des Plaines, Ill.
Filed May 24, 1974, Ser. No. 472,944
Int. Cl. B65d ***63/10;*** **B65b** ***13/02***
U.S. Cl. 24—27 **10 Claims**

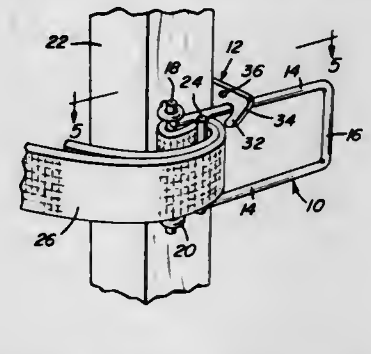


1. For use with a bale tie having preformed first and second end sections which include loop portions, a bale tie interlock device comprising a body member defining an elongated channel generally U-shaped in cross section, an elongated plunger longitudinally slidable in said channel and disposable to project outwardly of one end thereof in a loading position, first hook means in said channel intermediate of the ends thereof and engageable by the first bale tie end section inserted into the other end of said channel, second hook means on said plunger and engageable by the second bale tie end section inserted into said plunger at said one end of said channel, and said plunger being movable from said loading position inwardly of said channel to move the second bale tie end section through the first bale tie end section to interengage the same.

3,863,298
WEB LOCK AND TIGHTENER

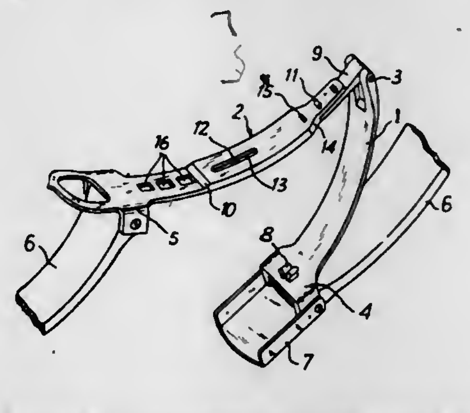
Olaf C. Sohn, 755 Lincoln Ave., and Adolph M. Sohn, 619 Second Ave., both of Zumbrota, Minn. 55992
Filed Nov. 19, 1973, Ser. No. 416,842
Int. Cl. A43c ***11/00***
U.S. Cl. 24—68 E **3 Claims**

1. A web lock and tightener for a strap length comprising a strap grip, a keeper, means pivotally mounting said grip for movement between a first inwardly directed loading position along a strap to be gripped thereby and a second outwardly directed position, said grip including first and second laterally spaced parallel bars, said first bar being located inward of said second bar in the first position of the grip for engagement of a strap over the first bar, around the second bar and back over the first bar, said second bar, upon movement of the grip to the second position, moving outward of the first bar in a manner so as to effect a bending of a bar overlying strap on itself and a corresponding clamping of the strap, said keeper being releasably engageable with said grip in the second position thereof for a retention of the grip in said second position, resilient spring means biasing said keeper toward engagement with the grip in the second position thereof, said keeper being manuually releasable from engagement with the grip, a cam surface on said keeper directed toward said grip and orientated for engagement by said grip upon movement of the grip from the first to second position thereof for an upward camming of the keeper into retaining engagement with said grip, said grip also including an elongated side bar interconnecting said first and second bars, and a rigid support, said support including a pair of generally right angularly related faces, said grip being pivotally mounted to one face of said support in a manner so as to, in the second position of the grip, project beyond said second face, said keeper being mounted on the second face of the support and projecting beyond the first face thereof into the path of movement of the grip from the first to the second position thereof.



3,863,299
CLASP FOR A BRACELET

Robert Hocq, Boulogne-sur-Seine, France, assignor to Societe Anonyme Dite: Cartier, Paris, France
Filed May 16, 1973, Ser. No. 360,931
Int. Cl. A44c ***5/24***
U.S. Cl. 24—71 J **4 Claims**

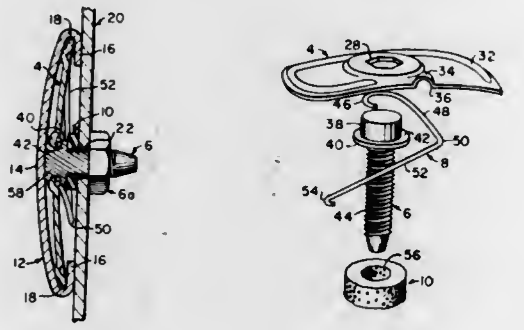


1. Clasp for a bracelet comprising two legs, each having one end pivotally connected to one end of the other leg and each provided at its other end with means for receiving a bracelet member, first locking means for locking the two legs of the clasp to each other, one of the two legs being telescopic and comprising two portions adapted to slide relative to each other, and second locking means distinct from said first locking means for locking the two portions of the telescopic leg in any of several relative positions corresponding to different lengths of the telescopic leg and defined by spaced openings in one of said relatively slidable portions, said first locking means comprising a spring clip fixed to one of the legs and spaced openings in the other leg spaced by the same distance as the openings in said one slidable portion, said first locking means being adapted to lock the legs of the clasp together with

the two portions of said telescopic leg in any of said several positions.

3,863,300
MOLDING RETAINER AND METHOD OF COUPLING THE COMPONENT PARTS THEREOF

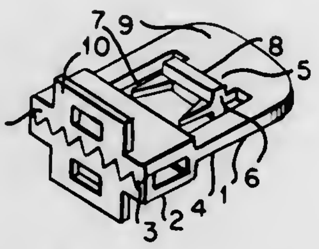
Charles Henry Becker, Braintree, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed Aug. 18, 1972, Ser. No. 281,697
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 BC **9 Claims**



1. A retainer for securing a strip molding having inturned flanges along its side edges to an apertured workpiece, said retainer comprising an apertured cross plate having a first side which at least partially confronts and engages the inturned flanges of the molding, means for attaching said cross plate to the apertured workpiece, said last mentioned means including a head portion overlying the side of said cross plate remote from said first side and a shank portion extending through the aperture in said cross plate, said shank portion having a radially protruding shoulder overlying said first side of said cross plate in spaced relation to said first side, and means for biasing said cross plate into engagement with the molding flanges, said last mentioned means being connected to said shank portion of said attaching means and being clamped against said first side of said cross plate by said shoulder.

3,863,301
ELASTIC BANDAGE AND FASTENER THEREFOR

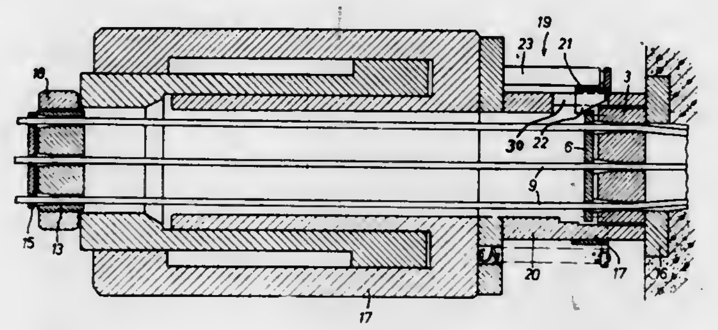
Harry H. Leveen, 800 Poly Pl., Brooklyn, N.Y. 11209
Filed Dec. 29, 1972, Ser. No. 319,881
Int. Cl. A44b *21/00;* **A61f** *13/00*
U.S. Cl. 24—85 R **2 Claims**



1. A fastener for elastic bandages which comprises a structure having a planar frame attached to a set of jaws said frame having side members thereof and a yolk supported by said side members and spaced apart from said jaws, said side members connecting said jaws and said yolk, a tine positioned between said side members facing said jaws but spaced apart therefrom and also spaced apart from said side members, said yolk, side members and tine all being in the same plane as the frame and jaws, said tine flexurally attached at its base to said yolk such that the free end or tip of the tine can be made to flex out of the plane of the frame and jaws by pressure exerted on one side or the other of its planar face said jaws being releasable.

3,863,302
APPARATUS FOR ANCHORING WIRES OR STRANDED WIRES

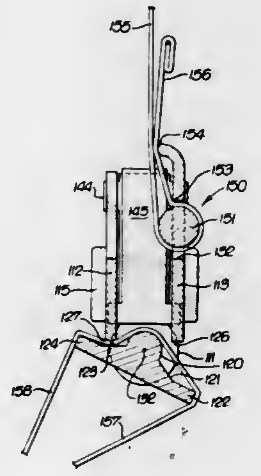
Gerard Weibergen, Zumikon, and Hans Rudolf Seigwart, Kilchberg, both of Switzerland, assignors to Bureau BBR Ltd., Zurich, Switzerland
Filed Oct. 10, 1973, Ser. No. 404,989
Claims priority, application Switzerland, Oct. 16, 1972, 15074/72
Int. Cl. F16g *11/04*
U.S. Cl. 24—122.6 **7 Claims**



1. An apparatus for anchoring wires or stranded wires equipped with an anchor plate having throughppassage bores for said wires or said stranded wires, and which plate has associated therewith clamping wedge means for anchoring the wires or stranded wires, each throughpassage bore possessing at one end a substantially conical recess for receiving the clamping wedge means and subsequently merging substantially cylindrical section, the improvement comprising means for applying the clamping wedge means, during the application of the apparatus to the wires or stranded wires and during the tensioning thereof, against a press-in plate which is located in spaced relation from the anchor plate, said press-in plate being equipped with openings for the throughpassage of the wires or stranded wires, said applying means holding the clamping wedge means out of their effective clamping position, and after tensioning of the wires or stranded wires said press-in plate being displaceable against the anchor plate for simultaneously and uniformly bringing the wedges into their clamping position.

3,863,303
CONNECTOR BUCKLE

Daniel A. Armstrong, Utica, and Michael A. Pocobello, Warren, both of Mich., assignors to American Safety Equipment Corporation, New York, N.Y.
Filed Nov. 9, 1973, Ser. No. 414,384
Int. Cl. A44b *11/12*
U.S. Cl. 24—193 **4 Claims**

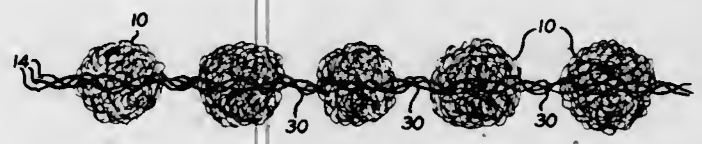


1. In a device for connecting webbing to a buckle including a buckle body with limiting means mounted thereto, and cam means mounted on said buckle body, said cam extending longitudinally for engaging the width of the webbing between itself and the limiting means, the improvement comprising the provision of:

- first supporting means on said buckle body for supporting one longitudinal end of said cam means for pivoting movement about its longitudinal axis and permitting movement of said longitudinal axis through an arcuate path;
- second supporting means associated with said buckle body and movable between a first position for supporting said other longitudinal end of said cam means for pivoting movement of said cam means about said longitudinal axis and preventing arcuate movement of said longitudinal axis of said cam and to a second position releasing said end of said cam and permitting the axis to move in said arcuate path whereby when said second supporting means is in its second position, said webbing being insertable between said cam and said limiting means when said cam is moved in an arcuate path, and when said second supporting means is in its first position, said webbing is prevented from being removed from between said cam and limiting means whereby pulling on an end of the webbing causes said webbing to pivot said cam means about said longitudinal axis to grip the webbing between said limiting means and said cam means.

3,863,304
LINEAR FASTENING ELEMENT AND METHOD THEREFORE

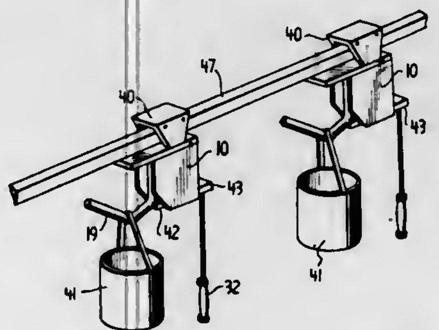
George C. Brumlik, Montclair, N.J., assignor to Ingrip Fasteners Inc., New York, N.Y.
Continuation of Ser. No. 126,706, March 22, 1971, abandoned. This application Aug. 8, 1973, Ser. No. 386,676
Int. Cl. A44b *11/25, 17/00*
U.S. Cl. 24—204 **21 Claims**



1. Linear fastening element comprising a plurality of filament clusters each of said clusters being a discrete porous particle aggregate containing one or more intertwined filaments and being adapted to permit a gripping member to enter the interior thereof and to reversibly retain and hold said gripping member therein by filament engagement, said filament clusters being interconnected by a linear member passing through successive clusters.

3,863,305
BREAK-AWAY TROLLEY HOOK

Robert J. Jaarsma, c/o Natmar Inc., 4026 Cherry St., Cincinnati, Ohio 45223
Filed Apr. 25, 1974, Ser. No. 463,968
Int. Cl. B65g *17/20;* **B66c** *1/34*
U.S. Cl. 24—230.5 SS **10 Claims**

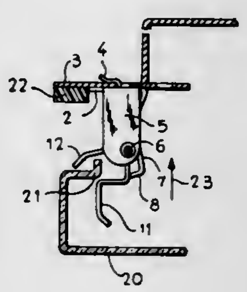


1. A break-away hook apparatus to selectively carry and discharge loads comprising:

- first and second spaced side plates,
- a hook rotatably mounted about a first pivot point between the first and second side plates, the position at which a load is carried by the hook being eccentric of the pivot point,
- a trip lever rotatably mounted about a second pivotal axis between the first and second plates,
- the trip lever having a first position wherein it abuts the hook in the region between the first pivot point and a load carried by the hook to fix the position of the hook and prevent it from rotating about the first pivot point towards its position of stable equilibrium whereby the load is retained on the hook,
- first means connected to the trip lever to actuate the trip lever about the second pivot point to a second position wherein the hook is enabled to rotate about the first pivot point under the force of a load carried thereby until a condition of stable equilibrium is reached whereat a load carried by the hook will be discharged by sliding off the hook.

3,863,306
PIVOTABLE MOUNTING CLIP

Bernard C. Duchatellier, Paris, France, assignor to Rapid S. A., Paris, France
Filed Mar. 7, 1973, Ser. No. 338,780
Claims priority, application France, Apr. 13, 1972, 72.13000
Int. Cl. A44b *21/00;* **F21v** *17/00*
U.S. Cl. 24—252 B **14 Claims**



1. A two-piece clip for releasably mounting a first object having an inwardly extending flange to a second object, said clip comprising:

- a stirrup member mountable to said second object, said stirrup member including a pair of substantially parallel arms and an integral resilient positioning means; and
- a generally V-shaped angle member pivotably mounted to said stirrup member, said angle member comprising a first and second leg and a shaft extending from each side of the angle member at the tip of the V, each shaft being received in an aperture of an arm of said stirrup member, said angle member having a first position for receiving the flange of the first object between the legs of the V and a second position for resiliently urging said flange against said second object, in the first position of said angle member said first leg engaging said resilient positioning means and said second leg providing a surface against which said flange may act as a result of said first object being urged towards said second object to pivot said angle member and in the second position of said angle member said first leg resiliently urging said flange against said second object and said second leg resiliently engaged by said resilient positioning means to maintain said angle member in said second position.

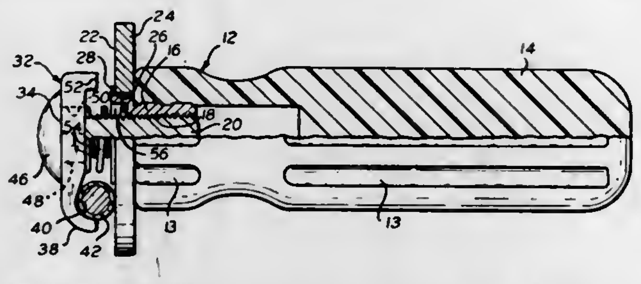
3,863,307
WIRE GRIPPING APPARATUS

Ignazio Leonardo, Mountainside, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 372,923

Int. Cl. A44b *21/00*

U.S. Cl. 24—263 A **3 Claims**



1. A wire gripping apparatus comprising a handle portion, a face at one end of the handle portion, a clamp section having a cable gripping surface confronting said face, and mechanism that moves the clamping section toward and from said face when the handle is rotated in different directions with respect to the clamp section, characterized by the face at one end of the handle being a plate, a bearing on which the plate and other portions of the handle are rotatable with respect to one another whereby the other portions of the handle can be rotated while the plate remains stationery and in contact with the cable that is being gripped, and further characterized by the face plate being generally annular with an inner cylindrical face that provides a bearing that contacts with a circumferential surface of the handle, the handle including a bushing that extends from one end of the handle, the handle having said circumferential surface on the bushing, and having thrust bearing surfaces on both sides of the face plate, one thrust bearing surface being a flange of the bushing and the other a shoulder on the handle.

3,863,308
HOT TOP INSERTING METHOD

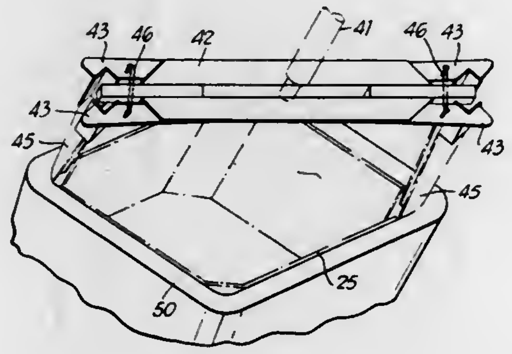
Kenneth Thomas Eccleston, and Roger Fieldhouse, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Division of Ser. No. 260,439, June 7, 1972, Pat No. 3,815,664. This application Mar. 22, 1974, Ser. No. 453,958

Claims priority, application Great Britain, June 16, 1971, 28244/71

Int. Cl. B22d *7/10*

U.S. Cl. 29—525 **1 Claim**



1. In the method of lining the head of an ingot mould or a head box therefor with a lining of refractory heat insulating material the improvement which comprises locating slabs of refractory heat insulating material on an expansible frame, locating on a holder associated with the said frame one or more wedges of refractory heat insulating material, the slabs and wedges together constituting a complete hot top, lowering the assembly of frame and holder so that the frame enters an ingot mould or head box, expanding the frame to urge the lining slabs into contact with the mould or head box wall, moving the holder downwardly to drive the wedges between adjacent edges of the lining slabs to so form and secure a complete hot-top within the mould or head box, contracting the frame and removing the frame and holder from the ingot mould or head box.

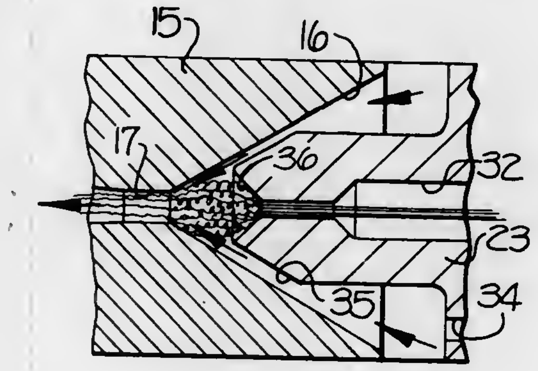
3,863,309
YARN TEXTURING AIR JET

Samuel T. Price, Kennedyville, Md., assignor to Enterprise Machine and Development Corporation, New Castle, Del.

Filed Jan. 25, 1974, Ser. No. 436,532

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 **6 Claims**



1. In a yarn texturing air jet of the type including an elongate housing having a central bore therethrough, a venturi supported in the central bore and in the exit end of said housing, an inwardly tapering conical surface on the inner end of said venturi and terminating in an exit orifice extending through the exit end of said venturi, a yarn guiding needle positioned in the central bore of said housing and having an inner end portion positioned closely adjacent said inwardly tapering conical surface on the inner end of said venturi, said needle having an axial yarn guiding channel extending therethrough for directing multifilament yarn through said needle and toward said venturi, said inwardly tapering conical surface of said venturi defining the exit end of a turbulence chamber, and means for directing pressurized gas into the central bore of said housing and along said inner end portion of said needle whereby the gas passes through said turbulence chamber and outwardly through said exit orifice of said venturi to impart crimps, curls and loops to the filaments as the yarn passes through said turbulence chamber; the combination therewith of means for improving the turbulence and enhancing the crimps, curls and loops imparted to the yarn in said turbulence chamber, said means comprising a conical opening extending from the inner end of said needle and inwardly toward the entrance end and terminating at the yarn guiding channel extending through said needle whereby the entrance end of said turbulence chamber is defined by said conical opening in the inner end of said needle.

3,863,310
PROCESS FOR PRODUCING COLORED PATTERNS IN EMBROIDERY MACHINES

Arnold Ochsner, Harriman, N.Y. 10926

Continuation-in-part of Ser. No. 848,840, Aug. 11, 1969, abandoned. This application May 12, 1971, Ser. No. 142,520

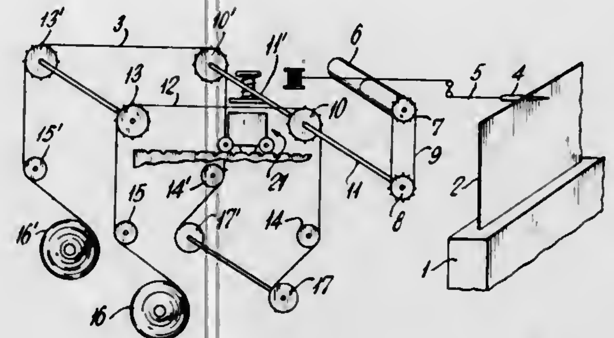
Int. Cl. D05c *3/04*

U.S. Cl. 28—77 **5 Claims**

1. In a Schiffli type shuttle embroidery machine controllable by a programmed design tape of the Jacquard type, a process for producing multi-colored yarns insertable in said machine for producing multi-colored embroidered patterns in accordance with said programmed design tape comprising,

a. programming a color control tape from the design tape according to the color variations in said design,
b. inserting the programmed color tape in a dye-control system which system consists of a multi-colored dye source and controls therefor responsive to the programmed color tape,

c. playing the programmed color tape with the control system to control the distribution of each of the colored dyes upon the yarn being dyed in a continuous manner until the yarn length is equal to the linear length of the pattern being embroidered upon the material being applied, and



d. inserting the colored yarn into the Schiffli machine in the sequence for the original start of the pattern being sewed and, thereafter, operating the machine so as to complete the original colored pattern.

3,863,311
PACKAGE TAKE-UP CONTROL FOR STUFFER BOX CRIMPERS

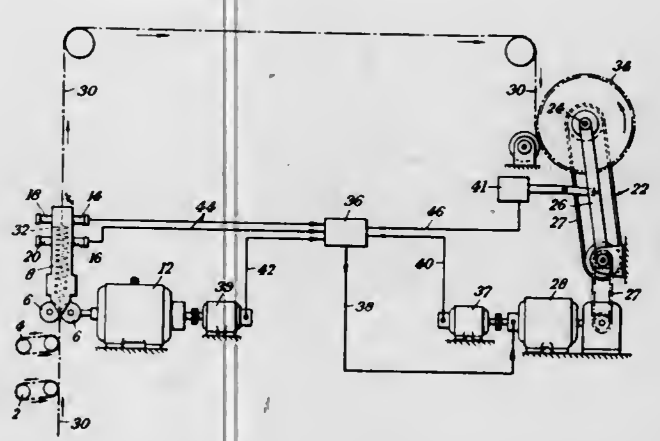
Albert Joseph Cartlidge, and Frank Shuttleworth, both of Bolton, England, assignors to Platt International Limited, Lancashire, England

Filed Jan. 30, 1973, Ser. No. 327,923

Claims priority, application Great Britain, Jan. 31, 1972, 4465/72

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.7 **5 Claims**



1. A stuffer box crimping machine comprising a stuffer box, feed means for supplying yarn to the stuffer box to form a plug of yarn therein, a take-up device arranged to withdraw yarn from the stuffer box and to form the yarn into a package, a D.C. motor arranged to drive the take-up device, detector means arranged to produce a level-dependent electrical output in dependence on the level of the plug of yarn in the stuffer box, a diameter sensor for sensing the diameter of the package and arranged to provide a diameter-dependent electrical output dependent on the diameter of the package, a speed sensor operative to detect the rate at which yarn is fed to the stuffer box by the feed means and to provide a feed-dependent electrical output in dependence on the detected rate, and control means arranged to receive the level-dependent electrical output, the diameter-dependent electrical output and the speed-dependent electrical output and being operative to control the rotational speed of the D.C. motor whereby the plug of yarn in the stuffer box is maintained between predetermined limits in dependence on the said electrical outputs.

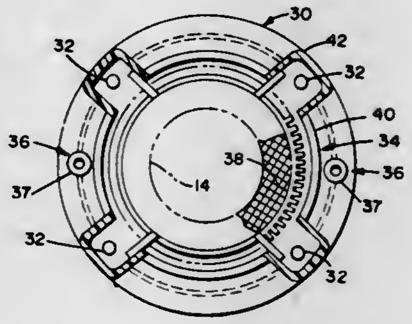
3,863,312
METHOD OF MOUNTING A DEFLECTION YOKE ASSEMBLY

Floyd E. Aldrich, Waterloo, and Fred A. Hovey, Geneva, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Division of Ser. No. 415,717, Nov. 14, 1974, Pat. No. 3,829,804. This application Apr. 24, 1974, Ser. No. 463,540

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.13 **1 Claim**



1. In a method of mounting a deflection yoke assembly in operable relation upon a cathode ray tube having a rear wall and a cylindrical neck extending therefrom, the steps comprising: positioning an annular tube ring against said rear wall of said tube in a position substantially centrally located with respect to and surrounding said neck, said annular tube ring having a circumferential wall containing first means for supporting a yoke retainer ring and second means for mounting said annular tube ring to said rear wall of said cathode ray tube, said first and second means being separate and distinct and projecting from said circumferential wall in a direction substantially parallel to said tube neck, said second means being formed with an adhesive passage which communicates with an internal hollow groove formed in said tube ring; positioning a yoke retainer ring, having a circumferential wall containing a plurality of hollow pockets, over said tube neck so that said first means are encompassed within said pockets, said pockets having a substantially closed bottom containing an opening therein; and dispensing a hardenable adhesive simultaneously through said openings in said bottoms and said adhesive passages in said second means, whereby said annular tube ring is bonded to said rear wall of said cathode ray tube and said yoke retainer ring is bonded to said annular tube ring.

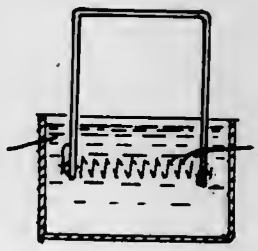
3,863,313
MANUFACTURE OF SUBMINIATURE INCANDESCENT LAMPS

Stephen F. Kimball, Georgetown, and Paul E. Gates, Danvers, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 7, 1973, Ser. No. 367,807

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.15 **1 Claim**



1. In the process of manufacturing a single ended subminiature incandescent lamp, the steps which sequentially comprise: helically coiling a length of fine tungsten wire on a mandrel wire having a larger diameter; heat treating the coiling; connecting a predetermined length of the coiling across the ends of a U shaped support wire, said predetermined length comprising a lamp filament; immersing said filament

into acid to dissolve the mandrel therein; inserting the filament into an open ended glass tube; heating and press sealing one end of the glass tube onto a portion of the legs of the support; sealing the other end of the glass tube; and removing the middle section of the support so that each leg thereof comprises a lead-in wire for the filament.

3,863,314

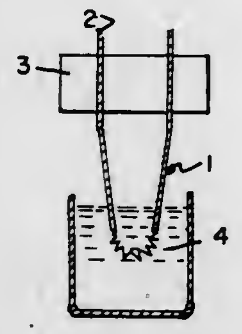
METHOD OF MANUFACTURING MINIATURE INCANDESCENT LAMPS

Bernard Kopelman, Magnolia, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 7, 1973, Ser. No. 367,819

Int. Cl. H01j *9/18*

U.S. Cl. 29—25.15 **1 Claim**



1. In the process of manufacturing a single ended subminiature incandescent lamp, the steps which sequentially comprise: helically coiling a length of fine tungsten wire on a mandrel wire having a larger diameter; heat treating and cutting the coiling into predetermined lengths; bending each of the cut lengths into a hairpin shape; attaching the ends of the hairpin to a temporary support; dissolving part of the mandrel at the apex end of the hairpin; inserting the hairpin into an open ended glass tube; heating and press sealing one end of the glass tube onto a portion of the legs of the hairpin, said portion still containing mandrel wire; sealing the other end of the glass tube and removing the temporary support to form a finished lamp.

3,863,315

PROCESS FOR THE MANUFACTURE OF A PIEZOELECTRIC SUSPENSION DEVICE

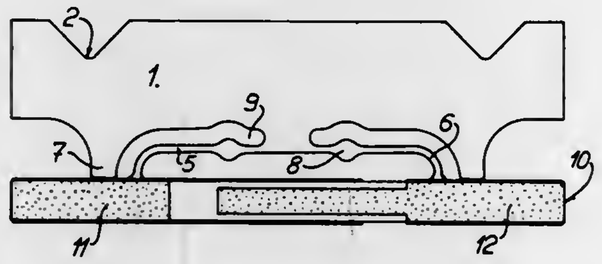
Gerald Jenni, Peseux, Switzerland, assignor to Oscilloquartz S.A., Neuchatel, Switzerland

Filed June 25, 1973, Ser. No. 373,265

Claims priority, application Switzerland, July 7, 1972, 10179/72

Int. Cl. B01j *17/00*

U.S. Cl. 29—25.35 **5 Claims**



1. A process for the manufacture of a piezozelectric resonator suspension device comprising the steps of:

a. forming a comb-piece from a thin metal plate,
b. forming positioning means in the thin metal plate for positioning same in a jig,
c. forming at least one connection in the comb-piece, said connection having an end part forming a stub and a flexible spring-like portion connecting said connection to the comb-piece and a bulge being provided in said flexible spring-like portion in proximity to where said portion joins the comb-piece,
d. providing a welding plate on said stub,
e. positioning said comb-piece by means of said positioning means in said jig and positioning a said resonator in said jig so that said stub equipped with said welding plate comes to bear against a predetermined point on one electrode of the piezoelectric resonator.
f. welding said welding plate to said predetermined point on said one electrode,
g. parting said flexible spring-like portion from said comb-piece between the comb-piece and said bulge, and
h. welding said bulge to a support of the suspension device.

3,863,316

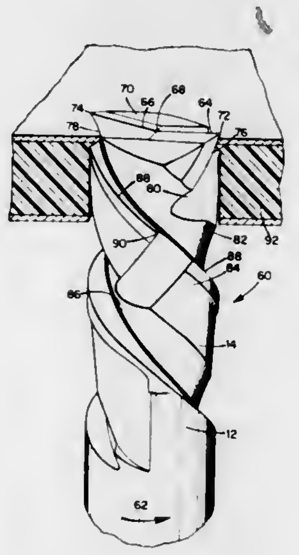
ROTARY CUTTING TOOL AND METHOD OF MANUFACTURING SAME

Herbert G. Yeo, Limerock Ave., Lincoln, R.I. 02865

Filed Dec. 7, 1973, Ser. No. 422,975

Int. Cl. B26d *1/12*

U.S. Cl. 29—103 A **6 Claims**



1. An improved rotary cutting tool comprising:
a shank portion; and
a fluted portion;
said fluted portion having a first double helical cutting edge means beginning at said shank portion and extending forward around said fluted portion in one direction to a point adjacent to but short of the end of said fluted portion and comprising first double helical parallel cutting edges on lands spaced by first double helical parallel flutes;
said fluted portion having a second double helical cutting edge means extending around said fluted portion in the other direction from the end of said fluted portion toward said shank portion to a point closer to said shank than is the forward termination of said first double helical cutting edge means and comprising second double helical parallel cutting edges on lands spaced by second double helical parallel flutes;
whereby the rearward end of said second double helical cutting edge means longitudinally overlaps the forward end of said first double helical cutting edge means; the flute of each of said second double helical cutting edge means extending through one cutting edge land and at least into the next cutting edge land of said first double helical cutting edge means.

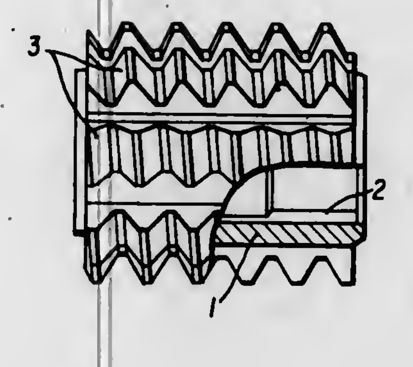
3,863,317

HOB

Hiroshi Taniguchi, Akashi, and Tatuo Tanimoto, Kakogawa, both of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan Continuation-in-part of Ser. No. 267,417, June 29, 1972, abandoned. This application May 30, 1974, Ser. No. 474,545

Int. Cl. B26d *1/12*

U.S. Cl. 29—103 B **11 Claims**



1. A hob comprising:
a cylindrical body portion having a longitudinal axis; and
tooth elements arranged in succession along a helical line extending around said longitudinal axis of said hob wherein the shoulder portions of the trailing sides of some of said tooth elements are reduced from their basic contour,
said reductions extending from the top end surfaces of said tooth elements to positions along said trailing sides which are disposed within the range of 0.6 – 1.0 modules, the intersecting angle, as measured in degrees, between the basic contour and a line tangent to said reduced contour at a position of 0.5 module being greater than two times the number of starts upon said hob, and wherein the leading sides of said tooth elements relative to the symmetric line of the basic contour of said elements, are unmodified,
whereby said reduced trailing sides of said tooth elements do not engage in the cutting operation.

3,863,318

HIGH TEMPERATURE-RESISTANT WEARPROOF SINTERED ALLOYS

Itaru Niimi, Nagoya; Kametaro Hashimoto, Toyota; Kenji Ushitani, Toyota; Yoichi Serino, Toyota; Tetsuya Suganuma, Toyota; Seishu Mitani, Kyoto, and Kunizo Imanishi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 1, 1973, Ser. No. 336,945

Claims priority, application Japan, Mar. 6, 1972, 47-22969

Int. Cl. B22f *1/00*

U.S. Cl. 29—182 **10 Claims**

1. High temperature resistant, wear-resistant sintered alloy consisting essentially of:
3–20% by weight of molybdenum,
0.5–1.5% by weight of carbon,
3–25% by weight of cobalt,
1–15% by weight of lead, and
balance mainly iron,
said alloy being in the form of particles consisting essentially of molybdenum and iron, said particles being several tens of microns in size and having a Vickers hardness of 600–1,300, and lead, dispersed in an iron-based matrix softer than said molybdenum-iron particles.

3,863,319

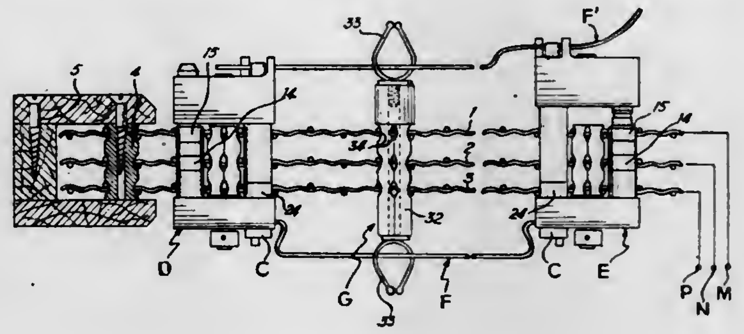
PROCESS AND EQUIPMENT FOR THE MANUFACTURE OF WIRING HARNESSES AND SIMILAR COMPONENTS

Bernard Pellet, 23 Blvd. da la Corne d'Or, Villefranche-sur-Mer, France

Filed Apr. 3, 1973, Ser. No. 347,497

Int. Cl. H05k *13/06*

U.S. Cl. 29—203 MW **14 Claims**



1. An apparatus for manufacturing wiring harnesses, said apparatus comprising, in combination:
semitransparent board means providing two oppositely disposed surfaces, one of said surfaces being adapted for placement of a pattern harness thereon, the other of said surfaces being adapted for the placement and assembly thereon of the wiring harness to be manufactured in superposed relationship with respect to the pattern harness which is viewed through the board means;
terminal block means disposed through said board at locations defining start and finish terminal blocks for the end points of each conductor of the pattern harness, each terminal block means having terminals thereon extending to opposite sides of said board means for connection to the same respective end of a conductor of the pattern harness and the respective conductor harness to be manufactured;
controllable illuminating means disposed on each terminal block means so as to provide a visual signal; and
circuit means connected to each terminal block means and to said controllable illuminating means and including change-over switch means integral with said terminal block means, said circuit means being automatically responsive;

1. to the connection of each end of a conductor of the pattern harness to the terminals of a respective start and finish terminal block to effect illumination of said respective start and finish terminal block with a visual signal, and
2. to the connection of an end of a conductor of the wiring harness to be manufactured to the terminal of said respective start terminal block to effect extinguishment of said visual signal at said respective start terminal block and modification of said visual signal at said respective finish terminal block, and
3. to the connection of the other end of said conductor of the wiring harness to be manufactured to the terminal of the respective finish terminal block to effect extinguishment of said modified visual signal.

3,863,320

SUBSTRATE LOADER

Robert W. De Lisle, Dover, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

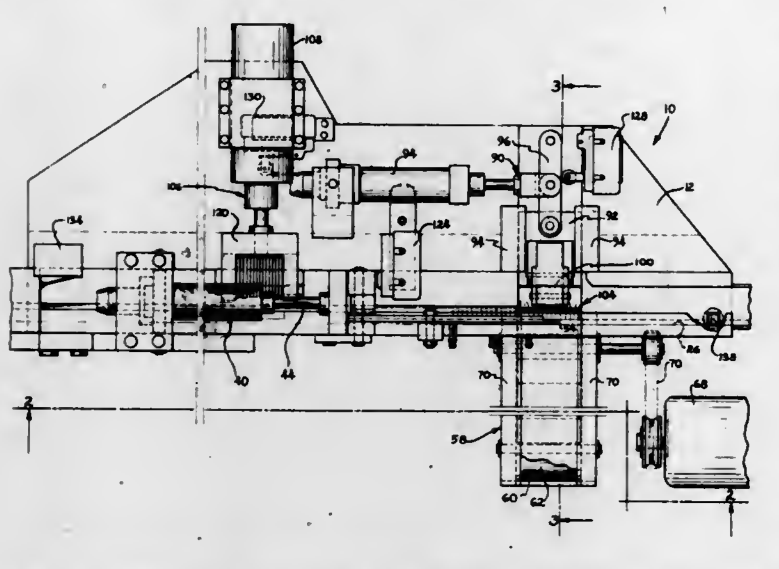
Filed Aug. 15, 1973, Ser. No. 388,363

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **7 Claims**

1. A substrate loading apparatus for attaching a selected number of terminals to one side of a flat ceramic substrate or like member comprising: a terminal feed path, means for periodically moving a terminal strip along the feed path to position a number of terminals at a loading zone adjacent the feed path, first substrate feeding means for moving flat sub-

strates laterally to a first position located to one side of the loading zone, second substrate feeding means for lifting the substrate to a second position immediately adjacent said loading zone with one edge of the substrate adjacent the terminals in the loading zone, and substrate pushing means engagable with an opposite edge of a substrate to move the substrate from said second position toward and into engagement with the terminals.



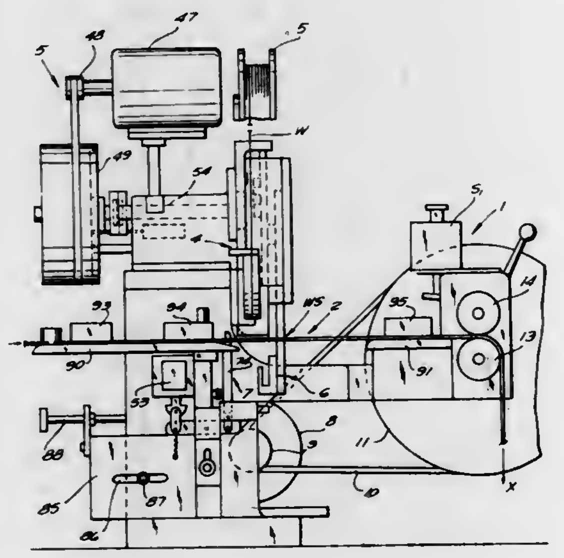
3,863,321
METHOD AND APPARATUS FOR AUTOMATICALLY ATTACHING TOP STOPS TO A CONTINUOUS SLIDE FASTENER CHAIN

Morris Perlman, Brooklyn, N.Y., assignor to Carbide Form Grinding, Inc., Brookyln, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,715

Int. Cl. B23p *19/04, 11/00*

U.S. Cl. 29—207.5 ST **14 Claims**



1. Automatic top stop attaching machine for attaching two top stops to each of successive portions of a continuous slide fastener chain which comprises two tapes, bottom stops, connectingg the two tapes at longitudinally spaced portions to each other, rows of interengaging coupling elements provided on facing edges of the tapes, and a slider on each of the portions for engaging and disengaging the coupling elements and providing between the slider and the following bottom stop a gap in which the tape portions are disconnected from each other, said machine comprising means for feeding the slide fastener chain intermittently in one direction and substantially in one plane to and past a working station; means for feeding two wires from opposite sides to said working station; combined cutting, bending and clamping means at said working station for cutting off portions from the two wires, for bending the cut-off wire portions into substantially U-shaped configuration, for holding the same in a predetermined position and for subsequently clamping the bent wire portions onto edges of said tapes closely adjacent to the coupling elements on one end of the rows of coupling elements; means for reciprocating said combined cutting, bending and clamping means in a direction transverse to said one direction; means for deflecting the tapes in the region of said working station for bringing the facing edges thereof in proper position for clamping the bent wire portions thereon; means for moving the chain longitudinally in a direction opposite to said one direction to bring the coupling elements on said one end of said rows of coupling elements closely adjacent to said bent wire portions before the latter are clamped to the edges of said tapes; and control means for automatically actuating the aforementioned means in proper sequence.

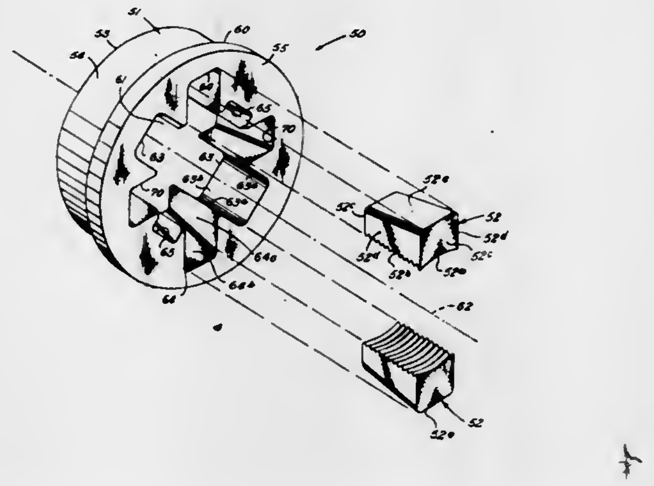
3,863,322
PULLING TOOL

Curtis J. Russell, 9344 Haven Cove, Dallas, Tex. 75227

Continuation-in-part of Ser. No. 123,152, March 11, 1971, Pat. No. 3,748,718. This application May 21, 1973, Ser. No. 362,362

Int. Cl. B23q *3/08*

U.S. Cl. 29—283 **2 Claims**



1. A pulling tool for removing a sleeve-type hub from a shaft comprising: a pulling ring adapted to be supported concentrically over said hub in spaced relation thereto to define an opening within said ring around said hub, said pulling ring having external peripheral pulling flange for engagement of said ring by a puller arm for applying a force to said pulling flange substantially parallel with a longitudinal axis of said hub; said pulling ring further having a plurality of pairs of diametrically opposed internal circumferentially spaced longitudinal slots, the bottom seat surfaces of each said pairs of slots being at a different distance from the axis of said pulling ring from all other pairs of said slots in said pulling ring, said seat surfaces sloping longitudinally along said pulling ring convergently toward the axis of said pulling ring in a direction away from said pulling flange; and a pair of jaw segments, each of said jaw segments having a generally cylindrical internal gripping surface adapted to engage said hub for pulling said hub from said shaft and a tapered external surface adapted to seat on one of said bottom seat surfaces of said longitudinal slots of said pulling ring whereby each of said jaw segments is wedged between said pulling ring and said hub responsive to a force applied to the back face of said flange on said pulling ring, said jaw segments being selectively positionable in each of said pairs of said slots at different distances from said axis of said pulling ring to accommodate said tool to different hub sizes, and said jaw segments when assembled in said pulling ring occupying less than 360° of the space between said hub and said pulling ring.

3,863,323
METHOD AND RELATED APPARATUS FOR FORMING AN ELEMENT-FREE GAP IN A CONTINUOUS SLIDE FASTENER CHAIN

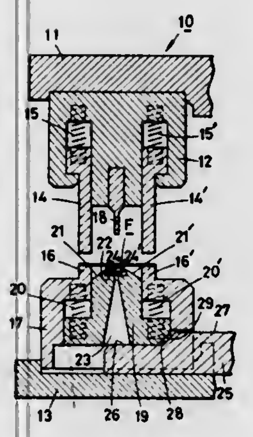
Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 31, 1973, Ser. No. 384,177

Claims priority, application Japan, Aug. 7, 1972, 47-79005

Int. Cl. B23p *11/00, 19/04*

U.S. Cl. 29—408 **6 Claims**



1. A method of forming an element-free gap in a continuous slide fastener chain having a pair of oppositely disposed stringer tapes each carrying along their adjacent longitudinal edges a row of fastener elements whose coupling parts are interengaged, which method comprises gripping the stringer tapes at points opposite to the rows of fastener elements, causing the interengaged parts of the fastener elements to pivot on themselves in a direction opposite to each other about a longitudinal axis of the pair of stringer tapes to spread apart the adjacent tape edges widely enough to expose therebetween said interengaged parts, and cutting the thus exposed interengaged parts off of the fastener chain along a length corresponding to a desired gap to be formed.

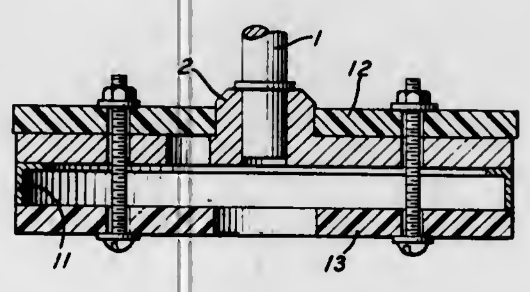
3,863,324
METHOD FOR FORMING AN EDGE-SUPPORTED ANNULAR MAGNETIC RECORDING MEDIUM

Robert A. Ehrhardt, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Filed June 24, 1954, Ser. No. 439,080

Int. Cl. B23p *17/00*

U.S. Cl. 29—423 **6 Claims**



1. In a recording and reproducing apparatus employing a magnetizable tape secured at one marginal edge thereof to the peripheral surface of a circular member of nonmagnetic material, the method of forming said magnetizable tape on said circular member which comprises attaching to a lateral face of said circular member a ring of metal, machining the peripheral surfaces of said circular member and said attached metal ring in a single operation to form coextensive peripheral surface areas, applying a plating of magnetizable material to the peripheral surface areas of said member and of said ring and thereafter removing said metal ring to leave a width of magnetizable material attached to and overhanging one edge of said circular member.

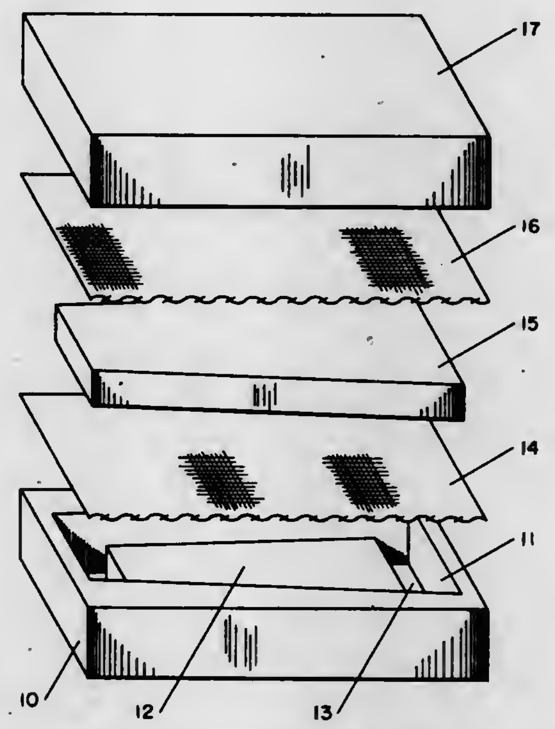
3,863,325
GLASS CLOTH IN METAL FORGING

Thomas B. Gurganus, Avon, and Leland L. Grubb, Parma, both of Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 363,930

Int. Cl. B23p *17/00*

U.S. Cl. 29—423 **16 Claims**



1. A method of forging a metal piece between dies, comprising the steps of heating the metal piece to a temperature above that of the dies, insulating the higher temperature metal piece from the dies with glass cloth, squeezing the insulated metal piece between the dies for causing metal flow for forging, and during said squeezing and forging step, maintaining said cloth in its original filamentary condition so that following squeezing and forging the individual filaments of the glass cloth are still visible.

3,863,326
DEVICE FOR MANUFACTURING DOUBLE-WALLED CUPS

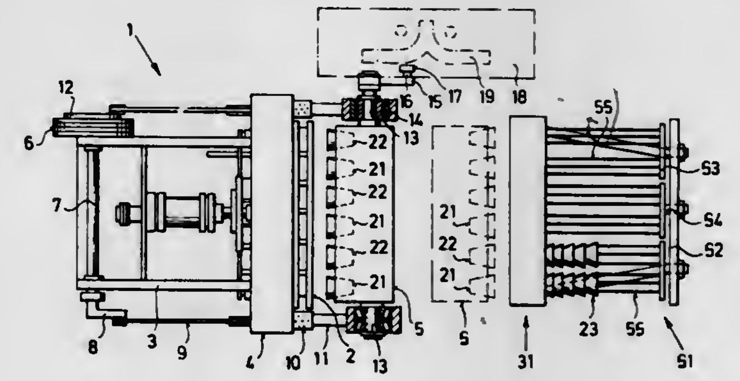
Wilhelm Haberle, Industriegelande, Scheer/Wurttemberg, Germany

Filed Jan. 18, 1973, Ser. No. 324,782

Claims priority, application Germany, Jan. 20, 1972, 2202624

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 F **8 Claims**



1. A device for manufacturing double-walled cups from thermoplastically deformable sheets, each cup being composed of an outer cup and an inner cup, said device comprising:

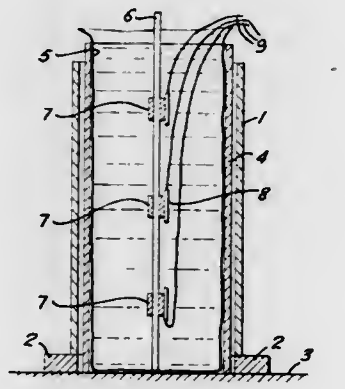
a. a molding station having tools for simultaneously manufacturing both outer and inner cups; and

b. a removal device associated with said molding station, means for ejecting the cups from said molding station into said removal device and by means of which an associated pair of inner and outer cups is fed by said molding station, said removal device being formed of at least one disk rotatably journaled and capable of being driven, and a plurality of inserts in each of said disks operable for receiving the outer or inner cups.

3,863,327

METHOD OF LINING METAL PIPES

Roland Arthur Legate, 30 Whitecrafts St., and Kevin Strickland, 28 Hazel Grove, both of Stotfold, Hitchin, England
No Drawing. Filed Dec. 27, 1972, Ser. No. 318,729
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **10 Claims**

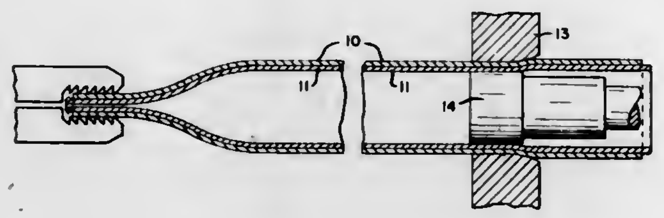


1. A method for internally lining a metal pipe said method comprising (i) positioning a metallic liner inside a pipe in a gaseous atmosphere, (ii) maintaining the volume within the liner full of a liquid, (iii) setting up at least three explosive charges in the liquid along the central axis of the pipe, (iv) simultaneously firing the explosive charges, the explosive charges being located such that initially the liner forms a tight mechanical bond with the pipe in the central region of the pipe, and carrying out subsequent firings to drive the gas from between the liner and the pipe so that the liner forms a tight mechanical bond with the pipe along the length of the pipe.

3,863,328

METHOD OF MAKING A COMPOSITE STEEL TUBING

John J. Arntz, Shelby, Ohio, assignor to Copperweld Steel Company, Shelby, Ohio
Continuation of Ser. No. 295,993, Oct. 10, 1072, abandoned, which is a continuation-in-part of Ser. No. 126,633, March 22, 1971, abandoned. This application Jan. 22, 1974, Ser. No. 435,526
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—516 **14 Claims**

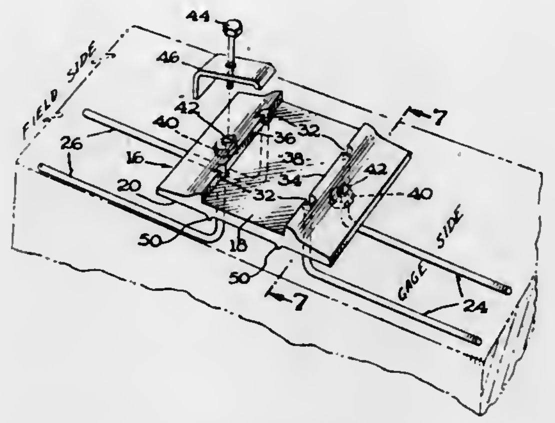


6. The method of making a composite steel tubing comprising the steps of:
a. providing two sections of welded steel tubing of substantially equivalent wall thickness, one of which sections has an outer diameter less than the inner diameter of the other;
b. telescoping said tubing sections and holding them together at one end;
c. changing the diameter of one of said tubing sections so as to produce a mechanical bond therebetween; and
d. cold drawing the united tubing sections through a sizing die and over a mandrel.

3,863,329

METHOD OF MAKING PRECAST RAILROAD TIE AND TIE PLATE

Jamie S. Bartlett, 6927 Green Hill Pl., Tampa, Fla. 33617
Division of Ser. No. 316,567, Dec. 19, 1972, Pat. No. 3,834,620. This application Nov. 30, 1973, Ser. No. 420,458
Int. Cl. E01b *3/32*
U.S. Cl. 29—471.3 **9 Claims**

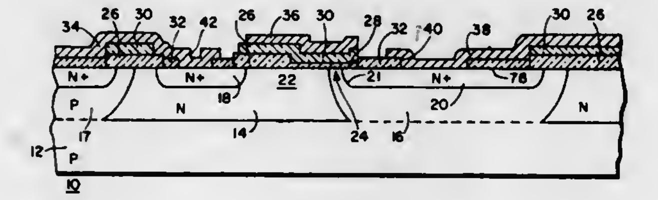


1. A method of making a precast reenforced rail tie and tie plate combination, of which the tie is formed of an initially cementious or plastic material, including the steps of:
a. disposing an elongated mold form of a generally U-shape cross-section in a horizontal position with the open side upward to receive the cementious material;
b. positioning within the form a first plurality of spaced-apart elongated reenforcing rods of a length extending substantially from end to end of the rail tie being cast in said mold form;
c. positioning a pair of opposed rail tie plates including combined transversely projecting anchor and reenforcing rods thereon constituting in part a second plurality of reenforcing rods, at the bottom of the open form in laterally opposed relation so that the projecting combined anchor and second plurality of reenforcing rods are generally medially disposed within said form and do not touch those of the other laterally spaced plate or those constituting said first plurality of reenforcing rods; and
d. filling said form with a setable cementious material and leveling said material substantially flush with the open top of said form.

3,863,330

SELF-ALIGNED DOUBLE-DIFFUSED MOS DEVICES

Albert V. Kraybill, Arlington Heights; William Rapshys, Palatine, and Francis R. Yester, Des Plaines, all of Ill., assignors to Motorola, Inc., Chicago, Ill.
Filed Aug. 2, 1973, Ser. No. 385,139
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **5 Claims**



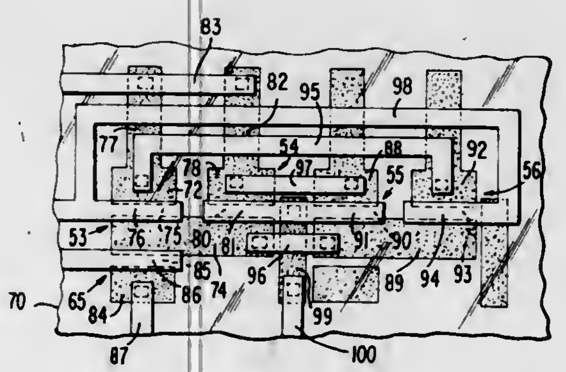
1. A method of making a double-diffused MOSFET semiconductor device comprising the steps of:
forming a first insulating layer on a first surface of a substrate of semiconductor;
forming a first opening in said first insulator exposing said substrate;
forming a second insulating layer on said first insulating layer and on said exposed substrate;

forming a second opening in said second insulating layer, exposing said first insulating layer;
removing said exposed first insulating layer, exposing said first surface;
forming a first region in said substrate through said second opening, said first region being of a first conductivity type, and extending a first predetermined distance under said second insulating layer in said first layer;
forming a third opening in said first and second insulating layers, exposing said substrate;
forming second and third regions of a second conductivity type in said substrate at said first surface, said second region being formed in said first region through said second opening and extending a second predetermined distance under said second insulating layer, said first region being driven in further to extend a third predetermined distance under said second insulating layer, said second predetermined distance being less than said third predetermiend distance, and said third region being formed external to said first region through said third opening; and
forming a conductive gate electrode on said second insulating layer over said first opening, said second predetermined distance being selected to minimize the capacitance between said conductive gate electrode and said second region while providing reliable operation of said double-diffused MOSFET devices, said third predetermined distance being selected to provide an optimized channel length.

3,863,331

MATCHING OF SEMICONDUCTOR DEVICE CHARACTERISTICS

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation
Filed Sept. 11, 1972, Ser. No. 287,863
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **4 Claims**

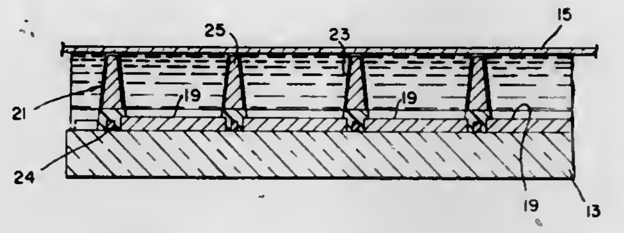


1. A method of making an electrical circuit which includes a pair of circuit elements having closely matched characteristics comprising:
forming, by photolithographic processes using at least one photomask, two pairs of subelements, each pair including a first subelement and a second subelement, said first subelements being made by using a pair of separate patterns on said photomask, each of said first pair of separate patterns on said photomask being made from a first pattern on a master, said second subelements being made by using a second pair of separate patterns on said photomask, each of said second pair of said separate patterns being made from a second pattern on said master, and
connecting the first subelement of one pair with the second subelement of the other pair and the second subelement of said one pair with the first subelement of the other pair.

3,863,332

METHOD OF FABRICATING BACK PANEL FOR LIQUID CRYSTAL DISPLAY

Alex M. Leupp, Newport Beach, and Hans G. Dill, Costa Mesa, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed June 28, 1973, Ser. No. 374,444
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 **3 Claims**

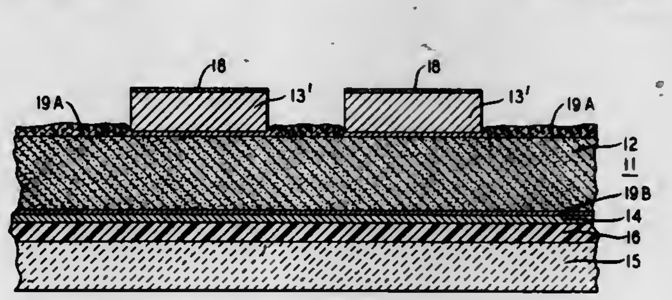


1. A method of fabricating a backplate with electrodes and integrated spacers for a liquid crystal display comprising the steps of:
a. forming an array of reflective electrodes in spaced apart columns and rows on a surface of a substrate,
b. depositing an oxide layer on said surface and over said electrodes,
c. depositing an aluminum layer over said oxide layer, and
d. forming a two-layered lattice extending from the spaces between said columns and rows of electrodes by removing those portions of said layers which are over the central portions of said electrodes and anodizing the aluminum portions of said two-layered lattice prior to removing the portions of the oxide layer.

3,863,333

METHODS FOR MAKING SEMICONDUCTOR DEVICES

Andrew Loya, Irvington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 31, 1973, Ser. No. 393,596
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 **13 Claims**



1. A process for making semiconductor devices comprising the steps of:
forming a first thin layer of gold on one side of a silicon wafer;
forming a platinum-silicide layer on the other side of the wafer;
forming a second layer of gold over the platinum-silicide layer;
defining a plurality of devices by etching porions of the second gold layer, thereby to expose part of the platnium-silicide layer;
subjecting the exposed platinum-silicide layer to a silicon etchant, thereby to weaken its structure;
immersing the wafer in a liquid and subjecting it to ultrasonic agitation of sufficient intensity to remove the exposed and weakened platinum-silicide, thereby to expose part of the silicon wafer;
subjecting the exposed silicon to a silicon etch for a sufficient time to etch through the wafer to the first thin layer of gold, whereby a plurality of defined devices are held together by the first layer; and

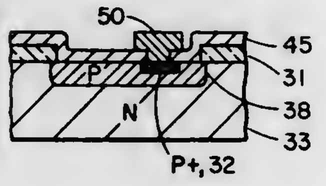
immersing the wafer in a liquid and subjecting it to ultrasonic agitation of sufficient intensity to rupture the thin gold layer, thereby to break apart the defined devices.

3,863,334
ALUMINUM-ZINC METALLIZATION
Michael G. Coleman, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 121,708, March 8, 1971, abandoned. This application May 7, 1973, Ser. No. 358,180

Int. Cl. B01j *17/00*

U.S. Cl. 29—590 **7 Claims**



1. A method for making an ohmic contact to a region of semiconductor comprising the steps of:

forming an insulating layer on a surface of a first region of semiconductor, said first region of semiconductor being of a first conductivity type;

forming an opening in said insulating layer, exposing said surface;

forming a metal layer on said insulating layer and on said exposed surface, said metal layer including a first metal and a second metal, such that impurity ions of said second metal are of said first conductivity type and the entectic between the semiconductor and the first metal being higher than the entectic between the semiconductor and the second metal, diffusing ions of said second metal through said exposed surface into said first region of semiconductor, by heating to a temperature below the entectic between the semiconductor and the first metal, thus forming a relatively heavily doped second region of said first conductivity type within said first region at said surface and wherein said second metal does not form an alloy with said semiconductor.

3,863,335
PROCESS AND APPARATUS FOR BENDING THE ENDS OF INSULATING STRIPS IN GROOVES OR STATORS OF ELECTRICAL MACHINES
Hans Droll, 6 Bergen-Enkheim, Nordring, Germany

Filed Apr. 5, 1974, Ser. No. 458,432

Claims priority, application Germany, May 10, 1973, 2323590

Int. Cl. H02k *15/02*

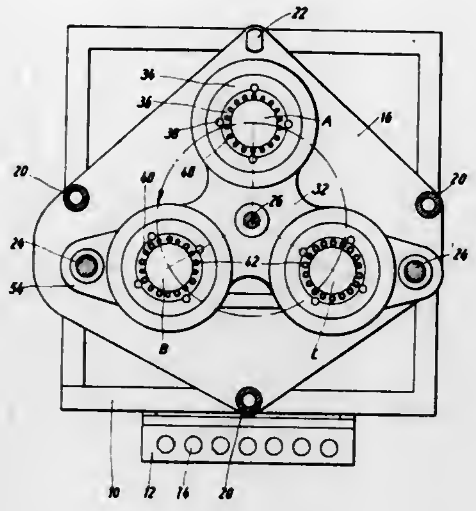
U.S. Cl. 29—596 **26 Claims**

1. In the manufacture of stators of electrical machines, a process for bending back the ends of thermoplastic insulating strips located in the stator grooves, comprising the steps of:

placing strips of thermoplastic, electrically insulating material into the stator grooves such that the end portions of the strip project axially of the stator beyond the end faces thereof,

heating the said projecting end portions,

bending the heated projecting end portions back against the end faces of the stator, and



holding the bent heated end portions against said stator end faces until they cool off.

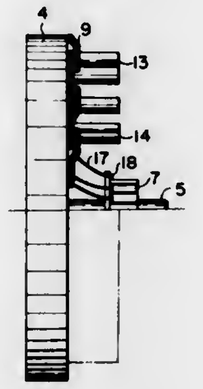
3,863,336
METHOD OF MANUFACTURING FLAT-TYPE ROTORS
Kunihiro Noto, Katsuta, and Hiroaki Mizoguchi, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,412

Claims priority, application Japan, Mar. 22, 1972, 47-28147

Int. Cl. H02r *43/00*

U.S. Cl. 29—597 **10 Claims**



1. Method of manufacturing a rotor for a flat-type motor comprising steps of:

winding a wire to make an armature coil in a flat cylindrical space, said flat cylindrical space being defined in part by one surface of a plate-shaped first mold on to which said wire is laid while being wound, said first mold having an interior configuration conforming to an outer configuration of a first portion of the rotor to be made,

providing a shaft extending along the longitudinal axis of the cylindrical space,

combining a second mold with said first mold to form a space between said first and second molds, said second mold having an interior configuration conforming to the outer configuration of a second portion of the rotor, and filling said space between said first and second molds with a resin material to provide an integrated unit having a predetermined mechanical strength, thereby forming said integrated unit which comprises said armature coil and said shaft.

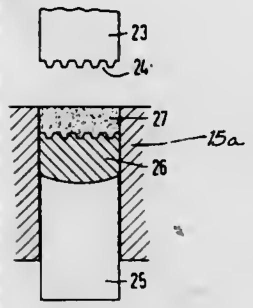
3,863,337
POWDER METALLURGY METHOD FOR MAKING AN ELECTRIC CONTACT AND THE RESULTING CONTACT
Horst Schreiner, and Bernard Rothkegel, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 24, 1972, Ser. No. 283,408

Claims priority, application Germany, Sept. 1, 1971, 2143843

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 C **4 Claims**



1. A powder metallurgy method for making a two-layer electric contact or the like, comprising:

a. providing a first layer of refractory metal or metal compound powder;

b. providing a second layer of low temperature melting metal powder;

c. compacting said first and second layers together to form a coherent two-layer compact;

d. providing a refractory surface having a plurality of depressions on the surface thereof;

e. supporting said compact with its second layer on said refractory surface with said plurality of depressions therebeneath;

f. heating said compact under non-oxidizing conditions to a temperature above the melting temperature of said low temperature melting metal to impregnate the pores of said first layer with the metal of said second layer; and

g. the step of providing said second layer including proportioning said second layer such as to provide said compact with a volume of said low temperature melting metal in excess of the pore volume of said first layer to an extent causing the formation on the latter's bottom of a thin layer of said low temperature melting metal.

3,863,338
ELECTRIC SHAVER WITH CUTTERS MOUNTED IN END TO END ALIGNMENT
Roger Paul Wellinger, Neuchatel; Francis Andre Vauthier, Hauterive, and Alberto Botta, Lausanne, all of Switzerland, assignors to The Gillette Company, Boston, Mass.

Filed July 20, 1972, Ser. No. 273,480

Claims priority, application Great Britain, Dec. 8, 1971, 56910/71

Int. Cl. B26b *19/04*

U.S. Cl. 30—43.92 **20 Claims**

12. An electric shaver comprising:

at least two cutter sections movably mounted aligned with each other and in end-to-end relationship;

drive means including a motor having a rotary output shaft; transmission means including a crank coupled to and driven by said motor shaft and a pair of crank throws driven by said crank and being coupled to said at least two cutter sections for driving said at least two cutter sections in end-to-end reciprocation, respectively in antiphase; and

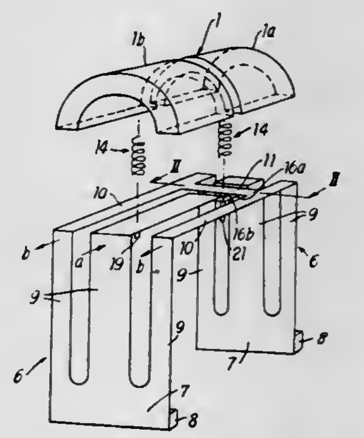
support means including mountings coupled to and resiliently supporting each cutter section, each mounting including a spring, the spring constants (K_1, K_2) of the mounting springs being selected in relation to the masses (M_1, M_2) of the respective cutter sections so that K_1/M_1 is substantially equal to K_2/M_2, so that the at least two cutter sections have substantially the same natural frequency of reciprocation;

said motor being operable under power to simultaneously drive said movable cutter sections via said transmission means substantially continuously at a frequency of reciprocation substantially equal to said natural frequency.

17. An electric shaver comprising:

two cutter sections movably mounted in alignment in end-to-end relationship;

means for resiliently mounting the cutter sections for linear reciprocation in said aligned end-to-end relationship, said mounting means including resilient structures defining a



natural rest position for each cutter section at substantially the centre of its path of linear reciprocation; and

driving means including a motor having a rotary output shaft; and

transmission means coupled to and driven by said motor shaft, and a pair of crank throws driven by said crank and being coupled to said cutter sections so as to substantially continuously and simultaneously reciprocate the respective cutter sections in antiphase such that the cutter sections move simultaneously towards and away from each other alternately and always pass substantially simultaneously through their said respective natural rest positions.

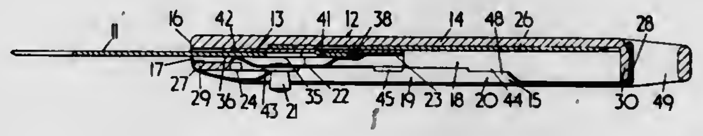
3,863,339
RETRACTABLE BLADE KNIFE
Albert Reaney, Rotherham, and Michael Taylor, Warwick, both of England, assignors to Stanley Tools Limited, Woodside, Sheffield, England

Filed May 23, 1973, Ser. No. 363,033

Claims priority, application Great Britain, May 26, 1972, 25061/72

Int. Cl. B26b *1/08*

U.S. Cl. 30—162 **13 Claims**



1. A retractable blade knife comprising a casing having a slot in one side thereof, a blade, a slidable blade carrier mounting the blade and engaging at least one edge thereof, an operating button projecting through said side slot and a leaf spring associated with the operating button for biasing the button into selective locking engagement with the casing and for removably holding the blade on the blade carrier, said casing comprises a body having a slot in one end through which the blade can be extended and retracted and a cover detachably attachable to the body to enclose the blade carrier and spring, wherein the cover has two curled opposite end portions which respectively hook over two corresponding end portions of the body, firstly one end portion of the cover being

hooked over one end portion of the body and then the cover being pivotable thereabout until the other end portion of the cover hooks over the other end portion of the body, whereby the cover can snap into place when attached to the body.

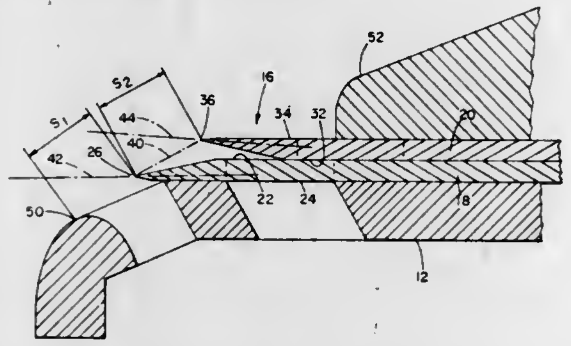
3,863,340
PLURAL EDGE SHAVING SYSTEM

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Sept. 8, 1972, Ser. No. 287,513

Int. Cl. B26b *21/54, 21/22*

U.S. Cl. 30—346.58 **9 Claims**



1. A plural edge structure for use in shaving, including a leading member and a following member, each of said members having the form of a plate bounded by first and second flat faces, and each said member having two intersecting facets that define a straight, sharpened cutting edge thereon parallel to said faces, each said cutting edge being offset outwardly from the center of the member at least about one-third the distance from the center of the member to its said first face so that it is positioned closer to the first than to the second of said faces, each of said facets being inclined with respect to the immediately adjacent face of the blade member and said two facets defining a bisector plane, said leading and following members being permanently affixed together with their respective second faces contiguous and with said cutting edges fixed in position parallel to each other in a plane inclined to said second faces in position to maintain a fixed distance perpendicular to said second faces of less than 0.02 inch between said cutting edge of said leading member and said cutting edge of said following member, a span between said cutting edge of said leading member and said cutting edge of said following member in the range of 0.03 inch to 0.08 inch and the angle between the bisector plane of the cutting edge of said following member and said plane containing both edges at a fixed value in the range of 20°-32°.

3,863,341
EXPLOSIVE ACTUATED PUNCH

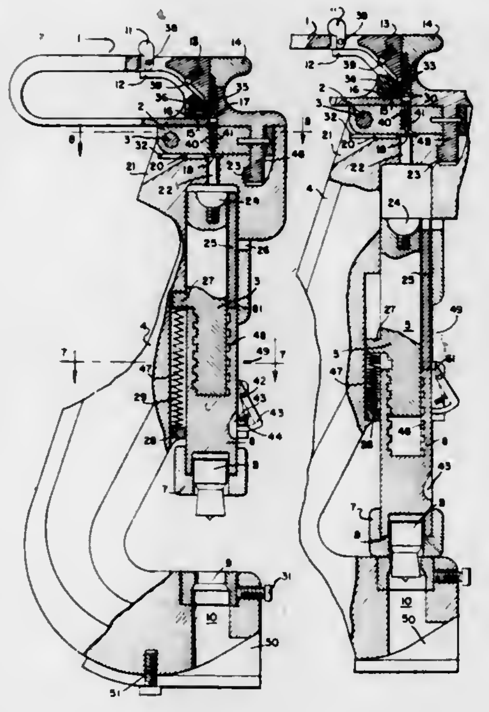
James L. Ramer, Rt. 1, Box 155, Sullivan, Mo. 63080

Filed Aug. 27, 1973, Ser. No. 392,162

Int. Cl. B26f *1/02;* **B26d** *7/26*

U.S. Cl. 30—358 **4 Claims**

1. In an explosive activated punching tool the improvement comprising a main body, a longitudinal recess located in said main body, a cartridge chamber communicating with said recess, means for detonating a cartridge placed in said cartridge chamber, a piston slidably received in said recess, a ram slidably received in said recess below said piston and adjustably axially joined to said piston, said ram having a shoulder within said recess an axial recess in said piston, a longitudinal member slidably received in said axial recess and resting on said shoulder such that said member moves with said ram upon axial adjustment of said ram relative to said piston, and a single exhaust port in said main body for exhausting gases from said longitudinal recess, said exhaust port being disposed in the path of travel of said longitudinal member and cooperating with said longitudinal member and with said longitudinal recess whereby adjustment of the ram relative to the piston will vary the distance of travel of the longitudinal member before uncovering the exhause port so that in any position of relative adjustment for varying thicknesses of material to be punched when a cartridge in said cartridge chamber is detonated by said means for detonating a cartridge the explosion which results from the detonation forces the gases in said cartridge chamber and longitudinal recess to expand and force said piston, said ram and said longitudinal member to move in said longitudinal recess until said longitudinal member uncovers the exhaust port and allows the gases to escape through said exhaust port thereby enabling the length of stroke of the punching tool to be varied according to the thickness of material to be punched.



3,863,342
SABER SAW

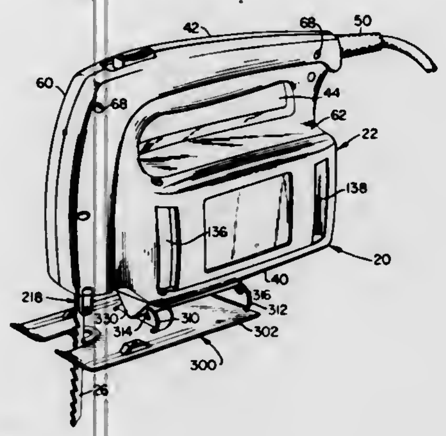
David R. Griffies, Joppa, Md.; Russell O. Robinson, Plymouth, Ohio, and Robert W. Taylor, Jackson, Tenn., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sept. 17, 1971, Ser. No. 181,471

Int. Cl. B27b *19/08;* **B23d** *49/10*

U.S. Cl. 30—393 **6 Claims**

1. A hand-held, power-operated sabre saw comprising a housing, an integral handle for hand manipulation of said saw and a generally planar work-engaging surface adjustably attached to said housing, a saw blade holder curved along a longitudinally extending axis of curvature mounted in said housing for reciprocation along said axis of curvature, a saw blade fixed to said holder for reciprocation therewith along said axis of curvature, and drive means in said housing for reciprocating said holder along said axis of curvature to impart alternate cutting and return strokes to said blade, said axis of curvature being curved in a direction to provide said blade with a component of cutting stroke travel that is in the direction in which said blade is urged against a workpiece to cut said workpiece.



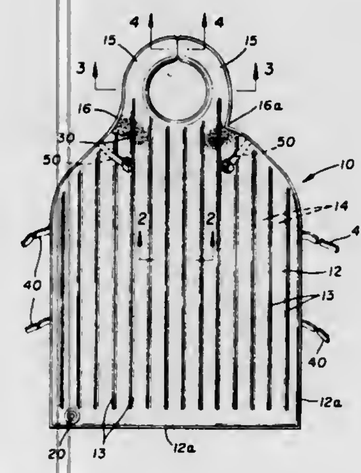
3,863,343
DENTAL PATIENT DRAPE

Oscar Malmin, 127 East Wayne Ave., Akron, Ohio 44301

Continuation-in-part of Ser. No. 183,519, Sept. 24, 1971, abandoned. This application Feb. 9, 1972, Ser. No. 224,865

Int. Cl. A22c *19/00*

U.S. Cl. 32—1 **10 Claims**



1. An inflatable protective patient drape, comprising;

A. a pair of impermeable membranes secured together at their peripheries to form an air-tight chamber;

B. means for introducing air into said chamber;

C. said membranes being secured to each other at transversely spaced intervals to divide said chamber into a plurality of longitudinally extending compartments
  1. whereby said drape assumes a curved cross sectional configuration upon inflation and;

D. said membranes each having a pair of opposed, integral inflatable neck-engaging members at one end, with said neck-engaging members being arcuate in planar and cross-sectional configuration and substantially encircling the patient's neck
  1. whereby said members will support the head and neck of said patient.

3,863,344
IMPLANTABLE DENTAL SUPPORT

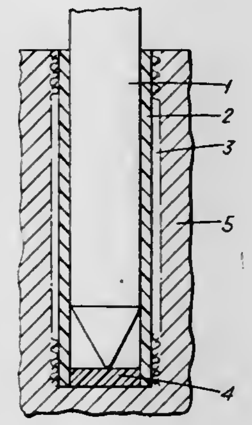
Jean Pillet, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Oct. 3, 1972, Ser. No. 294,546

Claims priority, application France, Oct. 6, 1971, 71.35968

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A **2 Claims**



1. In a dental endosseous root implant, having a tube able to receive an artificial tooth/supporting pin, said tube being provided with an external surface colonisable by surrounding tissues, the improvement comprising forming said implant as a tubular member closed at one end and formed of a resilient elastomer the external surface of which is covered by a textile sleeve.

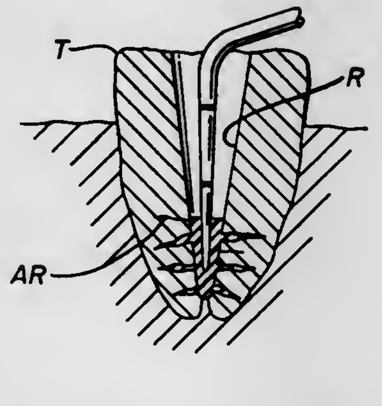
3,863,345
ENDODONTIC SEALING SYSTEM AND APPARATUS

Oscar Malmin, 127 East Wayne Ave., Akron, Ohio 44301

Division of Ser. No. 213,993, Dec. 30, 1971,. This application June 11, 1973, Ser. No. 368,514

Int. Cl. A61k *5/00*

U.S. Cl. 32—15 **5 Claims**



1. An endodontic system for chemically and mechanically sealing the main and auxiliary passages of a root canal system, comprising;

A. inserting an elongate instrument carrying a chemical sealing compound on one end thereof into said main passage;

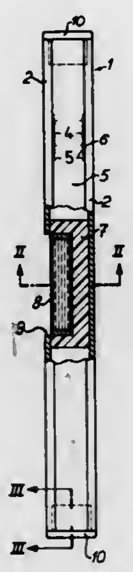
B. activating said instrument and forcing the chemical sealing compound against the walls of said main passage and into said auxiliary passages and against the walls thereof whereby said compound chemically seals said passages;

C. inserting at least one compressible sealing plug into said main passage;

D. condensing and compacting said plug and forcing the material of said plug into said auxiliary passages and against the walls of said main passage.

3,863,346
RIGID MEASURING ROD

Michel Quenot, Besancon, France, assignor to Stanley Mabo, Besancon, France
Filed Dec. 11, 1972, Ser. No. 314,028
Claims priority, application France, Dec. 9, 1971, 71.44151
Int. Cl. G01c *9/00*
U.S. Cl. 33—88 **3 Claims**

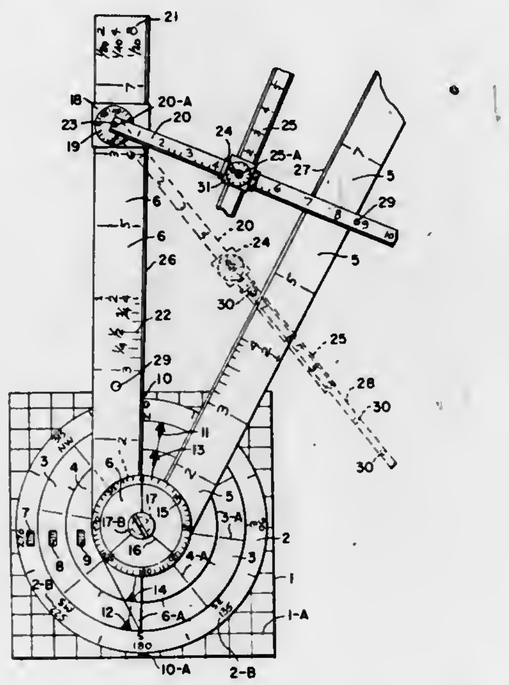


1. A measuring device comprising a rigid, linear, hollow rod; a bubble level mounted inside said hollow rod and in a viewable position; slideway means on said rod for interchangeably mounting at least one measuring tape on said rod for measuring therewith, said slideway comprising three parallel projections on said rod, all extending longitudinally of and reinforcing the rod, two of said projections being spaced apart and having surfaces defining two opposed, open ended, longitudinal grooves, and the third projection extending upwardly and beyond said surfaces; and a metallic, resilient measuring tape slidably received in the slideway and resiliently held in the grooves by said third projection.

3,863,347
NAVIGATION DEVICE

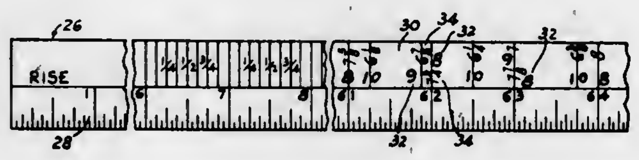
Philip Michael Banner, 28 Oxford Road, Massapequa, N.Y. 11758
Continuation-in-part of Ser. No. 27,535, April 13, 1970, Pat. No. 3,721,007. This application Nov. 21, 1972, Ser. No. 308,350
Int. Cl. B43l *7/06*
U.S. Cl. 33—98 **3 Claims**

1. A navigation device comprising a base plate having a compass rose disposed about a central aperture, a plurality of concentrically mounted circular disc members rotatably mounted on said base plate on a common pivot axle extending through said central aperture, said disc members having diameters of decreasing size with the largest adjacent the base plate and the smallest at the top, each disc member having a compass rose upon its surface and means for viewing the compass rose on the disc immediately below it, said disc members and base plate cooperating to insert various navigation parameters such as compass deviation, compass reading, wind direction and current direction so that the various parameters are utilized to give a final reading; first and second protractor arms having circular base portions and radially extending arms concentrically pitotally mounted on said common pivot axle atop said plurality of disc members with the second of said protractor arms being uppermost, a longitudinal edge of each arm passing transversely through the vertical axis of the common axle, said arms having linear distance scales along the edges and adapted to measure and draw course lines on a chart, said first circular base portion having compass rose about the central axis and a reciprocal transparent index marker extending from the circumference thereof in line with the central axis and longitudinal edge to indicate reciprocals, said uppermost second base portion having a compass rose on the surface thereof and a safety right of way and vessel lighting dial inscribed thereon comprising three radial lines extending from the center axle to the circumference and spaced 120° apart; a first transparent slide member slidably mounted on said first protractor arm and having a compass rose thereon, a third protractor arm pivotally mounted on said first slide member and having an index marker to cooperate with said compass rose, a second transparent slide member slidably mounted on said third protractor arm, said second slide member having a third transparent slide member pivotally mounted thereon and also having a compass rose thereon, a fourth protractor arm slidably received in said third slide member, index means connected to said fourth protractor arm to cooperate with said last mentioned compass rose; means on said first, second and third slide members for frictionally retaining the slide members in adjusted positions on their respective arms and means on said first and third arms for locking said third arm atop said first arm in a non-use position.



3,863,348
STAIR LAYOUT SCALE

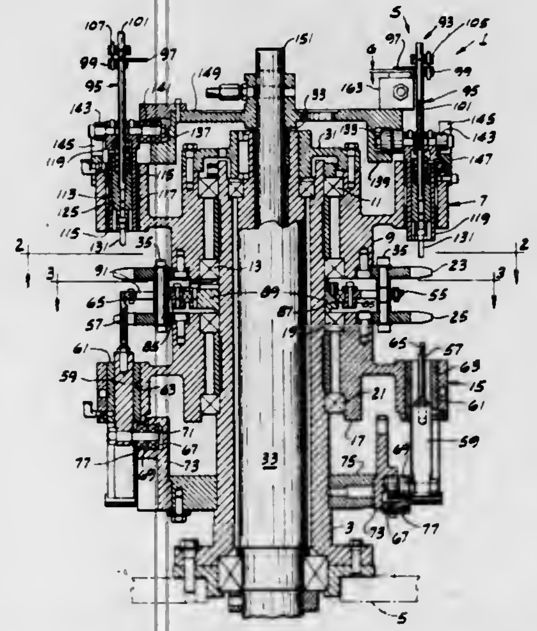
Herbert H. Herbst, R.D. No. 1, Sunset Dr., Dallastown, Pa. 17313
Filed Mar. 7, 1973, Ser. No. 338,750
Int. Cl. G01b *3/04*
U.S. Cl. 33—111 **5 Claims**



1. A scale system for laying out rise and tread dimensions on the beamlike support carriage for stairs and comprising an elongated member, a plurality of individual scales thereon respectively indicating the number of risers and treads and the widths of each for given individual total rises and runs for a desired stair installation, said scales each having duplex indicia including a limited range of choices in short increments of dimension respectively indicating by whole number the number of risers and by additional whole numbers and fractions the width of risers and by whole numbers indicating the number of treads and by additional whole numbers and fractions indicating the width of said treads, said duplex whole number and fraction indicia being placed upon said scales at progressive locations corresponding to actual given individual total rises and runs and comprising multiple transitions of the dimensional height of said risers and width of said treads relative to preferred numbers thereof to provide a limited selection possibility best suited for an individual stair installation, of said duplex indicia at said given dimensions having a second set of duplex and indicia indicating a different choice of whole numbers and fractions corresponding to actual given individual total rises and runs.

3,863,349
GAGING APPARATUS

David A. Wilson, Sheboygan, Wis., assignor to Perry Industries, Inc., Hicksville, N.Y.
Filed June 11, 1973, Ser. No. 369,082
Int. Cl. G01b *5/04*
U.S. Cl. 33—169 R **12 Claims**



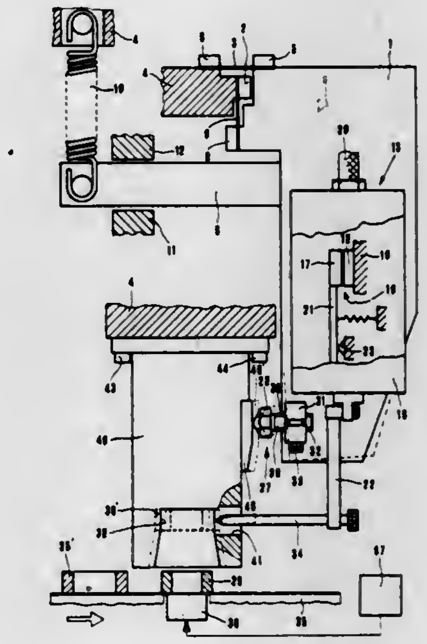
1. Gaging apparatus comprising a proximity sensor mounted in fixed position at a gaging station, means for continuously conveying units one after another through said station past the sensor with a gap between the units and the sensor, said sensor being responsive to passage of each unit in proximity to the sensor to gage the gap between the unit and the sensor, and means for continuously conveying workpieces to be gaged one after another in a predetermined path through said station, wherein said units are gage members and said means for conveying the latter comprises an endless conveyor carrying said gage members and means for moving said gage member conveyor in an endless path at least part of which parallels the path of the workpiece conveyor through the gaging station with the gage members contacting the workpieces as they pass through the gaging station, said gaging members carrying means for passage in proximity to the sensor.

3,863,350
GAUGE PROVIDED WITH A RAPID AND AUTOMATIC ZERO-SETTING DEVICE

Sergio Solaroli, Bologna, Italy, assignor to Finike Italiana Marposs-Soc. In Accomandita Semplice de Mario Possati & C., Bentivoglio (Bologna), Italy
Filed Aug. 31, 1973, Ser. No. 393,477
Claims priority, application Italy, Sept. 15, 1972, 3534/72
Int. Cl. G01b *5/00*
U.S. Cl. 33—169 R **7 Claims**

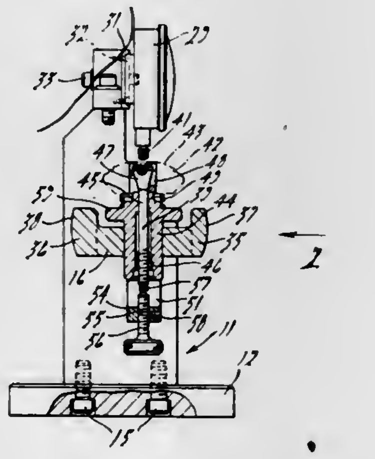
1. A measuring apparatus for measuring dimensions of workpieces comprising:

a frame; connecting means; a support carried by the frame through said connecting means which permit movements of the support relative to the frame; a measuring head mounted on the support and comprising a measuring arm adapted to cooperate with the workpiece to be measured and movable in the head toward and away from the workpiece; detecting means mounted in the head for measuring the position of the arm in the head; said connecting means permitting movement of said support together with said measuring head toward and away from the workpiece; first mechanical reference means fixed on said support and second mechanical reference means fixed on said frame adapted to cooperate with said first mechanical reference means for displacing said support together with said head in a defined position for the measurement of workpieces having a determined nominal dimension, this position corresponding to the head zerosetting; at least one of said first and second mechanical reference means being replaceable by similar reference means having a different determined dimension for achieving automatically the zero-setting of the measuring head, when measuring workpieces having a different determined nominal dimension.



3,863,351
GAUGE FOR CHECKING RADIUS AND SPHERICAL SURFACE

Stuart E. Kalen, Sterling Heights, Mich., assignor to Cogsdill Tool Products, Inc., Farmington, Mich.
Filed Jan. 11, 1974, Ser. No. 432,497
Int. Cl. G01b *3/22, 5/20*
U.S. Cl. 33—169 R **5 Claims**

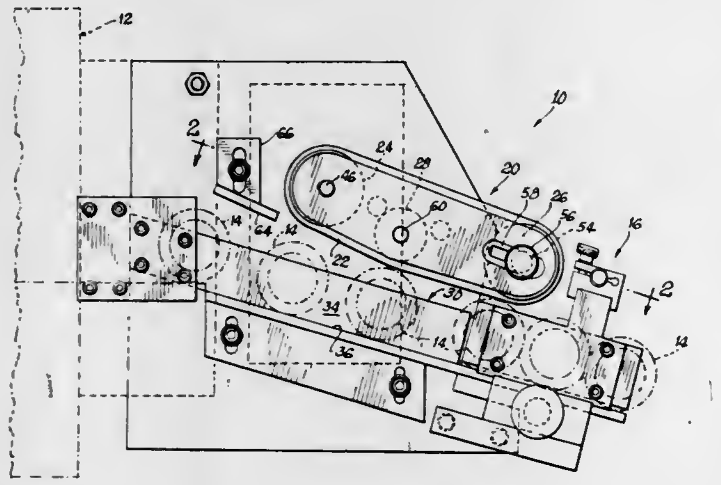


1. In a gauge, a base having a pair of uprights, a cradle, trunnions on said cradle pivotally secured on said uprights for rotatably supporting said cradle therebetween, an indicator supported on said uprights above said cradle, a support for a workpiece on said cradle which is adjustable axially toward and away from said indicator, means on said cradle for obtaining a reading on said indicator for a radius to be produced for

the surface of the workpiece, and means for moving a workpiece mounted on the support into engagement with the indicator until said reading is reproduced thereon and thereafter checking the sphericity of the workpiece surface relative to said reading.

3,863,352
GAGING APPARATUS WITH FLOW CONTROL MECHANISM

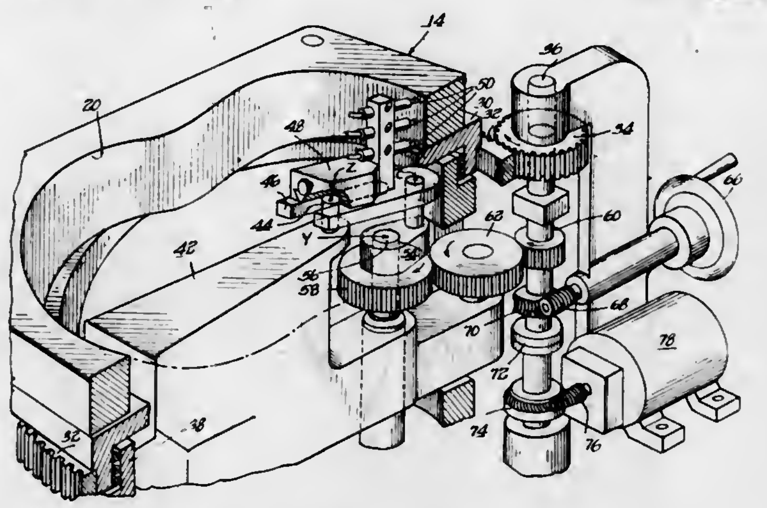
Edward Peonski, West Dundee, Ill., assignor to American Gage & Machine Company, Elgin, Ill.
Filed June 14, 1973, Ser. No. 369,898
Int. Cl. G01b *5/00;* **B65g** *19/02, 23/08*
U.S. Cl. 33—174 R **1 Claim**



1. Gaging apparatus for gaging a procession of workpieces, comprising a gaging station including gaging means for checking at least one dimension of each of the workpieces,
- guide means including a downwardly inclined guide ramp for supporting and carrying the workpieces past said gaging station,
- a first pulley disposed in a vertical plane above said guide ramp and rotatable about a horizontal axis,
- motor means for rotating said pulley,
- a carriage disposed above said guide ramp,
- means supporting said carriage for swinging movement about the axis of said pulley in a generally vertical direction toward and away from said guide ramp,
- said carriage being biased downwardly by gravity toward said guide ramp,
- a second pulley rotatably mounted in a vertical plane on said carriage and swingable therewith toward and away from said guide ramp,
- an endless drive belt strung around said first and second pulleys for positively moving the workpieces along said guide ramp at a controlled speed toward said gaging station,
- said drive belt being swingable upwardly and downwardly with said carriage to accommodate workpieces of varying sizes,
- said drive belt having upper and lower flights extending between said first and second pulleys,
- and a third pulley rotatably mounted on said carriage between said first and second pulleys and deflecting said lower flight of said drive belt downwardly toward said guide ramp for causing the workpieces to be movable freely along said guide ramp into engagement with the lower flight of said drive belt opposite said third pulley whereupon the drive belt moves the workpieces along said guide ramp and past said gaging station at a controlled rate.

3,863,353
EPITROCHOIDAL SURFACE ENGAGING DEVICE

Oliver E. Saari, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 257,835, May 30, 1972, abandoned. This application Sept. 22, 1972, Ser. No. 291,310
Int. Cl. G01b *5/20*
U.S. Cl. 33—174 R **21 Claims**

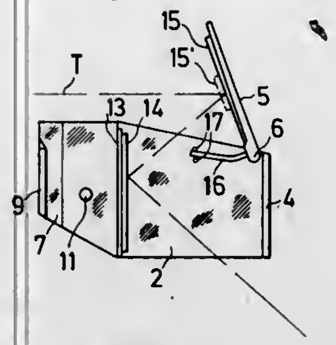


15. A device for engaging an epitrochoidal surface which defines the cavity in the cylinder block of a rotary type engine, including rotatable base means having a first fixed axis of rotation and having a surface disposed normal to said axis for supporting an engine cylinder block with the center of the epitrochoidal surface thereof coincident with the axis of rotation of said base means, means rotatable about a second fixed axis spaced laterally from and parallel to said first fixed axis, work engaging means for engaging the epitrochoidal surface of a supported cylinder block, means supporting said work engaging means, means pivotally coupling said supporting means with said means rotatable about said second fixed axis and having an axis spaced laterally from and parallel to said second fixed axis, the axis of said pivotal coupling means having a predetermined location with respect to said work engaging means, the distance between said second fixed axis and the axis of said pivotal coupling means being equal to the maximum degree of orbital eccentricity of the epitrochoidal surface of a supported cylinder block, guide means providing a third fixed axis and cooperatively disposed with respect to said work engaging supporting means, the distance between the axes of said second and third fixed axes having a predetermined relation to the distance between said first and second fixed axes, means cooperating with said fixed guide means and said supporting means for maintaining said third fixed axis and the points of contact of said work engaging means with the epitrochoidal surface of a supported engine block in a common vertical plane which is normal to a line tangent to said epitrochoidal surface at each point of contact, means for imparting rotation in a given direction to said base means at a given speed, and means for simultaneously imparting movement to said rotatable means in such a manner as to assure accurate positioning of said work engaging means with respect to said epitrochoidal surface.

3,863,354
MIRROR SIGHT FOR SMALL FIREARMS

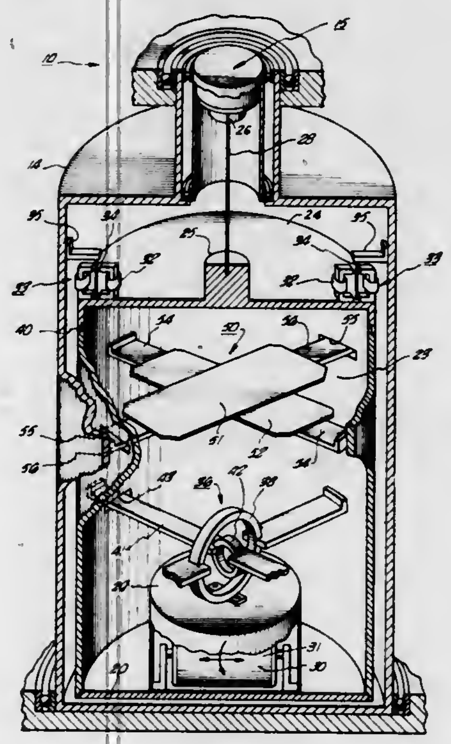
Toivo Johannes Karppinen, 01900 Nurmijarvi, Finland
Filed Jan. 17, 1974, Ser. No. 434,272
Int. Cl. F41g *1/40*
U.S. Cl. 33—233 **6 Claims**

1. A mirror sight for small firearms, comprising a casing having two opposite side walls, a rear wall connecting said side walls, a cover plate turnably mounted on said side walls adjacent to said rear wall and extending along the upper edges of said side walls, and an open bottom, means in said side walls at the front ends thereof for mounting said casing on a small firearm behind the sights thereof with said cover plate in closed position situated at a level below said sights, a first mirror secured between said side walls adjacent to the front ends thereof in a position substantially perpendicular to a straight line through said sights, a second mirror secured to the inside of said cover plate, and means for arresting said cover plate in an open position with respect to said first mirror to reflect a lightbeam from a target through said sights from said second mirror to said first mirror and from said first mirror in a downward and backward direction, thus allowing aiming and firing of the firearm from full cover.



3,863,355
POWER TRANSFER ASSEMBLY

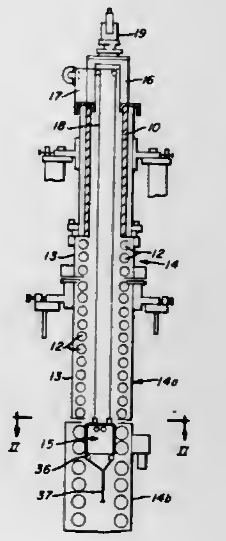
Darryl K. Bergstrom, Pacific Palisades, and David C. Clark, Los Angeles, both of Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Continuation-in-part of Ser. No. 220,962, Jan. 26, 1972. This application Mar. 24, 1972, Ser. No. 237,845. The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.
Int. Cl. G01c *19/04*
U.S. Cl. 33—324 **19 Claims**



1. In a pendulously supported gyroscope assembly having an exterior housing, a power supply exterior of said housing and means suspending said gyroscope assembly in said exterior housing for rotational movements about a vertical axis, the improvement comprising a power transfer assembly means for electrically interconnecting said power supply source with said gyroscope assembly including:
- two pairs of flexible electrically conductive connection bands of an electrically conductive material lying in parallel planes that are transverse to said vertical axis, with each band comprising an arcuate circular segment with a portion of a full circle removed so that each arcuate band comprises less than a full circle and more than a semicircle with their centres of curvature lying on vertical axes, at least one of said respective bands being electrically connected to said power supply;
- means for operatively connecting one end of each band of said pairs of bands to said gyroscope assembly; and
- means for operatively connecting the other end of each band of said pairs of bands to said exterior housing, the bands being further characterized in that one pair of bands is inverted with respect to the other pair of bands to define opposed circular arcs whereby any forces created by flexure of said bands during operation of the gyroscope assembly are substantially counter balanced.

3,863,356
METHOD AND APPARATUS FOR CHECKING GUIDE-ROLL ALIGNMENT IN A CONTINUOUS-CASTING MACHINE

Thomas G. Bengel, Plum Borough; Joseph S. Giunta, Monroeville Borough, and Thomas E. Nicely, Westmoreland, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Sept. 18, 1972, Ser. No. 289,922
Int. Cl. G01c *15/00*
U.S. Cl. 33—286 **4 Claims**



1. In an apparatus for checking alignment of guide rolls of a continuous casting machine with respect to one another and with respect to a mold thereabove, said apparatus comprising: a target adapted to be lowered through a mold into the roll pass;
- a vertical transit;
- a stand for positioning and centering said transit over the mold;
- a reeling mechanism adapted to be mounted on the mold; and
- a line suspending said target from said reeling mechanism for moving said target to various levels within the roll pass to be sighted on by said transit;

the improvement in which said target includes:
- a pair of diagonally opposed angle irons having roll-contacting faces at right angles to one another;
- a diagonally extending support;
- means fixing said support with respect to one angle iron and permitting relative sliding movement between said support and the other angle iron;
- spring means urging said angle irons apart to expand said target;
- means for contracting said target against the action of said spring means; and
- a grid pattern on said support centered with respect to the roll pass when the target is expanded into contact with the rolls.

3,863,357

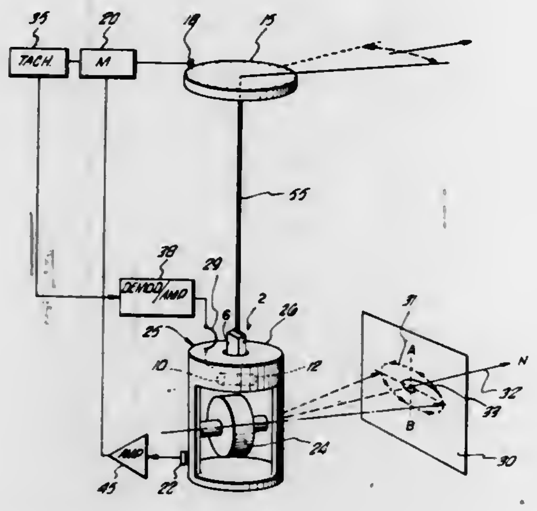
POWER DRIVEN BAND CLAMP FOR PENDULOUS NORTH SEEKING GYROSCOPES

Ralph E. Knapp, Canoga Park, and David C. Clark, Los Angeles, both of Calif., assignors to Lear Siegler Inc., Santa Monica, Calif.

Filed June 23, 1972, Ser. No. 265,758

Int. Cl. G01c *19/38*

U.S. Cl. 33—324 **18 Claims**



1. A gyroscope comprising:

a pendulum unit having a gyro wheel assembly with a spin axis;

means for pendulously supporting said pendulum unit; and means for varying the position of the supporting means during gyro operation relative to said pendulum unit including the relative movement of the point of connection between the supporting means and said pendulum unit to provide a displacement along a path substantially parallel to the spin axis of the gyro wheel assembly for decreasing the pendulum period.

3,863,358

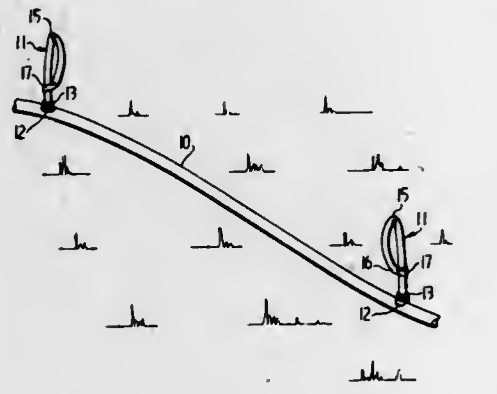
LEVELING DEVICE HAVING INTEGRAL SELF-LOCK FEATURE

Thomas K. Phares, Sr., Rt. 2, Box 231 D, Brandywine, Md. 20613

Filed Mar. 5, 1974, Ser. No. 448,390

Int. Cl. G01c *5/04*

U.S. Cl. 33—367 **3 Claims**



1. In a leveling system having a pair of flexible tubes, each of said pair of tubes having a free end and an end coupled to a hose at opposite ends of said hose comprising;

each of said pair of tubes having a cut portion extending in the form of a helix from its free end to a point remote therefrom for forming a locking position when each of said pair of tubes is folded upon itself, the said locking portion may be wound around the section of the tube upon which it is folded to hold said tube in said folded position.

3,863,359

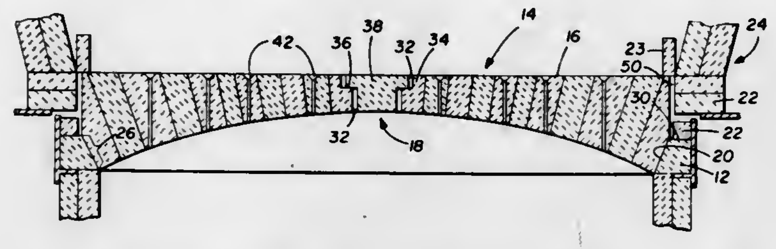
REFRACTORY GAS DISTRIBUTOR FOR A FLUIDIZED SOLIDS REACTOR

John M. Grega, Pittsburgh, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 29, 1973, Ser. No. 410,653

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 R **5 Claims**



1. In a fluidized solids reactor having sidewalls lined with refractories, a perforated gas distributor or grid having an upper and lower surface and composed of a plurality of concentric courses of refractory brick, the outer periphery of the grid being supported on an oblique face of skewbrick embedded in the sidewalls of the reactor, air space located between the inner periphery of the sidewalls and outer periphery of the grid and an air space in the central portion of the grid formed from the innermost course of refractory brick to allow for expansion and contraction of the grid during service.

3,863,360

SHEET DRYING APPARATUS

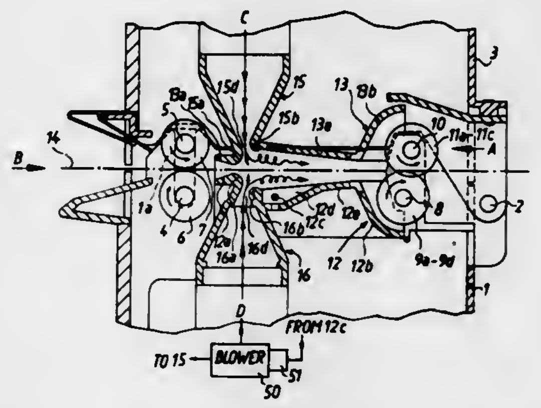
Emile Stievenari, Hoboken/Antwerpen, Belgium, and Jurgen Muller, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Munich, Germany

Filed Oct. 26, 1972, Ser. No. 300,992

Claims priority, application Germany, Oct. 28, 1971, 2153752

Int. Cl. F26b *13/04*

U.S. Cl. 34—155 **15 Claims**



1. Apparatus for drying sheet-like materials, comprising a hollow drying chamber having an inlet end and a discharge end, the cross-sectional area of said inlet end being substantially smaller than the cross-sectional area of said discharge end; first rotary sheet advancing means comprising a pair of rolls closely adjacent to said inlet end; second rotary sheet advancing means adjacent to said discharge end and defining with said first sheet advancing means an elongated path for travel of sheet-like material into, through and beyond said chamber; a source of gaseous drying fluid; and first and second nozzle means provided on said chamber adjacent to said inlet end at the opposite sides of said path and connected with said source, said nozzle means having orifices closely adjacent to said path and arranged to discharge streams of gaseous drying fluid against the respective sides of sheet-like material in said chamber whereby the drying fluid flows along the sheetlike material to leave said chamber by way of said discharge end, the cross-sectional area of said discharge end being large enough to allow for substantially unobstructed escape of gaseous fluid which is admitted into said chamber by said nozzle means and the cross-sectional area of said chamber decreasing in a direction from said orifices toward said discharge end to a point near the discharge end and then increasing in cross-sectional area to the discharge end, said second sheet advancing means comprising first and second roll means located at opposite sides of said path, said first and second roll means defining a plurality of large passages so as to offer little resistance to escape of gaseous drying fluid by way of said discharge end.

3,863,361

METHOD AND APPARATUS FOR DRYING A GYPSUM BOARD OR THE LIKE

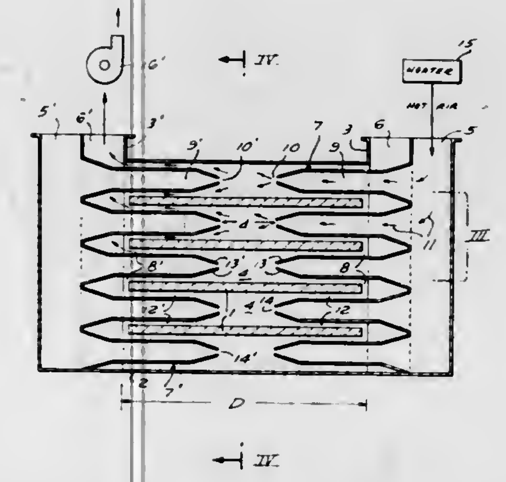
Klaus Gerhardt, Penzberg-Reindl, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Mar. 29, 1974, Ser. No. 456,252

Claims priority, application Germany, Mar. 30, 1973, 2315981

Int. Cl. F26b *21/06*

U.S. Cl. 34—191 **8 Claims**



1. An apparatus for drying a flat workpiece, said apparatus comprising:

first and second spaced-apart upright side walls;

means for supporting said workpiece generally horizontally between said walls;

respective first and second conduits each extending inwardly from said first and second side walls past the edges of said workpiece and provided adjacent a central region of said workpiece with respective first and second nozzles directed generally horizontally toward each other;

respective first and second outlets in said first and second walls adjacent said conduits; and

means for passing a current of heated air over said workpiece alternately from said first nozzle to said second outlet and from said second nozzle to said first outlet.

3,863,362

BRIDGE PLAYING DEVICES

Henri Marie Leon Borianne, 10 Avenue de Wagram, 75008 Paris, France

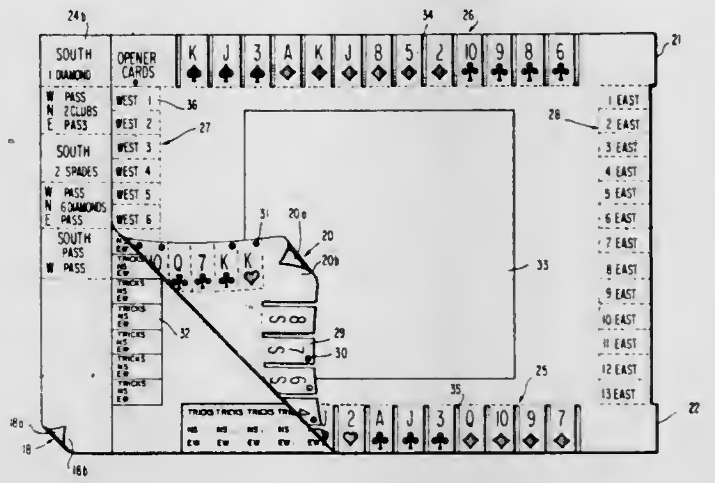
Filed Nov. 14, 1973, Ser. No. 415,756

Claims priority, application France, May 8, 1973, 73.16444; Nov. 17, 1972, 72.40900

Int. Cl. A63f *1/10*

U.S. Cl. 35—8 B **11 Claims**

1. A device for enabling an individual to play bridge deals on his own, comprising a four-sided support reoresenting a bridge table and bearing at each of its four sides thirteen cards of a hand corresponding to a deal in question; said cards being in form of respective detachable slips, those of said slips of two opposite sides corresponding to hand of declarer and his partner being provided with cards on the obverse visible face of said support classified according to color, according to order and value in each color and provided on the reverse hidden face thereof with an order number corresponding to number of trick in which respective ones of said slips in question have to be played; those of said slips of the two other sides corresponding to opponents' hands having their card face on said hidden face of said support, a respective number of a trick on said visible face thereof, and being arranged according to the regularly increasing or decreasing order of these numbers,



and wherein said support is defined by a first flap of a diptych-like tablet, a second flap of which totally covers its hidden face, said second flap bearing on its outer visible face printed reproduction of hand of declarer and on one of its sides overlapping said support detachable slips bearing on their hidden face successive bids recommended for deal in question.

3,863,363

PLANETARIUM

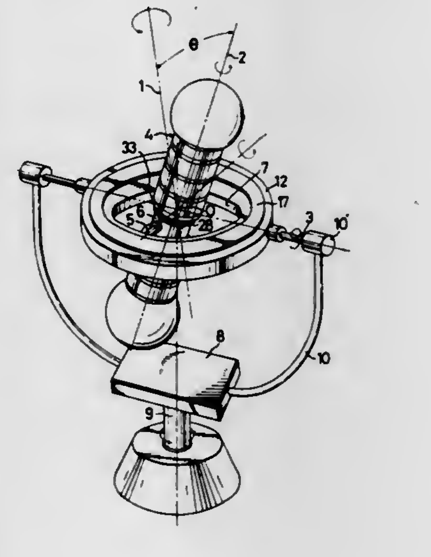
Toru Miyajima, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 172,798, Aug. 18, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,835

Claims priority, application Japan, Aug. 25, 1970, 45-74695

Int. Cl. G09b *27/00*

U.S. Cl. 35—42.5 **8 Claims**

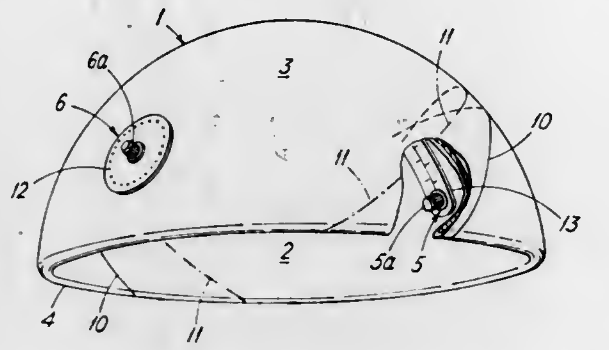


1. A planetarium system having an adjustable angle between the diurnal motion and precessional motion axes comprising a planetarium projector unit, a ring first mount supporting said projector unit for precessional rotation about the axis thereof, a second mount, a third mount supporting said second mount for diurnal rotation about the axis thereof, a fourth mount supporting said third mount for rocking about a transverse axis of said third mount for adjusting the latitude orientation of said projector system, a base supporting said fourth mount and means including diametrically opposing rods radially extending between said first and second mounts for varying the angle between said precessional and diurnal axes.

3,863,364

EDUCATIONAL/NAVIGATIONAL DEVICE

Bruce King, Forest Row, Sussex, England, assignor to King Scientific Limited, London, England
Filed Sept. 5, 1973, Ser. No. 394,512
Claims priority, application Great Britain, July 24, 1973, 35252/73
Int. Cl. G09b *27/04*
U.S. Cl. 35—43 **9 Claims**

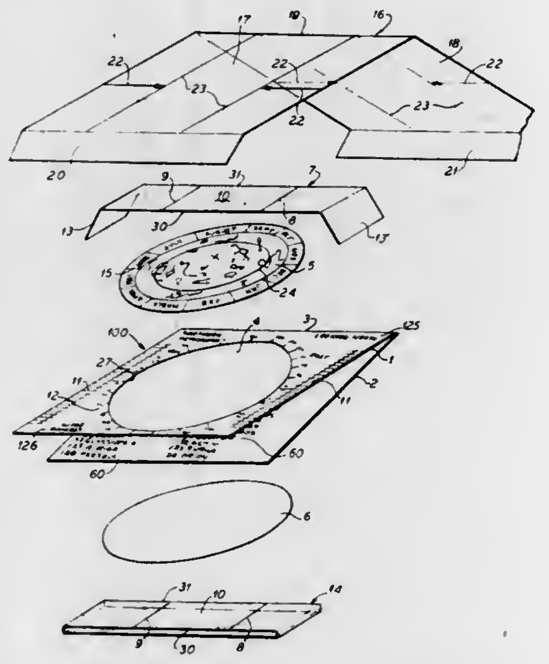


1. A device for displaying the positions of at least some of the celestial bodies of the celestial sphere, comprising a flexible envelope collapsed and evacuated and scaled in a hemispherical configuration presenting an inwardly concave wall and an outwardly convex wall joined by a horizon rim, a low-friction coating on the interior of the envelope and a rigidifying horizon ring member enclosed by the envelope and having a diameter substantially equal to the diameter of said flexible envelope, said horizon ring member having a rounded rim at the horizon and said envelope bearing the entire celestial sphere distributed over said inwardly concave and outwardly convex walls, whereby manipulation of the envelope enables a different, truly hemispherical portin of the celestial sphere to be presented on said inwardly concave surface of the envelope.

3,863,365

STAR FINDER

Henry Moliard, 942 Avenida Central, Guadalupe, Costa Rica
Filed Jan. 21, 1974, Ser. No. 434,818
Claims priority, application France, Jan. 25, 1973, 73.02617
Int. Cl. G09b *27/04*
U.S. Cl. 35—44 **21 Claims**

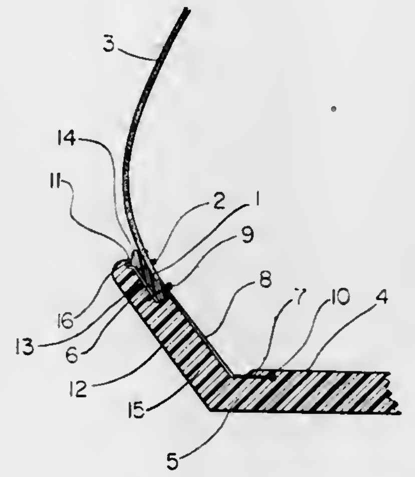


1. A device for quickly and easily pictorially representing stars as they would appear from earth at any selected latitude and at any selected time and date which comprises a flat base providing two panels, each panel having scales of latitude along the sides thereof and a central circular twenty-four hour scale, a circular disk for each panel surrounded by said circular scale and rotatable relative to said panel, each disk having circumferentially arranged indicia designating the months of the year and the days of each month arranged so that a selected date may be aligned with a selected hour on the surrounding hour scale, one disk having indicia surrounded by the circumferential indicia representing the principal star constellations of the Northern hemisphere, the other disk having indicia surrounded by the circumferential indicia representing principal star constellations of the Southern hemisphere, slides overlying the panels and their disks shiftable along the length of the longitudinal scale on the panel and having a window overlying and isolating a portion of the disk on the panel, and said scale of latitude, said scale of hours, said circumferential scale of dates and said constellation indicia being correlated so that alignment of the slide with a selected latitude on the scale of latitudes and rotation of the disk to align a selected date with a selected hour will expose in the window the principal star constellations that would appear to an observer at the selected latitude and at the selected date and time.

3,863,366

FOOTWEAR WITH MOLDED SOLE

Horace Auberry, Waynesville; Sven Oberg, Lake Junaluska, and Kenneth Smathers, Waynesville, all of N.C., assignors to Ro-Search Incorporated, Waynesville, N.C.
Filed Jan. 23, 1974, Ser. No. 435,651
Int. Cl. A43c *13/08*
U.S. Cl. 36—14 **8 Claims**



1. Footwear comprising an upper, a tread sole, said tread sole having a portion thereof extending upwardly to form a peripheral side edge, said sole and side edge being formed of elastomeric material, a strip of material secured to said upper above the insole level and said side edge being molded directly to said strip.

3,863,367

AUGER SCRAPER WITH RECESSED EJECTOR

James E. Gee, Washington, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 19, 1973, Ser. No. 416,954
Int. Cl. E02f *3/06*
U.S. Cl. 37—8 **6 Claims**

1. A self-loading auger scraper comprising

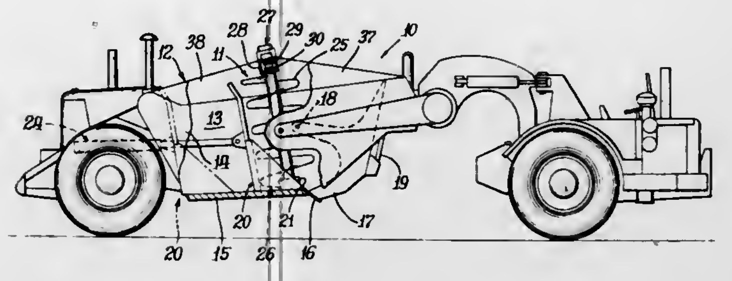
a bowl having a pair of laterally spaced and vertically disposed sidewalls, a generally horizontally disposed floor connected between said sidewalls and a cutting edge extending transversely between said sidewalls and secured to a forward end of said floor,

a generally upright ejector, extending between said sidewalls, normally positioned at a rearward end of said bowl, actuating means for selectively moving said ejector from the rearward end towards an open, forward end of said bowl, adjacent to said cutting edge,

a generally upright auger rotatably mounted in said bowl, and disposed rearwardly of said cutting edge,

means for rotating said auger, and

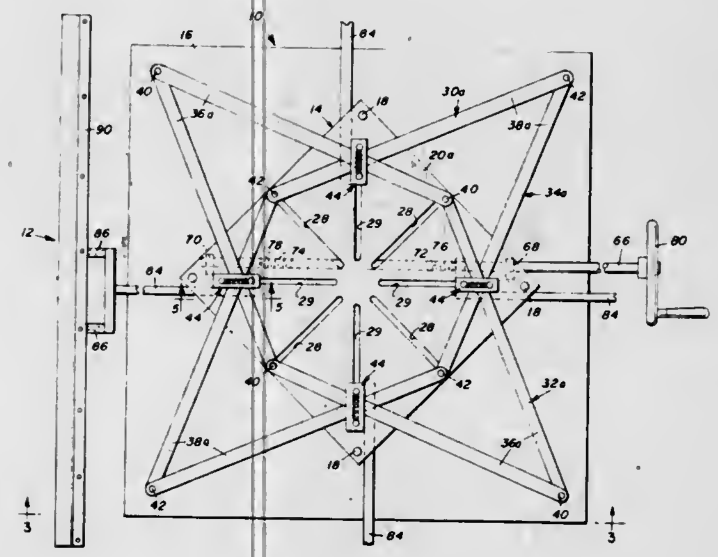
means forming a recess in said ejector, generally conforming to the shape of said auger, for permitting said ejector to move adjacent to said cutting edge upon actuation of said ejector towards the forward end of said bowl.



3,863,368

EXPANDER, DEVICE FOR STRETCHING A FABRIC SHEET

Michael Vasilantone, 147 E. First Ave., Roselle, N.J.
Filed Apr. 24, 1972, Ser. No. 246,697
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.5 **6 Claims**

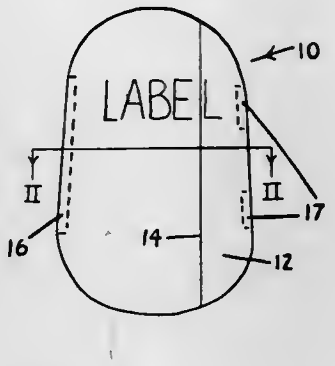


1. An expander device for stretching fabrics comprising a framework, a linkage system on said framework comprising a pair of parallelogram linkage sections each having major and minor axes, each parallelogram linkage section comprising bars connected to each other for relative pivotal movement, said sections being vertically stacked and angularly disposed relative to each other such that the major axis of one of said sections extends generally transversely to the major axis of the other, said stacked sections defining points of over-lap, said framework including a plurality of radially extending guide means slidably mounted therein, the bars of overlapped linkage sections engaging with said guide means at said points of overlap, fabric gripper elements mounted for movement with said guide means and extending outwardly therefrom, drive means operably connected to a single opposed pair of guide means for expanding and contracting said linkage system, said guide means providing for controlled uniform and simultaneous movement of said gripper elements toward and away from the center of said framework.

3,863,369

LABEL

Lewis K. Kinne, Hopkins, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Filed Aug. 14, 1972, Ser. No. 280,313
Int. Cl. A44c *3/00*
U.S. Cl. 40—2 R **7 Claims**

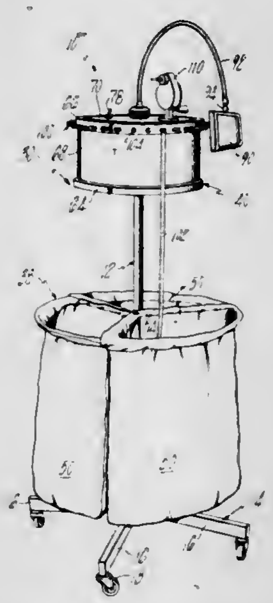


1. A multi-page label comprising an inner page, at least one outer page and a hinge connecting said inner and outer pages, at least one of said inner and outer pages having a pleat formed transversely to the plane thereof and being of such shallow depth as not to materially affect the overall thickness of said page, said pleat being positioned intermediate of the edges of said page to thereby provide said page with extensible means.

3,863,370

FILM TRIM BIN

Norval F. Smith, Pomfret Center, Conn., assignor to The Communicators, Inc., Pomfret Center, Conn.
Filed June 7, 1973, Ser. No. 367,977
Int. Cl. G09f *13/10*
U.S. Cl. 40—106.1 **11 Claims**



1. A film trim bin for mounting film trims thereon comprising a rotary film bin and a rotary film bin support for rotatably mounting the rotary film bin about a generally upright axis, the rotary film bin comprising annular hanger means for hanging a plurality of film trims angularly spaced about the axis of the rotary film bin and with the film trims depending therefrom and whereby the rotary film bin may be rotated for mounting and removing the film trims in a desired sequence, the rotary film bin further comprising annular container means below the hanger means and means connecting the container means to the hanger means for rotation therewith for containing the lower ends of the depending film trims and for rotating them with the annular hanger means to accommodate the mounting and removal of the film trims.

8. A film trim bin for mounting film trims thereon comprising a rotary film bin, a rotary film bin support for rotatably mounting the rotary film bin for rotation about a generally

upright axis, the rotary film bin comprising generally annular illuminating window means, annular film trim hanger means above the generally annular illuminating window means for hanging a plurality of film trims angularly spaced about the rotary film bin axis and in front of the generally annular illuminating window means to be viewed with the window means providing an illuminated background, the rotary film bin further comprising annular container means below the hanger means and means connecting the container means to the hanger means for rotation therewith for containing the lower ends of the depending film trims and for rotating them with the annular hanger means to accommodate the mounting and removal of the film trims.

3,863,371

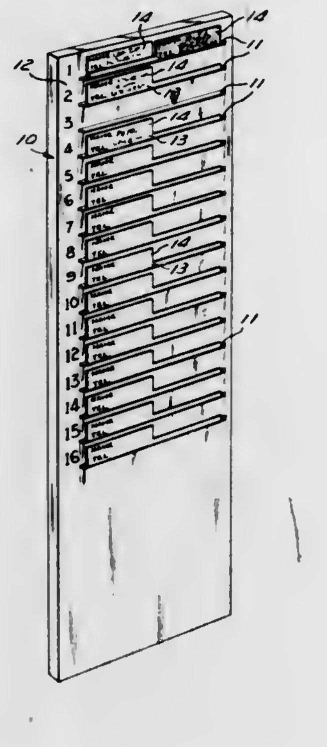
CHALLENGE LADDER CARD DISPLAY

William J. Shertenlieb, 600 N. Fig Tree Ln., Plantation, Fla. 33313

Filed Oct. 18, 1973, Ser. No. 407,425

Int. Cl. G09f *1/10*

U.S. Cl. 40—124.2 **5 Claims**



1. A card display assembly kit for challenge ladder competition comprising the combination of a rack having a plurality of vertically spaced, upwardly-facing, consecutively numbered pockets of a predetermined horizontal width, and a plurality of reversible cards of slightly smaller horizontal width than said pockets in the rack for slidable reception in said pockets individually facing forward or in pairs with one card of the pair reversed front to back, each of said cards having a tab at one side extending across the top of the card substantially less than the full width of the card and substantially less than the width of the pocket in the rack in which that card is received and projecting above the top edge of said pocket when said card is fully inserted therein, and similar indicia on both the front and the back faces of the tab on each card for naming the contestant whose card that is, whereby, when any card is removed from its pocket and is reversed front to back and fully inserted into a pocket containing another fully inserted, forwardly facing card, the top tabs on the two cards in said last-mentioned pocket are located side by side above the top edge of said pocket and simultaneously display visibly without obstruction by one another the name indicia for the two contestants whose cards those are.

3,863,372

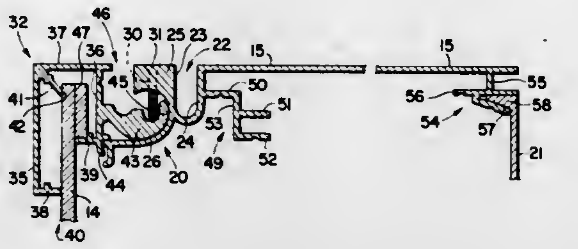
SIGN BOX WITH CLOSURE

Johann Stilling, 1141 Royal York Rd., Apt. A1001, Islington, Ontario, Canada (M9A 4A9)

Continuation-in-part of Ser. No. 285,206, Aug. 31, 1972, abandoned. This application July 9, 1973, Ser. No. 377,236

Int. Cl. G09f *13/04*

U.S. Cl. 40—132 R **24 Claims**



1. A sign box for the construction of an illuminated sign having illumination elements said box comprising;

a main frame having a top member, side members and a bottom member for containing the illumination elements and having at least one open side defined by the side edges of said members, said top member, said side members and said bottom member all being formed of extruded metallic material of identical cross-section;

a front panel removably attachable to said main frame for holding a translucent sign element in registration with said open side, said front panel having a top member, side members and a bottom member for supporting said translucent element, said top member, side members and bottom member all being made of extruded metallic material of identical cross-section;

a curved concave wall formation formed on said main frame around all four sides thereof, said concave wall formation being extruded integrally therewith

and being directed outwardly with respect to said main frame; said wall formation terminating in a free end directed forwardly, said free ends on said top and bottom members lying in parallel horizontal planes, and said free ends on said side members lying in parallel vertical planes, when said main frame is standing upright;

a curved convex formation extending around all four said members of said front panel and shaped to mate with said concave wall formation on respective sides of said main frame when said front panel is in position on said main frame, said convex formation being directed inwardly with respect to said main frame for movement into and out of engagement with said concave wall formation on said main frame;

and releasable means for securing said front panel to said main frame.

3,863,373

LABELED SIDE-SEAMED CAN BODY

Ralph William Kaercher, Barrington, Ill., and Stanley Wiswell Pierce, deceased, late of Lombard, Ill. (by Martha Murphy Pierce, executrix), assignors to American Can Company, Greenwich, Conn.

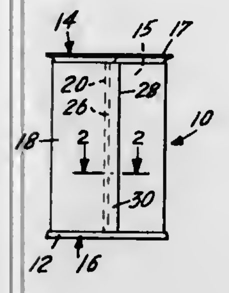
Filed June 26, 1973, Ser. No. 373,746

Int. Cl. G09f *3/10*

U.S. Cl. 40—306 **27 Claims**

1. A cylindrical side-seamed metal can body having a wrinkle-free water-resistant film label bonded to substantially the entire circumference of the can body wall, which comprises: a cylindrical side-seamed metal can body, the side seam area of the can body wall having an exterior surface which includes a side seam juncture, and

a non-stretchable, wrinkle-free, water-resistant film label bonded to substantially the entire circumference of the can body wall by a quick-tack hot-melt adhesive, the label being comprised of a base layer and an adhesive layer, the base layer being selected from the group consisting of polyethylene terephthalate, and a composite of (1) a vinylidene chloride polymer-coated cellophane and (2) a water-resistant overcoat selected from the group consisting of polyethylene, polypropylene and a rapid-curing oleoresinous material, the adhesive being selected from the group consisting of a wax material and an ethylenic acidic polymer, the label having a leading edge and a trailing edge, the leading edge being positioned parallel to the central axis of the can body within the side seam area and the trailing marginal edge portion being lapped over and adhered to the underlying marginal edge portion of the leading edge so that the overlap is within the side seam area.



3,863,374

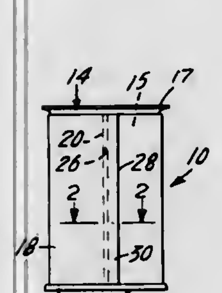
LABELED SIDE-SEAMED CAN BODY

Lowell Elmo Ray, Elgin, Ill., assignor to American Can Company, Greenwich, Conn.

Filed June 26, 1973, Ser. No. 373,768

Int. Cl. G09f *3/10*

U.S. Cl. 40—306 **27 Claims**



1. A cylindrical side-seamed metal can body having a non-stretchable, wrinkle-free, water-resistant paper based film label bonded to substantially the entire circumference of the can body wall, which comprises:

a cylindrical side-seamed metal can body, the side seam area of the can body wall having an exterior surface which includes a side seam juncture, and

a non-stretchable, wrinkle-free, water-resistant paper-based film label bonded to substantially the entire circumference of the can body wall by a quick-tack hot-melt adhesive, the label being comprised of a base layer and an adhesive layer, the base layer being an opaque composite whose first layer is selected from the group consisting of a white water-resistant paper and paper-backed foil, and whose second layer is a water-resistant overcoat selected from the group consisting of polyethylene having a density above about .940 grams per cc., polypropylene and a rapid-curing oleoresinous material, the adhesive being selected from the group consisting of a wax material and an ethylenic acidic polymer, the label having a leading edge and a trailing edge, the leading edge being positioned parallel to the central axis of the can body within the side seam area and the trailing marginal edge portion being lapped over and adhered to the underlying marginal edge portion of the leading edge so that the overlap is within the side seam area.

3,863,375

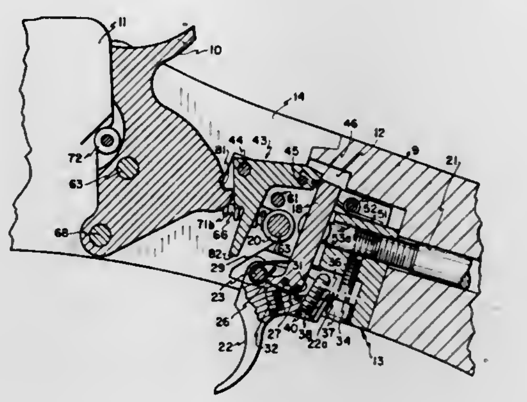
TRIGGER SYSTEM

Bruce W. Browning, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah

Filed July 13, 1973, Ser. No. 378,952

Int. Cl. F41c *19/00*

U.S. Cl. 42—69 R **9 Claims**



1. A trigger system for a firearm comprising:

a trigger housing;

a hammer, pivotally mounted to said housing and carrying catch means;

a sear, carrying a first lock means for holding the hammer in a half cock position and a second lock means for holding the hammer in a fully cocked position, pivotally mounted to said housing to register respective said lock means with said catch means when said hammer is pivoted to half cock and full cock positions, respectively; a trigger pivotally mounted to said housing;

means operably connecting said trigger to said sear to release the hammer from said fully cocked position upon pulling the trigger;

nonadjustable bias means mounted to provide a selected minimum bias of said sear against said hammer; and

second, adjustable bias means mounted for adjustment to additionally bias said sear against said hammer.

3,863,376

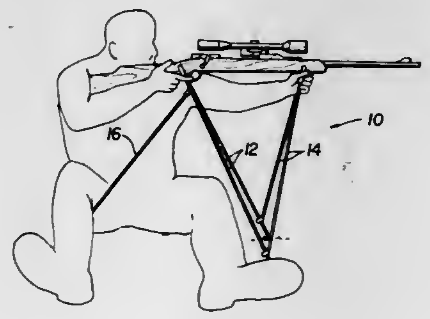
PORTABLE, FOLDABLE RIFLE OR GUN SUPPORT

Reno Dalmaso, R.D. 1, Pone Ln., Franklin, Pa. 16323

Filed June 18, 1973, Ser. No. 370,844

Int. Cl. F41c *21/00*

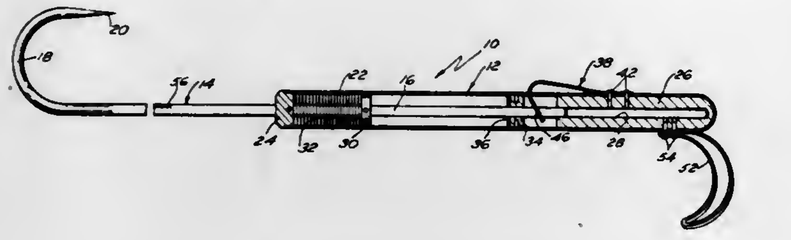
U.S. Cl. 42—94 **4 Claims**



1. A gun support comprising, in combination, a pair of front legs and a pair of intermediate legs, each pair being laterally pivotable toward and away from each other at a point adjacent their upper ends; the lower ends of said intermediate legs being ground engaging, and the lower ends of said front legs being pivoted to said intermediate legs at a point spaced above the ground for movement forwardly away from or rearwardly toward said intermediate legs; the lower ends of said front legs bearing against said intermediate legs when in forward most position to limit separation of the two pairs of legs; and a fifth leg pivoted to the upper ends of said intermediate legs and extending rearwardly thereof to vary the angle of a gun resting on the upper ends of said front and intermediate legs.

3,863,377
FISHING GAFF

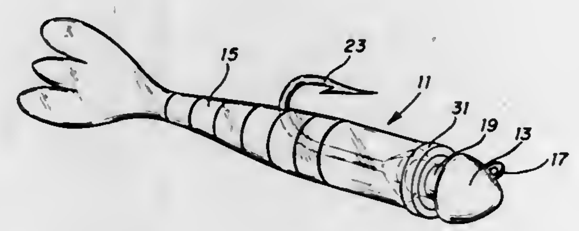
Clifford R. Leonard, 27 Church St., East Providence, R.I. 02914
Filed Sept. 17, 1973, Ser. No. 398,238
Int. Cl. A01k *81/00*
U.S. Cl. 43—6 **8 Claims**



1. A fishing gaff, comprising a hollow handle, a gaff rod having an elongated shaft portion extending into said hollow handle for axial movement the rein and a hook portion joined to said shaft portion and located in spaced relation relative to said handle, said gaff rod being axially movable relative to said handle from an inner inactive position to an outer cocked position, wherein said hook portion is moved outwardly relative to said handle, spring means located in said handle and responsive to outer movement of the gaff rod for biasing the gaff rod in the outer cocked position, and a trigger mounted on said handle and engaging the shaft portion of said gaff rod for releasing the gaff rod from the cocked position, wherein said gaff rod is rapidly urged inwardly in a retracting movement by said spring means for penetrating the body of a fish when the fish is to be boated after the landing thereof, said trigger having an inwardly extending forward portion in which an opening is formed, the shaft portion of said gaff rod extending through said opening and being restrained therein when the gaff rod is biased to the outer cocked position thereof.

3,863,378
FISHING LURE

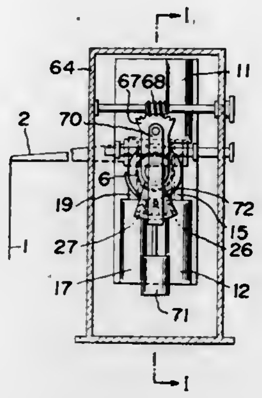
Ike J. Walker, 916 S. Rusk St., Gainesville, Tex. 76240
Filed Aug. 14, 1973, Ser. No. 388,192
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.28 **20 Claims**



1. A fishing lure comprising:
- an enlarged lure body having a rearwardly extending trailer engaging post with an enlarged head portion at the rear end thereof, a fixed hook extending from the extremity of said post;
- a solid trailer of soft pliable material, a portion of one end of said trailer is threaded onto said hook and over said post;
- a resilient ring concentrically overlying a portion of said one end of said trailer, said ring being of less pliable material than said trailer and having an inside diameter relative to the outside diameter of the post such that soft pliable material of said one end of said trailer is compressed between the ring and the body to effect a gripping action on the post and being elastically deformable to permit said ring to be forced over said head for holding said trailer in engagement with said lure body.

3,863,379
APPARATUS FOR AUTOMATIC ANGLING ON FISHING VESSEL

Tadashi Kobayashi, 1560-2 Tenma, Fuji, Japan
Filed July 2, 1973, Ser. No. 375,702
Int. Cl. A01k *79/00*
U.S. Cl. 43—6.5 **4 Claims**



1. A fish angling arrangement, comprising in combination:

a. a revolving shaft (5) coupled to a fishing rod (2) for holding a line (1), first mechanical means (10, 16) coupled to said revolving shaft for rotating said shaft so as to raise and lower said rod (2), a ring (6) mounted coaxially with said shaft, a first cam (7) for lowering said rod (2);

b. a second cam (8), an acceleration sensor (25) actuated by said second cam (8) as a certain angle is reached;

c. a hydraulic control valve (21) with a first fluidic terminal (59) coupled to said first mechanical means for controlling the mechanical means;

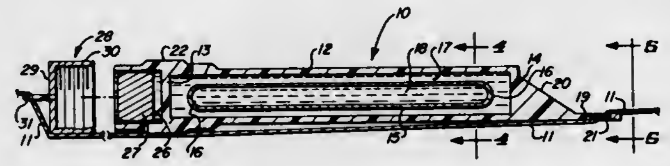
d. hydraulic fluid flow means actuated by said second cam (8) including a second terminal (61), an acceleration control valve (23) actuated by said terminal, and second mechanical means responsive to said second control valve (23) accelerating the turning of said revolving shaft;

e. a selector valve (3) connected to said rod (2) responsive to the weight of a fish pulling on said line (1); and,

f. fluidic logic OR-NOR and flip-flop gating circuits (35, 39, 40) responsive to said selector valve (3) connected to said fluidic terminal (59), for controlling said first mechanical means, whereby the weight of a fish on said line (1) will enable said selector valve (3) causing air to flow through said logic circuits to said fluidic terminal, in turn, actuating said mechanical means turning the revolving means to lift thereon rod (2).

3,863,380
ILLUMINATED FISHING LURE WITH LINE ATTACHMENT

John M. Purlia, 8908 Shelbyville Rd., Apt. 6, Louisville, Ky. 40222
Continuation-in-part of Ser. No. 365,595, May 31, 1973,. This application June 24, 1974, Ser. No. 482,668
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **6 Claims**



1. In an illuminated fishing lure,

a. a cartridge comprising an outer flexible tube having end walls, an inner rigid frangible tube within and spaced from said outer tube, a chemiluminescent material in the space between said tubes and another chemiluminescent material in said inner tube, said chemiluminescent materials being complemental so that when they intermix and react, they generate a chemical light;

b. a tab formed as a longitudinal continuation of said outer tube and extending beyond one of said end walls, said tab being formed with an aperture for receiving a fishing line;

c. a sleeve integral with said outer tube adjacent to the other of said end walls and having an end portion projecting longitudinally beyong said last mentioned end wall and defining a socket;

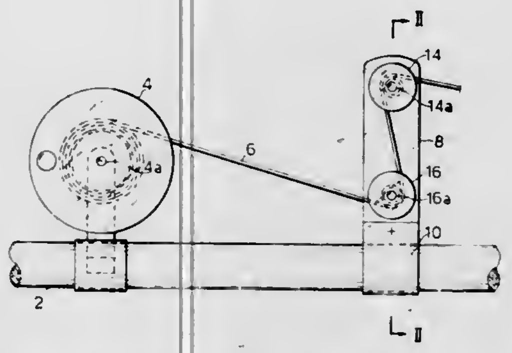
d. a weight removably received in said socket;

e. a cap secured to the projecting portion of said sleeve and having a top wall, and

f. an eyelet mounted on said top wall and receiving said fishing line.

3,863,381
CORD WINDING DEVICE PARTICULARLY FOR FISHING RODS

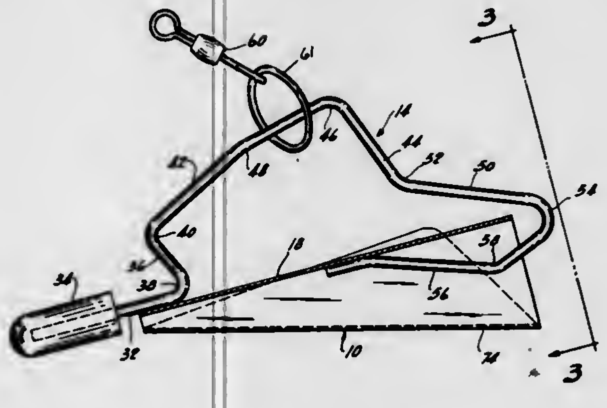
Shaul P. Ladany, 5700 Arlington Ave., Apt. 165, Bronx, N.Y. 10471
Filed Mar. 7, 1974, Ser. No. 448,940
Int. Cl. A01k *87/04*
U.S. Cl. 43—25 **9 Claims**



1. A cord winding device, particularly for fishing rods, including a reel for winding and unwinding the cord, and a supporting member rotatably supporting the reel, the cord winding device comprising bracket means attached to the supporting member at a location spaced longitudinally thereof, and a pair of rollers rotatably mounted on said bracket means and spaced from each other transversely of the supporting member, the axes of rotation of the rollers being parallel to each other and to the axis of rotation of the reel, said rollers being formed with grooves for receiving the cord around one and then around the other in an S-formation, thereby tensioning the cord as it is wound and unwound from the reel, the cord being easily unseatable from the grooves by the user to enable its quick unreeling from the reel.

3,863,382
DIVING PLANE FOR FISHING LURES

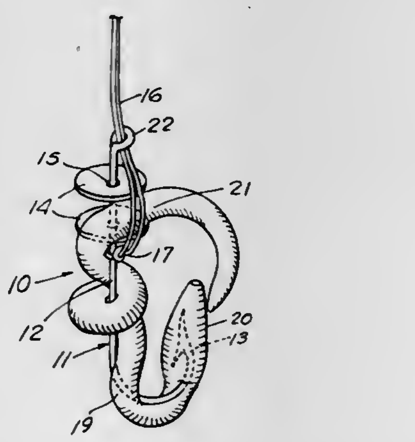
Dean H. Heili, 502 Waldo Blvd., Manitowoc, Wis. 54220
Filed Oct. 23, 1973, Ser. No. 408,820
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.13 **26 Claims**



1. A diving plane suitable for connection to a trolling line for drawing the line to a desired water depth upon relative movement of the plane and water by assuming a downwardly canted diving position, said diving plane comprising:
- a rigid vane having a pointed end which is forward when said plane is in the canted diving position, a flared rear end and a pair of channels diverging from said forward end towards said rear end, said channels being formed from a medial portion having a pair of arcuately disposed, generally triangularly shaped sides depending from a common ridge, and an upright arcuately disposed generally triangular shaped flange joined to each side of said medial portion; and
- an elongated, rod like bail fastened to said vane for slidably receiving the trolling line, said bail having a central portion located above said vane and sloping downward toward said forward pointed end, said rod being bent to form a first knee at the rear end of said central portion for receiving the trolling line where the diving plane is in the downwardly canted diving position and a second knee at the forward end of said central portion positioned rearwardly of said forward end of said vane for receiving said trolling line when said diving plane is in an upwardly canted surfacing position.

3,863,383
BAIT SAVER

Gregory Lore, 2775 21st St., Sacramento, Calif. 95818
Filed Jan. 29, 1974, Ser. No. 437,642
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.8 **6 Claims**



1. In a bait saver, a fish hook includes a shank having an eye on one end thereof, a tip on the other end of the shank, a pair of spaced apart washers moveably mounted on said shank and having centrally disposed apertures therein for the projection therethrough of the fish hook shank, a leader extending through said eye and connected to said shank, said leader extending over and engaging the outer periphery of said washers.

3,863,384
INSECT TRAP

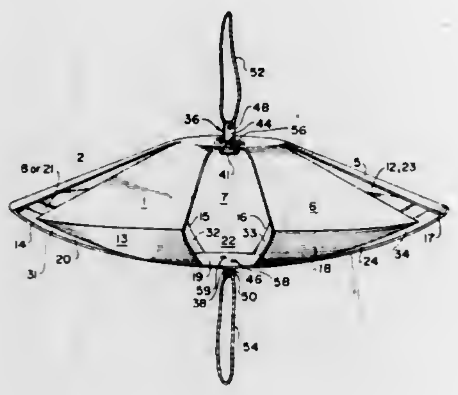
John Weatherston, and James H. Moffatt, both of Sault Ste. Marie, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Feb. 1, 1974, Ser. No. 438,731
Claims priority, application Canada, Mar. 29, 1973, 167492
Int. Cl. A01m *1/14*
U.S. Cl. 43—114 **3 Claims**

1. An insect trap comprising:

a. a plurality of upper panels of flexible sheet material joined at their inner ends and extending radially outwardly with insect entrances slots between them, with the upper panels spaced circumferentially around the join,

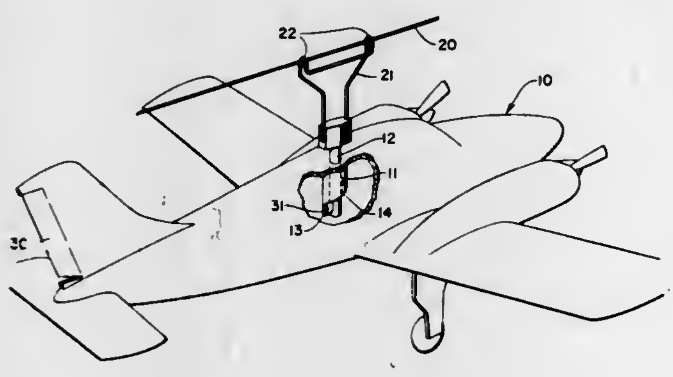
b. a plurality of lower panels of flexible sheet material joined at their inner ends and circumferentially spaced around the join and extending radially outwardly, with insect entrance slots between them, to positions at which

each lower panel is joined adjacent an outer end to an overlying upper panel,
- c. an insect trapping sticky coating on opposed, facing surfaces of the upper and lower panels,
- d. an insect luring odour emitting substance between the upper and lower panels,
- e. means for suspending the trap with the upper panels uppermost,



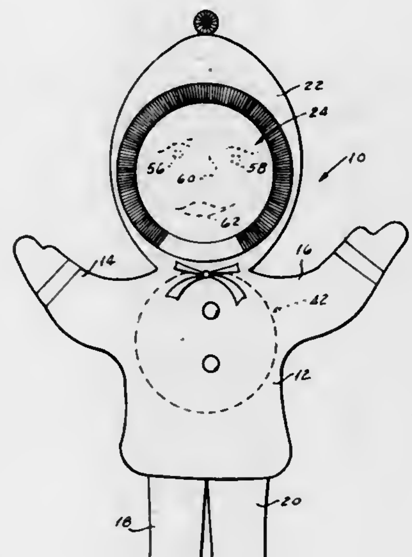
- f. means for suspending the trap with the lower panels uppermost, and whereby
- g. the trap may be stored in a flat condition with the facing surface of the upper and lower panel contacting one another, and the upper and lower panels may be pulled to space their facing surfaces for use.

3,863,385
CAM DEVICE FOR ALIGNING AND TURNING MOVING TOY
Joseph T. Becker, 21 W. 674 Glen Valley Dr., Glen Ellyn, Ill. 60137
Filed Aug. 27, 1973, Ser. No. 391,684
Int. Cl. A63h *27/04*
U.S. Cl. 46—1 H **7 Claims**



1. In a toy including a vehicle supportable on an inclined elongated support surface, so as to be movable along the longitudinal axis of such support surface, means for changing the direction in which the vehicle is facing with reference to the support surface, comprising:
- a cam surface;
- a cam follower adapted to slidably engage the cam surface with the weight of the vehicle supported by contact between the cam surface and the cam follower, and with either the cam surface or the cam follower being supported by the inclined support surface; such that the weight of the supported vehicle induces a rotation of the cam follower relative to the cam surface, thereby rotating the supported vehicle;
- means for heading the vehicle in one direction and for releasing it for pivoting through a desired angle; and
- means for stopping the turn after the desired angle is reached.

3,863,386
READILY ERASABLE DOLL FACE ASSEMBLY
Benjamin Kinberg, New York, N.Y., assignor to Horsman Dolls Inc., Columbia, S.C.
Filed Dec. 14, 1973, Ser. No. 424,657
Int. Cl. A63h *3/36*
U.S. Cl. 46—135 R **8 Claims**

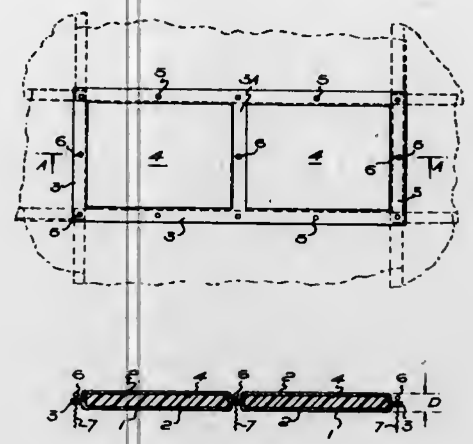


1. A doll including in combination, a torso, a head carried by said torso, a face opening in said head, a face assembly comprising an opaque backing plate, a translucent flexible sheet incorporating an iridescent dye, means mounting said flexible sheet and said backing plate in cooperative relationship with an inner surface of said sheet in closely spaced relationship to the surface of said backing plate, said face assembly being positioned in said face opening, the inner surface of said flexible sheet adapted releasably to adhere to the surface of said backing plate in response to pressure applied to the outer surface thereof to cause said dye to glow at points at which said pressure is applied to present a display corresponding to locations at which said pressure is applied, a bellows in said torso adapted to be compressed in response to squeezing of said torso, and means providing communication between the interior of said bellows and the spaces between said sheet and said backing plate to erase a display in response to said squeezing.

3,863,387
GROUND PROTECTION COVERS
Joseph Webster, and Doreen Webster, both of 39 Jenkin Ln., Horburg, Wakefield, England
Continuation of Ser. No. 122,975, March 10, 1971, abandoned. This application Feb. 8, 1973, Ser. No. 330,573
Int. Cl. A63c *19/12*
U.S. Cl. 47—29 **2 Claims**

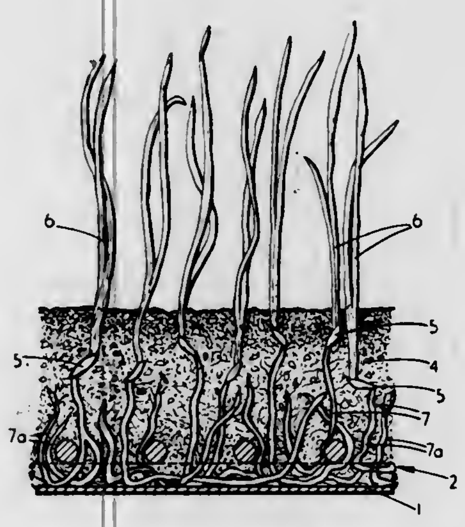
1. A flat panel usable as or in a turf protection cover, comprising an envelope of synthetic plastics material which contains expanded polystyrene, such envelope being transparent to sunlight and the expanded polystyrene being of a maximum thickness of 1 inch to permit the passage of sunlight therethrough so that the panel can be used to protect turfted areas, whilst allowing sunlight to the grass, and being light enough to permit growth of the grass whilst the cover is in position, said envelope being formed of two sheets of synthetic plastics

which are welded together at the edges and wherein the peripheral region defined by said edges has eye holes by which



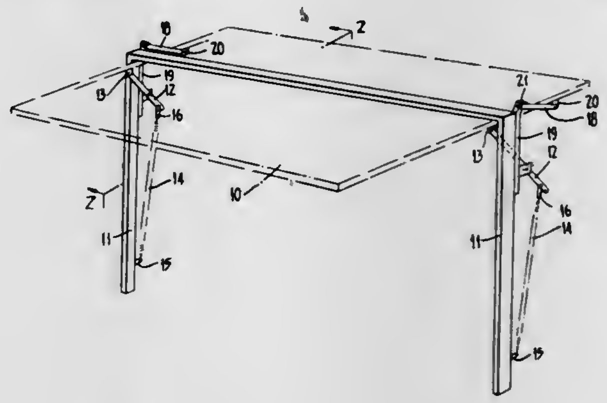
the panel may be pegged to the ground to hold same in position.

3,863,388
GROWING OF GRASSES
Frederick Walter Loads, Brookhouse, near Lancaster, England, assignor to F. B. Mercer, Limited, Lancashire, England
Continuation of Ser. No. 179,140, Sept. 9, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,279
Claims priority, application Great Britain, Sept. 10, 1970, 43457/70
Int. Cl. A01g *1/00*
U.S. Cl. 47—56 **5 Claims**



1. A method of producing a grass bearing lamina comprising a sheet of flexible plastic reticulate structure composed of a first set of strands of single filaments positioned transversely to a second set of strands of single filaments to form a rectangular mesh of about ¼ inch directly in contact with a surface impermeable to penetration by plant roots, the form of the reticulate structure being such that when placed in direct contact with said surface, shallow spaces are present between said surface and at least one of said sets of strands, distributing over the surface of the reticulate structure a layer of rooting medium containing an adequate quantity of grass seed of the selected variety or varieties, and subjecting the lamina to correct conditions of light, heat and moisture to effect rapid germination whereby the conducting roots from each seed grow through the layer of rooting medium lying above the reticulate structure, through the meshes in the reticulate structure, so that the the root system so produced bonds the rooting medium and the reticulate structure into a coherent unit of flexible laminar structure having at one surface growing grass blades and at the other surface a root structure which will strike and grow into an earth surface on which the lamina is laid.

3,863,389
LIFT UP GARAGE DOORS
Peter Tunjic, 19 Brisbane St., Eltham, Victoria, Australia
Filed Jan. 19, 1973, Ser. No. 325,117
Claims priority, application Australia, Jan. 19, 1972, 7706/72
Int. Cl. E05d *15/40*
U.S. Cl. 49—205 **2 Claims**

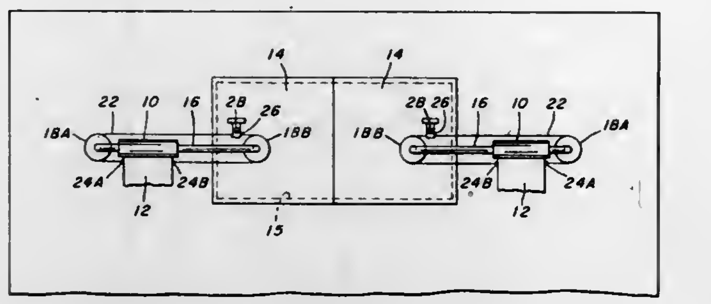


1. An attachment for a lift-up door of the spring assisted type for use in a door opening having a pair of column members one on each side of the opening, said attachment comprising:
- a pivot pin adapted to be mounted at a fixed position on each of said column members;
- a lever arm pivotally mounted on each of said pins at a position intermediate opposite ends of said lever arm, one end portion of each of said lever arms having means adapted to be connected to a tension spring for biasing said lever arms about said pivot pins to a substantially upright position, the opposite end portion of each of said lever arms being adapted to be connected to the door when in use at a point on one side of the line of the opening when the door is in the UP position; and
- a pair of rigid link members each having at one end thereof means adapted to be pivotally mounted one at each side at a fixed position on said door at a point on the other side of the line of the opening when the door is in the UP position, each of said link members having at the opposite end thereof means, fixed in relation to said pivot pins at a position above the uppermost level of said door, adapted to be pivotally mounted adjacent the top of each column member for preventing simple downward pivoting of the bottom of said door when said door is in the UP position, said link members providing means when said door is in the UP position for allowing the top of said door to pivot downwardly in a first relatively minor arc constituting a first closing stage of the door, said first arc being opposite to the direction of the eventual relatively major closing arc of the door constituting the second and final closing stage of the door and wherein the bottom of the door is pivoted downwardly.

3,863,390
DOOR OPERATING MECHANISM
Joseph Sawdai, Ross Twsp., Allegheny Cty., Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Mar. 16, 1973, Ser. No. 341,826
Int. Cl. E05f *15/06, 15/14*
U.S. Cl. 49—360 **7 Claims**

1. Apparatus for opening and closing a doorway comprising: at least one door mounted for lateral sliding movement into and out of a doorway closing position;
- a fixed base adjacent and spaced from at least one side of said doorway;

a linear motion device fixed to each said base;
connecting means comprising a rigid rod adapted to be linearly driven by said linear motion device in the direction of said door movements, said rod having ends thereof exterior to said device;

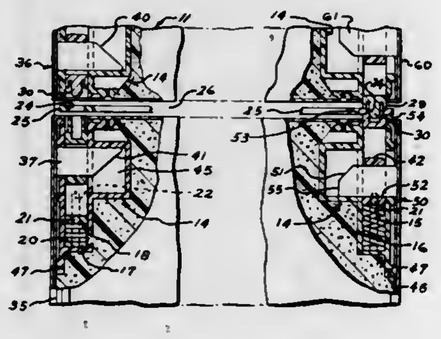


a pulley journaled on each end of said rod;
a flexible strand passing around both pulleys, both ends of said strand being fixed to the base upon which said linear motion device is mounted;
a strand clamp connecting said door and said strand, and means to actuate said linear motion device to cause movement of said door in a desired direction into or out of a doorway closing position.

3,863,391

REVERSIBLY MOUNTED CABINET DOOR

Julius B. Horvay, Louisville, Ky., and John M. Powell, Charlestown, Ind., assignors to General Electric Company, Louisville, Ky.
Filed Dec. 10, 1973, Ser. No. 423,205
Int. Cl. E05d *7/02*
U.S. Cl. 49—382 **3 Claims**

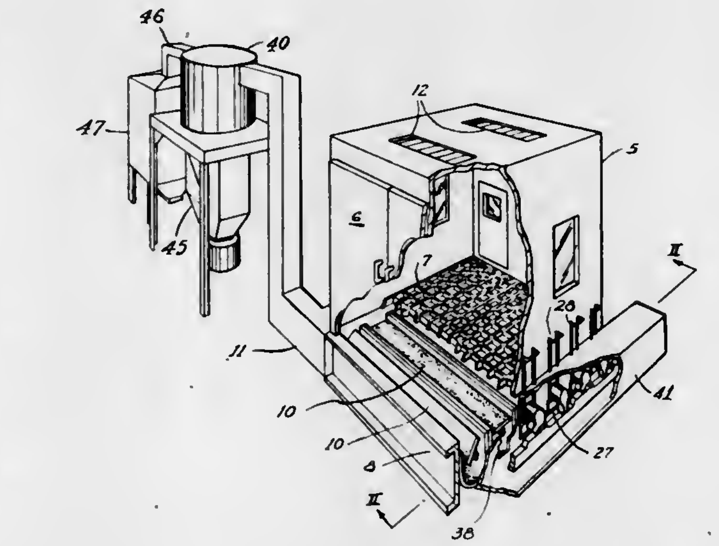


1. An arrangement for reversibly mounting a door on a cabinet including:
a first pair of hinge pins supported adjacent the upper and lower ends of the door adjacent one side thereof;
a second pair of hinge pins supported adjacent the upper and lower ends of the door adjacent the other side thereof;
means cooperating with each of said hinge pins to continuously bias each of said hinge pins to a position extending beyond the peripheral edge of the door;
first support means on the cabinet to receive in supporting engagement each of said hinge pins adjacent the upper end of the door when each of said hinge pins is in an extended position;
second support means on the cabinet to receive in supporting engagement each of said hinge pins adjacent the lower end of the door when each of said hinge pins is in an extended position;
removably disposed means mounted on one of the sides of the door to retract each of the hinge pins on the one side of the door from said first and second support means when said removably disposed means is disposed on the door so that said retracted hinge pins are retracted from supporting engagement with said first and second support means, said removably disposed means comprising a single longitudinal member having first and second means for cooperation with each of said hinge pins on the one of the sides of the door and said single longitudinal member of said removably disposed means being secured to the door to serve as the handle for the door; and
removable means on the other side of the door from the side having said removably disposed means for locking each of said hinge pins on the other side of the door in its extended position and supporting the bottom edge of the door in spaced relationship to the adjacent hinge plates.

3,863,392

SAND BLAST ROOM

Leroy C. Haker, 1011 Rice Rd., Elma, N.Y. 14059
Filed Mar. 21, 1974, Ser. No. 453,203
Int. Cl. B24c *9/00*
U.S. Cl. 51—8 R **6 Claims**



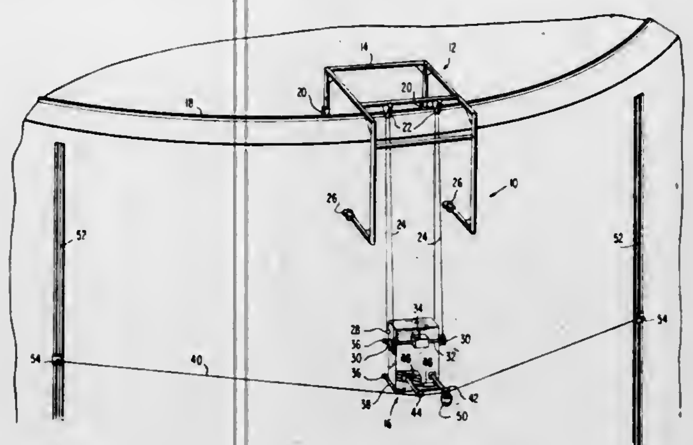
1. Apparatus for performing sand blasting operations comprising a sand blast room having a grid-like floor through which abrasive materials may fall during sand blasting, a plurality of parallel channels beneath said floor for receiving said materials, means for covering the upper sides of said channels and movable between channel closing and channel opening positions, said channels having air inlet openings at one end of each and duct means communicating with the opposite ends of said channels, suction means connected to said duct means for causing air flow through said channels to said suction means, and means for alternately opening and closing said channel covering means to produce maximum horizontal air flow through said channels when said means are closed and for producing purifying air flow downwardly from said room and through said floor when said means are open.

3,863,393

APPARATUS FOR SUPPORTING WORK MEANS ON VERTICALLY DISPOSED SURFACE

James R. Goff, Oklahoma City, Okla., assignor to Robert J. Nelson, Oklahoma City, Okla.
Filed Mar. 13, 1972, Ser. No. 233,968
Int. Cl. B24c *3/06, 3/32*
U.S. Cl. 51—9 **17 Claims**

1. A support apparatus adapted to be used in conjunction with a vertically disposed surface comprising a vertical support frame positioned above at least a portion of said vertically disposed surface; at least one flexible vertical support member attached to said vertical support frame; a depending means adapted to attach to and supported by said flexible vertical support member; ppositioning means extending from said depending means adapted to contact said vertically disposed surface; and a flexible track means extending in a horizontal direction which contacts said vertically disposed surface at least at one location and which contacts said depending means whereby the contacting of said flexible track means forces said

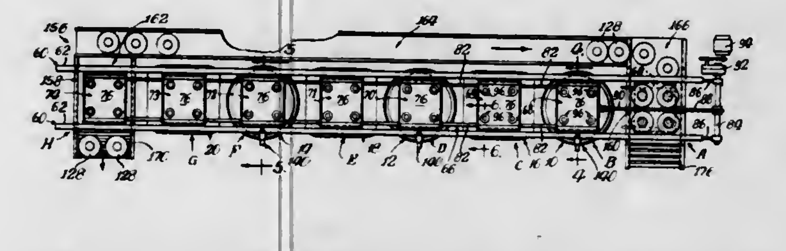


positioning means into contact with said vertically disposed surface.

3,863,394

APPARATUS FOR MACHINING WORK PIECES

Raymond E. Dumentat, Carlyle, Ill., assignor to Speedfam Corporation, Des Plaines, Ill.
Filed Feb. 4, 1974, Ser. No. 439,318
Int. Cl. B24b *7/06*
U.S. Cl. 51—109 R **11 Claims**



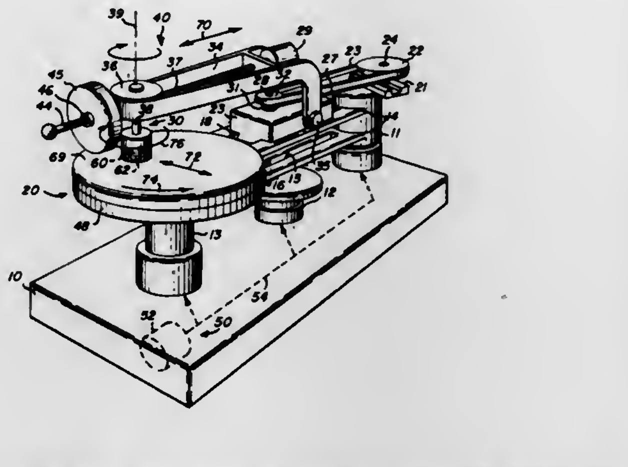
1. Apparatus for finishing the surface of work pieces and defining at least two horizontally spaced apart work stations, comprising a rotatable member with a horizontal operating surface disposed at one of said work stations for engagement by work pieces, carrier means movable horizontally above said two work stations, means for reciprocally moving said carrier means between said two work stations, at least one horizontally disposed plate means to which at least one work piece is adapted to be secured on the underside thereof, vertically disposed power actuated means carried by said carrier means for selectively raising and lowering said plate means, said power actuated means selectively serving to transfer said plate means and work piece secured thereto from one of said work stations to the other of said work stations upon movement of said carrier means, and said power actuated means selectively serving to apply downward pressure on said plate means to forcibly urge the work piece secured thereto against said horizontal operating surface of said rotatable member.

3,863,395

APPARATUS FOR POLISHING A SPHERICAL SURFACE ON A MAGNETIC RECORDING TRANSDUCER

David A. Brown, Los Gatos, Calif., assignor to Shugart Associates, Inc., Sunnyvale, Calif.
Filed Feb. 19, 1974, Ser. No. 443,626
Int. Cl. B24b *7/00, 9/00;* **B24d** *11/00*
U.S. Cl. 51—121 **19 Claims**

1. Apparatus for polishing a substantially spherical work surface of a workpiece comprising:
means forming a polishing pad including a rotatable base having a flat upper surface, at least one layer of resilient material disposed on said flat surface, and a flexible abrasive sheet overlaying the upper surface of said one layer and forming a resilient abrasive surface;
a workpiece holder disposed above said polishing pad for rotating said workpiece while urging said work surface against said abrasive surface with a substantially uniform contact pressure;
an oscillatory motion generator for causing said holder to move in random fashion across said abrasive surface; and
drive means for supplying driving energy to said polishing

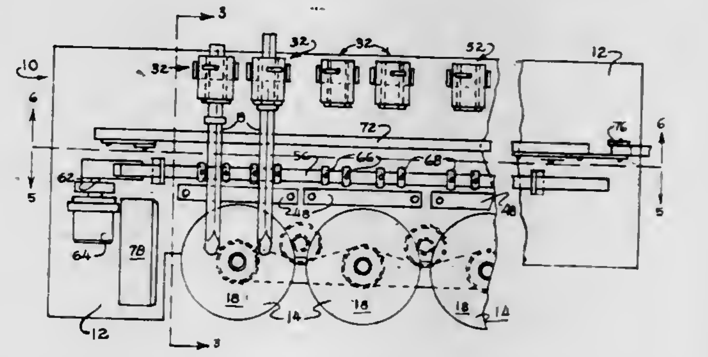


pad, said holder and said oscillatory motion generator, whereby polishing of said work surface is accomplished by the conforming engagement of said abrasive surface thereto as said workpiece is rotated and randomly moved across the upper surface of said polishing pad.

3,863,396

APPARATUS FOR GRINDING CONCRETE BITS OR THE LIKE

Billie E. Holt, Route 1 Box 427, Graham, N.C. 27253
Filed July 16, 1973, Ser. No. 379,619
Int. Cl. B24b *7/02*
U.S. Cl. 51—124 R **9 Claims**

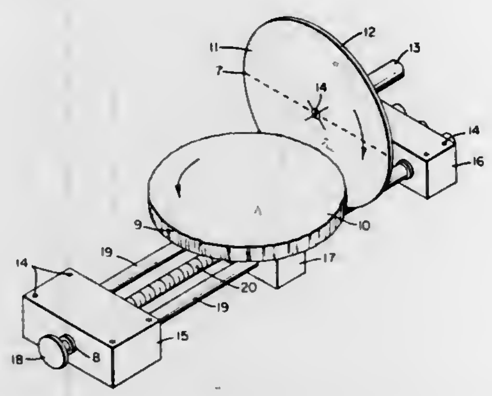


1. Apparatus for grinding elongate concrete bits having worn forward ends, comprising:
frame means;
at least one grinding wheel having a radial grinding face;
means on said frame mounting said wheel for rotation about a substantially vertical axis with said face thereof facing upwardly and extending generally horizontally;
means for imparting said rotation to said wheel during operation of the apparatus;
bit mounting means spaced laterally from said grinding wheel for pivotally mounting a plurality of concrete bits adjacent the rear end portions thereof in longitudinally fixed and forwardly and downwardly inclined relationship to said face of said grinding wheel, with the forward ends of said bits overlying said face for engagement therewith during a grinding operation, for free vertical movement of said forward ends of said bits relative to said grinding wheel face and for lateral movement of said forward ends of said bits generally radially of said grinding wheel face toward and away from its central axis;
and power-operated means engagable with said concrete bits intermediate said bit mounting means and said grinding wheel for simultaneously imparting, during operation of the apparatus, said lateral movement to said forward

ends of said bits to regulate the temperature and prevent overheating thereof.

3,863,397
WOODWORKING JIG

Arnold B. Reitz, 3735 Capri Dr., Santa Barbara, Calif. 93105
Filed Jan. 18, 1974, Ser. No. 434,442
Int. Cl. B24b *5/00, 29/00*
U.S. Cl. 51—131 **3 Claims**

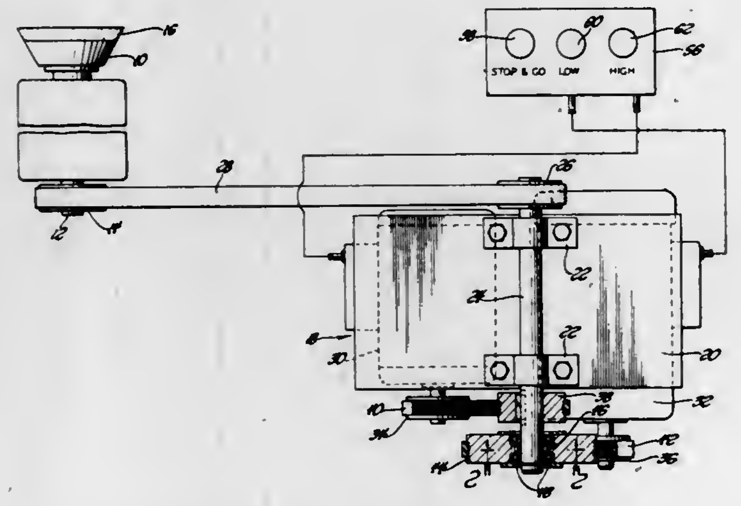


1. A woodworking jig for producing a smoothly round wooden workpiece, comprising:

- a pair of end castings for mounting in a fixed position on a stable surface, said end castings having at least one unthreaded guide rod and a threaded drag rod attached therebetween;
- a floating casting having a threaded internal bore for receiving said threaded drag rod and at least one unthreaded internal bore for receiving said at least one unthreaded internal guide rod, said floating casting having a male drive shaft affixed thereto on the upper side thereof;
- a chuck for detachable attachment to the center region of a workpiece, said chuck having a female extension for rotatably fitting over said male drive shaft; and
- a planar member rotatably attached to said stable surface, said planar member having a sanding disk attached thereto for contacting and abrading the edge of said wooden workpiece so that movement of said floating casting will force said wooden workpiece against said sanding disk and cause said wooden workpiece to rotate.

3,863,398
TWO SPEED GRINDING MACHINE

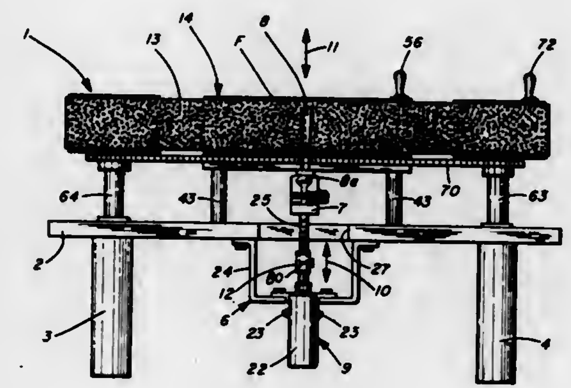
Richard M. Moser, Lincoln Park; Edward T. Kantarian, Royal Oak, and Raymond F. Nixon, Bloomfield Hills, all of Mich., assignors to Moni, Inc., Dearborn, Mich.
Filed May 14, 1973, Ser. No. 359,808
Int. Cl. B24b *47/10*
U.S. Cl. 51—134.5 **4 Claims**



1. A grinding machine comprising: a spindle; a grinding wheel mounted on said spindle; and a dual motor drive means connected with said spindle operable to rotate said spindle at a selected one of two speeds; said drive means comprising: a base member; an output shaft rotatably supported on said base member; means drivingly connecting said output shaft with said spindle; a high speed motor mounted on said base member; a low speed motor mounted on said base member; a high speed input drive member non-rotatably fixed to said output shaft; a high speed power drive member fixed to the shaft of said high speed motor and drivingly engaged with said high speed input drive member; a low speed input drive member rotatably mounted on said output shaft; a low speed power drive member fixed to the shaft of said low speed motor and drivingly engaged with said low speed input drive member; and a clutch means connected between the low speed input drive member and said output shaft operable to drivingly engage said low speed input drive member with said output shaft when said low speed motor is energized and said high speed motor is deenergized to cause said output shaft to be driven by said low speed motor, said clutch means being operable to disengage said low speed input drive member from said output shaft to permit free rotation between said output shaft and low speed input drive member when said high speed motor is energized and said low speed motor is deenergized, said clutch means being connected between said low speed input drive member and said output shaft such that said output shaft is driven in the same direction by both said high speed and low speed motors.

3,863,399
APPARATUS FOR FINISHING A FOIL

Oakley Cowdrick, 5079 Strawberry Ln., Willoughby, Ohio 44094
Filed Mar. 15, 1974, Ser. No. 451,573
Int. Cl. B24b *69/00*
U.S. Cl. 51—151 **13 Claims**



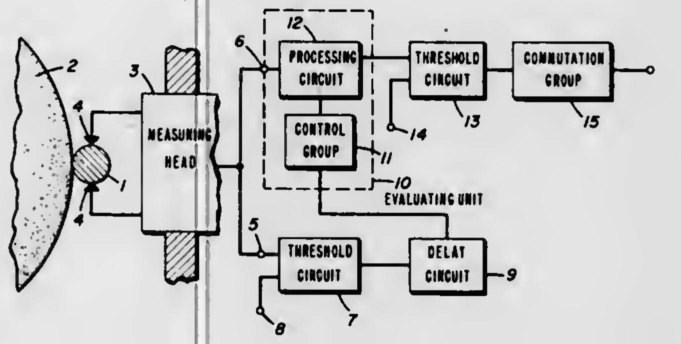
1. An apparatus for finishing the edge of a foil comprising,

a support structure,

- a finishing material mounting means on said support structure having a finishing material mounted thereon,
- a reciprocating jig means mounted on said support structure for holding said foil with said edge in exposed, confronting relation to said finishing material,
- said jig means including a rotatable jig head to enable said foil to rotate about its lengthwise axis when in the mounted position, and
- cam relief means yieldably supporting said finishing material in camming coacting engagement with said edge to impart an oscillatory rotating movement to said foil upon reciprocating movement of said jig means for providing a smooth finish for said edge of said foil.

3,863,400
DEVICE FOR CONTROLLING THE APPROACH SPEED IN MACHINE TOOLS PARTICULARLY GRINDING MACHINES

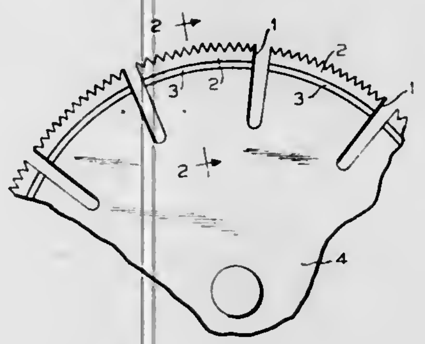
Roberto Rossi, Bologna, Italy, assignor to Finike Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C., Via Saliceto, Italy
Filed May 31, 1973, Ser. No. 365,733
Claims priority, application Italy, June 6, 1972, 3451/72
Int. Cl. B24b *49/02*
U.S. Cl. 51—165.77 **6 Claims**



1. A device for controlling the approach speed of the tool towards the pieces to be machined in machine-tools, particularly grinders, comprising gauging means, adapted to provide a signal responsive to the actual size of the workpiece; a processing unit connected with said gauging means and adapted a process said signal responsive to size; for providing a signal responsive to the rate of size change; and a commutating group, operated by said unit, to control, at the time of contact between tool and piece, the passage from approach speed to feed speed.

3,863,401
DIAMOND ABRASIVE CUT-OFF WHEEL

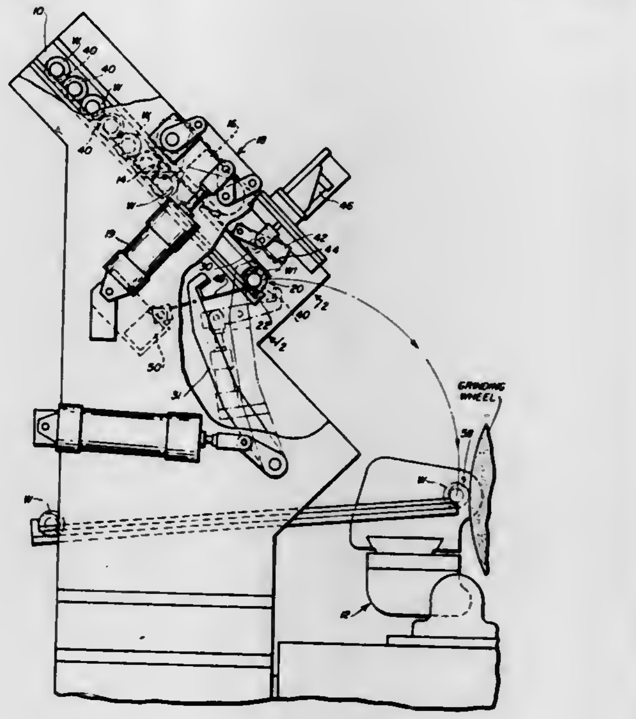
Henry Schwarzkopf, Westchester, and John J. Bouvier, Tonawanda, both of N.Y., assignors to Ferro Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 153,501, June 16, 1971, abandoned. This application Dec. 21, 1973, Ser. No. 427,065
Int. Cl. B24b *5/00, 3/02*
U.S. Cl. 51—206.4 **6 Claims**

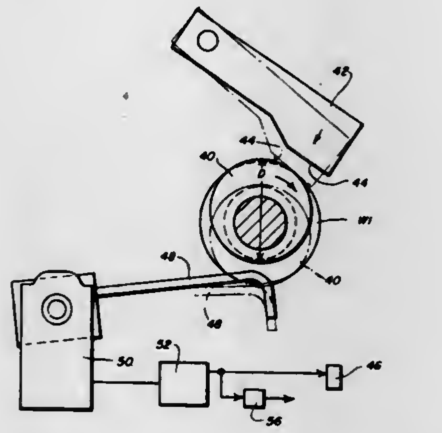


1. In a circular, diamond abrasive, segmented cutting member having an arbored, central support and drive disc, a multiplicity of arcuate cutting segments affixed thereto about the periphery thereof, said segments comprising a diamond support matrix having diamond particles therethroughout, and having substantially planular side surfaces, the improvement of the outer, peripheral cutting surface of said segments being substantially, unidirectionally, uniformly serrated in the form of ridges having sloping faces, and a multiplicity of said diamond particles oriented with a plan thereof coincident with the sloping faces of said ridges.

3,863,402
WORKPIECE ORIENTING DEVICE FOR A MACHINE TOOL

Ralph E. Price, Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.
Filed Feb. 1, 1974, Ser. No. 438,549
Int. Cl. B24b *49/08, 5/16;* **B65h** *9/08*
U.S. Cl. 51—216 ND **4 Claims**





1. A workpiece orienting device comprising

means for supporting a randomly oriented workpiece, having an eccentric portion to be ground to size, for selective engagement with a pair of work centers,

a pair of work centers,

means for forcefully engaging a supported workpiece with said work centers,

motor means for rotatably driving at least one of said work centers,

orienting means selectively located to be radially aligned with the eccentric portion of a supported workpiece and displaceable from a retracted remote position to an advanced position, said advanced position being selectively located so that the eccentric portion of the rotating workpiece will strike said orienting means at a predetermined location,

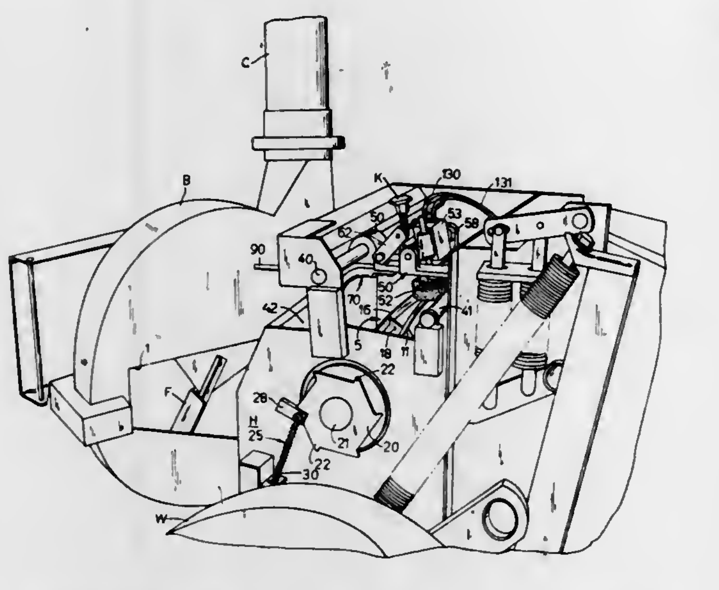
means for advancing said orienting means from said retracted position to said advanced position,

means for sensing when said orienting means can be advanced from said retracted position to said advanced position without abutting against the eccentric portion, and for actuating said advancing means,

means for maintaining said orienting means at said advanced position whereby rotation of the rotating workpiece will be halted when the eccentric portion engages said orienting means thereby establishing a predetermined workpiece orientation.

3,863,403
BLADE SHARPENING DEVICE FOR ROTATABLE CHOPPING CYLINDERS INCLUDING HYDRAULIC DRIVE MEANS

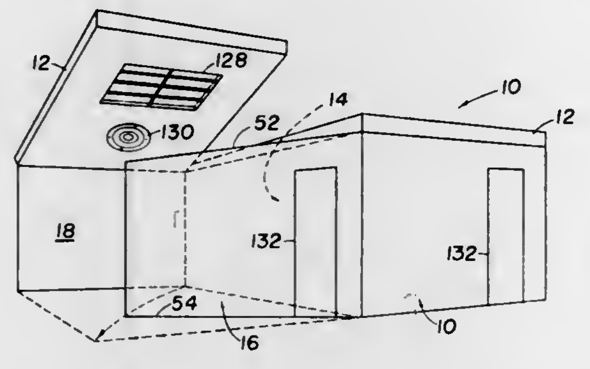
Philip F. Fleming, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.
Filed Feb. 25, 1974, Ser. No. 445,677
Int. Cl. B24b *3/42, 47/14*
U.S. Cl. 51—249 **4 Claims**



1. A blade sharpening device for use with a forage harvester having a housing and a cutting rotatably retained within the housing and having a plurality of circumferentially spaced spiral shaped cutting blades, the sharpening device comprising: guide track means supported on said housing, a carriage movably supported on said track means for movement generally parallel to the cylinder axis, a grinding wheel on the carriage and engagable with one of said cylinder blades, a hydraulic motor connected to and for driving said grinding wheel, and a hydraulic circuit for supplying controlled pressure fluid to and from said motor, said circuit including a fluid pressure pump, a control valve for receiving pressure fluid from said pump and delivering it to said motor, and an excess flow check valve and also and adjustable needle valve both located between said control valve and said hydraulic motor.

3,863,404
BUILDING CONSTRUCTION

Carl D. Wahlquist, Woodland Hills, Calif., assignor to Building Components Research, Inc., Salt Lake City, Utah
Filed Aug. 9, 1973, Ser. No. 386,900
Int. Cl. E04b *1/344*
U.S. Cl. 52—27 **6 Claims**



1. A building structure comprising in combination:

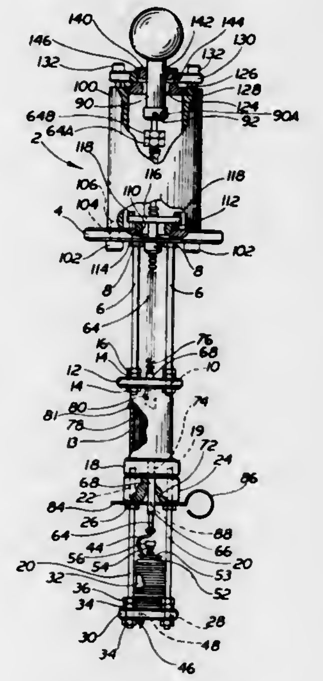
a generally vertically oriented folding wall panel mounted upon a rigid support wall so as to provide limited movement of the wall panel in the vertical plane;

a ceiling unit suspended above the wall panel, the ceiling unit comprising means for selectively lowering at least part of the weight of the ceiling unit upon the unfolded wall panel; and

means interposed above and below the wall panel for forming a seal when the weight of the ceiling unit is brought to rest upon the wall panel.

3,863,405
SELF-ERECTING TUBE DEVICE

Leigh David Leiter, Willow Grove, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed Jan. 25, 1974, Ser. No. 436,697
Int. Cl. B65h *75/24*
U.S. Cl. 52—108 **8 Claims**



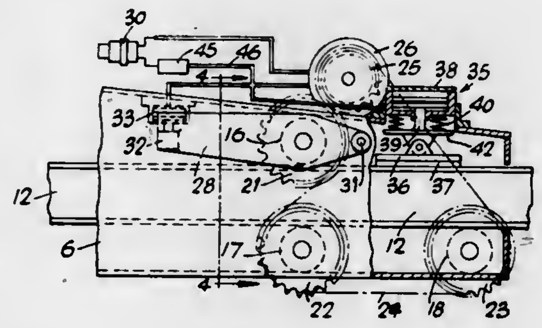
1. In a self-erecting tube having a helical axially extending ribbon of spring material with adjacent turns set to coil tightly in overlapping and telescoping engagement and mounted on a base,

a converging-diverging nozzle for guiding the tube during erection and tightly engaging the tube on full erection, and

a second converging-diverging nozzle spaced from the first mentioned nozzle for guiding the tube during erection and tightly engaging the tube on full erection.

3,863,406
DRIVE MECHANISM FOR JIB CRANES

Donald J. Quick, West Bundaberg, Queensland, Australia, assignor to International Harvester Company, Chicago, Ill.
Filed Oct. 9, 1973, Ser. No. 404,550
Claims priority, application Australia, Oct. 9, 1972, 748/72
Int. Cl. B66c *23/64*
U.S. Cl. 52—115 **3 Claims**



1. In a crane having an elongated cantilevered main jib of the box type construction, an extendable and retractable elongate extension jib of uniform rectangular cross-section telescopically mounted within the main jib, hydraulic power means including means for selectively energizing the power means for telescopically extending and retracting the extension jib, and securing means for holding the extension jib in place following telescopic movement, the improvement comprising:

a U-shaped lever having the ends of the extending arms of the U hinged to the lateral sides of the main jib and the cross-member of the U passing transversely through the lateral sides of the main jib;

a first roller mounted on a first shaft passing transversely through the lateral sides of the main jib and being journalled to the arms of the U-shaped lever, the first roller sitting on top of the extension jib;

a second roller mounted on a second shaft passing transversely through and being journalled to the latteral sides of the main jib and supporting the bottom of the extension jib, the axis of the second shaft being vertically aligned with the axis of the first shaft;

a third roller spaced horizontally from and parallel with the second roller and being mounted on a third shaft passing transversely through and being journalled to the lateral sides of the main jib and supporting the bottom of the extension jib;

a pulley wheel keyed to each shaft including a continuous belt means drivingly connecting the pulley wheels to the hydraulic power means for rotating the rollers in unison and telescopically moving the extension jib upon energization of the hydraulic power means;

a brake shoe sitting on top of the extension jib in the space between the vertical planar axes of the second and third shafts;

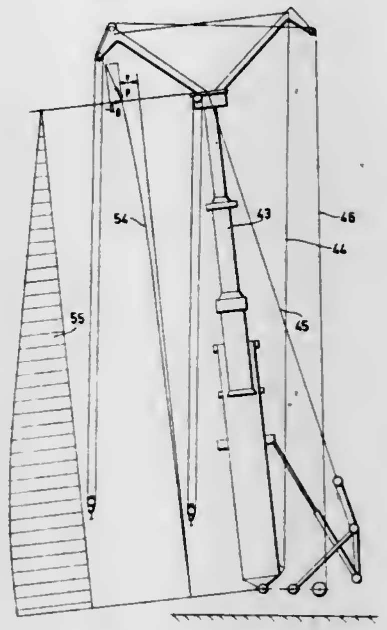
first and second hydraulic power ram means mounted on the main jib and each having first and second piston rod means respectively and being hydraulically connected to the hydraulic power means for simultaneous energization of the piston rod means with the power means, the first piston rod means being connected to the brake shoe for lifting the brake shoe from the extension jib upon energization thereof, the second piston rod means being connected to the cross-member of the U for swinging the arms of the U upon energization thereof and squeezing the extension jib between the rotating rollers; and

spring means between the brake shoe and the first piston rod means for pressing the brake shoe against the top of the extension jib upon the simultaneous de-energization of the hydraulic power means and piston rod means for halting the movement of the extension jib.

3,863,407
TELESCOPIC CRANE JIB

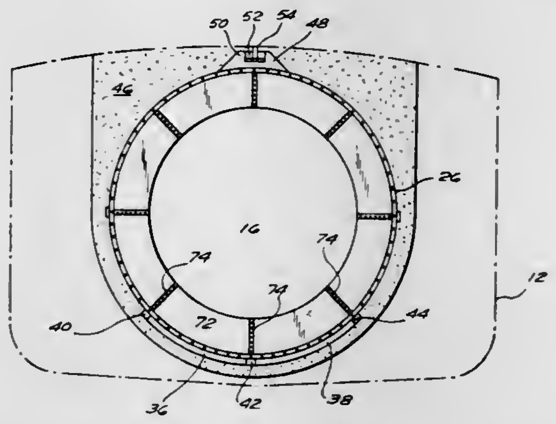
Harry Eucken, Hochdahl-Millrath, Germany, assignor to Leo Gottwald, K.G., Dusseldorf-Holthausen, Germany
Continuation of Ser. No. 225,566, Feb. 11, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,400
Claims priority, application Germany, Feb. 13, 1971, 2106983
Int. Cl. E04h *12/34;* **B66f** *11/02*
U.S. Cl. 52—115 **24 Claims**

1. In a telescopic crane jib including an axially elongated jib housing, a plurality of axially elongated individual telescopic parts selectively displaceable between a fully retracted position with all of said parts within said housing and a number of extended positions and during the extending and retracting operations said jib housing and telescopic parts are arranged approximately vertically, and means for positively locking said telescopic parts together in the extended positions, wherein the improvement comprises that each said telescopic part comprises a base at its lower end extending transversely of its elongated direction, a rim at its upper end extending transversely of its elongated direction, and sides extending in its elongated direction between said base and said rim, said sides of said telescopic parts being disposed in spaced relationship so that there is no mutual guiding between said telescopic parts, said positive locking means being located in said base and said rim of said telescopic parts and when said telescopic parts are interconnected in the extended position, said base of the upper said telescopic part is located in the same plane with said rim of said lower telescopic part so that there is no overlapping of said telescopic parts in the extended position, said jib housing having a length at least equal to twice the length of each of said telescopic parts, and releasable catch means located at the upper end of said jib housing and arranged to hold at least one of said telescopic parts in a position within said housing spaced upwardly from the lower end of said housing.



3,863,408
PRESTRESSED CONCRETE TANKS FOR LIQUID NATURAL GAS TANKERS

John J. Closner, Douglaston; Tadeusz Josef Marchaj, New York, and Sven Hjalmar Wichman, Yaphank, all of N.Y., assignors to Preload Technology, Inc., Garden City, N.Y.
Filed Sept. 27, 1972, Ser. No. 292,727
Int. Cl. E04c *3/26*
U.S. Cl. 52—224 **14 Claims**



1. A tank for cryogenic adapted for placement within a marine transportation vessel comprising:

a. a concrete, cylindrical tank wall having a plurality of steel prestressing tendons located therein in axial orientation;
b. a steel sheath anchored to the exterior surface of said wall;
c. a prestressing tendon wrapped essentially circumferentially about the exterior of said steel sheath;
d. at least two, annular stiffening disks positioned coaxially within the said wall said disks having holes therein for through-passage of axially oriented prestressing tendons;
e. a plurality of stiffening plates positioned radially-axially with respect to said tank and abutting at both axial extensions thereof, said stiffening disks and at their radial outermost extension, the said cylindrical tank wall, said

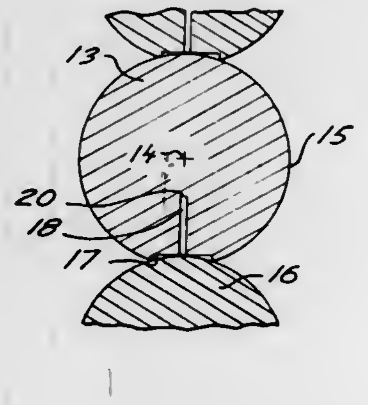
stiffening plates having essentially axially oriented prestressing tendons therein;

f. steel heads defining the ends of said cylindrical tank and attached to said stiffening disks; and

g. inlet and outlet means for said cryogenic liquid.

3,863,409
LOG CABIN STRUCTURE

Charles Raymond Fell, P.O. Box. 218, Hudson Hope, British Columbia, Canada
Filed Dec. 11, 1972, Ser. No. 313,944
Int. Cl. E04b *1/10*
U.S. Cl. 52—233 **10 Claims**



1. A portion of a log cabin wall structure, comprising:

a. an elongated first wall element having a substantially cylindrical cross section,

b. an elongated second wall element having a substantially cylindrical cross section and disposed immediately below and in alignment with the first wall element,

c. locking means disposed along the lowermost surface of the first wall element for firmly engaging and holding the first wall element in superposed relation with the second wall element,

d. the locking means including a recessed horizontal planar supporting surface for directly supporting the first wall element which has two spaced substantially perpendicular side walls, the planar supporting surface directly engaging and supported on the uppermost peripheral section of the cylindrical surface of the second wall element,

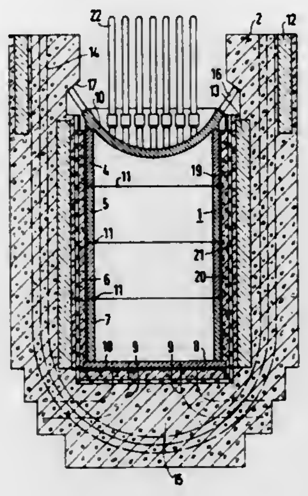
e. the locking means also including laterally spaced groove corners formed at the intersection of the spaced side walls with the cylindrical surface of the first wall element, said groove corners disposed below the horizontal planar supporting surface and which are resiliently urged into sinking engagement with the cylindrical surface of the second wall element,

f. a longitudinally extending radial slot disposed perpendicular to the horizontal planar supporting surface and having a length approximately one-third the radius of the wall element so as to permit resilient lateral spreading of the groove corners,

g. the distance between the groove corners before engagement with the cylindrical surface of the second wall element being slightly less than the cordal distance between the two opposed points of engagement with the laterally spread groove corners after the horizontal planar supporting surface comes into engagement with the cylindrical surface of the second wall element.

3,863,410
PRESSURE-TIGHT REACTOR TANK

Heinrich Dorner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 18, 1972, Ser. No. 315,867
Claims priority, application Germany, Dec. 23, 1971, 2164127
Int. Cl. G21c *13/00*
U.S. Cl. 52—249 **7 Claims**

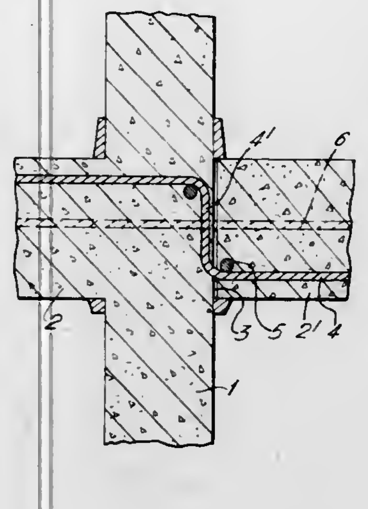


1. A nuclear reactor pressure tank having a cylindrical steel wall and a concrete wall surrounding this steel wall; wherein the improvement comprises said steel wall being formed by a plurality of cylindrical steel rings each of which has a cylindrical wall having opposite ends and strong enough in the radial direction to be pressure-tight with respect to the reactor internal pressure, said rings being stacked with mutually adjacent pairs of their said ends in abutting relationship to form said cylindrical steel wall, one of said rings forming a lowermost ring with one of its said ends forming a bottom end, a substantially flat steel bottom wall supporting said lowermost ring's said bottom end, said concrete wall being formed by concrete forming a cylindrical wall encircling said cylindrical steel wall and radially spaced at least slightly from the latter, said concrete further forming a bottom concrete wall beneath said steel bottom wall, another of said steel rings forming an uppermost ring with one of its said ends forming a top end, said cylindrical concrete wall having a portion extending upwardly to a level above said top end, a steel cover for said top end and resting thereon, and means between said concrete wall's upper portion and said cover for creating pressure therebetween so that said cover presses downwardly on said top end of said uppermost steel ring, holding all of said rings axially pressed together and towards and on said steel bottom wall.

3,863,411
ARRANGEMENT AT AN EXPANSION JOINT

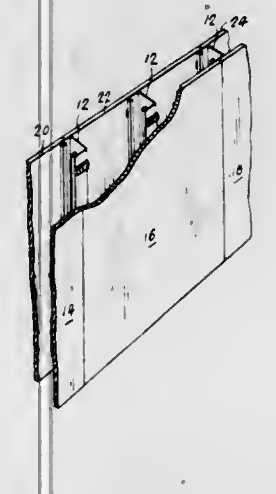
Olav Selvaag, Holmenveien 19, Oslo 3, Norway
Continuation of Ser. No. 179,435, Sept. 10, 1971, abandoned. This application July 20, 1973, Ser. No. 381,002
Claims priority, application Norway, Sept. 18, 1970, 3562/70
Int. Cl. E04b *1/60, 1/68*
U.S. Cl. 52—251 **4 Claims**

1. A connecting and support arrangement for an expansion joint between a supporting wall and an adjacent floor section of a building, which joint separates the building along planes which extend across the direction of expansion, said arrangement comprising at least one supporting member which includes first and second substantially horizontal portions respectively incorporated in the supporting wall and the adjacent floor section and which connects the wall and floor section together, said supporting member also including a further substantially vertical portion which connects said horizontal portions together and is disposed adjacent to the expansion joint and extends therealong a substantial distance, parallel to the plane thereof and which absorbs vertical forces between the wall and floor section; and at least one further, horizontally extending mild steel reinforcement member incorporated in the wall and floor section of the building which connects the wall and floor section together and which yields when the tension forces thereon, resulting from expansion or contraction of the building, exceed a predetermined level.



3,863,412
EASILY DISMANTLED PARTITION STRUCTURE

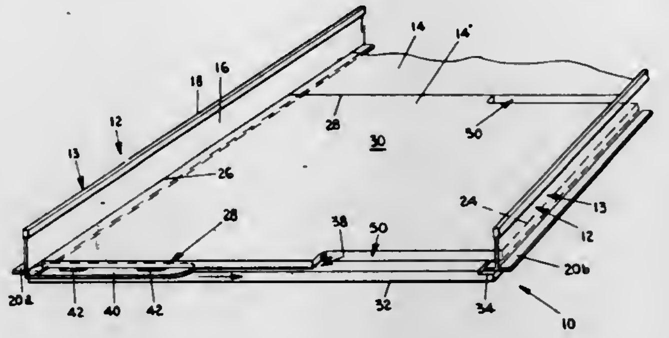
Alistair K. Bodycomb, Baie d'Urfe, Quebec; Samuel P. Meiel, Roxboro, Quebec; Cameron W. Shebry, and Garth N. Thompson, both of Dorion, Quebec, all of Canada, assignors to Domtar Limited, West Montreal, Canada
Filed Apr. 23, 1973, Ser. No. 353,710
Claims priority, application Canada, June 26, 1972, 145756
Int. Cl. E04b *2/82*
U.S. Cl. 52—483 **4 Claims**



1. A partition structure comprising stud means, a plurality of discrete spaced fastening elements secured to said stud means, a substantially rigid wall panel, co-operating fastening elements secured to said panel and positioned to co-operate with the fastening elements on said stud means, one of said fastening elements and said co-operating fastening elements being in the form of a plurality of loops the other in the form of a plurality of T-shaped hooks formed from plastic and adapted to hook into said loops thereby to secure said panlel to said stud means, said loops being small and said hooks being substantially rigid and having short stems, said hooks and loops being interposed between said panel and said stud means, and constituting means for inhibiting relative movement between said panel and said stud means.

3,863,413
SUSPENDED CEILING CONSTRUCTION

Henry Moomey, Kentwood, Mich., assignor to Harvey J. Geute, Spring Lake, Mich.
Filed Oct. 19, 1973, Ser. No. 407,802
Int. Cl. E04b *5/55*
U.S. Cl. 52—484 **6 Claims**



1. A suspended ceiling construction for a structure comprising:

a plurality of evenly spaced, parallel support beams mounted in the structure, each support beam comprising front and back ceiling tile support means on front and back sides thereof;

a plurality of removable ceiling tiles supported in rows between adjacent front and back support beams, each ceiling tile comprising:

a back edge having kerf means adapted to engage the front support means on the back support beam so as to hold the back edge in place on the back support beam; a front portion adjacent the back support means on the front support beam, but being disengaged from supporting engagement with said back support means; and opposing side edges that abut the side edges of adjacent tiles in the same row of ceiling tiles said side edges having longitudinal kerfs formed therein;

locking means slidably mounted in the kerfs in the abutting side edges of adjacent tiles, each locking means being slidable between a locked position, wherein the locking means engage the back support means of the front support beam and holds the front portions of the adjacent ceiling tiles in place against said front support beam, and a released position, wherein the locking means are disengaged from said back support means, thereby releasing the said front portions from the front support means; and at least one access tile comprising a ceiling tile having an open section above the kerf on each side of the tile, said open section being formed so that the locking means in the sides of the access tile will fit through said open sections when the locking means are in their released positions,

whereby, access tiles may be removed by sliding the locking means therein to their released positions and then lowering the tile away from the locking means and disengaging the back edge of the tile from the back support beam.

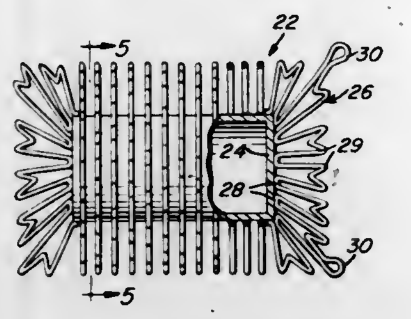
3,863,414
VOID SYSTEM FOR CONCRETE WITH AGGREGATE HAVING PROJECTING MEMBERS

Edward D. Dunn, Jr., Albany, Ga., assignor to Versatile Structures, Incorporated, Leary, Ga.
Filed Dec. 29, 1972, Ser. No. 319,739
Int. Cl. E04c *5/01*
U.S. Cl. 52—659 **1 Claim**

1. An aggregate for concrete, comprising, in combination:

a. a watertight element having watertight walls defining a watertight void, the element being a hollow cylinder provided with a cylindrical wall and a pair of end walls; and

b. a plurality of members arranged emanating outwardly from the element, the members being portions of a plurality of continuous wire attached to the walls of the cylinder, with a plurality of spaced one of the wires being arranged in substantially parallel planes about the cylindrical wall, the member forming portions being bent away from the element and provided with undulations intermediate the points of attachment of the associated wire, and at least some of the portions being further provided with a loop arranged for tying the aggregate to other aggregate and to conventional concrete reinforcing rods.



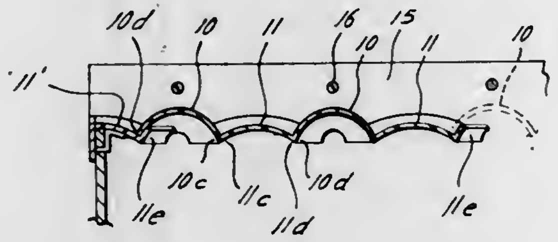
3,863,415
AWNING OR MARQUEE

Winston F. Bott, 1915 N. Lexington Blvd., Corpus Christi, Tex. 78409

Filed Aug. 22, 1972, Ser. No. 282,866

Int. Cl. E04c *2/32;* **E04b** *1/34*

U.S. Cl. 52—630 **14 Claims**



1. An awning for a building, comprising:

a first partial conical convex longitudinally extending section formed of a substantially rigid molded material and having its smaller portion at its upper end and its larger portion at its lower end;

a second partial conical convex longitudinally extending section disposed adjacent and laterally with respect to said first partial conical section with its smaller portion at its lower end adjacent said larger portion of said first section and with its larger portion at its upper end adjacent said smaller portion of said first section;

said first section and said second section having adjacent longitudinal edges secured together and forming a unitary awning section; and

said first section having a radius of curvature less than the radius of curvature of said second section whereby said second section is flatter than said first section to resist essentially lateral wind load thereon while the curvature thereof provides strength against bending.

3,863,416
CONCRETE REINFORCEMENT

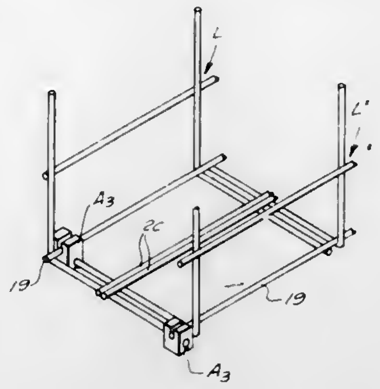
Georgi Oroschakoff, Simon-Denk-Gasse 7/7, Vienna IX, Austria

Continuation-in-part of Ser. No. 93,822, Nov. 30, 1970, Pat. No. 3,778,951. This application Dec. 17, 1973, Ser. No. 425,627

Int. Cl. E04c *2/42;* **E04h** *12/18*

U.S. Cl. 52—646 **10 Claims**

1. A concrete reinforcement for beams, columns and the like, comprising a pair of L-section reinforcement elements each comprising a plurality of longitudinally spaced L-shaped transverse bars lying in respective parallel planes, a first longitudinal bar secured to said transverse bars at the bends thereof and extending perpendicular to said planes, and a second longitudinal bar secured to codirectionally extending legs of the transverse bars and spaced from said first longitudinal bar, said elements having said codirectionally extending legs interdigitating and lying in a common plane parallel to said longitudinal bars with said second longitudinal bars of the two elements laterally abutting, and clips interconnecting the first longitudinal bar of one element and a leg of the other element.



3,863,417
MARINE DECKING

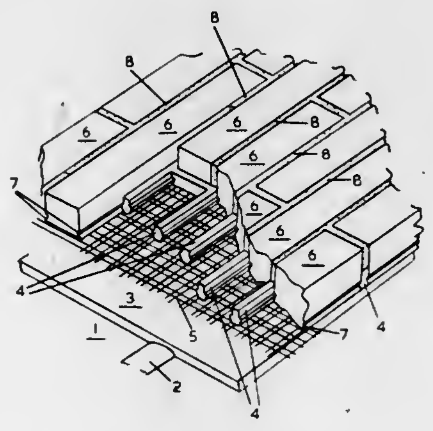
Vicenzo Franchi, Hornsey, England, assignor to Franchi Wood Mosaic Company Limited, London, England

Filed Mar. 19, 1973, Ser. No. 342,480

Claims priority, application Great Britain, Mar. 21, 1972, 13088/72

Int. Cl. E04f *15/16*

U.S. Cl. 52—741 **3 Claims**



1. The method of laying marine decking on a deck area, comprising forming dovetail grooves along the lower edges of wood blocks, securing together a plurality of said wood blocks in mutually spaced relationship to form a panel, spreading a bedding composition on the deck area, pressing said panel of wood blocks into said bedding composition before the latter has set such that the bedding composition passes up between said wood blocks as said panel is pressed, allowing said bedding material to set such that the set bedding material cooperates with said dovetail grooves to retain said wood blocks on said deck area, and applying a grouting material between said wood blocks.

3,863,418
BUILDING METHOD

Pierre Faucheux, Paris, France, assignor to Etablissements Fresa, Liechtenstein, Vaduz, Liechtenstein

Filed Jan. 30, 1973, Ser. No. 328,118

Claims priority, application France, Feb. 1, 1972, 72.1489; Switzerland, Feb. 11, 1972, 2006/72

Int. Cl. E04b *1/343;* **E04g** *21/14*

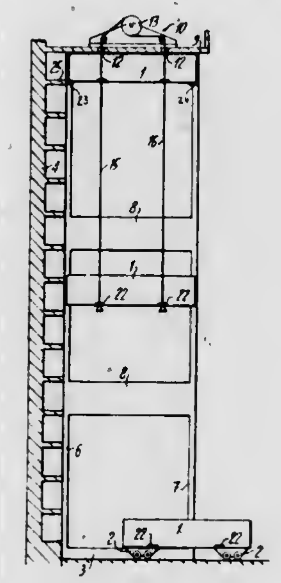
U.S. Cl. 52—745 **1 Claim**

1. A method of constructing a multiple-story building comprising the steps of:

a. erecting a vertical concrete structure having a plurality of walls defining an interior access well extending the height of the building;

b. providing a plurality of horizontal landings projecting outwardly from at least one of said walls of said concrete structure and corresponding in number to the number of stories of said building;

c. attaching to said landings a plurality of spaced-apart auxiliary guide members extending vertically to substantially the building height with each pair of adjacent said guide members defining with said attached landing the lateral and innermost limits, respectively, of a vertically extending channel through which housing units are to be hoisted;



d. providing additional auxiliary guide members extending vertically to substantially the building height and connecting with said first mentioned auxiliary guide members to likewise define lateral limits to said vertically extending channels as well as defining the outermost limits thereof whereby, said landings define a plurality of bays in each channel at the innermost end thereof and the outermost limits of said channels are void of any lateral connecting structure between adjacent pairs of said additional auxiliary guide members;

e. constructing a co-planar platform extending from the top of said wall of said well-defining structure to which said landings are attached, with said platform overlying in a co-extensive manner said auxiliary guide members and all of said adjacent vertical channels;

f. providing a winch mounted on rails atop said platform;

g. moving said winch on said platform rails above the top of a selected one of said channels;

h. forming openings in said platform to permit the lowering of cables from said winch into said selected channel;

i. moving a pre-assembled housing unit longitudinally into said selected channel through the open portion thereof between said additional auxiliary guide members at substantially ground level until said housing unit is fully wihtin the confines of said channel and beneath said platform and winch;

j. connecting said lowered cables to said housing unit within the bottom of said selected channel;

k. vertically hoisting said housing unit with said winch through said channel to the uppermost available one of said bays adjacent a landing;

l. securing cross beams to said guide members laterally of said selected channel beneath said hoisted housing unit to support said housing unit;

m. securing said housing unit to said cross beams;

n. disconnecting said cables from said housing unit and repeating this step and steps (i) through (m) until housing units have been installed within all bays within said selected channel;

o. moving said winch on said platform rails above the top of another selected one of said channels;

p. repeating steps (h) through (n); and

q. following installation of housing units within all said channels raising said cables and removing said winch from said platform.

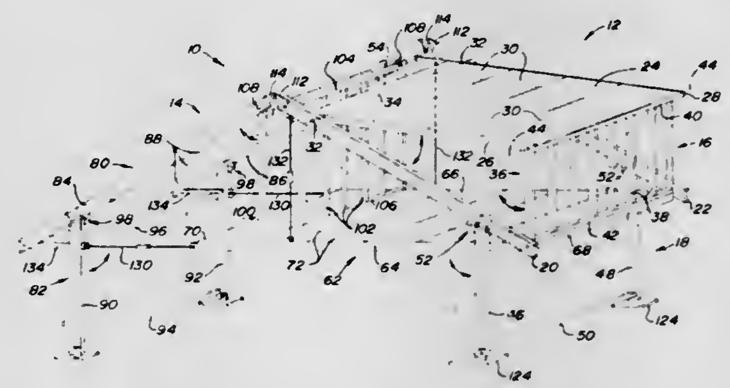
3,863,419
METHOD OF CONSTRUCTING A FOLDABLE BUILDING

John H. Hendrich, 5 W. 10th St., Erie, Pa. 16501

Continuation-in-part of Ser. No. 178,942, Sept. 9, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,677

Int. Cl. E04b *1/344, 1/35*

U.S. Cl. 52—747 **11 Claims**



1. A method of constructing a building comprising the steps of:

a. providing a first module including a side member having first and second end portions and a roof member having first and second end portions with the second end portion of the roof member being connected to the second end portion of the side member for pivotal movement about a first axis in a manner which permits them to be folded into a configuration wherein they are in side-by-side generally parallel relationship;

b. providing a first base;

c. providing a second base spaced from said first base;

d. positioning said first module in its folded configuration to lie generally horizontally with said side member subjacent said roof member and the first end portion of the roof member extending toward the second base;

e. pivotally connecting the first end portion of the side member to said first base for pivotal movement about a stationary, non-translatory second axis parallel to said first axis;

f. lifting said first module to pivot it relative to said second axis to produce arcuate translatory movement of said first axis and cause said side member to assume a generally vertical position with said roof member extending at an angle therefrom;

g. and, providing a support member and connecting said support member between the first end portion of said roof member and said second base to maintain said side member in the generally vertical position.

3,863,420
APPARATUS FOR INSTALLING BRICKS IN A KILN

Jack S. Peiffer; Donald J. Thelen, and Jimmie L. Moore, all of Houston, Tex., assignors to J. T. Thorpe Company

Filed Feb. 13, 1974, Ser. No. 442,088

Int. Cl. E04g *21/22*

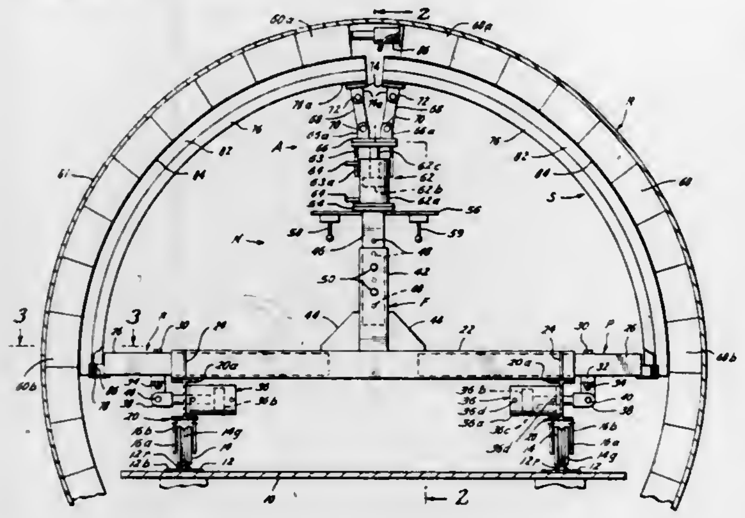
U.S. Cl. 52—749 **15 Claims**

1. A kiln apparatus for lining an interior face of a shell of a rotary kiln with liner bricks comprising:

a. a pair of arcuate brick-supporting shoes each having a lower end and an upper end, adapted to be located within the shell of the rotary kiln;

b. yieldable compensating means overlying said shoes and mounted therewith;

c. positioning means for moving the lower ends of said shoes laterally into engagement with kiln bricks when disposed in the shell; and



d. actuating means for urging the upper ends of said shoes inwardly and outwardly after said positioning means has been moved to engagement with the kiln bricks for causing bricks positioned between said shoes and the shell to move into engagement with the interior face of the shell.

3,863,421

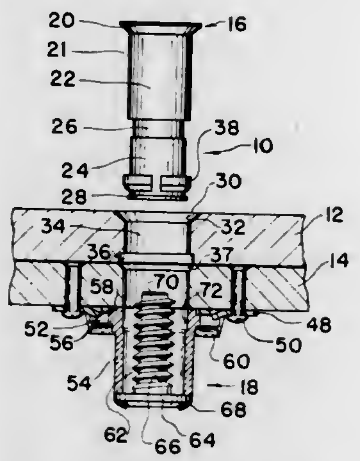
SELF-RETAINED PANEL FASTENER ASSEMBLY

William J. Busch, Fountain Valley, and Ervin J. Dey, Santa Fe Springs, both of Calif., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed May 21, 1973, Ser. No. 362,174

Int. Cl. F16b *7/18*

U.S. Cl. 52—758 F **14 Claims**



1. A self-retained panel fastener comprising a head and shank extending therefrom, said shank being formed with a thread configuration and being adapted to extend through aligned openings in a stack of workpieces, said shank including a first portion adjacent said head and a second portion spaced from said first portion by a groove, said second portion having a diameter smaller than the diameter of said first portion, and a compressible retaining ring on said shank portion, said ring having an inner-diameter slightly larger than that of said second shank portion and smaller than that of said first shank portion whereby said ring is slidable along said second shank portion to seat on said groove, said shank including radially projecting means adjacent the free end thereof for retaining said ring on said shank, said ring further having an outer-diameter larger than that of said first shank portion when the ring is uncompressed, said ring being compressible in said groove so that said outer-diameter is substantially equal to that of said first shank portion whereby said shank can be inserted through said openings in said workpieces when said ring is compressed, said ring further having aligning means formed thereon for aligning the workpieces during insertion of said shank through said openings in said workpieces.

3,863,422

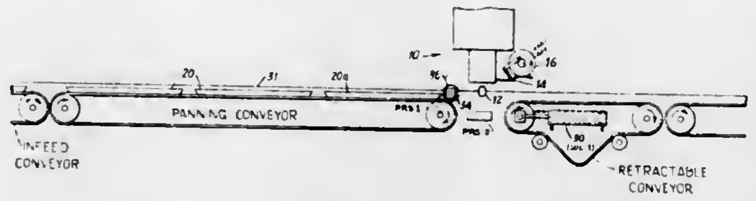
BAKING PAN REGISTRATION CONTROL SYSTEM

Dale R. Wagner, Richmond, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,568

Int. Cl. B65b *57/08, 57/16, 57/20*

U.S. Cl. 53—55 **9 Claims**



1. In a baking pan registration control system for controlling the positioning and movement of baking pans to deposit dough pieces at one or more predetermined locations on each pan, the combination comprising

dough piece dispensing means for repetitively dispensing dough pieces which are deposited in a given pattern on each dispensing action,

a pan conveyor for conveying baking pans to receive dispensed dough pieces,

conveyor motor means for moving said conveyor at selectable speeds which are functions of the dispensing rate of the dough piece dispensing means,

means for sensing the arrival of a designated portion of a pan at a predetermined location at or adjacent the dispensing means,

means for establishing a programmed deposition of dough pieces,

means operating in response to said sensing means and to said dispensing means for positioning and moving a pan to receive dough pieces at said predetermined locations in accordance with said programmed deposition of dough pieces,

means for monitoring the deposition of dough pieces and for determining the conclusion of the programmed deposition, and

means operable in response to said last named means and at the conclusion of the programmed deposition for conditioning said system to respond according to the programmed deposition upon sensing a subsequently appearing designated pan portion at said predetermined location.

3,863,423

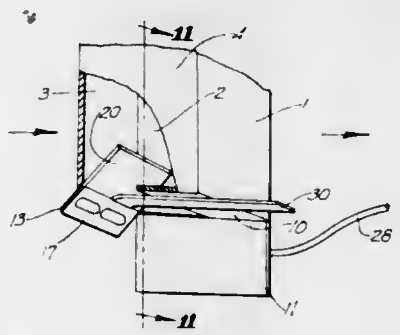
METHOD FOR CLOSING AND SEALING CARTON HAVING INTEGRAL CARRYING HANDLE

Frank D. Bergstein, Cincinnati, and Robert W. Nerenberg, Middletown, both of Ohio, assignors to The Interstate Folding Box Company, Middletown, Ohio

Filed Mar. 29, 1974, Ser. No. 455,972

Int. Cl. B65b *43/42, 7/20*

U.S. Cl. 53—29 **9 Claims**



1. In a method for closing and sealing a carton having a tubular body and end closures at its opposite ends, one of said end closures comprising end closure flaps hingedly connected to the end edges of three of the carton body walls and a panel hingedly connected to the end edge of the remaining carton body wall, the panel being cut and scored and folded upon itself to define a double thickness carrying handle immediately adjacent the remaining carton body wall and a closure flap portion extending in prolongation of the reversely folded portion of the handle, the steps of positioning the tubular body of the carton in vertically disposed position with the closure flaps and carrying handle extending in prolongation of the carton body walls and with the closure flap portion of the handle forming panel extending inwardly within the carton body, advancing the carton in a path of travel and, as the carton advances, sequentially infolding the leading closure flaps and outfolding the carrying handle, the outfolding of the carrying handle acting to infold the attached closure flap portion into essentially planar relationship with the leading closure flap, and thereafter infolding and adhesively securing the remaining end closure flaps to the leading closure flap and the closure flap portion of the handle forming panel.

3,863,424

BLOWING AND FILLING MACHINE FOR THE CONTINUOUS PRODUCTION OF FILLED AND SEALED CONTAINERS, PARTICULARLY INFUSION BOTTLES

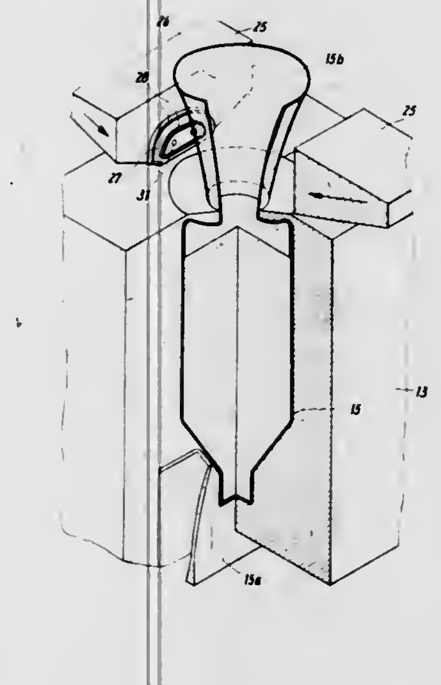
Wilhelm Naumann, Ettlingen, Baden, Germany, assignor to PMD Entwicklungswerk fur Kunststoff-Maschinen GmbH & Co., K.G., Ettlingern, Germany

Filed May 23, 1973, Ser. No. 363,129

Claims priority, application Germany, May 25, 1972, 2225311

Int. Cl. B65b *3/02, 47/08*

U.S. Cl. 53—192 **2 Claims**



1. An apparatus for the production of filled infusion bottles comprising:

a suspension station adapted to extrude at least one tube of synthetic-resin material;

a blowing, filling and sealing station spaced from said extrusion station and provided with a blowing mandrel receivable in a tube extruded at said extrusion station for blowing same and for filling the blown tube;

a blowing mold shiftable between said stations for receiving said tube and retaining same during the blowing and filling thereof, said blowing mold comprising a pair of separable mold parts defining at least one cavity having the configuration of an infusion bottle, said cavity being formed with a downwardly convex upward wall portion surrounding an opening adapted to receive said mandrel and conforming to the concave bottom of an infusion bottle adapted to be formed in said cavity, said mold parts being further provided with cutting and sealing edges at a bottom portion for sealing the top of an infusion bottle adapted to be formed in the mold cavity;

a pair of clamping members engageable with a portion of said tube projecting from said opening and formed with first sealing edges conforming to the concavity of the bottom of said bottle for sealing said bottom, and annular sealing and cutting edges for defining a flat eye extending from said bottom and formed with a hole enabling the hanging of said bottle from the synthetic-resin material extending through said opening;

means for displacing said members into and out of engagement with the synthetic-resin material extending through said opening; and

means for removing the filled bottles from said mold and transporting them away.

3,863,425

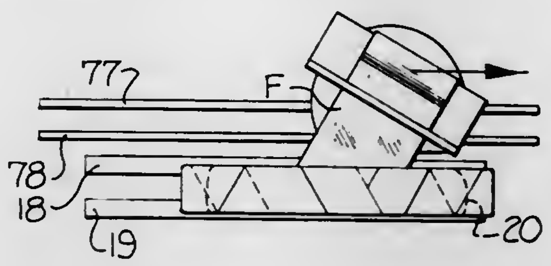
APPARATUS FOR WRAPPING ELONGATE CYLINDRICAL OBJECTS

John M. Edwards, Charlotte, N.C., and James D. Wright, Berkley Heights, N.J., assignors to John Edwards and Associates, Inc., Charlotte, N.C.

Filed May 14, 1973, Ser. No. 360,156

Int. Cl. B65b *11/04*

U.S. Cl. 53—211 **13 Claims**



1. An apparatus for covering elongate cylindrical objects with elongate sheet material having a width less than the length of said object, said apparatus comprising

a. a pair of rolls supported for rotation in spaced apart position with the distance therebetween being less than the diameter of said object so that said object may be supported between and on said rolls,

b. means for driving at least one of said rolls to impart rotation to said object while it is supported on said rolls,

c. carriage means supporting a supply roll of said elongate sheet material adjacent one side of said pair of rolls,

d. drive means for moving said carriage along a path of travel parallel to said pair of rolls, and

e. control means for varying the angular position of said carriage during movement of said carriage by said drive means to thereby change the angular relationship between the rotational axis of said supply roll and the rotational axis of said object and to form convolute windings of the sheet material at opposite ends of said object with overlapping spiral windings in the medial portion of said object.

3,863,426

DISC TRANSFER DEVICES TO PETRI DISHES

Patrice Marie Denis Paul Courvalin, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, (Hauts-de-Seine), France

Filed May 25, 1973, Ser. No. 364,064

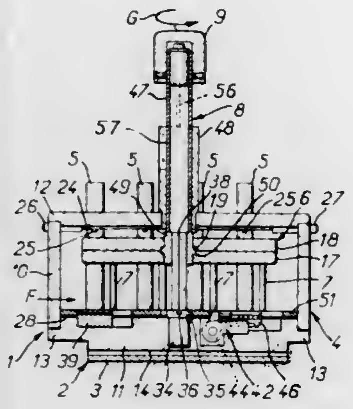
Claims priority, application France, May 26, 1972, 72.018905

Int. Cl. B65b *5/06, 67/02*

U.S. Cl. 53—237 **15 Claims**

1. A transfer device for depositing discs on a receiving surface, comprising a casing having a bottom particularly adapted to face the receiving surface, a plurality of tubes mounted in the casing for storing stacks of discs, an ejection passageway in said casing laterally adjacent each stack, trans-

fer means for transferring the disc at the bottom of each stack laterally to an ejection position in alignment with a corresponding one of said ejection passageways, a plurality of plungers arranged in alignment with said ejection passageways for sliding movement perpendicular to the bottom of the casing towards the receiving surface for driving the discs from their ejection position through said passageways onto the receiving surface and single control means for sequentially actuating said transfer means and said plunger.



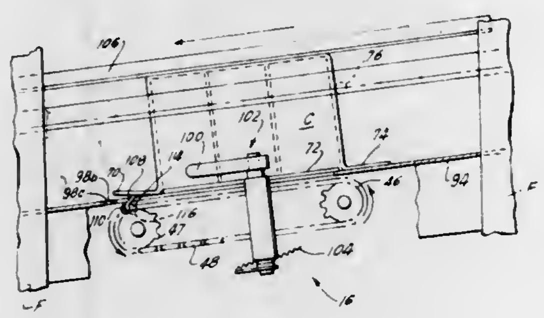
3,863,427
FLAP OPENING MECHANISM FOR HIGH SPEED AUTOMATIC CASING MACHINE

Anthony T. Rossi, 1800 Point Pleasant Ave., Bradenton, Fla. 33505

Division of Ser. No. 183,477, Sept. 24, 1971, Pat. No. 3,805,484. This application Feb. 11, 1974, Ser. No. 441,040

Int. Cl. B65b *43/39*

U.S. Cl. 53—382 **2 Claims**



1. For use in an automatic carton packing operation wherein a plurality of empty cartons are conveyed past a flap opening station, said cartons having at least the bottom leading flaps thereof in the closed position, a flap opening mechanism at said flap opening station comprising support means adapted to convey said carton at its bottom and having an opening therein, carton conveying means adapted to convey said carton along said support means in a given direction and flap engaging means comprising: a member adapted to engage said leading flap through said opening in said support means; an endless conveyor means moving said member in an endless path under said opening in said support, said member being articulately mounted on said endless conveying means, said member being effective to engage said leading flap and to pivot same outwardly as said carton passes said flap opening station, and actuating means operably connected to said member for moving said member upwardly through said opening to raise said leading flap above the level of said support means before said front flap reaches the end of said opening.

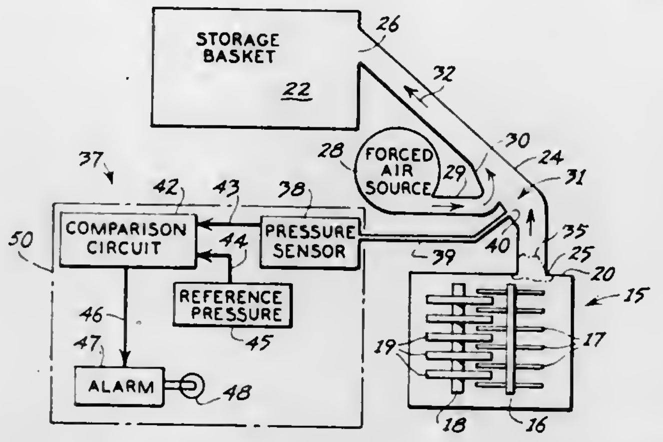
3,863,428
BLOCKAGE MONITOR FOR A COTTON PICKING MACHINE

Robert L. Baxter, 6501 Harding Rd. Apt. A-9, Nashville, Tenn. 37205

Filed Nov. 14, 1973, Ser. No. 415,511

Int. Cl. A01d *45/18*

U.S. Cl. 56—10.2 **4 Claims**



1. In a cotton picking machine having a picker head for picking cotton from a cotton plant, a storage receptacle for receiving picked cotton, a pneumatic duct assembly including an enlarged housing for said picker head and an elongated tubular duct of smaller cross-section than said housing, said tubular duct having an open inlet end in fluid communication with said housing and an open outlet end in fluid communication with said receptacle, and forced draft means for moving air through said duct assembly toward said receptacle with sufficient pressure to draw picked cotton from said picker head through said duct assembly to said receptacle, a blockage monitor system comprising:

a. a pressure-electrical transducer element mounted on said machine,

b. a tubular conduit connecting said transducer element to said duct assembly to place said transducer element in fluid communication with a region of negative pressure within said duct assembly when said draft means is moving air through said duct assembly,

c. an electrically actuated alarm on said machine,

d. electrical circuit means on said machine connecting said transducer to said alarm,

e. said circuit means being responsive to an electrical signal from said transducer element corresponding to a predetermined change in pressure within said duct assembly to actuate said alarm.

3,863,429
CYLINDER LAWN MOWER

Bernard Joseph Beusink, Oerle, and Barteld Niezen, Goningen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,813

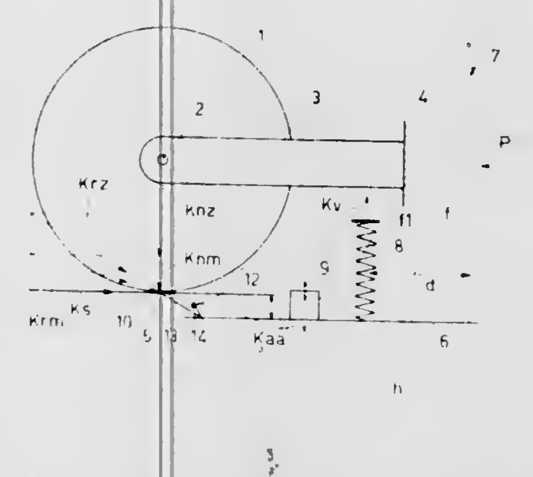
Claims priority, application Netherlands, Apr. 17, 1970, 7005530

Int. Cl. A01d *55/20*

U.S. Cl. 56—249 **9 Claims**

1. A lawn mower of the cutter-cylinder type comprising a wheeled frame, a subframe attached to said frame, a cutter cylinder rotatably mounted on a spindle carried on said subframe, at least one cylinder knife carried by said cutter cylinder, a ledger blade support pivotally attached to said frame, a ledger blade carried by said ledger blade support and arranged for cooperative engagement with said cylinder knives, helical spring means secured at one end thereof to said frame and connected at its other end to said ledger blade support for urging said ledger blade and said cylinder together so that the blade and knives are resiliently held towards each other, an adjustable abutment secured to the frame for limiting the travel of said ledger blade support so as to produce a cutting gap between the ledger blade and the cutter cylinder, a pivot

journalled in the frame and extending parallel to said cutter cylinder spindle, said knife and blade which are resiliently held towards each other being pivotable about said pivot into engagement with said abutment, whereby the cutting force which is produced during a cutting operation results in a cutting moment acting about said pivot with respect to each said knife, said cutting moment acting opposite to the spring moment caused by said spring acting about said pivot with respect to each said knife, so that upon an excessive cutting force during a cutting operation said cutting moment will exceed the spring moment and cause the cylinder knife and ledger blade to separate, said ledger blade support being arranged so as to be pivotable about said pivot journalled in the frame, the axis of said pivot being located behind the cylinder spindle with respect to the direction of travel of the mower and being located an equal distance from the line tangent to said cylinder at the point of contact between said cylinder and said ledger blade and the line passing through said contact point and the center of said cylinder spindle.



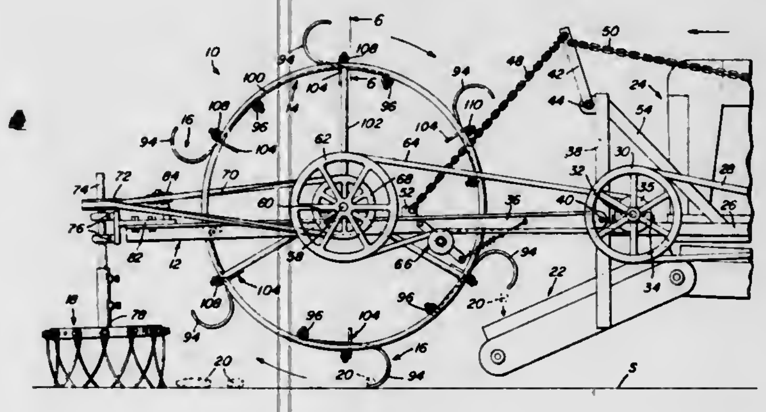
3,863,430
CORN PICK-UP DEVICE

James H. Jennings, Rt. 1, Box 84, Muleshoe, Tex. 79347

Filed Apr. 25, 1973, Ser. No. 354,382

Int. Cl. A01d *87/04*

U.S. Cl. 56—345 **7 Claims**



3. In a gathering machine having a frame, a support rotatably mounted on the frame, and a means for picking mounted on the support for rotation therewith, the improvement wherein the picking means includes a resilient element having a hook forming a flexible cup arranged for picking-up an article lying on a surface which the frame is traversing, the picking means further including a plurality of resilient elements, and means for maintaining a predetermined spacing of these resilient elements, the means for spacing including a plate mounted on the support and provided with a plurality of slots arranged for receiving the resilient elements.

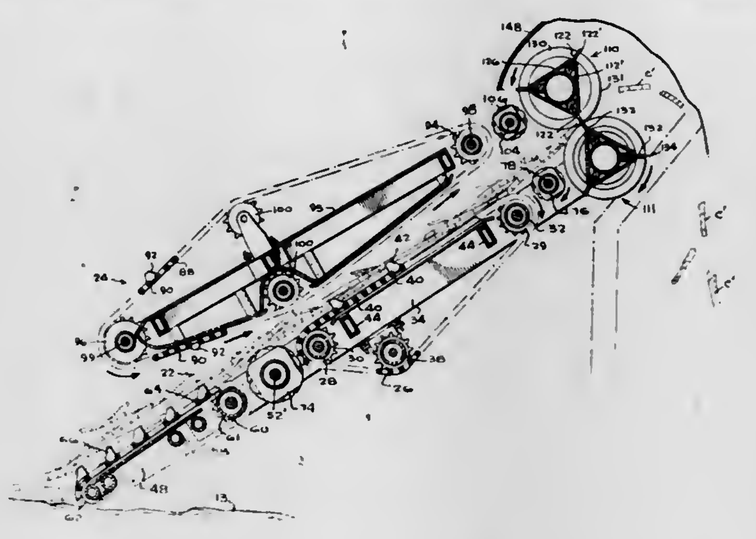
3,863,431
APPARATUS FOR HARVESTING AND CLEANING WINDROWED CANE

Larry G. Fowler, Belle Glade, Fla., assignor to Sugar Cane Growers Cooperative of Florida, Belle Glade, Fla.

Continuation-in-part of Ser. No. 248,970, May 1, 1972, Pat. No. 3,828,536. This application May 9, 1973, Ser. No. 358,695

Int. Cl. A01d *49/00*

U.S. Cl. 56—502 **24 Claims**



1. Field harvesting means for gathering freshly cut windrowed cane comprising a motor driven vehicle, cane pickup and conveying means mounted on and extending forwardly from said vehicle for engaging windrowed cane extending in generally parallel relation to the direction of movement of said vehicle and lifting the cane of the windrow upwardly from the ground for rearward conveyance, cane segmentizer means positioned on said vehicle to receive cane from said pickup and conveying means, a cleaning chamber mounted on said vehicle in a position to receive cane segments discharged from said cane segmentizer means to fall downwardly through said cleaning chamber, an outfeed conveyor means mounted on the vehicle and having a lower end in said cleaning chamber to receive said cane segments falling through said cleaning chamber, said outfeed conveyor extending transversely upwardly from said cleaning chamber and having a discharge end spaced to one side of said vehicle, means mounted on said vehicle for providing an air blast in said cleaning chamber across said cane segments falling through said cleaning chamber onto said outfeed conveyor for removing trash and leaf particles from said cane segments and blower means mounted adjacent the outer end of said outfeed conveyor for creating an air flow across the path of travel of cane segments falling from the discharge end of said outfeed conveyor.

3,863,432
APPARATUS FOR TAKING OUT CAKES FROM CENTRIFUGAL SPINNING UNITS

Akihiro Isobe; Takeshi Iwasaki, and Shigeo Katsuyama, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 16, 1973, Ser. No. 416,509

Claims priority, application Japan, Nov. 18, 1972, 47-115845

Int. Cl. D01h *9/06, 1/08, 7/74*

U.S. Cl. 57—52 **5 Claims**

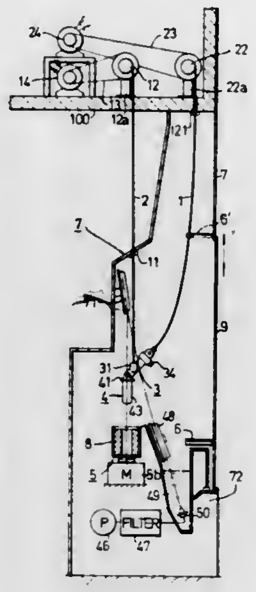
1. A cake removal unit in a centrifugal spinning set, comprising in combination:

A. first and second belts horizontally separated from one another and each respectively mounted at one end on first and second powered drum means; each of said first and second belts projecting downward through separate slit guides each disposed respectively below said first and second powered drum means;

B. an operating bar disposed below said slit guides and having pivotally suspended at one end thereof inflatable resilient bag-type gripper means for removing a cake from a spinning pot disposed below said gripper means;

C. said operating bar having the other end of said first belt pivotally attached at an intermediate point between its ends and having the other end of said second belt attached at the end thereof remote from said gripper means; and

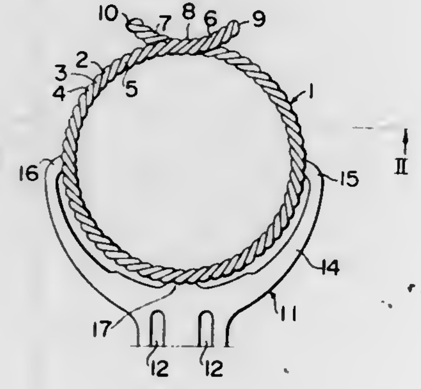
D. said gripper means being further adapted to be maintained in a position of vertical alignment with the axis of said spinning pot immediately prior to beginning removal of a cake from said pot.



3,863,433

BALLOON CONTROL RING

Hiroyuki Kanai, No. 3-15 Matsunouchi-cho, Ashiya, Japan
Filed Aug. 29, 1972, Ser. No. 284,492
Claims priority, application Japan, Sept. 2, 1971, 46-67756; Oct. 7, 1971, 46-79029; May 16, 1972, 47-48305
Int. Cl. D01h *13/04*; D02g *1/08*
U.S. Cl. 57—106 **2 Claims**

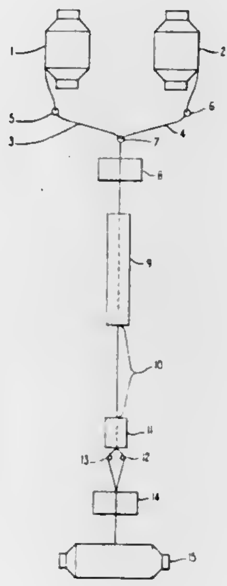


1. A balloon control ring through which a yarn is to pass having a ribbed inner surface over which the yarn rubs as it revolves and advances through the ring, the ribs on the inner surface being generally parallel to one another and extending at an angle of between 10° and 50° to the circular line at which the central plane in which the ring lies intersects the said inner surface, the arrangement being such that as a yarn revolves and passes over each successive rib, it engages each rib as or before it leaves the preceding rib, said ring being fixed to a supporting means through which it is fixed to the frame of a machine.

3,863,434

FALSE TWISTING OF YARN

Werner Doschko, 6901 Nussloch am Leaimbach 16, and Heinz Gilch, 6908 Wiesloch in der Bohn 19, both of Germany
Filed Oct. 16, 1972, Ser. No. 274,008
Claims priority, application Great Britain, July 21, 1971, 34185/71
Int. Cl. D02g *1/02*
U.S. Cl. 57—157 TS **6 Claims**



1. A process for false twist texturing a synthetic multifilament composite yarn comprising forwarding a yarn to be textured from feed means sequentially through a heated zone, a cooling zone, a false twisting zone and a yarn separation zone to a take up zone, friction twisting said yarn in said false twisting zone and passing said twist in said yarn through said cooling zone into said heating zone wherein said twist is heat set, cooled and untwisted as it is forwarded through said false twisting zone to thereby heat set the imposed twist and subsequently untwist to substantially remove real twist, separating said yarn into at least two plies to thereby arrest any residual real twist recombining the plies and taking up said yarn in said take-up zone.

3,863,435

METHOD FOR RESTRINGING A THREADLINE

Melvin Harry Johnson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 20, 1973, Ser. No. 343,172
Int. Cl. B65h *69/06*
U.S. Cl. 57—159 **12 Claims**

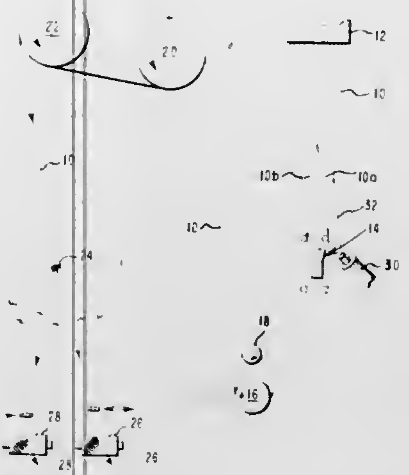
1. A method for restringing an unstrung threadline in a high-speed apparatus processing multiple running threadlines moving under tension said method comprising:

a. retrieving the unstrung threadline while moving it through a yarn handling device;

b. diverting a running threadline through a yarn passage of the jet splicer portion of a splicer-cutter apparatus;

c. diverting the retrieved moving unstrung threadline through said yarn passage while maintaining tension in said unstrung threadline;

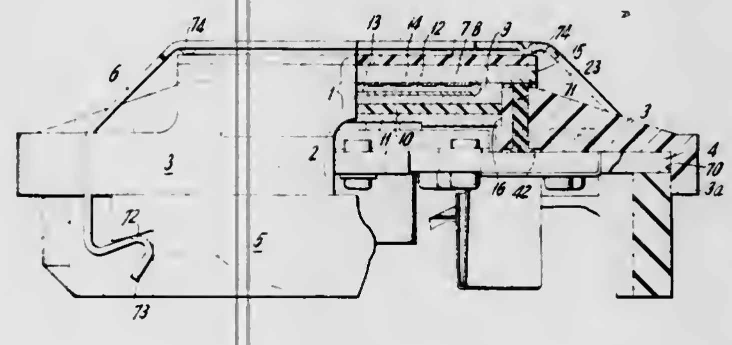
d. interlacing the moving unstrung threadline with the running threadline by directing air under pressure into said yarn passage in a plane perpendicular to the running threadlines to form a splice while practically simultaneously cutting the unstrung threadline upon its exit from the jet splicer whereby the unstrung threadline is carried by the running threadline.



3,863,436

SOLID STATE QUARTZ WATCH

Jack Schwarzschild, Stamford, Conn., and Raymond Robert Boxberger, So. Nyack, N.Y., assignors to Timex Corporation, Waterbury, Conn.
Filed Apr. 18, 1974, Ser. No. 462,151
Int. Cl. G04b *19/30, 37/14*; H02g *3/08*
U.S. Cl. 58—50 R **9 Claims**



1. A solid state watch module comprising:

Electrooptical display means having electrically energizable characters visible on a viewing surface and also having a first plurality of electrical contact terminals connected to said characters,

a substrate having printed circuit leads on at least one side thereof connected to a second plurality of electrical contact terminals, said substrate having an integrated circuit mounted thereon also connected to said printed circuit leads and adapted to provide driving signals to said display characters to give a time indication,

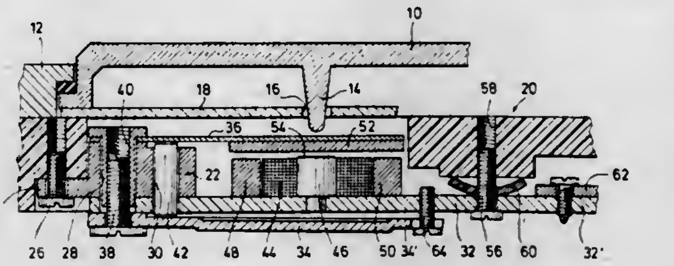
an intermediate connector member having first means locating the display means on one side thereof and second means locating the substrate on the other side thereof and including electrically conductive members making contact between said first and second plurality of contact terminals, and

spring clip means adapted to hold said display means, connector member and substrate together in compression and to maintain said electrically conductive members in contact with the first and second terminals.

3,863,437

ELECTROMAGNETIC BUZZER FOR A WATCH WITH TONGUE ADJUSTMENT MEANS

Mandred Hans Barth, Calmbach; Adolf Sedlak, Pforzheim, and Walter E. Sodler, Buchenbronn, all of Germany, assignors to Timex Corporation, Waterbury, Conn.
Filed June 17, 1974, Ser. No. 479,713
Claims priority, application Germany, July 5, 1973, 2334153
Int. Cl. G04c *21/34*; G04b *23/12*
U.S. Cl. 58—57.5 **15 Claims**



1. In an electromagnetic buzzer for a watch, said buzzer of the type having a membrane with associated projecting pin means, an electromagnet system, a support arm carrying the electromagnet system, one end of which support arm is fixed to the watch and the other movable end of which can be adjusted relative to said pin means, and a tongue clamped on one end and arranged to be excited to oscillate by the electromagnet system and strike said pin means, the improvement comprising:

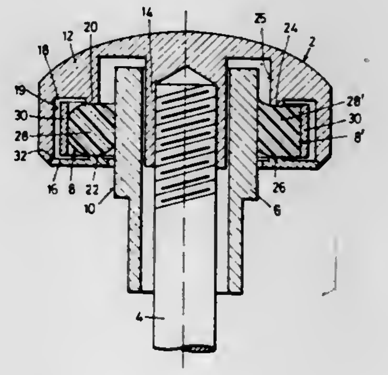
first adjusting means on said movable end of the support arm opposite the electromagnet system for positioning said support arm relative to said pin means,

second adjusting means acting near the clamped end of the tongue for positioning the tongue relative to the electromagnet system, said second adjusting means acting through reducation means.

3,863,438

DEVICE FOR INSURING THE TIGHTNESS OF A TIMEPIECE CASING

Rene Soguel, Rue de la Chapelle 10, Lee Hauts-Geneveys, Switzerland
Filed June 24, 1974, Ser. No. 482,568
Claims priority, application Switzerland, June 29, 1973, 9568/73
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 B **22 Claims**



1. Device for insuring the tightness of a timepiece casing at the passage of a stem, containing:

a part which is fixed to the casing,

a part which is movable and attached to the stem

and a ring-shaped tightness fitting suited for undergoing an elastic deformation and fitted together with said parts around a cylindrical surface of one of them and in a ring-shaped bed of the other, in which it is held between ring-shaped surface sections located in this bed, wherein said tightness fitting has a profile the height of which in radial direction of its ring shape is approximately at least equal to its width in axial direction of its ring shape,

said ring-shaped surface sections of one of the parts which grip the tightness fitting, are at least approximately axially formed opposite both sides of the fitting on which they exercise an axial gripping pressure substantially free from any radial component, said ring-shaped surface sections being defined on ring-shaped projections which stand out axially toward the fitting in order to only set up the axial gripping between two opposite ring-shaped grip-zones which are narrow with regard to said height of the profile of the fitting and beside which there remain no-grip-zones, said gripping tending to cause a radial extension of said height,

the tightness fitting is provided with a radial retention ring arranged around at least one elastically deformable fitting-body in order to restrain said radial expansion outwardly so as to make it act inwardly against the mentioned cylindrical surface around which said fitting is engaged, said retention ring being in direct contact with neither of said two parts,

the surfaces by which said fitting is held axially and the surface by which said fitting encloses said cylindrical surface having between them such a pressure and dimension relationship when a relative rotation occurs between the two said parts, said tightness fitting remains fixed in rotation with the cylindrical surface which it encloses.

3,863,439

MACROCYSTALLINE WATCH DIAL

Kazutomo Kasai, Shimosuwa-machi, and Shuzo Koizumi, Suwa, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 21, 1973, Ser. No. 390,290

Int. Cl. G04b *19/10*

U.S. Cl. 58—127 R **11 Claims**

1. A watch dial having an outer face consisting essentially of metal crystals large enough to be visible to the unassisted eye, said metal selected from the group consisting of iron, tin, copper and alloys thereof.

3,863,440

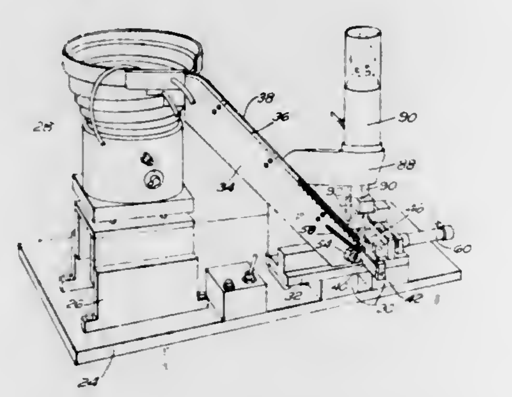
SEMI-AUTOMATIC LINKING MACHINE

Morris Kortick, 124 Paine Ave., Cranston, R.I.

Filed Feb. 19, 1974, Ser. No. 443,805

Int. Cl. B21l *11/00*

U.S. Cl. 59—14 **17 Claims**



1. A linking machine comprising a base, a horizontal feed strip mounted front to rear on said base, means for feeding successive links in open position to said feed strip, means for moving each link forwardly on said strip, whereby an operator can hold objects to be linked on each side of said strip in position in the link, and means for bending the link into closed position to lock the objects to the link.

3,863,441

SHORTENING HOOK

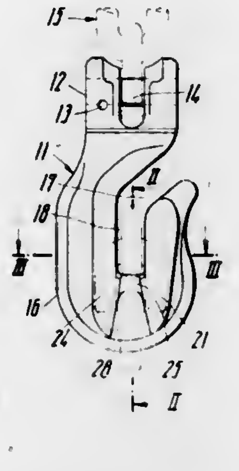
Hans Kaufmann, 7084 Unterkochen, Glashutte, Germany

Filed June 21, 1973, Ser. No. 372,226

Claims priority, application Germany, June 23, 1972, 2231653

Int. Cl. F16g *17/00*

U.S. Cl. 59—93 **6 Claims**



1. A shortening hook for round link chains having a plurality of connected links, said hook having an insertion slot formed by lateral supporting surfaces extending essentially parallel to each other to prevent tilting of an inserted chain link therein, said hook including a transverse yoke arranged in the region of the bottom of the hook slot and having projections which extend between the legs of the chain links following the chain link introduced into the shortening hook, the transverse yoke being developed as a supporting yoke and a centering trough providing a snug seat in the bottom of said slot for the inserted chain link and supporting the longitudinal leg of said link which faces the bottom of the insertion slot over practically its entire length.

3,863,442

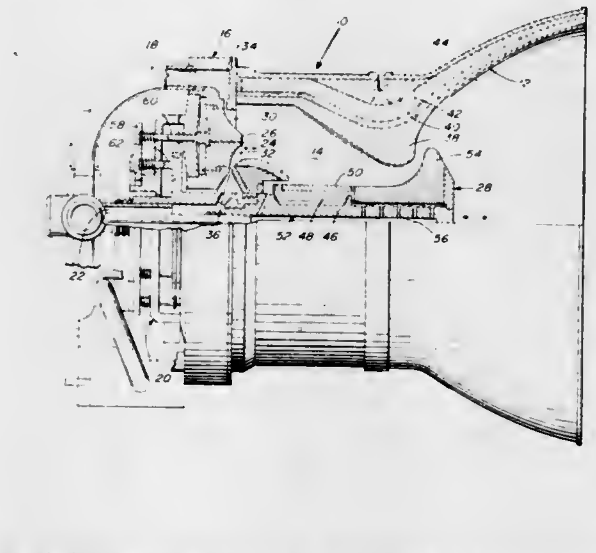
ANNULAR SHEET AND VARIABLE AREA INJECTION

Craig M. Schmidt, Williamsville; Frank D. Bond, Jr., Buffalo, both of N.Y., and Ronald F. McKenna, Rockford, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 24, 1970, Ser. No. 24,901

Int. Cl. F02k *9/02*

U.S. Cl. 60—258 **4 Claims**



1. An injector assembly for throttling a bipropellant rocket engine having a thrust chamber comprising:

an annular deflector plate projecting into the head of the thrust chamber and movable in an axial direction to vary the propellant flow;

said deflector plate having inner and outer annular concave deflector surfaces which propellants flow over and film-cool;

radially spaced, circumferentially arranged inner and outer groups of propellant orifices formed in said injector assembly;

said inner group of orifices being arranged to inject first propellant streams to directly impinge said inner concave deflector surface and be flattened out into a fan effect whereby said first propellant streams are formed into continuous circumferential sheet as said streams spread out and reach the edge of said inner concave deflector surface;

said outer group of orifices being arranged to inject second propellant streams to directly impinge said outer concave deflector surface and be flattened out into a fan effect whereby said second propellant streams are formed into a continuous circumferential sheet as said streams spread out and reach the edge of said outer concave deflector surface; and

said inner and outer concave deflector surfaces being contoured so as to guide said circumferentially formed propellant sheets to impinge and combust downstream of said deflector plate.

3,863,443

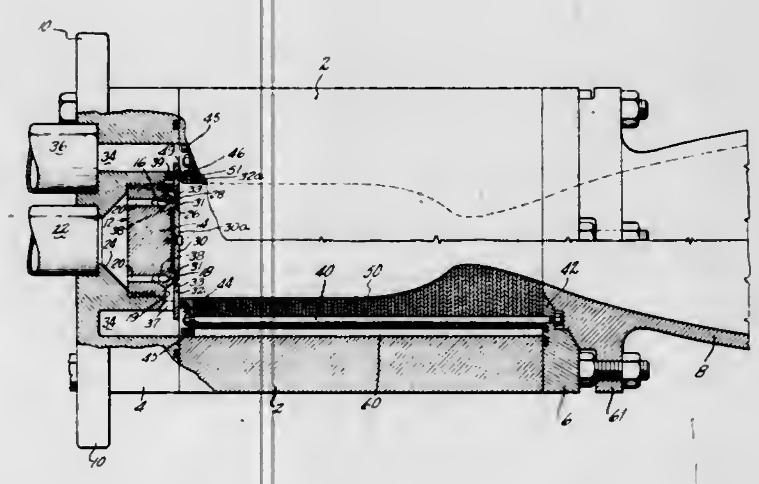
HIGH PRESSURE ROCKET AND COOLING MEANS

John Chamberlain, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 25, 1963, Ser. No. 319,047

Int. Cl. F02k

U.S. Cl. 60—265 **29 Claims**



1. In an engine having a combustion chamber of circular cross-section and concentric about an axis and including a propellant injector head at the upstream end of the combustion chamber and an exhaust nozzle at the downstream end of the combustion chamber, and wherein the combustion chamber is made up of a plurality of coaxially, circumferentially extending, abutting, flat rings, the improvement wherein each of said rings includes an outer diameter surface and an inner diameter surface and a first face surface having a circumferentially extending groove therein and further having a second groove extending between and in communication with said outer diameter surface and said circumferentially extending groove, and said first face surface still further having a plurality of arcuate grooves extending between and in communication with said circumferentially extending groove and said inner diameter surface, each of said rings further having a second face surface having a plurality of arcuate grooves extending between said inner diameter surface and the region in axial alignment with said circumferentially extending groove.

3,863,444

AIR-POLLUTION PREVENTIVE ARRANGEMENT

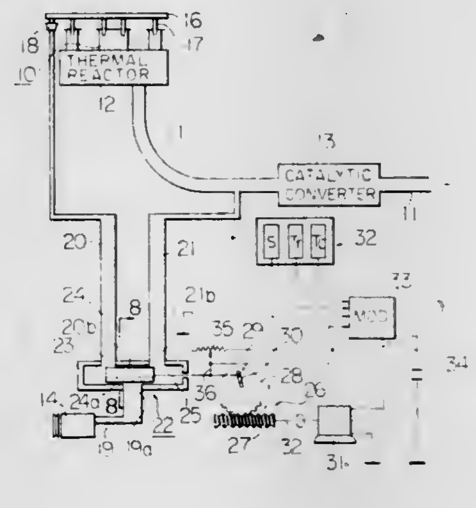
Yasuo Nakajima, Yokosuka; Takeji Oguri, Yokohama, and Hiroshi Kuroda, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Division of Ser. No. 160,278, July 7, 1971, Pat. No. 3,826,089.

This application Sept. 27, 1973, Ser. No. 388,800

Int. Cl. F01n *3/14*

U.S. Cl. 60—289 **2 Claims**



1. In an air pollution preventive arrangement, for use with an exhaust system having an exhaust passage through which exhaust gases emitted from an engine of a motor vehicle are discharged, comprising:

a thermal reactor mounted on said exhaust passage and located posterior to exhaust ports of said exhaust system for primary re-combusting unconsumed hydrocarbons and carbon monoxides contained in said exhaust gases;

at least one catalytic converter mounted on said exhaust passage and located posterior to said thermal reactor for secondarily re-combusting the exhaust gases passed from said thermal reactor;

an air injection unit including a pneumatic pump and an air passage divided into first and second branch passages, said first branch passage leading to said exhaust system anterior to said thermal reactor and said second branch passage opening into said exhaust passage anterior to said catalytic converter;

the improvement comprising a distributor interposed between said air passage and first and second branch passages, comprising:

a chamber into which said air passage is opened at its outlet port and from which said branch passages lead at their inlet ports; a piston slidably mounted in said chamber and having formed therein a groove longitudinally extending throughout the piston to provide communication between said outlet port and said inlet ports; a piston rod projecting from said piston and extending outwardly through said chamber, a gearing unit operatively connected to said piston rod for moving said piston through said piston rod in a longitudinal direction, and a reversible motor coupled with said gearing unit to drive the gearing unit selectively in either direction.

3,863,445

HEAT SHIELDS FOR EXHAUST SYSTEM

Robert A. Heath, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

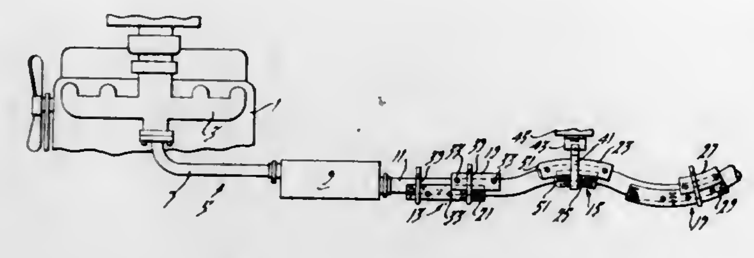
Filed Aug. 4, 1972, Ser. No. 277,870

Int. Cl. F01n *3/14*

U.S. Cl. 60—299 **7 Claims**

1. In a vehicle having an internal combustion engine with a catalytic exhaust system including a catalyst converter unit for reducing the quantity of unburned emissions in the exhaust gas, a pipe on the underside of the vehicle and connected to the converter to conduct exhaust gases away from the converter, an imperforate upper metal plate mounted adjacent

the pipe and spaced from and above it to serve as a heat shield protecting the underside of the vehicle body, and at least one lower plate mounted adjacent the pipe and spaced from and below it, said lower plate being perforated.



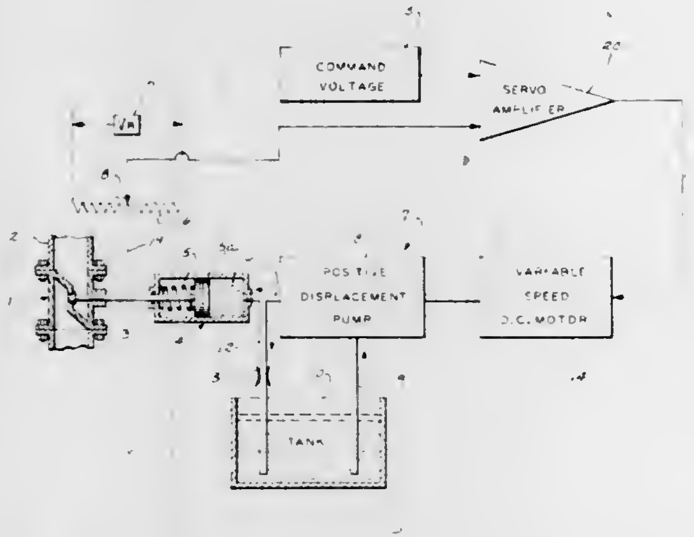
3,863,446
FLUID POSITIONING APPARATUS

Harry L. Giwosky, Milwaukee, Wis., assignor to Jordan Controls, Inc., Milwaukee, Wis.

Filed July 16, 1973, Ser. No. 379,326

Int. Cl. F15b *9/03*

U.S. Cl. 60—388 **5 Claims**



1. A positioning apparatus for accurately, mechanically positioning and holding a load in any one of a plurality of different load positions comprising a variable speed prime mover, a positive displacement pump coupled to and driven by said prime mover, a fluid responsive positioning device having a mechanical output for connection to a mechanical load and having a resilient return means, a fluid circuit means for connecting the positive displacement pump to the positioning device and a by-pass means including a restricted return means whereby the fluid pressure established is dependent on the speed of the prime mover to establish a position of the mechanical output against said resilient means, operating means connected to vary the speed of the prime mover and adjust the fluid pressure to said fluid responsive positioning device, and a servo control means connected to sense the position of the mechanical output and connected to control said operating means to said prime mover to adjust the speed of the prime mover in accordance with the sensed position and thereby the fluid pressure in said fluid responsive positioning device to variously position said mechanical output in any selected position between said limits and to hold said position with changes in the fluid circuit means.

3,863,447
HYDRAULIC MOTORS AND DRIVING SYSTEMS EMPLOYING SAME

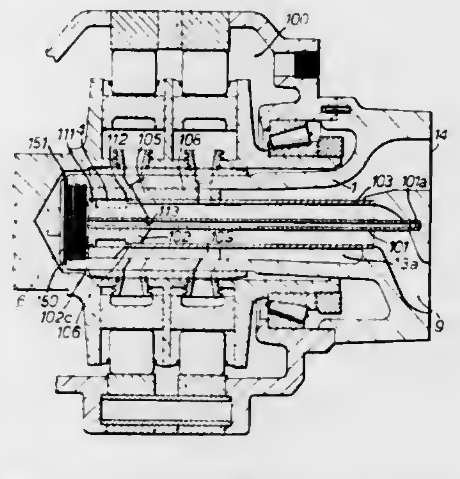
Kenneth William Samuel Foster, Prestbury; Neil McIntosh Wallace, Stockport, and Duncan Kinloch Irons, Cheadle, all of England, assignors to Renold Limited, Wythenshawe, Manchester, England

Filed Dec. 8, 1972, Ser. No. 313,253

Claims priority, application Great Britain, Dec. 9, 1971, 57161/71

Int. Cl. F15b *7/04*

U.S. Cl. 60—425 **23 Claims**



1. An hydraulic motor having means for receiving an externally generated fluid pressure signal and having:

a rotor comprising at least two rows of pistons and cylinders; and

adjustable valve means for supplying fluid under pressure into the cylinders and for allowing the fluid to exhaust therefrom, thereby to drive the pistons and rotate the rotor, the valve means comprising only a single displaceable valve member which is selectively adjustable, linearly, in two opposite directions by fluid under pressure between two alternative positions, said valve member being displaceable in one direction in response to the fluid pressure signal supplied to the motor and acting on a first effective area of the valve member, and being displaceable in the other direction by the supply of working fluid to the motor and acting on a lesser effective area of the valve member which is oppositely directed to said first effective area of the valve member,

said valve means controlling the supply of the working fluid to the motor by selectively communicating a pressure fluid inlet and an exhaust fluid outlet of the motor respectively with a first number of said rows when in a first of said two alternative positions and with a second number of said rows which is greater than said first number of said rows when in the other of said two alternative positions, to provide for two different motor speeds for a given delivery of working fluid to the motor, the pressure fluid inlet and the exhaust fluid outlet being interchangeable to rotate the rotor in opposite directions.

3,863,448
PRESSURE COMPENSATED PUMP

Paul J. Purdy, Eldridge, Iowa, assignor to J. I. Case Limted, Racine, Wis.

Filed July 11, 1973, Ser. No. 378,358

Int. Cl. F16h *39/46*

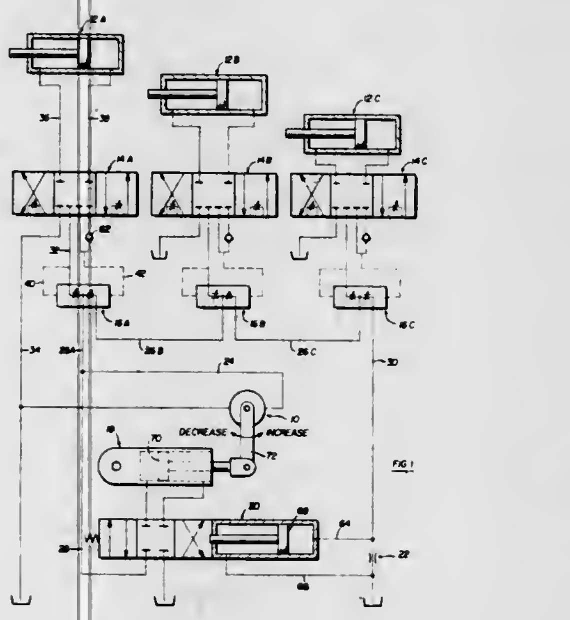
U.S. Cl. 60—422 **2 Claims**

1. In a hydraulic circuit having a variable displacement pump, a pump displacement controlling device, a plurality of hydraulic motors and a plurality of motor control valves, each hydraulic motor having an associated motor control valve for controlling the fluid flow to such hydraulic motor, the improved pump control system comprising:

a plurality of series-connected flow control valves each having its own input line and first and second output lines, said input line of the upstream most flow control valve being connected to the output of the pump, said first output line of each of said flow control valves serving as an input line to an associated one of said motor control valves and being continuously connected across such flow control valve to the input line of such flow control valve, said second output line of each of said flow control valves being connected in series with the input line of the next downstream flow control valve;

feedback singal means interconnecting each of said motor control valves to its associated flow control valve and operable to sense the flow rate and flow demand through such motor control valve and to position the associated flow control valve to reduce flow from the input line to the second output line of such flow control valve when the flow demanded by such motor control valve exceeds the flow rate therethrough, and to increase the flow from said input line to said second output line as the flow rate through such motor control valve catches up with the demand, thereby establishing a fluid supply priority among said flow control valves and their associated motor control valves which favors each upstream motor control valve relative to the next downstream motor control valve;

said second output line of the downstream-most of said series-connected flow control valves being connected to a flow demand-sensing device, said flow demand sensing device being connected to the pump displacement controlling device and being responsive to the flow rate in said second output line of said downstream-most flow control valve to signal the pump displacement controlling device to control pump displacement in inverse proportion to said flow rate, which flow rate is inversely proportional to the sum of the combined unsatisfied flow demand of all of said motor control valves



3,863,449
HYDRAULIC MOTOR FLUID FLOW CIRCUITRY

Hollis N. White, Jr., West La Fayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 27, 1973, Ser. No. 392,019

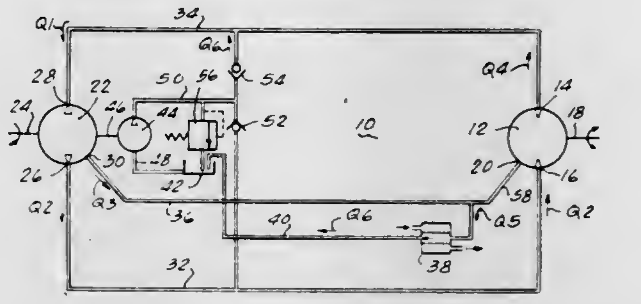
Int. Cl. F15b *21/04*

U.S. Cl. 60—456 **9 Claims**

1. A hydrostatic drive system comprising:

a hydraulic motor including a housing having first, second and third ports, an output shaft mounted for rotation, means in a primary fluid circuit disposed in said housing between said first and second ports and connected to said shaft for causing rotation of said shaft in response to fluid flow therethrough, a secondary fluid circuit disposed in said housing between said primary fluid circuit and said third port, and valve means in said secondary fluid circuit for bypassing a portion of the fluid received in said primary fluid circuit out of said housing through said third port;

a first pump including three ports and operable to discharge fluid at a first flow rate from a second of said ports, at a second flow rate from a third of said ports and receive fluid at said first and second flow rates combined at a first of said ports;



a heat exchanger connected to receive the fluid discharged from said third ports of said motor and said first pump for cooling and discharging the fluid;

a reservoir connected to receive the fluid discharged from said heat exchanger; and

a second pump connected between said reservoir and said first pump for providing said pump with fluid equal to the fluid cooled in said heat exchanger.

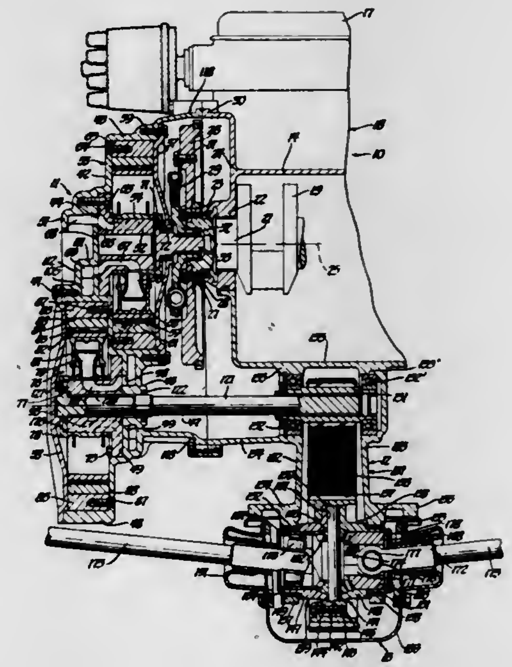
3,863,450
HYDROSTATIC TRANSMISSION

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 250,368, May 4, 1972, Pat. No. 3,805,641. This application Nov. 8, 1973, Ser. No. 413,880

Int. Cl. F16h *39/46*

U.S. Cl. 60—487 **3 Claims**



1. In a hydrostatic transmission; a hydrostatic transmission housing having an intermediate wall with a pump chamber and motor passages on one side and pump passages coaxial with said pump chamber and a motor chamber coaxial with said motor passages, both on the opposite side of said wall; pump means mounted in said pump chamber having a coaxial pump shaft; motor means mounted in said motor chamber having a rotatably mounted coaxial driven shaft driven by said motor means in spaced parallel relation to said pump shaft; said pump chamber and said motor chamber being in partial overlapping relation with napes at the points where their perime-

ters intersect to reduce the space between said pump shaft and driven shaft; connecting passage means extending from said pump passages along said opposite side of said wall, across said wall at the napes between said pump and motor chambers and along said one side of said wall to said motor passages.

3,863,451
HEATER APPARATUS OF A HOT GAS EXTERNAL COMBUSTION PISTON ENGINE

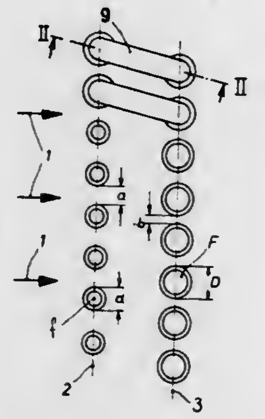
Peter Kuhlmann, Augsburg, and Franz Beschorner, Neusass, both of Germany, assignors to Maschinenfabrik-Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Germany

Filed Sept. 26, 1973, Ser. No. 400,883

Claims priority, application Germany, Oct. 6, 1972, 2249117

Int. Cl. F01b *1/00*

U.S. Cl. 60—522 **16 Claims**



1. A hot gas piston engine of the external combustion type in which the working gas is heated, in passing to and fro between a plurality of regenerators and a plurality of work chambers through heating tubes, by a heating gas passing around the outside of said tubes, comprising:

- two arrays of substantially straight and parallel heating tubes, one being located behind the other in the direction of flow of said heating gas and both arrays being disposed transverse to said direction of flow, including a first array leading said working gas directly to and from said hot work chambers without substantial change of direction of flow between said hot work chambers and the tubes of said first array and a second array leading said working gas directly to and from said regenerators without substantial change of direction of flow between said regenerators and the tubes of said second array;
- connecting duct means for guiding said working gas back and forth between said first and second arrays with not substantially more than 180° of change of direction of flow of said working gas;
- that one of said arrays of heating tubes which is upstream in the path of flow of heating gas (**2,13,18,26,28**) having a greater open cross-sectional area for the flow of heating gas than the other of said arrays (**3,15,22,23,27,29**) which is downstream in the path of flow of heating gas.

3,863,452
HOT-GAS ENGINE HEATER

George Albert Apolonia Asselman; Frits Reinink, and Joseph Wilhelmus Johannes Maria Van Der Leegte, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

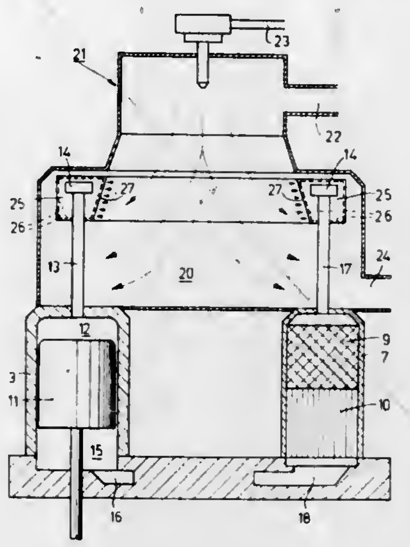
Filed Aug. 15, 1973, Ser. No. 388,601

Claims priority, application Netherlands, Sept. 22, 1972, 7212824

Int. Cl. F03g *7/06*

U.S. Cl. 60—524 **5 Claims**

1. In a hot-gas engine including a burner providing a flow of hot combustion gases, an expansion space for working gas, and a heater using thermal energy from said combustion gases to heat said working gas, the heater formed of a plurality of pipes, each pipe having a first part thereof situated in the flow path of said combustion gases, the improvement in combination therewith comprising a heat pipe also situated in the flow path of said combustion gases, with a second part of each heater pipe situated inside the heat pipe, whereby said second parts of the heater pipes within the heat pipe are maintained at substantially the same temperature.



3,863,453
OSCILLATOR SYSTEM FOR PAPER MACHINE

Robert L. Mercier, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Feb. 19, 1974, Ser. No. 443,738

Int. Cl. F15b *7/00;* **F16h** *53/00*

U.S. Cl. 60—539 **2 Claims**

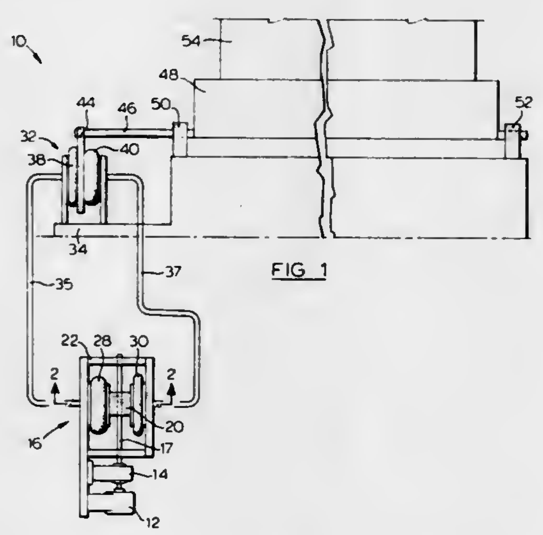


FIG 1

1. An oscillating device to apply oscillation to a relatively moveable component of a paper machine, comprising a prime mover locatable remotely from the machine mechanically connected in driving relation with liquid pump means, said pump means being connected in liquid transfer relation with an oscillator means, said liquid pump means comprising a first compressible bag and a second compressible bag arranged in mutually opposed compressing relation within restraining frame means, said prime mover being arranged to provide alternate cyclic compression of said pump bags, said oscillator means comprising a third compressible bag and a fourth compressible bag arranged in mutually opposed compressing relation within restraining frame means, linkage means connecting said oscillator means to said machine component, said first bag being connected in liquid transfer relation solely with said third bag and said second bag being connected in liquid transfer relation solely with said fourth bag whereby in operation, on actuation of said prime mover to compress said first bag liquid is transferred therefrom to said third bag to cause expansion thereof, thereby moving said linkage means and said machine component, said expansion of said third bag compressing said fourth bag to transfer liquid to said second bag in expanding relation therewith.

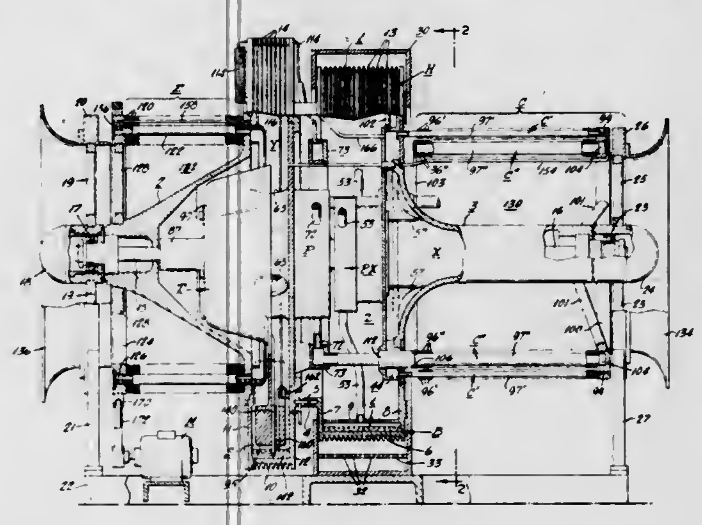
3,863,454
ROTARY HEAT ENGINE POWERED TWO FLUID COOLING AND HEATING APPARATUS

William A. Doerner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 316,851, Jan. 2, 1973, , which is a continuation-in-part of Ser. No. 227,902, Feb. 22, 1972, abandoned. This application Aug. 8, 1973, Ser. No. 386,630

Int. Cl. F25b *3/00;* **F01k** *11/04*

U.S. Cl. 60—669 **31 Claims**



1. Rotary closed Rankine cycle engine powered cooling and heating apparatus utilizing different engine power fluid and refrigerant fluid comprising,

- a cylindrical housing mounted for rotation about the axis thereof including an internal power fluid boiler,
- means for heating the power fluid in said boiler to generate pressure power fluid vapor therein,
- a power fluid expander in said housing including a coaxial driving member rotatably driven at a first predetermined speed by the power fluid vapor generated in the boiler,
- means subdividing the interior of said rotatable housing to provide a power fluid compartment for receiving the power fluid from said expander and a refrigerant fluid compartment,
- a compressor rotatably mounted coaxially in the housing and rotationally driven by the expander driving member for compressing refrigerant fluid from said refrigerant fluid compartment,
- a condenser mounted coaxially adjacent one side of the housing and rotatable therewith comprising a plurality of axially spaced annular fins having heat exchange tubes extending longitudinally therethrough,
- a predetermined number of said condenser heat exchange tubes being in communication with the power fluid compartment of the housing for receiving and condensing therein the power fluid vapor from said power fluid expander,
- means for conducting compressed refrigerant fluid from the compressor to the remainder of said condenser heat exchange tubes for condensing said compressed refrigerant fluid therein,
- refrigerant expander means in said housing for expanding the refrigerant fluid condensed in said condenser,
- means for supplying condensed refrigerant fluid from said condenser to said refrigerant expander,
- an evaporator mounted coaxially adjacent the other side of the housing from said condenser and rotatable therewith comprising a plurality of axially spaced annular fins having heat exchange tubes extending longitudinally therethrough and arranged to receive and vaporize therein refrigerant fluid from the refrigerant expander,
- means for returning vaporized refrigerant from said evaporator to said refrigerant compartment of the housing,
- and means operable to rotationally drive the housing, condenser and evaporator as a unit at a second predetermined speed substantially slower than said first predetermined speed and operable to cause a gaseous heat exchange fluid to be conveyed and accelerated by viscosity shear forces outwardly between the fins of the condenser and evaporator to the velocity providing optimum heat exchange between said gaseous fluid and the fluids in the heat exchange tubes of the condenser and evaporator.

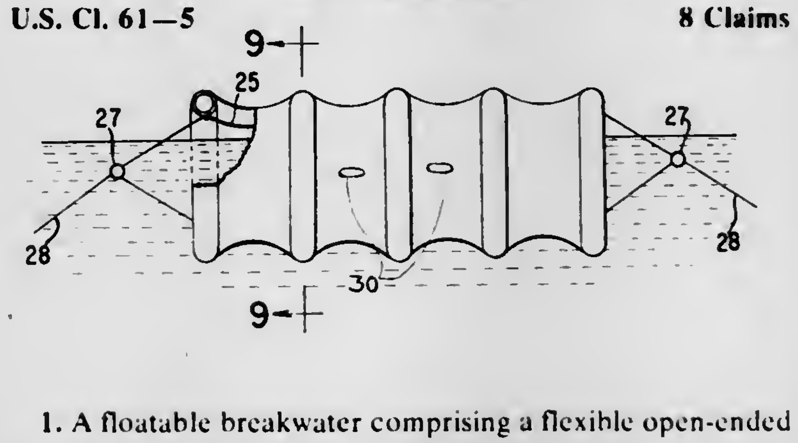
3,863,455
FLOATABLE BREAKWATER

Richard Buckminster Fuller, 200 Locust St., Philadelphia, Pa. 19106

Filed Dec. 10, 1973, Ser. No. 423,006

Int. Cl. E02b *3/04*

U.S. Cl. 61—5 **8 Claims**



1. A floatable breakwater comprising a flexible open-ended tubular envelope enclosing a plurality of axially spaced buoyant annular members therein, water from the outside of said envelope flowing in and out through the open ends of said envelope, said annular members being movable axially with respect to each other while supporting said envelope, and means connected to the end of said tubular envelope for anchoring each end of the envelope, the breakwater being positioned in the water with its longitudinal axis angularly disposed to the direction of the wave movement and floating at such a depth that the breakwater will be substantially filled with water through its open ends so as to be extendable and contractable axially by the relative movement of said annular members within said envelope when the breakwater is acted upon by waves.

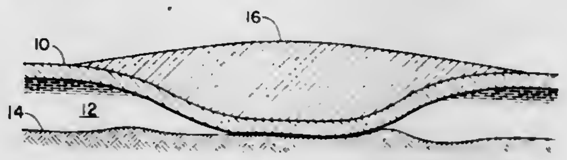
3,863,456
METHOD FOR CONSTRUCTING ICE ISLANDS IN COLD REGIONS

Paul J. Durning, La Habra, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed July 23, 1973, Ser. No. 381,869

Int. Cl. E02b *3/00;* **F25c** *1/02*

U.S. Cl. 61—46 **10 Claims**



1. A method for constructing an artificial ice island in a water body covered by a floating sheet of ice, which comprises placing water on the surface of a selected portion of the floating sheet of ice, said selected portion being substantially less than the whole of said ice sheet and being surrounded by a remaining contiguous portion of said ice sheet, and said water being placed on said selected portion under ambient conditions such that the water is frozen on said selected portion to form an ice body having a central thickened portion and tapering in thickness from said central portion outwardly to the edge of said selected portion, said ice body having a mass

sufficiently large that the sheet of ice is deformed downwardly so as to define one continuous sheet of ice having three portions: (1) a grounded portion centrally located within said selected portion, which is grounded on the bottom underlying said water body; (2) an intermediate portion contiguous with said grounded portion and with an exterior portion of said ice sheet, said intermediate portion tapering in thickness from said grounded portion to said exterior portion; and (3) said exterior portion being undeformed and floating on said water body; and thereafter placing additional water on the upper surface of the ice island so that additional ice is formed to raise the elevation of the ice island above that of the surrounding floating ice.

3,863,457
SUBMARINE FOUNDATION AND OFFSHORE WORKING PLATFORM

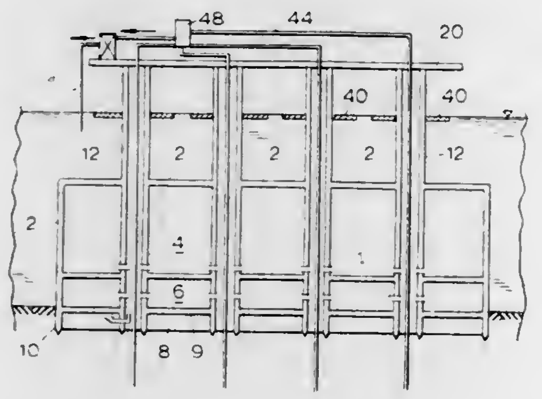
Petter Sigvardt Hafskjold, Bekkestua, Norway, assignor to Ingenior F. Selmer A/S, Oslo, Norway

Filed June 13, 1973, Ser. No. 369,694

Claims priority, application Norway, June 13, 1972, 2083/72

Int. Cl. E02d *27/38*

U.S. Cl. 61—46.5 **7 Claims**



1. A submarine foundation and offshore working platform comprising a submersible integral concrete structure adapted to be situated on the sea bottom and having hollow spaces for confining ballast or other materials, said foundation including a plurality of adjacent, vertically arranged, prismatically or cylindrically shaped lower hollow bodies of concrete placed in contact with one another and integrally bonded together at their areas of contact, said bodies having closed bottom and top walls and being designed to rest on the sea bottom in underwater position, and above said hollow bodies a plurality of platform supporting columns each extending above seal level from the region of an interspace defined between a set of at least three hollow bodies which are mutually adjacently located and which are bonded each to only two other members of the set, each wall of each column constituting an upwardly extending continuation of that part of one of the hollow bodies, of the set of hollow bodies defining the interspace from which the column extends, which bounds the interspace.

3,863,458
DEVICE FOR SINKING AND RETRIEVING UNDERWATER HEAVY ARTICLE

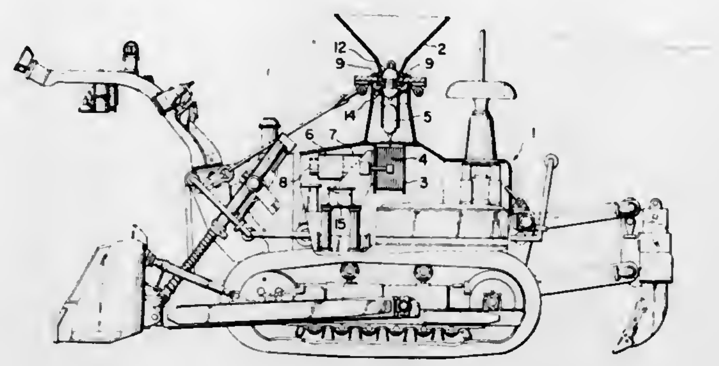
Kunimitsu Ueno, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho

Filed Dec. 21, 1972, Ser. No. 317,706

Int. Cl. B63c *11/34*

U.S. Cl. 61—69 R **5 Claims**

1. A device for sinking and retrieving an underwater heavy article comprising a heavy article used under water, a take-up drum supported axially by said heavy article in connection to a prime mover controlled by the control command from a control desk on a ship for taking up a guide rope when the prime mover is normally rotated and for feeding out the guide rope when the prime mover is reversely rotated, a float removably mounted to the guide rope, a hook attached to the suspension wire rope wound on a winch drum on the ship and replaceable with the float of the guide rope, and a mechanism for locking the hook to the heavy article when the hook is attached to the guide rope to be introduced to a predetermined position with respect to the heavy article.



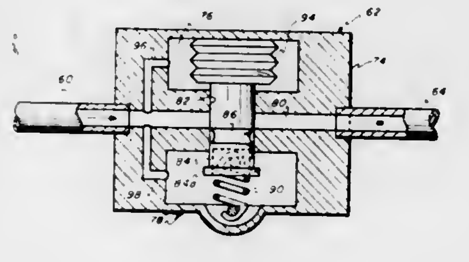
3,863,459
UNDERWATER HEAT SINK

Charles R. Rein, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1973, Ser. No. 415,907

Int. Cl. F17c *11/00*

U.S. Cl. 62—48 **4 Claims**



1. A cryogenic underwater breathing apparatus of the type wherein liquified gas is allowed to vaporize to augment a breathing gas mixture, said apparatus comprising:

a first tank including insulated wall portions in part defining first and second adjacent chambers, said first tank also including heat exchange wall means between said first and second chambers and means for circulating breathing gas through said first chamber;

a body of first liquified gas in said first chamber substantially at a predetermined low temperature;

a body of second liquified gas in said second chamber also substantially at said predetermined low temperature;

means defining a third chamber;

adsorption material disposed in said third chamber and adapted to reduce pressure therein below a predetermined equilibrium pressure for said second liquified gas at said predetermined temperatures;

a pressure responsive regulating valve;

duct means connecting said pressure responsive regulating valve between said second and third chambers; and

said pressure responsive regulating valve being responsive only to gas pressure in said second chamber and operative to vent gas from said second chamber to said third chamber, so as to maintain said equilibrium pressure and said predetermined low temperature.

3,863,460
DEVICE FOR THE STORAGE AND TRANSPORT OF LIQUIFIED GASES, LIQUIDS AND THE LIKE, IN PARTICULAR ON SHIPS

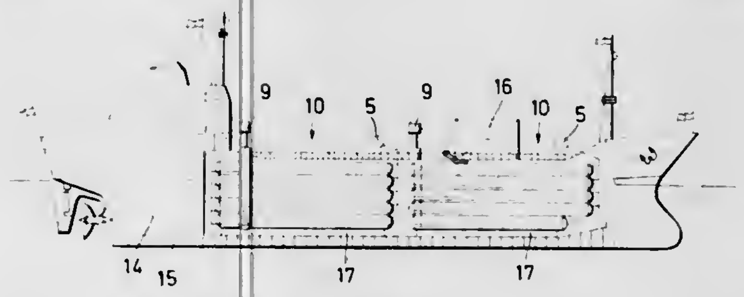
Fritz Stralle, Bonn-bad Godesberg; Winfried Eming, Rheinbreitbach, and Wolfgang Kolb, Sinzig-Bodendorf, all of Germany, assignors to Liquid Gas Anlagen Union GmbH, Remagen-Rolandseck, Germany

Filed May 4, 1972, Ser. No. 252,141

Claims priority, application Germany, May 5, 1971, 2122162; Oct. 12, 1971, 2150693

Int. Cl. F17c *13/08*

U.S. Cl. 62—54 **37 Claims**



1. A storage assembly comprising:

a. a plurality of longitudinally extending containers,

b. the said containers being rigidly fixed and independent with respect to each other and being sealed at each end thereof,

c. an expansion vessel interconnected commonly and directly in parallel connection to each of all the containers to receive expansion media from each of the containers, and

d. means providing a single pumping station which is connected commonly and directly in parallel connection to each of all of the containers for discharging and filling each of the containers whereby the assembly is capable of handling a large capacity of liquified gases, liquids and the like,

e. said discharge and filling means including a vertically extending pipe and horizontally extending collector pipe interconnected to each of the containers so that the vertically extending pipe is in common communication with all of the containers,

f. the bottom of said vertically extending pipe being disposed at a level lower than the undermost edge of the container located at the bottom of the assembly.

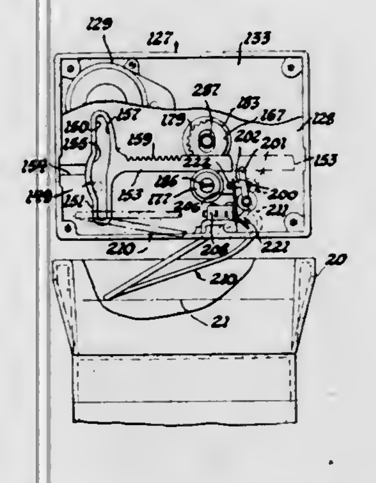
3,863,461
TRAY ICE MAKER WITH ICE LEVEL SENSING CONTROL

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1973, Ser. No. 420,360

Int. Cl. F25c *5/18*

U.S. Cl. 62—137 **3 Claims**



1. An automatic icemaker comprising a frame, means for rotatably mounting a mold on said frame including a rotatable support connected to one end of said mold, means for filling said mold with water for freezing the water in said mold, a pinion gear connected to said rotatable support, a horizontally disposed rack bar having driving means on one end thereof, said rack having a tooth portion adapted to engage said pinion gear, a drive motor for said rack bar driving means for rotating said pinion gear and inverting said mold whereby the frozen ice pieces are harvested from said mold and discharged into a receptacle, and a thermostatic switch in the control circuit of said drive motor, wherein the improvement comprises an ice level sensing arm, including a holder pivotally received on said frame, for movement between a gravity biased lower position in said receptacle and an elevated position above said receptacle; said holder including a cam means and an integral switch actuator, said switch actuator operative for tripping an operator of an ice level switch, in said control circuit, to a first normally open contact when said sensing arm is in its gravity biased lower position, said cam means positioned in the path of said rack bar when said mold is in its upright position, whereby upon said thermostatic switch closing to its ice harvesting contact, in response to the formation of ice in said mold, and said ice level switch in its tripped position being series connected with said thermostatic switch to energize said drive motor, the energizing of said drive motor causing said rack bar to be moved to its mold inverting position whereby it engages said cam means causing said holder and sensing arm to be pivoted through a predetermined angle to its elevated position.

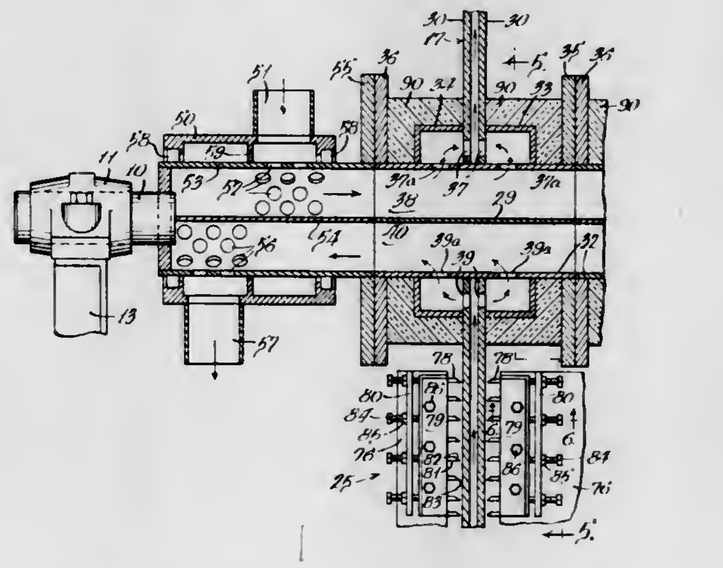
3,863,462
FLAKE ICE PRODUCING MACHINE

Allan J. Treuer, 2241 40th St. E., Seattle, Wash.

Filed June 29, 1973, Ser. No. 375,059

Int. Cl. F25c *7/12*

U.S. Cl. 62—345 **9 Claims**



1. A machine for the continuous production of a congealable liquid in frozen ice flake form, comprising:

a generally horizontal rotatable shaft,

a hollow disc mounted upon the shaft and having outer opposite flat freezing surfaces, said shaft rotating the disc and carrying said surfaces in a circular upright plane path, with the flat outer surfaces varying from the plane of rotation less than about 0.005 inches, means for continuously rotating the disc,

the disc having interior liquid coolant passages connected with the interior of the shaft for forced flow of coolant through the disc interior for removing heat from said flat freezing surfaces,

liquid applying means adjacent a portion of each of the flat surfaces for flowing a sheet of liquid over less than the whole of said surfaces, the remainder of said surfaces carrying ice in a sheet about a tenth inch thick until removed from the rotating surface, a liquid collection trough below said liquid applying means for catching excess liquid flowing over said surfaces.

said discs carrying ice frozen upon said surfaces beyond said liquid applying means and through an ice cooling and drying zone, said ice being supercooled in said cooling and drying zone,

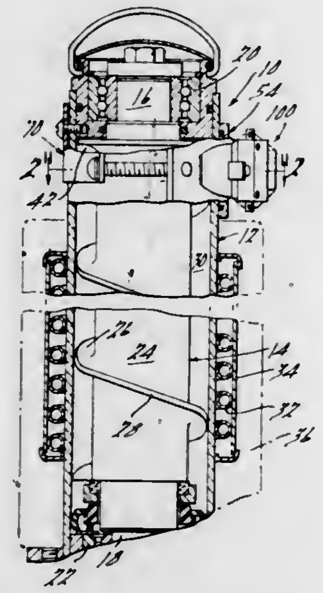
stationary ice removal tools closely adjacent each of said flat surfaces, in position for the disc to carry ice upon said surfaces into impinging relation with said tools, said tools having surfaces inclined to the arcuate path of ice carried into impinging relation with the tools to gradually force the ice in a direction away from each arcuate path to loosen same for gravity fall from the disc in flake form.

3,863,463
ICE MAKING APPARATUS

Robert P. Utter, and Vance L. Kohl, both of Albert Lea, Minn., assignors to King-Seeley Thermos Co., Ann Arbor, Mich.

Filed Aug. 16, 1973, Ser. No. 389,010
Int. Cl. F25c *1/14*

U.S. Cl. 62—354 **18 Claims**



1. An ice making apparatus comprising a housing member defining an ice forming chamber and providing an inner surface on which thin layers of ice are formed,

auger means rotatably mounted in the ice forming chamber and having a helical blade extending outwardly therefrom and terminating adjacent the inner surface of the tubular housing member,

means on the housing member and defining an ice discharge passage,

conduit means communicable with said last mentioned means for transferring ice from the apparatus to some predetermined location remote therefrom, at least a portion of said conduit means and said last mentioned means being movable relative to one another, and

means operable in response to relative movement between said conduit means and the said last mentioned means for opening and closing an electrical circuit communicating the apparatus with a source of electrical energy.

3,863,464
MINIATURE FLEXIBLE ROTATABLE SHAFT COUPLER

Robert B. Taggart, Mountain View, and Richard H. Barth, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 15, 1973, Ser. No. 416,127
Int. Cl. F16d *3/17*

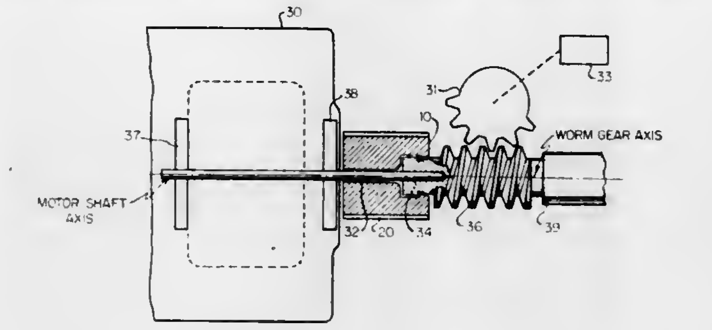
U.S. Cl. 64—11 R **6 Claims**

1. A coupling assembly for coupling two smooth rotatable shafts comprising:

a coupler having a substantially cylindrical shape with an outside diameter and an inside diameter that is accessible from either end thereof, ~~said~~ coupler being constructed of flexible and resilient material which elastically deforms to receive rotatable shafts at either end in uniform frictional engagement between the outside surface of the shafts and the inside surface of said inside diameter; and

a hollow coupler sleeve having a substantially cylindrical shape with an inside diameter accessible from either end thereof, said coupler sleeve being constructed of substantially inflexible material for receiving the coupler within the inside diameter thereof to substantially limit the amount of elastic deformation of the outside diameter of the coupler and to increase the amount of diametrical force exerted on the rotatable shafts by the coupler;

said uniform frictional engagement between the rotatable shafts and the coupler being increased by the increase in diametrical forces caused by the coupler sleeve.

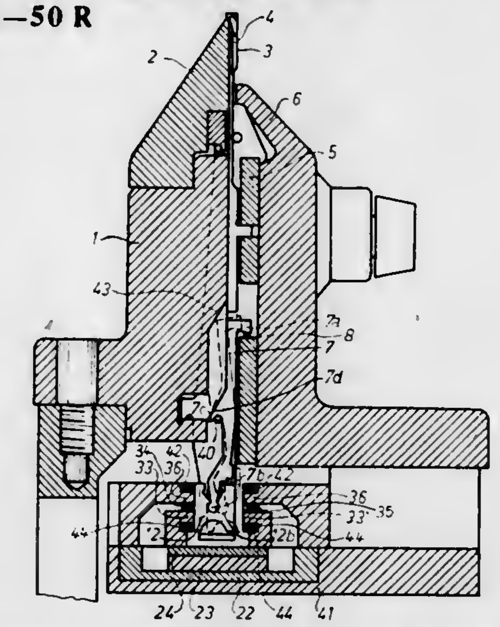


3,863,465
ELECTRO-MAGNETIC SELECTION DEVICE FOR THE NEEDLES OF A KNITTING MACHINE

Aymon De Cerjat; Claude Cuche, both of Neuchatel, Switzerland; Roger Jeanneret, deceased, late of Couvet, Switzerland, by Marguerite Jeanneret, legal representative; Pierre-Bernard Jeanneret, legal representative, Couvet, Switzerland, and Heinrich H. Zimmerman, Couvet, Switzerland

Continuation-in-part of Ser. No. 10,138, Feb. 10, 1970, abandoned, which is a continuation-in-part of Ser. No. 823,536, May 6, 1969, abandoned. This application Apr. 28, 1972, Ser. No. 248,749
Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **9 Claims**



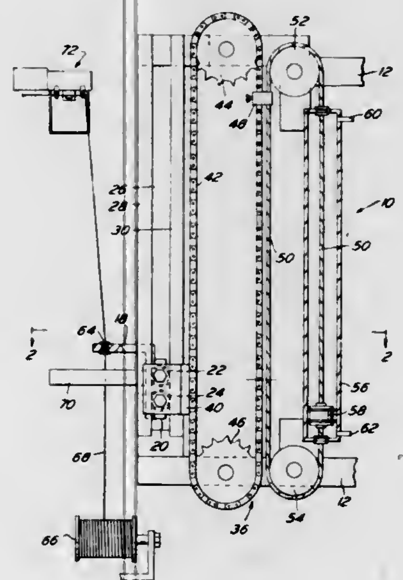
1. Electromagnetic selection device for the needles of a knitting machine, comprising jacks for raising the needles, cam means for moving the jacks upward when in selected position, a selector for each said jack movable laterally of the direction of travel of the needles to position said jack in or out of selected position, channel means guiding said selectors and comprising successively in the direction of movement of said selectors a portion with converging side walls, a throat and a portion with diverging side walls, an electromagnetic selection system at said throat of said channel means, said electromagnetic selection system comprising opposite pairs of pole pieces disposed at the side walls of said channel means for drawing said selectors selectively to one or the other side of said channel means, and a permanent magnet system in the portion of said channel means with diverging side walls for maintaining said selectors at the side of said channel means to which they have been drawn by said electromagnetic selection system, said permanent magnet system comprising a single permanent magnet disposed transversely of and beneath said channel means portion with diverging side walls, said permanent magnet being vertically magnetized and having an upper face of one polarity and a lower face of the opposite polarity, a pair of spaced superposed pole pieces of opposite polarity at each of the diverging side walls of said diverging portion of said channel means, and two soft iron yoke systems, one of said yoke systems being connected to one pole piece of one polarity of each of said pair of pole pieces of said permanent magnet system and having a portion contiguous to the upper face of said permanent magnet, the other of said yoke systems being connected the other pole piece of opposite polarity of each of said pair of pole pieces of said permanent magnet system and having a portion contiguous to the lower face of said permanent magnet, whereby the total flux of said single permanent magnet is distributed between the pairs of pole pieces at opposite sides of said portion of said channel means with diverging side walls according to the distribution of said selectors at one or the other side wall.

3,863,466
APPARATUS FOR GUIDING AND FEEDING FILAMENTARY MATERIAL

Robert A. Barone, Holland, Pa., assignor to Automated Textile Equipment Industries, Incorporated, Philadelphia, Pa.

Filed May 7, 1973, Ser. No. 357,992
Int. Cl. D04b *35/12*

U.S. Cl. 66—163 **11 Claims**



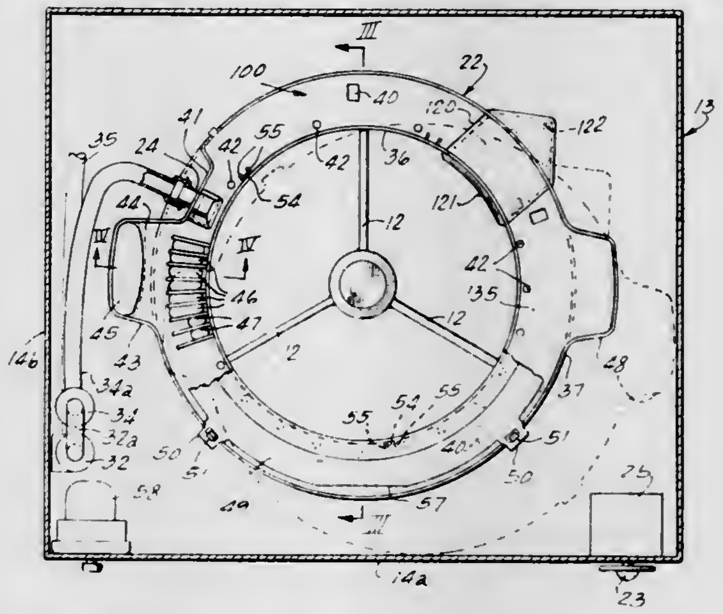
1. Apparatus for use with a machine for processing filamentary material comprising a tension trip mechanism having at least one finger pivotable from an operative position to an inoperative position in response to excess tension of filamentary material, a carriage guided for movement from an inoperative position remote from said trip mechanism to an operative position adjacent said trip mechanism, said carriage having a guide for filamentary material which is to be guided by said trip mechanism finger before extending to a processing machine, circuitry associated with said carriage and responsive to actuation of said trip mechanism finger to its inoperative position for causing said carriage to move upwardly from its inoperative position to its operative position and then return to its inoperative position, said carriage including means thereon for resetting said trip mechanism when the carriage is in its operative position by effecting pivotable movement of said finger to its operative position.

3,863,467
AUTOMATIC WASHING MACHINE AND OVERFLOW TUB RING THEREFOR

John W. Pielemeier, and Robert M. Weir, both of Saint Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed June 4, 1973, Ser. No. 366,501
Int. Cl. D06f *23/04, 37/00*

U.S. Cl. 68—18 F **14 Claims**



1. In an automatic washer having a cabinet,

a tub in said cabinet,

a clothes containing basket within said tub,

said tub having means defining a top opening and being movably suspended within said cabinet for receiving washing liquid,

a tub ring mounted on said tub and defining the opening thereinto,

said tub ring comprising an annular excursion limiting channel member extending around said top opening of said tub,

at least two opposed outwardly projecting excursion limiters extending from said channel member for limiting gyratory movement of said tub within said cabinet, and

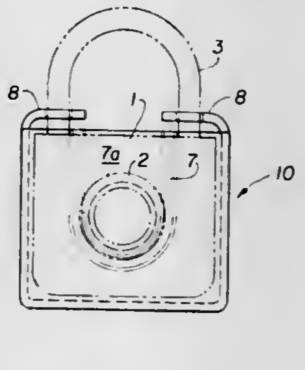
wall means defining a drain opening through one of said excursion limiters.

3,863,468
SECURITY CASING FOR PADLOCK

Greta L. Bach, 65-69 162nd St., Flushing, N.Y. 11365

Filed Jan. 25, 1974, Ser. No. 436,458
Int. Cl. E05b *67/38*

U.S. Cl. 70—50 **4 Claims**



1. A disposable security casing for a padlock having a body including a top wall, a shackle including one end rotatably mounted on the top wall and a free end for lockingly engaging an opening in the top wall, and means on the body for locking and unlocking the free shackle end, the security casing comprising a bottom wall, two side walls and two end walls substantially conforming to the padlock body whereby the padlock body may be received in the security casing with the top wall of the body exposed, a pair of flexible tongues projecting from the end walls of the security casing, each tongue defining a hole for receiving a respective one of the shackle ends when

the padlock is received in the casing and the free shackle end lockingly engages the opening in the top wall, and an identification mark on one of the walls of the casing.

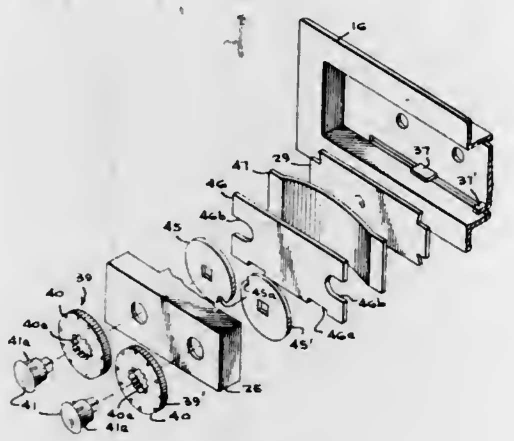
3,863,469
COMBINATION LOCK STRUCTURE

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed June 7, 1973, Ser. No. 367,787

Int. Cl. E05b *65/48*

U.S. Cl. 70—74 **6 Claims**



1. A combination lock assembly adapted to be mounted on first and second wall portions of separable sections of a container adjacent a line of separation therebetween for securing the sections together, comprising a keeper to be affixed to the first wall portion, a latching unit to be mounted on said second wall portion including an elongated base member, a movable latch member slidably supported on said base member for rectilinear reciprocative movement along a path parallel to said line of separation between latching and release positions, said latch member including a housing having a catch projecting into selected alinement with said keeper for interlocking engagement therewith, a pair of rotatable dial wheels disposed at the front of said housing for manipulation to angular positions forming a selected combination, each of the respective dial wheels having hub portions rotatable therewith and extending into said housing including tumbler formations on the inner ends thereof rotatable with the hub portions, a fence plate guided within the housing for movement between release and locking positions and biased toward release position, said base member including a planar base panel paralleling said wall portions, said fence plate being movable along a fore-and-aft axis perpendicular to the plane of said base panel between a rearward locking position and a forward release position, said fence plate and base panel having recess and lug portions which interfit when said fence plate occupies said locking position to prevent movement of said latching unit from said latching position, said fence plate and the tumbler formations on said hub portions having means normally restraining said fence plate at locking position including coactive formations accommodating movement of the fence plate to release position when the dial wheels occupy said selected combination.

3,863,470
SLIDING DOOR LOCK

Jean F. O. Imer, 3806 Bent Rd., Falls Church, Va. 27042

Filed Sept. 7, 1973, Ser. No. 395,054

Int. Cl. E05b *65/08*

U.S. Cl. 70—100 **3 Claims**

1. A lock for use with a pair of overlapping closure members at least one of which is slideably mounted in an upper track including a side rail, said lock comprising:

a. faceplate means,

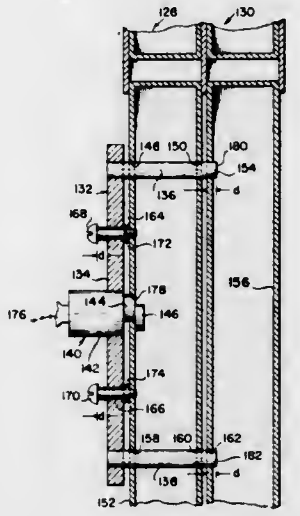
b. first bolt means secured to said faceplate means for passing through one of the closure members and at least partially through the other closure members to thereby prevent the closure members from sliding relative to each other,

c. lock means associated with said faceplace means for securing said faceplate means to one of the closure members and retaining said bolt means within the closure members, and

d. release means associated with said faceplate means for urging said faceplate means away from the closure to which it is adapted to be locked and said bolt means out of engagement with one of the closure members to thereby permit the closure members to slide relative to each other,

e. said release means including pin means slideably passing through said faceplate means and being adapted to be secured to the closure member to which said faceplate means is adapted to be locked,

f. said release means further including spring means positioned around said pin means.



2. In combination with a pair of relatively sliding overlapping closure members mounted in upper and lower tracks, a lock comprising:

a. faceplate means,

b. first bolt means being secured to said faceplate means and slideably passing through one of said closure members into an overlapping portion of the other of said closure members,

c. lock means for releaseably securing said faceplate means to one of said closure members, and

d. second bolt means secured to said faceplate means and passing through one of said closure members into an overlapping portion of the other of said closure members,

e. one of said upper tracks including a side rail,

f. a portion of said faceplate means abutting said side rail to thereby limit the vertical movement of said closure members in said upper tracks.

3,863,471
ESPAGNOLETTE LOCK

Ernst Keller-Volper, 6, Querstrasse, 8805 Richterswil, Switzerland

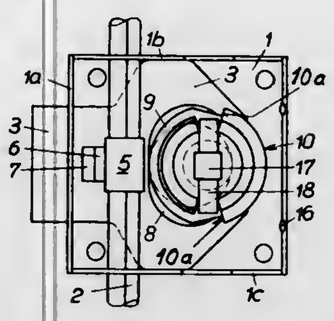
Filed Oct. 19, 1973, Ser. No. 408,001

Claims priority, application Switzerland, Oct. 24, 1972, 15507/72

Int. Cl. E05b *63/04;* **E05c** *5/00*

U.S. Cl. 70—116 **3 Claims**

1. Espagnolette lock for the right and left sided latching of doors, windows and the like, comprising a lock box; rotatably closure bar means extending through said lock box; a lock plate having interdigitating means adapted to operatively engage said closure bar means; a cover for said lock box; and nut means rotatably journalled in the wall of said lock box and in said cover, a recess being formed in said nut means adapted to receive a security cylinder, a rectangular through-hole in said nut means, and a slot in one side of said nut means for insertion of a key bit for actuation of said lock, said nut means having actuating cam means of approximately circular eccentric am configuration, said cam means engaging said lock plate in the region of the axis of symmetry thereof, so as to, upon rotation of said nut means about an angle of 180°, forcibly move said lock plate from an opened position to a locked position and conversely, and to arrest said lock plate in either of said operative positions.



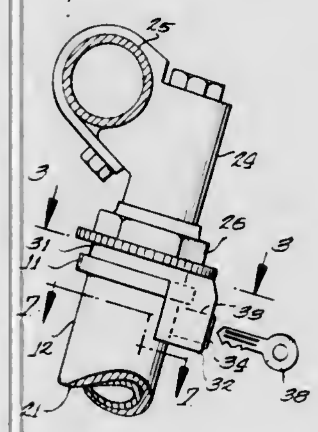
3,863,472
BICYCLE LOCKING DEVICE

Darel R. Klingfus, Rt. 5, Box 232B, Austin, Minn. 55912

Filed Jan. 7, 1974, Ser. No. 431,109

Int. Cl. B62h *5/06*

U.S. Cl. 70—186 **3 Claims**



1. A locking device intended for locking the steering wheel of a bicycle against steering movement, the bicycle having a hollow tubular head with a circumferally formed flange at the top thereof containing the rotating bearing and collar assemblies, a hollow stem extending through the tubular head and connected at the bottom end to a fork in which the front wheel is journaled for rotation, the stem projecting upwardly through the hollow tubular head and connected at the top end to a handle bar post to which steering handle bars are connected, and a lock nut device threadedly received on the tubular head above the flange portion adapted to retain the stem and handle bar posts rotatably mounted relative to the tubular head, the locking device comprising:

a hollow ring shaped mounting member having an interior diameter adapted to receive said tubular head such that the mounting member rests on said tubular head flange portion intermediate said flange and said lock nut, a body portion formed integrally with said mounting member and projecting axially downwardly from one side thereof adapted to be disposed adjacent a portion of the circumferal side walls of said tubular head, an elongated cylindrical bore disposed in said body portion extending radially with respect to said tubular head and opening out of opposed exterior and interior surfaces of said body portion, a locking mechanism housing mounted in said bore and having an exterior surface projecting exteriorly of said exterior surface of said body portion and an interior surface restingly engaging against said interior surface of said bore, a locking mechanism disposed in said lock housing and having a key slot in the exterior surface thereof and a spring loaded key actuated plunger disposed concentrically of the back surface thereof and adapted for axial reciprocal movement in a direction inwardly of and outwardly of said bore, an opening disposed in said tubular head concentric with said bore and adapted to permit said plunger to pass freely therethrough, and an opening in said stem adapted to be disposed in alignment with said plunger in a preselected position of said stem relative to said tubular head whereby when desired said plunger may be operated to pass through said tubular head opening and engage said stem aperture to lock the stem against any rotative movement about its axis and thus lock the attached steering wheel against any steering movement.

3,863,473
CYLINDER LOCK WITH KEY IN PARTICULAR FOR STEERING-WHEEL LOCKS FOR MOTOR VEHICLES

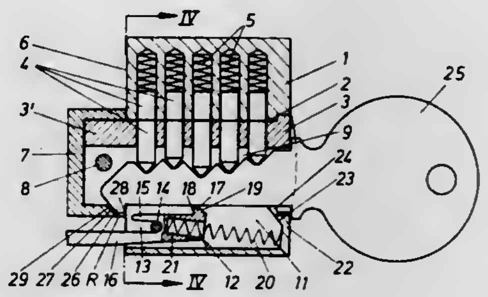
Charles Owen Neale, Luxor, Saval Park Rd., Dublin, Ireland

Filed Aug. 22, 1973, Ser. No. 390,492

Claims priority, application Switzerland, Aug. 28, 1972, 12697/72

Int. Cl. B60r *25/02*

U.S. Cl. 70—186 **10 Claims**



1. A cylinder lock comprising:

a key having a shank provided along one side with lock-actuating formations and another side provided with a lateral projection;

a lock-cylinder housing;

a lock barrel rotatable in said housing and having a keyway adapted to receive the shank of said key;

means between said housing and said barrel cooperating with said formations for enabling relative rotation of said barrel and said housing upon insertion of said key in said keyway, said housing being formed with a longitudinal groove, said projection passing through said groove upon insertion of said key into said keyway, said housing being formed with a space beyond said groove accommodating said projection upon full insertion of said key into said keyway to permit relative rotation of said barrel and said housing, said projection blocking such rotation while being disposed in said groove; and

control means actuated by said projection and external of said keyway for operating a further device.

3,863,474
SUBSTITUTED BENZYL-THIOLCARBAMATE ACID ESTERS AS HERBICIDES

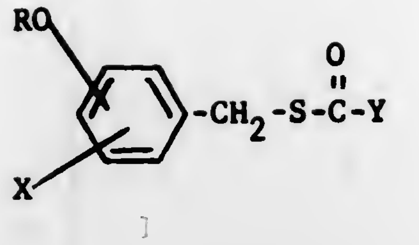
Akio Kudamatsu; Masao Miyamoto, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 875,546, Nov. 10, 1969, abandoned. This application Oct. 12, 1971, Ser. No. 188,431

Int. Cl. A01n *9/12*

U.S. Cl. 71—100 **10 Claims**

6. A herbicidal composition of matter comprising a herbicidally effective amount of a compound of the formula



in which
- R is alkyl of 1–4 carbon atoms.
- X is selected from the group consisting of chloro, bromo and alkyl having 1–4 carbon atoms, and
- Y is dialkylamino having 1–4 carbon atoms in each alkyl moiety, in admixture with a solid diluent or carrier or in admixture with a liquid diluent or carrier and a surface-active agent.

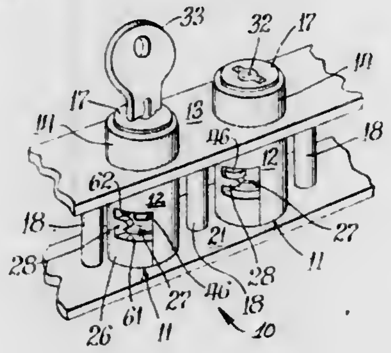
3,863,475
FUNCTION CONTROL KEY LOCKS

Arthur J. Foss, Streamwood, Ill., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Feb. 7, 1974, Ser. No. 440,520

Int. Cl. E05b *9/08*

U.S. Cl. 70—360 **9 Claims**



1. Function control key locks, comprising outer support means having a plurality of hollow cylindrical upper casing sections formed integrally therewith, separate inner support means having a plurality of upstanding lower casing sections formed integrally therewith, means for securing said inner and outer support means together to interengage each said upper section with an associated said lower section to present a hollow cylindrical casing, adjacent portions of said associated sections being formed to define a recess in each said casing when said support means are secured together, a key-controlled lock barrel mounted in each said upper casing section for rotation between locked and unlocked positions, a locking plate secured to each said barrel and cooperating with the associated said recess to limit rotational and longitudinal movements of said barrel relative to its associated said casing, and an upwardly spring-urged switch- actuating plunger means mounted in each said casing with a lower end extending downwardly through said inner support means, whereby inward longitudinal movement of said barrel when in unlocked position will depress said switch-actuating plunger means.

3,863,476
PICK RESISTANT LOCK

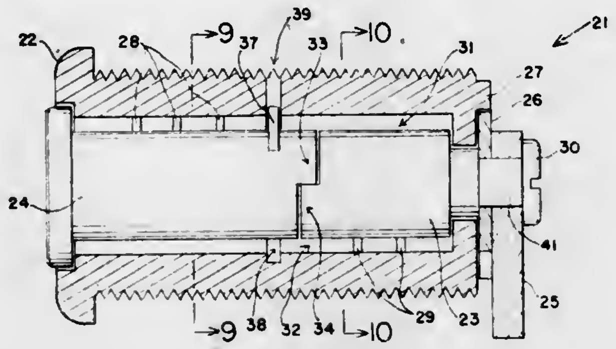
George P. Patriquin, Gardner, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.

Filed Feb. 9, 1973, Ser. No. 330,971

Int. Cl. E05b *63/00*

U.S. Cl. 70—419 **17 Claims**

1. A lock comprising:
- a housing comprising annular retaining means that defines spline means;
- cam actuator means rotatably mounted in said annular retaining means and for operating a locking cam, said cam actuator means defining a keyway for receiving a key;
- tumbler restraining means received by said spline means and responsive to a proper key in said keyway for releasably restraining said cam actuator in a preselected position with respect to said housing;
- a plug rotatably mounted in said annular retaining means and defining a plug keyway for receiving a key, said keyway and said plug keyway being aligned such that access to said keyway by a key is through said plug keyway when said cam actuator means and said plug are in their preselected positions;
- stop means coupled to said cam actuator means for preventing rotation of said cam actuator means in a direction opposite a release direction when said cam actuator means is in said preselected position; and
- plug restraining means comprising plug tumbler means received by said spline means and responsive to the proper key when placed in said plug keyway for releasably restraining said plug in a preselected position with respect to said cam actuator means, said plug restraining means further comprising means for preventing rotation of said cam actuator means in the release direction from the preselected position without corresponding rotation of said plug in the release direction, and wherein said spline means comprises a cam actuator restraining wall spaced a given distance from said tumbler means and disposed so as to be engaged thereby when said cam actuator means is rotating in the release direction, and a plug restraining wall spaced less than said given distance from said plug tumbler means so as to be engaged thereby prior to engagement between said tumbler means and said cam actuator restraining wall during rotation of said cam actuator means in the release direction.



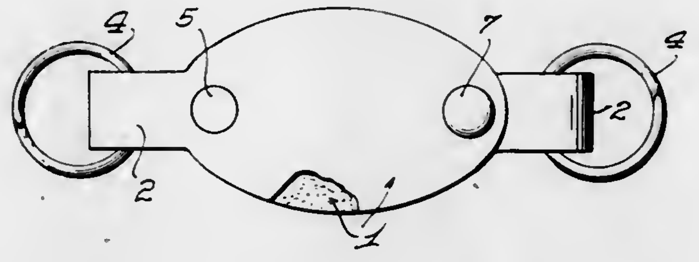
3,863,477
DUAL KEY RING HOLDER

Samuel Klein, Los Angeles, Calif., assignor to Leather Tree, Inc., Los Angeles, Calif.

Filed Jan. 28, 1974, Ser. No. 437,175

Int. Cl. A47g *29/10*

U.S. Cl. 70—456 R **3 Claims**



1. A dual key holder, comprising:
- a. a pair of essentially identical holder members;
- b. a tab at one end of each holder member formed into a loop;
- c. a key ring disposed in the loop;
- d. permanent fastening means extending through the tab and corresponding holder member to secure the key ring in the loop;
- e. a releasable fastener element carried by each fastening means;
- f. and a mating releasable fastener element disposed at the opposite end of each holder member for connection to the corresponding fastener element thereby removably securing the holder members in confronting relation with the tabs extending in opposite directions.

3,863,478
SYSTEM FOR CONTROLLING ROLLING MILLS

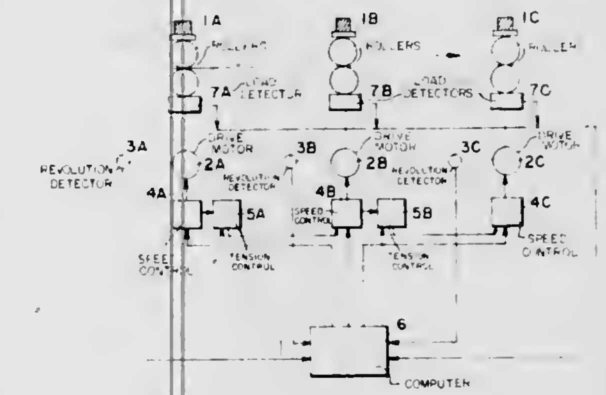
Toshio Harada; Shinichi Nakamata, both of Kisarazu; Shiro Araki; Koei Nakashima, both of Kitakyushu; Hironori Kawasaki, Kimitsu; Kazuo Watanabe, Kitakyushi; Muneo Kawasaki, and Shuhei Niino, both of Kobe, all of Japan, assignors to Nippon Steel Corporation and Mitsubishi Electric Corporation, both of Tokyo, Japan

Filed Sept. 6, 1973, Ser. No. 394,844

Claims priority, application Japan, Sept. 6, 1972, 47-88686; Sept. 6, 1972, 47-88687

Int. Cl. B21b *37/00*

U.S. Cl. 72—6 **15 Claims**



1. A method for providing a zero tension in a steel section between at least two stands of a continuous rolling mill, comprising the steps of:
- a. detecting the speed of the steel section when it enters into the first stand and when it emerges from the second stand; b. determining a plurality of parameters of rolling conditions including at least the sectional area of the steel section between said first and second stands;
- c. calculating a control constant based on said detected speeds and said plurality of parameters, so that both the forward slip ratio and backward slip ratio of the steel section may be linearly varied; and
- d. modifying the speed of the steel section between said first and second stands in accordance with said control constant so as to maintain the tension of the steel section therebetween substantially zero.

3,863,479
APPARATUS FOR THE PRODUCTION OF A TUBE

Xaver Lipp, Tannhausen Kreis Aslen, Germany, assignor to Silo Verfahrens AG, Zug, Switzerland

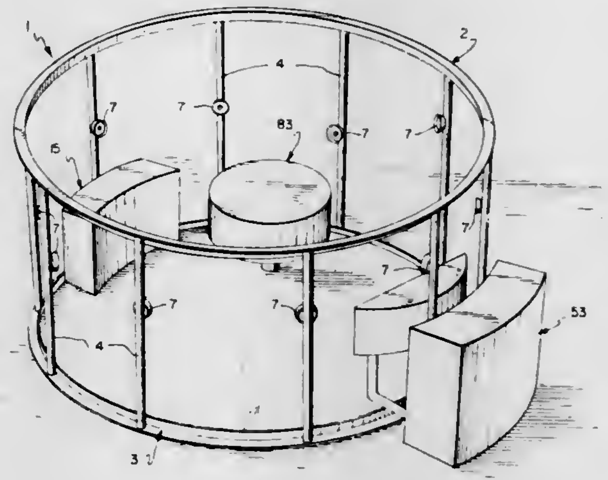
Filed Apr. 2, 1973, Ser. No. 346,987

Claims priority, application Germany, Oct. 13, 1972, 2250239

Int. Cl. B21b *37/00*

U.S. Cl. 72—12 **16 Claims**

1. A machine for the production of a tube, from a sheet metal strip coiled on a feed reel comprising:
- a frame of annular construction which is supported on the ground, the longitudinal axis of said frame being substantially vertical;
- supporting rollers carried by said frame and disposed on a helical path extending upward from the bottom end of said frame and supporting the tube at a fold therein, said helical path and said tube supported thereon having substantially vertical longitudinal axes;
- a profiling station supported on the ground adjacent said frame and having roller means for defining a path which extends adjacent said helical path defined by said supporting rollers in offset relation to the tube so as to match the bending of the tube wall; and
- a folding station adjacent said frame and which is also disposed on the ground so as to be substantially on one side of the wall of the tube when produced, the folding station having a path which coincides with said helical path defined by said supporting roller and which receives the tube,



- said profiling station roller means also bending the metal strip, modifying the profile of the metal strip and moving the metal strip through said profiling station,
- said folding station having means for folding adjacent profiled edges of the strip together,
- said frame comprising
  - a bottom ring supported on the ground,
  - a top ring disposed above said bottom ring, and
  - a plurality of vertical posts interconnecting said top and bottom rings.

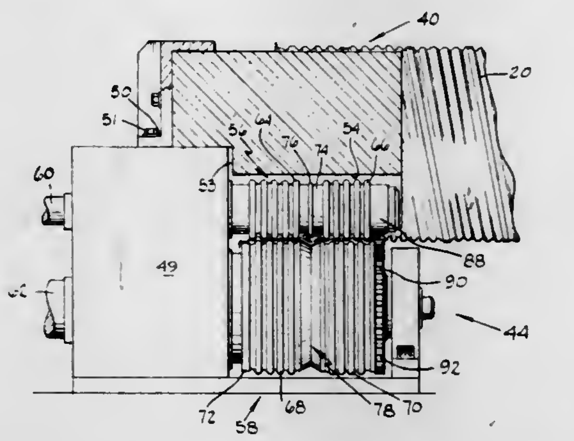
3,863,480
APPARATUS FOR FORMING CORRUGATED STRIP MATERIAL INTO HELICALLY WOUND TUBING

Robert H. Meserole, Toledo, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Aug. 28, 1973, Ser. No. 392,398

Int. Cl. B21c *37/12*

U.S. Cl. 72—50 **10 Claims**



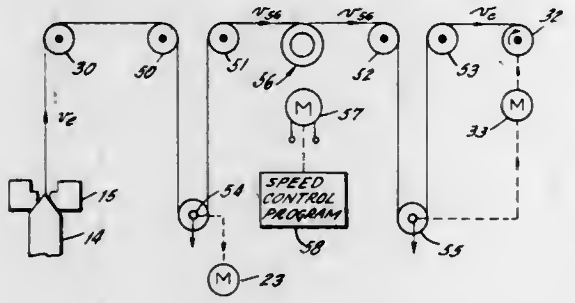
1. Apparatus for forming corrugated strip material into helically wound tubing wherein said strip material has first and second longitudinal edge portions which are complementary with respect to each other with said second edge portion being adapted to be nested within said first edge portion and with each of said edge portions having a longitudinally extending rib means spaced inwardly from the longitudinal edges of said strip material with said rib means being adapted to be folded over toward each other to form a seam of the helically wound tubing, comprising:

mandrel means having a surface about which said strip material is convoluted to set the diameter of the tubing, said mandrel means having a longitudinal axis,

forming roll means located adjacent said mandrel means for nesting said second edge portion within said first edge portion and for initiating a folding over of said rib means toward each other to partially form a seam, said forming means including a roll with a V-shaped groove therein having faces which engage said rib means to initiate the folding over of said rib means, said V-shaped groove having an included angle between said faces greater than 90°, and said V-shaped groove having a mouth with a width greater than the distance between the outer faces of said rib means of the nested edge portions, a second roll with a backing surface which opposes said V-shaped groove, said rolls being rotatably mounted on the apparatus, and each of said rolls having a series of spaced apart annular ribs which extend into corrugations of said strip material to guide said strip material so that said nested edge portions of said strip material are centered with respect to said V-shaped groove, and

means for feeding said strip material into said forming roll means and about said mandrel at an angle relative to the longitudinal centerline of said mandrel.

3,863,481
AUGMENTED HYDROSTATIC EXTRUSION OF FINE WIRE
James W. Dibrell, Malibu, Calif., assignor to Microwire Corporation, Allentown, Pa.
Filed Jan. 2, 1973, Ser. No. 320,088
Int. Cl. B21c *31/00*
U.S. Cl. 72—9 **27 Claims**



1. An augmented hydrostatic extrusion apparatus comprising, in combination:

hydrostatic extrusion press means for extruding therefrom, under relatively high pressure, a thin wire;

pressure control means connected to said press means for controlling the extrusion pressure within said press means, thereby to control the speed of extrusion of said wire;

a positive drive means operatively connected to said wire for moving said wire away from said press means at given velocity;

a wire reeling stage for receiving wire which has passed through said positive drive means for coiling said wire onto a reel;

a reservoir stage disposed between said press means and said positive drive means for receiving and storing a variable length of said wire therein as said wire moves from said press means to said reservoir stage;

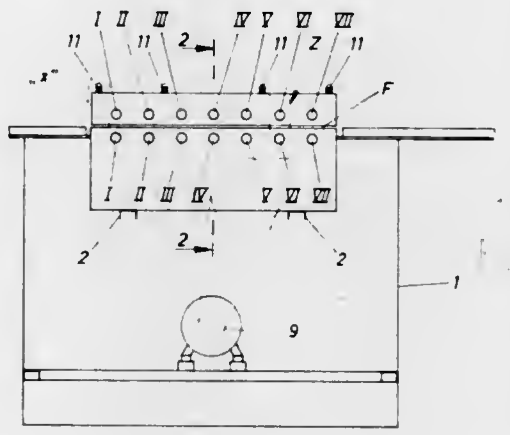
extrusion velocity measuring means for measuring a difference between the extrusion velocity of said wire and the said given velocity;

variable pulling force exerting means for providing a positive pulling force on said wire which leaves said press means, thereby to reduce the necessary hydrostatic pressure needed to cause the escape of wire from the die;

means connecting said variable pulling force exerting means to said extrusion velocity measuring means to increase pulling force responsive to a decrease in extrusion speed of said wire relative to said given speed, and to decrease pulling force responsive to an increase in extrusion speed of said wire relative to said given speed

and a second reservoir stage disposed between said positive drive means and said wire reeling stage; and means responsive to the loading and unloading of said second reservoir stage for respectively increasing and decreasing the speed of reeling in said wire reeling stage.

3,863,482
APPARATUS FOR MAKING SHEET-METAL PROFILES WITH FREE-STANDING TONGUES
Karl Heinz Fastenrath, Wermelskirchen, Germany, assignor to Firma Fasti-Werk Carl Aug. Fastenrath, Wermelskirchen/Rhld., Germany
Filed Nov. 7, 1972, Ser. No. 304,373
Claims priority, application Germany, Nov. 13, 1971, 2156463
Int. Cl. B21d *28/36*
U.S. Cl. 72—186 **3 Claims**



1. In an apparatus for producing an angle profile from a sheet-metal strip and comprising a pair of horizontal parallel bearing plates including an upper bearing plate and a lower bearing plate, a plurality of pairs of shafts journaled in said bearing plates, said pairs of shafts being horizontally spaced along said plates and having shaft portions defining a transport path for said strip between the shafts of each pair, the shafts of each pair lying in common vertical planes transverse to said path and being coupled for synchronous rotation, said portions of said shafts being constructed to receive respective strip-profiling rollers, and a common drive for said shafts, the improvement which comprises:

a tongue-cutting head mounted at an intermediate point along said path between two of said pairs of shafts and at another of said pairs of shafts located between said two pairs of shafts, said head including:

an upper housing part mounted on said upper bearing plate and formed with a recess receiving said portion of the upper shaft of said other pair in the absence of its roller;

a lower housing part mounted on said lower bearing plate and formed with a r ecess receiving the said portion of the lower shaft of said other pair in the absence of its roller;

a first roller blade journaled on one of said housing parts for rotation about a vertical axis for engagement with a flange of a sheet-metal strip advanced along said path and rotatable only be engagement with the latter strip to incise a tongue therein;

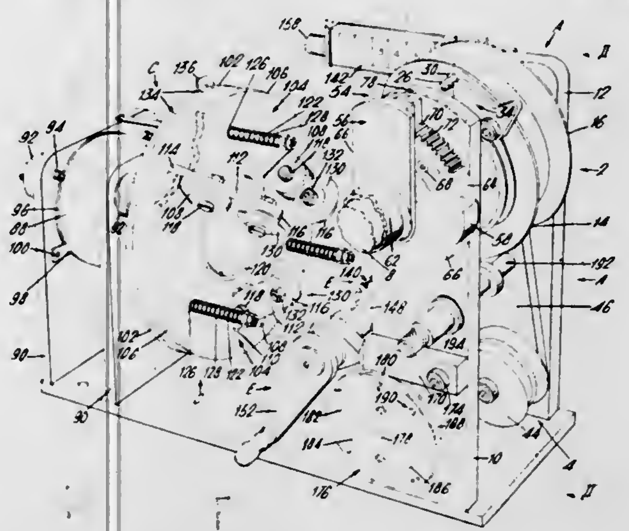
a carriage shiftable on the other of said housing parts transversely of said path;

a second roller blade journaled on said carriage for rotation about a vertical axis and adapted to cooperate with said first blade to incise said tongue in the latter sheet-metal strip while being rotated only by engagement with said strip;

spring means bearing upon said carriage to urge said second blade away from said first blade; and

releasable locking means effective against the force of said spring means for retaining said carriage with said blades in cooperating relationship during incising of a tongue in said strip.

3,863,483
APPARATUS AND METHOD FOR CURVING TUBING
Peter C. Wright, Etobicoke, and Donald L. Kirsch, Toronto, Ontario, both of Canada, assignors to Gidon Industries, Inc., Rexdale, Ontario, Canada
Filed May 14, 1973, Ser. No. 359,994
Int. Cl. B21d *7/024*
U.S. Cl. 72—219 **19 Claims**



1. Apparatus for forming successive curves in malleable tubing in relatively offset planes comprising, in combination:

a tube curving head including a forming die about which malleable tubing is curvable and a wiper die spaced from said forming die to permit the tubing to be interposed between it and the forming die, the wiper die being movable to curve said interposed tubing around said forming die whereby to form curves therein;

a rotatable chuck for supporting said tubing in interposed relation between said forming die and wiper die as aforesaid, said chuck being of the feed-through type permitting the tubing to be advanced through the chuck towards the forming die, the chuck including means for yieldingly supporting and gripping the tubing to cause the tubing to rotate with the chuck, said gripping means permitting the tubing to be advanced through the chuck while it is gripped for rotation, and

means for engaging said tubing supported in said chuck and for advancing metered portions thereof through the chuck, while the tubing is gripped for rotation therewith, to said tube curving head for curving as aforesaid; said engaging means including an element in tangential engagement with the tubing and rotatable about an axis transverse to the axis of rotation of the chuck;

the tubing being co-rotatable with the chuck to permit formation of successive curves in relatively offset planes.

3,863,484
APPARATUS FOR DRAWING WIRES AND TUBES
Hitoshi Tsuji; Takeshi Murayama; Shigeo Kawahata; Isamu Komine; Satoshi Huziwara, and Mikio Ueki, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa Ken, Japan
Filed Feb. 22, 1972, Ser. No. 295,831
Claims priority, application Japan, Feb. 25, 1971, 46-8987
Int. Cl. B21c *1/00*
U.S. Cl. 72—274 **8 Claims**

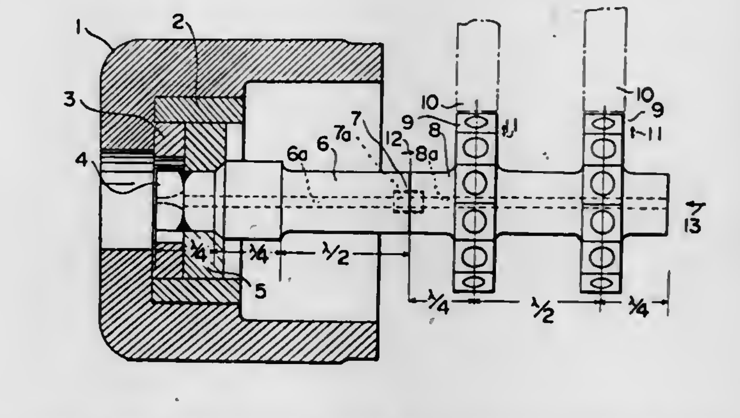
1. Apparatus for drawing tubes and wires comprising:

a drawing die (4) having an entry and an exit, and an opening defining a passage therebetween;

a vibration source (8,9,10);

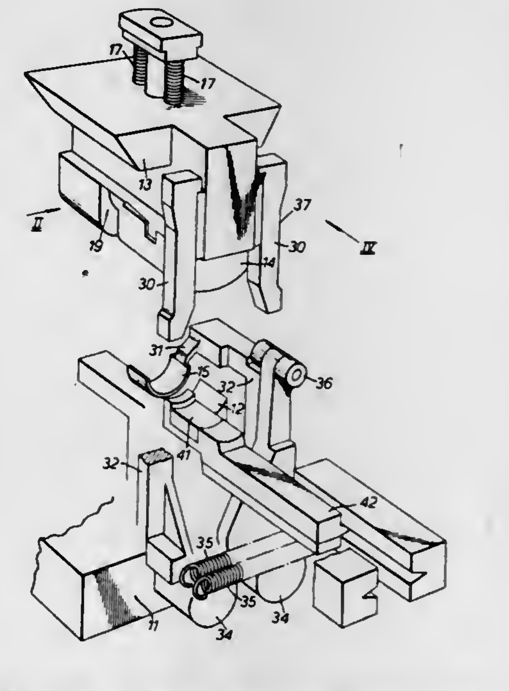
an elongated energy transmitting device (6) secured to the entry side of said die (4) and coupling said vibration source (8,9,10) to said die (4), said energy transmitting device (6) being provided with an axial bore (6*a*) in the longitudinal direction thereof and in the axial direction of said die opening, through which material to be drawn may be fed to the entry of said die;

said vibration source (8,9,10) including at least one vibrational energy source (9,10) for generating vibrational energy in a direction substantially perpendicular to the



axis of said axial bore of said energy transmitting device, and means (8) coupling said vibrational energy source (9,10) to said energy transmitting device (6) and for changing the direction of said vibrational energy by 90° so that the resulting vibrational energy is in the direction of said axis of said axial bore (6*a*) of said energy transmitting device (6), whereby substantially all of said resulting vibrational energy is imparted to said die in the direction of drawing of material through said drawing die (4).

3,863,485
PRESS AND METHOD FOR COIN PRESSING ARTICLES
Frank MacDonald, Irvine; David Michael Gardner, Kilmarnock, and Roy Stephens, Prestwick, all of Scotland, assignors to The Glacier Metal Company, Limited, Wembley, Middlesex, England
Filed May 11, 1973, Ser. No. 359,469
Claims priority, application Great Britain, May 11, 1972, 21994/72; May 11, 1972, 21995/72
Int. Cl. B21d *37/12*
U.S. Cl. 72—345 **10 Claims**



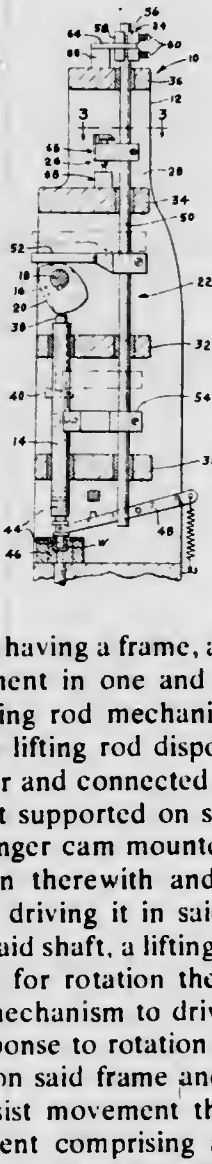
1. A press for coin-pressing separate blanks into semi-cylindrical bearing shells including a pair of forming tools having complementary opposed semi-cylindrical surfaces for forming opposite faces of the shells, and a mechanical drive for bringing the tools together to form the shells, and including also side pieces arranged to come together to clamp the side faces of the blanks while they are being formed into the semi-cylindrical shape, but to be released after the forming tools

move apart when the shells have been formed, a member having a surface which is held against the joint faces of the shells to locate them during forming, whereby all the faces of the blanks are located during forming and retaining means locating said shells in position after forming and following release thereof from said forming tools.

3,863,486
TRANSFER PRESS

Donald Richard Lassy, 22 Matthews St., Terryville, Conn. 06786

Filed Jan. 4, 1974, Ser. No. 430,883
Int. Cl. B21j *9/18, 13/00*
U.S. Cl. 72—405 **17 Claims**



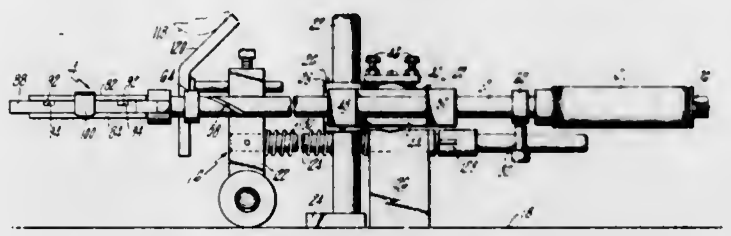
1. In a transfer press having a frame, a plunger supported on said frame for movement in one and an opposite direction relative thereto, a lifting rod mechanism supported on said frame and including a lifting rod disposed in axially parallel relation to said plunger and connected thereto for movement therewith, a cam shaft supported on said frame for rotation relative thereto, a plunger cam mounted in fixed position on said shaft for rotation therewith and engagable with said plunger for positively driving it in said one direction in response to rotation of said shaft, a lifting cam mounted in fixed position on said shaft for rotation therewith and engagable with said lifting rod mechanism to drive said plunger in said other direction in response to rotation of said shaft, and friction means mounted on said frame and frictionally engaging said lifting rod to resist movement thereof relative to said frame, the improvement comprising a limit stop assembly including an upper stop member defining a first abutment, means for securing said upper stop member to said lifting rod assembly for movement therewith, and means defining second abutment associated with said frame and in the path of said first abutment for engagment with said first abutment to limit movement of said plunger in said one direction.

3,863,487
FEED DEVICE

Edwin W. Plumb, Woodbury, and Harold T. Meikis, Waterbury, both of Conn., assignors to Safeguard Manufacturing Co., Woodbury, Conn.

Filed May 16, 1973, Ser. No. 360,850
Int. Cl. B21d *43/02*
U.S. Cl. 72—421 **7 Claims**

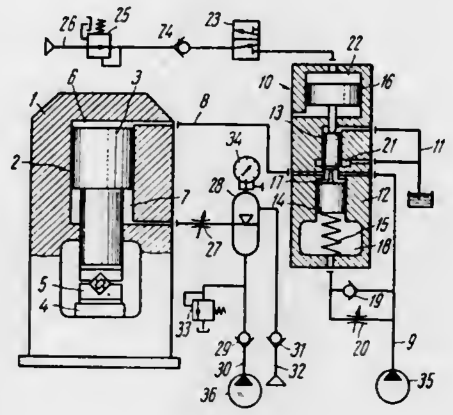
3. In a feed device particularly well suited to secondary feeding operations in the confined work area of a power press or the like comprising an elongated feed arm having a drive member on one end thereof and a pair of gripping jaws on the opposite end thereof movable between open and closed positions and an adjustable support slidably mounting the feed arm for linear movement relative to the support and simultaneous rotational movement about the axis of the feed arm for rotatably orienting the gripping jaws and moving the jaws toward and away from the power press, the combination comprising a jaw actuating mechanism operatively connected to the drive member for linear and rotational movement with the feed arm, said mechanism including adjustable limiting means preventing linear movement of the feed arm beyond predetermined forward and rearward limit positions, jaw stabilizing and aligning means including a pair of spaced guides spanning the jaws and controlling movement of the jaws between their open and closed positions, at least one of said jaws including guideways slidably receiving the guides and cooperating therewith to prevent misalignment of the jaws during the opening and closing movement thereof, and a jaw actuator interposed between the jaws and movable axially relative to the feed arm, said jaw actuator being operative upon movement of the feed arm to one of said limit positions to move axially relative to the feed arm in response to the drive member and simultaneously effect relative movement of the jaws between their open and closed positions.



3,863,488
HYDRAULIC PRESS WITH PULSATING LOAD

Nikolai Trifonovich Deordiev, ulitsa Fridrikha Engelsa, 42, kv. 40; Ivan Vasilievich Kononov, ulitsa Torpedo, 40, kv. 4; Ivan Egorovich Maslennikov, ulitsa Druzhinnikov 26, kv. 82; Gennady Vitalievich Modzheevsky, ulitsa Koltsovskaya 82, kv. 35; Vladimir Nikiforovich Platonov, ulitsa 9 Yanvarya 49, kv. 45, and Vasily Tikhonovich Sukhanov, Bulvar Pionerov 20, kv. 73, all of Veronezh, U.S.S.R.

Filed July 10, 1973, Ser. No. 377,911
Int. Cl. B21j *9/12*
U.S. Cl. 72—453 **1 Claim**

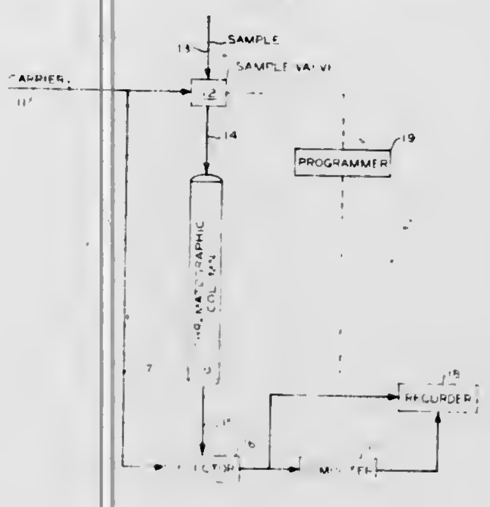


1. A hydraulic press with a pulsating load comprising a bed, a power cylinder provided with a piston; said cylinder being arranged on said bed and having above-piston and under-piston spaces; a source of liquid high pressure; a drain; a pulsator serving for the creation of a pulsating load in said power cylinder; said above-piston space serving for the working stroke of the piston being connected to the said source of the liquid high pressure and through said pulsator to the drain; a pipeline connecting said under-piston space to a source of liquid high pressure serving for the return of said piston to its initial position; a one-way valve mounted on said pipe-line; and a throttle and high pressure accumulator arranged in consecutive order on said pipeline between said under-piston space and said one-way valve enabling the control of the amplitude of oscillation of said piston.

3,863,489
ANALYSIS OF CHROMATOGRAPHIC PEAKS BY MOMENTS

Buell O. Ayers, and Edwin K. Clardy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 873,269, Nov. 3, 1969, abandoned. This application Oct. 19, 1970, Ser. No. 82,087
Int. Cl. G01h *31/08*
U.S. Cl. 73—23.1 **3 Claims**



1. The method of obtaining data useful in determining the relative concentrations of first and second constituents of a fluid mixture by chromatography when said constituents have approximately the same retention times, which method comprises:

introducing into a chromatographic analyzer a sample of the fluid mixture, and operating the analyzer to produce a first chromatogram wherein the composition of the analyzer effluent is measured with respect to time;
introducing into said analyzer a sample of said first constituent, and operating the analyzer to produce a second chromatogram wherein the composition of the analyzer effluent is measured with respect to time;
introducing into said analyzer a sample of said second constituent, and operating the analyzer to produce a thrid chromatogram wherein the composition of the analyzer effluent is measured with respect to time; and
computing the moments of the peaks of said constituents in each of said chromatograms with respect to a common reference point of time, whereby a comparison of the resulting moments provides an indication of the relative amounts of said first and second constituents in the first chromatogram.

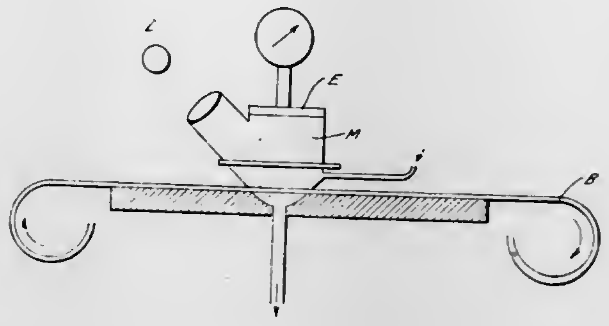
3,863,490
METHOD OF AND APPARATUS FOR AVOIDING ERRONEOUS INDICATIONS AS A RESULT OF THE PROPERTIES OF THE PAPER IN APPARATUS WHICH USE A PAPER TAPE AS MEASURING MEANS

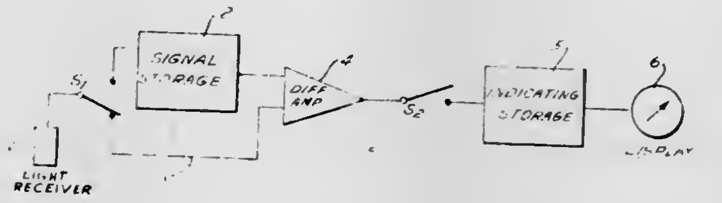
Otto Blunck, and Karl-Heinz Retzow, both of Hamburg, Germany, assignors to Firma H. Maihak AG, Hamburg, Germany

Filed Apr. 10, 1973, Ser. No. 349,730
Claims priority, application Germany, Apr. 11, 1972, 2217285
Int. Cl. G01n *21/28*
U.S. Cl. 73—28 **2 Claims**

1. A method of avoiding errors in indication due to the properties of the paper in apparatus which uses a paper tape as a means of gas measurement, comprising the steps of

causing a gas to act on a paper tape,
producing momentarily a presignal corresponding to a background of said paper tape at a point of the paper tape upon the commencement of the action of a gas on said paper tape,
electronically feeding a second signal corresponding to the action of said gas on said paper tape continuously during the action of the gas into a difference stage, and



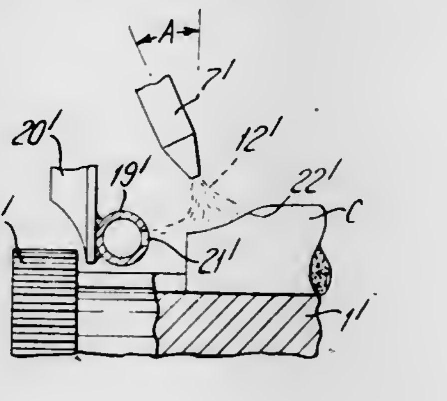


forming a difference between said presignal and said second signal determined at an end of the time of action of said gas by said difference stage, and
causing said difference to be indicated.

3,863,491
METHOD AND APPARATUS FOR TESTING CIGARETTES

Desmond W. Molins, London, England; Francis A. M. Labbe, Neuilly-sur-Seine, France; Harry Parkinson; Peter Kirk, both of London, England, and Robert J. Hayward, New South Wales, Australia, assignors to Molins Limited, London, England

Filed Jan. 22, 1973, Ser. No. 325,799
Claims priority, application Great Britain, Jan. 21, 1972, 2897/72
Int. Cl. G01m *3/26*
U.S. Cl. 73—37 **37 Claims**

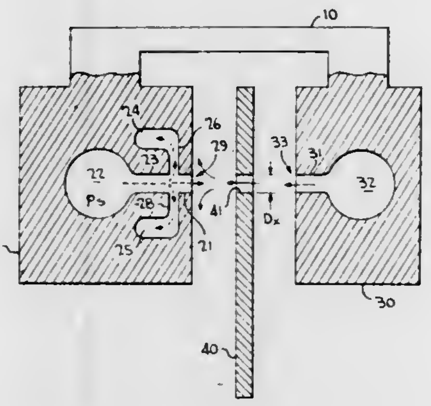


1. A method of testing a cigarette, comprising directing a stream of air against the side of the cigarette adajcent to one of its ends with a velocity sufficient to deform the end portion of an inadequately filled cigarette in which event said air stream is deflected towards a first region spaced from said end portion but insufficient to deform the end portion of an adequately filled cigarette in which event said air stream is deflected towards a second region spaced from said end portion and remote from said first region, and detecting the presence of the air stream in said first region to which said air stream is deflected by the deformed side of an inadequately filled cigarette.

3,863,492
APPARATUS FOR MEASURING THE DIAMETER FOR THROUGH HOLES

R. Pierce Trask, II, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,606
Int. Cl. G01b *13/08*
U.S. Cl. 73—37.5 **9 Claims**



1. An apparatus for measuring the diameter of through holes in a wink piece comprising:

a. spaced apart interconnected fluid supply means including first and second means, said work piece being inserted therebetween;

b. b said first means for emitting a constant emitter jet of fluid through a through hole in said work piece;

c. said second means for emitting a constant jet of fluid opposing said emitter jet, said second means being located on the side of said hole opposite said first means;

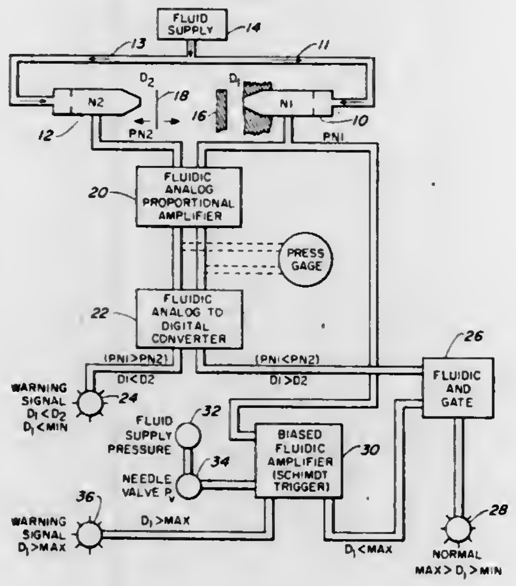
d. means for receiving fluid deflected from said opposed fluid supply jets; and,

e. means for measuring the pressure of said deflected fluid whereby the diameter of said through hole is determined.

3,863,493
COMPENSATED FLUIDIC BEARING CLEARANCE MONITOR

Charles C. Busenkell, Camarillo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,790
Int. Cl. G01b *13/12*
U.S. Cl. 73—37.5 **4 Claims**



1. A fluidic indicating system for monitoring clearances in a hydrostatic bearing comprising:

a. a first nozzle mounted in the bearing housing adjacent to the bearing;

b. a second nozzle mounted in close proximity to said first nozzle so that said first and second nozzles are in the same environment;

c. a plate mounted adjacent to the output of the second nozzle a predetermined distance;

d. a pressurized fluid supply connected through identical lines to said first and second nozzle;

e. a fluidic analog proportional amplifier connected to said first and second nozzles for amplifying any pressure difference between the two nozzles;

f. a fluidic analog to digital converter connected to the outputs of the fluidic analog proportional amplifier, and having first and second outputs;

g. a warning device connected to the first output of the analog to digital converter to indicated when the pressure in the first nozzle exceeds the pressure in the second nozzle whereby a warning is given when bearing clearance goes below a predetermined minimum.

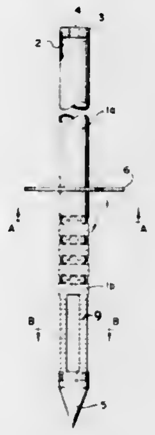
3,863,494
DEVICE FOR MEASURING THE WORKABILITY AND COMPACTION OF FRESH CONCRETE

Karim W. Nasser, 204 Garrison Crescent, Saskatoon, Saskatchewan, Canada

Continuation-in-part of Ser. No. 151,351, June 9, 1971, abandoned. This application Oct. 25, 1973, Ser. No. 409,595

Claims priority, application France, Aug. 14, 1973, 73.29769

Int. Cl. G01n *11/00, 33/38*
U.S. Cl. 73—54 **11 Claims**



1. A device for use in determining the workability, consistency, slump and compaction of a freshly prepared concrete mix which comprises a tube including a central bore, a member fixedly attached to and extending substantially transversely of said tube for limiting the depth to which said tube may be inserted into said mix, a plurality of apertures each in the shape of a slot extending from a closed end of the tube remote from the transverse member partially along said tube, including between the ends of said slotted apertures and said transverse member at least one set of a plurality of small apertures disposed around the periphery of said tube through which apertures said mix may enter said bore on insertion of said device into said mix, and index means associated with said tube for determining the residual height to which the mix is present in the bore of said tube on withdrawal of said device from said mix.

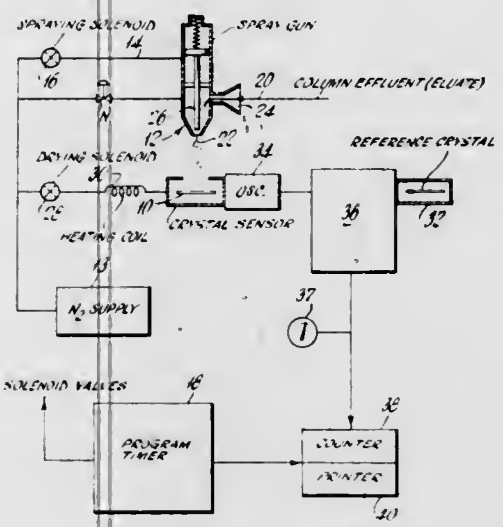
3,863,495
QUARTZ CRYSTAL SOLUTE MASS DETECTOR

Wolfgang W. Schulz, Warren, and William H. King, Jr., Florham Park, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 16, 1973, Ser. No. 351,339
Int. Cl. G01n *5/04*
U.S. Cl. 73—61.1 C **10 Claims**

1. A method of measuring the mass of materials which have been separated in a liquid-liquid chromatographic column and subsequently eluted in a sequential manner by a carrier solvent according to their physical characteristics as an eluate stream comprising the following steps in combination:

a. sampling an accurately reproducible amount of said eluate stream at uniform intervals during the elution of said materials, whereby the samples are representative of the separated material in said column;



b. depositing each of said eluate samples on a first crystal;

c. rapidly evaporating the carrier solvent from each of said eluate samples; and

d. measuring the resonant frequency of said first crystal after said carrier solvent has been evaporated from each sample.

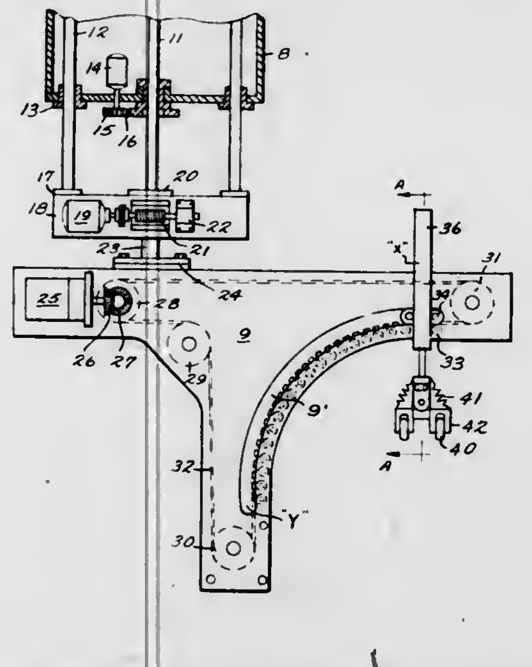
3,863,496
CURVED SURFACE SCANNING APPARATUS

Tsunehisa Hiramatsu, Miki, and Hiroshi Nosaka, Kakogawa, both of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 7, 1973, Ser. No. 395,077

Claims priority, application Japan, Sept. 30, 1972, 47-113802[U]; Sept. 30, 1972, 47-113803[U]

Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **5 Claims**



1. Apparatus for scanning the saddle shaped intersection of the bores of a first tubular member with a second tubular member from inside the base of the first tubular members, comprising:

a main body;

support means for disposing the main body in the first tubular member for rotation therein about the longitudinal axis of the bore of the second tubular member;

means defining an arcuate track on the main body, concave toward the saddle generally about an axis which remains perpendicular to the longitudinal axis of the bore of the second tubular member as the main body is rotated as aforesaid;

a slider mounted on the main body for movement along the track and means for moving the slider along the track;

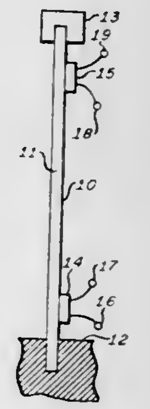
longitudinally extensible arm means mounted on the slider and provided with means for maintaining the arm directed toward the saddle regardless of the position of the slider along the track, the arm means having a first portion secured to the slider, a second portion disposed adjacent the saddle and provided with a contact member for engaging at least one of the tubular members in the vicinity of the saddle shaped intersection to standardize the proximity of the second portion with respect to the saddle shaped intersection, and means for extending the second portion with respect to the first portion, toward the saddle shaped intersection to ensure engagement of the contact member as aforesaid;

a scanning unit mounted on the second portion and and oriented to scan the saddle shaped intersection, whereby the main body may be rotated to cause the scanning unit to scan the saddle shaped intersection at a given radius, and the slider may be moved along the arcuate track to change the radius of scanning.

3,863,497
ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCERS

Herman van de Vaart, Harvard; Hugh B. Matthews, Acton, and James C. Worley, Sudbury, all of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 300,034
Int. Cl. G01h *1/00;* **G01p** *15/00*
U.S. Cl. 73—71.2 **18 Claims**



1. Transducer means comprising:

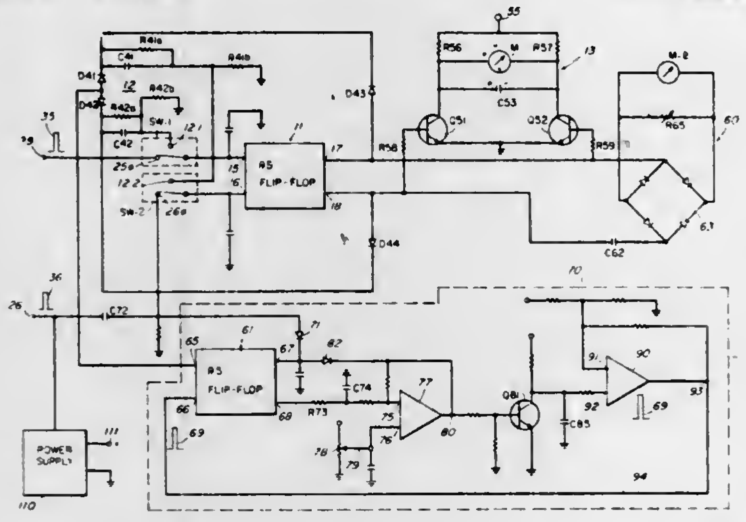
elongate cantilever flexure means having first and second ends and a flexible surface layer adapted to propagate acoustic waves,

exciter means for exciting and propagating said acoustic waves along a predetermined path at said flexible surface layer,

receiver means along said path for receiving and converting said acoustic waves into electrical signals,

signal generator means for driving said exciter means, and signal processing circuit means responsive to said signal generator means and to said receiver means for deriving a measure of the flexure of said flexure means.

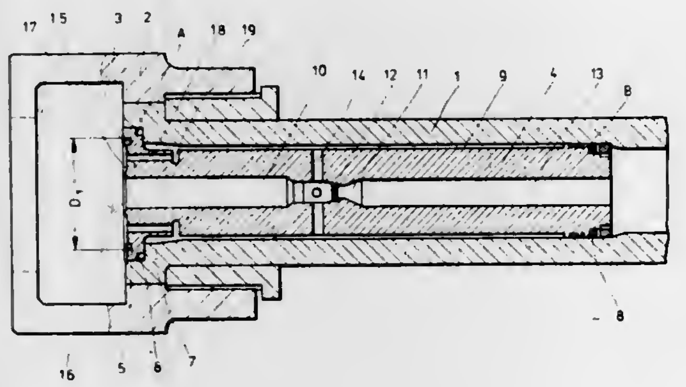
3,863,498
ENGINE TIMING METER
Bernd Gunther, Framingham, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed July 28, 1972, Ser. No. 276,232
Int. Cl. G01m *15/00*
U.S. Cl. 73—118 **11 Claims**



1. Method of measuring ignition timing of an internal combustion engine having a crankshaft and an even number of cylinders comprising steps of:

generating in each revolution of said crankshaft a reference signal which coincides in time with the same specified angular position of said crankshaft, whereby upon successive revolutions of said shaft to generate a train of said reference signals which are spaced apart in time proportional to the rotational velocity of said shaft, generating in alternate ones of said revolutions a first series of ignition signals each of which substantially coincides in time with an ignition pulse supplied to a first of a pair of said cylinders which fire 360° apart, generating in intervening ones of said revolutions a second series of ignition signals each of which substantially coincides in time with an ignition pulse supplied to the second of said cylinders, generating an electric wave train by shifting between a first predetermined voltage value and a second predetermined voltage value in response to, respectively, said reference signals and said ignition signals, and measuring the average DC level between said voltage values.

3,863,499
SIMULATING FIRING STRESSES IN GUN BARRELS
Sigmund Von Boutteville, Dusseldorf, and Horst Rekittke, Oberwinter, both of Germany, assignors to Firma Rheinmetall G.m.b.H., Dusseldorf, Germany
Filed July 19, 1972, Ser. No. 273,270
Claims priority, application Germany, Aug. 7, 1971, 2139735
Int. Cl. G01l *5/14;* **G01n** *25/54*
U.S. Cl. 73—167 **3 Claims**



1. An apparatus for testing gun barrels by simulating actual firing stresses without a projectile therein comprising:

a gun barrel;

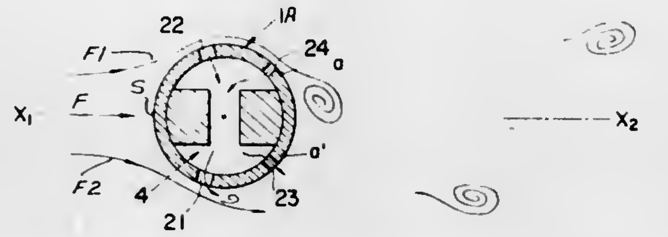
an insert body mounted in the loading chamber of said gun barrel to reduce the volume of said loading chamber and extending axially along part of the length thereof, the middle portion of said insert body defining an annular clearance between the ends of said body and the inner wall of said gun barrel, said ends of the insert body sealingly engaging said inner wall of the gun barrel;

means for mounting an explosive charge in said barrel of an intensity less than that of a normal propulsive charge for ejecting shells from the barrel to produce gas at an elevated temperature, said clearance communicating with said charge whereby the hot charge gases pass through said clearance;

means for closing the breech end of said barrel on one axial side of said clearance; and

a rupturable plate closing said barrel on the opposite side of said clearance and sustaining a predetermined pressure in said clearance upon detonation of said charge but rupturing beyond said predetermined pressure.

3,863,500
FLOW VELOCITY MEASURING DEVICE
Hiroo Yamasaki, and Ichizo Ito, both of Tokyo, Japan, assignors to Yokogawa Electric Works Ltd., Tokyo, Japan
Filed Apr. 5, 1973, Ser. No. 348,121
Claims priority, application Japan, Apr. 27, 1972, 47-42472
Int. Cl. G01f *1/00;* **G01p** *5/10*
U.S. Cl. 73—194 B **13 Claims**



1. Flow metering apparatus of the type wherein a vortex generating element is placed transversely in a stream of fluid to produce on opposite sides of the element vortices which are shed in alternating fashion, and wherein the element is formed with openings along said opposite sides which are connected together through the interior of the element to produce therethrough an alternating fluid flow corresponding to the alternating shedding of vortices, such apparatus being characterized in that:

the openings on each of the opposite sides of the element are arranged relative to the stream of fluid both in an upstream region and in a downstream region spaced circumferentially from the upstream region such that the fluid flow inwardly through the spaced openings on one side of the element serves to maintain the boundary layer of the stream of fluid attached to the element to the vicinity of said downstream region, said fluid flowing outwardly through the spaced openings on the other side of the element serves to prevent reattachment of the spearated boundary layer to the element.

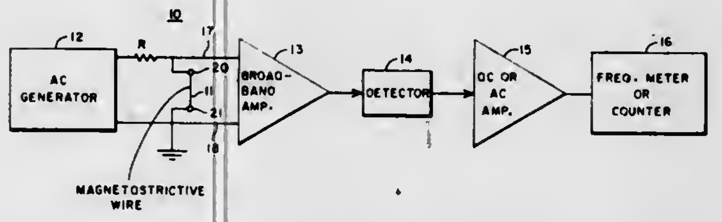
3,863,501
MAGNETOSTRICTIVE SENSOR FOR A FLOWMETER
John E. Janssen, Minnetonka; Vahram S. Kardashian, Plymouth, and Paul Antonio Corbero, Minneapolis, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 19, 1973, Ser. No. 426,268
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 B **7 Claims**

1. A flowmeter of the type having a turbulence induced therein which has an oscillatory type component, the repetition rate of which is a function of flow rate, the combination comprising:

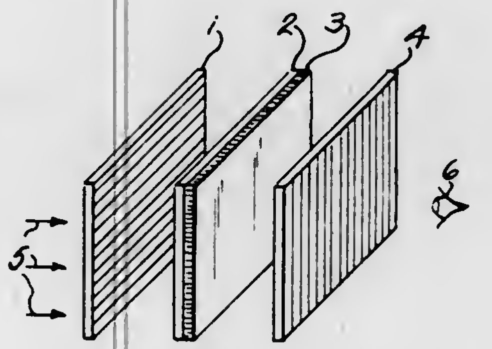
a magnetostrictive flow sensing means comprising a length of spring wire having plated thereon a magnetically anisotropic magnetostrictive thin-film,

means mounting said wire to extend into a fluid flow path, whereby the oscillatory type component of flow causes a vibratory deflection of said plated wire, the frequency of said vibratory deflection being a function of flow rate, and

a.c. generator means for energizing said plated wire with a carrier type wave and wherein said vibratory deflection of said wire effects a modulation of said carrier wave, said plated wire further having terminal means connected to frequency responsive signal output measuring means.



3,863,502
VISUAL-TYPE HYGROMETER
Stanley B. Elliott, 7125 Conelly Blvd., Bedford, Ohio 44146
Division of Ser. No. 18,921, March 12, 1970. This application Apr. 19, 1972, Ser. No. 245,550
Int. Cl. G01w *1/06*
U.S. Cl. 73—336 **8 Claims**



1. A visual-type humidity and temperature responsive device comprising: (1) a source of illumination providing a light beam, (2) a chemical composition that of itself senses changes in temperature and relative humidity, the composition being birefringent at a first relative humidity and temperature and non-birefringent at a second relative humidity and temperature, (3) means to amplify observable changes in composition due to changes in relative humidity and temperature including a polarizer for the light beam and an analyzer for the polarized beam that is passed through the composition, and (4) light detecting means for detecting changes in the brightness and intensity of light coming from the composition because of changes in relative humidity and temperature.

3,863,503
MULTISPEED, CHAINLESS VEHICLE DRIVE SYSTEM
David C. Loeb, 7227 S. Claiborne Ave., New Orleans, La. 70125, and Robert Trestman, 6649 Memphis St., New Orleans, La. 70124
Filed Apr. 30, 1973, Ser. No. 355,592
Int. Cl. F16h *3/30*
U.S. Cl. 74—347 **9 Claims**

1. A multispeed, chainless drive system for a vehicle of the occupant propelled type conmprising:

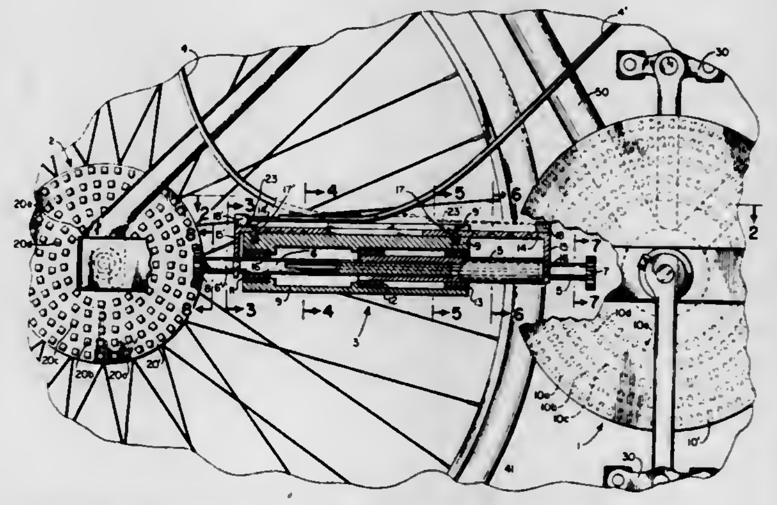
a first gear wheel mounted on a rotatable drive axle:

a second gear wheel spaced from said first gear wheel and mounted on a rotatable vehicle drive wheel, both of said gear wheels having projecting therefrom multiple rows of concentric gear teeth disposed in a circular array about the axis of rotation of said gear wheel;

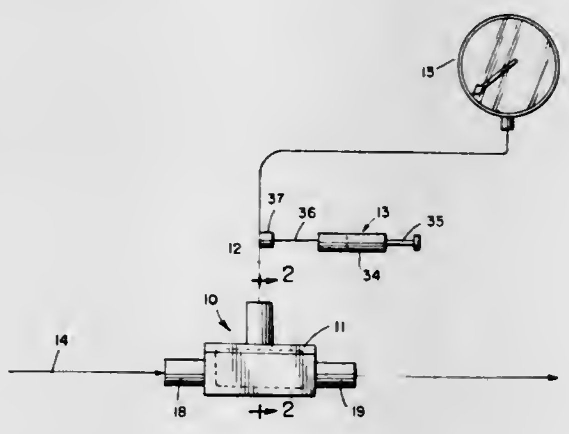
variable length drive shaft means mounted between and rotatably interconnecting said first and second gear wheels for transmitting the rotating force from the drive axle and first gear wheel to the second gear wheel and ultimately to the vehicle drive wheel, both ends of said drive shaft means having contact gear means fixedly mounted thereon for mating individually with selected one of said rows of concentric gear teeth on each said gear wheels, said drive shaft means further including

first and second, elongated, concentric rotatable shaft sections, each carrying one of said contact gear means, one slidably mounted in a longitudinal or axial direction within the other to vary the effective length of the said drive shaft means to position said contact gear means with different ones of said rows of concentric gear teeth, said first and second shaft sections being connected together to rotate in unison and in combination extending across from one gear wheel to the other; and

gear shifting means mounted on the vehicle and attached to said shaft sections for moving the contact gear means from engagement with one row of gear teeth to another row by relatively moving said shaft sections for moving the contact gear means from engagement with one row of gear teeth to another row by relatively moving said shaft sections in a longitudinal or axial direction with respect to each other and with respect to said gear shifting means.



3,863,504
PRESSURE GAUGE PROTECTOR ASSEMBLY AND METHOD
Alexander S. Borsanyi, Irvine, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Mar. 9, 1973, Ser. No. 339,516
Int. Cl. G01l *7/08*
U.S. Cl. 73—395 **6 Claims**



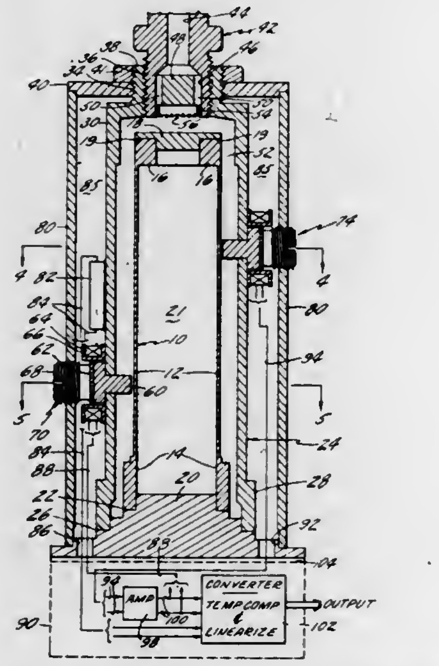
1. A gauge protector assembly for measuring the pressure of a fluid by a gauge without having the fluid contact the gauge comprising a casing having an inner cavity and inlet and outlet

openings communicating with the cavity, a flexible diaphragm secured to the casing within the cavity and dividing the cavity into first and second chambers, at least a portion of the casing being transparent to permit the diaphragm to be observed from outside of the casing, both of the inlet and outlet openings communicating with the first chamber but not the second chamber to provide a first fluid flow passage through the first chamber between the inlet and outlet openings, the casing being provided with a third opening communicating with the second chamber but not the first chamber, conduit means connected to the third opening and adapted to be connected to a pressure gauge to provide a second fluid flow passage through the third opening between the second chamber and the conduit means, and means for injecting a fluid into the second fluid flow passage whereby the fluid to be measured can be connected to the first fluid flow passage so that the pressure thereof acts on the diaphragm and fluid can be injected into the second fluid flow passage by the fluid injecting means until the pressures in the first and second chambers are equal.

3,863,505
VIBRATING CYLINDER PRESSURE TRANSDUCER

E. Marston Moffatt, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 9, 1973, Ser. No. 377,868
Int. Cl. G01l ***9/10***
U.S. Cl. 73—398 R **19 Claims**



1. A vibrating cylinder pressure transducer subcombination comprising:

a base member;

a vibrating cylinder composed of material having magnetic permeability, closed at one end and disposed in pressure sealing relationship against said base member at the other end thereof to form a first pressure chamber;

an outer pressure cylinder composed of a substantially low magnetic permeability material, and at least partially closed at one end and disposed in pressure sealing relationship against said base member and surrounding said vibrating cylinder to form a second pressure chamber between said vibrating cylinder and said outer pressure cylinder;

inlet means provided for one of said chambers so as to provide fluid communication between one of said chambers and a source of fluid, the pressure of which is to be measured by said transducer;

electromagnetic drive means disposed on said outer pressure cylinder and in driving relationship with said vibrating cylinder;

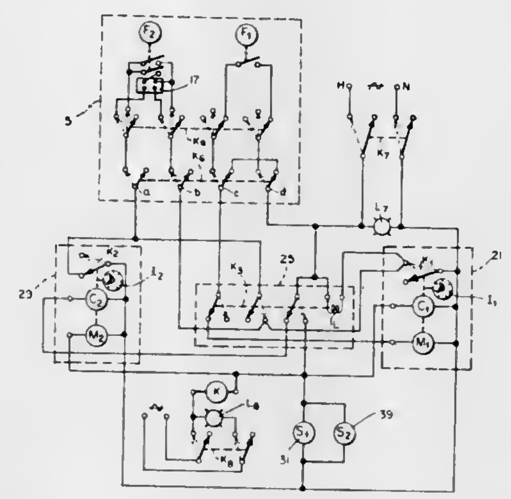
electromagnetic sensing means disposed on said outer pressure cylinder and in sensing relationship with said vibrating cylinder; and

low reluctance magnetic path means disposed externally of said outer pressure cylinder for providing a return path for magnetic flux through said electromagnetic means and said vibrating cylinder.

3,863,506
LIQUID SAMPLING

Charles Laird McClure, Malvern, Pa., assignor to Pro-Tech Inc., Malvern, Pa.

Filed June 13, 1973, Ser. No. 369,722
Int. Cl. G01n ***1/14***
U.S. Cl. 73—421 B **12 Claims**



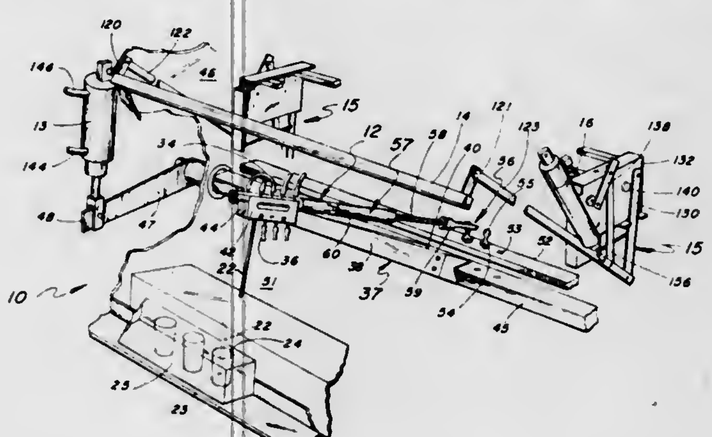
1. In apparatus for sampling liquid from a body thereof at predetermined intervals of time between and for predetermined periods of time at successive samplings, including conduit means to and from the body of liquid and adapted to receive gaseous fluid at superatmospheric pressure to propel samples of liquid from the body thereof to a collecting location during the sampling periods, the improvement comprising a pair of like electrical timing means, one for determining the interval between successive samplings and one for determining the duration of each sampling period, and including an indicator of the time remaining in any current sampling interval and the time remaining in any current sampling period; means for switching the respective timer means alternately off and on, each one being switched on when the other has counted down to zero time remaining, for an automatic mode of operation; switch means for inactivating such automatic switching and interconnecting the apparatus for operation in accordance with signals supplied from an external source, the first timing means including electrical means for totalizing time-duration signals and the second timing means including electrical means for determining the duration of sampling periods; and switch means interposed between the electrical means and the external signal source together with electrical interconnectors therebetween such that in one position of the switch means the external signal source is connected to the totalizing electrical means and in another position of the switch means the external signal source is connected to the electrical means for determining the duration of sampling periods.

3,863,507
SAMPLE MIXING AND METERING APPARATUS

Alan Richardson Jones, Miami, and Thomas J. Godin, Hollywood, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Mar. 16, 1973, Ser. No. 342,161
Int. Cl. G01n ***31/00***
U.S. Cl. 73—423 A **6 Claims**

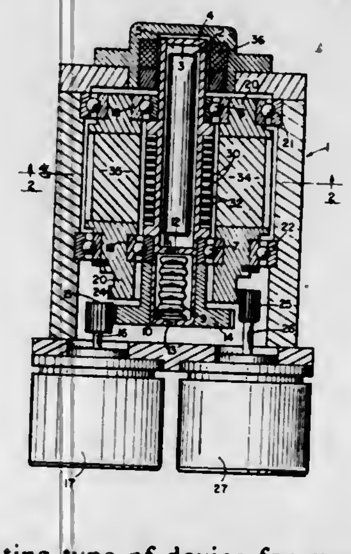
1. A sampling head for use at a sample pickup station, said head comprising a hollow sample pickup probe adapted to be inserted into a sample container at a sample pickup station for extracting a given amount of fluid sample from the container, said pickup probe being movable between a first or sampling position and a second or retracted position, valve means operable upon movement of said probe to said sampling position for connecting said probe to means for withdrawing fluid from the sample container through said probe, and means for moving said probe and simultaneously operating said valve means whereby said valve means is operated by said moving means to connect said probe to the withdrawing means at the same time said probe is moved by said moving means to said sampling position, said valve means including first and second movable valve blocks each having at least one passageway therethrough, said passageways being aligned with each other and with said probe when said probe is in said retracted position and said valve means is in a sample delivery and probe cleaning position, and said moving means includes lost motion means which permits said head to be lowered a predetermined distance with said valve blocks maintained in place defining said sample delivery and probe cleaning position of said valve means.



3,863,508
ACCELEROMETER

William M. Scarborough, Whittier, and Doyle E. Wilcox, La Puente, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 2, 1959, Ser. No. 784,819
Int. Cl. G01p ***15/08***
U.S. Cl. 73—516 R **19 Claims**

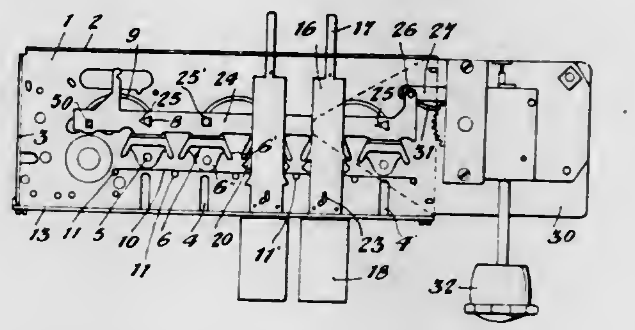


1. In an integrating type of device for measuring accelerations, the combination of: a housing a cylindrical proof mass of non-magnetic, electrically conductive material; positioned within and longitudinally with respect to said housing; bearing means, positioned in said housing for permitting frictionless translation of said proof mass parallel to the cylindrical axis thereof, while restraining movement of said proof mass transversely of said axis, said bearing means positioned in close proximity to the surface of said proof mass; means mounted on said housing adjacent one end of said proof mass, for sensing axial displacements due to accelerations of said proof mass; means for restoring said mass to null position after axial displacement, comprising rotating magnetic means for setting up magnetic fields travelling axially of said proof mass for inducing currents in said proof mass in such a direction as to produce magnetomotive restoring axial forces equal and opposite to those producing such translations, said restoring means comprising a pair of magnets mounted on said housing with their opposed poles adjacent the outer surface of said proof mass; and means for measuring the restoring forces necessary to balance the axial forces due to said accelerations as a function of the speed and number of revolutions of said rotating magnetic means for producing said induced currents.

3,863,509
KEYBOARD FOR THE PRESELECTION OF ELECTROMAGNETIC SIGNALS

Carmelo Zimatore, and Amedeo Pezzini, both of Rome, Italy, assignors to Autovox S.p.A., Rome, Italy

Filed Jan. 3, 1974, Ser. No. 430,589
Claims priority, application Italy, Jan. 17, 1973, 47733/73
Int. Cl. F10h ***35/18***
U.S. Cl. 74—10.33 **9 Claims**



1. In a keyboard for receivers, particularly for autoradios, for pre-setting them to the reception of as many transmitters as there are keys on siad keyboard, in which keyboard said keys are of a variable length and carry, fulcrumed to them, cams which can be locked in varying inclinations with respect to the key axis, said cams coacting with means to transmit said inclination to the tuning system of said receiver, the improvement that:

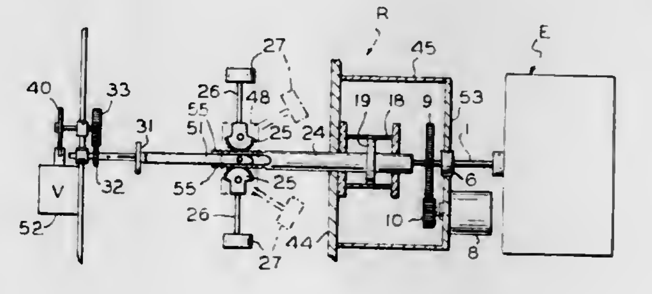
each key cam coacts with cams, whose one end is pivotably mounted on a plate, each cam presenting an ear at both sides of its pivot, said ears being coplanar with said key cam and capable of being moved into engagement with the latter;

each of the opposite end of said eared cams is linked by a pin to a flat bolt, one end of said bolt being disconnectably linked to the tuning system of said reeiver, said eared cams and said bolts forming the means to transmit the key cam inclinations to said tuning system.

3,863,510
INERTIA ENGINE

Everett H. Benson, Rt. 1, Box 429, Eagle Creek, Oreg. 97022

Filed Jan. 16, 1974, Ser. No. 433,933
Int. Cl. F16h ***33/12***
U.S. Cl. 74—64 **7 Claims**



1. An inertia engine comprising a reaction mechanism adapted to be driven by a vehicle-mounted prime mover, the reaction mechanism including:

a rotatable drive shaft,

a mass and means attaching said mass to said drive shaft for rotation with said drive shaft,

and means for moving said mass inwardly toward said drive shaft and for partially releasing said mass for movement outwardly away from said drive shaft in a direction having a component axial of said drive shaft for providing thrust in the last mentioned direction, said mass moving outwardly in response to centrifugal force as said mass is rotated by said drive shaft.

3,863,511

APPARATUS FOR OPENING THE SAND DISCHARGING DOOR FOR HOPPER BARGES

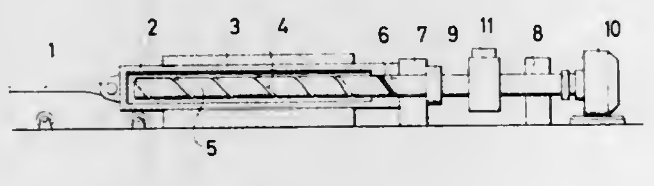
Keizo Kikui, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Oct. 9, 1973, Ser. No. 404,792

Claims priority, application Japan, Oct. 12, 1972, 47-118140

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **1 Claim**



1. The method of operating a sand or soil discharging door for a hopper barge in which said door is positioned and mounted to be urged open by the weight of said sand or soil, comprising:

providing a mechanism comprising a slidable body connected to said door so as to be slid in one direction when said door is opening and in the opposite direction when said door is closing, a rotary shaft having helical groove means engaging said body and providing a conversion between rotary motion of said shaft and linear motion of said body, motor means for rotating said shaft, and brake means for locking said shaft against rotation;

releasing said braking means and deactuating said motor means when said sand or soil is to be discharged, whereby the weight of said sand or soil urging said door open causes it to open gradually against the resistance produced by said helical groove means acting on said slidable body;

operating said motor means to close said door when said discharging has been effected; and

operating said breaking means when said door is to be held closed.

3,863,512

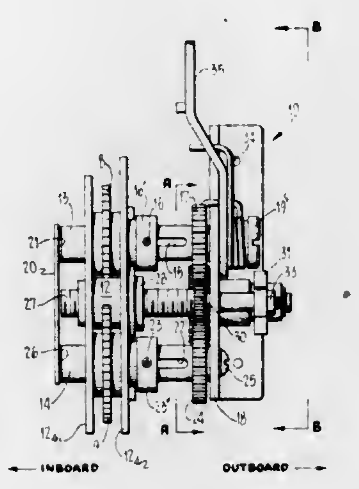
SHIFT MECHANISM FOR DERAILLEUR DRIVE

James W. Crawley, Woodland Hills, Calif., assignor to California Progressive Products, Inc., Manhattan Beach, Calif.

Filed Nov. 9, 1973, Ser. No. 414,146

Int. Cl. F16h *11/04*

U.S. Cl. 74—217 B **20 Claims**



1. In a derailleur gear changing mechanism including a main drive sprocket, a plurality of rear sprocket gears, and a connecting drive chain, a mechanism comprising:

a. means for laterally displacing said drive chain by means of power derived from the motion of said drive chain.

3,863,513

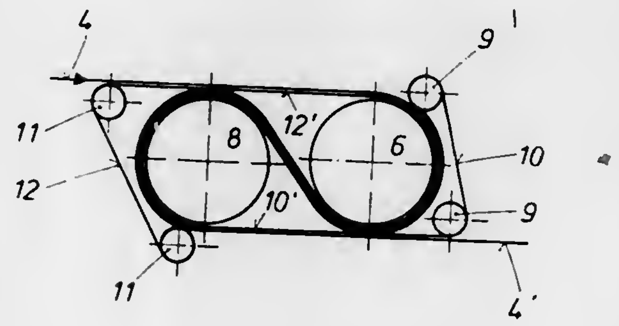
DRIVE UNIT FOR CONTINUOUSLY OPERATING SHEET PROCESSING OR TREATING LINES

Roland R. M. Schnettler, Hagen, Germany, assignor to Maschinenfabrik Sack GmbH, Duesseldorf-Rath, Germany

Filed Aug. 27, 1973, Ser. No. 392,100

Int. Cl. F16h *7/00*

U.S. Cl. 74—221 **2 Claims**



1. A tension roll assembly for regulating forward or back tension on a moving strip in strip processing lines comprising a pair of spaced first and second reversing rollers over which the strip is wound in an S-shaped configuration, and an endless belt winding means to increase friction between said strip and said reversing rollers, wherein said endless belt is guided initially in contact with the strip wound over said first reversing roller, then in contact with said second reversing roller and back over two spaced smaller guide rollers positioned in different radial planes of the first reversing roller, one of said guide rollers determining the back pass of said belt free of said first reversing roller.

3,863,514

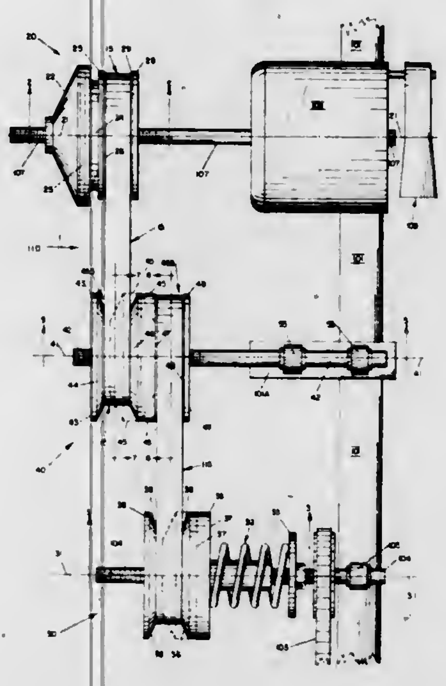
BELT-DRIVE TRANSMISSIONS OF AMPLIFIED LOW/HIGH RATIO RANGE FOR SELF-PROPELLED SURFACE VEHICLES

Stanley W. Jensen, Omaha, Nebr., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jan. 15, 1973, Ser. No. 323,901

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 A **5 Claims**



1. In a self-propelled surface vehicle having a variable speed engine including a throttle means therefor as the sole operator-controllable means for selectively controllably varying the engine-shaft "rpm" angular velocity and said vehicle, also having underlying movable traction means, the improvement of a variable-ratio belt-drive transmission apparatus for said self-propelled surface vehicle and being capable of furnishing an unusually amplified low/high ratio range from the vehicle's said independently variable speed engine-shaft to its underlying traction means and comprising:

A. A variable-width driver-pulley adapted for co-revolvable installation with the variable speed engine-shaft, said driver-pulley including a pair of relatively transversely movable pulley flanges having non-parallel opposing faces which converge toward the driver-pulley transversely extending central axis, and means for automatically decreasing the flanges' transverse separation in response to increasing angular velocity for the engine-shaft,

B. An annular first-V-belt engaged both with the driver-pulley and the first-beltway of a uni-axial twinned-pulley;
C. Said uni-axial twinned-pulley having a transversely linearly extending pulley-shaft as the uni-axis thereof and spaced a substantially fixed constant distance from and parallel to the driver-pulley central axis, said twinned-pulley comprising a first-flange and a third-flange in surrounding and substantially axially stationary relationship along the pulley-shaft, a dual-faces second-flange positioned between the first-flange and the third-flange and in surrounding and transversely movable relationship along the pulley-shaft, opposing faces of the first-flange and the second-flange being non-parallel and converging toward the pulley-shaft to provide a first-beltway gorge therebetween to accommodate the said first-V-belt, the transverse position of the dual-faces second-flange being wholly dependent upon the selected angular velocity for the engine-shaft, and opposing faces of the second-flange and the third-flange being non-parallel and converging toward the pulley-shaft to provide a second-beltway gorge therebetween;

D. A variable-width driven-pulley adapted for co-revolvable installation with a jack-shaft which is actuatably connected with the vehicle traction means, said driven-pulley including a pair of relatively transversely movable pulley flanges having non-parallel opposing faces which converge toward the driven-pulley transversely extending central axis and said axis being spaced a substantially fixed distance from and parallel to the twinned-pulley uni-axis, and transversely yieldable biasing means normally tending to minimize the transverse distance between the two driven-pulley flanges; and

E. An annular second-V-belt engaged both with the driven-pulley and the second-beltway gorge of said twinned-pulley whereby as the second-V-belt pitch diameter on the interdependent pitches slave twinned-pulley increases it causes the movable flange of the driven-pulley to move against the yieldable biasing means and the second-V-belt diameter decreases thereat.

3,863,515

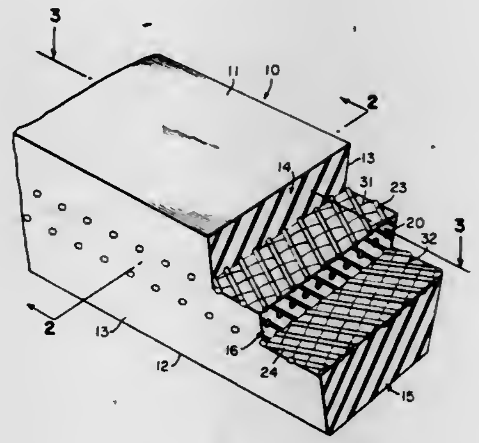
ENDLESS POWER TRANSMISSION BELT

Roger D. Meadows, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Filed Apr. 19, 1973, Ser. No. 352,786

Int. Cl. F16g *1/00*

U.S. Cl. 74—231 R **13 Claims**



1. An endless power transmission belt comprising, a tension section, a compression section, and a load-carrying section arranged between said tension and compression sections, said load-carrying section having a longitudinally extending load-carrying cord, a first plurality of parallel cords arranged in skewed relation relative to and on one side of said longitudinally extending cord, and a second plurality of parallel cords arranged in skewed relation relative to and on the other side of said longitudinally extending cord, said skewed cords cooperating with said longitudinally extending cord to provide said belt having tensile strength and torsional stiffness as well as flexibility.

3,863,516

ENDLESS POWER TRANSMISSION BELT

David G. Fisher; Mark W. Krueger, and Clinton L. Bishop, all of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

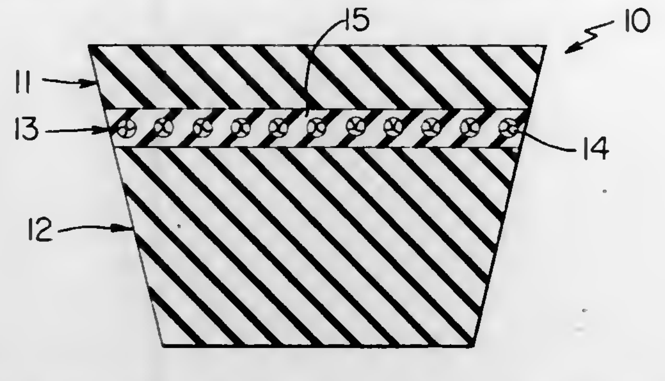
Filed Oct. 11, 1973, Ser. No. 405,380

Int. Cl. F16g *5/16, 5/00*

U.S. Cl. 74—233 **11 Claims**

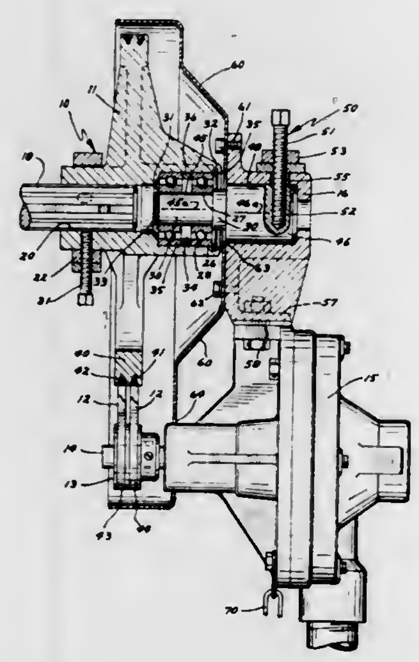
1. An endless power transmission belt comprising, a tension section, a compression section, and a load-carrying section, at least one of said sections being comprised of a poly (propylene oxide) rubber and a textile material, said poly (propylene oxide) rubber being blended with neoprene rubber to provide a rubber blend which adheres to said textile material with optimum adhesion, said rubber blend consisting of a blend

having poly (propylene oxide) rubeer therein which constitutes between 25 percent and 75 percent by weight of the total weight of the rubber blend, with the remainder of the blend being said neoprene rubber.



3,863,517
CENTRIFUGAL PUMP MOUNT

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Sept. 10, 1973, Ser. No. 395,579
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.16 **5 Claims**

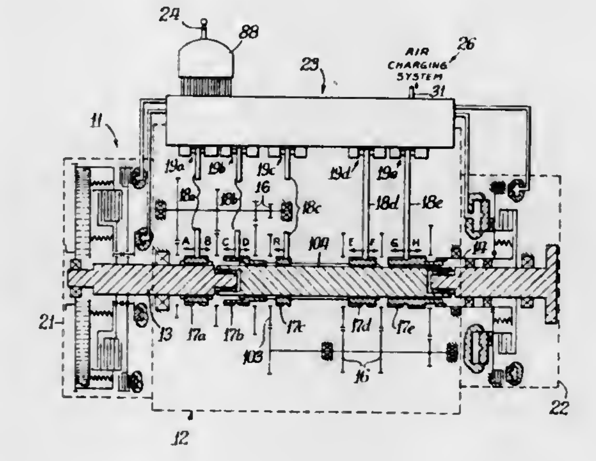


1. Drive belt tension adjustment means for controlling the belt coupling of a stationary drive shaft to a driven pulley and a relatively spaced rotary pump drive means and comprising: a. drive pulley means having a peripheral belt receiving drive surface and adapted for mounting directly onto a stationary drive shaft and including a central hub with an axial bore extending therethrough with axially spaced and aligned bore segments forming concentrically arranged inner and outer housing segments, said bore being adapted to receive said drive shaft within the inner housing segment end thereof and arranging for rotation of said drive pulley with said drive shaft; b. rotary pump means having a drive means disposed in spaced axial disposition from said drive pulley and having belt receiving drive means for engagement with a drive belt disposed upon said peripheral belt receiving drive surface, said drive pulley means and said pump drive means defining an belt occupying span therebetween;

- c. annular bearing means disposed within said outer housing segment and arranged to receive an off-set camming adjustment shaft in journaled relationship therewithin;
- d. off-set camming adjustment shaft means disposed within said annular shaft bearing means and having two axially spaced mutually eccentrically arranged segments in continuation, one with the other, the inner one of said segments being received within said shaft bearing means and with the other of said mutually eccentrically arranged segments extending axially outwardly therefrom;
- e. cup housing means for said outwardly disposed off-set shaft segment mounted on the outwardly disposed segment of said off-set adjustment shaft, and including a shaft receiving bore and a radially extending arcuately adjustable lock means secured to said outwardly disposed segment for controllably adjusting and releasably retaining the arcuate disposition of said off-set camming adjustment shaft relative to the axis of said central hub; and
- f. bracket means secured to said eccentric housing means for mountably receiving said rotary pump thereon.

3,863,518
TRANSMISSION SHIFTING SYSTEM

Philip S. Webber, and Joseph E. Goett, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 1, 1974, Ser. No. 438,667
Int. Cl. F16h *3/40, 3/22;* **F16d** *67/00*
U.S. Cl. 74—340 **10 Claims**



1. A drive transmission for coupling an engine to a driven load at any selected one of a plurality of drive ratios comprising; a plurality of coupling means for coupling selected sets of a plurality of gears, a plurality of shifting fork means for engaging said coupling means and shifting said coupling means for selecting desired gear drive ratios, actuator means associated with said shifting fork means for engaging said fork means and positioning said fork means and said coupling means, fluid pressure supply means, fluid communication means for connecting said supply means with said actuator means for actuation thereof, control means for controlling the flow of pressure fluid to said actuator means, said actuator means including a neutralizing actuator having mechanical means therein for automatically causing one of said shifting fork means to position an associated coupling means to disconnect said engine from said load when said fluid pressure drops below a predetermined value.

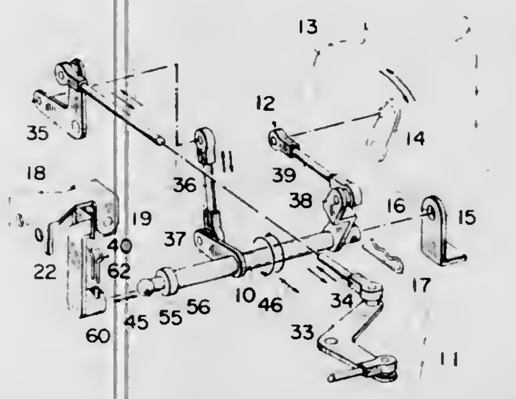
3,863,519
ROD-END BEARING ASSEMBLY FOR ACCELERATOR LINK MECHANISM

Sadaaki Natori, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Mar. 22, 1973, Ser. No. 343,942
Claims priority, application Japan, Mar. 24, 1972, 47-29534; Mar. 24, 1972, 47-34648[U]
Int. Cl. G05g *9/00*
U.S. Cl. 74—474 **3 Claims**

1. A rod-end bearing assembly for the accelerator link mechanism of automotive vehicles comprising:

a shaft;
means mounting said shaft for movement in the axial direction and in a direction normal to the axis;

a first arm on said shaft;
an accelerating pedal;
first link means connecting said first arm to said pedal;
a second arm on said shaft and a lever to operate a throttle valve of an engine carburetor;
second link means connecting said second arm to said lever;
said shaft having a ball head at an end thereof toward the side of the vehicle body with a narrower neck member connecting said ball head to said shaft;
a bracket secured to the vehicle body having a pivotable arm mounted on a pin held by said bracket;
a holder for said ball head fixed on one side to the lower end of said pivotable arm and having an opening on the other side for the insertion of said ball head;
said holder having a cavity therein connected by a bore to said opening on said other side of said holder;



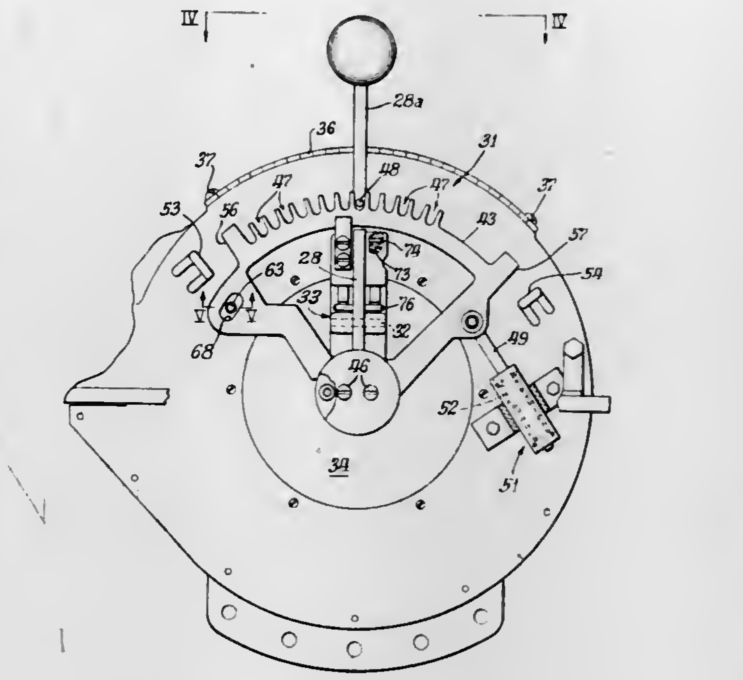
said bore having a slightly larger diameter than the outer diameter of said ball head and said cavity with connecting bore being spaced within said holder to enable said ball head and part of said neck member to be inserted within said holder;
a portion extending longitudinally through said holder from the tip of the opening to a depth at which the juncture of the neck member and said ball head is approximately placed when said ball head is inserted into said cavity;
a groove formed in said holder at the inner edge of said portion, said groove having a width equal to or narrower than the bore of said cavity, and
a check pin in said groove whereby said ball head is prevented from escaping from said cavity.

3,863,520
LIMIT MECHANISM FOR MANUAL SHIFT CONTROL LEVER

Kenneth R. Moline, Peoria; Maurice F. Franz, East Peoria, and Philip S. Webber, Morton, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 13, 1973, Ser. No. 369,714
Int. Cl. G05g *5/02, 9/08*
U.S. Cl. 74—475 **8 Claims**

1. A manually operable shift control mechanism for selectively establishing one of a multiplicity of speed ratios in a transmission, comprising

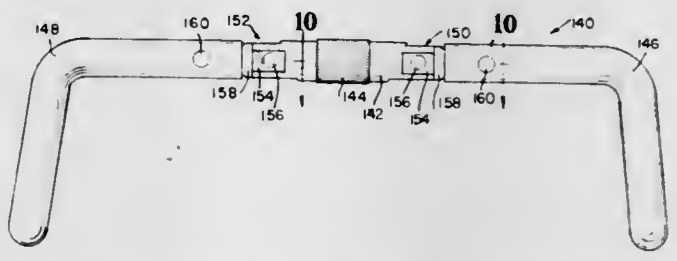
a shift control housing,
a shift control lever pivotably mounted on said housing for operating the transmission, said lever being angularly movable to a multiplicity of consecutively arranged settings, respectively corresponding to the transmission speed ratios. releasable means tending to engage said shift control lever in each of said multiplicity of settings,
limit means coupled with said lever, said limit means being operable to limit the number of consecutively arranged settings through which the lever may be angularly moved prior to engagement of said shift control lever by said releasable means,
override means operatively coupled with said limit means, said override means being selectively operable to override said limit means and permit substantially free angular movement of said lever through said multiplicity of settings, and



alternate limit means for varying the number of consecutively arranged settings through which the lever may be angularly moved during a selected speed ratio range of operation in the transmission.

3,863,521
ADJUSTABLE HANDLEBARS

Stephen L. Gatsos; Roy F. Abercrombie, and Charles R. Ford, all of Indianapolis, Ind., assignors to Carlisle Corporation, Cincinnati, Ohio
Continuation-in-part of Ser. No. 191,988, Oct. 26, 1971, abandoned. This application Feb. 2, 1972, Ser. No. 222,931
Int. Cl. B62k *21/16*
U.S. Cl. 74—551.4 **16 Claims**



1. Adjustable handlebars for a bicycle comprising a central main body portion, hand-grip portions respectively at opposite sides of said main body portion, means for connecting each hand-grip portion to said main body portion for movement between a high-speed running position and a low speed resting position, and manually-operable means for releasably locking each said connecting means securely to hold its associated hand-grip portion alternatively in its running and resting positions, said connecting means including a first connector member at the adjacent end of said main body portion and a second connector member fixed to said hand-grip portion, said second connector member being engaged with and connected to the adjacent first connector member for generally rectilinear movement only relative to said first connector member between an inner position and an outer position, and pivot means for connecting said second connector member to said first connector member for pivotal movement, when said second connector member is in said outer position, between a lower position corresponding to said running position and an upper position corresponding to said resting position, said pivotal movement being about an axis extending forwardly in the direction of movement of said bicycle, said connector members being disengaged to permit such pivotal movement when said second connector member is in said outer position.

3,863,522
CHAIN TENSIONING DEVICES AND DRIVE ASSEMBLIES FOR MINING

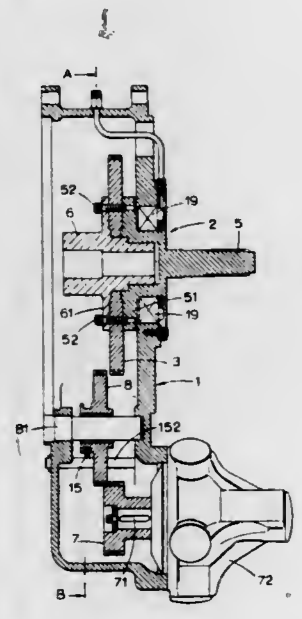
John Gibson, 61 Welbury Grove, Newton Avcliffe, and James Nelson, 47 Briar Ln., Shiney Row, Houghton le Spring, both of England

Filed June 26, 1972, Ser. No. 266,309

Claims priority, application Great Britain, June 30, 1971, 30641/71

Int. Cl. F16h *37/06*

U.S. Cl. 74—661 8 Claims



1. A chain tensioning device (CH or DH) in the form of a self-contained unit adapted to be interposed and interconnected between two components (e.g. CG and CJ) of a drive assembly for a mineral mining installation, one of said components having a stub shaft projecting therefrom and the other of said components having a socket into which said stub shaft is normally seated, said chain tensioning device comprising;

a. a housing (1) having front and rear sides;

b. a main shaft assembly (2) supported for rotation within said housing and interconnecting said two components, said assembly including;
  i. a main gear wheel (3) disposed within said housing;
  ii. a stub shaft part (5) projecting at least partially from the front side of said housing; and
  iii. a socket part (6) having a socket opening towards the rear side of said housing;

said main gear wheel, stub shaft part and socket part being engaged so as to be rotatable together;

c. an auxiliary driving motor (72) mounted to said housing (1) and having a drive shaft (71) extending into said housing, said drive shaft (71) being spaced from and parallel to said stub shaft part (5);

d. a pinion (7) carried by said drive shaft (71) within said housing;

e. an intermediate gear wheel (8) disposed within said housing between said main gear wheel (3) and said pinion (7), said intermediate gear wheel having a first axial position engaging and drivably interconnecting both said pinion and said main gear wheel and a second axial position out of engagement with said pinion and said main gear wheel; and

f. means (121–124, 15) for shifting said intermediate gear wheel (8) between the two said positions.

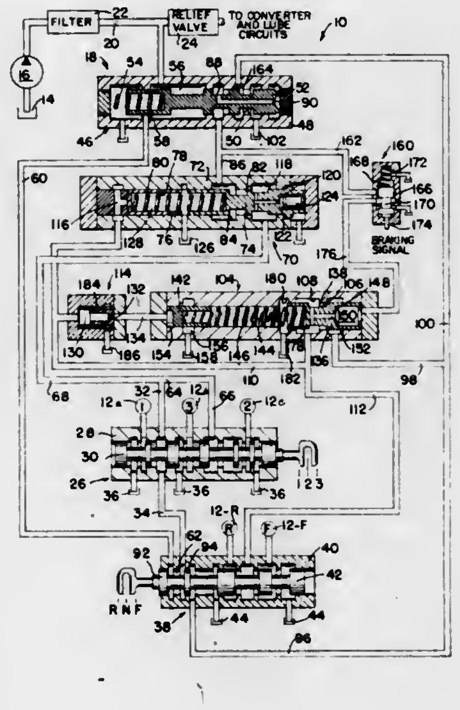
3,863,523
HYDRAULIC SAFETY SYSTEM FOR A VEHICLE TRANSMISSION

James G. Starling, Peoria, and Harold A. Mathes, Tremont, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 25, 1973, Ser. No. 373,246

Int. Cl. F16h *57/10;* **F16d** *67/04*

U.S. Cl. 74—754 6 Claims



1. In combination with a transmission having a plurality of fluid pressure actuated drive conditioning devices including a first group of drive conditioning devices and a second group of drive conditioning devices, and wherein application of fluid pressure to at least one device of each group establishes a selected one of a plurality of drive conditions through the transmission, a control system comprising:

a source of fluid under pressure;

safety valve means having first and second positions;

a first selector valve communicating with said source with the safety valve means in its second position, and having a plurality of drive conditions for directing fluid to predetermined ones of said first group devices;

a second selector valve communicating with said source with the safety valve means in its second position and having a plurality of drive positions for directing fluid to predetermined ones of said second group of devices, and having a neutral position which cuts off fluid to all of said second group of devices;

the source of fluid pressure communicating with the first selector valve with the safety valve means in its first position only when the second selector valve is in its neutral position, to direct fluid to the predetermined one of the first group of devices;

the safety valve means being biased into its first position to initially direct fluid from the fluid pressure source to the predetermined one of the first group of devices only when the second selector valve is in its neutral position;

means for moving the safety valve means from its first to its second position upon buildup of fluid pressure in the predetermined one of said first group of devices;

the movement of the safety valve means to its second position providing communication of the first and second selector valves with the source of fluid under pressure.

3,863,524
GEAR TRAIN ARRANGEMENTS

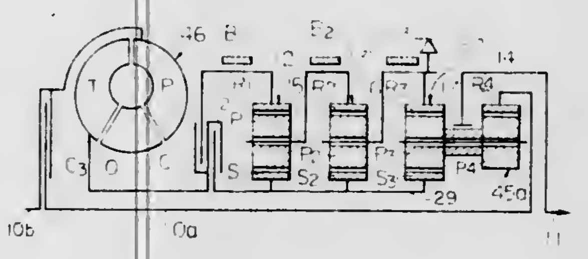
Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,553

Claims priority, application Japan, July 14, 1969, 44-55068

Int. Cl. F16h *57/10*

U.S. Cl. 74—765 2 Claims



1. A gear train comprising:

an input shaft (10);

an output shaft (11);

a first planetary gear set (12) having a ring gear (R_1), a pinion carrier (15), a planet pinion (P_1) meshing with the ring gear (R_1) and rotatably journaled on the pinion carrier (15) and a sun gear (S_1) meshing with the planet pinion (P_1);

a second planetary gear set (13) having a ring gear (R_2) connected to the pinion carrier (15) of said first planetary gear set (12), a pinion carrier (16) a planet pinion (P_2) meshing with the ring gear (R_2) thereof and rotatably journaled on the pinion carrier (16) thereof and a sun gear (S_2) meshing with the planet pinion (P_2) thereof, the sun gear (S_2) of said planetary gear set being connected to the sun gear (S_1) of said first planetary gear set;

a third planeary gear set (14) having a ring gear (R_3) connected to the pinion carrier (16) of said second planetary gear set (13), a pinion carrier (17), a planet pinion (P_3) meshing with the ring gear (R_3) thereof and rotatably journaled on the pinion carrier (17) thereof and a sun gear (S_3) meshing with the planet pinion (P_3) thereof, the pinion carrier (17) of said third planetary gear set (14) being connected to said output shaft (11), the sun gear (S_3) of said third planetary gear set being connected to the sun gear (S_2) of said second planetary gear set;

a first clutch means (C_1) for engaging said input shaft (10) with the ring gear (R_1) of said first planetary gear set (12) during operation of reverse speed and fourth forward speed;

a second clutch means (C_2) for engaging said input shaft (10) with the sun gears (S_1, S_2, S_3) of said first, second and third planetary gear sets (12, 13, 14) during operation of first second, third and fourth forward speeds;

a first brake means (B_1) for anchoring the ring gear (R_1) of said first planetary gear set (12) during operation of third forward speed;

a second brake means (B_2) for anchoring the pinion carrier (15) of said first planetary gear set (12) and the ring gear (R_2) of said second planetary gear set (13) during operation of second forward speed;

a third brake means (B_3) for anchoring the ring gear (R_3) of said third planetary gear set (14) and and the pinion carrier (16) of said second planetary gear set (13) during operation of reverse speed; and

a one-way brake means (32) for preventing the ring gear (R_3) of said third planetary gear set (14) and the pinion carrier (16) of said second planetary gear set (13) from rotating in a direction opposing to the rotation of said input shaft (10).

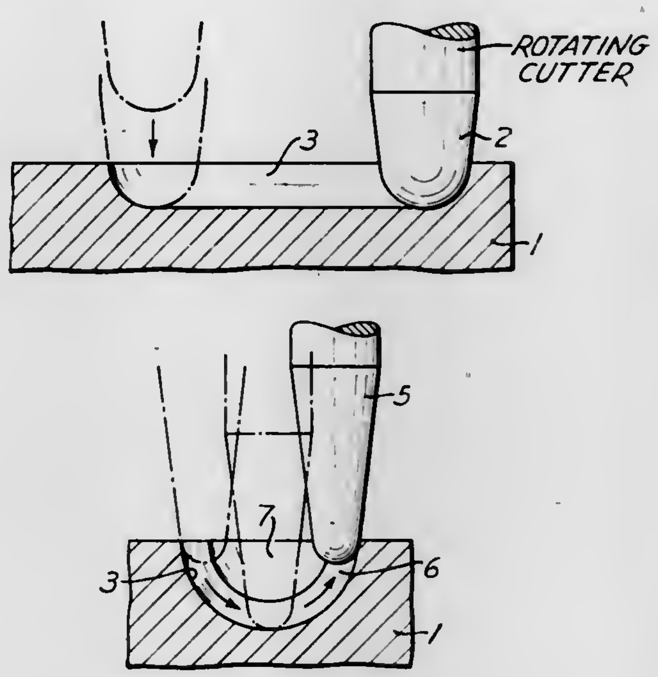
3,863,525
METHOD OF MAKING A FORGING DIE

Roland E. Cale, Mt. Lebanon Township, Pa., assignor to Schaefer Equipment Company, Pittsburgh, Pa.

Filed Apr. 24, 1974, Ser. No. 463,741

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R 3 Claims



1. In the method of making a forging die for forming on one end of a cylindrical rod-like member a projection shaped like part of a sphere spaced inwardly from the periphery of said member, the steps comprising moving a first rotating end-type milling cutter having a hemispherical lower-end down into a metal block to form a hemispherical recess therein, then moving the block at right angles to the cutter axis to cause the cutter to cut in the block a horizontal groove of predetermined length having horizontally curved end walls, removing the cutter from the block, positioning the lower end of a second downwardly tapered end-type milling cutter in one side of the groove near one end thereof, the lower end of the second cutter being hemispherical with a maximum diameter not exceeding about one-third of the maximum diameter of the hemispherical lower end of the first cutter, rotating the second cutter while maintaining it substantially in contact with the wall of the groove and simultaneously moving it downwardly in the groove and across it and up its opposite side, constantly repeating said movement of the second cutter across the groove as said block is moved lengthwise of the groove to slowly move said one end of the groove toward the second cutter to cause the cutter to cut into the curved end wall and form an arcuate shoulder, and forming another die block in the same way so that when the two blocks are placed together with their grooves registering a cylindrical die cavity will be formed having an end wall shaped like part of a shpere and spaced inwardly from the cylindrical side wall of said cavity by an annular shoulder formed from both arcuate shoulders.

3,863,526
METHOD OF FORMING A DIE SECTION

Henry Anton Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

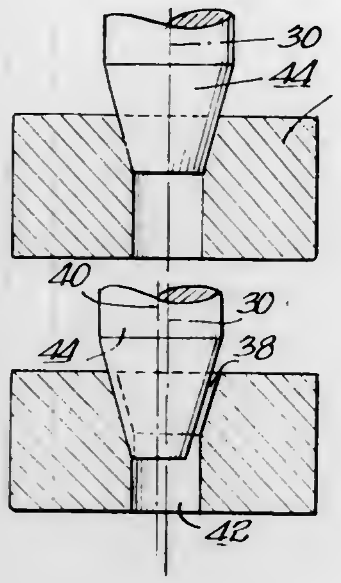
Division of Ser. No. 319,279, Dec. 29, 1972, Pat. No. 3,835,495. This application Aug. 5, 1974, Ser. No. 494,960

Int. Cl. B21k *5/20*

U.S. Cl. 76—107 R 3 Claims

1. A method of forming a die section to be used in forming the entering portion of a cylindrical screw blank including the steps of providing a die section with a central bore, forming a

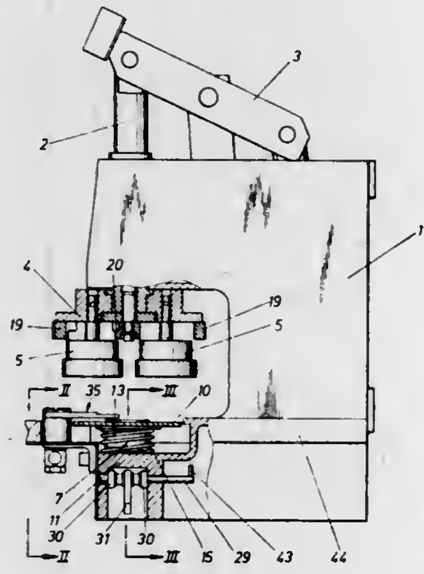
conical recess in the die section coaxial with the central bore, deforming the conical recess by engaging the recess with a



forming tool positioned along an axis laterally displaced from the central axis and to a depth greater than the conical recess.

3,863,527
MACHINE FOR PRODUCING OF BUCKLES, BUTTONS OR THE LIKE

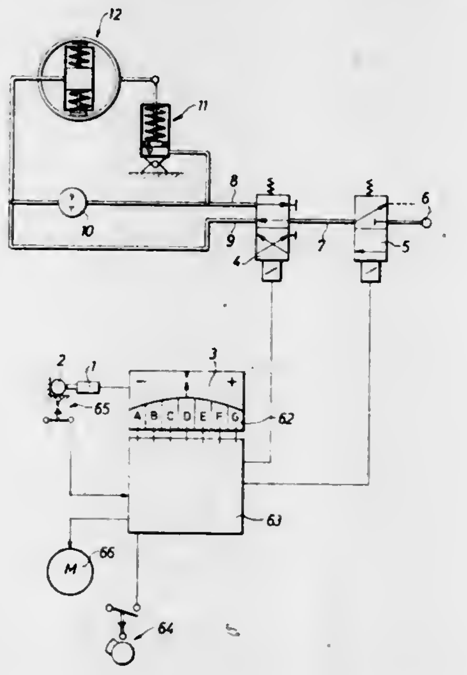
Rudolf Berning, Schwelm, Germany, assignor to Firma Astor-Werk Otto Berning & Co., Schwelm/Westfalen, Germany
Filed Aug. 30, 1973, Ser. No. 392,870
Claims priority, application Germany, Nov. 30, 1972, 2258649
Int. Cl. A44b *1/06*
U.S. Cl. 79—5 **4 Claims**



1. An apparatus for assemblying a button, comprising:
a housing;
an upper tool mounted on said housing and displaceable thereon;
a lower tool on said housing confronting said upper tool and adapted to receive a portion of a button to be formed in said tools, said lower tool including
an outer frame member,
spring means supporting said frame member for at least limited movement relative to said housing, said frame member being provided with an outer shoulder, and
a core piece received in said frame member and displaceable relatively thereto to lift a button from said frame member;
a pneumatic actuator on said housing for displacing said core piece to lift a button from said frame member;
a table removably mounted on said housing and having an opening receiving said frame member and engageable by said shoulder; and
an air-jet nozzle swingably mounted on said housing and normally overhanging said table and angularly displaced to clear said table for removable thereof, said nozzle training a jet of air against a button lifted from said frame member.

3,863,528
APPARATUS FOR ADJUSTING A TOOL SLIDE OF A MACHINE TOOL

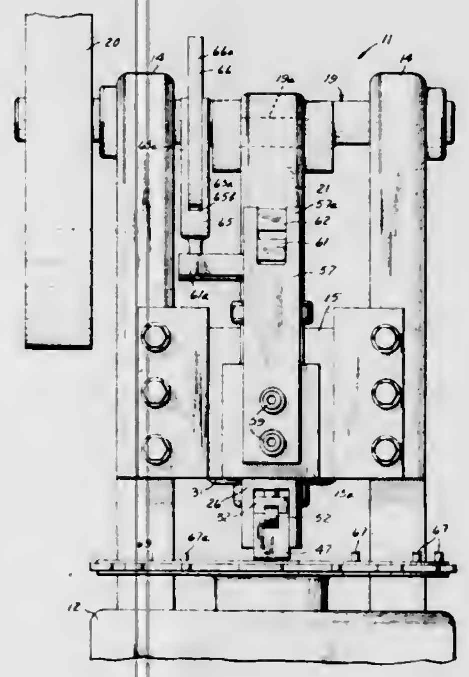
Franz Wiesner, Owen, Germany, assignor to Traub GmbH, Reichenbach/Fils, Germany
Filed Nov. 3, 1972, Ser. No. 303,341
Claims priority, application Germany, Nov. 26, 1971, 2158813
Int. Cl. B23b *21/00, 3/28*
U.S. Cl. 82—21 A **8 Claims**



1. An apparatus for adjusting the tool carriage of a machine tool in order to reproduce in a workpiece a dimension in accordance with a like dimension in a previously produced model workpiece, the apparatus comprising
means for sensing the dimension of a workpiece mounted in a machine tool, said means being initially adjustable to a null position with the model workpiece;
means responsive to said means for sensing, for producing a control signal representative of the deviation of the dimension in a subsequent workpiece from the model dimension;
an adjustable tool carriage;
means for stepwise adjusting said tool carriage;
a source of fluid under pressure; and
valve means coupled to said source and to said means for adjusting and responsive to said control signal for selectively providing fluid from said source to said means for adjusting,
said means for adjusting including
a driven member connected to said carriage and movable to incrementally move said carriage;
a driving member mounted for limited pivotal motion and actuated by fluid under pressure provided by said valve means; and
clutch means for selectively coupling said driving member to said driven member,
and wherein said driving member comprises
a pivotally movable body;
a piston and cylinder coupled to said valve means;
a fixed, non-rotatable body connected to said tool slide, said piston being operative against said fixed body to cause pivotal movement of said pivotally movable body from a first position to a second position when supplied with fluid under pressure from said source; and
spring means operative between said fixed and pivotally movable body to move the movable body from said second position to said first position when fluid pressure is removed.

3,863,529
METHOD FOR TRIMMING CARTRIDGE CASES

Robert J. Bolen, Port Penn, Del., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Apr. 6, 1973, Ser. No. 348,488
Int. Cl. B23b *1/00;* **B23** *3/22;* **B21d** *51/54*
U.S. Cl. 82—47 **4 Claims**

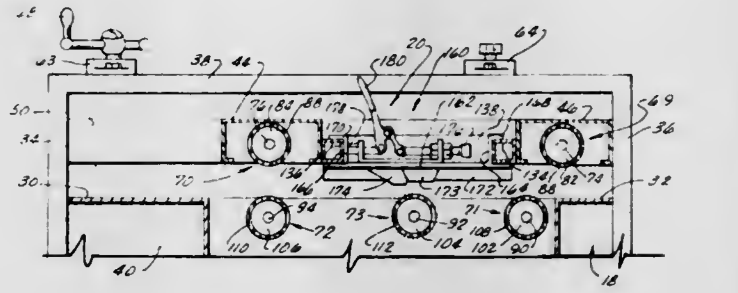


1. A method of trimming a tubular casing having an open end portion with a trimming machine including a mandrel with an extended end and a cutting tool mounted for rotation around the mandrel, said method comprising the steps of rotating the cutting tool at a uniform speed, positioning a casing at a trimming site in axial alignment with the mandrel, moving the mandrel and rotating cutting tool toward the casing to position the extended end of the mandrel within the open end portion of said casing, moving the rotating cutting tool toward the extended end of the mandrel at a predetermined rate to sever a ringlet from the casing and hold the ringlet on the mandrel, removing the mandrel and rotating cutting tool from the casing, and moving the cutting tool away from the extended end of the mandrel to release the ringlet for gravitational removal from the mandrel.

3,863,530
DUCT BOARD CUTTER

Roger F. Weidman, 2100 S. West St., Wichita, Kans. 67213
Filed Nov. 26, 1973, Ser. No. 419,136
Int. Cl. B26d *3/06*
U.S. Cl. 83—5 **5 Claims**

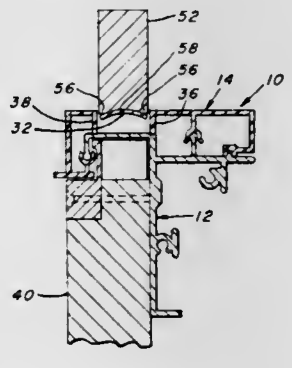
1. A machine for forming a formation in a sheet of material, comprising:
a. a frame means having a stationary portion, a vertically movable portion and a means to move said vertically movable portion,
b. powered means mounted with said stationary portion of said frame means and said vertically movable portion thereof to move a sheet of material through said frame means between said stationary portion and said movable portion,
c. means mounted with said movable portion to removably mount a cutting tool said means to removably mount a cutting tool having an adjustable mounting means constructed and adapted to adjust the position of said cutting tool vertically relative to said vertically movable frame portion,



d. a cutting tool having a mounting means to removably mount said cutting tool with said means to mount a cutting tool, said cutting tool having when mounted a downwardly extending blade to in use cut a formation in a sheet of material as said sheet of material is moved through said machine by said means to move a sheet of material, and
e. said cutting tool mounting means has a latch means with a movable plunger constructed and adapted to in use mount said cutting tool in a fixed position with said means to mount a cutting tool.

3,863,531
METHOD FOR FORMING HOLES

Robert H. Forschner, Apollo, and Robert J. Kushner, Creighton, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 26, 1974, Ser. No. 445,937
Int. Cl. B26d *3/00;* **B26f** *1/00*
U.S. Cl. 83—54 **6 Claims**



1. In the fabrication of a hollow article having a hole through a wall thereof comprising the steps of:
introducing a hollow article having substantially parallel walls and longitudinally extending support webs therebetween, between a supporting die and a punch having an anterior end with projecting corners and cutting edges around the periphery of the end between the corners angled with respect to die travel,
lineally displacing at least one of said die or punch to pierce a wall of said hollow article with the projecting corners on the punch in the area between the support webs in the article, and
continuing the lineal displacement of said die or punch to shear the wall of the article with the cutting edges of the punch to cut a hole through said wall.

3,863,532
SYSTEM AND METHOD FOR PROCESSING TEXTILE FIBERS

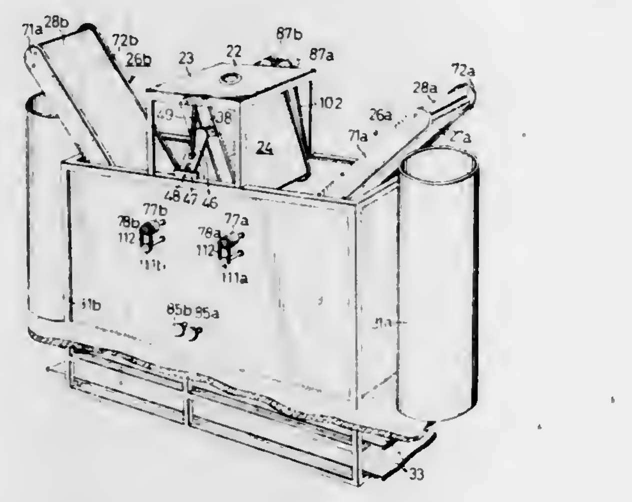
Kazue Konno, Odawara, and Yoshiji Kamekawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Nakagawa Seisakujo, Mii-ken, Japan

Filed Feb. 27, 1973, Ser. No. 336,199

Claims priority, application Japan, Mar. 3, 1972, 47-21993

Int. Cl. B26d *7/06*

U.S. Cl. 83—27 **16 Claims**



1. A method of preparing lengths of sliver of fibrous material comprising:

a. providing a sliver of fibrous material and a plurality of containers;

b. advancing said sliver of fibrous material in a longitudinal direction thereof;

c. delivering a length of said advancing sliver to one of said plurality of containers;

d. severing said sliver after said length of sliver has been delivered to said one container and retaining an end of said severed length of sliver, said retained end being a trailing end of said severed length of sliver;

e. delivering another length of said advancing sliver to another of said plurality of containers and simultaneously removing said severed length of sliver from said one container by advancing it in a longitudinal direction thereof so said retained trailing end is a leading end thereof;

f. severing said sliver after said another length of sliver has been delivered to said another container and retaining an end of said severed another length of sliver, said retained end being a trailing end of said severed another length of sliver;

g. delivering said advancing sliver to a different one of said plurality of containers and simultaneously removing said severed another length of sliver from said another container by advancing it in a longitudinal direction thereof so said retained end is a leading end thereof; and

h. repeating the steps of delivering a length of sliver to alternate ones of said plurality of containers, severing said sliver after a corresponding length has been delivered to a corresponding container and retaining a trailing end of said severed length of sliver, and removing the severed lengths of sliver alternately from said alternate ones of said containers by advancing said severed lengths in a longitudinal direction thereof so said retained end is a leading end thereof while delivering a length of sliver to an alternate of said containers.

4. An apparatus for preparing lengths of sliver of fibrous material comprising:

a. a feeder having a first and second operating position for receiving a sliver of fibrous material and advancing said sliver in a longitudinal direction thereof;

b. a first and second conveyor means cooperative with said feeder for receiving said advancing sliver from said feeder and advancing said sliver in a longitudinal direction thereof; said feeder and said first and second conveyor means comprising severing means for severing said sliver when said feeder is moved from one to the other of its said operating positions;

c. a first container and a second container disposed relative to said first and second conveyor means respectively for receiving said sliver advanced by said conveyor means;

d. sensing means for developing a signal when a length of said sliver is contained in either one of said containers;

e. control means comprising drive means for positioning said feeder to said first operating position for delivering said sliver to said first conveyor means and for driving said first conveyor means to advance said sliver to deliver it to said first container, means applying said sensing means signal to said control means for stopping the advance of said sliver by said first conveyor means to said first container, said drive means comprising means moving said feeder from said first to said second operating position thereby severing said sliver and providing said sliver advanced by said feeder to said second conveyor means for delivering said advancing sliver to said second container, and means in said drive means for driving said first conveyor means to advance said length of sliver in said first container in a direction to remove said length of sliver therefrom in response to said sensor means signal, said drive means moving said feeder from said second to said first operating position thereby severing said sliver and providing said sliver advanced by said feeder to said first conveyor means for delivering said advancing sliver to said first container and for driving said second conveyor means to advance said length of sliver in said second container in a direction to remove said length of sliver therefrom in response to said sensor means signal indicating said length of sliver is delivered to said second container.

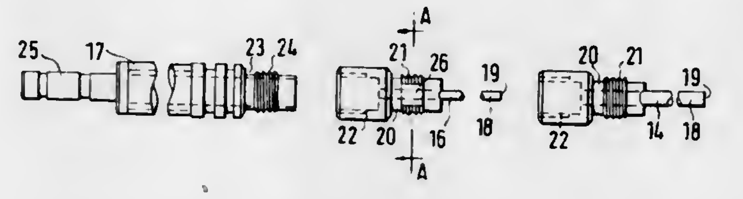
3,863,533
PUNCHING TOOL

Barry Anthony Lincoln Hurn, Beckenham, England, assignor to The Wellcome Foundations Ltd., London, England

Filed Mar. 8, 1973, Ser. No. 339,223

Int. Cl. B26f *1/24*

U.S. Cl. 83—100 **3 Claims**



1. A gel puncher comprising an outer pipe having a one end which has a gel cutting having an external diameter of from 1 to 10 millimetres; an inner pipe co-axially located within said outer pipe, said one end of said outer pipe projecting a predetermined distance of from 0.1 to 5 millimetres beyond a one end of said inner pipe; means for maintaining said pipes in stationary engagement relative to each other during operation of said gel puncher; said one end of said inner pipe having a transverse cross-sectional area of from 50 to 95 percent of a transverse cross-sectional area of said one end of said outer pipe; means located in said outer pipe enabling the passage of a gas from an external source into said outer pipe; means located between said inner pipe and said outer pipe enabling the passage of said gas within said outer pipe to said one end of said inner pipe, said means for maintaining said inner and outer pipes in stationary engagement relative to one another during operation of said device comprise an externally screwthreaded portion of said inner pipe, for screwthreaded engagement of an internally screwthreaded portion of said outer pipe, and wherein said outer pipe comprise a passage defined by said screwthreaded portion of said outer pipe and a depression extending along said screwthreaded portion of said inner pipe.

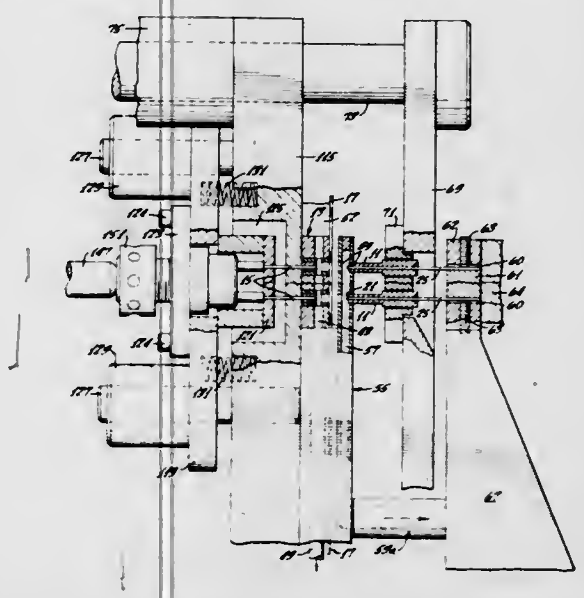
3,863,534
PRESS FOR PUNCHING MEMORY CORES

Eldred D. Scott, Tustin, Calif., assignor to Precision Sales Corporation, Reno, Nev.

Filed Oct. 1, 1973, Ser. No. 402,290

Int. Cl. B26f *1/02*

U.S. Cl. 83—126 **9 Claims**



1. A press for making parts from material comprising:

a die plate;

said die plate having first and second passages extending completely therethrough, one end of each of said passages defining a die;

said die plate having first and second passage sections therein intersecting said first and second passages at first and second intersections, said first and second intersections being respectively intermediate the ends of said first and second passages, respectively, said first and second passage sections opening at different locations on the periphery of the die plate;

tooling means including said dies for forming first and second parts from the material and positioning such parts at said first and second intersections, respectively, whereby said first and second parts can be separately removed through said first and second passage sections and separately collected; and

portions of the tooling means being received by the dies and portions of the tooling means being received through the other ends of said passages.

3,863,535
ROTARY SHEARING MACHINE

Masaji Hamano, 44-1, Takinogawa 6-chome, Kita-ku, Tokyo, Japan

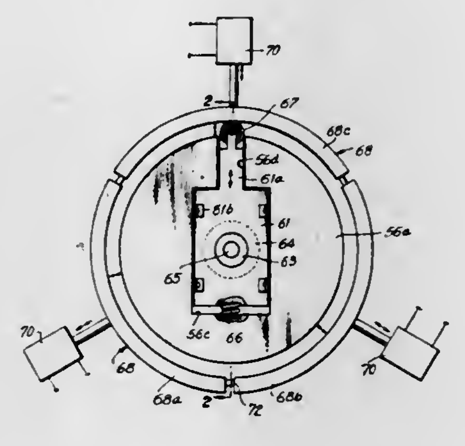
Filed Feb. 5, 1974, Ser. No. 439,833

Claims priority, application Japan, Feb. 6, 1973, 48-16008; Dec. 18, 1973, 48-143614

Int. Cl. B26d *1/00*

U.S. Cl. 83—196 **15 Claims**

1. In a machine for shearing elongated workpieces such as bars, rods, or the like, stationary shearing means formed with an opening for receiving part of workpiece during shearing thereof, said opening extending along a given axis and said stationary shearing means having at one end a stationary shearing edge surrounding said axis, rotary shearing means located next to said one end of said stationary shearing means and formed with an opening for also receiving part of a workpiece during shearing thereof, said rotary shearing means having a rest position where said given axis extends substantially centrally through said opening of said rotary shearing means and said rotary shearing means having next to said one end of said stationary shearing means a rotary shearing edge which surrounds said axis in said rest position of said rotary shearing means, and means operatively connected with said rotary shearing means for rotating the latter around said given axis while simultaneously displacing said rotary shearing means transversely with respect to said given axis for increasing the eccentricity of said rotary shearing means with respect to said stationary shearing means while shearing a workpiece with said stationary and rotary shearing edges.



3,863,536
CUTTING GUIDE FOR MACHINES FOR PRODUCING RODS, PARTICULARLY FOR CIGARETTE MACHINES

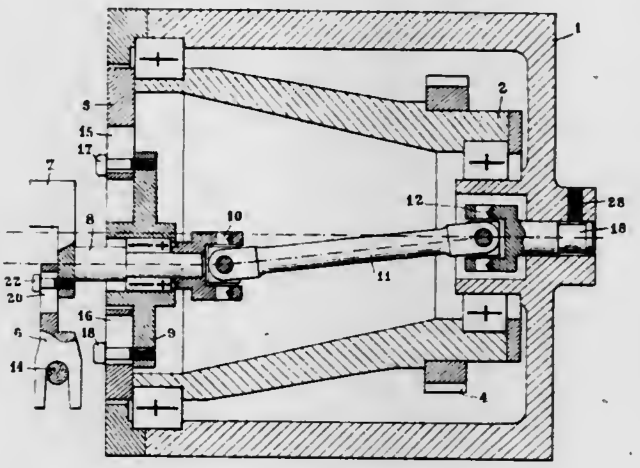
Andre Legardinier, Plessis Bouchard, France, assignor to Usines Decoufle, Paris, France

Filed Sept. 7, 1973, Ser. No. 395,050

Claims priority, application France, Sept. 7, 1972, 72.31709

Int. Cl. B26d *1/56;* **B23d** *25/02*

U.S. Cl. 83—299 **5 Claims**



1. A cutting device moving while remaining constantly parallel to itself and perpendicular to a cigarette rod to be cut, said device turning about an axis at a uniform tangential speed equal to the speed of travel of the rod, comprising a fixed frame, a circular plate rotatably mounted in said frame, means driving in rotation said circular plate in said fixed frame, a first shaft perpendicular to said plate freely rotating in an eccentric bore provided in said plate, a cutting guide fixed at the outer end of said first shaft, a second shaft perpendicular to said plate in alignment with the axis of the plate and mounted to said frame, a third shaft and two universal joints connecting the respective ends of said third shaft to the inner ends of the said first and second shafts.

3,863,537

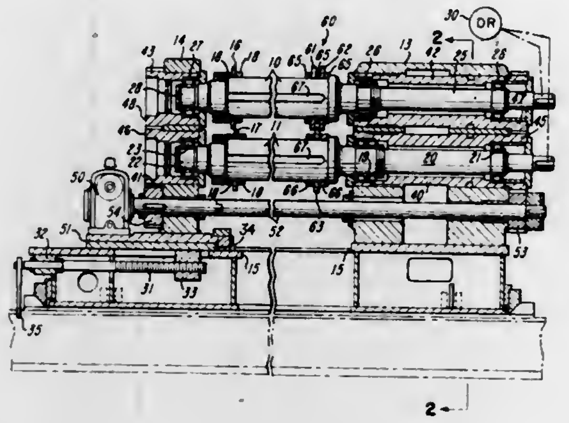
ROTATING LOCK FOR SLITTER APPARATUS

Charles E. Huelsman, Minster, Ohio, assignor to Stamco Division, The Monarch Machine Tool Company, New Bremen, Ohio

Filed Oct. 31, 1973, Ser. No. 411,446

Int. Cl. B23d *19/06*

U.S. Cl. 83—503 **8 Claims**



1. Web slitting apparatus of the character described comprising:
a. a machine base,
b. first rotatable arbor means having disk-shaped shearing blades mounted thereon,
c. second rotatable arbor means having disk-shaped shearing blades mounted thereon,
d. means on said base supporting said first arbor means for rotation and including means restricting one end of said first arbor means against axial movement with respect to said base,
e. means on said base supporting said second arbor means for both rotationally and axial movement in parallel spaced relation with said first arbor means, said blades on said arbor means cooperating to slit a web traveling therebetween, and
f. means forming a rotating lock connection between said arbor means establishing predetermined limits on the axial movement of said second arbor means with respect to said first arbor means.

3,863,538

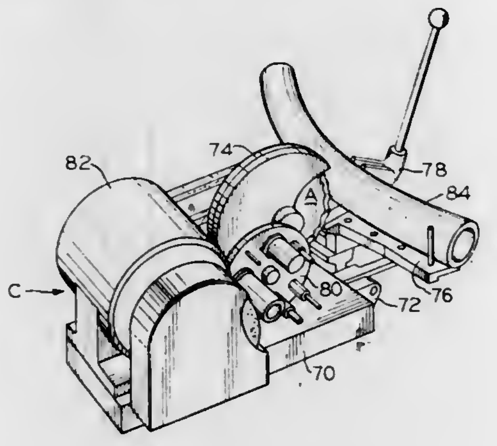
ROTARY CUT-OFF KNIFE AND METHOD

Howard N. Behnke, San Gabriel, Calif., assignor to Wyle Laboratories, El Segundo, Calif.

Filed May 2, 1973, Ser. No. 356,612

Int. Cl. B23d *35/00;* **B26d** *3/16;* **B26b** *9/02*

U.S. Cl. 83—676 **11 Claims**



1. A rotary cutting knife comprising:
a generally circular knife body including a pair of opposed end faces and an outer peripheral edge, said peripheral edge comprising a continuous curvilinear configuration alternating between a plurality of radially disposed first portions radiused outwardly of the center transverse axis of said knife body and second portions radiused inwardly toward said center axis, said end faces converging toward each other adjacent said outer peripheral edge to define a continuous curvilinear cutting edge at said outer peripheral surface, the angle of convergence of said end faes at said first portions being different from the angle of convergence of said second portions; and, means for selectively mounting said knife to apparatus for rotating said knife about its transverse center axis.

3,863,539

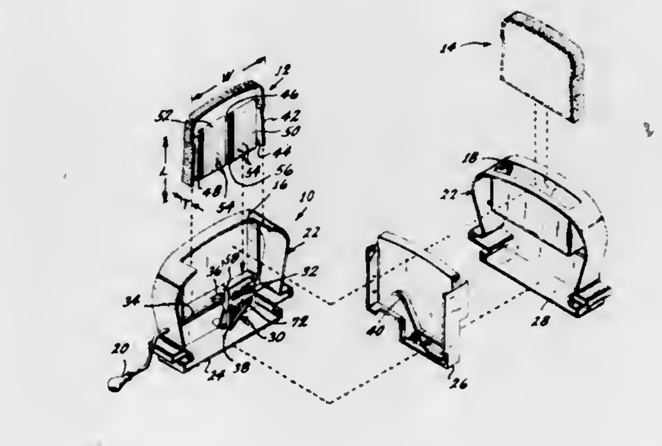
CHANGEABLE MUSIC BOX TOY

Derek J. Gay, Palos Verdes Peninsula, and William H. Smedley, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Aug. 28, 1972, Ser. No. 284,383

Int. Cl. G10f *1/06*

U.S. Cl. 84—94 **15 Claims**



14. A music box comprising:
a housing;
a music comb unit having a plurality of tines fixedly mounted in said housing;
interchangeable actuator means for cooperating with said music comb unit to play music;
each of said actuator means including a casing, an endless belt mounted in said casing around spaced shafts, said endless belt having appropriately positioned striking keys thereon, said casing having an opening at one end, and driven means within said casing adjacent said opening;
means for receiving one of said interchangeable actuator means adjacent said music comb unit;
and drive means mounted in said housing for driving said endless belt by engaging said driven means when said one actuator means is received in said receiving means and positioned adjacent said music comb unit so that said striking keys on said endless belt may pluck said tines.

3,863,540

SAXOPHONE

Robert V. Carree, Mantes-la-Ville, France, assignor to Buffet Crampon, Paris, France

Filed June 18, 1973, Ser. No. 370,858

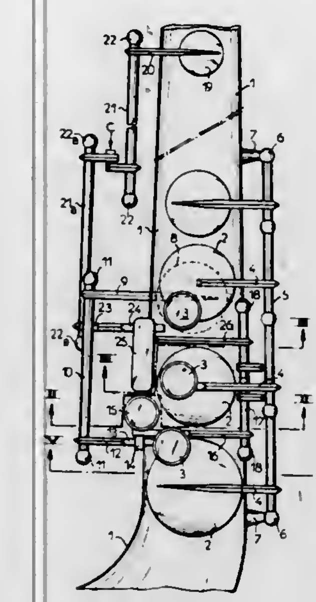
Claims priority, application France, Apr. 12, 1973, 73.13241

Int. Cl. G10d *7/08*

U.S. Cl. 84—385 **5 Claims**

1. A saxophone having a plurality of stops actuated by keys wherein the improvement comprises, a key disposed on a side of a saxophone having an integral first lever extending outwardly from said key, first mounting means for pivotally mounting said first lever at an end remote from said key, a stop having an integral second lever disposed on a side of a saxophone opposite said key, said second lever extending in a direction opposite the direction of said first lever, and second mounting means for pivotally mounting said second lever at an end opposite said stop, said second mounting means comprising a third lever coaxially mounted and commonly actuated

with said second lever and extending in a common direction with said first lever and having an end portion remote from said second mounting means juxtaposed relative to said key, said key engaging said third lever in operation to pivot said second lever to actuate said stop.



3,863,541

BERYLLIUM BORIDE ARMOR

Carl F. Cline, Walnut Creek, and Mark L. Wilkins, Pleasanton, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 7, 1972, Ser. No. 224,239

Int. Cl. F41h *5/00*

U.S. Cl. 89—36 A **3 Claims**

1. An improved lightweight armor comprising a cermet selected from the group consisting of Be_2B and Be_4B bonded to a backup plate.

3,863,542

ASSEMBLIES COMPRISING AN AUTOMATIC FIREARM WITH A RETURN SPRING MOUNTED ON A SUPPORT

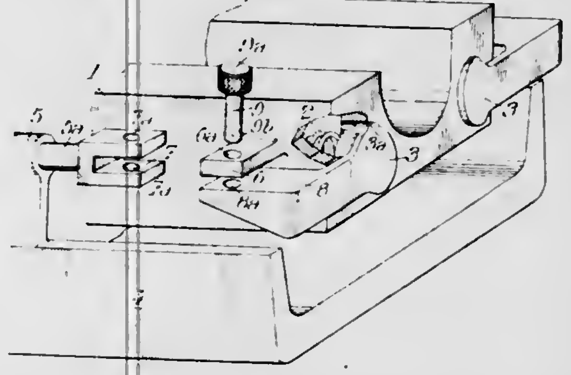
Bernard Pierre, Lyon; Rene Volle, and Raymond Koerper, both of Bourges, all of France, assignors to Etat Francais, Paris, France

Filed Sept. 24, 1973, Ser. No. 399,871

Claims priority, application France, Sept. 26, 1972, 72.33961

Int. Cl. F41d *11/24*

U.S. Cl. 89—37 GM **12 Claims**



1. An assembly comprising a support and an automatic weapon of open breech-block type, adapted to be mounted on said support, said weapon comprising a mobile breech-block subjected to the force of at least one return spring bearing via its rear end against a plug slidably mounted in the rear portion of the weapon breech box, characterized in that the bearing plug is fixed in relation to the weapon breech box and the weapon is fixed on its support by associating with each bearing plug of the return spring a detachable fixing member which, when the bearing plug of the return spring occupies its normal firing position and the weapon occupies its normal position on its support, is adapted to move through aligned apertures with which three separate attaching elements provided to this end are formed — i.e., a first element connected to the bearing plug, a second element connected to the weapon, and a third element connected to that member of the support to which the weapon is to be fixed, and further comprising a shock-absorbing apparatus with a mobile fitting interposed between the weapon and its support, characterized in that the attaching element associated with the weapon support is mounted towards the rear of said mobile fitting.

3,863,543

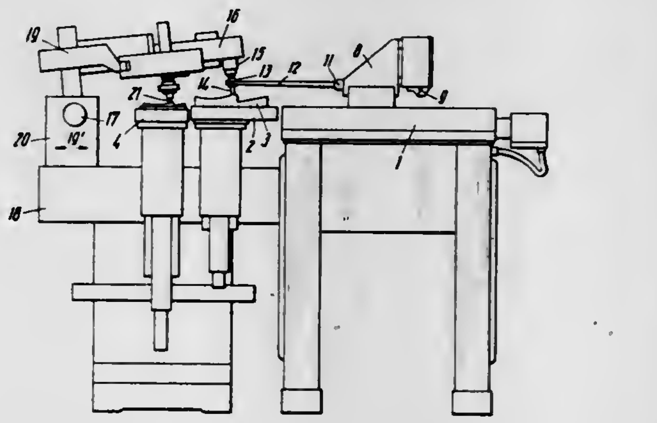
PATTERN TRANSMITTING DEVICES

Albert Bottcher, Scharzfeld Harz, and Hans Maass, Bad Lauterbert im Harz, both of Germany, assignors to Franz Kuhlmann KG, Harz, Germany

Filed Nov. 28, 1973, Ser. No. 349,444

Int. Cl. B23c *1/16*

U.S. Cl. 90—13 C **8 Claims**



1. In a pattern controlled machine having a tool movable in a plane and in a vertical feed direction perpendicular to said plane for three dimensional machining of a workpiece in accordance with a planar drawing and a contoured pattern, a pantograph including said tool and a tracer means operable to follow contours on said pattern and control motion of said tool in the vertical feed direction, pattern transmitting means comprising drawing reader means for automatically following the outline of said drawing, and guide means pivotally connected between said pantograph and said reader means for transmitting movements of said reader means to said tracer means to control the motion of said tool in said plane.

3,863,544

ENGRAVING AND COPY MILLING MACHINE HAVING A PANTOGRAPH

Rudolf Reeber, Neukeferloh; Peter Hofmeister; Heinrich Strobl, both of Munich, all of Germany, and Johann Muller, deceased, late of Unterhaching, Germany (by Katharina Muller, legal representative), assignors to Friedrich Deckel Aktiengesellschaft, Munich, Germany

Filed June 11, 1973, Ser. No. 369,052

Claims priority, application Germany, June 12, 1972, 2228575; Mar. 7, 1973, 2311149

Int. Cl. B23c *1/16*

U.S. Cl. 90—13.1 **5 Claims**

1. An engraving and copy milling machine, comprising:
means defining a machine column;
means defining a console mounted on said machine column means;

pantograph means including a tracer, said pantograph means being mounted on said console means;

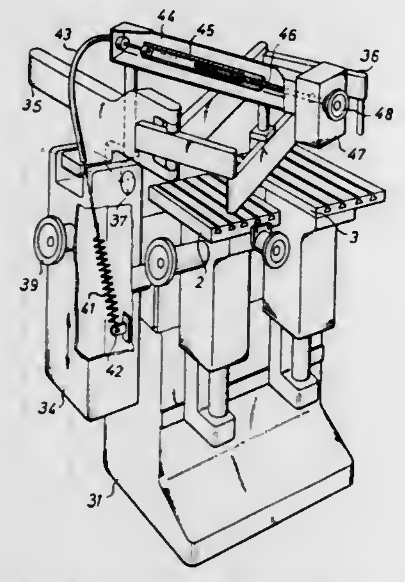
support means for supporting said pantograph means for pivotal movement about a horizontal axis and for vertical movement;

a tool spindle and drive motor means for driving same;

worktable means mounted on said machine column means and including adjustment means for adjusting at least the height thereof;

adjustable pattern table means;

counterbalance spring means for balancing the weight of said pantograph means, said counterbalance spring means including means defining a series connected sleeved wire and counterbalance spring;



means defining a swingable arm having a control panel mounted thereon within easy access of a machine operator, one end of said counterbalance spring being connected to said console means and the remote end of said sleeved wire being connected to said swingable arm; and adjusting means within easy access of a machine operator for effecting an operation of said sleeved wire and consequent adjustment of the tension of said counterbalance spring, said adjusting means including a hand wheel mounted on said control panel and operatively connected to said remote end of said sleeved wire.

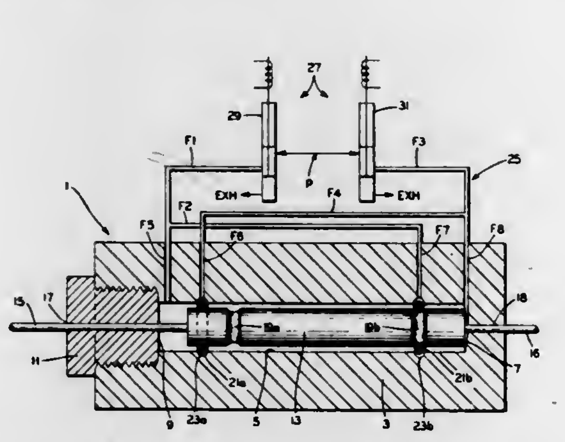
3,863,545
POSITIONING DEVICE

Richard R. Kesti, Akron, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.

Division of Ser. No. 196,979, Nov. 9, 1971, Pat. No. 3,735,781. This application Mar. 14, 1973, Ser. No. 341,264

Int. Cl. F15b *15/26;* **F16k** *35/04*

U.S. Cl. 91—45 **4 Claims**



1. A rectilinear positioning device comprising:

a. a body including a bore;

b. a slide positioner reciprocable in said bore between two operating positions;

c. at least two elastic ring seals spaced along said bore and partially recessed into the periphery thereof, said seals having an unexpanded ring diameter substantially equal to or slightly less than the ring diameter of complemental detents or recesses on the slide positioner into which the seals are selectively seated;

d. first means for applying fluid pressure to said ring seals to contract and expand them in their respective recesses, and for applying fluid pressure to the ends of said slide positioner; and,

e. second means for causing said first means to selectively expand at least one of said seals into its recess and contract at least one of said ring seals into engagement with said slide positioner while simultaneously urging said positioner to the other operating position where said contracted ring seal will seat in a complemental detent on said positioner to immobilize said positioner such that, upon inactivation of said first or said second means, said slide positioner is restrained from movement.

3,863,546
CONTROL VALVE AND FLUID MOTOR ARRANGEMENT

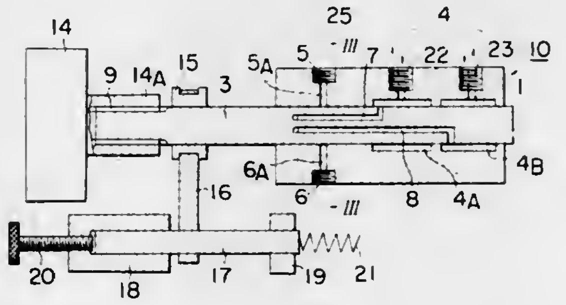
Youichi Saida, Kawasaki; Hajime Ito, Yokohama, and Kojiro Imanaga, Tokyo, all of Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 24, 1973, Ser. No. 363,338

Claims priority, application Japan, May 27, 1972, 47-62484; May 27, 1972, 47-62483

Int. Cl. F15b *9/10*

U.S. Cl. 91—375 R **1 Claim**



1. In combination,

1. a control valve for a rotary type hydraulic servo-actuating mechanism, comprising
   a. a hollow casing with a portion of one end defined as a valve portion, and at the other end a portion defined as a manifold portion, said manifold portion having passage means adapted to be connected to the hydraulic servo-actuating mechanism, and said casing further having in the valve portion a pressurized oil feeding port and a pressurized oil discharging port, and
   b. a spindle concentrically mounted in said hollow casing in a freely slidable and rotatable manner, said spindle having a pair of oil paths extending axially within said spindle from said valve portion to said manifold portion, long grooves spirally formed on the outer periphery of said spindle open to said valve portion, and radially extending oil paths connecting said axial oil paths with said long grooves; and
2. a feedback mechanism comprising
   a. a first pulley fitted on one end of said hollow casing,
   b. a rotary shaft adapted to be driven by the rotary type hydraulic servo-actuating mechanism,
   c. a second pulley mounted on said rotary shaft, said second pulley being disposed in alignment with said first pulley, and
   d. a belt tensioned between said pulleys, whereby the motion derived from the rotary type hydraulic servo-actuating mechanism is fed back to the control valve.

3,863,547
HYDRAULIC DRIVE FOR SWITCHGEAR

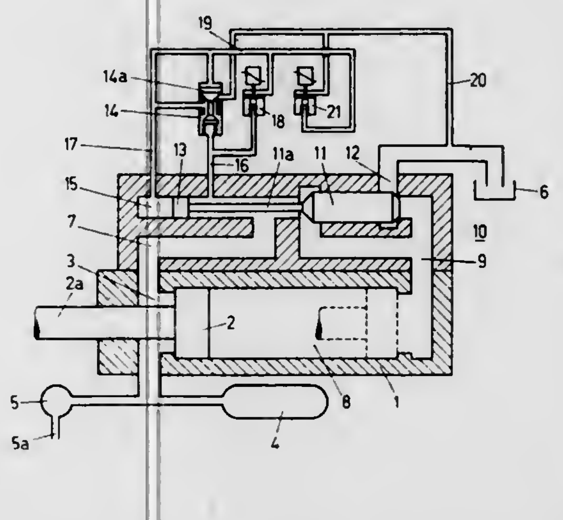
Arnold Meier, Wettingen, and Karl Trippel, Magenwil, both of Switzerland, assignors to BBC Brown Boveri & Co. Ltd., Baden, Switzerland

Filed Dec. 11, 1972, Ser. No. 314,259

Claims priority, application Switzerland, Dec. 13, 1971, 18042

Int. Cl. F15b *15/17, 15/22*

U.S. Cl. 91—416 **2 Claims**



1. A hydraulic drive for controlling switchgear comprising a main cylinder, a main differential piston slidable therein for controlling the switchgear, the opposed effective faces of said differential piston having different effective surfaces areas, a source of a pressure medium connected to one end of said cylinder to supply pressure to the smaller face of said differential piston, first closeable passage means connecting the opposed ends of said main cylinder, a main reversing valve for controlling flow of the pressure medium through said first passage means, whereby when said main reversing valve is open to permit the flow of pressure fluid to the larger face of said main differential piston, said main differential piston is moved in one direction, and a pressure relief port in said first passage means is opened when said main reversing valve closes said first passage means to permit reduction of fluid pressure against the larger face of said differential piston whereby said differential piston moves in the opposite direction, a second cylinder, a second differential piston connected to said reversing valve and slidably mounted in said second cylinder, the smaller effective face of said second differential piston being subject at all times to the pressure of the pressure medium, second passage means connecting opposed ends of said second cylinder, a control valve means disposed in said second passage means for controlling the flow of pressure medium in said second passage means to the larger effective face of said second differential piston, means for controlling said control valve means to actuate said main reversing valve, said main differential piston including an axial recess and a hollow needle valve means in communication with said first passage means and slidably disposed in said recess and cooperating therewith, said hollow needle valve means being fixed to said main cylinder, whereby said needle valve means is open to permit flow of the pressure fluid against the larger effective face of said main differential piston when said main differential piston moves in the one direction and closes when said main differential piston has moved in the opposite direction.

3,863,548
HYDRAULIC WHEEL

Bertrand Vachon, R.R. 3, Thetford Mines, Quebec, Canada

Filed Mar. 15, 1973, Ser. No. 341,544

Int. Cl. F04b *1/06*

U.S. Cl. 91—495 **1 Claim**

1. A hydraulic wheel comprising:

a fixed axle;

a wheel journalled on said axle;

a shaft eccentric to said axle extending slidably therethrough and keyed thereto against rotation;

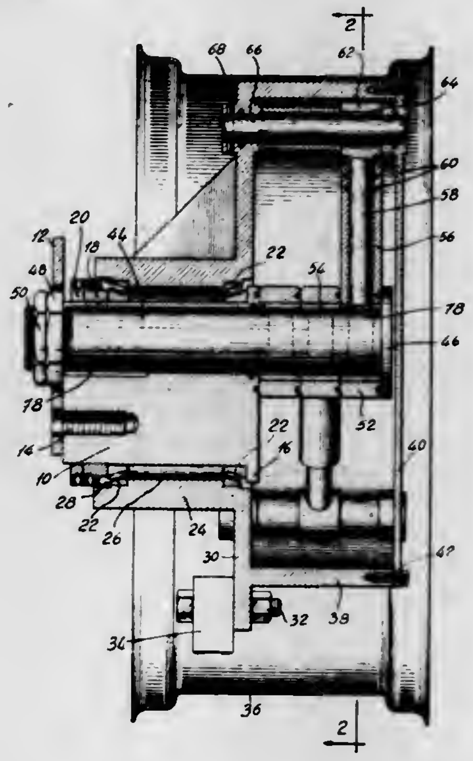
at least three cylinders each having a sleeve journalled on said shaft, all said sleeves being adjacent;

a piston in each cylinder, the outer ends of said piston being pivoted to said wheel at evenly angularly spaced points thereof;

a high pressure conduit and a low pressure conduit in said shaft;

ports communicating with said conduits and opening in respectively opposite sides of said shaft;

orifices in said sleeves connecting said ports to the interior of said cylinders;



a flange on an end of said shaft confining said sleeves between said flange and axle;

a nut threaded on said shaft for drawing said shaft and flange toward said axle;

sealing means between said flange and an adjacent sleeve, between said shaft and an adjacent sleeve and between adjacent sleeves;

said wheel comprising a hub journalled on said axle, a spoke section integral with said hub, an axial wall integral with said spoke section and a removable cover plate externally connected to said wall, said spoke section, wall and cover plate forming an enclosure containing said cylinders and pistons, the outer ends of said pistons being journalled on axial pins extending from said spoke section to said plate and removably supported at its opposite ends on said spoke section and plate, respectively.

3,863,549
GRIPPER-TRANSFER DEVICE FOR PLASTIC BAGS

Martin James Melin, Palos Hills, Ill., and Rodney Lee Wallace, Centerville, Iowa, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,916

Int. Cl. B31b *23/26*

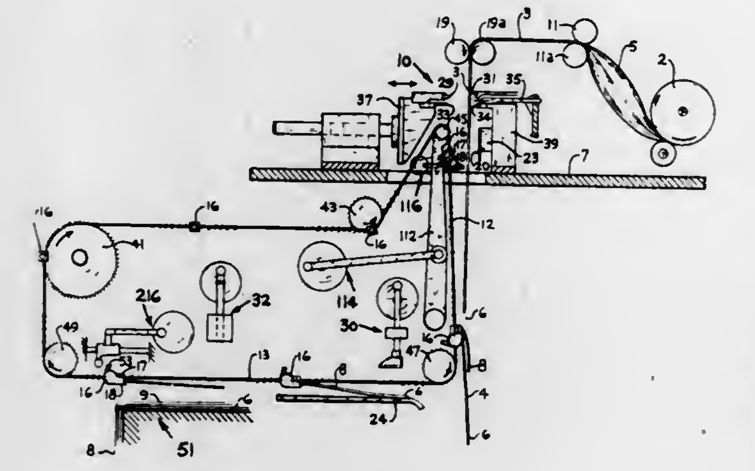
U.S. Cl. 93—35 R **4 Claims**

1. Apparatus for transporting a flexible web material having a first end and a second end, from a first machine station to at least a second machine station, which comprises in combination:

an endless conveyor having a first flight adjacent and juxtaposed to said first station and having a second flight adjacent and juxtaposed to said second station;

web foldover forming means mounted adjacent said first station, arranged and disposed to coact with a web gripper means said web foldover forming means comprising a plate-like member having a castellated edge;

web gripper means mounted on said conveyor adapted to coact with the castellated edge plate-like member of said web foldover forming means while closing to a web gripping position to form a foldover transversely across said web at a preselected foldover locus between said first and second ends of said web, to grip the folded over web through the castellation in the edge of the plate-like member of the foldover forming means, and to continue to grip said web at said foldover while maintained closed in said gripping position;



means for closing said web gripper means operably adjacent and juxtaposed to said web foldover forming means;

means for maintaining said web gripper means closed on a folded over web during its movement with said conveyor from said first station to said second station; and

means for opening said web gripper means operably adjacent and juxtaposed to said second station,

whereby said web is folded over and gripped intermediate said webs ends at said first station, is transported in folded gripped position to said second station, and is released at said second station.

3,863,550

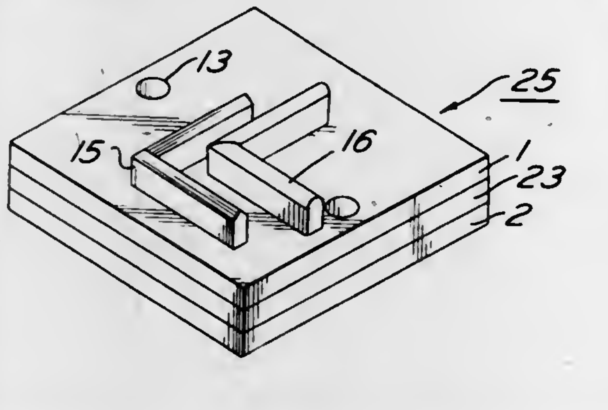
CUTTING AND SCORING DIE

Albert J. Sarka, Fairview Park, Ohio, and Pierson S. Kang, Pennsauken, N.J., assignors to Chem Par Corporation, Montgomeryville, Pa.

Filed Mar. 19, 1973, Ser. No. 342,577

Int. Cl. B31b *1/20*

U.S. Cl. 93—58.3 **7 Claims**



1. A cutting and scoring die comprising a superimposed pair of plates composed of substantially dimensionally stable material separated by an intermediate semi-rigid plastic material therebetween, said plates and plastic material having aligned slots therein extending from the outer face of one of said plates through the plastic material and into the opposed plate, each of said plates being substantially unitary and continuous except for said slots, and metallic rule members rigidly mounted in said slots and having their edges extending beyond the outer face of one of said plates.

3,863,551

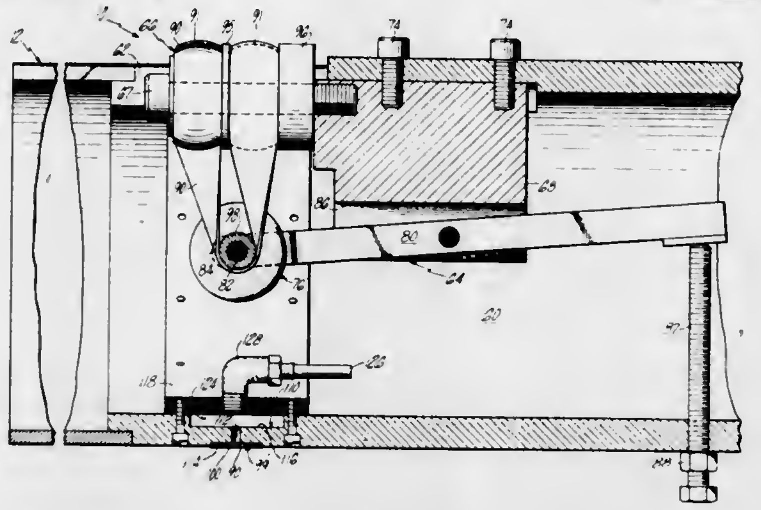
TUBULAR ARTICLE FORMING APPARATUS

Robert H. Murphy, West Hartford, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Filed Jan. 9, 1974, Ser. No. 431,688

Int. Cl. B31c *1/00*

U.S. Cl. 93—80 **8 Claims**



1. In a tubular article forming apparatus for forming a tubular article of elongated generally helically coiled material and having a mandrel assembly for supporting the material for forward movement along a generally helical path therearound for helically coiling the material into a tubular article, the mandrel assembly comprising an internal endless support belt for internally supporting the tubular article material, a support mandrel supporting the support belt for forward generally helical movement around the support mandrel along a generally helical path thereof from a first rearward point to a second forward point, and guide means for supporting and guiding the endless support belt from the forward to the rearward point of its helical path, the guide means and support mandrel supporting the endless support belt for unimpeded continuous movement generally helically around the support mandrel for supporting said material for forward movement along its generally helical path around the mandrel assembly, the improvement wherein the support mandrel has a generally helical peripheral support surface supporting the endless support belt along its said helical path, an air pressure supply system for supplying air under pressure, and air passageway means connecting the air pressure supply system to immediately above the helical peripheral support surface and under the support belt for supplying air under pressure as an air cushion under the support belt.

3,863,552

METHOD OF MAKING A VARIABLE-CONFIGURATION CONTAINER

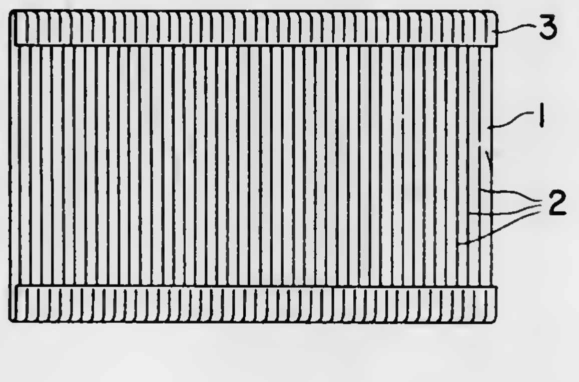
Jose Jorba Gabarro, Rubio, 10, Igualada, Barcelona, Spain

Filed Mar. 6, 1972, Ser. No. 231,934

Claims priority, application Spain, Oct. 8, 1970, 384346

Int. Cl. B31b *5/00*

U.S. Cl. 93—94 R **2 Claims**



1. A method of making a variable-configuration container, comprising the steps of providing a sheet-material blank having two pairs of spaced opposite edges; forming in said blank a plurality of folding lines extending between the edges of one of said pairs; securing to said blank along at least one edge of said one pair a strip of sheet material having a plurality of cut-outs; folding said blank along at least some of said folding lines and shaping it to the configuration of a tubular body having opposite open ends; and inserting end panels into said opposite ends so as to close the same, at least one of said end panels having a peripheral margin provided with projecting portions which are snapped into respective ones of said cut-outs.

3,863,553

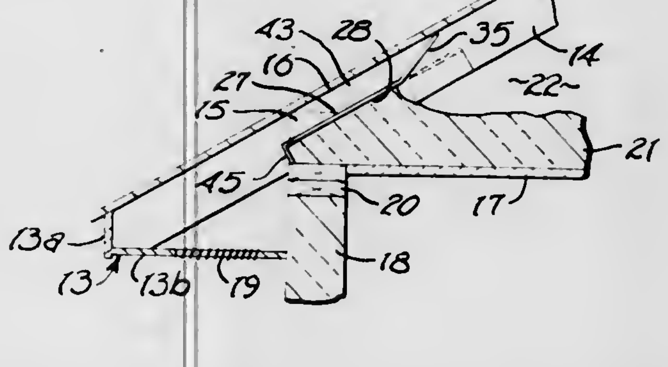
COMBINATION INSULATION STOP AND VENTILATION BAFFLE

Bryce L. Koontz, 4915 Rogers Dr., Anchorage, Alaska 99507

Filed Dec. 20, 1973, Ser. No. 426,821

Int. Cl. F24f *7/00*

U.S. Cl. 98—32 **1 Claim**



1. A combination insulation stop and ventilation baffle for mounting over an exterior wall and between a roof and ceiling of a building structure to provide a ventilation passageway to an air space between the ceiling and the roof and to prevent insulation which is subsequently applied to the ceiling from clogging said passageway, in which the exterior wall has a bearing plate on which ceiling joists and inclined parallel roof rafters are supported, said rafters being spaced from each other a first predetermined distance and said roof and bearing plate spaced from each other a second predetermined distance, said combination insulation stop and ventilation baffle comprising:

a body of stiff sheet material having (1) a length dimension between end edges greater than the second predetermined distance, and (2) a width dimension between side edges greater than the first predetermined distance;

said body having parallel side fold lines formed therein adjacent and spaced from the side edges defining side sections between the side fold lines and the side edges and a central section between the parallel side folds, in which the distance across the central section between the side fold lines is slightly less than the first predetermined distance to enable the side sections to be pivoted in the same direction relative to the central section and the body inserted between two rafters over the exterior wall at an inclined angle to the ceiling joist with the side section bearing against the rafters and one end edge engaging the bearing plate, the other end edge projecting into the air space to define a ventialtion passageway between roof rafters to the crawl space;

said body being scissile along said side fold lines, enabling slots to be formed therein extending inward from the other end edge with the distance between the slots being less than the first predetermined distance; and

said body having an end fold line formed therein extending perpendicular between the side fold lines forming a flexible end tab which may be freely pivoted about the end fold line upward between the rafters relative to the central section to block one end of the ventilation passageway and prevent insulating material from passing into the ventilation passageway as the insulation is applied between the ceiling joists and which may be subsequently pivoted downward in the other pivot direction relative to the body central section to open said end of the ventilation passageway to permit a flow of air therethrough to the crawl space after the insulation has been applied between the ceiling joist.

3,863,554

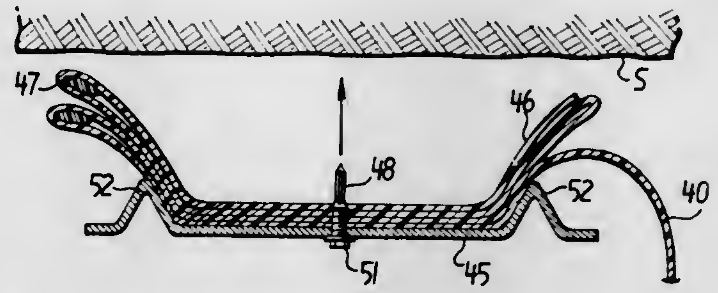
PORTABLE MINE STOPPINGS

Newton A. Boyd, P.O. Box 872, Sophia, W. Va. 29521

Filed Sept. 5, 1973, Ser. No. 394,499

Int. Cl. F21f *17/00*

U.S. Cl. 98—50 **10 Claims**



10. A portable stopping for blocking crosscuts in mine entries having roof, floor and side rib surfaces; comprising a sheet of fire-resistant, gas impervious flexible material adapted to be extended across a crosscut between the roof, floor and ribs thereof, a frame structure for supporting said sheet in substantially air-tight relationship between said surfaces, strap means carried by said frame and extending about the perimeter of said sheet adjacent said surfaces, continuous compressible sealing means positioned between said strap means and said surfaces, means for forcing said strap means toward said surfaces for compressing said sealing means thereby providing a substantially air-tight seal about the perimeter of said sheet, and wherein said sheet includes an excess of material over that which is required to extend across the crosscut, said excess being bi-folded upon itself adjacent one edge of said sheet, whereby said sheet may balloon out upon the occurrence of an extreme pressure differential to at least partially relieve the pressure.

3,863,555

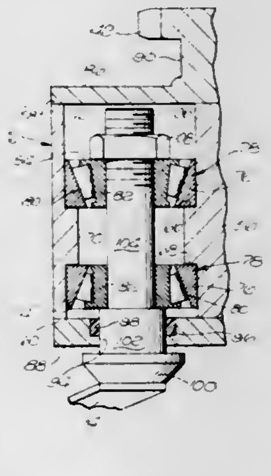
VEGETABLE TOP SEVERING DEVICE AND BEARING BLOCK

Kenneth J. Duff, 4601 Margalo, and Jay W. Deatherage, 1920 Kathryn Ct., both of Bakersfield, Calif. 93309

Filed Jan. 30, 1974, Ser. No. 438,122

Int. Cl. A01d *23/04*; **B23d** *25/02*; **B26d** *1/56*

U.S. Cl. 99—637 **9 Claims**



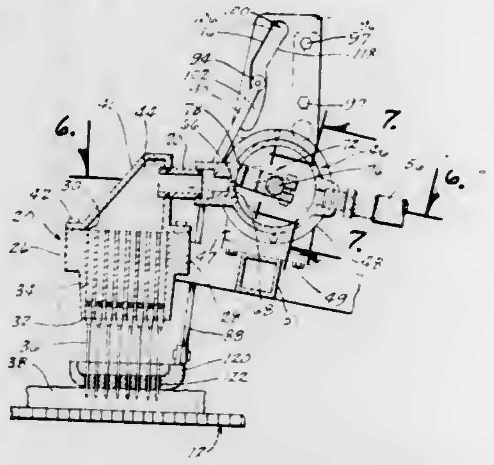
1. An improved cutter mechanism for a vegetable harvester having a plurality of double ended cutter blades, the improvement comprising:

a pair of double ended bearing blocks, each of which includes therein means defining a central bore upon a primary axis thereof, and a plurality of secondary bores equally spaced about said central bore;

- a pair of inwardly directed tapered roller bearings retained in each said secondary bore;
- a cutter blade support pin upon each end of each cutter blade, each said pin being positioned through one of said pairs of bearings in one of said secondary bores; and
- relatively adjustable securing means upon an end of each said pin engaging one of said bearings, whereby converging movement of said securing means causes said pair of bearings to be tightened both laterally and axially.

3,863,556
MACHINE FOR INJECTING FLUIDS INTO MEAT PRODUCTS

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Aug. 20, 1973, Ser. No. 390,079
Int. Cl. A22c *17/00*
U.S. Cl. 99—487 **17 Claims**

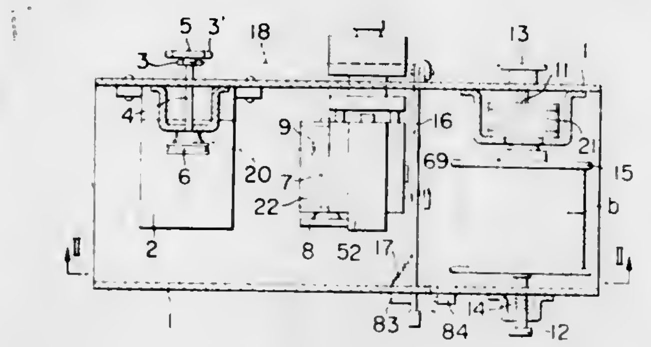


1. A machine for injecting fluids into meat products and the like, comprising,

- a support means having a conveyor means movably mounted thereon, said conveyor means adapted to convey the meat product from one end thereof towards the other end thereof,
- a fluid manifold movably mounted above said conveyor means and being movable between lower and upper positions with respect to the conveyor means, a first power means reciprocatably moving said manifold between its upper and lower positions,
- said fluid manifold being fluidly connected to a source of fluid under pressure,
- said fluid manifold having a plurality of injecting needles extending downwardly therefrom adapted to pierce the meat product thereunder when said manifold is in its said lower position,
- valve means operatively connected to said fluid manifold and said fluid under pressure for selectively supplying said fluid to said injecting needles, said valve means being movable from closed to open positions, said valve means permitting said fluid to be supplied under pressure to said injecting needles when in its open position, said valve means preventing said fluid from being supplied under pressure to said injecting needles when in its closed position,
- a meat product thickness sensing means adapted to engage the meat product being pierced by said injecting needles, valve control means operatively interconnecting said sensing means and said valve means for selectively opening and closing said valve means responsive to the thickness of said meat product,
- said sensing means comprising an elongated plate means having opposite ends, the opposite ends of said plate means being vertically movably secured to opposite ends of said fluid manifold, said valve control means comprising a valve actuator rod secured at one end thereof to said plate means and extending therefrom, the other end of said rod being operatively secured to said valve means,
- said valve means being secured to said fluid manifold for movement therewith, said valve means comprising a valve port and a valve member adapted to open and close said valve port, said valve actuator rod being operatively connected to said valve member.

3,863,557
STRAPPING MACHINE

Yukio Takahashi, Tokyo, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 3, 1972, Ser. No. 277,596
Claims priority, application Japan, Aug. 9, 1971, 46-60064
Int. Cl. B65b *13/32*
U.S. Cl. 100—33 PB **9 Claims**

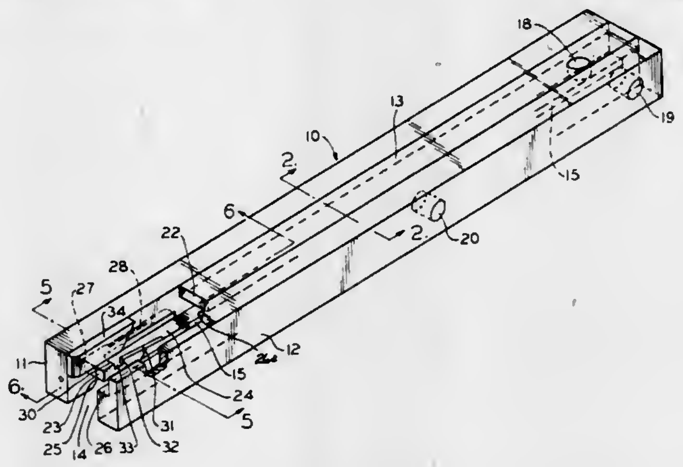


1. In a strapping machine for forming a strap loop in surrounding relationship to an object, such as a package, the improvement comprising:

- a frame;
- a press member movable supported on said frame for oscillatory movement between first and second positions;
- a heater device for at least partially melting a plastic band, said heater device being mounted on and movable with said press member and positioned for melting said band at two locations; and
- said press member including a pressing surface for engaging said band and for pressing said two locations of said band together.

3,863,558
WIRE TIE DEVICE

Cecil Dale Trumbo, 13122 Flint Dr., Santa Ana, Calif. 92705
Filed July 30, 1973, Ser. No. 383,773
Int. Cl. B65b *13/26*
U.S. Cl. 100—33 **10 Claims**

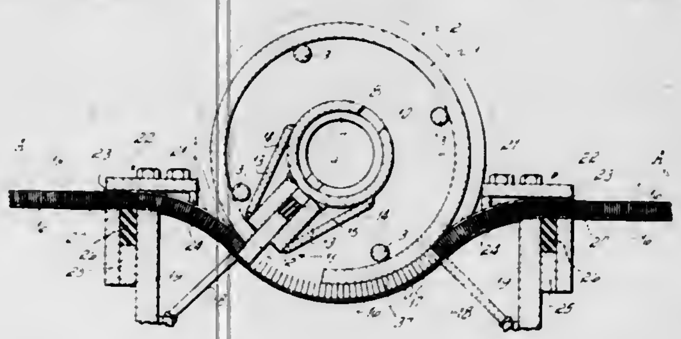


1. A wire tie device for use with a baling press upon connection to the upper platen of the baling press for holding and guiding one end of a length of bailing wire, having preformed loops at its ends, respectively, endwise with said one end foremost, into a knotting position and for holding and guiding the other end of the length of wire into an interengaged relation with the one end, when the platen is in baling position with respect to the material, so that the ends are drawn into a knot by the pull of the ends in the opposite directions by expansion of the baling material upon raising of the platen;

- said device comprising a body having therein an elongated open inverted channel open at opposite ends and defined by a top wall and depending side walls spaced apart laterally of the top wall, and a guide wall carried by one of said side walls and spaced below the top wall and extending transversely of the channel and terminating edgewise in laterally spaced relation to the other side wall, thereby providing a wire discharge passage;
- said channel having a wire knotting station near one end; and
- permanent magnet means carried by the body in laterally spaced relation to said one side wall and spaced from said passage in a direction toward the top wall, and operative while said one end of the wire is being fed loop end foremost to the knotting station to magnetically hold the portion of the length of wire which is between the loop of said one end of the wire and the other end of the channel in predetermined positions relative to the cross section of the body in which positions the wire is above and aligned with said discharge passage and spaced from said one side wall, and to hold the wire for movement of the wire endwise in opposite directions while it is in said predetermined positions.

3,863,559
METHOD AND APPARATUS FOR DEWATERING FIBROUS MATERIALS

Edgar M. Pierce, 8200 Weller Rd., Cincinnati, Ohio 45242
Filed Aug. 16, 1972, Ser. No. 281,114
Int. Cl. A47j *19/02;* **B30b** *9/06, 1/00*
U.S. Cl. 100—37 **14 Claims**



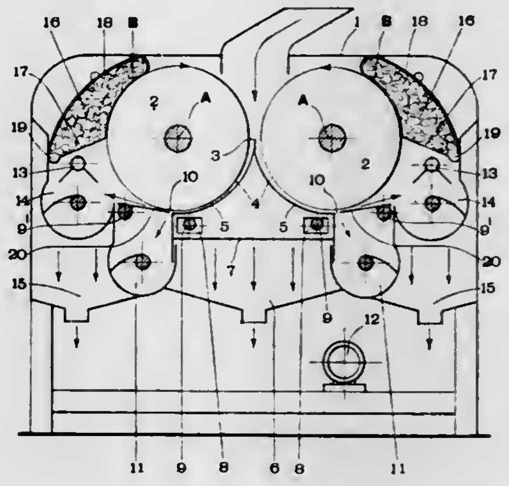
1. A method for dewatering materials comprising confining the material to be dewatered between two surfaces one constituting a perforated screen, the two surfaces being spaced apart a distance of about ½ to ¾ of an inch whereby the dewatered material has a thickness of between ½ to ¾ of an inch, and pressing the material against itself in a direction parallel to the perforated screen at a press rate which decreases as the pressing continues, the pressure asserted on the material being about 300–3,000 psi, the water content of said dewatered material being reduced to below about 60 percent at a pressure of about 3,000 psi.

3,863,560
MACHINE AND PROCESS FOR SIMULTANEOUSLY EXTRACTING THE JUICE AND ESSENTIAL OIL OF CITRUS FRUIT

Paolo Indelicato, and Carmelo Indelicato, both of Via Finacchiaco, Aprile 110, Giarre, Catania, Italy
Filed June 26, 1973, Ser. No. 373,662
Claims priority, application Italy, Mar. 23, 1973, 67840/73
Int. Cl. A47j *19/02;* **B30b** *9/02*
U.S. Cl. 100—37 **7 Claims**

7. A process for simultaneously extracting the juice and essential oil of citrus fruit, comprising the step of

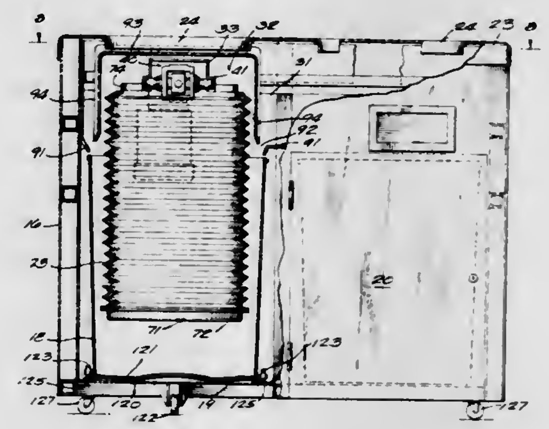
- feeding the citrus fruit into a gap formed between a pair of parallel straight tubular cylinders mounted horizontally for rotation in opposite directions;
- cutting the citrus fruit into two halves by a vertical cutting blade arranged in the gap between said pair of cylinders; feeding, deforming and squeezing the cut citrus fruit halves along a progressively narrowing gap formed between the periphery of each of said cylinders and an adjacent perforated metal sheet;
- allowing the juice of the cut citrus fruit halves to pass through said perforated metal sheet and collecting the juice in a basin;
- cutting the membranes and mesocarp from the peels of the citrus fruit halves and collecting and discharging the cut membranes and mesocarp;



- collecting and discharging the cut peels separately;
- collecting the essential oil adhering to the peripheries of said cylinders by a pad of absorbent material arranged adjacent said cylinders and collecting the essential oil dripping from said pad of absorbent material in an exhaust channel.

3,863,561
COMPACTOR

Robert F. Karls, Hales Corners, Wis., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Apr. 25, 1973, Ser. No. 354,430
Int. Cl. B30b *1/18*
U.S. Cl. 100—53 **11 Claims**



1. A top loading trash compactor comprising a low profile cabinet having two cubicles for trash containers therein, a cabinet top with two trash loading hatchways therein, one for each cubicle, said top being spaced above the containers to provide a ram shuttle way below the top and above the containers, a single ram, means mounting said ram in said shuttle way for shuttling movement from one cubicle to the other whereby when the ram is in one cubicle it is clear of the other cubicle to permit loading of trash into said other cubicle through its said hatchway, said ram having a ram platen and means for extending the ram platen deep into a trash container for compaction of trash therein and retracting said ram platen above the level of the container top and into said shuttle way for clearance of said containers during shuttling movement of said ram, and hatch cover means to close the hatchway above one cubicle in which the ram is working and open the hatchway above the other cubicle and permit trash loading

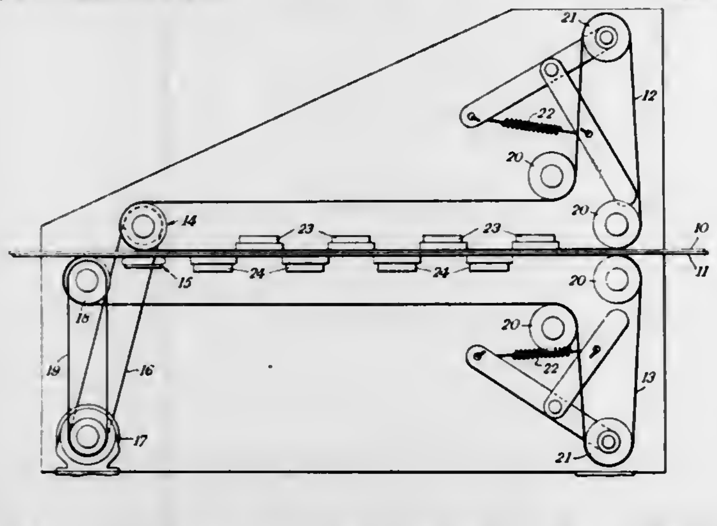
into said other cubicle concurrently with ram operation in the one cubicle.

3,863,562
MACHINE FOR CONTINUOUS BONDING OF FABRICS TO THERMOPLASTIC MATERIAL

William Jack, West Kilbride, Scotland, assignor to Jax Products (Engineering) Limited, Kilwinning, Ayrshire, England
Filed Nov. 13, 1973, Ser. No. 415,299

Claims priority, application Great Britain, Nov. 15, 1972, 52749/72

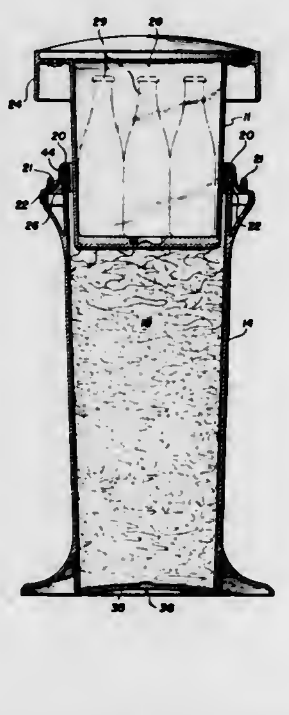
Int. Cl. B30b *5/04, 15/34*
U.S. Cl. 100—93 RP **4 Claims**



1. A press for the continuous bonding of a layer of textile fabric to another layer embodying thermoplastic polymeric material, said press including a roller, means for rotating the roller, a flat resilient pad forming a nip with the roller, means for feeding the layers in superposition through said nip and means for heating the layers on their way to the nip.

3,863,563
COMPACTOR

Samuel J. Popeil, Chicago, Ill., assignor to Popul Brothers, Inc., Chicago, Ill.
Filed Mar. 8, 1973, Ser. No. 339,401
Int. Cl. B30b *1/00*
U.S. Cl. 100—102 **10 Claims**



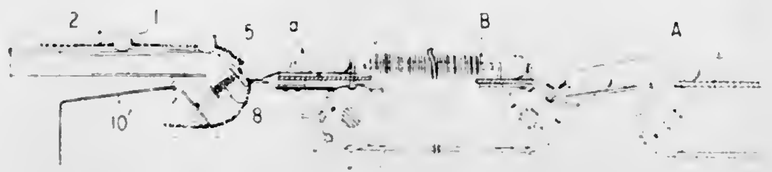
1. A compactor comprising, in combination,
a plunger member being hollow and having means at the upper end portion thereof for engaging a seat,
a seat proportioned for covering the upper end of said plunger and having means for removable engagement with said plunger, thereby exposing the hollow portion of the plunger,
said means for removable engagement including a bayonet-type lock means for removably locking said seat with said plunger member,
a tubular support member having a foot portion for resting on the floor and defining a hollow interior for collecting and compacting refuse, and whereby paper goods and other readily compressible refuse may be stored and compacted in the interior of the tubular member by the action of the plunger assisted by the weight of a person sitting on the seat, and by removing the seat portion of the plunger, access is had for the storage of bottles and other non-compressible refuse.

3,863,564
APPARATUS FOR CONVEYING AND STAMPING EGGS

Koichi Higuchi, 7-9, 1 chome, Hyakkoku-cho, Kochi-shi, Japan
Filed Mar. 15, 1974, Ser. No. 451,549

Claims priority, application Japan, Sept. 10, 1973, 48-102331

Int. Cl. B41f *17/30*
U.S. Cl. 101—35 **3 Claims**



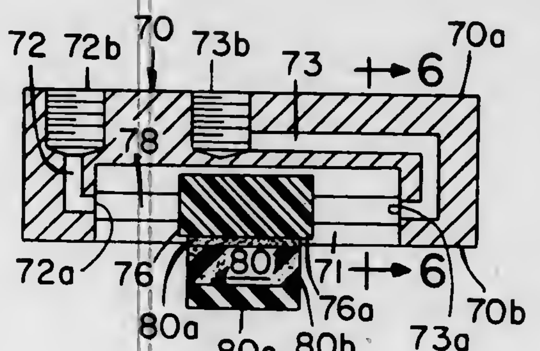
1. A device for automatically and continuously stamping eggs with an indicia to form a basis for judging the freshness of the eggs comprising in combination:
an intermittently moving conveyor means longitudinally extending in the horizontal plane whereby the vicinity of one end of said longitudinally extending conveyor means constitutes an egg stamping area; means for intermittently feeding eggs on an individual basis to said egg stamping area; an elongated frame member positioned longitudinally and in a substantial parallel manner adjacent to said conveyor means; a plurality of arm members fixedly supported at spaced intervals on said elongated frame member, each of said arm members arranged substantially at a right angle to said elongated member and having base and tip portions, the base portion being slidably associated with said conveyor means and the tip portion having an arcuate configuration to define a spoon-shaped section, said spoon-shaped section operatively propelling an individual egg from said egg stamping area; two rail members disposed substantially parallel to said conveyor means;
a lever member slidably supported between said two rail members and including a downturned tongue portion, said downturned tongue portion terminating in said egg stamping area and having an opening therethrough; and a spring pressed stamper member resiliently mounted within said opening and operatively stamping individual eggs intermittently being transferred to said stamping area by said intermittently feeding means.

3,863,565
APPARATUS FOR IMPRINTING ON MOVING ARTICLES WITHOUT SMEARING THE IMPRINT

Thomas E. Patykula, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,550
Int. Cl. B41f *17/00*
U.S. Cl. 101—44 **9 Claims**

1. In a stamping machine for imprinting a distinctive mark on each of a series of articles sequentially delivered to and briefly dwelling at a selected location, such machine including a platen carrier actuated between a first initial position and a second imprinting position in response to each of a series of electric triggering impulses supplied to the machine, apparatus for modifying said machine to imprint a distinctive mark on each of a series of similar articles sequentially transported by a rapidly and continuously moving conveyor in a selected direction through a path of travel including an imprinting station in such path, such apparatus comprising, in combination;

I. a printing platen support member having a generally planar surface and embodying a longitudinal and relatively wide hole which opens through said surface;
II. a generally rectangular printing platen including a generally planar surface and of a substantially smaller length than the length of said hole in said platen support member;
III. means for supporting said printing platen within said hole in said platen support member for longitudinal sliding movement of such platen between first and second ends of such hole and with said planar surface of the platen paralleling said planar surface of the platen support member;
IV. a printing element having a first surface secured to said planar surface of said printing platen and a second opposite surface including thereon a printing type of a mark to be printed, such second surface extending beyond said planar surface of said platen support member;



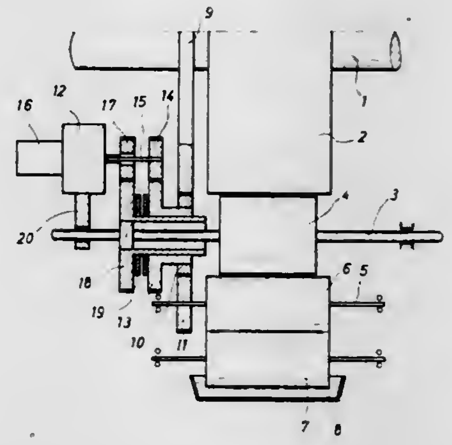
V. means for supporting said machine at said imprinting station and adjacent said conveyor with said planar surface of said printing platen and said printing type of said printing element facing said path of travel of said articles and with the direction of said sliding movement of said printing platen within said hole in said platen support member being in alignment with said path of travel;
VI. means, responsive to the passage of each of said articles as they are respectively transported through said imprinting station, for supplying an electric triggering impulse to said machine;
VII. means, operating when said platen carrier is in its said initial position, for impinging pressurized fluid against a first end of said printing platen to move such platen in a first direction within said hole in said platen support member, such first direction of movement being opposite to said selected direction of transport of said articles by said conveyor; and
VII. means, operating during actuation of said platen carrier between its said initial position and its said second imprinting position, for impinging pressurized fluid against a second end of said printing platen to move such platen in a second direction within said hole in said platen support member, such second direction of movement corresponding to said selected direction of transport of said articles by said conveyor.

3,863,566
DRIVE AND REGISTRY CONTROL FOR ROTARY PRINTING PRESS

Klaus Schirrich, Bielefeld-Brake; Amir Erk, Bielefeld-Grossdornberg, and Ottomar Tessmann, Jollenbeck, all of Germany, assignors to Fischer & Krecke KG, Bielefeld, Germany
Filed Mar. 7, 1974, Ser. No. 448,576

Claims priority, application Germany, Mar. 12, 1973, 2312175

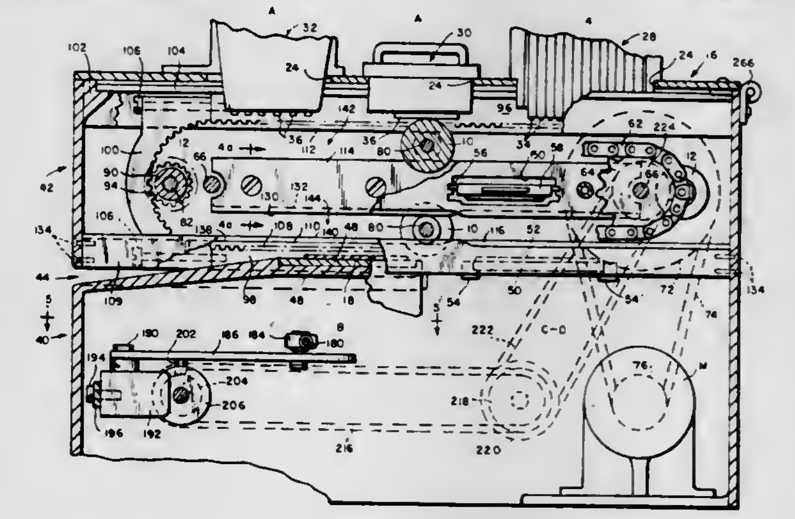
Int. Cl. B41f *13/12*
U.S. Cl. 101—248 **5 Claims**



1. In a printing machine having a central roller, a printing roller provided with a shaft and cooperating with said central roller, and an inking roller cooperating with said printing roller, a combination comprising a first gear having a diameter corresponding to that of said central roller and mounted for rotation with the same; a second gear mounted for rotation with said inking roller to rotate the same; a third gear meshing with said first and second gears to transmit motion to the latter one, said third gear having a diameter corresponding to that of said printing roller and being mounted on and freely turnable about said shaft; and a differential unit having an input gear train driven by said third gear, and an output gear train coupled with said shaft of said printing roller.

3,863,567
MULTILINE OFFSET PRINTING MACHINE

Dana B. Hastings, Natick, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed Apr. 25, 1973, Ser. No. 354,316
Int. Cl. B41f *3/00*
U.S. Cl. 101—252 **21 Claims**



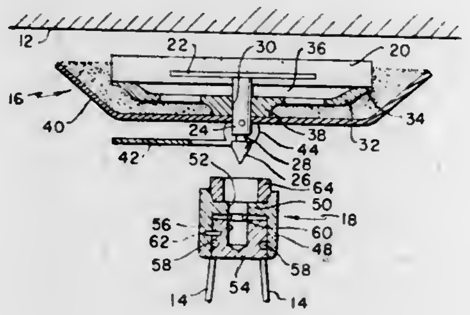
1. Printing apparatus comprising a supporting structure embodying a rigid horizontally disposed top part containing a plurality of longitudinally spaced openings, indicia bearing assemblies mounted on the top part in the openings with the indicia situated in a common plane at the under side of the top part, transversely spaced parallel conveyors supported on the

structure below the top part, said conveyors having longitudinally extending upper and lower runs, said upper runs being parallel to said plane of the indicia, a print platen and an ink pad supported on the structure adjacent the lower runs of the conveyors, ink and print rolls journaled at their ends between the conveyors for movement thereby relative to the ink pad, indicia and print platen, means for driving the conveyors to effect translational movement of the ink roll and print roll, means operable by the translational movement of the ink and print rolls to effect rotation about their axes, means for supporting that portion of the runs of the conveyors travelling along the upper runs at any time at a level such that the ink and print rolls have tangential engagement with the indicia, said means providing for lifting the ink roll as it is moved along the lower runs away from the print plate and then depressing it to a position of tangential engagement with the ink pad and for maintaining the print roll at a level to have tangential engagement with the print plate and then lifting it from the ink pad and means for delivering tickets from a strip of ticket material to present one ticket at a time to the print platen in timed relation with the arrival of the print roll at the print platen.

3,863,568
SUCTION FASTENING DEVICE

Arthur F. Frederick, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,713
Int. Cl. B63f *3/02*
U.S. Cl. 102—13 **5 Claims**



1. A suction device for permanently fastening an object to a surface comprising:

suction inducing means attachable to said surface;

suction maintaining means for permanently maintaining said suction inducing means in said attached condition and for attaching said object to said suction inducing means including:

  a suction cup maintainable in a suction inducing configuration;

  an elongate stem having one end connected to said suction cup and the other end connectable to said maintaining means; said stem movable between a normally inoperative position wherein said suction cup is in a relaxed configuration and an operative position wherein said suction cup is in a suction inducing configuration and said stem is in a position to be connected to said suction maintaining means;

a tapered camming surface formed at said other end of said stem;

a groove circumferentially formed adjacent said tapered end;

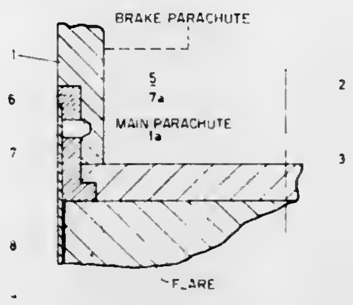
a first housing enclosing said suction cup and receivable of said stem; and

cam means pivotally associated with said stem for moving said stem between said normally inoperative position and said operative position.

3,863,569
SEPARABLE CONTAINER FOR PARACHUTE-TYPE FLARE

Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed June 5, 1972, Ser. No. 259,985
Claims priority, application Sweden, June 11, 1971, 7576/71
Int. Cl. F42b *13/38*
U.S. Cl. 102—35.6 **6 Claims**



1. In a parachute-type flare adapted to be fired in a trajectory with a high rate of spin and including a means which is separated from a carrier part, with said means including a pyrotechnic flare portion and a tubular casing formed of a plurality of separable casing parts detachably secured to the flare portion and housing a parachute, the improvement in means for detachably securing said casing parts to said flare portion comprising:

means including a disc-shaped portion attached to said flare portion and

an annular ring portion encircling the ends of said casing parts lying adjacent said disc-shaped portion.

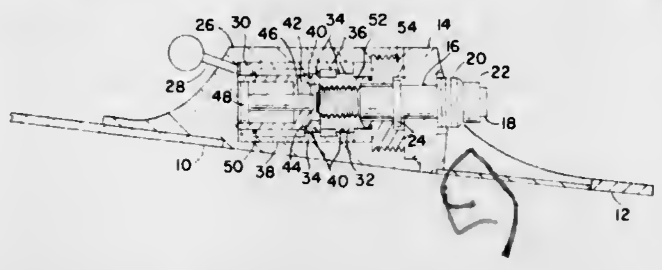
means engaging said ring portion to normally restrain said ring portion against longitudinal movement so as to maintain said ring portion in its said encircling position preventing radial outward movement of said casing parts in response to centrifugal forces,

an annular container normally encircling said ring portion, said engaging means being responsive to removal of said annular container from its normal encircling portion to permit longitudinal movement of said ring portion relative to said casing parts to thereby free said casing parts for outward radial movement.

3,863,570
HYDRAULIC PRESSURE ACTUATED MISSILE STAGE SEPARATION

Harold W. Bixby, Encino, Calif., assignor to the United States of America, as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1974, Ser. No. 442,993
Int. Cl. F42b *15/10*
U.S. Cl. 102—49.4 **3 Claims**

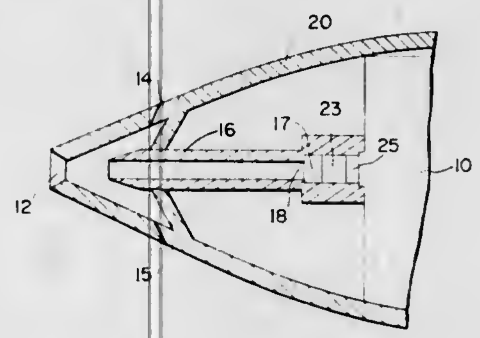


1. A hydraulic pressure actuated device for separating stages of a missile during flight comprising: a first frame attached to one of the missile stages; a second frame attached to a second missile stage and provided with a housing chamber therein, an inlet in said second frame providing a pressure passageway to said chamber; a segmented nut in said chamber; a bolt connecting said first frame with said segmented nut, said bolt being provided with a collar for engaging the inner side of said first frame, said first and second frames being attached to each other when said bolt is connected to the segmented nut and said collar being disposed between said frames, and pressure actuated means for radially displacing segments of said nut to release the connection between said bolt and segmented nut and for exerting a thrusting force on said collar to force said stages apart.

3,863,571
FLUIDIC BATTERY ACTIVATOR

Carl J. Campagnuolo, Chevy Chase, and Allen B. Holmes, Rockville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 17, 1968, Ser. No. 745,950
Int. Cl. F42c *15/28*
U.S. Cl. 102—81 **5 Claims**



1. Apparatus for activating a battery in response to a fluid flow, comprising:

a. a resonant tube having an open end and a closed end;

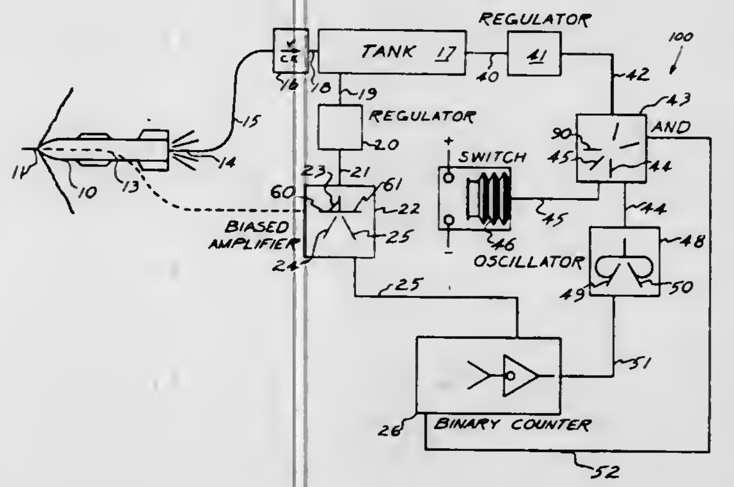
b. a nozzle for directing said fluid flow onto said open end of said resonant tube to produce fluid compression waves therein; and

c. means responsive to heat produced at said closed end of said resonant tube by said fluid compression waves for initiating the activation of said battery.

3,863,572
FLUIDIC SAFING-ARMING SYSTEM

Carl J. Campagnuolo, Chevy Chase, and Charles F. Peer, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 24, 1966, Ser. No. 589,128
Int. Cl. F42c *5/00*
U.S. Cl. 102—81 **11 Claims**



1. In a weapon carrying missile powered by exhaust gasses an arming system, comprising:

a. means for receiving a portion of said exhaust gas;

b. means for receiving ram air;

c. a fluid amplifier supplied with a source of power fluid having a control conduit connected to said means for receiving ram air, said amplifier having first and second output conduits and including means to direct said power fluid out said first conduit in the absence of ram air and out said second output conduit upon the application of ram air to the system;

d. an AND gate having two input conduits and at least two output conduits; one input of said AND gate being connected to said means for receiving exhaust gas;

e. a fluidic oscillator having an input conduit connected to one of said output conduits of said AND gate so that said oscillator is rendered operative when exhaust gas only is applied to said AND gate;

f. a fluidic binary counter connected to said second output conduit of said fluid amplifier such that said counter is rendered operative upon the application of ram air to the system, and connected to an output of said fluid oscillator, the oscillations of which are counted by said counter;

g. means connecting said binary counter to the other of said inputs of said AND gate for directing a signal to said AND gate after said counter has counted a predetermined number of oscillations; and

h. a pressure-activated switch for arming said missile connected to the other of said outputs of said AND gate so that it will receive a pressure signal upon the coincidence of input signals to said AND gate.

3,863,573
SOLID PROPELLANT CHARGE HAVING A SHORT BURNING TIME FOR ROCKET ENGINES

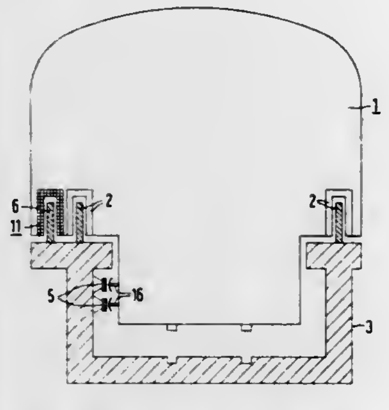
Heinz Dilchert, Steyerberg, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Postfach, Germany

Continuation-in-part of Ser. No. 874,881, Nov. 7, 1969, abandoned. This application Aug. 7, 1972, Ser. No. 278,389
Claims priority, application Germany, Nov. 9, 1968, 1808111
Int. Cl. F42b *1/00*
U.S. Cl. 102—101 **43 Claims**

1. A solid propellant charge for rocket engines having a short burning time comprising a plurality of spaced support layers arranged to together define a definite geometric shape in the direction perpendicular to said support layers, an adhesive layer attached to each support layer in such a way that each support layer is embedded in its respective adhesive layer, and a layer of propellant covering each side of each adhesive layer, the spacing of said support layers and the amounts of adhesive and propellant on said support layers being so selected that each propellant-covered layer is spaced from adjacent propellant-covered layers by substantially equidistant gaps, whereby loss of dimensional stability of said charge with increasing temperature and breakage of said charge with decreasing temperature are substantially prevented.

3,863,574
POWER SUPPLY FOR HIGH SPEED VEHICLES

Johann Thomas, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany
Filed Feb. 6, 1974, Ser. No. 440,027
Claims priority, application Germany, Feb. 8, 1973, 2306292
Int. Cl. B60m *7/00*
U.S. Cl. 104—148 LM **8 Claims**



1. An apparatus for powering a vehicle above a predetermined speed which comprises;

a. basic power means including a source of primary power and at least one transmission means parallel to the path of said vehicle, for carrying said primary power along said path;

b. an additional power transmission means paralleling said path;

c. a plurality of converter means each positioned at approximately equally spaced intervals of predetermined distance along said path;

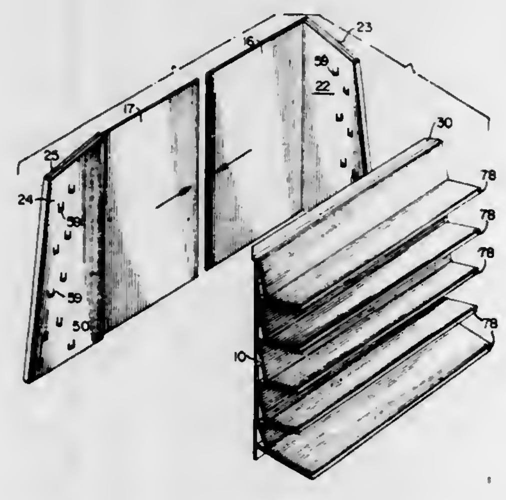
d. means for detecting when said vehicle has exceeded said predetermined speed;

e. means responsive to said speed detecting means for energizing at least one of said converter means such that said primary power transmission means is electrically connected to said additional power transmission means at that point in the vehicle path at which said vehicle is then located; and

f. means within said vehicles responsive to the power supplied to said additional transmission means, for powering said vehicle.

3,863,575
DISPLAY STAND

Roger R. Kuns, Clyde, and Nelson Orwig, Sandusky, both of Ohio, assignors to Westvaco Corporation, New York, N.Y.
Filed Nov. 8, 1973, Ser. No. 413,971
Int. Cl. A47b *43/02*
U.S. Cl. 108—111 **1 Claim**



1. A display stand having a completely finished outer surface and consisting of a plurality of components prepared from separate blanks of material such as paperboard that are folded, arranged and secured to one another to result in a single integral unit for shipment to the user, said display stand when set up having an open frontal portion formed by a back panel, a pair of side walls foldably attached thereto and arranged at right angles to said back panel, a plurality of shelf panels each secured to said back panel along one edge thereof, and a plurality of shelf support elements locked in position between the side walls and arranged to lie beneath each individual shelf panel, the improvement wherein:

a. said back panel is of double wall construction and consists of a full sized inside back wall panel and a pair of left and right half-sized outside back wall panels which are adhered to the back of said inside back wall panel, each half-sized back wall panel including a pair of articulated inside side wall panels foldably attached along one edge thereof which are folded over about their articulated joint and adhered to one another to form a pair of side wall core elements;

b. said side walls are of quadruple wall construction and each consists of a pair of left and right two part outside side wall panels which are folded around and adhered to a side wall core element, said outside side wall panels further including abbreviated flaps at the upper and lower ends thereof which are folded inside and adhered to the side wall panels to form finished upper and lower edges for said side walls;

c. said shelf panels are of multiple wall construction and consist individually of a two-piece core element adhered together and an outside shelf panel structure, said outside shelf panel structure including a pair of upper and lower shelf panels which are folded around and adhered to each core element, a riser panel foldably attached to said upper shelf panel and a flap member foldably attached to said riser panel, said multiple wall shelf panels each being attached to the front of said inside back panel only along said flap member; and,

d. means is provided in said quadruple wall side walls for accepting and retaining the shelf support elements in different positions for adjusting the angularity of the multiple wall shelf panels while the lower shelf panel of each multiple wall shelf panel abuts against the inside back panel forcing the riser panel into its proper position when the angulation of the shelves is changed.

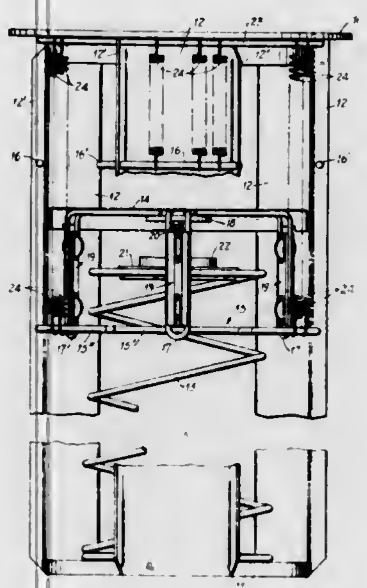
3,863,576
ADJUSTABLE SELF-LEVELING DISPENSER

Frank Christian Olsson, Eastlyme, Conn., assignor to AMF Incorporated, White Plains, N.Y.
Filed May 10, 1973, Ser. No. 359,075
Int. Cl. A47f *1/00*
U.S. Cl. 108—136 **6 Claims**

1. A spring loaded self-leveling article dispensing device, comprising a hollow frame, a movable platform positioned in said frame, a large compression spring positioned in said frame beneath said platform for biasing said platform vertically upward, a plurality of small tension springs surrounding said compression spring for also biasing said platform vertically upward, means between the upper end of said compression spring and platform for adjusting the head load of said platform, and means for individually selectively connecting any number of said small springs to said platform for adjusting the self-leveling rate of said platform,

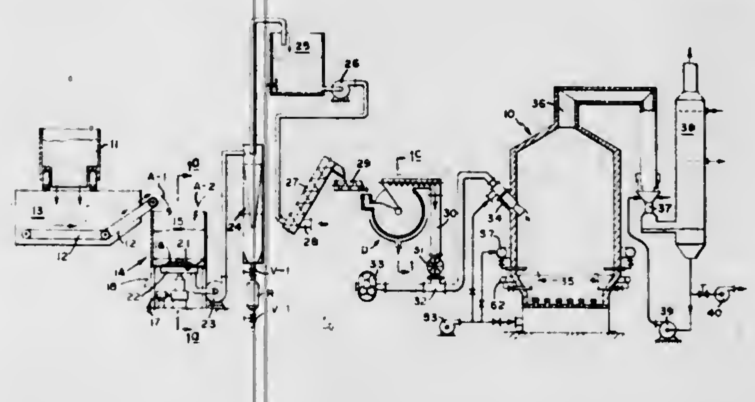
wherein said hollow frame comprises a cylindrical shape having an open annular top member, a circular bottom member, and spaced side panel members interconnecting the two, and means on said side panel members providing spaces thereon for storage of said small springs when not connected to said platform,

wherein said platform comprises a rigid wire cage structure having a top plate thereon, roller guide means on said cage structure adapted to guide said cage structure along the inside surface of said side panel members, and said storage space being located along the outer surface of said side panel members.



3,863,577
FLUIDIZED BED REACTOR

Andrew B. Steever, Old Greenwich, Conn., and David Kelleher, Yonkers, N.Y., assignors to Dorr-Oliver Incorporated, Stamford, Conn.
Filed Nov. 22, 1971, Ser. No. 200,994
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **15 Claims**



1. A fluidized bed reactor for the combustion of waste, which comprises an upright housing,

a horizontal construction plate dividing the housing into a wind box chamber below, and a combustion chamber above said constriction plate, said constriction plate being adapted to support a bed of sand,

a stack gas connection for the reactor housing, discharging the combustion gases,

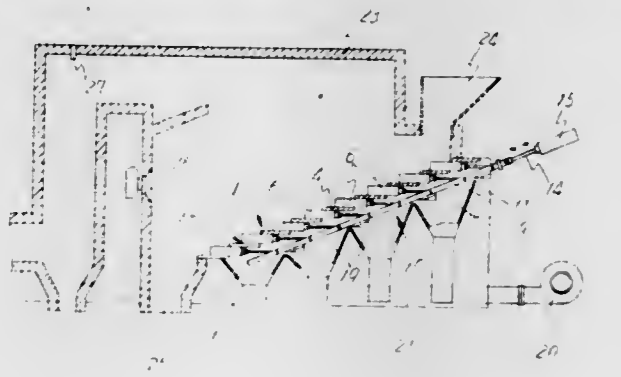
controllable means for supplying combustion air under pressure to said wind box chamber, effective to maintain said bed of sand in a state of fluidization,

a plurality of air jet devices mounted in the reactor wall, and provided with a controllable air pressure supply, said air jet devices being arranged so as to establish rotational turbulence in a zone of combustion adjacent to, and merging with, the top strata of the fluidized bed,

and feed means for supplying said waste material to said combustion zone.

3,863,578
INCINERATOR STOKER

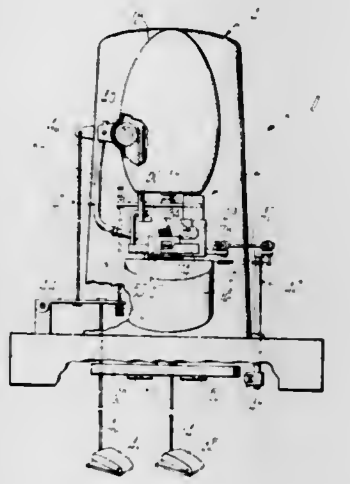
Hisamitsu Kato; Masashi Yoshimura; Yoshitaka Takei; Akio Nishina, and Ryosuke Yamashita, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd., Osaka, Japan
Filed Jan. 10, 1974, Ser. No. 432,244
Claims priority, application Japan, Apr. 18, 1973, 48-46817; Apr. 18, 1973, 48-46818; Jan. 29, 1973, 48-12730
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **15 Claims**



1. An incinerator stoker comprising a plurality of stepped stationary hearths having alternate horizontal step surfaces and vertical wall portions, openings provided in the vertical wall portions at suitable intervals widthwise of the stationary hearths, movable hearths having front end vertical portions and adapted to be moved in and out on the horizontal step surfaces through said openings, air holes provided in the front end vertical portions of said movable hearths and in the vertical wall portions of the stationary hearths between the movable hearths, and driving means for moving said movable hearths in and out.

3,863,579
SEWING MACHINE BUTTON LOCATING MECHANISM

John L. Rockerath, and Harold J. Schreck, both of Utica, N.Y., assignors to Jetsew, Inc., Barneveld, N.Y.
Filed May 1, 1974, Ser. No. 465,855
Int. Cl. D05b *3/22*
U.S. Cl. 112—113 **13 Claims**



1. In a sewing machine button apply installation having a sewing machine with a stitching station operable through a button apply cycle for sewing a button onto material thereat; and a button locating mechanism with a button guideway adapted to overly the material at the stitching station and operable for individually guiding buttons to and retaining them at the stitching station, a slide having a button locator engageable with a button in the guideway, the slide being shiftable from a first position to a second position for transferring a button along the guideway to the stitching station and back to its first position for engagement with a succeeding

button in the guideway, manually operated means for lifting the button guideway to facilitate removal and insertion of the underlying material, and slide operating means for shifting the slide from its first to its second position for transferring the engaged button to the stitching station and for returning the slide to its first position for engagement with a succeeding button in the guideway, the improvement wherein the slide operating means comprises means coupling the slide to said manually operated means for automatically shifting the slide forwardly to transfer an engaged button to the stitching station in conjunction with lifting the button guideway with the manually operated means.

3,863,580
LOW-INERTIA PRESSERFOOT FOR SEWING MACHINES

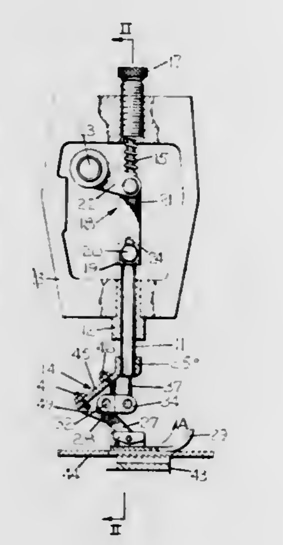
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed Mar. 22, 1973, Ser. No. 343,987

Claims priority, application Italy, Apr. 13, 1972, 23075/72

Int. Cl. D05b *27/04*

U.S. Cl. 112—212 **5 Claims**



1. For a sewing machine of the type including a needle plate and a feed dog for advancing a workpiece as it is sewn, an improved low inertia presser-foot device comprising:

- a. a presser-foot bar having an axial bore extending therethrough;
- b. support means including
  1. a clamp member attached to one end of said presser-foot bar,
  2. an oscillatable support having a bifurcated pivoting head pivotably connected to said clamp member with said sole plate being pivotably attached to the other end of said oscillatable support, and
  3. a roller member mounted between the bifurcations of said pivoting head;
- c. independent biasing means carried by said pressure-foot bar and operatively connected to said roller member for urging the sole plate toward the feed dog; and
- d. a fabric pressing spring with tension control means connected to said presser-foot bar for continuously urging the latter and the supporting means carried thereon under selected tension in a direction to effect contact of the sole plate with the workpiece as it is advanced by the feed dog.

3,863,581
THREAD TENSIONING DEVICE FOR SEWING MACHINES

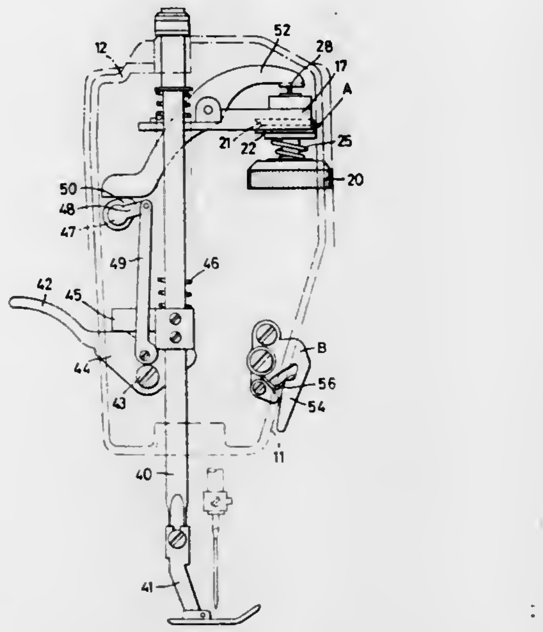
Tadao Kohara, and Iwao Takahashi, both of Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Sept. 4, 1973, Ser. No. 393,993

Claims priority, application Japan, Sept. 13, 1972, 47-107214; Oct. 13, 1972, 47-119017; Oct. 28, 1972, 47-113114

Int. Cl. D05b *47/00*

U.S. Cl. 112—255 **5 Claims**



1. In a sewing machine including a vertical standard supporting a substantially horizontal upper arm having an upper surface and depending side and end surfaces, an upwardly opening first thread guide extending transversely of the upper surface of the arm fully between said side surfaces, a second thread guide formed at a forward side surface of said arm and intersecting and communicating with said first thread guide, a pair of cooperating spring biased thread tensioning discs contained below said upper surface and wholly within said arm and located in close proxto the point of intersection of said first and second guides, the thread engaging surfaces of said discs being substantially coplanar and disposed substantially in a horizontal plane with said first and second guides, and tension adjusting means operatively associated with said discs and including a manually adjustable dial co-axially operatively associated with said tension adjusting means and partially projecting outwardly of a window in the forward side surface of said arm.

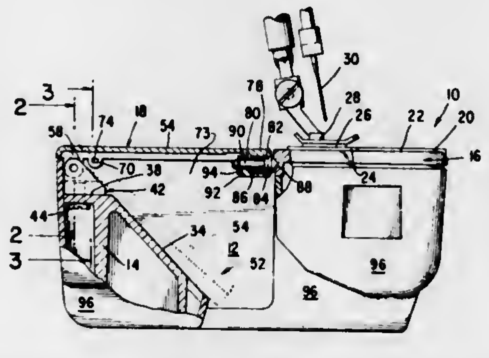
3,863,582
CONVERTIBLE SEWING MACHINE BEDS

John Patricia, Elizabeth, and Alfred H. Mack, Bayonne, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,508

Int. Cl. D05b *73/10*

U.S. Cl. 112—258 **10 Claims**



1. In combination with a sewing machine having a base with a work supporting bed including an elongated longitudinal arm having a primary work supporting surface for disposition of materials to be sewn, support means having a first end portion and a secondary work supporting surface, said support means being mounted to said base for movement in a first direction for disposition of said support means in a first limit position wherein said secondary work supporting surface is substantially continuous with the primary work supporting surface of said elongated arm, said support means being movable in a first reverse direction opposite said first direction to a second limit position wherein the secondary work supporting surface is discontinuous from the primary work supporting surface of said elongated arm, said support means and said base further including means for effecting simultaneous movement of said support means in a second direction substantially normal to said first direction as said support means is moved in said first direction such that a clearance space is maintained between the first end portion of said support means and said base during movement of said support means in said first direction, said combination further including pivot means joining said support means to said base for pivotal movement of said support means in said first direction, and wherein said support means is slidably mounted on said pivot means for longitudinal movement of said support means in said second direction as said support means is pivoted in said first direction.

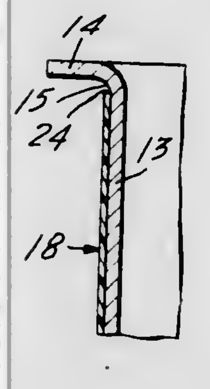
3,863,583
METHOD OF APPLYING LABEL TO TUBULAR CAN BODY

Irving Nerod, Wayne, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Aug. 2, 1973, Ser. No. 385,150

Int. Cl. B21d *51/26*

U.S. Cl. 113—120 A **3 Claims**



1. A method of applying a label to a tubular can body which comprises:

outwardly flanging the marginal end portions of a tubular can body to form radii of curvature between the flanged marginal end portions and the can body wall,

applying the label to the flanged can body wall, the label being selected to be of a size that covers the can body wall and that extends substantially to the radii of curvature, and

during the applying step, using the radii of curvature to guide and properly align the label onto the can body.

3,863,584
COMBINED HYDRAULICALLY OPERATED SNORKEL INDUCTION MAST AND HEAD VALVE

Richard S. Wilkins, Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

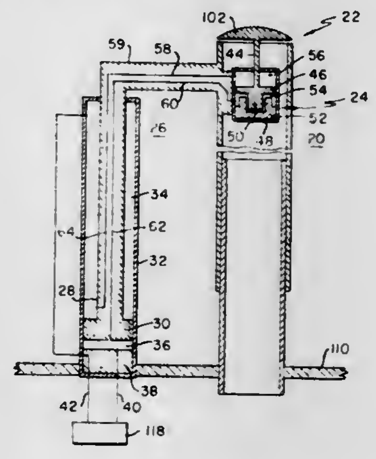
Filed Apr. 9, 1974, Ser. No. 459,432

Int. Cl. B63g *8/06, 8/36*

U.S. Cl. 114—16 D **3 Claims**

1. An improved snorkel system for submarine boats of the kind having:

- a snorkel-mast,
- a snorkel-mast head-valve situated at the top of said mast;
- a hydraulic piston assembly to operate said head-valve having:
  - a piston-shaft connected at one end to said head-valve and connected at its other end to a piston-head movable within a piston cylinder,
  - said piston-head having upper and lower piston-head surfaces forming separate upper and lower chambers within said piston cylinder into which chambers operating fluid is adapted to pass in order to move said piston-head and operate said head-valve,
- a hydraulic-type snorkel-mast hoist located externally of said snorkel-mast and attached thereto to raise and lower said snorkel-mast and said head-valve, said snorkel-mast hoist having



- a mast-hoist piston shaft connected to one end to said snorkel-mast and connected at its other end to a mast-hoist piston head movable within a mast-hoist piston cylinder,
- said mast-hoist piston head having upper and lower piston-head surfaces forming separate upper and lower chambers within said last piston cylinder into which chambers operating fluid is adapted to pass in order to move said mast-hoist piston-head,

characterized in that there is provided:

- a hydraulic-type fluid supply system communicating with said hydraulic piston assembly through passageways within said snorkel-mast hoist.

3,863,585
MARINE CARGO VESSEL

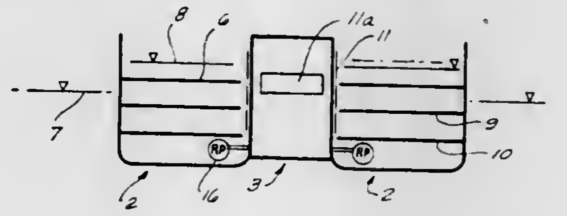
Louis Antoine Vernede; Leopold Nitzki, both of Bremen; Heinrich Liedke, Bremen-Osterholz, and Friedrich Schror, Bremen, all of Germany, assignors to Aktiengesellschaft "Weser", Bremen, Germany

Continuation-in-part of Ser. No. 138,951, April 30, 1971, Pat. No. 3,835,802. This application Feb. 13, 1974, Ser. No. 442,138

Claims priority, application Germany, May 2, 1970, 2021653

Int. Cl. B63b *35/44*

U.S. Cl. 114—43.5 **7 Claims**



1. A marine cargo vessel, comprising hull means having an inside, an outside and a waterline to which it is submerged in an ambient body of water; deck means located inside said hull means and at least in part constructed as floodable basin means located at a level different from that of said waterline;

means defining a floodable upright shaft in said hull means and extending through said deck means; gate means at the level of said waterline and said deck means for communicating the interior of said shaft with said ambient body of water and with said basin means, respectively; and means for raising and lowering the level of a body of water in said shaft between the level of said waterline and the level of said basin means, whereby to permit conveyance of floatable containers by flotation between said waterline and said basin means and vice versa.

3,863,586

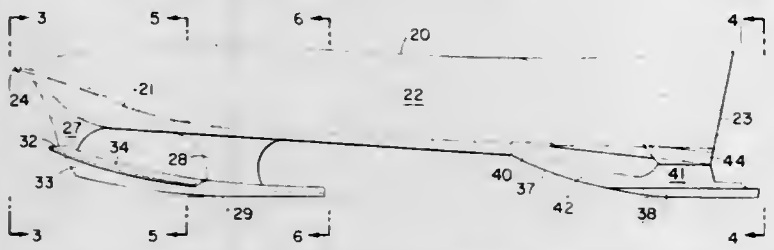
HYDRO-SKI BOAT STRUCTURE

Louie Deprez Hargett, 743 Nellie Ave.; Ellis Rose, 327 Baldwin St.; Aught Boone Dial, Shoals Acres; Jewel Rose, Executrix of said Ellis Rose, deceased, all of Florence, Ala. 35630

Filed July 28, 1971, Ser. No. 166,943

Int. Cl. B63b ***1/20***

U.S. Cl. 114—66.5 H **2 Claims**



1. A hydro-ski boat structure of the character described, comprising, in combination:

an elongated substantially rectangular hull, in lateral section characterized by a concave bottom curvature, said curvature starting at zero at the bow and increasing to its maximum in proximal relation thereto and thence decreasing progressively to a substantially flat stern, the longitudinal curvature starting as concave at the bow, changing thereafter progressively to convex and decreasing to zero at the stern;

forward and rearward hydro-ski support members affixed to the bow and stern sections of said hull;

said ski members having a plurality of inner and outer planing surfaces planing during the forward movement of said hull through a body of water from zero speed through acceleration, to cause said hull to emerge from the water through alternating consecutive inner and outer planar action to support said boat structure on such planing surfaces at maximum propelled speeds at an optimum of minimum contact area on the surface of the water;

said forward hydro-ski member inner and outer planing surfaces comprising secondary and primary surfaces consisting of:

- a first inner secondary surface (**31**) having a relatively high angle of incidence with said body of water affording accelerating lift to said structure;
- a second inner secondary surface (**30**) in rearward spaced relation to said first surface having an angle of incidence in relation to said body of water and ski member to provide continued lift to said member to cause the same to emerge from the surface of the water;
- an outer secondary surface (**33**) in lateral relationship thereto, having a relatively high angle of incidence with said body of water, affording continued lift to said member;
- a primary outer planing surface (**29**) rearwardly thereof having a decreasing angle of incidence from its forward tip to its trailing edge such as to cause said ski member at maximum speed to plane on the minimum area of its trailing edge; and
- a final inner secondary surface (**35**) in spaced relation to said primary surface, and laterally in relation thereto, having an angle of lateral incidence with respect to the water such as to cause the planing action of said ski member to be retarded in braking resistance when said boat structure is propelled into a turn.

3,863,587

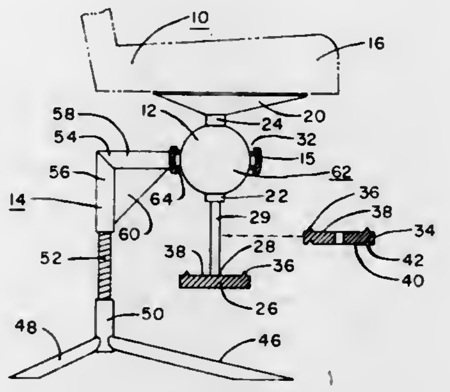
SELF-LEVELING AND SWIVELING CHAIR

Angelo J. Bosnich, 514 Dumaine St., New Orleans, La. 70116

Filed Feb. 25, 1972, Ser. No. 233,386

Int. Cl. B63b ***29/12***

U.S. Cl. 114—191 **1 Claim**



1. A self-leveling and swiveling chair having a seat for a sitter and comprising:

a. a shaft having oppositely disposed ends and fixed by one of said ends to said seat with the other free end depending;

b. a stand having radially extending feet for engaging a deck of a ship; a tapped sleeve joining adjacent ends of said feet and forming therewith a base; a straight threaded shaft having oppositely disposed ends one of which ends is adapted to be threadably engaged in said tapped sleeve for varying the length of said threaded shaft engaged in said tapped sleeve; a dog leg sleeve having two hollow legs, one of said legs being reversely tapped with respect to said tapped sleeve and adapted to threadably engage said threaded shaft for varying the length of said threaded shaft cooperatively with said tapped sleeve when said threaded shaft is rotated;

c. universal joint means having a ball and socket joint, said ball being mounted on said shaft between said seat and a counterbalancing weight and above the center of gravity of the swiveling chair, and said socket being mounted on said stand and adapted to engage said ball for relative movement therebetween about three axis of motion;

d. a flat weight base fixed to the free end of said shaft for at least counterbalancing the weight of said seat when empty;

e. and a plurality of flat weights for adding to said weight base for counterbalancing the weight of a sitter, each said weight having a curved radial slot defined therethrough that is adapted to engage around said shaft, said curved slot extending from a closed end at said weight's center and extending to an open end on its periphery with said open end being angularly offset from said closed end, each said weight being separately engageable radially on said shaft through the open peripheral end of said curved slot and being turned about about its axis normal to said slot to bring said shaft to the closed center end of said curved slot, whereby said weights are added from the side to the shaft in vertical formation and prevented from slidably disengaging therefrom inadvertently by the angular offset of the open and close-ends of said curved slots.

3,863,588

LOOP DEVICE FOR MOUNTING ON BOAT

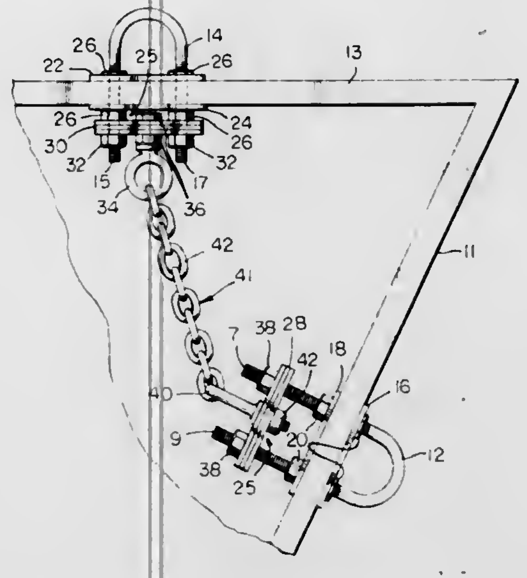
Herman L. Gillespie, 2415 Dellwood Dr., Fort Wayne, Ind. 46803

Filed Sept. 17, 1973, Ser. No. 397,989

Int. Cl. B63b ***21/04***

U.S. Cl. 114—218 **10 Claims**

1. A device for mounting on a boat and providing at least one loop for engagement by a hook, said device comprising: a first bow eye having legs adapted to extend through the deck of the boat, nuts for threading on the legs for connecting the bow eye to the deck, a tension member, first means connecting one end of said tension member to said first bow eye legs inside the hull of the boat, a second bow eye having legs adapted for extending through the boat and further nuts for theading on the legs of said second bow eye to connect the said bow eye to the boat, second means connecting the other end of said tension member to said second bow eye legs inside the hull of the boat whereby a tension load imposed on a bow eye outside the boat will be borne, at least in part, by said tension member.



3,863,589

FENDER SYSTEM

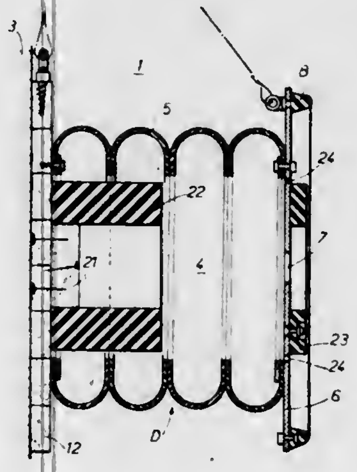
Paul Francois Guienne, Paris, and Jacques Francois Robert Prouhet, Les Clayes-sous-Bois, both of France, assignors to Bertin & Cie, Plaisir, France

Filed June 11, 1973, Ser. No. 368,742

Claims priority, application France, June 14, 1972, 72.21372

Int. Cl. B63b ***21/04***

U.S. Cl. 114—219 **9 Claims**



1. In a fender device having a backing plate and a flexible wall fitted at one end thereof to said backing plate and projecting therefrom to another end to bound a deformable hollow chamber bottomed by said backing plate and collapsible by crushing of said wall towards said backing plate, the improvement comprising a resilient deformable generally cylindrical sleeve housed within said hollow chamber in spaced relationship with said wall thereof with a peripheral clearance being left between said sleeve and said wall for the entire length and periphery of said wall, said sleeve being fitted to said backing plate and projecting therefrom to end short of said another end of said wall.

3,863,590

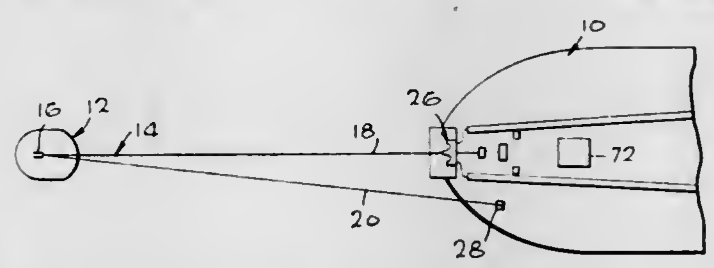
AUTOMATIC MOORING SYSTEM

Robert D. Karl, Pacific Palisades; Thomas D. Stearns, Saugus, and Ian B. Engh, Woodland Hills, all of Calif., assignors to Imodco, Inc., Los Angeles, Calif.

Filed Jan. 14, 1974, Ser. No. 433,220

Int. Cl. B63b ***21/00***

U.S. Cl. 114—230 **8 Claims**



1. Apparatus for mooring a ship to a buoy or other offshore installation, comprising:

pulley means mounted on the offshore installation;

a hauling line extending about the pulley means and having a pair of opposite ends normally lying in the water;

a mooring block mounted on the ship and attachable to one of said ends of said hauling line;

a haul-line winch mounted on the ship, for pulling on another of said ends of said hauling line so that the mooring block is pulled to the offshore installation;

at least one second line stored on the ship and attached to the mooring block so that it is pulled to the offshore installation with said mooring block; and

means for locking the mooring block securely to the offshore installation

7. In a mooring system wherein a ship picks up the ends of a hauling line that extends about a pulley on a buoy, so that the ship can transfer a second line to the buoy by tying one end of the second line to an end of the hauling line and pulling in the other end of the hauling line, the improvement comprising:

- a mooring block on the ship, said block having a hoseline pulley thereon;
- a hose line having opposite ends on the ship and extending about the hoseline pulley on the block;
- a hose disposed on the ship and attached to a first end portion of the hose line;
- a hauling line winch disposed on the ship for pulling one end of the hauling line while the other end of the hauling line is attached to the mooring block, to pull the block to the buoy; and
- a hose line winch disposed on the ship and engaged with a second end portion of the hose line which is opposite the first end portion, whereby when the mooring block is moved to the buoy and the hoseline winch is operated, the first end of the hose line and the hose attached thereto are pulled to the buoy.

3,863,591

MOORING BAR FOR BOATS

Leo Wild, 2 Secroft Crescent, Downsview, Ontario, Canada

Filed June 9, 1972, Ser. No. 261,257

Int. Cl. B63b ***21/00***

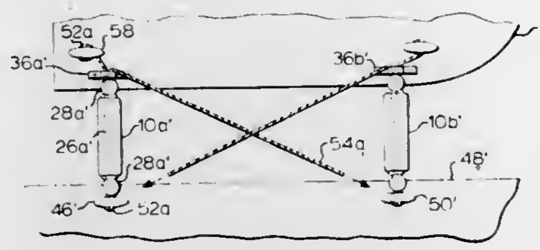
U.S. Cl. 114—230 **10 Claims**

1. A mooring bar for mounting between a boat and a dock, said mooring bar comprising:

a. a central stiff elongaged member formed of a length of cylindrical tubing having a passage therein for a rope, and having first and second straight ends;

b. a pair of discrete joint members, one for each of said ends of said central member, each joint member being of resilient material and having a passage therethrough for said rope,

c. first and second caps at said first and second ends respectively of said central member, said caps having a cylindrical end of a diameter to plug snugly into said tubing and an enlarged faced portion connected to said cylindrical end and having a concave surface for receiving said first and second joint members, said caps having a passage therethrough aligned with said passages of said central member and of said joint members to permit said rope to pass through all of said passages;



d. each joint member having a rounded surface adapted to seat on a said concave surface of said cap; one end of said rope extending through said central member and through said joint members so that said one end can be connected to a boat and the other end of said rope can be connected to a dock.

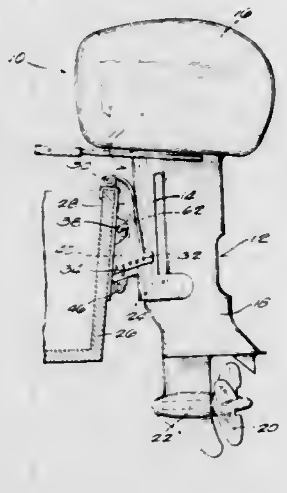
3,863,592
COMBINED DAMPING AND LIFT MEANS FOR MARINE PROPULSION DEVICE

Gaylord M. Borst, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Mar. 9, 1973, Ser. No. 339,587

Int. Cl. B63h *21/26*

U.S. Cl. 115—17 **8 Claims**



1. A marine propulsion device comprising a support bracket adapted to be attached to a boat hull, a propulsion assembly including a swivel bracket and a propulsion unit carried by said swivel bracket, means connecting said propulsion assembly and said support bracket on a horizontal transverse axis for tilting movement of said propulsion assembly in a vertical plane between an operating position and a raised, non-operating position, and cylinder-piston means for facilitating manual tilting movement of said propulsion assembly upwardly about said axis when said support bracket is attached to a boat hull and for absorbing shock in the event said propulsion assembly strikes an underwater obstacle, said cylinder-piston means comprising a cylinder including a first end and a second end, means for pivotally connecting said first end of said cylinder to one of said support bracket and said propulsion assembly, a piston located in said cylinder for reciprocative movement therein between a position adjacent said first cylinder end when said propulsion assembly is in the operating position and a position adjacent said second cylinder end when said propulsion assembly is in said raised position, means affording restricted fluid flow from one side of said piston to the other in both directions to control the rate of tilting movement between said support bracket and said propulsion assembly, a piston rod connected to said piston and extending from said second end of said cylinder, means for pivotally connecting said piston rod to the other of said support bracket and said propulsion assembly whereby, in response to an upward tilg movement of said propulsion assembly, said piston rod extends and, in response to a downward tilting movement of said propulsion assembly, said piston rod retracts, a predetermined quantity of an incompressible liquid partially filling said cylinder, and a pressurized gas at a pressure higher than atmospheric pressure filling the remainder of the otherwise unoccupied space inside said cylinder.

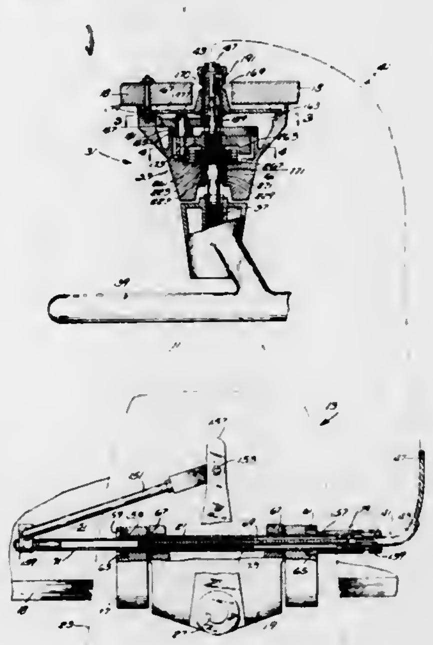
3,863,593
ROTARY CABLE STEERING SYSTEM

Gaylord M. Borst, and William J. Shimanckas, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 244,682, April 17, 1972, Pat. No. 3,774,568. This application May 2, 1973, Ser. No. 356,510

Int. Cl. B63n *21/26*

U.S. Cl. 115—18 R **6 Claims**



1. A marine steering device comprising a housing adapted to be mounted on a bout hull and including spaced walls defining an interior chamber with an annular internal gear therein, a steering wheel shaft rotatably mounted by said housing, extending through one of said spaced walls, and including a first part extending in said chamber and a second part extending exteriorly of said chamber, a steering wheel mounted on said second steering wheel shaft part exteriorly of said housing, a carrier fixed on said first steering wheel shaft part in said chamber for common rotation with said steering wheel, an output shaft rotatably mounted by said housing, extending through the other of said spaced walls in co-axial relation to said steering wheel shaft, and having thereon a pinion located in said chamber and having common rotation with said output shaft, and means mounted on said carrier and in mesh with said internal gear and said pinion for rotatably driving said output shaft by said steering wheel shaft.

3,863,594
BOAT TRAILER BACKUP GUIDE

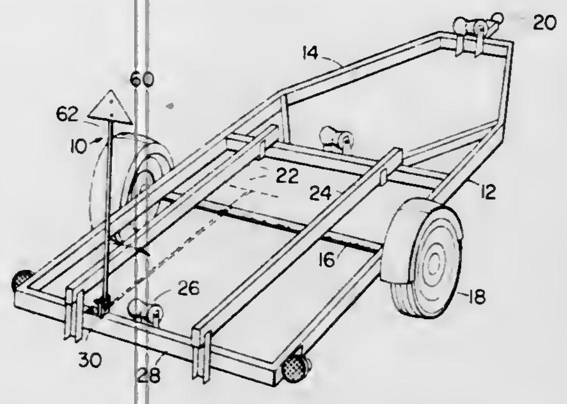
Theo C. Gawthrop, 121 N. Elm St., Columbia City, Ind. 46725

Filed Aug. 6, 1973, Ser. No. 385,991

Int. Cl. B60g *9/00*

U.S. Cl. 116—28 R **2 Claims**

1. In combination with a boat trailer including a frame having front and rear ends, a pair of laterally spaced, parallel, longitudinally extending skid elements having front and rear ends for supporting a boat thereon, and laterally extending frame members connecting said skid elements adjacent their respective front and rear ends; a backup guide device comprising a mounting bracket secured to the laterally extending rear end member and between said skid elements, an elongated rod having opposite ends, one of said rod ends being pivotally connected to said bracket for manual movement of said rod only in the direction fore and aft of said frame between a first position extending generally vertically upwardly from said frame and a second position extending forwardly from said member between said skid elements beneath and spaced from a boat thereon, resilient detent means on said bracket for maintaining said rod in said first position thereof, and a flag element on the other of said rod ends.



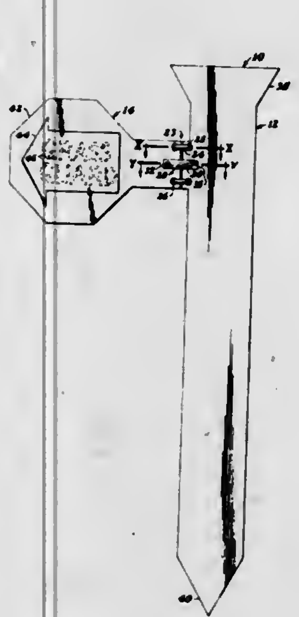
3,863,595
GRASS GUARD DEVICE

Eugene R. Barnett, and Willard R. Barnett, both of 6268 Windsor Dr., Indianapolis, Ind. 46219

Filed Mar. 26, 1973, Ser. No. 344,928

Int. Cl. E01f *15/00;* **G08b** *7/00*

U.S. Cl. 116—63 R **3 Claims**



1. A grass guard device, comprising, in combination:

a supporting post member adapted to be forced into the ground;

the supporting post member carrying, adjacent its upper end, laterally-extending arm means adapted to extend over the edge of an associated roadway surface even though the supporting post member is thrust into the ground at a location aside of said roadway surface;
face;

the supporting post member and the arm means providing that if the said arm means is engaged by a vehicle on said roadway surface adjacent the edge thereof, the said arm means will audibly warn the driver of the vehicle of the adjacent proximity of the edge limit of the said roadway surface, and thus warn the driver to exert some driving maneuver to the vehicle to prevent it from being driven off the edge of the roadway surface;

the audible sound being produced by the said engagement of the arms means with a component of the vehicle such as its bumper, fender, tire or paneling, either by the relative movement thereof by the engagement thereof as the below-mentioned return-bias or return-movement of the arm means causes it to forcefully encounter one of said vehicle-components;

in which relatively movable means of the arm means and/or the supporting post member accommodates a substantial movement of the said arm means without altering the engagement of the supporting post-member and the ground;

and in which a relative resilient deformation, of the arm means and/or the supporting post member, occurring as an incident to movement of said arm means, causes a return-bias of the arm means and subsequently a return movement thereof subsequent to release of engagement thereof of the portion of the vehicle which had caused said movement;

in a combination in which the said supporting post member and the said arm means are integrally connected in a unitary body member, which is of sufficient flexibility to provide the aforesaid relatively movable means resiliently accommodative of the said arm means movement without altering the ground engagement of the supporting post-member.

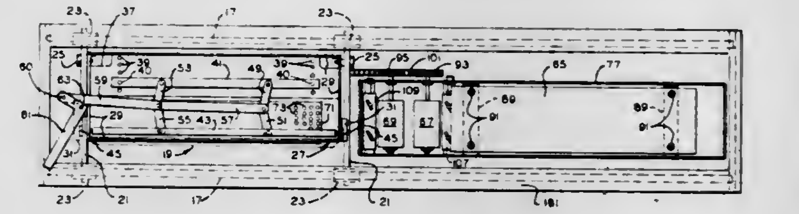
3,863,596
SEMI-AUTOMATIC BOOKBINDER

Clarence L. Anderson, Penfield, N.Y., assignor to Magnamatrix Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 133,026, April 12, 1971, Pat. No. 3,757,736. This application Jan. 5, 1973, Ser. No. 321,547

Int. Cl. B05c *1/02;* **B42c** *9/02*

U.S. Cl. 118—5 **12 Claims**



1. In a bookbinder comprising at least a frame, a clamp for clamping pages to be bound, said clamp mounted in a carriage movable on rods from one end of the frame to the other, and glue application means to apply glue to ends of the pages when said carriage is moved from one end to the other, improved glue application means comprising:

a. a container filled with glue;
b. a first applicator drum mounted for rotation on an axis perpendicular to the direction of movement of the carriage, with the bottom of said drum immersed in the glue;
c. a second drum similarly mounted parallel to said first drum;
d. a doctor blade mounted parallel to the axis of said second drum adjustable to wipe excess glue from said second drum when moved close to the circumference thereof and to permit said second drum to apply extra glue to the pages when moved away from said second drum;
e. means rotating said first drum in a direction such that its tangential velocity is in the same direction as the motion of the pages to be bound when moving from said one to said other end and rotate said second drum in a direction opposite thereto said means comprising:
  1. an electric motor having a first sprocket on its shaft;
  2. a second sprocket mounted to said first drum;

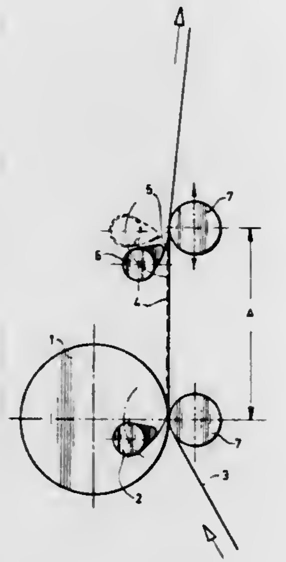
3. a third sprocket mounted to said second drum;
4. an endless chain linking said first, second and third sprockets; and

f. means coupling said motor to said carriage to provide a bi-directional drive, said means comprising:
1. a drive shaft parallel to the shaft of said motor and supported for rotation about its axis;
2. a fourth sprocket affixed to said shaft and contacting said chain so as to rotate in a direction opposite to the motor shaft;
3. a first pulley supported for rotation;
4. a second pulley similarly supported;
5. a first clutch coupling, when operated, said first pulley to the motor shaft;
6. a second clutch coupling, when operated, said second pulley to said drive shaft;
7. means to selectively operate one of said first and second clutches;
8. a first idler pulley mounted at one end of the frame;
9. a second idler pulley mounted at the other end of the frame; and
10. a cable having a first end coupled to the side of said carriage closest said first idler, said cable being passed over said first idler to said first pulley then around said first pulley, thence around said second pulley, thence over said second idler and the second end of said cable coupled to the other side of said carriage.

3,863,597

DEVICE FOR APPLYING A COATING LAYER

Lodewijk Anselrode, 27 Peelkant, St. Anthonis, Netherlands
Continuation-in-part of Ser. No. 222,527, Feb. 1, 1972, abandoned. This application July 5, 1973, Ser. No. 376,390
Claims priority, application Netherlands, Feb. 13, 1971, 7101419
Int. Cl. B05c *11/04*
U.S. Cl. 118—126 **2 Claims**

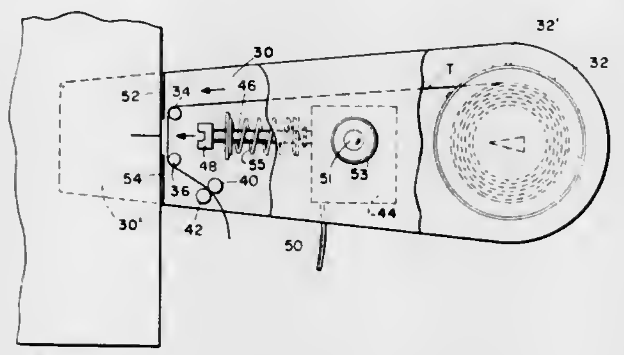


1. A device for applying a uniform smooth surface coating layer to an advancing web consisting of an apparatus contacting an advancing web for applying the coating substance to said web, and a vertically disposed doctor blade member for accurately and evenly striking off the applied coating material, said application apparatus comprising a cylindrical mesh stencil having an inner squeegee therein to provide a uniform distribution of the coating substance upon the web in contact with said stencil, said member comprising a very thin flexible blade contacting the coating substance on the web under a slightly resilient pressure and disposed at a very small angle relative to the web, the coated web moving in an upward direction, a plurality of vertically aligned rollers guiding said advancing web, one of said guide rollers being operatively associated as a backup member with respect to said doctor blade, and said one roll being adjustable, in its back-up position, between a location just in front of to a location just in back of the point of said blade contact.

3,863,598

DEVICE FOR MARKING MATERIAL

John H. Roper, 1325 Eutaw Place, Baltimore, Md. 21217
Filed Jan. 22, 1974, Ser. No. 435,436
Int. Cl. B05c *1/00*
U.S. Cl. 118—202 **4 Claims**

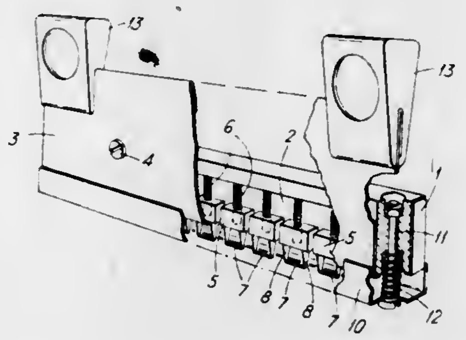


1. A device for marking the edges of a stack of material formed from a plurality of individual layers, comprising in combination:
a. a base;
b. means for rotatably supporting a roll of marking tape on said base, said tape having a heat-dissolvable material on one side thereof;
c. means for supporting the side of the tape carrying the heat-dissolvable material in close proximity to the edges of the stack of material;
d. a heated plate fixedly supported on said base;
e. means for moving the heated plate in contact with the edges of the stack of material for engaging the same for depositing at least a portion of the material carried by the tape on the edges of the stack of material, and
f. a motor having means connected to the heated plate for operating the same.

3,863,599

APPLICATOR MEANS

Joachim Kohn, London, England, assignor to Shandon Southern Instruments Limited, Surrey, England
Filed Jan. 23, 1974, Ser. No. 435,722
Claims priority, application Great Britain, Jan. 23, 1973, 3431/73
Int. Cl. B05c *1/06*
U.S. Cl. 118—256 **7 Claims**

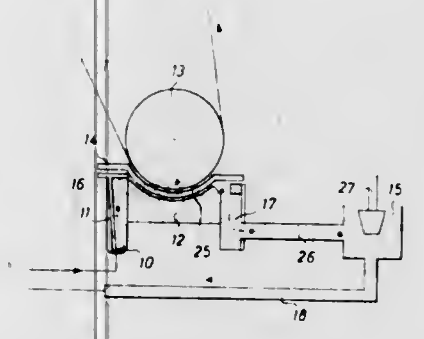


1. An applicator for forming on a substrate a number of spaced colinear liquid streaks each having substantially the same volume of liquid per unit length, comprising a body, an array of colinear spaced-apart liquid-holding and applicating strands of similar dimension spaced from the body, and support members freely suspending the strands from the body and engaging solely the ends of the strands.

3,863,600

ADJUSTABLE COATING PAN

Ludovicus Carolus Van Regenmortel, Hoboken, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium
Filed May 2, 1973, Ser. No. 356,440
Claims priority, application Great Britain, May 3, 1972, 20665/72
Int. Cl. B05c *3/12, 3/18*
U.S. Cl. 118—419 **14 Claims**

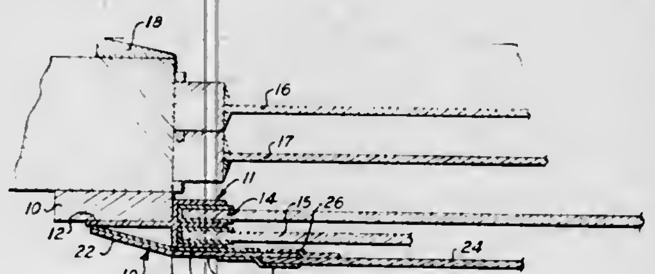


1. A coating apparatus for applying a liquid coating composition to a moving web, comprising a rotatable backing roller for determining a path for the web, a coating pan disposed under said backing roller for holding coating solution in said web path, and means for continuously delivering coating solution into said pan, over the full length thereof, said coating pan having end dams which determine the effective internal length of the pan and which are shaped and located so that their top edges conform to the curvature of the surface of the backing roller but are spaced from that surface a distance substantially greater than the thickness of said web, at least one of said dams being displaceable for varying said effective length, and said coating pan also having an overflow edge over which liquid can continuously discharge from the pan over the whole of said effective length, which overflow edge is at a level above the level of the lowest points on the top edges of said dams.

3,863,601

SURFACE MASKING DEVICE FOR PAINTERS

Edmund Albert Eckart, Jr., Westport, Conn., assignor to Sapolin Paints, Inc., New York, N.Y.
Filed Jan. 25, 1974, Ser. No. 436,555
Int. Cl. B05c *11/16*
U.S. Cl. 118—505 **9 Claims**

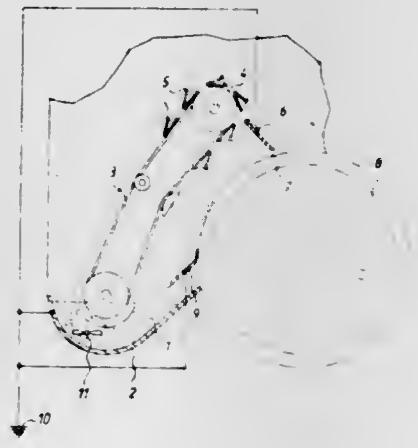


1. A surface masking device for masking selected corners of rectangular window frames including storm window sash channels and adjacent portions of a window pane, said masking device comprising a pair of shields each having at least one complimentary mitered end, each shield including a marginal body portion and an interior extension panel and having means for attaching said extension panel to said body portion, said masking device having adhesive attaching means on at least one of said shields enabling said shield to be temporarily attached to a window frame section and self supported thereon during a painting operation.

3,863,602

XEROGRAPHIC COPYING APPARATUS

Joachim Mueller, and Ludwig Dengler, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 21, 1972, Ser. No. 308,332
Claims priority, application Germany, Nov. 24, 1971, 2158334
Int. Cl. G03g *13/00*
U.S. Cl. 118—636 **5 Claims**



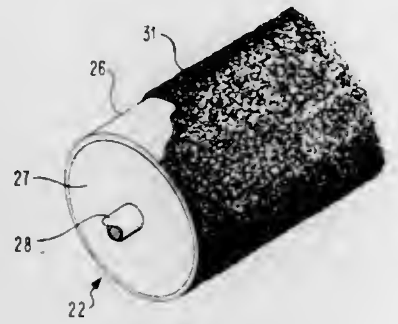
1. In a xerographic copying apparatus wherein a rotary drum-shaped xerographic surface is arranged to carry electrostatic latent images along a predetermined path, a development unit for converting said latent images into powder image patterns, comprising a magazine for a supply of intermixed toner and carrier particles; and a conveyor arranged to withdraw intermixed particles from said supply and to cascade the thus withdrawn particles over latent images in said path whereby the surplus of particles reenters said magazine and the particles become electrostatically charged as a result of triboelectrification during circulation in and back to said magazine, said conveyor including a series of discrete receptacles arranged to transport batches of intermixed particles from said magazine to a level above said supply and to dump the respective batches onto said xerographic surface upon reaching said level, said development unit having a plurality of particle-contacting surfaces including the particle-contacting surfaces of said magazine and said conveyor, said plurality of surfaces exhibiting neutral characteristics with respect to the overall triboelectric charge of said supply of particles and including a first group of surfaces which constitute the surfaces of said receptacles and move with said particles and a second group of surfaces, the particles which contact the surfaces of said first group being in motion relative to the surfaces of said second group, the surfaces of said first group consisting of insulating material and the surfaces of said second group consisting of current-conducting material and being connected to the ground, each of said receptacles consisting of current-conducting material having a coat of insulating material so that the surfaces of said second group are provided on said coats, said second group of surfaces comprising a first chute arranged to convey particles discharged by said conveyor into said path and a second chute for intercepting surplus particles in said path and for returning the intercepted particles into said magazine.

3,863,603

MAGNETIC BRUSH ROLL HAVING RESILIENT POLYMERIC SURFACE

Lawrence Webb Buckley; Raymond Alex Daniels, both of Lexington; James Dewayne Froula, Versailles; Arthur Holt Knight, Frankfort, all of Ky.; Dale Cliffton Stapleton, Boulder, Colo., and George Thomas Williams, Georgetown, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,275
Int. Cl. G03g *13/06*
U.S. Cl. 118—637 **10 Claims**



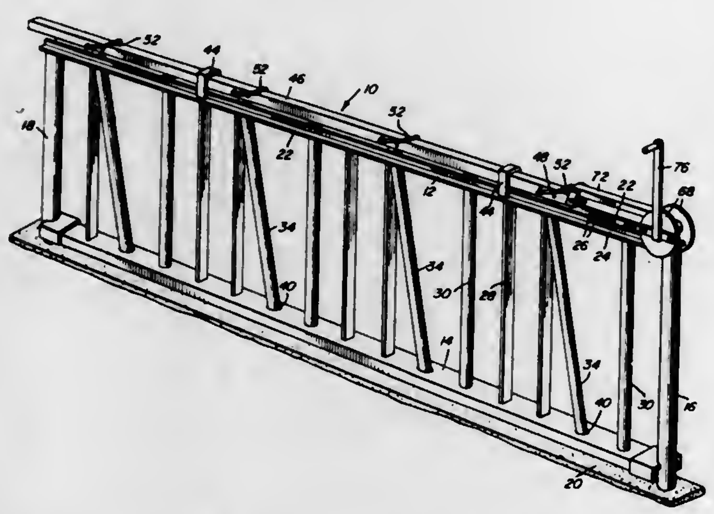
1. In an electrophotographic development apparatus of the magnetic brush type having:
a surface on which a latent image is formed;
a rotatably mounted hollow roll including a core of non-magnetic material and a resilient polymeric material secured to said core to form the surface of said roll;
said resilient polymeric material having at least its surface electrically conductive;
said resilient polymeric material having its surface non-abrasive, abrasion resistant, and rough;
magnetic means disposed within said core for creating a magnetic field in the path of the periphery of said roll;
and means to bring a developer material into contact with the surface of said resilient polymeric material of said roll, said roll being disposed adjacent said surface on which the latent image is formed so that said roll can transport the developer material in a brush-like configuration to the surface on which the latent image is formed.

3,863,604

STANCHION PANEL

Floyd P. Nielsen, 5650 W. Bethany Home Rd., Glendale, Ariz. 85301, and Bernard O. Anderson, 5341 W. Banff Ln., Phoenix, Ariz. 85306

Filed Aug. 23, 1973, Ser. No. 390,859
Int. Cl. A01k *1/06*
U.S. Cl. 119—148 **3 Claims**



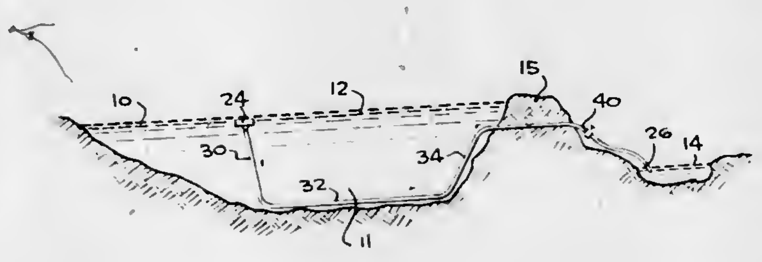
1. A stanchion gate assembly including at least one horizontally elongated and upstanding stanchion assembly, said assembly comprising vertically spaced generally horizontal upper and lower elongated supports interconnected at corresponding ends by means of upstanding end members extending and secured between said corresponding ends, a plurality of pairs of generally vertical spaced apart adjacent bars spaced along said assembly and extending between and rigidly connected to said supports, each pair of adjacent bars defining gate bars and being spaced apart a distance sufficient to receive the head of an animal therebetween, and a supplemental upstanding gate member disposed between the bars of each pair of adjacent bars with the lower ends of said gate members supported from said lower support intermediate the corresponding pair of adjacent bars for angular displacement about a horizontal axis transverse to said lower support and with the upper end of said gate member oscillatable lengthwise of said upper support, an actuator guidingly supported from said assembly for horizontal reciprocation therealong and operatively connected to the upper ends of said gate members for oscillating said upper ends in response to reciprocation of said actuator, said lower support member comprising an inverted channel-shaped member, the lower ends of said vertical bars being secured through bores formed through the upper bight portion of said inverted channel member, said bight portion additionally having apertures formed therein through which the lower ends of said gate members are loosely received, and a transverse brace secured between the opposite sides of said inverted channel-shaped member spaced below and in vertical registry with each of said apertures, the lower ends of said gate members resting upon said braces.

3,863,605

METHOD FOR PROVIDING COOLED AERATED WATER

Leslie E. Gallup, Box 116, Morrisville, N.C. 27560

Filed Oct. 1, 1973, Ser. No. 402,632
Int. Cl. A01k *63/00*
U.S. Cl. 119—3 **6 Claims**



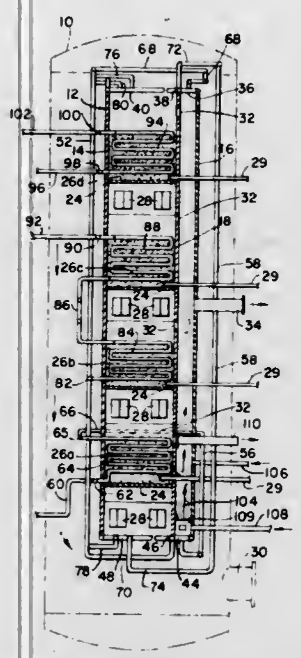
1. A method of providing a quantity of water having a high oxygen content and a relatively low temperature from a body of water having oxygen-rich warm water near its surface and oxygen-poor cooler water in its deeper portions, said method comprising the steps of taking quantities of said oxygen-rich warm water from near the surface of said body of water and moving said quantities of oxygen-rich warm water into heat exchange relationship with the cooler oxygen-poor water in said body of water without intermixing the oxygen-rich warm water with the oxygen-poor cooler water so that said oxygen-rich water is cooled below its original temperature wherein said oxygen-rich warm water is moved into heat exchange relationship with said oxygen-poor cooler water by causing said oxygen-rich warm water to flow into the end of a conduit positioned in said oxygen-rich warm water and causing said oxygen-rich warm water entering said conduit to flow to and through a substantial length of said conduit positioned in said oxygen-poor cooler water so that heat in said oxygen-rich warm water in said conduit flows through the walls of said conduit into said oxygen-poor cooler water to consequently lower the temperature of said oxygen-rich water to provide cooled oxygen-rich water and further including the step of discharging said cooled oxygen-rich water from said conduit into storage means subsequent to the cooling of said oxygen-rich water in said conduit.

3,863,606

VAPOR GENERATING SYSTEM UTILIZING FLUIDIZED BEDS

Richard W. Bryers, Cranford, N.J., and Jack D. Shenker, Lancaster, Ohio, assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed July 25, 1973, Ser. No. 382,404
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D **7 Claims**



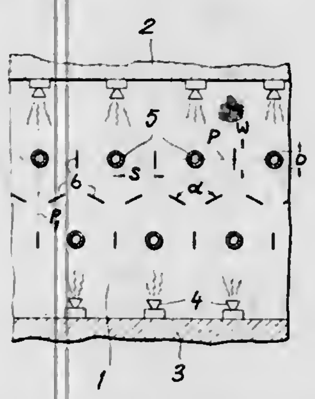
1. A vapor generating system comprising a housing, means defining a plurality of vertically aligned beds of particulate fuel material in said housing, a source of pressurized air, means to pass said pressurized air through each of said beds to promote the combustion of said fuel and maintain said beds at predetermined temperatures, a plurality of vertically disposed tubes connected together to form the walls of said housing for passing a heat exchange medium in a heat exchange relation to said beds, and piping means for directing said medium into the lower ends of a portion of said tubes for passage upwardly to the upper ends thereof and from the upper ends of said tubes downwardly externally of said tubes and back into another portion of said tubes for passage upwardly therethrough.

3,863,607

TUBE FURNACE FOR THERMAL DECOMPOSITION PROCESS

Walter Kreuter, Munich, Germany, assignor to linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jan. 18, 1974, Ser. No. 434,570
Claims priority, application Germany, Jan. 19, 1973, 2302612
Int. Cl. F22b *21/00*
U.S. Cl. 122—333 **12 Claims**



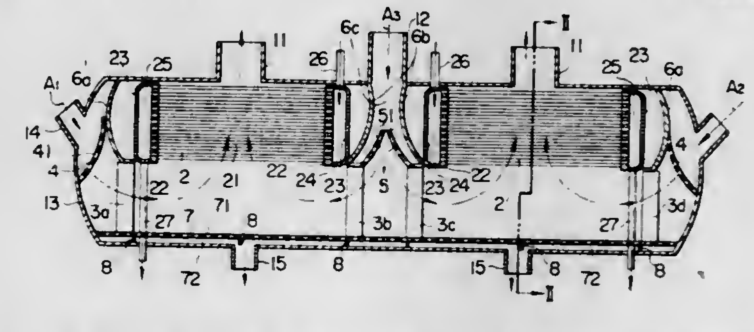
1. A tube furnace comprising a radiation chamber, a multiplicity of furnace tubes in said chamber and in spaced apart relation, heating means in said chamber for heating said tubes, and radiating surfaces in said chamber disposed along said tubes for absorbing heat from said chambers and reradiating heat to said tubes to maintain the heat transfer per unit surface thereof substantially constant all along and around said tubes, said tubes being disposed in at least two planar and mutually parallel arrays with the tubes of one array being offset with respect to the tubes of the other array by about half the distance between the tubes of each array and each of said tubes is flanked by a pair of said radiating surfaces each extending perpendicular to the plane of the axis of the tubes of the respective array, each of said radiating surfaces being a planar strip of a width at least equal to that of the diameter of the tube disposed midway between a pair of tubes of each array and said radiating surfaces include like strips disposed equidistantly between each tube of one array and a pair of tubes of the other array and perpendicular to common axial plane of the tubes between which the strips are disposed.

3,863,608

STEAM HEATING APPARATUS WITH MOISTURE SEPARATORS

Norio Yasugahira; Kuniyoshi Tsubouchi; Takeshi Sato, and Akira Uenishi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 389,820
Claims priority, application Japan, Aug. 23, 1972, 47-83783
Int. Cl. F22g *1/00*
U.S. Cl. 122—483 **10 Claims**



1. A steam heating apparatus with moisture separators, comprising: an elongated tubular shell having a pair of opposite axial end plates for effectively closing the respective ends of the tubular shell; a plurality of steam heaters each disposed substantially parallel with the axis of the tubular shell and in the upper portion of said tubular shell; each of said steam heaters having a plurality of generally axially extending heat exchange tubes, inlet means for introducing a heat exchange fluid into said plurality of said tubes, and fluid outlet means for exhausting the heat exchange fluid from the opposite ends of said tubes; a plurality of moisture separators disposed in the lower portion of said tubular shell respectively adjacent the axial ends of said steam heaters; a plurality of inlets provided on said shell structure adjacent to the axial ends of said steam heaters for introducing moisture laden steam; steam outlets for passing steam from the tubular shell to the exterior; and passage means for conducting the steam from said steam inlets through said moisture separators, through said steam heaters, and through said steam outlets serially in order.

3,863,609

ROTARY ENGINE

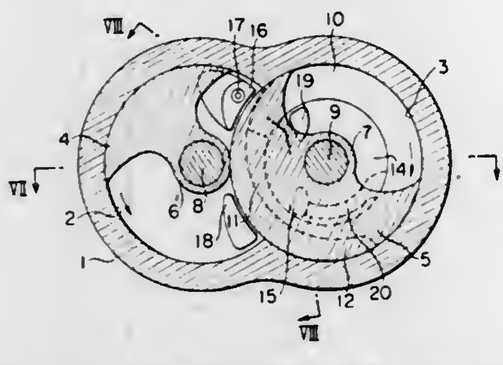
Yoshio Ikarashi, No. 3-15, Otemachi 1-chome, Shibata, Japan

Filed Sept. 19, 1972, Ser. No. 290,343
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.07 **10 Claims**

1. A rotary engine, comprising:
first and second rotor means respectively mounted for rotation about first and second parallel axes, each of said rotor means comprising an arcuate sector of selected angular extent so that the sectors of said first and second rotor means complement one another and total approximately 360°;
said first rotor means having the sector thereof defined by a first cylindrical surface which extends through a first arcuate extent, said first cylindrical surface being generated by a first radius defined about said first axis, said

sector also being defined by a first curved surface which connects to one end of said first cylindrical surface and extends radially inwardly toward said first axis, said sector being still further defined by a second curved surface which is connected to the other end of said first cylindrical surface and extends radially inwardly toward said first axis and is interconnected to said first curved surface;

said second rotor means having the sector thereof defined by a second cylindrical surface which extends through a second arcuate extent, said second cylindrical surface being generated by a second radius defined about said second axis, said second radius being equal to said first radius, said sector also being defined by a third curved surface which connects to one end of said second cylindrical surface and extends radially inwardly toward said second axis, said sector being still further defined by a fourth curved surface which is connected to the other end of said second cylindrical surface and extends radially inwardly toward said second axis and is interconnected to said third curved surface;



housing means defining therein a substantially cocoon-shaped chamber, said cocoon-shaped chamber being defined by first and second substantially cylindrical bores which extend parallel to one another, said first and second bores each being defined by a third radius which is substantially equal to said first radius, and the longitudinally extending axes of said bores being spaced apart by a distance less than the diameter of each bore so that the two bores overlap so as to be in open communication with one another;

said housing means including sidewall means surrounding said cocoon-shaped chamber and a pair of end wall means fixed to said sidewall means and closing the opposite ends of said cocoon-shaped chamber;

means rotatably supporting said first and second rotor means in said first and second bores, respectively, whereby the axis of rotation of the respective rotor means is aligned with the longitudinally extending axis of the respective bore;

said first curved surface being generated by providing a disk defined by a radius equal to said first radius, positioning a curve generating line adjacent said disk so that it overlies a reference line on said disk which extends radially outwardly from the center of said disk, said curve generating line having a length equal to said first radius and being positioned to overlie said reference line so that a first point defining the inner end of said generating line is disposed more closely adjacent the center of said disk and a second point defining the outer end of said generating line is disposed more closely adjacent the periphery of said disk, rotating the curve generating line about said second point in a rotational direction which is substantially parallel with said disk and simultaneously therewith rotating the disk about its center in the reverse rotational direction at the same angular velocity as said curve generating line, whereby the first point defines on said disk a curve which extends from said reference line to the periphery of said disk, said curve being the configuration of said first curved surface;

said second curved surface as formed on said first rotor means being a mirror image of said first curved surface; said third curved surface as formed on said second rotor means being generated in the same manner as said first curved surface, and said fourth curved surface being the mirror image of said third curved surface;

one of said end wall means having an annular ring-shaped channel formed therein in concentric relationship to said second axis, said ring-shaped channel projecting inwardly from the inner surface of said one end wall means whereby said ring-shaped channel communicates with said cocoon-shaped chamber, said one end wall means having a disk-shaped portion surrounded by said ring-shaped channel and having an end face thereon disposed directly adjacent and opposite to an end face on said second rotor means;

a ring-shaped flow control element fixed to and projecting from one end of said second rotor means and slidably disposed within said ring-shaped channel, said ring-shaped element having an outwardly opening groove formed on the outer periphery thereof and extending angularly along half of said outer periphery, said ring-shaped element further having a flow opening providing communication between said groove and the inner periphery of said element;

said disk-shaped portion having a recess formed in the end face thereof and opening toward said second bore, said disk-shaped portion also having a communication hole formed therein and extending between said recess and the outer periphery of said disk-shaped portion, whereby said opening and said hole intermittently communicate with one another during rotation of said second rotor means; means defining exhaust and intake opening respectively communicating with said first and second bores for permitting discharge of gases from said first bore and supply of gases to said second bore;

ignition means associated with said chamber for igniting a combustible gas located therein, said ignition means including an ignition chamber communicating with said first bore and also communicating with said ring-shaped channel, whereby said ignition chamber intermittently communicates with said groove during rotation of said second rotor means; and

means drivingly interconnecting said first and second rotor means for synchronous rotation in opposite directions.

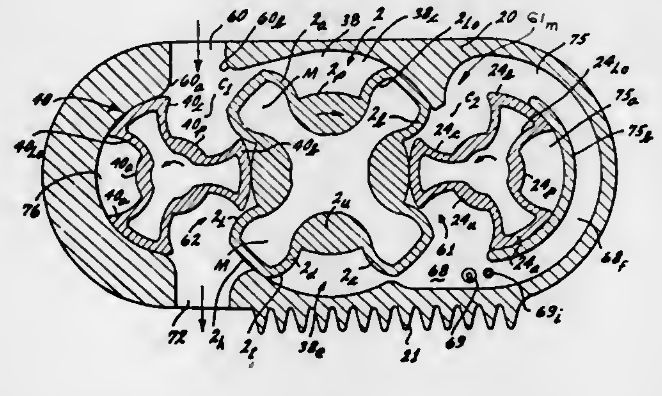
3,863,610
ROTARY CONVERTERS HAVING SPECIALIZED INTERLEAVING ELEMENTS

Raymond G. Spinnett, 2531 S. Salta St., Santa Ana, Calif. 92704

Division of Ser. No. 281,645, Aug. 18, 1972,. This application June 4, 1973, Ser. No. 366,856

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.27 **15 Claims**



1. A rotary energy converter comprising:

a. a casing defining a central chamber and a plurality of peripheral chambers, each of said peripheral chambers having areas in common with said central chamber;

b. a central rotor mounted for rotation in said central chamber and having a plurality of abutment piston-lobes extending radially to form pistons for rotary movement in said central chamber;

c. a first peripheral valving rotor mounted for rotation in said first one of said peripheral chambers and having a plurality of abutment-lobes extending radially therefrom and operating in interleaving non-contiguous relationship with said abutment piston-lobes of said of the second peripheral chamber central rotor;

d. a second peripheral valving rotor including a central hub mounted for rotation in said second peripheral chamber and having a plurality of abutment-lobes extending radially, said abutment-lobes operating in cooperative interleaving relationship with and non-contiguous to said piston-lobes of said central rotor;

e. and wherein said abutment-lobes of said first and second peripheral valving rotors cooperate in rotary motion with said piston abutment-lobes to form sealed function-chambers during rotary phases of the central rotor cycle;

f. means for intake of a charge;

g. means for exhaust of combusted gases;

h. a combustion chamber located within said second peripheral chamber;

i. a mixing chamber in said second peripheral chamber, said mixing chamber being located at the opposite side from said combustion chamber;

j. means for ignition of charge in said combustion chamber;

k. internal separation means within said second peripheral chamber and forming a feedback channel between said combustion chamber and said mixing chamber.

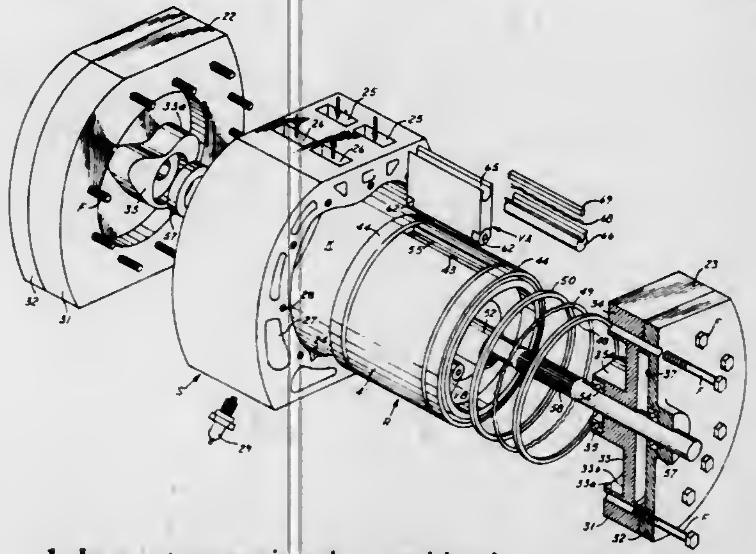
3,863,611
ROTARY ENGINE

Stefan Bakos, 4181 S. Verbena, Denver, Colo. 80237

Filed May 7, 1973, Ser. No. 358,056

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.45 **7 Claims**



1. In a rotary engine the combination comprising:

a stator having a main housing with a cavity formed as a throughbore and an inlet port for passing a fuel-air mixture into the cavity and an outlet port for passing products of combustion from the cavity, said main housing having a water jacket, and end caps attached to the ends of the main housing forming the ends of the cavity, each of said end caps having a recessed portion in the inner side thereof;

a rotor having a rotor body having three radial slots arranged at 120° intervals with a circular transverse cross section mounted for rotation about a fixed axis in bearings supported in the end caps, said rotor being undercut in each end forming an inner recess and an overhanging end portion that projects into the recessed portion in an associated end cap;

the stator and rotor defining therebetween and annular space including a relatively narrow, intermediate space segment formed by surfaces arranged concentric with the fixed axis and extending through an arc between about 135° and about 225° from a reference of 0° between the inlet port and outlet port, a larger generally crescent-shaped upstream space segment in communication with the inlet port formed by concave stator surfaces arranged eccentric with the fixed axis and extending through an arc between about 0° and 135° from a reference of 0°, a larger generally crescent-shaped downstream space segment in communcation with the outlet port formed by concave stator surfaces arranged eccentric with the fixed axis and extending through an arc between about 225° and about 360° from the reference of 0°, each of said intermediate, upstream and downstream space segments being joined by a convex stator surface formed by a radius having its center externally of the stator;

three radial vanes, each vane having an oblong vane body slidably movable in one of the radial slots, each said vane body having a rounded inner end with bearing means adapted to move over a cam surface and a circular groove in the outer end carrying a generally circular head rotatable in the groove and a sealing ring movable in the head;

a cam on the end caps at each end of the rotor having cam surfaces projecting into the inner recess of the rotor and having a contour similar to that of the stator cavity on which the inner ends of the vanes ride as the rotor is rotated to urge the ring carried by the head against the inner peripheral surface of the stator defining the cavity with the head rotating relative to the vane body;

sealing means between the rotor and the vane body in the slots;

first sealing rings in grooves in the periphery of the overhanging end portion of the rotor body in engagement with recessed portions of the end caps;

second sealing rings in grooves at the ends of the overhanging end portions of the rotor body in enagement with the recessed portions of the end caps;

said stator, rotor vanes and sealing means, first sealing rings and second sealing rings dividing the annular space into separate working chambers between each two adjacent vanes to confine the fuel-air mixture thereto whereby a fuel-air mixture is successively induced through the inlet port into the upstream space segment between two adjacent vanes and then compressed in the intermediate space segment between two adjacent vanes upon rotation of the rotor;

an ignition element positioned in the intermediate space segment for igniting the compressed fuel-air mixture just upstream of a vane to propel the rotor and produce products of combustion by the ignition whereby movement of the vane moves the resulting products of combustion through said downstream space segment and out the outlet port for each revolution of each vane.

3,863,612
COOLING SYSTEM

Leonard Stern Wiener, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Sept. 17, 1973, Ser. No. 398,251

Int. Cl. F01p *7/14*

U.S. Cl. 123—41.08 **8 Claims**

1. A cooling system comprising:

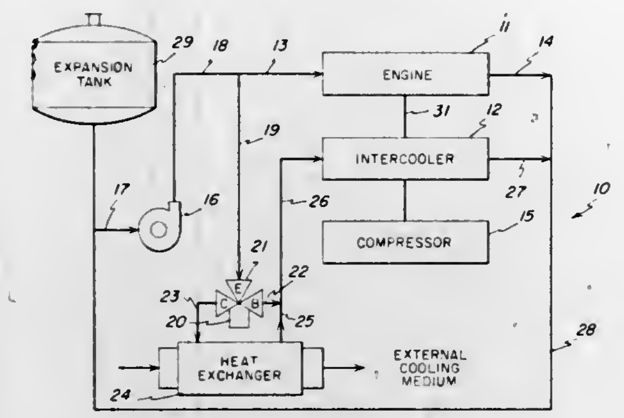
a. a first heat source to be cooled by the flow therethrough of a coolant at a first temperature;

b. a second heat source to be cooled by the flow therethrough of a coolant at a second temperature lower than said first temperature;

c. means for combining the total discharge flows from said first and second heat sources to form a coolant mixture at a temperature no higher than that of said first temperature;

d. means for pumping said coolant mixture toward the inlets of said first and second heat sources;

e. means for proportioning the total coolant mixture flow between said first and second heat sources; and

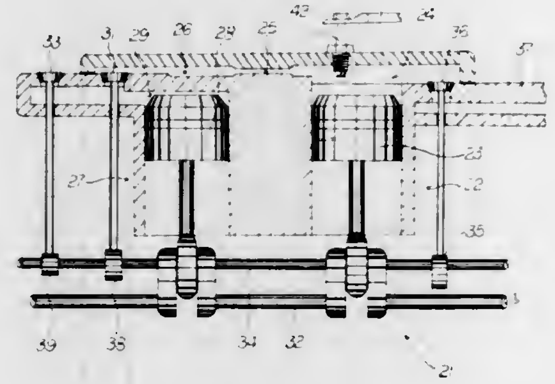


f. a heat exchanger means for cooling that proportion of coolant being delivered to the inlet of said second heat source.

3,863,613
INTERNAL COMBUSTION ENGINE

Frank J. Petrie, 93b Beaver Terrace Cir., Framingham, Mass. 01701

Filed July 16, 1973, Ser. No. 379,235
Int. Cl. F02b *21/00, 33/44*
U.S. Cl. 123—75 R **5 Claims**

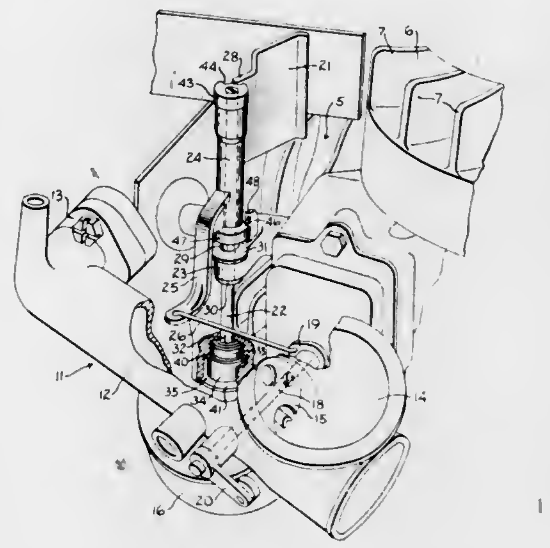


1. An internal combustion engine comprising:
- a primary cylinder slidably retaining a primary piston and defining a primary combustion chamber;
- an auxiliary combustion chamber;
- a coupling passage for providing fluid communication between said chambers;
- an air supply cylinder slidably retaining an air supply piston and defining an air supply chamber;
- air inlet means for selectively supplying air to said air supply chamber;
- crankshaft means for coupling said pistons and causing them to move synchronously;
- valve means providing fluid communication between said air supply chamber and said auxiliary combustion chamber;
- valve control means for operating said valve means in a preselected cycle during the operation of said engine, said valve control means comprising a valve timing means for opening said valve means to provide fluid communication between said air supply chamber and said auxiliary combustion chamber during every other stroke of said primary piston; and
- exhaust valve means for exhausting hot gases from said primary combustion chamber, said primary combustion chamber being disposed in a fluid flow path between said auxiliary combustion chamber and said exhaust valve whereby gases discharged from said auxiliary chamber flow through and thereby purge said primary chamber before being exhausted through said exhaust valve.

3,863,614
THERMOSTATIC AUTOMATIC CHOKE CONTROL FOR SMALL ENGINES

Robert G. Thompson, Milwaukee, and Heinz K. Gund, Brookfield, both of Wis., assignors to Briggs Stratton Corporation, Wauwatosa, Wis.

Filed Nov. 19, 1973, Ser. No. 417,402
Int. Cl. F02b *33/00;* **F02m** *7/00*
U.S. Cl. 123—119 F **9 Claims**



8. In an internal combustion engine having relatively fixed structure comprising a carburetor with an air inlet duct and having a choke valve in said air inlet duct which is movable between defined open and closed positions and which is biased towards its closed position, an automatic control for the choke valve comprising:

A. actuating means operable to produce in response to engine speed a choke valve opening force that can overcome the bias on the choke valve;

B. motion transmitting means connecting said actuating means with the choke valve and through which said force can be imposed upon the choke valve to urge it towards its open position;

C. a control member constrained to move in opposite directions between defined limits;

D. means providing a lost motion connection between said control member and the choke valve whereby the choke valve is prevented from moving to its open position when the control member is confined at one of said limits and is prevented from moving to its closed position when the control member is confined at the other of said limits;

E. a pair of thermostatic elements positioned to be influenced by heat developed by the engine and each capable of exerting a force in response to a change in the temperature to which it is subjected, one of said thermostatic elements being for high temperaturs, the other for low ones; and

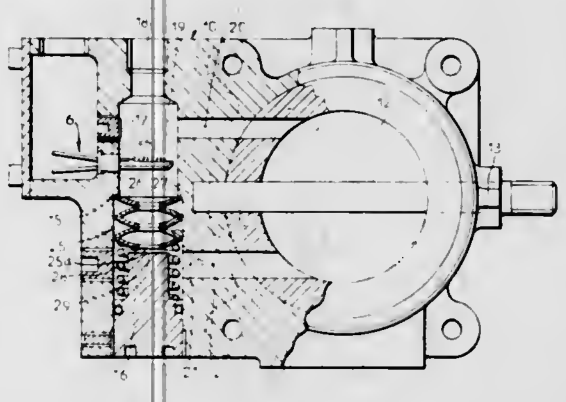
F. means connecting each of said thermostatic elements between the fixed structure and the control member to produce a force exerting reaction between them in only one direction, the last mentioned means comprising a unidirectional force transmitting connection for each thermostatic element,

1. the unidirectional force transmitting connection for the low temperature thermostatic element being so arranged that the force which the low temperature thermostatic element exerts in response to decreasing temperatures is imposed upon the control member in the direction to urge the same towards said one limit, and
2. the unidirectional force transmitting connection for the high temperature thermostatic element being so arranged that the force which the high temperature thermostatic element exerts in response to increasing temperatures is imposed upon the control member in the direction to urge the same towards its said other limit.

3,863,615
METHOD OF AND SYSTEM FOR CONTROLLING AIR TO FUEL RATIO FOR AN INTERNAL COMBUSTION ENGINE

Brian Colin Pagdin, Sutton Coldfield, England, assignor to GKN Transmissions Limited, Erdington, Birmingham, England

Filed Feb. 6, 1974, Ser. No. 440,265
Claims priority, application Great Britain, Feb. 6, 1973, 5761/73
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **10 Claims**



1. A system for supplementing the control of air to fuel ratio provided by a fuel supply apparatus of an internal combustion engine, such system comprising:

a. means for withdrawing a fraction of the exhaust of the engine from an outflow path for such exhaust,

b. means for burning a combustible constituent of said withdrawn fraction of exhaust,

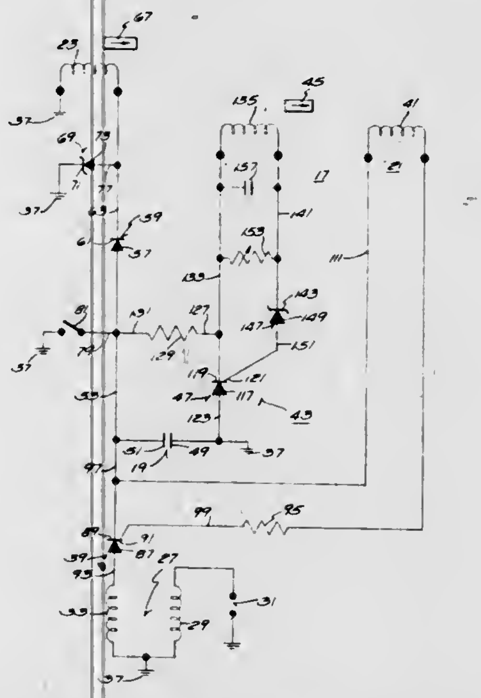
c. means for feeding the products of such combustion to an intake of the engine,

d. means for controlling the ratio of said products of combustion fed to said intake to air drawn into said intake as a function of the heat produced by said combustion.

3,863,616
CAPACITOR DISCHARGE SYSTEM WITH SPEED CONTROL SUB-CIRCUIT

Donald H. Wood, Gurnee, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sept. 13, 1971, Ser. No. 179,768
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **4 Claims**

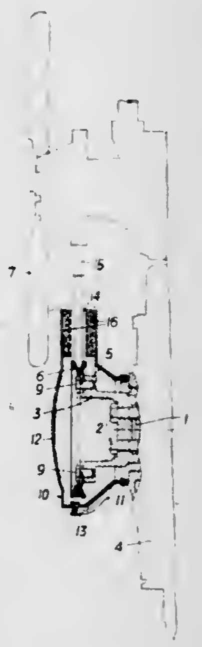


1. A capacitor discharge ignition system for an internal combustion engine comprising a capacitor, a first rotating magnet, a charge coil having a core located adjacent to the path of first magnet rotation and electrically connected to said capacitor, said charge coil being operative in response to first magnet rotation to charge said capacitor, an ignition coil, a first electronic switch electrically connected to said capacitor for selectively discharging said capacitor to said ignition coil, a second electronic switch electrically connected to said capacitor for selectively discharging said capacitor other than to said ignition coil and including a contol terminal, a voltage breakdown device connected to said control terminal and operable to permit conduction upon the application of potential above a given level, an annular magnet comprising a first segment having an arcuate extent of less than 360° and an arcuate periphery of one polarity and a second segment having an arcuate extent slightly less than the difference between 360° and the arcuate extent of the first segment and an arcuate periphery of the other polarity, a trigger coil having a core extending radially from and located adjacent to the rotational path of said arcuate peripheries and electrically connected to said first switch, said trigger coil being operable in response to annular magnet rotation to generate a trigger pulse which actuates said first switch to discharge said capacitor to said ignition coil so as to cause engine ignition, and an overspeed control coil having a core extending radially from and located adjacent to the rotational path of said arcuate peripheries and electrically connected to said voltage breakdown device, said overspeed control coil being operable in response to annular magnet rotation above a predetermined speed to generate a speed control pulse having a potential above said given level, said overspeed control coil core being located relative to said trigger coil core to generate said speed control pulse subsequent to charging of said capacitor and prior to generation of said trigger pulse, whereby to cause conduction of said breakdown device and operation of said second switch to discharge said capacitor other than to said ignition coil and render subsequent operation of said ignition trigger coil ineffective to cause engine operation.

3,863,617
INTERNAL COMBUSTION ENGINE WITH SOUND-PROOF V-BELT PULLEY

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Nov. 8, 1973, Ser. No. 414,098
Claims priority, application Austria, Nov. 10, 1972, 9617/72
Int. Cl. E04b *1/99;* **G10k** *11/04*
U.S. Cl. 123—195 C **2 Claims**



1. An internal combustion engine having a crankshaft, a crank wheel and further comprising a vee-belt pulley arranged in front of the crank wheel cover and non-rotatably connected with the crankshaft, a sound-proofing sheathing encompassing said vee-belt pulley and consisting of a sheathing member elastically attached to said crank wheel cover so as to provide sound-proof sealing and partly embracing said vee-belt pulley, and a cover located in front of the vee-belt pulley and remov-

ably attached to said sheathing member, vee-belts extending through said sound-proof sheathing at two passages, sound-absorbing inserts being provided on said sheathing member and said cover at the passages of the vee-belt, said sound-absorbing inserts combining at each passage to provide an absorption-type silencer closely encompassing the vee-belt.

3,863,618

BUTTERFLY VALVE ARRANGEMENT FOR A COMBUSTION ENGINE HAVING EXTERNAL IGNITION

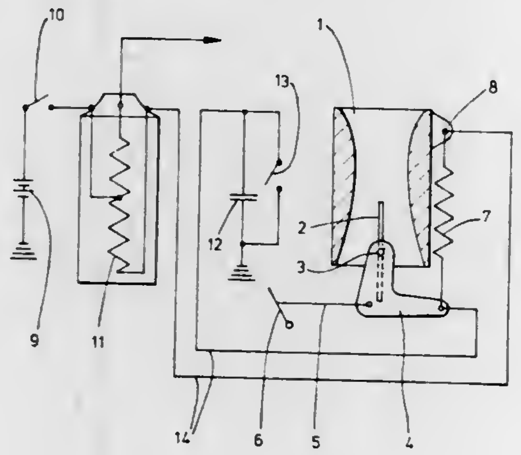
Norbert Scholz, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 16, 1973, Ser. No. 379,352

Claims priority, application Germany, Aug. 31, 1972, 2242737

Int. Cl. F02b *77/08;* **F02p** *11/00*

U.S. Cl. 123—198 DC **2 Claims**



1. In a combustion engine having combustion space means, an ignition arrangement for deliverying an ignition spark to the combustion space means, a butterfly valve means for controlling the fuel mixture to said combustion space means, a closure spring means for returning said butterfly valve means into a closed position when an associated accelerator is not actuated, said ignition circuit arrangement including said closure spring means, whereby when said closure spring means develop a discontinuity, said ignition circuit arrangement is prevented from delivering a spark to said combustion space means wherein said ignition circuit arrangement includes an ignition coil means and an interrupter contact means, a circuit portion connecting said ignition coil means with said interrupter contact means, said closure spring means being placed into said circuit portion.

3,863,619

COLLAPSIBLE HEAT SHIELD FOR WINDOW OF OVEN DOOR

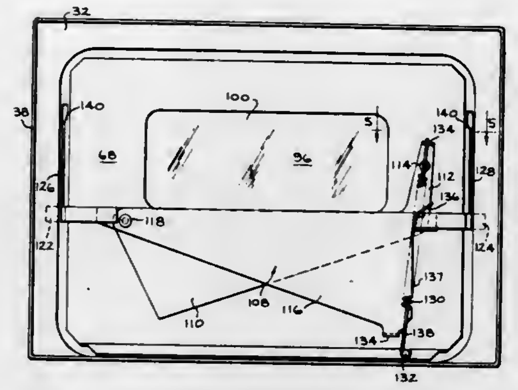
Robert A. Wolf, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

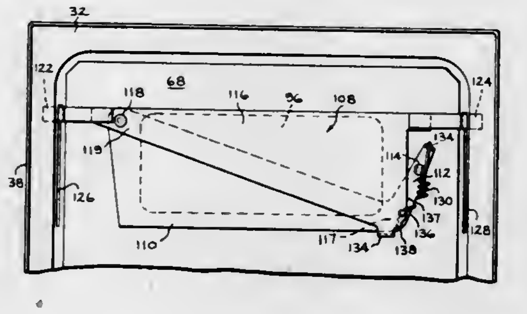
Filed May 6, 1974, Ser. No. 467,503

Int. Cl. F23m *7/00*

U.S. Cl. 126—200 **6 Claims**

1. A door construction comprising an outer panel and an inner door liner spaced inwardly therefrom, substantially alinged window openings in said panel and door liner, and transparent panes closing said window openings, a movable shield located within the door for movement into a closed position between said transparent panes to obstruct the view through said window openings, said shield being collapsible when moved to its open position out of registry with the transparent panes to permit viewing through said panes, said shield being in at least two parts, a first part hinged within the door structure and a second part hinged to the first part, said first and second shield parts overlying each other in said collapsed open position and being fanned out in the closed position of the shield, and counterbalance spring means associated with the hinge means of the first shield part to the door for holding the two-part shield in either its open or closed positions.





3,863,620

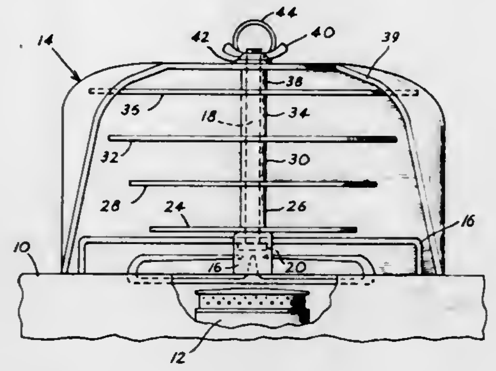
DEVICE FOR BENEFICIALLY ABSORBING, RERADIATING AND DEFLECTING HEAT TO THE OCCUPIED PORTION OF AN ENCLOSURE

Lawrence L. Warner, 1670 N.E. "A" St., Grants Pass, Oreg. 97526

Filed Jan. 14, 1974, Ser. No. 432,807

Int. Cl. F24c *15/00*

U.S. Cl. 126—248 **5 Claims**



1. A portable heat absorbing, heat reradiating and air deflecting and distributing unit composed of heat conductive material and adapted to be set over an extraneous heat source which unit includes

a. a supporting means;

b. a hood supported thereby, which hood includes uninterrupted side, back and top portions and has a wide open bottom and a wide open front, for deflecting a rising convection current of heated, breathable air in a generally horizontal direction through the open side of the hood from bottom to top thereof where it may reach and be useful to persons occupying a relatively low portion of such space, said unit further including, largely within the hood, a series of vertically spaced, horizontal, heat absorbing and reradiating plates of progressively increasing area from bottom to top of the hood.

3,863,621

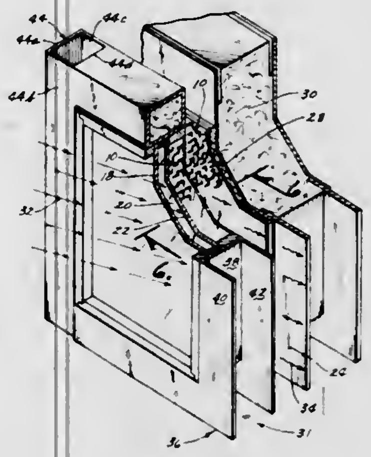
SOLAR WALL SYSTEM

James L. Schoenfelder, Iowa City, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 31, 1973, Ser. No. 393,593

Int. Cl. F24j *3/02*

U.S. Cl. 126—270 **16 Claims**



1. A solar wall system comprising,

an exteriorly exposed transparent member,

a collector plate, adapted to be exposed to solar energy, interiorly disposed with respect to, and spaced apart from, said transparent member to define a first void space between said transparent member and said collector plate,

said collector plate having a plurality of openings and having a mass equal to solid plate of like material, wherein said openings increase the total surface area of said collector plate as compared to a solid plate of like material, a second void space behind said collector plate for collection and movement of warm air, and

a most interiorly disposed wall structure element, said second void space being defined by said collector plate and said wall structure element.

3,863,622

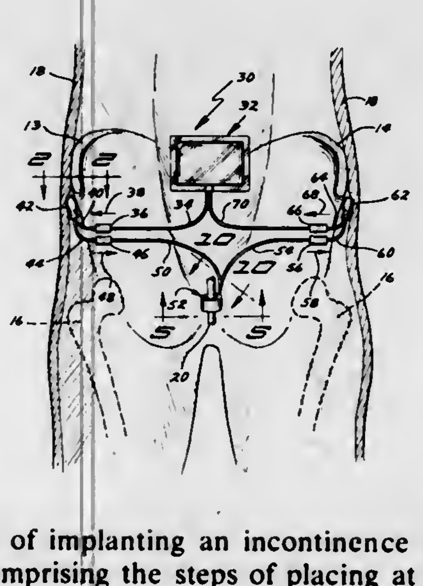
INCONTINENCE SYSTEM AND METHODS OF IMPLANTING AND USING SAME

Robert Enno Buuck, 2350 Wisconsin Ave., Golden Valley, Minn. 55427

Filed Jan. 9, 1973, Ser. No. 322,221

Int. Cl. A61f *1/00;* **A61b** *17/00*

U.S. Cl. 128—1 R **6 Claims**



1. A method of implanting an incontinence system in an animal body comprising the steps of placing at one location within said body a cuff device having a deformable wall so that said wall resides in a proximal relation with a vessel having a passage extending therethrough which passage is to be opened and closed, placing at a second location within said body a pump bulb having fluid communication with said cuff device, said second location being spaced from said first location and sufficiently near the inner surface of the animal's skin so that said bulb can be squeezed through the skin to force fluid under pressure into said cuff device, placing at a third location within said body spaced from said second location a reservoir having fluid communication with said pump bulb for storing at least some of said fluid which is to be pumped into said cuff device by the squeezing of said bulb, placing a first check valve between said reservoir and said pump bulb and a second check valve between said pump bulb and said cuff device, said first check valve permitting fluid flow only from said reservoir to said pump bulb and said second check valve permitting fluid flow only from said pump bulb to said cuff device, placing within said body a second pump bulb at still another location spaced from said cuff device and from said first pump bulb, and also third and fourth check valves, said third check valve being between said cuff device and said second pump bulb and said fourth check valve being between said pump bulb and said reservoir, said third check valve permitting fluid flow only from said cuff to said second pump bulb and said fourth check valve permitting fluid flow only from said second pump bulb to said reservoir, each check valve including a plug member and a coil spring urging its said plug member in a direction to prevent fluid flow, the coil spring in said second check valve having a greater strength than the spring in said fourth check valve, and said spring in said fourth valve having a greater strength than the springs in said first and third check valves.

5. An incontinence system for implanting within an animal body comprising an inflatable cuff unit for circumscribing the vessel to be opened and closed, a reservoir for storing at least some of the fluid to be supplied to said cuff unit, a pair of elastomeric bulbs, a first check valve connected between said reservoir and one of said pump bulbs for permitting fluid flow only from said reservoir to said one pump bulb, a second check valve between said one pump bulb and said cuff unit for permitting fluid flow only between said one pump bulb and said cuff unit, a third check valve for permitting fluid flow only between said cuff unit and the other of said pump bulbs, a fourth check valve for permitting fluid flow only from said other pump bulb to said reservoir, a coil spring contained in each of said check valves, said fourth check valve containing a coil spring having a greater spring constant than the coil springs contained in said first and third check valves, and the coil spring in said second check valve having a greater spring constant than the coil spring contained in said fourth check valve.

3,863,623

METHOD FOR MICROSCINTIGRAPHIC EVALUATION STUDIES

Jon H. Trueblood; Roger M. Rossomondo, and William H. Carlton, all of Augusta, Ga., assignors to Medical College of Georgia Foundation Inc., Augusta, Ga.

Filed June 19, 1972, Ser. No. 264,372

Int. Cl. A61b *6/00*

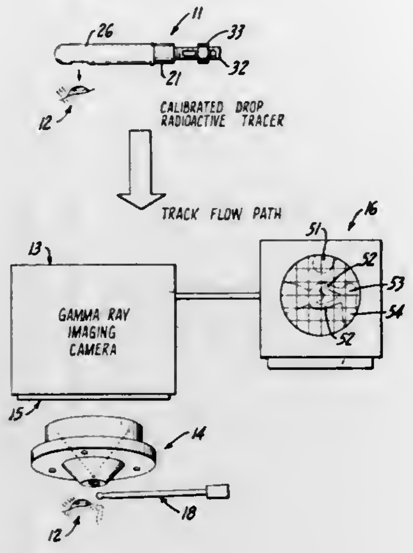
U.S. Cl. 128—2 A **16 Claims**

1. The method of microscintigraphic evaluation of the flow of the body fluids through defined flow paths adjacent to the surface of the body, comprising

situating a drop of radioactive liquid of calibrated minimal volume in the flow path upstream of the area to be evaluated,

positioning a micropinhole collimator in close proximity to said area and with said area in its operative field,

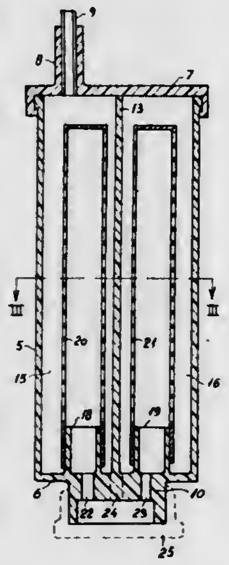
passing radiation emitted from said drop of radioactive liquid at said area through said micropinhole collimator onto the receptor of a gamma ray imaging camera to provide a visual display of sufficient resolution to delineate successive positions of said radioactive liquid in said flow path, and



observing in said visual display passage of said drop of radioactive liquid being carried along said flow path within said area to determine physical characteristics thereof.

3,863,624
VACUUM CURETTAGE DEVICE

Hans Gram, 737 Strandvejen, Klampenborg, Denmark
Filed Dec. 3, 1973, Ser. No. 421,286
Claims priority, application Denmark, June 15, 1973, 3322/73
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B 5 Claims



1. A vacuum curettage device comprising:

a curette including an elongated tubular shank having an inlet opening adjacent the outer end thereof;

a rotatable lid having connected eccentrically thereto said curette;

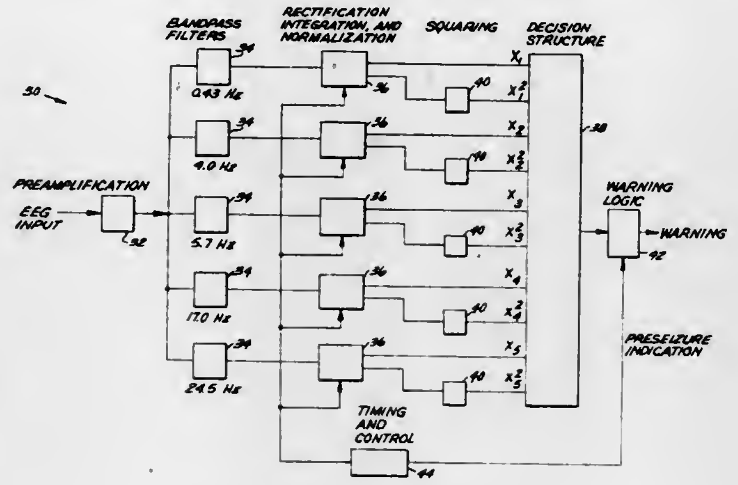
an elongated reservoir having at an inlet thereof said rotatable lid and in the interior of which a vacuum can be created by fitting to an outlet thereof a vacuum hose;

said reservoir having at least two compartments, each communicating one at the time with said curette in appropriate positions of said rotatable lid; and

each compartment being fitted with a filter partition separating said inlet from said outlet to intercept solid particles removed by the curettage.

3,863,625
EPILEPTIC SEIZURE WARNING SYSTEM

Sam S. Viglione, Anaheim; Vladimir A. Ordon, Long Beach; William B. Martin, Newport Beach, and Carl C. Kesler, Jr., Fountain Valley, all of Calif., assignors to The United States of America as represented by the Secretary Department of Health Education and Welfare, Washington, D.C.
Filed Nov. 2, 1973, Ser. No. 412,496
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B 12 Claims



1. A warning activation system comprising:

means for providing an electrical signal characteristic of the condition of a component part of a subject;

means for preprocessing said electrical signal to transform it into a predetermined format;

means for processing said transformed signal to measure energy characteristics thereof;

means for detecting predetermined features indicative of a relatively early abnormal condition of said component part of said subject, when predisposed to occurrence of an impending and disturbing event, from said measured energy characteristics of said transformed signal;

means for deciding from said detected features the condition of said component part of said subject and providing an output of a predetermined category for said abnormal condition thereof;

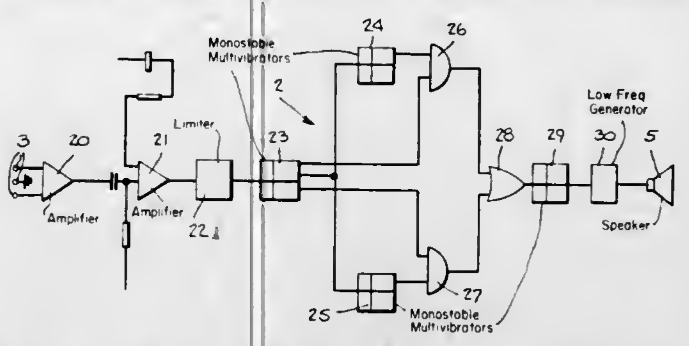
means for controlling said processing means to process said transformed signal reiteratively over successive sampling epochs thereof whereby decisions on the condition of said component part of said subject can be made for said epochs by said decision means; and

means responsive to the output of said decision means for providing an activation signal in advance of the occurrence of said event when said decision means output is of said predetermined category for at least a predetermined number of said epochs within an immediately preceding predetermined period.

3,863,626
APPARATUS FOR SURVEYING AND INDICATING THE PHYSICAL EFFORT OF AN INDIVIDUAL

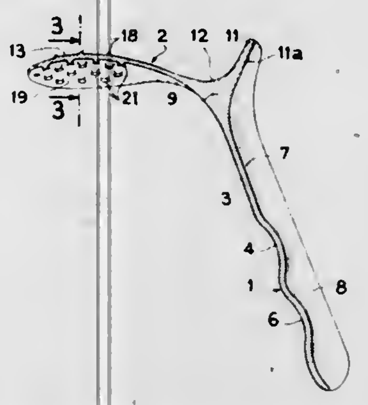
Anton Huber, Waldhofstr. 40, Langenthal, Switzerland
Filed Dec. 13, 1972, Ser. No. 314,884
Claims priority, application Switzerland, Sept. 7, 1972, 13134/72
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 F 14 Claims

1. Apparatus for surveying the physical efforts of a person, said apparatus comprising pulse sensing means, means for generating impulses in response to outputs from said pulse sensing means, first and second monostable multivibrators having means for separately adjusting their respective delay times for establishing high and low limit frequencies and being connected to be actuated by said impulses, first and second gate circuit means each having a first input connected to receive said impulses and each having a second input connected, respectively, to an output of said first and second monostable multivibrators, a signally means andd means connecting said signalling means for adjustment of same according to the outputs from either of said gate circuits, said monostable multivibrators including means for maintaining both said gate circuits closed for the duration between their respective delay times.



3,863,627
MOUTH EXPLORING DEVICE

Pierre Bouffard, 13, Avenue de Dorirdan, St. Cheron, France
Filed Nov. 1, 1972, Ser. No. 302,924
Claims priority, application France, Nov. 5, 1971, 71.39807
Int. Cl. A61b *1/24*
U.S. Cl. 128—10 8 Claims

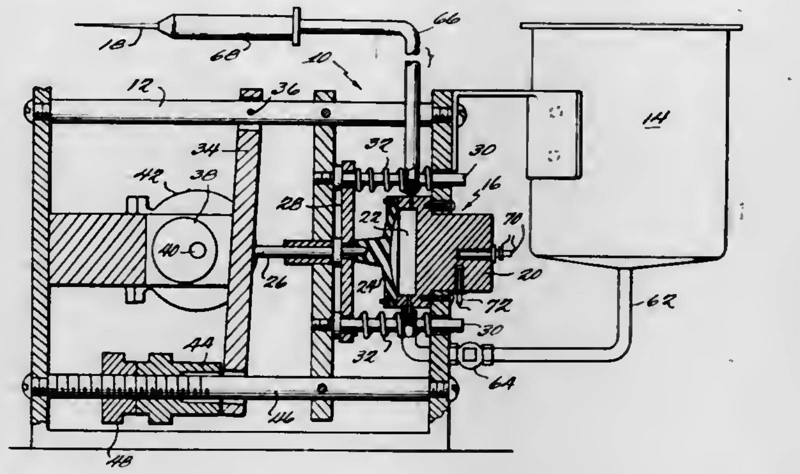


1. A device for depressing the tongue and exploring the inside of the mouth, comprising a handle, and a tongue depressing and mouth exploring strip having a rear part connected to the handle adjacent an upper end of handle in the position of use of the device, a front part, two curved convex lateral edge portions which extend from said rear part to said front part and define in said front part a substantially V-shaped notch which has curved convex flanks so that the strip has a generally heart-shaped profile in plan in the position of use of the device, the strip extending continuously between said lateral edge portions and between said front part and rear part, the strip having in the position of use of the device with the handle extending downwardly from the strip a slightly curved convex upper surface substantially throughout the strip in longitudinal and transverse directions of the strip and having a lower surface which is concave and slightly curved with a substantially constant curvature in said longitudinal and transverse directions so that it substantially corresponds to the shape of the part of the tongue the device is to depress.

3,863,628
DENTAL TREATMENT METHOD AND APPARATUS

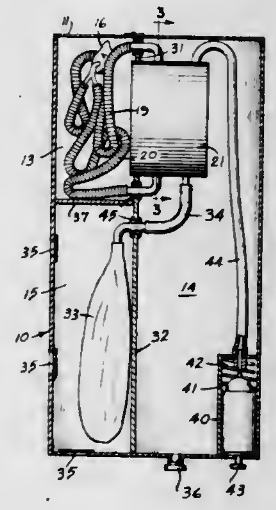
Jaroslav Vit, Belle Mead, N.J., assignor to National Patent Development Corporation, New York, N.Y.
Continuation-in-part of Ser. Nos. 301,071, Oct. 26, 1972, abandoned, and Ser. No. 301,074, Oct. 26, 1972, abandoned.
This application Dec. 6, 1972, Ser. No. 312,507
Claims priority, application Great Britain, June 12, 1972, 27445/72; Aug. 24, 1972; 39588/72; Aug. 24, 1972, 39589/72; Aug. 24, 1972, 35590/72; Sept. 5, 1972, 41194/72
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 8 Claims

1. Apparauts of the type described comprising means defining a pump chamber including a flexible diaphragm mounted for movement between a first limiting position wherein said pump chamber is of maximum volume and a second position wherein said pump chamber is of minimum volume, power driven cam and cam follower means operatively connected with said diaphragm for effecting a cyclic movement of said diaphragm consisting of a movement from said first position to said second position through a pressure stroke and a movement from said second position to said first position through a suction stroke at a frequency of the order of 100 to 1,600 cycles per minute in which said diaphragm is maintained in said first position during each cycle for a period of the order of 30 to 90 percent of the total period of each cycle, suction conduit means for communicating a source of liquid to said pump chamber, check valve means in said suction conduit means permitting flow of fluid through said conduit means to said chamber but preventing flow in the opposite direction, outlet nozzle means, and pressure conduit means communicating said pump chamber with said outlet nozzle means.



3,863,629
LIFE SUPPORT SYSTEM AND REBREATHER

Gordon E. Ries, 4423 Third Ave. East, Bradenton, Fla. 33505
Filed Apr. 9, 1973, Ser. No. 349,008
Int. Cl. A61m *16/00*
U.S. Cl. 128—142 1 Claim



1. In a closed cycle, low pressure, life support system and rebreather, a hollow case embodying first, second and third compartments therein, flap portions for gaining access to the interior of said case, there being an air vent establishing communication between the outside atmosphere and said third compartment, a port establishing communication with the atmosphere and said second compartment, a hollow cannister mounted in said second compartment having a quantity of air purifying material therein, first and second diametrically opposed fittings connected to said cannister, one-way check valves disposed in said first and second fittings for directing flow in one direction through said cannister, a face mask removably mounted in said first compartment and said face mask closing only the nose and mouth of the user, straps

connected to said face mask, a flexible bag mounted in said third compartment, a conduit connecting said bag to said cannister, a pair of flexible hoses connecting said face mask to said first and second fittings, said case defining and providing a back pack to be mounted and worn on the back of a user, an oxygen container arranged in one of said compartments, a manually operable means for selectively actuating the oxygen container to release oxygen therein, and a conduit connecting said oxygen container to said cannister.

3,863,630

RESPIRATORY APPARATUS

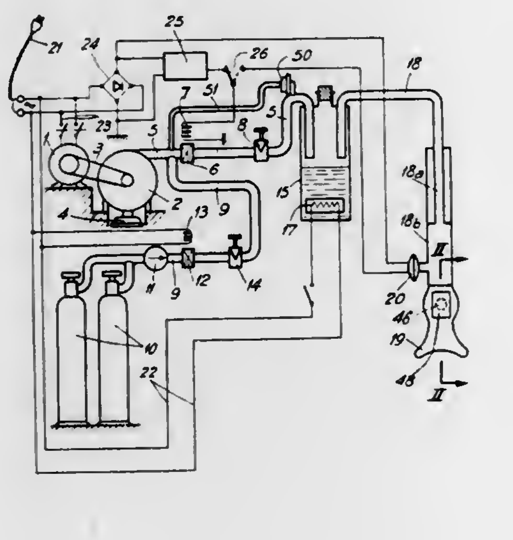
Roger Paul Charles Cavallo, Bourg-la-Reine, France, assignor to Synthelabo, Paris, France

Filed Nov. 7, 1972, Ser. No. 304,486

Claims priority, application France, Nov. 10, 1971, 71.40291; Oct. 11, 1972, 72.35928

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.6 6 Claims



1. A respiration apparatus comprising:
a multistage air-displacement turbine pump having a discharge side;
an electric motor connected to said pump for driving same; a first pipe connected to said discharge side of said pump; a mouthpiece connected to said first pipe and receiving air from said pump through said first pipe;
an adjustable first throttle valve along said first pipe between said discharge side of said pump and said mouthpiece for controlling the airflow to said mouthpiece;
an electromagnetic flow-control valve along said first pipe between said discharge side and said throttle valve for selectively passing and blocking flow of air to said mouthpiece from said turbine pump;
means for periodically opening and shutting said flow-control valve;
a safety valve communicating with said first pipe for connecting said mouthpiece to the atmosphere upon pressure in said first pipe upstream of said flow-control valve falling below a predetermined level and indicating a failure at said pump;
another pipe connected to a source of oxygen under pressure and communicating with the first-mentioned pipe between said flow-control valve and said discharge side of said turbine pump; and
a further throttle valve in said other pipe between said source and said first pipe, said electromagnetic valve constituting the sole valve for flocking and unblocking flow of air and oxygen to a patient.

3,863,631

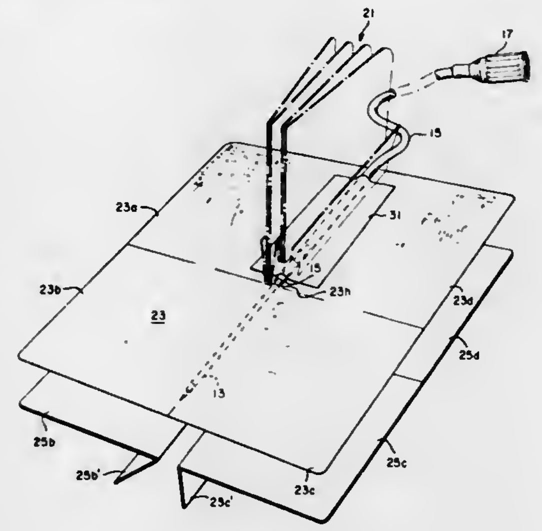
METHOD OF APPLYING AND SECURING A NEEDLE

Brian E. Baldwin, Wilmette, Ill., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Division of Ser. No. 42,713, June 2, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,794

Int. Cl. A61m *5/00*

U.S. Cl. 128—214 R 13 Claims



7. The method of applying and securing a needle and folded adhesive bandage assembly to a body having a puncturable securing surface, comprising
holding said needle and folded bandage assembly by manually grasping said folded bandage thereof,
inserting said needle into a body while manually grasping said folded bandage,
unfolding said bandage and adhesively removably adhering a pressure-sensitive adhesive securing surface of said bandage to said body in generally covering relation about the zone of insertion of said needle into said body by and through removal of a protective cover sheet from said adhesive surface, to removably secure said needle in place on said body,
said removal of said protective cover sheet being effected by manually holding said assembly in place at the zone of said puncture while pulling on and peeling back an edge portion of said protective cover sheet and also exerting an adhering pressure component on the thus uncovered adhesive securing surface of said bandage to thereby effect substantially interdependent removal of said protective cover sheet and adhesive securing of said bandage to the adjacent facing surface of said body.

3,863,632

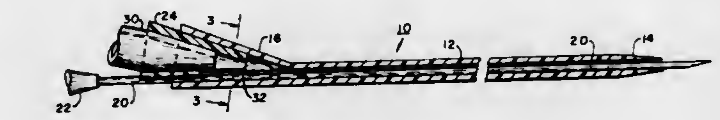
INTRACORPOREAL CATHETER ASSEMBLY

Boris Schwartz, 400 Park Ave., Paterson, N.J. 07504

Filed May 29, 1973, Ser. No. 364,756

Int. Cl. A61m *5/32, 25/00*

U.S. Cl. 128—221 8 Claims



1. A single-channeled intracorporeal catheter having a receiving socket for connection to the distal end of a fluid conducting system for feeding, injecting and draining, said catheter and connection including: (a) a catheter member of flexible tubing having its intermediate portion formed with a relatively constant bore, said catheter having a distal end of tapered configuration and having its other end secured in a fluid-tight manner to a hub having a tapered socket terminating at and connecting to this bore, the size of the socket progressively increasing as it approaches and reaches the open end of the hub and having the axis of this tapered socket disposed at a divergent angle to the bore of the catheter so that the inner surface of one side portion of the tapered socket of this hub is parallel to the axis of the catheter bore; (b) a tubular intermediate member of semirigid material and having a residual bias and having both a tapered bore and an outer tapered configuration which mates with and is snugly fitted into the tapered socket of the hub, the tapered bore of said intermediate member sized and configured to provide a tapered socket to receive and retain the distal end of a fluid conducting system, and (c) a needle slidably mounted within the catheter bore, this needle positioned so as to lay along and on that inner side wall surface portion of the tapered socket portion of the hub that lies in a common plane with the catheter axis, said needle having a sharpened point on its distal end, the outer diameter of the needle sized so as to be slidable in the bore of the catheter member, said needle when mounted in the catheter having a sufficient length to enable its midshaft to pass through the tapered socket of the hub and bore of the said catheter, the point of the needle extending beyond the distal end of the catheter while the needle is slidably retained between the outer surface of the intermediate member and the wall of the tapered socket of the hub, this needle midshaft displacing and to a degree compressing that inserted portion of the intermediate member adjacent the bore of the catheter, the angle divergence of the axis of the hub of the catheter and the mounted intermediate member from the axis of the catheter being sufficient for the shaft of the mounted needle to avoid interference with and permit ready seating and securing of the distal end of a fluid conducting system in the receiving socket of the intermediate member and as and after the needle is withdrawn from the bore of the catheter the intermediate member by its residual bias moves from its displaced condition and into a fluid sealing condition with the tapered socket formed with the hub.

3,863,633

COMPOSITION CONTAINING A SUBSTANCE SHOWING A TOPICAL EFFECT ON THE EYE, AND A METHOD OF PREPARING THE SAME

Emma Marta Ryde, and Jan Erik Ekstedt, both of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Filed May 24, 1972, Ser. No. 256,243

Claims priority, application Sweden, June 4, 1971, 7221/71

Int. Cl. A61m *7/00, 31/00*

U.S. Cl. 128—260 15 Claims

1. A composition in the form of a solid lens-shaped body having at least one curved surface and softly rounded corners which is adapted for insertion in the cavity between the eye and surrounding tissue, said shaped body retaining its shape during the whole time of use and containing a substance having a topical effect on the eye, which composition comprises a mixture of

a. 5 – 60 percent of at least one lipophilic substance having a melting point of 37 – 75°C and being selected from the group consisting of higher hydrocarbons, waxes, fats and mixtures thereof that are physiologically acceptable in the eye cavity,
b. 5 – 40 percent of at least one water-soluble or water-swellable polymer in solid, finely divided form and being selected from the group consisting of dextran, lower hydroxy-alkyl dextran, carboxy-methyl dextran, lower hydroxy-alkyl cellulose, lower alkyl cellulose, carboxy-methyl cellulose, polyvinyl alcohol, dextrin, starch, polyvinyl pyrrolidone and polyalkylene glycols, the particle size of the solid polymer being less than approximately 150 microns,
c. 0.05 – 30 percent of at least one substance having a topical effect on the eye, being in solid, finely-divided form, with a particle size less than approximately 150 microns, and being selected from the group consisting of drugs for glaucoma therapy and substances showing a mydriatic effect,
d. 10 – 80 percent of at least one member of the group consisting of aliphatic monalcohols having 13 – 22 carbon atoms to serve as stabilizer for the mixture,

the percentages relating to percent by weight calculated on the total weight of the mixture, whereby when said solid shaped body is inserted in an eye cavity and comes into contact with tear fluid, the polymer set forth in (b) which comes into contact with the tear fluid dissolves into a viscous solution or gel-like envelope that acts as a lubricating envelope, which, in cooperation with the shape of the unit

1. contributes to preventing mechanical irritation of the eye as a result of the shaped body and prevents the body from remaining in a specific position in the eye cavity, since it enables the unit to change position within the cavity,
2. forms a diffusion barrier for the drug or drugs for glaucoma therapy and therewith prevents a topical overdose with subsequent accompanying irritation, and
3. is free from difficulties with vision caused by ointment spread to the corneus tunic of the eye.

3,863,634

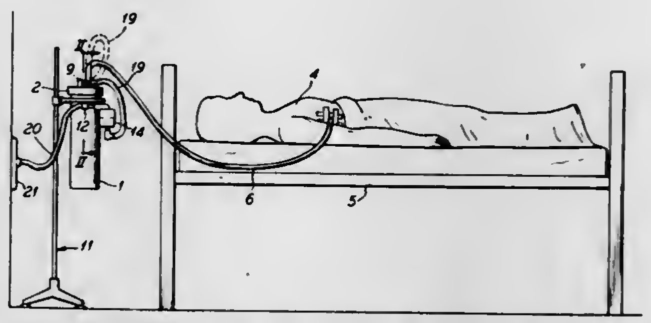
ASEPTIC SUCTION SYSTEM FOR BODY FLUIDS AND VALVE THEREFOR

Gordon S. Reynolds; Karl A. Pannier, Jr., and James L. Sorenson, all of Salt Lake City, Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed June 7, 1973, Ser. No. 367,831

Int. Cl. A61m *1/00*

U.S. Cl. 128—276 11 Claims



1. A body fluid receiving system for use in locations where bodies are worked upon, said system including a fluid receiver with means for connecting the interior of the receiver to the body being worked upon and also to a vacuum system, wherein the improvement comprises
a transparent housing in the vacuum line mounted so air passes through said housing from one end to the other drawn by the vacuum system, and
entrapment means in said housing to entrap fluid particles in a manner visible from a distance to denote to an observer that some body fluid has passed beyond the receiver,
said entrapment means including a deflector plate spaced inwardly from the inlet end of the housing and shaped to cause the air passing through to assume a vortex.

3,863,635

VACUUM HANDPIECE INCLUDING INTEGRAL VACUUM VALVE

Donald R. Swatman, Modesto, Calif., assignor to Den-Tal-Ez Mfg. Co., West Des Moines, Iowa

Filed Feb. 22, 1974, Ser. No. 444,709

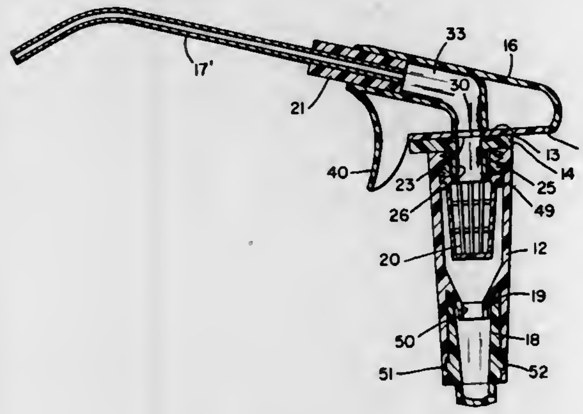
Int. Cl. A61c *17/04*

U.S. Cl. 128—276 10 Claims

1. A vacuum valve comprising:
a. a valve seat member having a smooth surface of given contour and a passageway therethrough terminating in an aperture of given cross-sectional area in said smooth surface;
b. a valve slide member having a passageway therethrough and a smooth surface adapted to mate with said smooth

surface of said given contour of said valve seat member with a given tolerance, said smooth surface of said valve slide member having a first portion with an area larger than said given cross-sectional area of said aperture in said smooth surface of said valve seat member and a second portion penetrated by an aperture communicating with said passageway through said valve slide member;

c. means attaching said valve slide member and said valve seat member to each other with said smooth surfaces thereof in mating relation for slidable movement with respect to each other between a first position in which said first portion of said smooth surface of said valve slide member is aligned with said aperture in said smooth surface of said valve seat member and a second position in which at least a part of said aperture in said second portion of said smooth surface of said valve slide member is aligned with said aperture in said smooth surface of said valve seat member;



d. annular resilient means surrounding said aperture in said smooth surface of said valve seat member, said annular resilient means being mounted on said valve seat member and projecting from said smooth surface of said valve seat member a distance substantially equal to said given tolerance of said mating relation between said smooth surfaces of said valve seat member and said valve slide member; and

e. means for moving said smooth surfaces of said valve slide member and said valve seat member with respect to each other between said first and second positions thereof.

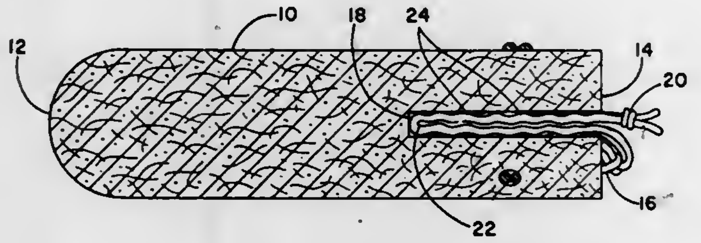
3,863,636
TAMPON WITH INTERNALLY PACKED WITHDRAWAL STRING

Carl W. Johnson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 175,561, Aug. 27, 1971, abandoned. This application June 1, 1973, Ser. No. 366,126

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 **9 Claims**



1. In a compressed tampon having a withdrawal string attached to one end thereof, the improvement comprising means for storing said withdrawal string in said tampon one end by being provided with an elongate open bore of small diameter extending longitudinally into the interior of said tampon for at least one-third of the tampon length; the diameter of said bore being less than the radius of said tampon; and the major portion of said string which extends between the attached and the free end of said string being packed and enclosed inside of said bore with sufficient tightness to be frictionally held therein until manually removed; said packed string being folded on itself at least once and the longitudinal axis of each of the longitudinal stretches of said folded string extending in the direction of the longitudinal axis of said bore; and a means for removing said major portion of said string from said bore comprising a minor portion of said folded string disposed outside the open end of said bore defining a free finger grasping end of said string.

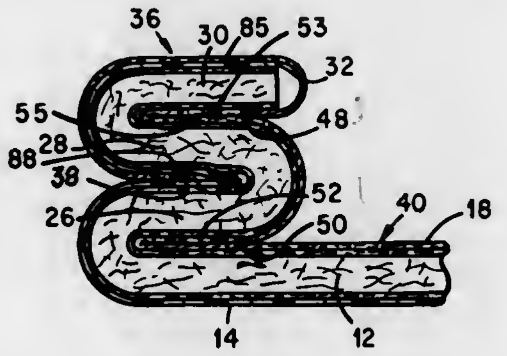
3,863,637
FOLDED DISPOSABLE DIAPER

Richard C. MacDonald, Rexdale; Noel E. Martin, Weston, Ontario, both of Canada, and Charles A. Lee, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,595

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **12 Claims**



1. In a disposable diaper having a rectangular outline and including an absorbent pad encapsulated between a backing sheet having an exposed surface and a liquid pervious cover sheet, the improvement wherein said cover sheet is wider than said pad and said backing sheet and defines longitudinal side extensions on opposite sides of said diaper, each of said side extensions being wrapped around the side edges of said pad and said backing sheet and bonded to said exposed surface of said backing sheet at a location spaced inwardly from the respective side edge of said backing sheet, each side edge of said diaper being folded along a longitudinal fold line inwardly toward the centerline of said diaper to define a first longitudinal fold, further folded along a second longitudinal fold line away from said centerline and back upon said first fold to define a second longitudinal fold, and further folded along a third longitudinal fold line inwardly toward said centerline and back upon said second fold to define a third longitudinal fold, whereby said side extensions of said cover sheet are exposed on the respective outer surfaces of said third longitudinal folds in position to cover that portion of said backing sheet disposed in the upperside of said third folds and thereby isolate said backing sheet from the skin of the person to whom the diaper is applied.

3,863,638
SHEATH ARRANGEMENT FOR MALE URINAL DEVICE

Crit H. Rogers, III, Natchitoches, La., and Joseph Sarto Rocheleau, Jr., Tiller, Oreg., assignors to Rogers Industries, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 331,683, Feb. 12, 1973, abandoned. This application Oct. 9, 1973, Ser. No. 404,346

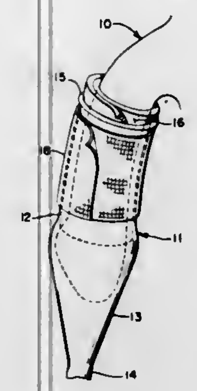
Int. Cl. A61f *5/44*

U.S. Cl. 128—295 **11 Claims**

2. A sheath arrangement for a male urinal device comprising:

a urinal sheath of flexible material designed for application to a penis for covering a substantial portion lengthwise of the same and having a connection means secured thereto for connecting the sheath through a suitable conduit to a urine receptacle, and

a liner pad of synthetic, resiliently compressible deformable waterproof material in the form of a strip of such material having a width sufficiently great to extend over a substantial portion lengthwise of a normal flaccid penis and of a length substantially greater than the circumference of such a normal flaccid penis to enable the strip to be wrapped at least one and a half turns around the penis before application thereto of said sheath, at least the surface of the liner pad intended to be in contact with the penis being adhesive so that it tends to be held in place on the penis.



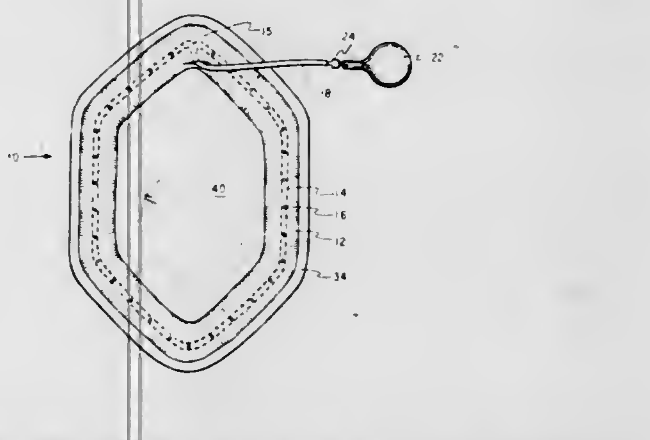
3,863,639
DISPOSABLE VISCERAL RETAINER

Richard N. Kleaveland, 426 Medical Center, Spokane, Wash. 99203

Filed Apr. 4, 1974, Ser. No. 457,906

Int. Cl. A61b *17/00, 19/00*

U.S. Cl. 128—303 R **22 Claims**



1. A collapsible retainer including means for temporarily retaining the body contents inside a patient during the suture of an incision following surgery, comprising:

a. a biologically sterile sheet of flexible, crushable material configured to fit within and beneath said incision;

b. an inflatable rib-like bladder formed in said sheet;

c. inflation means connected to said bladder for forcing gas into said bladder to render said sheet substantially flat and rigid; and

d. exhusting means connected to said bladder for releasing said gas therefrom to collapse said sheet.

3,863,640
BANDAGE CONSTRUCTION

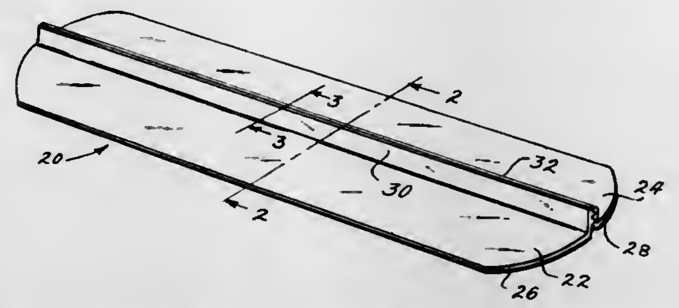
Charles B. Haverstock, 44 Frederick Ln., Glendale, Mo. 63122

Filed Apr. 27, 1973, Ser. No. 355,188

Int. Cl. A61b *17/04*

U.S. Cl. 128—335 **19 Claims**

1. A bandage for closing a wound comprising first and second strip portions of a relatively flexible material, each of said strip portions having a skin attaching surface and a flange formed of a flexible material extending along one side edge thereof, a coating of an adhesive substance applied to at least a portion of said skin attaching surfaces on each of said strip portions for attaching the said strip portions to the skin in spaced relationship to each other and along opposite edges of the wound, at least a portion of the adhesive substance on each of said strip portions extending to the side edges of the respective surfaces thereof which are to be attached along opposite edges of the wound, and cooperating engagable means including elongated male and female members extending respectively along each of said flanges, said male member being movable into cooperative resilient engagement with the female member when pressure is applied against the respective flanges in a direction to press the male and female members together thereby to unite and hold the strip portions and the skin along opposite side edges of the wound together.



3,863,641
THORACIC DRAINAGE CATHETER

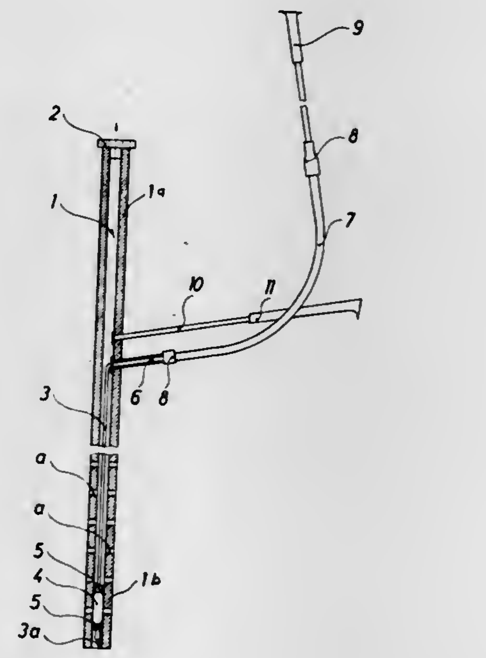
Ioan Pop D. Popa, Tirgu Mures, Romania, assignor to Institutul Pentru Creatie Stiintifica Si Technica, Bucharest, Romania

Filed Sept. 26, 1973, Ser. No. 400,798

Claims priority, application Romania, Sept. 29, 1972, 72375

Int. Cl. A61m *27/00*

U.S. Cl. 128—350 R **1 Claim**



1. A self cleaning catheter for thoracic drainage comprising: a catheter tube body having an end provided with lateral orifices and adapted to be received in a thoracic cavity, and another end having means connectable to a suction source;

means for selectively closing the tube comprising a semi-rigid tubular mandrel extending laterally into said tube and having an inflatable end and sized to slide along the wall of said tube along said orifices; and

a syringe connected to said tubular mandrel for distending and collapsing the inflatable end thereof;

a rigid tube extending laterally from said catheter tube and communicating with the interior thereof having means for being connected to a graduated cylinder for flushing the catheter tube with a heparine solution when the tube is closed by the end of the mandrel in its inflated state.

3,863,642
OBSTETRIC DEVICE FOR ANIMALS

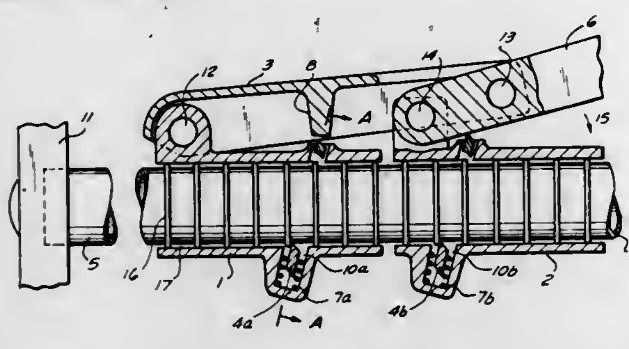
Werner Weiland, Bendorf-Sayn, Germany, assignor to Rheintechnik Weiland & Kaspar OHG, Bendorf, Germany

Filed July 2, 1973, Ser. No. 375,848

Claims priority, application Germany, July 4, 1972, 2232713

Int. Cl. A61b *17/42*

U.S. Cl. 128—352 **11 Claims**



1. An obstetric device for use with animals, particularly cattle and the like, comprising an elongated member having an end adapted to abut an animal giving birth; at least two members individually shiftably mounted on said elongated member and each adapted to be connected with an animal being born; control means for effecting individual movement of said shiftable members in a direction away from said end so that a tension may be continuously exerted on the animal being born when said shiftable members are connected with the latter to thereby aid the birth process; holding means for preventing movement of said shiftable members in a direction towards said end; and means for substantially simultaneously releasing said two shiftable members comprising release means coupled with said control means and operable by the same for disengaging said two shiftable members for sliding movement in a direction towards said end, whereby in case of emergency the tension exerted on the animal being born may be quickly released.

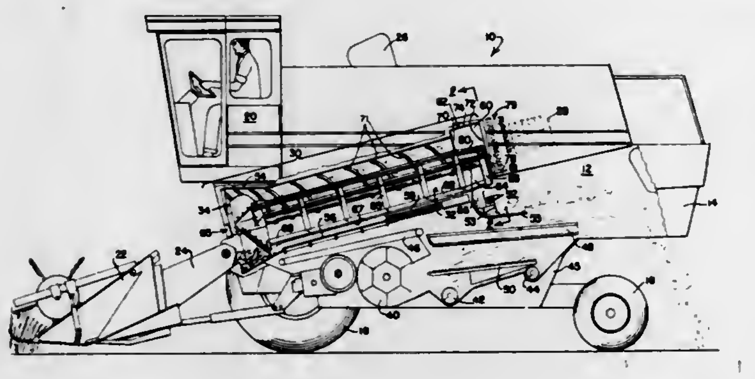
3,863,643
DISCHARGE CHUTE AND EXPANSION CHAMBER FOR AN AXIAL FLOW-TYPE COMBINE

Richard A. DePauw, East Moline, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,249

Int. Cl. A01f *12/44*

U.S. Cl. 130—27 T **12 Claims**



1. In an axial flow combine, in combination, an elongated generally cylindrical rotor casing defining a front crop-impelling region, a crop-threshing region, a crop-separating region, and a rear crop residue-expansion region therealong, successively and in the order named, a rotor disposed within said casing in coaxial relationship and substantially coextensive therewith, cooperating crop-impelling, crop-threshing and crop-separating instrumentalities on said rotor and casing in said impelling, threshing and separating regions respectively, the lower portion of said rotor casing in said residue expansion region being provided with a downwardly opening discharge outlet for crop residue, the wall of said rotor casing in said crop residue expansion region being displaced radially outwardly along substantially its entire three hundred and sixty degree circumference from the extended generally cylindrical confines of the casing in the adjacent crop separating region, thus defining an expansion chamber for the crop residue issuing from such latter region and flung from the rotor, whereby such residue may assume a state of equilibrium and fall by gravity through said discharge outlet.

3,863,644
SMOKING ARTICLES

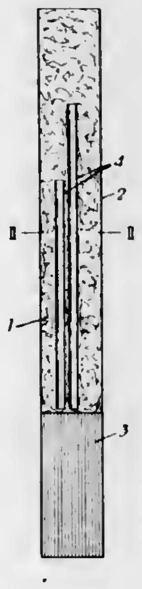
Frederick J. Hunt, Southampton, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Oct. 6, 1972, Ser. No. 295,453

Claims priority, application Great Britain, Oct. 21, 1971, 49023/71

Int. Cl. A24d *01/02*

U.S. Cl. 131—9 **4 Claims**



1. A smoking article comprising a rod of smoking material and a filter at one end of said rod, at least two combustible tubes of small cross section, open at each end, and extending longitudinally through the rod of smoking material from points closely adjacent the filter to points short of the end of the rod of smoking material opposite the filter, said tubes being of different lengths, the ends of said tubes located at the end of the rod opposite said filter being positioned at such different distances from said rod end so that a programmed air ventilation effect is achieved whereby during the initial puffs a mixture of air and tobacco smoke is delivered through the tubes providing a delivery of a higher TPM smoke to the filter than that which would be delivered in the initial puffs during smoking of the same tobacco column without inclusion of the tubes, and during successive puffs, the ratio of air to tobacco smoke in said mixture is increased as the fire cone moves through the tobacco rod to the ends of the tubes.

3,863,645
PROCESS FOR TREATING TOBACCO

Tien C. Tso, Beltsville, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 11, 1974, Ser. No. 478,417

Int. Cl. A24b *15/04*

U.S. Cl. 131—17 R **7 Claims**

1. A process for improving the combustion properties of cured leaf tobacco and for decreasing the amount of components associated with human health problems in the smoke of cured leaf tobacco comprising treating said cured leaf tobacco by applying to the tobacco a substance selected from the group consisting of $CH_3(CH_2)_nCOOCH_3$ in which n is a number from 4 to 12, $CH_3(CH_2)_nCH_2OH$ in which n is a number from 4 to 12, and mixtures thereof, said substance being applied in an aqueous mixture containing a combination emulsifier and surface active agent and then bulking the treated leaf tobacco.

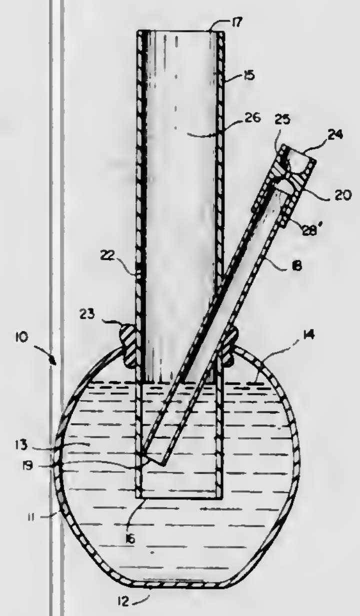
3,863,646
SMOKING DEVICE

Richard W. Kahler, Clinton, Md., assignor to Surf and Psych, Inc., College Park, Md.

Filed May 4, 1973, Ser. No. 357,186

Int. Cl. A24f *1/30*

U.S. Cl. 131—173 **3 Claims**



1. A smoking device comprising:

a chamber for maintaining a volume of fluid and having means defining a first opening within said chamber;

first smoke conducting means disposed within said first opening means of said chamber and defining a first open end means inserted into said chamber so as to extend within said fluid and a second open end means extending outwardly from said chamber;

second smoke conducting means also disposed within said first opening means of said chamber and defining a first open end means inserted into said chamber so as to extend within said fluid and a second open end means extending outwardly from said chamber, said first smoke conducting means also being inserted through means defining a second opening within said second smoke conducting means;

means surrounding said first and second smoke conducting means providing a seal for said chamber opening means adjacent to said second opening in said second opening of said second smoke conducting means, and

a smoking bowl connected to said second open end means of said first smoke conducting means for retaining smoking tobacco and permitting smoke to pass into said first smoke conducting means,

whereby said smoke passing into said first means is drawn through said fluid and directed out through said second means.

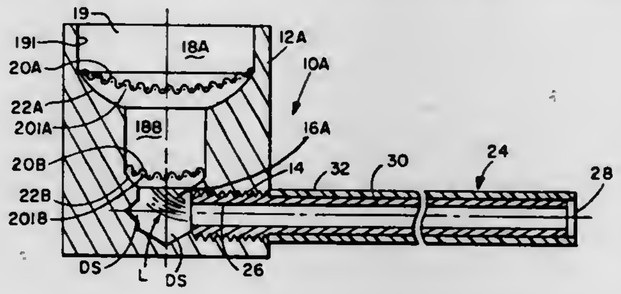
3,863,647
PIPE SMOKING

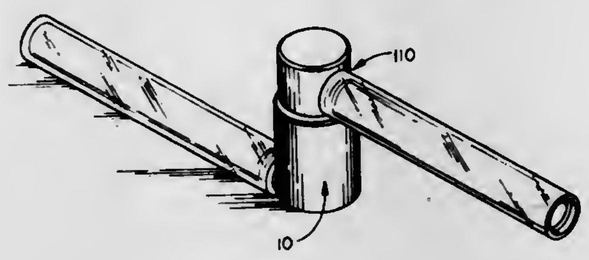
Richard A. Unger, 30 Bay State Rd., Rm. 928, Boston, Mass. 02215

Filed Dec. 22, 1972, Ser. No. 317,383

Int. Cl. A24f *5/08*

U.S. Cl. 131—179 **5 Claims**





1. A two pipe assemblage of similar pipes of different bowl sizes, each of said pipes comprising,

means for forming a pipe bowl comprising a metal block with first and second intersecting passages therein arranged orthogonally with respect to each other,

a first one of said first and second passages being enlarged at a surface of the block compared to the other of said passages to form a bowl,

means forming a transition section annular shoulder within said bowl,

screen means overlying and seating on the annular shoulder with screen edges in frictional engagement with bowl side walls to prevent the screen's falling out and spanning the cross section of said bowl to contain smoking material in the bowl and limit access of the smoking material to the intersection of said first and second passages,

means forming an elongated pipe stem with a lip end and a securing end engageable with said bowl and comprising means forming a central metal tube with smooth interior surfaces having a minimum cross-section area equivalent to a .200 inch diameter cylinder and a surrounding insulating jacket,

the pipe further comprising means demountably securing the securing end of said pipe stem to the second of said first and second passages,

the two pipes being nested with confronting bowls, one in the other, to form a total air flow passage comprising in sequence the tube lip end, tube, first and second passage intersection of one of the pipes and then through a volume defined by the overlapping bowls and then through the first and second passage intersection, tube and tube lip end of the other pipe.

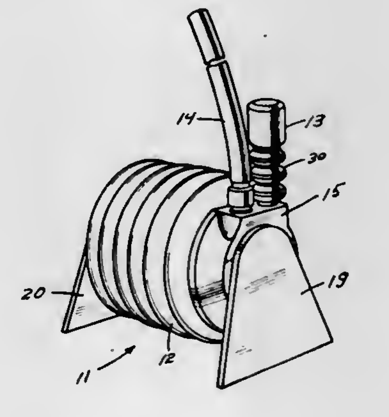
3,863,648
BELLOWS SMOKING PIPE

Glenn Thomas Cathey, 1106 E. Saginaw, Lansing, Mich. 48906

Filed May 2, 1974, Ser. No. 466,207

Int. Cl. A24f *13/04*

U.S. Cl. 131—186 **3 Claims**



1. In a smoking device, the combination comprising:

a. a resilient, partially collapsible flexible bellows body member defining a smoke expansion cooling chamber therein, said bellows body member provided with a smoke inlet check valve and a smoke outlet check valve in open communication with said cooling chamber;

b. A smoke generating bowl externally provided on said bellows body member in association with said smoke inlet check valve, said smoke generating bowl adapted to supply smoke through said smoke inlet check valve into said smoke expansion cooling chamber during expansion of said bellows body member;

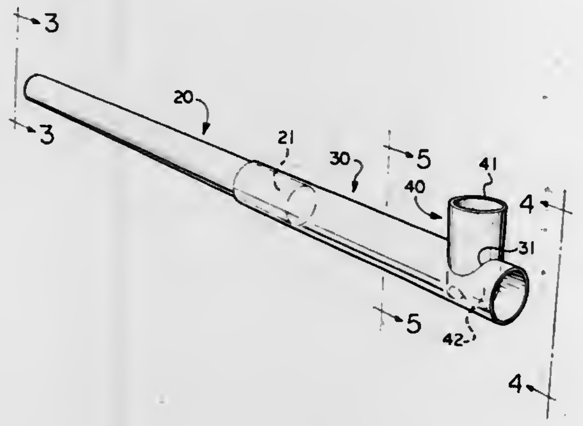
c. a mouth member in association with said smoke outlet check valve, said mouth member adapted to receive cooled smoke through said smoke outlet check valve from said smoke expansion cooling chamber during compression of said bellows body member;

d. resilient means adapted to expand said flexible body member when partially collapsed; and

e. handle members at each end of said bellows body member adapted to be manipulated to partially collapse the same, said handle members having means extending therefrom for supporting said smoking device on a horizontally disposed substantially flat surface.

3,863,649
SMOKER'S PIPE

Ralph S. Scharfy, 3226 Collingwood Blvd., Toledo, Ohio 43610
Filed Feb. 14, 1974, Ser. No. 442,600
Int. Cl. A24f *7/02*
U.S. Cl. 131—192 **4 Claims**



1. A smoking pipe comprising a hollow, generally elongate, tubular stem including a wall of preselected thickness, said wall including means providing an aperture, generally normal to the axis of said stem, and a bowl member of hollow configuration for receiving tobacco, said bowl snugly, slidably and removably fitting into said aperture means and also having means providing communication between the interior of the bowl and the interior of the stem, said bowl member having an inside configuration congruent to the outside of said stem member, permitting slidable reception of the extremity of said stem, whereby said bowl may be telescopically carried on the terminal end of said stem.

3,863,650
VARIABLE DEPTH HAIR COLORING APPLICATOR

Louis De Maria, 1191 S.W. Sixth Ave., Deerfield Beach, Fla. 33441
Filed Sept. 19, 1973, Ser. No. 398,711
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **2 Claims**

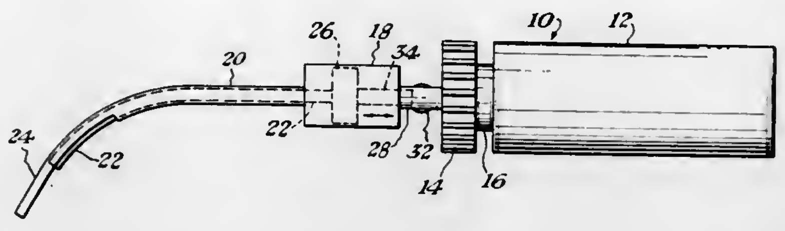
1. A comb dispenser for dyeing human hair uniformly comprising:

a fluid receiving container means for receiving dye;

a plurality of elongated hollow teeth, each of said teeth having a slotted free end portion longitudinally disposed;

a plurality of flexible tubes, each of said tubes disposed in a different respective tooth and coupled moveably therein;

a support means connected to said teeth, said inner tubes, and said container;

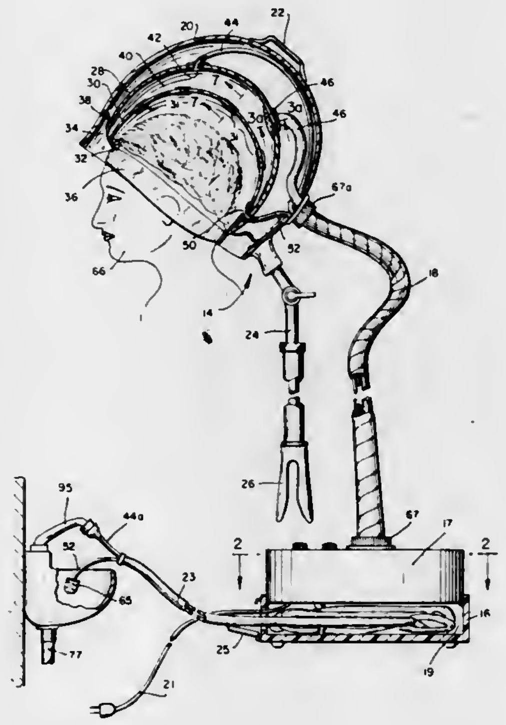


means coupled to said inner tubes and said support means for moveably adjusting the longitudinal position of said tubes within said teeth; and

conduit means connecting said inner tubes and in fluid communication with said container means.

3,863,651
AUTOMATIC HAIR WASHER, CONDITIONER AND DRYER COMBINATION

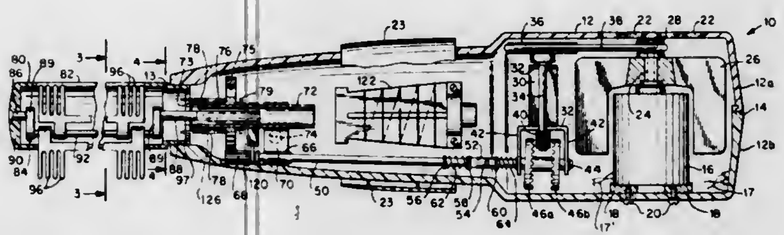
Vincent Vaiano, 116-30 127th St., South Ozone Park, N.Y. 11420
Filed Nov. 15, 1973, Ser. No. 415,980
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **10 Claims**



1. An automatic hair washer, conditioner and dryer comprising a base, a housing secured to said base, a post secured to said housing, a hood mounted on said post, a first semispherical shell spacedly mounted in said hood, a second semispherical shell mounted spacedly in said first shell and forming a chamber therebetween, means for supplying water to said chamber and the interior of said second shell, said second shell having a plurality of turbulence devices and a water outlet therein an air supply hose connected to said first shell soap supply means in said housing, soap and hair conditioner supply means in said housing, timing means in said housing for sequentially supplying water, soap, hair conditioner and air for drying a user's hair and blower means in said housing for forcing air into said second shell.

3,863,652
ELECTRICALLY DRIVEN HEATED HAIR CURLING OR SETTING DEVICE

Joseph P. Scivoletto, Brooklyn, N.Y., assignor to Malibu Personal Beauty Products, Inc., New York, N.Y.
Filed Aug. 31, 1973, Ser. No. 393,330
Int. Cl. A45d *24/00*
U.S. Cl. 132—11 A **8 Claims**



1. An electrically driven hair treating device comprising, in combination:

a. a first hollow housing;

b. a drive motor mounted in said first hollow housing, said drive motor including an output shaft;

c. a transmission system coupled to said drive motor through the output shaft thereof, said transmission system including an output pinion;

d. a drive gear rotatably mounted in said first housing and in meshing engagement with said output pinion for said transmission system;

e. a rotatable second hollow housing mounted in said first housing and coupled to said drive gear for rotation thereby, said second housing including at least one slot extending through the wall thereof;

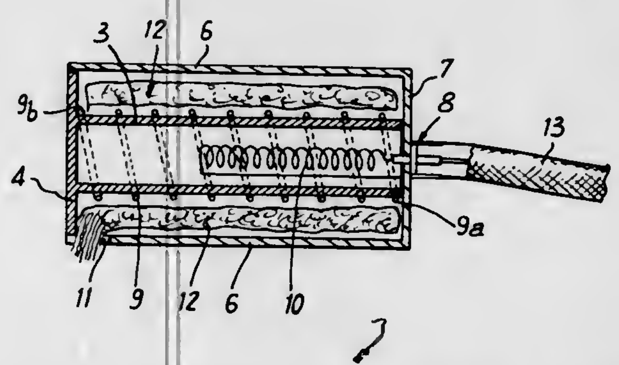
f. a non-rotatable shaft having first and second end sections mounted in said first housing and said second housing, respectively, and a mid section positioned eccentrically with respect to rotational axis of said second housing;

g. at least one hair treating member loosely mounted on said eccentric mid section of said non-rotatable shaft, the hair treating member being in alignment with and adpated to traverse said slot; and

h. means for selectively changing the direction of rotation of said housing.

3,863,653
METHOD FOR TREATING FIBERS BY SUBJECTING THEM TO HIGH FREQUENCY ELECTRIC FIELDS

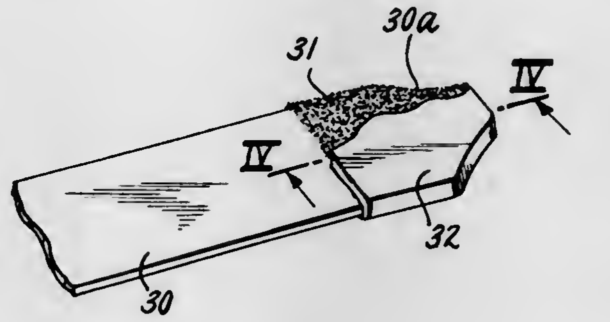
Georges Boudouris, Grenoble; Gregoire Kalopissis, Paris; Jean-Luc Levesque, Paris, and Paul Roussopoulos, Paris, all of France, assignors to Societe anonyme dite: L'Oreal, Paris, France
Continuation of Ser. No. 196,122, Nov. 5, 1971, abandoned. This application Sept. 21, 1973, Ser. No. 399,420
Int. Cl. A45d *7/00*
U.S. Cl. 132—33 **10 Claims**



1. Process of treating fibers which comprises the step of subjecting them to the action of a high frequency electromagnetic field characterized by the fact that the fibers to be treated are placed in a resonator connected through a transmission line to a high frequency generator which generates electrical power at a frequency substantially equal to the resonant frequency of said resonator.

3,863,654
COSMETIC APPLICATOR

Bruno P. Morane, Paris, and Jean Boulogne, L Hay Les Roses, both of France, assignors to Societe anonyme dite: L'Oreal, Paris, France
Filed Jan. 15, 1973, Ser. No. 323,423
Claims priority, application France, Jan. 18, 1972, 72.01515; Dec. 11, 1972, 72.44054
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **1 Claim**

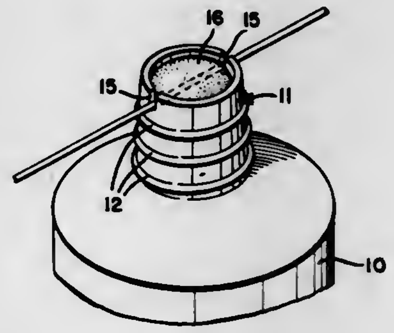


1. Cosmetic applicator comprising a flat strip of stiff material, one end of which is encircled by a thin layer of absorbent material adhesively secured thereto and having a substantially constant thickness, said layer being covered by a hard coating of lip rouge,

and comprising a thin coating of wax between said absorbent material and said lip rouge.

3,863,655
DENTRIFICE APPLICATOR METHOD

Richard K. Smith, 5500 Anne Ln., Dayton, Ohio 45459
Continuation of Ser. No. 181,184, Aug. 12, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 430,207
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 **5 Claims**



1. A method for applying a measured amount of dentrifice to tooth surfaces between the teeth comprising;

a. selectively applying dentrifice to part of a length of dental floss by

   1. manually pulling a length of dental floss from a dry sterile container,
   2. inserting said dental floss, at a space from the leading end, between two opposed open-ended slots, each approximately 0.12 to 0.13 inches deep and approximately 0.04 inches wide, which are formed integrally in the outlet neck of a tube,
   3. squeezing said tube until the toothpaste is at the upper edge of the neck, covering said dental floss, and
   4. passing the intermediate length of said dental floss through said slots, thereby coating said intermediate length with a measured amount of toothpaste while leaving the leading end and trailing end of the floss free of toothpaste,

b. inserting the coated portion of said dental floss between the teeth, and
c. moving said dentrifice coated dental floss so as to deposit said measured amount of dentrifice to the tooth surfaces between the teeth.

3,863,656

APPARATUS FOR COOLING AND DRYING SOLID MATERIAL IN GRANULAR OR POWDER FORM

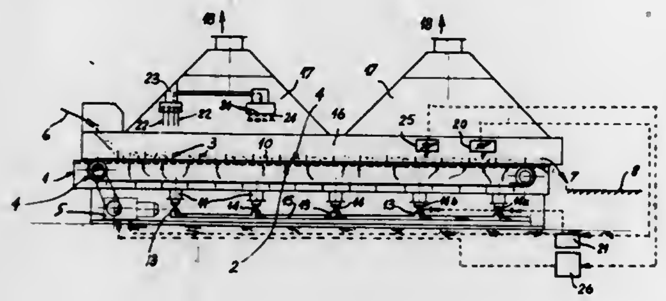
Gerhard Yves Richard, Precy sur Oise, France, assignor to Societe d'Application de Produits Industriels et Chimiques Sarl Departement SIGMA, Paris, France

Filed Nov. 30, 1971, Ser. No. 203,274

Claims priority, application France, Nov. 30, 1970, 70.43009

Int. Cl. B08b *3/02*

U.S. Cl. 134—57 R **5 Claims**



1. Apparatus for the continuous cooling of a powdery and/or granular solid material, such as foods, chemicals, minerals and foundry sand, to preferably room temperature and in a dry state, comprising:
- a trough provided with at least one horizontal or substantially horizontal perforated plate,
- conveyor means to move material deposited on one end of the said perforated plate along the perforated plate throughout the length thereof, the conveyor means including scrapers secured to an endless conveyor mechanism,
- a fluidization channel extending throughout the length of the perforated plate,
- air compressor means to direct an ascending flow of air upwardly through the perforations in the plate, the flow of air maintaining the said material in fluid suspension above the plate in the fluidization channel,
- spray nozzle means for spraying a liquid onto the said material in fluid suspension to dissipate heat thereby;
- a variable speed motor to drive said conveyor means,
- the said scrapers being positioned perpendicular to their direction of movement with the scrapers and flow of air imparting a whirling motion to the material during travel to provide uniform cooling,
- an outlet for the discharge of the material positioned adjacent one end of the said plate, and
- a temperature sensor positioned upstream of said outlet to determine the temperature of the material, the temperature sensor being connected to the variable speed motor to regulate the speed of travel of the material as a function of its temperature.

3,863,657

DISHWASHER AND SINK COMBINATION

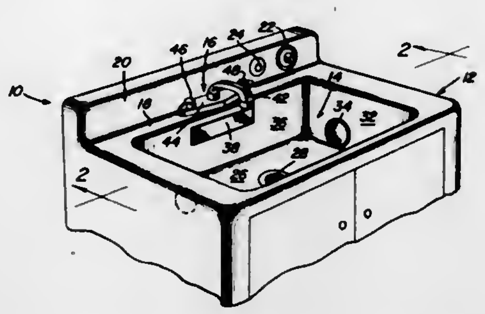
Willard Irving, P.O. Box 402, Dunbar, W. Va. 25064

Filed May 23, 1973, Ser. No. 363,109

Int. Cl. B08b *3/04*

U.S. Cl. 134—57 D **8 Claims**

1. In combination with a sink having a basin, a drain connected to the basin and a supply of water under pressure including a water outlet spigot, hot and cold water conduits and a manifold to which the spigot and the water conduits are connected, means for washing articles placed in the basin including receptacle means mounted on the basin for receiving water therefrom above a predetermined level, drain control means connected to the drain for selectively maintaining water in the basin and impeller means connected to the basin and the receptacle means for alternatively recirculating water and inducing flow of air through the basin, said basin including bottom, side and back walls, the impeller means being connected to the side walls and the drain means to the bottom wall, said receptacle means being mounted on the back wall and in fluid communication with the basin through an opening in the back wall.



3,863,658

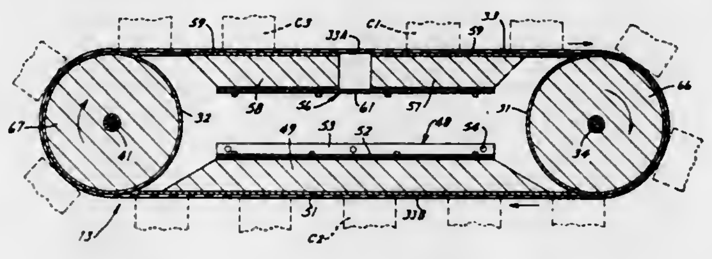
EMPTY CONTAINER WASHER

Kenneth D. Kramb, Portage; Richard L. Cramer, Kalamazoo, and Walter J. Isabell, Kalamazoo Township, Kalamazoo County, all of Mich., assignors to K.I.C. Incorporated, Kalamazoo, Mich.

Filed June 23, 1972, Ser. No. 265,504

Int. Cl. B65g *17/46;* **B67c** *1/06*

U.S. Cl. 134—131 **7 Claims**



1. A washing apparatus, particularly for washing magnetically attractable containers open at one end, comprising:
- housing means;
- conveyor means movable supported on said housing means for transporting containers, said conveyor means including a pair of spaced pulleys rotatably supported on said housing means and an endless conveyor belt extending between and supported on said pulleys;
- said endless conveyor belt including first and second spaced and substantially parallel belt reaches extending between said pulleys;
- first magnet means mounted on said housing means and positioned adjacent said first reach of said conveyor belt, said first magnet means being positioned closely adjacent the inside surface of said first reach for magnetically attracting and holding containers in engagement with said first reach;
- second magnet means mounted on said housing means and positioned closely adjacent the inside surface of said second belt reach for magnetically attracting and holding containers on said second reach;
- third magnet means associated with one of said pulleys for magnetically attracting and holding containers in engagement with the portion of the conveyor belt passing around said one pulley for permitting containers to be transferred between said first and second reaches;
- fourth magnet means associated with said other pulley for magnetically attracting and holding containers in engagement with the portion of the conveyor belt disposed in engagement with said other pulley for permitting containers to be transferred between said first and second reaches; and
- spray means including nozzle means positioned for spraying cleaning liquid into said containers when they are magnetically held on one of said reaches.

3,863,659

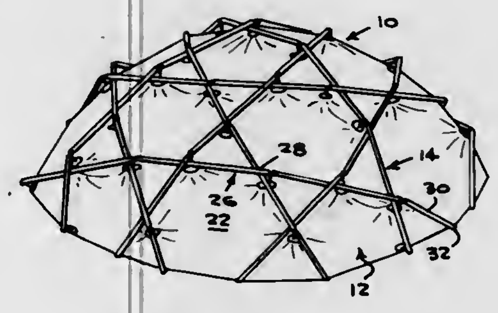
SHELTER STRUCTURE

Robert E. Gillis, R.R. No. 1, Golconda, Ill. 62938

Filed Mar. 19, 1974, Ser. No. 452,613

Int. Cl. A45f *1/16*

U.S. Cl. 135—4 R **9 Claims**



1. A shelter structure comprising:
- a skin having an inner side and an outer side;
- the skin having a series of apertures formed therein and extending therethrough;
- a strut assembly comprising a plurality of strut members, with said strut members arranged in rows;
- the strut members of each row being pivotally joined to one another at adjacent ends thereof, the rows being elongated;
- a first series of said rows in substantially parallel relation to one another, and a second series of said rows in substantially parallel relation to one another;
- the first and second series of rows being interwoven with the respective struct members thereof passing sequentially above and below one another;
- connectors depending from the strut members at spaced locations above the aperatures of the skins, said connectors including means engaged with the skins; and
- spring means interposed between the skin and the strut assembly, the skin and strut assembly being mutually supportive of one another.

3,863,660

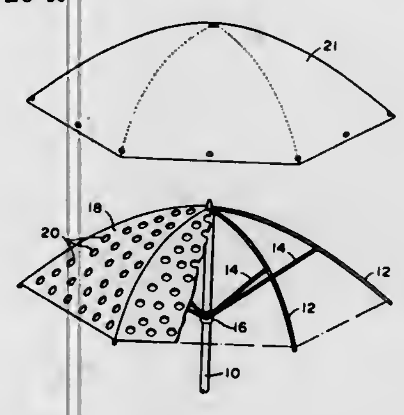
METHOD AND APPARATUS FOR CONTROLLING SUNLIGHT TRANSMISSION

Werner T. Glaeser, c/o Eltron Export Company, 159 Maiden Ln., Richmond, N.Y. 10038

Filed July 21, 1972, Ser. No. 273,852

Int. Cl. A45b *25/20*

U.S. Cl. 135—20 R **8 Claims**



1. An umbrella comprising,
- a central supporting pole,
- cover supporting means extending about and supported by said supporting pole,
- and cover means supported by said cover supporting means and including means defining a plurality of continuously open apertures free from material over substantially the entire surface of said cover means that transmit both sunlight and air therethrough for continuously exposing the user thereheneath to a portion only of the sunrays energy incident upon the top of said cover means and transmitting the flow of air therethrough,
- the remainder of said cover means consisting of portions that alternate with said apertures for preventing the transmission of sunrays and air therethrough.

3,863,661

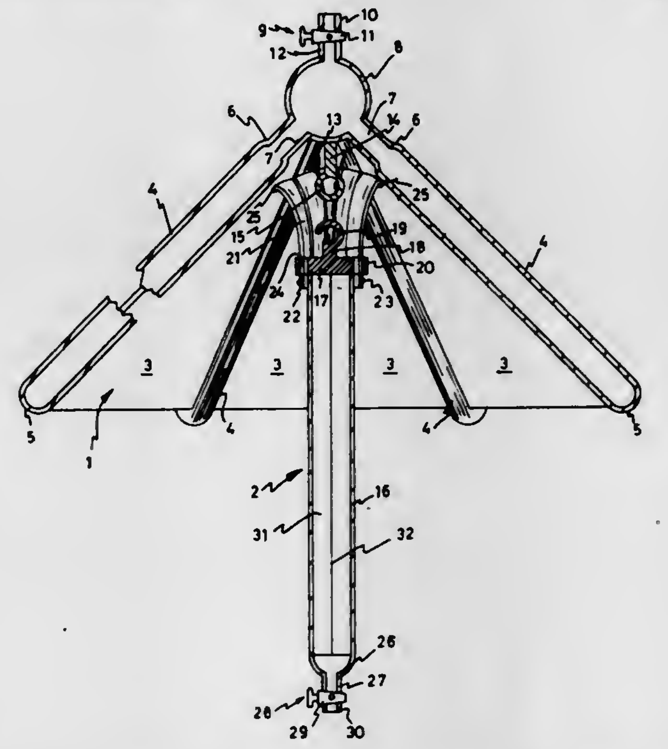
INFLATABLE UMBRELLAS

Carlos Mota Aburto, Donceles 86-1, Mexico

Filed May 21, 1973, Ser. No. 362,259

Int. Cl. A45b *19/02*

U.S. Cl. 135—20 B **9 Claims**



1. An inflatable umbrella which comprises, in combination, a foldable inflatable cone-like shield or cover member and a support member therefor, centrally engageable in supporting relationship thereto; said inflatable cone-like shield or cover member comprising a downwardly flaring cone-like panel, a plurality of radially evenly distributed elongated inflatable receptacles provided on said cone-like panel and forming a part thereof, said elongated inflatable receptacles having their outer ends closed and their inner ends adjacent the apex of said cone-like configuration being open, a plurality of inflation nozzle means integrally engaged to said open inner ends of said elongated inflatable receptacles, air distributing means connected to each one of said inflation nozzle means, said air distributing means being disposed on the outer top surface of said downwardly flaring cone-like panel in the region of the apex thereof, inflation air valve means connected to said air distributing means and hookable eye means extending downwardly from the inside center of said cone-like panel; and said support member comprising a body-engageable flexible member, a rigid circular plate means fixedly attached to one end of said body-engageable flexible member, hook means extending outwardly from the center of said circular plate means being engageable and disengageable with said downwardly extending hookable eye means of said inflatable cone-like shield or cover member and a plurality of strip-like stiffener members extending upwardly from the periphery of said circular plate means, said strip-like stiffener members when positioned against the undersurface of said cone-like shield or cover member when the latter is inflated extending beyond the reach of said hook means to bear against said undersurface and to thereby exert an opening pressure on said inflated cone-like shield or cover member.

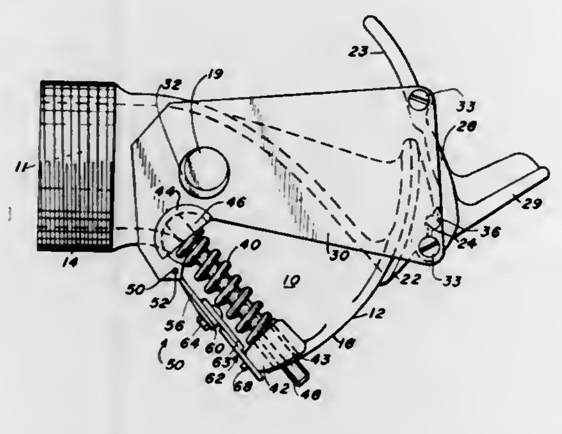
3,863,662
FUSIBLE LATCH FOR HOLDING OPEN A SELF-CLOSING VISCOUS LIQUID DRUM VALVE

William J. Zehr, Des Plaines, Ill., assignor to The Protectoseal Company, Bensenville, Ill.

Filed Dec. 13, 1973, Ser. No. 424,468

Int. Cl. F16k *17/40*

U.S. Cl. 137—75 **3 Claims**



1. A guillotine-type, self-closing drum valve having a body with a cylindrically-arcuate seat and sliding shoe supported on side arms centered on a trunnion axis passing through the discharge passage of the valve, which shoe is eccentrically actuated to close by compression springs acting on the side arms adjacent to the trunnion, and reacting against the body of the valve adjacent to the outlet of the discharge passage, and which shoe is normally loaded by said compression springs to pressure seal the shoe against the seat in the closed position wherein the improvement comprises:

a. a halter pivotally mounted on one end in each side arm outside the point of action of the compression springs from the trunnion axis on the side arm, and extending outside the body of the valve;

b. a fusible link fixedly connected to the halter at the other end and having an aperture at its free end; and

c. a pin fixedly mounted in the valve body adjacent the lower end of the outlet of the discharge passage for seating of the aperture of the fusible link thereon to hold the valve open against bias of the spring.

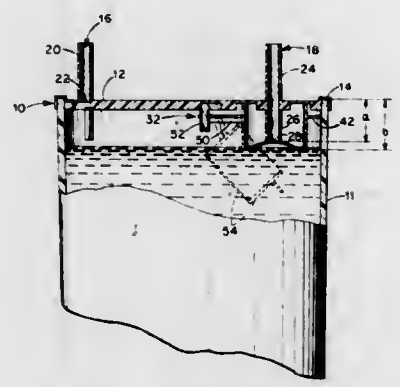
3,863,663
VACUUM FILLED LIQUID CONTAINER WITH CUT-OFF VALVE

Walter J. Bornhorst, Acton, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed May 17, 1973, Ser. No. 361,099

Int. Cl. A61m *1/00*

U.S. Cl. 137—205 **15 Claims**



1. A disposable vacuum operated liquid collection container adapted for use with a vacuum source, said container comprising in combination:

a. first means above the maximum liquid level for said container defining a fluid outlet port adapted for connection to the vacuum source;

b. Second means defining a liquid inlet for admitting liquid into said container by aspiration in response to action of an energized vacuum source connected to said outlet port;

c. a unitary sealing member cup-shaped for buoyancy defining a surface for sealingly covering said outlet port; and

d. flexible, unitary hinge means integral with said sealing member for mounting said sealing member internal of said container in operative position adjacent said outlet port, said hinge means permitting said member to depend below said port out of sealing position therewith and permitting movement of said member by floatation into said sealing position in response to a predetermined rise of liquid in said container, said member blocking communication to the vacuum source when in said sealing position.

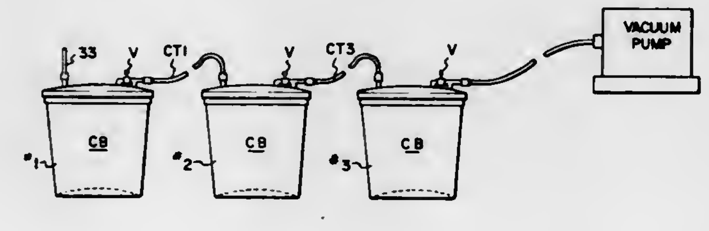
3,863,664
VACUUM-OPERATED FLUID BOTTLES IN SERIAL FLOW SYSTEM

LeGrand K. Holbrook, and David S. Ostler, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Division of Ser. No. 187,275, Oct. 7, 1971, abandoned, and a continuation-in-part of Ser. No. 876,438, Nov. 13, 1969, Pat. No. 3,620,408. This application Oct. 2, 1973, Ser. No. 402,750

Int. Cl. A61m *1/00*

U.S. Cl. 137—205 **2 Claims**



1. In combination, first and second fluid collection bottles each having a fluid inlet port, a free vacuum port, and a fluid-level controlled, valved vacuum port; a fluid inlet conduit connected to said fluid inlet port of said first bottle; conduit means for coupling said free vacuum port of said first bottle to said fluid inlet port of said second bottle; vacuum pump means; and conduit means connecting said valved vacuum port of said second bottle to said vacuum pump means, said valved vacuum port of said first bottle being selectively closeable.

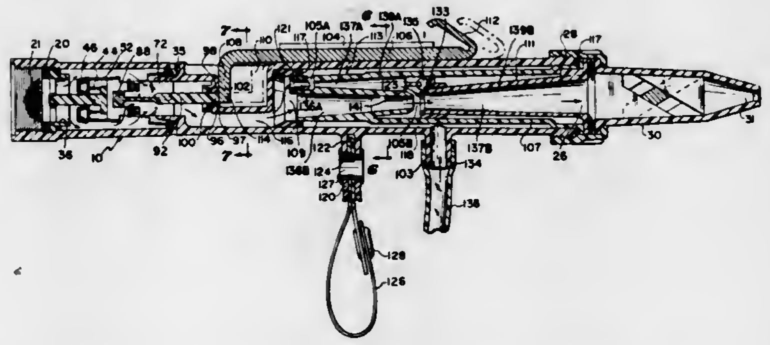
3,863,665
ANTI-BACK-SIPHONING WATER SUPPLY VALVE AND MIXER

Valentine Hechler, IV., 26 Meadow View Rd., Northfield, Ill. 60093

Division of Ser. No. 333,309, Feb. 16, 1973, abandoned. This application Mar. 21, 1974, Ser. No. 453,290

Int. Cl. F16k *45/00;* **F04f** *7/02;* **G05d** *11/02*

U.S. Cl. 137—218 **18 Claims**



1. In a safety device for potable water supply and distributing system having a manually valved outlet;

a housing defining a flow compartment connected releasably to the outlet having an inlet port, an outlet and a valve port opening to atmosphere disposed intermediate the inlet and outlet;

an inlet valve closing against the inflow of potable water at the inlet;

a vent valve in communication with said opening and opening inwardly to vent the compartment to atmospheric pressure;

means interconnecting and coordinating said valves to open one while closing the other; and

resilient means under pressure coacting with the interconnecting means to close said inlet valve when the opening force of supply water upon the inlet valve and the closing forces of water pressure in said compartment upon the vent valve drops below a predetermined gauge pressure.

3,863,666
ASSEMBLY FOR INSERTION IN A FLUID CONDUIT

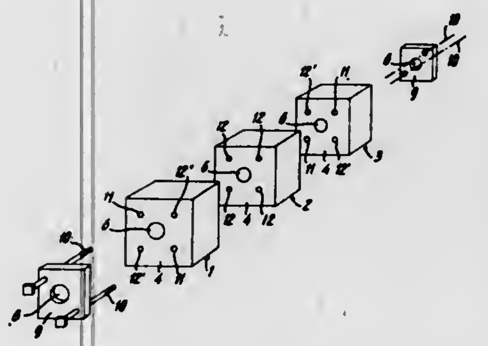
Adam Bonne, and Jorgen Hogh, both of Copenhagen, Denmark, assignors to A/S Teknova, Niva, Denmark

Filed Aug. 1, 1973, Ser. No. 384,422

Claims priority, application Denmark, Aug. 8, 1972, 3907/72

Int. Cl. F16l *23/00*

U.S. Cl. 137—269 **1 Claim**



1. An assembly to be inserted into a fluid conduit comprising

first, second and third components to be inserted in series into the conduit, each component having opposite external surfaces having a port defined therein to allow fluid flow therethrough,

a clamping flange on each of two fluid conduit sections between which the components are to be inserted, and

a pair of bolts for each flange,

characterized in that

said second component has four threaded bolt receiving holes on each of its opposite surfaces circumferentially spaced around the respective port in each surface, the centers of the holes defining a square,

said first and third components each have a pair of bores therethrough opening in each of said opposite surfaces and a pair of threaded bolt receiving holes in each of said surfaces, the centers of the bores and holes on each surface defining a square with the bores being located at diagonally opposite corners, and

the bolts project through the flange and through the bores in said first and third components to engage the threaded holes in said second component.

3,863,667
COMBINED SHEAR HEAD AND HOUSING PLUG

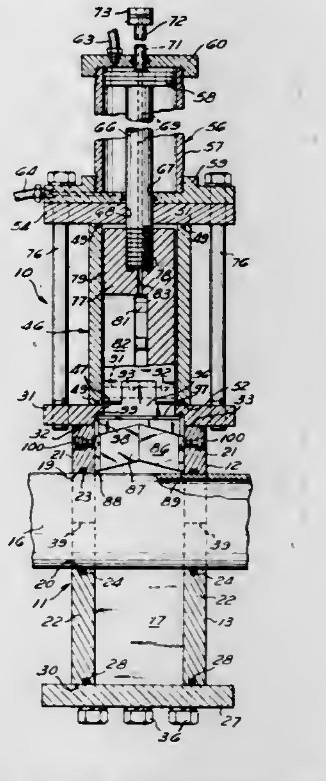
Gene T. Ward, Highland Heights, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Filed Mar. 21, 1973, Ser. No. 343,505

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—318 **13 Claims**

9. Apparatus for controlling fluid flow in a conduit in service comprising a fluid tight housing adapted to be sealingly secured on the exterior of a section of conduit, cutter means in the housing, an actuator external of the housing for extending the cutter means radially into a wall of the conduit and retracting the cutter means from the conduit, said actuator being operable through an aperture in the housing, guide surfaces in the housing for guiding the cutter means along a direction substantially radial to the conduit, said guide surfaces being solely outside of a zone defined by a radial projection of said aperture, said cutter means having aperture sealing surfaces outward of and peripherally continuous around said zone whereby said cutter means is adapted to seal said aperture when it is retracted from said conduit to a position where said sealing surfaces engage a portion of said housing surrounding said aperture, and means to separate said actuator from said cutter means when said sealing surfaces of said cutter means are in sealing engagement with said housing portion surrounding said aperture.



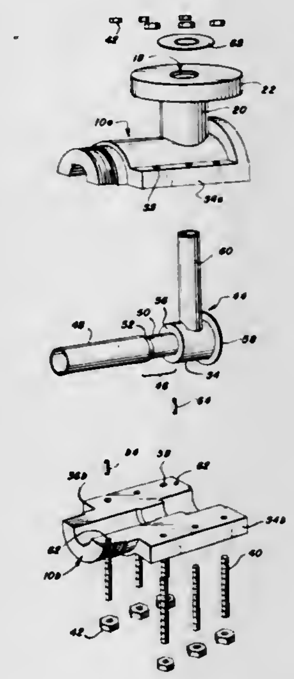
3,863,668
LINED FLUID FIXTURE

Frank J. Waters, Northridge, and Lawrence R. Good, Redondo Beach, both of Calif., assignors to Fansteel Inc.

Continuation of Ser. No. 198,153, Nov. 12, 1971, abandoned. This application Oct. 3, 1973, Ser. No. 403,321

Int. Cl. F16k *31/52*

U.S. Cl. 137—375 **18 Claims**



1. A corrosion resistant valve structure capable of withstanding internal pressures of 300 p.s.i.g. comprising:

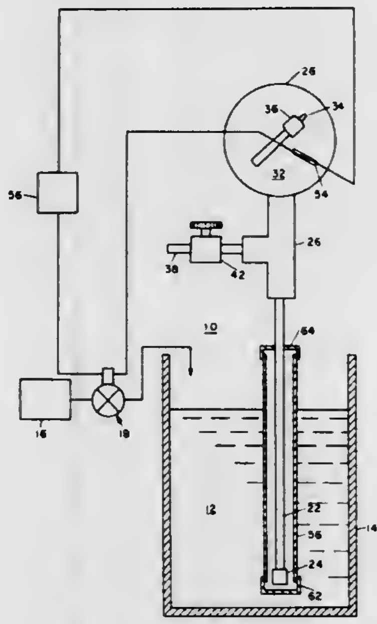
a split valve body, said valve body defining therein a passage;

said body being formed by at least two interconnected separable body sections, said body sections being separable to provide access to said passage;

a one piece, integral, preformed, rigid, thin-walled generally tubular, corrosion resistant liner disposed within said passage, the configuration of the outer surface of said liner being substantially identical to the configuration of said passage, said outer surface of said liner being in intimate contact with the passage defining surfaces of said valve body to inhibit relative movement therebetween, whereby said liner is securely held against relative movement with respect to said valve body.

3,863,669
LIQUID NITROGEN LEVEL CONTROLLER

Takanobu Ishida, Staten Island; Anthony M. Popowicz, Brooklyn, and Joseph Glickstein, New York, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed July 31, 1973, Ser. No. 384,326
Int. Cl. F16k *21/18*
U.S. Cl. 137—386 **3 Claims**



1. Apparatus for maintaining the level of cryogenic normally gaseous fluid which is at a liquefied temperature comprising:

a. means for containing the liquid forming a free surface;

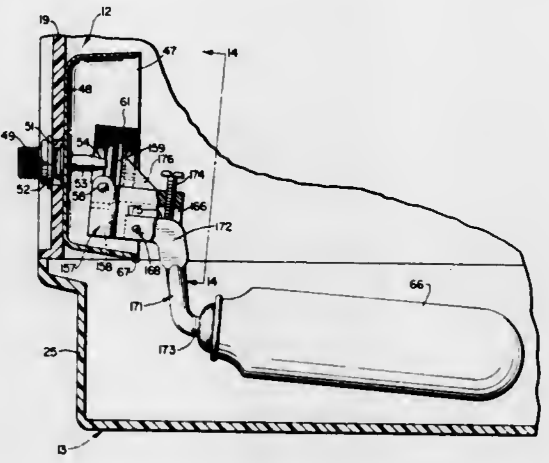
b. gas thermometer means having a sealed fluid containing tube with an end extending into said container means for partial immersion in said liquid and the other end extending out of said container, the aforesaid fluid within said tube at a pressure at which said fluid within said tube is liquid at the temperature of said liquid within said containing means so that said tube contains vapor and condensed vapor of said fluid;

c. solenoid valve means upon actuation for adding liquid to said container means; and

d. bourdon gauge means responsive to pressure within said tube having a magnetically operated switch for initiating said valve means to add liquid to said container means when the pressure within said gas thermometer means increases to a selected value due to declining level of said liquid causing vaporization of some condensed vapor therein, said valve means terminating the addition of liquid when said pressure decreases below said selected value due to rising level of said liquid causing condensation of vapor within said tube, said bourdon gauge means having a gauge pointer with a magnet thereon to energize and deenergize said switch upon reaching or receding from the aforesaid selected value, respectively.

3,863,670
HUMIDIFIER VALVE ASSEMBLIES

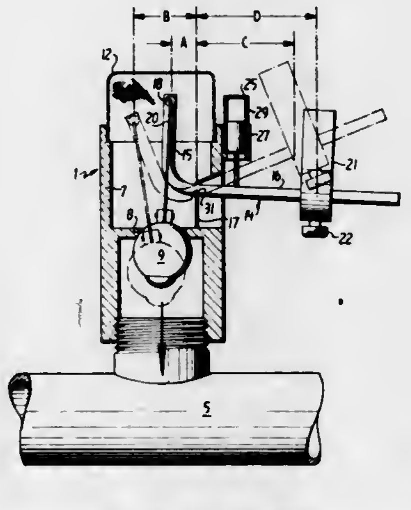
Richard J. Yeagle, 3823 Glen Hills Dr., Hartland, Mich. 48029
Continuation-in-part of Ser. No. 157,368, June 28, 1971, Pat. No. 3,774,588. This application May 24, 1973, Ser. No. 363,620
Int. Cl. F16k *31/24*
U.S. Cl. 137—437 **11 Claims**



1. A valve assembly for a humidifier comprising an integral combined inlet conduit, discharge nozzle and shroud member formed of water resistant shape retaining plastic, said shroud being cup-shaped and comprising a rear wall from opposite sides of which project said conduit and nozzle in generally horizontal alignment and comprising a continuous side wall laterally spaced from said nozzle and projecting away from said wall beyond said nozzle, a valve support member pivoted directly on a pin extending between opposed shroud side wall portions for rockably mounting said valve support member for movement about a generally horizontal axis that is disposed below the level of said nozzle and at right angles to said nozzle, said valve support member having a lower portion projecting rearwardly out of said shroud, a depending float attachment arm mounted on said lower portion of the valve support member externally of said shroud and having means on its lower end for securing it to a float, and a valve element having a resilient face for engaging the open end of said nozzle mounted on said valve support member.

3,863,671
VACUUM REGULATOR CONTROL

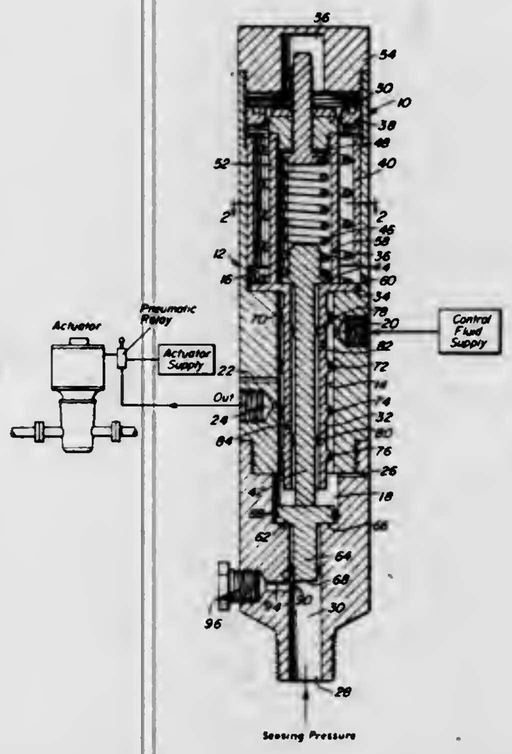
Bernard Heimann, Washington, Mo., assignor to Zero Manufacturing Company, Washington, Mo.
Filed Mar. 12, 1973, Ser. No. 340,298
Int. Cl. F16k *15/00*
U.S. Cl. 137—526 **8 Claims**



1. A vacuum regulator control for admitting air in a circuit under partial vacuum, comprising an inlet with a valve seat communicating with said circuit and a movable valve body positioned adjacent said seat to open and close same, an L-shaped lever member located above said seat and said member comprising an upwardly extending leg and a generally horizontal leg, said horizontal leg being supported on a fulcrum, said valve body being pivotably connected to the upper part of the upwardly extending leg at a location substantially above said fulcrum, said valve body being unseatable when the partial vacuum exceeds a predetermined amount and the pivot connection on said lever is moved to its lowermost position, said valve body being seatable in its uppermost position to maintain the partial vacuum in said circuit, said pivot connection being movable upwardly and in a non vertical direction towards said fulcrum, weight means on said horizontal leg, the position of said weight means being adjustable with respect to said fulcrum to vary the degree of partial vacuum needed to unseat said valve body.

3,863,672
DUAL ACTION PILOT

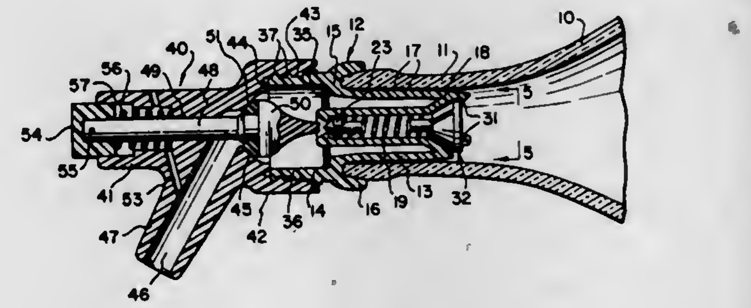
Gerold F. Theriot, Bourg, and Frank M. Hoofnagle, Houma, both of La., assignors to B.W.B. Controls, Inc., Houma, La.
Filed Sept. 6, 1973, Ser. No. 394,850
Int. Cl. F15b *13/042*
U.S. Cl. 137—596.18 **7 Claims**



1. A pilot valve comprising a valve body, a bore within said body, first and second valve pistons movably disposed within said bore, said pistons being movable both as a unit and independently of each other, a control fluid inlet in communication with said bore, a control fluid outlet in communication with said bore, a control fluid bleed port, a pressure sensing inlet in said body, biasing means biasing said first and second valve pistons to a first position responsive to sensing of pressure below a predetermined minimum pressure where said control fluid inlet is blocked and said control fluid outlet is communicated with said bleed port, pressure means moving said first and second valve pistons as a unit to a second position responsive to the sensing of a predetermined pressure at said pressure sensing inlet, at which second position said control fluid inlet is communicated with said control fluid outlet and said bleed port is blocked, said biasing means comprises first and second compression springs respectively associated with said first and second valve pistons, the second spring being of greater rigidity than the first spring and maintaining said second piston in a fixed position relative to said first piston in said first and second positions, the first spring controlling movement of said first and second pistons as a unit from the first to the second position, said pressure means moving said first and second valve pistons to a third position responsive to sensing an excess of pressure at said pressure sensing inlet thereby causing a blocking of said control fluid inlet, said pressure sensing means comprising a unitary pressure piston positioned inwardly of said pressure sensing inlet and operatively engaged with said valve pistons, and including means for independently adjusting the biasing force of the first spring without affecting the force required to move the second piston from the second piston to the third position.

3,863,673
CONTAINER DISPENSER VALVE

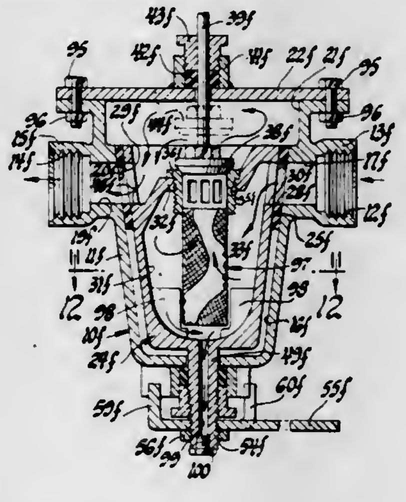
Robert E. Sitton, 4829 Bay Ct., Tampa, Fla. 33611
Filed Apr. 11, 1973, Ser. No. 350,238
Int. Cl. B67d *1/12;* **F16k** *47/16*
U.S. Cl. 137—614.11 **5 Claims**



1. Container dispensing apparatus comprising stopper means to be selectively mounted on a container having fluid therein, said stopper means including a body having spaced first and second valve seats, first and second spaced valve members carried by said stopper means, resilient means connecting said first and second valve members and simultaneously urging said first and second valve members in opposite directions, said first valve member being urged by said resilient means toward said first valve seat and normally being in engagement therewith, said second valve member being urged away from said second valve seat by said resilient means, means for maintaining said second valve member in spaced relationship with said second valve seat, means for selectively operating said first valve member, and said second valve member being urged toward said second valve seat by fluid within the container when said first valve member is operated, whereby said second valve member controls the flow of fluid through said stopper means when said first valve member is operated.

3,863,674
FLUID FLOW CONTROL VALVE

Paul J. Scaglione, 30180 Richmond Hill Dr., Farmington, Mich. 48024
Filed Sept. 18, 1972, Ser. No. 290,259
Int. Cl. F16k *29/00*
U.S. Cl. 137—614.16 **7 Claims**



1. A fluid flow control valve comprising:

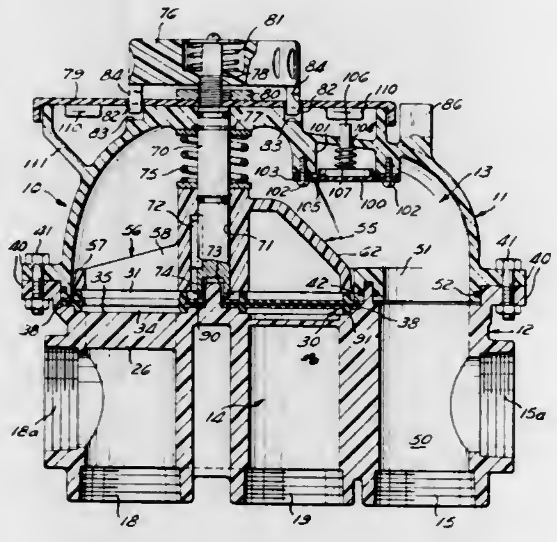
a. a valve body having a chamber therein;

b. an inlet passage communicating with said valve body chamber and an outlet passage co-axially aligned with said inlet passage and communicating with said valve body chamber;

c. a seal mens operatively mounted within said valve body chamber and being operative to seal around the inner ends of said inlet and outlet passages;
d. a rotatable valve operatively mounted in said valve body chamber in sealing engagement with said seal means;
e. means for holding said rotatable valve in a constant wedging and rotatable sealing relationship with said seal means in all positions of the rotatable valve on the seal means and during rotation of the rotatable valve;
f. said rotatable valve being provided with a pair of chambers formed therein by a sloping dividing wall with one of said chambers comprising an inlet chamber having an inlet port communicating with said inlet passage and an outlet port in said sloping dividing wall communicating with the other of said pair of chambers which comprises an outlet chamber, and said outlet chamber having an outlet port co-axial with the inlet port of said inlet chamber and communicating with said outlet passage, whereby fluid entering said inlet passage will pass through said rotatable valve inlet chamber and into said rotatable valve outlet chamber and thence into said outlet passage;
g. valve means operatively mounted in said valve body chamber above the rotatable valve for regulating the flow of fluid through the outlet port in said dividing wall from said valve body inlet chamber into said outlet passage;
h. means mounted exteriorly on the lower end of the valve body in a position below the rotatable valve and releasably connected to said rotatable valve for rotating said rotatable valve to a first position to permit said flow of fluid from said inlet passage and through said rotatable valve to said outlet passage and to a second position whereby the flow of fluid between the inlet passage and outlet passage is blocked by said rotatable valve; and,
i. said means for holding said rotatable valve in a rotatable sealing relationship with said seal including a cam means mounted exteriorly of the valve body and operatively attached to said means for rotating said rotatable valve by gradual inclination toward the seal means to retain the rotatable valve in a further wedged and locked position when it is rotated to said second position.

3,863,675
POSITIVE INTERLOCK FOR A MULTIPORT VALVE

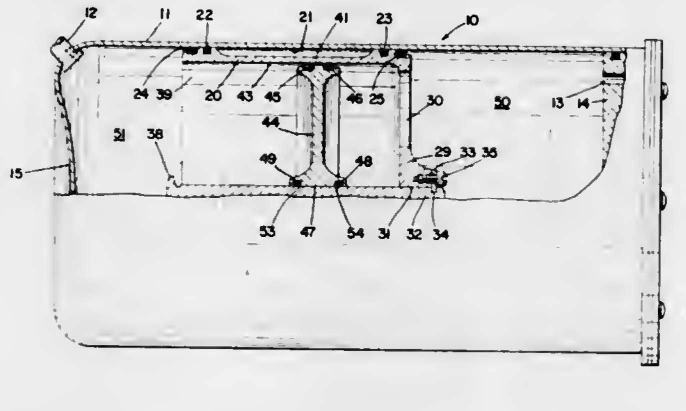
Arthur J. Wiltshire, Cleveland, Ohio, assignor to Pacific Fabrication, Inc., Chardon, Ohio
Filed Dec. 3, 1973, Ser. No. 420,957
Int. Cl. F16k *11/02*
U.S. Cl. 137—624.27 **4 Claims**



1. In a mulitport valve for selectively connecting a plurality of valve ports, comprising a valve body, a main pressure chamber defined by said body, inlet port means and a plurality of outlet port means in said valve body, and communicating with said chamber, valving means comprising a selector plate covering said outlet port means and having an aperture therein for providing selective fluid communication between said chamber and one of said outlet ports, and means for rotating said selector plate to provide said selective fluid communication, in combination therewith the improvement comprising pressure-responsive means fixed to said valve body and responsive to pressure in said chamber, and means responsive to said pressure-responsive means to lock said selector plate in a selected position and against movement in either direction when the pressure in said chamber is above a preselected value and to unlock said selector plate from its selected position when the pressure in said chamber is below said preselected value.

3,863,676
PISTON TYPE ACCUMULATOR

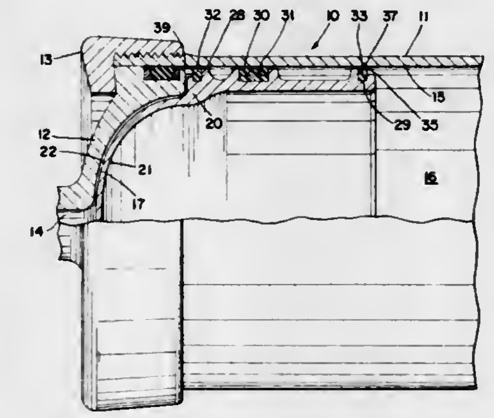
Manuel A. Tarsha, Santa Ana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Apr. 23, 1973, Ser. No. 353,763
Int. Cl. F16l *55/04*
U.S. Cl. 138—31 **11 Claims**



1. An accumulator comprising a cylinder closed at both ends and having an inner cylindrical surface, a main piston slidable in the cylinder in sealed engagement with said surface, said main piston having a bore forming a piston chamber open at each end to the interior of the cylinder, an axially extending cylindrical member mounted in the main piston, and an auxiliary piston slidably mounted on the member and in sealed engagement at its outer periphery with said bore.

3,863,677
ACCUMULATOR WITH COMBINATION GUIDE AND SEAL RING

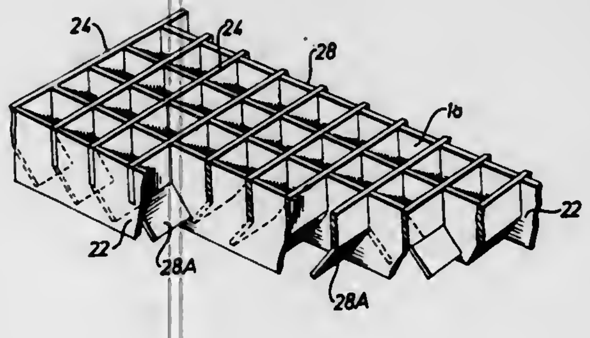
Manuel A. Tarsha, Santa Ana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Apr. 23, 1973, Ser. No. 353,795
Int. Cl. F16l *55/04*
U.S. Cl. 138—31 **4 Claims**



1. An accumulator comprising a shell having a cylindrical inner wall, a piston axially movable in said shell and dividing the interior of the shell into two chambers, a combination guide and seal ring carried by the piston at each end thereof in slidable contact with said wall for guiding movement of said piston, each of said combination rings being adjacent a respective one of said chambers, said combination ring projecting radially outwardly of said piston whereby it maintains adjacent portions of the piston out of contact with said wall, a main seal ring carried by the piston between said combination rings and in sealing contact with said cylindrical inner wall, means for conducting fluid from each of said chambers past the respective combination ring to said main seal ring, an annular valve face at one end of the shell sealingly engageable with a transverse surface on one of said combination rings when said piston is moved to said one end of the shell to prevent flow of fluid between said chambers around said piston in the event said main seal ring fails to maintain sealing contact with said cylindrical inner wall.

3,863,678
PIPE GRATING STRUCTURE

Birger Pettersson, Alta, and Bo Sangfors, Ektorp, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden
Filed June 21, 1973, Ser. No. 372,022
Claims priority, application Great Britain, Aug. 11, 1972, 37557/72
Int. Cl. F16l *55/00*
U.S. Cl. 138—37 **6 Claims**

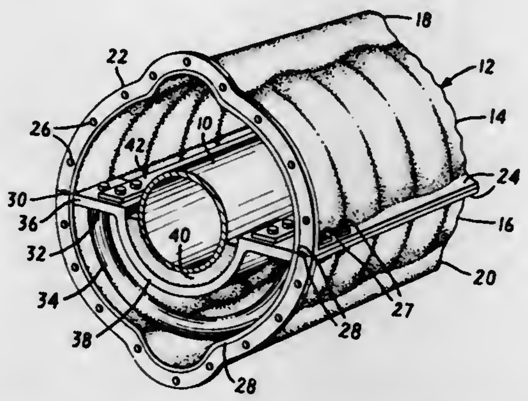


1. A grating structure adapted to be inserted in a conduit in order to homogenize a fluid flow passing therethrough, comprising a disc-like member traversed by passages which are arranged in parallel rows and which extend between the opposite major surfaces of the disc, the passages being curved and having inlet portions extending in a direction substantially parallel with the main direction of fluid flow over a distance which is substantial relative to the overall thickness of the disc-like member and having outlet portions communicating with respective inlet portions, the outlet portions of the passages of adjacent rows being inclined in opposite directions relative to the main direction of fluid flow through the disc.

3,863,679
PIPELINE ASSEMBLY

Joseph Young, Red Mill Rd., R.D. 2, Peekskill, N.Y. 10566
Filed Feb. 5, 1973, Ser. No. 329,532
Int. Cl. F16l *7/00*
U.S. Cl. 138—106 **13 Claims**

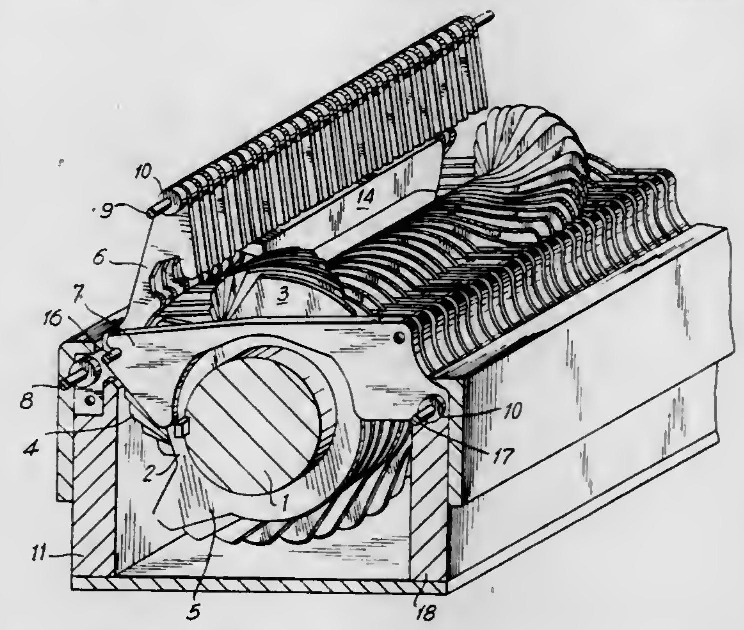
1. A pipeline assembly comprising:
a. a pipe for conveying fluid material;
b. a pipeline safety casing for receiving the pipe including:
  i. an elongated, tubular, corrugated casing body, and
  ii. A channel located adjacent the periphery of the casing body, the channel of the safety casing extending longitudinally along the casing body and communicating with the interior of the casing body to collect fluid material from within the casing body and to conduct the fluid material to a collection point; and
c. carriers for supporting the pipe generally concentrically in the casing body, each carrier including:
  i. a generally semicircular seat part formed to fit closely an interior circumference of the casing body, and



  ii. A cradle part having an arcuate portion formed to fit closely an exterior circumference of the pipe, the seat parts of the carriers conforming to the corrugations of the casing body so as to restrain movement of the carriers longitudinally along the casing body.

3,863,680
BEATING-UP DEVICE FOR LOOMS

Dmitry Vladimirovich Titov, 13 Parkovaya ulitsa 27, korpus 2, kv. 49; Nikolai Ivanovich Makachev, ulitsa Tsjurupy, 12, korpus 1, kv.27; Jury Pavlovich Sidorov, ulitsa Tsjurupy, 12, korpus 1, kv. 69; Tatyana Konstantinovna Filatova, B. Dorogomilovskaya, 31, kv. 290; Alexei Vasilievich Butuzov, Bolaklavsky prospekt, 38, kv. 61; Anatoly Grigorievich Selivanov, ulitsa Lobachevskogo, 44, kv. 59, all of Moscow, and Alexandr Mikhailovich Dyachkov, ulitsa Roschinskaya, 1, kv. 14, Klimovsk Moskovskoi oblasti, all of U.S.S.R.
Filed June 9, 1972, Ser. No. 261,544
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **3 Claims**



1. A beating-up device for looms, comprising: a drive shaft; toothed disks freely mounted on said shaft and movable translationally along said shaft, said disks being positioned angularly offset relative to each other so that their teeth form a helical surface, the teeth on each disk being grouped within an arc section of the disk, so that at the same time the addendum of one tooth is located at the fell of fabric, the addendum of another tooth entering between the warp threads of the shed section formed by the latter, said teeth on each disk having their heights increasing in the direction of the disk rotation, so that the first of the short teeth is adapted to shift the weft thread to the fell of the fabric and the last of the long teeth is adapted to beat it up; stationary separating plates having clearances therebetween for letting through the warp threads, each of said plates being mounted with a clearance relative to said disk and to the addendum of its tooth; auxiliary stationary plates having said disks placed therebetween, said auxiliary

plates entering the clearances between said separating plates for locating the disks opposite said auxiliary separating plates, the dedendum of said teeth coinciding with the axis of said shaft, the addendum of said teeth being formed along an arc by a single radius whose center coincides with the center of the addendum and being displaced relative to said axis of the shaft toward the beating-up tooth, the radius of the dedendum exceeding the distance between said shaft axis and the lower side of the shed but being less than the distance from said axis to the median line of said shed, the arc length at the addendum of the beating-up tooth having a magnitude so that at the beating up moment no more than four beating-up teeth arc in simultaneous contact with the weft thread, and the arc length at the addendum of each successive tooth of the same arrow of teeth is substantially 3–7 mm and equals the length of the arc substantially 20–35 mm between the upper and lower sides of the shed as measured along the generatrix of the addenda of teeth as described by a predetermined radius.

3,863,681
DEVICE FOR DRIVING MOVABLE MACHINE PARTS IN REVERSE DIRECTION

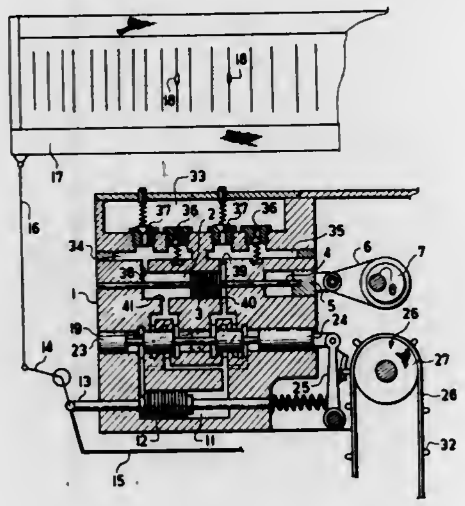
Pravomil Dostal, No. 910 U dubu, Tyniste nad Orlici, Czechoslovakia

Filed Jan. 22, 1973, Ser. No. 325,769

Claims priority, application Czechoslovakia, Jan. 20, 1972, 365-72

Int. Cl. D03c *13/00*

U.S. Cl. 139—55 **4 Claims**



1. A device for driving healds of weaving machines in reverse directions, comprising at least one double-acting driving piston unit and at least one double-acting driven piston unit, a by-passing circuit mutually interconnecting the two units, and a mechanism for controlling said by-passing circuit, the by-passing circuit comprising at least two separate branches of which each connects one point at one terminus of travel of the piston of the driving unit with two points at the termini of travel of the piston of the double-acting driven piston unit, a distribution sliding valve and a channel closed thereby mounted within the area of branching of the branches of said circuit, said channel mutually interconnecting both of said branches of the by-passing circuit, the branches of the by-passing circuit which are connected to the termini of the travel of the piston of the driving unit being provided at the points of mounting the distribution slide valve with pairs of parallel by-passing channels, in the center of each pair of said parallel by-passing channels there being by-passing channels of one branch of the by-passing circuit connected to one point at one terminus of travel of the piston of the driven piston unit, both sides of the said parallel by-passing channels of the other branch of the by-passing circuit being connected to the point at the other terminus of travel of the piston of the driven piston unit.

3,863,682
ELECTRICALLY OPERATED RACE FOR PRODUCING A TRAVELLING FIELD

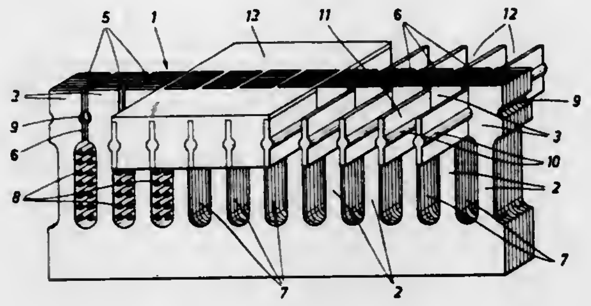
Walther Filter, Langenhagen, and Claus Filter, Rethem/Aller, both of Germany, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Etablissement Wanderfield & Co., Schaan, Liechtenstein

Filed July 16, 1973, Ser. No. 379,409

Claims priority, application Austria, July 27, 1972, 6455/72

Int. Cl. D03d *49/44*

U.S. Cl. 139—134 **6 Claims**



1. An electrically operated traveling field race for propelling a movable body along the race, the race comprising body propelling means consisting essentially of

1. a laminated iron core having a plurality of pole limbs defining slots therebetween and formed with pole heads having slot defining surfaces which define outer end portions of the slots, and
2. exciting electrically conductive winding means disposed in the slots and defining a plurality of poles each having a pole pitch and energizable to produce a magnetic flux emerging from the pole heads,
   - a. whereby the race has a plurality of pole pitch portions each of which corresponds to one of the pole pitches and
   - b. each pole pitch portion is adapted to be temporarily uncovered and at least partly covered by the movable body as it is propelled along the race,
   - c. the pole heads having a height sufficient to enable the slot defining surfaces thereof to pass substantially the entire magnetic flux produced in any uncovered pole pitch portion between the outer end portions of the slots from pole head to pole head, and
   - d. the reluctance presented to the magnetic flux passing through the outer end portions of the slots in any uncovered pole pitch portion exceeding the reluctance presented to the magnetic flux passing through the movable body in any at least partly covered pole pitch portion.

3,863,683
TIRE CORD FOR PNEUMATIC TIRES AND PNEUMATIC TIRES CONTAINING THE SAME

Raymond Guyot, Paris, France, assignor to Compagnie Industrielle de Textiles Artificiels et Synthetiques, Paris, France Continuation of Ser. No. 777,128, Nov. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 396,308, Sept. 14, 1964, abandoned. This application Sept. 10, 1970, Ser. No. 71,250

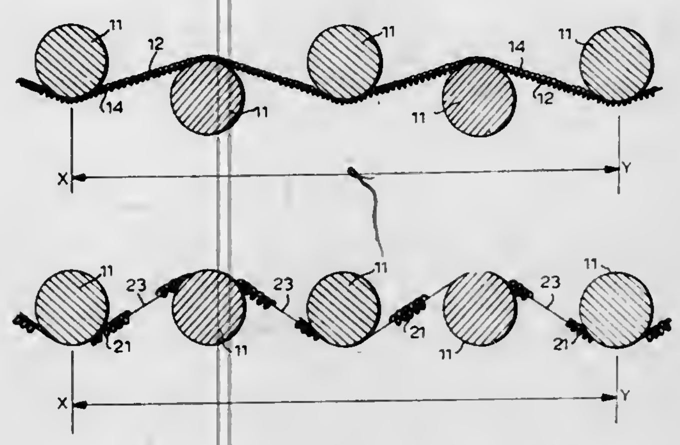
Int. Cl. D03d *15/00*

U.S. Cl. 139—426 R **5 Claims**

1. A method of preparing a woven fabric of parallel, equidistant cords for use in pneumatic tires comprising the steps of

weaving said cords as warp yarn with a composite weft yarn including a core yarn of low mechanical strength and a cover yarn helically wound around said core yarn, said cords being positioned in first and second planes after weaving with said composite weft yarn, and said core yarn having a length to maintain said cords in said first and second plane positions in parallel, equidistant relationship; and

processing said woven cords to position said cords in a single plane, said core yarn being broken during said processing step due to tensile stress caused by increased length requirement to maintain said cords in said parallel,



equidistant relationship exceeding said low mechanical strength of said core yarn and said cover yarn being straightened during said processing step and said cover yarn having a predetermined straightened length exactly equal to the length required to maintain said cords in said single plane in parallel, equidistant relationship.

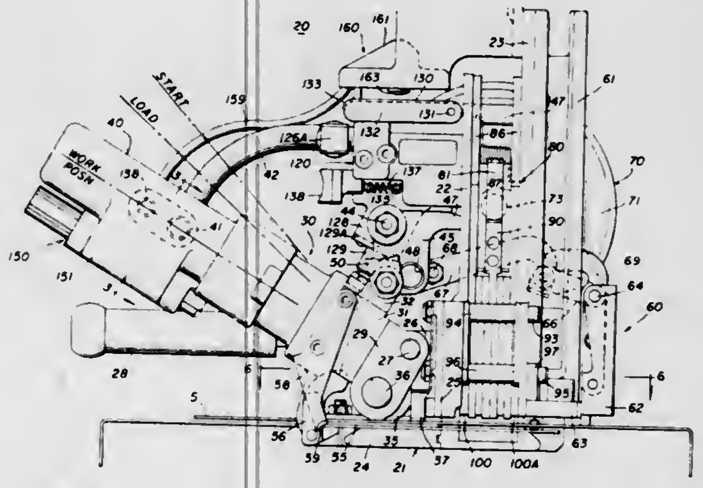
3,863,684
STRAPPING TOOL

James R. Simmons, Frankfort, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Nov. 23, 1973, Ser. No. 418,231

Int. Cl. B21f *9/02*

U.S. Cl. 140—93.4 **15 Claims**



1. A strapping tool for applying a length of strap around an object in a loop with overlapping end portions, said strapping tool comprising tensioning means for tensioning the loop of strap about the object, sealing mechanism for sealing together the overlapped portions of the tensioned strap to secure the strap about the associated object, strap guide means movable between a retracted position away from the strap loop and a strap guiding position alongside the opposite side edges of both of the overlapped portions of the strap for limiting lateral movement of both of the overlapped portions of the strap while freely accommodating longitudinal movement thereof, and means for moving said strap guide means to the strap guiding position thereof at the initiation of operation of said tensioning means after the end portions of the strap have been placed in overlapping relationship and for moving said strap guide means back to the retracted position thereof after sealing of the tensioned strap, whereby said strap guide means insures that the end portions of the strap loop will remain in overlapping relationship during tensioning of the loop to facilitate the sealing thereof.

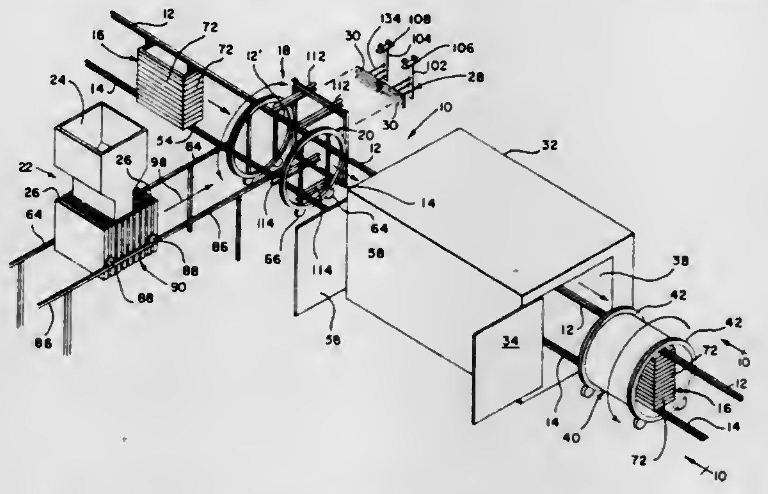
3,863,685
MONORAIL TRUCK TRAY LOADER

Ralph C. Parkes, Hancock & Lehigh Ave., Philadelphia, Pa. 19133

Filed July 10, 1973, Ser. No. 377,937

Int. Cl. B65b *1/04*

U.S. Cl. 141—1 **22 Claims**



15. The method of loading material in granular form comprising the steps of

- A. stacking a plurality of trays having open fronts horizontally in a tray truck;
- B. moving the tray truck in an initial position into a tray loading station;
- C. rotating the tray truck within the tray loading station to a loading position to face the open fronts vertically upwardly;
- D. moving a plurality of filled measuring pockets into the tray loading station and vertically aligning the pockets over the open fronts;
- E. dumping the material from the filled measuring pockets into the trays;
- F. rotating the tray truck to a leveling position; and
- G. leveling the material within the trays when the tray truck is maintained in the leveling position.

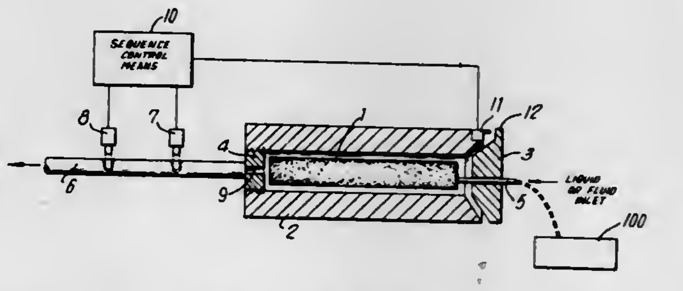
3,863,686
APPARATUS AND PROCESS FOR ARTICLE FILLING UNDER REDUCED PRESSURE

Edward I. Klein, Montreal, Quebec, Canada, assignor to V-Mark Automation Ltd., Montreal, Quebec, Canada

Filed Oct. 16, 1972, Ser. No. 297,935

Int. Cl. B43k *11/02*

U.S. Cl. 141—20.5 **2 Claims**



1. A method for adding a controlled amount of liquid or fluid to an absorbent article in an air tight container;

said container comprising first means being in airtight communication with a source of reduced pressure;

said container further comprising second means adapted to be placed in airtight communication provided under pressure;

wherein said first means comprises:

plug means in airtight engagement with said container at one end thereof, said plug means comprising an opening providing a communications path to said interior portion;

a flexible tube being in airtight connection with said plug adjacent to and surrounding said opening at said one end of said tube;

the other end of said tube being connected to said source of reduced pressure; and two spaced-apart clamp valves on said tube between said plug and said source of reduced pressure, comprising a first clamp close to said plug and a second clamp close to said source of reduced pressure; said method including the steps of activating said first clamp valve to close while said second valve remains open;

activating said source of reduced pressure to provide a zone of reduced pressure in said tube between said first valve and said source of reduced pressure;

activating said second valve to close thereby providing a zone of reduced pressure between said two valves;

activating said first valve to open;

whereby the reduced pressure in said zone between the two valves is communicated to the interior portion of said container to thereby reduce the pressure in said interior portion to draw said controlled amount of liquid or fluid into said container by a sucking action, said controlled amount of said fluid or liquid being absorbed by said absorbent article while said absorbent article is in said container.

3,863,687

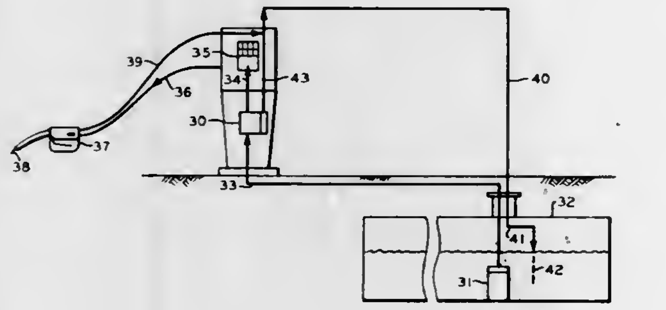
RETURN OF VAPOR CONDENSATE FORMED IN DISPENSING VAPOROUS LIQUID

Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1972, Ser. No. 250,295

Int. Cl. B65b *31/00*

U.S. Cl. 141—45 **5 Claims**



1. A means for removing a liquid from a reservoir in which it accumulates which comprises:

a. a reservoir for the accumulation of said liquid;

b. means for pumping a liquid to be dispensed from a place of storage to a place at which it is to be dispensed, said liquid yielding vapors during this dispensing and said vapors condensing, thus yielding said liquid which accumulates in said reservoir;

c. a conduit means for conveying said liquid to be dispensed to a place for its dispensing through which said means for pumping a liquid pumps said liquid, thus creating a fluid pressure; and

d. fluid pressure actuated means cooperatively functioning with said reservoir adapted to remove from said reservoir liquid accumulated therein and means operatively connected between said conduit means and said fluid pressure actuated means to transmit the pressure of said fluid in said conduit means to said fluid pressure actuated means.

3,863,688

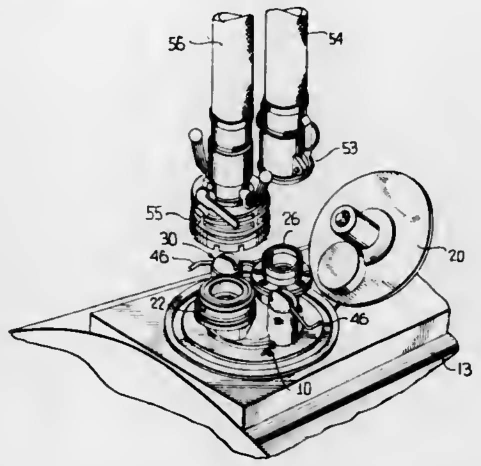
CONVERTOR FOR TOP LOADING TANKS

James S. Millar, Fountain Valley, and Charles V. Gardner, Santa Monica, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed June 18, 1973, Ser. No. 370,682

Int. Cl. B65b *3/18*

U.S. Cl. 141—59 **16 Claims**



1. A convertor for use in filling a tank with liquid through an opening in the tank, the convertor including a closure plate sealingly engageable with the tank for closing said opening, latch means carried by said convertor and engageable with the tank for locking the closure plate to the tank, a fitting on said closure plate for receiving a flow line, and actuator means for said latch means movable between a release position in which the latch means interferes with the attachment of the flow line to said fitting and a lock position in which the latch means permits said attachment.

3,863,689

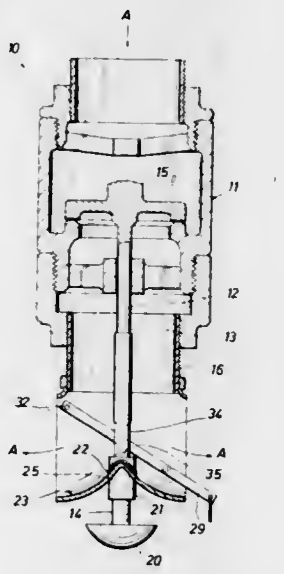
SPLASH PREVENTOR FOR TANK TRUCK LOADING RACK

Donald W. Lanning, Friendwood; Leonard J. Lambin, and John G. Pratt, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 1, 1972, Ser. No. 285,946

Int. Cl. B65b *3/02;* **B67c** *3/02*

U.S. Cl. 141—115 **4 Claims**



1. A device for preventing splashes during tank filling operations, said device comprising:

a valve assembly including a check valve having a poppet with a shaft extending downwardly therefrom and a discharge port therethrough

a fluid deflector disposed at the lower end of the device adjacent the discharge port of said check valve and in line therewith;

means for connecting said deflector to said check valve; said poppet valve shaft including a shaft extension extending through said deflector and being connected at its upper end to said poppet shaft, said poppet shaft extension having a poppet shaft tip at its lower end; and

manually-operable drain lever means operatively engaging said valve shaft and extending to a point laterally outside said device for the operation of said valve.

3,863,690

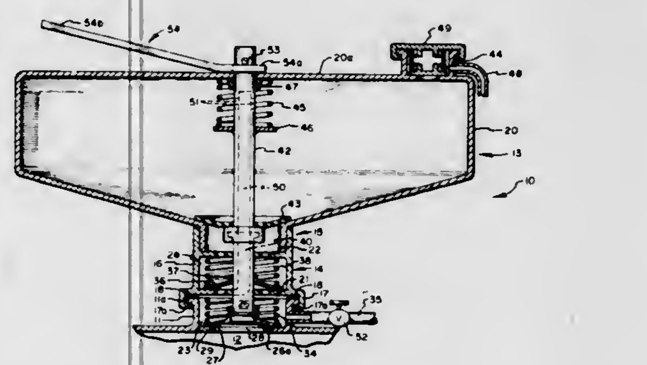
RADIATOR FILLER

John O. Dean, 370 N. 300 E., American Fork, Utah 84003

Filed June 11, 1973, Ser. No. 368,508

Int. Cl. B65b *3/18*

U.S. Cl. 141—364 **9 Claims**



1. A radiator filler comprising

a valve assembly including a valve housing;

connection means for coupling said valve housing into a cooling system of an internal-combustion engine;

valve means within said valve housing for selectively opening and closing off fluid passage therethrough;

a filler tank housing having a depending neck portion;

means for connecting said depending neck portion to said valve housing above said valve means;

a filler opening in said filler tank housing through which liquid is introduced into said tank housing;

cap means for releasably closing said filler opening;

a filler tube slidably extending through said filler tank housing and into said neck portion;

filler tank means secured to said filler tube and arranged to close said filler tank neck portion to control liquid passage from said filler tank housing to said upstanding first housing around said filler tube;

means for coupling said valve means in said valve housing to said filler tube such that movement of said filler tube will open said filler tank valve means and said valve means in the valve housing; and

means for admitting pressure from said valve housing to an upper portion of said filler tank housing when said valve means in said housing is opened.

3,863,691

CONTOUR COPYING LATHE

Erich Schmidt, Wien, Austria, assignor to Maschinenfabrik Zuckermann Komm-Ges. Wien, Wien, Austria

Filed Mar. 7, 1973, Ser. No. 338,814

Claims priority, application Austria, Mar. 10, 1972, 2064/72

Int. Cl. B23b *3/28*

U.S. Cl. 142—7 **6 Claims**

1. A contour-copying machine comprising:

means for supporting a model and a workpiece rotatably about parallel respective model and workpiece axes;

means for rotating said model and said workpiece about their respective axes at a first peripheral speed;

means defining a pivot axis substantially orthogonal to said model and workpiece axes;

means for relatively displacing said pivot axis and said model and workpiece axes at a feed speed parallel to said model and workpiece axes;

a model arm swingable about said pivot axis and having a feeler and engageable with said model;

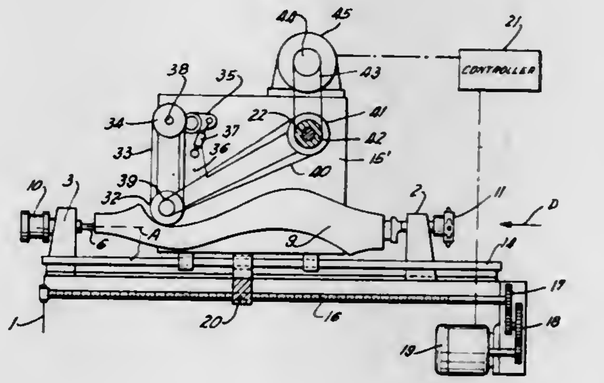
a workpiece arm pivotal about said pivot axis and angularly fixed to said model arm, said workpiece arm having a tool and engageable with said workpiece;

means for urging said feeler end and said tool end against said model and said workpiece, respectively;

a tool at said tool end of said workpiece arm rotatable about a tool axis transverse to said workpiece axis and parallel substantially to said pivot axis and comprising a rotatable drum, an endless sanding belt spanned over said drum, and means on said workpiece arm for maintaining said belt tight about said drum;

means for rotating said tool drum about said tool axis at a second peripheral speed many times greater than said first peripheral speed and said feed speed for machining said workpiece and reproducing therein the contours of said model;

means defining a second pivot axis transverse to said model and workpiece axes;



means for relatively displacing said second pivot axis and said model and workpiece axes at said feed speed parallel to said model and workpiece axes;

a second model arm pivotal about said second pivot axis and having a feeler end engageable with said model;

a second workpiece arm pivotal about said second pivot axis and angularly fixed to said second model arm, said second workpiece arm having a tool end engageable with said workpiece;

means for urging said feeler end and said tool end of said second arms against said model and said workpiece, respectively;

a second tool at said tool end of said second workpiece arm and rotatable about a second tool axis; and

means for rotating said second tool about said second tool axis, said second tool being disposed ahead of the first-mentioned tool with reference to the direction of relative displacement of said second pivot axis, said second tool having a coarser material-removal characteristic than said first tool.

3,863,692

BARK STRIPPING MACHINE

Yoshiaki Hasada, Asahikawa, Japan, assignor to Eho Industries Co., Ltd., Hokkaido, Japan

Filed July 27, 1973, Ser. No. 383,144

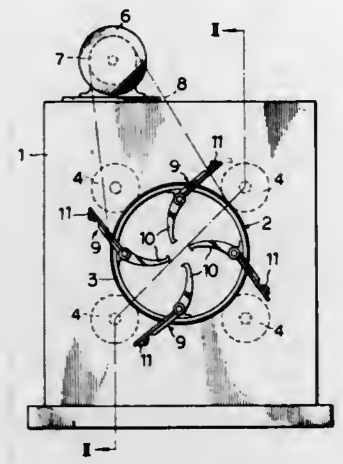
Claims priority, application Japan, Oct. 21, 1972, 47-104855

Int. Cl. B27l *1/00*

U.S. Cl. 144—208 E **4 Claims**

1. A bark stripping machine comprising a rotary drum and a plurality of knives, each of said knives having a cutting member at one end, a wing member at the other end thereof

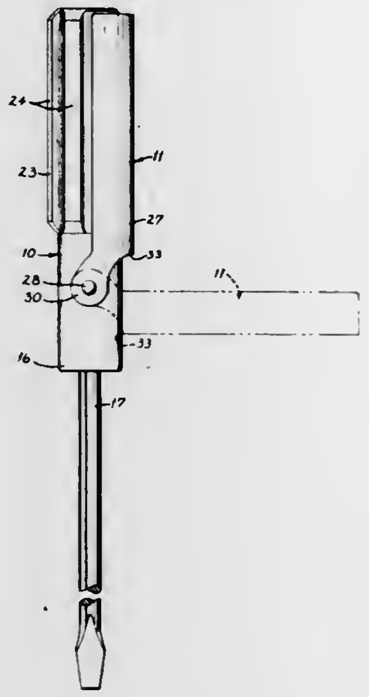
and a weight detachably mounted on said wing member, said knives being mounted on the inner peripheral wall of said



rotary drum in such a manner that each said cutting member is pivotable toward the center of the rotary drum.

3,863,693
COMBINATION HANDLE AND HAND LEVER FOR SCREWDRIVERS

Roy I. Carriker, 95 E. Ice Harbor Dr., Pasco, Wash. 99301
Filed Feb. 4, 1974, Ser. No. 439,230
Int. Cl. B25b *15/02;* **B25g** *1/00*
U.S. Cl. 145—50 R **1 Claim**



1. A combination handle and hand lever for a screwdriver comprising:

an elongated handle body of electrically non-conductive material having a continuous semi-cylindrical peripheral surface extending between ends of said handle along one side of a central longitudinal handle axis and a hand-grip surface extending along the remaining handle surface on the other side of said axis;

socket means at one end of said handle for rigidly mounting a screwdriver shank coaxially with said handle axis;

a semi-cylindrical lever of magnetic metal pivotably mounted to the handle for free pivotal movement about a pivot axis perpendicular to and intersecting the handle axis and having a concave inner surface formed about a lever axis complementary to the semi-cylindrical peripheral surface of the handle and a convex outer peripheral surface concentric to the inner surface;

an abutment surface on the lever radially spaced from the pivot axis;

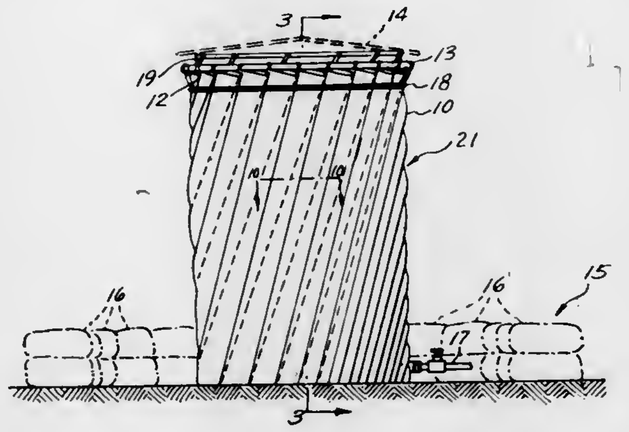
whereby the lever is pivotable to a closed position wherein the concave inner surface is located adjacent to and partially overlapping the semi-cylindrical peripheral surface of the handle with the lever axis and handle axis coaxial, and to an open position wherein the abutment surface is pivoted to engage the semi-cylindrical peripheral surface and the lever axis is substantially perpendicular to the handle axis; and

magnet means adjacent a remaining end of the handle for releasably securing the lever in the closed position:

said pivot axis being defined by a wrist pin extending through a complementary aperture in the handle body at a location thereon clear of the socket means to thereby electrically insulate the lever from a screwdriver shank.

3,863,694
DEPLOYABLE SYSTEM FOR CONTAINING OIL SPILLS

Edwin N. Fisher, 7632 Wandering Dr., Anchorage, Alaska 99502
Filed Sept. 22, 1972, Ser. No. 291,255
Int. Cl. B65d *65/02*
U.S. Cl. 150—1 **9 Claims**



1. A deployable containment system for containing spills from a storage container, comprising:

a. a deployable substantially planar diaphragm formed of relatively flexible material and having a radial dimension substantially equal to the radial dimension plus the height of said container so that said diaphragm is capable of containing substantially the entire contents of said container;

b. said diaphragm disposed beneath said container and suspended from and extending substantially to the upper edge of said container; and

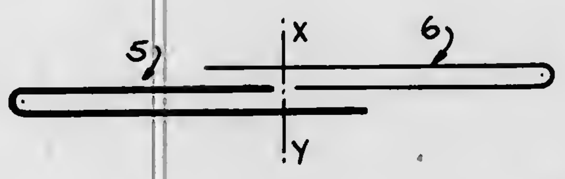
c. means for suspending said diaphragm from the upper edge of said container and holding said diaphragm substantially tightly against the outer surface of said container in the initially installed undeployed condition; so that any leak or spill of the contents of said storage container will be contained within said diaphragm and said diaphragm will deploy downwardly and expose the surface of said container as it becomes filled with said contents.

3,863,695
PNEUMATIC TIRES AND BREAKERS THEREFOR

Henri J. Mirtain, Compiegne, France, assignor to Uniroyal, a Societe Anonyme, Clairoix, France
Filed June 6, 1973, Ser. No. 367,468
Claims priority, application France, July 6, 1972, 72.24526
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 FP **13 Claims**

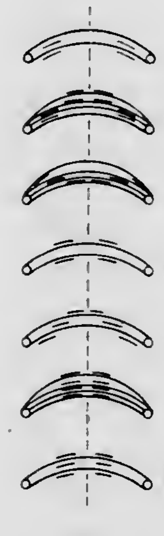
1. A pneumatic tire comprising a radial ply carcass having a crown region, a tread overlying said crown region, and a reinforcing breaker interposed between said tread and carcass, said breaker comprising a first folded ply having a fold region proximate one circumferential edge of said tread, and a second folded ply having a fold region proximate the other

circumferential edge of said tread, said fold regions of said first and second plies, respectively, dividing said plies each into a pair of webs, said webs of said first ply and said webs of said second ply cooperatively defining in cross-section a substantially S-shaped array wherein one web of said first ply and one web of said second ply lie in an intermediate mutual circumferential plane and have respective non-overlapping marginal edges confronting one another in spaced relation which define an annular gap therebetween, said one web of said first ply having physical characteristics different from said one web of said second ply in said intermediate mutual circumferential plane, whereby said breaker displays asymmetrical physical characteristics relative to a median equatorial plane thereof at least in said intermediate circumferential plane, said first and second plies each including a plurality of reinforcing cords therein, the cords in said first ply having a greater diameter than the cords in second ply.



3,863,696
MINI-PLY IMPROVED PNEUMATIC TIRES

Lawrence R. Sperberg, 6740 Fiesta Dr., El Paso, Tex. 79912
Continuation of Ser. No. 102,023, Dec. 28, 1970, abandoned, which is a continuation of Ser. No. 695,932, Jan. 5, 1968, abandoned. This application Oct. 5, 1972, Ser. No. 295,142
Int. Cl. B60c *9/06*
U.S. Cl. 152—356 **13 Claims**



1. In a pneumatic tire having spaced beads, a tread portion, a main carcass ply which extends from bead to bead to form a sidewall and which supports the tread portion, with said sidewall including a shoulder area thereon, the improvement comprising:

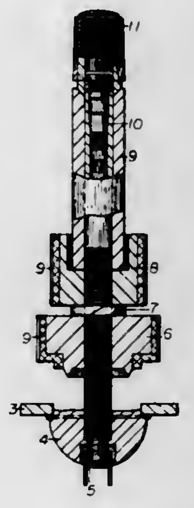
two mini-plies for imparting structural rigidity into the main carcass ply; each of said mini-plies being comprised of an individual circumferentially extending reinforcing strip lying parallel to one another and adjacent to the main carcass ply;

each of said mini-plies being spaced apart from each other and from the equatorial plane of the tire and from the tire beads and positioned in the shoulder region so as to decrease the bend point in the shoulder area as the tire contacts a supporting surface;

each of said mini-plies including two superimposed oppositely biased individual plies of tire cord material disposed at unlike angles relative to the equatorial plane of the tire.

3,863,697
INSTANT VALVE INSERT

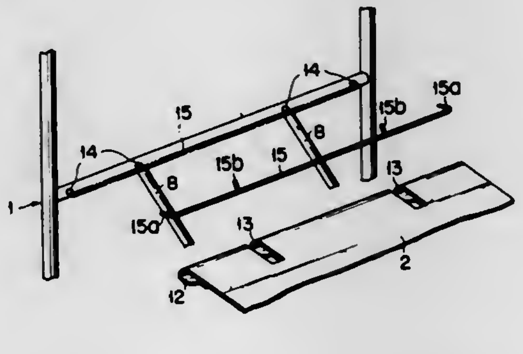
Roland Clough Brown, 425 Stratford Ct., Del Mar, Calif. 92014
Filed Dec. 17, 1973, Ser. No. 425,238
Int. Cl. B60c *29/00*
U.S. Cl. 152—427 **5 Claims**



1. In combination with an old valve plug as broken off from the old valve stem and remaining in the hole of the wheel flange of a vehicle with a tubeless tire, an instant valve insert, comprising a valve stem with a valve cap and a valve spring assembly, fitted on the said old valve plug in the said hole in the said wheel flange from the outside with air-tight clamping and locking means for securing the said valve insert to the said old valve plug at the opposite end of the said instant valve insert from the said valve cap, and fitted with air-tight anchoring means to assist the said clamping and locking means in securing the said old valve plug in the said hole in the said wheel flange of the said vehicle permanently and rigidly to the said instant valve insert.

3,863,698
CHAIR WITH A DETACHABLE SEAT

Suekichi Uchida, Aza Gonishi, Japan, assignor to Uchida Sharyo Co., Ltd., Nagoya-shi, Japan
Filed Jan. 4, 1974, Ser. No. 430,658
Claims priority, application Japan, Mar. 10, 1973, 48-30252
Int. Cl. A47c *5/06*
U.S. Cl. 160—327 **6 Claims**



1. A chair having a detachable seat comprising in combination

a. a frame assembly including a pair of side frames and a pair of lateral bars rigidly connected to the respective side frames, said respective lateral bars having a plurality of engaging holes longitudinally arranged in a line and spaced apart at predetermined intervals;

b. a seat having both sides doubled back to provide bag-like portions adapted to be wrapped around the respective lateral bars; and

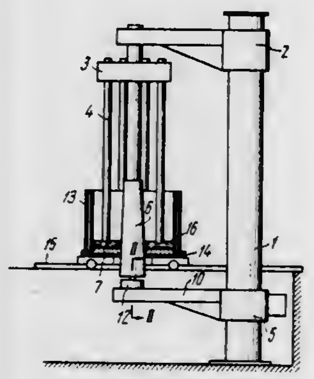
c. a pair of fixing bars inserted into the respective bag-like portions of the seat and having two groups of engaging projections projecting normal to the axis of the fixing bar and engaged in said engaging holes of the lateral bar;

d. said fixing bars, prior to assembly, having one group of the engaging projections differing in a relative angle from the other group of engaging projections so that, when the engaging projections of said one group are engaged with the respective holes of said lateral bars, the engaging projections of said other group are forced into the corresponding holes of said lateral bars, in a direction that the relative angle to the projections of said one group is decreased, whereby the seat is removably fixed to the lateral bar through the fixing bar.

3,863,699
PLANT FOR THE ELECTROSLAG MELTING OF HOLLOW INGOTS

Boris Izrailevich Medovar, ulitsa A. Barbjusa, 22/26, kv. 109; Valery Evgenievich Lanevsky, ulitsa V. Kuchera, 2, kv. 8; Jury Fedorovich Alferov, bulvar Lepse, 29, kv. 64; Rudolf Solomonovich Dubinsky, Politeknicheskaya ulitsa 5, kv. 209; Mikhail Elevich Berezovsky, ulitsa Lomonosova, 21/14, kv. 54; Leonty Vasilievich Chekotilo, ulitsa A. Barbjusa, 22/26, kv. 64; Leonid Viktorovich Pavlov, ulitsa Borschagovskaya, 234, kv. 6, all of Kiev; Veniamin Alexandrovich Ishunkin, ulitsa Tolbukhina, 7, kv. 142, Moscow; Anatoly Ivanovich Shevtsov, ulitsa Vorovskogo, 5, kv. 9, and Semen Yakovlevich Grinshpon, ulitsa Butova, 128, kv. 37, both of Kulebaki Gorkovskoi oblasti, all of U.S.S.R.

Filed Dec. 11, 1973, Ser. No. 423,750
Int. Cl. B22d *27/02*
U.S. Cl. 164—252 **2 Claims**

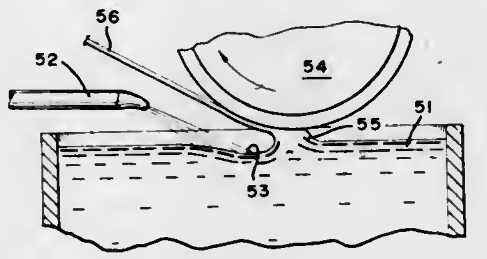


1. A plant for the electroslag melting of hollow ingots comprising a mast; a top carriage fastened to said mast so as to allow its transfer in a vertical direction; an electrode holder secured to said top carriage; a drive for carrying said top carriage; a cooled mold having a space for building up an ingot; a base plate mounting said cooled mold; said base plate being defined by a car provided with an opening in the zone of shaping the ingot space, horizontal guide bars in which said car is mounted; a bottom carriage fastened to said mast to allow its vertical transfer; a mandrel adapted to shape the ingot space, said mandrel being secured to said bottom carriage with the aid of a bracket and introduced into the space of said cooled mold through said opening in the base plate; and said mandrel having a base in which a ball-shaped support is secured intermediate of sockets mounted on said bracket of said bottom carriage to provide an angular deflection of said mandrel in relation to the longitudinal axis of said bracket for maintaining the vertical position of the mandrel.

3,863,700
ELEVATION OF MELT IN THE MELT EXTRACTION PRODUCTION OF METAL FILAMENTS

John R. Bedell, (Lake Mohawk) Sparta, and John A. Wellslager, Mount Arlington, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 16, 1973, Ser. No. 360,887
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 **12 Claims**

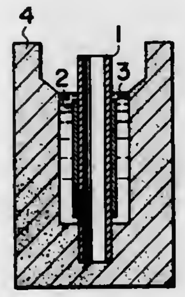


1. In a melt extraction method for the production of metal filaments from a molten reservoir wherein a quenching wheel is positioned contiguous to the melt and extracts a filament directly from the melt reservoir, the improvement comprising elevating a discrete amount of the melt directly from the melt reservoir to contact the quenching wheel by means of an auxiliary rotating hot wheel which is partially immersed within the melt thereby utilizing substantially the entire quenching capacity of said quenching wheel to quench said discrete amount of the melt.

3,863,701
PROCESS FOR MANUFACTURING HEAT-INSULATED CASTINGS

Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Akiyoshi Morita, Toyota; Katumi Yagi, Toyota, and Hiromitu Kashiwagi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed May 17, 1972, Ser. No. 254,228
Claims priority, application Japan, Jan. 17, 1972, 47-6738
Int. Cl. B22 *19/00*
U.S. Cl. 164—98 **4 Claims**

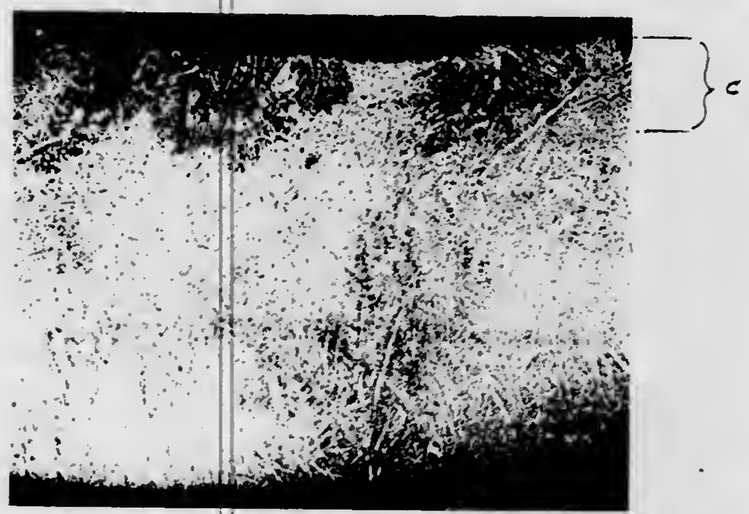


1. A process for manufacturing heat-insulated castings comprising the steps of providing a hollow metal core having resistance to heat and corrosion, applying a bonding agent to the outside of the core and thereafter coating a foamed alumina onto the bonding agent on the outside of the metal core, drying the thus obtained double structure at room temperature, and then at a temperature of approximately 250°C. for at least about 10 hours followed by drying at about 500°C. for several hours, positioning the double structure in a mold, and pouring molten metal into the mold to surround the double structure in a metal casting.

3,863,702
CENTRIFUGAL CASTING METHOD

William L. Hallerberg, and Gilbert W. Gordon, both of Kokomo, Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Jan. 12, 1973, Ser. No. 323,104
Int. Cl. B22d *13/00*
U.S. Cl. 164—114 **7 Claims**



1. The method of centrifugally casting hollow metal objects comprising the steps of:

a. casting molten metal into a rotating centrifugal casting mold,

b. adding a molten self-disintegrating slag which on solid state transformation breaks up to said rotating centrifugal casting mold immediately after casting said molten metal therein,

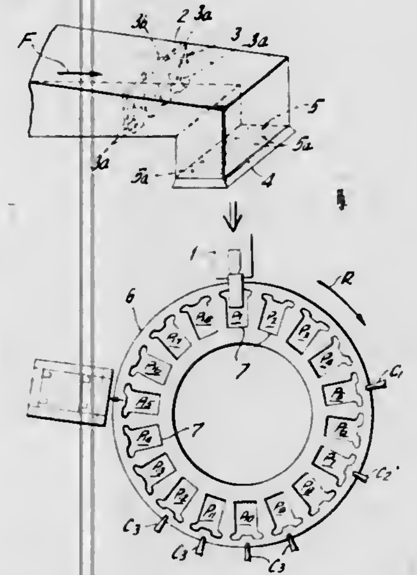
c. cooling said mold to solidify the metal and cause the slag to solidify and disintegrate, and

d. removing the cast metal object from the mold and the disintegrated slag from the cast object.

3,863,703
METHOD FOR CASTING A LARGE LEAD ANODE PLATE

Yuki Nishimura, Takehara, Japan, assignor to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1974, Ser. No. 442,575
Int. Cl. B22d *25/04, 35/04*
U.S. Cl. 164—128 **7 Claims**



1. A method for casting a large lead anode plate comprising: providing at least one open topped anode plate mold;

providing a pouring trough opening into said mold;

transporting melted crude lead through said trough at a temperature within the range of from about 340°C to 350°C;

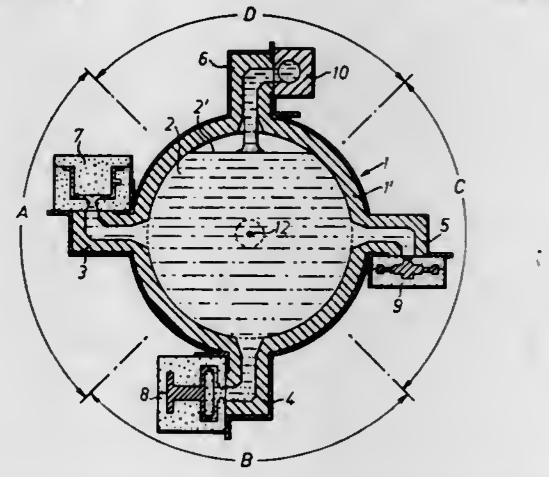
reducing the velocity of the melt without decreasing the volume of flow of melt during pouring of the melt into said mold;

sequentially applying discrete first and second stages of water cooling to the melt surface and a third stage of water cooling to the back surface of the mold; and subsequently removing the cast plate from said mold.

3,863,704
METHOD OF CASTING BY POURING METAL FROM A MELT SUPPLY THROUGH A FEEDER INTO A MOLD

Freidhelm Kahn, 2, Muhlbachstrasse, 6332 Ehringshausen, Germany

Filed Jan. 2, 1973, Ser. No. 320,686
Int. Cl. B22d *33/02*
U.S. Cl. 164—130 **10 Claims**



1. The method of producing castings by pouring melt from a melt supply into a mold through a feeder, comprising the steps of:

a. moving said mold and said feeder in a circular orbit in a vertical plane about a given point;

b. maintaining a level of said melt in said melt supply vertically above said given point;

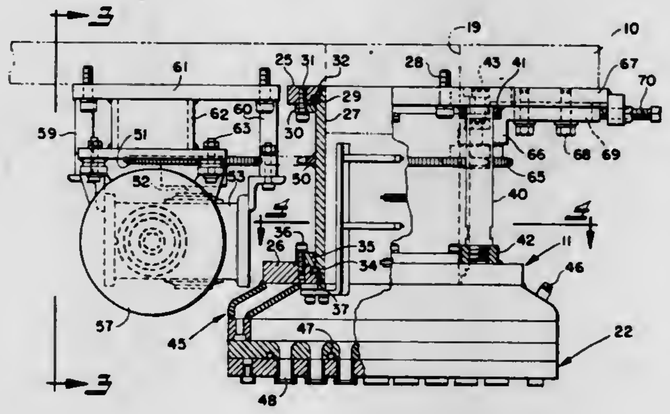
c. further moving said mold for solidification in said vertical plane through a plurality of positions relative to the direction of gravity having said feeder in connection with said melt below said given point for filling said mold through said feeder below said melt level; and

d. removing said casting from said mold connected with said feeder after solidification.

3,863,705
SAND BLOW RESERVOIR FOR A FOUNDRY MOLDING MACHINE

Barry G. Leeson, Bay Village, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 17, 1972, Ser. No. 298,297
Int. Cl. B22c *15/24*
U.S. Cl. 164—202 **12 Claims**



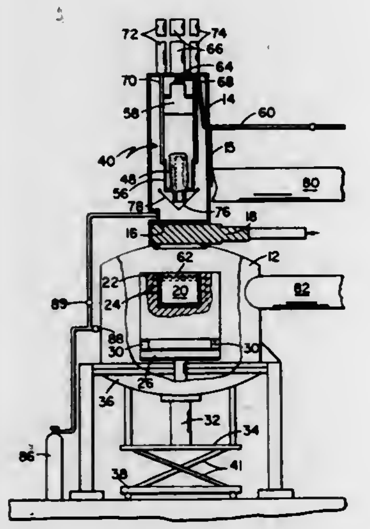
1. A sand blow reservoir for a foundry molding or core blowing machine wherein said reservoir is initially charged with sand which is subsequently blown from said reservoir into a mold or core box, said reservoir comprising a selectively rotatable housing and agitation means in said housing fixed with respect thereto, said housing being rotated during said blowing to assist the agitation means in maintaining the sand in said housing in a flowable condition, thereby uniformly to feed the sand to the mold or core box, said agitation means

including scraper arms mounted on one of said ends and positioned closely adjacent the interior of said cylindrical housing, and radially inwardly extending blades on said scraper arms.

3,863,706
METAL CASTING

George D. Chandley, and John N. Lamb, both of Amherst, N.H., assignors to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Dec. 4, 1972, Ser. No. 312,138
Int. Cl. B22d *27/16*
U.S. Cl. 164—255 **6 Claims**

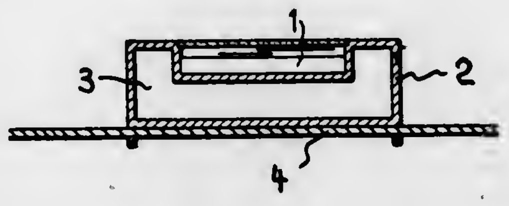


1. In casting apparatus having
a sealable melting and mold pouring chamber,
a sealable loading compartment mounted on said chamber and
valve and conduit means communicating between said chamber and said compartment
that improvement comprising:
a sealable mold container having a bottom opening for sealing around the lower open end of a gas permeable mold supported therewithin and extending downwardly therebeyond
said mold container including upper and lower cup elements movable into sealed relationship with one another
a crucible in said chamber having surrounding induction coils for holding and stirring molten metal to cause outward surface movement thereof along its surface to carry impurities away from the central area of said crucible
power means including piston means independently supporting said cup elements from above for relative movement into said sealed relationship and for movement between said compartment and said chamber through said valve and conduit means to said central area of said crucible and
means for selectively varying the pressure of said chamber, compartment and container
to fill said mold after lowering said container with the lower open of said mold beneath the surface of molten metal in said central area of said crucible and
permit loading and unloading said mold from said container in raised position by relative movement of said cup elements within said compartment while maintaining the chamber pressure by closure of said valve and conduit means.

3,863,707
METHOD FOR STABILIZING THE TEMPERATURE OF AN INSTRUMENT, PARTICULARLY OF A WRIST WATCH

Johannes Geiss, Hinterkappelen, and Peter Eberhardt, Gumligen, both of Switzerland, assignors to OMEGA Louis Brandt & Frere S.A., Bienne, Switzerland

Filed Feb. 14, 1972, Ser. No. 225,772
Claims priority, application Switzerland, Feb. 14, 1971, 2729/71
Int. Cl. F28b *3/00*
U.S. Cl. 165—1 **5 Claims**

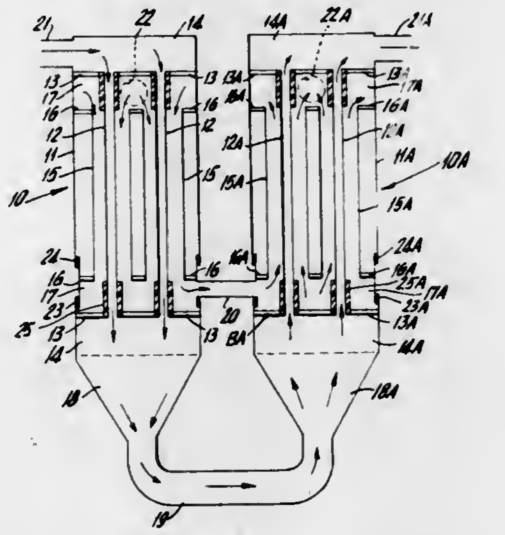


1. Method for stabilizing the temperature of a timepiece to permit it to operate within its normal working temperature range which comprises introducing the timepiece into a container having therein a body of a temperature stabilizing medium which exhibits at least one heat transformation point, whereby the latent heat of transformation absorbed or emitted by said medium at the time of passage through its transformation point produces a rise or fall in the temperature of said timepiece thereby stabilizing it.

3,863,708
MODULATABLE HEAT EXCHANGER WITH RESTRAINT TO AVOID CONDENSATION

George R. Grimes, deceased, late of Burgettstown, Pa. (by Mary E. Grimes; executrix), assignor to Amax Inc., New York, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,121
Int. Cl. B60h *1/00*
U.S. Cl. 165—1 **9 Claims**



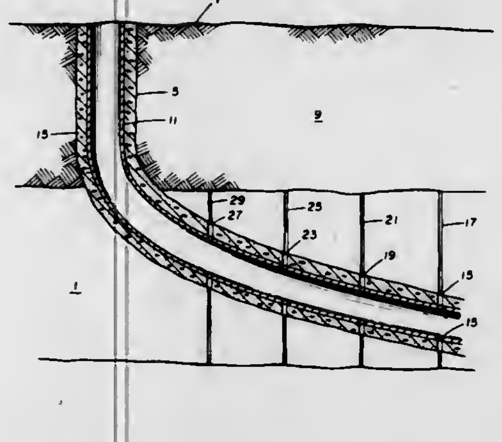
1. A modulatable heat exchanger system for cooling hot dust-laden flue gas having an elevated dew point which comprises,
a heat exchanger unit formed of a bank of tubes coupled to tube manifolds such that the bank of tubes communicates with a hot gas inlet and a hot gas outlet coupled respectively to said manifolds,
each of said tubes being surrounded by a tube to provide annular spaces having manifolds communicating therewith through which air is circulated in said heat exchanger in concurrent flow with said hot flue gas,
means for maintaining a flow of hot flue gas through said heat exchanger to a downstream line,

a closed circuit air line including a blower for maintaining a flow of air through said heat exchanger in concurrent flow and heat exchanging relationship with said hot flue gas,
first valve means for feeding fresh air into said air line when needed,
first temperature-sensing means for sensing the temperature of the flue gas downstream of said heat exchanger,
second valve means in said air line operable in accordance with the temperature sensed by said first temperature sensing means for controlling the rate of flow of said air through said heat exchanger according to the temperature sensed by said first temperatures-sensing means,
second temperature-sensing means associated with a portion of the heat exchanger in contact with said flue gas for sensing the temperature of the heat exchanger at said portion,
said second temperature-sensing means being operably coupled to said first valve means for controlling the feeding of fresh air to said air line,
and a pressure-sensing device in said air line coupled to a third valve means comprising an exit air gas valve for opening said valve to expel air from said line when a pressure above a predetermined pressure is sensed in the air line,
whereby the flow of air through the heat exchanger is independently controlled relative to the flow of said flue gas so as to maintain the temperature of said heat exchanger above the dew point of said hot flue gas during the cooling thereof in accordance with the temperature sensed by the temperature-sensing means of the system.

3,863,709
METHOD OF RECOVERING GEOTHERMAL ENERGY

John L. Fitch, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,851
Int. Cl. F24j *3/02*; **F28d** *21/00*
U.S. Cl. 165—1 **9 Claims**

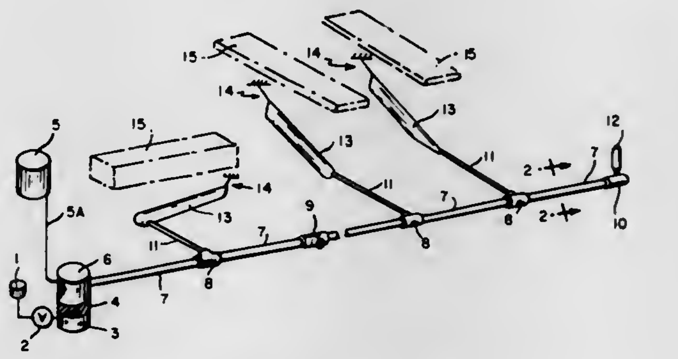


1. A method of recovering geothermal energy from a low permeability subterranean geothermal formation having a preferred vertical fracture orientation, comprising the steps of:
a. providing a first and a second well which extend from the surface of the earth and penetrate said geothermal formation at an angle of at least 10° measured from the vertical and extend into the formation in a direction transversely of said preferred vertical fracture orientation;
b. hydraulically fracturing said formation to provide a plurality of vertical fractures which are spaced laterally one from the other a predetermined distance measured in a direction approximately normal to the preferred vertical fracture orientation and which fractures extend into the formation and intersect said first and said second wells;
c. providing fluid communication intermediate each of said plurality of vertical fractures with each of said first and said second wells;
d. injecting a fluid via one of said first and said second wells into said plurality of vertical fractures;
e. flowing said fluid through said plurality of vertical fractures to heat said fluid; and
f. producing said heated fluid from said plurality of vertical fractures via the other of said first and said second wells.

3,863,710
HEAT EXCHANGE SYSTEM

Richard M. Masters, 1 Burns Rd., Lexington, Mass. 02173

Filed Dec. 11, 1972, Ser. No. 313,934
Int. Cl. F28f *7/00*
U.S. Cl. 165—46 **25 Claims**

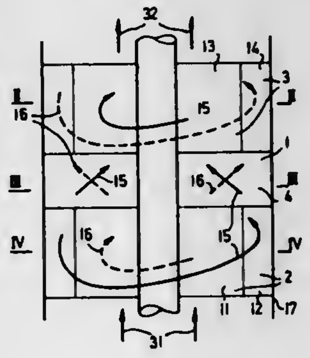


1. A heat exchange system comprising
a heat source for heating a fluid material;
a plurality of independently operable heat exchange devices, each of said devices being formed as a substantially flexible container capable of dissipating heat;
means for conveying said heated fluid material to each of said heat exchange devices in thermal relationship therewith so that heat contained in said heated fluid material is transferred to said heat exchange devices; and
means for mounting said heat exchange devices so that each of said flexible containers slopes in a substantially uniform direction from said conveying means independently of the pressure of the heated fluid material in the system and the heat from said heated fluid material is effectively transferred via said heat exchange devices to the regions adjacent thereto.

3,863,711
METHOD AND APPARATUS FOR MAINTAINING SUBSTANTIAL UNIFORMITY IN THE TEMPERATURE OF A HEAT-EXCHANGING FLUID

Georg Beckmann; Paul Viktor Gilli, both of Vienna, and Josef Lippitsch, Graz, all of Austria, assignors to Waagner-Biro Aktiengesellschaft, Vienna, Austria

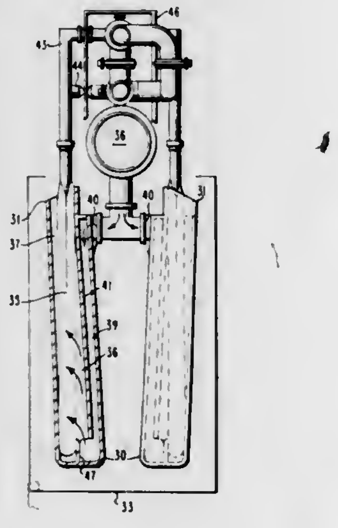
Filed Feb. 8, 1973, Ser. No. 330,623
Claims priority, application Austria, Feb. 9, 1972, A 1027/72
Int. Cl. F28f *9/22*
U.S. Cl. 165—145 **12 Claims**



1. In a heat exchanger, first and second groups of tubes communicating with each other for directing an inner heat-exchanging fluid along the interior of said groups, said first

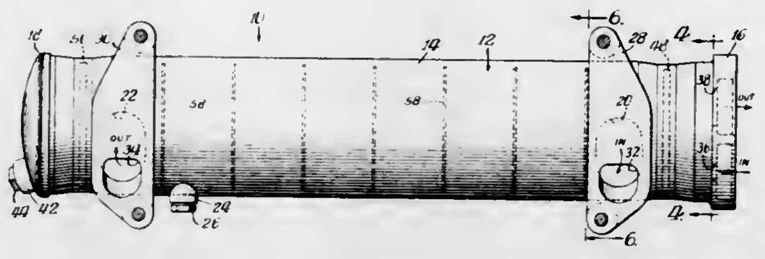
and second groups of tubes having a predetermined relationship with respect to an axis of the heat exchanger, means for directing an outer heat-exchanging fluid first across the exterior of said first group of tubes and then across the exterior of said second group of tubes to form from said outer fluid an entering stream distributed across said first group of tubes and an exiting stream distributed across said second group of tubes, said entering stream being composed of first and second stream portions which respectively have first and second relationships with respect to said axis and second exiting stream also being composed of first and second stream portions which have also said first and second relationships, respectively, with respect to said axis, and baffle means situated between said groups of tubes for deflecting said first stream portion of said entering stream to a location where said first stream portion of said entering stream forms said second stream portion of said exiting stream and for deflecting said second stream portion of said entering stream to a location where said second stream portion of said entering stream forms said first stream portion of said exiting stream, so that the temperature of said exiting stream will be substantially uniform.

3,863,712
LIQUID HEAT EXCHANGE SYSTEM
Frank T. Smith, 2521 Bona Rd., and Robert D. Smith, 2407 Kingman Dr., both of Wilmington, Del. 19803
Continuation-in-part of Ser. No. 63,851, Aug. 14, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,108
Int. Cl. F28c *7/06*
U.S. Cl. 165—145 **14 Claims**



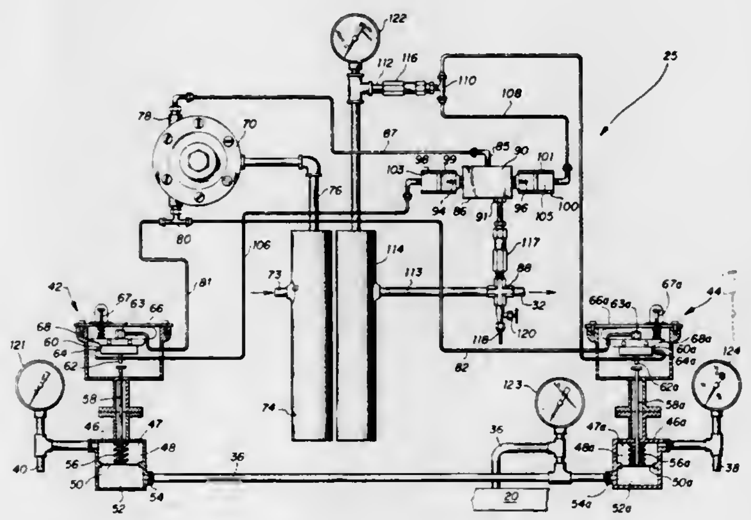
1. An apparatus for accomplishing heat exchange between a flowing first liquid and a second liquid having a temperature significantly different from that of the first liquid which comprises
   - a. an elongated tank having an input means for receiving the flowing first liquid and an output means by which the flowing first liquid exits,
   - b. a plurality of tube bundles each of which comprises a plurality of small diameter flexible tubes made from an organic polymer composition, one end of each of which bundles is coupled to an inlet means while the other end is coupled to an outlet means to permit the flow of the second liquid through the interior of the tubes, each tube bundle being disposed within and extending substantially from the top to the bottom of the tank and in relationship to the input and output means of the tank such that a substantially unbroken heat exchange region is provided and the tank is divided into an input side and an output side,
   - c. means for directing the passage of a substantially uniform volume of the first liquid substantially radially through each unit area of the tube bundles.

3,863,713
HEAT EXCHANGER
Vernon N. Tramontini, Indianapolis, Ind., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Aug. 27, 1973, Ser. No. 391,540
Int. Cl. F28b *9/14*
U.S. Cl. 165—158 **3 Claims**



1. A heat exchanger assembly, comprising; a generally tubular housing, a flat header plate adjacent each end of the housing having an original exterior dimension less than the original interior dimension on said housing, a plurality of heat exchange tubes supported in said header plates, said housing having a peripherally compressed portion radially of at least one of said header plates for firmly holding said one header plate in position, said one header plate having a peripherally compressed portion firmly engaged with said peripherally compressed portion of the one header plate.

3,863,714
AUTOMATIC GAS WELL FLOW CONTROL
David Reed Watson, Jr., Midland, Tex., assignor to Compatible Controls Systems, Inc., Midland, Tex.
Filed Apr. 17, 1973, Ser. No. 352,043
Int. Cl. E21b *43/00*
U.S. Cl. 166—53 **13 Claims**



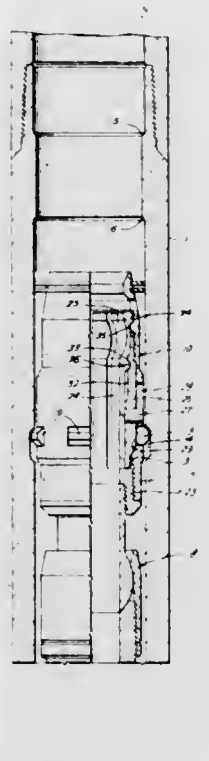
1. A control apparatus for a petroleum well having a tubing string and discharge line discharging into a sales line comprising:

a control valve interposed between said tubing string and sales line adapted to open or shut-in said well;

flow sensing means for monitoring the petroleum flow from said well and adapted to close said valve to shut-in said well when the flow decreases below a predetermined rate; and

pressure monitoring means for measuring the pressure differential between the tubing string and sales line and adapted to open said valve permitting delivery of petroleum from said well only when a predetermined differential therebetween exists whereby said well remains shut-in until the differential pressure builds to a level for acceptable volumetric flow from the well.

3,863,715
LANDING AND RUNNING TOOL ASSEMBLY
John H. Yonker, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Oct. 10, 1973, Ser. No. 405,084
Int. Cl. E21b *23/00*
U.S. Cl. 166—217 **7 Claims**



1. An anchoring tool comprising,

an elongate body,

external lug means carried by the body and adapted to be extended into a latching groove in a mandrel,

internal lug means carried by the body adapted to be extended above a shoulder on a running tool,

said body holding said internal lug means against movement along said elongate body relative to said external lug means while permitting said internal lug means to move laterally of the elongate body,

expander means having external land means and groove means cooperable with the external lug means and internal land means and groove means cooperable with the internal lug means,

said expander means movable between a running position in which the external groove means cooperates with the external lug means permitting them to retract and the internal land means cooperates with and extends the internal lug means and an anchoring position in which the external land means cooperates with and extends the external lug means and the internal groove means cooperates with and permits the internal lug means to retract.

3,863,716
CEMENTING PLUG RELEASE ASSIST APPARATUS
Steven G. Streich, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Apr. 5, 1974, Ser. No. 458,197
Int. Cl. E21b *33/05*
U.S. Cl. 166—70 **8 Claims**

1. Apparatus for assisting in the release of a cementing plug within a cementing plug container of the type which includes a closed tubular body having an upper end portion, a lower end portion for communication with the upper end of a casing string, a substantially cylindrical cavity formed in the body communicating with the lower end portion, a fluid inlet formed in the body intermediate the upper and lower end portions and communicating with the cavity, a plug retaining and releasing pin alternately insertable into the cavity and removable therefrom to support the cementing plug in the cavity above the fluid inlet, and, alternately, release the cementing plug, comprising:

a body member having an upper end portion and lower end portion and a longitudinal passageway extending therethrough and intersecting the upper and lower end portions thereof;

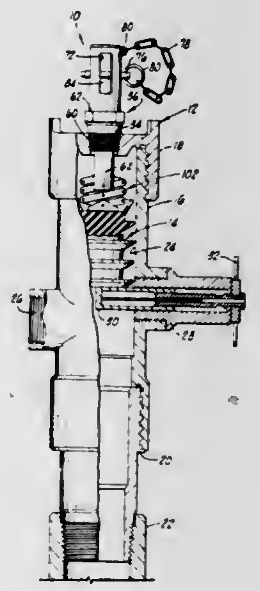
means formed on said body member for securing said body member in the upper end portion of the cementing plug container with the longitudinal passageway of said body member communicating with the cylindrical cavity in the plug container in substantial alignment therewith;

rod member means, having upper and lower end portions, movably disposed within the passageway of said body member for longitudinal movement between a lower position and an upper position in said body member;

seal means carried by said body member for providing a seal between said body member and said rod member means;

biasing means interposed between said body member and said rod member means for urging said rod member means upwardly relative to said body member;

extendable linkage means, having an upper end, a lower end and a medial portion intermediate the upper and lower ends, with the upper end thereof secured to the lower end portion of said rod member means and the medial portion secured to the lower end portion of said body member, for extending the lower end of said linkage means downwardly relative to said body member in response to upward movement of said rod member means relative to said body member;

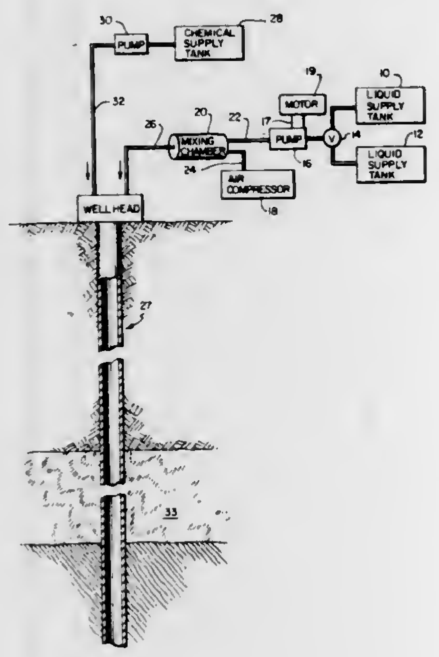


plug contacting means on the lower end of said extendable linkage means for contacting the cementing plug in the cementing plug container and moving the cementing plug downwardly within the cylindrical cavity of the cementing plug container in response to the extending of the lower end of said linkage means downwardly; and

rod retaining and releasing means mutually engageable between said body member and said rod member means for retaining said rod member means in the lower position in said tubular body member against the urging of said biasing means and, alternately, releasing said rod member means for upward movement in said body member to the upper position in said body member.

3,863,717
METHODS FOR FORCING A LIQUID INTO A LOW PRESSURE FORMATION

Robert Ernest Cooper, London, England, assignor to Compagnie Des Services Dowell Schlumberger, Paris, France
Filed Jan. 29, 1974, Ser. No. 437,651
Claims priority, application France, Jan. 16, 1973, 73.01379
Int. Cl. E21b *43/25*
U.S. Cl. 166—279 **6 Claims**



1. In a process for treating wells extending from the surface of the earth to a reservoir formation from which oil having a gas in solution therein is produced, the steps of:

injecting into the well a sufficient volume of a liquid chemical agent adapted to stimulate said reservoir formation;

injecting a sufficient column of stable foam into the well under sufficient pressure to drive the column of liquids then present into the well back into the reservoir formation;

terminating pressure injection of said foam into said well when at least a substantial portion of said column of liquids has been forced back into said formation;

closing said well at the surface for a desired period of time; and

opening the well and allowing said foam column and eventually the remaining portion of said column of liquids to rise normally under the influence of formation pressure, thereby ejecting said foam as a column formed by a mixture of liquid chemical agent and of oil and gas in solution rises within said well.

3,863,718
CEMENTING PROCEDURE FOR AVOIDING MUD CHANNELING

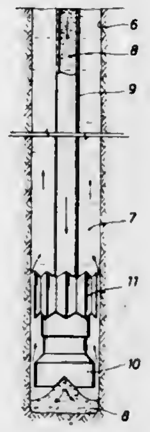
Edmond H. Bruist, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.
Filed Mar. 27, 1974, Ser. No. 455,171
Int. Cl. E21b *33/14, 33/16*
U.S. Cl. 166—285 **9 Claims**

1. A process for installing a pipe section that is to be cemented within a drilling-fluid-containing portion of a borehole of a well, which process comprises;

extending a relatively slender pipe string having an outer diameter significantly less than the borehole diameter into the borehole until it extends to at least near the bottom of the portion of the borehole in which the pipe section is to be cemented;

flowing fluid through the relatively slender pipe string to displace substantially all of the drilling fluid out of that portion of the borehole;

filling that portion of the borehole substantially completely with a subsequently solidifiable fluid that has a density at least substantially equalling that of the displaced drilling fluid and has a chemical composition that adapts it to remain pumpable, while remaining at the borehole temperature until the pipe section has been installed and a cement slurry has been inflowed, and then become substantially solid and impermeable;

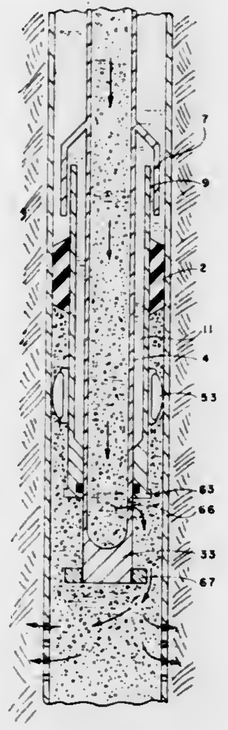


removing the relatively slender pipe string and installing the pipe section to be cemented, and

flowing a cement slurry into the annular space around the pipe section and allowing the solidification of both the cement and any subsequently solidifiable fluid that is present in that annular space.

3,863,719
RETRIEVABLE WELL PACKER WITH REVERSING FEATURE AND METHOD OF USE THEREOF

Charles Weber Parker, Odessa, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 23, 1973, Ser. No. 408,783
Int. Cl. E21b *33/129, 33/13, 43/25*
U.S. Cl. 166—305 R **16 Claims**



1. Packer and valve apparatus having reverse-out features, said apparatus comprising: resilient packer means;

internal elongated tubular mandrel means having an unrestricted bore passage therethrough;

tubular elongated packer mandrel means containing said resilient packer means and telescopically mounted on said internal mandrel means;

anchor means on said packer mandrel means;

packer actuation means on said apparatus adapted to actuate said resilient packer means and said anchor means into contact with the wellbore;

friction means on said packer mandrel means to provide frictional engagement of said packer and valve apparatus in a wellbore;

passage means located between said internal mandrel means and said packer mandrel means;

valve means between said packer mandrel means and said bore passage of said internal mandrel means, said valve means arranged to provide in a first position of said valve means communication through said bore passage in said internal mandrel means to the annulus below said resilient packer means and in a second position of said valve means, communication from said internal mandrel means bore passage through said passage means to the annulus above said resilient packer means; and

valve actuation means on said apparatus adapted to actuate said valve means.

14. A method of injecting liquids and semi-liquids under pressure into an underground formation penetrated by a borehole, said method comprising:

lowering into said borehole a string of conduit containing annulus sealing means, friction engaging means, a plurality of passage means, and valve means adapted to communicate alternately with one or more of said passage means;

positioning said conduit in said borehole so that said annulus sealing means is located above said formation to be treated and said valve means is in a first position;

expanding said annulus sealing means against the borehole wall to isolate the annulus area therebelow between the conduit string and the borehole wall;

actuating said valve means to a second position thereby communicating said conduit string with the annulus above said expanded annulus sealing means;

injecting the desired liquids or semi-liquids into the conduit string in sufficient quantity to just fill the conduit string, while maintaining said valve means open between said conduit string and the annulus above said annulus sealing means;

actuating said valve to said first position thereby communicating said conduit string with the formation below said annulus sealing means;

injecting an additional amount of liquid or semiliquid material in the amount desired into said conduit string under pressure, into the annulus below said sealing means and into said formation;

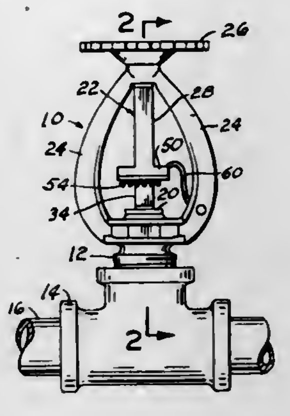
actuating said valve means to said second position to close communication between said conduit string and said annulus below said sealing means while maintaining said sealing means engaged against the borehole wall and without releasing pressure on said formation, said second position arranged to communicate said conduit string with the annulus above said sealing means; and

injecting a displacement fluid into the annulus at the surface under pressure in sufficient quantities to flow down said annulus, through said passage means, said valve means, and up through said conduit means therby displacing the liquids in said conduit string.

3,863,720
ELECTRICAL RESISTANCE FUSIBLE LINK FOR A SPRINKLER HEAD

Richard J. Young, 2131 S.W. 42, Oklahoma City, Okla. 73119
Filed Mar. 13, 1974, Ser. No. 450,951
Int. Cl. A62c *37/18*
U.S. Cl. 169—59 **4 Claims**

1. An electrically actuated release for an individual sprinkler head having a body including a cap normally closing an orifice axially aligned with a water deflector and having lever means interposed between the cap and water deflector with at least one portion of the lever means being separable from another portion to release the cap, the improvement comprising:

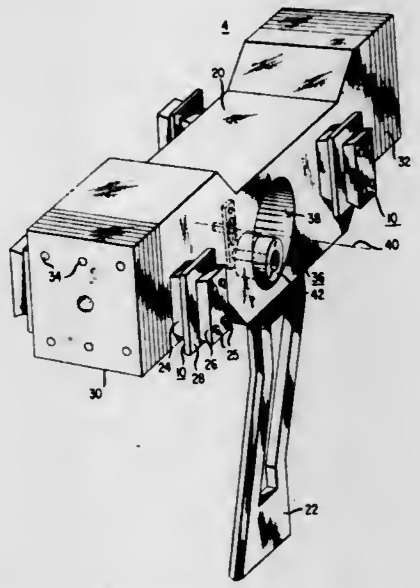


lever connecting means including an electrically fusible strand normally preventing separating movement between said lever means; and,

an electrical circuit including a normally open switch connecting a source of electrical energy to ground through said strand.

3,863,721
INERTIAL ORBITAL VIBRATING PLOW APPARATUS

Louis Joseph Scerbo, Randolph Twp., Morris County, and William Wallace Wood, Jr., Denville, both of N.J., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed July 16, 1973, Ser. No. 379,583
Int. Cl. E02f *5/02*
U.S. Cl. 172—40 **2 Claims**



1. An inertial orbital vibrating plow apparatus for forming a trench in the soil comprising in combination:

a mounting frame for receiving a force to move said apparatus along a preselected direction of travel;

a large inertia structural member having a center of rotation;

a plowshare rigidly mounted to and depending from said member to contact said soil, said member and said plowshare having a combined mass center which is located to the rear of said rotation center with respect to said direction of travel;

suspension means for mounting said structural member within said frame in such a manner that said force is transmitted from said frame to said member while said frame is substantially isolated from motions of said member, said suspension means including:

a torsion bar inserted through and having respective ends extending from said structural member, said bar being located to the rear of said rotation center with respect to said direction of travel and oriented substantially perpendicular to said direction;

mounting blocks rigidly mounted on said respective ends, said blocks including shafts extending therefrom substantially in said direction of travel;

a housing surrounding said blocks and adapted for connection to said frame;

bearing means in said housing into which said shafts extend, said bearing means allowing free movement of said shafts in said direction of travel and preventing movements in other directions; and

resilient mounting means for mounting said blocks to said housing to permit relative movement therebetween in said direction of travel; and

means for generating an orbital vibrating motion of said member about said center of rotation whereby said plowshare has an elliptical vibratory path with said path having a major axis inclined upwardly and forwardly with respect to said direction of travel.

3,863,722

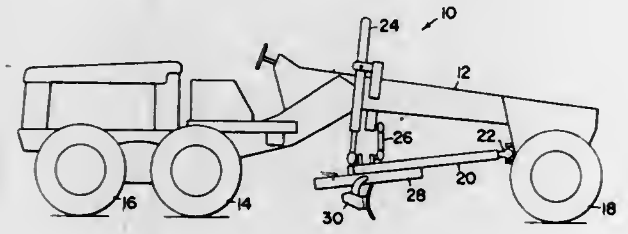
MOTOR GRADER BLADE-SHIFTING HYDRAULIC ACTUATOR AND MOUNT THEREFOR

Paul Edmund Hanser, Moline, Ill., and Thomas Edward Gebauer, Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 26, 1973, Ser. No. 427,467

Int. Cl. E02f *3/12*

U.S. Cl. 172—795 **5 Claims**



1. A motor grader blade assembly comprising: a support frame; an elongate blade having front and rear sides; mounting means securing said blade to said frame for substantially linear guided movement in the direction of the length of said blade; a linear actuator means being fixed to said frame adjacent said blade and including a unitary reciprocable rod means oriented for movement lengthwise of said blade and having opposite concurrently shiftable ends; connection means securing the opposite ends of said rod means to said blade and acting so as to maintain said rod means in tension during reciprocating movement and during times when an end portion of the blade is deflected rearwardly within predetermined limits.

3,863,723

HOLE DRILL AND DEBRIS CLEARANCE METHOD AND MEANS

Charles S. Godfrey, Berkeley, Calif., assignor to Physics International Company, San Leandro, Calif.

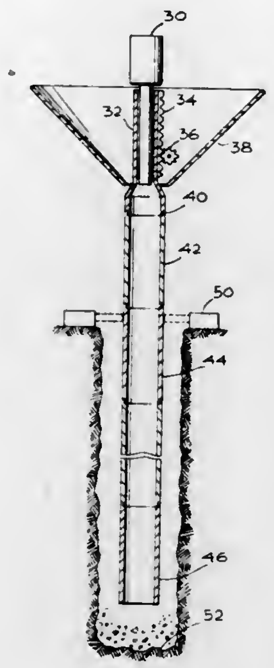
Filed Jan. 23, 1974, Ser. No. 435,632

Int. Cl. E21b *19/00;* **E21b** *7/00*

U.S. Cl. 175—4.5 **7 Claims**

1. In a system wherein a hole is excavated using a cannon which fires a frangible projectile by means of propellant gases into said hole, the method of removing debris from the bottom of said hole, comprising

emitting gases including propellant gases from said cannon near to the bottom of said hole whereby said gases carry the debris upward out of said hole through the annular space between the walls of said hole and the barrel of said cannon.



3,863,724

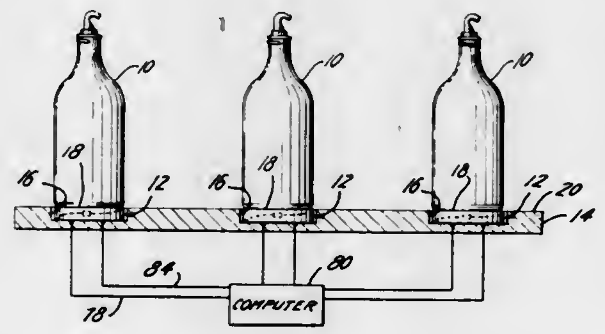
INVENTORY CONTROL SYSTEM

Nichola Dalia, Jr., 803 Smith St., Linden, N.J. 07036

Filed Sept. 20, 1973, Ser. No. 398,964

Int. Cl. G01g *3/14*

U.S. Cl. 177—25 **12 Claims**



1. Apparatus for determining the amount of material dispensed from a container during at least first and second points in time, comprising, in combination:

container support means for supporting at least one container of material to be dispensed, said container support means comprising a housing including a container support surface which is at least partially flexible and is responsive to the weight of said container and the material therein, so that movement of said container support surface produced by said container and the material therein resting on said container support surface corresponds to the weight of said container and the material therein,

transducer means mounted within said housing and responsive to movement of said container support surface for converting movement of said container support surface into a corresponding electrical signal, said electrical signal corresponding to the weight of said container and the material therein,

and conversion means responsive to said transducer means for sampling the signals provided thereby at first and second points in time and converting said electrical signals into a useful format relating to the weight of material in said container during said first and second points in time and operating on said converted signals to determine the amount of material dispensed from said container between said first and second points in time.

3,863,725

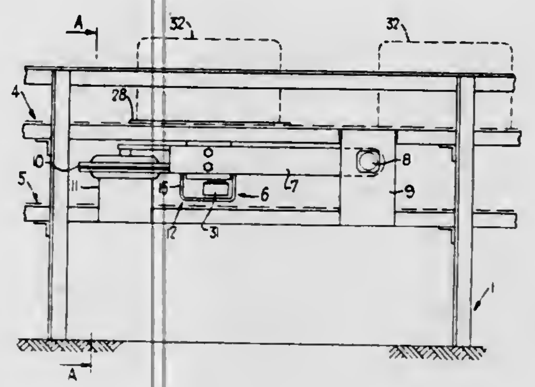
CONVEYOR WEIGHING SCALE

Stephen Henry Raynes, Aylesbury, England, assignor to Arthur Guinness Son and Company (Park Royal) Limited, London, England

Filed June 1, 1973, Ser. No. 366,112

Int. Cl. G01g *13/00*

U.S. Cl. 177—52 **5 Claims**



1. A weigh assembly for a conveyor which comprises a weigh device comprising at least two substantially parallel diaphragms secured in overlying and vertically spaced relationship by rigid tubular support means, the diaphragms being substantially rigid in the planes of their extent and having a degree of flexibility in the direction normal to such planes; rigid coupling means located within the confines of said tubular support means, said coupling means extending axially between and being secured to the diaphragms at positions remote from the support means and substantially centrally thereof; a substantially horizontal platform rigidly secured relative to one of said means and in substantially vertical alignment with that said means, said platform being intended to receive an article to be weighed, said article being locatable in any position over the surface of said platform; a measuring device responsive to relative vertical displacement of, or relative vertical loading on, the one said means relative to the other said means as a result of an article being supported on the platform from which displacement or loading the weight of the article may be determined; and wherein said diaphragms each have an array of radially extending reinforcing means thereon which are circumferentially spaced relative to the axis of the coupling means and provide localized stiffness in the diaphragms radially relative to said axis, each said reinforcing means having an elongated configuration and being located on its respective diaphragm with the larger dimension lying radially relative to said axis over the portion of the diaphragm between said support means and said connecting means,

said device being carried by a lift frame which is intended to be mounted with the platform underlying the conveyor, and wherein lift means is provided to raise and lower the lift frame so that the platform of the weigh device when raised can receive thereon articles from the conveyor for weighing purposes.

3,863,726

TRACKED DRIVE FOR VEHICLES

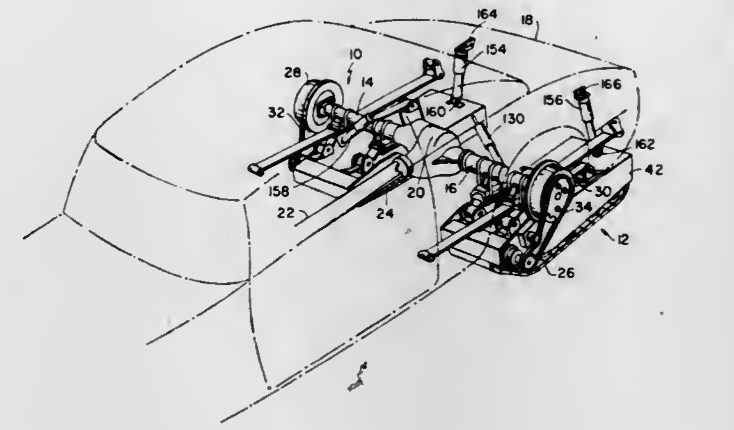
Roy E. O'Brien, 17834 Millar Rd., Mt. Clemens. Mich. 48043; Donald J. Leslie, 1310 N. Washington, Apt. No. 11, Royal Oak, Mich. 48067, and Michael R. Leslie, 1947 Robina Ave., Berkley, Mich. 48072

Filed Apr. 23, 1973, Ser. No. 353,599

Int. Cl. B62d *55/04*

U.S. Cl. 180—5 A **9 Claims**

1. A tracked drive for vehicles having a driven axle having a leaf spring structure connected thereto comprising an endless ground-engaging track, a housing operatively mounting said track, first sprocket means journaled in said housing operatively engaging the track for driving same, second sprocket means connectible to the axle to be driven thereby, means drivingly connecting said first and second sprocket means, and means for connecting the tracked drive to a vehicle, said means for connecting the tracked drive to a vehicle including additional leaf spring means connected to the housing, and structure for connecting said additional leaf spring means to the vehicle leaf spring means and vehicle driven axle.



3,863,727

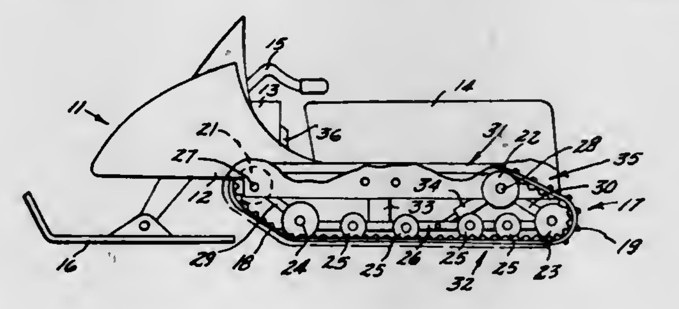
SUSPENSION SYSTEM FOR TRACKED VEHICLES

Regis C. Michrina, Lansing, Mich., assignor to Allied Leisure, Inc., Lansing, Mich.

Filed May 10, 1973, Ser. No. 358,884

Int. Cl. B62m *27/00;* **B62d** *55/00*

U.S. Cl. 180—5 R **7 Claims**



1. A suspension system for tracked vehicles comprising:

two parallel spaced apart axles, at least one of said axles being driven;

a lower frame element in spaced relation beneath said two axles;

a pair of frame extenders, one depending from each of said fixed axles and supporting said lower frame, said extenders being equal in length and parallel to each other when connected to the fixed axles and said lower frame;

an endless drive track supported internally on said fixed axles and said lower frame and driven by the driven one of said axles; and

a variable compression spring means acting against the lower frame and said fixed axles whereby said lower frame is controllably depressible and extendable toward and away from said fixed axles in the manner of a parallelogram.

3,863,728

VEHICLE INSECT PROTECTION APPARATUS

Theodor H. Mittendorf, Rte. 1, Box 102, Tavares, Fla. 32778

Filed Nov. 9, 1973, Ser. No. 414,204

Int. Cl. B60k *11/02*

U.S. Cl. 180—68 P **5 Claims**

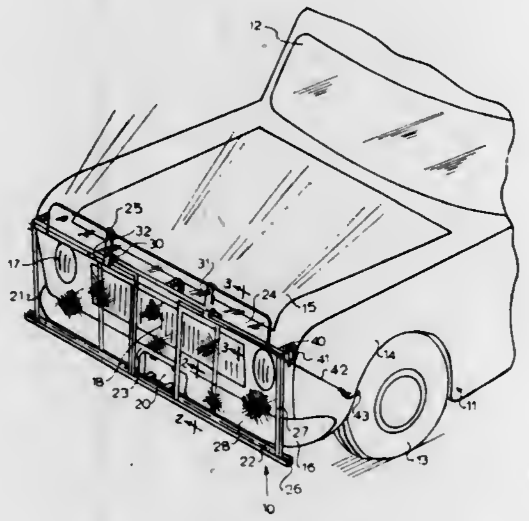
1. An insect protection apparatus for moving vehicles comprising in combination:

a. an adjustable screen means removably attachable to the front of a vehicle for preventing insects from passing therethrough onto the front end of said vehicle, said screen means having a plurality of panels, each panel having a frame and being adjustable relative to each other panel whereby said screen means can be adjusted for different vehicles;

b. a deflector shield attached to said screen means and having a deflector surface for directing air currents and insects away from a vehicle windshield;

c. a plurality of brace members attached to said adjustable screen means for engaging the front end of a vehicle to provide support for said apparatus;

d. attachment means for attaching said adjustable screen means to the front of a vehicle, said attachment means including means for attaching one portion of said adjustable screen means to the tire well of a vehicle with flexible members and means for attaching a second portion of said screen means to the front of a vehicle with at least one rigid bracket;



e. said screen means including a horizontal grooved frame member for the bottom portion of the screen panel to fit into and a pair of vertically extending frame members attached to at least one panel member, said vertically extending frame members having said deflector shield attached thereto; and

f. the top portion of said panels being held together by the overlapping portion of said panels and an overlapping portion of said deflector shield and said vertically extending frame members having a portion extending over the top of said screen panels.

3,863,729

ENGINE COMPARTMENT SIDE SHIELD STRUCTURE

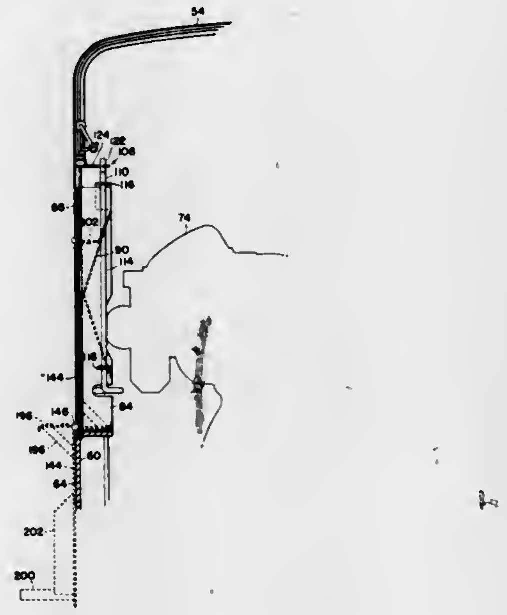
Cy William Von Fummetti, and David Dennis Latham, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 19, 1974, Ser. No. 462,587

Int. Cl. B62d *25/10*

U.S. Cl. 180—69 R **3 Claims**

1. In an industrial vehicle of a type including a longitudinal frame supported on rotatable ground-engaging means, an engine mounted on the frame and located in an engine compartment bounded at top and upper side portions by a hood, at bottom and lower side portions by said frame and at opposite intermediate side portions by a pair of side shield structures extending between said frame and said hood, the improvement comprising: at least one of the side shield structures including a longitudinal upright door support means fixed to said frame and extending upwardly alongside said engine between the frame and hood; said support means including a baffle plate having upper and lower horizontal longitudinally extending edges respectively spaced below and above said hood and frame and inwardly from a bend line located substantially halfway between and extending parallel to said upper and lower edges; a first longitudinal door normally located in a closed position wherein it is vertically disposed beside and outwardly of a lower portion of said baffle plate and cooperate therewith to form a downwardly and inwardly directed passage leading to the engine compartment, said first door being pivotally mounted, adjacent to lower edge thereof, to said door support means for vertical swinging movement about a first horizontal, longitudinal axis from said closed position to an open position; a second longitudinal door normally located in a closed position wherein it is vertically disposed beside and outwardly of an upper portion of said baffle plate including said upper edge and cooperates therewith to define an upwardly and inwardly directed passage leading to the engine compartment; and said second door being pivotally mounted, adjacent a lower edge thereof, to said door support means for vertical swinging movement about a second horizontal, longitudinal axis from said closed position to an open position; latching means for releasably latching said first and second doors in their closed positions; and said first and second doors cooperating with said baffle plate to block manual access to the compartment when said doors are in their closed positions.



3,863,730

ANTI-SKID CONTROL DEVICE FOR VEHICLES WITH CLUTCH RELEASING

Hisato Wakamatsu; Noriyoshi Ando, and Kazu Majima, all of Kariya, Japan, assignors to Nippon Denso Company Limited, Kariya-shi, Aichi-ken, Japan

Continuation-in-part of Ser. No. 61,407, Aug. 5, 1970, abandoned, and a continuation of Ser. Nos. 808,596, March 19, 1969, abandoned, and Ser. No. 829,901, June 3, 1969, Pat. No. 3,653,726. This application Feb. 26, 1971, Ser. No. 119,311

Claims priority, application Japan, Apr. 22, 1968, 43-26923; June 3, 1968, 43-37904; June 6, 1968, 43-38879; Oct. 31, 1968, 43-79445; Jan. 11, 1969, 44-2177

Int. Cl. B60t *8/08*

U.S. Cl. 180—82 R **32 Claims**

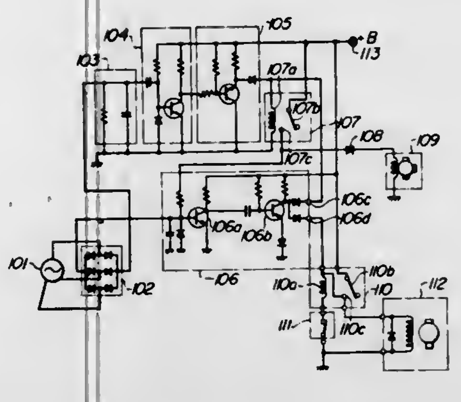
1. An anti-skid control arrangement for vehicles having a wheel braking system and a cooperating braking force releasing means and a motor-wheel clutch comprising;

clutch releasing means,

means for automatically energizing said braking force releasing means upon sensing wheel angular deceleration exceeding a predetermined value to effect automatic releasing of said braking force at least until said deceleration decreases to said predetermined value,

means operative at least upon the condition that said energizing means is operative, for automatically actuating said clutch releasing means to effect automatic releasing of said clutch, and

means operable by said energizing means and upon sensing substantially zero wheel speed for maintaining said energizing means operative as aforesaid and for at least conditionally operating said actuating means to cause said clutch to be released by said clutch releasing means as aforesaid.



3,863,731

INSTRUMENT PANEL SUPPORTING CONSTRUCTION OF VEHICLES

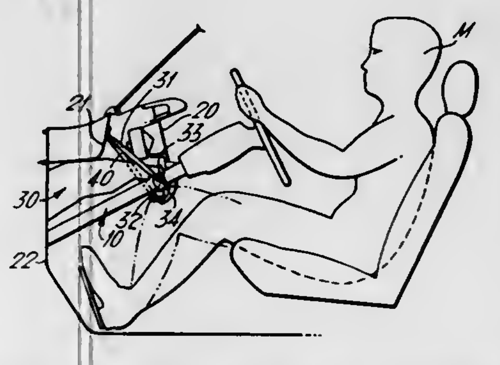
Ichiro Suzuki, Toyota, and Fumio Sugiura, Nisshin-cho, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki kaisha, Aichi-ken, Japan

Filed Aug. 23, 1973, Ser. No. 390,787

Claims priority, application Japan, Apr. 19, 1973, 48-44324

Int. Cl. B60k *37/00*

U.S. Cl. 180—90 **5 Claims**



1. In an instrument panel supporting construction for a vehicle comprising first supporting means for hanging a portion of an instrument panel onto a cowl panel of the vehicle body, and second supporting means for supporting a steering column assembly of the vehicle on the vehicle body,

the improvement wherein said first supporting means comprises a pair of struts for independently hanging the bottom portions of said instrument panel separated at the left and right sides of said steering column assembly from said cowl panel and said second supporting means comprises a first and a second supporting members for supporting said steering column assembly from said cowl panel and a dash panel of the vehicle body.

3,863,732

FLEXIBLE SKIRT ASSEMBLIES FOR FLUID CUSHION SUPPORTED VEHICLES

Peter Rowland Crewe, Newport, Isle of Wight, England, assignor to British Hovercraft Corporation Limited, Westland Works, Yeouil, Somerset, England

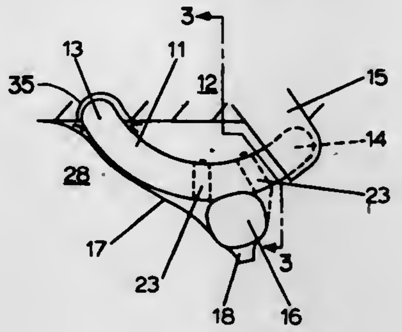
Filed Jan. 9, 1973, Ser. No. 322,178

Claims priority, application Great Britain, Jan. 12, 1972, 1439/72

Int. Cl. B60v *1/16*

U.S. Cl. 180—124 **13 Claims**

1. In a vehicle which receives support from at least one pressurized fluid cushion, a flexible skirt assembly for forming part of the cushion sealing means of the vehicle, wherein the skirt assembly includes a horizontal inflatable flexible cylindrical member which in operation of the vehicle is supported below rigid structure of the vehicle by arcuate inflatable flexible tubular members, and a flexible impermeable sealing curtain which in operation has one edge attached to the underside of rigid structure of the vehicle and is supported against forces generated by fluid cushion pressure by the horizontal inflatable flexible cylindrical member and the arcuate inflatable flexible tubular members, said flexible skirt assembly being fitted beneath the vehicle across the aft end so that the arcuate members are substantially parallel to the longitudinal axis of the vehicle.



3,863,733

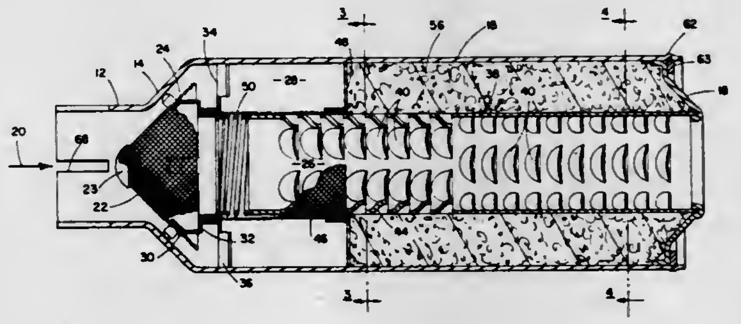
EXHAUST SILENCER FOR INTERNAL COMBUSTION ENGINE

Charles J. Raudman, Jr., Newhall, and Clyde W. Robertson, El Monte, both of Calif., assignors to Skyway Machine, Inc., San Fernando, Calif.

Continuation-in-part of Ser. No. 240,633, April 3, 1972, abandoned. This application Aug. 24, 1973, Ser. No. 391,225

Int. Cl. F01n *1/04*

U.S. Cl. 181—42 **8 Claims**



1. An exhaust silencer for receiving an exhaust stream from a combustion engine comprising:

a housing adapted to be connected to receive said exhaust stream;

an open ended core mounted in said housing with an open space formed between the outer wall of the core and the inner wall of the housing, said space including first and second portions, said second space portion having a substantially greater longitudinal extent than said first portion, said core having a plurality of inwardly extending louvers formed along the longitudinal extent of said core and circumferentially thereabout, the openings of all of said louvers facing towards the direction of flow of said exhaust stream, said louvers having curved surfaces tapered in the direction from which said exhaust stream flows; and

sound absorbing material substantially filling only said second space portion, thereby impeding the flow of gas through the louvers to said second portion;

the curved tapered surfaces of said louvers operating to shape the sound waves so as to create a low pressure barrier which tends to attenuate the sound energy.

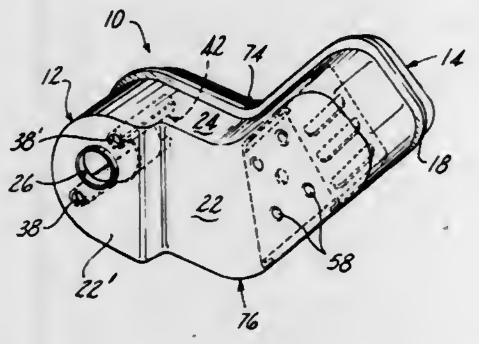
3,863,734
MUFFLER FOR INTERNAL COMBUSTION ENGINES

Julian S. Pawlina, Elkhart, Ind., assignor to Tecumseh Products Company, Tecumseh, Mich.

Continuation of Ser. No. 300,842, Oct. 25, 1972,. This application Jan. 14, 1974, Ser. No. 433,115

Int. Cl. F01n *1/08*

U.S. Cl. 181—49 **20 Claims**



1. A muffler comprising, a closed chamber having an exhaust inlet adjacent one end, an exhaust outlet adjacent the other end, a first outer wall portion with said exhaust inlet therein and at least two spaced mounting holes extending therethrough adjacent said exhaust inlet adapted to receive bolts for mounting said muffler on an engine, and a second outer wall portion axially spaced from and generally opposed to said first outer wall portion with second mounting holes therethrough coaxial with said first-mentioned mounting holes, a one-piece baffle member having two spaced perforate panel portions integrally interconnected by a bight portion, said baffle member being fixed in said chamber between said inlet and outlet and oriented therein with said panel portions spaced apart in the direction of gas flow through said chamber to divide said chamber into at least three compartments through which exhaust gases pass, and a one-piece spacer member received in said chamber immediately adjacent said exhaust inlet such that at least a portion of the exhaust gases from the inlet pass therethrough before passing through said baffle member, said one-piece spacer member having spacer tubes extending between said coaxial first and second mounting holes and a perforate portion extending between and rigidly interconnecting said spacer tubes.

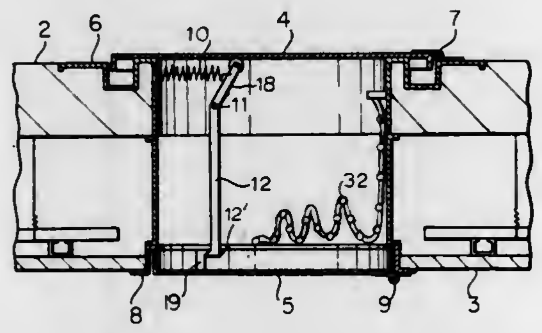
3,863,735
INDOOR ESCAPE DEVICE

Hiromitsu Naka, No. 39, Oaza Shinmachi, Yashio-cho, Minami Saitama-gun, Saitama-ken, Japan

Division of Ser. No. 124,034, March 15, 1971, Pat. No. 3,768,593. This application Aug. 15, 1973, Ser. No. 388,446

Int. Cl. E06c *1/56*

U.S. Cl. 182—81 **3 Claims**



1. An escape system to be positioned between the floor of one story of a building and the ceiling of a story below the first mentioned story, said system comprising:

an escape means including a first frame means adapted to be positioned at one end of a hole formed between a slab of the floor of said one story and the slab of the ceiling of said story below said first mentioned story, and a second frame means adapted to be positioned at the other end of said hole;

a cover member positioned over each of said frames for closing the hole when the system is not in use, each of said cover members being pivotally mounted to its respective frame means;

means operatively connecting said cover members to each other so that when the cover member positioned over said first frame means is opened, the other cover member opens automatically, said means connecting said cover members together comprising a spring biased lever and an abutment means, said lever being biased toward the opening direction of the cover member positioned over said first frame means and said abutment means being mounted on said other cover member, said lever engaging both said abutment means and said cover member positioned over said first frame means when said cover members are closed, whereby when said first mentioned cover member is opened, said lever moves away from said abutment means releasing said other cover member; and an escape unit secured within or adjacent said escape means and adapted to extend through at least part of said escape means when said cover members are open for use by the evacuee in passing through said escape means.

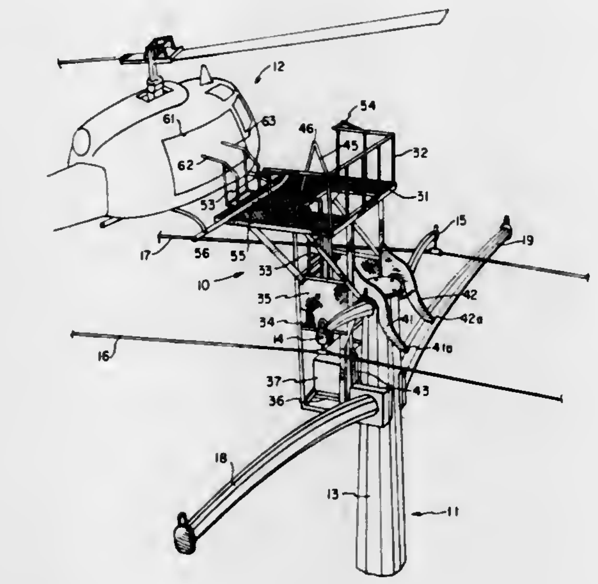
3,863,736
HELICOPTER-MOUNTABLE LANDING PLATFORM AND WORK SCAFFOLD AND METHOD OF PLACING SAME IN OPERATING POSITION

Roy J. McWilliams, Pomona, N.Y., assignor to Decair Helicopters, Inc., Spring Valley, N.Y.

Filed May 31, 1973, Ser. No. 365,713

Int. Cl. E04g *3/08*

U.S. Cl. 182—150 **11 Claims**



1. A landing platform and work scaffold adapted to be positioned on a pole structure by a helicopter or the like comprising:

a scaffold for supporting one or more persons;

means mounted on said scaffold enabling said scaffold to be suspended from a helicopter;

means mounted on said scaffold for engaging a pole structure to support said scaffold at the top of the pole structure when said scaffold is lowered onto the pole structure; and

a landing platform mounted on top of said scaffold in a position to provide clearance between the top of the pole structure and the rotor of a hovering helicopter touching said landing platform, said landing platform being of a size to permit one or more persons to step directly from the cabin of a hovering helicopter onto said landing platform when said scaffold is supported at the top of the pole structure.

3,863,737
LUBRICATING OIL SUPPLYING APPARATUS FOR STERN TUBE BEARING

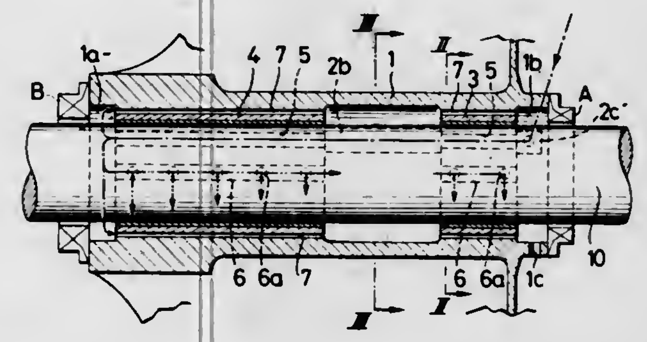
Minoru Kakihara, Okayama, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed May 14, 1973, Ser. No. 359,667

Claims priority, application Japan, May 19, 1972, 47-50103

Int. Cl. F16c *17/10*

U.S. Cl. 308—122 **1 Claim**



1. A lubricated stern tube bearing assembly, comprising: a bearing, a stern tube surrounding said bearing, a shaft extending through said stern tube and rotatably mounted in said bearing, sealing means associated with said shaft at opposite end of said stern tube for cooperating with said bearing and stern tube to define a fore lubricant reservoir at one end of said bearing and an aft lubricant reservoir at the other end of said bearing, passage means for flowing lubricant through said tube and along said bearing and to the aft reservoir from a location adjacent said fore reservoir, a plurality of peripherally-spaced lubricant grooves extending longitudinally in said assembly between said bearing and said tube for providing fluid communication between said reservoirs, said bearing having a plurality of apertures providing fluid communication between said lubricant grooves and said shaft, and means providing a lubricant outlet from said fore reservoir, whereby lubricant supplied to the aft reservoir returns through the grooves to the fore reservoir while lubricating and cooling the bearing.

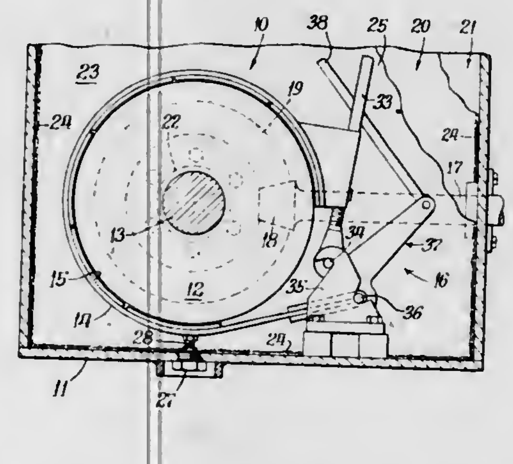
3,863,738
COMBINED DRAINING AND BRAKE ADJUSTMENT MEANS FOR A BAND BRAKE ASSEMBLY

Gerald F. Molloy, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 1, 1974, Ser. No. 438,597

Int. Cl. F16d *51/04*

U.S. Cl. 188—77 R **7 Claims**



1. In a band brake assembly, at least partially enclosed by a housing, comprising a rotatable drum, a flexible band having a lining secured internally thereon to at least partially circumvent said drum for selective frictional engagement therewith and actuating means operatively connected to said band to selectively clamp and frictionally engage said lining with said drum, the invention comprising combined draining and brake adjustment means comprising a drain plug removably mounted exteriorly on a bottom wall of said housing and brake adjustment means comprising a screw threadably mounted on said drain plug to dispose an adjustement end thereof interiorly of said housing in close proximity to said band to insure uniform braking contact between said lining and said drum and releasable locking means for selectively locking said screw relative to said drain plug.

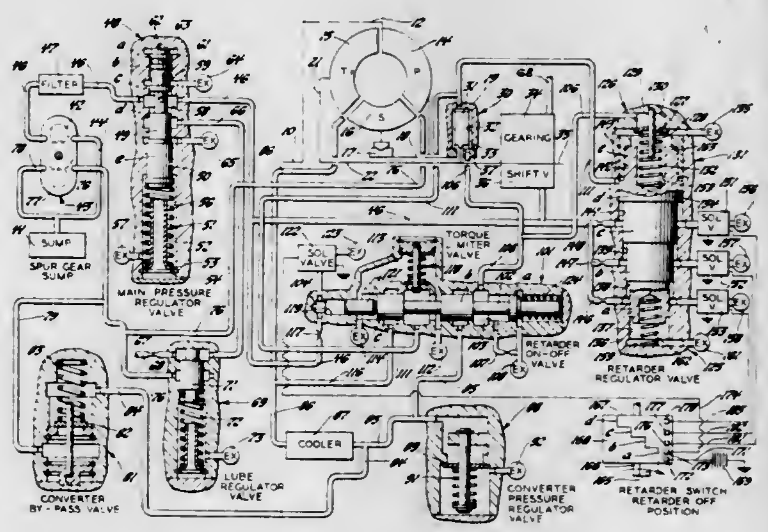
3,863,739
RETARDER CONTROL

Robert H. Schaefer, Westfield, and Carl A. Lentz, Mooresville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 23, 1973, Ser. No. 408,277

Int. Cl. F16d *57/02*

U.S. Cl. 188—296 **20 Claims**



1. In a hydrodynamic retarder, a stator chamber having stator blades, an inlet connected to a radial inner portion and an outlet connected to a radial outer portion; a rotor rotatably mounted in said stator chamber and pumping fluid from said inlet to said outlet during rotor rotation; cooler means including an inlet and an outlet and providing a pressure drop therebetween; a sump; source means connected to said sump and said cooler means supplying fluid from said sump under pressure to said cooler means; a low pressure regulator valve connected to said cooler outlet to regulate cooler outlet pressure at a low value and exhaust excess fluid to said sump; retarder on off valve means operative in off position to connect said retarder outlet and retarder inlet to exhaust and in on position connecting said retarder outlet to said cooler inlet and said cooler outlet to said retarder inlet; retarder pressure regulator valve means connected to said retarder inlet and said retarder outlet and having biasing means including manual control means movable from a retarder off position to a full retarding demand position for increasing retarding demand and outlet pressure responsive control means connected to said retarder outlet; said biasing means operative in response to said manual control means increasing retarding demand to increase the force of said biasing means and to decrease the force of the biasing means as a function of retarder outlet pressure and said regulator valve means regulating said retarder inlet pressure at increasing pressure values as a function of increasing bias force to provide retarder torque increasing with retarding demand and increased with speed at a rate reduced with increasing speed.

3,863,740
SEAL FOR HYDRAULIC DAMPER

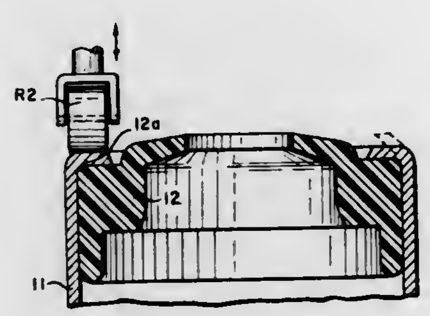
George Kinman, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed May 30, 1972, Ser. No. 257,520

Claims priority, application Great Britain, June 2, 1971, 18700/71

Int. Cl. F16f *5/00, 9/36*

U.S. Cl. 188—322 **3 Claims**



1. In a twin tube hydraulic damper including a cylindrical reservoir tube of permanently deformable metal the invention which comprises a rod seal housing adapted to receive a rod seal for sealing the piston rod of said damper, said housing being located in said tube and being of a cold deformable plastic material normally having an upper outer annular edge of approximately 90°, said tube having an end portion rolled over into direct engagement with said seal housing to deform said edge and maintain said edge deformed to form a liquid tight seal at said deformed edge between said tube and said housing without the interposition of a separate sealing gasket.

3,863,741
CONTROL SYSTEM FOR WINDING POWER SUPPLY CABLE

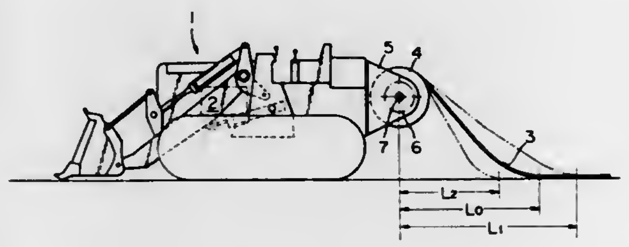
Yoshiji Mitsuishi, Midori-ku, Yokohama, and Toru Aihara, Sagamihara, both of Japan, assignors to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Apr. 15, 1974, Ser. No. 460,776

Claims priority, application Japan, Apr. 13, 1973, 48-43774

Int. Cl. H02g *11/00*

U.S. Cl. 191—12.2 A **3 Claims**



1. Control system for winding and unwinding a power supply cable for an electric-powered earthmoving or construction machine, comprising a reel assembly for winding the cable, a three-phase induction torque motor mechanically connected to drive said reel assembly, first contact means of connecting the torque motor to a three-phase AC electric source by a delta connection type, said contact means of connecting said torque motor to said three-phase AC electric source by a Y-connection type and a control circuit arranged to be actuated with changeover means for directional control of the machine, for alternately and selectively actuating the first and second contact means whereby said torque motor is connected to the electric source by the Y-connection type when the machine moves forward and by the delta connection type when it moves backward.

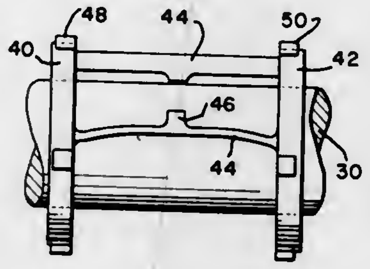
3,863,742
RETAINER FOR OVERRUNNING CLUTCH

J. Russell Elmore, New Hartford, and Gerard William Gehrke, Litchfield, both of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 8, 1973, Ser. No. 386,612

Int. Cl. F16d *15/00, 41/06*

U.S. Cl. 192—45 **19 Claims**



1. A retainer for an overrunning clutch having an outer member and an inner member of less outside diameter than the inside diameter of the outer member with one of said members having a cam surface and rolling members in the space between the outer member and the inner member comprising:

a pair of longitudinally spaced rims;

and at least one resilient spring bar member directly interconnecting the rims, said resilient spring bar member having a portion adapted to be engaged by a rolling member when the retainer and rolling members are assembled in the outer member with the inner member installed to flex said spring bar member circumferentially thereby causing a spring bias to be exerted against the rolling members and the spaced rims to move axially.

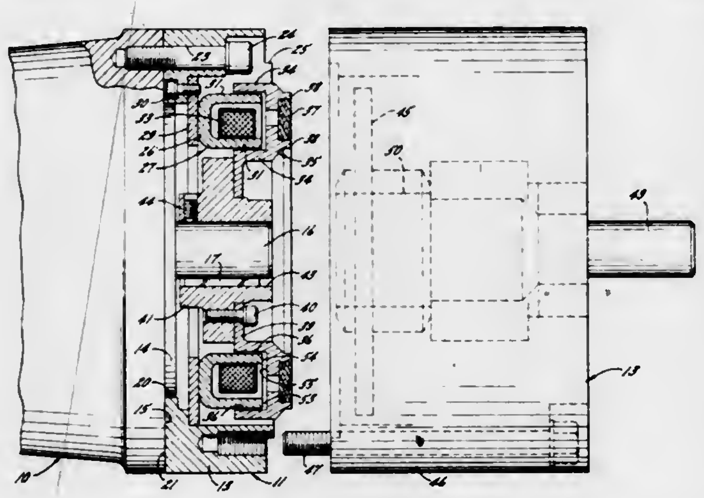
3,863,743
SUBASSEMBLY FOR MAGNETIC FRICTION COUPLING

Robert D. Rule, Rockford, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Oct. 5, 1973, Ser. No. 403,931

Int. Cl. F16d *27/10*

U.S. Cl. 192—84 C **7 Claims**



1. A subassembly for a magnetic friction coupling and comprising a frame member adapted to be fixed axially and radially with respect to a rotatable shaft, an annular magnet member fixed axially and radially with respect to said frame member, a rotor telescoped with and rotatable relative to said magnet member and adapted to be telescoped with and anchored to said shaft, there being a bearingless fit and radial clearance between all telescoped parts of said magnet member and said rotor so as to permit radial floating of said rotor relative to said magnet member prior to telescoping of said rotor with said shaft, and means coacting between said rotor and one of said axially and radially fixed members to locate said rotor axially relative to said magnet member without preventing said radial floating of said rotor relative to said magnet member, said means comprising a flange projecting radially from one of said rotor and said one axially and radially fixed member, and a groove extending circumferentially around and opening radially from the other of said rotor and said one axially and radially fixed member and receiving said flange with radial clearance.

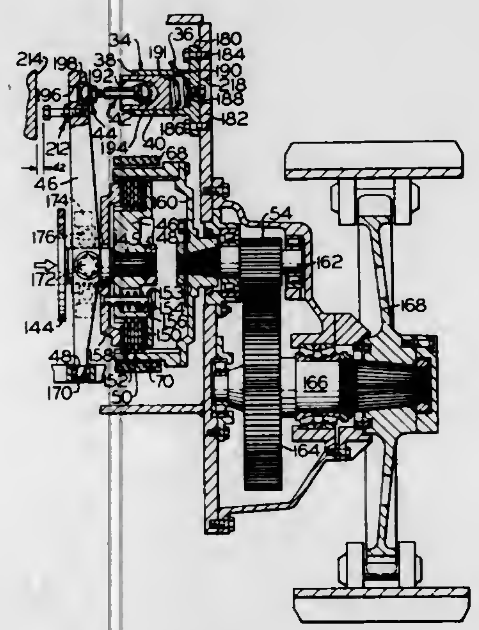
3,863,744
STEERING CLUTCH ACTUATING SYSTEM

John W. Bridwell, Peoria; Conard E. Leighty, Metamora, and John G. Wellwood, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 1, 1972, Ser. No. 285,925

Int. Cl. F16d *25/08*

U.S. Cl. 192—91 R **3 Claims**



1. In a track-type vehicle having a steering clutch for selectively discontinuing power transmission to a track of said vehicle; yoke means associatd with said clutch for disengaging said clutch when disposed in a first predetermined position and for engaging said clutch when disposed in a second predetermined position, actuator means connected to an externally accessible portion of said vehicle for moving said yoke means toward said first predetermined position, single rod means connected between said yoke means and said actuator means for transmitting actuator forces to said yoke means for movement thereof, said single rod means being connected between said actuator means and said yoke means by means of spherical joints movably mounted within sockets in said actuator means and in said yoke means, said actuator means including a fluid motor having a piston which receives a portion of said single rod means therein, said piston being mounted within a fluid-tight cylinder having a pressure chamber therein directly communicating with a portion of said piston and wherein a fluid bleed port is provided in said cylinder which communicates said pressure chamber with the exterior of said cylinder, said bleed port being accessible from the exterior of said vehicle, said actuator means including a flange member which is directly connected to said externally accessible portion of said vehicle by means of readily removable fastening means and wherein upon removal of said fastening means from said flange member said actuator means may be removed from said vehicle, said externally accessible portion of said vehicle including an access opening having a dimension greater than that of a portion of said fluid-tight cylinder, said flange member being attached to said fluid-tight cylinder externally of said access opening while said portion of said fluid-tight cylinder is disposed within said access opening, said fluid-tight cylinder being removable through said access opening upon removal of said fastening means.

3,863,745
CAM OPERATED CLUTCHES WITH AUTOMATIC LOCK

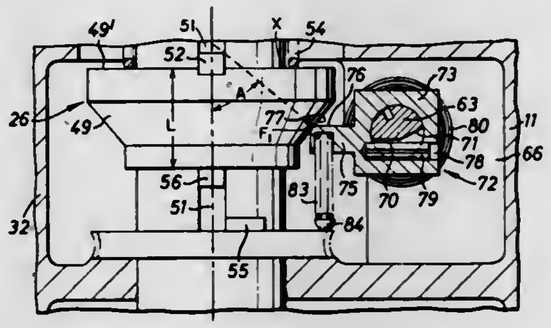
Jeremy Joseph Fry, Bath, England, assignor to Rotork Limited, Lower Weston, Bath, Somerset, England

Filed Mar. 9, 1973, Ser. No. 339,712

Claims priority, application Great Britain, Mar. 23, 1972, 13630/72

Int. Cl. F16d *11/04*

U.S. Cl. 192—93 R **10 Claims**



1. In a drive mechanism which has an output shaft, power means for rotating the output shaft, and means for manually rotating the output shaft, an annular clutch member nonrotatably mounted on the output shaft and having bearing surfaces slideable axially thereon operably connecting the output shaft to said manually rotating means and said power means, a clutch ring on said clutch member, a clutch actuator associated with said clutch member and engaging said clutch ring, resilient means for urging the clutch member away from the manually rotating means, said actuator being rotatable about an axis which is perpendicular to the axis of the clutch member for moving said clutch member axially against said resilient means for operably connecting the output shaft to the manually means, one of the engaging surfaces of the clutch ring and actuator being shaped as a cam surface sloping towards the axis of said shaft whereby the force exerted on the clutch member against said resilient means by the actuator as it is rotated is applied at a constant angle relative to the center line of the clutch member and always intereacts the shaft within the length of said bearing surfaces so as to prevent jamming between the clutch member and the output shaft.

3,863,746
CENTRIFUGALLY BALANCED ROTATING CLUTCH

Gunter W. Schulz, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

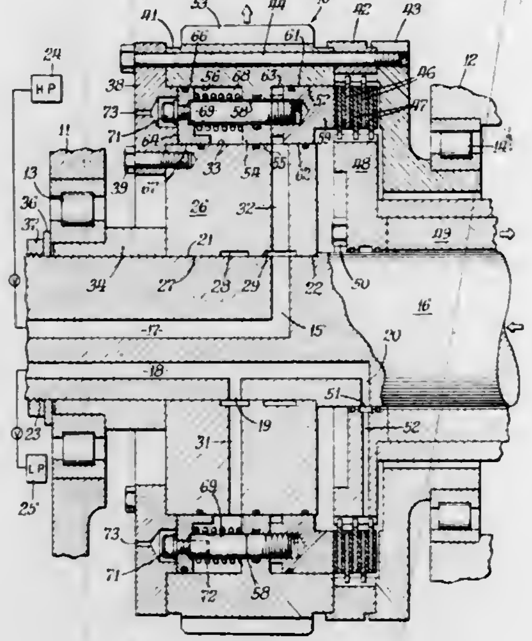
Filed Mar. 30, 1973, Ser. No. 346,648

Int. Cl. F16d *25/063*

U.S. Cl. 192—106 F **1 Claim**

1. In a fluid operated rotary clutch having rotatable clutch discs and plates which are movable into frictional engagement for engaging said clutch and movable out of frictional engagement for disengaging said clutch and having fluid pressure responsive actuating means for selectively engaging and disengaging said clutch; balance means for negating the effect of centrifugally generated fluid pressure upon said actuating means, said actuating means including first separate actuator piston means movable in response to fluid pressure for causing said discs and plates to engage said clutch, said balance means including second separate balance piston means connected to and movable with said actuator piston means, said actuator piston means and said balance piston means being housed respectively within separate first and second axially spaced aligned chambers having substantially equal cross-sectional areas and being separated by an annular radial wall, said first and second aligned chambers being annular and the inner and outer radii of each of said first and second chambers being respectively equal, said actuating means further including a source of high pressure actuating fluid and communication means for selectively communicating said high-pressure fluid to said first chamber and for selectively venting said first chamber, said separate first and second aligned annular cham-

bers being separated by said annular radial wall, said wall being transpierced by at least one axial bore, and rod means slidably extending through said at least one axial bore and interconnecting said separate actuator piston means and said separate balance piston means for unitary axial movement thereof, said balance means further including spring means disposed between said annular radial wall and said balance piston means for urging said balance piston means axially away from said annular radial wall, said balance means further including a source of low-pressure fluid and further communication means for selectively communicating said low-pressure fluid to said second chamber and for venting fluid therefrom,

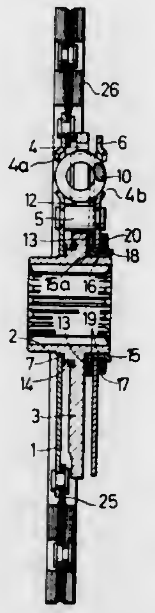


said fluid operated rotary clutch further including an annular output gear for providing clutch output torque, and said first and second aligned annular chambers being disposed concentrically within said annular output gear, said fluid operated rotary clutch receiving input torque from a first shaft and said further communication means including a second passageway formed within and extending axially along said first shaft, cooling means for supplying cooling fluid to said discs and plates, said cooling means including a radial passage in communication with said second passageway formed within said first shaft and receiving coolant fluid from said source of low-pressure fluid.

3,863,747
FRICTION DISC ASSEMBLY FOR A FRICTION COUPLING

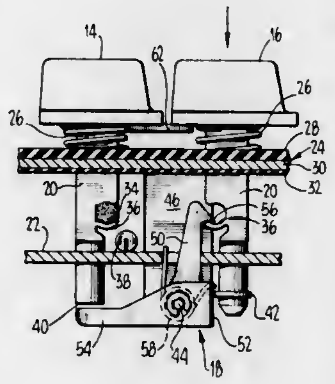
Karl-Heinz Werner, and Karl-Heinz Dotter, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany
Filed July 30, 1973, Ser. No. 383,614
Claims priority, application Germany, Aug. 3, 1972, 287286
Int. Cl. F16d *3/14, 47/02*
U.S. Cl. 192—106.2 **11 Claims**

1. A coupling disc assembly for a friction coupling comprising:
  a. a hub unit including a tubular hub member having an axis, and a flange member projecting from said hub member in a radially outward direction;
  b. a disc unit including a first radial disc member and a second radial disc member coaxially movable relative to said hub unit and offset from said flange member in opposite axial directions, and a plurality of spacer members fixedly connecting said disc members for joint movement;
  c. first yieldably resilient means operatively interposed between said units for angularly biasing said disc unit toward an angular rest position relative to said hub unit;
  d. an annular damper element coaxially movable relative to said units;
  e. second yieldably resilient means operatively interposed between said disc unit and said element for angularly biasing said element toward an angular rest position relative to said disc unit;
  f. cooperating abutment means on said element and on said hub unit engageable for limiting angular displacement of said element relative to said hub unit;
  g. first brake means for impeding angular movement of said element relative to said hub unit between said rest position of the element and a position of abutting engagement of said abutment means, said first brake means including
    1. spring means operatively interposed between said flange member and one of said disc members for biasing said one disc member axially away from said flange member and for thereby biasing the other disc member toward said flange member,
    2. motion transmitting means operatively connecting said element to said other disc member for joint axial movement when said other disc member moves toward said flange member under the biasing force of said spring means, and
    3. friction means axially interposed between said element and said flange member for simultaneous engagement with said element and said flange member;
  h. second brake means interposed between said disc unit and said element for frictionally impeding angular movement of said element relative to said disc unit; and
  i. friction facing on a radially outer circumferential portion of said first disc member.



3,863,748
SHIFT LOCK MECHANISM

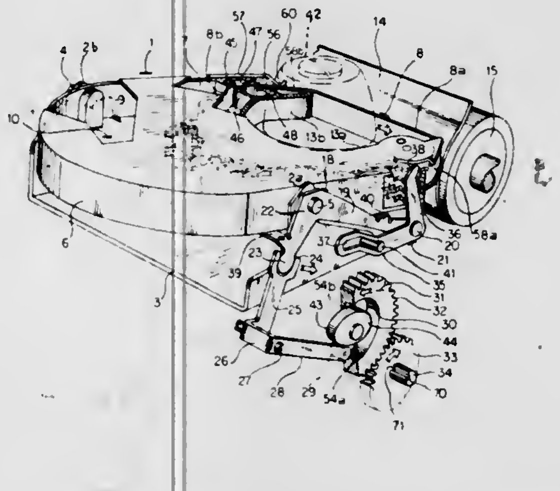
Richard Dale Trezise, Fremont, Calif., assignor to The Singer Company, New York, N.Y.
Filed Nov. 14, 1973, Ser. No. 415,887
Int. Cl. B41j *5/22*
U.S. Cl. 197—107 **4 Claims**



1. In combination with a manual keyboard with manual keys depressible relative to a keyboard mounting plate, a shift lock key mechanism comprising:
  a manually actuatable shift key positioned in the keyboard;
  a manually actuatable lock key positioned adjacent to the shift key;
  a stem on said shift key being substantially identical with a stem on the locking key;
  means mounted between said keys and engageable by said shift key stem and said lock key stem so as to hold said shift key depressed when said lock key is depressed, said means comprising a bellcrank having a latch arm and a release arm, said release arm being engageable by said shift key and said latch arm being engageable by said lock key, said lock arm further being positioned to engage said lock key stem when the latter is depressed, and
  means engaging said shift key so as to depress said shift key upon depression of said lock key.

3,863,749
SPOOLLESS RIBBON CARTRIDGE WITH LIFT AND FEED FEATURES COMBINED

Donald S. Perry, Los Altos, Calif.; Wyland L. Fowler, Green; Richard E. Shattuck, and Hans W. Mueller, both of Cortland, all of N.Y., assignors to SCM Corporation, New York, N.Y.
Division of Ser. No. 259,766, June 5, 1972. This application Apr. 16, 1973, Ser. No. 351,694
Int. Cl. B41j *33/14*
U.S. Cl. 197—151 **5 Claims**

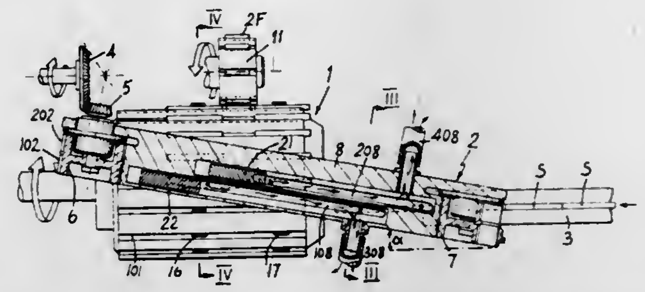


2. In a printing machine of the type having:
1. at least one print element;
2. means for mounting a ribbon in the printing machine, the ribbon mounting means having projecting members to hold a portion of the ribbon between the projecting members;
3. a first bell crank pivotally mounted in the printing machine and engaging the ribbon mounting means;
4. a cam follower;
5. means for connecting the cam follower to the first bell crank;
6. means for imparting motion;
7. a cam connected to the motion imparting means and engaged by the cam follower to oscillate the projecting members to move the portion of the ribbon held by the projecting members from a home position to a print position for impact by the print element to print on a record medium; and
8. a rotor in contact with the ribbon; wherein the improvement comprises:

a second bell crank having a cam arm and a pawl arm and pivotally connected to the first bell crank, the cam arm of the second bell crank having a cam slot engaging a stud in the printing machine and the pawl arm of the second bell crank positioned to engage the rotor to feed the ribbon during oscillation of the projecting members.

3,863,750
DEVICE FOR FORMING PAIRS OF AXIALLY ALIGNED CIGARETTES WITH AN INTERPOSED DOUBLE FILTER

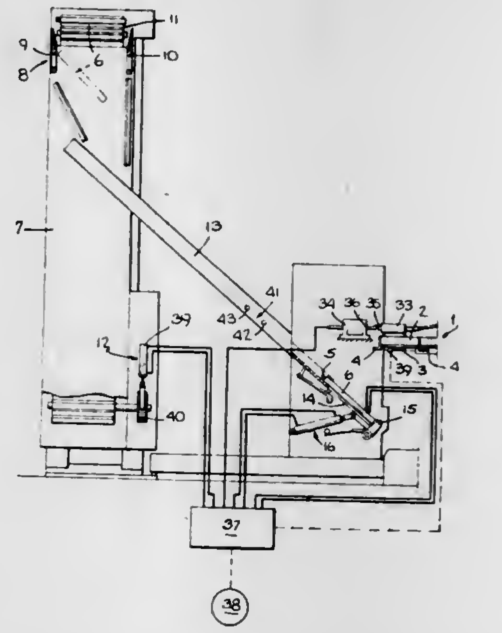
Filippo Giatti, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.
Filed Jan. 31, 1973, Ser. No. 328,493
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 C **9 Claims**



1. A device for continuously moving rod-like articles in an orderly manner and for reorienting the articles being moved, comprising:
  means for providing a linear path for a row of rod-like articles disposed end to end in axial alignment and advancing in an axial direction along said linear path;
  means for receiving pairs of said articles in spaced axial alignment substantially parallel to the linear path with the interspace between the spaced ends of the articles of each pair being of predetermined length, and for moving said pairs of articles in a direction lateral to their axes;
  means for transferring pairs of said articles from the row advancing along the linear path to said receiving means;
  said receiving and transferring means each being provided with controlled vacuum means for selectively holding said pairs of articles while being moved thereby; and
  means for providing rod-like members to said receiving means each being positioned in axial alignment in the interspace between a spaced pair of said rod-like articles.

3,863,751
FEEDING DEVICES FOR TEXTILE MACHINES

Louis Vignon, Geneva, Switzerland, assignor to Heberlein Hispano S.A., Vernier-Geneva, Switzerland
Filed Feb. 20, 1973, Ser. No. 333,472
Claims priority, application Luxembourg, Feb. 25, 1972, 64841
Int. Cl. B65g *47/52*
U.S. Cl. 198—27 **9 Claims**

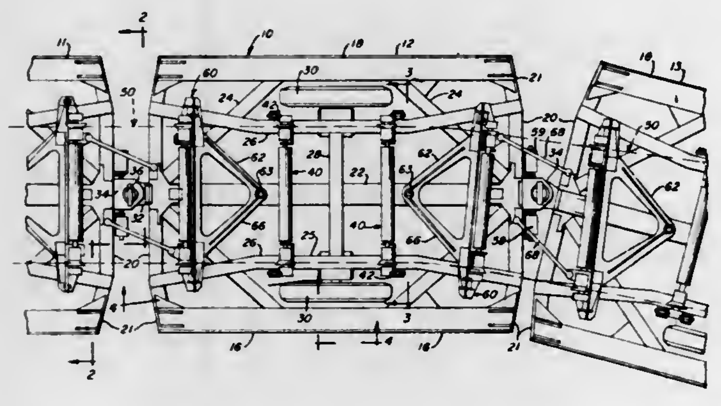


1. In apparatus for feeding empty bobbins each having a head at one end, to a bobbin changing device including spaced bobbin gripping means and means for advancing same, means for orienting bobbins for engagement of the heads by the

gripping means, bobbin carrying means mounted for pivotal movement between first and second positions and adapted to receive oriented bobbins from said orienting means when in said first position, drive means pivoting said carrying means to said second position to effect presentation of said bobbin heads to the advancing gripping means, means for urging the pivot axis of said carrying means in a direction to complete presentation of the bobbins to the gripping means at the end of the excursion of said carrying means from said first to second position, and retaining means rendering said urging means ineffective until said carrying means approaches its second position.

3,863,752
SUPPORT UNIT FOR A MOBILE BELT CONVEYOR

John R. Sibley, 401 Circle St., Franklin, Pa. 16323
Filed Feb. 5, 1973, Ser. No. 329,629
Int. Cl. B65g *41/00*
U.S. Cl. 198—109 **13 Claims**

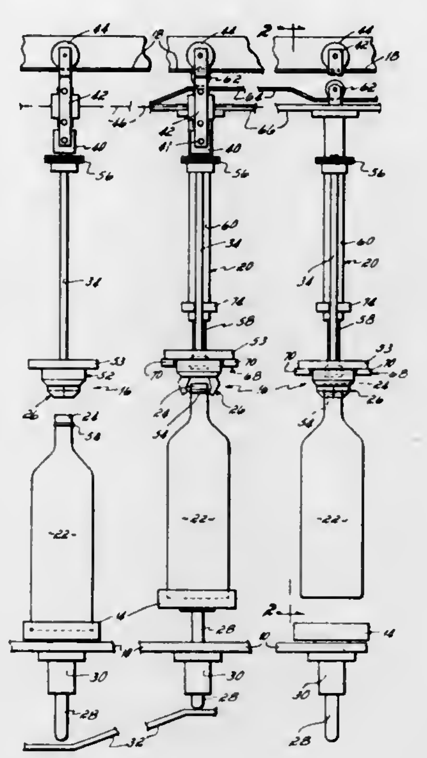


1. A conveyor train comprising: a series of support sections having portions cooperable to support a horizontally flexible conveyor belt to permit conveying of material along a generally horizontal elongated path; said support sections pivotally connected and relatively movable to vary the configuration of said path; adjacent portions of at least certain ones of said support sections having belt supporting means carried thereby and means mounting said belt supporting means for movement transversely and horizontally of said path; and connecting means connecting said adjacent sections and said belt supporting means to move said belt supporting means in said transverse and horizontal manner upon said relative movement of said certain ones of said support sections.

3,863,753
CHUCK APPARATUS FOR SUPPORTING CONTAINERS BY THE FINISH PORTION THEREOF

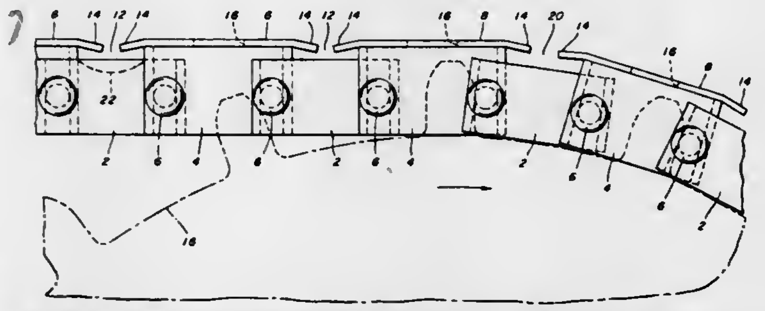
Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed May 10, 1973, Ser. No. 358,864
Int. Cl. B65g *19/00*
U.S. Cl. 198—179 **6 Claims**

1. Apparatus for supporting a container in a vertical position by a finish portion thereof comprising, in combination,
 a chuck assembly comprising:
 a spindle,
 means for mounting said spindle vertically,
 a chuck body carried by said spindle,
 a plurality of chuck jaws mounted by said body for pivotal movement about horizontal axes, between a radially outward open position and a radially inward closed position, said jaws being so shaped that when in said closed position in use they form a substantially closed mask about the finish portion of a container supported by the chuck assembly,
 and an annular sleeve shiftable along said spindle and operative to engage and cam said jaws to pivot about the horizontal axes thereof from said open position to said closed position,
 each said jaw including a lip portion adapted to engage said finish portion when in said closed position so that said jaws support said container,
 the mounting of each said jaw for pivotal movement being such that each jaw is biased by the force of gravity to pivot from said closed position outwardly toward said open position when said sleeve is out of engagement therewith;
 vertically movable means for shifting said sleeve along said spindle into and out of closing engagement with said jaws, and support means for said vertically movable means.



3,863,754
FLAT WIRE CONVEYOR BELT WITH IMPROVED COVERING

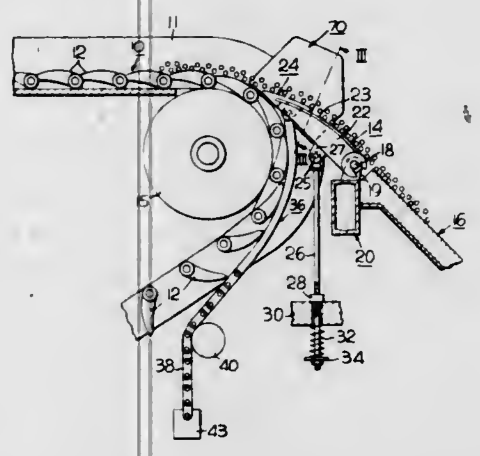
Carmen J. Van Lake, Waukegan, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Oct. 24, 1972, Ser. No. 299,989
Int. Cl. B65g *17/06*
U.S. Cl. 198—195 **2 Claims**



1. In a conveyor belt having flat wire links joined together by pintle rods an improved covering providing for hindrance free transverse and longitudinal sliding movement of the objects to be conveyed while on the moving conveyor belt comprising
 a plurality of generally flat rectangular cover plates with each of said cover plates fastened to the top surface of an alternate link of the belt,
 said alternate links having a height greater than the links connecting the alternate links whereby openings are created below the top surface of the alternate links,
 said cover plates having the surface adjacent the transverse edges extending slightly downward into the adjacent opening and
 with each of said cover plates having straight continuous transverse edges with each edge nearly meeting the edge of the adjacent cover plate thereby providing a smooth surface for sliding objects over the face of the belt.

3,863,755
END STRIPPER FOR A TRAVELING GRATE CONVEYOR

Walter J. Hartwig, Hartland, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Continuation-in-part of Ser. No. 356,049, April 30, 1973, Pat. No. 3,815,727. This application Nov. 9, 1973, Ser. No. 414,405
Int. Cl. B65g *45/00*
U.S. Cl. 198—230 **10 Claims**

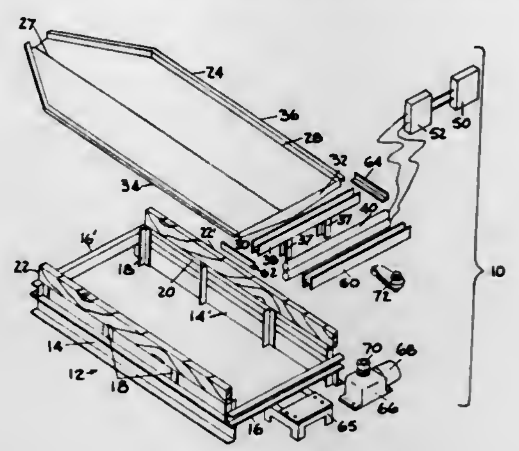


1. An end stripper adapted to strip material being processed from the discharge end of a grate conveyor, said end stripper comprising a main body member adapted to be supported by stationary support structure at a location in spaced relation from the stripping end of said stripper, a detachable side wall member positioned at a lateral edge of said end stripper, cooperating means carried by said side wall member and by said main body member for slidably detachably interlocking said side wall member with said main body member of said end stripper, and a replaceable stripper tip adapted to be detachably mounted on said main body member at the stripping end of said stripper, said replaceable stripper tip when assembled on said end stripper being in obstructing relation to detaching movement of said side wall member whereby to retain said side wall member in assembled relation on said end stripper, said stripper tip being provided with means adapted to be connected to a normally downwardly acting tension means whereby the tension means when connected to said stripper tip acts to engage said stripper tip and said main body member in firmly assembled relation with each other.

3,863,756
RECIPROCATING CONVEYOR

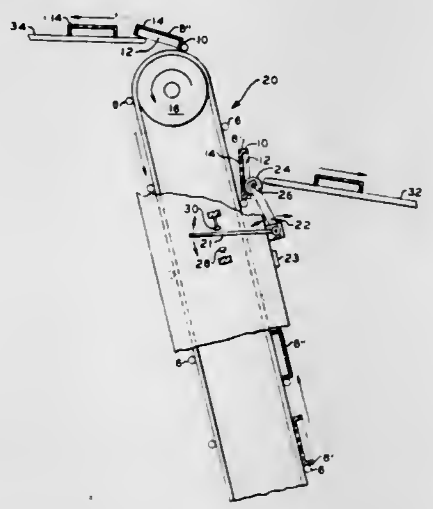
Lucas J. Conrad, Winston-Salem; Gerard E. Leonard, Kernersville, and Gary J. Simmons, Westfield, all of N.C., assignors to R. J. Reynolds Company, Winston-Salem, N.C.
Filed Aug. 23, 1973, Ser. No. 390,969
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CC **13 Claims**

1. A reciprocating conveyor comprising:
 a. pan means for carrying a live load to be transported by said conveyor;
 b. means for supporting said pan means;
 c. drive and release means attached to an acting on said pan means for imparting a first acceleration force to said pan means in a first direction and terminating said first acceleration force imparted to said pan means at a predetermined location; and
 d. pressurized pliable, right circular cylindrical, tubular, pneumatic spring means being contacted by said drive and release means and compressed as said drive and release means imparts said first acceleration force to said pan means in said first direction, whereby energy will be stored in said tubular pneumatic spring means, said tubular pneumatic spring means imparting a second and greater accelerator force to said pan means in a second direction opposite said first direction through said drive and release means as it disengages from said tubular pneumatic spring means, whereby the inertial force of the live load will overcome the frictional force between the pan means and the live load allowing the live load to slide in said first direction along the pan means.



3,863,757
METHOD AND APPARATUS FOR ORIENTING ELEMENTS HAVING A CONCAVE PORTION

Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 9, 1973, Ser. No. 358,533
Int. Cl. B65g *47/24*
U.S. Cl. 198—271 **15 Claims**

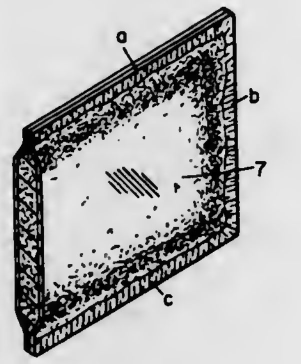


1. An apparatus for recovering articles having a concave portion defined by a top and a side portion from a bulk source, orienting said articles with the concave portion of said articles directed downwardly and delivering said oriented articles to a preselected location, comprising:
 first means for receiving articles from the bulk source, maintaining each individual article resting on its side portion against the supporting structure of the first means, and moving said article upwardly;
 second means for receiving from the upper end of the first means an article having its concave portion directed toward the supporting structure of the first means and moving the article from the first means to preselected location, retaining the position of the concave portion of the article directed toward the structure supporting the article on the second means and at the preselected location;
 third means for contacting an oriented article supported by said first means, pivoting outwardly from the first means and onto a fourth means for receiving and moving only an article having its concave portion directed outwardly from the supporting structure of the first means, said pivoted article being pivoted about its side portion; and

fourth means for receiving and moving to a preselected location an article pivoted from the first means by the third means, said pivoted article positioned on the fourth means and at the preselected location having its concave portion directed toward the structure supporting said article.

3,863,758
MOLDING COMPOSITIONS

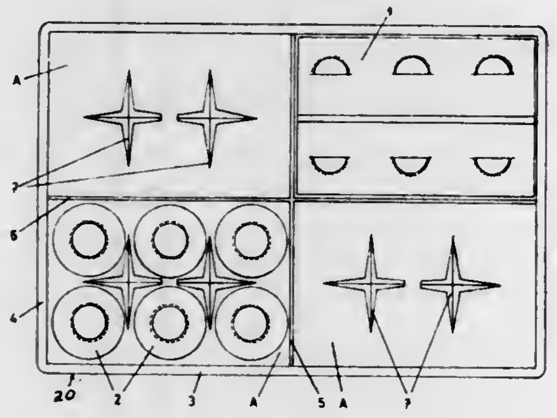
Frank J. Connelly, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Continuation of Ser. No. 194,951, Nov. 2, 1971, abandoned. This application Nov. 29, 1973, Ser. No. 420,359
Int. Cl. B32b *3/00;* **B65d** *81/00*
U.S. Cl. 206—84 **2 Claims**



1. A thermoplastic molding composition in the form of a packet consisting essentially of a blend of pulverulent thermoplastic film-forming polymer and up to 85 percent by weight of said blend of reinforcing fibers selected from the group consisting of glass fibers, asbestos fibers, graphite fibers and carbon fibers enclosed between two thermoplastic cover films of the same polymer as said pulverulent thermoplastic polymer, said cover films being heat sealed at least along the open edges.

3,863,759
PLASTIC CRATE FOR TRANSPORTING BOTTLES IN BOTTLE CARRIERS

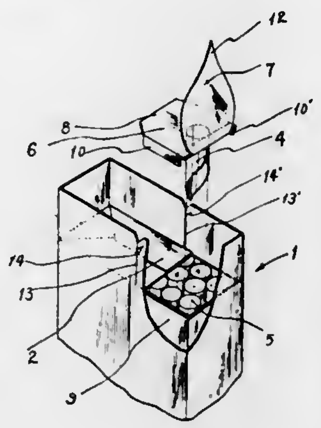
Ulrich Heinrich Prodel, Bad Salzuflen, Germany, assignor to Spumalit-Anstalt, Liechtenstein
Filed Oct. 18, 1973, Ser. No. 407,561
Int. Cl. B65d *75/00*
U.S. Cl. 206—203 **9 Claims**



1. Packaging for the transport of bottles, comprising a plurality of bottle carriers each holding a plurality of bottles and a plastic carton of a size to receive a plurality of said bottle carriers, said carton having side walls and a bottom, and positioning elements projecting up from the bottom of said carton and fitting between the bottles in bottle carriers placed in said carton to position said bottles and prevent them from bumping one another during transport, said carriers having openings in their bottoms through which said positioning elements extend.

3,863,760
CIGARETTE PACKAGE AND CIGARETTE-EJECTION TAB DEVICE

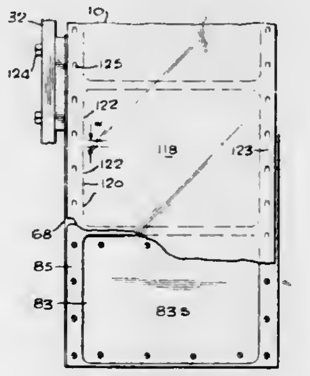
Ryou Dong Il, No. 111 Mia-Dong, and Hong Sung Pyo, No. 46-8 Woo E-Dong, both of SungBuk-ku, Seoul, South Korea
Filed May 7, 1973, Ser. No. 357,697
Int. Cl. A24f *15/14;* **B65d** *85/10*
U.S. Cl. 206—250 **3 Claims**



2. An article of manufacture providing a package for packaging a plurality of articles and for simultaneously withdrawing a first article from the packaged articles during the opening of the package, comprising in combination: a package having a sealed opening provided with a sealing sheet material having a slit therein, a tab member extending through said slit and having a free distal end exposed to exterior space, and the tab member having a base portion structure in a shape such that it is attachable to an article adjacent to said sealed opening of the package such that upon pulling upwardly on said free distal end the sheet material is such that it will be torn away from the opening, said article being a cigarette and the tab base being of conical shape and being wedged onto an upper portion of the cigarette structure.

3,863,761
LABEL WEB

Herbert LaMers, Los Angeles, Calif., assignor to R. A. Jones & Company, Inc., Covington, Ky.
Division of Ser. No. 89,492, Nov. 13, 1970, Pat. No. 3,776,801, which is a division of Ser. No. 756,651, Aug. 30, 1968, Pat. No. 3,661,625. This application June 5, 1972, Ser. No. 259,719
Int. Cl. D06f *69/00;* **B32b** *3/10*
U.S. Cl. 206—390 **6 Claims**

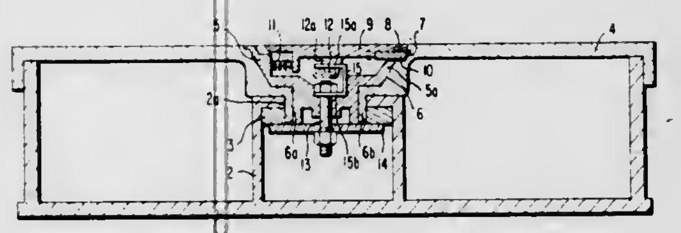


1. A rolled, pre-printed, precut label supply including an elongated web supporting labels therein, for use in apparatus adapted to apply labels to products, said apparatus including means for establishing a tacky surface to one side of said labels, a reciprocating resilient plunger means for engaging labels, for passing through said web and detaching labels therefrom, for carrying labels toward and applying labels to products, and thereafter withdrawing through a web remnant, said resilient plunger means having a forward label engaging face with a predetermined shape, and sprocket means for transporting said web through said label applying apparatus, said pre-printed, precut label supply comprising:

- an elongated single-ply web in the form of a roll including a plurality of die-cut labels and a web remnant to which said labels are attached, said labels being located throughout said remnant from one end to the other of said web,
- said labels being partially cut from said web remnant by a plurality of cuts extending completely through said web, the ends of said cuts being spaced apart to leave bridging means between said labels and said web remnant thereby to releasably hold said labels in said remnant,
- said bridging means having predetermined widths selected to permit the detachment of said labels by said resilient plunger, transversely to said web remnant, without indiscriminate tearing of the label,
- said labels having two sides, each free from adhesive, one of which sides is adapted for receiving adhesive and another side which bears printed indicia, and
- sprocket holes in said web remnant and extending therealong, said sprocket holes disposed in said remnant to permit accurate registration of said remnant and said labels with respect to said resilient plunger.

3,863,762
TAPE CONTAINER

Takuya Arai, Tokyo, Japan, assignor to Fugi Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan
Filed Sept. 7, 1973, Ser. No. 395,116
Claims priority, application Japan, Sept. 7, 1972, 47-89704
Int. Cl. A47j *27/08, 36/10*
U.S. Cl. 206—405 **11 Claims**

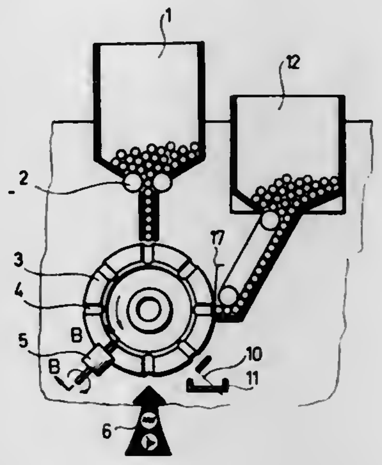


1. A container for a tape or the like comprising:

- a body portion having a flat bottom plate, a circumferential wall fixed to said bottom plate integrally therewith, and a socket fixed to the inside surface of said bottom plate at the center thereof,
- said socket having a cylindrical portion and an upper end plate, said end plate having an elongated shaped opening, a cover portion having a flat top plate, a circumferential wall fixed to said top plate thereof integrally therewith, and a recess formed at the center of said top plate, and latch means provided in the recess of said top plate,
- said latch means comprising a latch plate rotatable in said recess, a finger plate associated with said latch plate so as to be rotated with said latch plate, the shape of said finger plate being so formed that said finger plate may pass through said elongated opening of said socket when said finger plate is in alignment with said elongated opening and may not pass through said elongated opening when said finger plate is rotated from the position of alignment, and latch holes provided on the internal surface of said recess for holding said latch plate in predetermined positions.

3,863,763
EQUIPMENT FOR THE INSPECTION OF FILLED AMPOULES

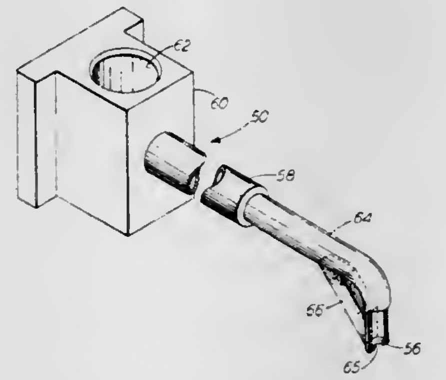
Arpad Kollar; Istvan Takacs; Bela Sandor, and Sandor Nepper, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary
Continuation of Ser. No. 300,654, Oct. 25, 1972, abandoned. This application Jan. 24, 1974, Ser. No. 436,383
Claims priority, application Hungary, Oct. 30, 1971, RI 453
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **9 Claims**



1. In an ampoule inspection device a combination comprising a rotary forwarding wheel having a frustoconical peripheral surface provided with a plurality of circumferentially spaced nests for holding ampoules therein; illuminating means adjacent said peripheral surface for illuminating ampoules located in said nests; a rotating wheel arranged adjacent said peripheral surface of said forwarding wheel ahead of said illuminating means, as considered in the direction of rotation of said forwarding wheel, for rotating ampoules in said nests about their axes; and means for feeding containers to be inspected seriatim into said nests of said forwarding wheel.

3,863,764
METHODS AND APPARATUS FOR IDENTIFYING NONMAGNETIC ARTICLES

Stephen A. Myslinski, Whitehall; Edwin J. Pritchard, Coopersburg, and Howard A. Tooker, Allentown, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.
Filed Feb. 28, 1974, Ser. No. 446,888
Int. Cl. B07c *5/344*
U.S. Cl. 209—111.8 **15 Claims**



1. A method of identifying nonmagnetic articles which comprises the steps of:

- coating the article with a material which is capable of retaining a magnetic flux when magnetized;
- testing the articles individually to determine which articles are to be identified;
- and contacting the individual articles to be identified in accordance with the testing, with a tip of a marking member having a magnetic flux concentrated at the tip thereof to magnetize the material and identify the articles.

3,863,765

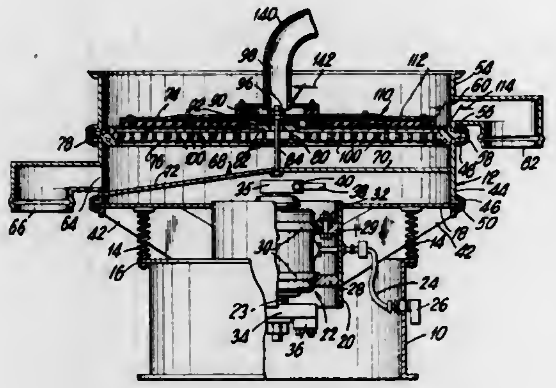
ANTI-BLINDING WIPER ASSEMBLY FOR VIBRATORY SEPARATOR

Eric G. Gray, 46 Flavian Crescent, Willowdale 428, Ontario, Canada

Filed May 8, 1972, Ser. No. 251,006

Int. Cl. B07b *1/52*

U.S. Cl. 209—323 **21 Claims**



1. A wiper assembly for a vibratory separator including a generally horizontal separator screen mounted in an annular casing, said wiper assembly comprising:

an annular cover means of small diameter than said annular casing, for inhibiting splashing of material on said separator screen, said cover means being disposed above the separator screen and movable relative thereto, said cover means including an opening for enabling the substance to be separated to be passed to the region intermediate the cover means and the separator screen;

a feed pipe means for introducing said substance to be segregated to said opening in said cover means, said feed pipe means extending to an elevation which is lower than the elevation of the top of said opening whereby the lower portion of said feed pipe limits the excursion of said wiper assembly within an area which is approximately concentric with said annular casing; and

a plurality of wiper members secured to the underside of said annular cover means, said wiper members being operative to space the cover means from the screen to enable said substance to move along the upper surface of the screen, and said wiper members being operative, during operation of the separator, to move with the cover means relative to the screen in such manner as to dislodge portions of the substance which may coat the upper surface of the screen.

3,863,766

METHOD AND APPARATUS FOR SORTING AND SEPARATING GRANULAR MIXTURE

Hans Oetiker, Salisstr. 4 CH-900 St. Gallen, Switzerland

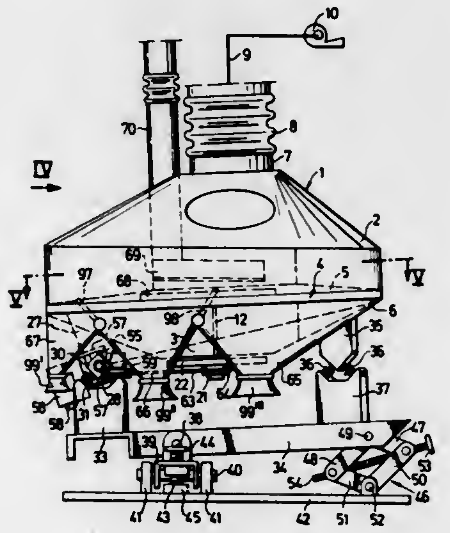
Continuation of Ser. No. 167,933, Aug. 2, 1971, abandoned. This application Dec. 27, 1973, Ser. No. 428,890

Claims priority, application Switzerland, Aug. 3, 1970, 11641/70

Int. Cl. B07b *4/08*

U.S. Cl. 209—469 **3 Claims**

1. In apparatus for sorting and separating a minority of grains, having a low suspension velocity, and a majority of grains, having a higher suspension velocity, from mixtures of granular material, under the influence of swinging-throw movements of a plane inclined gas-permeable support and of an air current flowing upwardly through the support, and of the type including a feeding device extending to an inlet on the plane inclined gas-permeable material support, a swingable bearing carrying the material support, a swing drive operatively associated with the material support to produce the swinging-throw movements, means producing an air current flowing upwardly through the support, and outlets, for the minority grains and the majority grains, adjoining the material support: the improvement comprising, in combination, the swinging movement of said support establishing a direction of conveyance, for the discharge of the majority grains, extending from said inlet horizontally and laterally; the outlet for the majority grains being arranged in said horizontal region; means providing a flow region on the material support, located downwardly from said horizontal region, for the floating evacuation of the minority grains on the material support extending between the material fall line on said support extending through the inlet with the steepest inclination and a line on said support having an inclination which is one-half the inclination of the fall line and intersecting the inlet; the outlet for the minority grains being arranged in said last-mentioned flow region; the direction of the swinging-throw movements produced by said swing drive being oriented at an acute angle to and in the direction of conveyance; the bearing carrying said swingable material support being adjustable in height both in the direction of the swinging-throw movements and at a right angle thereto, to vary the inclination of the material support with respect to a fixed base; the bearing for said material support having three support members provided with swinging elements; said three support members being connected, on one side of said swinging elements, to the swingable part of said apparatus and, on the other side of said swinging elements, to a first rocker; a second rocker; means pivotally mounting said first rocker on said second rocker; a fixed base; means pivotally mounting said second rocker on said fixed base; the axis of said last-named pivotal mounting means extending horizontally and parallel to the direction of the swinging-throw movements, and the axis of said first mentioned pivotal mounting extending at a right angle thereto; and means operatively associated with each rocker and operable to adjust the inclination thereof.



3,863,767

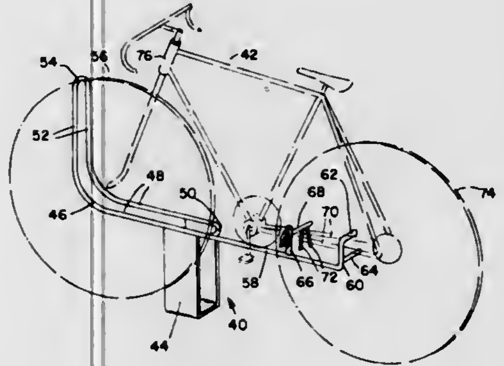
BICYCLE SECURITY RACK

William Guy Garwood, 1650 Waverly St., Palo Alto, Calif. 94301

Continuation-in-part of Ser. No. 223,581, Feb. 4, 1972, abandoned. This application Dec. 13, 1973, Ser. No. 424,509

Int. Cl. E05b *71/00*

U.S. Cl. 211—5 **10 Claims**



1. A bicycle security rack comprising: front wheel securing means including a horizontal U-shaped portion and a generally vertical U-shaped portion in combination for limiting movement of the front wheel of an upright two-wheel bicycle forwardly and transversely when said wheel is inserted therein; rear wheel securing means extending aftwardly from and fixed to the front wheel securing means; arm means extensible transversely from the rear wheel securing means, said arm means adapted to be extended to a position slightly above and at least partially spanning the chain stays of a two-wheel bicycle when the front wheel of said bicycle is inserted in the front wheel securing means so that said arm means extends through the spokes of the rear wheel of said bicycle, said arm means including depending portions adapted to coact with said chain stays; and means for locking the arm means in its extended position to prevent removal of each of the wheels and frame of said bicycle, either individually or assembled, when said bicycle is inserted in said rack.

3,863,768

Patent Not Issued For This Number

3,863,769

STRUCTURAL MEMBERS FOR PROVIDING RELEASABLE CONNECTIONS AND STRUCTURES INCORPORATING THE MEMBERS

Norman H. Goddard, Chateauquay Center, Quebec, Canada, assignor to JCN Wire Industries Ltd., East Montreal, Canada and JCN Wire Industries Ltd., Quebec, Canada

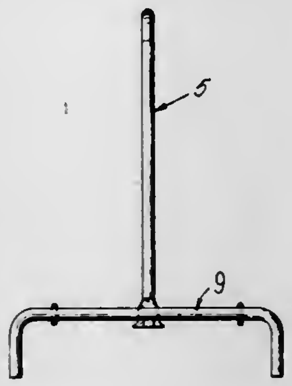
Filed Dec. 4, 1972, Ser. No. 311,553

Claims priority, application Canada, Sept. 21, 1972, 152300

Int. Cl. A47f *5/10*

U.S. Cl. 211—182 **8 Claims**

1. A pair of elongated structural members adapted to be connected together, one of said members having a main tubular section and a connecting section at one end of the tubular section, the connecting section being integral with and forming a deformed extension of said main tubular section, the connecting section having a pair of spaced apart, elongated portions and a web section joining the elongated portions, said web being formed integrally with said elongated portions and comprising a pair of adjacent wall sections, extensions of said wall sections forming a merging section flaring outwardly from the connecting section to the main tubular section and being joined integrally with said main tubular section, the elongated portions extending substantially parallel to, and substantially symmetrically about, the longitudinal axis of the one member, the other member having aperture means for receiving the connecting section of the first member, the shape and size of said aperture conforming substantially with the cross-sectional shape and size of the connecting section, whereby, when the connecting section of said first member is inserted in the aperture of said second member and forced in the direction of said second member, the first member will be releasably held in said second member by frictional engagement between edges of said aperture and said merging section of said web.



3,863,770

METHOD AND APPARATUS FOR HANDLING AN IRRADIATED FUEL ASSEMBLY

John M. Shallenberger; Robert E. Meuschke, and Walter E. Desmarchais, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

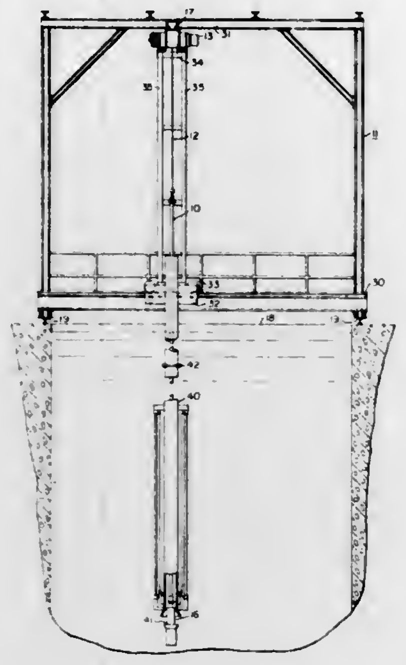
Filed Apr. 11, 1973, Ser. No. 350,243

Int. Cl. B66c *5/02, 1/28*

U.S. Cl. 212—14 **13 Claims**

1. Apparatus for handling irradiated fuel assemblies of a nuclear reactor during underwater transfer operations, said apparatus comprising means for lifting and lowering a fuel assembly, means for moving the fuel assembly in a horizontal direction, first support means for structurally supporting the fuel assembly during the handling operations, said first support means including apparatus for grasping the fuel assembly, and second support means for redundantly supporting the fuel

assembly, said second support means including apparatus for redundantly grasping the fuel assembly, said redundant grasping apparatus being activated so as to engage the fuel assembly by lifting of the fuel assembly with said lifting means.



3,863,771
GANTRY CRANES

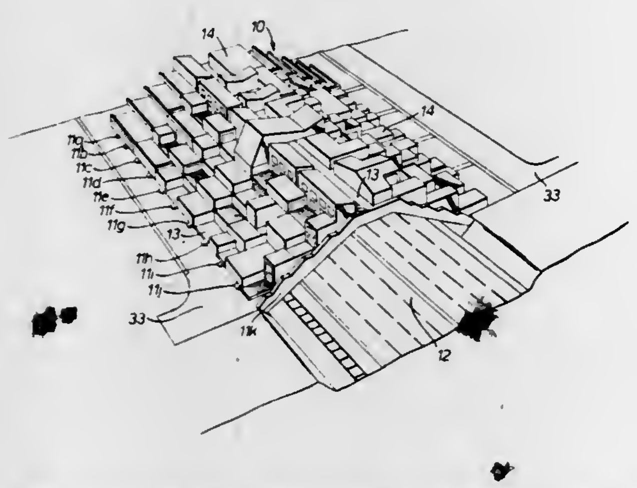
Charles Herbert Dobbie, Winchelsea, and John David Winders, Epsom, both of England, assignors to Charles Herbert Dobbie, Winchelsea; Thaddeus Marian Prus-Chacinski, London; Norman Ivor Pallett, Tonbridge; John David Winders, Epsom and William Brown Harris, Penarth, all of England

Filed Dec. 6, 1973, Ser. No. 422,323

Claims priority, application Great Britain, Dec. 8, 1972, 56876/72

Int. Cl. B66c *19/00*

U.S. Cl. 212—14 **7 Claims**



1. A movable gantry crane useful in the erection of a structure comprising several bridge-like sub-structures arranged side by side in spaced relationship; which crane comprises a girder long enough to span the structure, supported by movable supporting columns, at least two sets of hangers which suspend a platform from the girder in a position to lie beneath a bridge-like sub-structure to be erected with the aid of the crane, at least one set being disposed to occupy a position in front of the said sub-structure and at least one other set being disposed to occupy a position to the rear of the said sub-structure, a lifting device movable along the girder between sets of hangers disposed to occupy positions respectively in front of and to the rear of the said sub-structure, and the hangers of the said other set or sets being removable or displaceable to permit the crane including the platform to be moved forwards when this sub-structure has been made self-supporting and laterally stable.

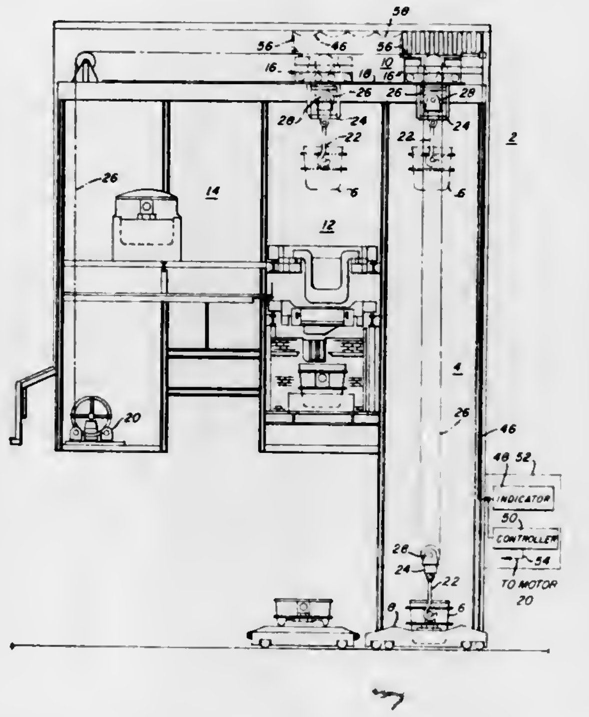
3,863,772
CRANE HOIST HEIGHT CONTROL

George F. Schwartz, Hampton Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1973, Ser. No. 328,976

Int. Cl. B66c *17/18*

U.S. Cl. 212—21 **3 Claims**



1. A crane hoist height signal system for a crane having a hoist block comprising
- a cable having one end attached to the hoist block,
- a revolving drum mounted on the crane and attached to the other end of the cable for winding and unwinding the cable as the hoist block is raised and lowered,
- a shaft attached to the drum to revolve with the drum,
- a constant torque spring motor attached to the shaft for continuously applying a force to the drum tending to wind the cable onto the drum,
- a pulse generator attached to the shaft for providing a first type pulse for each predetermined increment of winding the cable and a second type pulse for each predetermined increment of unwinding the cable and
- means connected to said pulse generator for adding the first type pulses and subtracting the second type pulses from a predetermined total correlated with a selected hoist block height thereby providing a pulse total representative of the hoist block height.

3,863,773
ROTARY TOWER CRANE SUITABLE FOR HIGHWAY TRANSPORTATION

Elmar Reich, Biberach an der Riss, and Alfons Kohle, Pflummernstrasse, both of Germany, assignors to Hans Liebherr, Biberach an der Riss, Germany

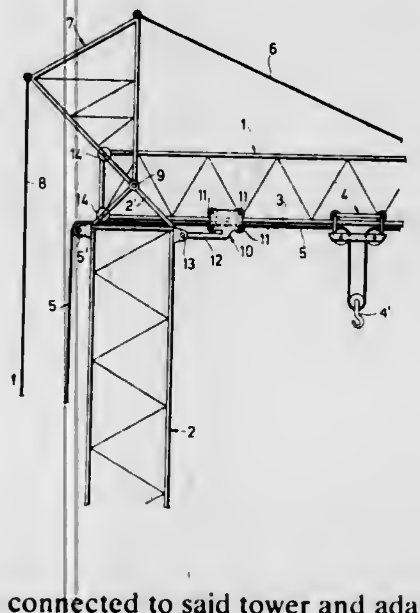
Filed July 9, 1973, Ser. No. 377,757

Claims priority, application Germany, July 10, 1972, 2233828

Int. Cl. B66c *23/62*

U.S. Cl. 212—46 B **7 Claims**

1. A tower crane comprising:
- a tower having a lengthwise axis adapted to stand vertically during hoisting operations of said crane;
- a boom for hoisting, having a lengthwise axis adapted to extend transversely from the lengthwise axis of said tower during hoisting operations of said crane;
- means supporting said boom in said transverse position during hoisting operation of said crane;
- means to move said lengthwise axis of said boom to a position substantially coaxial with said lengthwise axis of said tower, comprising:
  - boom actuating means extending transverse from the lengthwise axis of said boom;
  - means pivotally connecting said boom actuating means to said tower;
  - means connecting said boom actuating means to said boom; and
  - means to pivot said boom actuating means about said tower to raise said boom and thereby bring said lengthwise axis of said boom into alignment with said lengthwise axis of said tower;
- means to move said boom at least partially into said tower in coaxial telescoped relationship to said tower, comprising:
  - line means operatively associated with said boom for hoisting operation of said crane;
  - guide means connected to said tower and adapted to hold said line means in contact with a guide means on said boom;
  - guide means on said boom vertically spaced when said boom is in its horizontal positions, said guide means adapted to engage said line means when said boom is disposed with its lengthwise axis aligned with said lengthwise axis of said tower; and
  - said tower guide means and said boom guide means relatively disposed to allow said boom to move into and out of said tower upon lengthening and shortening of said line means; and
  - means to guide movement of said boom when moving into and out of telescope relationship with said tower.



3,863,774
SKYLINE CARRIAGE

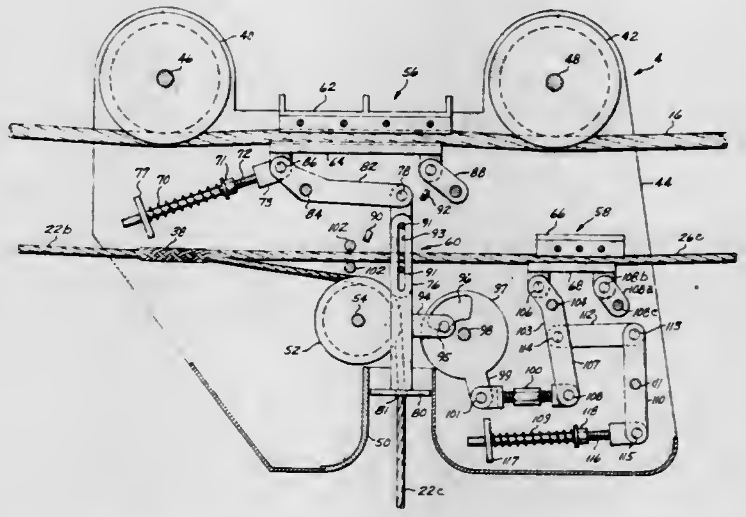
Dennis L. Brandt, Broken Bow, Okla., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 18, 1974, Ser. No. 452,022

Int. Cl. B66c *21/00*

U.S. Cl. 212—94 **3 Claims**

1. A skyline carriage of the type with first and second sides and a bottom adapted to traverse a skyline cable and having mainline and haulback cables in operative communication therewith together with means to independently actuate said mainline and haulback cables with the improvement comprising:
- means within the carriage to direct the mainline cale from its entry point at the first side of said carriage to the bottom thereof such that a portion of said mainline cable extends downwardly from the bottom of said carriage,
- means to direct the haulback cable from its entry point at the second side of said carriage toward said first side,
- means to join the end of said haulback cable to said mainline cable at a position which is above said mainline cable directing means and generally in the same plane therewith, and
- a locking mechanism for sequentially locking and unlocking said carriage to said skyline cable and to said haul-back cable comprising:
  - means to sense a vertical position of the downwardly extending portion of said mainline cable,
  - first means responsive to said sensing means to lock the carriage to the hualback cable and to substantially simultaneously unlock the carriage from said skyline cable when the downwardly extending portion of the mainline cable is substantially in its uppermost position, and
  - second means responsive to said sensing means to lock the carriage to the skyline cable and to substantially simultaneously unlock the carriage from said haulback cable when the downwardly extending portion of the mainline cable is in a lower vertical position with respect to its uppermost position.



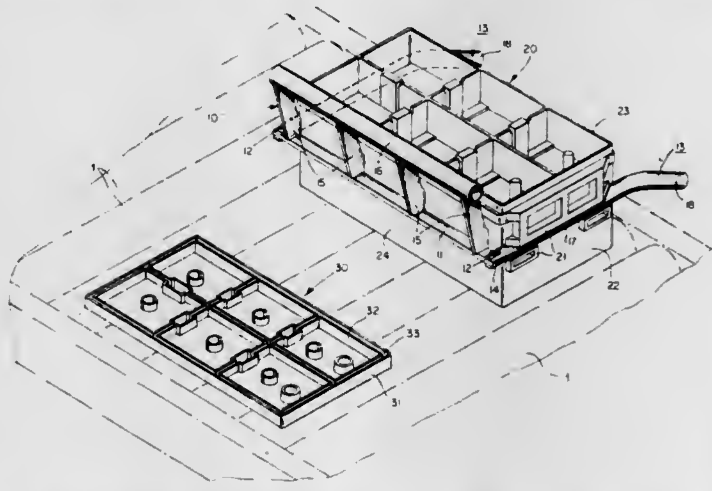
3,863,775
METHOD AND APPARATUS FOR INVERTING OPERATIONS ASSOCIATED WITH THE ASSEMBLY OF A STORAGE BATTERY

Henry Toback, New Ringgold, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Nov. 9, 1973, Ser. No. 414,520

Int. Cl. B65g *7/00*

U.S. Cl. 214—1 QE **12 Claims**



1. Apparatus for use in inverting operations associated with the assembly of a storage battery, comprising:
- a. a rigid base having spaced-apart ends;
- b. a pair of handle means pivotally connected to said base so as to be capable of movement toward and away from each other relative to said base and configured for lifting engagement of said battery therebetween; and
- c. roll-over support means rigidly associated with said base adapted for providing a supporting axis about which said battery, upon engagement by and upward lifting of said handle means, can be rolled over and rotated as much as 180°, whereby said battery is inverted from its original unengaged position.

3,863,776
APPARATUS FOR TRANSFERRING DISCRETE LOADS TO OR FROM PALLETS

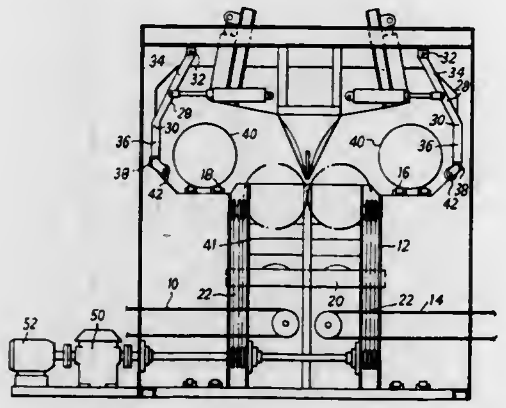
Frederick George Harman, Epping, England, assignor to The British Mathews Limited, Essex, England

Filed Apr. 11, 1973, Ser. No. 350,188

Claims priority, application Great Britain, Apr. 11, 1972, 16736/72

Int. Cl. B65g *57/26*

U.S. Cl. 214—6 P **5 Claims**



1. Apparatus for transferring a plurality of discrete loads to a pallet of the kind capable of receiving two parallel rows of the discrete loads, comprising:
   - pallet infeed means for moving an empty pallet to a loading station;
   - first and second conveying means to convey loads simultaneously to respective first and second loading positions on opposite sides of said loading station so that each loading position is occupied by a similar number of loads arranged in a single row parallel to and adjacent the position on the pallet in which the loads are to be supported by the pallet;
   - transfer means for acting simultaneously on the two rows of loads at said loading positions to push the loads simultaneously to their respective position on the pallet while the pallet is at said loading station; means for actuating said transfer means so that the articles in each of said rows of loads are pushed simultaneously into position on the pallet; and
   - pallet discharge means for discharging the loaded pallet from the apparatus.

3,863,777
ARTICLE STORAGE AND HANDLING SYSTEM

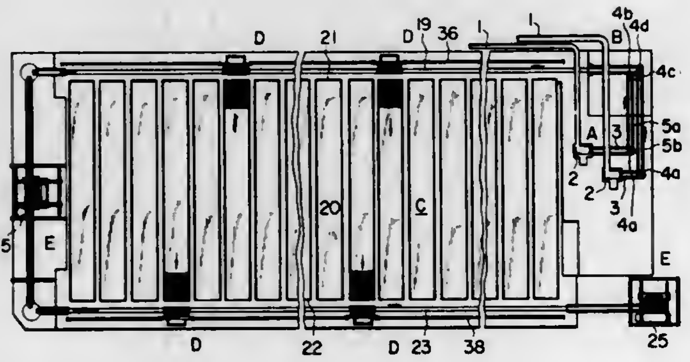
Tsuneo Murata, Tokyo, Japan, assignor to Tsubakimoto Chain Co., Osaka-shi, Japan

Filed July 18, 1973, Ser. No. 380,282

Claims priority, application Japan, July 19, 1972, 47-72369; Oct. 18, 1972, 47-10364; Oct. 23, 1972, 47-105249; Nov. 15, 1972, 47-113902

Int. Cl. B65g *1/04;* **B66f** *9/14*

U.S. Cl. 214—16 B **3 Claims**



2. Loading-and-unloading means comprising a main frame, an elevating frame guided and supported by said main frame, an L-shaped frame comprising a horizontal frame mounted on said elevating frame and moving forward and backward and a vertical frame attached to the front or rear end of said horizontal frame, a plurality of tilting frames supported, in a row, by the front portion of said vertical frame and adapted to tilt forward and backward on the fulcrum at its lower end, and a fork frame elevatingly guided and supported by said tilting frames, having a fork at its lower end, and springingly fitted to said tilting frames through a spring.

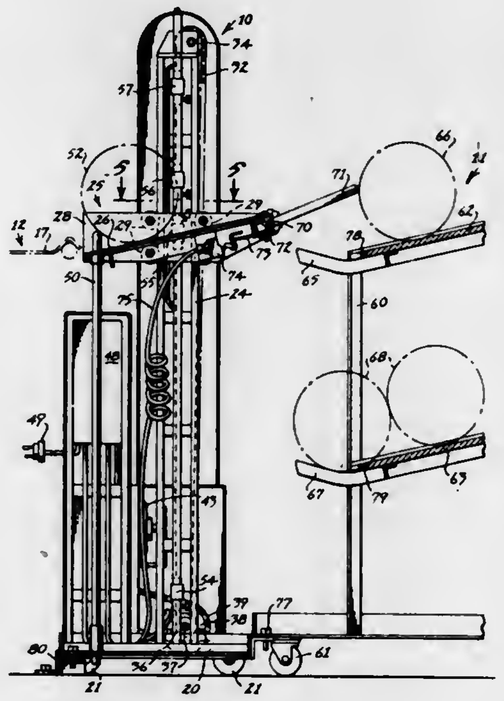
3,863,778
ROLL STORAGE DEVICE HAVING AN ELEVATOR WITH PIVOTAL LOAD SUPPORTING MEANS

Thomas W. Martin, Sr., Nashville, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.

Continuation of Ser. No. 117,514, Feb. 22, 1971, abandoned, which is a division of Ser. No. 831,848, June 10, 1969, Pat. No. 3,601,270. This application Nov. 24, 1972, Ser. No. 309,432

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 R **5 Claims**



1. A roll loading apparatus comprising:
   - a. a base frame,
   - b. an elevator member,
   - c. means mounting said elevator member on said base frame for vertical reciprocable movement,
   - d. an elongated cradle adapted to support a roll in an elevated position,
   - e. means supporting said cradle adjacent said base frame,
   - f. at least one roll engaging finger,
   - g. means pivotally mounting said finger on said elevator member to normally project toward said cradle at an inclination from said elevator member, said cradle being in the vertical path of said projected finger,
   - h. an opening in said cradle adapted to register with each said finger to permit the vertical movement of said finger through said cradle,
   - i. means limiting the pivotal movement of said finger between its normally inclined position and a raised position,
   - j. motive means for raising and lowering said elevator member so that when said finger is moving up through said cradle said projecting finger lifts a roll supported by said cradle causing said roll to roll down said finger toward said elevator member, and when said finger is moving down through said cradle, a roll carried by said cradle deflects said finger to said raised position,
   - k. a reversing limit switch on said elevator member adapted to be actuated by the pivotal movement of said finger, so that when said finger moves from its raised position to its inclined position, said reversing limit switch is actuated, said reversing limit switch being operatively connected to said motive means to reverse the direction of said elevator member from down to up when said reversing limit switch is actuated.

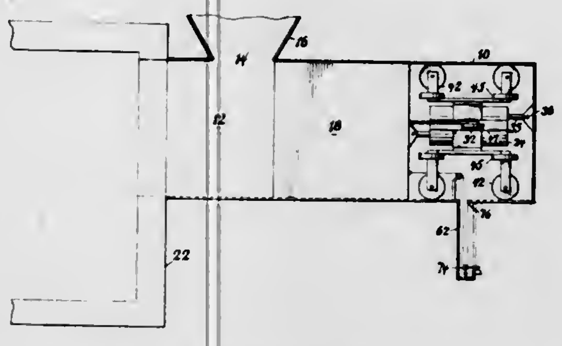
3,863,779
RAM TYPE REFUSE LOADER

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company Inc., Wellsville, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,086

Int. Cl. F23k *3/12*

U.S. Cl. 214—23 **5 Claims**



1. A loader for an incinerator that comprises fixed housing structure having inner walls that form a compaction chamber, an opening in said housing for loading a mass of material into said chamber, a compaction member movable along the longitudinal axis of the compaction chamber, means for moving the compaction member along the longitudinal axis of the housing between a forward position at one side of said opening and a rearward position at the opposite side of said opening including a pair of oppositely directed driving means intermediate the compaction member and the housing structure, means connecting one of said driving means to the compaction member and another to the fixed structure, a power supply for applying a driving force to said driving means, means supporting said driving means comprising support structure guided for movement along the longitudinal axis of said chamber, and trailing means guiding said compaction member along the longitudinal axis of said compaction chamber.

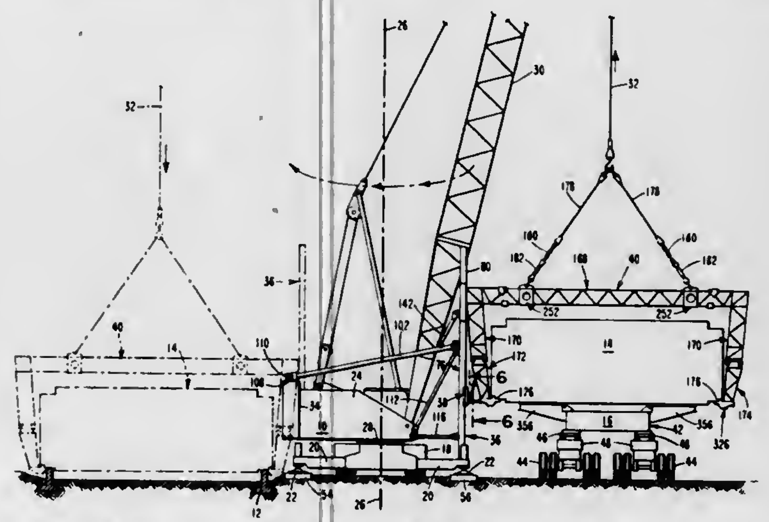
3,863,780
SYSTEM FOR PLACING FACTORY PREFABRICATED HOUSING UNITS

C. Robert Gottlieb, Mobile, Ala., and Eugene C. Lewis, Scotch Plains, N.J., assignors to Diamondhead Corporation, Mountainside, N.J.

Division of Ser. No. 312,575, Dec. 6, 1972, Pat. No. 3,831,770. This application Jan. 22, 1974, Ser. No. 435,585

Int. Cl. B66c *3/00*

U.S. Cl. 214—38 CA **12 Claims**



1. A self-transportable system for placing factory prefabricated, interiorly finished housing units on lot site foundations, said system comprising:
   - a vehicular rotary crane having a boom and hoist line swingable about a vertical axis;
   - a load spreader detachably suspendable from said hoist line and including means to establish retractable, rigidly linear, foundation-like supports under opposite sides of the housing unit along the full length thereof;
   - a snubbing frame mountable on said crane to move with said boom in its swinging movement about said vertical axis;
   - means to connect said load spreader adjustably and removably to said snubbing frame to insure movement of said load spreader directly with movement of said snubbing frame about said vertical axis irrespective of vertical movement of said load spreader by said hoist line;
   - vehicular transporter means for positioning a housing unit in transfer relation to said crane; and
   - means to mount said load spreader on said transporter means for over-land movement thereof independent of said crane.

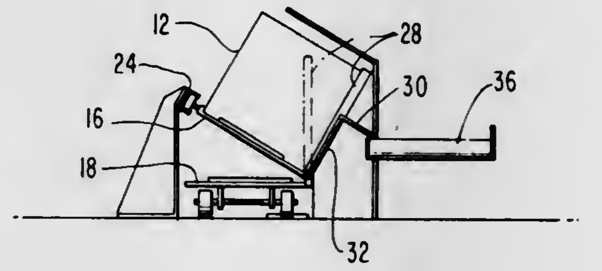
3,863,781
ARTICLE UNLOADER

Neil W. Butzow, Greendale; Glenn J. Eggert, Cedarburg; Bert Krivec, Waukesha, and Gary J. Rollinger, Belgium, all of Wis., assignors to Rexnord, Inc., Milwaukee, Wis.

Filed Apr. 6, 1973, Ser. No. 348,785

Int. Cl. B65g *67/24*

U.S. Cl. 214—62 R **9 Claims**



1. Apparatus for unloading articles from a container while the container is being conveyed through an unloading station, said apparatus comprising:
   1. a first conveyor which is
      - a. adapted to carry said container and
      - b. adapted to tilt about a first axis parallel to the direction in which said container is to be conveyed through said unloading station while said container is being conveyed through said unloading station;
   2. a retaining surface comprising a plurality of doors pivotably mounted about a second axis parallel to the direction in which said container is to be conveyed through said unloading station, said second axis being located at a height approximately equal to that of said first axis, said plurality of doors being adapted to bear against articles contained in said containers while said first conveyor is being tilted and being built in overlapping relationship so that the doors downstream of any given door will always be rotated by at least as much as that door, thereby ensuring a smooth transition from one door to the next as said container is conveyed through the unloading station; and
   3. a second conveyor which is
      - a. adapted to carry said articles and
      - b. located in said unloading station immediately downstream of said retaining surface in a position to receive articles slid off said container,

whereby articles may be unloaded from said container while it is being conveyed through said unloading station, said articles first being retained within said container by said retaining surface while said container is being tilted and then being deposited on said second conveyor when the tilting has been fully accomplished.

3,863,782

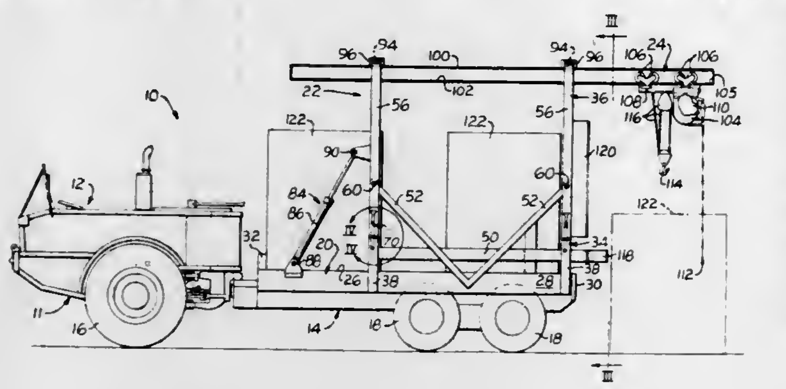
SELF-LOADING ARTICLE TRANSPORT VEHICLE

Dale D. Sandrock, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 2, 1973, Ser. No. 375,482

Int. Cl. B60p *1/54*

U.S. Cl. 214—75 H **14 Claims**



1. A self-loading article transport vehicle comprising;
- an elongated load carrying bed having a predetermined load receiving end;
- a frame pivotally mounted on said vehicle for movement between a substantially rigid, upstanding load receiving position above the bed and a collapsed load restraining position for articles on the bed;
- a longitudinally extended rail pivotally mounted centrally on said frame and having a load receiving end extending outwardly of said load receiving end of the bed when said frame is in said load receiving position;
- load transfer means longitudinally movably mounted on said rail and having a load engaging member elevationally extendably retractably movable relative to the rail for permitting articles to be loaded onto and removed from the bed; and
- means for pivotally swinging said frame to its collapsed position automatically to lower said rail downwardly and to swing its load receiving end inwardly of the bed in tightly clamping load restraining engagement against articles on the bed.

3,863,783

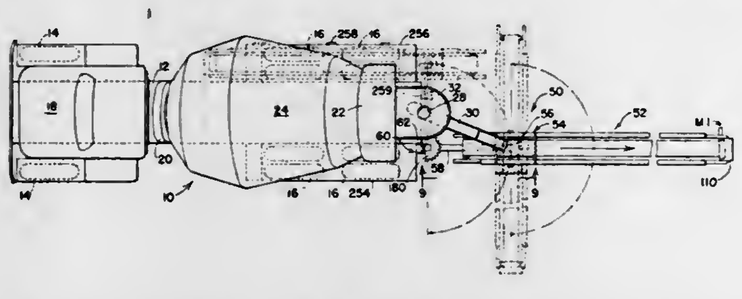
DISTRIBUTING CONVEYOR SYSTEM FOR A ROTARY CONCRETE MIXING OR OTHER TRUCK

Francis T. Spellman, Jr., Blue Springs, Mo., assignor to Symons Corporation, Des Plaines, Ill.

Division of Ser. No. 208,682, Dec. 16, 1971,. This application Dec. 1, 1972, Ser. No. 311,225

Int. Cl. B60p *3/16*

U.S. Cl. 214—83.26 **8 Claims**



1. In combination with a vehicle having a frame structure and designed for the transport of flowable material, a support bracket having its proximate end hingedly secured to the rear end of said frame structure for swinging movement about a substantially vertical axis, a turntable mounted on the distal end of said support bracket for rotation about a vertical axis, a carrier frame mounted on said turntable for rotation bodily therewith, an longated conveyor unit of the endless belt type slidably mounted on said carrier frame for lengthwise sliding movement on the frame in opposite directions between a first extreme position wherein one end thereof is in close proximity to the carrier frame and the other end is remote therefrom, and a second extreme position where said other end is in close proximity to the carrier frame and said one end is in close proximity thereto, and a material-receiving hopper on said carrier frame, said conveyor unit, in all positions of which it is capable of assuming, remaining in effective material-receiving register with said hopper, the effective length of said support bracket being greater than the distance between the hinge connection between the bracket and frame structure and the lateral side of said vehicle frame structure, whereby the distal end of the support bracket overhangs said rear end of the vehicle frame structure in a transverse direction when the support bracket is swung to a transversely extending position with respect to the vehicle, the turntable being rotatable throughout an angle of sufficient extent to bring the conveyor unit alongside the vehicle in a longitudinally extending relationship when the conveyor unit is in one of its extreme positions.

3,863,784

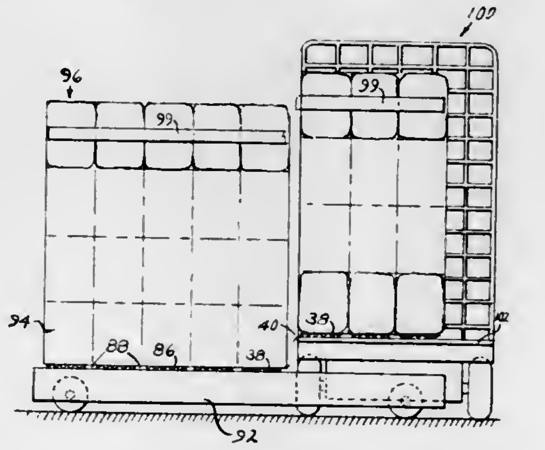
LOAD SUPPORTING PALLET

Wells A. Webb, 1788 Shattuck Ave., Berkeley, Calif. 94709

Division of Ser. No. 133,795, April 14, 1971, Pat. No. 3,763,792. This application July 17, 1973, Ser. No. 380,104

Int. Cl. B65d *57/00*

U.S. Cl. 214—10.5 R **12 Claims**



1. A method of handling a cargo comprising a plurality of indivdual cartons, said method comprising the steps of:
- providing a load supporting pallet comprising a plurality of adjacently positioned individual sections connected together by severable connecting means;
- placing cartons on said pallet in tiers corresponding to said individual sections to thereby separately load said individual sections;
- selecting and moving a predetermined number of said loaded sections less than said plurality of sections; and
- severing the connecting means between said selected tiers and adjacent non-selected loaded sections.

3,863,785

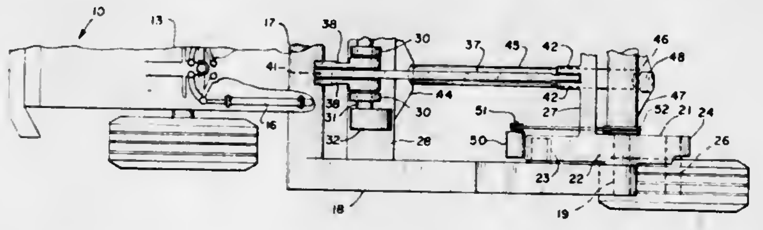
SELF-LOADING COIL CARRIER

Gibson E. Brock, R.D. 5 Persimman Rd., Sewickley, Pa. 15143

Filed Jan. 22, 1974, Ser. No. 435,442

Int. Cl. B66c *23/00*

U.S. Cl. 214—130 C **9 Claims**



1. Trailer apparatus adapted for carrying coils of steel strip and the like comprising a pull yoke, a pair of draft beams spaced from each other connected with the pull yoke and extending rearwardly therefrom, a load-straddling rack including a pair of legs, a wheel assembly journaled at the lower end of each leg, outwardly thereof, a cross member spacing the upper ends of the legs, means pivotally mounting the rack between the draft beams at the upper ends of the legs so as to rock from a traveling position in which the legs are upright to a loading position in which the legs are folded forwardly against the draft beams, and a ram adapted to support a coil of steel strip through the eye thereof affixed at one end to the draft beams adjacent the pull yoke and extending rearwardly thereof below the draft beams and substantially parallel thereto.

3,863,786

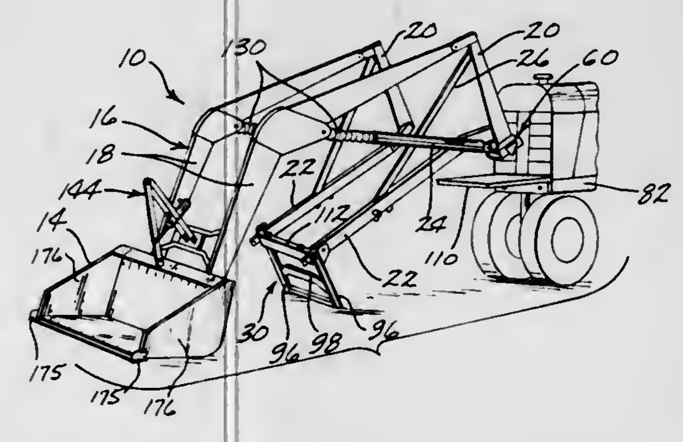
IMPLEMENT DEVICE AND METHOD OF MOUNTING SAME ON TRACTOR

Eldon M. Frank, Rt. 1, Lake View, Iowa 51450

Filed June 7, 1972, Ser. No. 260,465

Int. Cl. E02f *3/70*

U.S. Cl. 214—131 A **24 Claims**



1. In combination a tractor and implement comprising, a subframe having side frame members positioned in a plane below said tractor,
- the rear ends of said side frame members being connected to the opposite ends and under said tractor rear axle, the forward ends of said side frame members being connected to said tractor substantially midway along its length, said forward end connection of said subframe to said tractor including means extending both horizontally and vertically from said side frame members and operatively engaging said tractor to provide horizontal and vertical stability for said subframe, said means extending horizontally from said side frame members and operatively engaging said tractor is further defined as including a horizontally disposed member extending under said tractor and interconnecting said side frame members, said means extending vertically from said side frame members and operatively engaging said tractor is further defined as including a pair of vertically disposed upstanding members extending operatively from said side frame members on opposite sides of said tractor into engagement with said tractor on opposite sides thereof,
- an implement support pad being provided on the forward ends of each of said side members, and
- said implement having frame members extending along opposite sides of said tractor, said implement frame members having their lower rear ends supportably engaging said implement support pads.

3,863,787

REFUSE-COLLECTING VEHICLE INCLUDING PICK-UP MEANS

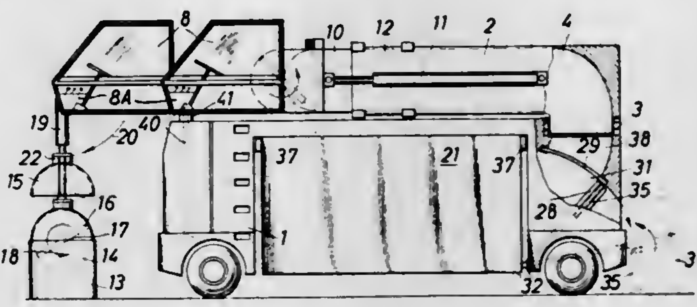
Herbert Ertl, Starnberg, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed May 18, 1973, Ser. No. 361,511

Claims priority, application Germany, May 20, 1972, 2224870

Int. Cl. B65f *3/02*

U.S. Cl. 214—302 **14 Claims**



1. A refuse-collecting vehicle for emptying household refuse containers and for receiving refuse therefrom, said vehicle having steerable wheels, comprising:

means defining a refuse receiving chamber mounted on said vehicle;
- boom means mounted on said vehicle and including refuse conveying means for conveying refuse into said refuse receiving chamber and support means therefor including means defining a vertical hinge axis for supporting said boom means at one end for pivotal movement relative to said vehicle about said vertical axis;
- attachment means mounted on said free end of said boom means for engaging a refuse container;
- sweeping means mounted on said attachment means for removing refuse from said refuse container and delivering same to said refuse conveying means whereby refuse is first swept out of said refuse container into said attachment means and subsequently swept into said conveying means; and
- means defining a control cabin enclosed on all sides, top and bottom and having transparent panel means, said control cabin having boom control means mounted therein, said control cabin being mounted on said free end of said boom means for movement therewith and for facilitating a close supervision through said transparent panel means of the placement of said attachment means to permit an operative engagement of said attachment means to said refuse container.

3,863,788

DEPANNING MACHINE

Alfred L. Meyer, Libertyville, Ill., assignor to Anetsberger Brothers, Inc., Northbrook, Ill.

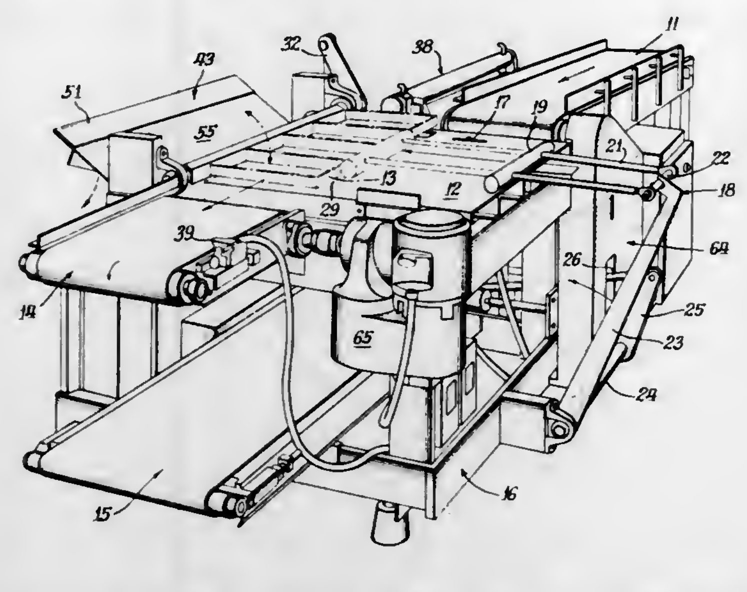
Filed June 27, 1973, Ser. No. 373,973

Int. Cl. B65g *47/82*

U.S. Cl. 214—302 **12 Claims**

1. A machine for removing biscuits from baking pans, comprising a platform, infeed conveyor means for serially delivering biscuit-containing pans to said platform, pan swinging means mounted adjacent a lateral edge of said platform, loader means operable in response to delivery of a pan by said conveyor means to said platform to move said pan laterally onto said pan swinging means to enable the latter to turn said pan over to dump the biscuits therefrom and return the thus emptied said pan to said platform, a second conveyor means, pan ejector means operable to move said emptied pan from said platform onto said second conveyor means, a third biscuit conveyor means below and longitudinally aligned with said infeed conveyor means, and transfer means normally disposed in substantial horizontal alignment with said platform for receiving said biscuits from said pan, as the latter is turned

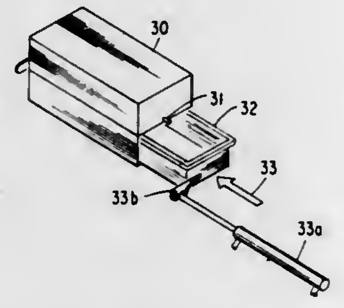
over by said pan swinging means, and means for lowering said transfer means below said infeed conveyor means and tilting the same inwardly to deposit said biscuits onto said biscuit conveyor means.



3,863,789
MAIL TRAY UNLOADING

Edward T. Hunter, Dallas, and William C. Monday, Rowlett, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Aug. 3, 1973, Ser. No. 385,466
Int. Cl. B65g *65/04*
U.S. Cl. 214—314 **11 Claims**



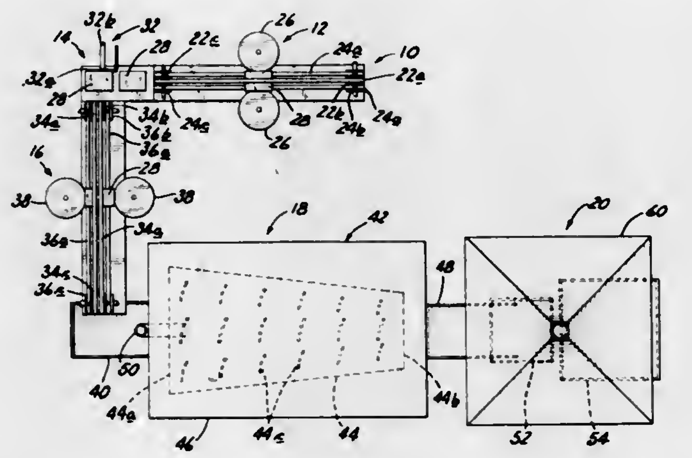
1. A mail tray unloader which comprises
- a box having the bottom half of both ends open for entry at one end onto the bottom of said box of a tray filled with an ordered stack of edge supported mail pieces and delivery of said stack from the other end,
- means to rotate said box about a longitudinal axis to drop said stack from said tray,
- means to prevent reordering of said stack during said drop, means to eject the inverted tray from said box,
- means to rotate said box to its upright position to deposit said stack onto said bottom of said box,
- means to prevent reordering of said stack during said deposit, and
- means to sweep said stack from said box through said other end.

3,863,790
WRAPPER REMOVAL APPARATUS

Joseph S. Kanarek, 5435 W. 63rd St., Chicago, Ill. 60638

Filed Apr. 20, 1973, Ser. No. 352,897
Int. Cl. B65g *65/04*
U.S. Cl. 214—305 **6 Claims**

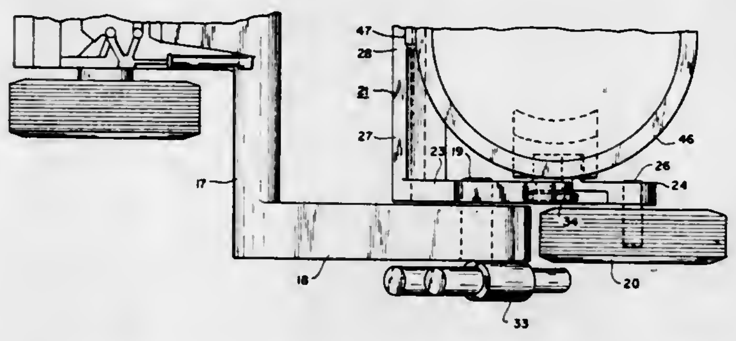
1. Apparatus for separating a solid article from its wrapper, said article having a thickness such that the wrapper can be slit along its sides, comprising: conveyor means for moving in one direction a wrapped solid article, having a thickness such that the wrapper can be slit along its sides, to a first wrapper slitting station, said conveyor means including vertically spaced apart members between which the wrapped article is engaged for movement to the wrapper slitting station, said members serving to support the wrapped article and to maintain it in a properly oriented position as it is conveyed in said one direction to the first wrapper slitting station, wrapper slitting means at said first station for slitting the wrapper on the article on opposite sides along one dimension of the article, conveyor means for moving the wrapped article in another direction to a second wrapper slitting station, said last mentioned conveyor means including vertically spaced apart members between which the wrapped article is engaged for movement to the second wrapper slitting station, said members serving to support the wrapped article and to maintain it in a properly oriented position as it is conveyed in said other direction to the second wrapper slitting station, wrapper slitting means at said second station for slitting the wrapper on said article on opposite sides along another dimension of said article, and wrapper separating means for removing the slit wrapper from the article, including tumbling means for mechanically removing the slit wrapper from the article, said tumbling means includes a rotatable open-ended basket having guide means arranged on the inner surface thereof for directing articles in the basket from the inlet end thereof to the outlet end thereof as the basket is rotated, said wrapper separating means further including means for producing a zone of reduced pressure for facilitating the recovery of the articles free from pieces or fragments of the slit wrapper.



3,863,791
SELF-LOADING SLAG POT TRANSPORTER

Gibson E. Brock, R.D. 5 Persimman Rd., Sewickley, Pa. 15143

Filed May 1, 1974, Ser. No. 465,863
Int. Cl. B65g *65/04*
U.S. Cl. 214—314 **7 Claims**

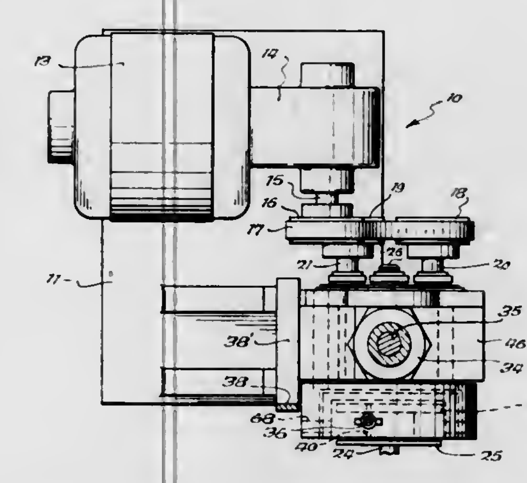


1. Trailer apparatus for transporting slag pots and the like provided with trunnions, comprising a pull yoke, a pair of spaced-apart draft beams connected with the pull yoke and extending rearwardly therefrom, a generally U-shaped slag pot-carrying rack pivotally mounted between the draft beams at their rear ends, the pivots being positioned intermediate the cross-member of the U and the ends of its legs, an independent wheel assembly mounted at the end of each leg of the U, means for grasping a slag pot trunnion carried by each leg of the U, positioned intermediate the pivot and the wheel assembly, and means attached to the draft beams for rocking the rack from a loading position in which the wheel assemblies are rearward of the pivots through an intermediate traveling position to a dumping position in which the wheel assemblies are forward of the pivots, and means mounted on said U-shaped rack for movement therewith which causes the slag pot to dump when said U-shaped rack is pivoted.

3,863,792
MACHINE TOOL

John F. Kopczynski, 1671 Sweeney, North Tonawanda, N.Y. 14120

Filed May 2, 1973, Ser. No. 356,616
Int. Cl. B65g *7/00*
U.S. Cl. 214—340 **10 Claims**



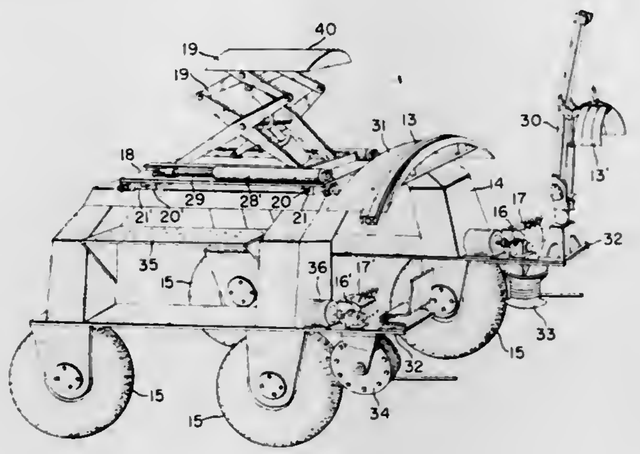
1. A machine tool for rotatably mounting a workpiece having spaced cylindrical portions comprising a base, first and second shafts mounted in spaced substantially parallel relationship on said base, first and second roller means mounted on said first and second shafts, respectively, for rotatably engaging said workpiece, a third shaft mounted on said base in generally parallel relationship to said first and second shafts, axially spaced third and fourth roller means mounted on said third shaft for rotatably engaging said workpiece, said first, second, third and fourth roller means being oriented relative to each other to receive said workpiece therebetween, and pivot means providing a pivot axis extending generally radially relative to said third and fourth roller means for permitting said third and fourth roller means to pivot toward and away from said first and second roller means whereby said third and fourth roller means will maintain engagement with spaced portions of said workpiece irrespective of slight differences in diameter of said spaced portions.

3,863,793
MINING SHIELD-SUPPORTING CARRIER

Masao Fujimori, Tokyo, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1973, Ser. No. 418,568
Claims priority, application Japan, Dec. 18, 1972, 47-126266
Int. Cl. B60p *1/00*
U.S. Cl. 214—518 **1 Claim**

1. A mining shield supporter (1) carrier for expanding and collapsing mining shields used at a mine workface so as to leap-frog a rear shield under a forward shield to continuously place shields at the workface as cutting work progresses, comprising in combination:
- a. an arch-shaped frame (**14**) to allow passage thereunder of a cutting machine;
- b. wheels (**15**) mounted at the lower portion of a frame depending from said arch-shaped frame;
- c. first and second sliding mechanisms mounted on a top portion of said arch-shaped frame, including a pair of parallel spaced apart first guide members (**20,20′**), a sliding plate (**22**) held by and disposed to move longitudinally along said first guide members, a pair of parallel spaced apart second guide members mounted on the upper surface of said sliding plate (**22**) normal to said first guide members, a sliding base member (**25**) held by and disposed to move longitudinally along said second guide members, first and second sets of cylinders and pistons (**27,28**) disposed to move said sliding plate and sliding base member along the respective first and second guide members;

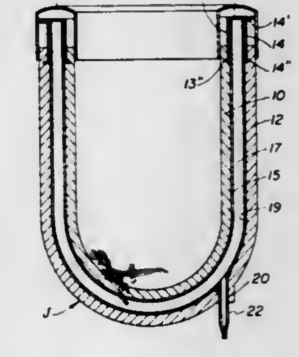


- d. a lift mechanism mounted on said sliding base member including a zig-zag upwardly telescoping section and a top section, cylindrically curved in the longitudinal direction;
- e. a curved beam storing unit disposed adjacent said lift mechanism on which to store beams used for making a mining shield; and,
- f. a crane mounted rearwardly of said arch-shaped frame to lift said beams for storage and assembly purposes.

3,863,794
VACUUM RETAINING JAR

Hideaki Hata, Tokyo, Japan, assignor to Brighton Corporation Ltd., Tokyo, Japan

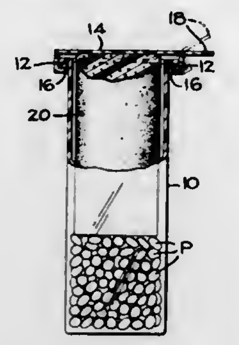
Filed Apr. 11, 1973, Ser. No. 350,099
Int. Cl. A47j *41/02*
U.S. Cl. 215—13 **5 Claims**



1. A vacuum retaining jar comprising:
- a. a thermoplastic outer shell;
- b. a thermoplastic inner shell positioned therewithin to provide a space between the facing surfaces of the shells, said shells being of generally U-shaped cross-sectional configuration with open upper ends;
- c. an annular metal ring provided on the outer surface of the inner shell and on the inner surface of the outer shell respectively at the upper ends thereof, said metal rings being partially embedded within the respective shell surfaces so that their outer faces are substantially flush with the shell surfaces;
- d. the facing surfaces of the shells and rings being coated with a metallic insulating layer; and
- e. said rings having flange means, said flange means being secured together to seal the upper ends of the shells and the space therebetween.

3,863,795
SAFETY CONTAINER

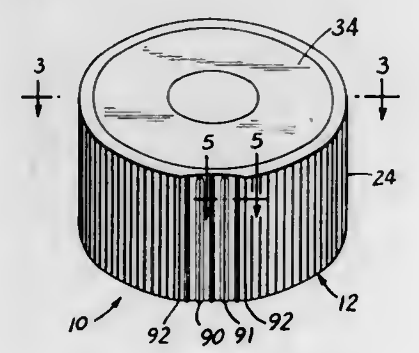
Richard L. Mills, 2961 Westgate Ave., San Jose, Calif. 95125
Filed May 3, 1972, Ser. No. 249,951
Int. Cl. B65d *55/02;* **A61j** *1/00*
U.S. Cl. 215—201 **3 Claims**



1. A safety container for pills or the like which comprises, a receptacle having an open top,
- a removable cap for the open top of said receptacle,
- a compressible member adapted to substantially fill said receptacle and maintained in resilient engagement with the receptacle contents by application of said cap to said receptacle,
- means forming an upturned flange on said cap, and
- means forming a downturned flange on said receptacle dimensioned to provide interlocking connection with the upturned flange on said cap whereby said compressible member resiliently holds said cap and receptacle in interlocked connection.

3,863,796
SAFETY CLOSURE

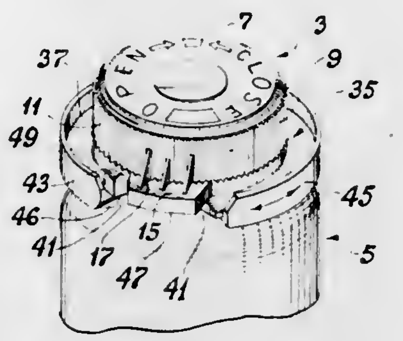
Gerald L. Roy, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.
Filed June 27, 1973, Ser. No. 374,273
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—220 **6 Claims**



1. A closure for fastening to containers, comprising: an outer cap having a circular top end wall and a cylindrically shaped skirt depending from the outer edge of said top end wall, an inner cap having a top end wall and a depending skirt joined to the outer edge of said end wall, said outer cap overlying said inner cap and being concentric therewith, container fastening means on the skirt of the inner cap for releasably fastening on a portion of a container, radially extending teeth on the upper surface of the top end wall of the inner cap, radially extending teeth on the inner surface of the top end wall of the outer cap, vertically disposed ratchet teeth on the inner wall of said outer cap skirt, vertically disposed ratchet teeth on the outer wall of said inner cap skirt, said vertically disposed ratchet teeth on said respective caps abutting when the outer cap is turned in an application direction to rotate the two caps together and cause said container fastening means to fasten said inner cap onto said container, said ratchet teeth of said outer cap sliding over said vertically disposed ratchet teeth on said inner cap when said outer cap is turned in the removal direction, a central portion on said inner wall of said outer cap, a central portion on said inner cap engaging said central portion of said outer cap and spacing in a vertical direction said radially extending teeth of said caps from each other, a downward force on said outer cap engaging said radially extending teeth on said inner and outer caps so that a simultaneously applied torque on the outer cap in the removal direction will act through said radially and horizontally extending teeth to turn said inner cap to release the same from the container, said skirt of said outer cap having reduced cross-sectional thickness portions adjacent said ratchet teeth on the outer cap for flexing outwardly with ratcheting of said ratchet teeth on said outer cap past the ratchet teeth on said inner cap to reduce the friction and torque therebetween to assure that said inner cap remains stationary, the outer surface of said portions having at least two spaced apart vertically disposed ribs integrally formed therein and presenting a generally continuous outer circular working face upon which closure applying apparatus can contact during application of the closure to the container.

3,863,797
SAFETY CLOSURE-BOTTLE ASSEMBLY

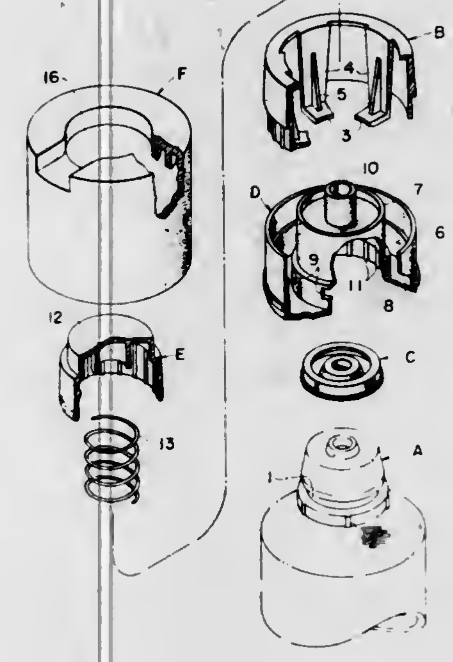
Walter G. Berghahn, Scotch Plains, N.J., assignor to Bristol-Myers Company, New York, N.Y.
Continuation-in-part of Ser. No. 218,885, Jan. 19, 1972, Pat. No. 3,757,979. This application Nov. 20, 1972, Ser. No. 306,955
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—225 **6 Claims**



1. A safety closure-bottle assembly comprising a flexible snap-on closure having a bottle engaging portion which is substantially circular in cross-section, said snap-on closure being of relatively low profile with respect to the outer diameter of said snap-on closure; said closure having a roof, a skirt and a lower marginal surface having an internal diameter of substantially uniform size, said skirt being provided on the internal surface thereof with means for engaging a bead on the neck of said bottle, said snap-on closure being provided with a tab extending outwardly from said lower marginal surface and having a lower surface which is in substantially the same place as the lower marginal surface of said closure; said skirs being tapered downwardly and outwardly from said closure roof to the outer circumference of said lower marginal surface, the shortness of said skirt and its taper being such as to make it difficult for a child to get its teeth on it when the closure is in position on a bottle; said bottle having a closure receiving portion which is also substantially circular in cross-section, said bottle being provided with a flange extending outwardly from said bottle in the region adjacent its closure receiving portion, said flange having a horizontally extending flat top surface adapted to flushly engage said lower marginal surface of said snap-on closure and further being provided with a first notch; said snap-on closure being capable of being snapped over the open end of said bottle irrespective of the relative circumferential position of said tab with respect to said flange, the relative radial dimensions of the various portions of the assembly and the relative dimensions of said tab and first notch being such that said closure is engageable from below for removal substantially only when it is positioned so that said tab is above said first notch when the assembly is in its upright position.

3,863,798
PUSH-BUTTON-TYPE CAP FOR CONTAINER

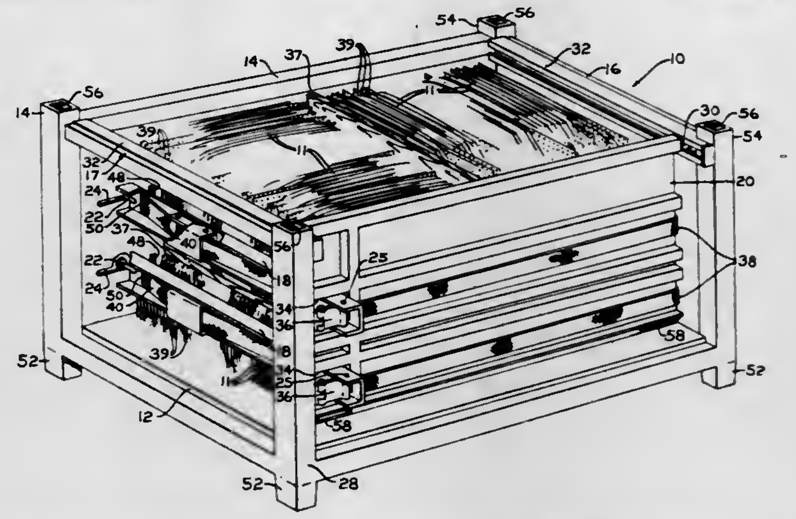
Tsuneaki Kurihara, Tokyo, and Kenji Saka, Odawara, both of Japan, assignors to Kanebo Kabushiki Kaisha and Yoshida Kogyo Kaisha Kabushiki, both of Tokyo, Japan
Filed Oct. 31, 1973, Ser. No. 411,406
Claims priority, application Japan, Nov. 6, 1972, 47-127232[U]; May 7, 1973, 48-52636[U]; May 7, 1973, 48-52637[U]
Int. Cl. B65d *41/02*
U.S. Cl. 215—301 **14 Claims**



1. A push-button-type cap for a container such as a bottle, comprising in combination:
- an engaging cap member having an outer wall with a recess formed at its lower end and having an elastic engaging means positioned proximal to said outer wall and normally engaged with a receiving means formed around a mouth portion of said container,
- an inner cap member having an inner member and an outer wall spaced from said inner member and connected to said inner member at their lower ends by a coupling member to provide an open-top hollow gap in which is received said engaging means of the engaging cap member, the upper portion of said outer wall of the inner cap member being fit in said recess of the engaging cap member, said inner member being fit to and covering said mouth portion of the container and provided with apertures for the passage therethrough of said engaging means,
- a top-closed hollow push-button member with a circumferential wall slidably inserted between said inner member of said inner cap member and said engaging means of said engaging cap member for progressively engaging said elastic engaging means as this button member is depressed progressively to outwardly urge said engaging means to release said engaging means from engagement with said receiving means through said apertures, and
- a container-mouth blocking means interposed between said mouth portion of the container and said inner cap member for blocking the dispensing open mouth of said container.

3,863,799
ADJUSTABLE BIN FOR TRANSPORTING ARTICLES

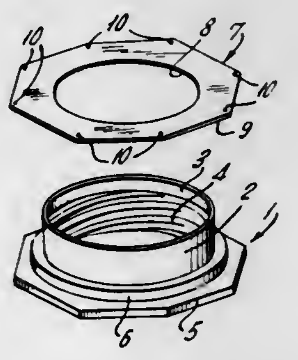
Ronald J. Thomaswick, Kittanning, and James R. Rowley, Freeport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 20, 1973, Ser. No. 371,911
Int. Cl. B65d *57/00*
U.S. Cl. 220—1.5 **7 Claims**



1. In an adjustable bin for transporting or shipping articles wherein the bin comprises a back wall, a first side wall and a second side wall mounted to a base, the improvement comprises:
- at least one rigid member mounted at the second side wall for movement toward and away from the first side wall;
  - a door pivotally and slideably mounted between the first and second side walls for movement toward and away from the back wall;
- means for adjusting said at least one rigid member in spaced relationship to the first wall to reduce or increase the length of the bin; and
- means for adjusting said door in spaced relationship to the back wall to reduce or increase the width of the bin.

3,863,800
CONTAINER CLOSURE CONSTRUCTION

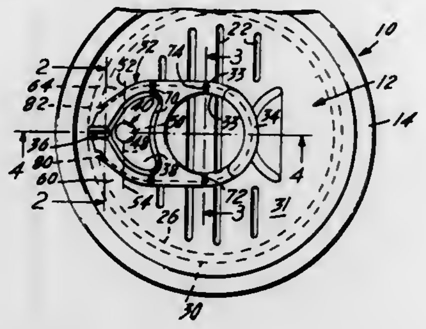
John Jesevich, Cicero, and Vyto Simkus, Chicago, both of Ill., assignors to American Flange & Manufacturing Co., Inc., New York, N.Y.
Division of Ser. No. 131,258, April 5, 1971, Pat. No. 3,800,401. This application Oct. 25, 1973, Ser. No. 409,389
Int. Cl. B65d *41/04*
U.S. Cl. 220—214 **4 Claims**



1. A closure container wall combination comprising a closure flange having an upstanding cylindrical neck surrounded by a circumferentially enlarged polygonal base, a container wall overlying said flange base and formed with an opening surrounding said flange neck, an annular tag ring element having an upstanding neck surrounding said flange neck and formed with a circumferentially enlarged polygonal base overlying said container wall, said polygonal flange base and said polygonal tag ring element base being aligned corner for corner and means formed in said tag ring element base for affixing a wire strand thereto.

3,863,801
FULL-OPEN END WITH CAMBERED TAB

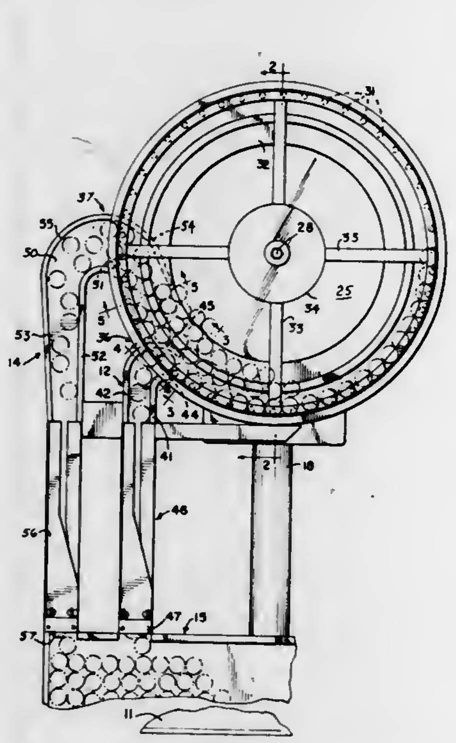
Burton Frank Pilnik, Cary, Ill., assignor to American Can Company, Greenwich, Conn.
Filed July 27, 1973, Ser. No. 383,186
Int. Cl. B65d *17/20*
U.S. Cl. 220—267 **8 Claims**



1. In a can end closure having a substantially flat, imperforate central wall with a peripheral flange adapted to be interfolded with an edge flange of a can body to form a double seam whose top portion is disposed above the central wall, a peripheral score defining a removable panel in the central wall, and an opening tab having a nose portion at the outer end adjacent the peripheral score and a handle portion at the inner end thereof, said tab being secured to the removable panel by a securement adjacent the nose portion, the improvement which comprises a camber and stress in the tab extending from at least about the securement to about the handle portion and a corresponding raised area of stress in the panel disposed beneath the cambered area of the tab, whereby when the end closure is placed on a can and the closed can is subjected to internal pressure, the tab handle portion will not rise above the top portion of the double seam.

3,863,802
CAP FEEDING HOPPER

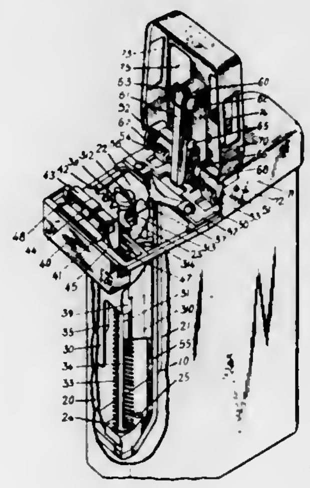
Ben G. Daniels, Elmhurst, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation of Ser. No. 114,835, Feb. 12, 1971, abandoned. This application May 11, 1973, Ser. No. 359,517
Int. Cl. B65h *3/16*
U.S. Cl. 221—68 **17 Claims**



1. An apparatus for handling closure caps which are of magnetic material, said apparatus comprising a cylindrical hopper, a cap lifting disc in said hopper which is mounted for rotation about an axis coinciding with the axis of the hopper and in a plane inclined to the horizontal, said disc having magnets mounted in row formation about the marginal edge thereof for holding on the uppermost face lines of caps so as to advance the caps to plural discharge areas, the first discharge area being located within 60° above the bottom of the path traversed by said row of magnets, an inclined cap receiving chute having an upper entry end disposed adjacent the periphery of said cap lifting disc at a first discharge area and means at said first discharge area to wipe off an outermost line of caps advancing on the cap lifting disc and to feed the caps into said chute and a second inclined cap receiving chute having an upper entry end disposed adjacent the periphery of said cap lifting disc at a discharge area spaced downstream of the upper end of said first cap receiving chute at a point less than 90° from said first discharge area, and means at said second discharge area to wipe off caps advancing on the marginal edge of the cap lifting disc and to feed the caps into said second cap receiving chute.

3,863,803
CIGARETTE DISPENSER WITH SWIVEL ACTING EJECTOR

Albino Valcic, 3232 34th St., Astoria, Long Island City, N.Y. 11106
Filed Jan. 16, 1974, Ser. No. 433,910
Int. Cl. A24f *15/06*
U.S. Cl. 221—210 **11 Claims**

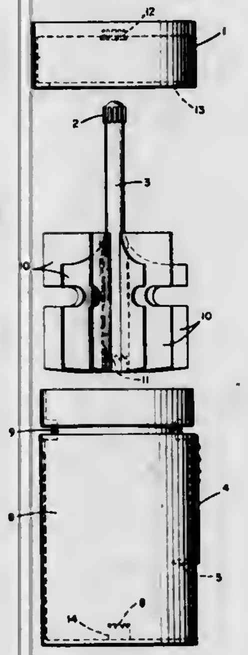


1. An article dispenser comprising a base member in an initial position surrounding at least a portion of said articles, a cover member covering said articles, a catcher positioned within said base member, first means for releasing said cover member from said initial position for exposing an opening into said base member and moving said catcher into lateral engagement with one of said articles, second means responsive to release of said cover for sliding said catcher and said article engaged therewith upwardly along said base member until said article projects through said opening, and third means responsive to the closing of said cover for resetting said catcher in its initial position within said base member.

3,863,804
MEDICAMENT-DISPENSING CONTAINER

Francisco Infante-Diaz, Suite 304, Villa Olimpica, Edificio 12; Jose Rene Perez De La Parra, Valle Dorado, Barcelona 168; Luis Gaona-Ortiz, Llama 1, Ampliacion Vista Hermosa, and Aurea Gutierrez-Castaneda, Llama 19, Ampliacion Vista Hermosa, both of Tlalnepantla, all of Mexico
Filed Jan. 24, 1974, Ser. No. 436,093
Claims priority, application Mexico, Aug. 7, 1973, 145383
Int. Cl. B65h *3/00*
U.S. Cl. 221—251 **6 Claims**

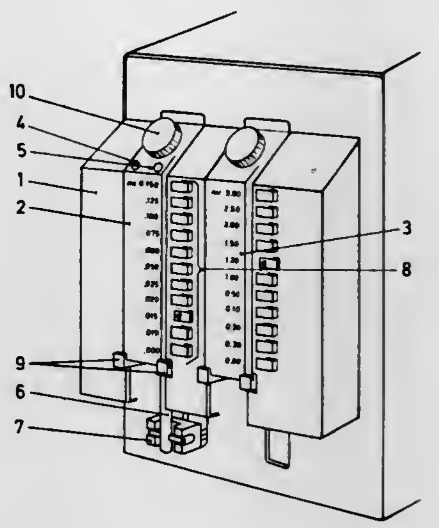
1. A container for dispensing capsules in an individual manner comprising a generally cylindrical cap having an annular lip on the lower edge thereof and a small cylindrical cavity centrally positioned on the upper inner face thereof which presents in its periphery a series of grooves; a rotary member having a stem on which upper portion thereof is provided a series of grooves on which lower portion thereof is provided a plurality of radially spaced walls and on which lower end thereof is defined a cylindrical cavity cavity that terminates interiorly in a plurality of teeth; and a generally cylindrical body having an open end, a peripheral groove near said open end, a small cylindrical projection centered on its inner lower face with the projection terminating in a plurality of teeth, a channel on its vertical outer face in which is inserted a small gate that runs to and from an opening in the vertical wall to cover and uncover said opening, a substantially flat projection horizontally disposed and positioned intermediate the ends of the cylindrical body on its vertical interior face, said grooved upper portion of the stem engaging the cylindrical cavity of the cap, said cylindrical cavity of the rotary member being engaged by the cylindrical projection of the cylindrical body, said annular lip of said cap being inserted within the peripheral groove of the cylindrical body, said walls defining a horizontal cut in the outer edge of each to avoid being hindered by the projection of the inside face of the cylindrical body during rotation of the rotary body.



3,863,805
EXCHANGEABLE PISTON PUMP UNIT

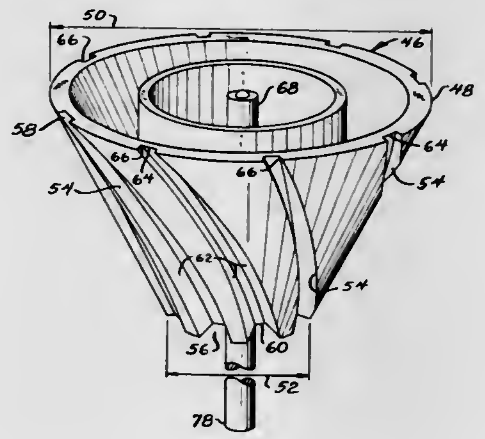
Heinz Dzaack, Enebyberg, and Sven Axlid, Spanga, both of Sweden, assignors to LKB-Produkter AB, Bromma, Sweden
Filed June 6, 1973, Ser. No. 367,491
Claims priority, application Sweden, June 9, 1972, 7579/72
Int. Cl. B67d *5/30*
U.S. Cl. 222—14 **6 Claims**

1. Liquid dispensing system comprising a plurality of exchangeable liquid pump units and mounting means for removably supporting any one of said pump units in a position for dispensing liquid in measured quantities, each of said pump units including a housing containing movable piston means having an exteriorly projecting means for moving the piston means, said mounting means including a plurality of setting means arranged in spaced relationship to each other and in proximity to a support pump unit, said mounting means also being provided with driving means for engagement with the means for moving the piston means of a pump unit in predetermined increments in response to actuation of a setting means, the amount of said increment of movement being dependent upon the respective setting means actuated, each of the housings of the pump units being provided with volumetric indicia means arranged in spaced relationship to each other and to be disposed respectively in proximity to respective ones of said setting means, the predetermined increment of movement of a piston means initiated by actuation of each setting means being the respective amount necessary to dispense the volume of liquid denoted by the indicia means disposed in proximity to that setting means.



3,863,806
TURBINE METER

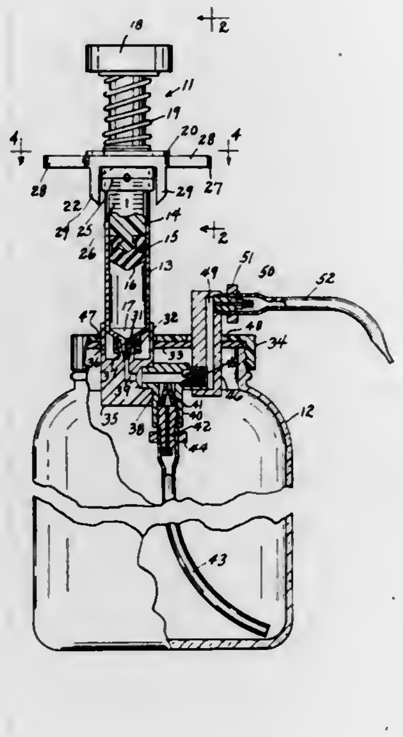
Ross Eugene Risser, Jr., Bonham, Tex.
Filed Oct. 9, 1973, Ser. No. 404,237
Int. Cl. B67d *5/38*
U.S. Cl. 222—23 **10 Claims**



1. In fuel dispensing equipment including storage means for confinement of a supply of fuel, hose and nozzle means for discharging said fuel into a receptacle, pump means connected to the storage means for forcing said fuel under pressure to said nozzle means, and fuel register means; fuel meter means connected between said pump and nozzle means and operable to actuate said fuel register means comprising: a housing having an inlet receiving fuel from said pump means and an outlet discharging fuel to said nozzle means; a turbine rotor mounted on a shaft journaled in said housing, a seat formed in said housing, said rotor having a configuration shaped to cooperate with said seat of said housing, said rotor having a plurality of tapered spiral grooves formed in a peripheral surface thereof; and electrical means disposed adjacent said rotor for counting and sending to said register means the number of revolutions of the rotor; said fuel in being pumped through the grooves of the meter means being effective to raise the rotor from the seat of the housing, revolve said rotor therein and thereby measure the volume of fuel dispensed from said nozzle.

3,863,807
LIQUID DISPENSING AND TRANSFER DEVICE

Justin Joel Shapiro, Berkeley, and John W. G. Chin, Richmond, both of Calif., assignors to said Shapiro, Berkeley, Calif., by said Chin
Filed Feb. 20, 1974, Ser. No. 444,176
Int. Cl. G01f *11/06*
U.S. Cl. 222—43 **7 Claims**

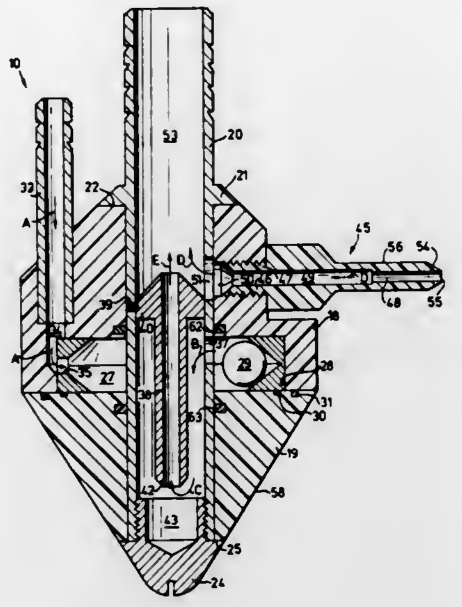


7. A liquid dispensing device comprising a barrel having fluid conduit means at one end, a movable plunger in said barrel and extending from its other end, a collar member surrounding, slidably engaging, and being longitudinally movable on said barrel, a connection rod extending parallel to and adjacent said barrel, means rigidly connecting said connection rod to the external portion of said plunger, means to rigidly connect said connection rod to said collar member, whereby said collar member moves relative to said barrel in accordance with the positioning of the plunger in said barrel, and finger-gripping means on the barrel including depending guard flange means adjacent opposite sides of the barrel and spaced therefrom to at times receive said collar member therebetween.

3,863,808
PARTICULATE MATERIAL CONVEYING APPARATUS

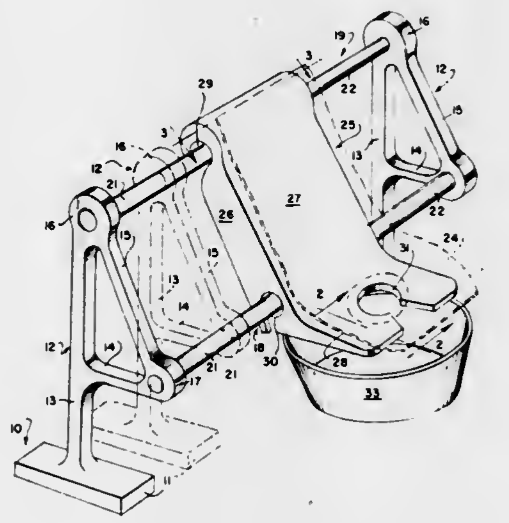
Charles R. Vertue, Etobicoke, Ontario, Canada, assignor to Volstatic of Canada Limited, Ontario, Canada
Filed Mar. 20, 1974, Ser. No. 453,119
Claims priority, application Canada, Jan. 16, 1974, 190309
Int. Cl. B65g *53/14;* **B67b** *7/24*
U.S. Cl. 222—82 **12 Claims**

1. Particulate material conveying apparatus, comprising:
an inlet for the entry of particulate material into the apparatus;
a gas flow passage extending past said inlet;
means for vibrating said inlet comprising a ball race extending around and spaced outwardly from said gas flow passage and a ball adapted to be driven around said race; and
a compressed gas supply passage communicating with said vibrator means for supplying compressed gas to said vibrator means to drive the ball around the race;
said vibrator means having a compressed gas outlet communicating with said gas flow passage for discharging the compressed gas from said vibrator means along said gas flow passage past said inlet to thereby entrain the particulate material through said inlet into and along said gas flow passage.



3,863,809
DISPENSING RACK AND PACKAGE

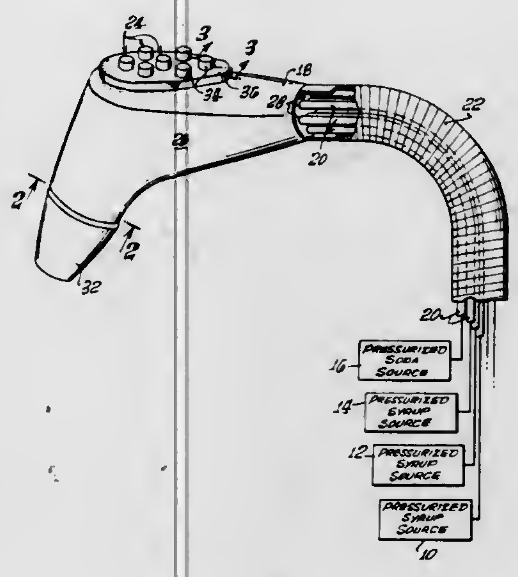
William C. Christine, Catasaque, and William E. R. Watt, Barto, both of Pa., assignors to Inpaco, Allentown, Pa.
Filed July 2, 1973, Ser. No. 375,364
Int. Cl. B65d *33/14*
U.S. Cl. 222—105 **2 Claims**



1. An apparatus for dispensing pourable materials comprising, a rack including spaced parallel similar side members each embodying a horizontally disposed base portion, up standing legs, horizontally disposed extensions and inclined portions connecting said up standing legs and horizontal extensions, upper and lower telescoping cross pieces connecting said side members together, securing elements connected to said cross pieces, a holder embodying an inclined back piece having a slotted portion receiving the upper cross piece and a horizontally extending bottom section having a slotted portion adjacent thereto for receiving the lower cross piece, a key way in the bottom portion of said holder, a flexible pouch having a quantity of material therein to be dispensed, a fitment on said pouch received in said key way, and a dispensing valve for selectively engaging said fitment.

3,863,810
PLURAL SOURCES BEVERAGE DISPENSING APPARATUS

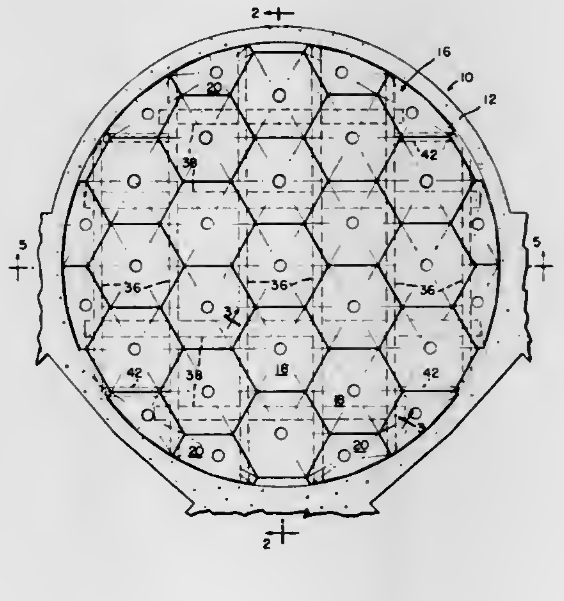
Sigurd A. Hanson, Los Angeles, Calif., assignor to Bar Mates Fluidic Systems, Inc., Los Angeles, Calif.
Filed Oct. 9, 1973, Ser. No. 404,307
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 **4 Claims**



1. A soft drink dispensing system comprising:
a plurality of sources of syrup each maintained at a relatively low pressure;
a source of soda maintained at a relatively high pressure;
a hand-holdable, fully mechanical valve control means having a plurality of fluid inlets and a fluid dispensing head at a fluid outlet thereof; and
conduit means connecting said plurality of syrup sources and said soda source to different inlets of said valve control means; and
said valve control means including
  a housing,
  a plurality of normally closed valves in said housing one for each different syrup source and each including
    a valve cavity extending from an outer surface of said housing,
    a valve spindle in said cavity with an upper end portion exposed beyond said outer surface,
    upper, intermediate and lower spools on said valve spindle,
    a first inlet port into a side of said cavity immediately below said lower spool,
    a second inlet port into a side of said cavity immediately above a top of said intermediate spool and below said upper spool,
    a first outlet port from a side of said cavity above said first inlet port and below said intermediate spool,
    a second outlet port from a side of said cavity below said second inlet port,
    a first seal on an inner wall of said cavity between said first inlet and outlet ports slidably engaging an outer surface of said lower spool to block fluid flow between said first inlet and outlet ports when said valve is in its normally closed position and releasing from said lower spool as said spindle is moved axially into said cavity to define an open position for said valve,
    a second seal on an inner wall of said cavity between said first and second outlet ports slidably engaging an outer surface of said intermediate spool to block fluid flow between said second inlet and outlet ports and said first outlet port,
    a third seal on an inner wall of said cavity between said second inlet and outlet ports slidably engaging an outer surface of said intermediate spool to block fluid flow between said second inlet and outlet ports when said valve is in said closed position and releasing from said intermediate spool as said valve is moved to said open position,
    a fourth seal on an inner wall of said cavity between said second inlet and a top of said cavity slidably engaging an outer surface of said upper spool to block fluid flow from said top of said cavity, and
  spring means for urging said valve spindle away from a bottom of said cavity to said closed valve position, said spindle being finger depressible in said cavity to said open valve position, and
conduit means in said housing connecting said first inlet port to said fluid inlet connected to said soda source, said second inlet port to a fluid inlet connected to a syrup source and said first and second outlet ports to said fluid dispensing head, whereby soda at said relatively high pressure acts on the lower spool of each valve to produce an upward force rapidly moving the valve from said open to closed positions upon a release of its associated valve spindle and an initial upward movement thereof in response to its associated spring means.

3,863,811
LAMINAR FLOW BIN

Glen W. Fisher, Bellevue, and Fred A. Franz, Mercer Island, both of Wash., assignors to Technovators, Inc., Seattle, Wash.
Continuation of Ser. No. 145,648, May 21, 1971, abandoned. This application May 10, 1973, Ser. No. 358,866
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 **17 Claims**



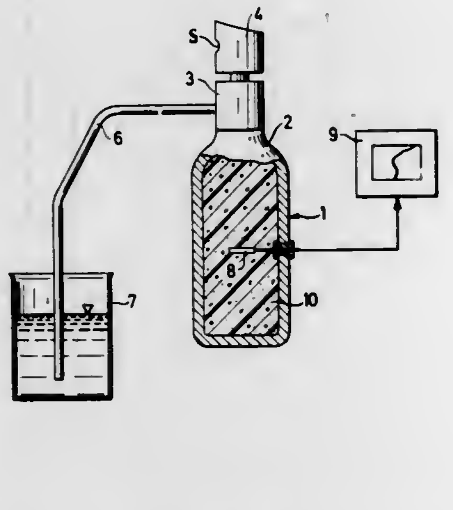
7. A laminar flow bin for solid particulate material which comprises:
A. a vertical peripheral wall defining a storage volume consisting of substantially all of the particulate material storage space within the bin; and
B. hopper discharge means at the lower end of the storage volume for effecting discharge of particulate material from the storage volume under laminar flow conditions throughout substantially the entire length of the storage volume, said hopper discharge means including:

1. a plurality of substantially identical, open-topped hoppers arranged in side-by-side adjacency, each said hopper including an upper inlet, a lower outlet smaller than and in axial alignment with said upper inlet on the same vertical axis, and an inner surface inclining downwardly from said upper inlet to said lower outlet at a slope of at least 55°, said upper inlets occupying the entire central cross sectional area and occupying in toto substantially the entire cross-sectional area enclosed by said vertical peripheral wall; and
2. flow control means regulating particulate material discharge from said hoppers for effecting particulate material discharge simultaneously from each hopper at a rate proportional to the relative cross-sectional area of each such hopper.

3,863,812
Patent Not Issued For This Number

3,863,813
LIQUEFIED-GAS CARTRIDGE WITH DISPENSING VALVE

Helmut Metzner, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Apr. 22, 1974, Ser. No. 462,693
Claims priority, application Switzerland, Apr. 25, 1973, 5883/73; Jan. 31, 1974, 1333/74
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HA **13 Claims**

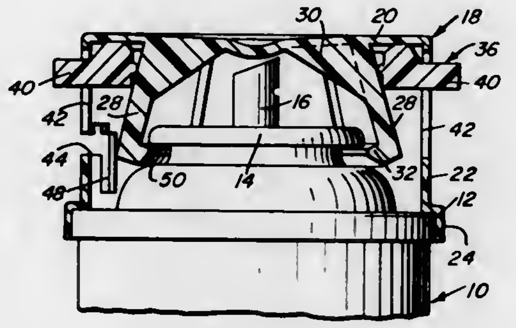


1. A liquefied-gas filled cartridge with dispensing valve, comprising, in the liquid phase of the liquefied gas contained within the cartridge, an agent which, on cooling of the liquefied gas in consequence of evaporation of the liquid phase whilst the valve remains open, releases heat to the liquefied gas.

3,863,814
SAFETY CAP FOR AEROSOL CANS

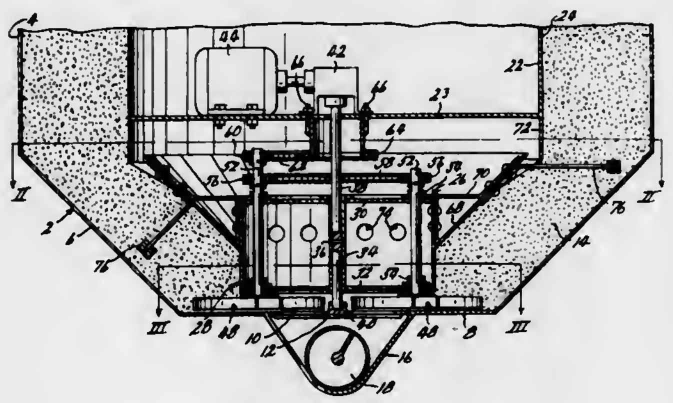
Jewel J. Shelton, 5208-F Falls of Neuse Rd., Raleigh, N.C. 27609
Filed Nov. 1, 1973, Ser. No. 411,770
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **9 Claims**

1. For use in conjunction with an aerosol can incorporating a valve surrounding outwardly projecting bead, a cap and associated locking ring, said cap including a top, a plurality of sections depending from said top and terminating in inturned lower ends engageable beneath the valve surrounding bead of an aerosol can, said sections encircling said bead, said sections being outwardly flexible in a manner so as to outwardly move said inturned ends upon a compression of the cap top inward of said sections, a ring surrounding said sections and being vertically positionable between a first position surrounding and closely engaging the inturned end portions of said sections and a second position vertically upward therefrom, said ring, in the first position, precluding an outward flexing of said sections, said ring, in said second position, allowing an outward flexing of said sections.



3,863,815
GRAIN METERING DEVICE

Robert C. Chaffee, Green, and Delmar Toburen, Riley, both of Kans., assignors to Gilmore-Tatge Manufacturing Co., Inc., Clay Center, Kans.
Filed Mar. 7, 1974, Ser. No. 448,833
Int. Cl. G01f *11/20*
U.S. Cl. 222—238 **10 Claims**

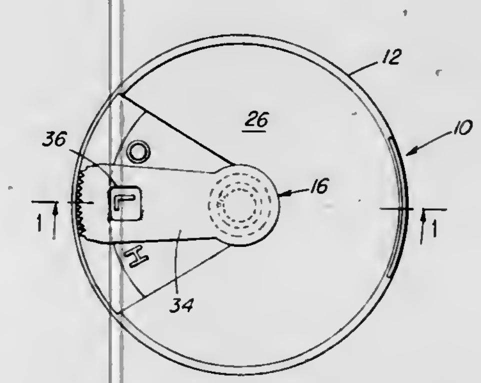


1. In combination with a grain receptacle having a grain discharge opening in the floor thereof, a metering device for regulating the rate of discharge of grain through said opening, said metering device comprising:

a. a meter housing disposed within said receptacle in spaced relation above said discharge opening, concentrically with and of greater horizontal dimensions than said opening, whereby grain must pass beneath said housing to reach said opening,
b. power means operable to rotate said meter housing about a vertical axis concentric with said discharge opening,
c. at least one scoop wheel carried rotatably by said meter housing on a vertical axis eccentric to the axis of said housing, said wheel including radially extending fingers operable in the vertical space between said receptacle floor and the lower edge of said meter housing, said fingers being of sufficient length to extend radially outwardly of said meter housing, and radially inwardly over said discharge opening, and
d. means whereby rotation of said meter housing results in rotation of said scoop wheel in an opposite direction relative to said housing rotation whereupon the fingers of the latter scoop grain from said receptacle under the lower edge of said meter housing to said discharge opening.

3,863,816
VARIABLE FLOW RATE ACTUATOR BUTTON FOR A PRESSURIZED AEROSOL DISPENSER

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.
Filed Nov. 1, 1972, Ser. No. 302,784
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.17 **5 Claims**

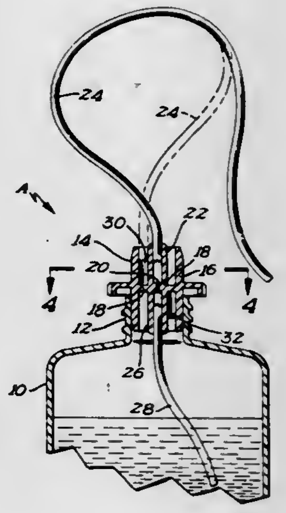


1. A variable flow rate actuator for a pressurized aerosol dispenser comprising:

- a body and a plug having a cylindrical portion;
- said body including a discharge orifice, means for connection to a dispenser valve and a cylindrical socket in communication with the connection means to receive said plug cylindrical portion;
- said body including a groove extending longitudinally of the cylindrical wall of said socket;
- said plug cylindrical portion being positioned in said socket to overlie the body socket groove, said plug being rotatable relative to said body;
- a plurality of circumferentially spaced grooves of different cross-sectional areas extending longitudinally of the sidewall of said plug cylindrical portion to the bottom end of said plug portion, the plug grooves being selectively registerable with said body socket groove upon rotation of said plug, said plug portion grooves being in direct communication with said dispenser valve;
- said discharge orifice being in communication with said body socket groove.

3,863,817
CONTAINER WITH APPLICATOR TUBE FOR DISPENSING A LIQUID FOR DETECTION OF LEAKS

Guy Speaker, 4240 Fairview Ave., Minnetonka, Minn. 55343
Continuation of Ser. No. 241,198, Apr. 6, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 385,820
Int. Cl. B67d *5/06*
U.S. Cl. 222—530 **2 Claims**



1. A container with applicator tubes for dispensing a liquid, comprising in combination:

a. a deformable bottle having,
b. a hollow neck,
c. a stopper having first and second identical ends, each of said first and second ends being snuggly insertable into said hollow neck,
d. said stopper having a first socket formed in said first end and
e. a second socket, identical to said first socket, formed in said second end of said stopper, said first and second sockets terminating in an,
f. inner wall having a,
g. flow hole axially of said first and second sockets and of a diameter less than the diameter of said first and second sockets,
h. a tube mounted in each of said first and second sockets in communication with said flow hole and in contact with said inner wall,
i. said stopper including identical storage sockets formed in said first and second ends for receiving the free end of said first and second tubes to seal off the same.

3,863,818
DISPENSING CLOSURES WITH INTEGRAL SPOUT LATCHES

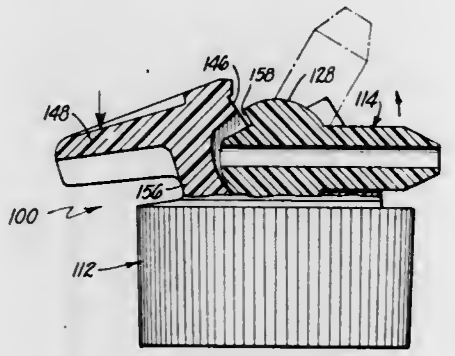
Robert E. Hazard, No. Kingston, R.I., assignor to Polytop Corporation, Slatersville, R.I.
Filed Dec. 17, 1973, Ser. No. 425,227
Int. Cl. B67b *7/12*
U.S. Cl. 222—531 **7 Claims**

1. In a dispensing closure having a cap and a spout, said cap being adapted to be attached to a container and having an opening leading therethrough, said spout having a passage extending therethrough and being capable of being rotatably mounted on said cap so as to be capable of being rotated between a closed position in which said spout closes off said opening and an opened position in which said passage is aligned with said opening, the improvement which comprises: said cap having latch means formed integrally therewith,

said cap and said latch means being formed of a resilient material,

said latch means including a resilient wall means which extends from the top of said cap and a lever means and a latch surface means both of which are carried by the extremity of said wall means remote from the top of said cap,

said latch surface means overlying a part of said spout when said spout is in said closed position so as to lock said spout against rotation from said closed position,

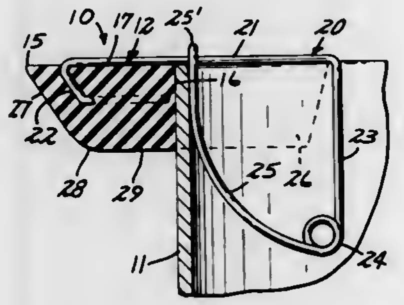


said lever means being spaced from the top of said cap and said wall so as to be capable of being manually engaged so as to rotate said latch surface means to a sufficient extent so that said spout may be rotated to said opened position,

said latch means being sufficiently resilient so that when said spout is rotated from said opened position to said closed position said latch surface means automatically engages said spout so as to hold said spout in said closed position.

3,863,819
POURING SPOUT ATTACHMENT

John G. Storm, 5210 Villa Way, Minneapolis, Minn. 55424
Filed Dec. 1, 1972, Ser. No. 311,128
Int. Cl. B65d *25/48*
U.S. Cl. 222—569 **2 Claims**



1. A pouring spout attachment for open top containers comprising:

a. a flexible resilient body having converging side edge portions, the juncture of which forms a vertex, and having a base edge portion connecting said side edge portions;

b. said side edge portions and base edge portions cooperating to define a planar upper surface;

c. said base edge portion having a curved surface which is generally normal to said upper surface, said curved formed on a radius that is less than that of containers on which it is to be mounted; and

d. a mounting clamp carried by said body for resiliently engaging the inner surface of the container upon which the spout attachment is secured at a single point, said mounting clamp including:

i. a mounting element having a first leg portion secured to said body and extending along said upper surface from a point adjacent said vertex and bisecting base edge portion to form a capillary flow path;

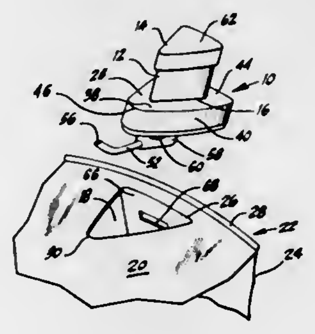
ii. a second leg portion depending from said first leg portion, spaced from said base edge portion;

iii. a clamping arm carried by said second leg portion and movable toward and away from said base edge portion to engage a container which may be inserted between said base edge portion and said clamping arm; and

iv. said clamping arm is guided in said movement toward and away from said vase portion by said first leg portion.

3,863,820
POUR SPOUT

Franklin Eugene Wharton, 1308 Sartori Ave., Torrance, Calif. 90501
Filed Nov. 8, 1973, Ser. No. 413,888
U.S. Cl. 222—569 **8 Claims**



1. A pour spout device adapted to be positioned over an opening in the end wall of a container having at least one end wall and a side wall, the opening having two ends, a first end adjacent the juncture of the end wall and the side wall, and a second end spaced inwardly from the juncture of the end wall and the side wall, which device comprises:

a. a tubular body having an upper end and a lower end;

b. a vent tube having an upper end and a lower end extending the length of the tubular body and attached to and eccentrically positioned within the tubular body so as to be toward the second end of the opening in the end wall of the container when the device is in use;

c. a plate attached to the lower end of the tubular body and having an opening therein in alignment with and coextensive with the opening of the tubular body, the plate having a first end adapted to be positioned generally over the first end of the opening and a second end adapted to be positioned generally over the second end of the opening;

d. a pad of resilient material attached to the surface of the plate opposite the tubular body and having an opening therein in alignment with and coextensive with the opening of the tubular body, the pad being adapted to sealingly engage the surface of the end wall of the container around the opening therein;

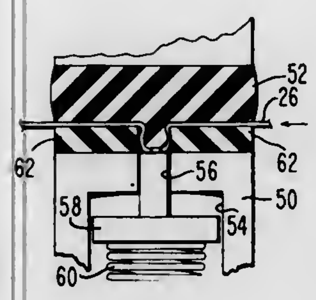
e. a hook shaped lever arm swinging out from a first end positioned below the pad of resilient material and then upwardly to a second end at a position spaced from the plate and below the plane of the plate;

f. means comprising a collar extending downwardly from the plate and within which the first end of the lever arm is mounted attaching the first end of the lever arm to the plate towards the second end thereof so that the lever arm may be slid through the opening, the second end of the lever arm being positioned below and bearing against the end wall so as to compress the pad into sealing position when the plane of the plate is parallel to the plane of the end wall;

g. means for compressing the pad below the first end of the plate into sealing position on the end wall of the container to complete the seal.

3,863,821
BURSTING, SEPARATING AND/OR DIE CUTTING APPARATUS FOR CONTINUOUS FORMS

Hans Lochmann Van Bennekom, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.
Filed May 2, 1973, Ser. No. 356,515
Int. Cl. B26f *3/02;* **B65h** *35/10*
U.S. Cl. 225—93 **8 Claims**



1. Apparatus for separating continuous multiple item forms into separate and individual items comprising;

oppositely disposed, relatively rigid members,

one of said rigid members being movable with respect to the other of said rigid members,

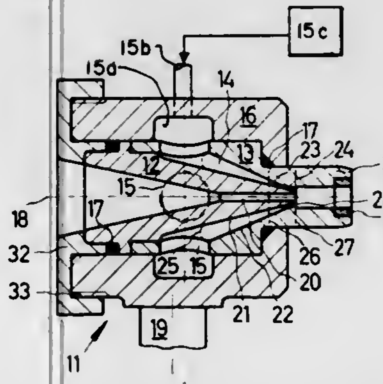
means of differing relative resilience disposed on each of said rigid members, the upper resilient means being solid, flat faced, flexible material, the lower resilient means being formed as two separate, flat faced members with a cavity therebetween, the resilient means of one member being receivable within the cavity formed by the resilient means of the other of said rigid members,

means for advancing continuous item forms between said rigid members, and

means operably associated with said advancing means and said rigid members whereby relative movement between said rigid members causes said resilient means to grip said items and force the resilient means of one of said rigid members into the cavity of the other of said resilient means so that the items therebetween are burst apart along a line of preweakening between items.

3,863,822
NOZZLE DEVICE FOR PRODUCING A FLUID JET

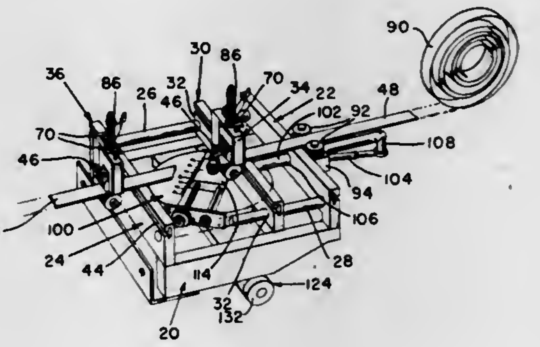
Rachid Keldany, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., (formerly Caspar Honegger), Ruti/ZH, Switzerland
Filed May 1, 1973, Ser. No. 356,103
Claims priority, application Switzerland, May 29, 1972, 7895/72
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **8 Claims**



1. Nozzle device for producing a jet of fluid for inserting weft threads into a shed on a loom, the said nozzle device comprising an inner portion and an outer portion symmetrically surrounding said inner portion, said inner and outer portions defining a ring shaped nozzle aperture for a jet of fluid to flow out, there being defined between the said inner portion and the said outer portion a chamber which contains the weft thread propelling fluid, said outer portion being formed with a plurality of apertures for supplying the fluid to said chamber from a fluid source, said chamber having a front and a rear zone with its front zone extending rearwardly away from said nozzle aperture and forming an "aiming" portion for determining the direction of the flow of said jet of fluid, and which is prolonged by said rear zone forming a storage portion, the apertures for supplying the fluid to said chamber being located in said rear zone remote from the nozzle aperture, said aiming portion being elongated and delimited by two walls at least one of which is conical and that converge with respect to each other to produce a substantially uniform decrease in the cross-section of the aiming portion in the direction of the nozzle aperture, a bore in said inner portion for passage of said weft thread to be propelled by said jet of fluid passing from said nozzle aperture, and a means for supplying said fluid flow to said chamber.

3,863,823
STRIP STOCK FEEDING MECHANISM

Arthur L. Allred, High Point, N.C., assignor to Allred Metal Stamping Works, High Point, N.C.
Filed Sept. 4, 1973, Ser. No. 393,731
Int. Cl. B65h *17/36*
U.S. Cl. 226—142 **9 Claims**



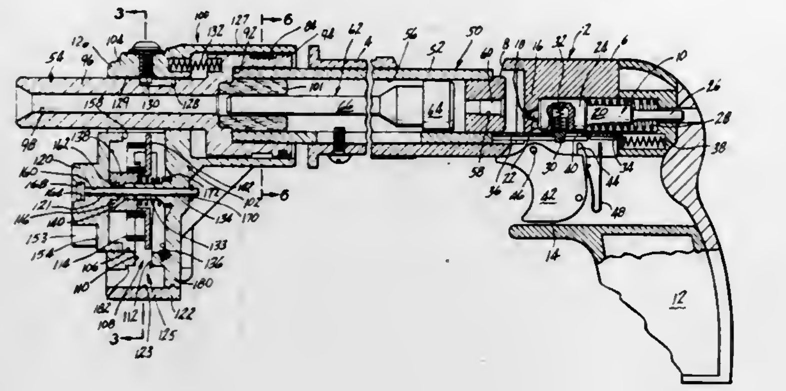
1. Apparatus for feeding a continuous strip of material to a punch press comprising, a base, reciprocable means supported upon said base, means upon said reciprocable means for gripping and intermittently advancing said strip of material uniformly and accurately, means for preventing retrogressive movement of the strip material advanced by said gripping means, rotatable driven means mounted upon said base, drive means, including a clutch, selectively coupling said rotatable means with a press drive, adjustment means supported upon said rotatable means for selectively varying the stroke of said reciprocating means and the length of strip material fed, and means positively and directly coupling said adjustment means to said reciprocable means.

3,863,824
AUTOMATIC FASTENER FEED MAGAZINE AND FEED BELT

Andrew G. Bakoledis, Clinton, Conn., assignor to Olin Corporation, New Haven, Conn.
Filed Oct. 23, 1973, Ser. No. 408,341
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 **10 Claims**

1. An automatic fastener feed mechanism for a power-actuated tool of the type including a muzzle bushing having an opening for receiving a fastener to be driven, said mechanism comprising a magazine housing having an upper portion supported by the muzzle bushing and a lower portion having a cylindrical side wall, a cam track in said side wall, a follower mounted for movement in said cam track between a first loading position and a second position adjacent said opening in the muzzle bushing, a cover member having a side wall spaced from said side wall of said lower portion to provide a

space for receiving a plurality of fasteners, means biasing said follower toward said opening in said muzzle bushing, and



means for rotating said follower against the bias of said biasing means.

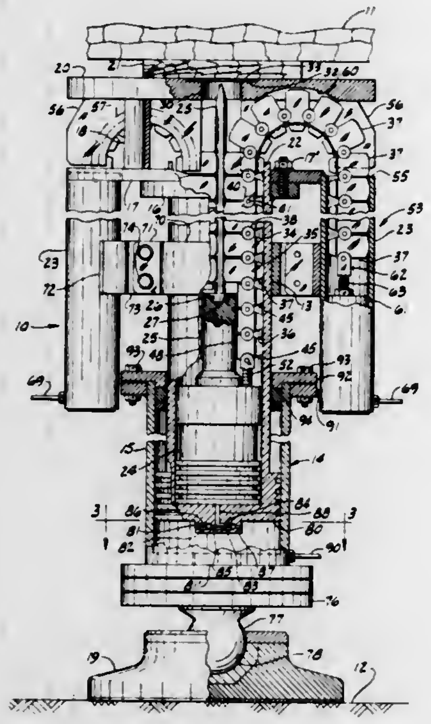
3,863,825
MACHINE FOR DRIVING MINE ROOF PINS HAVING COAXIAL JACKING MEANS

Gerald W. Elders, P.O. Box 1369, Aspen, Colo. 81611; Thomas R. Alongi, 350 E. Main St., DuQuoin, Ill. 62832; Thomas E. Schneider, deceased, late of 601 E. Park St., DuQuoin, Ill. 62832, and Thomas R. Schneider, administrator, 527 Mallory Ln., DuQuoin, Ill. 62832

Continuation-in-part of Ser. No. 202,611, Nov. 26, 1971, Pat. No. 3,819,101 which is a division of Ser. No. 846,795, Aug. 1, 1969, abandoned. This application Jan. 4, 1974, Ser. No. 430,639

Int. Cl. B27f *7/02*

U.S. Cl. 227—130 **12 Claims**



1. In a machine for driving mine roof pins:
- a. an elongate pin cylinder,
- b. a pin piston movably received in the pin cylinder, the pin piston providing a seat for a mine roof pin,
- c. a pressure plate carried by and movable with the pin cylinder,
- d. a base supported by the mine floor, and
- e. jacking means supported by the base and urging the pin cylinder and the pressure plate toward the mine roof, said jacking means including a jack piston member and a jack cylinder member coaxial with the pin cylinder, said jack piston member being integral with said pin cylinder for movement with said pin cylinder and said jack cylinder member being movable relative to said pin cylinder.

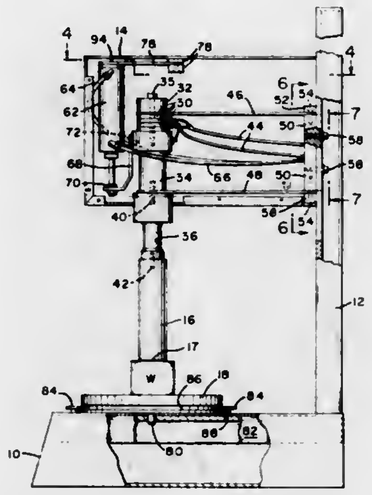
3,863,826
SONIC OR ULTRASONIC APPARATUS

Andrew Shoh, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Apr. 23, 1973, Ser. No. 353,227

Int. Cl. B23k *1/06, 5/20*

U.S. Cl. 228—1 **23 Claims**



1. A sonic or ultrasonic apparatus comprising:

a support for supporting electroacoustic transducer means; electroacoustic transducer means adapted to be resonant at a predetermined frequency of sound for providing vibratory energy in response to electrical energy of said frequency applied;

leaf spring means coupling said transducer means to said support, said spring means being dimensioned to yield in the direction substantially parallel to the axis of propagation of the vibratory energy provided by said transducer means, but to exhibit rigidity in a direction substantially normal to said axis, and

motive means coupled to said transducer means for imparting gross reciprocating motion to said transducer means relative to said support in a direction substantially parallel to said axis for coupling said transducer means into vibratory energy transmitting contact with a workpiece and for withdrawing said transducer means from such energy transmitting contact.

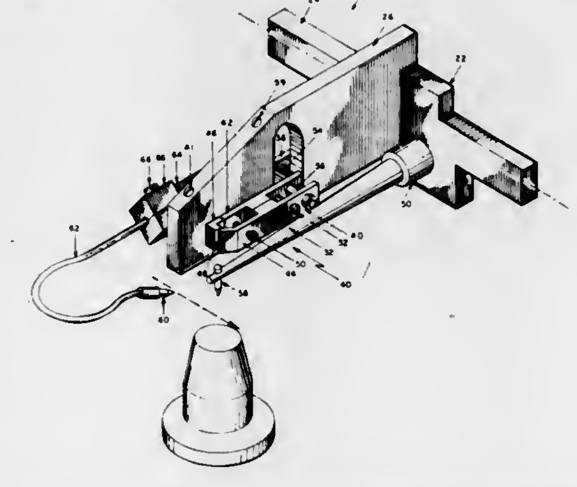
3,863,827
TAILLESS WIRE BONDER

Richard F. Foulke, Carlisle, and James E. Kelly, Melrose, both of Mass., assignors to Mech-El Industries, Inc., Woburn, Mass.

Filed Nov. 10, 1972, Ser. No. 305,568

Int. Cl. B23k *37/04*

U.S. Cl. 228—5 **4 Claims**



1. In apparatus adapted to form a tailless bond between fine electrical conductive wire and electrical contact points of semiconductor devices the combination of:
- a. a mounting block;

- b. a tool holder rigidly mounted on said block extending outward therefrom;
- c. a capillary bonding tool on said tool holder, said bonding tool having a longitudinal axis, said bonding tool further having a capillary opening for receiving said conductive wire, said opening disposed coincident with said longitudinal axis of said tool;
- d. a source of bonding energy for driving said bonding tool to form a bond between said conductive wire and said electrical contact point;
- e. an assembly arm mounted on said block extending outward therefrom;
- f. a lever arm pivotally mounted on said assembly arm;
- g. a conductive wire clamp comprising a pair of jaws mounted on said lever arm, said jaws positioned and arranged to grasp said conductive wire at a selected distance from said bonding tool substantially along said bounding tool longitudinal axis;
- h. means for actuating said clamp jaws to grasp said conductive wire;
- i. means for moving said lever arm and said clamp a selected distance substantially along said axis toward said bonding tool by pivoting said lever arm and said clamp while said bonding tool remains stationary to form a bow in said conductive wire;
- j. means for simultaneously raising said tool holder and said assembly arm away from said bond sufficient to break said conductive wire at said bond whereby a tailless bond is formed and whereby a predetermined length of conductive wire is left extending below said bonding tool substantially equal in length to said bow,
- k. means for altering the end of said extending conductive wire to form an enlarged portion of a predetermined uniform size and shape in preparation for a future bonding sequence.

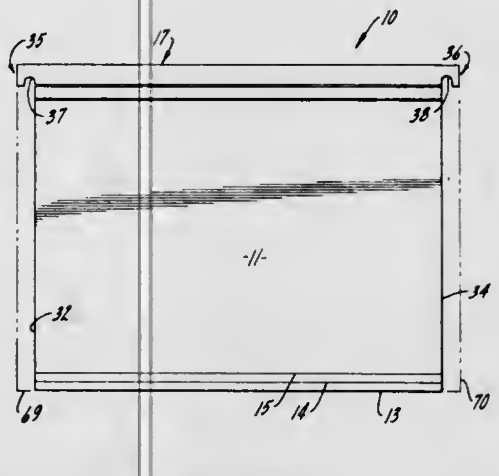
3,863,828
SELF LAMINATED HANGING FILE FOLDER

Jack C. King, North Muskegon, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.

Continuation of Ser. No. 154,458, June 18, 1971, abandoned. This application July 9, 1973, Ser. No. 377,586

Int. Cl. B65d *1/00*

U.S. Cl. 229—1.5 R **3 Claims**



1. A hanging file folder including:

a front panel and a rear panel formed integrally from a piece of paper and connected about a bottom fold,

a hanger member formed integrally at the upper end of each panel and including a plurality of plies of said panel folded one upon the other and adhered to one another,

each hanger member including an upper portion and a lower portion with the upper portion having hooks formed at the opposite ends thereof and located laterally outwardly of the sides of the panels,

the lower portion of each hanger member being offset relative to the upper portion to strengthen said hanger member,

said hook members extending toward said bottom fold but terminating short of the lower portion of said hanger member.

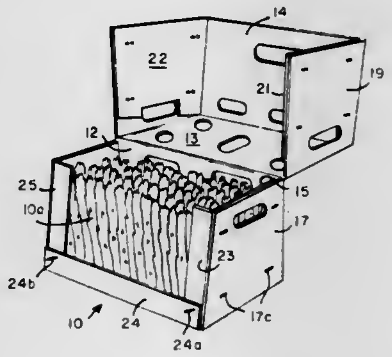
3,863,829
SHIPPING AND DISPLAY CONTAINER FOR FRESH PRODUCTS SUCH AS ASPARAGUS

Thomas M. Merrill, P.O. Box 659, Salinas, Calif. 93901

Filed June 7, 1973, Ser. No. 367,836

Int. Cl. B65d *5/00, 5/22*

U.S. Cl. 229—16 D **3 Claims**



1. A combined shipping and display container for fresh products such as asparagus, the combination comprising a box body having a bottom, a rear wall and double thickness side walls, one thickness of said side walls having the rear edges thereof integral with the respective sides of said rear wall, the other thickness of said side walls having the bottom edges thereof integral with the sides of said bottom, a cover having a top, a front wall and double thickness side members, the rear edge of said top being hingedly attached to the top edge of said rear wall, said front wall being attached to the front edge of said top, one thickness of said side members being attached to the side edges of said top and the other thickness of said side members being attached to said front wall, said side members overlapping said side walls when said top is lowered to close said box body and said front wall closes the front of said box body, and means attaching said front wall to said bottom and to said end walls when said box body is closed.

3,863,830
LIQUID AND GAS SEALING CARDBOARD PACKAGE

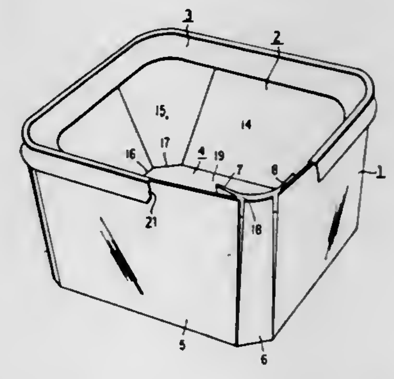
Od Wikar Christensson, Bromma, Sweden, assignor to Christenssons Maskiner & Patenter AB, Bromma, Sweden

Filed June 12, 1972, Ser. No. 261,957

Claims priority, application Sweden, June 30, 1971, 8424/71

Int. Cl. B65d *5/58*

U.S. Cl. 229—14 BA **4 Claims**

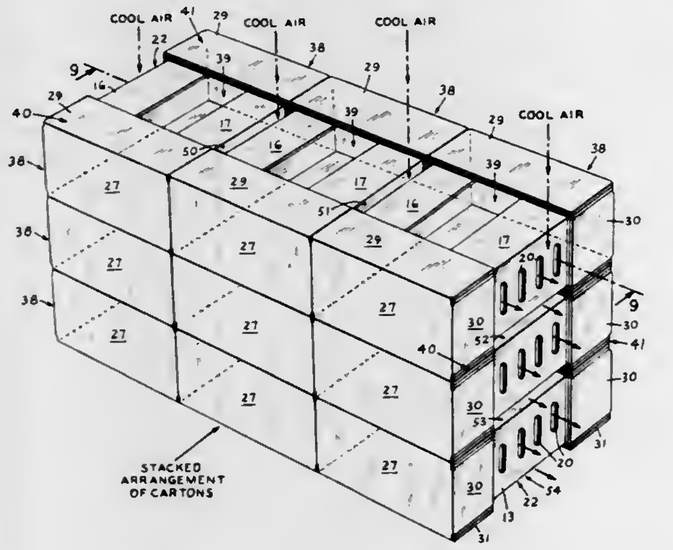


1. A liquid and gas sealing package comprising an outer package of cardboard or any other fairly stiff material and an inner package of a thin sealing material which completely covers the interior of the outer package, and a sealing lid which sealingly receives the upper edge both of the outer package and the inner package in a downwards open groove

thereof, both said outer package and said inner package being formed of continuous blanks each including a bottom, side pieces and corner pieces, said corner pieces being comprised of a corner panel and a fold part on each side of said corner panel and resting against the inside of the adjacent side piece, the fold part of the outer package being received within the corresponding fold of the inner package and at least each fold part of the outer package being formed with somewhat less height than its side pieces and corresponding corner and side pieces of the inner package so that the upper part of the outer package along its whole upper edge will be formed by the inner package and only one layer of cardboard at the maximum.

3,863,831
SHIPPING CARTON

Roger M. Wozniacki, Brea, and Wilbur Wong, Long Beach, both of Calif., assignors to International Paper Company, New York, N.Y.
Filed Aug. 15, 1972, Ser. No. 280,881
Int. Cl. B65d *13/04*
U.S. Cl. 229—23 R **24 Claims**



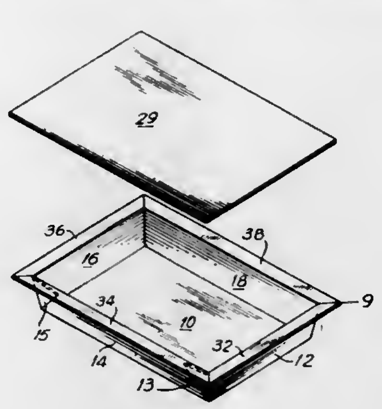
1. A carton open at its top for loading comprising a central body section open at its top having a bottom panel and two side wall panels attached to opposed edges of the bottom panel; end wall panels at each end of the body section having attached thereto four extension panels; a first extension panel joined to the outer surface of the bottom panel in face-to-face relationship therewith, second and third extension panels joined to the outer surfaces of the two side wall panels in face-to-face relationship therewith; the first extension panel disposed beneath the bottom edges of the second and third extension panels with the second and third extension panels resting on the first extension panel; a movable fourth extension panel adapted to overlie the top edges of the second and third extension panels; the extension panels joined to the body section at each end thereof having between them an apertured zone in the body section occupying about 33 to 75 percent of the surface area of the body section.

3,863,832
FOOD CONTAINER

Robert L. Gordon, Monroe, and John C. Siegele, New City, both of N.Y., assignors to International Paper Company, New York, N.Y.
Filed Dec. 20, 1972, Ser. No. 316,664
Int. Cl. B65d *5/20*
U.S. Cl. 229—30 **14 Claims**

1. A container for packaging, storing and heating foods which comprises:

a. a paperboard tray, the interior surface of which is coated with a thermoplastic, said tray including,
   i. a base portion
   ii. a plurality of upstanding walls foldably connected to said base portion,
   iii. a plurality of corner closures, each corner closure foldably connected to a respective one of said upstanding walls and overlapping bonded thereto,
   iv. horizontally disposed panels each foldably connected to the top of a respective one of said upstanding walls,

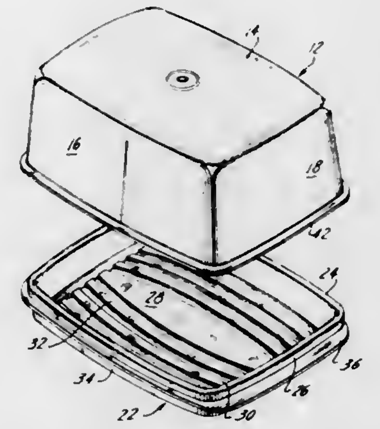


the end of said panels abutting each other to form a peripheral flange,

b. a lid disposed on said flange, the interior surface of said lid coated with a thermoplastic; and
c. a heat sensitive adhesive connection between said lid and said flange wherein said heat sensitive adhesive connection is adapted to fail when the pressure within said container reaches a predetermined value whereby said lid is automatically seperated from said tray.

3,863,833
STORAGE CONTAINER FOR MEAT OR POULTRY PRODUCTS

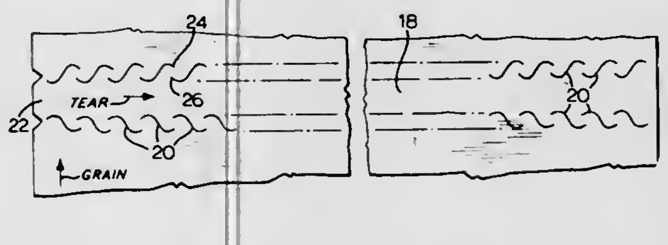
James B. Swett, Barrington, R.I., and Robert H. C. M. Daenen, Erembodegem, Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Continuation of Ser. No. 194,885, Nov. 2, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,646
Int. Cl. B65d *5/64, 43/00*
U.S. Cl. 229—43 **4 Claims**



1. A storage and serving tray and closure combination adapted to hold consumable foodstuffs and the like comprising: a tray member having a recessed bottom wall integral with an upwardly extending side wall, said bottom wall being integrally constructed to include a plurality of raised rib areas adapted to support the foodstuff so that the remaining channel-like portion thereof will collect any fluids exuded thereby, the upper portion of said side wall having a cross-section in the shape of an inverted U with the top surface characterized by an outwardly extending ledge with a downwardly projecting sealing surface that terminates in a laterally extending annular lip all of which are integral with said side and bottom walls, and a closure having a top wall and side walls, said side walls including a sealing flange area that is adapted to sealably engage said sealing surface and which area is further supported by an outwardly protruding peripheral rim that is positioned above the lower edge of said sealing flange area such that it is approximately opposite the outwardly extending ledge of said tray when said closure is in sealing relation thereon.

3,863,834
TEAR-STRIP FOR PAPERBOARD CONTAINER

Peter E. Sandford, London, Ontario, Canada, assignor to Somerville Industries Limited, London, Ontario, Canada
Filed Oct. 9, 1973, Ser. No. 404,292
Int. Cl. B65d *5/54*
U.S. Cl. 229—51 TS **12 Claims**



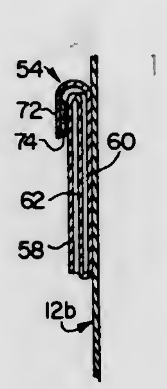
1. A paperboard container having a tear-strip in a panel thereof, said tear-strip having its side edges each defined by a series of cuts,

the terminal end of each cut being in advance of the initial end of the next following cut in the direction of tear of said tear-strip,

the terminal end portion of each cut being inclined in a direction that intersects the next following cut a substantial distance from its initial end whereby pulling force on the strip in the direction of tear is applied substantially to tear initiation at the terminal ends of said cuts in succession.

3,863,835
LETTER PACKAGES

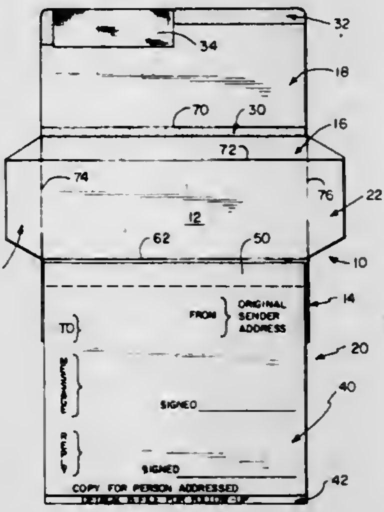
Wilfred H. Gendron, Wilbraham, Mass., assignor to United States Envelope Company, Springfield, Mass.
Filed Sept. 18, 1972, Ser. No. 289,773
Int. Cl. B65d *27/10, 27/04, 27/06*
U.S. Cl. 229—69 **16 Claims**



1. A continuous form letter package assembly comprising an elongated web of sheet material defining at least one longitudinal series of foldable carrier envelope-letterhead blanks connected together in series in end-to-end relation and a plurality of reply envelope structures equal in number to said carrier envelope-letterhead blanks, each of said letter packages comprising one of said blanks and an associated one of said reply envelope structures carried by said one blank, said one blank having a copy area on the front surface thereof and including two carrier envelope panels connected along a common fold line, one of said carrier envelope panels having a window opening therethrough spaced from said common fold line, said one blank having means for securing said two carrier envelope panels in folded relation with said associated one reply envelope structure therebetween when said one blank is separated from said series and said one carrier envelope panel is folded along said common fold line relative to the other carrier envelope panel to form a carrier envelope for said one reply envelope structure, said one reply envelope structure comprising a reply envelope, a coupon panel connected to said reply envelope, and a pair of attaching tabs connected to said coupon panel for attaching said one reply envelope structure to said one blank, said reply envelope having a plurality of body panels connected together to form an envelope body, said coupon panel being connected to the upper edge of one of said body panels along an associated line of weakening and folded downwardly therealong and into overlying relation with said envelope body, said attaching tabs being connected along associated lines of weakening to the respective opposite side edges of said coupon panel and extending outwardly in opposite directions therefrom and beyond the respectively associated side edges of said envelope body, each of said attaching tabs being adhesively connected to an associated portion of the front surface of said other carrier envelope panel, said coupon panel and said tabs cooperating with said other carrier envelope panel to retain said envelope body between said other carrier envelope panel and said coupon panel and in generally overlying relation with an associated portion of said front surface of said other carrier envelope panel, said coupon panel having an address area thereon in registry with and exposed in said window opening when said two carrier envelope panels are secured in folded relation by said securing means.

3,863,836
TWO-WAY ENVELOPE AND LETTER

William H. Austin, 186 S. Main St., Cheshire, Conn. 06410
Filed Dec. 29, 1972, Ser. No. 319,762
Int. Cl. B65d *27/06*
U.S. Cl. 229—73 **5 Claims**



3. A combination two-way envelope and letter comprising envelope means formed by a single foldable sheet, said sheet having a front surface and a rear surface;

said sheet being divided into a central panel portion, a top panel portion and a bottom panel portion connected respectively to the top and bottom of said central panel portion, a pair of side flap portions connected respectively to the sides of said central panel portion, and a cover flap portion connected to said top flap portion;

adhesive means on said sheet front surface including a first adhesive portion on said top panel portion adjacent its juncture with said cover flap portion and a second adhesive portion at the outer edge of said cover flap portion; and

message means formed by a multiple sheet set including means for transmitting a message written on the top sheet of said set onto the remaining sheets in said set;

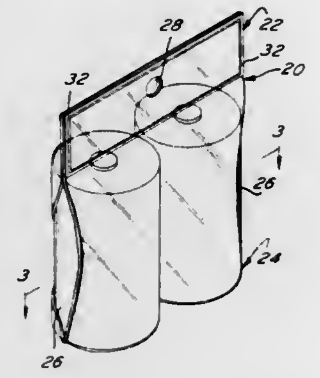
said message means being attached to the front surface of said bottom panel portion;

said message means including means enabling individual sheets from said set to be separated and removed from said set, while the remaining sheets in said set remain attached to said bottom panel portion.

3,863,837
CARDLESS HEAD BOARD MERCHANDISING PACKAGE

Jacob Spiegel, Philadelphia, Pa., and Albert Miller, Somerdale, N.J., assignors to Gilbreth Company, Philadelphia, Pa., by said Miller

Filed Aug. 17, 1972, Ser. No. 281,600
Int. Cl. B65d *65/04*
U.S. Cl. 229—87 R **2 Claims**

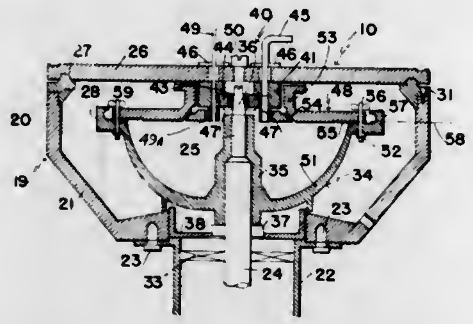


1. A package for displaying and packaging articles, said package being suspendable from a rod, said package comprising a sheet of heat shrinkable film which will retain its dimensional stability when subjected to prolonged ambient temperatures up to 120° F, said sheet being formed with a loop section for receiving said articles and a head section, said sheet being folded upon itself whereby the lower portion comprises the loop section and the upper portions comprise the head section, with the abutting faces of said head section being heat sealed together to form a substantially planar head section, said abutting faces forming an inner surface on said head section, said head section including a printed portion, with said printed portion being on said inner surface, said head section consisting of said planar heat sealed faces, said loop section being adapted to receive and contain said articles by placing said articles in said loop section and heating said loop section above 120° F to shrink said loop section to tightly secure said articles therein, and an opening formed in said head section, said package being suspendable from a rod which is received in said opening.

3,863,838
CENTRIFUGE

Frank E. Pronk, Calgary, Alberta, Canada, assignor to R. M. Hardy Associates Ltd., Calgary, Alberta, Canada

Filed Aug. 8, 1973, Ser. No. 386,770
Int. Cl. B04b
U.S. Cl. 233—2 **4 Claims**

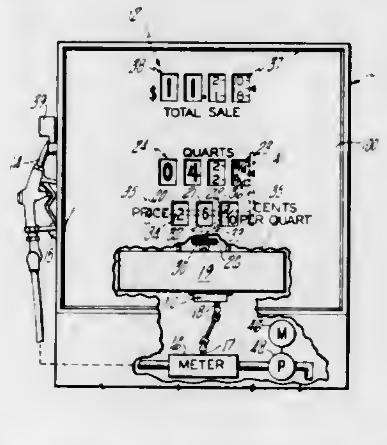


1. A centrifuge assembly comprising in combination a vertically situated body portion, a drive shaft extending upwardly into said body portion from the base thereof, means to support said drive shaft for rotation within the said base of said body portion, a centrifuge bowl having an upper side bounded by a peripherial rim, detachably engaged for rotation over said drive shaft and within said body portion, a centrally apertured detachable cover for said bowl in clamping engagement with said rim, a filtering medium operatively clamped between said detachable cover and said rim of said bowl, a detachable cover for said body portion, an upper drive shaft steady bearing assembly secured to said cover for said body portion, bearably engaging over the upper end of said drive shaft, and an annular vertically situated U-shaped sediment trap formed around the periphery of said bowl and extending substantially above the horizontal plane of said rim of said bowl.

3,863,839
FUEL PUMP COMPUTER CONVERSION TO QUARTS/LITERS PRICING AND COST COMPUTATION

Bradley L. Batson, Marlborough, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Feb. 14, 1974, Ser. No. 442,476
Int. Cl. G06c *15/42;* **B67d** *5/22*
U.S. Cl. 235—94 R **5 Claims**

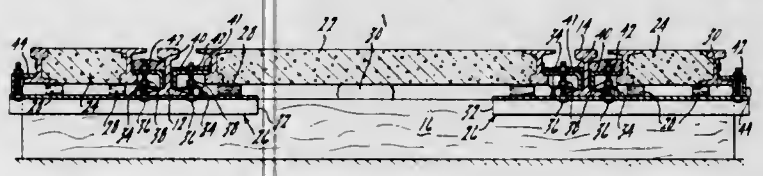


1. Conversion means for expanding the price range of a mechanical fuel pump computer having a variator driven by a fuel meter in accordance with the volume amount of fuel delivered and settable for independently establishing each place of a gallon unit volume fuel price within a three place price range and having at least one set of three number wheels for posting the three places respectively of the gallon unit volume price established by the variator setting; and a resettable register having at least one volume counter connected to be driven by the meter to provide a gallons readout of the amount of fuel delivered and resettable to zero between fuel deliveries and at least one cost counter connected to be driven by the meter and via the variator in accordance with the variator setting to provide a dollars readout of the cost amount of fuel delivered in accordance with the gallons readout and the gallon unit volume price established by the variator setting; each of said counters comprising a counter shaft, a transfer pinion shaft extending parallel to the counter shaft, a plurality of counter wheels of ascending order mounted on the counter shaft each having an outer rim with one decimal set of angularly spaced count indicia, adjacent counter wheels of relatively higher and lower order each having a disengageable wheel reset gear for resetting the counter wheel to zero, a disengageable wheel drive gear for rotating the counter wheel for counting, and gear engagement means operable by the counter shaft by axially shifting the counter shaft in one direction for disengaging the wheel drive gear and engaging the wheel reset gear for conditioning the counter wheel for being reset and by axially shifting the counter shaft in the opposite direction for engaging the wheel drive gear and conditioning the counter wheel for counting, the adjacent lower order counter wheel having a combination locking ring and single two-tooth segment transfer gear, and a plurality of transfer pinions mounted on the transfer pinion shaft each mounted in engagement with a wheel drive gear and combination locking ring and single two-tooth transfer gear of adjacent counter wheels of relatively higher and lower order for generating a one count transfer from the lower to the higher order counter wheel for every revolution of the lower order wheel; the conversion means comprising a substitute lowest order counter wheel for each counter; each substitute counter wheel having a said disengageable wheel drive gear, a said disengageable wheel reset gear, a said gear engagement means operable by the counter shaft, an outer rim bearing four decimal sets of angularly spaced count indicia, and a combination locking ring and transfer gear with four equi-angularly spaced two-tooth transfer gear segments and intermediate locking ring portions for generating a one count transfer from the substitute lowest order counter wheel to the next order counter wheel for every one-fourth revolution of the substitute counter wheel; whereby a fuel pump computer converted by the conversion means is operative to set and post a quart/liter unit volume price with its variator, provide a quarts/liters volume readout of the volume amount of fuel delivered, and provide a dollars readout of the cost amount of fuel delivered in accordance with the quarts/liters volume delivered and the quart/liter unit volume price established by the variator setting.

3,863,840
VEHICULAR SUPPORTING DECK FOR A RAILROAD GRADE CROSSING

Paul J. Szarka, and Joseph R. Szarka, both of Livonia, Mich., assignors to Szarka Enterprises, Inc., Livonia, Mich.

Filed Mar. 5, 1973, Ser. No. 338,047
Int. Cl. E01b *2/00*
U.S. Cl. 238—8 **10 Claims**

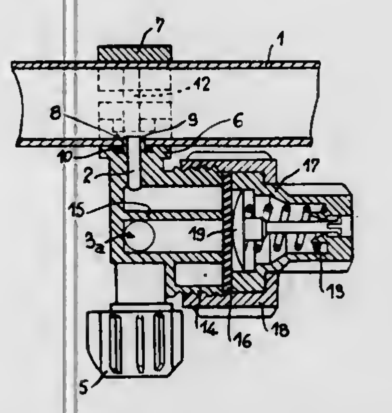


1. In a railroad grade crossing including a pair of running rails carried by a plurality of supporting ties, a crossing structure embodying a unit slab member spanning the area between said rails, bridging means between said running rails and the edges of said member adjacent to said rails for securing said edges thereto, and flowable means for supporting said member from said plurality of ties after said means has been deformed by said member and hardened.

3,863,841
LIQUID SPRAYING DEVICE

Fernand Berthoud, Rhone, France, assignor to Berthoud S.A., Belleville sur Saone, Rhone, France

Filed May 7, 1973, Ser. No. 358,057
Claims priority, application France, May 8, 1972, 72.17718
Int. Cl. B05b *1/30*
U.S. Cl. 239—266 **5 Claims**



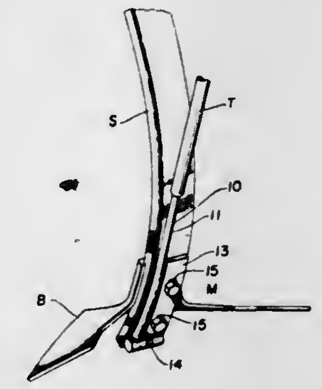
1. A liquid spraying device to be connected to a pressurized liquid supply line, comprising:

a. a body including
  a liquid receiving portion having an inner passage to receive the pressurized liquid to be sprayed;
  means to connect said inner passage with the pressurized liquid supply line;
  a transverse branch extending substantially on each side of said liquid receiving portion, said branch being formed with a longitudinal bore which does not communicate directly with said inner passage, and said longitudinal bore having two open ends;
  tubular nozzle carrying portions extending substantially radially from said transverse branch on each side of said liquid receiving portion and communicating with said longitudinal bore;
  and an antidrip-valve carrying portion laterally disposed with respect to said liquid receiving portion, said lateral portion having a substantially flat surface and being formed with ducts respectively communicating with said inner passage and with said transverse bore, with each of said ducts having an open end terminating at said substantially flat surface;
b. an antidrip diaphragm valve bearing against said flat surface to close the open ends of said ducts in the absence of the liquid under pressure within at least one of said ducts;
c. resilient means to press said diaphragm valve against said flat surface;
d. spraying nozzles mounted on said nozzle carrying portions;
e. and valve means slidably mounted in each end of said longitudinal bore and selectively operable to block the flow of liquid from said bore to at least one of said nozzle carrying portions.

3,863,842
FERTILIZER APPLICATOR

Raymond J. McFarland, Box 36, and David L. McFarland, Box 54, both of Gwinner, N. Dak. 58044

Filed Apr. 11, 1974, Ser. No. 460,117
Int. Cl. B05b *1/06*
U.S. Cl. 239—283 **5 Claims**



1. A fertilizer applicator comprising:
a tubular elongated stem having a longitudinal passage;
a tubular manifold extending transversely to the elongated stem, having a longitudinal passage therein in communication with the longitudinal passage of the elongated stem, and a countersunk aperture extending transversely through the tubular wall of the manifold from the passage therein to the exterior thereof;
a mounting plate secured to the elongated stem and the tubular manifold.

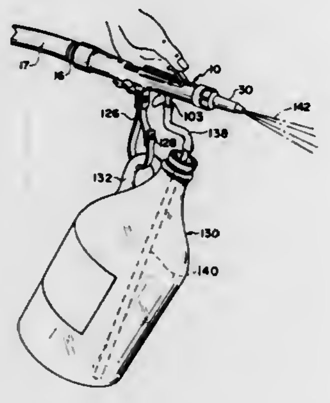
3,863,843
ANTI-BACK SIPHONING WATER SUPPLY VALVE AND MIXER

Valentine Hechler, IV, 26 Meadow View Rd., Northfield, Ill. 60093

Continuation of Ser. No. 333,309, Feb. 16, 1973, abandoned.
This application Apr. 15, 1974, Ser. No. 460,889
Int. Cl. B05b *7/30*
U.S. Cl. 239—318 **17 Claims**

1. In a safety device for potable water supply and dispensing system having a manually valved outlet;
a housing defining a flow compartment connected releasably to the outlet and having an inlet port, an outlet

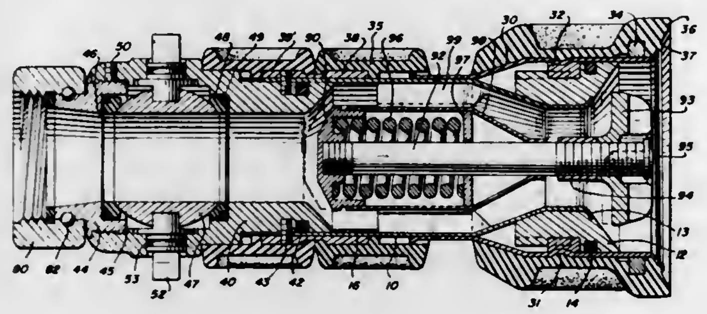
- dispensing means having a flow area open to atmosphere substantially less than the flow area of the compartment, a valve port opening to atmosphere disposed intermediate the inlet port and the outlet dispensing means, and mixing means between said valve port and outlet dispensing means;
- an inlet valve closing the inlet port against the inflow of potable water to the inlet port;
- a vent valve in communication with said valve port opening to vent the compartment to atmospheric pressure;



- means for coordinating said valves to open one while closing the other; and
- resilient means under pressure coacting with the coordinating means to activate said inlet valve to close said inlet port when the opening force of supply water upon the inlet valve and the closing forces of water pressure in said compartment upon the vent valve drops to a predetermined positive gauge pressure.

3,863,844
AUTOMATIC FIRE NOZZLE WITH AUTOMATIC CONTROL OF PRESSURE AND INTERNAL TURBULENCE COMBINED WITH MANUAL CONTROL OF VARIABLE FLOW AND SHAPE OF STREAM PRODUCED

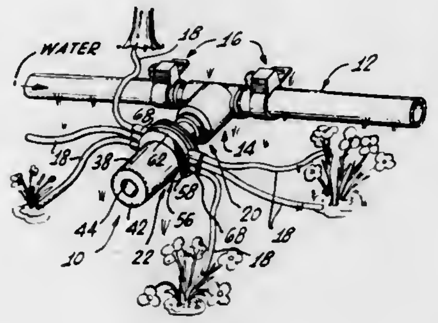
Clyde H. McMillan, Hobart, Ind., assignor to Fire Task Force Innovations, Inc., Hobart, Ind.
Filed May 2, 1973, Ser. No. 356,567
Int. Cl. B05b *1/32*
U.S. Cl. 239—452 **17 Claims**



1. A nozzle body for regulated discharging of a fluid with an automatic pressure controlling mechanism axially and reciprocably mounted therein, and said pressure controlling mechanism having a piston head constructed and positioned in the path of fluid flow and cooperating with a surrounding portion of the nozzle body to form a variable size first annular opening for the passage of fluid, and said pressure controlling mechanism also having a control baffle cooperating with a surrounding conical portion of the nozzle body to form a variable size second annular opening for the discharge of fluid, wherein said control baffle is mounted on a shaft is adapted to be manually positioned in relation to an adjacent conical surface for purposes of flushing or manually overriding of automatic pressure control.

3,863,845
EMITTER FOR LOW RATE, LOW PRESSURE DISCHARGE OF IRRIGATING WATER

John G. Bumpstead, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Mar. 18, 1974, Ser. No. 451,852
Int. Cl. B05b *15/00, 1/14*
U.S. Cl. 239—542 **15 Claims**

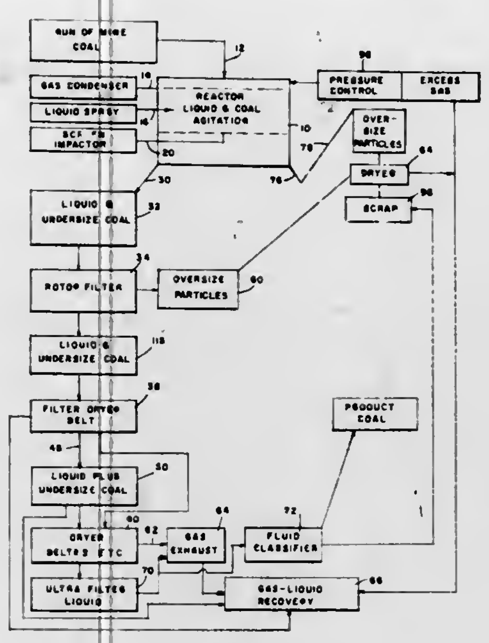


5. An emitter for distributing water at a low rate and low pressure uniformly to a plurality of selected areas from a single source of water of relatively high pressure, said emitter comprising:
- a body portion coupled to the source and receiving water under relatively high pressure;
- means defining a helical path having inlet and outlet ends in said body portion and through which water from said source spirals to substantially reduce its pressure;
- an annular chamber in said body and receiving water from said outlet end of said helical path;
- a pluraltiy of elongated flexible tubes communicating with said annular chamber; and
- means for dissipating the spiral motion of the water leaving said helical path preparatory to discharge through said tubes, whereby said tubes each receive a substantially uniform amount of low pressure water from said chamber and distribute the water from said body portion at a substantially uniform rate and pressure through each of said tubes.

3,863,846
APPLICATION FOR THE BENEFACTION OF COAL UTILIZING HIGH VOLATILE LIQUIDS AS CHEMICAL COMMINUTANTS

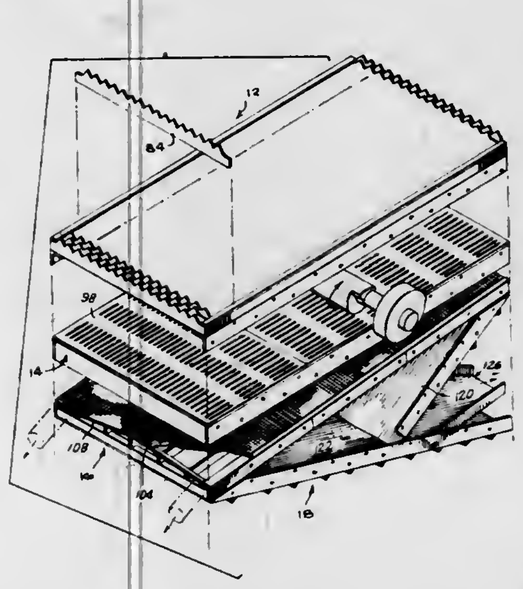
Douglas V. Keller, Jr., and Clay D. Smith, both of Lafayette, N.Y., assignors to Chemical Comminutions International, Inc., Lafayette, N.Y.
Filed Aug. 22, 1972, Ser. No. 282,735
Int. Cl. B02c *19/00*
U.S. Cl. 241—1 **30 Claims**

1. Apparatus for comminuting coal comprising:
- a reactor containing coal essentially submerged in a liquid chemical comminutant for producing reactants, such as impurity materials and product coal, the reactor including (1) means to provide a small variational mechanical stress on the coal by the comminutant, and (2) means to provide at least a partial separation of the impurity materials from the coal without generating environmental pollutants or physical hazards.



3,863,847
FOUNDRY SAND REDUCER AND RECLAIMER

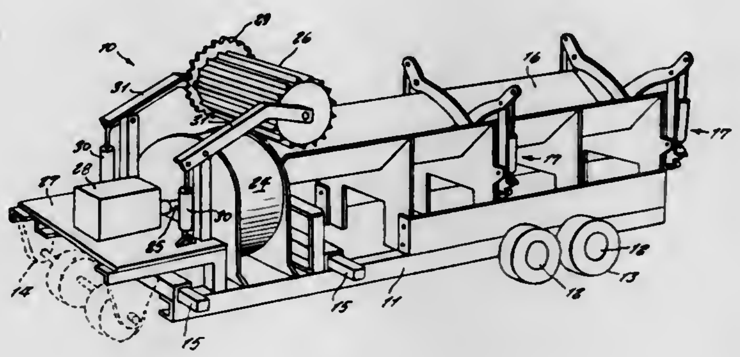
Wallace Day, Augusta; Alvin E. Postell, Martinez, and William D. Postell, Augusta, all of Ga., assignors to Georgia Iron Works Co., Grovetown, Ga.
Filed July 26, 1973, Ser. No. 382,789
Int. Cl. B02c *19/20*
U.S. Cl. 241—14 **29 Claims**



1. The method of reducing into individual grains, large lumps of foundry sand formed from sand grains coated with organic material and foundry binders formed by chemical reaction in the mold and reclaiming the grains into reusable foundry sand without impact forces sufficiently severe to fracture the sand grains comprising:
- vibrating said large lumps of foundry sand to produce agglomerates of sand grains and individual grains in a first zone, passing said sand grains to a second zone,
- vibrating said grains in said second zone to maintain said grains substantially continually in an unsupported state, contacting substantially each of said grains with adjacent grains while in said unsupported state for at least 10 seconds to reduce the agglomerates to individual grains by cleaving said agglomerates along the interface of the binder, and
- simultaneously abrading said grains with adjacent grains to remove a sufficient amount of binder coated on said grains to permit commercial foundry reuse, and thereafter collecting said individual sand grains.

3,863,848
GIANT TREE CHOPPER

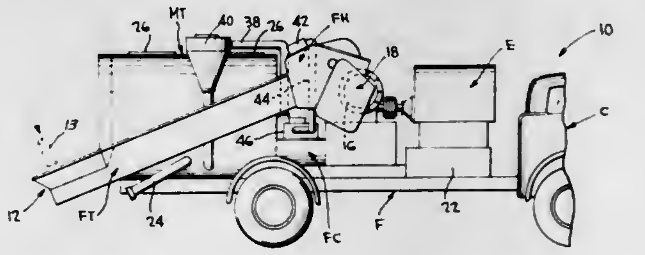
David J. Mashuda, R.D. No. 1, Evans City, Pa. 16033
Filed Jan. 2, 1974, Ser. No. 430,192
Int. Cl. B02c *21/02*
U.S. Cl. 241—101.7 **5 Claims**



1. Mobile apparatus having a frame on which is carried a rotary cutter member for fragmentizing whole trees and tree trunks, wherein the improvement comprises a plurality of horizontal telescoping trough members for supporting the tree trunk longitudinally of said frame and in position to be fed endwise against said rotary cutter member, transversely spaced guide channels on said frame, and anti-friction rollers on said telescoping trough members cooperatively engaging in said channels whereby to movably support said trough members for movement longitudinally of said frame.

3,863,849
DUST ABATEMENT SYSTEM FOR MIXING APPARATUS

John L. Kugle, and Robert C. Futty, both of Lancaster, Pa., assignors to Irl Daffin Associates, Inc., Lancaster, Pa.
Filed Oct. 5, 1973, Ser. No. 403,886
Int. Cl. B02c *9/04, 13/04;* **B07b** *4/00*
U.S. Cl. 241—152 A **6 Claims**



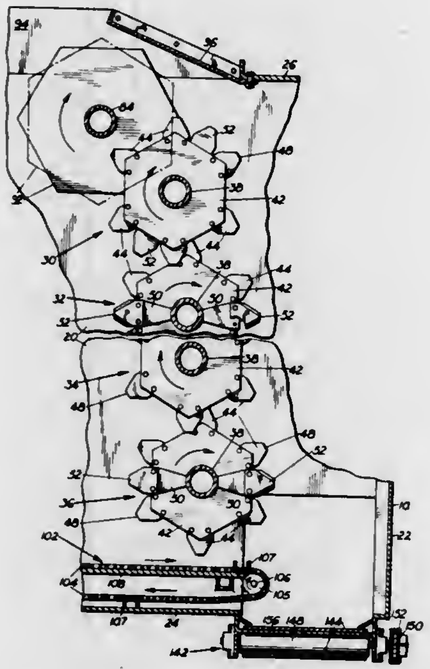
1. A mixing apparatus for materials such as livestock feed comprising, in combination, a mixing tank, means within said mixing tank for mixing fluent materials fed into said mixing tank, milling means for comminuting solid livestock feed materials into a fluent state prior to feeding same into said mixing tank, first conduit means communicating the outlet of said milling means with said mixing tank, feeding conveyor means for receiving solid livestock feed materials from a source of same, said feeding conveyor means having a discharge end remote from said source to which the solid livestock feed materials are conveyed, housing means overlying said discharge end of said feeding conveyor means and having an inlet and an outlet opening, shredding means operatively associated within said housing means between said inlet and outlet openings for preparing coarse solid livestock feed materials for said milling means, second conduit means communicating said outlet of said housing means with the inlet of said milling means, and a dust abatement means for removing fine particles of said livestock feed materials from said housing means to preclude escape thereof through said inlet opening of said housing means and for simultaneously removing such

fine particles from said first conduit means and creating a negative pressure between the inlet and the outlet of said milling means, said dust abatement means delivering said fine particles to said mixing tank, said dust abatement means comprising fan means including an inlet end at which a negative pressure is produced and an outlet end at which a positive pressure is produced, a housing dust baffle secured over an opening in said housing means, and a conduit dust baffle secured over an opening in said first conduit means, said conduit dust baffle having spaced side walls, a first tube section having one end communicating with said housing dust baffle and a second end communicating with one side wall of said conduit dust baffle, a second tube section having one end communicating with the other side wall of said conduit dust baffle and a second end communicating with said inlet of said fan means, and additional tubing means connecting said outlet end of said fan means to said mixing tank, the end of one of said tube sections communicating with said conduit dust baffle being slidingly received in its associated side wall to permit it to be positioned within said conduit dust baffle at a selected distance from the end of the other tube section which is opposed thereto.

3,863,850
BALE SHREDDER AND DISCHARGER

Percy F. Freeman, 2034 N.W. 27th Ave., Portland, Oreg. 97210

Filed Feb. 25, 1974, Ser. No. 445,494
Int. Cl. A01f *29/00*
U.S. Cl. 241—186 R **7 Claims**

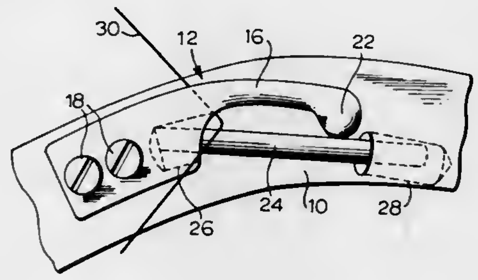


1. A device for shredding baled material comprising:
a. a bin for receiving bales to be shredded,
b. a plurality of power driven rotating knife assemblies in said bin disposed one above the other and each including a cross shaft and radially extending knife blades projecting therefrom,
c. conveyor means arranged to feed bales into said knife,
d. a power driven cross shaft above the uppermost shaft of the knife assemblies,
e. and a plurality of wheels on said last mentioned shaft,
f. said wheels projecting radially beyond the uppermost knife blades with relation to the side from which the bales are fed by said conveyor means,
g. said wheels being non-round so that their peripheral edges provide abutment for material which has worked up on the knife assemblies in a shredding operation whereby the material is held down for efficient shredding.

3,863,851
DEVICE FOR HOOKING A YARN ON A ROTATING SUPPORT

Rolland Sartori, Roanne, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Sept. 25, 1973, Ser. No. 400,564
Claims priority, application France, Sept. 25, 1972, 72.34461
Int. Cl. B65h *65/00*
U.S. Cl. 242—18 PW **7 Claims**

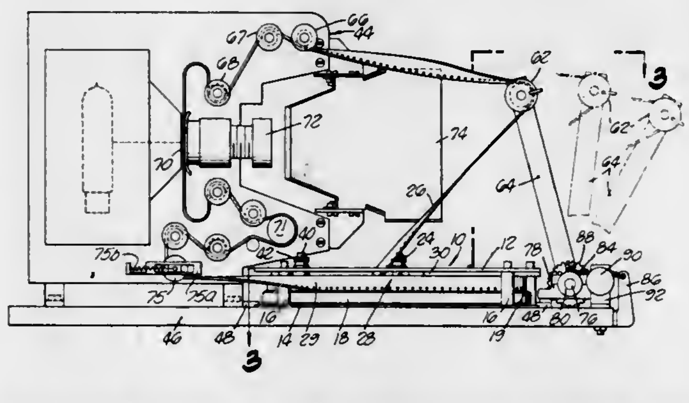


1. A device for hooking a moving yarn on rotatable support means comprising a rotatable mounting means, a hooking catch mounted on said mounting means in close proximity to an end of the support means and responsive to centrifugal force to hold the yarn during rotation of the rotatable mounting means and release the yarn when the rotatable mounting means ceases to rotate, said hooking catch including a finger element and an elongated elastic element adjacent to the finger element held with play at each of its ends, said finger element and said elastic element forming a yarn receiving recess therebetween such elastic element deforming when subjected to a centrifugal force and resuming its original form when the centrifugal force dissipates, said elastic element being adapted to compress said yarn between itself and said finger element during rotation of said mounting means and to release the yarn during deceleration of said mounting means, said finger carrying a substantially spherical polished tip adapted to catch the totality of filament of a multifilament yarn.

3,863,852
CONTINUOUS LOOP FILM CARTRIDGE AND DRIVE MECHANISM

Gerald F. Rackett, 13543 Moorepark St, Sherman Oaks, Calif. 91403, and Ralph Sacks, Hilton Office Center, 900 Wilshire Blvd., Suite 1134, Los Angeles, Calif. 90017

Continuation-in-part of Ser. No. 64,372, Aug. 17, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 233,957
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 R **14 Claims**



1. A system for handling an endless strip of material such as motin picture film for use with a film projector or the like, whereby the strip of material is to be disposed in a single coil having one continuous external section for engagement with the projector, the combination comprising:

a housing, a turntable mounted within said housing, said turntable comprising a disc providing a flat continuous surface, a hub member mounted upon said turntable, said hub extending upwardly from the surface of said turntable, an exit aperture in said housing near the center of said turntable, an entrance aperture in said housing near the edge thereof for the return of said external loop to said coil in said housing;

guide means mounted adjacent said housing, said guide means being spaced laterally and above said exit aperture, said guide means operative to guide said strip out of said housing at an acute angle with respect to the plane of said turntable;

drive means for rotating said turntable, said drive means comprising a continuously running motor, said motor having a motor shaft engaging said turntable;

control means coupled to said drive means, means responsive to the size of a loop formed in the strip of material between said exit aperture and a projector to which the strip extends, said responsive means being coupled to said control means, said control means including means for controlling the electrical signal to said motor for continuously varying the speed thereof in response to changes in said loop whereby said turntable is made to continuously rotate at varying speeds the minimum being greater than zero under normal operating conditions; and

a layer of material deposited upon the surface of said turntable, said layer having a low coefficient of friction, said housing having a top cover plate, a plurality of strip-like members affixed to the underside of said cover plate disposed in a substantially radial fashion with respect to said turntable, means for adjustably positioning said strip-like members in a spaced-apart relationship with respect to said turntable surface so as to be capable of frictionally engaging the edges of said coil of said endless strip material when said material is so disposed upon said turntable surface.

3,863,853

ENDLESS MAGNETIC TAPE CARTRIDGE

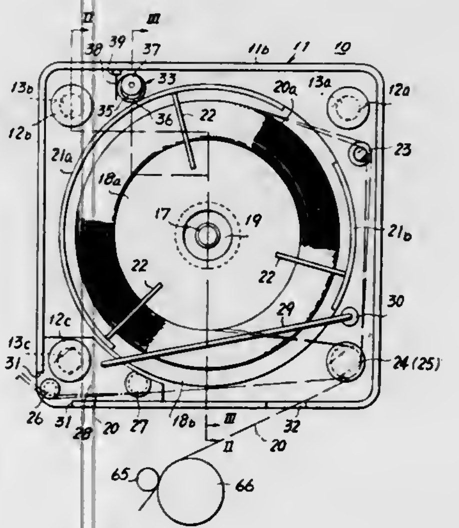
Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd, Yokohama, Kanagawa-ken, Japan

Filed Apr. 4, 1972, Ser. No. 240,965

Claims priority, application Japan, Apr. 6, 1971, 46-24909[U]; Apr. 30, 1971, 46-33597[U]; May 7, 1971, 46-35758[U]; May 7, 1971, 46-35759[U]; May 7, 1971, 46-35760[U]; May 14, 1971, 46-38193[U]; May 14, 1971, 46-23818

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A **4 Claims**



1. An endless-tape cartridge for use in a recording and/or reproducing apparatus of the type wherein an endless tape is caused to travel obliquely with respect to the rotating plane of a rotary magnetic head for recording and/or reproducing video signals, said cartridge comprising: a cartridge casing; a spool rotatably accommodated within said casing; a body of wound tape of an endless-tape wound around said spool and disposed in the lower half part of the casing; a first guide member for guiding a tape portion drawn out of the innermost periphery of said body of wound tape to a high position higher than the position of the body of wound tape; a tape outlet provided in a side wall of the casing at a position of the same height as said high position such that said tape guided by said first guide member can move out of the casing at said high position; a tape inlet provided in a side wall of the casing at a position lower than said high position such that the tape which has moved out of said tape outlet can enter into the casing at the same high position as the body of wound tape; and a second guide member for guiding the tape which has thus entered through said tape inlet in such a manner that it is wound around the outermost periphery of the body of wound tape, said endless tape drawn out of the casing through the tape outlet being held between a capstan and a pinch roller of said recording and/or reproducing apparatus and thereby being driven and caused to travel, and said first guide member being disposed above and coaxially with said second guide member.

3,863,854

APPARATUS FOR SPLICING PAPER ROLLS

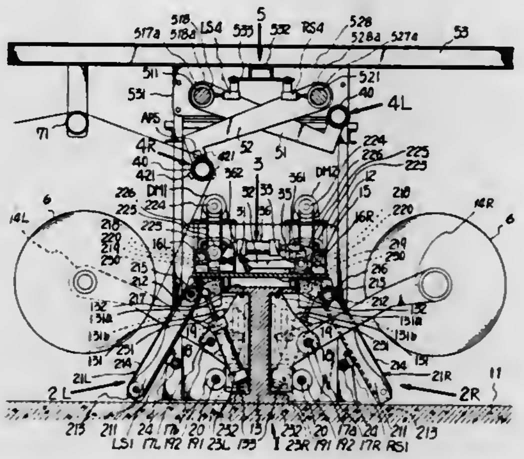
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Filed Nov. 30, 1972, Ser. No. 310,703

Claims priority, application Japan, Dec. 30, 1971, 47-2380; Feb. 15, 1972, 47-16254; Mar. 13, 1972, 47-25930

Int. Cl. B65h *19/12*

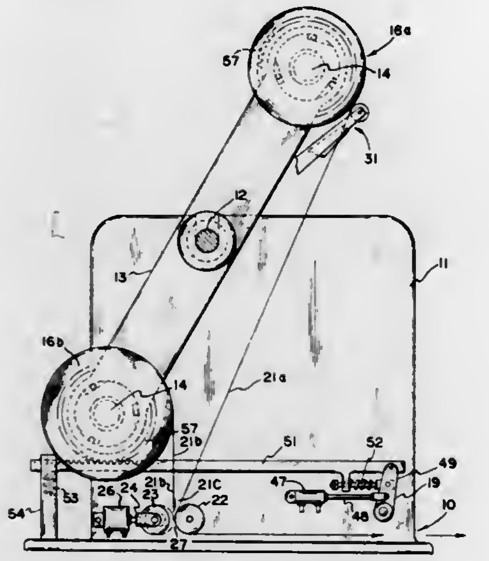
U.S. Cl. 242—58.2 **9 Claims**



1. An apparatus for splicing a running web which is being continuously withdrawn from an expiring roll with a fresh fully wound web roll without interrupting the continuous operation thereof which comprises a mill stand, said fully wound roll and said expiring roll being rotatably supported by said mill stand in mutually opposed positions, means for rotating said fully wound roll and said expiring roll, respectively, guide roll means disposed in said mill stand between said fully wound roll and said expiring roll, cutting means supported in the mill stand and associated with said guide roll means for cutting the web running from the expiring roll after the splicing operation has been achieved, and an assembly of web shifting roller means disposed above said mill stand and above said web rolls, said assembly of web shifting roller means comprising a pair of opposing outer arms and a pair of opposing inner arms, each of said pairs of arms being rotatably mounted at their one end above said mill stand and each of said other ends of said pairs of arms being provided with a web pushing roller which is adapted to engage the running web being drawn from the expiring roll and means for independently displacing said pairs of arms containing said web pushing rollers and the web associated therewith from a position above the web rolls to the cutting means and into engaging relationship with the fully wound web roll whereby the leading end of the fresh web roll is spliced with the running web of the expiring roll.

3,863,855
FILM UNWINDING AND SPLICING APPARATUS AND METHOD

Rene J. Gaubert, 4219 Oakmore Rd., Oakland, Calif. 94602
Filed Oct. 20, 1972, Ser. No. 299,370
Int. Cl. B65h *19/16*
U.S. Cl. 242—58.4 **8 Claims**



1. Apparatus for unwinding and splicing rolls of material, the exterior lead end of the material being provided with splicing adhesive, means for supporting separate first and second rolls of the material on spaced parallel horizontal axes, a horizontal rotatable take-off roller over which the material is entrained as it is unwound from the first one of the rolls, a rotatable presser roller disposed alongside and parallel to the take-off roller, means for moving the presser roller from a normal retracted position in spaced proximity to the take-off roller to a pressing position in which its peripheral surface is pressed against the take-off roller and the material entrained upon the same, there being a vertically open gap between the rollers when said presser roller is in its normal retracted position, the lead end of the material from the second roll of material and the gap between said take-off and presser rollers being such that such lead end hangs down by gravity with its lower end in proximity with the gap between the rollers, and means responsive to completion of the unwinding of material from the first roll to energize the means for moving the presser roller whereby the presser roller is moved against the take-off roller and the material entrained over the same, and means to effect lowering movement of said lead end of the material from the second roll downwardly between the take off and presser rollers whereby said lead end is caused to be pressed against and to adhere to the trailing end portion of the unwound material from the second roll, thereby forming a splice.

3,863,856
TAPE REEL DRIVE MECHANISM

Bartholomew F. Conlon, Jr., Waynesboro, Va., assignor to General Electric Co., Lynn, Mass.
Filed Mar. 15, 1973, Ser. No. 341,368
Int. Cl. B65h *19/02*
U.S. Cl. 242—68.3 **9 Claims**

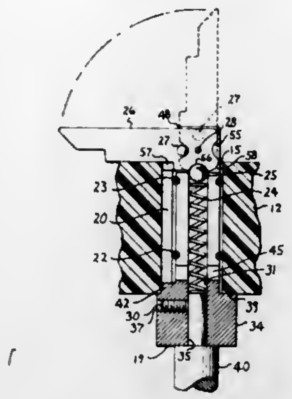
1. A mechanism for driving a reel having a central circular hub opening from a motor driven shaft comprising:

a. a drive member having a collar and a cylindrical shaft portion extending from the collar, at least a part of the shaft portion including the end remote from the collar being bifurcated to form first and second spaced opposed shaft segments, the shaft portion being adapted to extend through and fit loosely within the reel hub opening;

b. a pivotally mounted cam means having cam surfaces rotatable into the space between the shaft segments so that the cam surfaces increase the space between the shaft segments thereby urging the shaft segments into forcible contact with the reel hub;

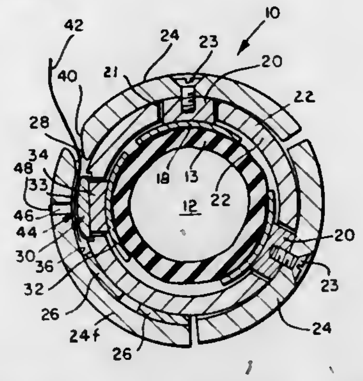
c. means for pivotally mounting the cam means to the remote end of the bifurcated shaft; and

d. means for securing the collar to the motor driven shaft.



3,863,857
LEAF-TYPE EXPANSIBLE SHAFT WITH TRAPPER BAR

Geoffrey Smith, Nashua, N.H., assignor to Nim-Cor Inc., Nashua, N.H.
Filed Apr. 2, 1973, Ser. No. 346,769
Int. Cl. B65h *75/24, 75/28*
U.S. Cl. 242—72 B **9 Claims**



9. In an expansible shaft of the type having outwardly movable leaves extending along, and around, an intermediate cylinder, the combination of:

a plurality of said elongated leaves spaced around said cylinder, one said leaf being fixed to said cylinder in asymmetrical position to define a portion of a cylinder outlined when all of said leaves are expanded and having one axially extending lateral edge portion spaced from said cylinder to form a space therewith for receiving an end of a web;

the other said leaves being normally retracted but radially movable outwardly to define said cylindrical outline with said fixed leaf;

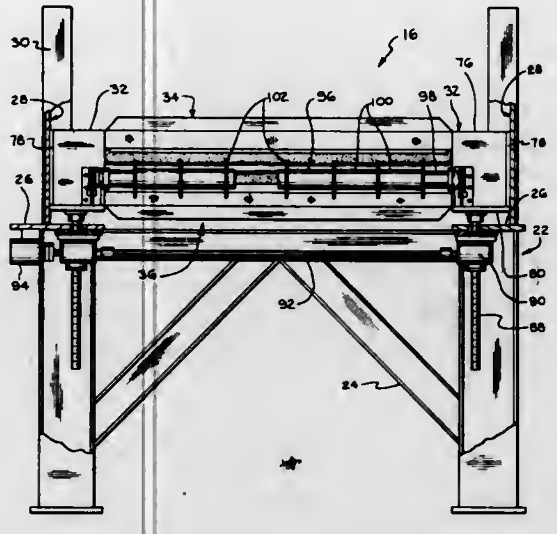
elongated clamping means on said intermediate cylinder, oppositely disposed to, and under, the lateral edge portion of said fixed leaf, in said space, for gripping said end of said web against said lateral edge portion of said fixed leaf, said means being radially movable in said space;

and means for moving said outwardly movable leaves and said clamping means radially inwardly and outwardly.

3,863,858
TENSIONING APPARATUS

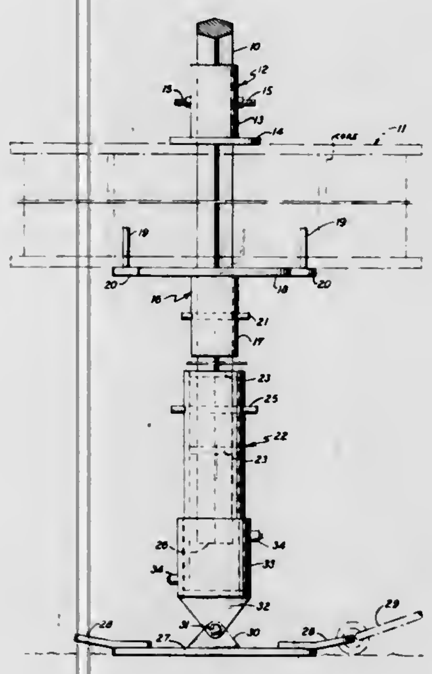
Ford B. Cauffiel, and Herbert C. Trautman, both of Toledo, Ohio, assignors to Ford B. Cauffiel, Toledo, Ohio
Filed Nov. 9, 1973, Ser. No. 414,373
Int. Cl. B65h *23/10*
U.S. Cl. 242—75.2 **21 Claims**

1. A tensioning device for maintaining substantially equal tension on a plurality of elongate, flexible members, said tensioning device comprising a first drag member, means for holding said drag member in a predetermined position, a second drag member, means for holding said second drag member facing said first drag member, said flexible, elongate members being passed in a common direction between said drag members, means for establishing uniform pressure over a substantial portion of the length of said second drag member to urge said second drag member toward said first drag member, supporting means for supporting both of said drag members, and at least two jackscrews engageable with said supporting means for raising and lowering said supporting means.



3,863,859
REEL SUPPORT AND WINDER APPARATUS

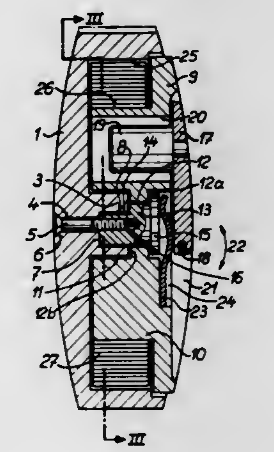
Horace J. Keith, Rt. 1, Box 31-C, Pearsall, Tex. 78061
Filed Feb. 21, 1974, Ser. No. 444,510
Int. Cl. B65h *75/14*
U.S. Cl. 242—77 **10 Claims**



1. Apparatus for supporting and turning a reel during winding and unwinding operations comprising a generally upright elongated shaft adapted to be driven rotatably by an overhead driving means, said shaft adapted to be assembled with a reel having an axial opening to receive the shaft completely therethrough with the shaft extending substantially above and below the reel during use of the apparatus, a reel positioning device adapted to be assembled onto said shaft above the reel thereon, means to releasably lock the positioning device in a selected adjusted position on said shaft with the positioning device engaging the top of the reel, a reel support and drive unit adapted to be assembled onto said shaft and locked relative to the shaft below said reel and in engagement with the bottom of the reel and having a positive driving connection with the bottom of the reel whereby said support and drive unit causes rotation of the reel with said shaft, and a holder and bearing device for said shaft mountable upon the lower end portion thereof in locked relation therewith and extending below the lower end of the shaft and serving as a journal for the shaft during rotation thereof with said reel, said holder and bearing device tiltable with the shaft and reel to various angular operational positions relative to ground.

3,863,860
CASE FOR A LINEAR MEASURING DEVICE

Michel Quenot, Besancon, France, assignor to Stanley Mabo, Trepillot Besancon, France
Filed Jan. 19, 1973, Ser. No. 325,030
Int. Cl. B65h *75/16, 75/40*
U.S. Cl. 242—84.8 **2 Claims**



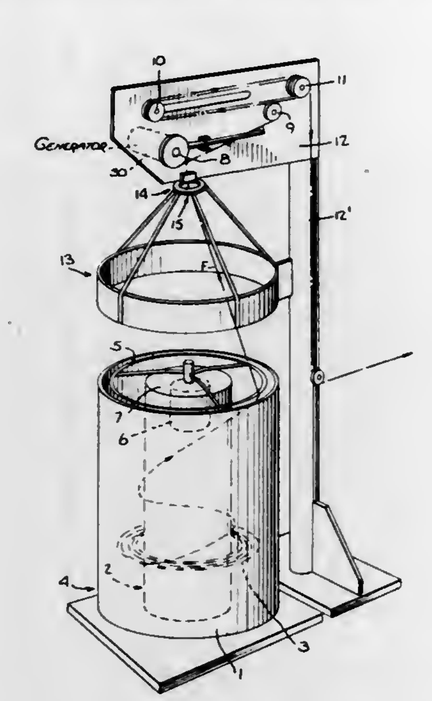
1. A case for a tape measure comprising, an outer shell defining a first side of a case for a tape measure and the periphery of said case, said outer case having an axial spindle, a cover disc defining a second side of said case and having a tape drum extending therefrom rotatable about said spindle, said drum having an internal collar, means defining an axial extension of said spindle having a head internally of said tape drum axially spaced from an inner end of said spindle defining an annular groove therewith receiving said collar of said tape drum for rotation therein, fastener means extending through said shell and spindle thereof removably holding said axial extension removably assembled to said spindle, a handle on said disc for rotating said cover disc, said spindle having a non-circular bore, said axial extension having a portion including a non-circular cross section received in said non-circular bore, said cover disc having a recess, a spring in said recess bearing against said handle for retaining it in a retracted position on said cover disc and an extended position when manually actuated to said extended position, said spring being removably received in said recess and frictionally bearing on said head of said axial extension, and said spring comprising a flat spring having a convex portion bearing against said handle and holding said cover disc against undesired rotation.

3,863,861
WIRE PAYING-OUT APPARATUS

Aldo Bellasio, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy
Filed May 22, 1973, Ser. No. 362,770
Claims priority, application Italy, June 13, 1972, 25588/72
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 **4 Claims**

1. Apparatus for paying off wire stored in superimposed connected coils, said apparatus comprising a cylindrical body having said coils therearound, the exterior diameter of said body being smaller than the interior diameter of said coils whereby said coils are loosely arranged around said body, detaching means mounted for rotation around the axis of said body and spaced from said coils in the direction of paying off, said detaching means having a portion thereof engageable with said wire as it is payed off and movable in a circular path around said axis, and motor means connected to said detach-

ing means and rotating said detaching means in a direction which unwinds said coils and moving said portion of said



detaching means around said axis at a speed which is at least four times greater than the linear paying off speed of said wire.

3,863,862
KINEMATOGRAPH PROJECTION APPARATUS

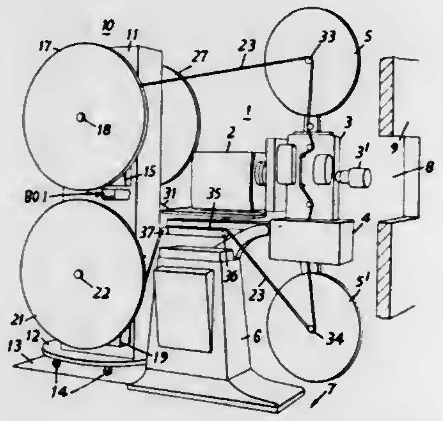
Peter Robins, New Driston, and Leroy G. Osborn, London, both of England, assignors to Westrex Company Limited, London, England

Filed July 24, 1972, Ser. No. 274,187

Claims priority, application Great Britain, July 28, 1971, 35390/71

Int. Cl. G03b *1/04*

U.S. Cl. 242—181 **10 Claims**



2. Film pay-off and take-up apparatus for a film projector comprising:

a. a housing rotatable about an axis on said projector between said first and second positions;

b. first and second pairs of motor-operable spindles supported by said housing, each of said pairs of spindles being capable of carrying respective pay-off and take-up film reels for film projection and rewind, means mounting said housing for rotation about said axis for movement with respect to said projector whereby when said housing is in said first position, pay-off and take-up reels carried by said first pair of spindles are aligned with said projector for film projection and pay-off and take-up reels carried by said second pair of spindles are controllable for film rewind, and whereby when said housing is in its second position, pay-off and take-up reels carried by said second pair of spindles are aligned with said projector for film projection and pay-off and take-up reels carried by said first pair of spindles are controllable for film rewind; and

c. driving means driving said motor-operable spindles including a separate motor for each spindle a first adjustable transformer, a second adjustable transformer, and a third adjustable transformer, means connecting said first adjustable transformer to the motor operating the film pay-off reel to control electric power thereto in the first projection position, means connecting said second transformer to the motor operating the take-up film reel to control electric power thereto in the first projector position, and means connecting said third transformer to both the motors operating the pay-off and take-up film reels to control electric power thereto in the second projector position.

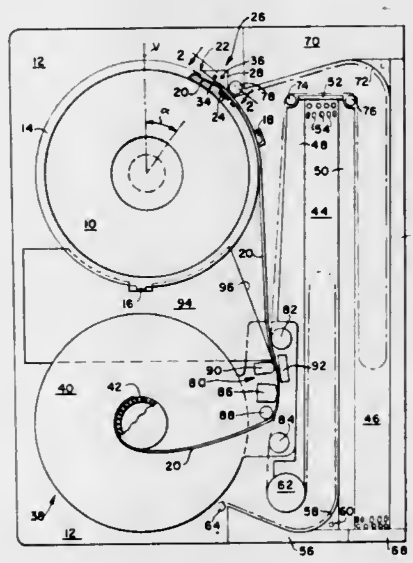
3,863,863
SELF-THREADING TAPE HANDLING APPARATUS

Don S. Ende, Commack, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed June 30, 1972, Ser. No. 268,080

Int. Cl. G11b *15/66, 15/58*

U.S. Cl. 242—182 **25 Claims**



24. A system for extracting tape from a reel on which the tape is wound, comprising a rotatable reel, and jet means mounted externally to the reel adjacent to the periphery thereof for directing a pressurized fluid stream across said periphery parallel to the rotational axis of said reel in order to lift the free end of said tape off of said reel.

3,863,864
FILM TREADING ASSEMBLY AND REWIND ACTUATOR

Joerg Fischer, Madison, Ala., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 15, 1973, Ser. No. 323,620

Int. Cl. G03b *1/56;* **B65h** *17/14*

U.S. Cl. 242—192 **11 Claims**

1. In a motion picture projector operable in normal projection modes, in a threading mode and in a film rewind mode, the projector having a film supply to which the trailing end of a film is attached, means for transporting a length of film from the film supply, a film take-up for winding up a length of film, and rewind means for returning the length of film to the film supply, a film threading and rewind conditioning assembly comprising:

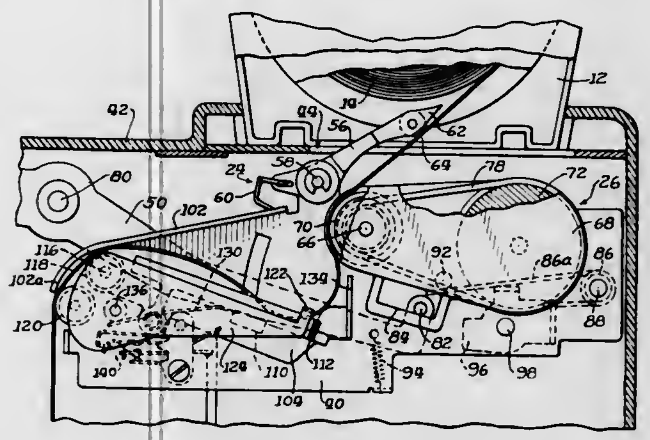
film drive means for transporting film from said film supply toward said take-up; means supporting said film drive means for movement between a threading condition in engagement with film in the film supply and a non-threading condition;

film stripper means for removing the leading end of a film from said film supply;

means supporting said stripper means for movement between a threading condition in engagement with film in the film supply and a non-threading condition;

a film guide channel means for guiding film from said stripper means and having a portion movable about a first axis between a threading condition and a non-threading condition; and

said movable film guide channel portion supporting a second axis for movement therewith;



a film tension sensor mounted on said second axis and movable with said movable channel portion when said channel portion is in said threading condition and movable independently of said movable channel portion about said second axis to actuate said film rewind means responsive to film tension when said movable channel portion is in said non-threading condition.

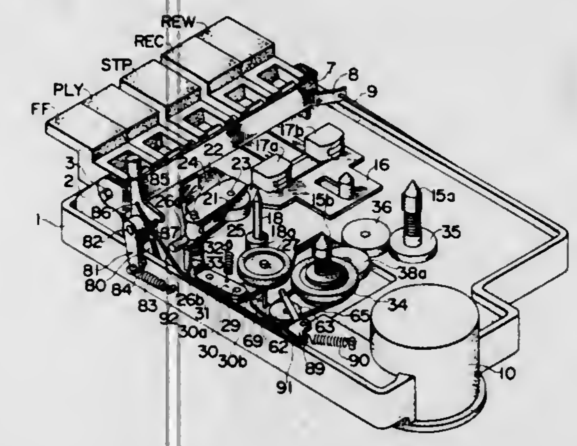
3,863,865
MAGNETIC RECORDING-REPRODUCING DEVICE

Keisuke Syohji, Nagoya, Japan, assignor to Shin-Shirasuna Electric Corporation, Nagoya-shi, Japan

Filed Mar. 7, 1973, Ser. No. 338,731

Int. Cl. B11b *15/32;* **G03b** *1/04*

U.S. Cl. 242—209 **3 Claims**



1. A magnetic recording -reproducing device employing a tape casette which contains a pair of reels and a magnetic tape wound thereon and having the opposite ends thereof securely fixed to said pair of reels respectively, said device comprising a drive motor, keyboard including depressible keys adapted, when depressed, to energize said drive motor, a capstan adapted to be rotated at a predetermined speed by means of said drive motor, a pinch roller adapted to be brought into and out of engagement with said capstan, a pair of reel spindles on which said pair of reels contained in said tape cassette are mounted respectively, said reel spindle being adapted, upon depression of a key or keys of said keyboard, to be rotated in a predetermined direction by means of said drive motor until said magnetic tape is fully wound from one of said reels onto the other one, slidable lock means for locking said key or keys in depressed position, and an automatic stop motion mechanism operatively associated with one of said reel spindles, characterized in that said automatic stop motion mechanism comprises slidable unlock means operatively connected to said slidable lock means and slidable in a direction substantially perpendicular to the direction of the sliding movement of said slidable lock means to thereby cause the latter to be slidden in such a direction as to release the locked key or keys, an actuator means operatively connected to said drive motor in such a manner as to be pivotally moved in a first area when said reel spindles are rotated in a first direction and in a second area when said reel spindles are rotated in a second direction and to be rectilinearly moved between said first and second areas when said reel spindles are stopped from rotating because of said magnetic tape having been fully wound from said one reel onto said other reel, wherein when rectilinearly moved said actuator means is brought into operational engagement with said slidable unlock means to cause the latter to be slidden in such a direction that said slidable lock means is thereby slidden in said direction, whereby said locked key or keys are released and said device is automatically shut off, irrespective of the direction and speed of transportation of said magnetic tape.

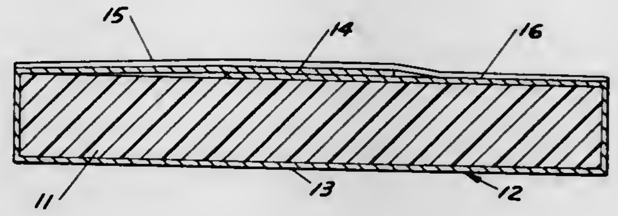
3,863,866
FABRIC REEL

Lee R. Ballard, Grand Prairie, and Joe G. Harris, Mansfield, both of Tex., assignors to Colt International Inc., Dallas, Tex.

Filed Mar. 19, 1973, Ser. No. 342,609

Int. Cl. B65h *75/06*

U.S. Cl. 242—222 **3 Claims**



1. A fabric reel of the type for supporting a bolt of fabric disposed around said reel, said fabric reel comprising, in combination:

a. an elongated central core of synthetic resinous material defined by a rectangular parallelopiped having a pair of opposed longitudinally extending major faces, a pair of opposed longitudinally extending edge surfaces, and a pair of end surfaces transverse to said major faces and said edge surfaces, the junctions of intersection of said longitudinally extending major faces with said longitudinally extending edge surfaces being sharp, well-defined corners; and

b. an enclosing sheet of fibrous material having a pair of longitudinally extending end portions; said enclosing sheet extending completely about said core in close-fitting, but nonsecured, relationship with said core, thereby to enable relative movement between said enclosing sheet and said core; said enclosing sheet having a contour at the said junctions of intersection of said longitudinally extending major faces and said longitudinally extending edge surfaces conforming to said sharp, well-defined corners, thereby to resist any longitudinal movement of the fabric bolt relative to said reel, one of said longitudinally extending end portions of said enclosing sheet overlapping, and being adhesively sealed to, the other of said longitudinally extending end portions.

3,863,867

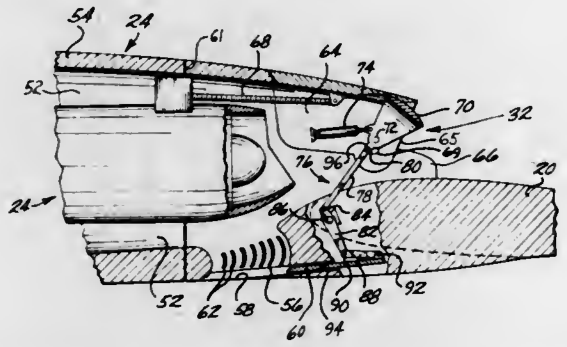
THRUST CONTROL APPARATUS FOR A JET PROPULSION ENGINE AND ACTUATING MECHANISM THEREFOR

Richard Ervin Souslin; James E. Klansnic, both of Bellevue, and Charles Kahler, Kirkland, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 26, 1973, Ser. No. 428,308

Int. Cl. B64c *15/06*

U.S. Cl. 244—12 D **10 Claims**



1. Thrust control apparatus in combination with a jet propulsion engine which develops thrust by discharge of a primary gas stream, said engine having a propulsive gas flow duct therein, said duct terminating at the rear end of said engine in an exhaust nozzle which normally directs said primary gas stream rearwardly from said engine, comprising:

- conduit means associated with said engine and having an inlet in fluid communication with said duct and an outlet in fluid communication with the atmosphere, said conduit means being so oriented in relation to said engine as to divert a portion of the propulsive gas from said duct and to direct said portion from said outlet as a secondary gas stream in a downward and forward direction relative to the discharge direction of said primary gas stream,
- valve means mounted on said engine and so located in relation to said conduit means to selectively vary the flow of propulsive gas through said conduit means,
- reversing door means associated with said exhaust nozzle and mounted on said engine for swinging movement about a first axis transverse to the discharge direction of said primary gas stream, said reversing door means being mounted for movement between a first position in noninterfering relationship with said exhaust nozzle and a second position located rearwardly and downwardly of said first position wherein said reversing door means blocks said exhaust nozzle and diverts said primary gas stream for discharge forwardly from said engine,
- throttling means mounted on said reversing door means and so associated therewith to selectively reduce the outlet area of said exhaust nozzle when said reversing door means is in said first position and when a portion of said propulsive gas is being diverted through said conduit means, and
- actuating means mounted on said engine and so coupled to said valve means and to said throttling means to cause said valve means to open said conduit means to flow and to simultaneously cause said throttling means to reduce the outlet area of said exhaust nozzle.

3,863,868

HANG GLIDER

Roger A. Oberle, 125 Canner St., New Haven, Conn. 06511

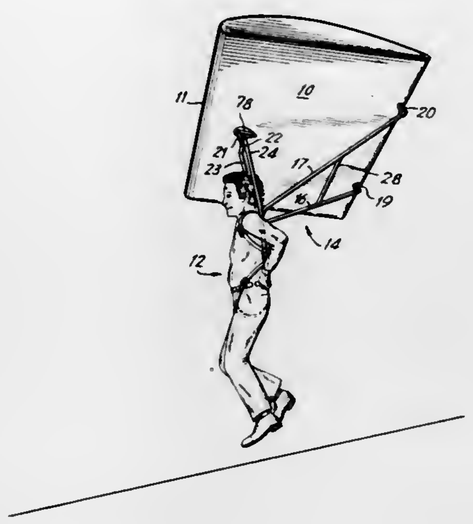
Filed Mar. 5, 1973, Ser. No. 337,895

Int. Cl. B64c *31/02*

U.S. Cl. 244—16 **11 Claims**

1. A hang glider which comprises:

a. a wing having a continuous leading edge and an area and lift characteristic which is sufficient to dynamically support a person generally only when said wing is less than approximately three chord lengths from the ground, said wing having an aspect ratio in the range of 1.0 to 4.0, an area in the range of 15 to 100 square feet and a loading in the range of 2.0 to 6.25 pounds per square feet when said wing is dynamically supporting a person; and



b. means for mounting said wing on a person such that the person is in generally vertical alignment with the center of pressure of said wing and said wing is not more than approximately two chord lengths from the ground when the person is standing on the ground.

3,863,869

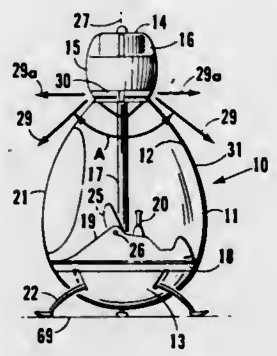
VTOL CAPSULE AIRCRAFT

Gerhart Herman Bachman, Toronto, Ontario, Canada, assignor to Flight Capsule, Inc., Toronto, Canada

Filed Apr. 10, 1972, Ser. No. 242,451

Int. Cl. B64c *29/04*

U.S. Cl. 244—23 D **3 Claims**



2. A flight capsule comprising, in combination; a central rigid control column defining a longitudinal axis; a jet engine mounted on one end of said column and having a thrust outlet opening defining a thrust axis extending towards the other end of said column and coincident with said longitudinal axis; structure mounted on said column adjacent said one end thereof and deflecting exhaust gases from said engine to define a plurality of thrust streams diverging outwardly towards said other end of said column; a hollow capsule body mounted upon and surrounding said column and disposed entirely within said thrust streams; and nozzle structures for each of said thrust streams including control means associated therewith and available to an operator for moving each of said thrust streams between an angle of substantially 90° to said axis through a control angle of substantially 60 degrees, said control means being in the form of a pilot operable joystick and independent hydraulic acutators extending from said joystick to said nozzle structures; and a lift control lever for adjusting the angles of all said thrust nozzle structures simultaneously.

3,863,870

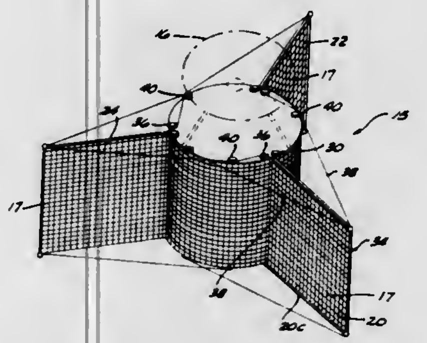
SPIN STABILIZED VEHICLE AND SOLAR CELL ARRANGEMENT THEREFOR

George J. Andrews, Los Angeles, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 270,107, July 10, 1972, abandoned, which is a division of Ser. No. 886,332, Dec. 18, 1969, Pat. No. 3,722,840. This application Oct. 25, 1973, Ser. No. 409,518

Int. Cl. B64g *1/10*

U.S. Cl. 244—173 **4 Claims**



1. A vehicle comprising:

a. a body having a substantially cylindrical portion with a substantially round circumference and a central axis,

b. three rollers rotatably mounted to said body at substantially uniformly spaced locations around the circumference thereof substantially parallel to said central axis,

c. three flexible substantially rectangular elongated solar panels each mounted to a single one of said rollers and having side surfaces,

d. a plurality of photovoltaic cells mounted on the cylindrical surface of said body and on the side surfaces of said panels, and

e. means to deploy said panels from a first position wherein said panels are retracted to said body and rolled up about said rollers to a second position wherein said panels extend substantially radially outwardly from said body and substantially coplanar with said central axis.

3,863,871

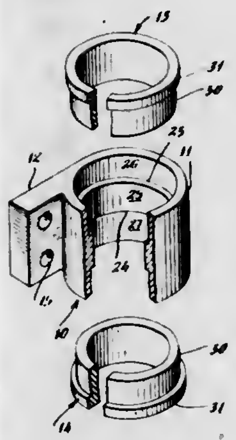
VIBRATION ISOLATION MOUNTING ASSEMBLY

Daniel T. Meisenheimer, Jr., 404 Longmeadow Rd., Orange, Conn.

Filed May 14, 1973, Ser. No. 359,794

Int. Cl. F16s *1/36*

U.S. Cl. 248—15 **6 Claims**



1. A mounting bracket for supporting a control having a body flanked by radially outwardly protruding surfaces and for isolating the control from vibration and amplified vibratory loads, the mounting bracket comprising a body portion loosely surrounding the control body, the interior of the body portion of the mounting bracket having inwardly disposed shoulders spaced from either end thereof, and two resilient bushings, each resilient bushing mating with the interior of the body portion of the mounting bracket between the shoulder and the open end thereof, the inner end of the resilient bushing abutting against the inwardly disposed shoulder and the outer end of the resilient bushing extending outwardly beyond the open end of the body portion of the mounting bracket, the body portions of the mounting bracket and the resilient bushings being of a size such that the resilient bushings are not compressed when the control is mounted therein, wherein the control is supported in the body portion of the mounting bracket by the resilient bushings, radial support of the control being provided by the portions of the resilient bushings between the interior of the body portion of the mounting bracket and the exterior of the control housing and axial support of the control being provided by the portions of the resilient bushings between the shoulders of the body portion of the mounting bracket and the radially outward protruding surfaces flanking the body of the control.

3,863,872

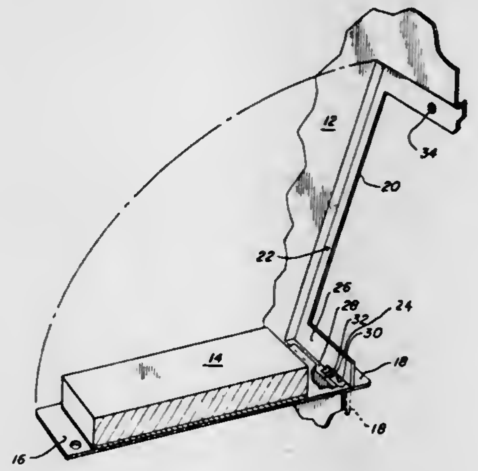
READOUT PANEL

Giles P. Godes, Brookings, S. Dak., assignor to Daktronics, Inc., Brookings, S. Dak.

Filed Nov. 24, 1972, Ser. No. 309,254

Int. Cl. G12b *9/00*

U.S. Cl. 248—27 **9 Claims**



1. A readout panel comprising a mounting plate and a readout assembly wherein one of said plate and assembly includes an aperture and an embossment formed by a first and second surface which first and second surfaces adjoin and are substantially normal to each other, said aperture being at the juncture of said first and second surfaces, and one of said plate and said assembly includes a tab, said tab being inserted into the aperture to physically interconnect the plate and assembly while permitting pivotal movement of the plate and assembly to an open position to afford free and open access to the assembly for minor maintenance and permitting ready separation of the plate and assembly by withdrawal of the tab from the aperture to facilitate removal of an assembly for major maintenance and for minor maintenance under conditions which require immediate return to service of a display device incorporating the readout panel.

3,863,873

SUPPORTING DEVICE

Paul Richard Cushing, Box 68, Stony Brook, N.Y. 11790

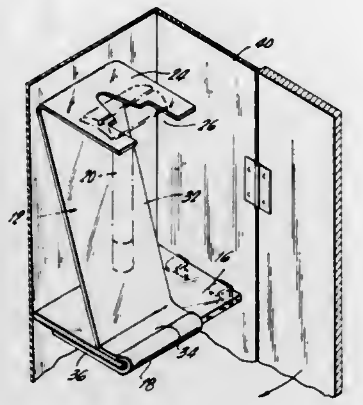
Filed July 23, 1973, Ser. No. 381,803

Int. Cl. F16m *13/00*

U.S. Cl. 248—110 **5 Claims**

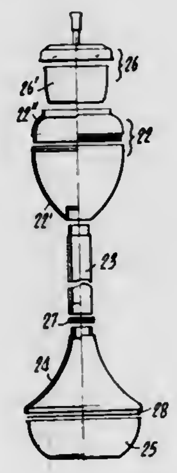
1. A unitary supporting device comprising a substantially Z-shaped member including an upper horizontal arm having a slot therein, a horizontal base, and a downwardly and forwardly extending interconnecting member extending between and connecting said arm and said base, said base including clip means integrally and resiliently interconnecting said base and said interconnecting member at the front of said base for

engagement with a horizontal projecting element with said element being received and resiliently clamped between said base and said clip means, said clip means being arcuate and curving downwardly and inwardly over the top of said base.



3,863,874
INTERCHANGEABLE CONJUGABLE ELEMENT ASSEMBLY FOR MAKING UP FURNISHING FITTINGS

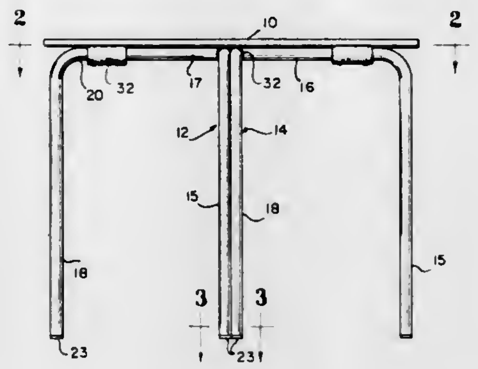
Adele Pirovano, Via Zara 3, Nova Milanese, Italy
Filed Feb. 20, 1973, Ser. No. 333,512
Claims priority, application Italy, Feb. 29, 1972, 21194/72
Int. Cl. A24f *19/00;* **F16m** *11/22*
U.S. Cl. 248—150 **10 Claims**



1. A knockdown set of conjugable interchangeable elements for combining in numerous ways to make up furnishing fittings, such as ash-trays, pot-holders, lamp-holders, flower-vases, paper-holders and waste-holders, the set of elements being of such a nature as to take a first orientation or to be inverted in the finished furnishing fitting so as to obtain different shapes, and comprising: an open cup of external convex shape for serving as the top or, when inverted, the bottom of the completed furnishing fitting; at least one tubular supporting section for connection with other sections of a same or different length; a flared bell base of external concave shape for use as a floor bearing or, when inverted, for use as the top of the complete furnishing fitting; a flat ballast cup having a torical periphery for containing ballast material and coupling with the open edge of said flared bell base; a flat basin of a wide base and a lesser height than said ballast cup for coupling with the open edge of said flared bell base; a flat ash-tray having a peripheral lip applicable to the open edge of the flared bell base when the latter is in an attitude with its open edge upward; a cover adapted to be secured to the top open edge of said open cup when serving as the top, or bottom adapted to be secured to the bottom open edge of said cup when serving as the bottom; a thin planar plate adapted to be horizontally connected in the furnishing fitting as an article-stand; a shaped plane provided at least on one side with a V-shaped extension for use as a paper-holder; a series of connection fittings for removably interconnecting said elements together to define said furnishing fittings, said connection fittings being operative in a first sense and in an inverted sense.

3,863,875
SUPPORTING FRAME FOR A TABLE

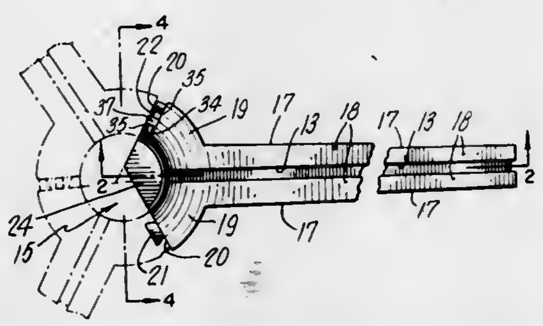
Ogden R. Olson, Columbus, Ohio, assignor to Cosco, Inc., Columbus, Ind.
Filed Jan. 2, 1974, Ser. No. 429,507
Int. Cl. A47b *13/06*
U.S. Cl. 248—188.1 **10 Claims**



1. A supporting frame assembly for a table top, comprising a set of first frames each having a vertically extending leg and first and second horizontally extending arms, said first arm being integrally joined at its opposed ends to said leg and second arm and said second arm being angularly disposed with respect to said first arm, a set of second leg frames each having a vertically extending leg integrally joined to a horizontally extending third arm, each of said first frames having its leg connected to a leg on an adjacent one of said second frames and its second arm connected to the third arm on another one of said adjacent second frames, whereby each of the frames in each set of frames is connected to a pair of frames in the other set.

3,863,876
UPRIGHT SUPPORT

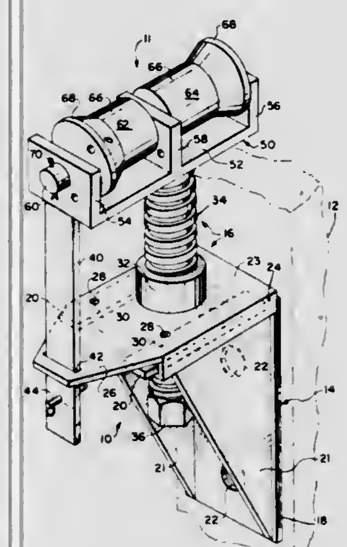
Laurence Stephen Finkelstein, and Gabor Gellert, both of Montreal, Quebec, Canada, assignors to Cantreco Ltd., Montreal, Quebec, Canada
Filed Feb. 1, 1973, Ser. No. 328,689
Int. Cl. A47c *7/00*
U.S. Cl. 248—188.7 **7 Claims**



1. An upright support comprising three interlocking leg members each having a leg section and a cup forming flange at a connecting end thereof, said cup forming flange defining a front face and opposed arms projecting angularly forward and one on each side of said leg section, each of said arms having a substantially flat vertical end face, an elongated vertical tongue molded along one of said end faces of one of said arms of said opposed arms, an elongated vertical groove formed in the end face of the other of said arms, said tongue and groove each having a transverse cross-section of a configuration to permit said tongue to be slideably received and retained in a groove of an adjacent leg member to interlock therewith, and a stop post in the lower portion of only two of said grooves to limit the sliding movement of a tongue therein to provide vertical alignment of said three leg members, said three leg members when interlocked together forming a hollow central circular cup between the front face of each cup forming flange.

3,863,877
TRACTION HEAD FOR A COLUMN-MOUNTED SHORING BRACKET

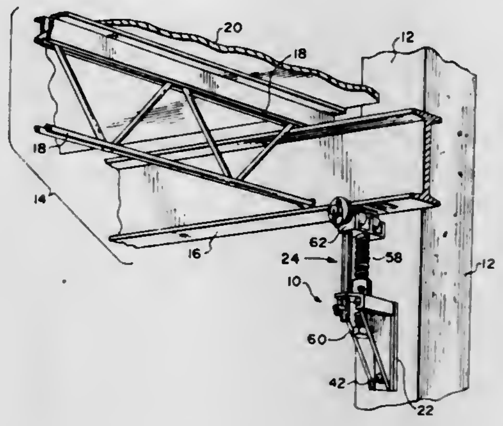
R. Kirk Gregory, Barrington, Ill., assignor to Symons Corporation, Des Plaines, Ill.
Filed June 1, 1973, Ser. No. 365,957
Int. Cl. A47f *5/10;* **A47h** *33/00*
U.S. Cl. 248—295 **2 Claims**



1. A traction head designed for the rolling support of a horizontal stringer that is associated with a formwork for concrete, said head comprising a rolled-supporting frame having a swivel connection whereby it may be secured to a shoring support for the stringer, said frame comprising a bottom plate, a pair of upstanding end plates, and a central upstanding plate disposed midway between the end plates, said plates being of substantially equal height and provided with aligned holes therethrough, a horizontal shaft projecting through said holes above the level of said bottom plate and having its opposite ends and medial region removably supported by said plates, a pair of stringer-supporting rollers rotatably mounted on said shaft on opposite sides of said central plate, each roller substantially spanning the distance between said central plate and the adjacent side plate, each of said rollers being of half-spool design and including a cylindrical section and a single radially extending flange, the upper end of said central plate terminating below the level of the uppermost portion of the cylindrical section of each roller, said rollers being reversible in end-to-end fashion on the shaft whereby, when they are positioned thereon so that the end flanges are remote from each other, the cylindrical sections are adapted to make tangential rolling contact with the base of a single I-beam type stringer while the end flanges function as edge guides which straddle said base, and when they are positioned on the shaft so that the end flanges are in close proximity to each other, the cylindrical sections are adapted to make tangential rolling contact with the spaced apart base sections of a split, channel-formed stringer while the end flanges project between said base sections and constitute a center guide therefor, and removable means on at least one end of said shaft disposed exteriorly of the adjacent end plate and adapted to retain said shaft in position on said plates against endwise removal from said aligned holes.

3,863,878
COLUMN-MOUNTED SHORING BRACKET ASSEMBLY FOR OVERHEAD FORMWORK

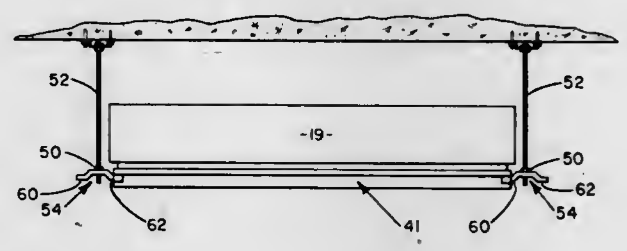
R. Kirk Gregory, Barrington, and Richard T. Dagiel, Elk Grove Village, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.
Filed June 4, 1973, Ser. No. 366,470
Int. Cl. A47f *5/10;* **A47h** *33/00;* **E04g** *17/16*
U.S. Cl. 248—295 **10 Claims**



1. A shoring bracket adapted releasably to support a horizontal stringer forming a part of a concrete-receiving formwork-type pallet used in the erection of a multi-story building, said bracket comprising a two-part structure of a shelf part and a jack part, said shelf part being adapted for mounting it on a vertical column of the building and having an arm projecting outwardly from such column, said jack part including a base plate mountable on said arm, means for releasably securing said base plate to said arm, an elongated vertically extending jack screw having threaded engagement with the base plate and projecting upwardly thereabove, a frame mounted for swiveling movement on the upper end of said jack screw, a stringer-supporting roller carried by said frame and mounted for rotation about a horizontal axis, and an anti-torque connection extending between said frame and base plate and adapted to prevent rotational movement of the frame about the vertical axis of the jack screw when the latter is rotated for stringer raising or lowering purposes.

3,863,879
APPARATUS FOR MOUNTING A CEILING AIR TERMINAL

Carl C. Herb, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Feb. 26, 1973, Ser. No. 336,106
Int. Cl. E04g *17/18*
U.S. Cl. 248—327 **3 Claims**



1. Apparatus for mounting a plurality of serially connected ceiling air terminals in an installation having a false ceiling, a plurality of elongated rods being employed to suspend components of said false ceiling beneath the actual ceiling of a space having conditioned air from said terminal supplied thereinto, said apparatus comprising:

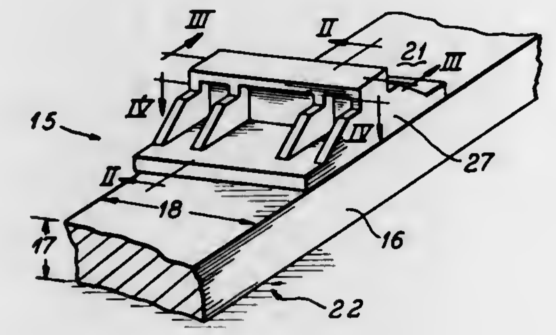
- a first member suitably secured onto one of said elongated rods;
- a second member suitably secured onto a second of said elongated rods, said first and second rods being axially aligned and spaced apart a distance substantially equal to the axial length of one of said ceiling terminals; and

first and second mounting means secured in engaging relationship respectively to each of said first and second members and being readily disengageable therefrom each of said mounting means including at least a first portion for engaging one of said ceiling air terminals, and a second portion for engaging a second of said ceiling air terminals, each consecutive pair of mounting means thereby supporting a first end of one ceiling air terminal, each end of a second terminal, and a first end of a third air terminal.

3,863,880
MOUNTING BASE

Henry Lindner, Wood Dale, and James D. Kennedy, Streamwood, both of Ill., assignors to Beatrice Foods Co., Elgin Molded Plastics Div., Elgin, Ill.

Filed Apr. 16, 1973, Ser. No. 351,310
Int. Cl. E01f *9/10*
U.S. Cl. 248—349 **11 Claims**



1. A mounting base for a display device or the like comprising:

A. an elongated pedestal whose width is generally substantially greater than the thickness thereof and which has a generally flattened, top, mid-section adapted to be generally horizontal in extent when the bottom of said pedestal rests on a generally level surface, said pedestal further having defined generally in a central region of said mid-section thereof a vertically extending, cross-sectionally round hole having a beveled edge region adjacent the bottom of said pedestal,

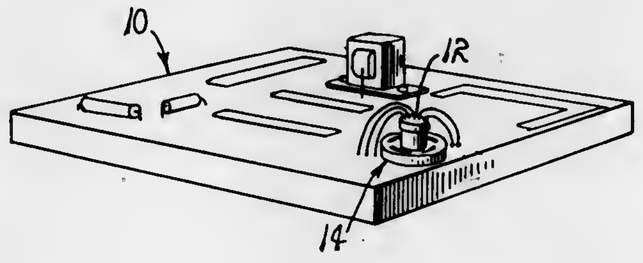
B. a swivel of single-piece, integral construction comprising:
  1. a base portion having a generally quadrilateral perimeter and generally flat, spaced, generally parallel top and bottom faces,
  2. a pivot pin projecting downwardly from about the center of said bottom face, said pivot pin being adapted to mate with said hole and being further adapted to have the terminal portion thereof expanded against said beveled edge region in an interlocked, circumferentially slidable configuration with said pedestal with said bottom face being in general face-to-face slidable engagement with said top mid-section,
  3. a vertically upstanding ridge member transversely extending across the mid-region of said top face and having an upper edge extending in spaced, generally parallel relationship to said top face,
  4. at least three vertically upstanding pairs of rib members, each one with spaced, generally parallel side walls, each said pair transversely extending across said top face perpendicularly to said ridge member in laterally spaced, symmetrical relationship to other pairs such that the members of each such pair abut in alignment against opposite respective opposed faces of said ridge member, said rib members having a height generally equal to said upper edge,
  5. a cap plate means horizontally extending over said top edge and over at least a portion of said rib members and having spaced, generally parallel top and bottom faces, and

C. the interrelationship between said pedestal and said swivel being such that
  1. said hole has a diameter which is greater than the average thickness of said base portion,
  2. said terminal portion of said pivot pin is generally in face-to-face, slidable engagement with said pedestal to an extent such that said swivel resists lateral movement relative to said pedestal in response to lateral force applied to said cap plate means.

3,863,881
SHOCK ABSORBING MOUNT FOR ELECTRICAL COMPONENTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert F. Dillon, Jr., 17733 Contador Dr., Rowland Heights, Calif. 91748, and Robert C. Mayne, 2465 Shields St., La Crescenta, Calif. 91214

Filed Sept. 10, 1973, Ser. No. 395,687
Int. Cl. F16f *15/04*
U.S. Cl. 248—358 R **1 Claim**



1. A shock absorbing mount for use in mounting electrical components comprising:

A. means including a first member of an endless configuration adapted to receive in supporting relation an electrical component;

B. a second member of an endless configuration circumscribing the first member;

C. means for supporting said first member for motion relative to said second member, including a body of viscoelastic material interposed between said first and second members and affixed thereto;

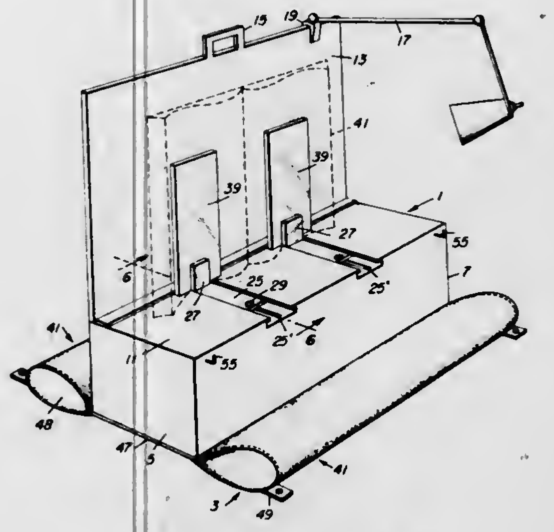
D. means defining within said first member a first endless array of openings and means defining in said second member a second endless array of openings coaxially aligned with the openings of said first array; and

E. motion damping means mounted on said second member for limiting motion imparted to said first member relative to said second member, including an endless array of coplanar, rigidly supported snubbing pins disposed in an opposed relationship and extended through the openings of said second array of openings and into the openings of said first array, each of said snubbing pins being characterized by an elongated body having a base end portion rigidly connected with said second member and a distal end portion for engaging said first member having a diameter substantially less than the diameter of the openings of said first array of openings, and an annular shoulder disposed in closed proximity with said first member, whereby each of said snubbing pins is rigidly fixed to said second member and adapted to engage said first member as motion relative to said second member is imparted to said first member.

3,863,882
SELF-BALANCING SUPPORT

Constance Bannister Hatcher, P.O. Box 8, Syosset, L. I., N.Y. 11791

Filed May 30, 1972, Ser. No. 257,792
Int. Cl. A47b *97/04*
U.S. Cl. 248—453 **4 Claims**

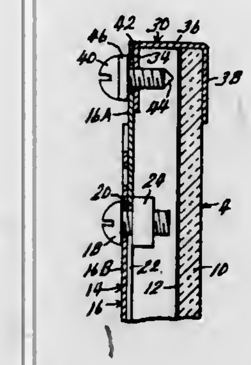


1. Means for supporting material in position viewable by the user, including in combination, a body upon which the material rests, means on said body in engagement with the material for holding it in viewable position by the user, and at least two balancing and supporting means connected to the body and movable and adjustable with respect thereto and with respect to each other and adapted to support said body in various positions with respect to the surface upon which it is supported, said at least two balancing means comprising a fluent material, wherein said balancing and supporting means comprise flexible casings containing fluent material, said casings being disposable laterally of said body and being of a length substantially the same as the length of the side of the body with respect to which they may be laterally disposed, the casings being connected to the body along one longitudinal edge whereby the casings may assume different positions relative to the body.

3,863,883
MIRROR BRACKET

Boyd E. Cousins, 4534 Main St., Kansas City, Mo. 64111

Filed Dec. 15, 1972, Ser. No. 315,517
Int. Cl. A47g *1/24*
U.S. Cl. 248—477 **6 Claims**



1. A mirror supporting bracket comprising:

a. a standard adapted to be affixed at its lower end to a furniture piece, and to extend thereabove,

b. an upper hook and a lower hook, and

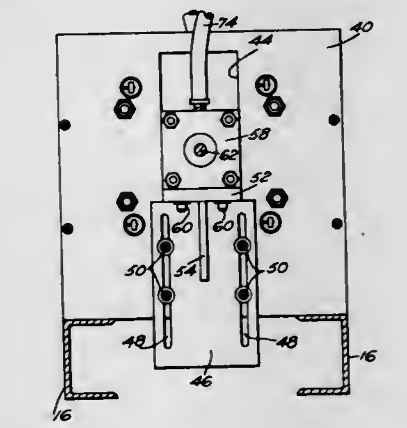
c. means affixing said hooks to said standard, with said upper hook opening downwardly and said lower hook opening upwardly, both forwardly of said standard, whereby to engage therein the upper and lower edges of a mirror,

said means affixing said upper hook to said standard being operable to permit selective reversal of said upper hook to open either downwardly or upwardly, whereby in its upwardly opening position to serve as a suspension means over which suspension eyes of a mirror may be downwardly engaged to support said mirror.

3,863,884
ADJUSTABLE OPERATING CYLINDER FOR A GRAVITY CASTING MACHINE

Louis Saccoccio, 25 St. Mary's Dr., Cranston, R.I. 02903

Filed Sept. 26, 1973, Ser. No. 400,948
Int. Cl. B41b *11/66*
U.S. Cl. 249—137 **4 Claims**

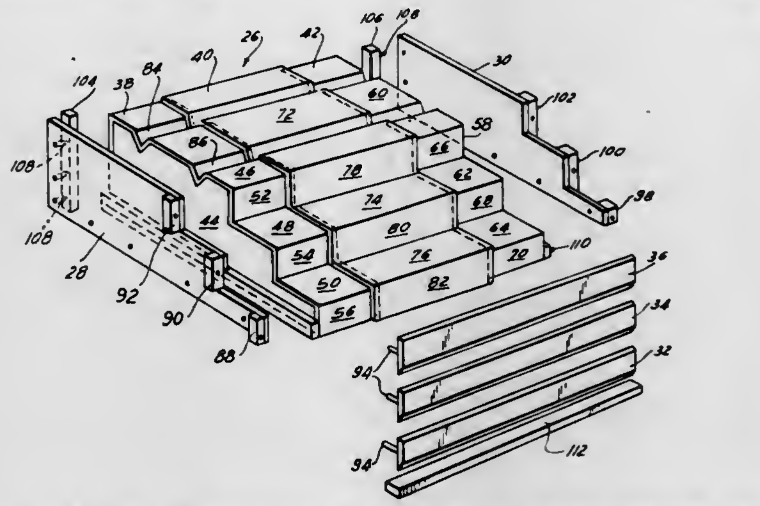


1. In a mold machine having a pivotally suspended base, a fixed plate mounted on said base, a movable plate on said base slidable toward and away from said fixed plate, a mold having one part mounted on said fixed plate and the other part mounted on said movable plate, and an adjustably mounted pneumatic cylinder having a piston coupled to said movable plate for moving said movable plate toward and away from said fixed plate, said cylinder mounting comprising a vertically mounted fixed plate, said fixed plate having a rectangular opening, an adjustable plate mounted on said fixed plate for vertical adjustment thereon, and a horizontal plate mounted on top of the adjustable plate and extending through said opening for supporting said cylinder.

3,863,885
FORM FOR CONCRETE STEPS

Bernard J. McLoughlin, 10 Hudson Dr., Troy, N.Y. 12180

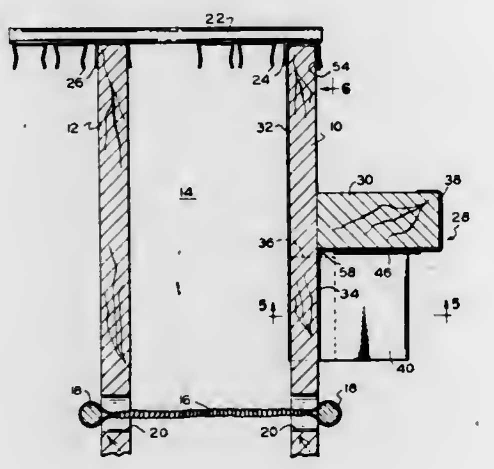
Continuation-in-part of Ser. No. 128,028, March 25, 1971, abandoned. This application Jan. 2, 1974, Ser. No. 429,961
Int. Cl. B28b *7/28*
U.S. Cl. 249—184 **1 Claim**



1. A form for molding concrete steps as an integral unit including in combination: a base member forming the inner side of said form, first, second and third base member elements of said base member, each of said first and second base member elements including a base member side wall, a base member tread extending from said base member side wall, and a base member riser extending from said base member side

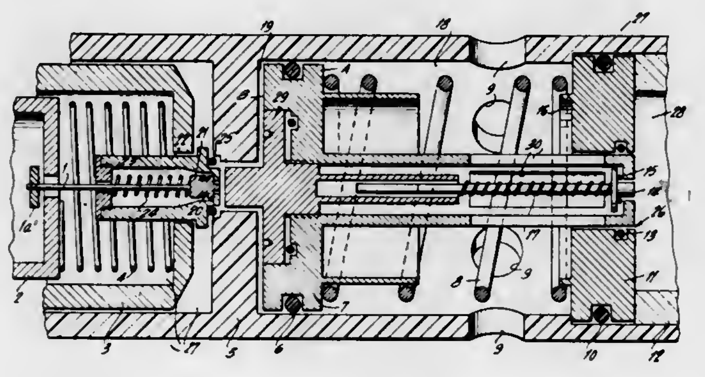
wall and joined to and forming an angle with said base member tread, the respective base member treads and respective risers of said first and second base member elements being aligned, said third base member element including a base member tread and a riser, slideable means whereby said first and second base member elements can be relatively slideably moved from a position of abutment to a spaced position, said third base member element continually with portions of the tread and riser thereof in abutment respectively with the treads and risers of said first and second base member element and said base member treads and risers providing a continuous concrete receiving surface of said base member whereby concrete can be applied directly thereto; first and second outer side wall members forming the outer side walls of said form; means for securing said outer side wall members in spaced relation to respective base member side walls; outer riser members corresponding in number to the number of base member risers of said base member; and means for securing said outer riser members in spaced relation to respective base member risers.

3,863,886
SUPPORT BRACKET FOR CONCRETE FORM
Dwight W. Carr, Rt. 1, Box 459, Casa Grande, Ariz. 85222
Filed July 16, 1973, Ser. No. 379,787
Int. Cl. E04g ***11/06***
U.S. Cl. 249—192 10 Claims



1. A concrete form apparatus including a plurality of brackets for concrete form panels in which each bracket comprises:
a backing plate portion;
- stop means separated from said backing plate by a distance substantially equal to the thickness of the form panels, for engaging the opposite side of the panels from said backing plate;
- web means rigidly joining said backing plate and said stop means, for extending through the junction between the edges of two adjacent form panels with at least a portion of said web means spaced below the top of said adjacent panels; and
- holder means fixedly attached to said bracket for holding an elongated support member so that said support member extends across the junction of said adjacent panels, said holder means being provided on the opposite side of said panels from said backing plate to clamp said panels between said support member and said backing plate.

3,863,887
PNEUMATICALLY-SERVOCONTROLLED, INSTANTLY-ESPONSIVE FLOATING VALVE, PARTICULARLY ADAPTED FOR UNDERWATER PNEUMATIC GUNS AND OTHER USES
Giuseppe Stradella, 13 via Roma; Fernando Gatti, 37 via Cavour; Giuliano Daniele, 144 via Roma, and Umberto Stradella, 13 via Roma, all of Recco, Italy
Filed Nov. 21, 1972, Ser. No. 308,588
Int. Cl. F16k ***31/12***
U.S. Cl. 251—25 4 Claims

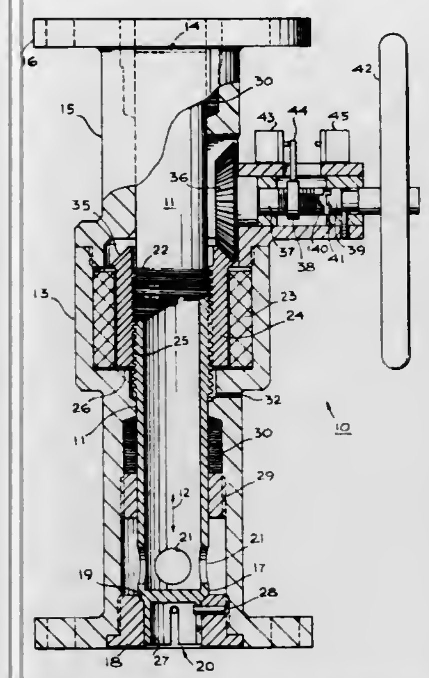


1. A pneumatically servocontrolled, instantly responsive floating valve, particularly designed for pneumatic underwater guns and other uses, mounted in a cylindrical body that can be inserted in an air-reservoir, characterized by servo-control means comprising a needle valve having a control rod and threaded disc engageable on a mobile sleeve that can be actuated through a suitable mechanism or trigger of the gun, said valve being preferably mounted in a cup-shaped valve body supported by a second mobile sleeve that is submitted to the thrust of a helical spring the apposite end of which bears against the former mobile sleeve, the latter assembly being mounted at an axial hole in a transverse wall of the cylindrical supporting body, said hole opening on the opposite side into a chamber wherein the floating valve proper is mounted, the latter valve being formed by a disc-shaped piston with toroidal sealing ring and tubular cylindrical projection provided with longitudinal slots, said projection being provided at its free and with an internal non-return valve having a guide stem around which a helical pressure spring in mounted, said projection being axially slidably and sealingly movable through a hole in a disc-shaped plate with a toroidal sealing ring being fixedly mounted in the cylindrical supporting body, the outer face of said disc-shaped plate being adjacent to an end of the barrel of the gun, a helical spring being mounted between the piston of the floating valve and said disc-shaped plate with the aid of suitable centering and guide means.

3,863,888
POWER OPERATED FLUID CONTROL VALVE
Paul D. Hines, 9634 Farragut Dr., Culver City, Calif. 90230
Filed Jan. 15, 1973, Ser. No. 323,995
Int. Cl. F16k ***31/05***
U.S. Cl. 251—130 16 Claims

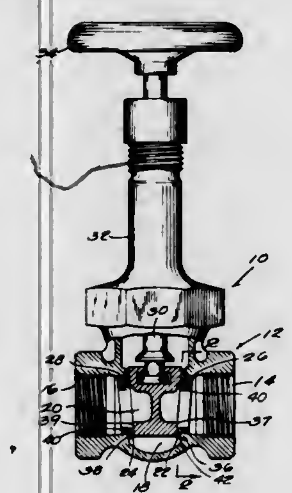
1. A power operated valve having an axial flow passage;
- a non-rotatable but axially movable hollow valve stem in the axial flow passage in operating relationship with a valve closure;
- said valve stem having external threads around a portion thereof;

- motor means including a stator and a hollow rotor concentric with the axial flow passage;



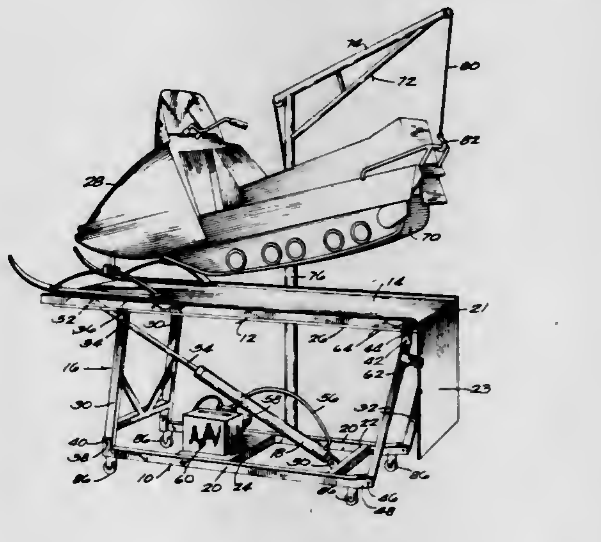
- said rotor having internal threads for engaging said external threads in operational movement.

3,863,889
GATE VALVE
Bernie E. Robinson, Oak Creek, and Alfred L. Sachs, Wauwatosa, both of Wis., assignors to Milwaukee Valve Company, Inc., Milwaukee, Wis.
Filed Mar. 22, 1973, Ser. No. 343,818
Int. Cl. F16k ***3/12***
U.S. Cl. 251—328 2 Claims



1. A gate valve comprising
- a body including opposed inlet and outlet ports and a chamber interposed said inlet and outlet ports defining a flow passage extending through said body, each of said ports including a bore and an annular shoulder surrounding the opening thereof into said valve chamber, said shoulder having an outer face facing said valve chamber and the planes of said shoulder faces being opposed and angularly related;
- a tapered gate member located in said valve chamber and movably supported for reciprocative movement relative to said ports between an open position to permit flow through said flow passage and a closed position to shut off flow through said flow passage, said gate member having opposed, angularly related seating surfaces; and
- a seat ring mounted in each of said ports, each of said seat rings being stamped from a relatively thin sheet of stainless steel and including a tubular sleeve fitting snugly inside the respective of said bores and staked thereto and further including an annular flange extending radially outwardly from one end of said sleeve and rigidly seated against the respective of said shoulders, each of said seat ring flanges having a flat outer seating face which is sealingly engaged by the respective of said gate member seating surfaces when said gate member is in a closed position.

3,863,890
LIFT DEVICE FOR SMALL EQUIPMENT
Charles Ruffing, Rt. 1, Chilton, Wis. 53014
Continuation-in-part of Ser. No. 257,766, May 30, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 427,906
Int. Cl. B60p ***1/16***
U.S. Cl. 254—10 C 7 Claims

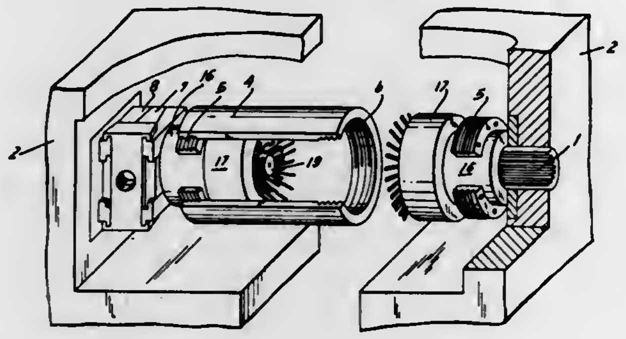


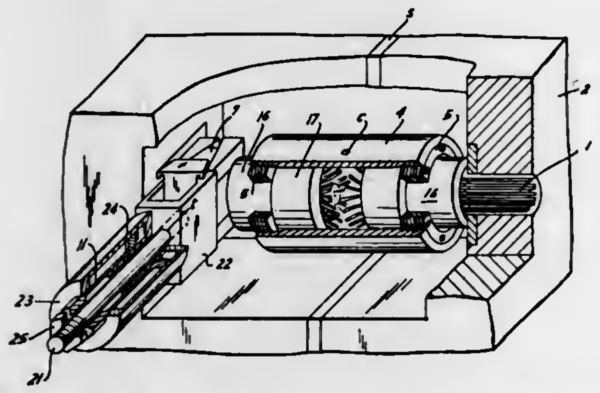
1. A lift device for elevating small equipment to convenient working positions comprising:
- a generally horizontally disposed base frame supported on a floor and having longitudinally spaced front and rear portions;
- a vertically movable lift frame located above said base frame and carrying a platform for supporting the equipment, said lift frame and said platform having longitudinally spaced front and rear portions;
- a fluid actuated ram pivotally connected at one end to said base frame and pivotally connected at the other end to said lift frame and located beneath said platform for moving said lift frame vertically relative to said base frame between a fully raised position and a fully lowered position where the equipment can be moved from the floor onto said platform;
- means supported on said base frame and located beneath said platform for supplying a controlled flow of actuating fluid to said ram; and
- means pivotally connecting said lift frame to said base frame for said vertical movement in response to the actuation of said ram, said last-mentioned means including
- a first pair of laterally spaced front legs having lower ends which are pivotally connected to the front portion of said base frame for relative pivotal movement about a first pivot axis and upper ends which are pivotally connected to the front portion of said lift frame, and
- a pair of laterally spaced rear legs having lower ends which are pivotally connected to the rear portion of said base frame for relative pivotal movement about a second axis and having upper ends which are pivotally connected to the rear portion of said lift frame, said first and second pivot axes being located at different elevations and said legs being angularly related such that, when said lift frame is in the fully raised position, said platform is substantially horizontal and, when said lift platform is in the fully lowered position, the rear portion of said platform is adjacent the floor and said platform is upwardly inclined towards the front portion to provide sufficient vertical clearance between said platform and said base frame for

accommodating said ram and said means for supplying a controlled flow of actuating fluid to said ram.

3,863,891
CONCRETE PRESTRESSING DEVICE

Constantin Leonte, Iasi, Romania, assignor to Institutue Politehnic Iasl, August, Romania
Division of Ser. No. 208,293, Dec. 15, 1971, Pat. No. 3,790,657. This application Jan. 4, 1974, Ser. No. 430,874
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 A **3 Claims**



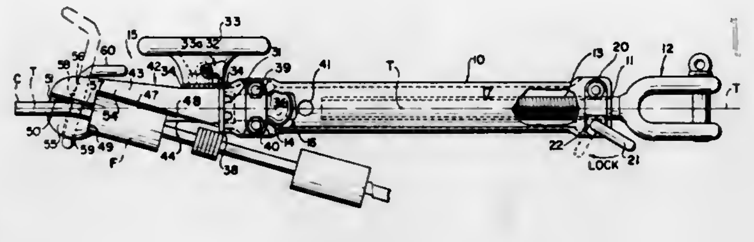


1. A device for stressing a beam having a longitudinally extending throughgoing cable projecting from said beam at least at one end thereof, said device comprising:
  a wedge assembly surrounding said end of said cable and laterally removable therefrom, said assembly including a pair of oppositely converging wedge members and means relatively displaceable transversely to said cable to spread said members, one of said members bearing against said beam;
  a cable clamp fixed to said end of said cable beyond said wedge assembly;
  a sleeve interposed between said cable clamp and the other of said members and in axial force-transmitting relationship therewith;
  an externally threaded ring mounted rotatably on said sleeve and having an external diameter in excess of that of said cable clamp and an internal diameter less than that of said cable clamp; and
  an internally threaded pipe for joining said beam to a similar beam having a similar ring by threading said rings into opposite ends of said internally threaded pipe.

3,863,892
CABLE TENSIONER

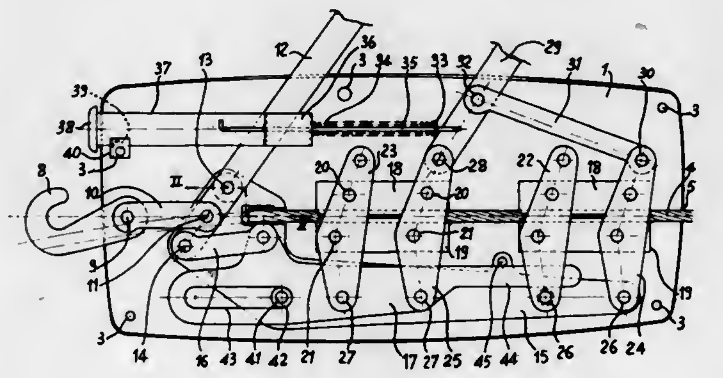
John M. Di Martino, Sayville, N.Y., assignor to Line Fast Corporation, Farmingdale, N.Y.
Filed Apr. 14, 1972, Ser. No. 243,953
Int. Cl. B66f *3/08*
U.S. Cl. 254—67 **6 Claims**

1. A tensioner comprising a body, a first connector at a first end of said body, thread means for longitudinal adjustment of the body and first connector with respect to each other, a second connector at a second end of said body, rotary joint means for permitting free rotation of said second connector and said body with respect to each other, said body being divided into two longitudinal components each longitudinal component including a portion of each of said thread means and said rotary joint means, and lock means for securing said longitudinal components in cooperating relationship.



3,863,893
CABLE TRACTION AND HOISTING APPARATUS

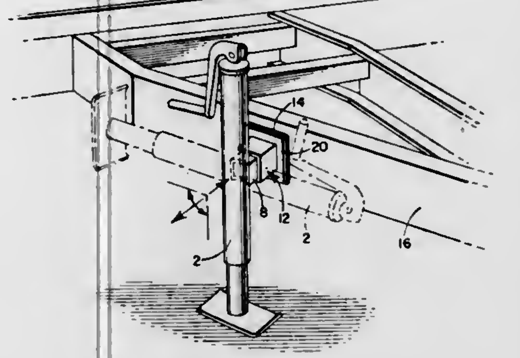
Michel Cavalieri, Neuilly sur Marne, France, assignor to Tractel S. A., Bagnobt, France
Filed June 21, 1973, Ser. No. 372,304
Claims priority, application France, June 27, 1972, 72.23182
Int. Cl. B66d *1/00;* **B66f** *1/00*
U.S. Cl. 254—76 **4 Claims**



1. An apparatus for pulling and hoisting a load attached to one end of a cable comprising a casing having detachably connected halves and openings at each end, a pair of clamps each having a pair of superposed jaws, two pairs of tightening levers with each pair of levers interconnecting one of said pair of jaws, a first control rod axially positioned within said casing and being pivotally connected to an end of said levers of one of said clamps, a forward motion control lever having one end pivotally connected to said first control rod, a second control rod parallel to said first control rod and pivotally connected to an end of said levers of the other of said clamps and said forward motion control lever, said first and second control rods and said forward motion control lever each consisting of flat metal sheet elements, and anchoring hook extending through one of said casing openings, a link pivotally connected to said hook and said forward motion control lever at a position of said forward motion control lever, intermediate the positions where said forward motion control lever is pivotally connected to said first and second control rods, a deflecting plate carried laterally of and by one of said first and second control rods and said casing encasing the above elements and having a lateral opening adjacent said deflecting plate whereby a cable can extend through the other of said end openings, through said clamps and then be deflected by said deflecting plate through said casing lateral opening upon operation of said forward motion control lever.

3,863,894
JACKING APPARATUS FOR A TRAILER TONGUE

Joseph S. Mansi, and Larry W. Spence, both of Orlando, Okla., assignors to The Charles Machine Works, Inc., Perry, Okla.
Filed Sept. 20, 1973, Ser. No. 399,335
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R **4 Claims**

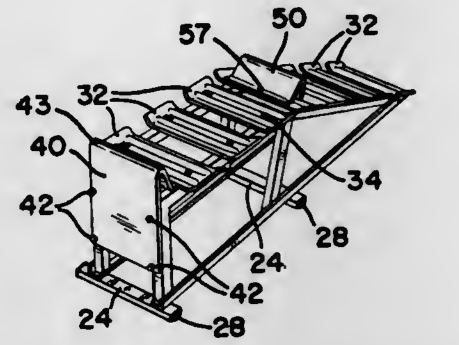


1. Trailer tongue jacking apparatus comprising:
  a trailer having a tongue for connecting the trailer to a towing vehicle;
  a variable length jacking mechanism;
  a mounting member having a longitudinal axis generally normal to the longitudinal axis of said jacking mechanism, said member having a first portion of regular polygonal external cross section of constant dimension throughout its length and having a second portion of circular external cross section axially aligned with said first portion;
  a mounting socket having a cavity of regular polygonal internal cross section, corresponding to said mounting member first portion external cross section, for supportably receiving and engaging said mounting member first portion, said socket having an aperture at one end extending axially of said cavity cross section for slidably and rotatably engaging said mounting member second portion, whereby said mounting member received and engaged by said socket may be axially withdrawn sufficiently to disengage said first portion from said cavity and may then be rotated within said aperture by engagement of said mounting member second portion with said aperture and may then be restored to said supportable engagement by said mounting member first portion being engaged with said cavity;
  means biasing said mounting member into said supportable engagement with said mounting socket cavity; and
  one of said mounting member and said mounting socket being attached to said jacking mechanism and the other having means attaching it to said trailer tongue.

3,863,895
WHEEL RAMP

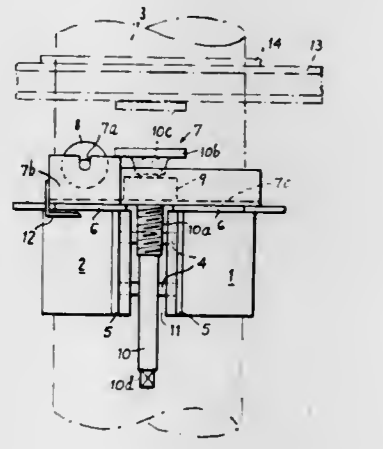
Ronald E. Grewe, Delphos, and Eugene L. Hoersten, Kalida, both of Ohio, assignors to The Huffman Manufacturing Company, Miamisburg, Ohio
Filed June 7, 1973, Ser. No. 367,854
Int. Cl. E02c *3/00*
U.S. Cl. 254—88 **8 Claims**

1. A demountable wheel ramp comprising:
  a. a pair of spaced apart, longitudinally extending, substantially flat, rigid side frames each formed of a plurality of side frame members lying substantially in a single plane,
  b. means interconnecting permanently all of said side frame members of each side frame, forming integral side frames each having an upper section and an inclined section extending downwardly and rearwardly from said upper section,
  c. transverse cross bracing extending between and interconnecting said spaced apart side frames,
  d. said cross bracing including a plurality of separate, transversely extending treads mounted on said upper and inclined sections of said spaced apart side frames, and
  e. readily disengagable fastening means attaching said cross bracing to said integral side frames and forming with said integral side frames a complete wheel ramp while permitting ready detachment of said cross bracing from said side frames,
  f. whereby said cross bracing and treads can be removed readily from said integral side frames and said side frames and cross bracing can be collapsed into a substantially flat, compact package for shipping and storage.



3,863,896
SUPPORT DEVICES FOR STRUCTURES, AND METHODS AND SYSTEMS EMBODYING THE SAME

Eric Hope, and John William Edward Petty, both of Woking, England, assignors to Richard Castain Limited, London, England
Filed Oct. 13, 1972, Ser. No. 297,383
Claims priority, application Great Britain, Oct. 15, 1971, 48175/71
Int. Cl. B66f *3/08*
U.S. Cl. 254—98 **3 Claims**



1. A temporary support device for temporarily supporting a structure from an elongate support, comprising a releasable clamp member adapted to be detachably secured around the support and to frictionally grip the support, the clamp member comprising a two-part collar, the two collar parts being securable together, after location of the collar parts around the support, to immovably clamp the clamp member to the support, the collar parts including generally arcuate central portions defining a generally tubular support-receiving opening within which the support is clamped when the collar parts are secured together, each collar part further including structure-supporting elements comprising a pair of flanges extending from opposite sides of the associated central portion, the flanges of one collar part being disposed parallel to, but spaced from, the flanges of the other part, when the collar parts are secured to the support, the support device further including a structure-supporting arrangement co-operable with and supportable by said flanges, and provided with ad-

justable jack means capable of co-operating with the structure to support and adjust the height of the latter.

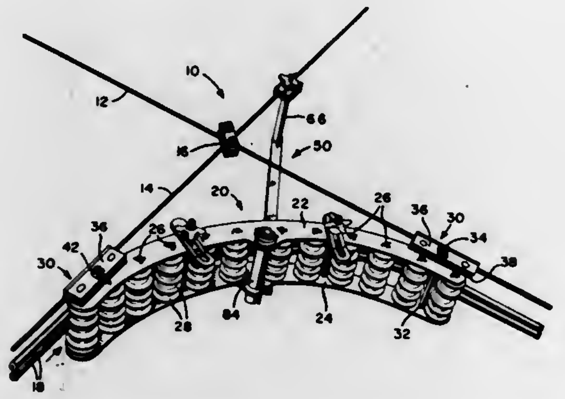
3,863,897
FLOATING CORNER MOUNTED BLOCK

David A. Yeager, Belington, W. Va., assignor to Jackson Communication Corporation, Clayton, Ohio

Filed Nov. 15, 1973, Ser. No. 415,938

Int. Cl. B66d *1/36*

U.S. Cl. 254—134.3 R **6 Claims**



1. A corner mounted block adapted to be mounted at the intersection of a pair of crossed messenger strands comprising:
a. a roller supporting framework,
  b. a plurality of sets of substantially coaxially mounted rollers rotatably mounted in said framework with cable engaging surfaces of said rollers defining an arcuate cable path,
  c. means on said framework adjacent a first end of said arcuate path for engaging one of said crossed messenger strands at a point thereon spaced from the point of crossing of said messenger strands,
  d. means on said framework adjacent a second end of said arcuate path for engaging the other of said crossed messenger strands at a point thereon spaced from said point of crossing of said messenger strands,
  e. brace means extending between said framework and said one of said messenger strands,
  f. means on said brace means for engaging said framework intermediate said ends of said arcuate path, and
  g. means on said brace means for engaging said one of said messenger strands at a point thereon spaced from said framework.

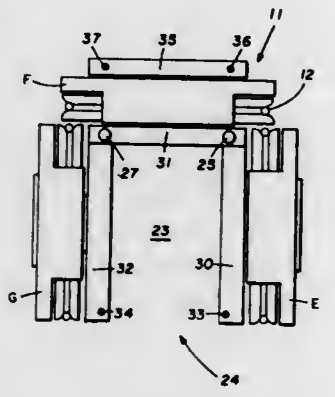
3,863,898
CHANGING BLOCK HOISTING SYSTEM

Wayne L. Brackin, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 10, 1973, Ser. No. 395,466

Int. Cl. B66d *1/36*

U.S. Cl. 254—194 **2 Claims**



2. A hoisting apparatus for moving pipe within an oil well derrick, said hoisting apparatus including a traveling block with a side opening that may be changed from admitting the pipe from a first side to admitting the pipe from a second side, comprising:
  a crown block with three sets of lines; and
  a traveling block with
    a first sheave connected to one set of lines,
    a second sheave connected to another set of lines, and
    a third sheave connected to the other set of lines,
  said first sheave having first means for selectively connecting said first sheave to said second sheave at first side of said first sheave thereby admitting said pipe from said first side,
  said first sheave having second means for selectively connecting said first sheave to said second sheave at a second side of said first sheave opposite to said first side of said first sheave thereby admitting said pipe from said second side,
  said third sheave having third means for selectively connecting said third sheave to said second sheave at a side on said third sheave coincedent to said first side thereby admitting said pipe from said first side, and
  said third sheave having fourth means for selectively connecting said third sheave to said second sheave at a side on said third sheave coincedent to said second side thereby admitting said pipe from said second side.

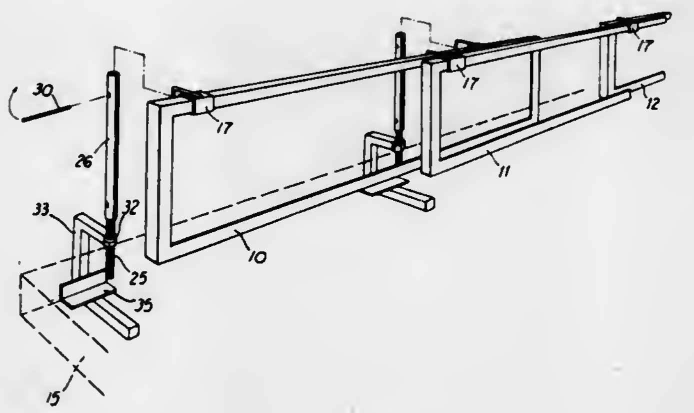
3,863,899
REMOVABLE GUARD RAIL

Richard W. Werner, 570 Forrest Rd. N.E., Atlanta, Ga. 30312

Filed Aug. 27, 1973, Ser. No. 391,539

Int. Cl. E04h *17/16*

U.S. Cl. 256—24 **14 Claims**



1. A removable guard rail comprising a stanchion having receiving means for receiving and holding a downwardly projecting section of a hook; means for securing said stanchion to a platform; a frame having a substantially horizontally extending rail; a collar slidably mounted to said frame rail, and a hook secured to said collar, said hook including a first section projecting laterally to one side of said frame rail and a second section projecting downwardly from said first hook section and removably received in said receiving means.

3,863,900
REMOVABLE GUARD RAIL ASSEMBLY AND STANCHION BRACKET THEREFOR

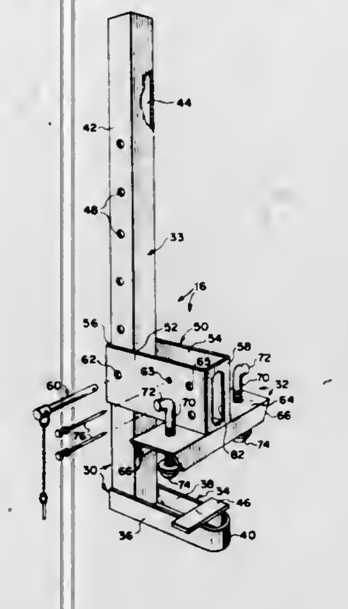
Richard T. Dagiel, Elk Grove Village, and Russell H. Plough, Chicago, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.

Filed Apr. 13, 1973, Ser. No. 350,700

Int. Cl. E04h *17/14*

U.S. Cl. 256—59 **7 Claims**

1. A stanchion supporting bracket adapted to be removably clamped to a drop-off edge of an upper story level concrete floor slab or the like, said bracket comprising a pedestal having a foot member projecting laterally from the lower end thereof, a socket member projecting laterally from said pedestal above the level of said foot member and opposing the latter, said socket member being in the form of a loop of flat metal stock and having sides which straddle the pedestal and a bight portion which is spaced outwardly from said pedestal, an upper jaw plate extending across the lower edges of the loop sides in overhanging relationship, said foot member and upper jaw plate being adapted to receive the edge region of the slab therebetween with the former underlying the slab and the latter overlying the slab, and a pair of clamping screws threadedly received in the overhanging portions of said jaw plate, projecting downwardly therefrom and adapted when tightened against the upper face of the slab to draw the foot member into clamping engagement with the slab, said socket member and upper jaw plate defining an upwardly opening socket designed for reception therein of the lower end of a vertical guard rail supporting stanchion post.



3,863,901
APPARATUS FOR MIXING OF LIQUIDS AT AN ADJUSTABLE RATIO

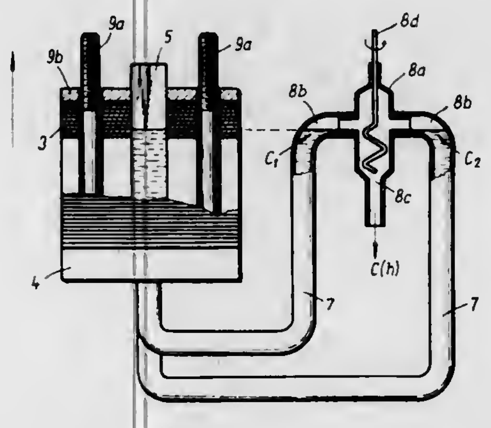
Ivan Janda, and Miroslav Barta, both of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

Filed Oct. 15, 1973, Ser. No. 406,670

Claims priority, application Czechoslovakia, Oct. 13, 1972, 6912-72

Int. Cl. B01f *7/24*

U.S. Cl. 259—7 **3 Claims**



1. Apparatus for mixing liquids at an adjustable mixing ratio comprising;
  a horizontal base plate,
  a number of similar horizontally arranged plates with longitudinal cuts,
  a vertical partition wall fixed to the base plate, the width of said partition wall being equal to the width of the longitudinal cuts in the plates,
  the plates being piled on said base plate with the partition wall engaging into their longitudinal cuts,
  the partition wall defining with each plate two separate spaces, the sum of the volumes of both said spaces being constant for each plate without regard to the position of the plate with respect to the partition wall,
  fastening means for fixing the plates on the base plate in a predetermined relative position with respect to the partition wall,
  the spaces of the piled up plates forming a chamber at each side of the partition wall,
  discharge ports in the base plate at each side of the partition wall for discharging liquid from both of said chambers, and for mixing these liquids, said device being connected with the chambers,
  means for adjustment of the height of the composite body comprising the base plate, the plates and the partition wall with respect to the device for equalizing the level of liquids in both chambers and for mixing these liquids.

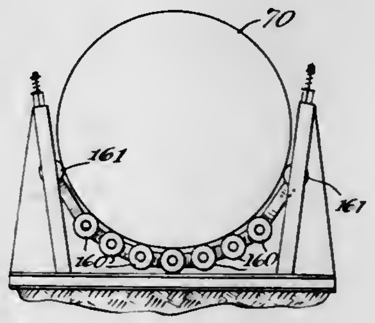
3,863,902
FLEXIBLE LINKAGE WHEEL SUPPORTED ROTATABLE DRUM

Richard Edward O'Brien, Geneva, and Arthur Raymond Simpson, Riverside, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Mar. 26, 1973, Ser. No. 344,531

Int. Cl. B01f *9/02*

U.S. Cl. 259—89 **21 Claims**



1. Apparatus comprising:
a horizontally positioned rotatable cylindrical drum;
a pair of spaced-apart circular track means mounted circumferentially on the drum;
a pair of spaced-apart nontraveling chains suspending said drum in cradled arrangement with the chains in tension; each chain having two ends, with the ends of each chain connected to a support means;
a plurality of wheels rotatably mounted on spaced-apart axles supported by each chain, said wheels rotatably contacting one of the track means and thereby rotatably supporting the drum;
the axis of the drum being substantially parallel to the axes of the wheels;
said chain and wheels being unrestrained apart form the drum and said support means and;
power drive means connected to said drum to rotate said drum while being cradled between said chains.

3,863,903
AGITATOR ASSEMBLY FOR MIXING PAINT

John Brehmer, Cary; Russell C. Brewer, Bellwood, and John W. Robinson, Libertyville, all of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

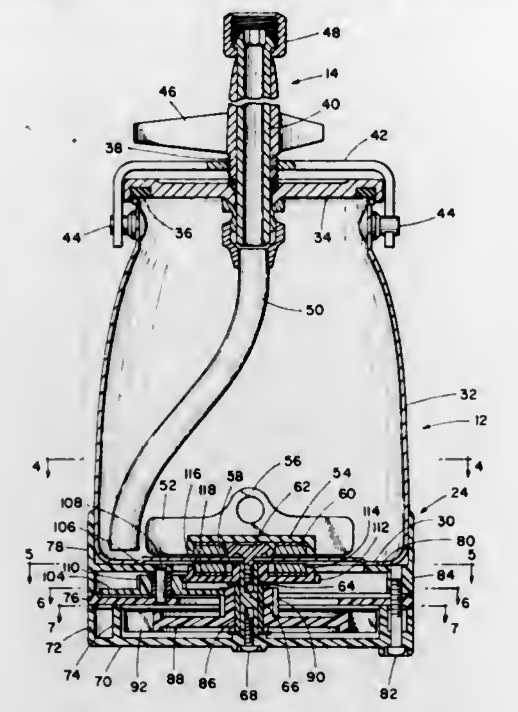
Filed Jan. 11, 1974, Ser. No. 432,556

Int. Cl. B01f *7/18*

U.S. Cl. 259—108 **14 Claims**

1. An agitator assembly for a paint cup having a back wall and a peripheral wall, comprising a first magnet, an impeller, means securing said impeller to said first magnet, means on the back wall of said paint cup for rotatably supporting said first magnet and impeller in said paint cup, a second magnet, means supporting said second magnet for coaxial rotation with said first magnet and external to said cup in a position adjacent to said cup back wall for rotating said first magnet in

response to rotation of said second magnet, an air turbine, a plurality of speed reduction gears, and means rotatably supporting said gears and turbine with said gears interconnected between said turbine and said second magnet for rotating said second magnet at a speed substantially below the speed of said turbine in response to the rotation of said turbine.



3,863,904

MIXING OF FRAGILE GRANULAR MATERIALS

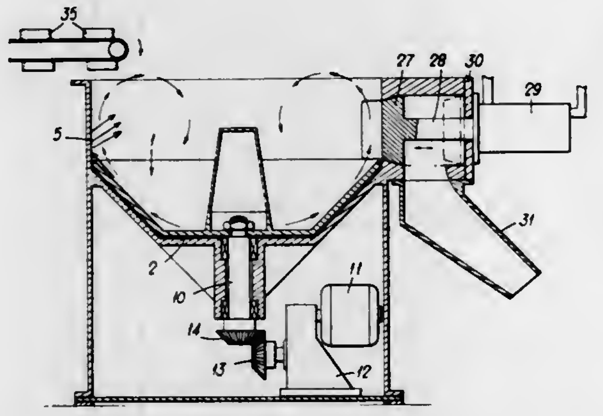
Rudolf Ferdinand Leon Milik, Welwyn Garden City, England, assignor to Design Link, Little Burrow, Welwyn Garden City, Hertfordshire, England

Filed Jan. 5, 1973, Ser. No. 321,225

Claims priority, application Great Britain, Jan. 18, 1972, 2395/72The portion of the term of this patent subsequent to Aug. 7, 1990, has been disclaimed.

Int. Cl. B01f *3/08, 7/26*

U.S. Cl. 259—148 **4 Claims**



1. A method of mixing together at least two materials, at least one of which is in the form of fragile granules having a bulk density of less than about 70 lb per cubic foot, said method comprising the steps of supplying said materials to a circular dish-shaped surface, having an inclined peripheral portion which is substantially free of projections and has its edge surrounded by a wall surface extending directly substantially vertically upwardly at an obtuse but sharply defined angle to said peripheral portion, holding said wall surface stationary while rotating said dish-shaped surface about a vertical central axis at a peripheral speed of from about 400 to about 2500 feet per minute and for a period of from the order of 5 to the order of 7 seconds and thereby imparting a rotation to said materials and flinging said materials centrifugally outwards and upwards against said stationary wall surface, contact with said wall surface retarding said rotation of said materials and directing said materials inwards towards said axis whence they fall downwards again onto said dish-shaped surface, whereby said materials form a toroidally shaped mass around said peripheral portion of said dish-shaped surface and said materials circulate along a helical path around said toroidally shaped mass.

3,863,905

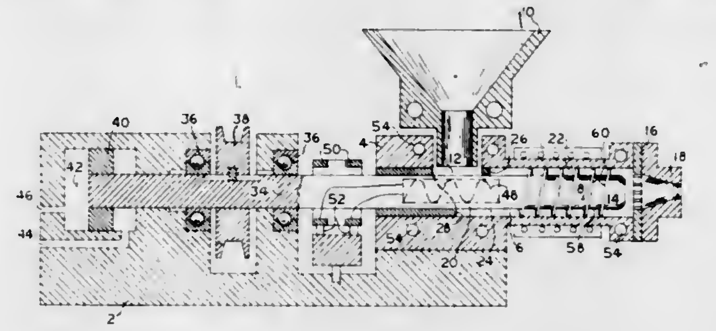
APPARATUS AND METHOD FOR PROCESSING PLASTIC MATERIAL

Bryce Maxwell, 19 McCosh Cir., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 242,700, April 10, 1972, Pat. No. 3,790,328. This application May 9, 1973, Ser. No. 358,656

Int. Cl. B29b *1/06*

U.S. Cl. 259—191 **15 Claims**



1. Apparatus for use in processing plastic material comprising a casing having a tubular bore therein, having an inlet opening near one end thereof and a discharge opening near the opposite end thereof, (an essentially cylindrical rotor located in said bore) a rotor in said bore having a cylindrical form in that portion thereof located adjacent said inlet opening, means for rotating said rotor in a predetermined direction, said casing and rotor having cooperating surfaces defining an inlet zone located near said inlet opening, and means for advancing material from said inlet zone towards said discharge outlet including a stationary member surrounding that portion of the rotor adjacent said inlet zone and presenting a helical surface facing toward said discharge opening and inclined in said predetermined direction throughout at least 360° circumferentially of said rotor.

3,863,906

RECOVERY OF COMBUSTIBLE GASES FROM FURNACES IN GENERAL AND MORE PARTICULARLY FROM CONVERTERS

Pierre Georges Vicard, Lyon, France, assignor to Societe"-Lab.", Villeurbanne, France

Filed Feb. 28, 1973, Ser. No. 336,815

Claims priority, application France, Mar. 3, 1972, 72.08901

Int. Cl. C21c *5/40*

U.S. Cl. 266—16 **5 Claims**

1. A plant for the recovery of combustible gases issuing from the mouth of furnaces in general and more particularly of converters comprising:

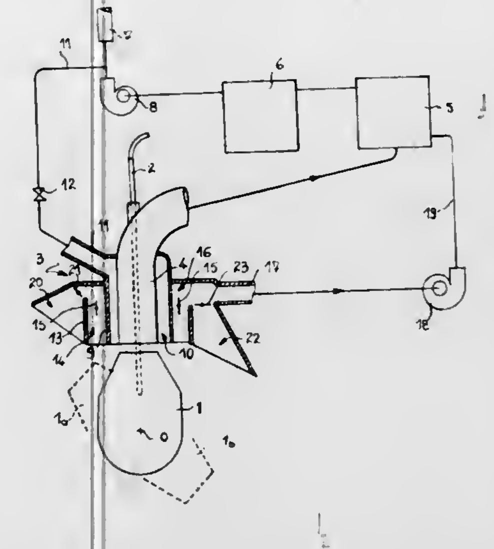
- an exhaust conduit having an inlet end and an outlet end, with said inlet end being disposed above the furnace mouth to collect combustible gases issuing therefrom;
- a combustion chamber separate from said exhaust conduit with the outlet end of said exhaust conduit opening into said chamber;

an auxiliary air conduit having an annular inlet located around the inlet of said exhaust conduit above the furnace mouth to withdraw ambient air from the perimeter of said mouth, and an outlet end opening into said combustion chamber to supply same with comburent air to cause combustion of said combustible gases within said combustion chamber, thus producing burnt gases therein;

- means to discharge outwardly said burnt gases from said combustion chamber;

gas propelling means to cause said combustible gases to flow through said exhaust conduit into said combustion chamber and said burnt gases from same to said discharge means;

air propelling means to cause air to flow through said auxiliary air conduit into said combustion chamber;



- said gas propelling means comprising a first blower having its low pressure side connected with said combustion chamber;
- and said air propelling means being formed of a second blower disposed in said auxiliary air conduit.

3,863,907

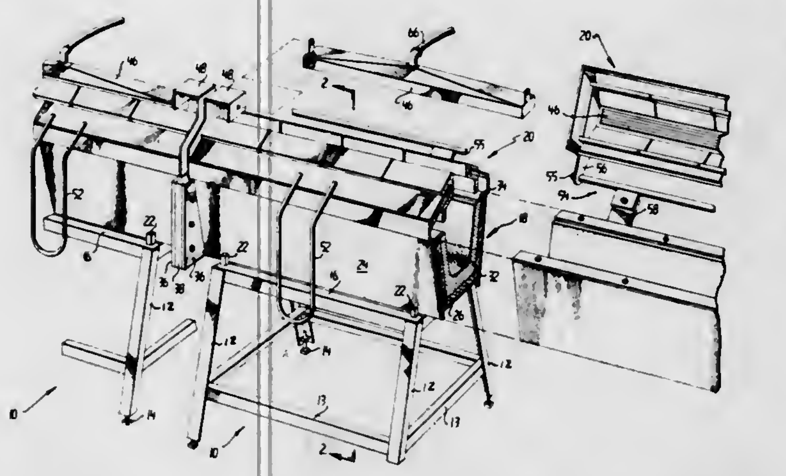
RADIANT HEATING SYSTEM

Fred W. Pierson, Sr., and Fred W. Pierson, Jr., both of Grand Rapids, Mich., assignors to M & T Manfuacturing Company, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 300,168, Oct. 24, 1972, abandoned. This application June 10, 1974, Ser. No. 477,822

Int. Cl. F27b *19/00*

U.S. Cl. 266—34 R **4 Claims**



1. A cover construction for use in conveying molten nonferrous metal in a substantially U-shaped trough member having upwardly extending front and rear side wall members and having an open top end, said cover construction comprising:

a. means for supporting a radiant heater member substantially centrally of said cover member,
b. heat reflecting means extending longitudinally of said cover construction,
c. hinge means on said cover construction,
d. handle means cooperating with said hinge means for movement of said cover construction into and out of close proximity with respect to the open end of said U-shaped trough member,
e. and longitudinally extending skirt means which extend along opposite longitudinal sides of said U-shaped trough member,
f. said skirt means being spaced slightly outwardly from the uppermost ends to said front and side wall members to effect venting of gases from within said trough with said venting occurring substantially along the entire length of said trough member.

3,863,908

CELLULAR, RESINOUS PRODUCTS AND METHODS AND APPARATUS FOR MAKING THEM

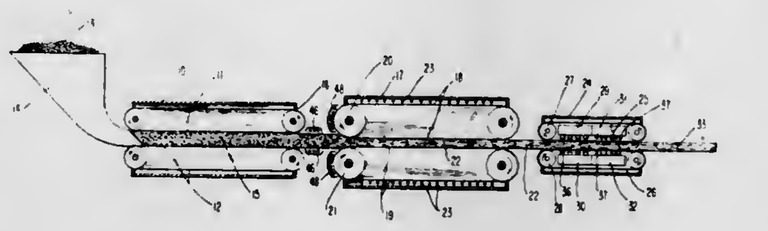
Maurice Charpentier, Rantigny, France, assignor to Saint-Gobain, Nurilly-sur-Seine, France

Continuation of Ser. No. 681,515, Nov. 8, 1967, abandoned. This application Jan. 1, 1971, Ser. No. 105,661

Claims priority, application France, Apr. 15, 1965, 65.13377; Nov. 10, 1966, 66.83268

Int. Cl. B29d *27/00, 27/08*

U.S. Cl. 264—45.5 A **8 Claims**



1. The method of forming a cellular sheet from expanded polystyrene pearls which comprises introducing the pearls into the first of a series of tunnels defined by sheet shaping belt conveyors, heating the pearls to their softening temperature in an upstream tunnel without substantial compression until they are autogeneously welded together into a porous body by blowing hot gases through the pearls in said tunnel, continuing to blow hot gases through the body to maintain the temperature of the body, passing the body into a downstream tunnel while at the softening temperature and compressing it therein to its definitive dimensions, cooling the body under compression to solidify it, passing the body into a further downstream tunnel, and reheating at least one surface of the body above the softening temperature, without substantial compression and without raising the core of the body to the softening temperature, until the surface softens and becomes smooth, and cooling the body.

3,863,909

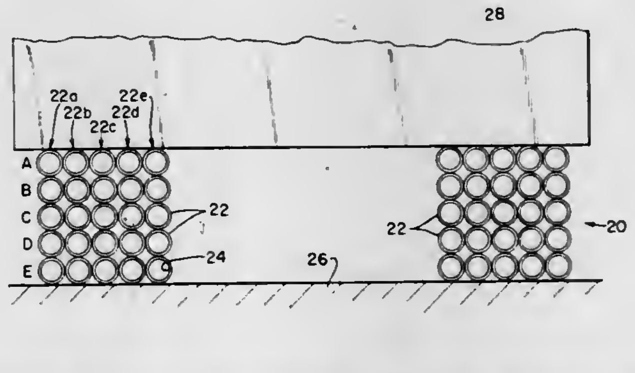
MULTI-TUBULAR SPRINGS

Milton N. Weber, Dearborn, Mich., assignor to Barry Wright Corporation, Watertown, Mass.

Filed July 9, 1973, Ser. No. 377,243

Int. Cl. F16f *7/12*

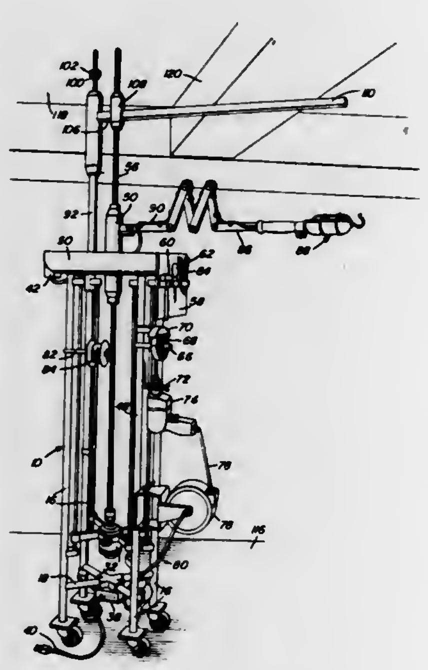
U.S. Cl. 267—140 **18 Claims**



1. A spring comprising a plurality of tubular spring elements arranged in groups in substantially parallel planes with each member of each group extending parallel to the other members of the same group, each of said spring elements being made of a resilient material so that it is capable of collapsing under a load applied transversely of its longitudinal axis and of automatically regaining its original cross-sectional configuration on removal of said load, and the members of each group

engaging and being bonded to each other and also adjacent members of each adjacent group so as to form a totally integrated structure with said members in load-transmitting relation with each other.

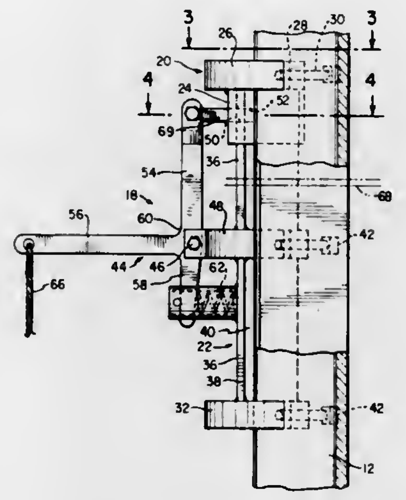
3,863,910
OVERHEAD DUCT AND PIPE SUPPORT
Earnest R. Warax, P.O. Box 111, Jacksboro, Tenn. 37757
Filed Oct. 17, 1973, Ser. No. 407,202
Int. Cl. B25b *11/02*
U.S. Cl. 269—11 **8 Claims**



1. An overhead support for use between vertically spaced downwardly and upwardly facing upper and lower surfaces, respectively, said support including an upright stand, the lower end of said stand being adapted for support from said lower surface, the upper end of said stand including upwardly extendable abutment means for engagement with said upper surface, a generally horizontal laterally outwardly projecting support arm carried by the upper portion of said stand and supported from the latter for guided vertical shifting relative thereto, and positioning means connected between said support arm and stand operative to adjustably vertically shift said support arm relative to said stand, including extending guide means, a follower assembly guidingly engaged with said guide means for adjustable shifting therealong, said positioning means including a reversible electric motor supported from said follower assembly and an upstanding screw shaft driven by said motor and threaded through an upper portion of said stand, an upstanding sleeve carried by said support arm through which said screw shaft is slidably and rotatably received, and a thrust bearing member mounted on said screw shaft for adjustable positioning therealong and rotation therewith, said thrust bearing member being disposed below said sleeve, the lower end of the sleeve resting upon and being supported from said thrust bearing member.

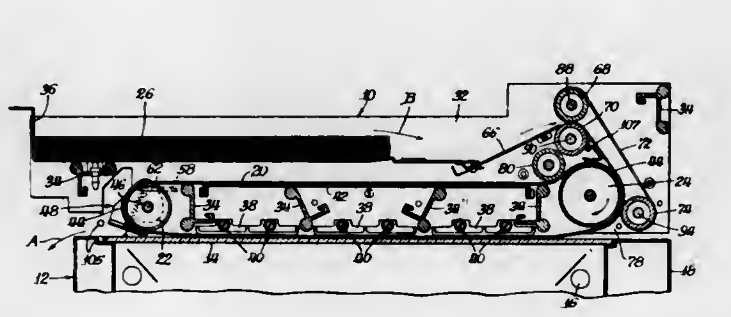
3,863,911
RELEASABLE CLAMP
Roy J. McWilliams, Pomona, N.Y., assignor to Decair Helicopters, Inc., Spring Valley, N.Y.
Filed Aug. 13, 1973, Ser. No. 387,733
Int. Cl. B25b *5/16*
U.S. Cl. 269—152 **11 Claims**

1. A clamp adapted for attachment to a unitary member which is to be severed to form adjacent separated parts, said clamp being adapted temporarily and detachably to hold said parts in position subsequent to severance, comprising:
a first clamp element attachable to said unitary member on one side of the desired point of severance;
a second clamp element attachable to said unitary member on the other side of said point of severance said second clamp element engaging said first clamp element upon attachment of said elements to the unitary member;



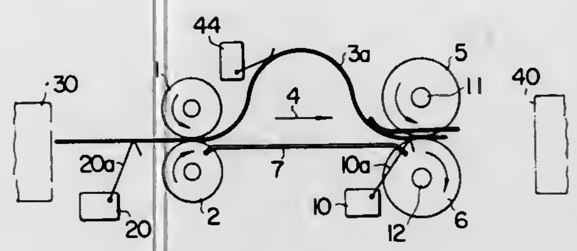
selectively engageable means provided on said first and second clamping elements for rigidly connecting said first clamp element to said second clamp element prior to severance of said unitary member; and
means provided on one of said clamp elements for disengaging said connecting means thereby disconnecting said first and second clamp elements.

3,863,912
DOCUMENT FEEDER
Roy D. Korff, Elk Grove Village, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Continuation of Ser. No. 201,043, Nov. 22, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,370
Int. Cl. B65h *5/02*
U.S. Cl. 271—245 **9 Claims**



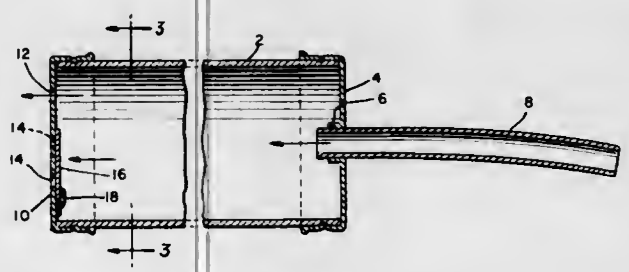
1. In a document feeder for transferring documents placed in a stack, one at a time, in succession into a copy position on a platen of a copy machine, an improvement comprising:
support rollers in spaced apart relation;
an endless belt supported by said support rollers having a run parallel to the surface of said platen for moving a document through a path across the platen into said copy position;
drive means connected to continuously propel one of said support rollers;
gate means supported about an axis of rotation of one of said support rollers for blocking said path of a document; and
a stop surface movable by pivoting said gate means between a stop position between one of said support rollers and said platen and an open position away from said platen, wherein the end of a document moved into said copy position is engageable by said stop surface in said stop position for aligning and holding said document.

3,863,913
APPARATUS FOR CONVEYING SHEETS
Van Hirafuji, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1973, Ser. No. 407,833
Claims priority, application Japan, Oct. 25, 1972, 47-106841
Int. Cl. B65h *5/06, 29/20*
U.S. Cl. 271—265 **8 Claims**



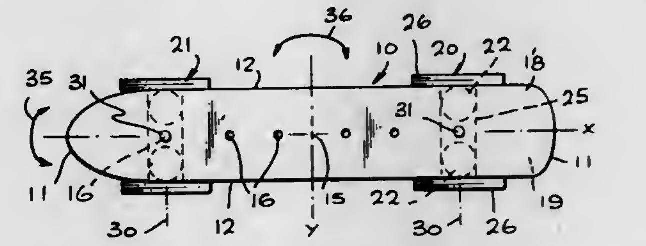
1. An apparatus for conveying sheets comprising:
a. first sheet feed means for feeding a sheet at a first speed;
b. second sheet feed means for receiving said sheet from said first sheet feed means and feeding the sheet at a second speed which is greater than the sheet feeding speed of the first sheet feed means; and
c. control means for maintaining the second sheet feed means inoperative until the leading end of the sheet fed by the first sheet feed means reaches the second sheet feed means, and momentarily operating the second sheet feed means for a short period of time when the leading end of the sheet has reached the second sheet feed means, and for operating the second sheet feed means at the second speed when a loop formed in the sheet between the first and second sheet feed means has grown to a given size subsequent to the termination of the momentary operation of the second sheet feed means.

3,863,914
BREATHING DEVICE
Michael J. O'Connor, 117 Maple Rd., Bala Cynwyd, Pa. 19004
Continuation-in-part of Ser. No. 166,904, July 28, 1971, abandoned. This application Jan. 4, 1973, Ser. No. 321,066
Int. Cl. A61h *31/00*
U.S. Cl. 272—57 F **19 Claims**



1. A breathing device through which an individual can repeat both the inhaling and exhaling phases of respiration comprising: (A) a closed container having a free volume of at least about 500 cc; (B) passageway means through which air can be inhaled from said container and exhaled into said container by the individual; (C) air passage means communicating with an air supply at about atmospheric pressure through which air is admitted into said container and into and through said passageway means when air is inhaled from said container through said passageway means and through which air is expelled from said container when air is exhaled through said passageway means into said container; (D) means responsive to the individual's respiration for increasing the exhalation force needed to expel air from said container relative to the inspiratory force needed to inhale air into the container; and (E) means responsive to the individual's respiration for increasing the exhalation force needed to expel air from said container relative to the exhalation force that would be needed to expel air directly into the atmosphere; wherein the positional relationship of said passageway means and said air passage means is such that at the end of exhalation the container is filled predominately with exhaled air which upon inhalation is first inhaled from said container through said passageway means.

3,863,915
SURFING SIMULATOR
Harry J. Pifer, P. O. Box 117, Kalispell, Mont. 59901
Filed Sept. 10, 1973, Ser. No. 395,743
Int. Cl. A63b *69/18*
U.S. Cl. 272—57 B **2 Claims**

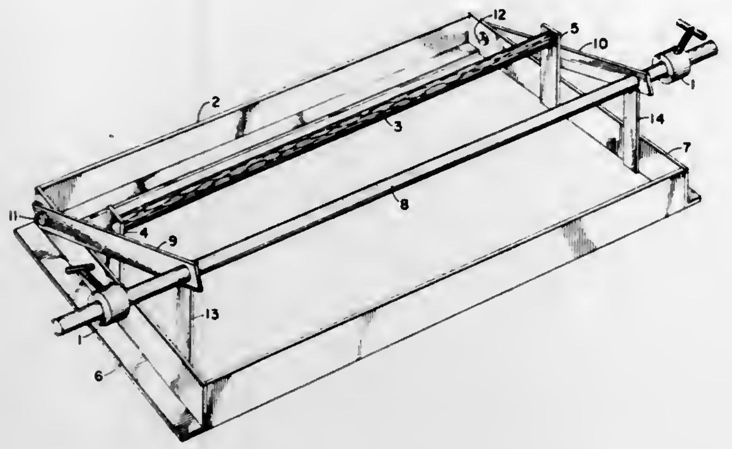


1. A surfing simulator comprising:
an elongated board having top and bottom sides and defining a longitudinal axis in a plane parallel to said sides;
spring suspension means including first and second spring assemblies, each assembly including at least one coil spring and top and bottom members with the spring connected therebetween, with the spring axis extending between said members; and
connecting means for selectively connecting each assembly to the board by securing the assembly top member to the board's bottom side with the spring's axis perpendicular to said longitiduinal axis, whereby said springs suspend said board above a support surface with which the bottom members of said assemblies are in contact, with the rockability of said board about an axis perpendicular to said longitudinal axis being a function of the spacing between said assemblies, each of said assemblies includes first and second coil springs spaced apart and parallel between the top and bottom members of the assembly, each assembly defines a plane in which the axes of the springs of the assembly lie, and said connecting means connect each assembly to said board at a selectable angular orientation of the assembly's plane with respect to the board's longitudinal axis so as to control the rockability of the board about said longitudinal axis, the top member of each assembly defining an aperture equidistant from the two springs of the assembly, said board defining a plurality of apertures along its longitudinal axis, and said connecting means include a pair of bolts, extending through one of said board apertures and the aperture of the top member of one assembly, with the rockability of the board about an axis perpendicular to its longitudinal axis being a function of the distance between the board's apertures through which the bolts extend.

3,863,916
EXERCISING DEVICES
Vance Allen Cline, 4831 N. Karlov, Chicago, Ill. 60630
Filed Dec. 17, 1973, Ser. No. 425,211
Int. Cl. A63b *13/00, 21/00*
U.S. Cl. 272—81 **3 Claims**

1. In combination an exercising device comprising a rectangularly constructed frame, including a foot heel rest assembly, consisting of a knurled shaft member secured to and supported by a pair of vertically disposed upstanding members secured adjacent the sides of two opposing transverse frame members, a weight holding bar assembly consisting of a shaft member, including a pair of screw clamp weight collars, secured to a pair of opposing swing arm members, which are pivotal adjacent to the sides, at one end of the two forementioned opposing frame members, a pair of weight bar stops

consisting of two vertically disposed upstanding members, secured adjacent to the sides of said opposing frame members,

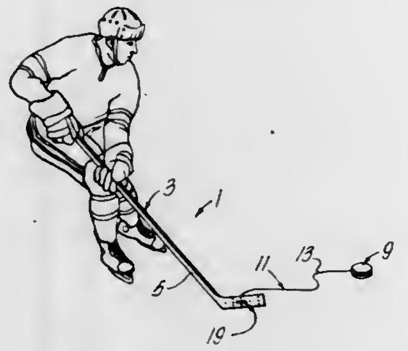


positioned beneath, and supporting the forementioned weight holding bar in proper position for beginning the exercise movement.

3,863,917

HOCKEY TRAINING STICK

Robert G. Beale, 7377 Brucy St., St. Leonard, Quebec, Canada
Filed Nov. 19, 1973, Ser. No. 417,196
Claims priority, application Canada, Nov. 17, 1972, 156,903
Int. Cl. A63b *59/14*
U.S. Cl. 273—1 B **8 Claims**



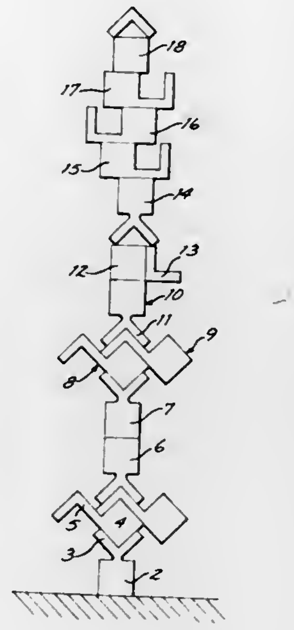
1. Hockey equipment for practicing puck control comprising a hockey stick having a blade, a hockey puck, and flexible tie means connected to the puck, the blade of the stick having a plurality of spaced-apart locations for selectively receiving the tie means whereby the puck will return to a different portion of the blade depending on the location on the blade at which the tie means is received.

3,863,918

BUILDING BLOCK GAME

George A. Kramer, Box 2000, Apple Valley, Calif. 92307
Filed Dec. 10, 1973, Ser. No. 423,249
Int. Cl. A63f *9/00;* **A63h** *33/06*
U.S. Cl. 273—1 R **3 Claims**

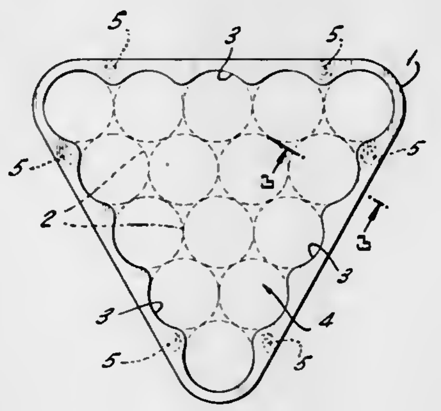
1. A building block game in which the blocks comprising the same are adapted to be stacked laterally to define a column in which a portion of the blocks interlock and extend transversely therefrom, said game comprising: a plurality of rectangular blocks in which a first portion thereof includes V-shaped wings that extends outwardly from flat surfaces thereof, a second portion of said blocks that include inverted L-shaped members that project from flat surfaces thereof and are partially offset from said blocks, a third portion of said blocks that include inverted L-shaped members that project from flat surfaces thereof and are axially aligned with said blocks, and a fourth portion of said blocks that include L-shaped members in abutting contact flat surfaces thereof, with one of said blocks of said first portion serving as a base for said column with said V-shaped wing in upwardly extending position and said blocks defining said first, second, third and fourth portions being stacked one upon the other to rest on said V-shaped wings to define said column and at least a part of said first, second, third and fourth portions of said blocks stacked on said V-shaped wing of said block that serves as a base interlocking with one another to extend horizontally from said column.



3,863,919

BILLIARD BALL RACK

Jerry Louis Sardelli, 141 Clearwater, Lindenhurst, N.Y. 11757
Filed May 3, 1973, Ser. No. 357,031
Int. Cl. A63d *15/00*
U.S. Cl. 273—22 **1 Claim**

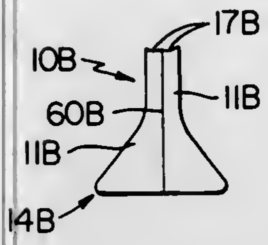


1. In combination, a group of billiard balls and a rack comprised of a flat, rigid frame having an overall triangular shape for the alignment of billiard balls on a billiard playing surface; supporting members depending from said frame to maintain said frame at a distance above the playing surface generally corresponding to the radius of the billiard balls; an interior opening in said frame of substantially triangular shape provided with indentations on the periphery thereof comprising 12 segmented circular portions which mate with the periphery of the billiard balls thereby accomodating 15 billiard balls within said interior opening; the sides of said frame being substantially equal in length to five times the major diameter of one of the billiard balls; and said frame being constructed in a generally equilateral triangular configuration.

3,863,920

BASEBALL AND SOFTBALL TYPE BALL TEE

Joseph V. Tassone, 2425 Rawnsdale Rd., Kettering 45440, and James T. Candor, 5440 Cynthia Ln., Washington Township, Montgomery County 45429, both of Ohio
Filed Jan. 2, 1973, Ser. No. 320,280
Int. Cl. A63b *69/40*
U.S. Cl. 273—25 **10 Claims**

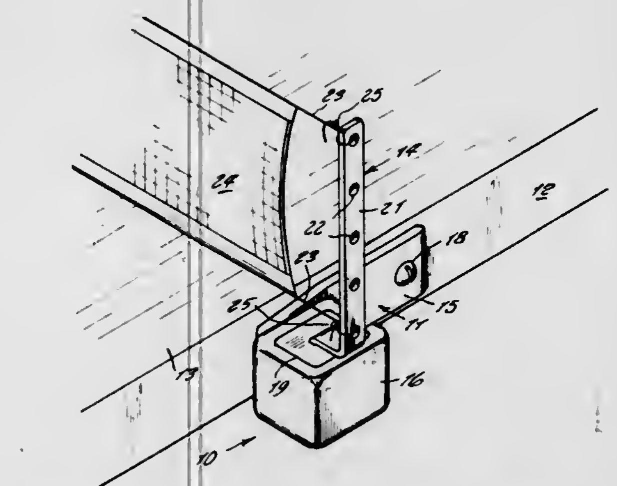


1. A baseball and softball ball tee construction having a base for supporting said construction in an upright manner and having a ball support for supporting thereon a ball having an external diameter within the range of the diameter of a standard baseball to the diameter of a standard softball, said ball support being sized and shaped such that said ball overhangs same at all supporting locations enabling easy striking in a generally upwardly direction from said base by a batter and in any direction about the entire periphery of said tee construction and at a vertical height above said base in a ball strike zone which is at least equal to a vertical height defined by the batter's knees, at least the major part of said base automatically collapsing into a substantially flat configuration by its own weight when said tee construction is overturned.

3,863,921

PLASTIC TABLE TENNIS NET BRACKET

O. R. Price, 905 6th St., Bristol, Tenn. 37620
Filed Nov. 27, 1973, Ser. No. 419,413
Int. Cl. A63b *61/00*
U.S. Cl. 273—30 **1 Claim**

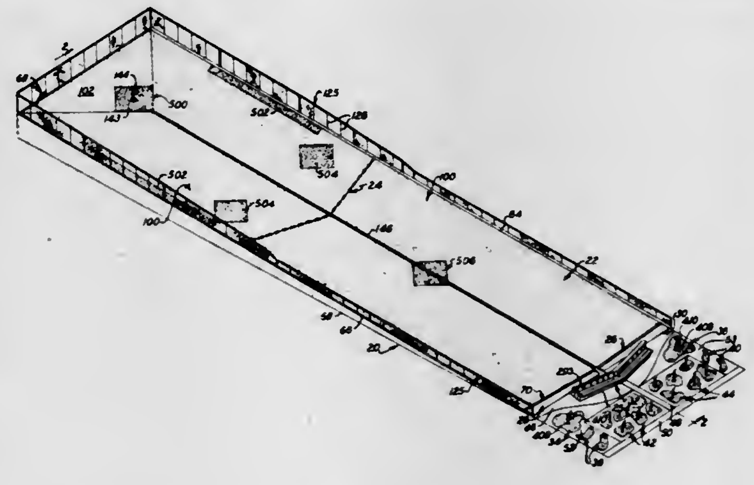


1. In a table tennis net bracket assembly, the combination of a bracket mountable permanently upon a side of a table used for playing table tennis, and said bracket supporting a removeable post, said bracket including a plate portion and a block portion integrally formed together, said plate portion having a pair of openings therethrough for receiving mounting screws in order to secure the same to said table, and said block portion having a vertical opening therethrough, said vertical opening being cross sectionally square, said post being comprised of a correspondingly shaped block receivable within said cross sectionally square opening of said block portion, and a metal bar secured to said block, said block of said post being downwardly convergingly tapered, and said opening of said block portion being downwardly tapered convergingly so that said post is rigidly supported by said bracket, said metal bar having its lower end embedded within said block, said bar extending upwardly and having a plurality of openings therethrough to which an upper and lower cord of a net is attachable.

3,863,922

GOLF PRACTICE RANGE AND METHOD OF RETRIEVING BALLS HIT THEREON

Maurice E. Peeples, Boone St, Royal Heights, Ga. 31548
Division of Ser. No. 82,559, Oct. 21, 1970, Pat. No. 3,738,664. This application Apr. 2, 1973, Ser. No. 346,917
Int. Cl. A63b *69/36*
U.S. Cl. 273—35 B **3 Claims**

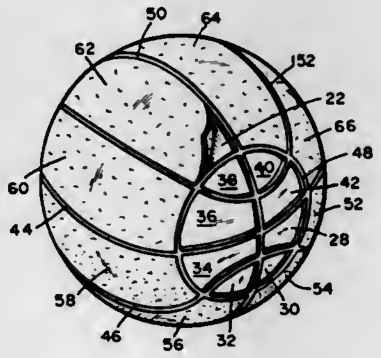


1. A method of retrieving golf balls from random locations on a golf practice range having a shallow V cross-section surface, the range having a ball collection station near one end thereof, the method comprising propelling a flexible drag assembly over the surface of the range longitudinally in one direction and toward the ball collection station and with the flexible drag assembly spanning substantially the full width of the range during its movement, restraining and guiding the opposite ends and the center of the flexible drag assembly during its movement over the range so that the assembly will be held in contact for its full length with the shallow V cross-section surface, thereby assuring engagement of the golf balls by the flexible drag assembly and the sweeping of the golf balls toward the collection station, and then delivering the golf balls by gravity near said one end of the range to the ball collection station.

3,863,923

INFLATED GAME BALL

John W. Anderson, Cincinnati, Ohio, assignor to Hutch Sporting Goods, Inc., Cincinnati, Ohio
Filed May 14, 1973, Ser. No. 359,979
Int. Cl. A63b *37/12, 41/08*
U.S. Cl. 273—58 BA **3 Claims**



1. An inflatable game ball comprising an inflatable bladder having a plurality of upstanding ribs thereon defining a plurality of side panel receiving depressions therebetween at the sides of the ball and a plurality of separate end panel receiving depressions at the opposite ends of the ball, said ribs including

a rib at each end of the ball extending in a circular path and defining closed circular areas at each of the ends of the ball, and further ribs subdividing said circular areas into a plurality of smaller end panel receiving depressions, a plurality of side cover panels secured in said side panel receiving depressions, said side panels all terminating at their opposite ends at said ribs defining the circular areas, and said end panel receiving depressions being devoid of end cover panels whereby desired end panels may be subsequently secured in the end panel receiving depressions to economically produce a ball having a desired appearance.

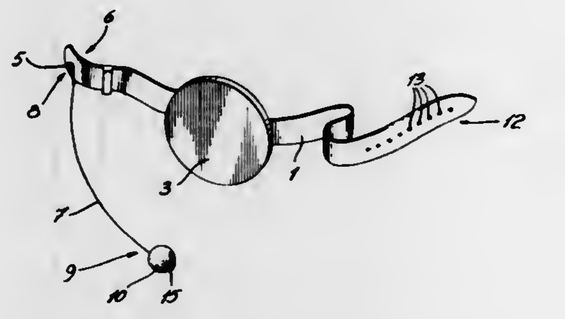
3,863,924
WAIST TETHERED BALL & TARGET

Paul Emile Gagnon, 2437 Monsabre St., Montreal, Quebec, Canada

Filed Oct. 9, 1973, Ser. No. 404,153

Int. Cl. A63b *71/02*

U.S. Cl. 273—97 R **5 Claims**



1. A ball game comprising:
- a support means adjustable to different human torso sizes and adapted to be placed around a torso;
- a generally flat-faced target secured to said support means to lie generally flat against one side of the torso;
- a ball and a flexible band, said flexible band being secured at one extremity to said ball, and at the other extremity to said support means at a position spaced from said target around said torso to enable said ball to strike said target by hip motion of the participant.

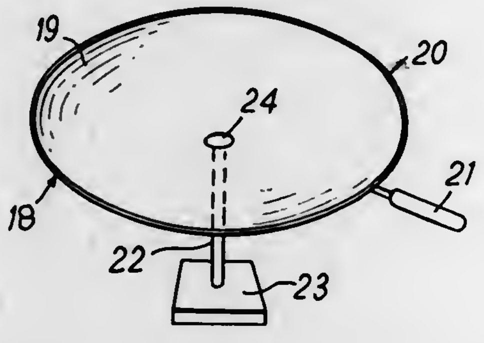
3,863,925
WHIPTOP GAME

Abraham M. Torgow, 185 E. 206 St., Bronx, N.Y. 10458

Continuation-in-part of Ser. No. 257,276, May 26, 1972, abandoned. This application Mar. 16, 1973, Ser. No. 341,862

Int. Cl. A63f *9/16*

U.S. Cl. 273—110 **4 Claims**



1. Apparatus for playing a game comprising in combination, a spinnable conical top having a pointed lower end, a whip comprising a relatively stiff handle, a relatively flexible lash and an orientable game board having an edge and including a smooth concave top playing surface adapted to receive said spinnable top thereon, and means for pivotally support the game board for universal tilting movement of the board, a handle attached to said game board and projecting outwardly beyond said edge for tilting said board.

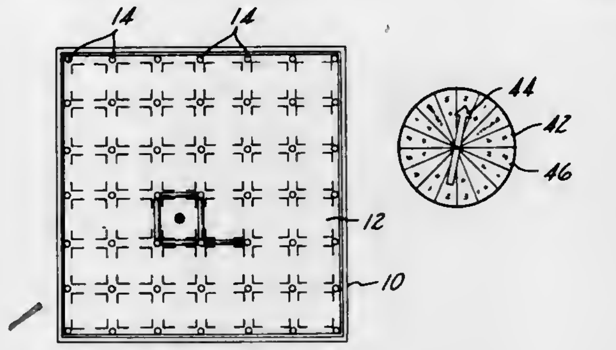
3,863,926
GAME APPARATUS

Beverly A. White, and David L. White, both of Mason Ct., Westland, Mich. 48185

Filed Sept. 8, 1972, Ser. No. 287,474

Int. Cl. A63f *3/00*

U.S. Cl. 273—130 F **7 Claims**



1. Game apparatus comprising:
- a game board having a generally flat playing surface;
- a plurality of equally spaced, parallel rows of pegs fixedly mounted on the playing surface, each row having a plurality of pegs spaced apart a distance equal to the distance between adjacent rows, each peg in each row being disposed adjacent a peg in an adjacent row in a direction at right angles to the rows of pegs, each of said pegs having a predetermined height above the surface of the board;
- at least four similarly shaped, elongated playing elements each having a length less than the distance between adjacent pegs; and
- wall means mounted on the board for defining at least two playing element positions adjacent each peg including a first playing element position between such peg and the adjacent peg in the row thereof for receiving a playing element parallel to said rows of pegs, and a second playing element position for receiving a playing element between such peg and the adjacent peg in the adjacent row at right angles to said rows of pegs, said wall means being disposed adjacent to their respective pegs, but in spaced relationship thereto, and including a first pair of walls disposed in parallel relationship on opposite sides of and adjacent one end of each playing element position, and a second pair of walls disposed in parallel relationship on opposite sides of and adjacent the opposite end of each playing element position, said wall means having a height above the playing surface less than the height of the pegs and less than the diameter of the playing elements,
- whereby the opposite ends of each playing element in a playing element position is disposed between said first and second pairs of walls, but can be removed therefrom by a motion perpendicular to the playing surface of the game board by having its mid-section engaged by a player.

3,863,927
BOARD GAME APPARATUS

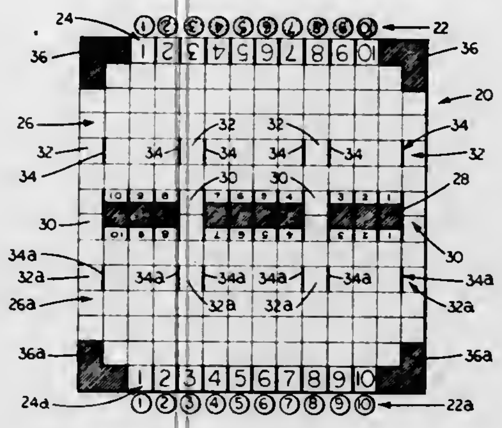
Edward M. Moritz, 2710 Hartford Rd., York, Pa. 17402

Filed Jan. 10, 1974, Ser. No. 432,406

Int. Cl. A63f *3/02*

U.S. Cl. 273—131 K **3 Claims**

1. A game comprising in combination, a rectangular playing board having an overall grid pattern of playing position squares with the opposite ends of said board having rows of starting position squares consecutively numbered transversely, sets of game pieces for each of two players, said sets of game pieces being visually distinguishable from each other but similarly and consecutively numbered to correspond to the numbering of said starting position squares, a row of scoring squares parallel to and midway between said rows of starting position squares, said row of scoring squares being arranged in a plurality of separated groups of squares to provide channel passages for said game pieces to be moved between said groups, transverse sets of rows of consecutive numbers along said scoring squares for the respective players being farthest from the rows of starting squares of said players, whereby it is necessary for the players to move their game pieces through said channel passages and onto the scoring square corresponding to the number on the game piece being moved.



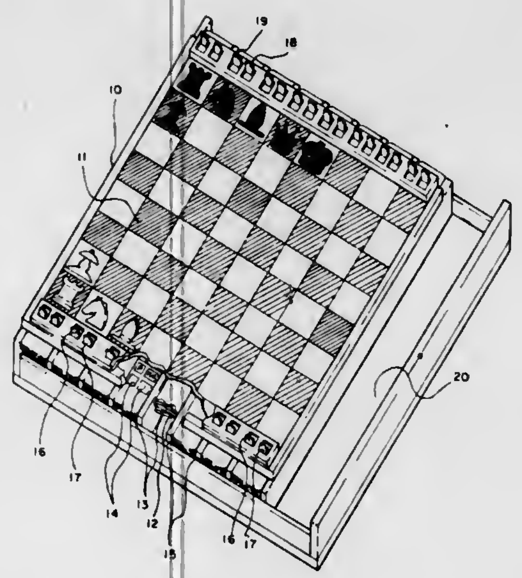
3,863,928
CHESSBOARD AND PROGRAMMED PLAYING AID

James E. Nelson, 304 Harvard Ave., Wenonah, N.J. 08090

Filed July 22, 1974, Ser. No. 490,332

Int. Cl. A63f *3/02*

U.S. Cl. 273—136 B **7 Claims**



1. A chess board and programmed playing aid assembly comprising,
- eight sets of display file cards, one set for each file on the chess board, wherein each card displays the entire file of the chess board with chess piece symbols showing the positions of the pieces on that file at a particular stage of the game, and wherein the uppermost cards of the eight sets make up a complete configuration of a chessboard with pieces in play,
- move indicia on each display card indicating the color of the piece involved in the next move and the move number of the move,
- wherein each set of display cards are organized in a program such that when stacked, the display card directly beneath the top card shows the arrival position of the chess pieces or the removal of a piece according to the programmed move of a chessman of that rank,
- guide and holding means to allow a set of the display file cards to be held in position as a stack on the file of the chessboard to which that set is programmed and to allow singular removal of the top display card to expose the card directly under it without removing the entire stack, and
- move indicia covering means to prevent general viewing of the move indicia but allow selective uncovering of a single file move indicia.

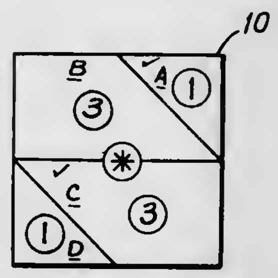
3,863,929
GAME UTILIZING A PLURALITY OF TILES

Steven J. Kahan, 32-45 88th St., Jackson Heights, N.Y. 11369

Filed Jan. 28, 1974, Ser. No. 436,893

Int. Cl. A63f *9/20*

U.S. Cl. 273—137 C **4 Claims**



1. A game comprising a plurality of identical rectangular polygonal tiles, each tile including a plurality of areas with each area of a given tile both being the same and different in size from areas on other tiles, each area having a value number assigned to it, with each area including at least one edge coincident with a tile edge, the length of the area edge being equal to L/N where L is the length of the tile edge and N is a positive integer the lowest value of which is one, each area of each tile being shaped so that a predetermined number of isosceles right triangles can be fit wherein with the leg length of each isosceles right triangle being equal to half the length of a tile edge, the value number of each area being equal to the number of isosceles right triangles that fit into said area, certain areas on a tile being visually distinguishable in a first way in a manner other than shape and value number from adjacent areas of said tile and said adjacent areas being visually distinguishable in a second way in a manner other than shape and value number from said adjacent areas of said tile, and for each tile edge of a given area and the portions of areas at said given tile edge there being a tile edge of another tile with the portions of the areas at said another tile edge being identical to said area portion at said given tile edge whereby in one aspect of the game an edge of a first tile can be matched to an edge of a second tile with the portions of the areas of said first tile at said first tile edge being visually identical to the portions of the area of said second tile at said second tile edge so that on adjacent tiles on a continuous string of identically distinguished areas can be formed.

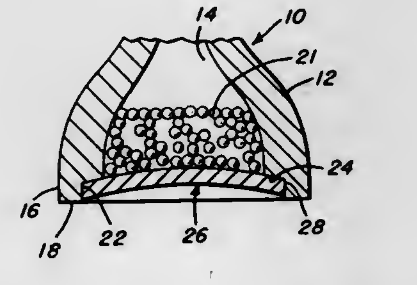
3,863,930
WEIGHTED CHESS PIECE

Joseph R. Uvanni, 722 Laurel St., Rome, N.Y. 13440

Filed Mar. 22, 1974, Ser. No. 453,882

Int. Cl. A63f *3/02*

U.S. Cl. 273—137 W **2 Claims**



1. A game piece, said game piece comprising an upstanding body configured to define a chess piece and having a base portion, said base portion having a game board engaging flat lower support surface, an internal chamber within said body,

an access port through said lower support surface into said chamber for the introduction of loose ballast into said chamber, and a closure insert for said port, said insert being circular, flat and resiliently flexible for deformation into a concavo-convex configuration within said port, said insert having upper and lower surfaces with a peripheral edge at an angle of slightly less than ninety degrees to the lower surface, said port including a circular side wall projecting inwardly from the lower support surface at an angle thereto slightly greater than the angle of the peripheral insert edge to the insert lower surface, the diameter defined by the peripheral sidewall of the port being slightly less than that of the lower surface of the insert, and a shoulder above said peripheral sidewall of the port projecting radially inward therefrom at an angle equal to the angle of the peripheral edge of the insert to the lower surface of the insert, said insert, upon a concavo-convex deforming insertion thereof into said port, having the peripheral edge thereof engaged flush against the circular sidewall of the port with the upper surface of the insert engaging flush against the inwardly projecting port shoulder.

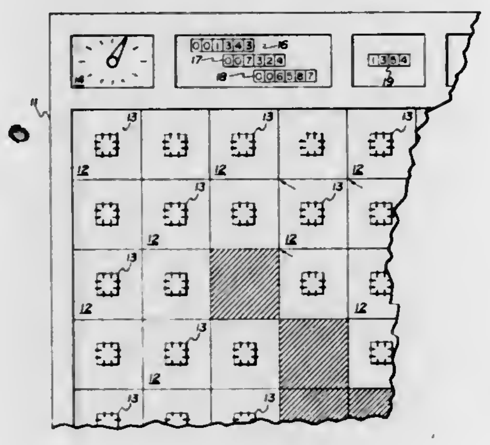
3,863,931
ELECTRICAL CROSSWORD PUZZLE

Brian R. Forsyth, 8105 Camino Del Sol, La Jolla, Calif. 92037, and Corey D. Rand, 8555 Sherwood Dr., West Hollywood, Calif. 90069

Filed Aug. 24, 1973, Ser. No. 391,335

Int. Cl. A63f *9/18*

U.S. Cl. 273—156 **3 Claims**



1. An electrical crossword puzzle comprising:
a game board;
a plurality of letter squares arranged in horizontal and vertical arrays to form horizontal and vertical word units on said game board;
a plurality of coded electrical contacts on each of said letter squares;
a plurality of letter blocks adapted for being received on said letter squares;
a plurality of electrical contacts on said letter blocks geometrically disposed and coded for cooperation with said plurality of coded electrical contacts on said letter squares; and
electrical scoring means coupled to said electrical contacts on said letter squares, said scoring means including a counting means for indicating the number of completed correct horizontal word units and counting means operable for indicating the number of completed correct vertical word units.

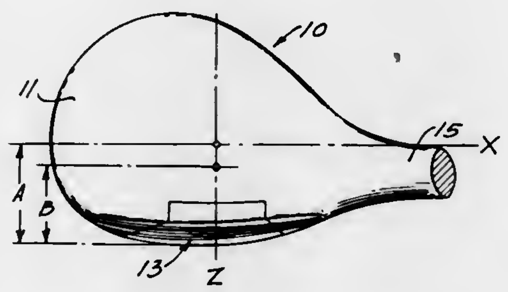
3,863,932
WEIGHTED WOOD GOLF CLUB

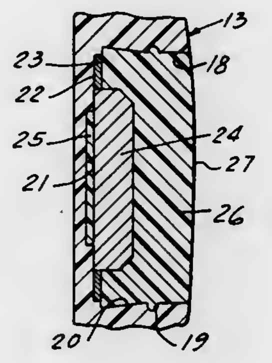
Arthur J. Lezatte, Downers Grove, Ill., assignor to Wilson Sporting Goods Co., River Grove, Ill.

Filed May 21, 1973, Ser. No. 362,004

Int. Cl. A63b *53/04*

U.S. Cl. 273—169 **7 Claims**





1. A wood-type golf club comprising a club head having a recess in the striking area, an insert filling said recess, a dense disk weighting means within said insert, a layer of an impact resistant resin within said insert covering one face and at least a portion of the periphery of said disk, the layer of resin having a smoothly contoured, uninterrupted surface forming part of the striking face of said club, the disk weighting means being positioned to provide a center of gravity for said club head which is closer to the leading edge of the club face than in the absence of said weighting means.

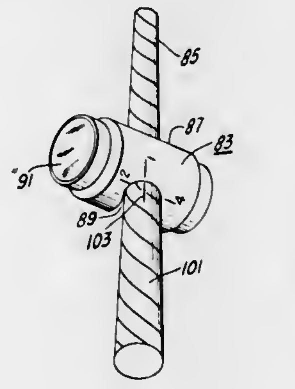
3,863,933
GAME CLUB SWING TRAINING DEVICE

Wynn B. Tredway, P.O. Box 130, Freeport, Pa. 16229

Continuation-in-part of Ser. No. 263,980, June 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 153,772, June 16, 1971, abandoned. This application June 11, 1973, Ser. No. 368,814

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 A **7 Claims**



1. Apparatus for use in a club swing training program comprising:
a club shaft;
a light having indicia thereon;

means for adjustably mounting said light to said shaft;
an index on said shaft; and
means for aligning selected ones of said indicia with said index whereby, when said shaft is swung properly during said training program, said light emits rays along preselected paths which may be viewed to permit a close study of the phases of a club swing.

3,863,934
DISMOUNTABLE COLUMN APPLICABLE TO AUTOMATIC RECORD PLAYERS

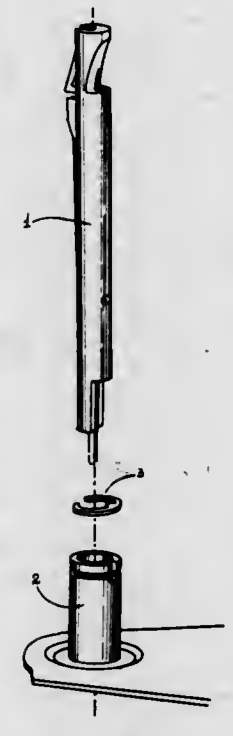
Raul Antonio Vega, Vieytes 1386, Martinez-Pcia., Buenos Aires, Argentina

Filed Jan. 29, 1974, Ser. No. 437,625

Claims priority, application Argentina, Feb. 9, 1973, 246523

Int. Cl. G11b *17/04, 17/16*

U.S. Cl. 274—10 S **1 Claim**



1. A dismountable column within a hollow shaft attachable to the base of a record player, said column having on a portion entering said shaft and on said portion a pyramid-shaped protuberance, said hollow shaft having a vertical groove within which is guided said protuberance and a ring-shaped groove positioned above said protuberance when the column is inserted fully within the shaft, and an elastic ring having an opening, the thickness of said ring being coincident with the width of the ring-shaped groove and having an interior coincident with the bottom of the ring-shaped groove when riding within said groove, said ring having a small interior tongue positioned opposite the opening to fit within the vertical groove and having a length not exceeding the thickness of the wall of the tubular shaft but of a length sufficient to engage said protuberance as said column is mounted or dismounted.

3,863,935
SEAL ASSEMBLY AND LUBRICATION SYSTEM IN A PUMP FOR HANDLING LIQUID MATERIALS

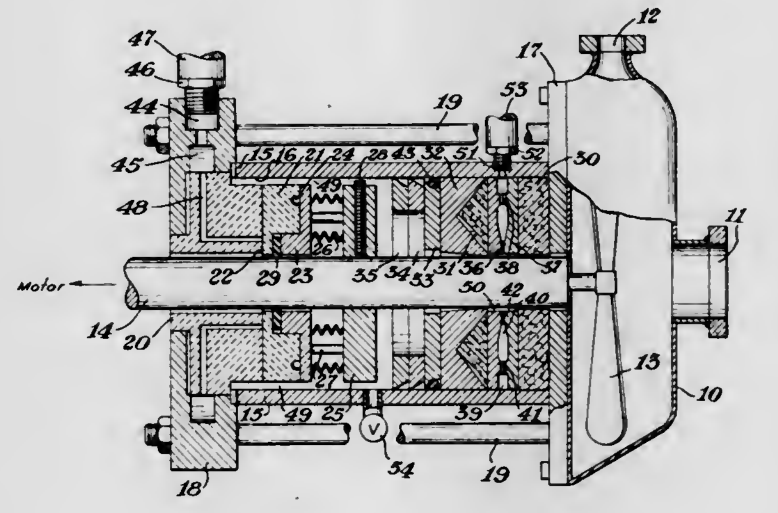
Marvin L. Batch, 2106 Wilmington, Midland, Mich. 48640

Filed Jan. 9, 1974, Ser. No. 431,897

Int. Cl. F16j *15/16, 15/40, 15/44*

U.S. Cl. 277—65 **4 Claims**

1. An improved seal assembly and lubrication system for use in a pump for handling liquid materials, the pump including a rotatable shaft positioned in a packing gland chamber which has an inner wall surface, the improvement comprising the combination of:
a gland ring which defines one end of the chamber;
a pump head housing which defines the opposite end of the packing gland chamber;
a first lubrication receiving port which is positioned in the gland ring, and is adapted for receiving a lubrication material;
a first lubrication channel which is defined in the gland ring, which communicates with the first lubrication port, and which is adapted to receive the said lubricant material from the first lubrication port;
a rear seal assembly in which the components enclose the shaft, the components are spaced from the inner wall surface of the packing gland, the components include an insert block that seats in the gland ring and a face block that mates with the insert block to define a seal face;
a series of first lubrication passages which extend through the insert block, which connect the first lubrication channel with the seal face, and which are adapted to carry the said lubricant material from the first lubrication channel to the seal face;



a forward seal assembly in which the components enclose the rotatable shaft, the components are spaced from the rear seal assembly and from the shaft, the components are positioned adjacent to the pump head housing, and one component of the seal assembly is a lubrication feeder member;
a second lubrication receiving port which is positioned in the wall of the packing gland chamber, and is adapted for receiving a lubrication material;
a second lubrication channel which is defined in the lubrication feeder member, which communicates with the second lubrication receiving port, and which is adapted to receive the said lubricant material from the second lubrication port;
a series of second lubrication passages which are defined in the lubrication feeder member, which connect the second lubrication channel with the space defined between the forward seal assembly and the shaft, and which are adapted to carry the said lubricant material from the second lubrication channel to the shaft.

3,863,936
HIGH TEMPERATURE GASKET STRUCTURE AND METHOD OF PRODUCING SAME

Robert G. Farnam, New Lisbon, and Michael T. Passarella, Wisconsin Rapids, both of Wis., assignors to F. D. Farnum Co., St. Lyons, Ill.

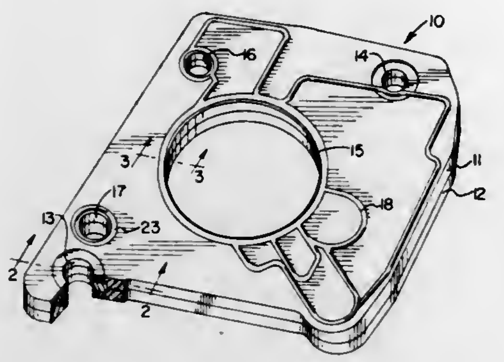
Filed Mar. 27, 1973, Ser. No. 345,356

Int. Cl. F16j *15/12*

U.S. Cl. 277—166 **18 Claims**

1. A high temperature gasket comprising:
a. a body portion formed of semi-rigid asbestos board having minimal elastomeric binder content and having a density within the range of 65 to 100 lb/ft^3, and

b. a bolt hole portion integral with the body portion, but having a density from 25 percent to 250 percent higher



than that of the surrounding body portion, and including a metal washer retained within such bolt hole portion.

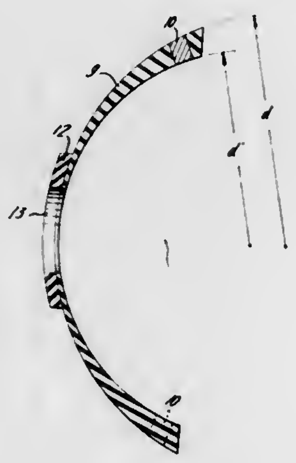
3,863,937
ADAPTER GASKET

Howard M. Silverman, Edison, and Herbert M. Laford, Verona, both of N.J., assignors to Electro-Protective Corp., Newark, N.J.

Filed Nov. 2, 1973, Ser. No. 412,323

Int. Cl. F16j *15/10;* **F16l** *5/00*

U.S. Cl. 277—180 **12 Claims**



1. A gasket for mounting pipes in pipe saddles, said gasket comprising an arcuate gasket body, said arcuate gasket body including an outer cylindrical surface of a first diameter, and said arcuate gasket body including an inner cylindrical surface of a second diameter, said second diameter being smaller than said first diameter.

3,863,938
SEALING MEANS

Terence Peter Nicholson, County Durham nr. Consett, England, assignor to The Corrugated Packing and Sheet Metal Company Limited, Newcastle upon Tyne, England

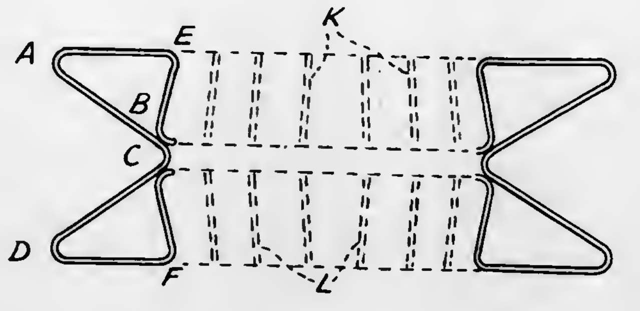
Filed Feb. 2, 1973, Ser. No. 329,137

Claims priority, application Great Britain, Sept. 27, 1971, 44907/71

Int. Cl. F16j *15/08*

U.S. Cl. 277—200 **4 Claims**

1. Sealing means comprising a ring of resilient material which is substantially sigma-shaped in cross-section, having a pair of outer arms and a pair of intermediate arms, the free ends of the outer arms being in-turned to define rim portions in turn having free ends resting on the adjacent intermediate members.



3,863,939
CHUCK FOR USE IN A DENTAL HANDPIECE

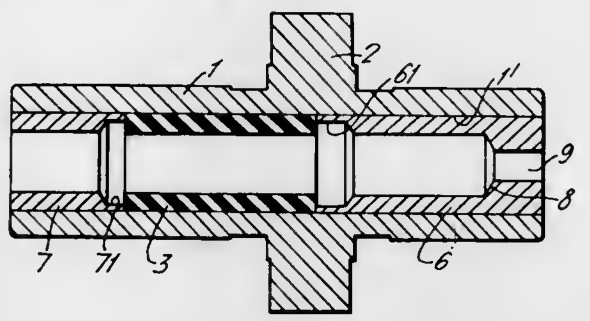
Kenzo Sato, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Aug. 17, 1973, Ser. No. 389,374

Claims priority, application Japan, Aug. 31, 1972, 47-87426

Int. Cl. B23b *31/08*

U.S. Cl. 279—1 SG **4 Claims**



1. A chuck for use in a dental handpiece having therein a rotor provided with an axial through bore, comprising a tubular body provided in said axial bore and fixed to the inner surface thereof for simultaneous rotation with said rotor, said tubular body being made of an elastic material and having along its whole length an inner diameter such that when said tool bar is inserted into said tubular body, said tubular body is deformed and compressed along its whole length so that the elasticity of the material of said tubular body produces a sufficient gripping force of said tubular body on said tool bar; and at least one tubular fixing member provided adjacent to said tubular body in said axial bore of said rotor and secured to the inner surface thereof, said fixing member being made of metal and having an inner diameter such that the inner surface of said tubular fixing member restricts the nutation of said dental tool inserted therethrough as it is being rotated, said fixing member provided at the end of said chuck adjacent to one end of said tubular body with an annular recess having an inner diameter greater than the inner diameter of said tubular body so that part of the material of said deformed tubular body protrudes into said annular recess.

3,863,940
WIDE OPENING COLLET

Philip T. Cummings, 8924 Lindblade, Culver City, Calif.

Filed Apr. 4, 1973, Ser. No. 347,782

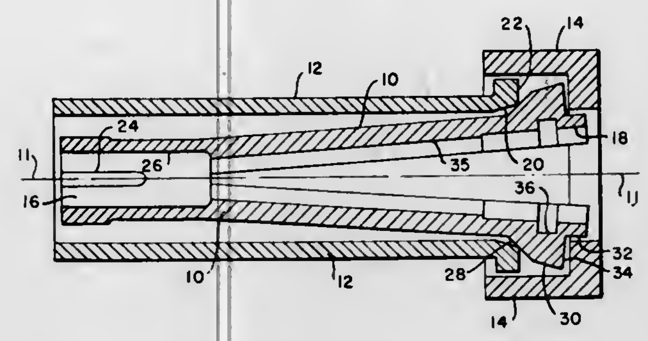
Int. Cl. B23b *31/20*

U.S. Cl. 279—50 **8 Claims**

1. A spring leaf collet having a longitudinal axis comprising: a plurality of resilient leaves mutually attached at one end of said collet and separated at the other end;

a first annular cam surface on each of said leaves adjacent the other end of said collet, said surface being formed at a predetermined angle with respect to the longitudinal axis of the collet;

a second annular cam surface adjacent said first cam surface and at a substantially larger angle than said first surface with respect to said longitudinal axis;



a third cam surface adjacent said second cam surface, said third surface being formed at a lower angle than said second surface with respect to the longitudinal axis and forming an annular conical surface of smaller diameter than the surface formed by said second surface; and

said third surface being formed at generally the same angle as said first surface.

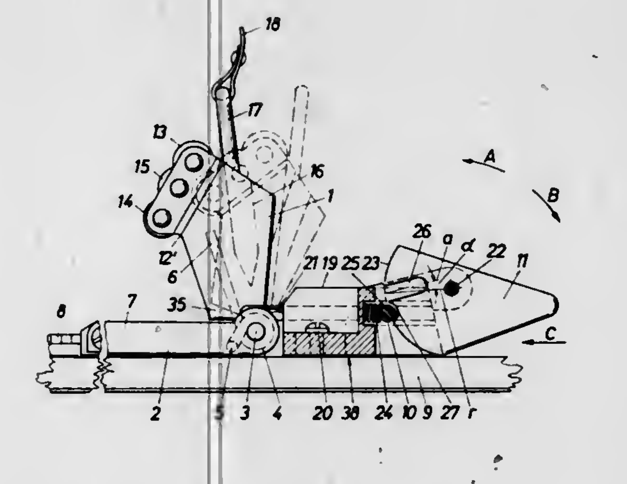
3,863,941
DEVICE FOR USE WITH SKI BINDINGS FOR SELECTIVELY RETAINING BINDING MEMBERS WHICH CAN BE LIFTED FROM THE SKI

Andreas Hausleithner, Mittenwald, Germany, assignor to Heinrich Wunder, Dachau, Germany

Filed Aug. 3, 1973, Ser. No. 385,233

Int. Cl. A63c *9/10*

U.S. Cl. 280—11.35 E **4 Claims**



1. In a ski binding comprising a holding-down member for the heel of the boot, which member is adapted to be lifted from the ski, the improvement comprising a housing which is secured to the ski adjacent to that end of said holding-down member which faces the rear end of the ski, a locking member in the form of a U-shaped member which is mounted in the housing for a displacement in the longitudinal axis of the ski under the influence of a spring, which urges said locking member away from the holding-down member, and means for moving the locking member against the force of said spring and for fixing said locking member in a position to hold the holding-down member against the ski, said moving means including a lever connected to displace the locking member and pivoted in said housing on an axis which is transverse to the skiing direction, said lever having a slot which is downwardly inclined toward the heel of the boot, and a recess which is disposed below said slot to receive the web of the said U-shaped member.

3,863,942
SKI BINDING

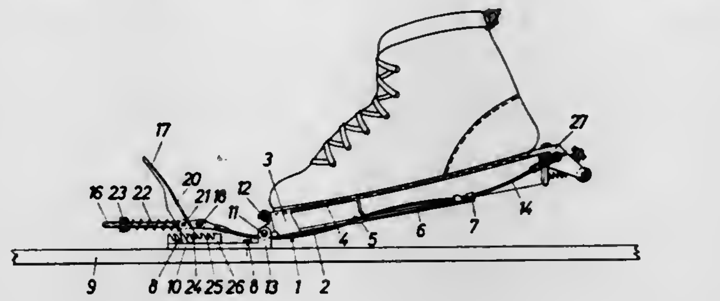
Simon Burger, Dachau, Germany, assignor to Heinrich Wunder KG, Dachau, Germany

Filed Aug. 13, 1973, Ser. No. 387,658

Claims priority, application Austria, Aug. 16, 1972, 7050/72

Int. Cl. A63c *9/083*

U.S. Cl. 280—11.35 A **7 Claims**



1. A ski binding for detachably securing a ski to a skiing boot, comprising a sole plate having a surface for supporting the boot, means for pivotally connecting the sole plate to the ski adjacent to the toe portion of the boot about an axis which is transverse to the longitudinal direction of the ski, said sole plate being provided with means adapted to hold the toe portion of the boot on the sole plate and to follow the movement of the toe portion of the boot about said transverse axis, a flexible cable which is detachably secured with respect to the ski in front of said sole plate and extends on the sides of said sole plate rearwardly and around the heel portion of the boot, a notched bar, which is disposed in front of said sole plate and extends along the longitudinal center line and serves for a detachable fixation of said cable, means provided on said cable and adapted to be hooked into notches of said notched bar, said notched bar forming part of a base, which is adapted to be secured to said ski and carries said means for pivotally connecting said sole plate, said notched bar having notches which are downwardly inclined toward the toe portion of the boot and said cable being hooked into said bar by means of a tightener which has laterally protruding pins adapted to be inserted into said notches, said cable being pivoted to a screw of the tightener and said screw being pivoted to a tightener lever at a point spaced from the pivot for the cable toward the toe portion of the boot, said tightener lever carrying said pins for engaging said tightener with the notches of said notched bar.

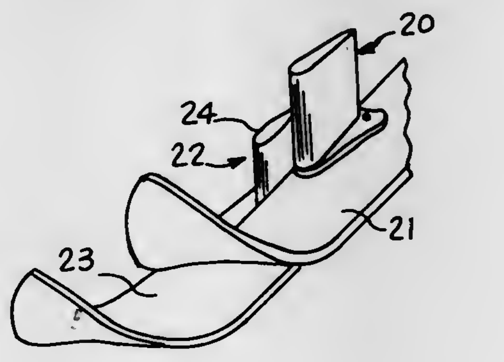
3,863,943
SKI ANTI-CROSSING DEVICE

Hugo V. Giannotti, E. Patchogue, N.Y., assignor to Ski Dynamics Inc., Bellport, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,027

Int. Cl. A63c *11/00*

U.S. Cl. 280—11.37 E **5 Claims**



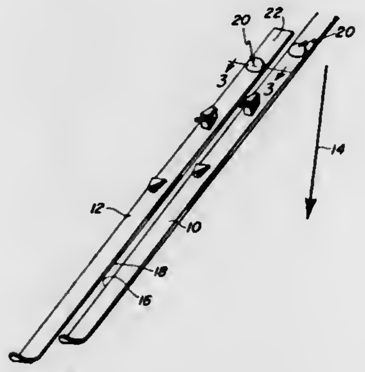
1. Means for attachment to the upper surfaces adjacent an end of skis comprising a first base plate, mounted on a first ski, a first member pivotally mounted on said first base plate,

a second base plate mounted on a second ski, a second member pivotally mounted on said second base plate, said members being pivoted about an axis parallel to the longitudinal axis of said skis,

said members being spring loaded to the vertical position, each said member being adapted to block the other ski from crossing it but yielding in the direction that will unlock the other ski if the other ski has crossed a member.

3,863,944
ANTI CROSSOVER DEVICE

Thomas P. Waddel, 309 Columbia Pl., Broomall, Pa. 19008
Continuation of Ser. No. 252,472, May 11, 1972, abandoned. This application Dec. 13, 1973, Ser. No. 424,331
Int. Cl. A63c *5/06*
U.S. Cl. 280—11.37 E **13 Claims**



1. A ski attachment to aid in parallel skiing comprising:

a member having a mounting surface at its bottom and a generally convex upper surface, at least a portion of which extends upwardly and inwardly from adjacent an edge of the ski when attached thereto;

means for adhesively bonding said mounting surface of said member to the upper surface of said ski adjacent an end of said ski so that said upper surface of said member projects upwardly of said ski;

said member being formed from a material which is of a softness and resilience as to enable an edge and portion of the bottom of an adjacent overlapping ski to dig into said member to form a pocket of substantially conforming shape therein, whereby said pocket may resist further overlapping of said skis and may provide a support for said bottom portion of said overlapping ski when a portion of the skier's weight is on said overlapping ski, said member being sufficiently resilient as to urge said overlapping ski out of said pocket toward a non-overlapping position as the skier's weight on said overlapping ski is diminished.

3,863,945
WHEEL UNIT FOR ATTACHMENT TO A TRIPOD

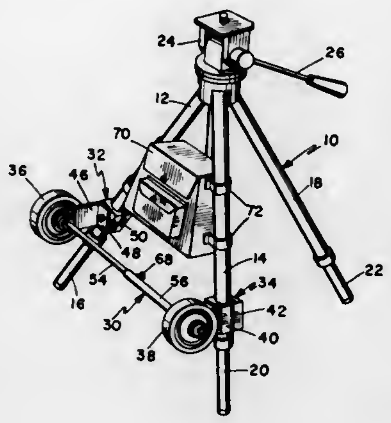
Diane M. Dunstan, 3312 N. Central, No. 203, Phoenix, Ariz. 85012
Filed Sept. 4, 1973, Ser. No. 393,948
Int. Cl. B62b *1/12*
U.S. Cl. 280—35 **4 Claims**

1. A wheel unit for attachment to two legs of a tripod, comprising:

a pair of brackets each having a clamp portion with means for clamping on one of the tripod legs;

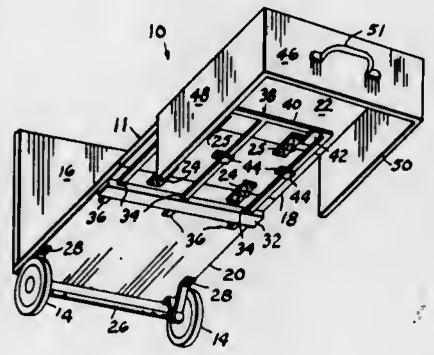
an arm extending from each clamp portion, each arm being pivotally adjustable on the clamp portion about an axis substantially radial to the longitudinal axis of the respective tripod leg;

each said arm having a wheel rotatably mounted thereon; and spacing means interconnecting said brackets for holding the brackets and the two tripod legs in spaced apart position.



3,863,946
TWO-WHEEL FOLDABLE DOLLY

Barett O. Dotson, 2830 S.E. Colt Dr., Portland, Oreg. 97202
Filed Oct. 29, 1973, Ser. No. 410,924
Int. Cl. B62b *1/10*
U.S. Cl. 280—36 C **2 Claims**



1. A foldable dolly, comprising:

a sectional platform including a center section and opposing end sections forming a plane defining a load receiving surface;

platform hinges connecting said end sections to said center section for movement toward and away from the plane of the load receiving surface;

means releasably maintaining said end sections in the plane of the load receiving surface,

said releaseable means including at least one pair of anchor members secured, respectively, to the surface of each said end section opposite the load receiving surface adjacent the hinged connection with the center section,

each anchor member of said pair of anchor members forming a slot adjacent the surface of said end sections opposite the load receiving surface and,

an elongated anchor bar slidable into and out of the anchor member slots,

the respective end portions of said anchor bar projecting beyond the hinged connection of said center section with said end sections when said anchor bar is disposed within the anchor member slots;

a pair of platform support wheels connected with one said end section opposite the load receiving surface;

a load retaining shoe hingely connected by one marginal edge to the end portion of said one end section opposite said platform hinges for movement toward and away from the load receiving surface;

a pair of side walls coextensive with and respectively connected by one marginal edge to opposing side edges of said end section opposite said shoe,

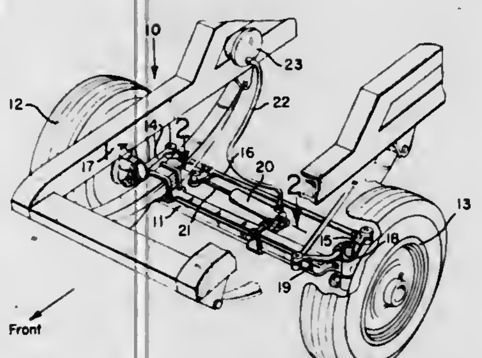
the planes of said side walls being normal to and projecting away from the plane of the load receiving surface; and,

an end wall extending between said side walls at their ends opposite said shoe and being connected, by one marginal side edge with the end of said one end section opposite said shoe,

said end wall and said side walls forming a socket for nesting the other said end section and said pair of wheels when said end sections are pivoted about their respective hinged connection toward each other and disposed in a plane normal to the load receiving surface of said center section.

3,863,947
VEHICLE STEERING STABILIZER

Orville O. Weston, Cudahy, Calif., assignor to Highway Safety Accesories Company, Inc., Bell, Calif.
Filed Oct. 9, 1973, Ser. No. 404,412
Int. Cl. B62d *7/00*
U.S. Cl. 280—90 **5 Claims**



1. A steering stabilizer for connection between a front wheel axle and the steering rod of a vehicle comprising, in combination:

a. a cylinder having first and second end caps with central openings;

b. a shaft comprised of first and second sections passing into opposite ends of said cylinder through the central openings in said end caps respectively, the inner end of the first shaft section having a reduced diameter portion defining a first annular shoulder, the inner end of the second shaft section having a counterbore dimensioned to receive the end of said reduced diameter portion to define a second annular shoulder opposing said first annular shoulder in spaced relationship;

c. first and second pistons mounted on said reduced diameter portion between said first and second shoulders in axial alignment with each other, the axial length of the pistons being less than the actual distance between the shoulders so that the pistons can move axially apart to seat respectively on said shoulders in a first position and axially towards each other into face-to-face engagement in a second position,

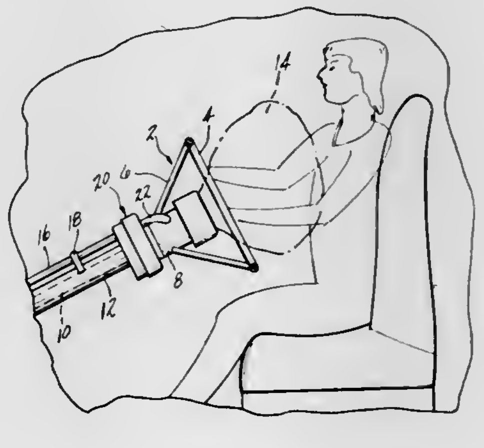
said pistons including passage means respectively radially spaced different distances from their axes so that the passage means are eclipsed when the pistons are in their second position and are clear when in their first position, said second piston including an annular groove in its face opposed to the face of the first piston within the radial distance of its passage means;

d. biasing means between the opposed faces of said pistons urging them apart to said first position, said biasing means comprising an O-ring in said annular groove, said O-ring being compressed completely into said groove when said pistons are in their second position so that their opposed faces are in full surface contact; and,

e. a liquid filling said cylinder, the volume of liquid displaced in said cylinder by the shaft means and first and second pistons being constant for all axial positions of the shaft means and pistons in said cylinder between said end caps so that said shaft means and pistons can move back and forth in the cylinder to follow normal movements of the steering rod relative to the axle, said liquid passing from one side of the pistons to the other through said passage means and the separation space defined between the pistons when in their first position, any sudden shock applied to the steering rod tending to accelerate relative movement between the shaft means and cylinder in one direction or the other in excess of a given acceleration, causing said pistons to move to their second position to close off said passage means and block liquid flow therethrough so that the shaft means is held in its last axial position to thereby stabilize the steering rod and wheels of the vehicle against unintended sudden movement as a result of said shock.

3,863,948
ROTARY CONNECTION FOR A SAFETY BAG INFLATION SYSTEM

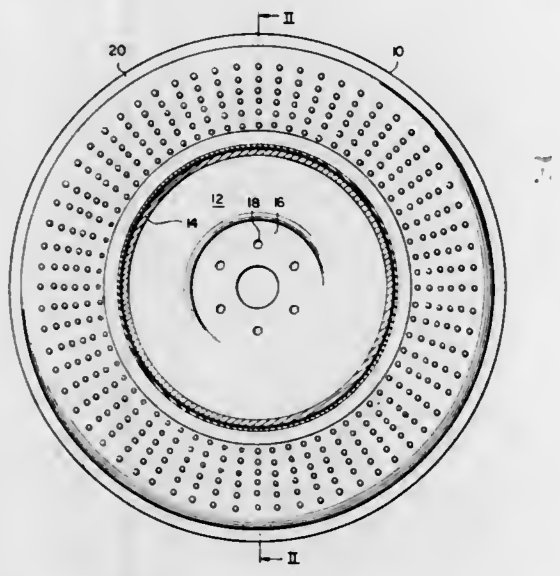
Rayburn D. Vancil, Carterville, Ill., assignor to Olin Corporation, New Haven, Conn.
Filed Oct. 5, 1973, Ser. No. 403,735
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **1 Claim**



1. A vehicle safety assembly mounted on a steering asembly of the vehicle, said steering assembly including a steering column fixed to the vehicle; a steering shaft rotatably mounted within said steering column; a steering wheel having a longitudinally elongated hub which is fixed to said steering shaft, said hub having a hollow interior; said safety assembly comprising an air bag stored in a collapsed condition within said hub; first conduit means mounted externally of said steering column and fixed thereto for ducting air bag inflation gas; second conduit means mounted externally of said hub, said second conduit means communicating with the interior of said hub through an opening in said hub upstream of said air bag, said second conduit means being fixed to the exterior of said hub and rotatable therewith, and said second conduit means being operable to duct air bag inflation gas into the interior of said hub; and an annular manifold interposed between said first and second conduit means for establishing fluid-ducting connection therebetween, said manifold including a first annular portion fixed to and completely encircling the exterior of said steering column, and a second annular portion fixed to and completely encircling the exterior of said hub and rotatable therewith, said first conduit means opening into said first manifold portion and said second conduit means opening into said second manifold portion; and annular seal means fixed to one of said manifold portions and disposed in sliding sealing engagement with the other of said manifold portions to form a gas-tight seal between said first and second manifold portions.

3,863,949
TIRE SPLASH GUARD

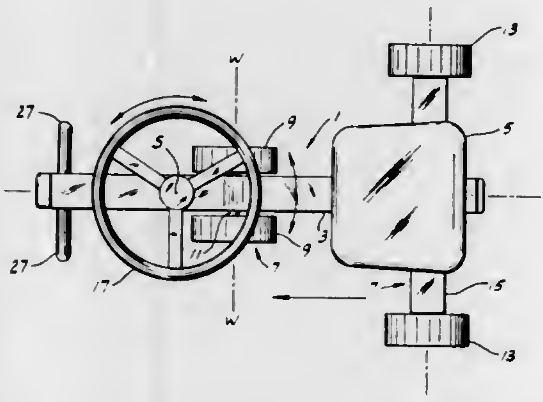
Lloyd Clarke, Block 20-G, Greenhill Dr., Silverhill, CH. CH., Barbados, British W. Indies
Filed May 6, 1974, Ser. No. 467,072
Int. Cl. B62d *25/16*
U.S. Cl. 280—156 **6 Claims**



1. A splash guard for motor vehicles wheels comprising an annular member adapted to be secured on the side wall of a tire and having a shape conforming to the shape of said side wall; said member having an inner peripheral portion clamped between said tire and the rim of a wheel; and a plurality of spaced rows of flexible interceptor rods extending from said member; each of said rods having tips bent away from the center of said tire thereby forming a rotary, circular splash shield to downwardly deflect spray caused by contact between said wheels and wet roads.

3,863,950
RIDER-PROPELLED VEHICLE

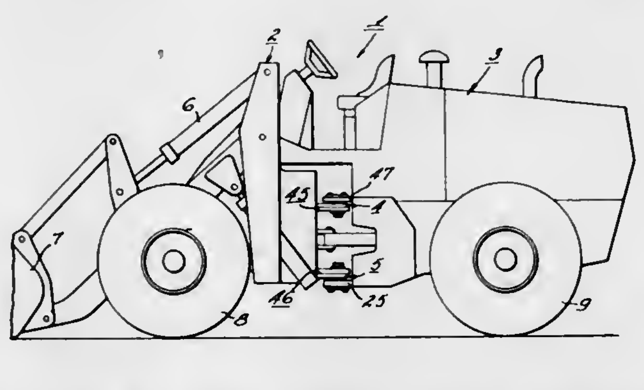
Gerald J. Jordan, 127 West Chicago, Marceline, Mo. 64658
Continuation-in-part of Ser. No. 271,551, July 13, 1972, Pat. No. 3,807,760. This application Apr. 26, 1974, Ser. No. 464,300
Int. Cl. B62m *1/00*
U.S. Cl. 280—218 **10 Claims**



1. A rider-propelled wheeled vehicle comprising:
a frame;
a seat mounted on the frame for supporting the rider;
wheel means for supporting the frame above the ground including an axle mounted for swinging movement midway between its ends relative to the frame on an upright axis, said axis being rotatable 360° about its upright axis, said wheel means including a pair of wheels carried by said swingable axle spaced generally at equal distances on opposite sides of said upright axis with the wheels on a common generally horizontal axis; and
rider operable means for propelling and steering said vehicle including means for swinging said axle about its upright axis and means associated with each wheel carried by said swingable axle permitting rotation thereof in one direction with respect to said axle but preventing rotation thereof in the opposite direction with respect to the axle, said swingable axle being adapted to occupy a first neutral position in which the axis of the wheels is generally perpendicular to the longitudinal axis of the vehicle and the wheels are rotatable so as to permit forward rolling of the vehicle in the direction of its longitudinal axis, said swingable axle being adapted to occupy a second neutral position in which the axis of the wheels is generally perpendicular to the longitudinal axis of the vehicle and the wheels are rotatable so as to permit rearward rolling of the vehicle in the direction of its longitudinal axis, said axle being swingable on said upright axis in opposite directions about its first neutral position for effecting generally forward propulsion of the vehicle via one wheel being held against reverse rotation while the other rotates in forward direction and the axle swings forward on the point of engagement of the held wheel with the ground thereby to propel the vehicle forward, said axle being similarly swingable on said upright axis in opposite directions about its second neutral position for effecting generally rearward propulsion of the vehicle via one wheel being held against forward rotation while the other rotates in reverse direction and the axle swings rearward on the point of engagement of the last-mentioned held wheel thereby to propel the vehicle backwards.

3,863,951
BEARING SEAL FOR ARTICULATED VEHICLE

John W. Barth, Topeka, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed June 25, 1973, Ser. No. 373,520
Int. Cl. B62d *53/02*
U.S. Cl. 280—400 **10 Claims**



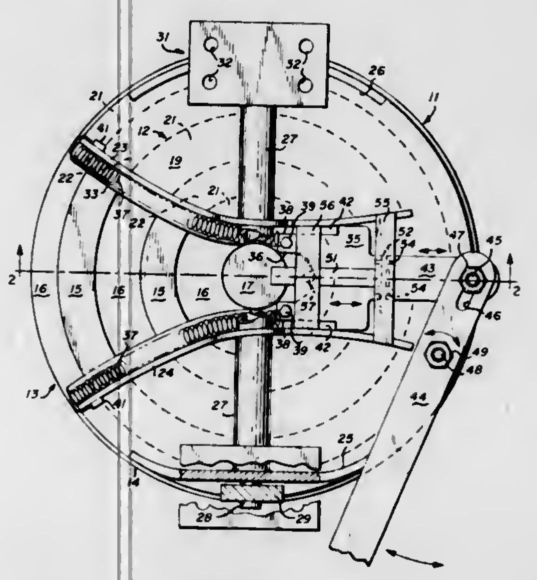
1. An articulated vehicle bearing pivotally connecting first and second sections of an articulated vehicle comprising, a bearing support means on the first of said vehicle sections partially forming a bearing chamber, a pin means, means on the second of said vehicle sections connected to said pin means, a first bushing defining a segment of a spherical surface mounted on said bearing support means, a complementary bushing mounted on said pin means defining a segment of a spherical surface engaging the segment of spherical surface of said first bushing, a flexible seal member including an annular mounting portion resiliently positioned on said pin means and complementary bushing, an axial sealing portion on said seal member biased to sealingly engage said bearing support means and thereby form a sealed bearing compartment for said bushings.

3,863,952
FIFTH WHEEL KING PIN LOCK COMBINATION

Donald W. Hodgson, 1646 10th St., Arcata, Calif. 95521
Filed Dec. 6, 1973, Ser. No. 422,437
Int. Cl. B62d *53/12*
U.S. Cl. 280—434 **6 Claims**

1. In a fifth wheel:

first half means for affixing to a first vehicle and having an opening therein to receive a king pin affixed to a second vehicle to be coupled to the first vehicle, said first half means having structure for receiving said king pin in said opening due to relative vertical translation therebetween for effecting coupling engagement between said king pin and said first half means to restrain relative horizontal translation therebetween;
bolt means for movement into said opening in said first half after the king pin has been received therein for locking the king pin to said first half means against vertical movement;
means for biasing said bolt means into said opening in said first half and into locking engagement with the king pin as received in said opening in said first half;
latch means for preventing the biased return of said bolt means after said bolt means has been withdrawn from locking engagement with the king pin;

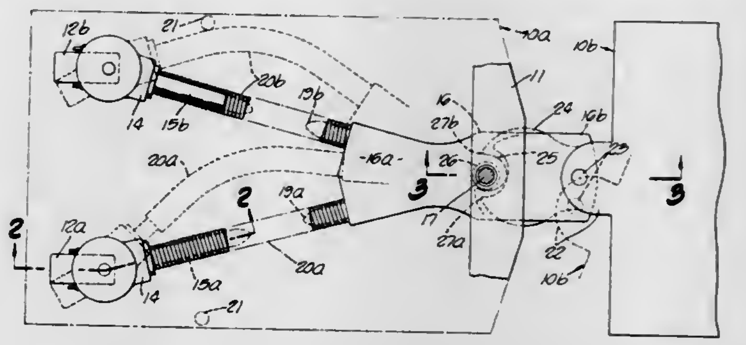


trigger means for disposition in a first position for triggering engagement with the king pin upon entry of the king pin into locking position in said opening in said first half means for triggering release of said latch means due to said relative vertical translation and allowing said bias means to move said bolt means into locking engagement with the king pin to lock the king pin to said first half, said trigger means adapted for disposition in a second position for non-triggering engagement with an unlocked but previously locked king pin disposed in the locking position; and
second bias means for biasing said trigger means into said second position of non-triggering engagement with the previously locked king pin after said bolt means has been withdrawn from locking engagement with the king pin and for automatically urging said trigger means into said first triggering position, upon withdrawal of the previously locked king pin, such that said trigger is positioned for triggering engagement with the next king pin to enter the locking position in said opening in said first half means.

3,863,953
INDUSTRIAL TRAILER STEERING MECHANISM

David F. Jorgensen, 1616 Huntington Dr., South Pasadena, Calif. 91030
Filed Oct. 5, 1973, Ser. No. 404,109
Int. Cl. B62d *13/04*
U.S. Cl. 280—444 **19 Claims**

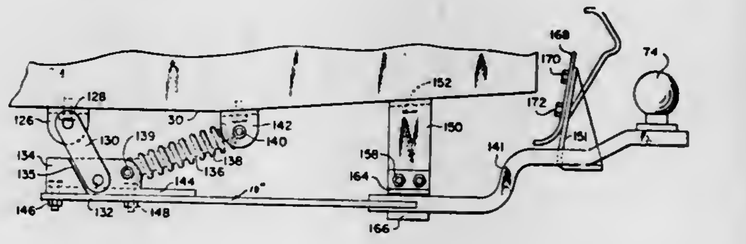
1. A trailer vehicle for coupling connection with a pulling vehicle of a trackless train, comprising:
a. a generally rectangular platform;
b. individually supported wheel assemblies at the rear corners of said platform pivoted for swinging movement on a vertical axis;
c. a pulling tongue at the forward end of said platform pivoted between its forward end and rear end for lateral swinging movements; and
d. means interconnecting the rear end of said tongue respectively with each of the wheel assemblies for imparting



guiding swinging movements thereto in response to lateral pivotal movements of the forward end of said tongue, said means comprising a resilient member extending between the rear end of said tongue and each of said wheel assemblies.

3,863,954
LOAD DAMPING FRAME HITCH FOR VEHICLES TOWING A TRAILER

John C. Abromavage, 1437 E. Westleyan Dr., Tempe, Ariz. 85282, and James W. Ryden, 3143 W. Stella Ln., Phoenix, Ariz. 85017
Division of Ser. No. 384,764, Aug. 1, 1973,. This application June 3, 1974, Ser. No. 476,008
Int. Cl. B60d *1/16*
U.S. Cl. 280—476 **3 Claims**



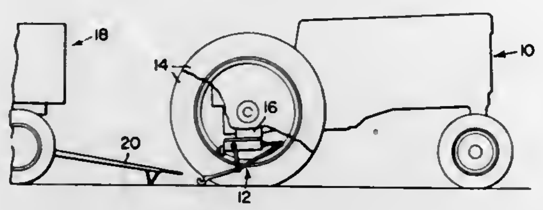
1. A vehicle frame hitch of the type used for hitching and pulling trailers comprising:
- A. a hitch platform movably attached at its forward end to the vehicle frame and slidably supported by brackets extending downwardly from the vehicle frame and bumper;
- B. a hitch ball secured to the rear end of said hitch platform;
- C. a bumper adapter bracket secured to the vehicle bumper and slidably engaging said hitch platform; and
- D. tension means connected between the forward end of said hitch platform and brackets secured to the vehicle frame rearwardly of said forward end.

3,863,955
PICK-UP-TYPE DRAWBAR ASSEMBLY

Ludwig Muncke, Morlenbach; Gerhard Gross, Wiesental, and Josef Buchmuller, Mannheim, all of Germany, assignors to Deere & Company, Moline, Ill.
Continuation of Ser. No. 66,977, Aug. 26, 1970, abandoned. This application May 7, 1973, Ser. No. 357,865
Int. Cl. B60d *1/04*
U.S. Cl. 280—479 A **17 Claims**

1. A drawbar assembly in combination with a tractor having a normal direction of travel, comprising: a drawbar extending in the normal direction of travel; vehicle hitch-engaging means carried by said drawbar; connecting means securing said drawbar to said tractor for movement between first and second positions wherein said hitch-engaging means is respectively disposed in a raised towing condition and a lowered

vehicle hitch-engaging condition, said second position being located downwardly and rearwardly from said first position; said connecting means including means for constrainingly guiding said hitch-engaging means along a smooth arcuate path which is concave, as viewed facing the rear of the tractor, and curves downwardly and rearwardly from the first to the second position of the hitch-engaging means and power means for moving said drawbar between its first and second positions.



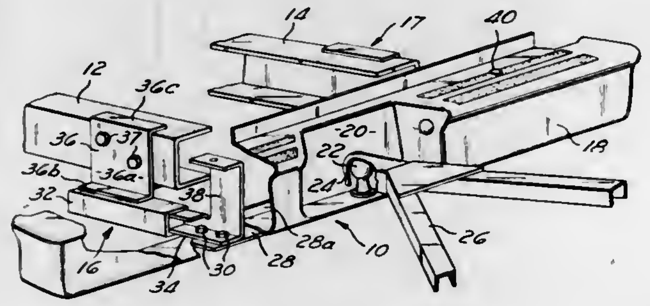
3,863,956
SHOCK ABSORBING BUMPER AND HITCH

Shahid R. Khan, Urbana, Ill., assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Feb. 28, 1974, Ser. No. 446,600

Int. Cl. B60d *3/00*

U.S. Cl. 280—483 **12 Claims**



1. A shock absorbing bumper unit for trailer hitches comprising a bumper with a towing-connector member fixed at the center thereof, bracket means for mounting said bumper on a vehicle frame, said bumper including draw bar means for transmitting forces between said towing-connector member and said bracket means, said bracket means comprising a pair of female bracket elements fixed to the frame rails at each side of said vehicle frame and a pair of male bracket elements fixed to said draw bar means on each side of said towing-connector member and partially penetrating said female bracket elements, draw rod means tied to each of said female bracket elements and extending from the tie point through the penetrating end of said male bracket element and lengthwise thereof to a rod end provided with sleeve retainer means, first resilient sleeve means surrounding said rod between said tie point and said penetrating end, second resilient sleeve means surrounding said rod between said penetrating end engaging opposite ends of said first and second sleeve means whereby, during the course of towing, the bumper together with the male bracket elements on each side thereof move back and forth with respect to the female bracket elements and the vehicle frame, alternately compressing the first and second resilient sleeve means associated with the bracket means at each side of the bumper.

3,863,957
BOOK SECTION

William C. Heller, Jr., 1840 N. Farwell Ave., Milwaukee, Wis. 53202, and Leonard Shatzkin, Croton-On-Hudson, N.Y., assignors to said Heller, by said Shatzkin

Division of Ser. No. 74,270, Sept. 22, 1970, Pat. No. 3,730,805. This application Feb. 26, 1973, Ser. No. 335,486

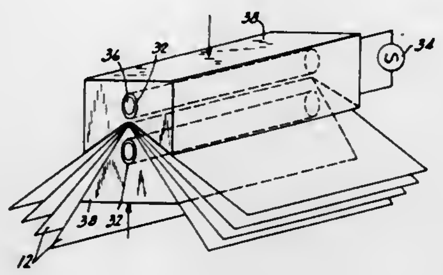
Int. Cl. B42d *1/00*

U.S. Cl. 281—27 **8 Claims**

1. A book signature comprising:

a plurality of paper leaves having abutting portions containing aligned holes;

a plurality of strands of thread having dispersed therein a gamma Fe_2O_3 particulate susceptor heatable upon exposure to an alternating magnetic field, said strands being formed into leaf joining stitches running through said holes and along the abutting portions of said leaves; and a bonding agent of thermally responsive adhesiveness fusing said strands together and to adjacent areas of said abutting portions.



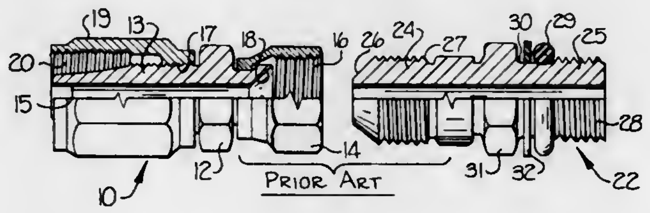
3,863,958
UNIVERSAL HOSE COUPLING

William H. Todd, P.O. Box 12488, Winston-Salem, N.C. 27107

Filed May 2, 1973, Ser. No. 356,409

Int. Cl. F16l *25/00*

U.S. Cl. 285—12 **10 Claims**



1. A hose coupling adapted to be fixedly connected to one end of a hydraulic hose or the like and characterized by the ability to sealably receive dissimilar externally threaded male fittings for connecting the coupling and associated hose to various external components, said hose coupling comprising

a nipple comprising a cylindrical stem portion adapted to be inserted into the end of the hose, an integral head portion, and a tubular bore extending coaxially through said stem portion and said head portion, said tubular bore including a first portion extending substantially through said stem portion,

a second internally threaded portion of a diameter larger than said first portion and extending substantially through said head portion,

a frusto-conical portion interconnecting said first portion and said second portion to define a first outwardly facing sealing surface, and

an entry end portion communicating with said second portion and defining a second outwardly facing sealing surface, and

means for securing an end of the hose coaxially about said stem portion, whereby either an externally threaded male fitting having a conically tapered forward end conforming to the taper of said first sealing surface, or an externally threaded male fitting having an external O-ring which is adapted to sealably engage said second sealing surface, may be sealably received in said coupling.

3,863,959
PIPE CONNECTION

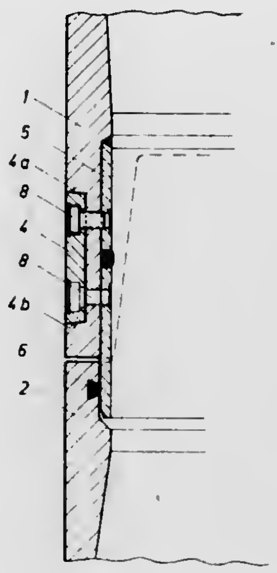
Kurt Karl Blaschke, Liesbeth-Dill-Strasse 21, 6602 Dudweiler/Saar, Germany

Filed Mar. 5, 1973, Ser. No. 338,304

Claims priority, application Germany, Mar. 7, 1972, 2210980

Int. Cl. F16l *55/00*

U.S. Cl. 285—24 **7 Claims**



1. A releasable pipe connection for axially and rotationally connecting adjoining pipe sections, such as sections of boring pipe and the like, comprising in combination:

two axially adjoining pipe end portions, each having a plurality of regularly spaced axial teeth with matching axial recesses therebetween for receiving therein the axial teeth of the other pipe end portion, the mating teeth thus defining an axially overlapping portion between the two pipe end portions, the pipe wall in said overlapping portion being thus alternatingly part of one or the other of the two pipe end portions;

an annular groove on the outer side of the pipe wall in said overlapping portion of the two pipe end portions, said groove having a substantially cylindrical bottom surface and outwardly extending axial flanks which are thus alternatingly part of one or the other of the two pipe end portions; and

a split spring ring received within said annular groove, the spring ring having opposite axial end faces abutting against said flanks of the annular groove; and wherein:

one of the two axial end faces of the spring ring and its associated abutting groove flank define a surface orientation which converges with the surface orientation of the other axial end face and associated abutting groove flank in a shallow, self-locking taper, the angle of taper being smaller than the angle of friction obtaining between said abutting surfaces of the spring ring and of the annular groove, so as to permit the creation of an axial preload between the adjoining pipe end portions, through radial pressure applied to the spring ring, while avoiding any taper-induced radial force reaction on the spring ring, when the pipe connection is subjected to an axial load.

3,863,960
DEVICE FOR TUBE FITTINGS

Rune Sigvard Andersson, Berchshill, Ossjo 43, S-262 00 Angelholm, Sweden

Filed Nov. 26, 1973, Ser. No. 419,118

Claims priority, application Sweden, Dec. 1, 1972, 15664/72; Apr. 30, 1973, 7306053

Int. Cl. F16l *35/00*

U.S. Cl. 285—39 **6 Claims**

1. The combination of a fitting and sealing element for fitting a branch pipe to an opening in a structure, comprising:

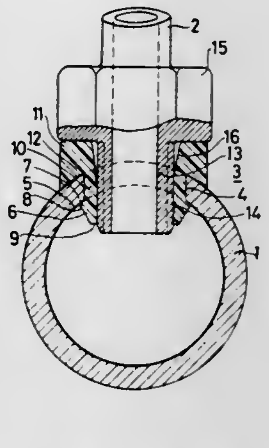
a structure having inner and outer surfaces with an opening passing therethrough;

a generally tubular sealing element of resilient material having axially spaced circumferential shoulder rings;

a generally cylindrical fitting having an externally threaded portion of an outer diameter greater than the internal diameter of said tubular sealing element and an external annular shoulder adjacent one end of said threaded portion;

said sealing element extending through said opening with its circumferential shoulder rings respectively abutting the inner and outer surfaces of said structure around said opening, said fitting being threaded through said sealing element with its annular shoulder abutting one of said circumferential shoulder rings; and

that portion of said fitting and sealing elements, radially inwardly of said one shoulder ring, being radially spaced and free of threaded engagement with each other whereby further rotation of said fitting axially compresses said sealing member and urges said shoulder rings axially toward each other into firm sealing engagement with said inner and outer surfaces of said structure.



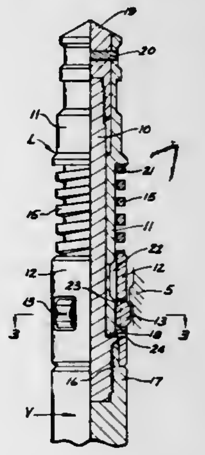
3,863,961
LATCHING DEVICE

Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Company, Inc., Houston, Tex.

Filed Dec. 13, 1973, Ser. No. 424,368

Int. Cl. F16l *55/00*

U.S. Cl. 285—39 **11 Claims**



1. Latching apparatus for selectively locking and releasing a well tool in and from a tubular receiver comprising: a well tool and a tubular receiver, said tubular receiver having an internally projecting shoulder;

stem means connected to said well tool;

body means surrounding said stem means for limited axial movement relative thereto and having an external annular recess thereon;

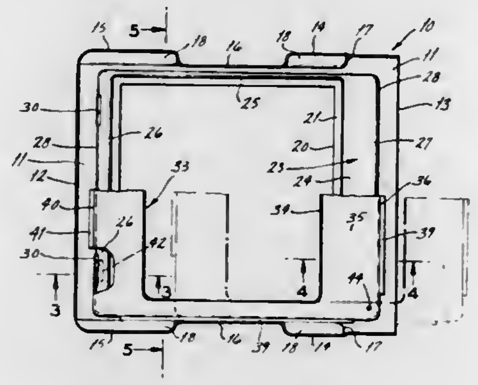
sleeve means surrounding said body means for limited axial movement relative to said stem means and having radial apertures therethrough;

latch means carried in said sleeve means apertures for movement between retracted positions within said apertures and extended positions in which portions of said latch means project out of said aperture means for engagement with said receiver shoulder; and

biasing means engaging and biasing said sleeve means toward a first position in which said latch means is locked in said extended position, said biasing means being capable of being overcome by an axial force applied to said latching apparatus upon movement of said apparatus into said receiver thereby allowing said sleeve means to move to a second position in which said latch means is in registration with said body recess permitting retraction of said latch means and passage of said latch means by said receiver shoulder, said biasing means forcing said sleeve means to return to said first position upon said passage by said receiver shoulder, said body means forcing said latch means into said extended positions locking said well tool in said tubular receiver.

3,863,962
SLIDE-ON BASE-TO-PLENUM ASSEMBLY

DeWayne James Thomas, Belleville, Ill., assignor to Intertherm, Inc., St. Louis, Mo.
Filed Nov. 21, 1973, Ser. No. 417,942
Int. Cl. F16l , *37/26*
U.S. Cl. 285—325 **4 Claims**



1. For installing counterflow furnaces and like air-delivery appliances connectable through a floor to a sub-floor air duct, a slide-on base-to-plenum assembly comprising

a floor plate having

central window means to make a plenum connection to such sub-floor air duct,

an outer planar plate portion, and

a raised bead portion, outwardly of the window means and having at its outer side a line of juncture with the planar plate portion,

said bead portion having skid parts flanking said window means and extending aft therebeyond to an aft lateral bead part, and

slot means extending forward through said aft lateral bead part at its said line of juncture and located laterally inward of said skid parts, in combination with

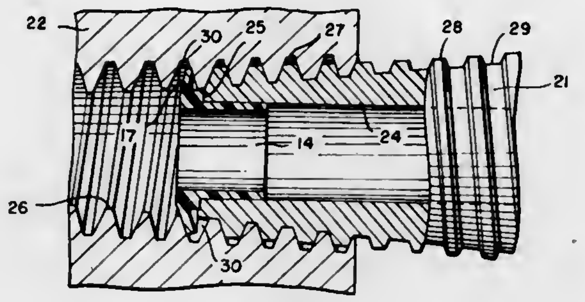
an appliance base structure comprising a normally horizontal centrally windowed rectangular frame-like member terminating downwardly in a planar lower edge, whereby to seal against the planar plate portion of the floor plate, said planar lower edge including an aft edge portion, whereby to bear on said bead skid parts during aft movement along said floor plate to an installed position and in said position to seal along said line of juncture,

said aft edge portion having forward turned tab means, presented aft of the slot means when the base structure is pushed aft of such installed position, to engage the said slot means on forward movement to such installed position,

whereby, after such engagement, such appliance may be securely attached to such floor by securement at its forward side only.

3,863,963
CHIP-RETAINING BUSHING FOR THREADED ASSEMBLY

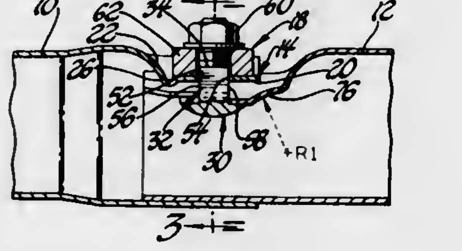
Gerald Hershey, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Oct. 23, 1973, Ser. No. 408,492
Int. Cl. F16l *25/00*
U.S. Cl. 285—334 **9 Claims**



6. In combination, an internally threaded female member, an externally threaded tubular male member threadedly engaged with the female member, the male member having a cylindrical central bore, and a bushing mounted on the male member, the bushing including a cylindrical rear end portion frictionally retained in the bore of the male member, a radially enlarged intermediate portion extending outwardly from the cylindrical end portion to provide an annular stop shoulder engaging the end of the male member, and a frusto-conical flexible and resilient flange portion extending outwardly from the forward end of the bushing and rearwardly toward the cylindrical rear end portion, the diameter of the outer periphery of the flange portion being greater than the minor diameter of at least some of the threads of the female member, the flange engaging the threads of the female member as the male member is threaded into the female member, the forward end of the flange portion being spaced forwardly from the stop shoulder whereby a chip-retaining pocket is formed between the forward end of the male member and the flange portion.

3,863,964
PIPE JOINT WITH IMPROVED FASTENER ASSEMBLY

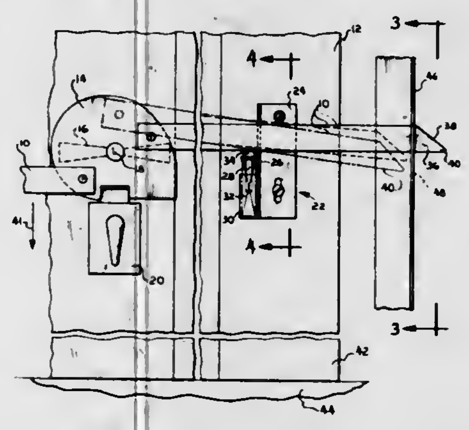
Thomas R. Cassel, 226 Shirley, Birmingham, Mich. 48009
Filed Dec. 16, 1971, Ser. No. 208,591
Int. Cl. F16l *19/00*
U.S. Cl. 285—382 **6 Claims**



1. In a pipe coupling of the type which comprises an inner pipe and outer pipe each having inward deformations adjacent one end, an opening in each of said deformations, a bolt having a head inside the outer pipe and a shank extending outwardly through the opening in the outer pipe, the opening in the inner pipe being a slot extending to the end of the inner pipe to permit insertion of the inner pipe into the outer pipe when the slot is aligned with the bolt, the end of the inner pipe extending into the end of the outer pipe with the deformations in nested relation, a spacer disposed outside the outer pipe with the shank of the bolt extending through an opening in the spacer and a nut threadedly engaging said shank outwardly of said spacer, whereby, upon tightening of the nut, the end of the outer pipe is stretched around the end of the inner pipe in close fitting engagement therewith, the insertion of the inner pipe into the outer pipe being facilitated by the improvement comprising: said shank of the bolt and the wall of the outer pipe surrounding the opening therein constituting an interference fit whereby the head of the bolt is retained in spaced relation to the wall of the outer pipe when the force urging the shank through the opening in the outer pipe is less than a predetermined value thereby permitting the inner pipe to be slidably inserted into the outer pipe with the head of the bolt being spaced inwardly of the inner pipe, said interference fit being yieldable when the nut is tightened to urge said shank through said opening in the outer pipe with a force greater than said predetermined value whereby the head of the bolt is drawn into engagement with the inner pipe and said deformations are drawn together to stretch the outer pipe about the inner pipe.

3,863,965
GARAGE DOOR LOCK

William S. Vickers, 1186 Jericho Rd., Abington, Pa. 19001
Filed June 20, 1973, Ser. No. 371,862
Int. Cl. E05c *5/00*
U.S. Cl. 292—66 **3 Claims**

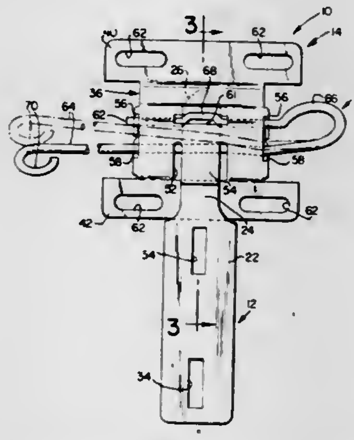


1. A lock for securing a garage door or like closure in a closed position with an edge of the door in flush engagement against a movable sill or like surface, where the lock includes a locking bar having a nose at the free end thereof, means for extending the bar so that the nose moves toward one side of the door, and a fixed keeper located at such side of the door and having a bar-engaging surface facing the sill so that upon closing of the door on the sill, extension of the bar moves the nose toward the keeper to engage the surface and lock the door against movement away from the sill; the improvement comprising a bar guide on the door adjacent the fixed keeper, the guide including a bar guide surface facing the sill and engagable with a side of the bar facing away from the sill and means biasing the bar toward the guide surface to hold such side of the bar normally against the bar guide surface while permitting movement of the bar from such surface toward the sill, whereby, depending upon the position of the sill relative to the fixed keeper, extension of the bar to position the free end in engagement with the bar-engaging surface may move the bar from the bar guide surface against the action of said means.

3,863,966
CATCH ASSEMBLY

Gunnar E. Swanson, Middletown, Conn., assignor to The Nielsen Hardware Corporation, Hartford, Conn.
Filed Apr. 9, 1973, Ser. No. 349,264
Int. Cl. E05c *19/06*
U.S. Cl. 292—87 **31 Claims**

1. A catch assembly for releasably connecting two members separable in generally opposite directions and comprising a strike unit, and a catch unit for releasable connection with said strike unit, said strike unit having a mounting portion for attachment to one of said members and an elongated shank upwardly projecting from said mounting portion, said shank having a leading end portion at the upper end thereof and a latch engaging portion below said leading end portion, said latch engaging portion defining a generally upwardly facing cam surface and a generally downwardly facing abutment surface thereon, said catch unit having a body including a base portion for attachment to the other of said members and one wall projecting forwardly of said base portion, said one wall having a generally upwardly facing bearing surface inclined generally forwardly and upwardly from said base portion and a generally downwardly opening aperture therethrough substantially larger than said leading end portion for receiving said shank therethrough when said strike unit is in connected position with said catch unit, a latch element supported on said body above said one wall for movement relative thereto between latching and releasing positions and including an operating portion for manual manipulation to move said latch element from its latching position to a releasing position, said latch element in its latching position having a part thereof disposed in the path of said cam surface for engagement therewith to move said latch element to a releasing position in response to movement of said shank upwardly into and through said aperture and toward said connected position, said part extending across said aperture between said abutment surface and said bearing surface when said strike unit is in its connected position and said latch element is in its latching position and being engageable with said abutment surface to positively retain said strike unit in connected relation with said catch unit, means for biasing said latch element toward its latching position, first guide means on said body defining a guide surface at the forward end of said aperture extending downwardly for some distance below said forward end for cooperating with one part of said shank to position said shank and maintain it in a generally predetermined path relative to said body during movement thereof upwardly toward and through said aperture and toward said connected position, and second guide means on said body and spaced upwardly from said one wall and said latch element for cooperating with another part of said shank to maintain said shank in substantially fixed position relative to said body in said connected position and to maintain said shank in said predetermined path during movement thereof away from said connected position and toward disengagement from said catch unit.



3,863,967
DOOR STOP

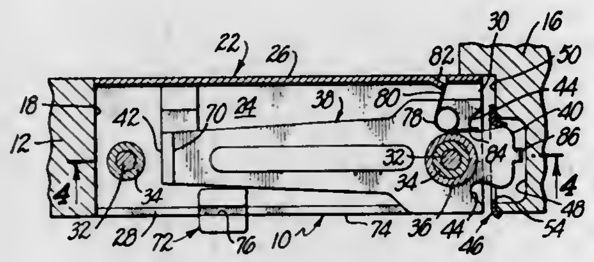
Vernon J. Carrier, 9166 Cerrites No. 19, Anaheim, Calif. 92804
Filed May 14, 1973, Ser. No. 359,999
Int. Cl. E05c *3/96*
U.S. Cl. 292—198 **10 Claims**

1. The combination of a door pivotally mounted on a door jamb so as to be capable of being moved between a closed position extending across said door jamb and an open position extending away from said door jamb in which the improvement comprises:

an arm pivotally mounted intermediate its ends on said door so as to be capable of being rotated between a first position and a second position relative to said door, said arm having a jamb engaging end and a wall engaging end,

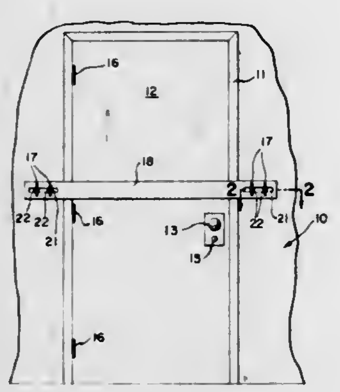
said wall engaging end extending away from said door when said arm is in said second positiion, said wall engaging end being positioned adjacent to said door when said arm is in said first position,

said jamb engaging end being capable of engaging said jamb when said door is moved from said closed position so as to rotate said arm from said first position to said second position when said door is in said open position and said jamb engaging end being capable of engaging said jamb when said door is moved from said open position into said closed position so as to rotate said arm from said second position to said first position, so that said arm is in said first position when said door is in said closed position, and latch means for holding said arm against rotation so as to preclude rotation of said jamb engaging end out of engagement with said jamb, said latch means being movably mounted on said door so as to be capable of being moved to a position in which it physically blocks rotation of said arm from said first position.



3,863,968
SECURITY DEVICE FOR A DOOR

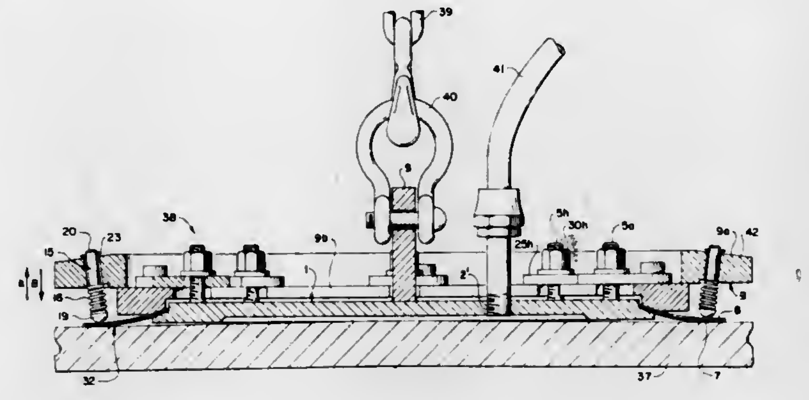
Myron B. Fraser, 816 E. 21 St., Oakland, Calif. 94606
Filed Oct. 25, 1973, Ser. No. 409,609
Int. Cl. E05c *15/00*
U.S. Cl. 292—260 **6 Claims**



1. In combination with a room wall having inner frame members, a door frame defining an access opening in said wall, and a door for said opening hingedly supported along one edge thereof and equipped with a handle along its opposite edge, the improvement comprising: holding element substantially encircling an inner frame member adjacent the door frame in a manner to shear the inner frame member by movement of said holding element in the direction in which the door swings open; locking means fixed to said holding element and extending through the inside surface of said wall; and security element having high tensile and shear strength, said security element being releasably fastened at one end to said locking means being disposed in bridging relation with the handle-equipped edge of the door, and being secured adjacent its opposite end portion in such bridging relation.

3,863,969
VACUUM LIFTER

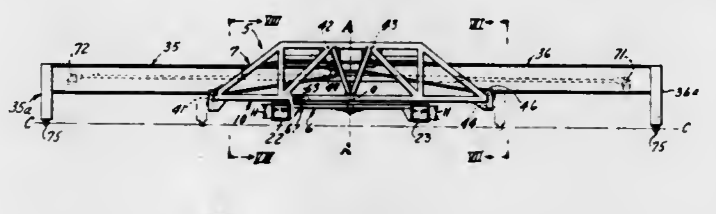
Richard B. Weiss, Lower Burrel, Pa., and D. Marshall Fox, South Barwon, Australia, assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Nov. 1, 1973, Ser. No. 411,717
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **9 Claims**



1. A vacuum lifter comprising a cup including a bottom wall and a lip, a sealing ring, means for holding an edge of the sealing ring hermetically against the lip, a plurality of radial segment means arranged free of restraint from one another, and spring means, independent of said radial segment means, for biasing said radial segment means individually in the direction from the bottom wall toward the lip against the sealing ring outside of said edge, the radial segment means distributing force exerted by the spring means uniformly onto the sealing ring, the radial segment means being able to deflect in the direction from the lip toward the bottom wall against the spring means biasing.

3,863,970
FORK TRUCK SPREADER FOR CARGO CONTAINERS

Carl R. Gottlieb, Mobile, Ala., and Jack E. Fathauer, Roxboro, N.C., assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed July 26, 1973, Ser. No. 382,869
Int. Cl. B66f *9/00*
U.S. Cl. 294—67 DA **12 Claims**



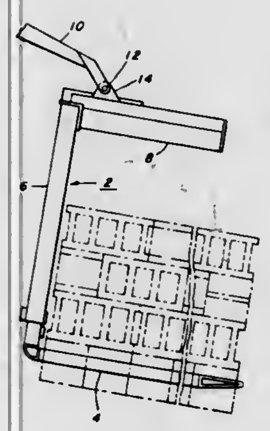
1. A cargo container spreader for a carrier having cantilever spreader-supporting means extending horizontally outwardly from the carrier comprising:

a platform frame comprising channel means for receiving said carrier supporting means in guide relation therewith, said platform frame having upward facing bearing means; a skew frame arranged in overlying crosswise relation with the platform frame and having downward facing bearing means received by and resting on said upward facing bearing means, said bearing means being arranged in concentric relation with a normally vertical axis of rotation located centrally of both frames, said frames being connected for relative rotation about said axis;

said skew frame being of generally horizontally rectangular configuration and having means at the four corners thereof extending to the level below said platform frame and terminating in latching means for interlocking with a cargo container.

3,863,971
ADJUSTABLE SUPPORT FOR A MATERIAL HANDLING FORK

Charles D. Meads, Hellam, Pa., and Paul R. Hefler, Alger, Ohio, assignors to Dico Company, Inc., York, Pa.
Filed Nov. 12, 1973, Ser. No. 414,675
Int. Cl. B66c *1/22*
U.S. Cl. 294—67 AA **5 Claims**



1. Apparatus for shifting the point of support of a material handling fork having a substantially horizontal upper frame and substantially horizontal tines suspended from the upper frame, so as to balance the fork from a lift means when handling various loads, which apparatus comprises:

a. substantially horizontal guide means attached to the upper frame;

b. a trolley member adapted to be suspended from the lift means, and to fit and travel on the guide means, so that the trolley member is movable along the length of the guide means, and capable of supporting the guide means at any point along said length; and

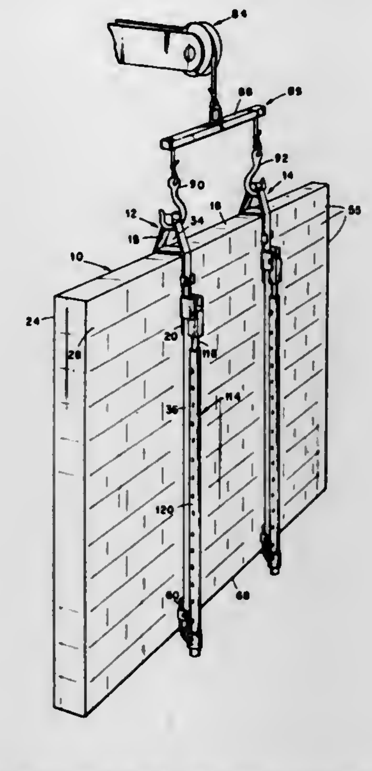
c. activating means mounted on the upper frame and operatively connected to the trolley for selectively positioning the trolley at any point along the length of the guide means.

3,863,972
SYSTEM FOR LIFTING AND HANDLING PANELS

Paul M. Thomas, 6306 Mockingbird Ln., Paradise Valley, Ariz. 85253
Division of Ser. No. 254,662, May 18, 1972, Pat. No. 3,765,543. This application May 14, 1973, Ser. No. 360,196
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 **3 Claims**

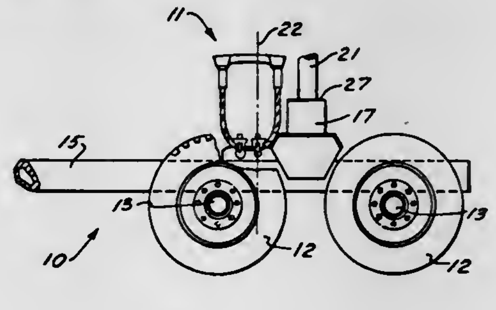
1. In an apparatus for handling a panel in an upright position the combination comprising

bifurcated yoke means disposed on the top edge of said panel and defining an opening for receipt of lift means, said yoke means including leg portions thereof lying along opposite sides of said panel and a cross member extending between and connecting said leg means to one another and overlying the top edge of said panel, bracket means disposed on the bottom edge of said panel, and band means encircling said panel and engaging said yoke means and said bracket means to releasably secure said yoke and bracket means to said panel.



3,863,973
POLE TRAILER LIFTING ATTACHMENT

Dennis Roger Ross, Box 397, Lumby, British Columbia, Canada
Filed Oct. 19, 1973, Ser. No. 407,945
Int. Cl. B66c *1/20*
U.S. Cl. 294—74 **3 Claims**



1. A lifting attachment for pole trailers having a transverse load bearing bunk including:

a. a length of springy wire rope bent into a U-shape configuration so as to have a bight and straight parallel legs,

b. an elongated rigid bridging piece rigidly connected at its ends to the free ends of the legs, for restraining the length of rope in said U-shaped configuration,

c. means engageable with the rope bight for securing the rope to the trailer near the center of gravity of the latter, and below the bunk, in a normal upright position with the bridging piece uppermost,

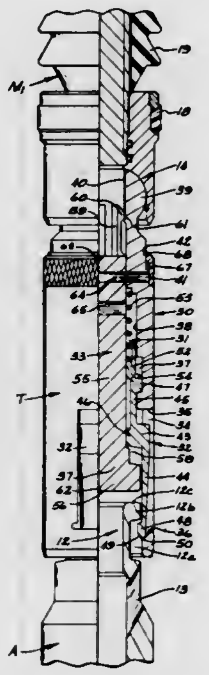
d. length of the legs being such that the bridging piece extends above the trailer bunk when the rope is in its normal upright position so as to enable the bridging piece to be engaged by a lifting device.

3,863,974
WELL TOOL APPARATUS

Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Company, Inc., Houston, Tex.
Filed June 27, 1973, Ser. No. 373,956
Int. Cl. E21b *31/02*
U.S. Cl. 294—86.3 **15 Claims**

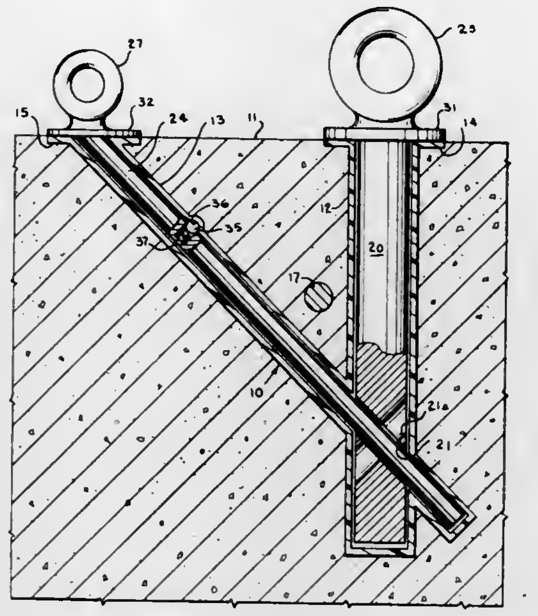
1. Well tool apparatus for selective engagement with and disengagement from a well device comprising:

a. tubular body means having radial windows therein;
b. a plurality of latches carried by said body means for radial movement in said windows between retracted positions, engaging said well device, and extended positions, disengaging said well device;
c. cam means carried by said body means and axially movable relative thereto to effect movement of said latches between said retracted and extended positions; and
d. cooperable retainer means comprising retractable and expandable collet means, carried by one of said body means and said cam means, engageable with corresponding groove means carried by the other, permitting said axial movement of said cam means in response to a predetermined axial force applied thereto, said retainer means also comprising a frangible member connecting said body means and said cam means, said member being frangible in response to an axial force greater than said predetermined axial force to release said cam means for response to said predetermined axial force and operation of said collet means.

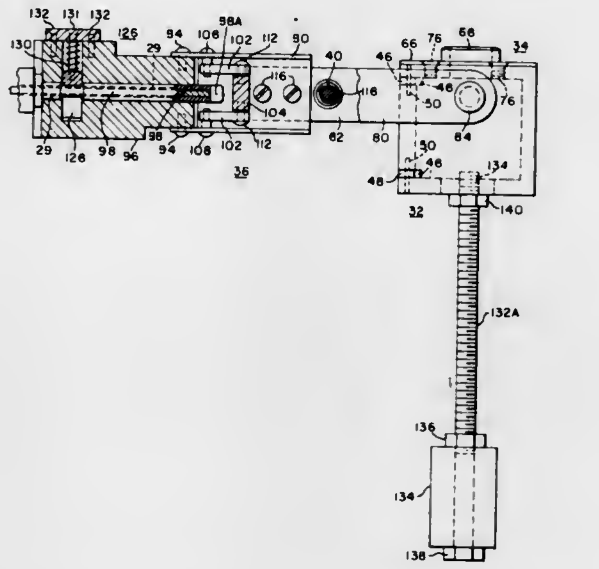


3,863,975
APPARATUS FOR LIFTING HEAVY OBJECTS
Alvin B. Oldenettel, 3500 Red Bluff Rd., Apt. 61, Pasadena, Tex. 77503
Continuation-in-part of Ser. No. 150,008, June 4, 1971, abandoned. This application Jan. 23, 1973, Ser. No. 326,090
Int. Cl. B66c ***1/66***
U.S. Cl. 294—89 **7 Claims**

1. Apparatus for use in lifting objects of the type which are poured and set, comprising body means having first and second passages and designed for imbedding in an object which is poured and set, said second passage intersecting said first passage intermediate the length of said first passage, lift rod means insertable into said first passage and having a pair of crossed angular bores therethrough, each selectively alignable with said second passage and having connection means at its outer end, lock rod means having connection means at its outer end and being freely insertable into said second passage and into one of said crossed angular bores of said lift rod means to prevent removal of said lift rod means from said first passage, cooperating latch means on said lock rod means and in said second passage for positively retaining said lock rod means in said second passage whereby said lock rod means will not fall out of said second passage even though said object is rotated or inverted and whereby when said body means is imbedded within said object poured and set therearound with the rod-receiving ends of said first and second passages open exterior of the object said cooperating latch means comprising a spring-biased ball detent means disposed in a cavity in said lock rod means and a recess disposed in the wall of said second passage for receiving said ball detent means and said rods are inserted and said lock rod means is latched in place as described, said lifting rod may be employed in lifting the object.

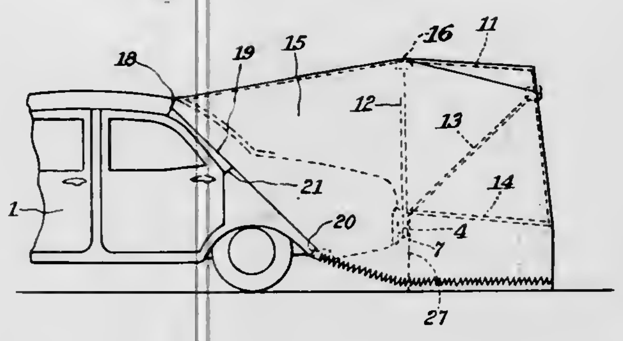


3,863,976
REMOTELY OPERABLE EXPLOSIVE PLUG INSERTION TOOL
Emil P. Loch, Tampa, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 12, 1973, Ser. No. 331,459
Int. Cl. B25b ***5/12***
U.S. Cl. 294—97 **7 Claims**



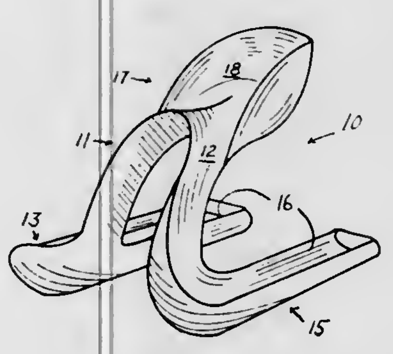
1. An expansion clamp tool for carrying and inserting an explosive plug having an internal opening therein, said expansion clamp tool comprising:
a movable clamp support;
a movable clamp mounted on said clamp support;
means for moving said clamp support from a first open position to a second closed position, said movable clamp support being pivotally attached to said means; and,
means for biasing said clamp support toward the first open position, said clamp being insertable into said opening in said plug when said clamp support is in the second closed position, said clamp support responding to said bias means to return to said first open position to permit said clamp to hold said plug from within said internal opening.

3,863,977
VEHICLE SUPPORTED COLLAPSIBLE SHELTER
Arthur D. Hardinge, Scarborough, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 9, 1973, Ser. No. 331,285
Int. Cl. B60p ***3/34***
U.S. Cl. 296—23 MC **5 Claims**



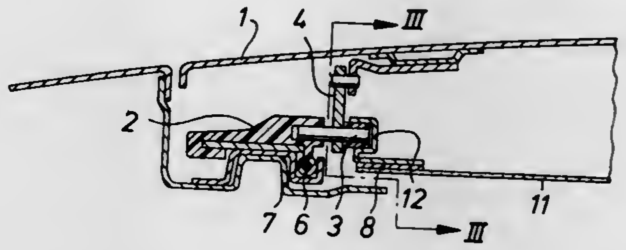
1. A collapsible shelter adapted to be supported by a motor vehicle having a rear bumper and a rear roof edge, said shelter comprising
a plurality of brackets removably affixed to a vehicle, some of the brackets being affixed to the rear bumper and some of the brackets being affixed to the rear roof edge;
a first plurality of support members removably affixed to the brackets and a second plurality of support members affixed to the first plurality of support members and to each other and independent from the ground on which the vehicle rests to form a framework over part of the vehicle and an area of ground behind the vehicle; and
covering material removably affixed to the support members for enclosing the area bordered by the framework and the vehicle, said material extending substantially to the ground in the area of ground.

3,863,978
KNEE-CHAIR
Peter Richard Gillings, Jr., Box 1193, Claremont, N.H. 03743
Filed Apr. 17, 1973, Ser. No. 352,075
Int. Cl. B62j ***1/00***
U.S. Cl. 296—63 **6 Claims**



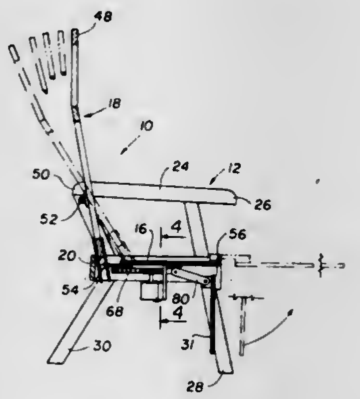
1. A structure for supporting the human body with the trunk and torso generally upright comprising a first section having a saddle-shaped surface upon which the buttocks may rest with the thighs downwardly straddling the saddle-shaped surface and including downwardly and forwardly extending concave surfaces which merge smoothly with a second section, said second section including rearwardly facing upright concave surfaces to restrain the respective knees against forward motion only, and a third section merging smoothly with said second section having means to support the respective legs from below in a substantially horizontal position.

3,863,979
AUTOMOBILE SLIDING ROOF WITH CANOPY FRAME
Horst Bienert, Max-Klingerstr. 15, 8035 Gauting, Germany
Filed Mar. 22, 1973, Ser. No. 343,878
Claims priority, application Austria, Mar. 31, 1972, 82828/72
Int. Cl. B60j ***7/04***
U.S. Cl. 296—137 E **7 Claims**



1. A sliding roof structure for automobiles and the like, comprising in combination:
a fixed roof structure having a substantially rectangular, vertical opening therein;
a generally horizontal, movable sliding roof panel matching the outline of the roof opening to serve as a closure element therefor;
means for operating the sliding roof panel by lowering its rear portion out of the roof opening and then retracting the panel rearwardly under the fixed roof structure, and reversely, by advancing the panel to a position half-way in and half-way below the roof opening and then raising its rear portion into the opening so as to close the roof;
means for horizontally guiding the sliding roof panel against the roof structure during its retracting and advancing motions; and
a canopy frame mounted underneath the sliding roof panel, the front portion of the canopy frame being attached to the forward end portion of the panel, the rear portion being vertically movable relative to the panel;
the canopy frame including connecting means between it and the panel guide means for vertically constraining the canopy frame rear portion relative to the panel guide means, while permitting relative horizontal displacement there between.

3,863,980
GERIATRIC CHAIR
Elliot Ciner, 520 E. 21st St., Brooklyn, N.Y. 11226
Filed June 15, 1973, Ser. No. 370,229
Int. Cl. A47c ***1/02, 1/06***
U.S. Cl. 297—69 **4 Claims**

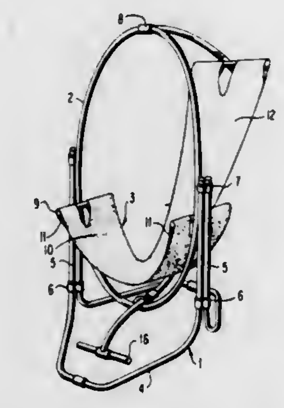


1. A geriatric chair comprising a pair of facing vertically oriented arm rests bounding a seat compartment therebetween, each arm rest having a horizontally oriented support with front and rear end portions extending the depth of said seat compartment so as to be respectively located adjacent the front and rear of said chair, a seat support in said seat compartment, a seat slidably disposed on said seat support having a first operative position of movement located rearwardly in

said seat compartment adapted for sitting service of said chair and having a second operative position of movement located forwardly in said seat compartment adapted for facilitating rising from said seat by shifting the weight of the user to said chair front and between said front end portions of the supports of said arm rests, a seat-holding means for holding said seat in said first and second positions of movement, a backrest pivotally mounted adjacent the rear end portions of the supports of said arm rests and having a lower edge thereon in pushing engagement with said seat, whereby actuating said backrest through a pivotal traverse provides a selected one of said first and second positions of movement of said seat which is best adapted for either sitting in or rising from the seat of said chair, a foot-supporting panel mounted along the front of said seat for pivotal movement independently of said sliding movement of said seat, and drive means including a rack and pinion operatively arranged in meshing engagement with each other with an extent of frictional resistance against movement to normally hold said foot-supporting panel in its pivotal positions of movement supported in depending relation along the undersurface of said seat operatively connected to urge said foot-supporting panel through pivotal traverses relative to said seat.

3,863,981
CHAIR

Edward R. Doyle, 8733 N. 33rd St., Tampa, Fla. 33604
Filed Mar. 12, 1973, Ser. No. 340,457
Int. Cl. A47c *3/00*
U.S. Cl. 297—278 **10 Claims**

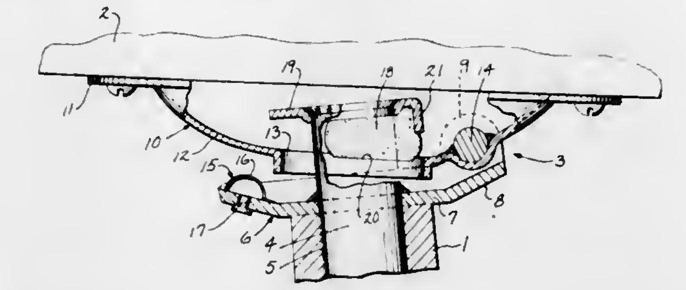


1. A chair comprising a stand forming a base and including upright side portions on opposite sides of the chair, a frame extending transversely of the chair and having opposite sides mounted on the upright side portions of the base for supporting a seat portion thereabove, a support arm extending transversely of the frame between the upright side portions and upwardly behind the seat, means for adjustably connecting the support arm adjacent one end portion thereof with the frame for tilting movement of the support arm relative thereto, means for adjustably locking the support arm in a tilted position with respect to the frame, and means connected to the support arm for receiving pressure from the feet of an occupant of the chair to release the support arm from the locking means and to reengage the support arm with the locking means subsequent to adjustment of the tilting of the support arm.

3,863,982
TILT-SWIVEL MECHANISM FOR A CHAIR

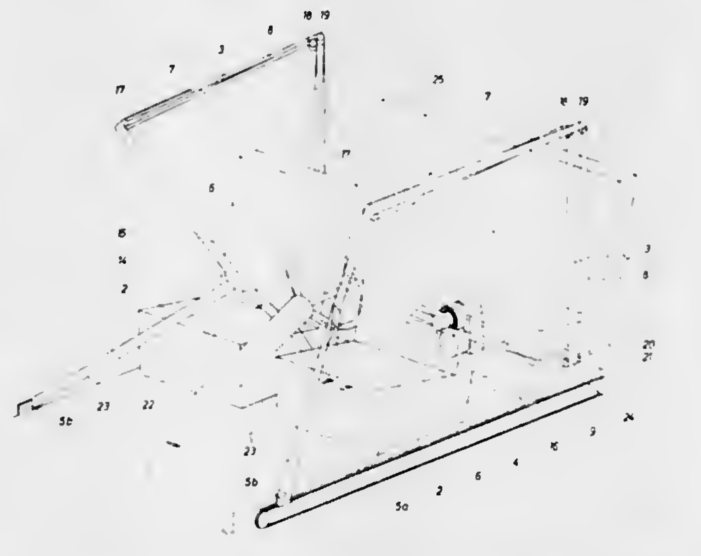
Edwin C. Sandham, Thiensville, Wis., assignor to EST Company Incorporated, Grafton, Wis.
Filed Feb. 5, 1973, Ser. No. 329,525
Int. Cl. A47c *3/00*
U.S. Cl. 297—302 **6 Claims**

1. A tilt-swivel mechanism for a chair to enable the seat of the chair to swivel as well as tilt to the rear, comprising a supporting structure, a vertical shaft journaled for rotation about its axis with respect to said supporting structure, a mounting plate secured to said shaft and spaced below the upper end of the shaft, an upper dish-shaped annular support member located above said mounting plate, a chair seat secured to said upper support member, said upper support member having a peripheral portion secured to said chair seat and having a central body portion extending downwardly from said peripheral portion and terminating in a generally flat bottom surface spaced beneath said chair seat, said bottom surface having a single operative opening to receive said shaft, hinge means for hinging the upper support member to said mounting plate to enable the upper support member and said chair seat to tilt to the rear, abutment means secured to the upper end of the shaft and located above the bottom surface of said upper support member, and resilient means disposed and held between said abutment means and the bottom surface of said upper support member whereby said resilient means is concealed by said dish-shaped support member, rearward tilting of said chair seat acting to pivot said bottom surface upwardly and compress said resilient means against said abutment means to cushion the tilting action.



3,863,983
SEAT BELT SYSTEM

Alfred Wriedt, Friedrichshulderweg 186, 2083 Halstenbek, Germany
Filed Apr. 18, 1973, Ser. No. 352,354
Int. Cl. A47c *31/00;* **A47d** *15/00*
U.S. Cl. 297—388 **5 Claims**



1. Apparatus for holding and releasing the occupant of a passenger vehicle in and from a seat therein independently of manual assistance from the occupant, said apparatus comprising,

a pelvic strap connected to and extending between an inner point of attachment to the lower structure of the vehicle near its longitudinal centerline and on one side of the occupant's place and outer point of attachment to the lower structure of the vehicle on the other side of the occupant's place to provide a bight in said strap for passing over the pelvic region of a seat occupant and for holding the pelvic region of the occupant on the base and against the back rest of the seat,

said outer point of attachment to which said pelvic strap is connected being movable fore and aft of the vehicle from an aft position for holding the bight of said pelvic strap in a restraining relationship with a chair seat occupant to a forward position permitting unobstructed access to and from the chair seat on the side of said movable point of attachment,

a shoulder strap and associated winching means attached to the structure of the vehicle,

a releasing strap and associated winching means attached to the structure of the vehicle,

guide means for guiding and positioning said shoulder strap and said releasing strap during operation of the apparatus, said guide means comprising a forward guide device attached to the upper vehicle structure forward of the seat and an after guide device attached to the upper vehicle structure behind the seat,

said shoulder strap being connected to the bight of said pelvic strap at a point intermediate its ends and extending therefrom to and being guided by said guide means and thence to said associated winching means for guiding, positioning and tensioning said shoulder strap to and between a restraining and a releasing relationship with a seat occupant upon retraction and extension, respectively, of said associated winching means,

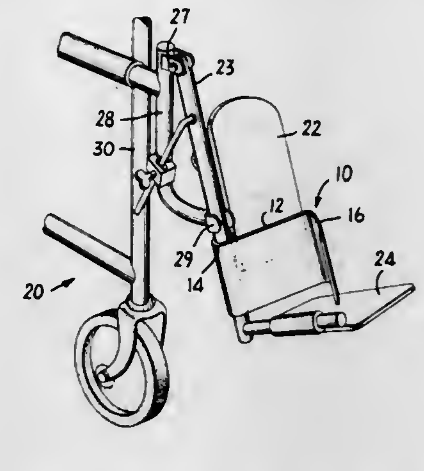
said releasing strap being connected to said shoulder strap at a point intermediate its ends and extending therefrom to and being guided by said guide means and thence to said associated winching means for guiding, positioning and tensioning said releasing strap to and between positions for lowering said shoulder strap into its restraining relationship with a seat occupant upon extension of said releasing strap winch and for lifting said shoulder strap into its releasing relationship with a seat occupant upon retraction of said releasing strap winch,

said shoulder and said releasing strap being operatively related to said guide means whereby said shoulder strap in its restraining relationship with a seat occupant extends from said pelvic strap across the upper torso of the seat occupant to its said after guide device and to its associated winching means and said releasing strap extends from said shoulder strap over said after guide device forward to said forward guide device and thence rearward to said after guide device and to its associated winching means, and whereby said shoulder strap in its releasing relationship with a seat occupant is lifted from the upper torso of the seat occupant and its point of attachment with said releasing strap is carried up to and over said forward guide device by retraction of said releasing strap, means to move said movable point of attachment to which said pelvic strap is connected, the operation of said means and said winching means associated with said shoulder strap and with said releasing strap being coordinated so that said movable point of attachment of said pelvic strap moves forward and said shoulder strap loosens and said releasing strap lifts said shoulder strap forward and away from a chair seat occupant to provide unobstructed access to and from said chair seat, and so that said movable point of attachment of said pelvic strap moves aft and said shoulder strap tightens and said releasing strap allows said shoulder strap to tighten into a restraining relationship with said chair seat occupant.

3,863,984
LEG-SUPPORTING AND-RETAINING DEVICE ATTACHABLE TO AN ELEVATABLE LEGREST OF A WHEEL CHAIR

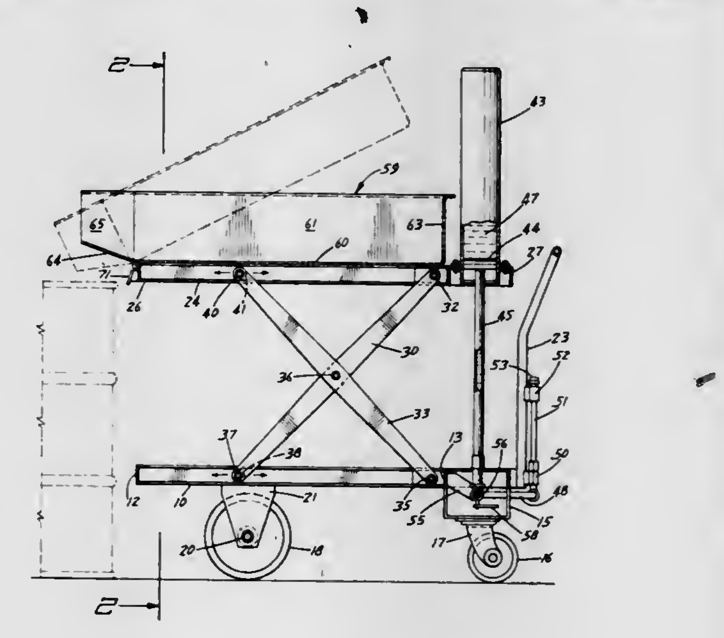
Nancy E. Sickels, 408 N. Midland Ave., Nyack, N.Y. 10960
Filed Dec. 1, 1972, Ser. No. 311,360
Int. Cl. A47c *7/50*
U.S. Cl. 297—427 **11 Claims**

1. A device attachable to an elevatable legrest of a wheel chair for retaining the leg of a person sitting in the wheel chair upon the legrest comprising: a body portion; clamping means connected to said body portion for releasably clamping same to an elevatable legrest of a wheel chair during use of the device; and retaining means connected to said body portion for retaining the leg of a person sitting in the wheel chair upon the elevatable legrest by preventing lateral inward movement of the leg; the device being composed of a single sheet of resilient material configured at one end into said clamping means and configured at the other end into said retaining means; and wherein said clamping means comprises an arcuate end portion of said sheet and said retaining means comprises another arcuate end portion of said sheet and wherein said body portion is interposed between and interconnects said arcuate end portions; whereby the device prevents the person's leg from falling off the elevatable legrest.



3,863,985
OFFAL CART

Chauncey E. Zuber, c/o E. F. Zuber Engineering & Sales Co., 800 W. 79th St., Bloomington, Minn. 55420
Filed July 9, 1973, Ser. No. 377,637
Int. Cl. B62b *1/00*
U.S. Cl. 298—2 **11 Claims**



1. A cart for reception of offal from slaughtered livestock animals, which cart comprises:

A. a lower frame comprising at least a pair of parallel spaced apart longitudinal members interconnected by at least a pair of forward and rearward parallel spaced apart transverse members,

B. wheel means supporting said lower frame for movement,

C. an upper frame of construction corresponding to said lower frame and overlying said lower frame,

D. means for vertically raising and lowering said upper frame relative to said lower frame, and

F. an offal receiving tray supported on said upper frame, said offal receiving tray being open at one end and pivotally attached to said upper frame adjacent to that end.

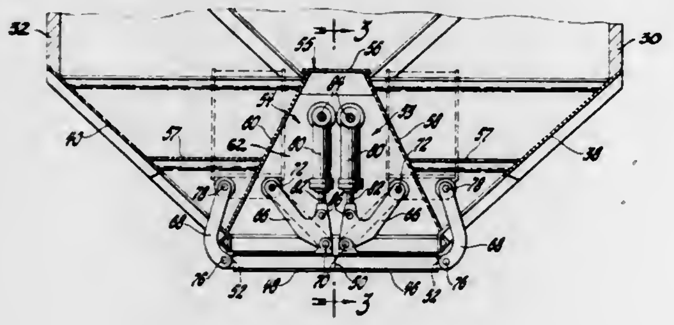
3,863,986
OPERATING LINKAGE FOR BOTTOM DUMP DOORS

Roland A. Mentessi, Parma, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,139

Int. Cl. B60p *1/56*

U.S. Cl. 298—35 M **2 Claims**



1. In a bottom dump vehicle having a trailing hopper provided with an elongated opening adapted to be opened and closed by a pair of longitudinal doors, a linkage for controlling movement of said doors between a first position wherein said doors are horizontally aligned to close said opening and a second position wherein said doors are shifted laterally outwardly to expose the opening and permit the contents within the hopper to be dropped by gravity, said linkage including a pair of hydraulic cylinders, each of said doors having an inner edge and an outer edge, said linkage for each of said doors comprising a first link member and a second link member, a first pivotal connection supporting one end of the first link member on said each of said doors at said inner edge, a second pivotal connection supporting one end of the second link member on said each of said doors at the outer edge thereof, the other ends of said first and second link members being connected respectively to said hopper by horizontally spaced third and fourth pivotal connections, one of said pair of hydraulic cylinders being connected to said each of said doors for moving said each of said doors between said first and second positions, said one of said pair of hydraulic cylinder having one end thereof connected to said first link member by a fifth pivotal connection and the other end connected to the hopper by a sixth pivotal connection, said pivotal connections being so arranged that when said each of said doors is in the first position a straight line passing through the centers of the fifth and sixth pivotal connections extends between the centers of the first and third pivotal connections of the first link member.

3,863,987
CONTROLLED IN SITU LEACHING OF ORE DEPOSITS UTILIZING PRE-SPLIT BLASTING

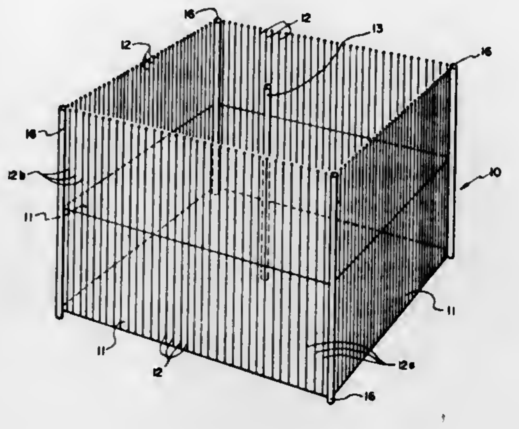
William J. Lampard, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 332,015

Int. Cl. E21b *43/28*

U.S. Cl. 299—4 **10 Claims**

1. A method of in-situ leaching of mineral deposits, comprising driving a series of pre-split blasting bore holes into or near an underground area to be leached for the recovery of mineral values therefrom; blasting a pre-split fracture along said series of bore holes to provide a barrier to fluid flow; injecting a leach solution into or near said area for diffusion through said area, said barrier limiting flow of said fluid; and recovering pregnant leach solution from parts of said area into which said pre-split fracture has directed the flow of solution.



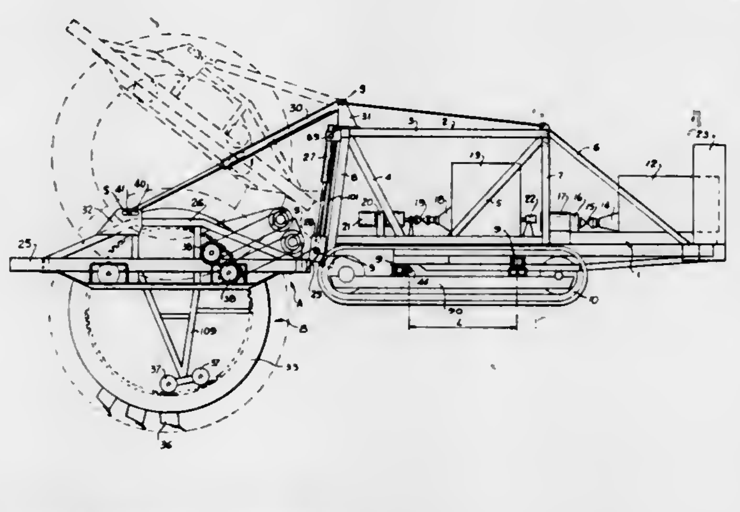
3,863,988
DITCHER FOR PERMAFROST

Fred Willie Bartels, Edmonton, Alberta, Canada, assignor to Banister Continental Ltd., Edmonton, Province of Alberta, Canada

Filed Mar. 20, 1973, Ser. No. 343,107

Int. Cl. E02f *5/08*

U.S. Cl. 299—25 **10 Claims**



1. In a ditcher comprising

a carrier having a main frame, extending substantially parallel to the ground surface, and an upstanding suspension frame rigidly secured to said main frame, and

a rigid wheel frame, supporting a rotatable ditching wheel, pivotally connected at its front end to the suspension frame and movable thereon between a lowered position and an elevated position, and

means for raising and lowering the wheel frame between said positions,

the improvement which comprises

a hold down hydraulic cylinder pivotally connected at its front end to the suspension frame for rotation about an axis substantially parallel to the plane of the main frame; means slidably connecting the rear end portion of the hold down cylinder with a portion of the wheel frame, said means comprising slide means, formed in one of the portions, having stop faces at each end of the slide means, and a connecting member joining the portions together, whereby the connecting member may move along the slide means between the limiting stop faces; and

means for controllably actuating the hold down hydraulic cylinder to expand or contract it.

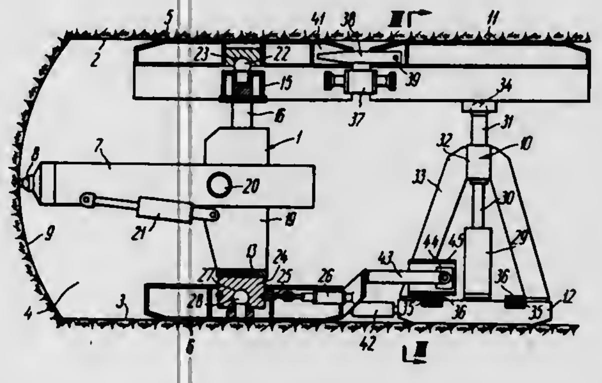
3,863,989
HARD-ROCK MINING MACHINE

Bogdan Vyacheslavovich Voitsekhovsky, ulitsa Ilicha 17, kv. 16; Valentin Pavlovich Nikolaev, ulitsa Pravdy 5a, kv. 21; Grigory Yankelevich Shoikhet, ulitsa Gerovetruda, 21, kv. 49; Leonid Alexeevich Mitin, ulitsa Akedemicheskaya, 2; Lidia Petrovna Dimova, ulitsa Maltseva, 1, kv. 8, and Vladimir Alexeevich Samusenko, ulitsa Pravdy, 1 kv. 34, all of Novosibirsk, U.S.S.R.

Filed Nov. 10, 1972, Ser. No. 305,509

Int. Cl. E21c *37/24*

U.S. Cl. 299—31 **4 Claims**



1. A hard-rock mining machine movable stepwise in a heading having a roof, a floor and a face to be worked, comprising a manipulator frame, said frame being provided with upper and lower support means thrustable against the roof and floor respectively, a horizontal shaft mounted in a middle section of the frame, a percussive means having an impact energy exceeding 10,000 kgm mounted on the horizontal shaft for working on the face of the heading, two vertical shafts positioned in the upper and lower portions of the frame, and complemental means on the upper and lower support means and the vertical shafts providing universal connections whereby the frame can rotate relative to the upper and lower support means around its vertical axis.

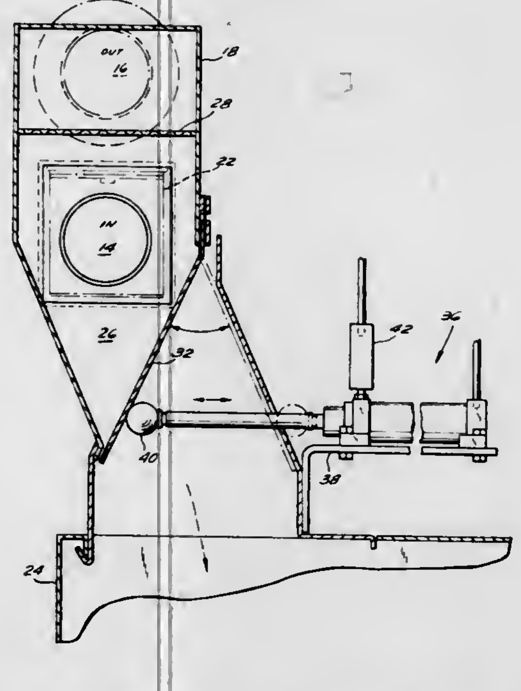
3,863,990
PNEUMATIC FEED SYSTEM HAVING A CALL-DUMP-FILL CYCLE

Francis J. Ballard, Jr., Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Oct. 17, 1972, Ser. No. 298,291

Int. Cl. B60t *8/00*

U.S. Cl. 302—28 **6 Claims**



1. A tobacco discharger for association with a cigarette making machine and an automatic tobacco conveying system which pneumatically conveys tobacco from a storage area to the discharger and ultimately to the associated cigarette making machine with the system including a main feed pipe for coupling with the source of the stored tobacco and the tobacco discharger, air differential pressure means for forcing air through the pipe at a predetermined conveying velocity, a tobacco feeder at the source of stored tobacco for feeding the tobacco into the main feed pipe, the tobacco discharger comprising:

a housing having an air inlet and means for coupling the air inlet with the main feed pipe, an air discharger and a tobacco discharge opening defined by an abutment closure surface,

tobacco separating means within the housing for separating tobacco carried by air entering the air inlet end, the tobacco separating means including a tobacco separating screen arranged within the housing intermediate the inlet and discharge,

valve means for stopping the flow of the air through the discharger,

door means forming part of the discharger housing and adapted to be shifted from a closed position during filling of the housing with tobacco and until such time as the separated tobacco is to be discharged into the associated cigarette making machine to an open position where the tobacco within the housing is discharged under the influence of gravity into the associated cigarette making machine, said door means being hingedly connected to said housing at said tobacco discharge opening and swingable through an arc downwardly to discharge the tobacco and upwardly into sealing engagement with said abutment closure surface on the housing, said abutment closure surface being in the path of said arc so that the door will seal the discharge opening, and

discharger door actuating means engaging said door means for moving the door means to a position slightly spaced from the abutment closure surface and holding said door means in said position after filling of the housing with tobacco and until such time as the cigarette machine signals a demand for tobacco, said actuating means then permitting the door means to open whereby the tobacco is discharged into the associated cigarette making machine, the actuating means being comprised of a cylinder assembly having a piston rod with a free end, means at the free end for sliding engagement with the surface of the door means for shifting the door means from an open position through a portion of said arc towards a closed position, the stroke of the piston rod being such that the door means is moved through only a portion of its arc to a position in spaced relation to said abutment closure surface whereby, upon application of pneumatic pressure in the system, said pressure causes the door means to swing through the remainder of said arc and upon deactivation of the pressure, the door means drops to the slightly spaced position and is retained at that position by the piston rod until tobacco is required by the cigarette making machine and then the piston rod is retracted to allow the door to open, said movement to a spaced position avoids damage to the door by the piston rod in that the rod does not drive the door into sealing relation and further avoids the necessity for critical adjustment of the operating stroke of the piston rod.

3,863,991
VEHICLE BRAKE SYSTEM

John F. Wilson, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

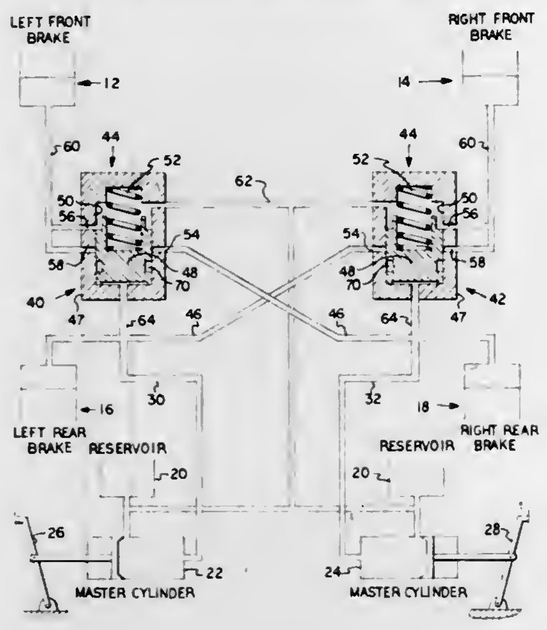
Filed Sept. 17, 1973, Ser. No. 398,202

Int. Cl. B60t *11/18*

U.S. Cl. 303—6 A **6 Claims**

1. In a braking system for a vehicle having left and right front brakes and left and right rear brakes, an actuating system for said brakes including a source of fluid, left and right individual actuating means cooperating with said source for re-

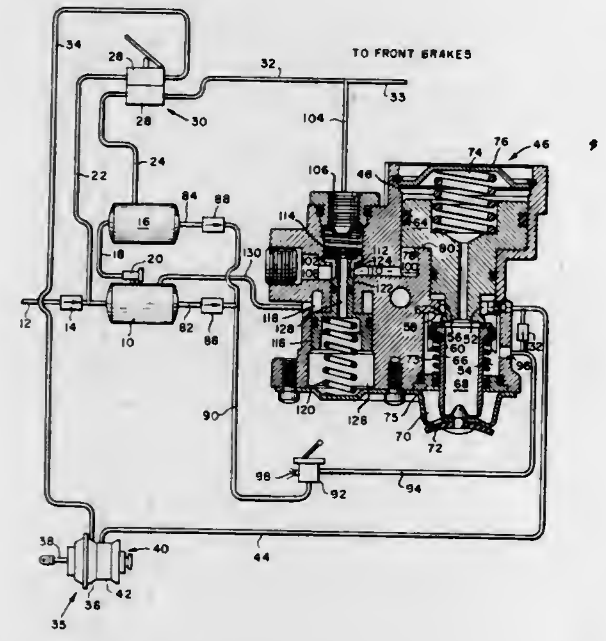
spectively supplying fluid under pressure to said left and right rear brakes, first and second actuators respectively cooperating with left and right actuating means for moving said actuating means between inoperative and operative positions, and means between said left and right actuating means and said front brakes, said last means including valve means between



said left and right actuating means and said left and right front brakes for (1) supplying fluid under pressure to said front brakes from said actuating means when both actuating means are in operative positions and (2) preventing actuation of said front brakes when either actuated means is in an inoperative position.

3,863,992
INVERTING LIMITING RELAY VALVE WITH INTERLOCK

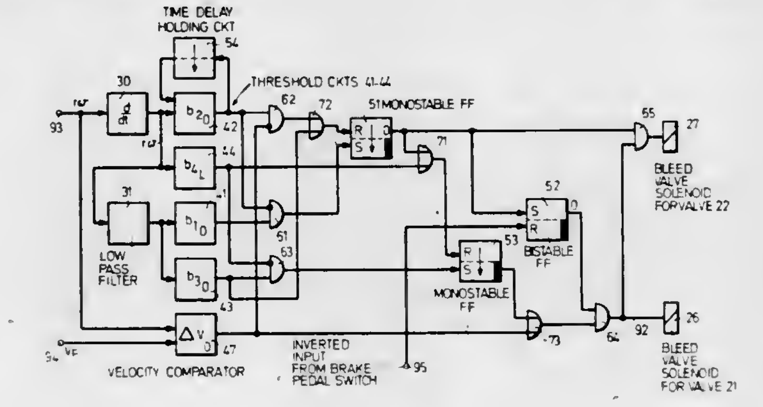
Edward J. Kurke, and Roy E. Bartholomew, both of Elyria, Ohio, assignors to The Bendix Corporation, South Bend, Ind.
Filed May 10, 1974, Ser. No. 468,835
Int. Cl. B60t *13/14, 15/12*
U.S. Cl. 303—9 **3 Claims**



1. For use in a fluid pressure braking system of the dual circuit type in which one circuit includes a spring applied fluid pressure released actuator, and a manually operable valve for controlling the application of fluid pressure to said circuits, the invention which comprises a first valve means movable to a first position to supply fluid pressure from a source to said actuator to move the latter to a brake released position and movable to a second position to release fluid pressure from said actuator, to graduate spring brake application thereof in accordance with fluid pressure supplied to said other circuit, and means controlled by fluid pressure from the source for positively preventing fluid pressure release operation of said valve means so long as the fluid pressure from the source is above a predetermined value, said means including a first pressure responsive member for moving said valve means, resilient means for actuating said member to move the valve means to said first position, said member having a motive area, a second valve means movable to a first position for normally connecting said motive area with the atmosphere, and movable to a second position to connect said motive area with the other circuit, and a second pressure responsive member axially aligned with said second valve means and movable in response to fluid pressure from said source to allow the second valve means to occupy its first position, the second pressure responsive member being spring-actuated to positively move the second valve member to its second position.

3,863,993
WHEEL BRAKING CONTROL SYSTEM

Helmut Fleischer, Schwieberdingen; Eberhard Schnaibel, Hemmingen; Werner Gotz, Friolzheim, and Wolfgang Maisch, Schwieberdingen, all of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany
Filed Sept. 13, 1972, Ser. No. 288,791
Claims priority, application Germany, Sept. 18, 1971, 2146825
Int. Cl. B60T *8/12*
U.S. Cl. 303—21 BE **61 Claims**



1. Vehicle wheel braking control system comprising

means (**20, 25*b*, 25*a*, 20*a***) supplying a brake fluid medium under pressure;

controllable brake pressure valve means (**21**) having a control winding (**26**) and applying pressurized brake fluid to a wheel brake cylinder (**23**);

controllable bleeder valve means (**22**) having a control winding (**27**) bleeding brake fluid from the wheel brake cylinder (**23**);

means (**93**) providing a signal ($r\omega$) representative of wheel speed;

differentiator means (**30, 230**) providing a differentiated signal ($r\omega$) representative of change of wheel speed;

a group of at least three threshold circuits (**41-44**) connected to the differentiator means (**30**), the first threshold circuit (**41**) responding to wheel deceleration above a predetermined first threshold level (b_1) corresponding to maximum wheel deceleration and being connected to open the bleeder valve means (**22**) and to close the pressure valve means (**21**) to effect a steep drop in brake fluid pressure applied to the wheel;

the second threshold circuit (**42**) responding to about **0** change in wheel speed (b_2) upon transition of wheel speed change from deceleration to acceleration and being connected to close the bleeder valve means (**22**) to effect termination of the steep drop in brake fluid pressure;

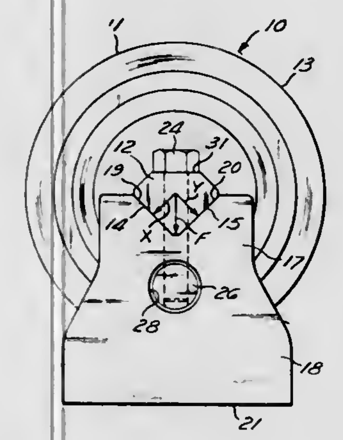
the third threshold circuit (**43**) responding to a first value of wheel acceleration (b_3) corresponding to wheel reacceleration and being connected to open the pressure valve means (**21**) to effect increase in brake fluid pressure applied to the wheel;

controlled connecting means (**65**) interlocked with a control connection (**92**) and interlocking the pressure brake valve winding (**26**) and the bleeder valve winding (**27**) to permit bleeding of brake fluid only if the brake pressure valve means (**21**) interrupts supply of pressurized brake fluid to the wheel brake cylinder (**23**);

and a low-pass filter (**31; 233, 234**) connected between the output of the differentiator means (**30, 230**) and the input of the first (**41, 241**) and the third (**43, 243**) threshold circuit, and filtering stray and noise signals from being applied to said first and third threshold circuits effecting steep drop in brake fluid pressure, or increase in brake fluid pressure, respectively.

3,863,994
BIDIRECTIONAL ROLLER CUTTER

Trevor Fink, University Heights, Ohio, assignor to Jarva Corporation, Solon, Ohio
Filed Sept. 24, 1973, Ser. No. 400,004
Int. Cl. E21c *13/12*
U.S. Cl. 308—8.2 **13 Claims**

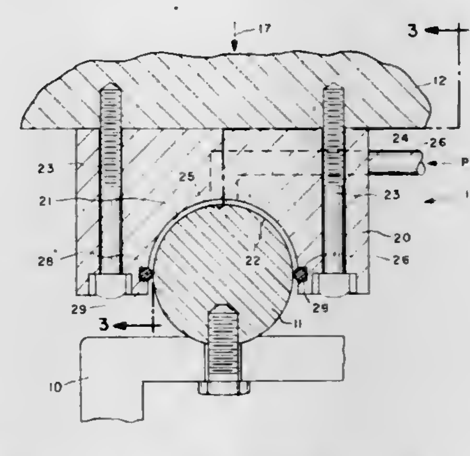


1. A roller cutter assembly comprising a cutter rotatably mounted on a shaft so that end portions of said shaft project from said cutter, each end portion having first and second flat angularly related faces, a generally U-shaped saddle having projecting arm portions mounting said shaft and having a mounting face adapted to be secured to a cutter head, at least one of said projecting arm portions having first and second flat faces which are non-parallel with respect to each other and with respect to said mounting face and which respectively engage the first and second angularly related faces of an end portion, means for clamping said angularly related faces to said flat faces with a clamping force have resultants normal to the engaged faces and on both sides of a plane perpendicular to said mounting face.

3,863,995
FLUID BEARING ASSEMBLY

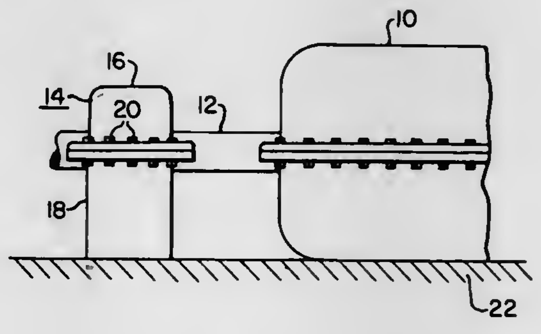
Cecil R. Jones, Orange, Conn., assignor to Transfer Systems Incorporated, North Haven, Conn.
Filed Oct. 23, 1973, Ser. No. 408,995
Int. Cl. F16c *29/02, 33/72*
U.S. Cl. 308—9 **7 Claims**

1. In combination with a machine having first and second parts movable relative to one another along confronting first and second bearing surfaces with the first of the movable parts exerting a load in a given direction including a component generally orthogonal to the confronting bearing surfaces and tending to increase the frictional forces resisting the movement at the first and second bearing surfaces, a fluid bearing comprising means on one of the parts providing a third bearing surface extending generally orthogonal to the load direction component and confronting the second bearing surface on the other of the parts, at least one opening in one of the second and third bearing surfaces, an annular sealmember mounted in one of the second and third bearing surfaces so as to protrude therefrom and surround said opening, means for furnishing pressurized fluid to the said opening, the location of the opening and the fluid pressure being such that the fluid exits from said opening and impinges on the confronting bearing surface in a direction so as to provide a fluid force substantially opposite to the load and tending to lift the load of the first part and thereby reduce the frictional forces at the first and second bearing surfaces, the seal member being located in a position to impede the flow of fluid between the second and third bearing surfaces.



3,863,996
VIBRATION DAMPER BEARING

Albert A. Raimondi, Monroevile, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 27, 1973, Ser. No. 374,179
Int. Cl. F16c *1/24;* F16c *7/04;* F16c *39/04*
U.S. Cl. 308—122 **5 Claims**



1. A damper bearing for a vibrating rotatable shaft having a journal portion thereon, said damper bearing comprising:

a bearing structure for rotatable supporting said journal portion of said shaft,

a support member surrounding said bearing structure,

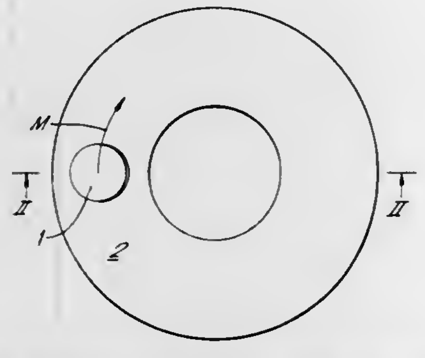
means for introducing a lubricating fluid into said bearing structure, said lubricating fluid forming a hydrodynamic film about said journal to support said shaft when said shaft is rotating, said hydrodynamic film having a predetermined pressure existing therein when said shaft is rotating, and,

damping means disposed between said bearing structure and said support member, said damping means comprising

- a predetermined plurality of cavities disposed equiangularly about the surface of said bearing structure, said cavities being adjacent to said support member,
- means for conducting said fluid from said film to said cavities, and,
- flow restrictor means disposed within said conducting means, said flow restrictor means lowering the pressure of the lubricating fluid conducted to said cavities,
- said fluid conducted into said cavities being disposed in a layer between said bearing structure and said support structure to absorb and to dampen vibrations transmitted to said bearing structure by said shaft when said shaft is rotating.

3,863,997
CONICAL BEARINGS

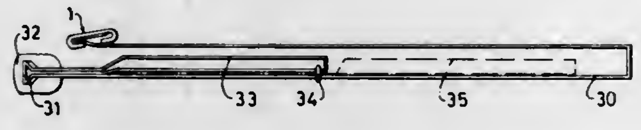
Anthony Roger Davis, Cirencester, England, assignor to Vickers Limited, London, England
Filed Aug. 21, 1973, Ser. No. 389,630
Claims priority, application Great Britain, Aug. 26, 1972, 39868/72
Int. Cl. F16c *17/06, 17/08, 23/04*
U.S. Cl. 308—160 **1 Claim**



1. A bearing that includes an axial piston swash plate having pivoted slipper pads, and a swash plate having a thrust face on the pads run in operation, the surface of each pad that runs on the thrust face being substantially flat and the thrust face being of conical form generated from a centre about which the motion of each pad is substantially circular and so as to be convex with respect to the substantially flat running surfaces of the pads.

3,863,998
DOCUMENT FILES, FOLDER, REGISTERS AND THE LIKE

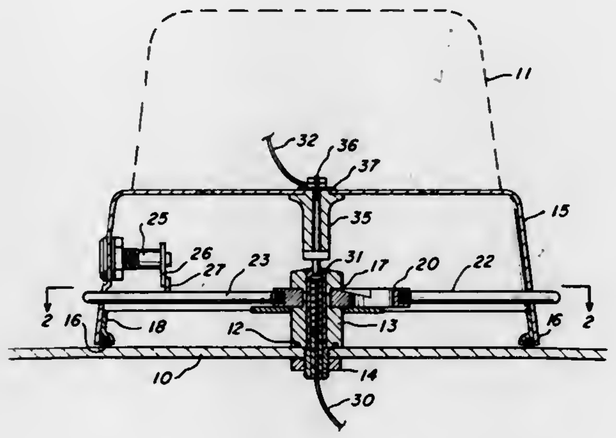
Carl-Erik Grundell, Osogatan 8, 122 48 Enskede, Sweden
Filed Sept. 25, 1973, Ser. No. 400,509
Claims priority, application Sweden, Sept. 25, 1972, 12369/72
Int. Cl. A47f *3/14*
U.S. Cl. 312—184 **6 Claims**



1. A register comprising in combination a substantially flat preferably rectangular base member, movable members such as strips, slideably arranged relative thereto, said base member comprising a sheet member, made from relatively thin but stiff as cardboard, said sheet member having two opposite ends thereof folded to generate anchoring means, a profile having a substantially planar web portion, first and second abutment portions extending substantially perpendicular to said web portion and first and second guiding portions extending from said abutment portions and directed towards each other and substantially parallel to said web portion such that a longitudinal channel is formed in the profile with said channel having an extension parallel to the plane of said web portion which considerably exceeds the extension in a direction perpendicular to said web portion, the extension of said guiding portions being such that a longitudinal groove communicating with said channel is generated, the folded anchoring portions of said base member having an extension which substantially corresponds to the corresponding portions of said channel, said anchoring portions being sideways introduced in said channel with said folded portions located in said channel such that the main portion of said base member will first substantially follow one of said guiding portions, then pass through said slot and finally extend substantially parallel to said web portion of said profile thereby generating a support for said movable members as well as together with said other guiding portions of said profile resilient guides for the ends of said movable members.

3,863,999
DETACHABLE WARNING LIGHT

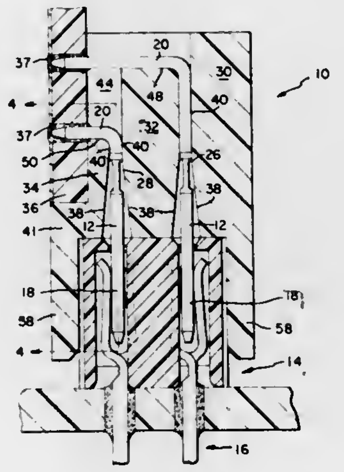
Philip O. Muller, 13005 James Ave., South, Burnsville, Minn. 55337
Filed Dec. 26, 1973, Ser. No. 427,820
Int. Cl. H01r *13/54*
U.S. Cl. 339—10 **10 Claims**



1. Apparatus for attaching an electrical appliance to a surface for subsequent convenient removal, comprising:
A. an insulated post attached to said surface and having an internal axially aligned electrical conductor and a shoulder;
B. an appliance mounting base having a mounting hole sized larger than said post and fitting over said post, said mounting base having a bearing surface extending near said shoulder;
C. a slidable wedge block movable on said bearing surface and having a wedge incline for contacting said shoulder for transmitting a locking force from said shoulder to said bearing surface;
D. a quick-disconnect electrical coupling attached to said mounting base at a position to contact said post internal electrical conductor when said mounting base is positioned over said insulated post.

3,864,000
MATING CONTACT CONNECTOR HOUSING ASSEMBLY

James Ray Coller, Mechanicsburg, and Robert Franklin Cobaugh, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed June 7, 1973, Ser. No. 367,926
Int. Cl. H01r *21/28*
U.S. Cl. 339—64 M **3 Claims**

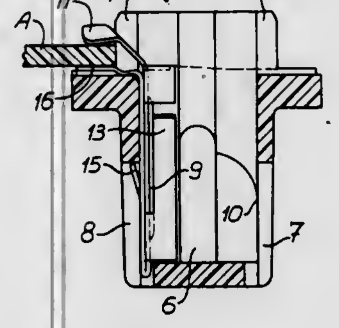


1. An electrical connnector having a plurality of electrical terminals mounted in rows within a housing of dielectric material, comprising:
first and second rows of apertures in said housing receiving said terminals,

said housing having a first end portion and a second end portion,
each aperture having a relatively large first portion extending through said first end portion of said housing and an adjacent relatively narrow second portion extending through said second end portion of said housing,
each terminal having a relatively enlarged wide portion received in a corresponding first portion of a corresponding aperture and protruding from said first end portion of said housing,
each terminal having a relatively narrow portion received in a corresponding second portion of a corresponding aperture,
said housing defining a seating portion between the first and second portions of each aperture,
each terminal engaging and seating against a corresponding seating portion,
said housing second end portion defining first and second anvil surfaces,
said first row of terminals having the second portions thereof extended outwardly of said first row of apertures and bent to overlie against said first anvil surface and to project outwardly of said housing, and
said second row of terminals having said second portions thereof extended outwardly of said second row of apertures and bent to overlie against said second anvil surface and to project outwardly of said housing.

3,864,001
LAMP SOCKET

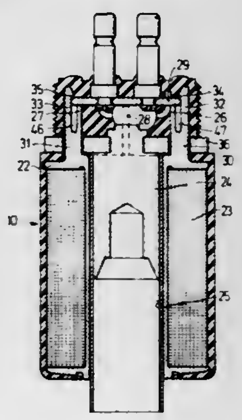
Jean Joseph Millet, Besancon, France, assignor to S.O.C.O.P. S.A., Besancon, France
Filed Oct. 18, 1973, Ser. No. 407,673
Claims priority, application France, Nov. 3, 1972, 72.39059
Int. Cl. H01r *13/46*
U.S. Cl. 339—127 **4 Claims**



1. Miniature lampholder, comprising a socket for mounting a miniature lamp having a stem, means on the socket for mounting it in an aperture of a plate, and at least two contact means for detachably mounting the lamp in the aperture and electrically connecting conductors on the lamp stem to plate conductors, each contact means comprising a spring strip folded into the general configuration of a flattened V having inner and outer sides and free end parts thereof, the sides of each V being located in a peripheral recess in the socket and the free end parts being bent externally of the recess to form a bayonet for gripping the plate and making electrical connection with a plate conductor.

3,864,002
CONNECTION DEVICE FOR AN ELECTRICAL APPARATUS

Joachim Naser, Nurnberg; Fritz Horn, Lichtenau; Ludwig Specknew, Nurnberg; Theo Sturm, Neukirchen; Olaf Schmid, Schwabach; Erich Ebenhoh, Ansbach, and Karl Berthel, Roth, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 25, 1973, Ser. No. 409,501
Claims priority, application Germany, Oct. 25, 1972, 2252167
Int. Cl. H01r *3/00*
U.S. Cl. 339—147 R **4 Claims**



1. A connection device for at least one operating winding of an electrical apparatus such as an electromagnet, said connection device having at least two terminal connections connected to said winding, carrying at least two contact pins, and having the improvement that:
said device includes a copper-clad conducting pattern plate (**29**) to which said contact pins (**16, 17**) are fastened;
said terminal connections of said winding (**23**), said contact pins (**16, 17**) and said electric circuit components (42,43) are connected with said conducting pattern plate (**29**);
said conducting pattern plate (**29**) rests against at least two supports (**26,27,28**) connected to a carrier body (**22**) for said operating winding (**23**) and is held in place by at least two resilient catches extending from said carrier body (22);
said conducting pattern plate is oriented perpendicular to the axis of said winding (**23**) near one end thereof and is at least approximately centered on said axis;
said supports and said resilient catches are separately constituted to the extent necessary to assure that displacement of said catches produced by seating said pattern plate does not produce any substantial displacement of said respective catches, and
said resilient catches are collectively surrounded by a protective collar of insulating material coaxial with said winding.

3,864,003
LOCK NUT COOPERABLE WITH ELECTRICAL TERMINAL BLOCK

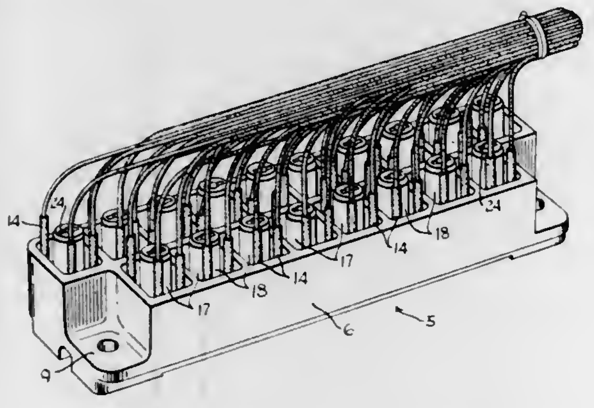
Artur Oloy Boke, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed June 18, 1973, Ser. No. 370,684
Claims priority, application Sweden, June 26, 1972, 8375/72
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 R **4 Claims**

1. Terminal means for electrical conductors having eyelet connectors on their end portions and by which the eyelet connectors can be fixed in good electrical and mechanical connection with one another, said terminal means comprising:
A. a terminal body member of insulating material having a base wall;

B. a screw member fixed to said base wall and having a threaded shaft projecting upwardly therefrom;

C. said terminal body member having other wall portions projecting upwardly from said base wall to near the top of said shaft, said other wall portions surrounding the shaft all around the same and in close proximity thereto and joining one another at corners in which can be received portions of conductor wires that have their eyelet connectors around the shaft and adjacent to the base wall; and

D. means for maintaining good electrical connection between the screw shaft and eyelet connectors around it while securely but removably holding the eyelet connectors in place adjacent to the base wall, for confining in said corners the conductor wires that are connected to said eyelet connectors, and for electrically insulating the screw shaft and the eyelet connectors while leaving said shaft accessible to a test prod, said means comprising



1. a substantially tubular member of rigid but deformable insulating material, substantially longer than the screw shaft, said tubular member having a substantially cylindrical external surface of a diameter to be closely receivable between said other wall portions and having a bore extending through the entire length thereof, said bore
   1. being of noncircular cross section in an upper end portion thereof to receive a correspondingly noncircular driving tool by which the tubular member can be rotated, and
   2. having, intermediate its ends, a transverse dimension somewhat smaller than that of the screw shaft to provide inner surface portions on the tubular member that are deformably engageable with the crests of the threads on the screw shaft to inhibit rotation of the tubular member relative thereto; and
2. a coaxial substantially tubular metal insert anchored in the lower end portion of said bore and having an internal thread cooperable with the thread on the screw shaft.

3,864,004
CIRCUIT BOARD SOCKET

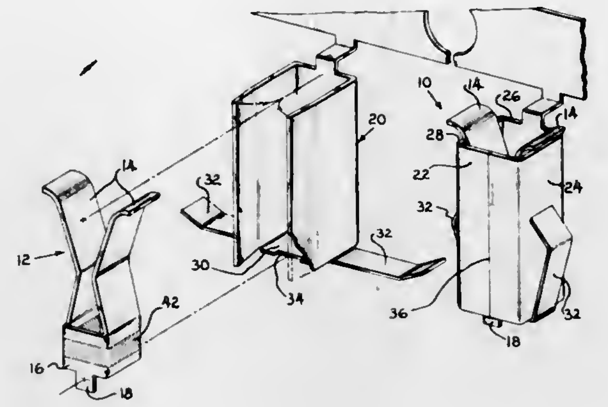
Lindsay C. Friend, Camp Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1972, Ser. No. 310,871

Int. Cl. H01r *13/12, 9/06*

U.S. Cl. 339—258 R **6 Claims**

5. A two part circuit board socket including an elongate hollow socket body with an open end and a closed end, a pair of exterior spring arms joining the body at said closed end and extending therefrom along opposite sides of the body, said arms being bowed outwardly of the body for securing the body in a circuit board hole prior to soldering, a longitudinal body seam extending the length of the body from the open end to the closed end, a body seam extending across each exterior spring arm at the junction with the body at the closed end; and a spring metal contact member located within the body for engaging a lead inserted into the body through the open end, said member including a solder contact on the outside of the body and a portion extending through an opening in the body connecting said solder contact and said member; and a solder resistant surface on the interior of said body adjacent said seams to prevent molten solder from flowing through the seams and into the interior of the body.



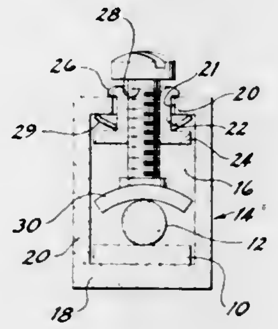
3,864,005
RESILIENT ELECTRICAL TERMINAL CONNECTOR

Keith William Klein, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,686

Int. Cl. H01r *7/12*

U.S. Cl. 339—272 R **1 Claim**



1. A terminal connector for making an electrical connection between a terminal strap and a wire conductor, said connector comprising, in combination:

A. a rigid frame having a central opening and means forming an aperture through a wall of said frame into said central opening;

B. a sleeve accommodated in said wall aperture, said sleeve having a threaded axial bore and terminating in inner and outer axially spaced, radially extending flanges, said flanges engaging said wall about said aperture to capture said sleeve in said wall aperture and to limit the degree of reciprocal motion of said sleeve through said wall aperture;

C. a clamping bolt threadedly engaged in said axial bore to advance a free end thereof into said central opening;

D. a clamping plate mounted by said free end of said bolt for clamping a wire conductor introduced into said central opening in electrical connection with a terminal strap therein; and

E. a spring positioned within said central opening and acting between said inner flange of said sleeve and said frame to exert a resilient clamping force on the wire conductor.

3,864,006
LUMINAIRE HAVING A HOLDER FOR A CAPLESS MINIATURE INCANDESCENT LAMP

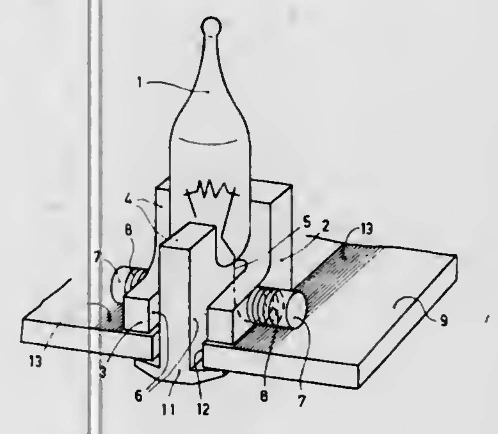
Walter Feldner, Rechtenbach, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1973, Ser. No. 390,700

Claims priority, application Germany, Sept. 27, 1972, 7235504

Int. Cl. H01r *13/54;* **H05k** *1/04*

U.S. Cl. 339—17 D **4 Claims**



1. A luminaire having a holder and a capless miniature incandescent lamp, an insulating plate having contact elements disposed thereon and carrying said holder, said holder comprising two upright supports cooperatively dimensioned and configured for holding said lamp, connection wires projecting outwards on one side of said lamp and engaging said contact elements on said insulating plate, said holder further comprising two radially projecting studs around which the connection wires of the lamp are wound and which are connected to the contact elements of the plate.

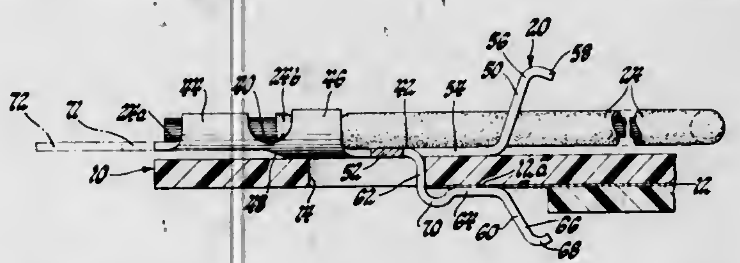
3,864,007
PRINTED CIRCUIT CONNECTOR TERMINAL

Robert G. Plyler, Vienna, and Andrew Russo, Jr., Fowler, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1973, Ser. No. 388,016

Int. Cl. H01r *9/12;* **H05k** *1/07*

U.S. Cl. 339—17 LC **5 Claims**



1. An electrical connector means comprising, in combination, a printed circuit board having a plurality of conductor strips thereon and a row of through openings spaced wholly inwardly from adjacent side edges of the printed circuit board, terminal means including a carrier strip and a plurality of terminals integrally connected to the carrier strip via webs in a spaced relationship corresponding to the spaced relationship of said through openings whereby said terminals are simultaneously alignable with said through openings, and a wire conductor connected to each terminal, said terminal means being connected to said printed circuit board with said carrier strip and portions of said webs overhanging said terminal board,

each of the terminals having a rearward portion and a forward portion, said rearward portion having a crimping flange which is crimped onto an end of wire conductor wtth the wire conductor overlying said forward portion and said printed circuit board to space said wire conductor from said carrier strip and said overhanging portions of said webs, said forward portion of said terminals including a pair of first laterally spaced fingers having sections engaging a first side of said printed circuit board and a second flexible finger having a first section extending transversely of said first fingers disposed in one of said through openings, a second section extending generally in the same direction as the first fingers biasingly engaging a side of said printed circuit board opposite said first side, at least one of said fingers engaging a contact area of the conductor strips on the circuit board, said terminals being simultaneously connectable with the circuit board by aligning respective terminals with respective openings, moving the second fingers through the through openings and then simultaneously moving the terminals relative to the circuit board so that portions of the circuit board adjacent said openings are slidably received between and biasingly engaged on opposite sides by said first fingers and said second sections of the second fingers, said carrier strip being integral with the rearward portion of the terminals and severable therefrom via said overhanging web portions after the latter are connected to the printed circuit board to separate the individual terminals from each other.

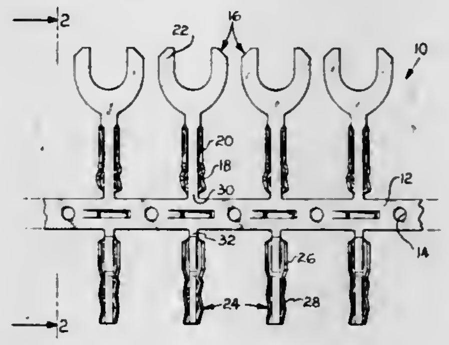
3,864,008
LEAD WIRE ASSEMBLY

Fransiscus C. Bakermans, Shiremanstown, and William C. Thoms, East Berlin, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 7, 1973, Ser. No. 386,410

Int. Cl. H01r *11/08*

U.S. Cl. 339—28 **3 Claims**



1. A lead wire assembly comprising a carrier strip extending along the assembly with a number of wire-securing means extending to one side of the strip at regular intervals therealong, and a plurality of parallel insulated lead wires arranged in side-by-side relation along the length of the strip and extending generally perpendicular to the strip and across the strip with each lead wire associated with a wire-securing means, each wire-securing means including an insulation crimp barrel secured to one end of a lead wire and an open wire crimp barrel with a bared lead wire conductor disposed in the wire crimp barrel and contact means on the other ends of said wires located on the opposite side of said strip.

3,864,009
CONNECTOR AND METHOD

Ralph F. Wickenberg, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 9, 1973, Ser. No. 349,068

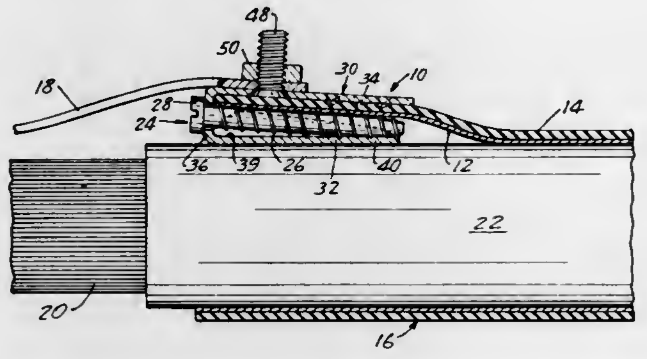
Int. Cl. H01r *11/10*

U.S. Cl. 339—95 R **14 Claims**

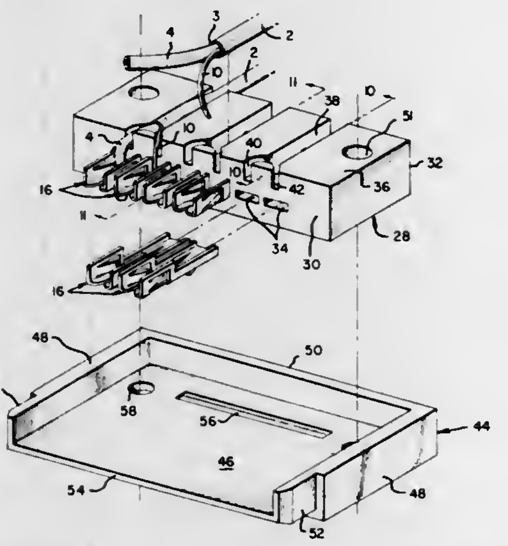
1. A connector for making an electrical connection to an end of a tubular electrically conductive plastic coated shield with an electrically insulating outer jacket on a communication cable, said connector comprising:

an electrically conductive screw having a head and a generally pointed helically threaded end; and

a generally U-shaped resilient clip having first and second opposed jaws projecting from an interconnecting end wall, said jaws terminating with spaced ends adapted to receive the conductive shield and jacket therebetween with the first jaw adjacent the inner surface of said shield and said end wall adjacent the end of said conductive shield, said end wall having an opening receiving the threaded end of said screw to project from said end wall between the jaws, said clip including means for guiding the screw along the first jaw and said jaws being spaced to resiliently press said screw against said conductive shield when said clip is engaged over said jacketed shield to engage the adjacent edges of the threads with the conductive shield, thereby wiping away the plastic coating on the shield as the screw is rotated between the jaws to provide an electrical connection between the screw and the conductive shield, and resiliently retaining said electrical connection after the screw is completely engaged with its head at the end wall.

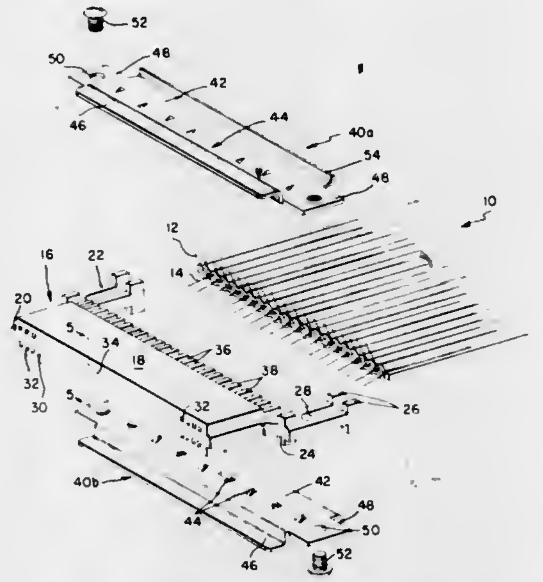


3,864,010
PRE-LOADED ELECTRICAL CONNECTING DEVICE
Henry George Wasserlein, Jr., Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 30, 1973, Ser. No. 327,966
Int. Cl. H01r *11/20, 13/58*
U.S. Cl. 339—97 R **14 Claims**



1. An electrical connector intended for use with a pair of associated conductors such as a signal conductor and a grounding conductor, said connector being adapted for engagement with complementary connecting means to disengageably connect said associated conductors to further conductors, said connector comprising:
- an insulating housing, said housing having a mating face which is proximate, and opposed to, said complementary connecting means when said connector is engaged with said complementary connecting means, said housing having a rearward face on the side thereof which is opposite from said mating face,
- a pair of electrical contact terminals in said housing, said terminals having contact portions which extend normally of, and beyond, said mating face, each of said contact portions having a free end, said free ends being generally channel-shaped in cross-section and having a web and sidewalls, each of said free ends having a conductor receiving slot extending inwardly from its web at said free end, and
- conductor-receiving passageway means extending through said housing from said rearward face to said mating face whereby upon positioning said conductors in said conductor-receiving passageway means and locating end portions of said conductors in said conductor-receiving slots, said conductors are electrically connected to said contact terminals adjacent to said free ends, and upon engagement of said connector with said complementary connecting means, said end portions of said conductors are located adjacent to said complementary connecting means.

3,864,011
COAXIAL RIBBON CABLE CONNECTOR
John Henry Huber, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 27, 1973, Ser. No. 391,727
Int. Cl. H01r *11/20, 13/46*
U.S. Cl. 339—103 M **1 Claim**

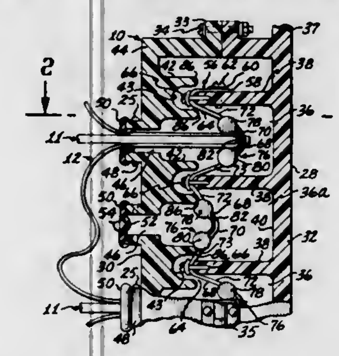


1. A connector for connecting a coaxial ribbon cable of the type having a plurality of signal-carrying conductors and drain wires, to contact elements of other electrical circuits, which comprises:
- a. a housing of insulating material having a plurality of cavities extending therethrough;
- b. a plurality of contact members positioned in the cavities in the housing, each contact member having on one end contact means for resiliently engaging contact elements of other electrical circuits and on another end, terminal means for receiving either the signal-carrying conductor or the drain wire; and
- c. strain relief means for relieving strain on the coaxial ribbon cable which may be terminated therein, said means including two identical halves, each half having a surface containing a plurality of inwardly projecting lances for engaging the coaxial ribbon cable, some of the lances pointing in one axial direction and other of such lances pointing in the opposite axial direction, said halves further having thereon means for being fastened to said housing.

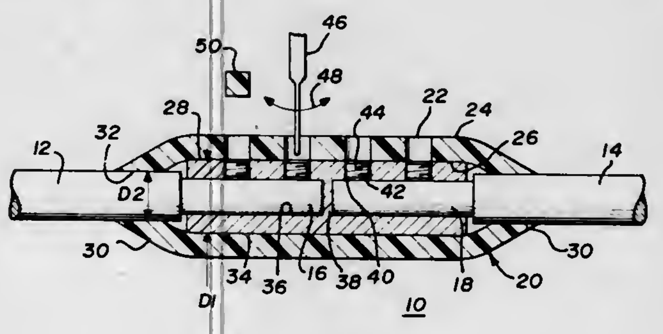
3,864,012
ELECTRICAL CONNECTOR
John M. Cutchaw, 7333 E. Virginia, Scottsdale, Ariz. 85257
Filed Feb. 22, 1974, Ser. No. 444,809
Int. Cl. H01r *13/54;* **H05k** *1/07*
U.S. Cl. 339—176 MP **14 Claims**

1. A connector for electrically interconnecting flat multiconductor elements such as a printed circuit board having

edge contacts upon which the conductors of a flexible ribbon cable are aligningly positioned, said connector comprising:
- a. a housing having at least one connection chamber formed therein and having an elongated slot formed in one wall thereof which opens into the center of the chamber and through which the portions of the multiconductor elements to be electrically interconnected are insertable;
- b. a tension band of elastic material mounted within the chamber of said housing and positioned to present one surface in facing coextensive relatinship with the slot of said housing;
- c. tension means within the chamber of said housing for deflectively contacting said tension band to apply a tension preload to said band and to form it into a substantially U-shaped cross-sectional configuration with the bight portion thereof aligned and coextending with the slot formed in said housing and the leg portions thereof forming a diverging included angle therebetween which extends from the bight portion toward the slot of said housing, the extending ends of the leg portions being secured to said housing so that movement of the bight portion away from the slot is produced by deflective engagement of the multiconductor elements when they are inserted therein which will increase the stress of said band and reduce the included angle between the legs of said band by moving the legs toward each other; and
- d. cam means mounted on said tension band and positioned thereon so that a portion of said cam means is disposed on each of the leg portions of said band and movable therewith for applying a compression force to the multiconductor elements when they are inserted into the chamber of said housing, the compressive force resulting from the stress of said band and movement of the leg portions which decreases the included angle therebetween.

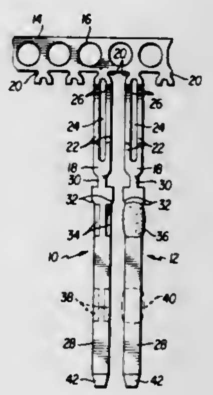


3,864,013
PRE-INSULATED CONNECTOR FOR ELECTRICAL CONDUCTORS
Sidney Levy, Belle Mead, N.J., assignor to Thomas and Betts Corporation, Elizabeth, N.J.
Filed Sept. 19, 1973, Ser. No. 398,664
Int. Cl. H01r *7/12*
U.S. Cl. 339—272 A **6 Claims**



1. A pre-insulated coupling for joining two electrical conductors comprising: a metallic sleeve of a first predetermined length having a passage therethrough proportioned to accept therein the end of an electrical conductor from which the insulation has been removed; an insulating sleeve formed from a given insulating material and having a second predetermined length greater than said first predetermined length, said insulating sleeve having a generally uniform first outer diameter along said first predetermined length, the opposite ends of said insulating sleeve being tapered so as to terminate in a second outer diameter less than said first outer diameter and arranged to provide a smooth transition between the outer surface of said insulating sleeve and the outer surface of the insulation of an insulated electrical conductor inserted within a respective end of said insulating sleeve; said insulating sleeve having a central passage proportioned to receive therein said metallic sleeve, said central passage extending for said first predetermined length; a plurality of apertures extending through said insulating sleeve from the outer surface thereof to said central passage thereof; means coupling said metallic sleeve to the ends of electrical conductors from which the insulation has been removed which have been inserted into said metallic sleeve; and a plurality of plugs formed from said given insulating material, one for each of said apertures, said plugs when inserted into their associated apertures sealing said apertures; the exposed surfaces of said plugs lying flush with the outer surface of said insulating sleeve and providing a continuous insulating sleeve of homogeneous composition about said metallic sleeve.

3,864,014
COINED POST FOR SOLDER STRIPE
James Edward Lynch, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 248,964, May 1, 1972, Pat. No. 3,780,433.
This application June 11, 1973, Ser. No. 368,808
Int. Cl. H01r *5/04*
U.S. Cl. 339—275 R **6 Claims**

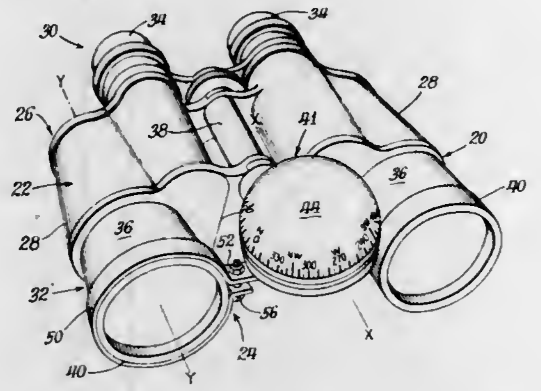


1. An electrically conductive post intended for mounting in a plated-through aperture of a printed circuit board, comprising:
- an elongated body of conductive material having a first body portion and a second body portion,
- a selected length of said second body portion having a plurality of external surfaces defining a first polyhedral cross-section,
- a selected length of said second body portion having external surfaces defining a second polyhedral cross-section of smaller area than the area of said first polyhedral cross-section,
- said external surfaces of said second selected length being offset from the external surfaces of said first selected length, and
- solder adhered to the external surfaces of said second selected length.

3,864,015

VISUAL BEARING INSTRUMENT

Paul F. Ilg, 4065 Bunker Ln., Wilmette, Ill. 60091
Filed Oct. 26, 1973, Ser. No. 409,925
Int. Cl. G02b *7/00*
U.S. Cl. 350—81 **6 Claims**

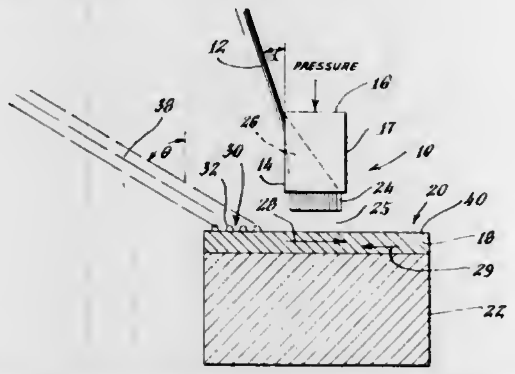


1. In a visual bearing instrument including a binocular device comprised of a pair of parallel telescopic housings each having oppositely disposed viewing and objective end portions, the improvement comprising,
- a compass having a fixed vertical lubber line and a compass card movable in a horizontal plane relative to the lubber line,
- the surface of said compass card opposite the lubber line being in a plane having a vertical component,
- and means for mounting the compass on the binocular device with at least an extension of the vertical lubber line in the line of sight of the binocular device whereby the line and indicia on the card are visible from the viewing end portion externally of the binocular device.

3,864,016

HOLOGRAPHIC FIBER TO WAVEGUIDE COUPLER

Mark L. Dakss, Yonkers, and Stanley A. Zemon, New York, both of N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Apr. 10, 1972, Ser. No. 242,491
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **13 Claims**

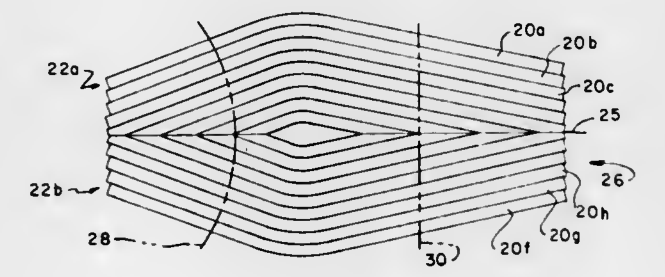


3. A device for optically coupling a light-carrying fiber and an optical waveguide in an integrated optical circuit comprising
- an optical circuit having an optical waveguide for propagating an optical guided wave,
- an optical fiber mounted over the optical circuit to direct a beam in the far field upon a surface of the optical waveguide, and
- a photo-recording material layer interposed between the optical fiber and the surface of the optical waveguide, said material having a coupling segment in close adjacency to the optical waveguide to receive a portion of the optical waves propagating therealong,
- said photo-recording material further being provided with an interference pattern in the coupling segment thereof, said interference pattern formed by light propagating in said optical waveguide interfering with light beam propagating from said optical fiber, to produce a hologram having a conversion function selected to convert the light in the far field propagating from the fiber to that of said optical guided wave.

3,864,017

OPTICAL FIBER ARC-TO-LINE CONVERTER

Henry B. Cole, East Woodstock, Conn., assignor to American Optical Corporation, Southridge, Mass.
Filed May 31, 1973, Ser. No. 365,774
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **11 Claims**

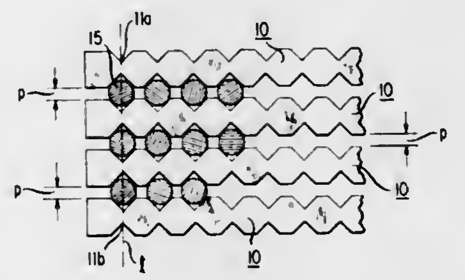


1. An arc-to-line converter comprising
a. An optical fiber array including at least mirror image subassemblies joined together along a plane;
b. each said subassembly including a plurality of lengths of optical fibers bent at a predetermined angle and nested together;
c. each said subassembly being secured to a mirror image subassembly with the legs of the angled fibers contacting along said plane;
d. one edge of exposed optical fibers being formed into an arcuate plane generally transverse to the axes of said fibers; and
e. the opposite edge of exposed optical fibers being formed into a straight plane generally transverse to the joining plane between said mirror image assemblies.

3,864,018

METHOD AND MEANS FOR SPLICING ARRAYS OF OPTICAL FIBERS

Calvin Max Miller, Lilburn, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill Heights, N.J.
Filed Oct. 18, 1973, Ser. No. 407,528
Int. Cl. H01r *15/00*
U.S. Cl. 350—96 C **7 Claims**

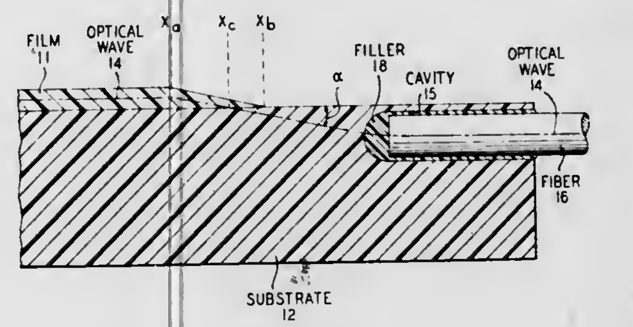


1. An article for permanently locating the ends of a first group of optical fibers in abutting, axial alignment with corresponding ends of a second group of optical fibers, comprising: a thin wafer having parallel flat top and bottom surfaces, each surface having an equal number of spaced parallel optical fiber-receiving longitudinal grooves of uniform cross section, the corresponding grooves of said surface being in vertical alignment, the geometry of each said groove being selected to assure spatial separation between two such articles when enveloping uniform diameter optical fibers thereinbetween.

3,864,019

OPTICAL FILM-FIBER COUPLER

Gerald Smolinsky, New Vernon, and Ping King Tien, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 15, 1973, Ser. No. 415,936
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **8 Claims**

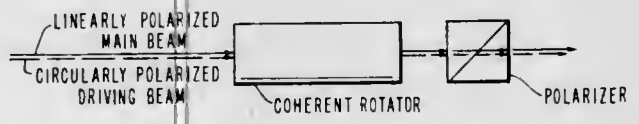


1. An arrangement for coupling a wave of optical electromagnetic radiation between a thin-film optical waveguide and a fiber optical waveguide, said thin-film waveguide comprising a transparent substrate, a transparent dielectric film formed on a major surface of said substrate, said film having an index of refraction exceeding that of said substrate and a thickness proportioned for guiding said wave of optical electromagnetic radiation, said fiber waveguide comprising an elongated transparent fiber having cross-sectional dimensions and a refractive index distribution also proportioned for guiding said wave, said arrangement being characterized in that
- said film has an end region that is gradually tapered in thickness along the intended path of said wave to be guided therein to a cut-off point at which said film is incapable of supporting said wave as guided mode, said tapered end region providing emergence of said wave from said film along a path in said substrate, and in that said substrate includes a region defining a cavity disposed to intercept the intended path of said wave in said substrate and into which a portion of the length of said fiber is inserted said cavity having an essentially hemispherical end shape and being filled with a transparent filler material having an index of refraction exceeding that of said substrate to form an essentially hemispherical lens in said substrate at the end of said cavity.

3,864,020

LIGHT CONTROLLED LIGHT MODULATOR

John A. Armstrong, South Salem, and Daniel R. Grischowsky, Peekskill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 28, 1973, Ser. No. 429,337
Int. Cl. G02f *1/16*
U.S. Cl. 350—147 **9 Claims**


LINEARLY POLARIZED MAIN BEAM
CIRCULARLY POLARIZED DRIVING BEAM
COHERENT ROTATOR
POLARIZER

1. A light controlled light modulator comprising:
a. a coherent rotator containing a material exhibiting Zeeman splitting of the optical spectra of radiations emitted by atomic transitions wherein the population densities of atoms in the Zeeman magnetic sublevels of the ground and excited states are controlled by a circularly polarized driving light beam, and
b. a polarizer oriented to variably transmit a main beam of linearly polarized light as a function of the rotation of the plane of polarization of the main beam by passage through said coherent rotator.

3,864,021

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PROCESSING THE SURFACE OF ELECTRODE GLASS THEREOF

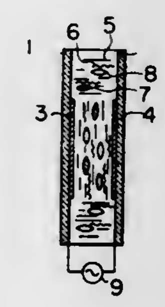
Yoshio Katagiri, and Yoshio Miyata, both of Sendai, Japan, assignors to Kabushiki Kaisha Daini Seikosha and Kabushiki Kaisha Seikosha, both of Tokyo, Japan
Filed Mar. 6, 1973, Ser. No. 338,625
Claims priority, application Japan, Mar. 8, 1972, 47-23813
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **8 Claims**

1. A liquid crystal display device comprising a transparent support material for sandwiching a liquid crystal, said material being coated at least at its surfaces adjacent said liquid crystal, with transparent conductive material adapted for localized application of electric fields to control areas of said liquid crystal display device, and said conductive material being further coated at the surface adjacent said liquid crystal with a rubbed layer of fluorocarbon polymer, selected from group consisting of fluorinated polyolefins and their copolymer, rubbed in a predetermined direction.

3,864,022

COLOR SWITCHING LIQUID CRYSTAL DISPLAY

Akio Moriyama, Katano; Masakazu Fukai, Nishinomiya, and Komei Asai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 18, 1973, Ser. No. 425,857
Claims priority, application Japan, Dec. 19, 1972, 47-127848
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **10 Claims**



1. A color switching liquid crystal display comprising:
- a liquid crystal element formed of a nematic liquid crystal which in the absence of an electric field exhibits a homeotropic arrangement and has a negative dielectric anisotropy, and including at least two kinds of dyes of different light absorption at least one of which is a pleochromatic dye, and at least two of which exhibit mutually different display action characteristics under the effect of an electric field; and
- means for applying an electric field to said liquid crystal element.

3,864,023

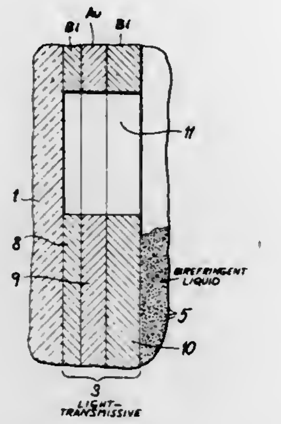
ELECTRO-OPTICAL DISPLAY DEVICE

Hans-Joachim Glaser; Gunther Graw, and Karl-Heinz Makowicki, all of Gelsenkirchen, Germany, assignors to Flachglas Aktiengesellshaft DELOG-DETAG, Gelsenkirchen, Germany
Filed Jan. 2, 1974, Ser. No. 429,897
Claims priority, application Germany, Jan. 9, 1973, 2300856
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **10 Claims**

1. An electro-optical display device comprising:
- wall means forming a closed chamber, said wall means including a light-transmissive plate;
- a pair of electrodes integral with said wall means confronting each other across said chamber, one of said electrodes

being a discontinuous light-transmissive coating on an inner surface of said plate forming a pattern to be displayed;

a liquid crystal in said chamber contacting said electrodes; and

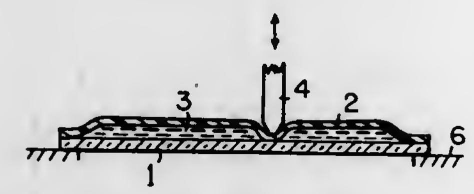


circuit means for energizing said electrodes;

said coating consisting of a plurality of superposed metallic layers including a bonding layer of bismuth adhering to said inner surface and a highly conductive layer of noble metal adhering to said bonding layer.

3,864,024
OPTICAL DISPLAY DEVICE

Gust A. Olson, 2030 Manning Ave., Los Angeles, Calif. 90025
Filed Mar. 26, 1973, Ser. No. 345,170
Int. Cl. G02f *1/36*
U.S. Cl. 350—161 **13 Claims**



1. A selectively changeable optical display, comprising;

a. a transparent solid layer (1),

b. a coextensive flexible layer (2) spaced from said solid layer, said flexible layer having a given reflectance property,

c. an opaque quasi-liquid layer (3) interposed exclusively between said solid layer and said flexible layer, said opaque layer having a reflectance property optically contrasting to said given reflectance property, and

d. selectable external means to bear (4) upon selected portions of said flexible layer to correspondingly displace said opaque layer,

whereby the contrasting reflectance property of said flexible layer is selectively displayed for viewing through said solid layer.

3,864,025
DISPLAY INSTRUMENT USING OPTICAL COLLIMATION

Bernard Picardat, Paris, France, assignor to Thomson-CSF, Paris, France
Filed May 23, 1973, Ser. No. 363,156
Claims priority, application France, May 26, 1972, 72.18882
Int. Cl. G02b *27/10*
U.S. Cl. 350—174 **3 Claims**

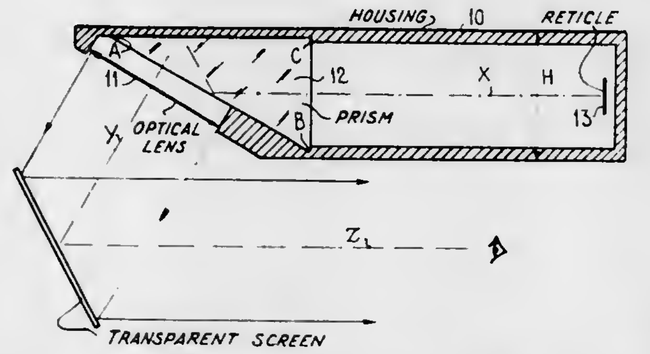
1. A display instrument using optical collimation for projecting data into the observer's normal line of sight, said instrument comprising:

a transparent combining glass positioned in said line of sight and having a surface for reflecting projected images into said line of sight;

an optical objective for projecting images of luminous objects focused at infinity onto said surface;

means for providing said luminous objects; and

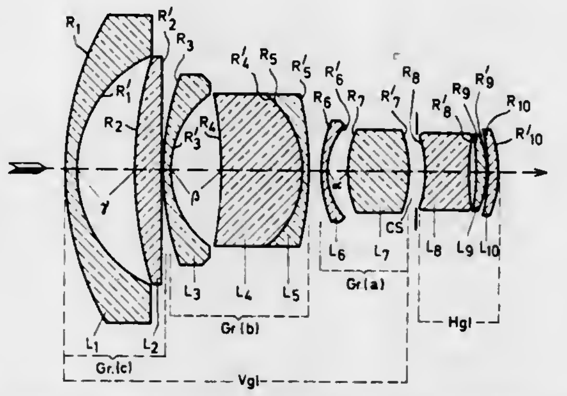
a reflectively deflecting prism located between said optical objective and said luminous objects providing means, said prism having an entry face for refracting incident light rays issued from said luminous objects; a reflecting face forming a plane reflective mirror and an exit face comprising the largest face of the prism, said exit face being perpendicular to the optical axis of said optical objective which is positioned parallel and opposite said exit face,



said luminous objects being positioned in the focal zone of said objective through said prism, said entry face being perpendicular to the optical axis which extends through said prism to said focal zone, the angles of said prism adjacent to said exit face having predetermined values and the ratio of the angle formed with the reflecting face to that formed with the entry face being equal to 1:2 for providing emerging rays which form with the normal to the exit face angles which are respectively the same as those which the corresponding incident rays issued from said objects make with the normal to the entry face, whereby the diameter of the optical objective is greater than the breadth of the entry face and corresponds to the emergent area of said exit face.

3,864,026
WIDE ANGLE PHOTOGRAPHIC LENS

Erhard Glatzel, Heidenheim, Germany, assignor to Carl Zeiss Stiftung (a.k.a. Carl Ziess), Heidenheim on the Brenz, Wurttemberg, Germany
Filed Sept. 19, 1973, Ser. No. 398,774
Claims priority, application Switzerland, Sept. 21, 1972, 13917/72
Int. Cl. G02b *9/00, 1/00*
U.S. Cl. 350—214 **13 Claims**



1. A wide angle lens system with a relatively long back focus on the image side and a relatively large angle of view, comprising a rear member behind an aperture space and a front member in front of said aperture space, said rear member comprising at least three lens elements each with air on both sides, the forward element adjacent said aperture space being a negative element followed in a rearward direction by two positive elements, said front member comprising at least three groups of lens elements, each group having a negative component at the front of the group and a positive component rearwardly of such negative component, the negative component and positive component of each group enclosing between them a diverging-acting air space constituting a negative air lens, each of said air lenses having a more strongly diverging glass-air surface which is concave toward an image at the rear of the lens system, the successive groups in order from the aperture space forwardly being respectively designed Gr. (*a*) and Gr. (*b*) and Gr. (*c*), the lens elements being so constructed that:

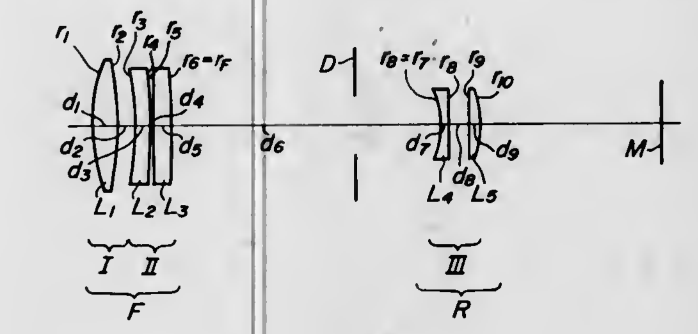
1. The paraxial focal length (f_a) of the rearmost group Gr. (*a*) of the front member is between the limits of 1.134 times and 2.055 times the equivalent focal length (F) of the entire lens system.

2. The absolute value of the paraxial focal length (f_b) of the group Gr. (*b*) is between the limits of 8.148F and 2.433 F.

3. The numerical value of the paraxial focal length ($f_{c,b}$) of the combination of the two groups Gr. (*c*) and Gr. (*b*) has an absolute value between the limits of 2.40 F and 5.373 F.

3,864,027
TELEPHOTO LENS SYSTEM HAVING SMALL OVERALL LENGTH

Kenichi Harada, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan
Filed May 8, 1973, Ser. No. 358,366
Claims priority, application Japan, May 10, 1972, 47-46086
Int. Cl. G02b *9/60, 9/36*
U.S. Cl. 350—216 **4 Claims**



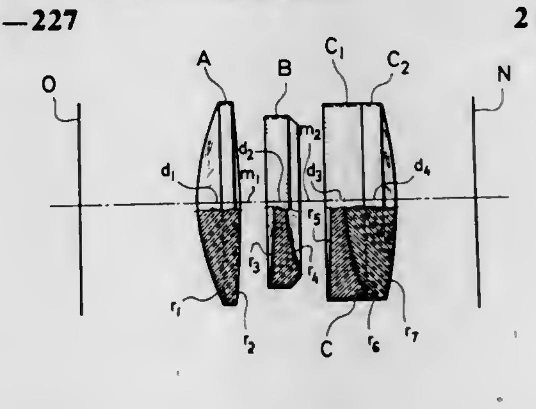
1. A telephoto lens system having a small overall length, which is constructed by three components and five lenses and comprises a front lens group and a rear lens group separated by a diaphragm space, said front lens group consisting of a biconvex first component that has its object side a convex surface having a large curvature and a negative second component that has its object side a concave surface having a large curvature and that consists of two negative lenses, said rear lens group consisting of a negative lens and a positive lens and constituting a third component composed of a negative lens that has its object side a concave surface having a large curvature followed by a positive lens that has its image side a convex surface having a large curvature, and which is defined by the following five conditions, i.e.,

1) $(0.9/f) < (n_1-1/r_2) + (1-n_2/r_3) < (1.3/f)$,
2) $-0.07 < (r_B/r_F) < 0.1$,
3) $0.01f < d_2 < 0.05f$,
4) $0.07 < f_1/f_3 < 0.35$, and
5) $0 < (f_3 - f_2/f) < 3$

where d_2 is an air space between the first and second components r_2 to r_3 are radii of curvature of the front and rear surfaces of the first component, r_3 is a radius of curvature of the front surface of the second component, f is an overall focal lenth of the total lens systems, f_1, f_2 and f_3 are focal lengths of the first, second and third lenses counted from the object side, respectively, n_1 and n_2 are refractive indexes of the first and second lenses, respectively, r_F is that surface of the two lens surfaces bounding a diaphragm space which is located at the object side, and r_B is that surface of the two lens surfaces bounding the diaphragm space which is located at the image side.

3,864,028
THREE COMPONENT REPRODUCTION OBJECTIVE

Miloslav Paukert, Prerov, and Libuse Schwarzova, Pencicky, both of Czechoslovakia, assignors to Meopta, narodni Podnik, Prerov, Czechoslovakia
Filed June 7, 1973, Ser. No. 367,822
Claims priority, application Czechoslovakia, June 13, 1972, 4092-72
Int. Cl. G02b *9/20*
U.S. Cl. 350—227 **2 Claims**



1. A lens system for reproduction comprising three components axially arranged in such a manner that the first component nearest the image-plane side is a simple biconvex element, the second component being in the middle is a simple biconcave element, and the third component nearest the objective-plane side is a cemented concave-convex lens composed from a biconcave element and a biconvex element, said system complying with the following conditions:

		n_d	ν
$r_1 = + \ 27.36$			
	$d_1 = 4.55$	1.62041	60.3
$r_2 = -1978.05$			
	$m_1 = 4.36$	air	
$r_3 = - \ 62.69$			
	$d_2 = 1.65$	1.59551	39.2
$r_4 = + \ 25.3$			
	$m_2 = 5.23$	air	
$r_5 = - \ 142.92$			
	$d_3 = 1.74$	1.53172	48.9
$r_6 = + \ 28.52$			
	$d_4 = 6.59$	1.65844	50.8
$r_7 = - \ 41.81$			

where

$r_1 - r_7$ are the radii of curvature of the individual refracting surfaces

$d_1 - d_4$ are the axial thicknesses of the individual components and elements thereof

m_1 and m_2 are the airspaces between the individual components

n_d is the refracting index for the spectral D-line

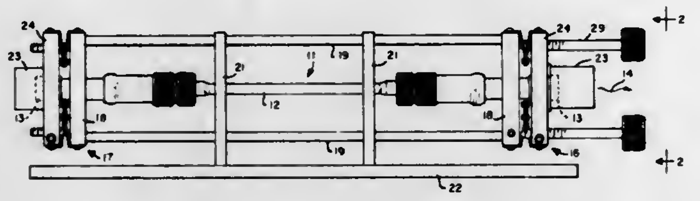
and ν is the Abbe number.

3,864,029
LASER MIRROR MOUNT AND WINDOW PROTECTION ASSEMBLY

Galen E. Mohler, Mountain View, Calif., assignor to Lexel Corporation, Palo Alto, Calif.
Filed Aug. 29, 1973, Ser. No. 392,614
Int. Cl. G02b *5/08*
U.S. Cl. 350—288 **11 Claims**

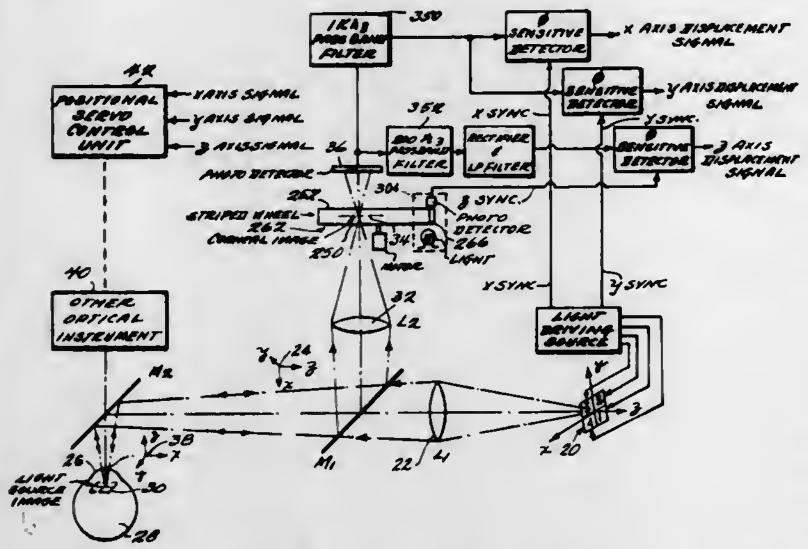
1. In a laser which includes an an elongated envelope enclosing a lasable medium and having a window at an end thereof for the passage therethrough of optical energy along an optical axis, an optical reflector positioned transversely of said optical axis exteriorly of said envelope to intercept optical radiation emanating from said window, mounting structure for said optical reflector which allows the angular orientation of the same to be accurately adjusted relative to said optical axis,

and a tubular cover enclosing the path for optical energy along said optical axis between said envelope and said reflector, said cover having opposite ends respectively secured to said envelope about said window and to said mounting structure and including a tubular ball joint along its length permitting changes in the angular orientation of said mounting structure with respect to said envelope and, hence, said optical axis, said tubular cover including a pair of coaxial tubes joining one another at adjacent ends and having their opposite ends respectively secured to said envelope about said window and to said mounting structure, one of said joining ends of one of said tubes being received within the end of the other end of said tubes thereat, and said ball joint including a rigid ball surface on one of said joining ends mating with a deformable elastic portion on the other of said joining ends, said deformable elastic portion of said other joining end extending axially of said tube beyond said rigid ball surface whereby axial movement of said ball in said other end is accommodated.



3,864,030
EYE POSITION MEASURING TECHNIQUE

Tom N. Cornsweet, Washington, D.C., assignor to Acuity Systems, Incorporated, McLean, Va.
Filed July 11, 1972, Ser. No. 270,639
Int. Cl. G01c *3/08*
U.S. Cl. 351—7 **15 Claims**



1. An eye position measuring device for detecting relative eye position by measuring reflections from the eye's cornea, said device comprising:

source means for selectively providing light energy emanating from different ones of at least two physically distinct positions and for providing a synchronization signal representative of the sequence with which light is caused to emanate from the distinct positions,

light transmitting means for directing said light energy onto said cornea,

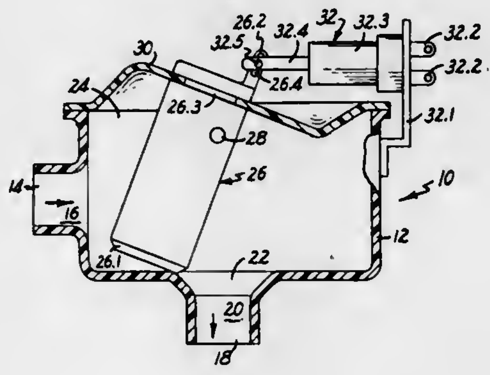
light receiving means for collecting a portion of said light energy after reflection from said cornea,

photodetecting means for converting reflected light passed by said receiving means into a photodetector output signal, said photodetecting means being aligned with the receiving means to provide substantially equal illumination thereof due to light emanating from either of said distinct positions when the cornea center is in alignment with an optical axis of said receiving means, and

phase sensitive detecting means electrically connected to said source means and to said photodetecting means for comparing the phase of said photodetector output signal with that of said synchronization signal to thereby provide a signal representing the relative direction of cornea displacement from an aligned position and hence representative of a corresponding relative eye position.

3,864,031
FLUID CONTROL VALVE

Roderick J. Hossfeld, Northampton; Paul E. Tartaglia, Amherst, and Daniel R. Pimentel, Seekonk, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed June 11, 1973, Ser. No. 368,922
Int. Cl. F16k *31/10*
U.S. Cl. 251—138 **2 Claims**



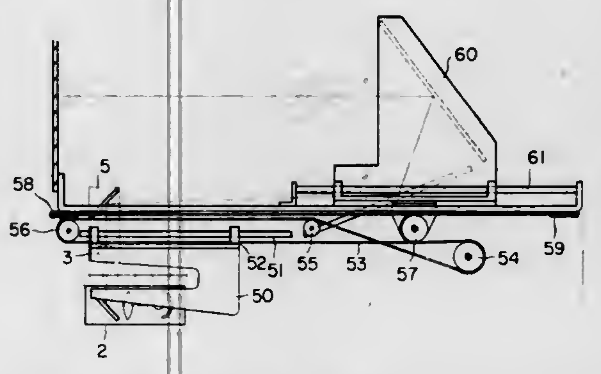
1. A valve device comprising a valve body having an inlet passage including an inlet opening and an inlet chamber, having an outlet passage extending from one side of said chamber, having a valve seat between said outlet passage and chamber at said one side of said chamber, and having an aperture at the opposite side of said chamber from said valve seat, a valve member having a plug portion to be engaged with said valve seat for closing said valve device and having a stem portion extending into said body aperture, means on said valve body pivotally mounting said valve member for movement between the closed valve position having said plug portion engaging said valve seat and an open valve position having said plug portion spaced from said valve seat, said pivotal mounting means engaging said valve member at a location spaced from said valve seat for permitting fluid flow in said inlet passage over said valve seat to urge said valve member to said closed valve position with selected force, a flexible diaphragm secured in sealing relation to said stem portion and to said valve body around said aperture for sealing said valve body with minimal interference with said pivotal movement of said valve member, and an electrically operable actuator means mounted on said valve body exteriorly thereof and operatively connected with said stem portion for selectively moving said valve member from said closed valve position to said open valve position against said force when said actuator means is electrically energized.

3,864,032
PROJECTION OPTICAL DEVICE FOR MICROREADERS CAPABLE OF VARYING MAGNIFICATION

Nobuyuki Yanagawa, Kanagawa-ken, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 27, 1973, Ser. No. 355,021
Claims priority, application Japan, May 2, 1972, 47-43313
Int. Cl. G03b *21/22*
U.S. Cl. 353—76 **3 Claims**

1. In a microreader of the type having:
a. a projection screen fixed with respect to a support;
b. information means containing an array of information to be read; and
c. optical means for projecting an information image from said information means onto said projection screen; the improvement wherein said optical means is capable of varying its magnification and comprises:

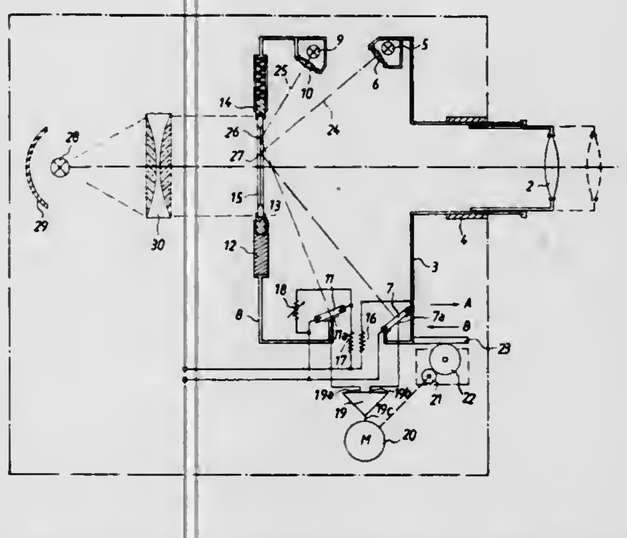
d. projection lens means mounted on said support for movement along said information means and including a first reflector for projecting the information image;
e. reflector means mounted on said support for movement in the same direction as said projection lens means and including second and third reflectors for receiving the information image projected by said first reflector and displacing and reversing the direction of the information image projection onto the projection screen; and
f. drive means for moving said projection lens means and said reflector means in synchronism with a displacement ratio of 2:1, said drive means comprising:



i. four pulleys fixed on said support;
ii. a movable pulley connected to said reflector means for movement therewith;
iii. wrapping connector means trained respectively about two of said fixed pulleys, said movable pulley and the remaining two fixed pulleys;
iv. means for rotating one of said fixed pulleys; and
v. means for fixing another one of said fixed pulleys against rotation and for adjusting its position about its rotational axis to permit movement of said reflector means independently of said projection lens means.

3,864,033
AUTOMATIC FOCUSING ARRANGEMENT FOR A SLIDE PROJECTOR

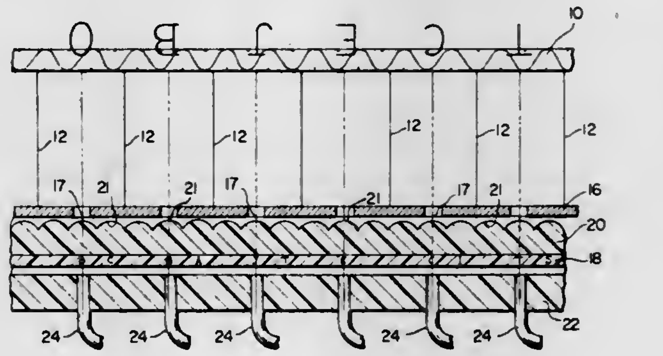
Alois Rieder, Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed May 25, 1973, Ser. No. 364,079
Claims priority, application Germany, May 27, 1972, 2225972
Int. Cl. G03b *3/10;* **G01j** *1/16*
U.S. Cl. 353—101 **9 Claims**



1. In a slide projector adapted to project a slide and having a projector lens and slide holding means for holding said slide, the relative positions of said projector lens and slide holding means being changeable with respect to each other, an automatic focusing arrangement, comprising, in combination, first opto-electrical means mounted in a fixed position relative to said projector lens for impinging a first light beam onto said slide holding means and creating a first test signal in dependence upon the position of the corresponding light beam reflected by said slide; second opto-electrical means mounted in a fixed position relative to said slide for impinging a second light beam onto said slide and creating a second test signal in dependence upon the position of the corresponding light beam reflected by said slide; regulator means connected to said first and second opto-electrical means, for furnishing a control signal in response to said first and second test signals; and moving means for changing the position of said projector lens relative to said slide holding means under control of said control signal.

3,864,034
MICROFICHE AND READER

George J. Yevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.
Filed Nov. 28, 1972, Ser. No. 309,968
Int. Cl. G03b *23/08*
U.S. Cl. 353—120 **5 Claims**



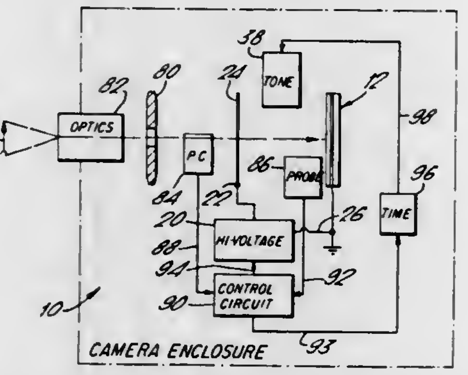
1. A microfiche adapted for use on a micro optical viewer, said microfiche including:
a. a transparent sheet,
b. said sheet carrying stored micro optical information distributed over its area,
c. one surface of said sheet including a plurality of optically active elements each of which is adapted to function as a lens, said elements being spaced parallel from said stored information,
d. said micro optical information defined by a plurality of information sets, each information set corresponding to a unique macro scene, each information set occupying dispersed areas interlaced with but distinct from the dispersed areas occupied by any other information set, each unique macro scene corresponding to a unique set of said active elements, each of the dispersed areas of an information set having its own active element and being in optical correspondence therewith.

3,864,035
SHUTTERLESS CAMERA SYSTEM

Manfred R. Kuehnle, Lexington, Mass., assignor to Coulter Information Systems, Inc., Bedford, Mass.
Filed Sept. 14, 1973, Ser. No. 397,309
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **23 Claims**

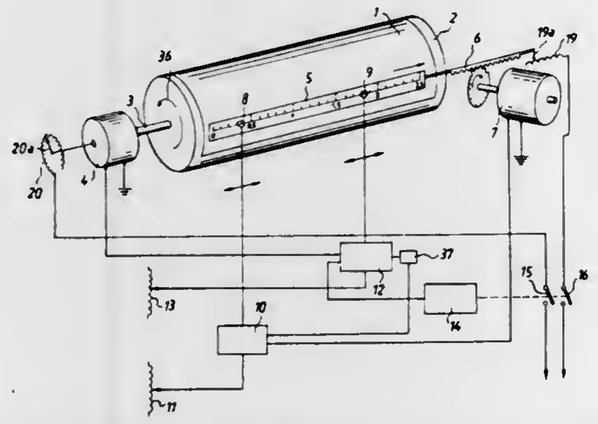
1. A shutterless camera for recording a scene on electrophotographic film having a photoconductive coating, said camera comprising:
A. a camera housing providing a light-tight enclosure,
B. a wall of said camera housing having projecting means for projecting an exterior light pattern through the wall and into said enclosure,
C. means for removably mounting an electrophotographic film member having a photoconductive coating within said enclosure in a position such that the light pattern will be projected onto the photoconductive coating,

D. a charging device for charging the coating to raise the surface potential thereof rapidly while the coating simultaneously is exposed to said light pattern,
E. means within the enclosure for toning the latent image which is adapted to be produced by the projection of said pattern onto said coating,
F. means for measuring the surface potential of the coating at an area which achieves the peak voltage first of all areas of the coating and deriving a first electrical signal representative of said potential,
G. means for measuring the average intensity of said light pattern and deriving a second electrical signal representative of said intensity,
H. means for comparing the first and second signals while the charging device is enabled and deriving a third electrical signal when a predetermined relationship between the first and second signals has been reached which represents a desired peak voltage corresponding to the particular light intensity,
I. means for disabling the charging device,
J. structure energized by said third signal for operating the last-mentioned disabling means,
K. means for enabling the toning means immediately after operation of said last-mentioned disabling means such that the toning of the latent image commences immediately after the peak voltage has been reached,
L. means for disabling the toning means after a period of time and
M. the camera including means for manually initiating the operation of the charging device when it is desired to commence the recording of a scene.



3,864,036
APPARATUS FOR CONTROLLING EXPOSURE

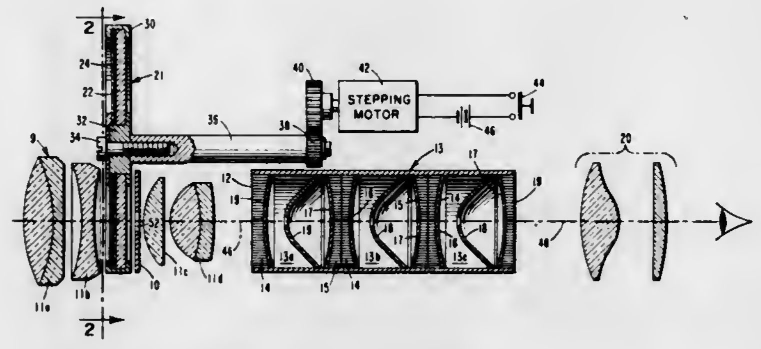
Jacques Vanheerentals, Schoten, Belgium, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 13, 1974, Ser. No. 450,619
Claims priority, application Germany, Mar. 17, 1973, 2313349
Int. Cl. G03b *27/76*
U.S. Cl. 355—68 **21 Claims**



1. In an apparatus for controlling the exposure of variable-contrast photo-sensitive material which is exposed to light passing through an original in two colors, and whose gradation is different for each of said colors, a combination comprising electronic timer means having adjusting means for selecting the total exposure time to light in said colors, determined on the basis of the contrast grade of said photo-sensitive material; operating means for selecting the ratio of exposures to light in said colors within said total exposure time; first exposure selecting means having calibrating values determined by the desired contrast of the photo-sensitive material; second exposure selecting means having calibrating values determined on the basis of the minimum and maximum densities of said original, and connecting means connecting said operating means and said first and second exposure selection means and being operative to automatically select said ratio on the basis of said calibrating values.

3,864,037
IMAGING SPECTROSCOPIC METHOD AND APPARATUS

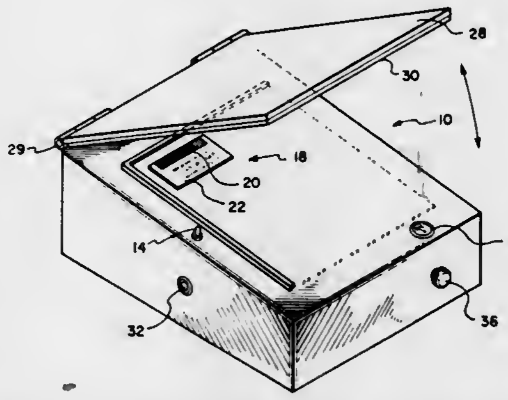
Quentin S. Johnson, P.O. Drawer 1334, Leesburg, Va. 22075
Filed Jan. 3, 1973, Ser. No. 320,734
Int. Cl. G01j *3/00;* **H01j** *31/50*
U.S. Cl. 356—74 **26 Claims**



1. An imaging spectroscope comprising:
a light attenuating narrow band pass optical filter adapted to pass wavelengths of light energy within a restricted spectral band and to block substantially all wavelengths of light energy outside of said band;
means to form an image of an object or scene under observation solely with light energy passing said filter; and
means to intensify said image to a level adequate for spontaneous and direct visual observation, said intensifying means being sensitive at least to light energy throughout the entire wavelength range of visible light.

3,864,038
DENSITY CONTROL PRINTER

James C. Palazzolo, 902 N. Main, Farmington, Utah 84025
Filed Sept. 18, 1973, Ser. No. 398,442
Int. Cl. G03b *27/04*
U.S. Cl. 355—114 **4 Claims**

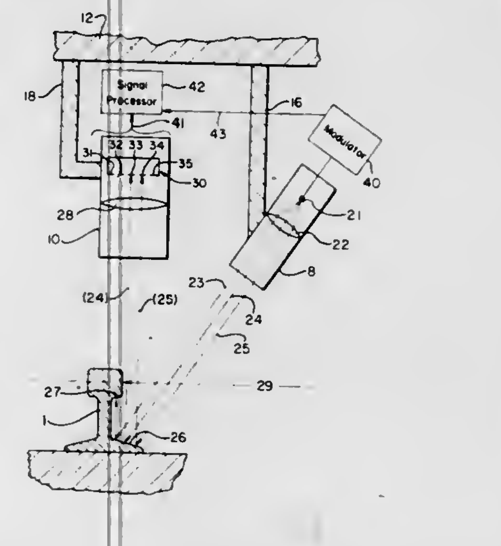


1. A density control and identification printer for transferring a density control strip and identifying information to an unexposed portion of exposed X-ray film comprising:

a printing chamber and energy storing and releasing means contained within said chamber for transmitting a constant and reproducible amount of light energy,
a translucent window positioned in the top wall of said chamber wherein one section of said window contains a graded film density strip and the remaining segment of said window provides space to receive an identification card containing identifying information, said film density strip being characterized by a series of graded densities which, when transferred to said X-ray film, will provide information as to whether said X-ray film has been properly processed and/or whether the X-ray film was properly exposed.

3,864,039
RAIL GAGE APPARATUS

Robert W. Wilmarth, Wellesley, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.
Filed July 12, 1973, Ser. No. 378,510
Int. Cl. E01b *35/10;* **G01b** *11/14*
U.S. Cl. 356—172 **4 Claims**

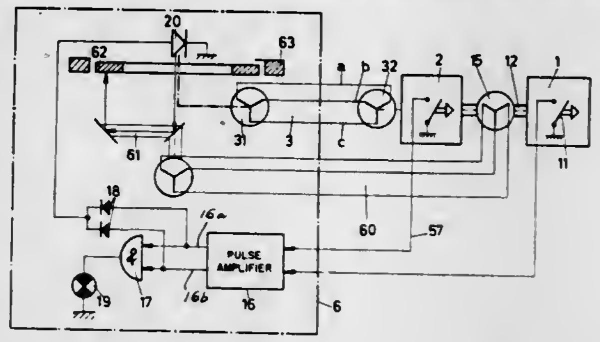


1. Rail gage apparatus comprising in combination with a wheeled vehicle for traveling along two rails having opaque rail heads:
light projection means mounted on said vehicle illuminating the base of both of the rails;
light receiver means positioned above said opaque rail heads but not in physical contact therewith such that the amount of reflected light received is dependent upon the shadows cast by the positions of the gage side of said opaque rail heads; and
means for converting said received light into continuous positional data signals representing the gage between rails.

3,864,040
PHASE ANGLE MEASURING ARRANGEMENT

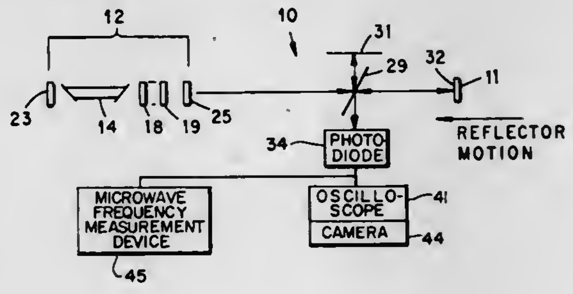
Gabriella Fuchs Viniczay, Steinach; Wilhelm Hutter, Rogg-wil/TG, and Rudolf-Karl Bohme, Goldach, all of Switzerland, assignors to Aktiengesellshaft Adolf Saurer, Arbon, Switzerland
Filed Oct. 29, 1973, Ser. No. 410,369
Claims priority, application Switzerland, Oct. 27, 1972, 15711/72
Int. Cl. G01r *25/00*
U.S. Cl. 356—24 **5 Claims**

1. In equipment having a rotating shaft, synchronizing signal furnishing means for furnishing synchronizing signals under control of said shaft, and reference signal furnishing means directly coupled to said shaft for furnishing reference signals when said shaft is in a predetermined angular position, an arrangement for measuring the phase angle between said synchronizing signals and said reference signals, comprising, in combination, stationary projection disk means; transducing means for converting said reference signals and said synchronizing signals into, respectively, first and second light beams; and projection means rotating substantially in synchronism with said shaft, for projecting said first and second light beams onto said stationary projection disk means in such a manner that a first and second light spot is created on said projection disk means in response to said first and second light beams respectively, the angular distance between said first and second light spots constituting a measure of said phase angle.



3,864,041
DOPPLER-SHIFT VELOCITY MEASUREMENT SYSTEM USING A TWO-FREQUENCY LASER

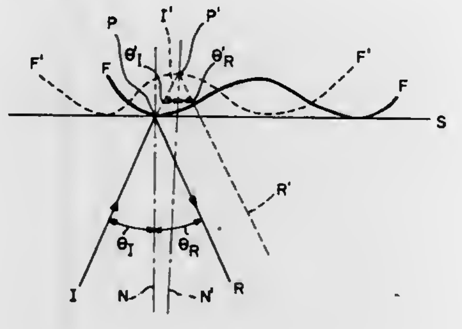
James R. Long, Danville, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed June 6, 1973, Ser. No. 367,683
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **3 Claims**

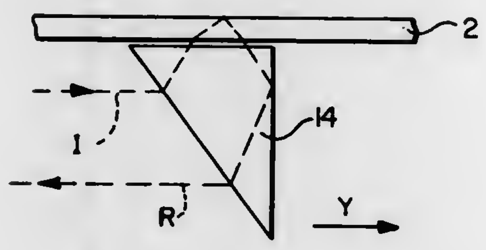


1. A system for determining the velocity of a moving object, including:
a reflector included on said object;
a two-frequency laser for developing frequency gain peaks for emission of light at first and second original frequencies f_1 and f_2 to impinge on said reflector and be reflected therefrom;
a square law light detector, said detector being a photodiode;
means for directing light emitted from said laser and light reflected from the object to said detector, the frequencies of said light at frequencies f_1 and f_2 being reflected from said object and Doppler-shifted to a third frequency f_1' and a fourth frequency f_2', respectively, according to the velocity of said object;
means connected to said detector for indicating a difference frequency $(f_1' - f_2)$, said means connected to said detector including an oscilloscope for displaying as a trace the difference frequency $(f_1' - f_2)$, and a camera for permanently recording the oscilloscope trace; and
means for determining the difference between said second frequency f_2 and said first frequency f_1,
the difference frequency $(f_1' - f_2)$ added to the difference between the frequencies f_2 and f_1 being a measure of the velocity of the object,
said laser being selected to produce frequencies f_1 and f_2 relative to the estimated velocity of said object so that all difference frequencies between the frequencies f_1, f_2, f_1' and f_2', other than the difference frequency $(f_1' - f_2)$ are

outside the range of response of said detector and said oscilloscope.

3,864,042
FINGERPRINT SCANNING SYSTEM
Stephen Richard Leventhal, Suite 506 E, 7315 Wisconsin Ave., Bethesda, Md. 20014
Filed May 10, 1973, Ser. No. 359,008
Int. Cl. G06k *9/08*
U.S. Cl. 356—71 **2 Claims**

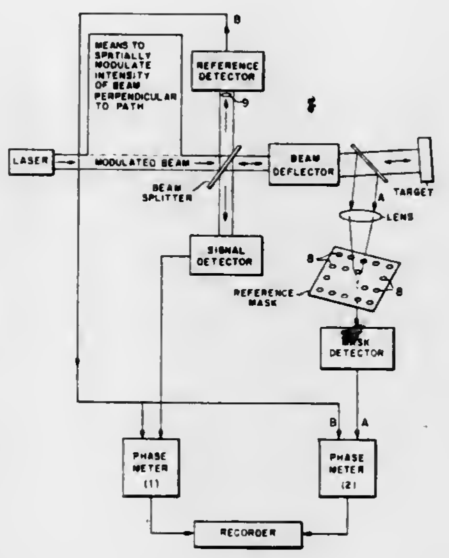




1. A system for producing a pattern comprising ridges and troughs in accordance with a fingerprint of an individual's finger, said system comprising:
- a. light source means;
- b. scanner means for scanning said light source over said finger, said scanner means comprising first means including a prism for scanning said light source along one axis of said finger; second means positioned to receive the light from said first means, for directing the light to said finger along a path such that said light is reflected by said finger and for directing the light reflected by a ridge in said finger along said predetermined path, wherein the light reflected by a trough is directed along other paths; and driver means for driving said second means such that said light source is scanned along a second axis of said finger;
- c. detector means for detecting the light from said light source means reflected along a predetermined path by said finger;
- d. output means, coupled to said detector means, for reproducing said pattern of ridges and troughs in accordance with the light detected by said detector means, wherein said pattern corresponds to the fingerprint of said finger.

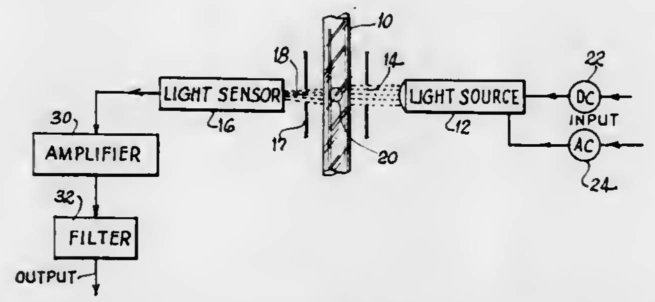
3,864,043
ANGULAR DEVIATION MEASURING DEVICE AND ITS METHOD OF USE
James T. Russell, Richland, Wash., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Continuation-in-part of Ser. No. 302,959, Nov. 1, 1972, abandoned. This application Nov. 30, 1973, Ser. No. 420,509
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **9 Claims**

1. A system for determining angular deviations of a device comprising:
- a source of a spatially modulated electromagnetic beam that has its intensity modulated substantially perpendicular to the transmission path of the beam:
- a reference detector placeable in the path of the beam for determining the spatial modulation phase of a beam section;
- a deflector placeable in the path of the beam for directing the beam through various angular orientations corresponding to specific orientation settings of the deflector;
- means placed in the beam path for diverting a first portion of the beam after it is deflected;



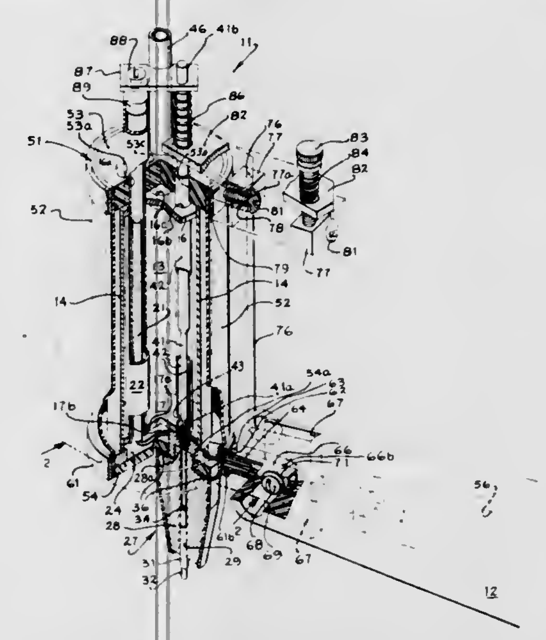
- a reference mask with at least one beam transmitting area;
- means for transmitting the first portion of the beam through the mask transmitting area;
- a reference mask detector for detecting the spatial modulation phase in the beam after the first portion passes through the mask; and
- means for comparing the phase difference between the reference detector and mask detector to allow for the determination of the angular deviation of the deflector from a prior reading for the same deflector setting.

3,864,044
METHOD AND APPARATUS FOR THE ANALYSIS OF A DISPERSED PHASE CAPABLE OF TRANSMITTING AND FOCUSING LIGHT
Norman A. Lyshkow, Chicago, Ill., assignor to Combustion Equipment Associates, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 309,644, Nov. 27, 1972, abandoned. This application May 7, 1973, Ser. No. 357,901
Int. Cl. G01n *21/22*
U.S. Cl. 356—201 **31 Claims**



1. Apparatus for analysis of a dispersed phase capable of transmitting and focusing light contained in a continuous phase capable of transmitting light, comprising chamber means adapted to contain the dispersed phase and the continuous phase, a light source positioned to pass a wide beam of light through the chamber means, means associated with the light source to generate the light beam with a component of varying intensity, light sensing means adapted to detect differences in light intensity positioned to receive a portion of the light beam passed through the chamber means whereby the dispersed phase is passed through the beam of light to focus the beam of light onto the light sensing means to cause an increase in the intensity of the light beam striking the light sensing means to activate the light sensing means for each dispersed phase in the continuous phase.

3,864,045
WAXING TOOL
Billy C. Hudson, 948 Coronado Way, Livermore, Calif. 94550
Filed May 15, 1973, Ser. No. 360,564
Int. Cl. B67d *5/62*
U.S. Cl. 401—1 **10 Claims**

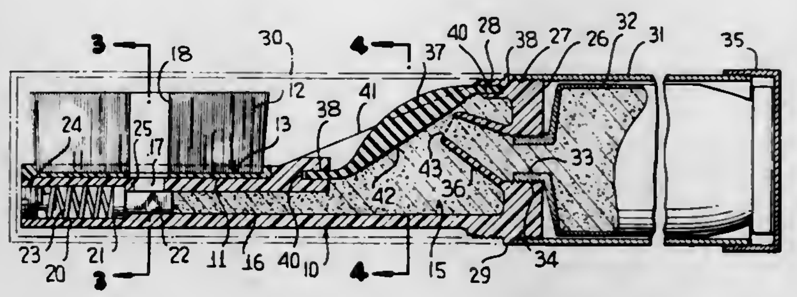


1. In a waxing tool, a body portion including means defining a reservoir for holding wax, electrically energized heating means disposed within the reservoir for melting the wax, a nozzle mounted at the bottom of the reservoir having an axially extending passageway communicating with the reservoir, a needle valve member disposed coaxially of the passageway and movable between advanced and retracted positions for controlling the flow of wax through the nozzle, said valve member extending outside the reservoir at the top thereof, an elongated handle pivotally attached to the body portion for movement in a plane extending radially of the axis of the nozzle whereby the angle between the axis of the nozzle and the axis of the handle can be varied, a control lever pivotally mounted on the body portion for movement about a radially extending pivot in a plane generally normal to the plane of handle movement, one end of the lever extending toward the junction of the handle and the body portion, whereby the lever can be operated by the hand of an operator gripping the handle, and means connecting the control lever to the valve member externally of the reservoir whereby the position of the valve member is controlled by the lever.

3,864,046
MECHANICAL PENCIL, ESPECIALLY FOR THIN LEADS
Kemal Butka, 372 Central Park West, New York, N.Y. 10025
Continuation-in-part of Ser. No. 333,148, Feb. 16, 1973, abandoned. This application Nov. 29, 1973, Ser. No. 420,172
Int. Cl. B43k *21/02*
U.S. Cl. 401—53 **8 Claims**

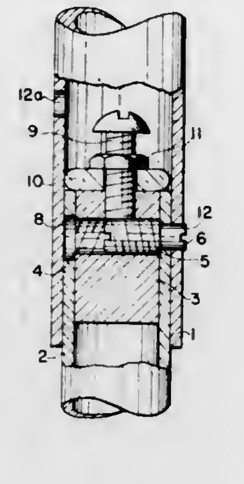
1. In a mechanical pencil, especially for thin leads, a combination comprising elongated tubular casing means having a lower end; resilient clamping means arranged substantially coaxially within said casing means spaced from said lower end and movable between normally open position in which it is disengaged from a lead passing through said clamping means and a clamping position in which it clamps said lead, said clamping means including a connecting portion remote from said lower end and a plurality of circumferentially spaced force-multiplying arms extending from said connecting portion towards said lower end and defining in the region of said connecting portion a lead passage; tubular lead guide means projecting coaxially beyond the lower end of the tubular casing means and being guided therein movable in axial direction, said tubular lead guide means being constructed for frictionally engaging a lead passing through said clamping means and said tubular lead guide means; transmission means between said tubular lead guide means and said clamping means for transmitting, during writing or drawing and exertion of axial pressure and slight inward movement of the tubular lead guide means, a corresponding pressure to said arms of said clamping means to move the latter to said clamping position in which said arms multiply the applied force and engage the lead in said lead passage with an increased force, so as to prevent inward movement of the lead; and restoring means for moving said lead guide means upon cessation of said axial pressure in outward direction relative to said casing means while said clamping means return to said open position thereof.

3,864,047
TOOTHBRUSH WITH RESILIENT PUMP FOR SUPPLYING PASTE TO BRUSH
James A. Sherrod, P.O. Box 84, Pavo, Ga. 31778
Filed May 23, 1974, Ser. No. 472,671
Int. Cl. A46b *11/04*
U.S. Cl. 401—278 **8 Claims**



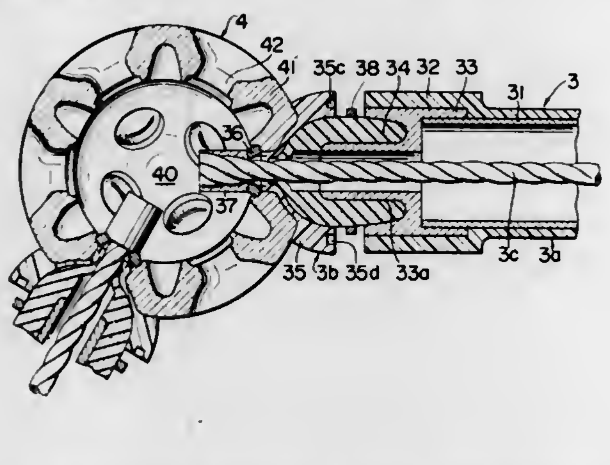
8. A paste dispensing toothbrush or the like comprising a body portion having a paste holding chamber and a paste inlet nozzle projecting into the chamber and connectable to an external paste source, a brush head secured to the body portion and having a paste receiving cavity, the body portion having a paste outlet passage interconnecting said chamber and brush head cavity, a pressure responsive valve element on the body portion normally blocking communication between the brush head cavity and said outlet passage and opening in response to increasing pressure in said chamber and outlet passage, and a manually operable control element on the body portion having a normal position away from said nozzle and a use position in contact with the nozzle and blocking the nozzle, said control element when in the use position diminishing the volume of said chamber and thereby compressing paste therein to cause opening of the pressure responsive valve element and dispensing into said brush head cavity a measured amount of paste.

3,864,048
QUICK-ACTING RELEASABLE TUBE CONNECTORS
Alene McCall Parker, Rt. 1 Box 23, Windsor, N.C. 27983
Filed Nov. 17, 1972, Ser. No. 307,342
Int. Cl. F16b *7/10*
U.S. Cl. 403—27 **10 Claims**



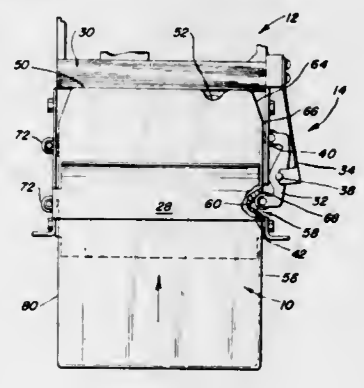
1. Apparatus comprising inner and outer telescopically interfitting tubular sections having a common longitudinal axis, said outer section having a plurality of regularly- and axially-spaced radial holes in and through its walls, said inner section also having a plurality of axially-spaced radial holes in and through its walls and spaced differently from the spacing of the holes in said outer section, all said holes being the same diametral size, a plug entirely fitting within and axially adjustable in and along said inner section, bayonet slot means formed on one end of said plug, said plug having a bore extending diametrically thereacross, generally cylindrical latch means movably fitting within said bore and having an outer end of reduced diametral size to smoothly fit within and extend through any selected registering pair of radial holes in and through said sections, said reduced outer end forming an annular shoulder with the body of said latch means, actuating means within said bore operaable to move said latch means radially outwardly along said bore, from a first position entirely within said plug, outwardly to a second and latching position with its reduced end extending through any selected registering pair of holes in said sections and in registration with said bore, to thus releasably lock said sections in selected telescopic relation, and abutment means cooperating with said shoulder on said latch means, positively limiting radially outward movement thereof in said second position.

3,864,049
CONSTRUCTION ELEMENTS OF UNDERWATER TRUSSES
Taisaburo Ono, No. 2-39, 2-chome, Shinjuku, Zushi, Japan
Filed June 11, 1973, Ser. No. 368,537
Claims priority, application Japan, Jan. 11, 1973, 48-5524
Int. Cl. E04g *7/20*
U.S. Cl. 403—171 **6 Claims**



1. Construction elements of underwater trusses comprising a web member having elastic head members secured to each of the opposite ends thereof, spherical hollow opposing joint members having a plurality of holes formed therein, a cup-shaped member covering a portion of each elastic head member and received in one of said holes in each joint member, a tension member extending through said web member and having ends extending through said holes into the hollow portions of said joint members, and stopper means for locking each end of the tension member to said hollow portion of each joint member to interconnect said web member and said joint member in fixed position.

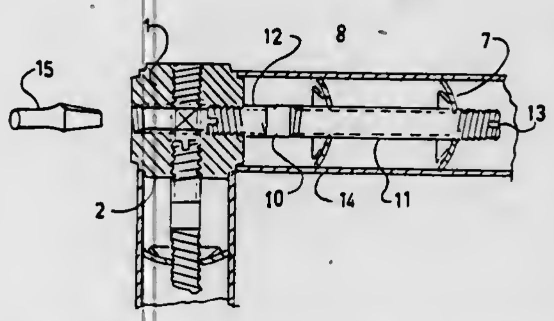
3,864,050
HOLDING MECHANISM FOR TAPE CARTRIDGE
Michael D. Thomas, 640 Fern Ct., Elmhurst, Ill. 60126
Filed Feb. 28, 1974, Ser. No. 446,594
Int. Cl. F16b *2/16*
U.S. Cl. 403—329 **11 Claims**



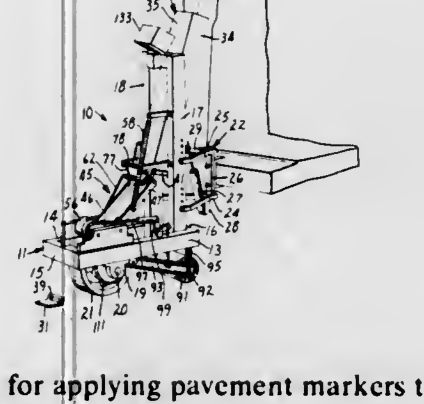
1. Mechanism for securing a first mating member in an elongated channel of a second mating member, comprising: means defining a transversely extending notch in one wall of said first mating member, said notch including a forwardly inclined surface and being spaced from one end of said first mating member that is adapted to be received in said channel; a locking bridge having opposite ends; resilient means carried by said second mating member and defining a movable pivotal connection supporting said locking bridge intermediate said opposite ends, said resilient means being positioned to locate at least a portion of said locking bridge in said channel and longitudinally aligned with said notch when said first mating member is aligned with said channel, said locking bridge being simultaneously pivoted on said second mating member and moved transversely of said channel when said first mating member is moved into said channel, said notch being positioned to receive one end of said locking bridge against said forwardly inclined surface when said first mating member is in a fully inserted position in said channel with the opposite end of said locking bridge engaging said one wall at a location spaced from said notch to retain said one end in said notch, whereby said one end of said locking bridge applies both a forwardly directed biasing force and a laterally directed biasing force against said forwardly inclined surface while said opposite end of said bridge applies a laterally directed biasing force against said one wall at said spaced location.

3,864,051
CONNECTING MEANS FOR TUBULAR MEMBERS
Robert Reid, 50 Transwell Ave., Willowdale, Ontario, Canada
Filed Mar. 22, 1973, Ser. No. 343,725
Claims priority, application Canada, May 8, 1972, 141519
Int. Cl. F16b *7/22*
U.S. Cl. 403—408 **4 Claims**

1. A connector for orthogonally connecting together at least two elongate tubular members comprising in combination a hexahedron block having a raised surface on at least two orthogonally oriented faces of said hexahedron block, each raised surface having a circumferential outline corresponding to the inside perimeter of a tubular member to be connected to permit insertion of the raised surface in an end of the tubular member; a threaded stud having a left hand thread at one end and a right hand thread at the other end, both ends of said stud having means for receiving a driving tool to rotate said stud; a threaded bore extended axially through said hexahedron block and between two diametrically opposed faces of said hexahedron block, there being a threaded bore extending through each of said raised surfaces of said hexahedron block; the number of threaded bores being equal to the number of raised surfaces; a helically threaded washer having a circumferential dimension which permits insertion thereof into a tubular member; said washer having resilient means for permitting insertion of the washer within the tubular member and for precluding removal of the washer from the tubular member; said threaded bore having an internal thread for receiving a threaded end of said threaded stud and said washer having an internal thread for receiving the other threaded end of said threaded stud; each end of said threaded stud being threaded into the corresponding internal thread of said threaded bore and said washer to connect said block to the tubular member upon positive rotational advancement of the threaded stud in said washer where the longitudinal axis of said threaded stud is substantially parallel to the longitudinal axis of the tubular member being connected; said threaded stud extending less than halfway into the respective threaded bore.

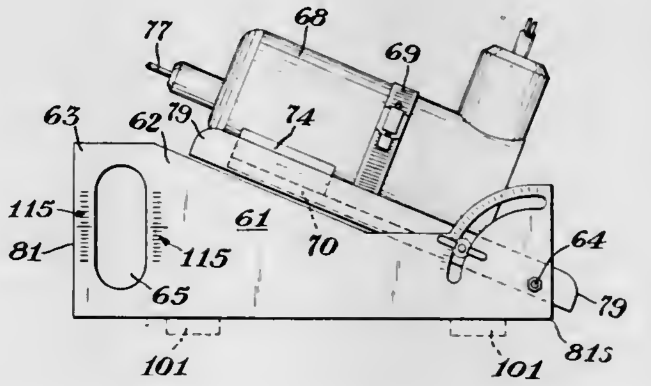


3,864,052
APPLICATOR FOR PAVEMENT MARKERS
James K. Blomberg, Richfield, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Feb. 4, 1974, Ser. No. 439,090
Int. Cl. E01c *23/16*
U.S. Cl. 404—94 **15 Claims**



1. An applicator for applying pavement markers to a paved surface, comprising:
A. a frame;
B. wheel means supporting the frame and adapted for rolling engagement with the paved surface;
C. a magazine supported by the frame and adapted to receive and hold a stack of pavement markers with an end pavement marker in the stack positioned at an opening in the magazine;
D. picker means mounted on the frame and comprising a movable support means and a gripping means attached to the movable support means, said picker means being adapted to move through a cycle of movement that includes,
  1. gripping of said end pavement marker by the gripping means,
  2. movement of the support means to carry the gripping means and the end pavement marker from the opening in the magazine to a point adjacent the wheel means so as to present the pavement marker into wedging contact between the wheel means and the paved surface, whereupon the pavement marker is pressed against the paved surface by the wheel means and pulled from the gripping means; and
  3. return movement of the support means and gripping means to the point of origin of the cycle of movement; and
E. drive means for moving the picker means through a cycle of movement.

3,864,053
PORTABLE GUIDE JIG FOR HAND DRILL
William James Harwood, Apt. 6, 4973 Fontaine, Saginaw, Mich. 48603
Continuation-in-part of Ser. No. 328,561, Feb. 1, 1973, Pat. No. 3,809,489. This application July 19, 1973, Ser. No. 380,913
Int. Cl. B23b *49/00*
U.S. Cl. 408—110 **12 Claims**

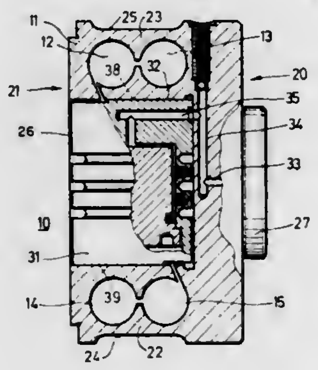


1. A portable jig adapted to be hand held and to hold and support a portable electric drill at an adjustable predetermined angle relative to a surface to be penetrated by the bit of said drill, which comprises:
i. first and second substantially rectangular troughshaped main support members each having opposed sidewalls connected by a floor, and each having open ends;
ii. the second support member being nested in the first support member and pivotally supported thereby by first and second fastening members, said fastening members each being adjacent and apart from a common end of the jig;
iii. and the floor of the first support member being foreshortened at the end of the jig adjacent the fastening members;
iv. means for locking the first and second support members in predetermined pivotal angle relationship;
v. and on the floor of said second support member, means for mounting the portable electric drill within and to the second support member, said means for mounting being slideable longitudinally of said floor whereby the drill is advanceable towards an end of the jig so as to allow the said bit to be operatively extended; wherein
vi. the sidewalls of each of the first and second support members are substantially parallel and aligned;
vii. the second support member nesting closely inside the first member and being pivotally supported thereby by means of said first and second fastening members each extending through one sidewall of each support member adjacent a common end of the jig but above the floor of the second support member;
viii. and the fastening members each having an axis of rotation and said axis being substantially co-aligned;

- ix. the floor of the first support member being foreshortened, extending only from the vicinity of the fastening members toward the end of the first support member remote therefrom; thereby
- x. permitting the floor of the second support member to be pivotal through an angle of at least about 45° with respect to the floor of the first support member; wherein
- xi. the ends of the sidewalls of the first support member remote from the fastening members are each provided with mutually coplanar and outwardly extending flange portions adapted to be placed on the surface to be penetrated by said bit and to act as a support base for the jig when in use; and wherein
- xii. the sidewalls of the first support member are each provided with an extended portion at an end thereof; and
- xiii. a hand receiving slot is provided in each extended portion.

3,864,054
TOOL CARRIER

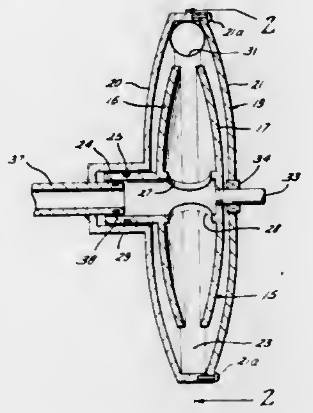
Dieter Eysel, Frankfurt, Germany, assignor to Samson Apparatebau AG, Frankfurt am Main, Germany
Filed June 11, 1973, Ser. No. 368,931
Claims priority, application Germany, June 12, 1972, 2228553
Int. Cl. B23b *29/34*
U.S. Cl. 408—147 **6 Claims**



1. In a tool carrier for rotating or stationary tools having a tool receiving surface adapted to receive a tool thereon resiliently movable with respect to a base plate for small amounts perpendicular to the tool carrier axis, the improvement comprising means defining a cylindrical housing having generally a U-shaped cross section in axial direction, said housing including means defining two pairs of side-by-side and parallel holes therethrough, each pair being located on opposite sides of said cylindrical housing and which are parallel to a theoretical tangent to the exterior cylindrical surface of said housing means, each of said side-by-side holes in each of said pairs being connected by means defining a slot which extends coextensive with said holes and parallel to said theoretical tangent, each of said holes positioned nearest said base plate being connected to a hole of the other pair which is nearest said tool receiving surface by means defining circumferentially extending and externally opening slots which communicate with the interior of said U-shaped housing so that the end of said housing means having said tool receiving surface thereon is resiliently supported relative to said base plate through web means defined by a portion of said housing means which connects said tool receiving surface with said base plate and means for adjustably moving said tool receiving surface relative to said base plate in a direction perpendicular to said tool carrier axis.

3,864,055
PUMPS CAPABLE OF USE AS HEART PUMPS AND BLOOD PUMPS

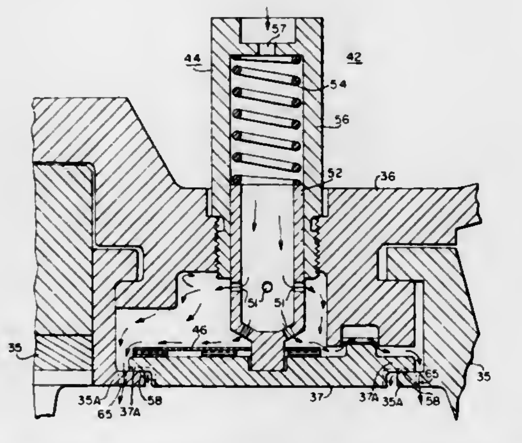
Harold D. Kletschka, 1925 Noble Dr., Minneapolis, Minn. 55422, and Edson H. Rafferty, Rt. 1, Box 479, Excelsior, Minn. 55331
Continuation-in-part of Ser. No. 204,980, Dec. 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 886,137, Dec. 18, 1969, Pat. No. 3,647,324, which is a continuation-in-part of Ser. No. 678,265, Oct. 26, 1967, Pat. No. 3,487,784. This application Nov. 9, 1973, Ser. No. 414,225
Int. Cl. F04d *7/00, 29/26*
U.S. Cl. 415—1 **12 Claims**



1. A method of pumping blood which is subject to damage under impact and shear, said method comprising rotating an impeller having a pair of axially spaced smooth discs that define a constant annular cross sectional vaneless pumping chamber therebetween, providing one disc with a central opening communicating with the inner portion of said annular pumping chamber, subjecting the blood to centrifugal action by engagement with the smooth walls of the rotating discs that define the pumping chamber, increasing the outward movement of blood under laminar flow conditions without appreciable turbulance to the outer peripheries of the discs and collecting the discharged laminar flow of said blood from said pumping chamber in an annular unobstructed chamber about said discs without subjecting the blood to impact and/or shear.

3,864,056
COOLED TURBINE BLADE RING ASSEMBLY

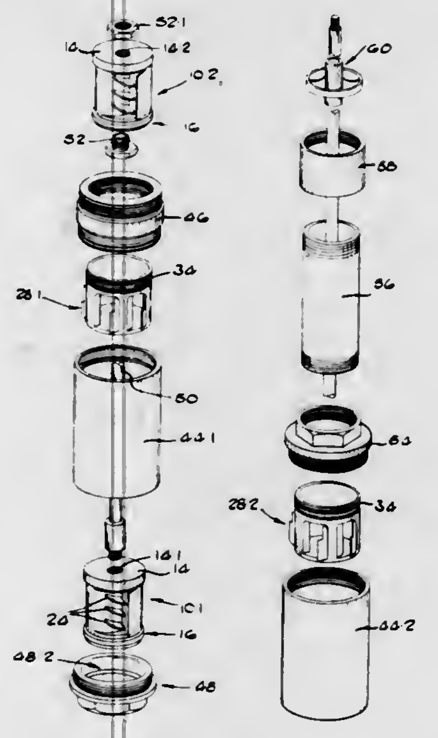
Frank K. Gabriel, Springfield, Pa., and Stephen D. Leshnoff, Highland Park, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 27, 1973, Ser. No. 383,426
Int. Cl. F01d *25/08, 25/14, 25/12*
U.S. Cl. 415—178 **3 Claims**



1. A hot elastic fluid machine, comprising: a turbine casing, a plurality of rotatable discs mounted on an axis, a plurality of rotor blades disposed on the periphery of each of said rotatable discs, a plurality of radially directed stationary blades disposed in annular arrays alternating with said rotatable discs, each annular array of stationary blades having an inner and an outer shroud ring, a blade ring circumferentially disposed about the blades, means for supplying said stationary blades with cooling fluid, a plurality of insulated ring segments coaxial with said blade ring disposed radially outwardly of said rotating blades and inwardly of said blade ring, conduit means for supplying pressurized cooling fluid to said ring segments, said ring segments disposed about said rotating blades being expansible in both the radial and the axial direction, said radial direction of expansion of said ring segments being controlled by a biasing means, and a heat shield, said heat shield being disposed in a spaced relationship and radially outwardly of, yet fixedly attached to, said ring segments, said heat shield being cooled by chambers having a passageway extending therethrough, said passageway permitting the flow of cooling fluid through said bias producing means, the radially innermost chamber having holes therein, said holes permitting the pressurized cooling fluid to impinge upon said heat shield, the flow of cooling fluid upon said heat shield preventing localized overcooling and hence preventing localized distortion of said ring segments thereby, said heat shield receiving heat from said ring segments by radiation and convection to permit a uniform temperature across said ring segments and, said heat shield providing a heat barrier between said blade ring and said ring segments.

3,864,057
CENTRIFUGAL PUMP

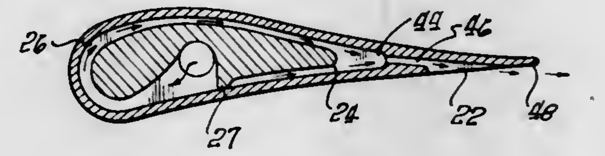
Helgard Holtzhauzen Theron, Rooiwal, District Richmond, Cape Province, South Africa
Filed Aug. 6, 1973, Ser. No. 386,029
Claims priority, application South Africa, Sept. 13, 1972, 72/726250; Oct. 13, 1972, 72/727314
Int. Cl. F04d *13/14, 29/28, 29/44*
U.S. Cl. 415—199 **8 Claims**



1. A centrifugal pump comprising a housing having a discharge opening, an impeller in the housing, the impeller being of a tubular form having an axial inlet opening isolated from the interior of the housing and adapted to discharge into the interior of the housing, and a guide means for guiding fluid in the interior of the housing to the discharge opening, the guide means being arranged axially with respect to the impeller and comprising a tubular member having substantially the same diameter as the impeller with an axial outlet opening and being adapted to guide fluid inwardly into the interior of the guide means, the impeller and guide means, each further comprising a hollow cylindrical member having at least one elongated opening in its peripheral surface, each said opening having two of its defining edges substantially, axially aligned, and each said opening having a vane attached to at least one of said defining edges, each said vane being jointed to a corresponding defining edge in such a manner that each said vane and said peripheral surface cooperate to form an angle therebetween.

3,864,058
COOLED AERODYNAMIC DEVICE

William C. Womack, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Feb. 5, 1973, Ser. No. 329,506
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 **11 Claims**



1. A fluid cooled aerodynamic device comprising:

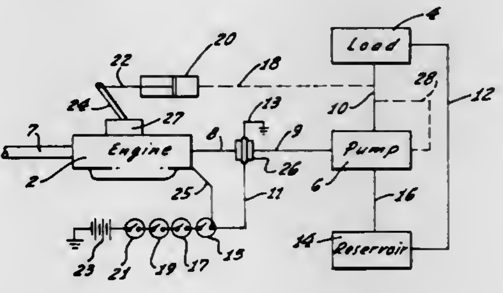
a fluid impervious shell member of aerodynamic shape having leading and trailing edges and having a cavity therein extending along its entire span with an exit opening cummunicating between said cavity and the ambient atmosphere;

a body member inserted in the cavity of said shell member said body being spaced apart from said shell member at predetermined points to form a plurality of chordwise cooling fluid passages therebetween in communication with the exit opening of said shell member and having openings communicating between each of said passages and a source of cooling fluid said body member forming closure means for the ends of said cavity; and

metering means for metering cooling fluid flow from said source into each of said cooling fluid passages.

3,864,059
NOISE REDUCTION APPARATUS AND METHOD

Fred T. Smith, Dearborn Heights, Mich., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Division of Ser. No. 274,798, July 24, 1972, Pat. No. 3,812,676. This application Sept. 27, 1973, Ser. No. 401,184
Int. Cl. F04b *49/00*
U.S. Cl. 417—20 **11 Claims**



1. A throttle control device for varying the quantity of fuel fed to an engine in a vehicle at each instant in response to variations in the pressure and volume of a hydraulic fluid discharged from a pump means driven by the engine to maintain the engine at speeds approaching idling, comprising:

auxiliary means for providing a cyclic operation distinct from the movement of the vehicle where the auxiliary means imposes variable magnitudes of load at different times in each cycle,

the auxiliary means being operatively coupled to the pump means to provide for the discharge of the hydraulic fluid from the pump means at each instant in accordance with the magnitude of the variable load from the auxiliary means at that instant;

first receiving means for receiving at each instant characteristics proportional the volume of hydraulic fluid discharged by the pump means to the auxiliary means at that instant;
second receiving means for receiving at each instant characteristics proportional to the pressure of hydraulic fluid discharged by the pump means to the auxiliary means at that instant; and
biasing means,
control means actuatable, against the action of the biasing means, by the cumulative effect of the first and second receiving means at each instant in accordance with the pressure and the volume of the hydraulic fluid respectively introduced to the first and second receiving means to transmit movement to the engine throttle in a direction to change the speed of the engine in a direction corresponding to variations in the cumulative effect of the pressure and flow of the fluid discharged by the pump means and thereby maintain the engine at a speed approaching idling with the degree of movement of the engine throttle being dependent on the cumulative effect of both the pressure and volume of fluid discharged by the pump means, whereby
the torque output of the engine is varied at the engine speeds approaching idling in response to the load requirements imposed upon the pump by the auxiliary means.

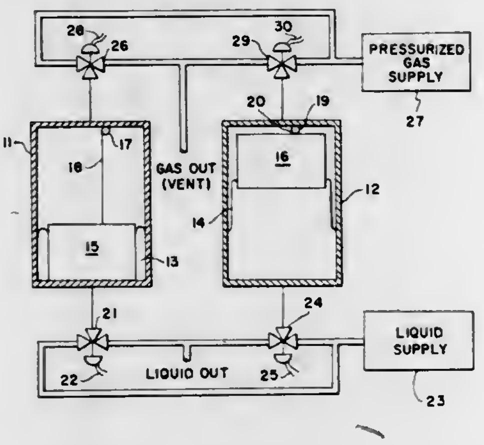
3,864,060
AUTOMATIC LIQUID INVENTORY COLLECTING AND DISPENSING UNIT

John B. Hall, Jr., Newport News, and Edwin F. Williams, Hampton, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 21, 1973, Ser. No. 334,349

Int. Cl. F04b *49/00, 43/04;* **F04f** *1/06*

U.S. Cl. 417—36 **2 Claims**



1. An automatic liquid inventory collecting and dispensing unit comprising:
first and second tanks;
first and second two-way solenoid valves associated with each of said tanks with the first coupled to a liquid source and its associated tank for allowing the liquid to flow into the tank when the first valve is in its normal position and for allowing the liquid to flow out of the tank when the first valve is in its actuated position and with the second valve connected to its associated tank and a pressurized gas supply for allowing gas inside the tank to flow out when the valve is in its normal position and for allowing gas to flow from the gas supply into the tank when the valve is in its actuated position;
control circuit means for actuating the two valves associated with said first tank and not actuating the two valves associated with the said second tank when both said first tank is filled with liquid and said second tank is emptied for not actuating the two valves associated with said first tank and for actuating the two valves associated with said second tank when both said first tank is emptied and said second tank is filled with liquid whereby said first and second tanks are alternately filled and emptied;
said control circuit means including a piston inside each of said first and second tanks to form a compartment inside each tank for the liquid and a compartment inside the tank for the gas and including a potentiometer associated with each of said tanks and means attached to each said potentiometer and the associated piston for varying the potentiometer in accordance with the movement of said piston.

3,864,061
ARRANGEMENT OF AN ELECTROMAGNETIC PUMP IMMERSED IN A LIQUID MATERIAL PROVIDING A CONSTANT DISCHARGE

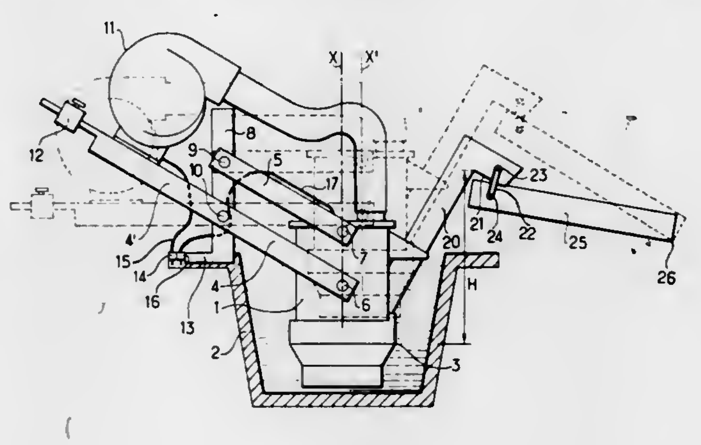
Henri Carbonnel, and Guy Morlaud, both of Paris, France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis Robinson, France

Filed Sept. 28, 1973, Ser. No. 401,789

Claims priority, application France, Sept. 28, 1972, 72.34393

Int. Cl. H02k *45/00*

U.S. Cl. 417—50 **4 Claims**



1. In an arrangement wherein an electromagnetic cylindrical pump is immersed in a ladle of liquid metal and provides a discharge independent of the variations in the level of liquid metal, the improvement comprising: adjustable means for keeping the depth of immersion of the cylindrical pump constant and for simultaneously keeping the pump axis in a vertical position, said adjustable means comprising two sets of connecting rods 4 and 5 of the same length, each set forming an articulated parallelogram, trunnions 6 and 7 fixing two apices of the two parallelograms on a generating line of the cylindrical body of the pump, trunnions 9 and 10 fixing the other two apices respectively of said parallelogram to the liquid metal ladle and wherein one of the connecting rods of each set being extended towards the outside of the ladle by an arm 4' bearing an adjustable counterweight to enable the depth of immersion to be varied.

3,864,062
SYSTEM FOR STORING A FLOWABLE MASS

Jean-Pierre LeFur, Vienne, France, assignor to Enterprise de Recherches et d'Activites Petrolieres, Paris, France

Filed Apr. 17, 1973, Ser. No. 352,080

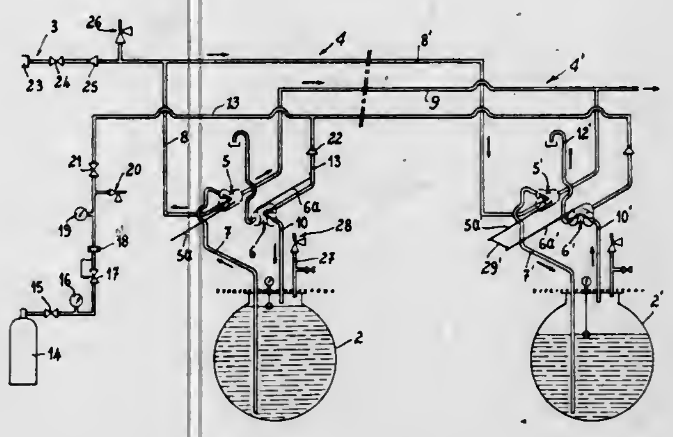
Claims priority, application France, Apr. 18, 1972, 72.14371

Int. Cl. F04f *1/06, 3/00*

U.S. Cl. 417—121 **5 Claims**

1. A system for the storage of a flowable mass capable of displacement by a high-pressure driving fluid, comprising:
a plurality of storage units for said flowable mass each including a closed vessel with a first conduit and a second conduit;
a supply conduit for said flowable mass common to said units;

a source of driving fluid provided with a high-pressure conduit for each of said units;
a discharge conduit for said flowable mass at each of said units;
a venting conduit for said fluid at each of said units;
first three-way valve means at each of said units for connecting said first conduit thereof to said supply conduit in a filling position and to said discharge conduit in an emptying position;
second three-way valve means at each of said units for connecting said second conduit thereof to said venting conduit in a filling position and to said high-pressure conduit in an emptying position;
first actuating means for each of said units for alternately placing said first valve means thereof in said filling and emptying positions; and



second actuating means for each of said units for alternately placing said second valve means thereof in said filling and emptying positions;
joint placement of said first and second actuating means in said filling positions establishing a circuit from said supply conduit through the vessel to said venting conduit, joint placement of said first and second actuating means in said emptying position establishing a circuit from said source through the vessel to said discharge conduit, simultaneous placement of said first actuating means of one unit in said filling position and of said second actuating means of the same unit in said emptying position establishing a circuit from said source through the vessel of said one unit to said supply conduit whereby the contents of said vessel can be transferred to the vessel of another unit having said first and second actuating means in said filling position.

3,864,063
AUTOMATIC TORQUE LIMITATION CONTROL

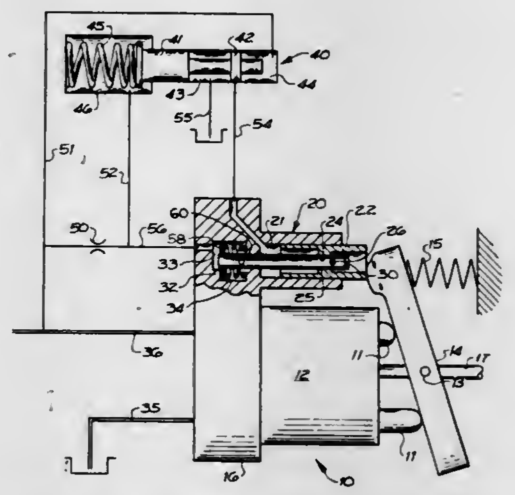
Robert J. Martin, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed Sept. 11, 1973, Ser. No. 396,317

Int. Cl. F04b *1/26*

U.S. Cl. 417—222 **2 Claims**

1. A torque-compensating control system for a variable displacement pump with an outlet port, the pump having a tiltable swash plate actuated by a fluid operated displacement cylinder normally biased toward its maximum flow position, the system comprising:
a pilot-operated valve means positioned in fluid communication with the displacement cylinder, pump outlet port, and drain, having a first position directing fluid pressure to the displacement cylinder and a second position draining the displacement cylinder to tank;
a first pilot servo urging the valve means towards its first position;
a first sensing line connecting the first pilot servo to the pump outlet pressure;
a second pilot servo urging the valve means toward the second position with the assistance of a biasing means;
a second sensing line connecting the second pilot servo across an orifice to the pump outlet pressure; and
variable relief valve means relieving the pressure in the second pilot servo, the relief valve means including a hollow pressurized plunger reacting against a spring means with its interior connected to the second pilot servo, the plunger having a first valve opening therein, the plunger passing axially through the displacement piston



with the displacement piston acting as a valving means on the first valve opening, the spring force on the plunger increasing as the plunger follows the piston toward a minimum flow position causing the relieving pressure level to increase as the pump swash plate decreases its displacement whereby the torque output of the pump remains substantially constant at various pump discharge pressure levels.

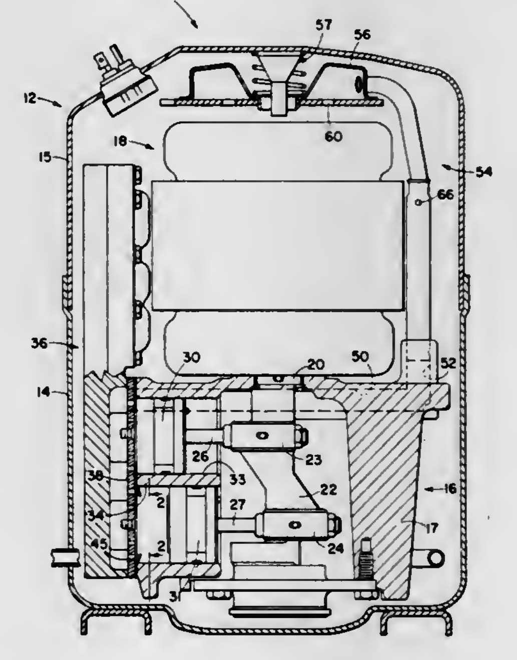
3,864,064
SUCTION MUFFLER TUBE FOR COMPRESSOR

Edwin L. Gannaway, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 12, 1973, Ser. No. 340,553

Int. Cl. F04b *21/00;* **F01n** *3/06*

U.S. Cl. 417—312 **4 Claims**



1. A gas compressor, comprising:
a housing means,
a compressor in said housing means having intake valving, an intake manifold leading to said intake valving,
intake muffler means opening into said housing means,
an intake muffler tube leading from said muffler means to said intake manifold, and
a by-pass tube leading to said intake manifold and opening into said housing means without passing into the muffler

means, said by-pass tube being concentric with said intake tube and surrounding the same.

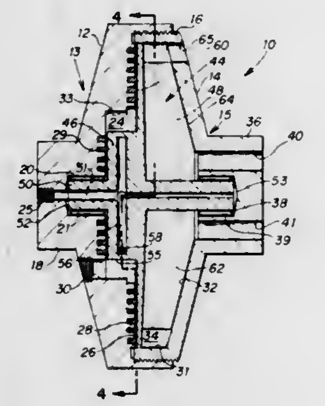
3,864,065
REFRIGERANT EXPANDER COMPRESSOR

Fred L. Goldsberry, Amarillo, Tex., assignor to Lone Star Gas Company, Dallas, Tex.

Filed Dec. 7, 1973, Ser. No. 422,759

Int. Cl. F04b *17/00*

U.S. Cl. 417—406 **12 Claims**



1. A rotary device comprising:
a housing having first and second chambers, each chamber having a discharge passageway;
an axially extending shaft mounted in said housing and extending into the first and second chambers, said shaft having a fluid inlet passageway formed therein;
bearing means supporting the shaft for rotation relative to the housing;
means sealing said first chamber from said second chamber;
a rotor fixedly mounted on said shaft for rotation therewith in said first chamber, said rotor including a fluid passageway communicating between the inlet passageway of the shaft and nozzle means adapted to effect fluid discharge generally tangentially into said first chamber to impart rotation to said rotor by reaction to the fluid discharge from the nozzle means; and
impeller means mounted on said shaft in said second chamber and driven thereby, said impeller means adapted to compress fluids introduced thereto.

3,864,066
APPARATUS FOR SPREADING COMMINUTED PARTLY CEMENTITIOUS MATERIAL ON A MOVING SUPPORT

Klaus Gerhardt, Penzberg-Reindl, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany

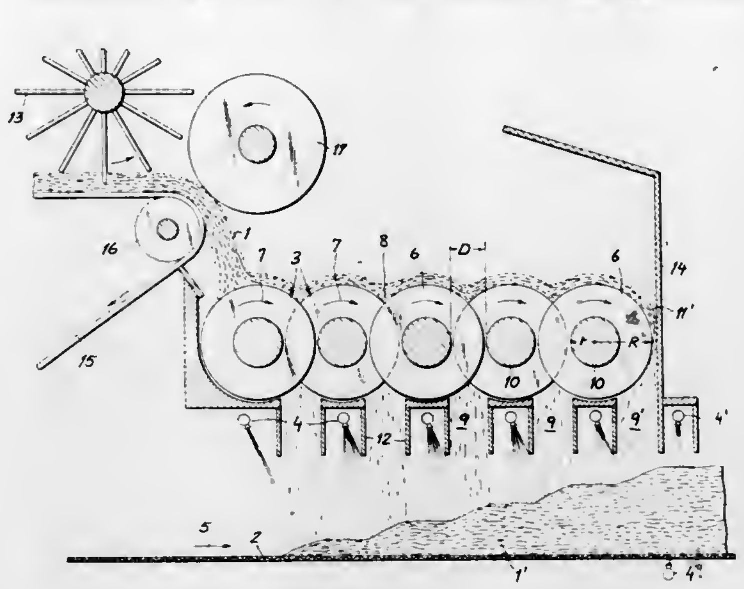
Filed June 13, 1973, Ser. No. 369,734

Claims priority, application Germany, June 15, 1972, 2229147

Int. Cl. B28b *5/00*

U.S. Cl. 425—84 **6 Claims**

1. An apparatus for converting a mass of comminuted partly cementitious material into a moistened continuous layer, comprising:
a conveyor with a horizontal supporting surface;
an array of juxtaposed rollers with parallel horizontal axes above said supporting surface, each roller including a cylindrical hub and a multiplicity of axially spaced annular fins on said hub, the fins of adjacent rollers being interdigitated with formation of narrow slots in the gaps between the hubs thereof;
drive means for codirectionally rotating said rollers and simultaneously moving said conveyor;
feed means for continuously depositing comminuted cementitious material on said rollers for distribution into a plurality of flows descending in a free fall through said gaps to said supporting surface;
flow-guiding means underneath said rollers for confining the descending material to the vicinity of said gaps; and



spray means underneath said rollers for irrigating the descending flows of said cementitious material.

3,864,067
CAKE STOCK DISPENSING APPARATUS

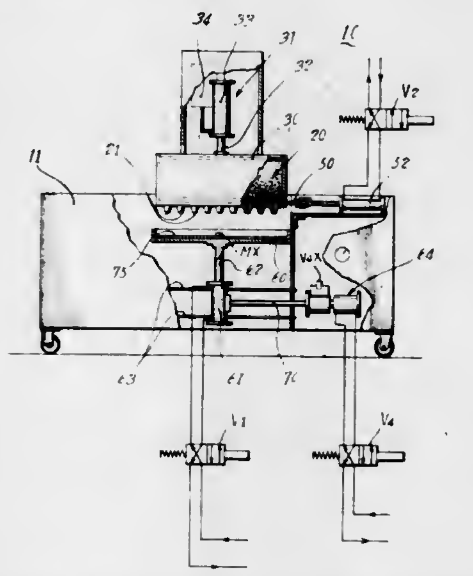
Tadahiro Kajitani, 288-28, Oaza-Anyoji, Ritto-cho, Kurita-gun, Shiga Prefecture, Japan

Filed May 4, 1973, Ser. No. 357,196

Claims priority, application Japan, Jan. 24, 1973, 48-10513; Jan. 24, 1973, 48-10514; Jan. 25, 1973, 48-11529[U]

Int. Cl. A21c *5/02*

U.S. Cl. 425—166 **3 Claims**



1. In a cake stock dispensing apparatus including:
a. a cake stock container having a bottom plate provided with a number of nozzle openings and an intermediate plate provided with a number of openings therethrough aligned with the nozzle openings;
b. a shutter disposed slidably between the bottom plate and the intermediate plate for opening and closing the openings of the plates,
c. a depressing plate positioned above the shutter for downwardly depressing cake stock contained in the container,
d. a supporting plate positioned below the nozzles of the bottom plate for removably supporting a disk which is adapted to receive the cake extruded through the nozzles,
e. a first cylinder operatively connected to the shutter for moving the shutter, and
f. a second cylinder operatively connected to the supporting plate for raising and lowering the supporting plate; the improvement comprising:
g. a depressing means for operating the depressing plate including an operating cylinder and an auxiliary cylinder, a first piston reciprocably mounted in the operating cylinder and a piston rod operatively connecting the first piston to the depressing plate, the first piston dividing the operating cylinder into a lower chamber below the first piston and an upper chamber above the first piston, a second piston reciprocably mounted in the auxiliary cylinder and dividing the auxiliary cylinder into a lower chamber below the second piston and an upper chamber above the second piston, pipe means connecting the lower chambers of the operating cylinder and the auxiliary cylinder, at least one magnetic valve interposed in said pipe means, the lower chambers being filled with incompressible fluid, and magnetic valve means for filling the upper chambers with compressed air,
h. sliding means operatively connected to the second cylinder for horizontally sliding the supporting plate, and
i. electrical control circuit for controlling the first and seond cylinders, the depressing mechanisms and the sliding means in properly timed relation.

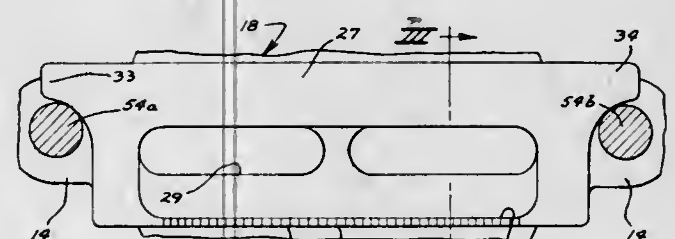
3,864,068
HOT MELT EXTRUSION APPARATUS

John R. Flakne, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Feb. 9, 1973, Ser. No. 330,935

Int. Cl. B29f *3/04*

U.S. Cl. 425—192 **7 Claims**



1. A filament extrusion apparatus including means for supplying extrusion material at extrusion pressure;
means for heating said extrusion material to a plastic condition; and
die means, said die means including a plurality of identical die plates, each of said die plates including a pair of laterally extending shoulder means, said apparatus including a pair of rod means on which said shoulder means may rest for support, each of said die plates having first and second machined surfaces, a flow channel defined through each of said die plates, a ridge along one edge of each die plate, said ridge having defined therein a plurality of orifices and a flow passageway interconnecting said flow channel and said orifices.

3,864,069
APPARATUS FOR CROSS-LINKING MOLDING OF HIGH POLYMERS

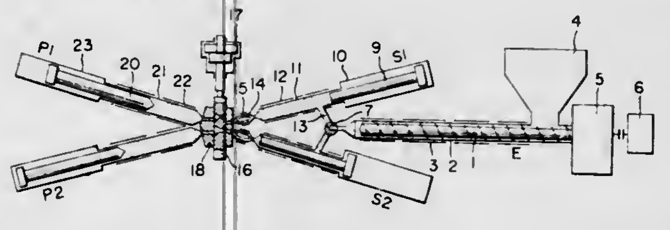
Mamoru Takiura, Kawasaki; Yasushi Ebisawa, and Noriyuki Kikuchi, both of Tokyo, all of Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 347,203

Claims priority, application Japan, Apr. 4, 1972, 47-33660

Int. Cl. B29f *3/02*

U.S. Cl. 425—204 **7 Claims**



1. A high-pressure fluid cross-linking molding apparatus for use in molding high polymers, comprising:
extruder means for melting and kneading a mixture composed of high polymers and a cross-linking agent by applying such temperature and pressure as will not give rise to a cross-linking reaction;
a plurality of feeding units each having a feed chamber containing a relatively movable feeding plunger therein and a heating device for imparting heat energy within said chamber effective to cause a cross-linking reaction;
passageway means providing communication between the discharge end of said extruder means and the feed chambers associated with the plurality of feeding units;
a plurality of reaction units each having a reaction compartment and a relatively movable reaction plunger therein, each of said reaction units being associated with a corresponding one of said feeding units;
a plurality of first passages connecting and providing communication between each of said feed chambers and a corresponding reaction compartment;
a molding head assembly and a plurality of second passages connected to and providing communication between said reaction compartments and said molding head assembly; and
transfer valve means associated with said first and second passages for alternately opening and closing said first and second passages to provide for the continuous flow from said reaction compartments to said molding head assembly while permitting intermittent and alternating flow from each of said feed chambers to a corresponding reaction compartment.

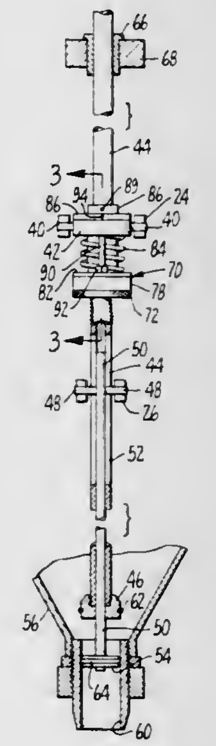
3,864,070
ADJUSTABLE DOUGHNUT MACHINE

Leland W. Pendleton, 1343 Folsom Ave., San Pablo, Calif. 94806

Filed Sept. 15, 1972, Ser. No. 289,421

Int. Cl. A22c *11/18*

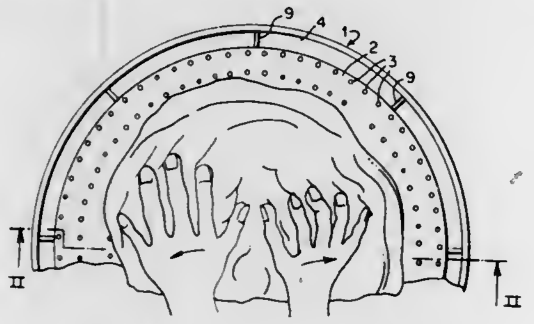
U.S. Cl. 425—287 **2 Claims**



1. In a doughnut dispensing machine having a dough hopper with a discharge throat, an upper plunger and a lower plunger arranged on a common axis and operable in said throat in a predetermined coordinated cycle to dispense doughnuts from the discharge throat, a first vertical member connected to said upper plunger and a second vertical member connected to said lower plunger, and actuating means operably connected to each of said connecting members for cycling each of said plungers; the improvement comprising an adjustment mechanism for varying the discharge of doughnuts which comprises: a bushing threadably connected to said first vertical member

and arranged for adjustable vertical displacement relative thereto,
- an annular sleeve so constructed and arranged on said bushing that vertical displacement relative to said bushing is prevented and rotational movement relative to said bushing is permitted,
- a collar arranged above said bushing and slidable on said first vertical member,
- a compression spring arranged between said collar and said bushing,
- an annular cap arranged above said collar and connected to said annular sleeve with elongated connecting pins and so constructed and arranged that said collar is restricted in vertical movement except by compression of said spring, and,
- means operably connecting said collar to the actuating mechanism.

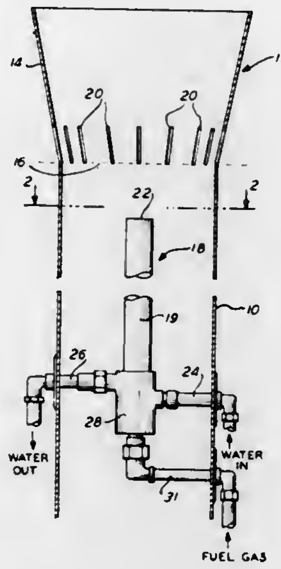
3,864,071
PIZZA PIE MAKING APPARATUS AND METHOD
Luigi La Monica, 1533 85th St., Brooklyn, N.Y. 11228
Filed Apr. 3, 1973, Ser. No. 347,476
Int. Cl. A21c *11/12*
U.S. Cl. 425—470 **19 Claims**



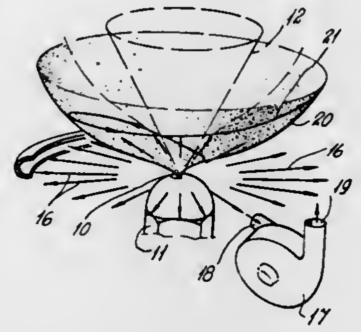
1. A pie crust making and retaining device comprising:
- a generally flat surface for receiving pie dough thereon;
- means for piercingly engaging and preventing shrinkage of said pie dough, said engaging and shrinkage preventing means including a plurality of spaced projections extending from said flat surface and being distributed over a substantial portion of said flat surface, said projections extending from said flat surface by an amount which is less than the thickness of the pie crust to be made from said dough and maintaining said dough in its formed condition; and
- forming means at the outermost portion of said pie crust making device for forming a raised edge of the dough relative to the flat surface at least around the periphery of said flat surface.

3,864,072
COMBUSTION SYSTEM FOR FLARE GAS
Randolph Abernathy, East Orange, and Thomas L. Shepherd, Essex Fells, both of N.J., assignors to Airco, Inc., Montvale, N.J.
Filed Oct. 10, 1973, Ser. No. 405,204
Int. Cl. F23d *13/20*
U.S. Cl. 431—5 **11 Claims**

1. A stack combustion tip for burning flare gas comprising:
a. an enclosure at the top of the stack forming an open-end combustion chamber for receiving flare gas rising through the stack,
- b. the combustion chamber having an enlarged cross-section with respect to the cross-section of the stack and having at its lower periphery openings to ambient air,
- c. and an oxygen-fuel burner mounted substantially centrally within the stack for projecting hot, turbulent elongated oxygen-fuel flames into the combustion chamber, said burner having a barrel portion defining an elongated burner chamber substantially centrally positioned within said stack and parallel to the longitudinal axis of said stack, a plurality of fuel passages for supplying streams of fuel, a plurality of oxygen passages for supplying streams of substantially pure oxygen, and means for cooling said burner chamber which chamber is positioned to receive said streams of fuel and oxygen supplied thereto from said fuel and oxygen passages, respectively, such that said fuel and oxygen streams are mixed and ignited in said burner chamber to produce said hot, turbulent elongated oxygen-fuel flame.

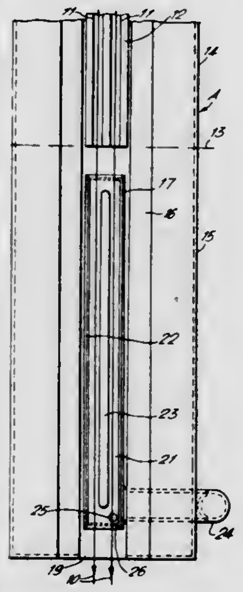


3,864,073
METHOD FOR COMBUSTION FUELS WHICH ARE EJECTED FROM AN ORIFICE IN A MANNER TO FORM A SUBSTANTIALLY CONICALLY SHAPED CURTAIN OF FUEL AND A DEVICE FOR PUTTING THE METHOD INTO EFFECT
Martti Ilmari Kolhi, Stenhamra, Sweden, assignor to R. Collin Consulting AB, Stockholm, Sweden
Division of Ser. No. 127,228, March 23, 1971, Pat. No. 3,758,258. This application June 26, 1973, Ser. No. 373,866
Claims priority, application Sweden, Mar. 24, 1970, 4010/70
Int. Cl. F23l *1/00*
U.S. Cl. 431—115 **23 Claims**



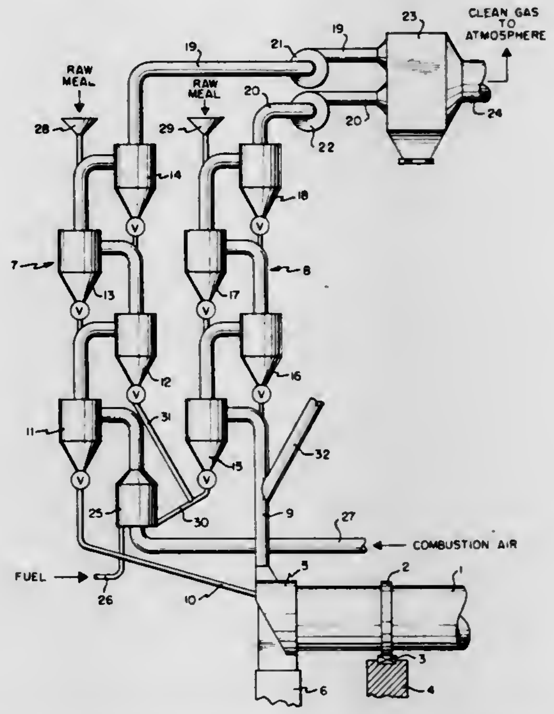
1. A device for combusting fuel with a conical fuel curtain and a conical envelope of combustion air external of the fuel cone and a subatmospheric zone external of said conical fuel curtain, said device having a combustion zone, comprising:
- a fuel nozzle having a fuel orifice to provide a substantially conical fuel curtain; and
- at least one air exit means, located around the axis of the fuel cone, for establishing said subatmospheric zone externally of said conical fuel curtain to hold said combustion zone rearwardly withdrawn toward said nozzle and concentrated around said axis of the fuel cone in which said means is an annular gap communicating with a source of subpressure.

3,864,074
YARN HEATER
Samuel Gosling, Bollington nr. Macclesfield, England, assignor to Scrogg Ernest and Sons Limited, Macclesfield, England
Filed Jan. 28, 1974, Ser. No. 437,354
Claims priority, application Great Britain, Jan. 27, 1973, 73-04303
Int. Cl. F27b *9/28*
U.S. Cl. 432—59 **7 Claims**



1. In a yarn heater assembly comprising means defining an elongate heating zone for at least one running yarn, the improvement comprising an endwise longitudinally projecting extension at one end at least of said assembly, and fume removal means incorporated in said extension.

3,864,075
APPARATUS FOR BURNING GRANULAR OR PULVEROUS MATERIAL
Soren Bent Christiansen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed Apr. 29, 1974, Ser. No. 464,964
Claims priority, application Great Britain, Apr. 30, 1973, 20463/73
Int. Cl. F27b *7/02*
U.S. Cl. 432—106 **19 Claims**



1. A plant for burning granular or pulverous material comprising a preheater having at least two cooperating units, each unit having an inlet and an outlet for heating gas or air and a raw material inlet, a kiln having means for feeding preheated raw material from said preheater, cooling means associated with said kiln for cooling material burnt therein, means for dividing said heated cooling air such that a portion is directed as combustion air to said kiln and a portion is directed to an inlet of at least one preheater unit, means for connecting the gas inlet of said other preheater unit to an exhaust gas outlet of said kiln, and means associated with each preheater unit at or near its gas or air outlet for controlling the air or gas flow through each associated unit and the division of the heated cooling air.

CHEMICAL

3,864,076

PROCESS FOR FLAMEPROOFING ORGANIC FIBERS WITH PHOSPHORUS-CONTAINING CONDENSATION PRODUCTS AND THE PRODUCTS PRODUCED

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 31, 1972, Ser. No. 285,173

Claims priority, application Switzerland, Sept. 10, 1971, 13307/71; Jan. 14, 1972, 516/72

Int. Cl. D06m *1/00*

U.S. Cl. 8—116 P **14 Claims**

1. A process for flameproofing organic fiber materials, comprising the steps of applying to the organic fiber material an aqueous preparation comprising (1) a water-soluble condensation product of a tetrakis-(hydroxymethyl)-phosphonium salt or tetrakis-(hydroxymethyl)-phosphonium hydroxide and a guanidine, which is obtained by condensing (a) the tetrakis-(hydroxymethyl)-phosphonium compound with (b) guanidine, a guanidine salt, guanylurea, a guanylurea salt, a methylolated guanidine or guanylurea, in a molar ratio of 1:0.02 to 1:0.5, at a temperature in the range of 40° to 120°C, and (2) an aminoplast precondensate which is different from the condensation product (1), and subsequently finishing the organic fiber material by a moist batch, wet batch, ammonia or thermofixing process.

3,864,077

NON-AQUEOUS DYESTUFFS WITH A PHTHALIC ACID DIALKYL ESTER

Gottfried Popp, Cologne; Wolfgang Haebler, Odentha L-Neschen, and Wilhelm Gohrbandt, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 1, 1972, Ser. No. 285,579

Claims priority, application Germany, Sept. 2, 1971, 2143993

Int. Cl. D06p *5/04*

U.S. Cl. 8—173 **7 Claims**

1. A storage-stable non-aqueous dyestuff dispersion consisting essentially of

a. a phthalic acid C_1–C_8-dialkyl ester;
b. a water-soluble or water-dispersible dyestuff which is insoluble or sparingly soluble in phthalic acid C_1–C_8-dialkyl ester; and
c. an anionic dispersing agent, a non-ionic dispersing agent, or a mixture of anionic and non-ionic dispersing agent having a minimum solubility of 1 g per litre of tetrachloroethylene;

said composition containig 10 to 40% of dyestuff, which dispersion is obtained by grinding or kneading said components (a), (b) and (c) together.

3,864,078

INHIBITING COLOR CHANGE IN SOLUTIONS OF VINYLAROMATIC RESINS IN CHLORINATED SOLVENTS

William E. Gealy, Forward Township, Allegheny County, and Walter A. Vrendenburgh, Pleasant Hills, both of Pa., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 17, 1972, Ser. No. 307,656

Int. Cl. D06l *1/04;* **C07c** *17/40*

U.S. Cl. 8—142 **8 Claims**

1. The method of inhibiting color deterioration in dry cleaning and sizing solutions comprising a vinylaromatic resin in a chlorinated solvent which method comprises treating the solution by contacting the solution with lime, allowing sufficient time and stirring to effect color stabilization, and thereafter filtering the lime from the solution.

3,864,079

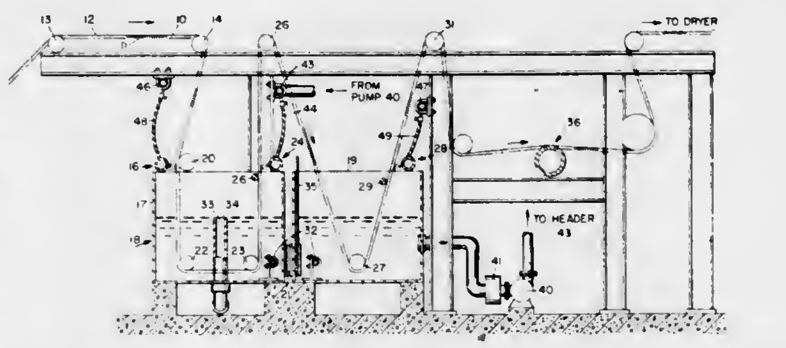
METHOD FOR SCOURING AND BLOOMING PILE CARPET

Rodman I. Gregg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 149,963, June 4, 1971, Pat. No. 3,747,375. This application Mar. 19, 1973, Ser. No. 342,918

Int. Cl. B05c *3/152*

U.S. Cl. 8—151 **4 Claims**



1. A method of scouring and blooming a pile carpet comprising:

advancing a wetted carpet into and through a first tank at least partially filled with hot water and immersing said carpet in the water;
directing high pressure spray of hot water at a pressure of at least 100 p.s.i.g. at a downward angle at the pile side of said carpet as it emerges from the water in said first tank;
advancing said carpet into and through a second tank at least partially filled with hot water and immersing said carpet in the water;
directing a rinsing spray at said pile side of said carpet as it emerges from the water in said second tank; and
supplying said high pressure spray with water from said second tank.

3,864,080

ROOM ODOR CONTROL

Bruno M. Valbona, Avon, and Harry M. Voglesonger, Riverton, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Continuation-in-part of Ser. No. 264,135, June 19, 1972, Pat. No. 3,829,071. This application July 23, 1973, Ser. No. 381,802

Int. Cl. A61l *9/00*

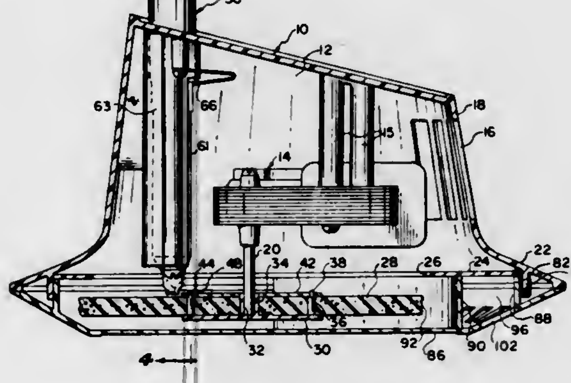
U.S. Cl. 21—53 **11 Claims**

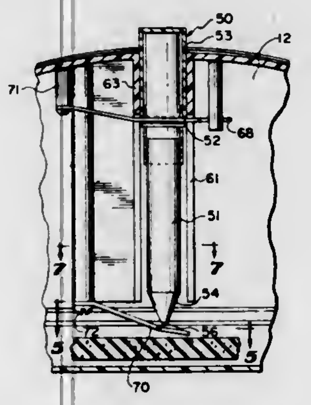
4. A liquid dispenser for odor control comprising:

a housing having air inlet and outlet openings,
a motor supported in said housing,
a porous resilient disk impeller of expanded plastic disposed between said openings and rotated by the motor, said impeller having a porous rough surface means on at least one of two radially extending sides for inducing movement of air between the inlet and outlet openings,
a feeder element means resiliently supported in close proximity to said rough surface means for movement into momentary contact with said rough surface means and having an exposed face remote from said surface means, liquid supply means supported in the housing for supplying to said exposed face of the feeder element means a small amount of odor control liquid, and
manually movable means actuating said supply means and feeder element means for moving limited amounts of odor control liquid into contact with said rough surface means and for distributing liquid supplied to the feeder element means progressively over a circular path on said rough surface means for absorption by the disk impeller while the disk impeller is being rotated continuously.

11. The method of controlling room odor comprising turbulating and circulating contaminated room air with a rough rotating surface of porous resilient material,

simultaneously contacting and compressing a limited portion of the porous material along a circular path,
applying a flowing drops of odor control liquid onto the path at the point of compression,





releasing the compression to expand the porous material to absorb the control liquid thereon into the pores of the material immediately following each compression at a given point to store a supply of liquid in the pores,
centrifugating the absorbed control liquid to slowly expose it to the air at the rough surface,
vaporizing and entraining liquid from the surface of the porous material through intimate contact with air circulated past the rough surface, and
discharging the turbulated air into a room.

3,864,081

APPARATUS FOR STERILIZING BIOLOGIC MATERIAL AND THE LIKE BY ULTRA-VIOLET IRRADIATION

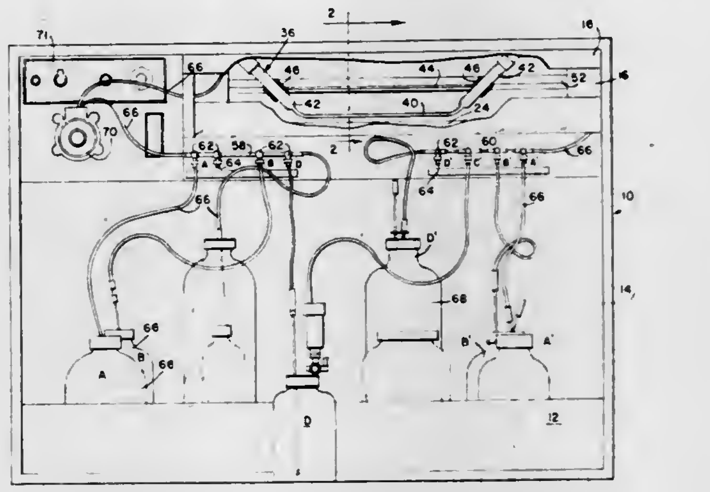
Gerald A. Logrippo, Pleasant Ridge, Mich., assignor to Spectroderm International Inc., Fairfax, Va.

Filed June 12, 1973, Ser. No. 369,250

Int. Cl. A61l *3/00*

U.S. Cl. 21—102 R **8 Claims**

1. Apparatus for sterilizing liquids comprising a casing defining a chamber therein for receiving liquid container means for liquid to be sterilized, means forming a separate compartment within said casing with a liquid sterilizing enclosure therein, the walls of said enclosure being constructed of Quartz, and ultra-violet tube means within said compartment disposed adjacent said enclosure slidably adjustable clamping means within said comparment for detachably securing said enclosure thereto, means in said compartment for securing said ultra-violet tube thereto including adjustable means for varying the distance of said ultra-violet tube from said enclosure to vary the intensity of irradiation with respect to liquid passed therethrough, pump means in said casing, and means operatively connecting container means disposed in said chamber with said pump means and said enclosure for passing liquid to be sterilized therethrough.



3,864,082

METHOD OF CONTINUOUSLY MEASURING THE PROGRESS OF DEVELOPMENT OF PHOTOGRAPHIC EMULSIONS

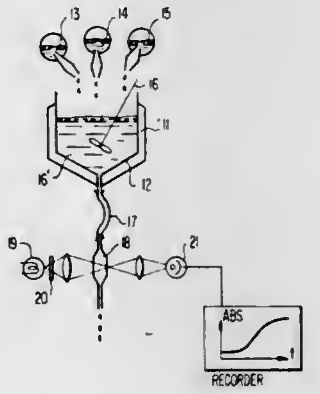
Kato, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Feb. 14, 1973, Ser. No. 332,445

Claims priority, application Japan, Feb. 15, 1972, 47-15772

Int. Cl. G03c *5/26, 5/24;* **G01n** *31/06*

U.S. Cl. 23—230 R **8 Claims**



1. A method of continuously measuring the progress of development of a silver halide photographic emulsion which comprises mixing a liquid silner hodide photographic emulsion and a developer, continuously passing the mixture through a flow cell without adding thereto a fixing solution or a stopping solution, irradiating the mixture passing through the flow cell with measurement light having any desired wave length measuring the absorbance of the photographic emulsion, and immediately withdrawing the mixture from the flow cell.

2. The method as set forth in claim 1 wherein said photographic emulsion is exposed to light prior to being introduced into the flow cell.

3,864,083

CARBON DETECTION

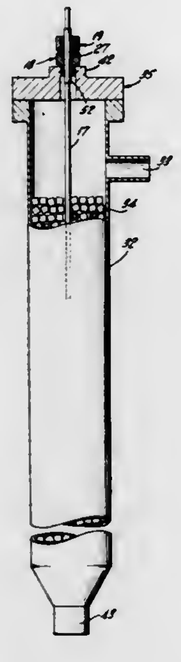
Norman W. Green, Lake Hiawatha, and Richard W. Dunning, Piscataway, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 26, 1970, Ser. No. 50,108

Int. Cl. C01b *2/14;* **G01r** *27/02;* **G01n** *27/04*

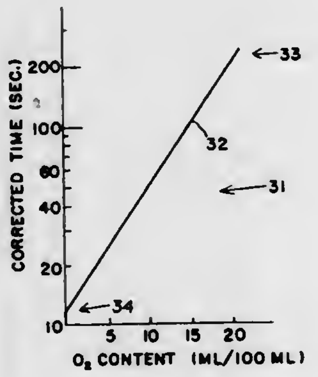
U.S. Cl. 23—230 PC **9 Claims**

1. In processes involving reactions of carbonaceous materials in the presence of a bed of catalyst wherein said catalyst is activated at some point within the bed and wherein coke is formed in the bed of catalyst and the coke formed is detected by reference to changes in the conductivity of the catalyst bed, the improvement comprising measuring changes in conductivity of said catalyst bed only over an area within the bed sufficient to encompass the point where the catalyst is first activated.



3,864,084
METHOD FOR MEASUREMENT OF OXYGEN CONTENT IN BLOOD AND OTHER LIQUIDS BY OXYGEN INHIBITION OF CHEMICAL REACTIONS

M. Judah Folkman, 18 Chatham Cir., Brookline, Mass. 02146
Filed Aug. 3, 1972, Ser. No. 277,810
Int. Cl. C08f *3/90;* **G01n** *33/16*
U.S. Cl. 23—230 R **25 Claims**



1. A method of measuring the oxygen content of liwuids comprising the steps of:

mixing a test liquid containing oxygen with an activator liquid to produce a polymer by a free radical initiated polymerization reaction that is inhibited by oxygen in said test liquid;

isolating said test liquid and said activator liquid from any gas phase during said mixing step; and

timing said polymerization reaction to determine the amount of oxygen initially present in said test liquid and consumed during said reaction.

3,864,085
GLUTATHIONE REAGENT AND TEST METHOD

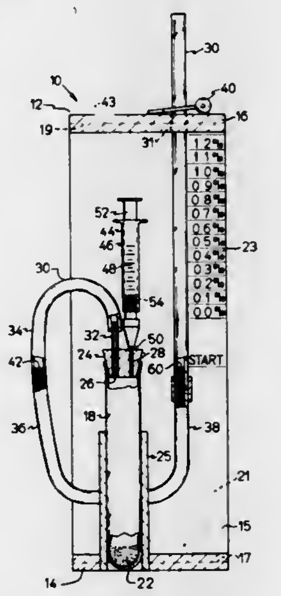
Joseph Eliot Woodbridge, Princeton, N.J., assignor to Princeton Biomedix Incorporated, Princeton, N.J.
Filed Oct. 31, 1973, Ser. No. 411,228
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **7 Claims**

1. A method for the quantitative determination of thiol-containing compounds in biological fluids comprising the steps of:

a. mixing an aliquot of said biological fluid with a reagent comprising stabilized tungstic acid, ethanol, and 5,5'-dithiobis (2-nitrobenzoic acid), to thereby obtain a precipitate and a supernatant;
b. separating said supernatant from said precipitate;
c. measuring the optical density of said supernatant against water at 412 nm;
d. mixing said supernatant with a buffer such that the pH of the mixture is from about 7 to about 10;
e. measuring the optical density of said mixture at 412 nm; and
f. determining the concentration of said thiol-containing compounds.

3,864,086
APPARATUS FOR MEASURING GASEOUS QUALITY OF A SUBSTANCE

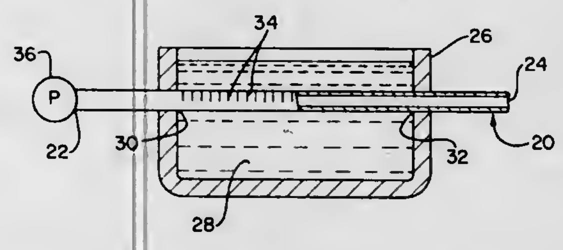
Kenneth R. Geist, and James E. Walsh, both of Milwaukee, Wis., assignors to Brust, by said Geist, a part interest
Filed Dec. 29, 1971, Ser. No. 213,523
Int. Cl. G01n *7/18*
U.S. Cl. 23—253 R **5 Claims**



1. Apparatus for directly measuring the percentage by weight of acid contained in a liquid sample of predetermined volume comprising: a supporting means, a sealable flask removably mounted in a fixed position on said supporting means and wherein said sample and an agent are to be mixed to effect evolution of a gas, said flask having a mouth through which said agent is deposited prior to sealing of said flask, removable sealing means for insertion into said mouth to seal said flask, said sealing means having a first opening and a second opening, sample supplying means selectively operable to inject said sample into said flask after said flask is sealed, said sample supplying means being closed to prevent gas escape therethrough and being removably insertable into said first opening in said removable sealing means in sealed relationship, said flask having an air space therein which tends to vary in volume depending on the amount of agent deposited in said flask or the extent of insertion of said sealing means in said mouth or both, tube means having one end connected to said second opening in said sealing means and having its other end exposed to atmosphere, said tube means comprising a flexible intermediate portion and a vertically movable upright leg portion at its said other end, said upright leg portion having a transparent portion, an indicator liquid in said tube means providing a meniscus in said movable upright leg portion which is visible through said transparent portion, scale means mounted in fixed position on said supporting means and including a fixed starting point and fixed graduated indicia directly indicative of percentages by weight of acid possibly contained in a sample, and attachment means for releasably securing said movable upright leg to said supporting means in desired fixed adjustment positions, said movable leg portion being relatively movable vertically with respect to said scale means to initially effect alignment of said meniscus with said starting point after said flask is sealed and prior to exposure of said sample to said agent for adjustment purposes to compensate for variations in volume in the air space in said flask, said indicator liquid being subsequently displaceable in response to generation of gas in said sealed flask so that said meniscus moves into alignment with the said indicia on said scale means to provide a direct indication of the percentage by weight of acid present in said sample.

3,864,087
TITRATING SYSTEM

Tomas Hirschfeld, Framingham, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.
Filed May 14, 1973, Ser. No. 359,845
Int. Cl. G01n *21/08, 21/06*
U.S. Cl. 23—253 R **15 Claims**



1. A chemical measuring system for titrating a sample solution with a titrant capable of reacting with said solution to produce an observable end-point change, and comprising, in combination:

means for containing a body of said titrant;

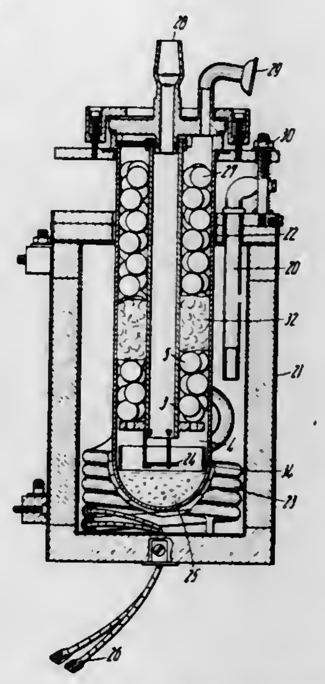
a hollow, elongated conduit disposed within said means for containing, the wall of said conduit being porous so that a net flow through said wall can occur between said body of titrant and a stream of sample solution flowing through said conduit; and

means for determining the relative position along said conduit at which said end-point change is observable.

3,864,088
APPARATUS FOR DETERMINING THE CONTENT OF ORGANIC SUBSTANCES IN WATER

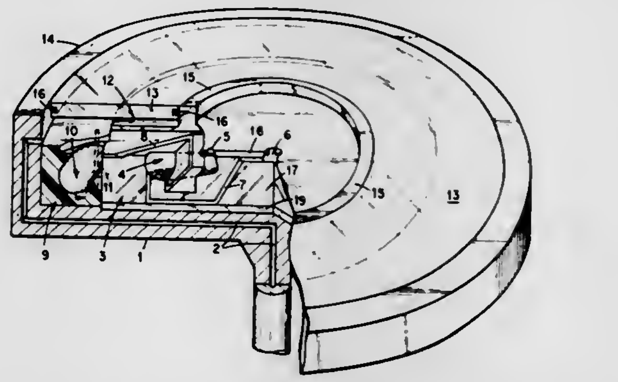
Heinz Delin, Wedel/Holstein, and Werner Voss, Hamburg, both of Germany, assignors to H. Malhak A.G., Hamburg, Germany
Filed Mar. 5, 1974, Ser. No. 448,380
Claims priority, application Germany, Mar. 6, 1973, 7308398[U]
Int. Cl. G01n *25/00, 33/18*
U.S. Cl. 23—253 PC **8 Claims**

1. In an apparatus for determining the content of organic substances in water, a combination comprising a crucible having an upper end provided with an inlet for drops of water, and a bottom wall; an impact plate adjacent to but upwardly spaced from said bottom wall and so positioned that drops of water drip into said impact plate and become fragmented thereby onto smaller droplets; a layer of non-caking particulate material on said bottom wall beneath said impact plate, so that said droplets fall onto said layer; heating means for heating the region of said impact plate and layer, so that said droplets become vaporized on said layer and organic substances present in them become combusted and form CO_2; and discharging means for discharging the water vapor and CO_2 to the exterior of said crucible for analysis of the CO_2 contents in a gas analyzer.



3,864,089
MULTIPLE-SAMPLE ROTOR ASSEMBLY FOR BLOOD FRACTION PREPARATION

Thomas O. Tiffany; James C. Mailen, both of Oak Ridge; Wayne F. Johnson, Loudon; Charles D. Scott, and W. Wilson Pitt, Jr., both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Dec. 10, 1973, Ser. No. 423,381
Int. Cl. B04b *9/12, 11/02*
U.S. Cl. 23—258.5 **5 Claims**



1. A multiple-sample centrifugal rotor assembly for blood fraction preparation comprising:

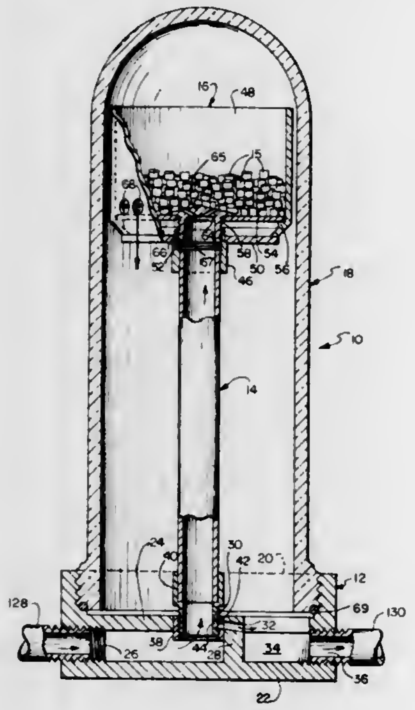
a. an inner disk-shaped rotor portion having a top end surface, said inner rotor portion defining:
  i. a multiplicity of radially oriented sample-receiving chambers having centripetal and centrifugal ends, said sample-receiving chambers being disposed in a circular array;
  ii. a multiplicity of static sample-loading ports, each of said ports communicating between said top end surface and respective sample-receiving chambers;
  iii. a centrally located dynamic distribution port open to said top end surface;
  iv. a multiplicity of distribution passageways, each of said distribution passageways communicating between said dynamic distribution port and the centrifugal end of a respective sample-receiving chamber; and
  v. a multiplicity of transfer passageways, each of said transfer passageways communicating between one of said sample-receiving chambers at a point intermedite its centrifugal and centripetal ends and the radial pe-

riphery of said inner rotor portion, each of said transfer passageways extending radially inward from its point of communication with said sample-receiving chamber and then generally radially outward to said radial periphery of said inner rotor portion; and

b. a removable outer rotor portion having an annular configuration nested concentrically about said inner rotor portion, said outer rotor portion defining at least one collection chamber in fluid communication with said transfer passageways in said inner rotor portion for receiving material discharaged from said transfer passageways.

3,864,090
PRESSURE-TYPE TABLET HYPOCHLORINATING DEVICE

Kenneth Richards, P.O. Box 17, Gordon Town, Parish of St. Andrews, Jamaica, British W. Indies
Filed Oct. 12, 1973, Ser. No. 405,769
Int. Cl. B01d *11/02*
U.S. Cl. 23—267 E **10 Claims**



1. An apparatus for chlorinating water, the combination comprising;

a pipe means adapted to have water flowing under pressure therein;

a chlorinating unit containing hypochlorite tablets;

a first conduit means for conducting water from said pipe means to said chlorinating unit;

a second conduit means for conducting a chlorinated solution of water from said unit to said pipe means;

a valve means in said pipe means for diverting a portion of said water flow into said first conduit means;

said chlorinating unit including

a container means for supporting said tablets,

a base, having an inlet bore communicating with said first conduit and an outlet bore communicating with said second conduit,

a tube means centrally carried by said base and communicating with said inlet bore in said base and said container means for conducting water from said inlet bore to said container means and supporting said container a substantial distance above said base.

a conical distribute means, mounted at one end of said tube means and located within said container means, for directing water flowing up said tube means into contact with said tablets,

a plurality of orifices located in said container means adjacent the bottom thereof and in substantially the same horizontal plane as said distributor means, and

dome means removably mounted to said base and enclosing said tube means and said container means for pressurizing said chlorinating unit;

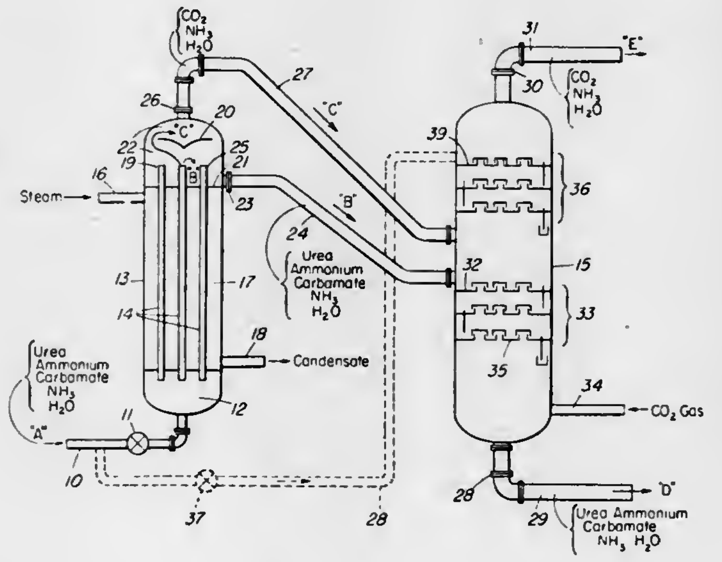
said apparatus being operative so that water is diverted into said container means from said pipe means along said first conduit, said inlet bore and said tube means by operation of said valve means and such water contacts and dissolves said tablets forming a chlorinated solution which solution flows through said orifices, through said outlet, said second conduit and back into said pipe means,

said container means being formed as a right cylinder having an open end at the top and a closed end at the bottom, said closed end having a central bore therein receiving said tube means, and

said container means further including an annular support surface which is solid and flat and is supported above said closed end, said support surface supporting said tablets said orifices being located in the side of said container means above said annular support surface.

3,864,091
APPARATUS FOR THE DECOMPOSITION OF AMMONIUM CARBAMATE

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10021
Division of Ser. No. 237,644, May 10, 1971,. This application May 24, 1973, Ser. No. 363,328
Int. Cl. B01j *1/00;* **C07c** *127/04;* **F28f** *9/02*
U.S. Cl. 23—283 **3 Claims**



1. A shell and tube decomposer, comprising:

a shell having a bottom section and an upper section;

means defining a heat transfer chamber in said shell;

a plurality of tubes extending in a substantially vertical direction in said shell of said decomposer, said tubes passing through said heat transfer chamber and communicating said bottom section with said upper section and said tubes having upper extremities extending above an upper surface of said heat transfer chamber;

a first outlet located at or below the upper extremities of said tubes to remove substantially all liquid phase decomposition products from said decomposer and preventing substantially all of said liquid phase from reentering said tubes;

a second outlet in said upper section above said first outlet and above the upper extremities of said tubes; and

a deflector element located in said upper section above the upper extremities of said tubes, below said second outlet, spaced from said shell and arranged to deflect said liquid phase downwardly and toward the outer portions of said shell to substantially prevent reentry of the deflected liquid phase into said tubes to allow said gas phase to pass therearound to said second outlet.

3,864,092
PRESSED METAL SCRAP BLOCK AND METHOD OF RECOVERING SCRAP METAL

Benjamin D. Ravitz, Pontiac, Mich., assignor to Harold D. Lipsitz, Royal Oak, Mich., a part interest
Continuation of Ser. No. 162,196, July 13, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,545
Int. Cl. B21c *37/00*
U.S. Cl. 29—186 **10 Claims**

1. An article of manufacture for recovering metal scrap for remelting purpose comprising a block made of fragmentary pieces of scrap metal and a binder material compressed into a block under heavy pressure, said binder material consisting essentially of cement and said block including at least one opening extending therethrough from a surface thereof to an opposite surface, whereby subsequent conversion of the block to a molten state in a furnace is facilitated by heat convection and molten material circulation through said opening.

3,864,093
HIGH-TEMPERATURE, WEAR-RESISTANT COATING

Thomas A. Wolfla, assignor to Union Carbide Corporation, New York, N.Y.
Filed Nov. 17, 1972, Ser. No. 307,345
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 **3 Claims**

1. A high-temperature, wear-resistant coated article comprising a solid structural substrate having a single coated layer of metal oxide particles substantially uniformly dispersed in a metal alloy matrix; at least one of said metal oxide particles selected from the group consisting of aluminum oxide, chromium oxide, beryllium oxide, calcium oxide, titanium oxide, niobium oxide, thorium oxide, zirconium oxide, tantalum oxide, silicon oxide, magnesium oxide, hafnium oxide, yttrium oxide, rare earth oxides, and the spinel combination of the above metal oxides, sized between about 0.05 micron and about 74 microns, and present in a volume fraction of between about 2% and about 50%; said metal alloy matrix comprising essentially at least one first metal selected from the group consisting of iron, cobalt and nickel, and at least one second metal selectaed from the group consisting of aluminum, silicon and chromium, the aggregate of said first metal being at least 40% by weight of the alloy and the aggregate of said second metal being between about 10% and about 40% by weight of the alloy; the surface hardness of said coated layer being at least 500 VHN as determined using a 300 gram test load and the coated layer having a microstructure consisting of a thin lamellar structure of interlocking and overlapping microscopic leaves mechanically bonded to each other and to said substrate.

3,864,094
FUEL COMPOSITION

Harry B. Locketz, La Crosse, Wis., assignor to Cryogenic Recycling International Inc., LaCrosse, Wis.
Filed Apr. 16, 1973, Ser. No. 351,138
Int. Cl. C10l *5/00*
U.S. Cl. 44—1 G **3 Claims**

1. An improved combustible fuel product, for use in coal-burning heating systems, characterized by a heat value substantially equivalent to coal so as to permit substitution thereof in said heating systems, which burns with low emissions so as to reduce polluting discharges, and consists essentially of lignite and cryogenically reclaimed rubber tire fragments in an amount effective to adjust the heat value of the fuel to substantially the heat value of the substituted for coal, said fragments being obtained by exposing rubber tire scraps to cryogenic temperatures so as to embrittle the rubber therein and striking said embrittled tire so as to shatter said tire into fragments of a size sufficiently small for use as a fuel.

3,864,095
ANTI-KNOCK INJECTION FOR IN-LINE BLENDING OF GASOLINE

John T. Sinclair, and Franklin P. Clark, both of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.
Filed Dec. 26, 1973, Ser. No. 427,644
Int. Cl. C10l *1/30;* **G05d** *11/02*
U.S. Cl. 44—2 **7 Claims**

1. A method of adding a dilute solution containing a constant fraction of lead alkyl compounds to a gasoline stream after in-line blending of the hydrocarbon components thereof and before storage of said gasoline comprising the steps of:

a. analyzing the octane value of said blended gasoline stream after the addition of said lead alkyl compounds;

b. establishing a primary circulating loop stream for addition of lead alkyl compounds by withdrawing a portion of said gasoiline stream, adding lead alkyl compounds to said portion to produce a dilute solution, and returning said lead alkyl containing primary stream to said gasoline stream downstream of said withdrawal point;

c. establishing secondary and tertiary streams by dividing said primary stream before said lead alkyl compounds are added;

d. controlling the volumetric flow rate of said secondary stream to maintain a constant flow rate through an eductor means for adding said lead alkyl compounds to said secondary stream;

e. controlling the addition of lead alkyl compounds to said secondary stream according to the octane value measured in (a);

f. adjusting the flow rate of said tertiary stream in a constant proportion to the addition rate of said lead alkyl compounds;

g. merging said secondary and tertiary streams to form said lead alkyl containing primary stream of (b) thereby providing a constant lead alkyl concentration in said merged streams.

3,864,096
PROCESS FOR CONVERTING CELLULOSE

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 4, 1973, Ser. No. 321,112
Int. Cl. C10j *1/00*
U.S. Cl. 44—50 **6 Claims**

1. A process for converting cellulose to a normally liquid hydrocarbonaceous product which comprises contacting paper with water, a reducing gas and ammonia at conversion conditions including a temperature of about 200°C. to about 375°C. and a pressure sufficient to maintain at least a portion of the water as a liquid phase, and recovering the hydrocarbonaceous product from the resulting mixture.

3,864,097
PROCESS FOR CONVERTING CELLULOSE

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 15, 1973, Ser. No. 323,615
Int. Cl. C10j *1/00*
U.S. Cl. 44—50 **8 Claims**

1. A process for converting cellulose to a normally liquid hydrocarbonaceous product which comprises contacting paper with water, a reducing gas a catalytic compound selected from the group consisting of alkali metal and ammonium sulfides, sulfites and thiosulfates at conversion conditions including a temperature of about 200°C. to about 375°C. and a pressure sufficient to maintain at least a portion of the water as a liquid phase, and recovering the hydrocarbonaceous product from the resulting mixture.

3,864,098
FUEL ADDITIVES

Lewis R. Honnen, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 7, 1974, Ser. No. 431,457

Int. Cl. C10l *1/22*

U.S. Cl. 44—58 **14 Claims**

1. A fuel composition comprising a major amount of a liquid hydrocarbon fuel and from 10 ppm to 4,000 ppm of a N-hydrocarbyl-N-heterocyclic polyamine, other than piperazine, wherein said N-heterocyclic polyamine contains from 2 to about 6 nitrogen atoms and from 2 to about 30 carbon atoms, and said hydrocarbyl substituent contains from 30 to about 300 carbon atoms.

3,864,099
MINERAL OILS CONTAINING COPOLYMERS OF AZIRIDINEETHYL ACRYLATES AND METHACRYLATES: ALKYL ACRYLATES AND METHACRYLATES

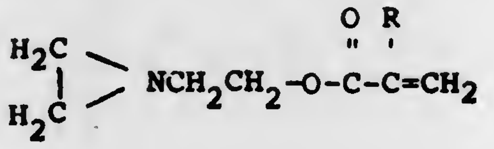
Arvid Ek, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 3, 1973, Ser. No. 421,096

Int. Cl. C10m *3/26, 5/20, 7/30*

U.S. Cl. 252—51.5 A **13 Claims**

1. An oil composition which comprises a major amount of a mineral oil and a small amount of an oil-soluble copolymer of (a) a monomeric aziridinyl ethyl carboxylic acid ester having the formula



$$\overset{\overset{}{H_2C}}{} \!\!>\! NCH_2CH_2{-}O{-}\overset{O}{\overset{\|}{C}}{-}\overset{R}{\overset{|}{C}}{=}CH_2 \quad (H_2C{-}CH_2 \text{ ring})$$

where R is selected from the group consisting of the hydrogen atom and the methyl group and (b) a monomeric alkyl ester having the formula

$$CH_2{=}CRCOOR_1$$

where R is selected from the group consisting of the hydrogen atom and the methyl group and R_1 is selected from the group consisting of straight- and branched-chain alkyl groups containing 8 to 18 carbon atoms, said copolymer having a molecular weight of at least 20,000 and a ratio of the constituent monomers (a) and (b) in the range of about 1:2 to about 1:99, (a):(b), respectively.

3,864,100
METHOD AND APPARATUS FOR GASIFICATION OF PULVERIZED COAL

Henry John Blaskowski, West Simsbury, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Jan. 2, 1973, Ser. No. 320,366

Int. Cl. G10j *3/20*

U.S. Cl. 48—73 **13 Claims**

1. Apparatus for continuously generating a make gas by the reaction at high temperatures of oxygen and steam with a solid fuel containing carbon and ash comprising:

a first vertically extending cylindrical wall;

a second vertically extending cylindrical wall smaller in diameter than and coaxially disposed within said first wall to define an annular reaction chamber therebetween, the lower ends of said first and second walls cooperating to define a bottom for said annular reaction chamber;

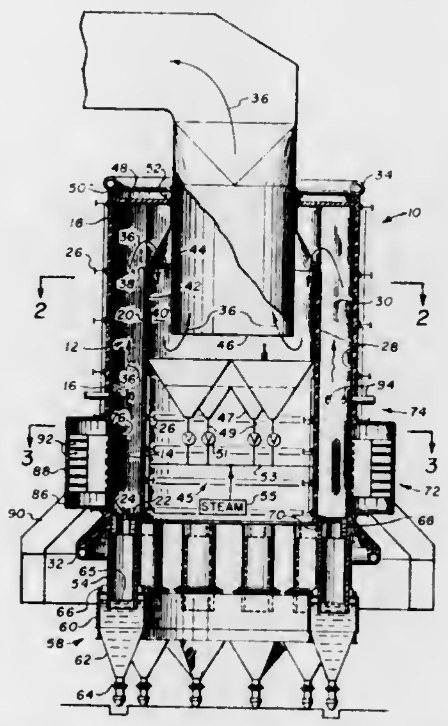
means for discharging molten slag through said bottom of said reaction chamber;

means cooperating with the upper edge of said first wall forming a top for said reaction chamber and extending radially inward of said second wall, said second wall being shorter than said first wall to define a first horizontal flow passageway between the upper edge of said second wall and said top means;

means for discharging make gas from said apparatus comprising a cylindrical duct extending downward through said top means, said duct being smaller in diameter than said second wall and terminating at a level below the upper edge of said second wall to define a vertical flow passageway therebetween;

means extending across the interior of said second wall below the level of termination of said gas discharge duct for preventing the downward flow of gas therebeyond, said means defining a second horizontal passageway with the lower end of said duct;

first nozzle means for introducing into the lower end of said reaction chamber a first quantity of solid fuel in a pulverized state in suspension in a stream of gas containing free oxygen in near stoichiometric proportions, so that combustion of said fuel and gas results in the production of hot products of combustion at a temperature above the fuel ash fusion temperature which rise within said reaction chamber;



second nozzle means for introducing into said reaction chamber, at a location adjacent and above said first nozzle means, a second quantity of solid fuel in a pulverized state in suspension in steam;

whereby said fuel and steam suspension impinges upon said rising hot products of combustion and reacts therewith to form said make gas, said reacting gases rising upward through said reaction chamber, through said first horizontal flow passageway, downward through said vertical flow passageway, through said second horizontal flow passageway and thereafter upward through said discharge duct.

3,864,101
PROCESS FOR PREPARING A RESIN-BONDED GRINDING ARTICLE CONTAINING STRESS-ABSORBING PARTICULATE MATERIAL

Vernon K. Charvat, Bay Village, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Apr. 19, 1972, Ser. No. 244,965

Int. Cl. C08g *51/12, 51/14*

U.S. Cl. 51—298 **15 Claims**

1. A process for preparing a resin-bonded rigid grinding article containing above about 70 percent by weight of the article of abrasive particles wherein said particles are spaced apart in the article by solid-spacer material which comprises

a. preparing an abrasive mixture consisting essentially of

  i. a sufficient amount of abrasive particles to provide an abrasive content in the mixture of from about 75 to about 100 percent of the bulk density of the abrasive; said abrasive having a particle size of from about 600 to 10 mesh,

  ii. from about 5 to 30 percent by weight of the abrasive particles of stress-absorbing particulate solid spacer material,

  iii. from about 10 to 35 percent by weight of the abrasive particles of a liquid-binding resin capable of being cured to a solid without a substantial change in volume,

  b. filling the mold with the abrasive mixture without substantially compressing said mixture, and

c. curing the abrasive mixture in the mold in the absence of a significant amount of external pressure and change in volume to form a rigid-grinding article having the shape and volume substantially as that of the mold.

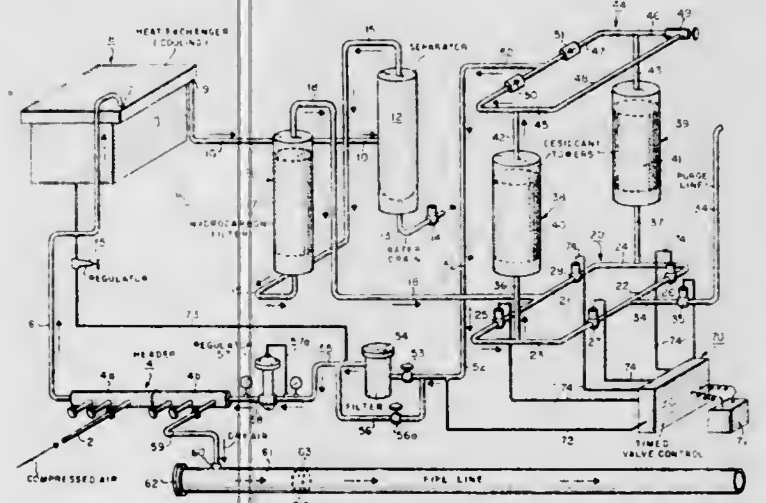
3,864,102
DEHYDRATION OF A PIPELINE WITH A PORTABLE DRY AIR GENERATING PLANT

Marvin D. Powers, Houston, Tex., assignor to Pipeline Dehydrators, Inc., Houston, Tex.

Filed June 25, 1973, Ser. No. 373,220

Int. Cl. B01d *53/04*

U.S. Cl. 55—30 **2 Claims**



1. A process for dehydrating a pipeline adapted to carry fluids, said pipeline containing undesired water, said process comprising:

moving to said pipeline a towable dehydration plant;

compressing with said plant near the pipeline ambient air;

cooling the compressed air to condense water and oil therefrom;

filtering oil vapor out from the cooled air, and removing a sufficient amount of water vapor from the oil-free air to produce water-absorbing dry air;

propelling a cylindrical pig through said pipeline with said dry air, thereby causing said pig to physically push the water downstream and said air to absorb water; and

removing from the downstream end of the pipeline the water saturated air, the pig, and the water pushed by said pig.

3,864,103
DEHYDRATION OF GASES

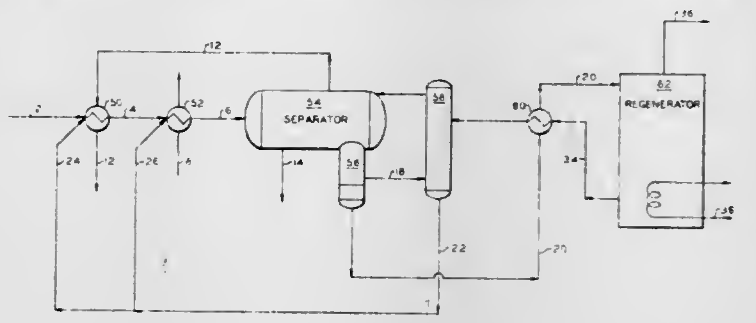
William F. Tuckett, and Ivan A. Peterson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 21, 1973, Ser. No. 362,238

Int. Cl. B01d *53/14*

U.S. Cl. 55—32 **7 Claims**

1. In a process for dehydrating a hydrocarbon gas stream containing moisture, wherein said gas is contacted in a contacting zone with a liquid desiccant and the resulting mixture is thereafter chilled to a temperature sufficient to condense the high boiling constituents of said hydrocarbon gas stream, then separated into a gaseous component containing low boiling gaseous constituents, a first liquid stream containing high boiling gaseous components and a second liquid stream containing said desiccant and absorbed moisture, wherein said desiccant containing moisture stream is regenerated to remove absorbed moisture, the improvement which comprises recycling a major portion of said separated desiccant containing moisture so as to increase the moisture content thereof, passing a lesser portion of said separated desiccant containing moisture stream to a regeneration zone wherein most of said absorbed moisture is removed and admixing the thus-regenerated desiccant with said recycling desiccant containing moisture stream, which resulting admixture is thereafter introduced to said contacting zone.



3,864,104
PROCESSES FOR THE PREPARATION OF CHLOROIMINOPHOSGENE

William S. Durrell, Chappaqua, N.Y., and Robert J. Eckert, Jr., Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 256,690, May 25, 1972, Pat. No. 3,801,483, which is a continuation-in-part of Ser. No. 862,519, Sept. 30, 1969, abandoned. This application Oct. 5, 1973, Ser. No. 403,742

Int. Cl. B01d *53/14*

U.S. Cl. 55—71 **1 Claim**

1. A process for concentrating and isolating chloroiminophosgene contained in cyanogen chloride gas streams as coproduced by-product which comprises absorbing said gas stream in an inert organic solvent, stripping the cyanogen chloride from the solution obtained, and separating the solvent from the chloroiminophosgene solution by distillation.

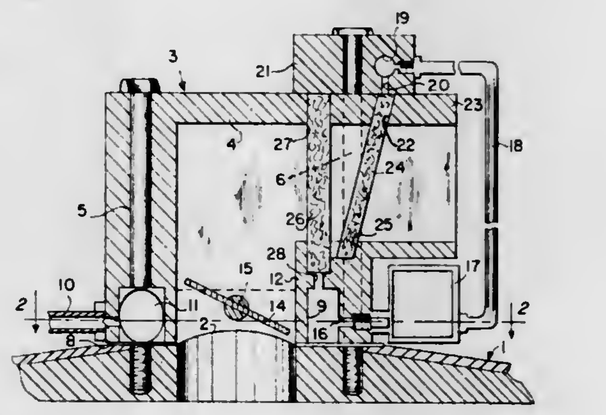
3,864,105
CARBURETOR

William E. Davis, P.O. Box 1705, Stuart, Fla. 33494

Filed Sept. 5, 1973, Ser. No. 394,525

Int. Cl. F02m *17/28*

U.S. Cl. 55—259 **5 Claims**



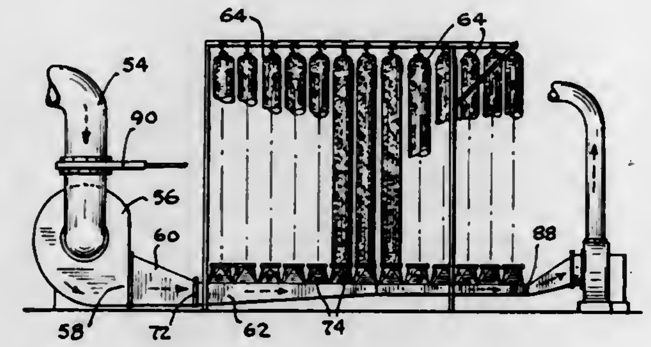
1. In a carburetor, a housing defining a through passageway including an inlet for ambient air at a first end, and an outlet for explosive fuel vapor at a second end, first means for attaching said outlet end to the intake manifold of an internal combustion engine, in pressure-tight relation therewith, there being a first slot in and through said housing opening into said passageway at the top thereof and adjacent said first end, a first porous absorbent filter element disposed in said passageway between said ends thereof and obturating the same, and

having a first edge fitting and essentially filling said first slot, second means including a conduit opening at its discharge end into communication with said first slot, there also being a channel in said housing opening into said passageway, opposite to and below said slot, said first element having a second edge extending into said channel, and a second porous absorbent filter element obturating said passageway adjacent and downstream of said first filter element, said second element having a lower edge extending into said channel and with its opposite edge sealed in a second slot in and through said housing, adjacent said first slot.

3,864,106
CONCENTRATOR SYSTEM FOR PARTICULATES SUSPENDED IN AIR

Robert E. Brandt, Delavan, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed July 18, 1973, Ser. No. 380,320
Int. Cl. B01d *50/00*
U.S. Cl. 55—288 **7 Claims**

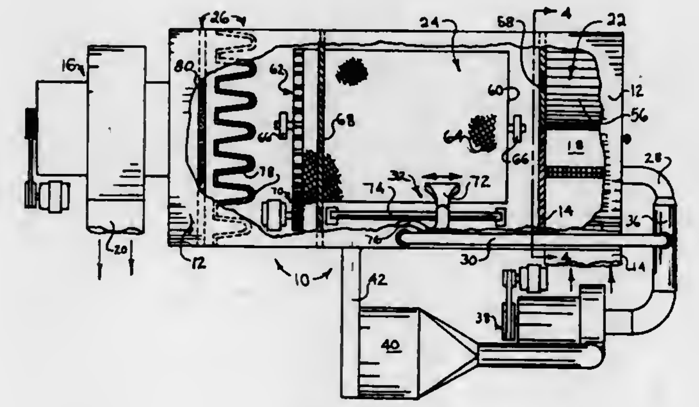


5. In an air filter system wherein a flow of air in a duct carries particulate matter which is to be removed from the air, a filter unit comprising
- a plenum formed by a duct extending substantially horizontally between opposite ends, having
  - an inlet at one end into which air bearing particulate matter is introduced,
  - an outlet at the other end leading to a collection chamber, a bottom therebetween sufficiently smooth for particulate matter to be swept therealong to and through said outlet by said air, and
  - a plurality of apertures in the top wall thereof, and
- a plurality of filter bags connecting with said apertures,
  - the vertical velocity of air rising through said apertures being less than 400 feet per minute when a horizontal air velocity of 4,000 feet per minute is maintained in said plenum.

3,864,107
AIR CLEANING APPARATUS

Joseph F. Baigas, Jr., 4901 Sentimen Post Rd., Charlotte, N.C. 28203

Filed Dec. 20, 1972, Ser. No. 316,758
Int. Cl. B01d *50/00*
U.S. Cl. 55—290 **7 Claims**

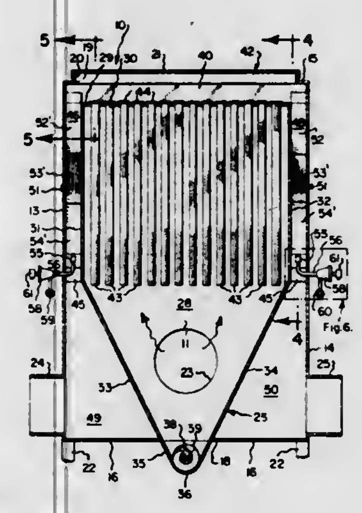


1. Apparatus for cleaning air in textile mills and the like, comprising:
- elongate housing means;
- means for passing air from which particulate matter is to be removed through said housing means;
- a plurality of air-cleaning means disposed within and enclosed by said housing means for progressively cleaning the air during its passage through said housing means;
- said air-cleaning means including partial-cyclone means disposed within said housing means and comprising a generally C-shaped baffle member extending through an arc distance of no more than approximately 180° about a substantially horizontal axis;
- said means for passing air through said housing means including an inlet duct communicating with said housing means and said baffle member adjacent one end of said baffle member for directing incoming air and particulate matter substantially tangentially against the concave inner surface of said baffle member;
- adjustable velocity-regulating valve means within said housing means for regulating the velocity of air and entrained particulate matter introduced into such partial-cyclone means through said inlet duct, said valve means comprising a plate-like member pivotally mounted within said inlet duct, and valve operating means connected to said plate-like member for varying the pivotal position thereof and for thereby varying the effective flow-area of said inlet duct;
- a purge outlet adjacent the end of said baffle member opposite from said one end thereof for receiving particulate matter directed thereto along said baffle member by centrifugal force;
- rotating-drum filter means disposed within said housing means downstream from said partial-cyclone means for receiving and further cleaning partially-cleaned air discharged from said partial-cyclone means, said drum filter means including a generally cylindrical drum rotatable about a central axis and having filter media extending about the generally cylindrical peripheral surface thereof for filtering the air passing therethrough and into said drum, and further having at least one open end for discharging the filtered air in a generally axial direction from said drum through said open end thereof;
- additional filtering means disposed within said housing means downstream from said drum filter means for receiving the air discharged from said drum-filter means and for further filtering the same prior to passage of the air from said housing means;
- particulate-matter separating means disposed exteriorally of said housing means;
- stripping means disposed within said housing means for stripping particulate matter from said media of said rotating-drum filter means;
- means including a plurality of conduits for conducting particulate matter from said purge outlet of said partial-cyclone means and from said stripping means associated with said rotating-drum filter means to said particulate-matter separating means;
- and a return conduit for returning exhaust air from said particulate matter separating means to the interior of said housing means at a location therein downstream from said partial-cyclone means and adjacent said rotating drum-filter means.

3,864,108
DUST COLLECTOR WITH JET INDUCED REVERSE AIR CLEANING

Roger S. Brookman, East Aurora, N.Y., assignor to American Precision Industries, Inc., Buffalo, N.Y.

Filed May 29, 1973, Ser. No. 364,963
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 **10 Claims**

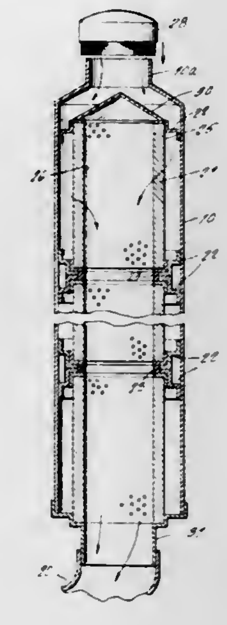


1. A dust collector, comprising:
- a first enclosure defining an entrance chamber arranged to receive entrance gas laden with particulate material, said first enclosure having a first wall provided with an outlet opening and also having a second wall;
- a gas-permeable filter medium closing said opening to separate said particulate material from cleaned gas passing through said filter medium;
- a second enclosure joining said first wall to define a reception chamber to receive said cleaned gas;
- first conduit means having a third wall operatively joining said second wall to provide a first conduit communicating with said reception chamber to convey a first flow of cleaned gas thereaway in a normal direction; and
- first venturi jet pump means arranged in said first conduit and selectively operable to cause cleaned gas to flow in a direction opposite to said normal direction for abruptly raising the pressure on the cleaned gas side of said filter medium to shock off particulate matter collected on the opposite side thereof.

3,864,109
AIR FILTER

Erik J. Hansen, Ann Arbor, Mich., assignor to Inter-Nation Research Corporation, Ann Arbor, Mich.

Division of Ser. No. 329,116, Feb. 2, 1973, , which is a continuation-in-part of Ser. No. 73,714, Sept. 21, 1970, abandoned. This application June 26, 1974, Ser. No. 483,396
Int. Cl. B01d *50/00*
U.S. Cl. 55—324 **4 Claims**

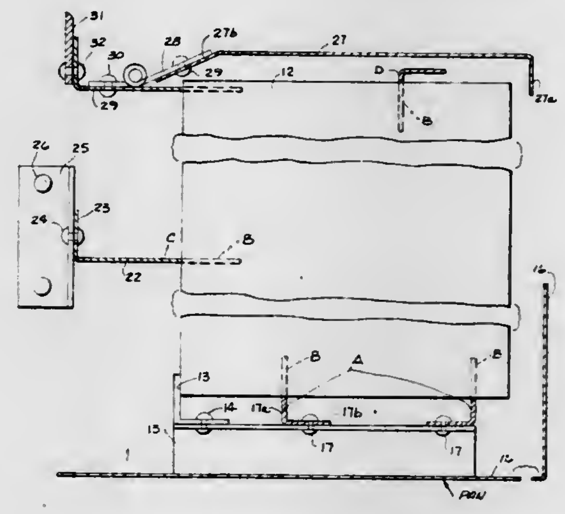


1. An air filter for use with internal combustion engines which comprises a substantially cylindrical housing, the top portion of which terminates in an air-inlet portion, a filtered air outlet disposed through the bottom of said housing, a plurality of filter elements having a central opening and a perforated cover placed one atop the other inside the housing, said filter elements being substantially equidistantly spaced from the interior cylindrical walls of the housing and means for deflecting air around the filter elements and means for covering the central opening in the uppermost filter element.

3,864,110
SUPPORT ASSEMBLY FOR ELIMINATOR BLADES

Floyd H. Wyman, 220 Edgemont Dr., Mauldin, S.C. 29662, and John E. Chambers, 323 E. Parkins Mill Rd., Travelers Rest, S.C. 29607

Filed Dec. 29, 1972, Ser. No. 319,747
Int. Cl. B01d *45/08*
U.S. Cl. 55—440 **4 Claims**



1. A support assembly for eliminator blades used to separate particles from a moving gas stream comprising: a base including a plurality of spaced bars extending transversely of a plurality of spaced vertical eliminator blades; said bars having a plurality of aligned grooves therein, spaced in accordance with the spacing of the blades, receiving a marginal base portion of a blade in respective grooves; at least one such transverse bar spaced above the base, the grooves of which receive a marginal side portion of a blade in respective grooves; and a movable detached bar having such grooves therein insertable transversely adjacent the top of said blades, the grooves of which receive a marginal portion of a blade in respective grooves; whereby the blades may be readily installed and removed for cleaning.

3,864,111

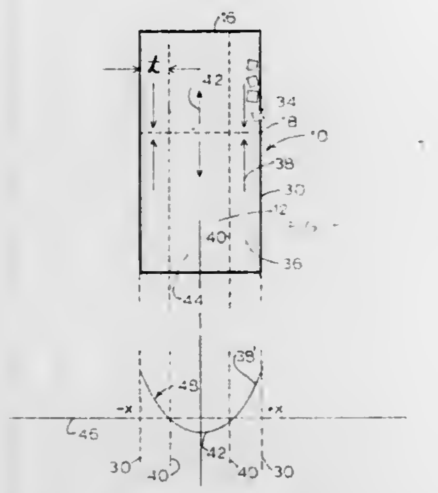
REDUCING STRESS BIREFRINGENCE IN FUSED SILICA OPTICAL ELEMENTS

James C. Kemp, 1945 Kincaid St., Apt. 1, Eugene, Oreg. 97403

Filed Aug. 8, 1973, Ser. No. 386,645

Int. Cl. C03c *15/00*

U.S. Cl. 65—31 **11 Claims**



1. The method of reducing stress-birefringence in fused-silica and fused-quartz light-transmitting elements by etch removal of stressed surface layers of the light-transmitting elements comprising:

- covering light-transmitting surface areas of the optical element with an etchant resistant substance,
- subjecting the selectively covered optical element to an etchant corrosive to the optical element substrate for a period of time sufficient to remove mechanically abraded or thermally effected layers of the substrate under static compressional stress (typically 0.001 inch to 0.004 inch), and
- removing by means of the etchant uniaxial strain directed in the plane of light-transmitting faces which strain gives rise to stress-birefringence.

3,864,112

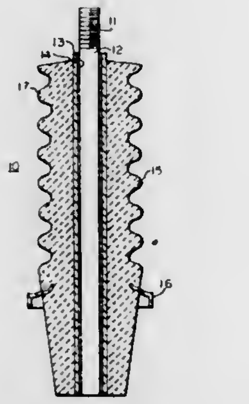
METHOD OF FORMING A GLASS-CERAMIC TO METAL SEALS

Douglas M. Mattox, and Joseph W. Toth, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1973, Ser. No. 411,542

Int. Cl. C03c *27/04*

U.S. Cl. 65—43 **12 Claims**



1. A method of bonding an insulating material to a metal member comprising the steps of:

A. applying a coating of a boron containing aqueous solution having a temperature of between about 25°–100°C and comprising 0–10 weight percent H_3BO_3 and 10–30 weight percent $Na_2B_4O_7$, wherein the weight ratio $H_3BO_3 + Na_2B_4O_7{:}H_2O$ is between about 1:1.5 and 1:9, to a metal member having a coefficient of thermal expansion between about 5×10^{-6} in/in/°C to 18×10^{-6} in/in/°C;

B. drying the applied solution to form a boron precipitate coating having a thickness of between about 25–150 microns;

C. applying a molten glass insulating material, directly to the coated metal member, and heating the insulating material and coated metal member up to a temperature of between about 500°–900°C, at a temperature rate effective to simultaneously form a solid insulating layer selected from the group consisting of glass, and glass-ceramic having a coefficient of thermal expansion between about 0 to 17×10^{-6} in/in/°C, and a boron glass coating about 25–150 microns thick consisting essentially of 30–50 weight percent Na_2O and 50–70 weight percent B_2O_3, having a coefficient of thermal expansion between about 8×10^{-6} in/in/°C to 20×10^{-6} in/in°C, between the metal member and the insulating layer; and then

D. cooling the insulated metal member to room temperature.

3,864,113

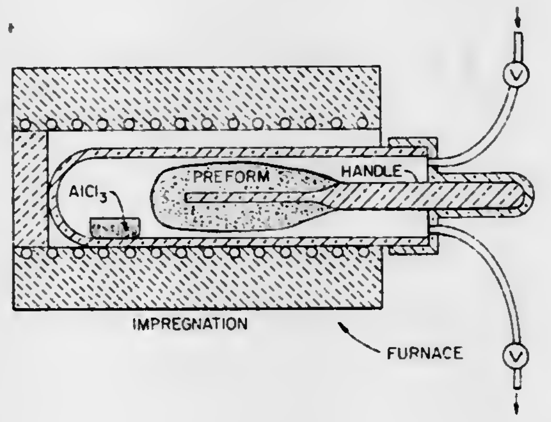
METHOD OF PRODUCING GLASS BY FLAME HYDROLYSIS

William H. Dumbaugh, Jr., and Peter C. Schultz, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 19, 1973, Ser. No. 407,917

Int. Cl. C03c *25/02*

U.S. Cl. 65—60 **9 Claims**



1. A method of incorporating an oxide additive into a glass body produced by flame hydrolysis which comprises passing a hydrolyzable compound of SiO_2, B_2O_3, GeO_2, P_2O_5, SeO_2, TeO_2, or a mixture thereof in vapor form into a flame to produce the corresponding oxide in particulate form by hydrolysis of said compound, depositing the oxide particles on a support as an integral preform having a network of continuous open pores throughout its mass, said porosity being less than about 90 percent and said pores having a diameter not less than about 0.001 micron, positioning said preform in a heated, enclosed space containing vapors of an oxide additive, or a compound convertible thereto, which thermally vaporizes at a temperature below the consolidation temperature of the preform, to introduce such vapors into the pores of the preform, cooling the preform in the said vapors to condense the vapors in the pores, heat treating the preform to consolidate it into a non-porous glassy body composed of the oxide of hydrolysis containing the additive oxide dispersed throughout at least a portion of the body.

3,864,114

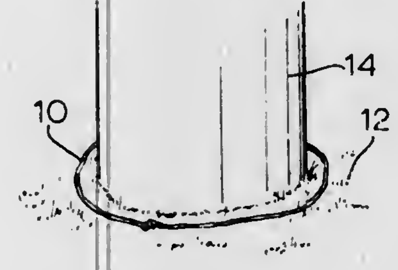
SOIL TREATMENT

William Edward Green, 2561 Bloor St. W., Apt. 11, Toronto, Ontario, Canada

Filed Mar. 27, 1972, Ser. No. 238,039

Int. Cl. A01n

U.S. Cl. 71—3 **1 Claim**



1. In a method for manufacturing a composite article of the type employed for the controlled application of an active chemical to the soil through use of a carrier of an active chemical impregnated string, the improvement comprising the steps of selecting a length of compressible adsorbent yarn derived from spun filaments of regenerated cellulose, an active chemical composition including at least one of a herbicide, plant growth regulator or plant nutrient suitable for use in the treatment of the soil and a degradable adhesive substantially inert to the activity of said chemical composition and to said yarn; then combining said active chemical composition and said degradable adhesive into a blend of substantially uniform consistency; then contacting said yarn with said blend in a manner whereby said yarn is substantially saturated with said blend; then compressing said saturated yarn to expel excess blend and to substantially uniformly distribute said blend throughout the extent of said yarn; and then subjecting said compressed yarn and blend to conditions of controlled temperature to dry the same without decomposition.

3,864,115

4-SUBSTITUTED 1,2-METHYLENE DIOXYBENZENE COMPOUNDS AS PLANT GROWTH REGULANTS

Gerhard Schrader, Wuppertal-Cronenberg, and Klaus Lurssen, Koenigsdorf, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

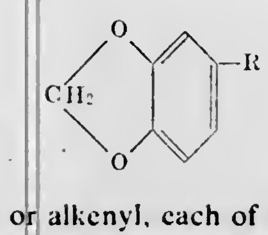
Filed July 6, 1972, Ser. No. 269,373

Claims priority, application Germany, July 10, 1971, 2134499

Int. Cl. A01n *9/28*

U.S. Cl. 71—88 **8 Claims**

1. Method of influencing plant growth which method comprises applying to the locus thereof a 4-substituted 1,2-methylene dioxybenzene compound of the formula



in which R is alkyl or alkenyl, each of which may be substituted one or more times by halogen, hydrocarbyl arylthio or halogenated hydrocarbyl arylthio, wherein said alkyl or alkenyl contain not more than 4 carbon atoms, in an amount effective to influence plant growth.

3,864,116

SELECTIVE TROPICAL CROP HERBICIDES

Reed W. Varner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1973, Ser. No. 335,117

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **10 Claims**

1. A method of controlling weeds in tropical crops comprising applying to the locus of the crops an effective amount of at least one uracil selected from the group consisting of 5-bromo-6-methyl-3-neopentyluracil and 5-chloro-6-methyl-3-neopentyluracil.

3,864,117

HERBICIDAL AGENTS

Joachim Gante, and Gerhart Schneider, both of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed June 25, 1971, Ser. No. 156,957

Claims priority, application Germany, June 27, 1970, 2031942

Int. Cl. A01n *9/24*

U.S. Cl. 71—115 **8 Claims**

1. A method of combatting weed grasses which comprises applying thereto a herbicidally effective amount of a composition containing as an essential active ingredient at least one of α,β-dichloro-β-phenylpropionic acid or an alkali-metal or ammonium, salt thereof.

3,864,118

METHOD FOR PRODUCING MANGANESE OXIDE PELLETS

Charles R. Schumacher, Easton; Ezekiel Dominguez, Bethlehem, and Gordon H. Crouch, Bechtelsville, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 7, 1973, Ser. No. 330,367

Int. Cl. C22b *1/16*

U.S. Cl. 75—3 **21 Claims**

1. A method for producing manganese oxide pellets containing not less than 48% manganese, not more than 6.0% iron, not more than 4.0% silica, not more than 7.0% alumina, not more than 1.0% alkali metals, not more than 0.12% arsenic and characterized by having a manganese to iron weight ratio of not less than about 8:1 and not more than 20:1, a porosity of 5% to 15% and a tumble index of 90% to 95%, from a manganese-bearing material which has been beneficiated to produce a manganese oxide concentrate containing about 35% to 50% manganese, about 10% to 15% iron, up to about 2.2% alkali metals, about .18% to about .25% arsenic, about 3% to about 8% water of hydration, a manganese to iron weight ratio of not more than about 7:1, substantially all the manganese particles being manganese dioxide and substantially all the iron particles in the concentrate being non-magnetic iron oxides, said method comprising:

a. roasting the manganese oxide concentrate at a temperature for a time in a reducing atmosphere to reduce substantially all the manganese dioxide particles to mangano-manganic oxide and a minor portion of manganous oxide, to reduce a major portion of the non-magnetic iron oxide particles to magnetic iron oxide particles, and to remove substantially all the water of hydration,

b. magnetically separating the magnetic iron oxide particles from the non-magnetic particles in the concentrate to form a magnetic concentrate which is passed to waste and a non-magnetic concentrate,

c. treating the non-magnetic concentrate to remove a substantial portion of the potassium oxide from the non-magnetic concentrate and to produce a concentrate suitable for balling,

d. balling the non-magnetic concentrate,

e. charging the balled non-magnetic concentrate into a furnace,

f. heating the balled non-magnetic concentrate to a temperature for a time to remove a major portion but not all of the arsenic and to form pellets,
g. cooling the pellets, and
h. discharging the pellets from the furnace, said steps (a) through (g) being carried out under such conditions to produce said manganese oxide pellets having the aforesaid composition and physical properties.

19. In a method for producing manganese oxide pellets containing not less than 48% manganese, not more than 6.0% iron, not more than 4.0% silica, not more than 7.0% alumina, not more than 1.0% alkali metals, not more than 0.12% arsenic, suitable for use in manufacturing ferromanganese alloys, from the group consisting of high grade manganese ores, medium grade manganese ores and low grade manganese ores, said ores containing arsenic and potassium, in the form of insoluble potassium compounds, wherein the manganese ores are upgraded in a physical ore processing plant to produce a manganese oxide concentrate containing about 35% to 50% manganese, about 10% to 15% iron, about .18% to about .25% arsenic and about 2.00% potassium, said pellets characterized by having a porosity of 5% to 15% and a tumble index of 90% to 95%, said method comprising:

a. roasting the manganese oxide concentrate at a temperature for a time in a reducing atmosphere to reduce substantially all the manganese dioxide (MnO_2) to manganese oxide (Mn_3O_4) and a minor portion of manganous oxide (MnO) and a major portion of the non-magnetic iron oxide (Fe_2O_3) to magnetic iron oxide (Fe_3O_4), simultaneously converting a major portion of insoluble potassium compounds therein to water soluble potassium compound, and removing substantially all the water of hydration therefrom,
b. grinding the roasted concentrate to liberation and balling size,
c. magnetically separating the magnetic iron oxides from non-magnetic iron oxides and manganese oxides to form a magnetic concentrate and a non-magnetic concentrate,
d. discarding the magnetic concentrate,
e. treating the non-magnetic concentrate to remove a substantial portion of the soluble potassium compounds and to produce a non-magnetic concentrate suitable for balling,
f. balling the non-magnetic particles to form balls having a diameter of between about one-fourth inch to about three-fourths inch,
g. charging the balls into a traveling grate furnace,
h. drying the balls,
i. heating the balls to a temperature of about 2550° F. to about 2650° F. for about one hour to form pellets, and to remove a major portion but not all of the arsenic therein,
j. cooling the pellets to a temperature of about 150° F. to about 200° F. and
k. discharging the pellets from the furnace, said steps (a) through (j) being carried out under such conditions to produce said manganese oxide pellets having the aforesaid composition and physical properties.

3,864,119

METHOD AND APPARATUS FOR SIMULTANEOUSLY PRODUCING LARGE AND SMALL HEAT HARDENED AGGLOMERATES OF MINERAL ORE

Orion C. Whitaker, Wauwatosa, and Glenn A. Heian, Franklin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 1, 1973, Ser. No. 402,456

Int. Cl. C21b *1/20*

U.S. Cl. 75—3 **2 Claims**

1. A method of making finished fired and heat hardened agglomerates of finely divided mineral ore of a first predetermined desired agglomerate size and a lesser quantity per unit of time of a second and larger agglomerate size, in a single facility, the method comprising the steps of:

a. making individual green balls of a first preselected size range from finely divided ore;
b. drying, preheating and heat hardening the first size range balls;
c. a first screening of the heat hardened first size range balls to separate therefrom balls of a preselected size larger than the first preselected desired size range when such balls are present and pass therethrough balls within the first preselected size range;
d. a second screening of the heat hardened balls which have passed through said first screening to remove during the second screening preselected size balls from within the first size range which represent less than one half the number of balls that have passed through the first screening, and pass through the second screening the remaining size balls within said first preselected size range which are then collected for storage as finished fired and hardened agglomerates of said first predetermined desired size;
e. rolling the balls removed from the first size range during the second screening step, in additional moistened finely divided ore to apply a coating of ore thereto until the rolling balls grow in diameter to a predetermined larger size to provide the balls of said second predetermined desired agglomerate size; and
f. depositing the coated balls with green balls of the first size range for drying, preheating and final heat hardening of the coating of the coated balls simultaneously with drying, preheating and final hardening of the balls of the first size range, after which the first said screening step screens out the hardened coated balls which are collected to provide the supply of second desired size agglomerates, and the second screening continues to separate finished fired and hardened agglomerates of the first predetermined size from hardened balls of the size preselected for coating.

3,864,120

STABILIZED BURNT LIME PRODUCT AND PROCESS

Helmut Knuppel, Richard-Wagner-Strasse 1, Sulzbach-Rosenberg; Karl Brotzmann, Fentschweg 6,, Sulzbach-Rosenberg Hutte; Hans Georg Fassbinder, Schelmesgraben 20a, Sulzbach Rosenberg, and Peter Wurm, Luisenstrasse 94, Dusseldorf, all of Germany

Continuation-in-part of Ser. No. 28,553, April 14, 1970,. This application July 9, 1973, Ser. No. 377,836

Int. Cl. C21b *1/18*

U.S. Cl. 75—5 **3 Claims**

1. A process for preparing a hydration-resistant lime sinter for use in the reduction of ores in blast furnaces, which comprises:

a. crushing limestone to a particle size of less than 4 mm, and
b. forming a bed of a sinterable mixture which includes said crushed limestone and (1) ferruginous material, the quantities of said material and of the limestone being proportioned so that in the sintered material the ratio by weight of calcium oxide to iron oxide as Fe_2O_3 lies between 3 and 5, (2) coke and/or coal with low gas content and (3) recycled sintered material,
c. moistening the resulting mixture to a water content between 8% and 10% by weight before sintering,
d. igniting said bed for a brief interval of time of about 90 seconds at about 1300°C, and
e. then sintering the mixture of said bed thereby producing a porous burnt lime and simultaneously therewith impregnating said burnt lime with a fluid mixture of calcium oxide and iron oxide.

3,864,121

PROCESS IN THE ROASTING OF ORES FOR REMOVING QUANTITIES OF TIN CONTAINED THEREIN

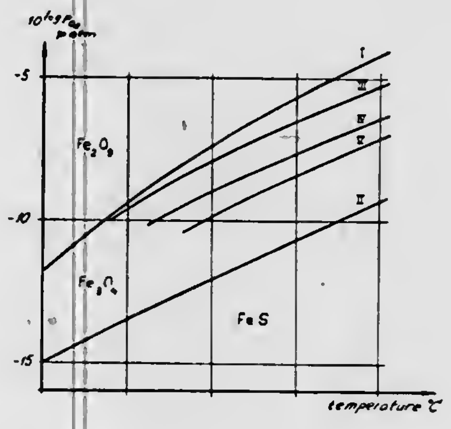
Torsten Eli Jensfelt, Stocksund, and Karl Goran Gorling, Lidingo, both of Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Continuation of Ser. No. 852,610, Aug. 25, 1969, abandoned. This application Aug. 14, 1972, Ser. No. 280,222

Claims priority, application Sweden, Sept. 2, 1968, 11799/68

Int. Cl. C22b *1/10*

U.S. Cl. 75—9 **11 Claims**



1. A process for volatilizing the tin content of an ore in a one-stage process according to the fluidized bed technique, characterized in that tin-containing ore bearing iron sulphide is continuously introduced into a fluidized roasting bed of said ore in a furnace which is supplied with an oxygen-containing gas in such quantities and at such concentration that the partial pressure of oxygen in the resulting roaster gas lies adjacent but not below the curve which in a binary coordinate system, wherein the partial pressure of oxygen in atmospheres, expressed in terms of log P_{0}, as the ordinate, is plotted against the temperature in degrees Centigrade, as the abscissa, passes through the following points:

$Log_{10}P_{O}$	Temperature °C
− 9.3	1100
−10.8	1000
−12.0	900
−13.4	800
−15.0	700

and that said partial pressure of oxygen does not exceed an analogous curve passing through the following points:

$Log_{10}P_{O}$	Temperature °C
− 5.4	1100
− 6.7	1000
− 7.9	900
− 9.7	800
−11.7	700

whereafter the roasted goods are separated from the roaster gas at such a temperature that the tin compounds exist in gas form.

3,864,122

METHOD FOR PRODUCING STEEL

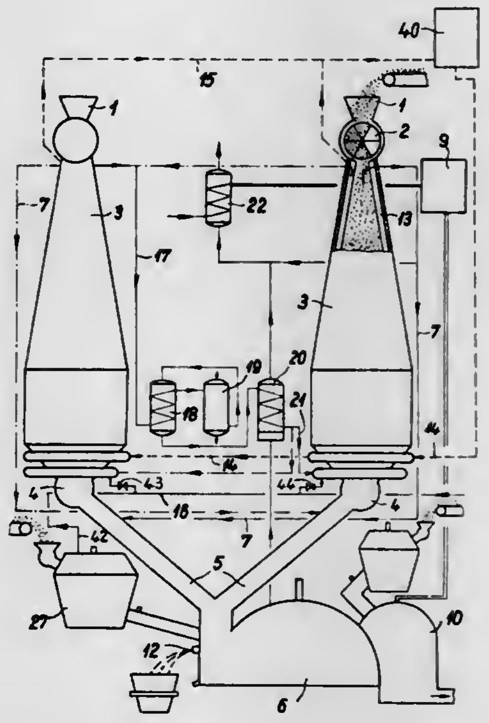
Henri R. Seelig, Essen, and Ritter Von Waclawiczek, Duisburg, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Germany

Filed May 19, 1972, Ser. No. 255,150

Claims priority, application Germany, May 29, 1971, 2126803

Int. Cl. C21c *5/52*; C21b *1/08, 13/14*

U.S. Cl. 75—11 **8 Claims**



1. A method for producing steel, comprising the steps of:

a. jacket-heating a plurality of jacketed shaft-furnace units containing iron ore pellets;
b. flowing a reducing gas through the plurality of jacket-heated shaft-furnace units containing iron ore pellets, always from a shaft-furnace unit containing iron ore pellets in a more advanced stage of reduction to a shaft-furnace unit containing iron ore pellets in a less advanced stage of reduction, by flowing a fresh reducing gas through a first unit containing iron ore pellets in an advanced stage of reduction, for directly reducing the iron ore pellets with the reducing gas; and withdrawing the reducing gas from said first unit and flowing it through a second of the plurality of units containing iron ore pellets in a less advanced stage of reduction than the pellets in said first unit for effecting a preliminary direct reduction of the pellets in the second unit;
c. withdrawing pellets reduced to completion from the first unit;
d. protecting the withdrawn pellets from the first unit with at least a part of said reducing gas from the last of the shaft-furnace units through which the reducing gas flows;
e. feeding the withdrawn pellets from the first unit and protecting reducing gas together into an electric furnace;
f. introducing into the first unit new iron ore pellets which are in a less advanced stage of reduction than the iron ore pellets in the second unit and changing the direction of flow of the fresh reducing gas so that it flows into the second unit for bringing about complete direct reduction of the preliminarily reduced iron ore pellets in the second unit and then into the first unit to effect a preliminary direct reduction of the new iron ore pellets in the first unit;
g. withdrawing pellets reduced to completion from the second unit;
h. protecting the withdrawn pellets from the second unit with at least a part of said reducing gas from the last of the shaft-furnace units through which the reducing gas flows;
i. feeding the withdrawn pellets from the second unit and protecting reducing gas together into the electric furnace;

j. introducing into the second unit new iron ore pellets which are in a less advanced stage of reduction than the iron ore pellets in the first unit; and
k. again changing the direction of flow of the fresh reducing gas so that the fresh reducing gas flows into the first unit containing iron ore pellets that have been preliminarily reduced and are ready for complete reduction by the fresh reducing gas.

3,864,123
PROCESS OF PRODUCING MANGANESE CAST STEEL ON HIGH IMPACT STRENGTH

Waclaw Sakwa, ul. Drozdow 1 b, Katowice; Stanislaw Jura, ul. Stowowa 1/27; and Mariusz Labecki, Parkowa 6 m. 3, both of Gliwice, all of Poland
Continuation-in-part of Ser. No. 771,619, Oct. 29, 1968, abandoned. This application July 28, 1971, Ser. No. 166,958
Claims priority, application Poland, Oct. 31, 1967, 123320
Int. Cl. C22c *33/00, 39/30, 39/54*
U.S. Cl. 75—129 **5 Claims**

1. A process for producing austenitic cast steel having a high impact strength comprising adding to molten high manganese steel approximately 0.01 to 0.05% antimony.

3,864,124
PROCESS FOR PRODUCING SINTERED ARTICLES FROM FLEXIBLE PREFORMS CONTAINING POLYTETRAFLUOROETHYLENE AND AT LEAST ABOUT 85 VOLUME PERCENT OF SINTERABLE PARTICULATE MATERIAL

Ernest J. Breton; Jack D. Wolf, and Dexter Worden, all of New Castle, Wilmington, Del. 19801, assignors to Composite Sciences, Inc., Newport, Del.
Continuation-in-part of Ser. No. 818,781, April 23, 1969, abandoned. This application Feb. 28, 1972, Ser. No. 229,823
Int. Cl. B28d *1/32*
U.S. Cl. 75—212 **6 Claims**

1. A process for preparing a sintered article comprising:
a. conforming a self-sustaining, cloth-like, flexible, non-woven preform to a desired configuration, said preform comprising from about 85 to about 99 % by volume of a solid sinterable particulate material selected from the group consisting of ceramics, metals, intermetallic compounds, synthetic organic polymers and mixtures thereof and from about 1 to about 15 % by volume of polytetrafluoroethylene resin, said particulate material being interconnected and entrapped by fibrils of said polytetrafluoroethylene to impart a self-sustaining condition and flexibility to the preform,
b. heating the preform to a temperature sufficient to decompose and remove the polytetrafluoroethylene resin and to sinter the particulate material thereby bonding the particulate material into a unitary structure, and
c. cooling the product of step b) to obtain the sintered article.

3,864,125
ELECTROPHOTOGRAPHIC METHOD OF MAKING AN IMAGING MASTER

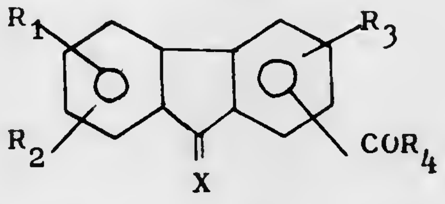
Yasuo Tamai, Asaka, Japan, assignor to Xerox Corporation, Rochester, N.Y.
Division of Ser. No. 222,268, Jan. 31, 1972, Pat. No. 3,806,339, which is a continuation of Ser. No. 8,415, Feb. 3, 1970, abandoned. This application Oct. 29, 1973, Ser. No. 410,867
Claims priority, application Japan, Feb. 10, 1969, 44-9968
Int. Cl. G03g *13/10, 13/22*
U.S. Cl. 96—1 LY **4 Claims**

1. The method of making an imaging master capable of producing multiple prints comprising the steps of forming an electrostatic latent image on an insulating recording member, developing the electrostatic latent image with a liquid developer comprising an electrically insulating liquid having an electrical resistivity greater than about 10^{10} ohm-cm. and having dispersed therein
1. finely divided, substantially colorless, polypeptide material capable of readily imbibing an aqueous solution of a water-soluble dye, said polypeptide being attractable to said latent image, and
2. colored pigment particles, said pigment particles being present in an amount of from about 1% to about 20% by weight of the polypeptide image to the recording member.

3,864,126
ORGANIC PHOTOCONDUCTOR WITH CARBOXY GROUP CONTAINING FLUORENE OR FLUORORE

Katsuhiko Nishide, Yokohama, and Tsuyoshi Eida, Chiba, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 8, 1974, Ser. No. 431,730
Claims priority, application Japan, Jan. 10, 1973, 48-5774
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.5 **3 Claims**

1. Photosensitive material for electrophotography comprising one or more organic photoconductive materials and one or more compounds of the formula:



wherein R_1, R_2, and R_3 are, the same or different, nitro, cyano, halogen, trifluoromethyl, acyl, lower alkyl, lower alkoxy, aryl, aralkyl, or hydrogen; X is oxygen or malononitrile; and R_4 is, substituted or non-substituted, alkyloxy, alkylamino, aralkyloxy, aralkylamino, aryloxy, or arylamino, containing 4 to 30 carbon atoms, the ratio of said compound to said organic photoconductive material being 0.01 – 120 mols to 100 mols.

3,864,127
METHOD FOR PREPARING ZnO-TiO$_2$ BICHARGEABLE ELECTROPHOTOGRAPHIC MATERIAL

Hajime Miyatuka, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd, Nakanuma Minami Ashigara-shi, Kanagawa, Japan
Filed Aug. 8, 1972, Ser. No. 279,136
Claims priority, application Japan, Aug. 12, 1971, 46-61142
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **10 Claims**

1. A method for the preparation of an electrophotographic material that can be charged both positively and negatively, which electrophotographic material comprises a powdery mixture of zinc oxide and an oxide of titanium in a molar ratio of 3:1 to 70:1 based on the zinc and the titanium, comprising: obtaining said powdery mixture by adding an organic compound of titanium to a zinc oxide-sol containing water to effect the hydrolysis of the organic compound of titanium and heat-treating said powder mixture at a temperature of 300°–900°C.

3,864,128
ELECTROPHOTOGRAPHIC SHEET MATERIAL EMPLOYING A HYDROPHOBIC FILM SUPPORT AND HYDROPHILIC LAYER

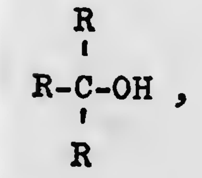
August Jean Van Paesschen, Antwerpen; Lucien Janbaptist Van Gossum, Kontich, and Jan Jozef Priem, Mortsel, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium
Division of Ser. No. 165,312, July 23, 1971, Pat. No. 3,788,856, which is a division of Ser. No. 763,382, Sept. 27, 1968, Pat. No. 3,649,336. This application Feb. 12, 1973, Ser. No. 331,374
Claims priority, application Great Britain, Sept. 28, 1967, 114/67
Int. Cl. G03g *5/00, 5/08*
U.S. Cl. 96—1.8 **10 Claims**

1. A sheet material compirsing a hydrophobic film support, and on one side of said support a first layer directly adherent to said hydrophobic film support and comprising a copolymer formed from 45 to 99.5% by weight of at least one vinylidene chloride or vinyl chloride monomer, from 0.5 to 10% by weight of an ethylenically unsaturated hydrophilic monomer, and from 0 to 54.5% by weight of at least one other copolymerizable ethylenically unsaturated monomer; a second layer adjacent said first layer comprising in a ratio of 1:3 to 1:0.5 by weight a mixture of gelatin and a copolymer of 30 to 70% by weight of butadiene with at least one copolymerizable ethylenically unsaturated monomer; and finely divided particles of a photoconductive compound suited for use in electrophotography uniformly dispersed into a layer of an electrically insulating binder carried on said support other than said first layer.

3,864,129
PHOTOGRAPHIC ACTIVATING BATH

Manfred Schober, Offenbach/Main, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 12, 1973, Ser. No. 323,316
Claims priority, application Germany, Jan. 24, 1972, 2203116
Int. Cl. G03c *5/26, 1/06*
U.S. Cl. 96—50 R **5 Claims**

1. A photographic activating bath for activating light-sensitive silver halide materials having developer substances incorporated in them, the activating bath consisting essentially of an aqueous solution of an alkaline substance selected from the group consisting of caustic alkali, sodium carbonate, potassium carbonate, aluminates and phosphates, an alkali metal sulfite preservative and at least one water-miscible alcohol of the formula



$$R-\overset{\overset{\displaystyle R}{|}}{\underset{\underset{\displaystyle R}{|}}{C}}-OH,$$

where r is H, alkul (C_1–C_{12}), aryl, vinyl, $Ch_3O—(CH_2)_n$ —, $HO—[C(R_1)_2]_n$ —; R_1 is H or alkyl; and n is 1–4; in quantities of 10–60 percent by weight.

3,864,130
INTEGRATED OPTICAL CIRCUITS

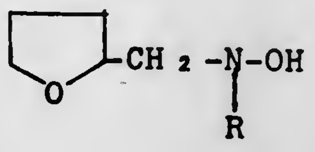
Heinrich Nassenstein, Leverkusen, and Jurgen Geldmacher, Leichlin, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 229,802, Feb. 28, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 416,918
Claims priority, application Germany, Mar. 2, 1971, 2109687
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **14 Claims**

1. A process for the production of integrated optical elements, for example waveguides, comprising contacting a dielectric radiation sensitive material with a transparent optical medium having a higher refractive index than said radiation sensitive material and illuminating the boundary between the two materials through said transparent medium with electromagnetic radiation at an angle which is greater than the critical angle of total reflection, thereby creating in the radiation sensitive material adjacent the boundary an exponentially decaying surface wave and producing a transition layer having a refractive index gradient in accordance with the exponential decay, the maximum of the refractive index being at the boundary.

3,864,131
DEVELOPER FOR SILVER SALT DIFFUSION TRANSFER PHOTOGRAPHY

Mitsugu Tanaka; Katsumi Hayashi, and Atsuaki Arai, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 26, 1973, Ser. No. 427,878
Claims priority, application Japan, Dec. 25, 1972, 47-259
Int. Cl. G03c *5/54, 5/30*
U.S. Cl. 96—66 R **7 Claims**

1. A developer for diffusion transfer photography, which comprises an alkali, a silver halide solvent and a compound represented by the following general formula,



in which R represents an alkyl group, an alkoxyalkyl group, an alkoxyalkoxyalkyl group, an alkenyl group or a tetrahydrofurfuryl group.

6. The developer of claim 1, wherein said alkali is an alkali metal hydroxide, wherein said silver halide solvent is a thiosulfate, a thiocyanate, thiourea, thioglycolic acid, a cyclic imide compound, or an amine.

3,864,132
ARTICLE HAVING A HYDROPHILIC COLLOID LAYER ADHESIVELY BONDED TO A HYDROPHOBIC POLYMER SUPPORT

Arthur A. Rasch, Webster; Herbert B. Cowden, and David P. Sullivan, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 22, 1972, Ser. No. 255,331
Int. Cl. G03c *1/94*
U.S. Cl. 96—85 **11 Claims**

1. In a photographic article comprising a radiation-sensitive silver salt, a support having a hydrophobic polymer supporting surface, a hydrophilic colloid layer and a subbing layer which is contiguous to said supporting surface and said hydrophilic colloid layer and is bonded to each, the improvement in which said subbing layer is binderless and consists essentially of an inorganic oxide selected from the group consisting of silicon oxide, magnesium oxide, aluminum oxide, tantalum oxide, titanium oxide, boro-silicon oxide and mixtures thereof and is from 10 to 1000 angstroms thick.

3,864,133
PHOTO-POLYMERIZABLE COMPOSITIONS

Hiroyoshi Hisamatsu, Tsurugashima-machi; Katutoshi Takahashi; Masanori Takase, both of Urawa, and Michihiko Shiraishi, Kawaguchi, all of Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 171,000, Aug. 11, 1971, abandoned. This application Oct. 19, 1973, Ser. No. 408,094

Claims priority, application Japan, Aug. 11, 1970, 45-169689; Oct. 27, 1970, 45-93967

Int. Cl. G03c *1/70*

U.S. Cl. 96—115 P **7 Claims**

1. A photo-polymerizable composition containing a polymerizable compound having an average molecular weight within the range of 144 – 100,000, said polymerizable compound having 0.01 – 1.0 urethane linkage based on an average molecular weight of 100, with 0.001 – 1.0 radical or linkage selected from the group consisting of a secondary amino radical, tertiary amino radical, urea linkage or mixture thereof based on an average molecular weight of 100 and 0.02– 1.0 ethylenically unsaturated double bond based on an average molecular weight of 100; and 0.001 – 10 % of a photo-polymerization initiator based on the total weight of the photo-polymerizable composition.

3,864,134
SILVER BROMOIODIDE PHOTOGRAPHIC EMULSION WITH IMPROVED GREEN SENSITIVITY

Hirozo Ueda; Keisuke Shiba, and Akira Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Oct. 30, 1972, Ser. No. 301,912

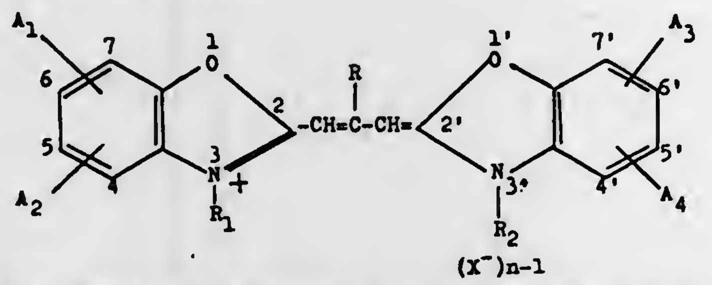
Claims priority, application Japan, Oct. 28, 1971, 46-85835

Int. Cl. G03c *1/14, 1/18*

U.S. Cl. 96—124 **32 Claims**

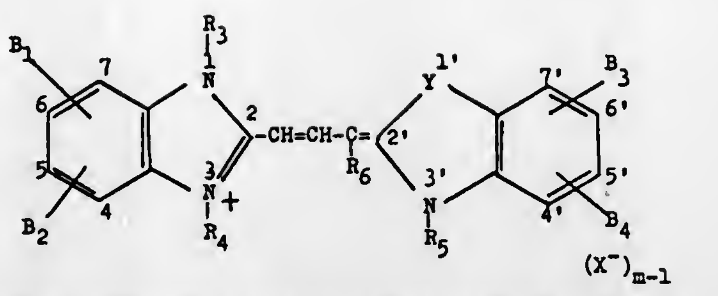
1. In a silver bromoiodide negative-working photographic emulsion of the developing out type which is subjected to only one exposure followed by wet-developing, said emulsion containing at least one green sensitizing dye to effect green sensitization thereof, a silver bromoiodide photographic emulsion wherein at least 0.01 mol percent of iodide ion based on silver halide adsorbs on the surface of silver bromoiodide grains contained in the emulsion, said iodide ion being in addition to iodine present in said silver iodobromide grains and said green sensitizing dye intensely sensitizing said emulsion to green without substantially deteriorating its photographic properties wherein said green sensitizing dye is represented by one of the following general formulae

(I)

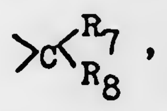


wherein A_1 and A_3 each represents a hydrogen atom or halogen atom, A_2 and A_4 represent a hydrogen atom, halogen atom, hydroxy group, alkoxy group, amino group, acylamido group, acyloxy group, alkoxycarbonyl group, lower alkyl group or alkoxycarbonylamino group, or, when taken together, A_1 and A_2, and A_3 and A_4, can be the atoms necessary to form a benzene nucleus, R represents a hydrogen atom, lower alkyl group, or aryl group, R_1 and R_2 each represents an alkyl group, hydroxyalkyl group, acetoxyalkyl group, alkoxyalkyl group, alkyl group containing a carboxyl group, alkyl group containing sulfo group, benzyl group, phenethyl group or a vinylmethyl group; and

(2)



wherein B_1 represents a hydrogen atom or halogen atom, B_2, B_3 and B_4 each represents a hydrogen atom, halogen atom, lower alkyl group, amino group, acylamido group, acyloxy group, alkoxycarbonyl group, carboxyl group, alkoxy group, aryl group, cyano group, carbamoyl group, alkylsulfonyl group, alkylaminosulfonyl group or aminosulfonyl group, or, when taken together, B_3 and B_4 can represent the atoms necessary to form a benzene ring, Y represents —O—



$$>C<{}^{R_7}_{R_8} ,$$

wherein R_7 and R_8 each represents an alkyl group,

$$>N-R_9,$$

wherein R_9 represents an alkyl group, R_3, R_4 and R_5 represent the same alkyl groups as R_1 or R_2; R_6 represents a hydrogen atom or R_5 and R_6 may combine with each other through an alkylene group, and *m* represents 1 or 2.

3,864,135
FLAME RETARDANT AND INTUMESCENT COMPOSITIONS

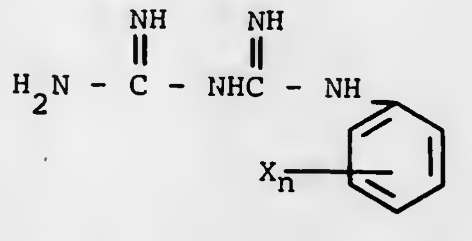
Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Division of Ser. No. 297,397, Oct. 13, 1972, Pat. No. 3,801,333, which is a division of Ser. No. 104,149, Jan. 5, 1971, Pat. No. 3,728,138, which is a division of Ser. No. 726,538, May 3, 1968, Pat. No. 3,639,535. This application Oct. 26, 1973, Ser. No. 409,895

Int. Cl. C09d *5/18*

U.S. Cl. 106—15 FP **10 Claims**

1. A flame-retardant polymeric composition containing from about 5% to about 60% by weight of said composition of a flame-retarding agent selected from the group consisting of a mineral acid salt of a compound characterized by the generalized formula:



wherein X is a halogen having an atomic weight greater than 30 and *n* is a number from 0 to 5 and mixtures of said mineral salt with a phosphorus-containing flame-retardant compound, provided that if said mineral acid salt to be the sole flame-retarding agent, said mineral acid salt be present in a concentration of not less than about 25% by weight of said composition and that if said flame-retarding agent be a mixture providing a concentration of said mineral acid salt of less than about 25% by weight of said composition, the concentration of said phosphorus-containing flame-retardant compound in said polymeric composition be not less than about 4% by weight of said composition.

3,864,136
DIRECT BONDED REFRACTORY BRICK HAVING IMPROVED HOT STRENGTH AND ITS METHOD OF MANUFACTURE

Grant M. Farrington, Jr., Marlton, and Ronald Staut, Cherry Hill, both of N.J., assignors to General Refractories Company, Philadelphia, Pa.

Filed Nov. 5, 1973, Ser. No. 412,917

Int. Cl. C04b *35/42*

U.S. Cl. 106—59 **15 Claims**

1. A direct bonded refractory shape comprising about 30 to about 80 percent by weight magnesia, about 70 to about 20 percent by weight chrome ore, and having an overall lime to silica ratio less than about 0.30 and a silica content of less than about 2.5 percent, based on the total weight of the refractory shape.

3,864,137
HYDROGEN PEROXIDE BLOWING AGENT FOR SILICATE FOAMS

Wulf Van Bonin; Ulrich Nehen, both of Leverkusen, and Ulrich Von Gizycki, Cologne, all of Germany, assignors to Bayer Aktiengesellshaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 318,068, Dec. 26, 1972,. This application May 24, 1973, Ser. No. 363,671

Claims priority, application Germany, Dec. 31, 1971, 2165912; Mar. 25, 1972, 2214609; June 7, 1972, 2227608

Int. Cl. C04b *35/16*

U.S. Cl. 106—75 **5 Claims**

1. In the production of foams by mixing an aqueous silicate solution with a blowing agent and a hardener, molding the mixture, and drying the molded silicate foam, the improvement which comprises using hydrogen peroxide as the blowing agent and using a hardener consisting essentially of a member selected from the group consisting of chloroformic acid esters, chloracetic acid esters, isocyanide dichlorides, sulfochlorides, carboxylic acid chlorides and compounds which contain aliphatically bound labile chlorine.

3,864,138
PROCESS FOR REGULATING SETTING TIME OF HYDRAULIC CEMENT

Hiroshi Uchikawa, Funabashi, and Shunichiro Uchida, Chiba, both of Japan, assignors to Onoda Cement Company, Limited, Onoda-shi, Yamaguchi, Japan

Filed May 15, 1972, Ser. No. 253,352

Claims priority, application Japan, May 22, 1971, 46-34979

Int. Cl. C04b *7/02*

U.S. Cl. 106—89 **7 Claims**

1. A process for regulating the setting time of a hydraulic cement, which consists essentially of: admixing the retarders anhydrite and a silicofluoride with a clinker containing 5–60% by weight of $11CaO.7\ Al_2O_3.CaX_2$, wherein X represents a halogen atom, and more than 5% by weight of $3\ CaO.SiO_2$ solid solution, $2CaO.SiO_2$ solid solution and $4\ CaO.Al_2O_3.Fe_2O_3$; wherein the anhydrite is present in an amount such that the weight ratio of Al_2O_3 in the clinker to SO_3 in the anhydrite is 0.7 to 1.8.

3,864,139
PRETREATMENT COMPOSITIONS AND USE THEREOF IN TREATING METAL SURFACES

Ferdinand P. Heller, Ambler, Pa., assignor to Amchem Products, Inc.,, Ambler, Pa.

Continuation-in-part of Ser. No. 95,364, Dec. 4, 1970, abandoned. This application Jan. 4, 1973, Ser. No. 321,086

Int. Cl. C09k *3/00;* **B44d** *1/34*

U.S. Cl. 106—287 R **1 Claim**

1. A stable aqueous colloidal solution for activating the surface of a metal selected from the group consisting of iron, steel zinc, aluminum, and alloys thereof, on which a zinc phosphate coating is subsequently applied, consisting essentially of:

a. from about 0.05 grams/liter to about 30 grams/liter of an activating composition consisting essentially of disodium orthophosphate and titanium salt, wherein the titanium comprises from about 0.005% to about 20% by weight of said activating composition and the disodium orthophosphate comprises at least 80% by weight of said activating composition;

b. a stabilizing agent selected from the group consisting of alkali citrate and alkali aminopolycarboxylic acid salts, such that for each part by weight of activating composition thre is present from about 2 parts by weight to about 30 parts by weight of stabilizing agent; and

c. water having undesirable alkaline earth metal cations in concentrations of at least 100 parts per million; wherein the concentration of the activating composition plus the stabilizing agent in said solution is from about .15 grams/-liter to about 100 grams/liter; and wherein the pH of said solution is fro 5.0 to 10.0.

3,864,140
PIGMENTARY COMPOSITIONS WITH REDUCED WATER ABSORPTION

Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation-in-part of Ser. Nos. 306,926, Nov. 15, 1972, , and Ser. No. 356,055, April 30, 1973, , and Ser. No. 164,416, July 20, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,525

Int. Cl. C09c *1/28;* **C08h** *17/04*

U.S. Cl. 106—308 Q **14 Claims**

1. A pigmentary composition comprising calcined agglomerates ranging in size from about 20 microns to one centimeter and each embodying a plurality of particles of silicate mineral having an average particle size of from about 0.5 to 20 microns, said particles being bonded together so that the agglomerates have voids therein and a density of from about 60% to 90% of that of said silicate mineral in the agglomerates, said agglomerates having from about 0.005% to 1% by weight of a hydrolizable silane based on the weight of the agglomerates applied thereto and chemically bonded to the outer surface of the agglomerates in the form of a siloxane limiting the water absorption of the agglomerates to less than 10%.

3,864,141
PROCESS FOR REGULATING SETTING TIME OF HYDRAULIC CEMENT

Hiroshi Uchikawa, Funabashi, and Shunichiro Uchida, Chiba, both of Japan, assignors to Onoda Cement Co., Ltd., Onoda-shi, Yamaguchi-ken, Japan

Division of Ser. No. 253,352, May 15, 1972,. This application July 6, 1973, Ser. No. 377,112

Int. Cl. C04b *13/24, 7/02*

U.S. Cl. 106—315 **7 Claims**

1. A process for regulating the setting time of a hydraulic cement, which comprises the steps of:

admixing the retarders anhydrite and 0.01 – 1.0 weight percent of a carboxylic acid with a clinker consisting essentially of 5 – 60 weight percent of $11\ CaO.7Al_2O_3.CaX_2$, wherein X represents a halogen atom, and more than 5 weight percent of $3\ CaO.SiO_2$ solid solution, $2\ CaO.SiO_2$ solid solution and $4\ CaO.Al_2O_3.Fe_2O_3$; wherein the anhydrite is present in an amount such that the weight ratio of Al_2O_3 in the clinker to SO_3 in the anhydrite is 0.7 – 1.8.

3,864,142
METAL OXIDE SOLS

James F. Kovarik, Berwyn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Continuation-in-part of Ser. No. 137,670, April 26, 1971,. This application Jan. 12, 1973, Ser. No. 323,006
Int. Cl. B01j *13/00*
U.S. Cl. 117—100 S **5 Claims**

1. A process of preparing metallic oxide coated silica sols which comprise the steps of:

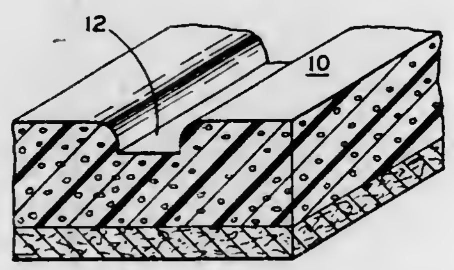
A. adding a metallic chloride to a silica sol having from 5 to 40 percent by weight SiO_2 to form a reaction product, with the amount of the metallic chloride being sufficient to coat from 0.10 to 1.0 of a monolayer of metal oxide which corresponds to the metal of the metallic chloride on the surface of said silica sol;

B. treating the reaction product with an anion exchange resin; and

C. recovering the reaction product as the metallic oxide coated silica sol product, said steps being the only steps used in said process.

3,864,143
CHEMICAL EMBOSSING USING ULTRAVIOLET RADIATION

Richard M. Fantazier, Columbia, Pa., and James N. Wells, Cottage Grove, Minn., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed June 22, 1972, Ser. No. 265,141
Int. Cl. B44c *1/02*
U.S. Cl. 117—10 **2 Claims**

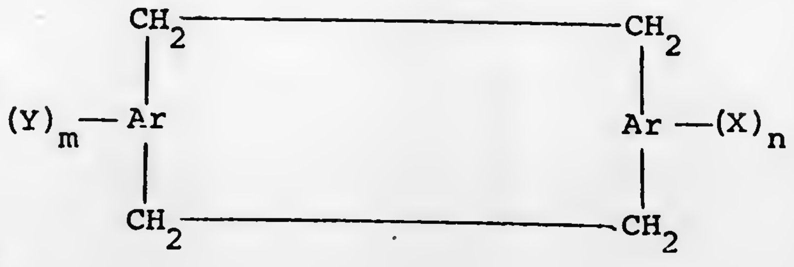


1. The method of obtaining an embossed pattern on a sheet utilizing a plastisol mix containing a decomposable expanding agent, comprising the steps of, preparing a plastisol mix which is capable of being foamed and containing an expanding agent, heating the mix at a point below the decomposition point of the expanding agent to effect its gellation, masking portions of the gelled mix, then exposing the unmasked portions of the gelled mix to ultraviolet radiation which will then decompose the expanding agent in the gelled mix in the unmasked regions without expansion of the gelled mix, said irradiation temperature being insufficient to cause fusion of the gelled plastisol mix, and then subsequently heating the total mix for fusion of the gelled plastisol and to effect expansion of the remaining expanding agent whereby an embossed type product is formed with the masked areas having a greater foam height than the unmasked areas.

3,864,144
PROCESS FOR PREPARATION OF PHOTOCONDUCTIVE FILMS FROM INTRACTABLE MATERIALS

Moshe Levy, Rehovot, Israel; James M. Pearson, Webster, and David J. Williams, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 19, 1973, Ser. No. 342,635
Int. Cl. B44d *1/14;* **B32b** *27/06*
U.S. Cl. 117—34 **7 Claims**

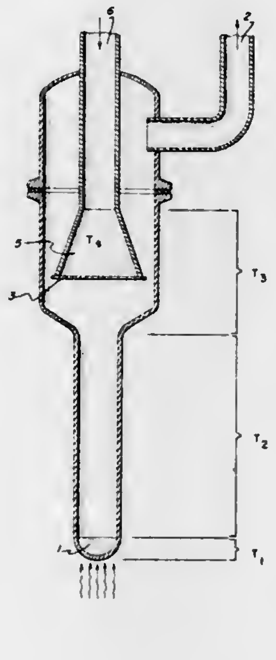
1. A process for preparation of a photoconductive imaging layer from at least one cyclic compound of the formula:



wherein

Ar is a polyaromatic nucleus selected from the group consisting of diradicals of napthalene and anthracene;

X and Y are independently selected from the group consisting of halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters; and *m* and *n* range from 0 to the total number of replaceable hydrogens on the polyaromatic nucleus,



said process comprising:

a. providing a chamber having (1) at least 3 distinct temperature zones spatially arranged so as to enable vaporization, pyrolytic cleavage, condensation and polymerization of said cyclic compounds, (2) means for condensation of vaporized materials, and (3) means for evacuation of said chamber;

b. heating at least one of the above cyclic compounds under vaporizing conditions in the evacuated chamber;

c. cracking the vaporized cyclic compounds by subjecting said compounds to temperatures sufficient to cause pyrolytic cleavage of the compounds;

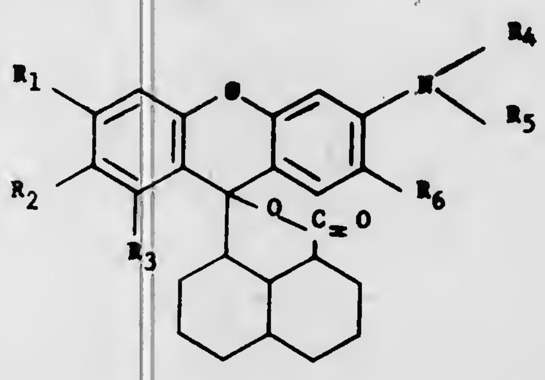
d. collecting the products of said pyrolytic cleavage by condensation on a electrically conductive substrate, said substrate having been sufficiently chilled so as to forestall and/or retard the polymerization of the condensate deposited thereon; and

e. increasing the temperature of the substrate, thereby, allowing the condensate to polymerize.

3,864,145
PRESSURE SENSITIVE COPYING PAPER

Hiromitsu Seki, and Kenji Yamamoto, both of Osaka, Japan, assignors to Yamamoto Kaguku Gosei Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 208,415, Dec. 15, 1971,. This application Nov. 29, 1972, Ser. No. 310,585
Claims priority, application Japan, Dec. 15, 1970, 45-112053
Int. Cl. B41c *1/06*
U.S. Cl. 117—36.2 **8 Claims**

1. In a pressure sensitive copying paper, a paper sheet having applied thereto at least one fluoran compound of the formula:



wherein R_1, R_2 and R_3 are members selected from the group consisting of hydrogen, methyl and halogen; R_4 and R_5 are both hydrogen or one of R_4 and R_5 is hydrogen, and the other is methyl or ethyl; and R_6 is a member selected from the group consisting of hydrogen, methyl, amino and acetylamino, also R_2 and R_3 when joined together represent a hydrocarbon residue which forms a benzene ring.

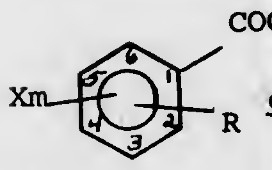
3,864,146
SENSITIZED RECORD SHEET MATERIAL

Shinichi Oda, Amagasaki, and Jujiro Kono, Osaka, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan
No Drawing. Filed June 13, 1972, Ser. No. 262,362
Claims priority, application Japan, June 16, 1971, 46-43546
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.8 **15 Claims**

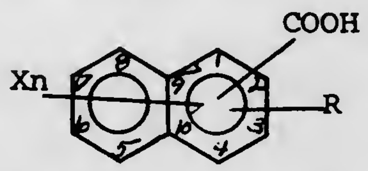
1. A sheet of record material sensitized with a coating to produce color on contact with colorless chromogenic compounds, said coating comprising a binder, and a color reactant material, said color reactant material consisting essentially of in combination:

a. at least one metal ion selected from the group consisting of zinc, aluminum, calcium, magnesium, titanium, nickel, cobalt, manganese, iron, tin, chromium, copper and vanadium, or at least one water insoluble inorganic compound of a metal selected from said metal group, and

b. at least one aromatic carboxylic acid of the formula:



or [and]



wherein R is hydroxyl, amino, amino substituted by at least one lower alkyl group having 1 to 5 carbon atoms, nitro or chlorine, and R Group being substituted on one of the carbon atoms at the position adjacent to that of the carboxylic group on the aromatic ring,

X is a substituted or unsubstituted hydrocarbon containing a monocylic or bicylic carbon ring having 6 or 10 carbon atoms,

m is an integer of 1 to 2 and

n is an integer of 1 to 3.

3,864,147
METHOD OF IMPROVING THE BONDING CAPABILITY OF POLYMER SURFACES FOR SUBSEQUENTLY APPLIED COATINGS, AND PRODUCTS THEREOF

John J. Grunwald, New Haven; Eugene D'Ottavio, Thomaston, and Michael S. Lombardo, Waterbury, all of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.
Filed Sept. 25, 1972, Ser. No. 291,717
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **15 Claims**

1. A process of improving the topography characteristics of a plastic substrate for the bonding thereto of a permanent coating film, which comprises the steps of initially forming by heat and pressure a laminate of the plastic substrate and a sacrificial aluminum metal foil having an oxidized surface facing the substrate, then stripping said sacrificial aluminum metal foil from the laminate thus formed by treatment in an aqueous etchant solution effective to dissolve said sacrificial aluminum metal foil wherein said treatment always includes, either during or subsequent to removal of said metal but before any other treatment, subjecting said substrate to an aqueous solution of phosphoric acid, a soluble pyrophosphate, or both.

2. A process of improving the topography characteristics of a plastic substrate surface for the bonding thereto of a permanent coating film, which comprises the steps of initially forming by heat and pressure a laminate of the plastic substrate and a sacrificial aluminum metal foil having an oxidized surface facing the substrate, chemically stripping in an aqueous etchant solution all visible traces of said sacrificial aluminum metal foil from the surface of the substrate, and then subjecting the stripped substrate to treatment in an aqueous solution of phosphoric acid or a soluble pyrophosphate effective in removing all trace metal oxides from the surface of the substrate after the first etching step, and thereafter rinsing and applying said permanent coating film.

7. In the electroless metal plating of plastic substrates in which a laminate is initially formed by bonding an anodized aluminum foil to a resin substrate by heat and pressure, the aluminum foil being then chemically stripped from the plastic surface, the surface activated and then plated with an adherent film by immersion in an electroless metal plating solution, the improvement which comprises: subjecting the plastic substrate to further chemical treatment, supplemental to the said regular stripping step, to substantially eliminate traces of metal oxides adhering to the surface, wherein said supplemental treatment involves immersing the stripped substrate in a solution of phosphoric acid or soluble pyrophosphate.

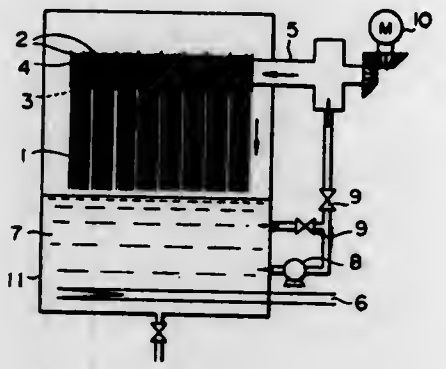
14. A process of improving the topography characteristics of a polymerized plastic substrate surface for the bonding thereto of a permanent metallic film, which comprises the step of initially forming a laminate of the plastic substrate and a sacrificial anodized aluminum foil by heat and pressure, chemically stripping said foil from the substrate surface in an aqueous etchant solution of a strong acid or base to remove all visible trace of the metal, supplementing said etchant step by subjecting the stripped substrate to an aqueous solution of phosphoric acid or a soluble pyrophosphate, and thereafter rinsing and electrolessly plating said permanent metallic film on said substrate.

3,864,148
PROCESS FOR PRODUCTION OF METAL-PLATED FIBERS

Minoru Maeawa, and Morioka, Hiroka, both of Okayama, Japan, assignors to Kuraray Co., Ltd.,, Kurashiki, Okayama prefecture, Japan
Filed Oct. 10, 1972, Ser. No. 296,021
Claims priority, application Japan, Oct. 14, 1971, 46-81135
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **6 Claims**

1. A process for the production of metal-plated fibers by electrolessly plating pre-treated fibers, which comprises reel-

ing the fibers into hanks, hanging the fibers in the hank form on a rotary cylinder having projection holes to suspend the fibers in the air, wherein the projection holes are from about 2 to about 5 mm in diameter and present in from about 25 to about 150 holes per 100 cm² of the cylinder surface, and

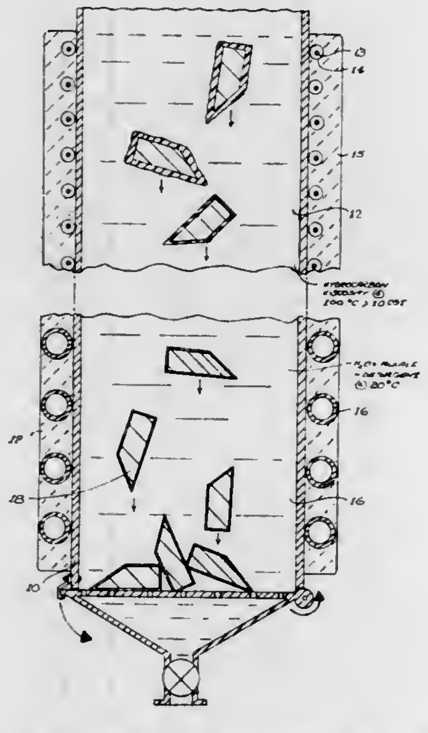


wherein the fibers have a denier of from about 0.1 to about 15, allowing the fibers to move rotatively around the cylinder by rotation of the cylinder, projecting an electroless metal plating solution at a rate of 5 to 50 cm/sec from said projection holes against the rotatively moving fibers and thereby effecting the electroless plating of the fibers.

3,864,149
METHOD OF COATING WORKPIECES WITH THERMOPLASTIC SYNTHETIC RESINS

Werner Scheiber, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 29, 1973, Ser. No. 375,009
Int. Cl. B44d *1/094, 1/40*
U.S. Cl. 117—64 **9 Claims**



1. A process for coating a workpiece with a thermally-fusible synthetic resin comprising the steps of:

a. heating a workpiece to at least the softening temperature of said resin;

b. adhering particles of said synthetic resin to the workpiece by contacting the heated workpiece with said particles to form a rough fritted layer of said particles on said workpiece;

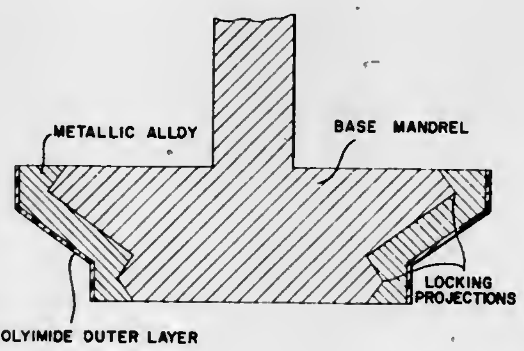
c. thereafter coalescing and smoothing said layer and fusing said particles into a continuum by treating the workpiece with said layer adherent thereto with a high-molecular-weight liquid hydrocarbon in which said synthetic resin is insoluble at a temperature above the softening point of said synthetic resin, said liquid hydrocarbon having a viscosity at 100°C greater than 10 cSt; and

d. thereafter cooling the synthetic-resin layer by treating it with water following step (c).

3,864,150
REUSABLE MANDREL FOR STRUCTURES HAVING ZERO DRAFT OR RE-ENTRANT GEOMETRIES

Robert J. Baird, Indianapolis, Ind., and Thomas G. Everett, Jr., Flanders, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 156,191, June 24, 1971, Pat. No. 3,717,914. This application Oct. 27, 1972, Ser. No. 301,495
Int. Cl. C23c *1/06, 1/10*
U.S. Cl. 117—71 M **7 Claims**



1. a process for fabricating reusable mandrels designed for use in producing free-standing bodies comprising the steps:

a. preparing a base mandrel of a material having a melting temperature above at least 650°C and substantially conforming in shape to a desired body to be deposited thereon and being dimensionally different than said body by a radial distance sufficient to allow for a dual coating build up on said mandrel(;), said body having zero draft angles or re-entrant geometries;

b. depositing a metallic alloy on the surface of the mandrel to substantially conform to the shape of said mandrel, said alloy having a melting temperature below 700°C and lower than the melting temperature of said base mandrel and said base mandrel material being substantially nonreactive with said metallic alloy; and

c. depositing and then curing at least one polyimide layer on said alloy deposited base mandrel to produce an overall coating that substantially conforms to the shape of the alloy coated base mandrel and that will essentially prevent any reaction between said alloy layer and the material of the body to be deposited thereon, said polyimide layer having a higher melting point than said alloy and being non-reactive with and easily separable from the material of the body to be deposited.

3,864,151
GLASS ARTICLE COATED WITH PLASTIC AND LUBRICITY COATINGS AND METHOD OF COATING

Francis J. Shonebarger, Lancaster, and William Brown, Amanda, both of Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed July 2, 1973, Ser. No. 375,684
Int. Cl. B32b *17/10;* **C03c** *17/32*
U.S. Cl. 117—72 **12 Claims**

1. The method comprising,

applying a plastic coating to a glass container, the plastic coating comprising an ionic copolymer of an alpha olefin and an alpha, beta-ethylenically unsaturated carboxylic acid,

providing a lubricity coating in the form of a water emulsion and comprising

1 part by weight of a salt of the group consisting of calcium stearate, zinc stearate, calcium oleate, zinc oleate, and mixtures thereof;

about 0.5 to 2 parts of a soluble polyvinyl alcohol,

about 1.5 to 3 parts of oleic acid,

and about 0.3 to .8 part of a hydroxide of the group consisting of potassium, sodium, and ammonium hydroxides, and mixtures thereof,

applying said lubricity coating to said container over said plastic coating at a temperature in the range of about 150° to 200°F.,

and drying the lubricity coating on the container.

3,864,152
COATED GLASS BOTTLE

Shuji Kitamura, Toyonaka, and Kimio Horikoshi, Takatsuki, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 2, 1973, Ser. No. 356,450
Claims priority, application Japan, May 24, 1972, 47-51841
Int. Cl. B65d *23/08*
U.S. Cl. 117—73 **4 Claims**

1. A resin-coated glass bottle which comprises a polyvinyl alcohol resin coating layer of a thickness not less than 100 microns on the surface of the bottle, which polyvinyl alcohol resin has a polymerization degree of not less than 500, and a high alkali-resistant resin coating layer on the said polyvinyl alcohol resin layer, which alkali-resistant resin is selected from the group consisting of an epoxy resin, a urethane resin and an ethyl cellulose resin.

3,864,153
WATER RESISTING AND ANTICORROSIVE PAINTING METHOD AND THE PAINTED ARTICLES

Satoru Enomoto, Fukushima, Japan, assignor to Kureha Kagaku Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 68,553, Aug. 31, 1970, abandoned. This application Jan. 26, 1973, Ser. No. 326,657
Claims priority, application Japan, Aug. 30, 1969, 44-68350
Int. Cl. B32b *15/08*
U.S. Cl. 117—75 **7 Claims**

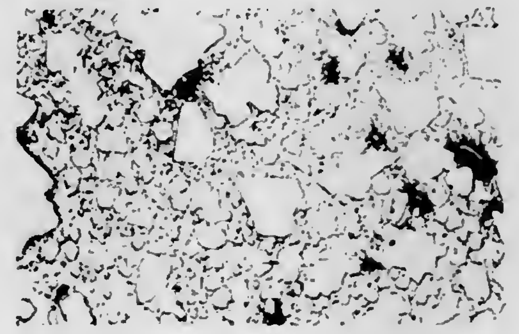
1. A coated article having excellent water-resistance and corrosion-resistance and which is non-bleeding comprising:

1. a substrate;
2. a first layer coated directly on said substrate consisting essentially of 10 to 500 parts by weight of an alkylated polycyclic aromatic compound and 100 parts by weight of a urethane resin, said alkylated polycyclic aromatic compound containing no nitrogen, oxygen or sulfur to the extent detectable by elementary analysis, having a means molecular weight measured by VPO method of from 250 to 600, having an aromatic ring-forming proton density measured by the nuclear magnetic resonance method of from 35 to 80%, having a specific gravity of from 0.95 to 1.10, and, if liquid, having a viscosity of at least 2,000 centipoises at 25° C or, if solid, having a softening point of about 25° C; said first layer further consisting essentially of a hardening agent for the urethane resin; and
3. a second layer coated directly on said first layer consisting essentially of a curable resin selected from the group consisting of an epoxy, a urethane resin and an alkyd resin.

3,864,154
CERAMIC-METAL SYSTEMS BY INFILTRATION

George E. Gazza, Sudbury, Mass., and Michael W. Lindley, Holton Heath, England, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Gazza and The Secretary of State for Defence Ministry of Defence, London, England, by said Lindley

Filed Nov. 9, 1972, Ser. No. 305,038
Int. Cl. C03c *17/00;* **C04b** *41/00*
U.S. Cl. 29—123 B **6 Claims**



AlB_{12}— Al (500X)

1. A ceramic-metal composition consisting of a metal impregnated into a porous ceramic compact by infiltration, selected from the group consisting of:

	CERAMIC	METAL IMPREGNANT
a)	SiB_6 -	Al
b)	AlB_{12} -	Al
c)	AlB_{12} -	Si
d)	B -	Al
e)	AlB_{12}-B	- Al

3,864,155
GLASS FIBER SIZE AND RESULTING PRODUCT

Roy R. Graham, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 27, 1973, Ser. No. 355,237
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GB **8 Claims**

1. In the method of forming chopped glass fiber strand for use as reinforcement for articles formed from aqueous dispersion, which comprises drawing glass streams through orifices in a bushing to form individual glass fibers, moving the fibers away from the bushing at a high rate of speed and forming them into a strand, applying to the fibers while they are moving at this speed and before strand formation an aqueous sizing solution whose solids comprise 40 percent to 93 percent by weight of gelatin, 5.55 percent to 44.6 percent by weight of an n-alkyl N-amidoalkyl imidazoline and 0.95 to 16.7 percent by weight of a solubilized fatty acid amide said sizing solution having a viscosity less than 100 centipoise at 20° C., drying the strand so formed and chopping said strands.

3,864,156
PROCESS FOR FLAMEPROOFING SYNTHETIC TEXTILES AND THE FIRE RETARDANT TEXTILE FORMED THEREFROM

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 23,493, March 27, 1970, abandoned. This application July 10, 1972, Ser. No. 270,110
Int. Cl. C09d *1/00;* **B44d** *1/50*
U.S. Cl. 117—136 **18 Claims**

1. A process for flameproofing synthetic textiles which comprises:

- a. applying an aqueous solution containing a polycondensed vinylphosphonate monomer to a synthetic textile; and
- b. curing the monomer on said textile so as to affect the polymerization of said monomer in situ on said textile to render the textile flame retardant.

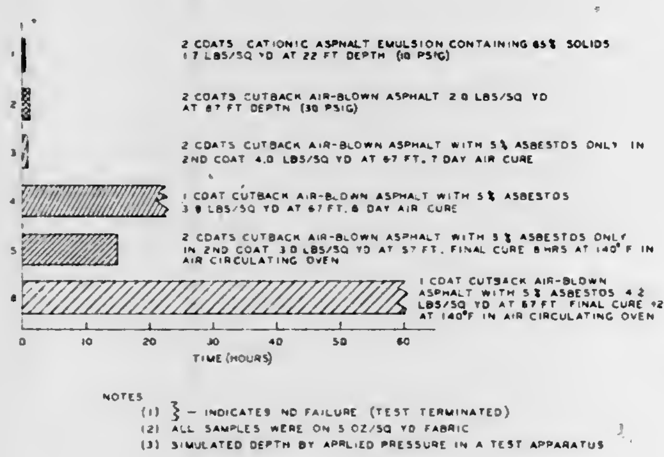
3,864,157
IMPERVIOUS BARRIER COMPRISING POLYOLEFIN FABRIC, ASPHALT AND ASBESTOS

Clarence R. Bresson, and Forrest D. Spaulding, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 14, 1971, Ser. No. 207,800

Int. Cl. B32b *27/00*

U.S. Cl. 117—138.8 E **2 Claims**



1. A method of providing a surface covering comprising a non-woven polyolefin fabric, mat or web, fused externally on one side and having unfused fiber on the other external side, which method comprises placing said polyolefin fabric, mat or web, which can be needle-punched, against a surface to be rendered impervious to fluids, the side of the fabric placed against the surface to be covered having been fused and then coating the other side of the fabric which presents unfused fibers with a mixture containing asphalt and asbestos fibers.

3,864,158
RECORDING MATERIAL

Daniel Maurice Timmerman, Mortsel, and Walter Frans De Winter, Berchem, both of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

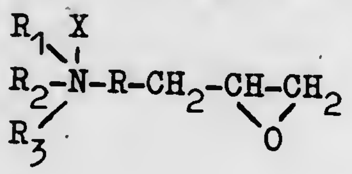
Filed Jan. 15, 1973, Ser. No. 323,420

Claims priority, application Great Britain, Jan. 17, 1972, 2134/72

Int. Cl. B32b *27/00;* **H01b** *1/06*

U.S. Cl. 117—201 **4 Claims**

1. A recording material comprising a support of paper or synthetic polymer, an electroconductive layer coated on at least one side of said support, said electroconductive layer having a surface resistance measured at 15 percent of relative humidity lower than 10^{11} ohm/sq., said electroconductive layer consisting of or including a major proportion of a water-soluble polymer resulting from the amino-alkylation of polyethyleneimine with an epoxy compound bearing a quaternary ammonium end group, according to the general formula:



wherein:

R represents a branched or unbranched alkylene group having up to 4 carbon atoms,

each of R_1, R_2, and R_3 (same or different) represents an alkyl group containing up to 4 carbon atoms, a cycloalkyl group or an aralkyl group,

or wherein R_1, R_2, and R_3 together with the nitrogen atom represent a heterocyclic amine group, and

X is an anion.

3,864,159
CAPACITOR HAVING THICK-FILM GLASS-CERAMIC DIELECTRIC LAYER AND METHOD FOR MANUFACTURE

Marshall Field, Luckey, and James E. Rapp, Oregon, both of Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Filed Dec. 4, 1972, Ser. No. 311,854

Int. Cl. H01g *1/00;* **H01b** *3/02;* **B44d** *1/18*

U.S. Cl. 117—212 **8 Claims**

1. In the method for forming a capacitor having a thick-film, glass-ceramic, dielectric layer positioned between an electrode and a counterelectrode, wherein a mixture of a thermally crystallizable glass frit and a binder is deposited in a predetermined pattern on said electrode, and the mixture is maintained at a temperature and for a time sufficient to expel said binder, fuse and crystallize said crystallizable glass frit to form said dielectric layer, the improvement for forming a capacitor having a dielectric constant of at least about 90 at 5KHz, a dissipation factor of less than about 3% at 5KHz and a temperature coefficient of capacitance of ±15% over the range of −25°C. to 125°C. wherein said thermally crystallizable glass frit consists essentially of:

INGREDIENTS	Mole %
GeO_2	20–36
Nb_2O_5	32–40
Na_2O	32–40

wherein the molar ratio of Na_2O to Nb_2O_5 is from about 0.8:1 to about 1.2:1, wherein up to one-half of the GeO_2 is replaced with B_2O_3 on a molar basis; wherein up to one-half of the Na_2O is replaced with K_2O on a molar basis; and CdO is present in proportions up to about 5 mole % of the frit composition as molar replacement for Na_2O and K_2O; but when GeO_2 content is less than 24%, the B_2O_3 content is at least about 5%, or the CdO content is at least about 1%.

3,864,160
METAL-CONTAINING FIBROUS MATERIAL

Charles Davidoff, 118 Rolling Hill Rd., Manhasset, N.Y. 11030

Continuation of Ser. No. 28,912, April 15, 1970, abandoned. This application Mar. 23, 1973, Ser. No. 344,156

Int. Cl. B44d *1/18;* **H01c** *7/00, 3/00*

U.S. Cl. 117—212 **7 Claims**

1. A flexible fabric woven with yarns composed of electrically non-conductive and magnetically non-responsive continuous filaments, said fabric having discrete areas of patterns extending from one surface to the corresponding opposite surface of the fabric, all the surfaces of the filaments within such areas or patterns being individually coated with a flexible substantially uniform and continuous about 1×10^{-6} to 40×10^{-6} inch thick film of electrically conductive or magnetically responsive metal, whereby such areas or patterns have electrical resistive values of about 0.01 to 500 ohms per square the lines of demarcation separating such areas or patterns from remaining unmetallized portions of said fabric crossing filaments whereby the segments of the crossed filaments within such areas or patterns are coated with said film and segments of the same crossed filaments outside such areas or patterns are not so coated, the filaments in both the metallized areas or patterns and unmetallized portions being substantially uniformly flexible and unattached to, and free to move relative to, filaments adjacent thereto.

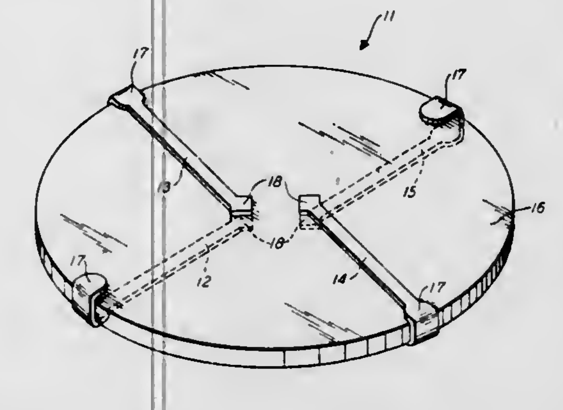
3,864,161
METHOD AND APPARATUS FOR ADJUSTING RESONATORS FORMED ON A PIEZOELECTRIC WAFER

Edwin C. Thompson, Epping, N.H., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 10, 1973, Ser. No. 387,580

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **12 Claims**



1. A method for adjusting the resonant frequency of a resonator, formed on a piezoelectric wafer, to a predetermined resonant frequency, said method comprising the steps of:

pliantly contacting a major surface of the wafer with a pliant mask having an aperture therein to expose a selectedd portion of the resonator;

depositing material on the selected portion of the resonator through the mask to adjust the resonant frequency of the resonator;

testing the resonator by exciting and monitoring the resonant frequency thereof as material is deposited on the selected portion; and

stopping the deposition of material on the selected portion when the resonant frequency reaches a predetermined value.

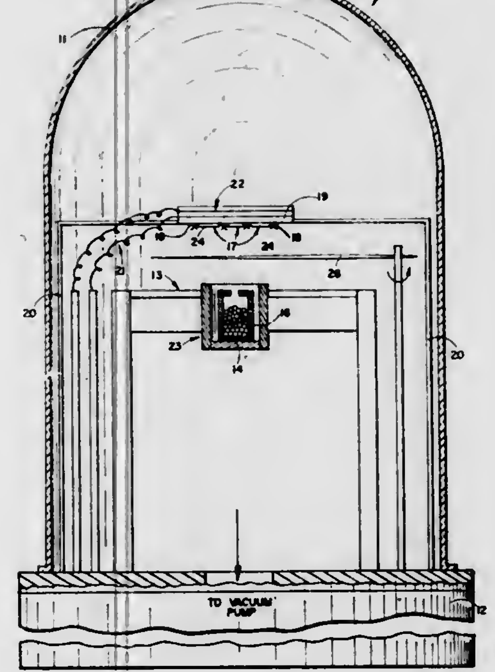
3,864,162
METHOD OF FORMING GALLIUM ARSENIDE FILMS BY VACUUM EVAPORATION DEPOSITION

Joseph L. Kenty, Placentia, Calif., assignor to Rockwell International Corporation, El Sequndo, Calif.

Filed Feb. 4, 1975, Ser. No. 379,521

Int. Cl. C23c *13/04*

U.S. Cl. 117—213 **10 Claims**



1. A method of forming a layer of monocrystalline gallium arsenide on a monocrystalline substrate having a dissimilar crystal structure, comprising:

removing a sufficient thickness of substrate mateial from at least one surface of the substrate to define a substantially smooth surface;

etching said surface to define a clean surface finish;

heating a single source of gallium arsenide at a subatmospheric pressure of approximately 10^{-5} to 10^{-8} torr to evaporate gallium and arsenic; and

heating the substrate at the subatmospheric pressure to a temperature sufficient to condense stoichiometric gallium arsenide on said one surface of said substrate.

3,864,163
METHOD OF MAKING AN ELECTRODE HAVING A COATING CONTAINING A PLATINUM METAL OXIDE THEREON

Henri Bernard Beer, Kalmthout, Belgium, assignor to Chemnor Corporation, Panama City, Panama

Division of Ser. No. 75,726, Sept. 25, 1970, Pat. No. 3,711,385, which is a continuation-in-part of Ser. No. 549,194, May 11, 1966, abandoned. This application Mar. 24, 1972, Ser. No. 237,969

Int. Cl. B44d *1/02;* **B01k** *3/04*

U.S. Cl. 117—217 **45 Claims**

1. A method of making an electrode comprising forming on at least part of the surface of a core of a film-forming metal a layer containing at least one platinum metal taken from the group consisting of platinum, iridium, rhodium, palladium, ruthenium, rhenium and osmium, and alloys of these metals, the amount of platinum metal being sufficient, when converted to the oxide thereof, to be effective for carrying out electrolysis, and subjecting the layer to oxidizing conditions which are sufficient to oxidize the metal of said layer until the layer is oxidized to a depth of at least about 0.054 micron.

22. A method as claimed in claim 21 in which the step of applying the material comprises spraying the dispersion onto the core.

45. A method as claimed in claim 43 in which the core is titanium and the platinum metal is platinum and the metal other than platinum metal is chromium.

3,864,164
METHOD FOR DEPOSITING PROTECTIVE COATINGS ON CARBON ARTICLES

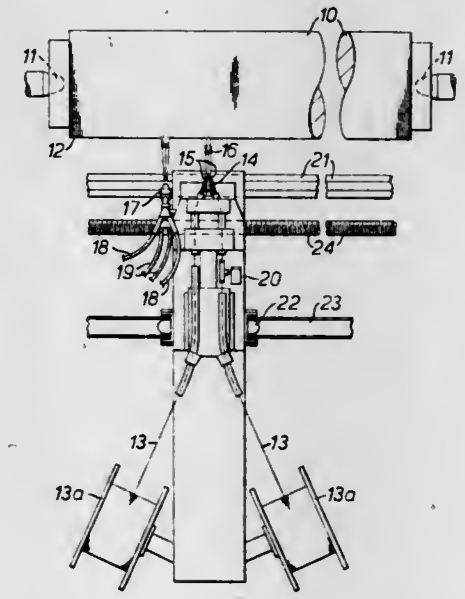
Alan Hinchcliffe, Sheffield, and Kenneth Johnson, Doncaster, both of England, assignors to British Steel Corporation, London, England

Filed Oct. 20, 1972, Ser. No. 299,455

Claims priority, application Great Britain, Oct. 22, 1971, 49261/71

Int. Cl. B44d *1/08, 1/16;* **C23c** *7/00*

U.S. Cl. 117—217 **9 Claims**



1. A method of creating a protective coating on the surface of a carbon article comprising, in a single operation, directing

a spray of aluminium in molten state against said surface, and immediately thereafter directing a spray of a water-slurry of refractory material onto the aluminium coating so formed without drying out said slurry before it reaches the surface of said carbon article, there being substantially no interference between the sprays.

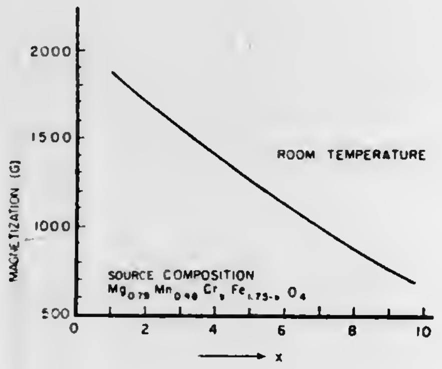
3,864,165
FABRICATION OF FERRITE FILM FOR MICROWAVE APPLICATIONS

Aleksander I. Braginski, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 069,658, Sept. 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 867,699, Oct. 20, 1969, abandoned, and a continuation-in-part of Ser. No. 814,709, April 9, 1969, abandoned. This application Jan. 2, 1973, Ser. No. 320,250

Int. Cl. C23c *11/08;* **H01f** *41/14*

U.S. Cl. 117—235 **16 Claims**



1. In the chemical transport deposition method of producing on a substrate polycrystalline films of spinel ferrites having a thickness of less than about 1500 microns and which are suitable for use in microwave applications, the steps comprising:

assemblying in a reactor a multicomponent source material of a spinel ferrite selected from the group consisting of magnesium ferrites, manganese-magnesium ferrites, and transitional metal ferrites and a substrate material in spaced relation to one another, the substrate material being suitable for use in a microwave application,

flowing a carrier gas and a reaction gas through the reactor in contact with said source material and said substrate material said carrier gas being selected from the group consisting of inert gases and oxygen and mixtures thereof and said reaction gas being selected from the group consisting of the halogens and halogen hydrides, heating the materials in the reactor with a single heat source to a temperature sufficiently high to cause a reaction between the source material and the reaction gas; maintaining the substrate at a temperature within the range between 20°C and 200°C below the temperature of the source for a predetermined length of time whereby a film of the desired thickness of the source material is deposited on the substrate and thereafter cooling the substrate with the deposited film thereon to room temperature.

3,864,166
PROCESS FOR THE SEPARATION OF SUGARS

Sidney Alan Barker; Peter John Somers, both of Birmingham, and Brian William Hatt, Bromsgrove, all of England, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed May 30, 1973, Ser. No. 365,360

Claims priority, application Germany, June 5, 1972, 2229208

Int. Cl. C13d *3/12;* **C13k** *9/00*

U.S. Cl. 127—46 R **9 Claims**

1. Process for the separation of mixtures of sugars and of sugar alcohols comprising subjecting an aqueous solution thereof to chromatography on an insoluble organic resin, wherein the resin used is an aryl boric acid group-containing resin, and recovering the component sugars or sugar alcohols obtained.

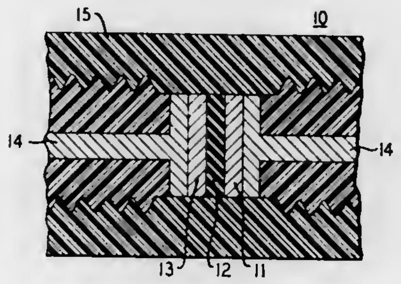
3,864,167
NON-AQUEOUS BATTERY USING CHALCOGENIDE ELECTRODE

John Broadhead, Morristown; Francis Joseph Di Salvo, Jr., Florham Park, and Forrest A. Trumbore, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 19, 1973, Ser. No. 352,514

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 LN **7 Claims**



1. A non-aqueous secondary power supply comprising at least one cell, said cell comprising an electrolyte, negative electrode with active negative electrode material and positive electrode with active positive electrode material, characterized in that the said active positive electrode material consists essentially of a transition-metal chalcogenide selected from the group consisting of niobium triselenide, tantalum trisulfide, titanium trisulfide, niobium trisulfide, and tantalum triselenide and said active positive electrode material has a fibrous structure which persists in both charged and discharged state in which the fibers are at least 1 micron in length and have aspect ratios from 5:1 to 1000:1.

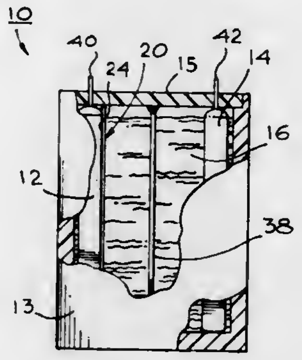
3,864,168
ELECTROLYTIC CELLS INCORPORATING WATER SCAVENGERS

John E. Casey, Jr., and Roland F. Chireau, both of Stonington, Conn., assignors to Yardney International Corp., Los Angeles, Calif.

Filed Mar. 22, 1974, Ser. No. 453,589

Int. Cl. H01m *43/00*

U.S. Cl. 136—6 LN **19 Claims**



1. An improved electrolytic cell comprising in combination:
- a. A metallic anode;
- b. A cathode spaced from said anode;
- c. An organic substantially water-free electrolyte containing a dissolved salt current carrier disposed between and in contact with both of said electrodes, and
- d. A particulate solid water scavenger disposed in association with at least one of said electrodes and said electrolyte.

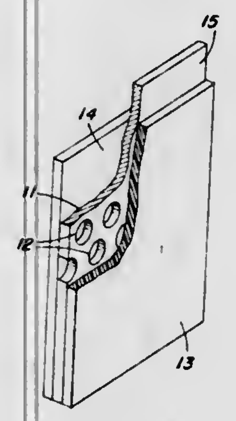
3,864,169
METHOD FOR MAKING LAMINATED ELECTRODES

John P. Cestaro, Trenton, and Uriel Sokolov, Princeton, both of N.J., assignors to N L Industries, Inc., New York, N.Y.

Division of Ser. No. 330,316, Feb. 13, 1973, which is a continuation-in-part of Ser. No. 151,935, May 10, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,163

Int. Cl. H01m *35/18*

U.S. Cl. 136—75 **8 Claims**



1. A method for making a composite sheet of a loose homogeneous mat of synthetic fibers coated with a powdered active material said composite sheet useful for forming a laminated electrode which comprises dispersing synthetic fibers in water with agitation to form a slurry, adding powdered active material to said slurry and after thoroughly mixing, flocculating the dispersed slurry by lowering the pH until a large flocculated mass of fibers and active material is formed, filtering and drying said flocculated mass to form a composite sheet of a loose homogeneous mat of fibers coated with said active material.

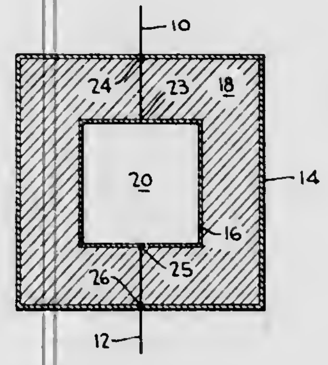
3,864,170
LOW CONDUCTIVITY THERMAL INSULATOR FOR THERMAL BATTERIES

Frank C. Krieger, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 249,583, May 2, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 462,056

Int. Cl. H01m *21/14*

U.S. Cl. 136—83 T **14 Claims**



1. A low thermal conductive insulator for thermal power supplies, comprising, in combination:
- a. a thermal battery having electrodes and at least one solid electrically non-conducting material at normal storage temperature but becoming an electrolyte in the molten state and means contained in the battery for supplying heat to melt said electrolyte causing said cell to become functionally active to produce electric current, said means also causing high thermally conductive gases to be evolved and capable of reducing the efficiency of a porous thermal insulator said battery being in a gas tight metal container;
- b. a porous thermal insulator surrounding said thermal battery to reduce heat losses therefrom; and
- c. at least one low thermal conductive inert gas located within the pores of said insulator for further reducing the heat losses from said thermal battery, said gas having a thermal conductivity below that of air, and not liquefied at normal operating temperatures of said thermal battery.

10. A method of reducing the thermal conductivity in the porous thermal insulation that surrounds the active components of a thermal battery, comprising the steps of:
- a. placing a gas tight metal container between said active components of said thermal battery and said thermal insulation to reduce the amount of high thermally conductive contaminants entering said insulation; and
- b. introducing an effective amount of low thermal conductivity inert gas having a thermal conductivity below that of air into the pores of said thermal insulation to reduce the effect of any high thermally conductive gases not excluded by step (a).

3,864,171
ELECTROCHEMICAL CELLS

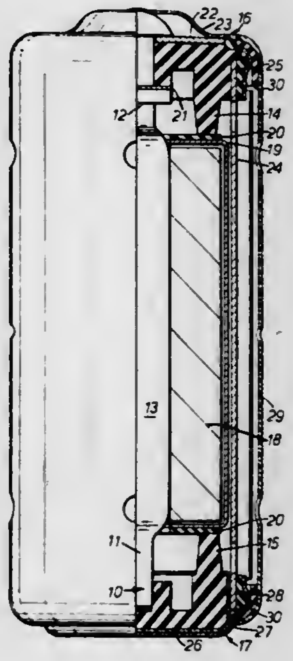
Terence Mills, Basingstoke; Marian Wiacek, Baughurst; Peter James Gillespie, Basingstoke, and Clive Douglas Hatcher, Reading, all of England, assignors to Energy Conversion Limited, Basingstoke, Hampshire, England

Filed Aug. 22, 1972, Ser. No. 282,696

Claims priority, application Great Britain, Sept. 14, 1971, 42705/71

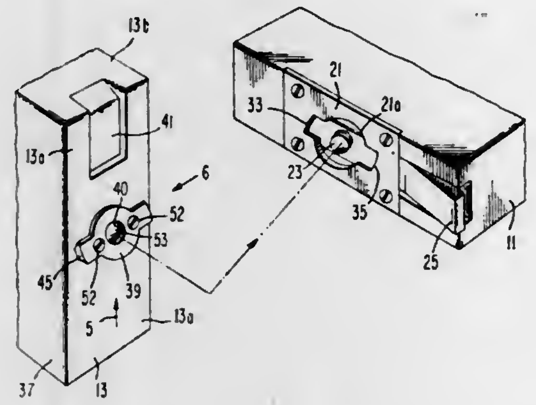
Int. Cl. H01m *21/00*

U.S. Cl. 136—107 **11 Claims**



1. A gas depolarized cell comprising:
- a. a tubular apertured anode electrode;
- b. a separator extending around and adjacent the outer surface of said apertured anode electrode;
- c. a tubular cathode electrode adjacent the outer surface of the separator and extending beyond said apertured anode electrode at each end thereof to an associated end cap;
- d. electrolyte at least contained within the separator;
- e. a current collector which passes through said apertured anode electrode longitudinally and extends beyond each end thereof to said associated end cap, said current collector being electrically connected to said apertured anode electrode and being located between and in operative contact with the end caps in the form of a strut whereby longitudinally rigidity is imparted to the cell.

3,864,172
BATTERY CONNECTING ASSEMBLY
Richard Earl Marks, Houston, Pa., assignor to RCA Corporation, New York, N.Y.
Filed May 17, 1973, Ser. No. 361,305
Int. Cl. H01m *1/02*
U.S. Cl. 136—173 **3 Claims**



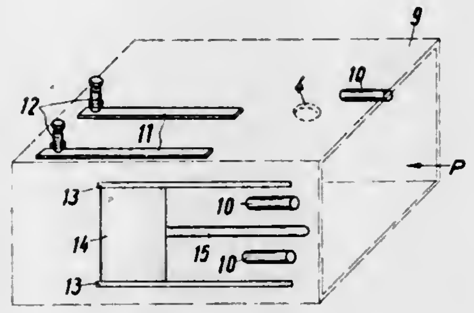
1. In combination, an electrical device, a supporting plate having a large opening therein and a pair of smaller notches at opposite sides of said large opening, said plate being mounted across a recess in the body of said device located along a first wall thereof, a first electrically conductive contactor extending into said recess and centered with respect to said large opening and coupled to circuitry within said electrical device,

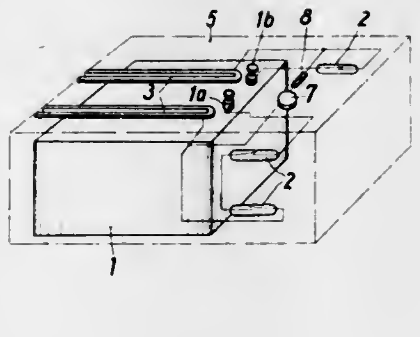
a battery case adapted to hold at least one battery therein, said case including at one end a protruding member extending from one wall of said battery case and having a pair of radially extending lugs, said protruding member having an aperture in the center thereof, a second electrically conductive contactor extending in insulative manner from a terminal of said battery into said aperture in said protruding member, said protruding member and said lugs being adapted to be inserted into said large opening in said plate by passing the pair of lugs through said pair of notches in said plate whereby to dispose said lugs at the side of said plate opposite the plate side adjacent said one wall of said battery case, said lugs including a generally symmetrically shaped camming portion having a peak extending toward said one wall of said battery case with the peak of the camming portion arranged such that after the protruding member is given a partial rotation in either direction from the position thereof in which said lugs are in said notches said plate is clamped between the peak of the camming portions and said one wall of the battery case and said first and second contactors make electrical contact, and

means for releasably latching said battery case from rotation when clamped to said plate.

3,864,173
ELECTRIC BATTERY PROVIDED WITH A SAFEGUARD AGAINST SHORT-CIRCUITINGS
Hans Butschkau, Franz-Lenze-Platz 37a, 4103 Walsum, Germany
Filed Apr. 18, 1973, Ser. No. 352,307
Int. Cl. H01m *31/00*
U.S. Cl. 136—181 **8 Claims**

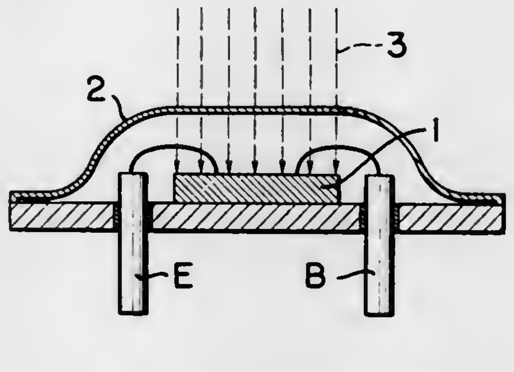
1. A short-circuiting protection arrangement for an electrical battery, comprising, in combination:
- a. an electrical battery;
- b. inner housing means for housing the battery;
- c. a normally-open magnetically switchable switch arranged in the inner housing means and electrically connectable to the battery;
- d. outer housing means for housing the inner housing means, the inner housing means being insertable into the outer housing means;
- e. a magnet having an associated magnetic field and arranged on the outer housing means for being operatively associated with the switch and closing same when the inner housing means is inserted into the outer housing means;





- f. terminals mounted on the outer housing means; and
- g. contact means provided on the inner housing means and outer housing means for connecting the switch to the terminals when the inner housing means is inserted into the outer housing means.

3,864,174
METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE
Nobuyuki Akiyama, No. 2612, Shinomiya, Hiratsuka-shi, Kanagawa-ken; Shunji Miura, No. 18-1, Takada 1-chome, Toshima-ku, Tokyo, and Haruo Chisaka, No. 25-5, Misono 3-chome, Sagamihara-shi Kanagawa-ken, all of Japan
Filed Jan. 22, 1973, Ser. No. 325,745
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **3 Claims**



1. A method for manufacturing semiconductor device characterized in that a semiconductor element is fabricated, lifetime killers are introduced into the element by diffusion or like, and the element is thereafter subjected to an irradiation of electrons of an energy ranging from 0.1 to 5.0 Mev.

3,864,175
CHROMATE RINSE FOR PHOSPHATE COATED METALS AND METAL PRODUCTS
Kurt Goltz, Exton, and Willaim Adrian Blum, Fort Washington, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Apr. 25, 1973, Ser. No. 354,401
Int. Cl. C23c *1/10;* C23f *7/24*
U.S. Cl. 148—6.2 **17 Claims**

1. The process of sealing a phosphate coated metal comprising wetting the phosphate coated metal by contacting it with an acidic aqueous solution consisting essentially of aluminum chromate polymer in which solution the concentration of the aluminum chromate polymer is at least 0.1 grams per liter expressed as CrO_3, rinsing the wetted metal with deionized water and then drying the said metal.

3,864,176
MOULDING OF SUPERPLASTIC ALLOY SHEET
Colin John Swanson, Horfield, England, assignor to ISC Alloys Limited, London, England
Filed June 14, 1973, Ser. No. 370,035
Claims priority, application Great Britain, June 14, 1972, 27891/72
Int. Cl. C21d *9/48;* C22f *1/04*
U.S. Cl. 148—11.5 R **9 Claims**

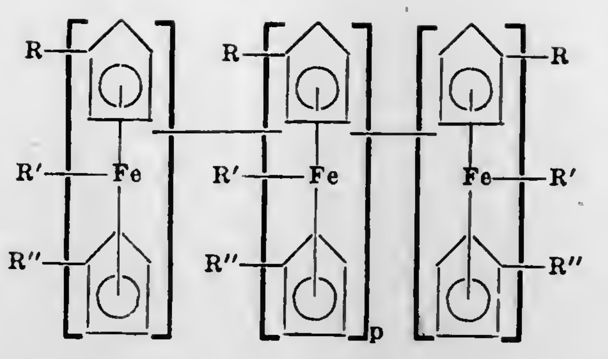
1. In a method of moulding superplastic zinc/aluminium alloy sheet material containing from 15 to 40 percent by weight of aluminium comprising heating a blank of the sheet material to a temperature at which the material exhibits superplasticity, moulding the heated blank to conform to a mould surface of desired shape, and removing the moulded sheet from the mould, the improvement comprising holding the moulded sheet at a temperature of from 180° to 220°C to remove undesired warping or distortions from the moulded sheet.

3,864,177
SAFE-HANDLING PERCHLORATE EXPLOSIVES
Maximilian Klunsch, Opladen; Paul Lingens, Leverkusen, and Heinz Ratz, Bonn-Ippendorf, all of Germany, assignors to Dynamit Nobel Aktiengellschaft, Troisdorf, Germany
Filed May 26, 1972, Ser. No. 258,850
Claims priority, application Germany, May 29, 1971, 2126920
Int. Cl. C06b *11/00*
U.S. Cl. 149—36 **23 Claims**

1. An explosive composition containing an explosive salt of perchloric acid which is sensitive to impact and shock and a solvent therefor, which solvent has a boiling point above 150°C, said explosive salt of perchloric acid being dissolved in said solvent, said composition being such that the ingredients are present in such amount so that the solvent at −20°C contains said explosive salt in dissolved liquid form, said composition exploding when detonated.

3,864,178
LIQUID POLYNUCLEAR HYDROCARBYL FERROCENES
Thomas P. Rudy, Saratoga, and Harry J. Hyer, Palo Alto, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation-in-part of Ser. No. 663,517, Aug. 28, 1967, abandoned. This application Mar. 29, 1968, Ser. No. 718,313
Int. Cl. C07f *15/02;* C06b *19/00*
U.S. Cl. 149—109.4 **18 Claims**

1. A noncrystalline, noncrystallizable liquid composition of matter comprising a mixture of polynuclear ferrocene derivatives having the general formula:

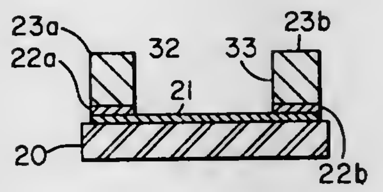


wherein R is a lower alkyl group, R' and R'' are selected from the group consisting of hydrogen and lower alkyl groups, the total number of carbon atoms in R, R' and R'' being from 1 – 6 and p is an integer from 0 – 1.

3,864,179
PRODUCTION OF METAL PATTERN CONTAINING FABRIC
Charles Davidoff, 118 Rolling Hill Rd., Manhasset, N.Y. 11030
Division of Ser. No. 28,912, April 15, 1970, abandoned. This application Mar. 23, 1973, Ser. No. 344,157
Int. Cl. C23f *1/00*
U.S. Cl. 156—3 **10 Claims**

1. A method comprising treating a flexible fabric woven with yarns composed of electrically non-conductive and magnetically non-responsive continuous filaments individually coated with a flexible, substantially uniform and continuous about 1×10^{-6} to 40×10^{-6} inch thick film of electrically conductive or magnetically responsive metal to remove the metal film coating from all the filaments in only certain portions of one surface through to the corresponding opposite surface of the fabric by treating said certain portions with a solvent for said metal film coating.

3,864,180
PROCESS FOR FORMING THIN-FILM CIRCUIT DEVICES
William D. Barraclough, Simi Valley, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Continuation of Ser. No. 165,628, July 23, 1971, abandoned. This application June 29, 1973, Ser. No. 374,846
Int. Cl. B32b *31/14;* C23f *1/02*
U.S. Cl. 156—3 **7 Claims**



1. A process for forming a thin-flim circuit device containing a circuit element and contacts comprising the steps of:

providing a laminated structure including a substrate having thereon a thin-film layer of material having electrical characteristics corresponding to those of the intended circuit element, the thin-film layer being covered by a first layer of conductive material until the desired bounds of the circuit element and contacts have been formed, and the first layer being covered by a second layer of conductive material;

applying a first layer of a photoresist over said second layer; forming an image on said first layer of photoresist which defines predetermined dimensions between intended contacts;

developing said first layer of photoresist to form an aperture therein;

selectively etching a rectangular cavity through said second layer to expose a surface of said first layer, the dimension between a first pair of opposite side walls of said cavity being the same as the dimension between the intended contacts for said circuit device, and the dimension between a second pair of opposite side walls of said cavity being greater than the dimensional width of the circuit element;

removing remaining portions of said first layer of photoresist;

applying a second layer of photoresist over exposed portions of said first and second layers of conductive material;

forming an image on said second layer of photoresist which defines the desired bounds of the circuit device;

developing said second layer of photoresist, said developed second layer having a dimensional width less than said dimension between said second pair of opposite side walls and equal to the dimensional width of the circuit element;

subsequently selectively etching portions of said first, second and thin-film layers with first, second and third etchants respectively to leave portions of said first, second and thin-film layers coincident with the configuration of the desired bounds of the circuit device, each said layer being attacked by only its respective etchant, the remaining portions of said second layer forming a plurality of individual contacts;

removing remaining portions of said second layer of photoresist; and

subsequently selectively etching the exposed surface of said first layer to expose a surface of said thin-film layer between contacts formed of the remaining portions of said conductive layer.

3,864,181
POLYMER FOAM COMPOSITIONS

Leon E. Wolinski, Cheektowaga, and Arthur R. Endress, Hamburg, both of N.Y., assignors to Pratt & Lambert, Inc., Buffalo, N.Y.

Division of Ser. No. 259,656, June 5, 1972, , which is a continuation-in-part of Ser. No. 122,086, March 8, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,744

Int. Cl. B32B *31/14*

U.S. Cl. 156—79 **20 Claims**

1. A method of making a shock absorbing package comprising forming a coating composition of a solution of a film-forming polymer in a solvent therefor, having dispersed in said solution about 0.25 to 45.0 weight percent, based on the weight of said film-forming polymer, of thermally expandable thermoplastic microspheres, applying said coating composition to a paper based substrate, drying the coated substrate to remove the solvent from the coating composition, cutting and creasing the coated substrate to form a package blank, wherein said blank includes edges to be overlapped, applying to the edges to be overlapped an adhesive, folding said blank to form a package, adhesively bonding the overlapping edges, and heating to expand the microspheres.

3,864,182
METHOD OF MAKING A REINFORCED PLASTIC APERTURED TUBE

Samuel M. Shobert, Mishawaka, and Bernard L. Rice, Osceola, both of Ind., assignors to Plas/Steel Products, Inc., Walkton, Ind.

Filed July 18, 1973, Ser. No. 380,489

Int. Cl. B31c *13/00;* **E03b** *3/18*

U.S. Cl. 156—175 **11 Claims**

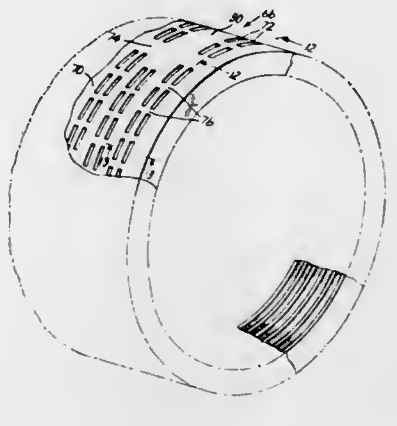
1. The method of fabricating an apertured tube comprising the steps of:

a. providing an elongated flexible strip proportioned and arranged to be wound on a mandrel, said strip having a base portion with an upstanding portion extending therefrom,

b. winding said strip on a mandrel with said base portion in engagement therewith and said upstanding portion forming a generally helical groove,

c. forming circumferentially spaced, longitudinally extending grooves in said upstanding portion of the thus-wound strip,

d. winding multi-filament glass strands pre-wetted with hardenable plastic material in said helical groove and placing lengths of such strand in said longitudinal grooves so as substantially to fill said helical and longitudinal grooves,



e. hardening said plastic material while said strands and lengths are in said grooves and said strip is on said mandrel thereby to form a glass-fiber reinforced plastic tube surrounding said base portion of said strip and with said upstanding portion embedded in the wall of said tube,

f. removing said mandrel from the interior of said base portion of the wound strip, and

g. removing said strip from the interior of said tube, removal of said upstanding portion from the wall of said tube leaving apertures therein.

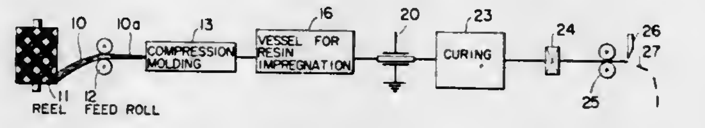
3,864,183
METHOD FOR PRODUCING PEN CORE FROM FILAMENT TOWS

Hironobu Hori, Tokyo, Japan, assignor to Tokyo Boshi Kabushiki Kaisha, Tokyo-To, Japan

Filed Nov. 21, 1972, Ser. No. 308,456

Int. Cl. D02j *1/00;* **B43k** *15/00*

U.S. Cl. 156—180 **8 Claims**



1. In a method for producing pen cores from a synthetic fiber bundle, comprising the steps of subjecting a tow of synthetic fibers to compression-molding under heat to form a rod-shaped body having a predetermined cross-sectional shape, immersing said compression-molded, rod-shaped body in a liquid containing a synthetic resin and solvent therefore to impregnate the liquid into the body, subjecting said liquid impregnated rod-shaped body to a dielectric heating treatment in a high frequency electric field of an intensity sufficient to cause internal heating within the rod-shaped body to volatilize the solvent in said liquid, in a state wherein the rod-shaped body is passed through a pipe of low dielectric constant which shields the body from the external atmosphere, cutting the thus treated rod-shaped body into a required length, and shaping at least one end of the rod-shaped body to taper said end into a configuration required for a writing tip, the improvement wherein said liquid is prepared by dissolving a synthetic resin in a solvent consisting essentially of a principal solvent and a polar solvent having a high dielectric constant, a lower volatilization speed than that of said principal solvent and a higher boiling point than that of said principal solvent, said polar solvent being used as a heating medium and for generating internal heat due to dielectric loss therein during said dielectric heating treatment, to volatilize the principal solvent and to heat the rod-shaped body internally, thereby gelling the synthetic resin.

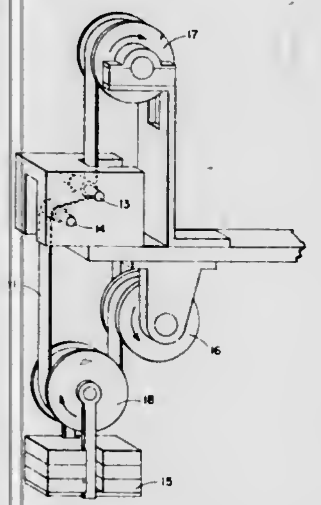
3,864,184
TECHNIQUE FOR FORMING LAMINATED FILAMENTARY COMPOSITES UTILIZING PRESTRESSING

Walter E. Crandall, Malibu; George J. Mills, Santa Ana, and Gary G. Brown, Diamond Bar, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Continuation of Ser. No. 195,590, Nov. 4, 1971, abandoned. This application Aug. 22, 1973, Ser. No. 390,595

Int. Cl. B32b *31/16*

U.S. Cl. 156—180 **15 Claims**



1. A technique for fabricating fibered laminated composites from a plurality of sections formed of similar type of load bearing filaments impreganted with a matrix material comprising the steps of:

stressing each of said sections until a number of the filaments thereof are broken,

layering said sections against each other, and

molding said layered sections into a laminated composite.

9. A technique for fabricating sections formed of similarly type of load bearing filaments impregnated with a matrix material for use in making a laminated composite formed from a plurality of such sections layered against each other and molded together comprising:

stressing each of said sections and all of the filaments thereof uniformly with a predetermined force such as to break a number of the weaker filaments and to leave the stronger filaments unbroken.

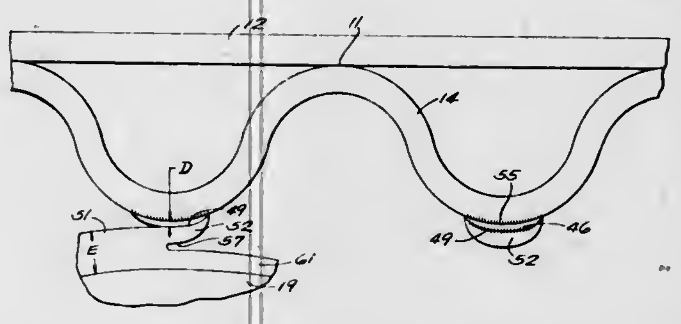
3,864,185
METHOD OF MAKING CORRUGATED PAPERBOARD

Paul A. Johnson, West Allis; David Adams, West Bend, and Hamilton A. Pinkalla, Milwaukee, all of Wis., assignors to I. D., Inc., Cedarburg, Wis.

Filed July 14, 1972, Ser. No. 271,969

Int. Cl. B31f *1/22*

U.S. Cl. 156—208 **9 Claims**



1. In a method of manufacture of double-faced corrugated paperboard, the improvement comprising the steps of applying a coating of gel point depressant to the exposed flute tips of the corrugated medium faced with a single liner opposite the exposed flute tips by contact of an applicator carrying the depressant with the flute tips, applying an adhesive over the coated flute tips with an adhesive roller and wherein the coating of adhesive on said roller is substantially thicker than the coating of gel point depressant on the flute tips to cause a splitting of the adhesive coating on the roller into an adhesive layer on the flute tips and an adhesive layer on the adhesive roller which isolates the depressant coating from the adhesive roller and the coating of adhesive film on the adhesive roller, initiating gelatinization of the adhesive starting from the interface of the adhesive and gel point depressant outwardly through the adhesive coating, and applying an additional board layer to the coated flute tips prior to material gelatinization of the outer exposed surface of the adhesive.

3,864,186
METHOD FOR INDUCTION SEALING PACKAGING MATERIAL

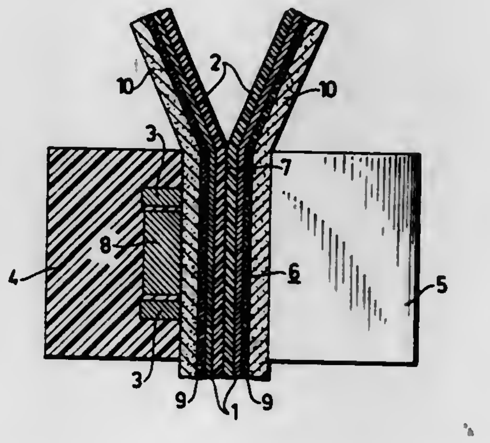
Gyula Balla, Malmo, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Continuation of Ser. No. 95,150, Dec. 4, 1970, abandoned. This application Jan. 12, 1973, Ser. No. 323,095

Claims priority, application Sweden, Dec. 10, 1969, 17018/69

Int. Cl. B29c *19/02;* **B32b** *31/00*

U.S. Cl. 156—272 **5 Claims**



1. A method of producing separate packages from a continuous tube having an inner layer of thermoplastic material and a layer of metal foil disposed on the outside thereof by forming simultaneously, two longitudinally spaced, adjacent, transverse seals across the tube comprising,

pressing opposed portions of the tube together along a transverse area so that the layers of thermoplstic material of each portion are flattened together and are juxtaposed, inducing simultaneously a flow of two sets of spaced, adjacent, heat-producing eddy currents in the layers of the metal foil to heat said metal layers to a temperature sufficient to heat said thermoplastic material, by conduction, to fusion temperatures at two longidudinally spaced, parallel, adjacent, transverse zones in said transverse area to thereby form simultaneously two tight, mechanically durable, parallel, longitudinally spaced, adjacent, transverse seals, across the tube and,

cutting the tube transversely between the two, adjacent seals to separate the continuous tube into separate packages.

3,864,187
LABELING MACHINE

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio

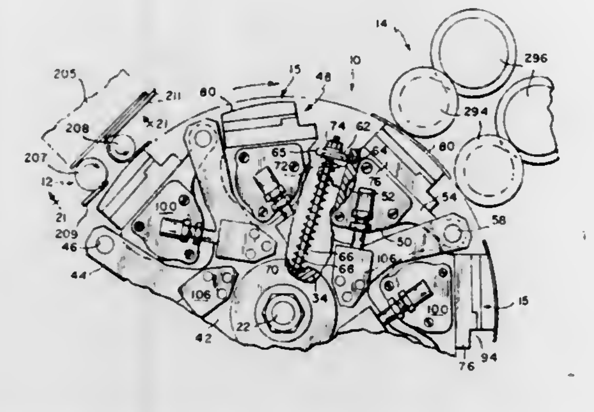
Filed Mar. 29, 1973, Ser. No. 346,125

Int. Cl. B65c *9/08*

U.S. Cl. 156—364 **33 Claims**

1. In a label applying machine, rotary transfer means comprising a rotor rotatable about a predetermined axis, a picker,

adhesive applying means, and container supporting means supported about said rotor, label holding pads mounted on the rotor for movement from a normally distended position in which they travel in a path tangent to the picker, adhesive applying means and container supporting means to a retracted position withdrawn from said path of tangency, means for yieldably holding the label holding pads distended and means operable as the pads travel from the picker toward the adhesive applying means in the absence of labels on the pads to withdraw the pads from the path of tangency with the adhesive applying means, said means being rendered inoperative as the pads travel away from the place of application of the labels to the containers to restore the pads to their distended positions before they reach the picker.



3,864,188

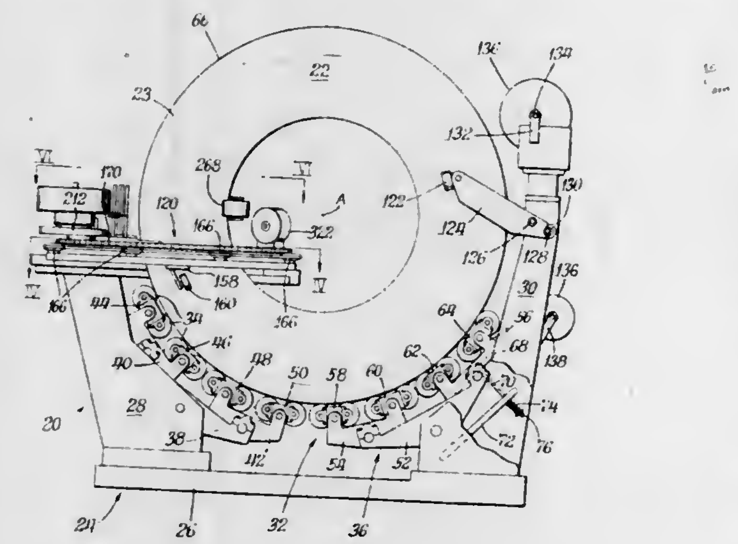
TIRE WRAPPING MACHINE

Charles E. Grawey, Peoria; Robert W. Untz, Hanna City; Ronald L. Satzler, Metamora; Jesse R. Berchtold, Pekin, and Floyd S. Dadds, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 16, 1973, Ser. No. 351,779

Int. Cl. B29h *17/02*

U.S. Cl. 156—397 **53 Claims**



1. Apparatus for winding flexible elongated material about the body of a toroidal member comprising:

a base;

roller means associated with the base for supporting the toroidal member, the toroidal member being rollable about its axis on said roller means;

guide means for guiding the elongated material onto the surface of the toroidal member;

means for rotating the guide means about the body of the toroidal member to deposit the elongated material on the surface of the toroidal member;

means for providing relative motion between the guide means and the toroidal member about the axis of the toroidal member, whereby the elongated material is wound about the toroidal member, and

means interconnecting the base and roller means for providing continuous positive support of the toroidal member by the roller means while compensating for changing size of the toroidal member due to the winding of the elongated material thereon.

3,864,189

BUILDING OF PNEUMATIC TIRE ASSEMBLIES

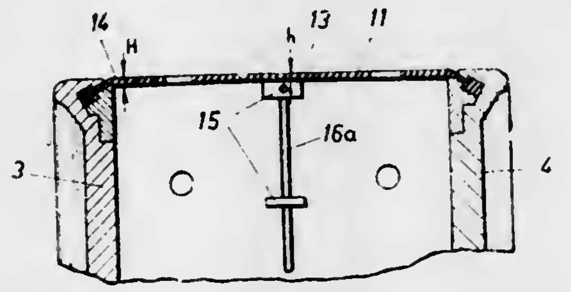
Hans Galleithner, Baden, and Kurt Strauch, Wien, both of Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria

Filed Feb. 22, 1972, Ser. No. 227,787

Claims priority, application Austria, Feb. 22, 1971, 1473/71

Int. Cl. B29h *17/16*

U.S. Cl. 156—415 **12 Claims**



1. A building drum for fabricating a radial belted, pneumatic tire assembly comprising the combination of two parallel discs which are adapted to be moved coaxially with respect to one another, a flexible, fluid permeable support element mounted on said discs to define an annular chamber for receiving thereon a partial tire assembly including bead cores and a carcass, means for supplying a pressurized fluid to the interior of said annular chamber and means for deflecting said support element radially inward, whereby the partial tire assembly is deflected radially outward when the pressurized fluid passes through said support element to thereby act directly on the interior surface of the partial tire assembly and further including means comprising a plurality of retaining members secured to the interior surface of said support element and at least one prestressed, annular spring member threaded through said retaining members.

3,864,190

APPARATUS FOR MANUFACTURING CARPETING

Herbert Coates, Shelf near Halifax, Yorkshire, Great Britain, assignor to Bonded Carpets Limited, London, England

Filed Sept. 1, 1972, Ser. No. 285,565

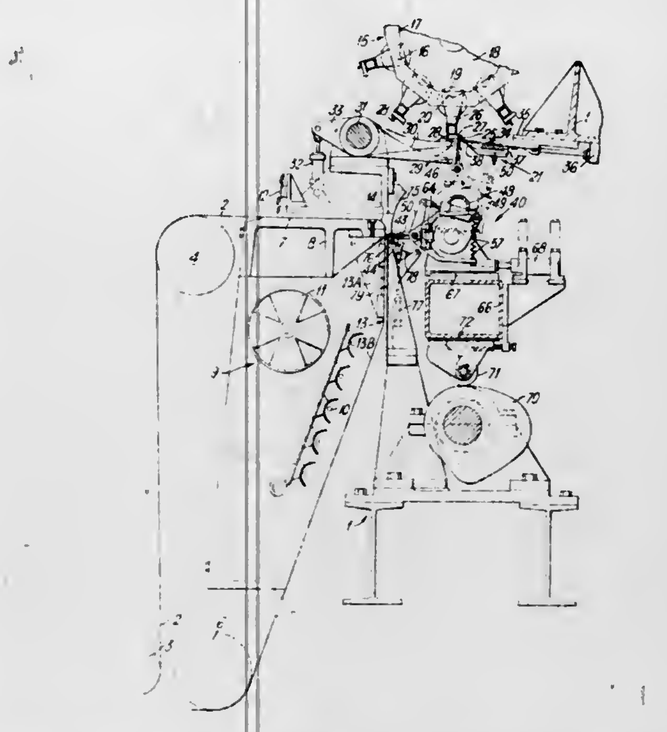
Claims priority, application Great Britain, July 14, 1972, 32975/72

Int. Cl. D04h *11/00*

U.S. Cl. 156—443 **17 Claims**

1. Apparatus for manufacturing carpeting comprising feed means for feeding a web of backing material through the apparatus, a yarn selection device of the spool or Jacquard type for selecting a yarn from which a pile tuft is to be formed, a tuft cutting mechanism for cutting tufts of a predetermined length from the yarn, a tuft handling mechanism comprising a projecting member defining a former, cam means for bending a cut tuft into a U-shape about said former with the bent portion exposed and spaced from the web, said tuft handling mechanism including means to grip said tuft during tuft cutting by said cutting mechanism and during said bending of said tuft about said former, said tuft handling mechanism also

including means to move said projecting member with a tuft bent thereabout toward the backing material to present the tufts to the backing material in a predetermined order, and means for bonding the tufts to the backing material.



3,864,191

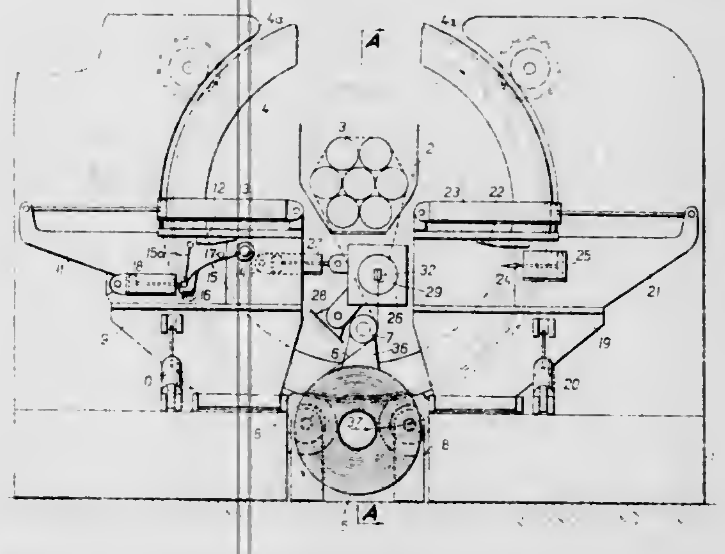
ARRANGEMENT FOR BINDING TOGETHER PACKS OF ELONGATED OBJECTS SUCH AS RODS AND SIMILAR ARTICLES BY A SELF-STICKING BAND

Zdenek Tovarys, Ostrava, Czechoslovakia, assignor to Vitkovicke zelezarny Klementa Gottwalda narodni podnik, Ostrava, Czechoslovakia

Filed Feb. 5, 1973, Ser. No. 329,814

Int. Cl. B65b *13/10, 27/06*

U.S. Cl. 156—468 **2 Claims**



1. Apparatus for binding together packs of elongated objects such as rods, tubes and similar articles by a multiple bandage by means of a self sticking band comprising: a frame, a guiding trough for the elongated objects to be bound fixed on the frame, a carrier for the self sticking band encompassing the guiding trough, supported rotatably around a horizontal axis on the frame, a first pair of opposite gripper jaws for the self sticking band, a pair of arms pivotably supported on said frame, one of said arms on each side of the guiding trough, first power cylinders controlling the position of these pivotable arms, a slide slidingly guided on each of said pivotable arms, each of said slides supporting one of said gripper jaws, a second power cylinder on each of said pivotable arms controlling the position of said slide with respect to the pivotable arms, a third power cylinder pivotably supported on the slide of the first pivotable arm, the piston rod of this power cylinder pivotably connected with a suspension, a spring loaded lever with a finishing roller pivotably connected to the piston rod of this third power cylinder, a fourth power cylinder supported by the slide of the second pivotable arm, a cutting knife for the self sticking band controlled by the piston rod of this fourth cylinder, a gripper body for seizing the self sticking band suspended on the frame below the guiding trough, a fifth power cylinder controlling the position of this gripper body with respect to the frame, said gripper body housing a sixth power cylinder with a hollow piston rod and a second pair of gripper jaws for the self sticking band, the position of which with respect to the self sticking band is controlled by said sixth power cylinder, and a seventh power cylinder controlling the opening and closing of said second pair of gripper jaws.

3,864,192

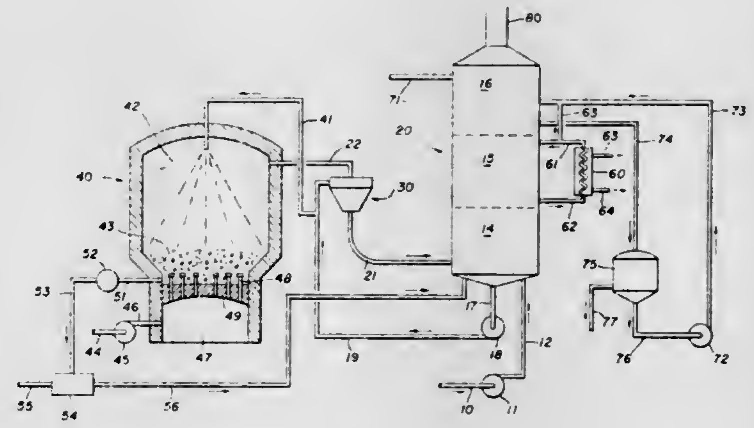
APPARATUS FOR PRODUCING AMMONIA-BASE PULPING LIQUOR FROM SPENT LIQUOR

George G. Copeland, Western Springs, Ill., assignor to Copeland Systems Incorporated, Oakbrook, Ill.

Filed Dec. 20, 1971, Ser. No. 209,861

Int. Cl. B01d *1/16, 1/14*

U.S. Cl. 159—4 A **8 Claims**



1. Apparatus comprising:

a fluidized bed reactor having a bed of magnesia particles; an exhaust gas conduit from the freeboard space of the reactor to a vessel for delivering magnesia fines, sulfur dioxide and other hot exhaust gases from the reactor to ammonia-base bisulfite spent liquor in the vessel;

a conduit for delivering ammonia-base bisulfite spent liquor to the vessel;

a conduit for delivering concentrated spent liquor from the vessel to the reactor for combustion of the liquor therein; and

means to absorb sulfur dioxide and ammonia from the vessel in aqueous ammonium hydroxide to form fresh ammonia-base bisulfite pulping liquor.

3,864,193

ELASTIC SHEET HAVING THE APPEARANCE OF STAINED GLASS

William Frierson, and Jerome Oberwager, both of Great Neck, N.Y., assignors to National Teaching Aids, Inc., Garden City Park, N.Y.

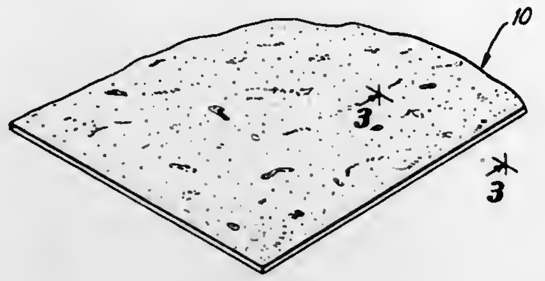
Filed Dec. 22, 1972, Ser. No. 317,748

Int. Cl. B44f *1/06*

U.S. Cl. 161—2 **7 Claims**

1. A vinyl plastic sheet having optical properties of stained glass, said sheet being an extruded plastic sheet obtained by extruding base vinyl plastic material containing therein partially melted particles having a higher melting temperature than the base material of the sheet, said particles representing

less than 2% of the total volume of the sheet and being dispersed therein such that there is a negligible number of areas



greater than one-fourth inch × one-fourth inch which exhibit a substantially uniform thickness, color and texture.

3,864,194
OPTICAL SHIELDING ELEMENT HAVING LOW REFLECTING POWER AND METHOD FOR PRODUCING

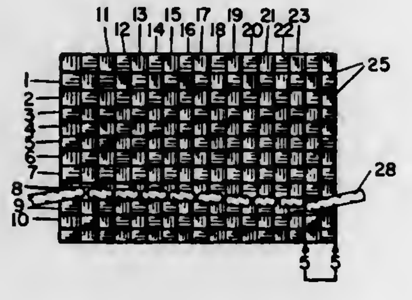
Takashi Shibata, and Teruo Kaneko, both of Tokyo, Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan
Filed Nov. 21, 1973, Ser. No. 417,789
Claims priority, application Japan, Nov. 27, 1972, 47-118118
Int. Cl. B32b *17/06*
U.S. Cl. 161—6 **12 Claims**

1. A method for producing a light shielding element exhibiting low reflecting power with a desired form of a light shielding portion, which comprises the steps of

- a. depositing in a desired pattern on a surface of a transparent glass containing at least one light metal at least one heavy metal capable of ion-exchanging with the light metal and of forming monovalent ions upon oxidation,
- b. ion-exchanging ions of said light metal with ions of said heavy metal thereby to penetrate said heavy metal ions into said transparent glass, and
- c. reducing the penetrated heavy metal ions into a metal atom, and condensing said metal atom to form colloidal particles.

3,864,195
STABLE SYNTHETIC CARPET BACKING MATERIAL

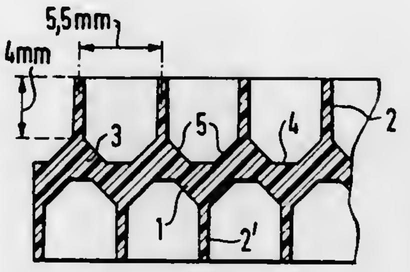
Henry G. Patterson, 1405 Dug Gap Rd., Dalton, Ga. 30720
Division of Ser. No. 221,166, Jan. 27, 1972, , which is a continuation-in-part of Ser. No. 877,777, Nov. 18, 1969, abandoned. This application May 7, 1973, Ser. No. 357,887
Int. Cl. D05c *17/02*
U.S. Cl. 161—66 **7 Claims**



1. A tufted pile fabric comprising a woven sheet of backing material having a substantially uniform thickness and a plain 1/1 weave of substantially uniform flat strands of plastic material; an adhesive material adhering adjacent and crossing strands of plastic material to one another; and rows of carpet yarn piercing said strands and said adhesive material to provide a face of tufted yarn on one side of said woven backing and tuft loop backs of yarn on the other side of said woven backing; all of said adhesive material being disposed on the woven backing material and none of the adhesive material being disposed on the tuft loop backs for said carpet yarn.

3,864,196
HONEYCOMB STRUCTURE FOR USE IN BEE BREEDING

Matthias Schmidt, 8491 Miltach 82, Miltach, Germany
Filed Apr. 10, 1972, Ser. No. 242,354
Claims priority, application Germany, Apr. 17, 1971, 2118676
Int. Cl. B32b *3/12;* **A01k** *47/04*
U.S. Cl. 161—68 **4 Claims**



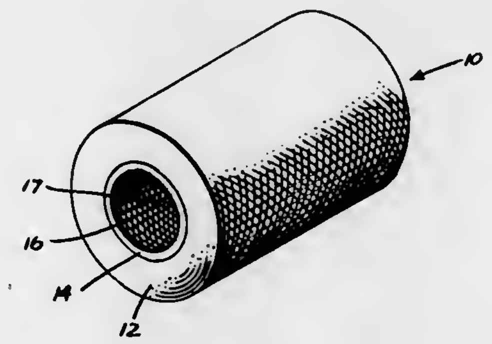
1. A honeycomb member for use in bee breeding, which comprises:

a center wall and a plurality of reduced walls extending outwardly from both sides of the center wall to provide cell portions on both sides of the center wall, the surface of the center wall in each cell portion being formed with a depression of greater depth in the center thereof than the depth of its adjacent walls,

the height of said plurality of reduced walls being about one-third to one-half of the full size of the cell walls, and said surface of the center wall in each cell portion being of arcuate form.

3,864,197
PLASTIC BEARING

Samuel M. Shobert, 17760 Dragoon Trail, Mishawaka, Ind. 46544
Division of Ser. No. 1,833, Jan. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 800,955, Feb. 20, 1969, abandoned. This application Nov. 14, 1972, Ser. No. 306,295
Int. Cl. F16c *13/00, 13/02, 33/00*
U.S. Cl. 161—96 **11 Claims**

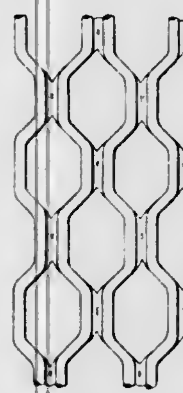


1. An article of manufacture comprising a low-friction structure and a hard backing therefor, said hard backing including a plastic material, said low-friction structure having a bearing surface comprising adjacent cords of strands of low coefficient of friction material, each strand consisting of low coefficient of friction material in fiber form and said low coefficient of friction material including fluorocarbon resin, each cord having an irregular outer surface containing a plurality of raised and depressed portions, said strands in each cord being woven together for locating said fibers in place in relation to each other, said cords being interlaced together in a woven fabric which further anchors said fibers against displacement, said cords and fibers being substantially embedded in said plastic material such that the latter mechanically secures said cords and fibers in position, said fibers being undulated throughout the length of said cords with portions of said fibers being exposed through said plastic material to define said bearing surface and other portions being fully embedded in said plastic material, said plastic material not being chemically or adhesively bonded to said fibers or cords.

8. An article or manufacture comprising a low-friction structure and a hard backing of fiber reinforced plastic therefor, said low-friction structure having a bearing surface comprising adjacent cords of strands consisting of polytetrafluoroethylene fibers, each cord having an irregular outer surface containing a plurality of raised and depressed portions, said strands in each cord being braided together for locating said fibers in place in relation to each other, said cords being interlaced together in a woven fabric which further anchors said fibers against displacement, said cords and fibers being substantially embedded in said plastic material such that the latter mechanically secures said cords and fibers in position, said fibers being undulated throughout the length of said cords with portions of said fibers being exposed through said plastic material to define said bearing surface and other portions being fully embedded in said plastic material, said plastic material not being chemically or adhesively bonded to said fibers or cords.

3,864,198
INTERCONNECTED NETWORK STRUCTURES

David B. Jackson, Loveland, Ohio, assignor to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 92,099, Jan. 23, 1970, Pat. No. 3,730,821. This application Jan. 26, 1973, Ser. No. 327,021
Int. Cl. D04h *13/00;* **B32b** *3/30;* **D02** *3/06*
U.S. Cl. 161—109 **4 Claims**

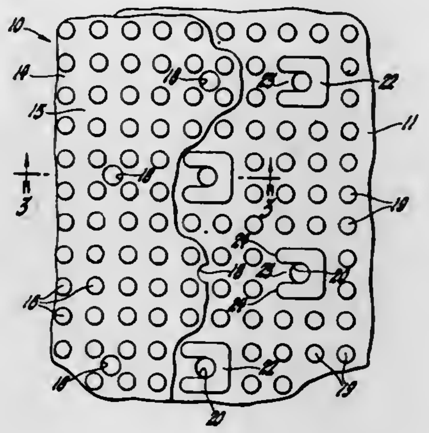


1. A network structure of a thermoplastic material comprising a fibrillated longitudinal striated film having alternating relatively thick longitudinal rib sections and relatively thin longitudinal web sections, said web sections being split between each pair of rib sections about 0.5 to 2.0 times per linear inch with the splits in adjacent web sections being linearly displaced from one another, said film being transversely expanded to form the split web sections into transverse rows of openings with each opening in a row being separated from the adjacent opening by at least two or more rib sections which are interconnected by web sections.

3,864,199
ANGULAR DISCHARGE POROUS SHEET

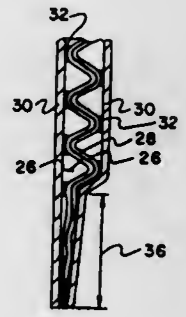
George B. Meginnis, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed July 26, 1973, Ser. No. 382,906
Int. Cl. F01d *5/08, 5/18;* **B32b** *3/10*
U.S. Cl. 161—112 **4 Claims**

1. A porous sheet adapted to be cooled by flow of fluid through the sheet and to discharge the fluid at an acute angle to the front surface of the sheet comprising a front layer defining the front surface of the sheet having outer and inner surfaces and having distributed fluid exit pores extending through the layer and comprising a rear layer abutting and bonded to the inner surface of the front layer, the rear layer having distributed fluid entrance pores extending through the layer out of register with the pores in the front layer, one of the layers having distributed bosses on its surface contiguous to the other layer engaging the other layer so as to define passages for fluid flowing between the layers from the fluid entrance pores to the fluid exit pores, the sheet being characterized by fluid flow barriers on one layer extending partially around the entrance to each said exit pore, the said barriers being oriented so that the flow into each exit pore over a defined area of the sheet is constrained to proceed in a direction consistent with that of all other pores within the defined area.



3,864,200
WATERPROOF CORRUGATED BOARD

Elmer Marshall, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.
Filed Aug. 26, 1971, Ser. No. 175,144
Int. Cl. B32b *3/28*
U.S. Cl. 161—135 **5 Claims**



1. A waterproof corrugated board construction comprising, in combination:

- a. a corrugated sheet having attached to the crest of the corrugation on at least one side thereof at least one substantially flat waterproof lining sheet, said corrugated sheet and said lining sheet also having formed throughout a plurality of holes extending completely through said corrugated sheet and said lining sheet;
- b. said corrugated sheet having formed thereon, between said corrugated sheet and said waterproof lining sheet, a coating of deformable waterproof composition; and
- c. the exposed edges of the corrugated board as well as the exposed edges of the holes in the corrugated board being compressed an amount sufficient to compress the corrugated sheet and the lining sheet against the deformable waterproof composition so that the holding characteristics of the composition will serve to hold the compressed shape of the sheet edges as well as around the edges of the holes thereby sealing the edges against the entry of water between the liner and the corrugated sheet.

3,864,201

THERMOPLASTIC RESINS LOADED WITH FILLER BONDED TO COVER LAYERS

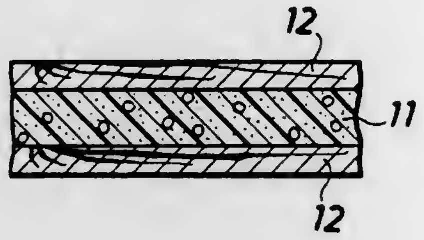
Rinnosuke Susuki; Hiroshi Hoshi; Jiro Saito; Koichi Takano, and Kiyoshi Yoshikawa, all of Tokyo, Japan, assignors to Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,244

Claims priority, application Japan, Oct. 6, 1970, 45-99495; Oct. 6, 1970, 45-99497; Oct. 6, 1970, 45-99498; Oct. 6, 1970, 45-99502; Oct. 6, 1970, 49-99503; Oct. 6, 1970, 45-99508

Int. Cl. B32b *3/26, 5/18*

U.S. Cl. 161—160 **13 Claims**



1. A laminated material comprising at least one layer of a material selected from the group consisting of woody material and metallic material, and bonded thereto in laminated relationship at least one layer of a filled resinous composition of at least one member selected from the group consisting of thermoplastic homopolymer resins, copolymers thereof and mixtures thereof, containing a filler selected from the group consisting of calcium sulfite, gypsum, and mixtures thereof.

3,864,202

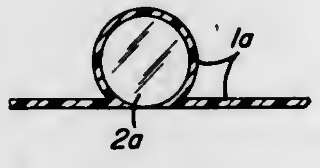
SUPPORT MEDIA WITH SUPPORTED OBJECT

William E. Loeb, Martinsville, and Mark A. Spivack, Wachtung, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 167,252, July 29, 1971, abandoned. This application May 24, 1972, Ser. No. 256,531

Int. Cl. B32b *19/02*

U.S. Cl. 161—162 **10 Claims**



1. An article of commerce comprising an essentially flat film of p-xylylene polymer having a thickness of up to about 25,000 A and wholly supporting one or more discrete objects mounted on at least one face thereof, the total surface area of said objects facing said film being less than the total surface area of the supporting face of said film, said supported objects being ohmically isolated with respect to objects not supported on said one supporting face.

3,864,203

FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

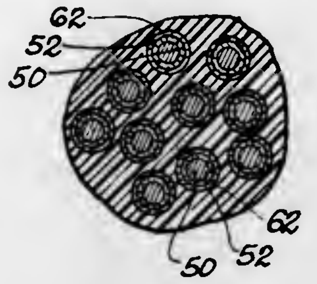
Filed Nov. 20, 1970, Ser. No. 91,472

Int. Cl. B44d *1/16, 1/06;* **E06b** *9/26*

U.S. Cl. 161—175 **35 Claims**

10. A fiber bundle for use in the reinforcement of elastomeric materials comprising a plurality of metal fibers, each of said fibers having a continuous coating of glass on the surfaces thereof, and an impregnant in the bundle comprising an elastomer compatible polymeric material selected from the group consisting of a blend of a resorcinol-aldehyde resin and rubber, a vinyl pyridine-butadiene-styrene terpolymer, elastomers and resinous polymers, said impregnant completely filling the interstices between the fibers to define a unitary bundle.

25. In the method for treating metal fibers to enhance the bonding relationship of metal fibers with elastomeric materials in the manufacture of metal fiber reinforced elastomeric products in which an elastomer constitutes the continuous phase in which the metal fibers are distributed, the improvement comprising coating the metal fibers with a glass material to form a continuous glass coating thereon, passing the coated fibers through a die to smooth the glass coating formed, and coating the resulting glass coated metal fibers with a material selected from the group consisting of an anchoring agent, an elastomer compatible polymeric material selected from the group consisting of a blend of a resorcinol-aldehyde resin and rubber, a vinyl pyridine butadiene-styrene terpolymer, elastomers and resinous polymers, and mixtures thereof.



3,864,204

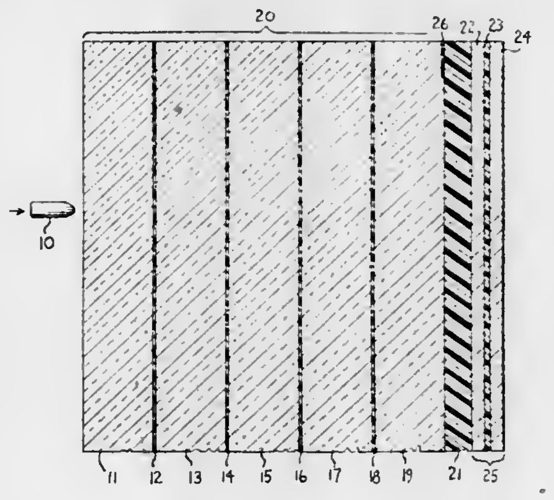
MULTILAYERED SAFETY GLASS

Norman Shorr, Mt. Lebanon Township, and Harry E. Littell, Jr., Shaler Township, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 24, 1969, Ser. No. 819,045

Int. Cl. F41h *5/26*

U.S. Cl. 161—190 **8 Claims**



1. A multiplate safety glass comprising an outward facing, impact striking section including an outer ply of relatively thick glass, a plurality of intermediate plies of relatively thick glass, and an interlayer of transparent thermoplastic material adherent to glass interposed between adjacent glass plies, said interlayers separating said relatively thick glass plies being relatively thin and having a total thickness less than that of any of said relatively thick glass plies in the ar[illegible]intermediate adjacent of said relatively thick glass plies; an impact transition section comprising a relatively thick sheet of transparent thermoplastic interlayer material having a thickness greater than said total thickness in the area facing said glass plies; and an impact absorption section comprising a penultimate, relatively thin glass ply, an innermost, relatively thin glass ply and an interlayer of transparent, thermoplastic interlayer material separating said penultimate, relatively thin glass ply from said innermost, relatively thin glass ply, said interlayer of said impact absorption section having a thickness in the area between said relatively thin glass plies greater than those of said interlayers in said impact striking section and less than that of said impact transition section, the total thickness of said glass plies in said impact absorption section being less than the thickness of each of said plies of relatively thick glass in said impact striking section.

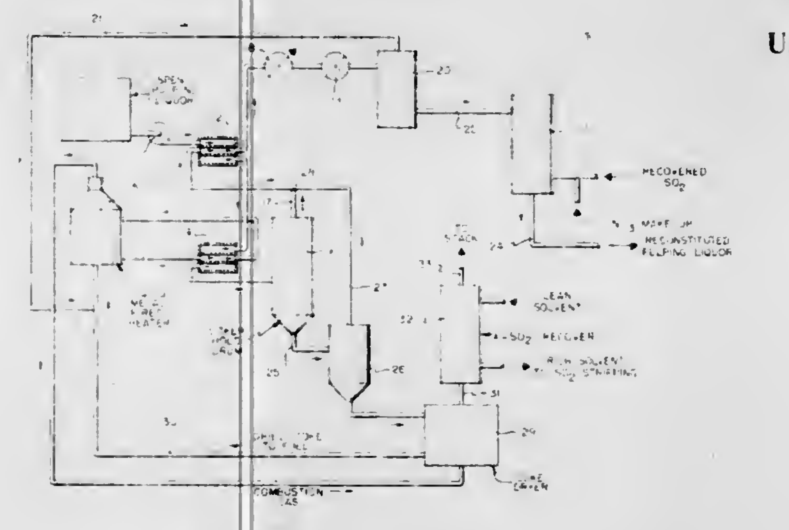
3,864,205

INTEGRATED PROCESS FOR COKING SPENT BASE SULFITE PULPING LIQUORS

William F. Franz, Gardiner; Howard V. Hess, Glenham; Edward L. Cole, Fishkill, and Kenneth E. Neisser, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y. Continuation-in-part of Ser. Nos. 149,673, June 3, 1971, abandoned, and Ser. No. 149,577, June 3, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,908

Int. Cl. D21c *11/14*

U.S. Cl. 162—31 **8 Claims**



1. In a process for coking spent ammonia and low pH sodium base sulfite wood pulping liquors wherein the liquors are coked in the liquid phase under pressure in a coking zone at a temperature in the range of 400° to 700°F. to produce coke, gases including sulfur dioxide, and an effluent, the improvement consisting of coking said liquors by rapidly heating said liquors to the coking temperature at the rate of about 110° to about 150°F. per minute in the temperature interval of 350° to about 550°F. whereby coke gel formation is avoided and coke separation is improved in the coked pulping liquors.

3,864,206

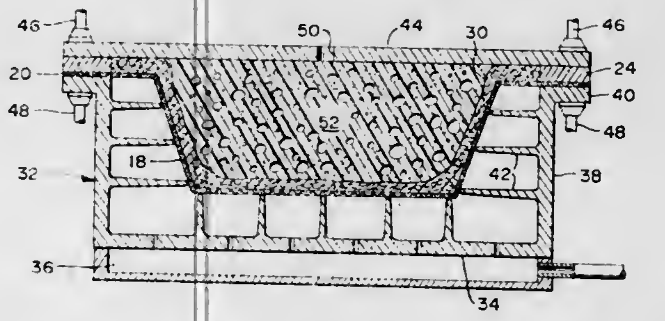
STRUCTURALLY SUPPORTED, DIMENSIONALLY ACCURATE, SHAPED ARTICLES AND METHOD OF PRODUCING THE SAME

Rodney V. Linderoth, 18 Maple St., Portville, N.Y. 14770

Filed Apr. 17, 1972, Ser. No. 244,556

Int. Cl. B32b *3/00, 5/18*

U.S. Cl. 162—103 **10 Claims**



1. A method of producing dimensionally accurate, structurally supported, shaped articles of pulped fibers comprising the steps of

forming a wet felted mat of pulpped fibers on a foraminous forming mold, the wet felted mat having a hollow portion;
filling the hollow portion of the wet felted mat with a core material while the wet felted mat is supported on the foraminous forming mold;
curing the core material and bonding the same to the wet felted mat to form a core integral with the wet felted mat;
removing the wet felted mat and core from the foraminous forming mold with the core acting in a transfer support capacity before drying of the wet felted mat; and
drying the wet felted mat.

3,864,207

PAPERMAKING MACHINE SUCTION BOX WITH VIBRATORY MOVEMENT HAVING BOTH LONGITUDINAL AND VERTICAL COMPONENTS

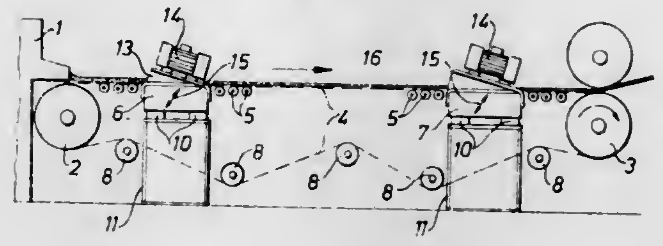
Frans Hugo Ekberg, Angermanlandsgatan 17, 891 00 Ornskoldsvik, Sweden

Filed June 18, 1973, Ser. No. 370,621

Claims priority, application Sweden, July 17, 1972, 9403/72

Int. Cl. D21f *1/52*

U.S. Cl. 162—365 **6 Claims**



1. Apparatus for dehydrating wet fibrous materials carried on a travelling endless screen, comprising a suction-box having a top plate, resilient means supporting the suction-box under the upper run of said screen with said top plate disposed adjacent the underside of said upper run, and means coupled to the suction-box for imparting vibratory movement thereto having components in the longitudinal direction of said screen and in the vertical direction and of such resultant direction and amplitude that the top plate of the suction-box at least in its highest position contacts the underside of, and moves in the same direction as, said upper run of the screen.

3,864,208

GEOTHERMAL-NUCLEAR WASTE DISPOSAL AND CONVERSION SYSTEM

Allen T. Van Huisen, Rolling Hill Estates, Calif., assignor to Kinichi Watase, Redondo Beach, Calif., a part interest

Filed Apr. 11, 1972, Ser. No. 242,941

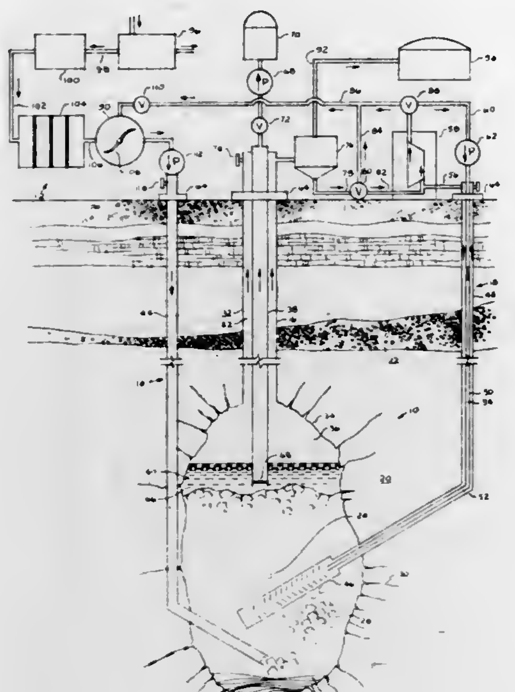
Int. Cl. G21f *9/08;* **E21b** *43/25*

U.S. Cl. 176—39 **13 Claims**

1. A method of recycling organic waste comprising the steps of:

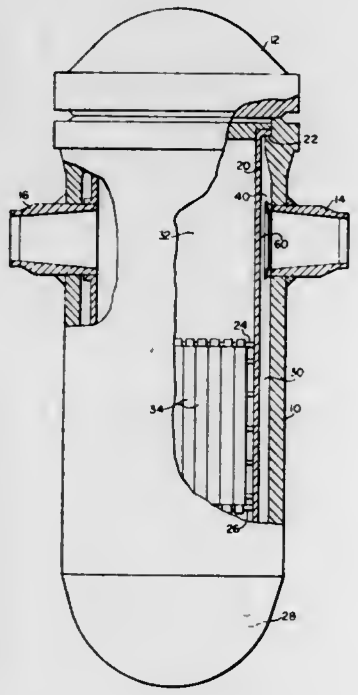
producing a highly permeable cavity containing a bed of hot rock rubble within a deep subsurface geothermal zone having a temperature of at least 300°F. by implanting a thermonuclear device within the zone and detonating the device to produce a porous rubble cone cavity;
forming an aqueous slurry of said organic waste and injecting said aqueous slurry into the cavity at a point substantially below the surface of the rubble cone and directly into the bed of hot rock rubble;
pyrolytically decomposing and destructively distilling the waste within the cavity, in absence of oxygen, into steam

and high BTU value, combustible, hydrocarbon liquid and gaseous fluid products as the waste rises thru the bed of hot rubble to the upper surface of the rubble cone; and transferring said products to the surface for utilization.



3,864,209
INLET FLOW OSCILLATION DAMPER FOR A NUCLEAR REACTOR

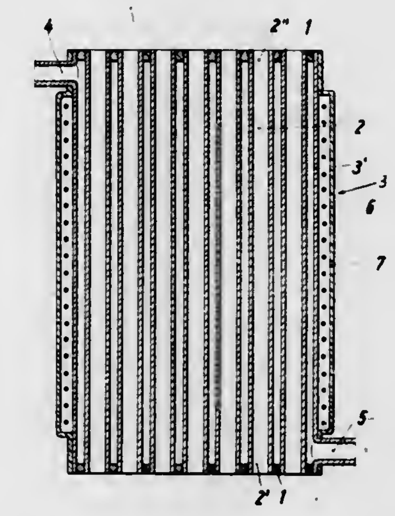
Long S. Tong, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 30,499, April 21, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302,327
Int. Cl. C21c *15/24*
U.S. Cl. 176—50 **1 Claim**



1. A nuclear reactor comprising:
a reactor core enclosed in a core barrel;
a pressure vessel surrounding and spaced from said barrel the area therebetween defining a fluid coolant passageway of annular configuration;
at least one inlet nozzle extending through the pressure vessel into said annular passageway, and at least one outlet nozzle extending through the core barrel and pressure vessel for accommodating coolant flow from the inlet nozzle through the passageway and reactor core prior to being discharged from the outlet nozzle;
vortex suppressor means adjacent the discharge end of the inlet nozzle for minimizing pressure oscillations otherwise induced in the coolant by coolant flow vortexes after the coolant leaves the inlet nozzle;
said vortex suppressor means comprising an annular member supported on the inner walls of said pressure vessel by a plurality of struts, said vortex suppressor means being in axial alignment with the inlet nozzle and spaced from the core barrel said struts being positioned around said inlet nozzle and being of a size sufficient to space the leading edge of the annular member from the discharge end of the inlet nozzle; and
said annular member further having an inner diameter approximately the same as said inlet nozzle.

3,864,210
APPARATUS FOR COOLING LIQUID METALS IN ATOMIC REACTORS

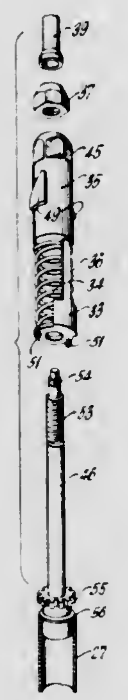
Harald Hanisch, Vienna, Austria, assignor to Gebr. Boehler & Co. AG, Vienna, Austria
Filed Dec. 1, 1972, Ser. No. 311,398
Claims priority, application Austria, Dec. 13, 1971, 10706/71
Int. Cl. G21c *3/56*
U.S. Cl. 176—60 **1 Claim**



1. A heat transferring installation for cooling liquid metals in atomic nuclear reactors or in installations simulating operative conditions of such reactors, comprising in combination,
a cylindrical member having a pair of metallic confronting end plates spaced from each other;
a plurality of straight open-ended pipes of heat-conductive material which are adapted to conduct a gaseous cooling medium and which are mounted in said cylindrical member and are being supported by said end plates;
said cylindrical member having an inner and an outer wall surface and said open-ended pipe have inner and outer surfaces; the inner wall surface only being contacted by liquid metal flowing over the outer surface of said plurality of open-ended pipes through said cylindrical member during the cooling;
the outer wall surface of said cylindrical member is in contact with the ambient atmosphere;
including inlet and outlet means being mounted at opposite ends of said cylindrical member for conducting hot liquid metal in cooled liquid metal out of said cylindrical member;
said inner wall surface of said cylindrical member is formed by an inner wall made of heat conducting material and said outer wall surface is formed by an outer wall made of heat-insulating material, said outer and inner walls being spaced from each other and defining an annular space therebetween, and a heating coil disposed in said annular space for heating the liquid metal in said cylindrical member, whereby solidified metal present within the installation can be melted bysaid coil so that the liquified metal may flow through the installation.

3,864,211
REMOVABLE UPPER TIE PLATE

Lloyd L. King, Benton City, and Robert K. Marshall, Richland, both of Wash., assignors to Exxon Nuclear Company, Inc., Richland, Wash.
Filed Oct. 2, 1972, Ser. No. 294,213
Int. Cl. G21c *3/32*
U.S. Cl. 176—78 **6 Claims**



1. In a nuclear power reactor fuel bundle having tie rods for securing a pair of spring-biased fuel rod mounting upper and lower tie plates in assembled position, the improvement which comprises:
a. a locking means attached to the end of each of said tie rods which engages said upper tie plate and moveable relative to said tie rod and an integral seat means within an opening in the upper one of said tie plates and facing away from said fuel rods for receiving said locking means and thereby locking said tie rods into said plates against the separating force of said fuel rod springs, said locking means comprising a cylindrical member coaxially moveable relative to said tie rod and having at least one cam means projecting radially outward from the surface of said cylindrical member;
b. cam operator means disposed within said opening in said upper tie plate for rotating said cylindrical member by coacting with said cam means when said tie rod is moved through said opening in the upper tie plate until said locking means is above said seat means; and
c. spring means for urging said locking means into locking engagement with said integral seat means in said upper tie plate after said locking means is above said seat means and thereby securing said tie rods to said tie plate, said spring means comprising a torsion spring attached at one end to said tie rod and at its opposite end to said cylindrical member whereby said torsion spring resists rotation of said cylindrical member relative to said tie rod.

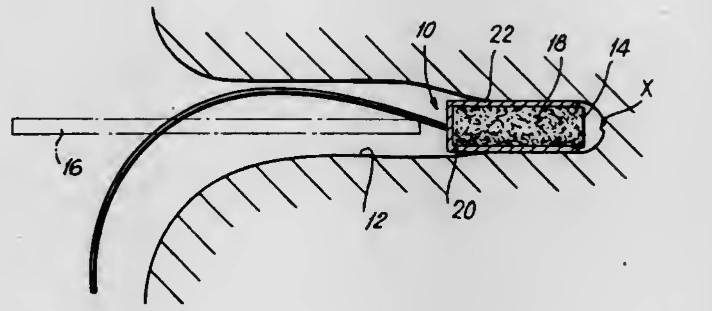
3,864,212
TREATMENT OF CELLS FOR MEASUREMENT OF DNA

Ernst Berkhan, Gottingen, Germany, assignor to Phywe Aktiengesellschaft, Gottingen, Germany
Filed May 25, 1972, Ser. No. 256,822
Claims priority, application Germany, May 25, 1971, 2125699
Int. Cl. C12k *1/00*
U.S. Cl. 195—103.5 R **3 Claims**

3. A treatment of cells for measurement of DNA therein comprising: initially isolating the nuclei of the cells by treating the cells with a solution of pepsin in hydrochloric acid and thereafter separating them from the solution and from the cell plasma, then dyeing the isolated nuclei in a dye solution which takes effect on nucleic acids and causes fluorescence, and measuring the intensity of fluorescence caused by said dyes by passing a liquid suspension of said dyed nuclei through a flow-through optical measuring chamber.

3,864,213
CULTURING METHOD

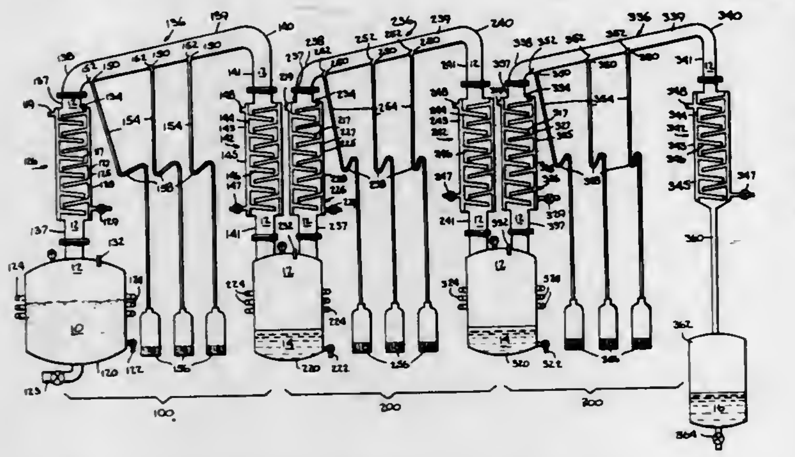
Louis Bucalo, Holbrook, N.Y., assignor to Microbyx Corporation, Holbrook, N.Y.
Continuation-in-part of Ser. No. 329,862, Feb. 5, 1973,. This application Oct. 12, 1973, Ser. No. 405,939
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **9 Claims**



1. In a culturing method, the steps of placing one part of a wick within a body in engagement with a body fluid while maintaining an opposed part of the wick which is distant from said one part out of engagement with the body fluid so that the body fluid progresses by capillary action along the wick from said one part toward said opposed part thereof, maintaining in engagement with the wick a culture medium which will encourage predetermined micro-organisms to grow to be subsequently rendered visible if present in the body fluid, limiting the progress of the body fluid along the wick from said one part toward said opposed part thereof for providing a distribution of the body fluid from said one part toward said opposed part of the wick according to a density gradient which is most dense at said one part of the wick and which becomes gradually less dense toward said opposed part of the wick so that the micro-organisms, if they are present, will be capable of growing into discrete colonies in sufficient numbers to become visible with great clarity at a portion of the density gradient, removing the wick from its position within the body where said one part thereof engages the body fluid after a given time, and thereafter checking for the presence of the micro-organisms.

3,864,214
APPARATUS FOR THE PLURAL STAGE DISTILLATION OF DRINKING ALCOHOL

Evald Ohakas, 1266 Sheridan Ave., Apt. 3F, Bronx, N.Y. 10456
Filed Nov. 7, 1972, Ser. No. 304,347
Int. Cl. B01d *3/00*
U.S. Cl. 202—186 **5 Claims**

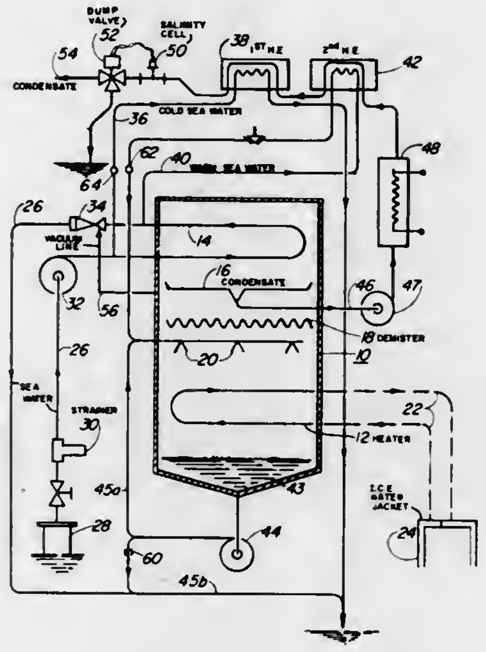


1. An apparatus for distillation of drinking alcohol, comprising:
- a plurality of interconnected stages, each stage comprising:
  - a boiler having an inlet and an outlet which discharges alcoholic vapors,
  - an outlet condenser in heat conducting contact with the vapors from the outlet of said boiler,
  - an inclined pipe having a first end and a second end, said first end communicating with said outlet condenser to receive vapors which have passed from the outlet of said boiler through said outlet condenser, and said second end of the inclined pipe communicating with the inlet of the boiler in the next one of said stages to discharge vapors thereinto, said inclined pipe having an intermediate section between said ends upwardly inclined away from said boiler, and the bottom wall of said intermediate section of said inclined pipe having at least one opening therein, and
  - means for collecting liquid flowing through said opening; a collection condenser in heat conducting contact with the second end of the inclined pipe in the last of said stages; and
- means for collecting liquid from said collection condenser; wherein the outlet condenser in at least one of said stages is comprised of a tubular outer wall, a tubular inner wall corresponding generally to said outer wall to form an annular space between said inner and outer walls, a plurality of downwardly sloping hollow baffles extending partially inwardly from different longitudinal positions along said inner wall and communicating with said annular space for the passage of liquid therebetween, alternate ones of said baffles extending inwardly from the inner wall on opposite sides of the condenser, said baffles extending substantially more than half way to the inner wall on the opposite side of said condenser so as to form a zig-zag shaped passageway bounded by said baffles and said inner wall for the passage of vapors through said outlet condenser, and means for controlling the flow of liquid into said annular space and said baffles.

3,864,215
METHOD OF DISTILLING SEA WATER ON SMALL SHIPS AND MARINE PLATFORMS HAVING INTERNAL COMBUSTION ENGINE

Alanson J. Arnold, 16 Bluebird St., New Orleans, La. 70124
Filed Feb. 11, 1974, Ser. No. 441,077
Int. Cl. B01d *1/22, 3/00, 3/08, 3/10*
U.S. Cl. 203—11 **3 Claims**

1. Improved method of distilling fresh water from sea water on marine structures with internal combustion main engines, comprising the steps of: circulating hot water from water-jacketed main engines to heater tubes mounted in a closed chamber; circulating cold sea water to provide condensive cooling through condenser tubes mounted in said closed chamber above said heater tubes and above the liquid level therein, and through a first heat exchanger mounted adjacent said closed chamber to provide cooling therein; circulating a portion of the sea water warmed from said condenser tubes to a second heat exchanger for further heating to circulate as sea water for evaporation; Creating a vacuum in said closed chamber with a venturi through which flows the remaining portion of said sea water warmed in said condenser tubes which is then wasted by connecting a low pressure area of said venturi to the vapor space of said closed chamber, said vacuum being at least sufficiently high to flash vaporize sea water at slightly below the temperature of said circulating hot water from water-jacketed main engines; spraying heated sea water from said second heat exchanger over said heater tubes to flash vaporize part into rising vapor and the remainder falling to bottom of the closed chamber; pumping said remainder partially back to said spraying and partially overboard; condensing said rising vapor on said condenser tubes as condensate dripping therefrom; catching said condensate in a collector means mounted below said condenser tubes; Pasteurizing said condensate in a heater; simultaneously cooling said hot pasteurized condensate and heating said warmed sea water in said second heat exchanger; further cooling said condensate with cool sea water in said first heat exchanger; and testing salimity of condensate in a salinity cell for acceptance or rejection.

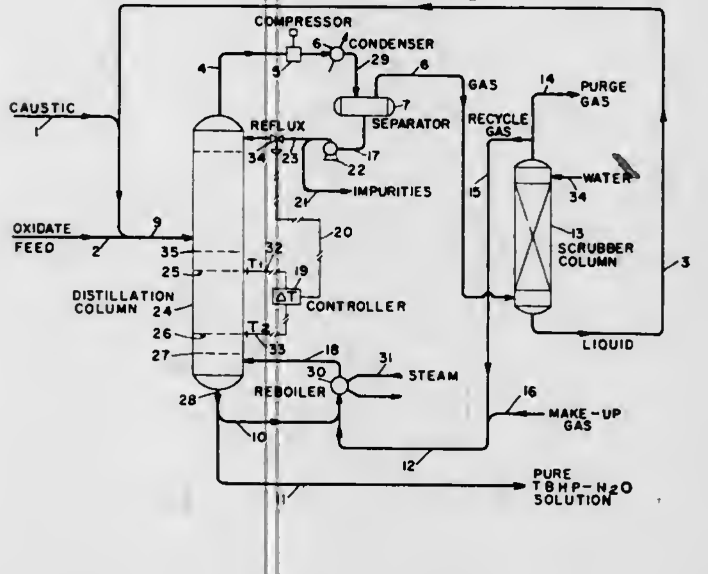


3,864,216
TERTIARY BUTYL HYDROPEROXIDE PURIFICATION BY DISTILLATION AT ATMOSPHERIC PRESSURE WITH AN INERT DILUENT GAS

George R. Worrell, Media, Pa.; Edward G. Guetens, Glendora, N.J., and James T. O'Toole, Philadelphia, Pa., assignors to Atlantic Richfield Company, New York, N.Y.
Continuation-in-part of Ser. No. 68,907, Sept. 2, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,278
Int. Cl. B01d *3/34*
U.S. Cl. 203—49 **3 Claims**

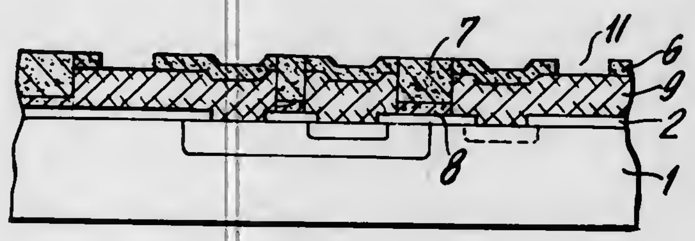
1. In a process for the purification and recovery of tertiary butyl hydroperoxide from an isobutane-free isobutane oxidate wherein said oxidate is fractionally distilled at about atmospheric pressure in a columnar distillation zone in the presence of water vapor, said water vapor being produced by the vaporization in said distillation zone of water introduced into said distillation zone together with said oxidate at a point in the mid-section of said distillation zone, the weight ratio of said water to the tertiary butyl hydroperoxide in said oxidate being at least 5:1, the improvement comprising introducing a

non-soluble, non-condensing diluent gas selected from the group consisting of methane and nitrogen at a point near the bottom of said distillation zone to dilute vapors formed in said zone and in an amount such that flamable tertiary butyl hydroperoxide-water vapor mixtures are avoided throughout said distillation zone, said methane being maintained in a proportion of at least 60 per cent by volume in the vapor phase, said nitrogen being maintained in a proportion of at least 80 per cent by volume in the vapor phase, removing from the bottom of said columnar distillation zone a bottoms fraction of purified tertiary butyl hydroperoxide and water and removing from the top of said columnar distillation zone an overhead comprising the oxidate impurities and said diluent gas.



3,864,217
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Koichiro Takahata, and Hiroshi Shiba, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Jan. 21, 1974, Ser. No. 434,259
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **8 Claims**



1. A method of fabricating a semiconductor device which device includes a semiconductor substrate and an insulating film covering at least one major surface of said substrate including the steps of:
- forming openings in said insulating film to expose portions of said major surface of said substrate;
- forming a thin film of the same semiconductor material as said substrate over said insulating layer and said exposed portions of said substrate;
- forming a metallic film over said thin film of semiconductor meterial;
- selectively converting at least a portion of the material of said metallic film and said semiconductor thin film into the oxides of their respective materials by anodic oxidation; and
- heating said device to alloy at least a portion of said metallic film with said semiconductor thin film.

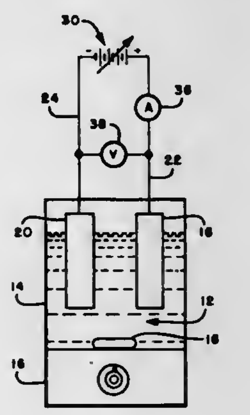
3,864,218
METHOD FOR PRODUCING WROUGHT ALUMINUM ARTICLES HAVING A COLORED ANODIC OXIDATION FILM

Ichiro Mizukami, and Masahiro Takahasi, both of Shimizu, Japan, assignors to Nippon Light Metal Research Laboratory Limited, Tokyo, Japan
Continuation of Ser. No. 211,041, Dec. 22, 1971,. This application July 19, 1973, Ser. No. 380,696
Claims priority, application Japan, Dec. 26, 1970, 20-118550/45
Int. Cl. C23b *5/50, 9/02*
U.S. Cl. 204—29 **7 Claims**

1. A method for producing a wrought aluminum article having a pale silvery colored anodic oxidation film which comprises the steps of casting a body of an aluminum alloy containing about 1–3 percent by weight of iron and about 0.02 to less than about 0.2 percent by weight of silicon, with the balance aluminum, working said cast aluminum body into a wrought aluminum article, anodically oxidizing the thus obtained wrought aluminum article in an aqueous electrolyte consisting of sulfuric acid within a concentration range of about 10–20 percent at anodizing current density less than 2 amp/dm^2 and at a temperature of about room temperature and after said casting step but before said anodically oxidizing step, heat-treating said article at a temperature of above about 550°C but insufficient to alter the shape of the article.

3,864,219
PROCESS AND ELECTROLYTE FOR APPLYING BARRIER LAYER ANODIC COATINGS

Robert G. Dosch, and Thomas S. Prevender, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Jan. 8, 1974, Ser. No. 431,818
Int. Cl. C23b *9/02, 11/02*
U.S. Cl. 204—33 **10 Claims**



1. The method for forming an anodized, essentially porefree film on metals selected from the group consisting of niobium, tantalum, tungsten, titanium, beryllium, uranium, aluminum, and alloys thereof, comprising cleaning said metal, thereafter immersing said metal in an electrolyte comprising a quaternary ammonium compound having the general formula $(R_4N)(M_xO_yH_z)$ where R is selected from the group consisting of an alkyl group having from 1 to 4 carbon atoms, an aryl group and mixtures thereof, N is nitrogen, O is oxygen, H is hydrogen, and M is a metal selected from the group consisting of niobium, tantalum, and titanium, and x is at least two, said quaternary ammonium compound dissolved in a solvent of water and a polar, water soluble organic liquid selected from the group consisting of an alcohol having the general formula ROH where R is an alkyl group having from 1 to 3 carbon atoms, and ethylene glycol, attaching said metal to an electrical lead to make it an anode, applying current to said anode while in said electrolyte for a time sufficient to form said film, and thereafter removing said anodized metal from said electrolyte.

3,864,220
METHOD FOR REDUCING HYDROGEN ABSORPTION OF ZIRCONIUM BY ANODIZING

Richard F. Denning, Hastings, and Stuart D. Bresnick, West Nyack, both of N.Y., assignors to General Atomic Corporation, San Diego, Calif.

Continuation of Ser. No. 112,473, Feb. 3, 1971, abandoned. This application Sept. 20, 1972, Ser. No. 290,508

Int. Cl. C23b *5/52*

U.S. Cl. 204—37 R **8 Claims**

1. A method for reducing hydrogen absorption and embrittlement of zirconium and zirconium alloy nuclear reactor structural elements which comprises forming at least a portion of a nuclear reactor structural element from a metal selected from the group consisting of zirconium and zirconium alloys, placing said metal portion of said structural element as an anode in an aqueous acidic electrolytic bath, applying a sufficient voltage across said anode to cause the formation of an anodized film on the said metal portion of said structural element and heat treating the anodized metal portions of said structural element in an atmosphere of at least one of air and inert gas containing about 2 to 3 percent oxygen by volume to impart an oxide film to the surface thereof without causing substantially any hydrogen absorption, and thereafter incorporating said structural element in a nuclear reactor.

3,864,221
COATING OF A STEEL OR IRON WITH A CHROMIUM CONTAINING SURFACE LAYER

Lars Henry Ramqvist, Nynashamn, and Henrik Werme, Garphyttan, both of Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm and AB Garphytte Bruk, Garphyttan, both of, Sweden

Filed June 22, 1973, Ser. No. 372,618

Claims priority, application Sweden, July 7, 1972, 9011/72

Int. Cl. C23b *5/00;* **C23f** *17/00*

U.S. Cl. 204—38 R **2 Claims**

1. A process for producing a ductile metal coating consisting essentially of chromium on carbon-containing steel or iron substrate which comprises, applying a barrier layer of at least one metal selected from the group consisting of Cu, Ag, Au, Pd, Pt, Rh, Ir, Ru, Os and CuNi alloy to said substrate and then depositing on said barrier layer a layer consisting essentially of said chromium by electrolysis from a molten salt bath containing chromium halide at a temperature in excess of 700°C.

3,864,222
BATHS FOR ELECTRODEPOSITION OF GOLD AND GOLD ALLOYS AND METHOD THEREFORE

William A. Wilson, Pawtucket; Hana M. Hradil, and Edward F. Hradil, both of Warwick, all of R.I., assignors to Technic, Inc., Cranston, R.I.

Filed Mar. 26, 1973, Ser. No. 344,887

Int. Cl. C23b *5/28, 5/42, 5/46*

U.S. Cl. 204—43 G **15 Claims**

1. An aqueous bath for electrodeposition of gold and gold alloys comprising, in said bath,

gold in solution as a water soluble compound thereof,

alloying metal as a salt in an amount from 0 to 20 grams of metal per liter of solution,

electrical conductivity enhancing electrolyte selected from the group consisting of phosphoric, phosphonic, phosphinic, citric, malic, formic, and ethylene polyamino acetic acids in amount from about 6 to 16 ounces per gallon of solution,

a compound selected from the group consisting of polyethyleneimines derived from polymerized ethyleneimine, substituted ethyleneimines or polyethyleneimines derived from the addition of ethyleneimine to organic or inorganic molecules,

said imine compound being present in amount from 0.005 to 100 grams per liter of bath and said compound having a molecular weight in the range from 100 to 60,000,

said bath being adjusted to pH operating level in the range from 1 to 14.

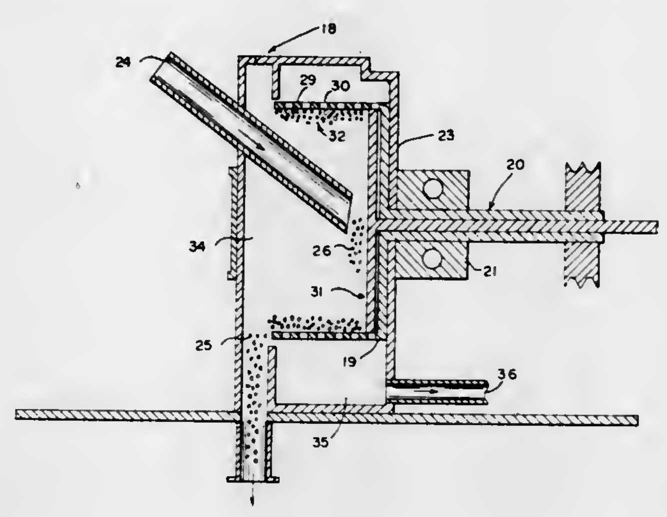
3,864,223
METHOD OF REGENERATION SPENT IRON ELECTROPLATING SOLUTIONS WITH CONCOMITANT DESULFURIZATION OF COAL

Robert E. Colwell, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,330

Int. Cl. C01l *9/02;* **C23b** *5/04;* **C01b** *17/02*

U.S. Cl. 204—48 **4 Claims**



1. A process for effecting the regeneration of spent electrolyte solutions obtained from iron plating baths comprising the steps of:

charging coal particles containing iron sulfides to a reaction chamber having a plurality of openings in its sidewalls, the size of the openings being smaller than the size of the particles,

rotating the chamber with sufficient rotational speed to generate a centrifugal force to cause the particles to be propelled outwardly against the walls of the chamber and be fixed thereon to form a continuous bed of particles,

charging spent electrolyte solution comprised of an aqueous solution of Fe^{3+} to the rotating chamber, the electrolyte solution being propelled outward into contact with the particle bed fixed on the walls of the chamber and caused to move radially therethrough under the action of centrifugal force, the Fe^{3+} in the electrolyte solution during the passage of the solution through the particle layer entering into chemical reaction with the iron sulfide contained in the particles whereby the Fe^{3+} of the electrolyte and the iron sulfide is converted to Fe^{2+} and S.

3,864,224
PREPARATION OF OXIDES

Joseph Bernard Cotton, Sutton Coldfield; Peter Charles Steele Hayfield, Castle Bromwich, and Ian Robert Scholes, Sutton Coldfield, all of England, assignors to Imperial Metal Industries (Hynoch) Limited, Warwickshire, England

Filed Apr. 25, 1972, Ser. No. 247,322

Claims priority, application Great Britain, Apr. 28, 1971, 11884/71

Int. Cl. C23b *9/00*

U.S. Cl. 204—56 R **11 Claims**

1. A method of preparing a titanium oxide comprising taking an acid solution containing titanium cations, inserting in the solution first and second electrically conductive bodies, and applying a voltage to the first electrically conductive body to render it anodic with respect to the second electrically conductive body and precipitating a porous coating of titanium dioxide alone upon the first body.

3,864,225
ELECTROLYTIC CARBOXYLATION OF SUBSTITUTED OLEFINS

Donald Armon Tyssee, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 17, 1972, Ser. No. 307,753

Int. Cl. C07b *29/06;* **C07c** *51/40, 55/02*

U.S. Cl. 204—59 R **10 Claims**

1. The method of electrolytic dicarboxylation of alpha, beta-olefinic nitriles, esters, and carboxamides, having an organic group selected from oxy, thio, phosphino and amino groups attached to one of the olefinic carbon atoms, which comprises effecting electrolytic reduction at a cathode selected from the group consisting of mercury, cadmium, lead and carbon by electrolysis in an electrolysis medium comprising such olefinic compound, an apratic solvent, supporting electrolyte and carbon dioxide, and recovering a dicarboxylated product of such olefinic compound.

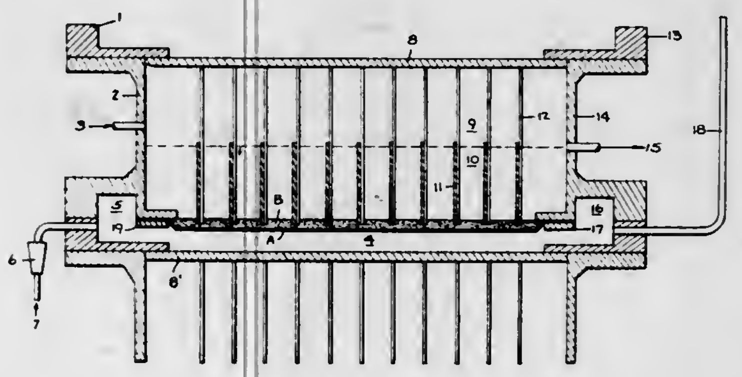
3,864,226
PROCESS FOR ELECTROLYZING AQUEOUS SODIUM OR POTASSIUM ION SOLUTIONS

Robert Spitzer, New York, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1972, Ser. No. 298,922

Int. Cl. C01d *1/06, 1/08;* **C01b** *67/06*

U.S. Cl. 204—98 **23 Claims**



1. A process for the electrolysis of an aqueous solution containing sodium and/or potassium ions in solution with anions of the mineral acids and/or of the organic acids and/or hydroxyl ion, wherein said electrolysis would normally produce a gaseous anode product at atmospheric pressure in said solution, which comprises

passing an electric current through said solution which is between
  an anode and
  a composite membrane of
    a polymeric membrane facing said anode and
    a layer of metal permeable to alkali metal in intimate contact with said polymeric membrane at its surface facing away from said anode, and

conducting said electrolysis at pressures between about 100–1000 psi and temperatures between about 60°–270°F under conditions which produce said anode product in a substantially liquefied state or dissolved within said solution.

3,864,227
METHOD FOR THE ELECTROLYTIC REFINING OF COPPER

Walter L. Brytczuk, Roselle Park, and Milton J. Hauser, Scotch Plains, both of N.J., assignors to Amax Inc., New York, N.Y.

Filed June 20, 1973, Ser. No. 371,876

Int. Cl. C22d *1/16;* **C23b** *7/00;* **B01k** *3/00*

U.S. Cl. 204—108 **5 Claims**

1. An electrolytic process for producing heavy deposits of high purity copper on a cathode at improved production rates which comprises,

selecting a metal cathode material which is self-passivating in a copper sulfate electrolyte,

said cathode metal being characterized by a negative free energy of formation of the oxide of at least about 90,000 calories per gram atom of oxygen at about 25°C,

providing a plating system comprising a plurality of said cathodes immersed in said copper sulfate electrolyte alternately spaced between anodes,

continuously subjecting said system to a periodic forward and reverse flow of current from said anodes to said cathodes and from said cathodes to said anodes, respectively,

said forward flow of current being carried out for a time ranging from about 10 seconds to 100 seconds, at a current density of about 20 to 65 amps/sq.ft.,

said reverse flow of current being carried out for a time ranging from about one-fifteenth to one-fiftieth of the time employed in the forward flow of current, the reverse flow of current being maintained at a current density level of 15 to 65 percent less than the current density corresponding to the forward flow of current, and maintaining said periodic application of the current to said system until a heavy deposit of strippable high purity copper is obtained on said cathodes.

3,864,228
MOLDABLE AND HEAT RECOVERABLE COMPOSITION COMPRISING AN ADMIXTURE OF VINYLIDENE FLUORIDE/HEXAFLUOROPROPYLENE COPOLYMER AND A POLYMER OF VINYLIDENE FLUORIDE

Louis F. Rossetti, Jr., Arlington, Mass., assignor to Electronized Chemicals Corporation, Burlington, Mass.

Continuation of Ser. No. 137,620, April 26, 1971, abandoned. This application July 13, 1973, Ser. No. 378,807

Int. Cl. C08d *1/00;* **C08f** *1/00*

U.S. Cl. 204—159.2 **3 Claims**

1. A novel thermosetting composition comprising an admixture of vinylidene fluoride/hexafluoropropylene copolymer, containing from 70 to 30% by weight of vinylidene fluoride units and from 30 to 70% by weight of hexafluoropropene units, and a polyvinylidene fluoride, cross-linked by irradiation with highenergy electrons in a range of approximately 1–20 megarads, and wherein the ratio of weight of vinylidene fluoride/hexafluoropropylene copolymer to vinylidene fluoride polymer is in the range of 225:275 to 70:430.

3,864,229
POLYTHIOL ACCELERATED RADIATION CROSS-LINKING OF OLEFINICALLY UNSATURATED POLYMERS

Robert L. Zapp, Short Hills, and Alexis A. Oswald, Mountainside, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 6, 1972, Ser. No. 232,275

Int. Cl. B01j *1/10, 1/12*

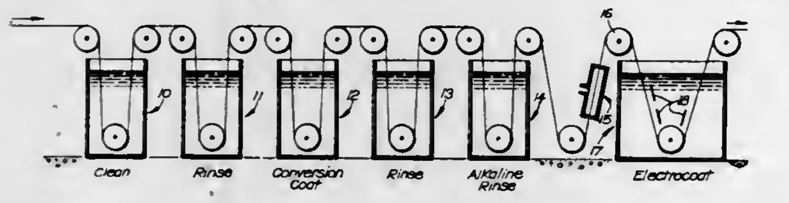
U.S. Cl. 204—159.18 **15 Claims**

1. In a process for the curing of an elastomer having a number average molecular weight of at least 50,000 using ionizing radiation, wherein said elastomer is an olefinically unsaturated elastomer having (1) at least 15 mole % unsaturation the improvement which comprises incorporating into the elastomer vulcanization mixture about 0.6 to about 6 parts per hundred by weight of elastomer of a cure enhancer comprising a hydrocarbon polythiol having about 3 to about 5 thiol groups and a molecular weight of about 200–1,000 selected from the group consisting of (1) the reaction product of cyclododecatriene and 1,3 propane dithiol, (2) the reaction product of trivinylcyclohexane and H_2S, (3) the reaction product of trivinylcyclohexane and ethane dithiol, or (4) the reaction product of trivinylcyclohexane and 1,4 butanedithiol.

3,864,230
PRETREATING AND ELECTROCOATING METAL PRODUCTS

Willard J. Springer, Livermore, and Bruce A. Baker, Jr., Pleasanton, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jan. 9, 1974, Ser. No. 431,853
Int. Cl. C23b *13/00*
U.S. Cl. 204—181 **6 Claims**

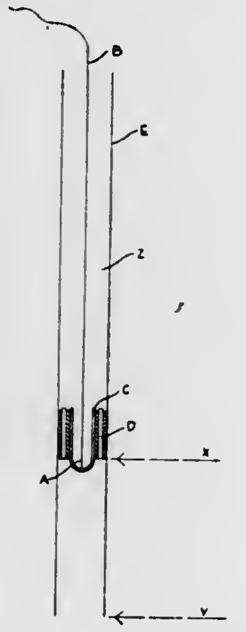


1. In the method of electrocoating a metal surface wherein the metal surface is treated so as to form thereon a chemical conversion coating, subsequently the metal surface is immersed as an electrode in an aqueous bath containing an electrodepositable polyelectrolyte resin and an electrical current is passed between said product and an electrode in said bath so as to electrodeposit said resin onto said surface, the improvement comprising treating the metal surface having a chemical conversion coating thereon with an aqueous alkaline solution having a pH greater than 8.

3,864,231
APPARATUS FOR MEASURING IN A CONTINUOUS MANNER OXYGEN IN A MOLTEN METAL

Frederick Denys Richardson, Epsom, England, assignor to Mettallurgie Hoboken-overpelt, Brussels, Belgium; RST International Metals Limited, London, England; a part interest

Filed Jan. 15, 1973, Ser. No. 323,493
Claims priority, application Luxembourg, Jan. 31, 1972, 64699
Int. Cl. G01n *27/30, 27/46*
U.S. Cl. 204—195 S **15 Claims**

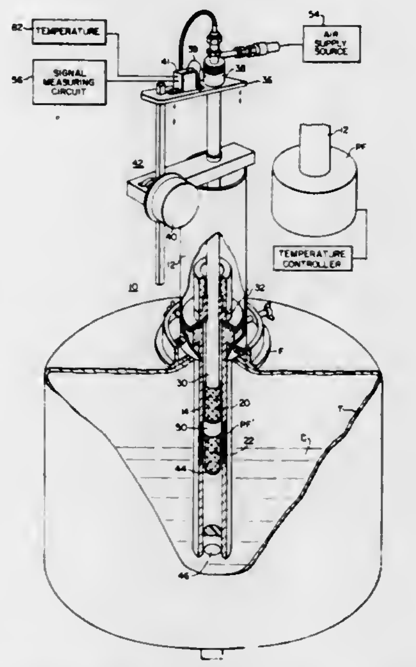


1. Apparatus for the continuous measurement of oxygen contained in a molten metal comprising
   a. a cell which comprises:
      i. means for measuring the electrochemical potential present between two faces of a solid oxygen electrolyte:
      ii. one of said two faces being in contact with a controlled oxygen pressure used as a reference; and
      iii. the other of said two faces being adapted to be contacted with the metal which is to be tested;
   b. an outer tube having a high resistance to mechanical stresses, to thermal shocks and to chemical attack;
   c. said outer tube containing at its lower end a projecting sleeve of high resistance to mechanical stresses, to thermal shocks and to chemical attacks;
   d. said projecting sleeve being adapted to be dipped into the liquid metal before the cell is immersed in the liquid metal in order to conduct heat from the liquid metal to the cell and to preheat the cell prior to immersion;
   e. said projecting sleeve being adapted to contain a volume of trapped air which is present between the surface of the liquid metal and the solid electrolyte when the cell is dipped into the liquid metal; and being adapted upon immersion to permit expansion of said trapped air to blow away slag, oxides, and other foreign particles which may be present on the surface of the metal being tested, and being adapted to reduce the thermal shock to which the solid electrolyte is subjected; and
   f. a column of cement provided between the outer tube and solid electrolyte wherein said cement is gas pervious for allowing said trapped air to be displaced by the hydrostatic pressure of the liquid metal upon immersion, and the porosity and length of the column of cement being adjusted to ensure delay between the immersion and rising of the liquid metal up to said solid electrolyte.

3,864,232
APPARATUS FOR MONITORING THE OXYGEN CONTENT OF HIGH TEMPERATURE FLUIDS

Lawrence M. Handman, Cherry Hill, N.J.; Charles E. Spangler, Pittsburgh, Pa., and Raymond F. Thompson, Bristol, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1973, Ser. No. 356,669
Int. Cl. G01n *27/30, 27/46*
U.S. Cl. 204—195 S **1 Claim**

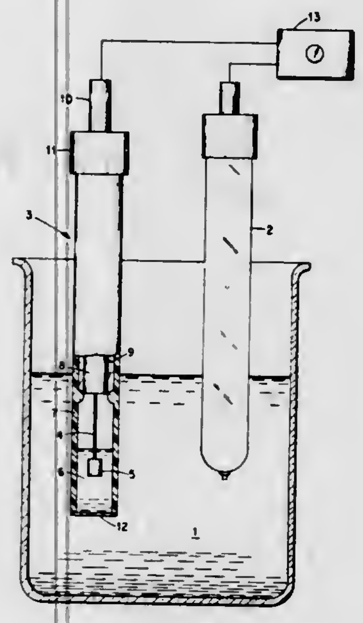


1. Apparatus for monitoring the oxygen content of molten metal comprising, an open ended tubular member, a solid electrolyte electrochemical cell cell means including an oxygen ion conductive solid electrolyte having an external surface and an internal surface, an electrode means disposed in intimate contact with said internal surface and a reference medium of known oxygen content in contact with said internal surface, said solid electrolyte electrochemical cell means being slidably positioned within said tubular member, said tubular thermal insulating member being adapted for positioning relative to said molten metal, adjustment means for slidably positioning said solid electrolyte electrochemical cell means to project said solid electrolyte electrochemical cell means through the open end of said tubular thermal insulating member to establish said external surface of said solid electrolyte in direct contact with said molten metal and to retract said solid electrolyte electrochemical cell means within said tubular thermal insulating member, said solid electrolyte electrochemical cell developing a signal indicative of the oxygen content of said molten metal, and electrical heater means located within said tubular thermal insulating member at a position adjacent to said solid electrolyte electrochemical cell means to maintain the temperature of said solid electrolyte electrochemical cell at a temperature comparable to that of the molten metal prior to insertion of said solid electrolyte electrochemical cell into said molten metal.

3,864,233
URANIUM-SENSITIVE ELECTRODE MEMBRANE

William C. Dietrich, Knoxville, and Delmer L. Manning, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 17, 1973, Ser. No. 425,415
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M **6 Claims**



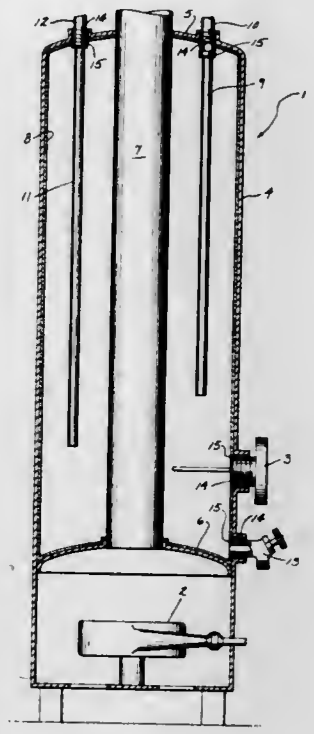
1. A uranyl sensitive membrane comprising a uranyl complex of an organophosphoric acid embedded within a polyvinyl chloride matrix, said organophosphoric acid being selected from the group consisting of di (2-ethylhexyl) phosphoric acid, di (2-ethyl-4 methyl-pentyl) phosphoric acid, and mono-n-butyl phosphoric acid.

3,864,234
CATHODIC PROTECTION SYSTEM FOR WATER HEATERS WITH SEALANT

Loerwood C. Wasson, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed May 8, 1973, Ser. No. 358,369
Int. Cl. C23f *13/00;* **F24h** *1/00, 1/20*
U.S. Cl. 204—197 **5 Claims**

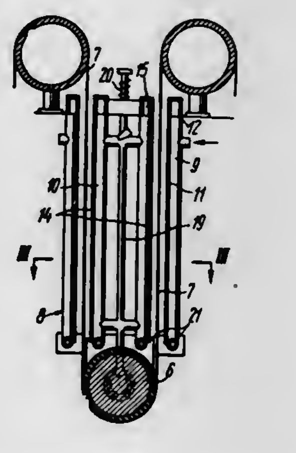
1. A substantially closed metal tank having a lining disposed on the inside of the tank of a material to protect the metal of the tank from corrosion by the fluid stored within the tank, but leaving some bare metal exposed to said fluid throughout various areas of the tank, a primary anode more anodic than the exposed metal of the tank and secured to the tank and extending therein in contact with the fluid stored in said tank to cathodically protect the exposed bare metal in the tank, a plurality of fittings secured within openings in the metal tank and forming joints with the tank at said openings in which bare metal may be exposed to the fluid in the tank, and a sealant separate from said fittings disposed in said joints and covering the exposed metal of the tank at the joint area and having particles of metallic material therein more anodic than the metal of the tank distributed throughout said joints, said sealant expanding in volume as products of corrosion are produced in the joints from said particles by contact with the fluid in the tank to increase the sealing effect of the sealant and acting as a secondary distributed anode to cathodically protect the exposed metal in the joints and initially charge any exposed metal in the joints so that less potential is later required to be developed in the joints by the primary anode to provide corrosion protection in the event the distributed anode is used up.



3,864,235
LOOP ELECTROLYZER

Vyacheslav Borisovich Bobrov, Yaroslavakaya ulitsa 1/9 kv. 30; Antonina Vladimirovna Buzhinskaya, Murmansky Proezd, 6, kv. 54; Vadim Afanasievich Semenenko, ulitsa Trofimova, kv. 82, all of Moscow, U.S.S.R.; Anatoly Borisovich Bobrov, deceased, ulitsa Arbat, 51, kv. 117, late of Moscow, U.S.S.R., and Evdokia Nikolaevna Bobrova, administrator, Konkov-Derevlevo, I Mikroraion, korpus 4, kv. 118, Moscow, U.S.S.R.

Continuation of Ser. No. 174,767, Aug. 25, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,642
Int. Cl. C23b *5/68*
U.S. Cl. 204—206 **4 Claims**



1. A loop electrolyzer for producing metal strip, comprising: a container for holding a bath of electrolyte; a plurality of top driven current-carrying drums mounted on the sides of said container; a plurality of bottom tension drums located inside said container and rotating on journals; a cathode ribbon movably passing in between said top driven drums and said bottom tension drums; a plurality of anode plates having their vertical edges flanged and each attached to separate detachabley mounted frames arranged consecutively in the direction of travel of said cathode ribbon inside said container, each of said frames comprising single separate sections and a twinned section disposed therebetween.

3,864,236

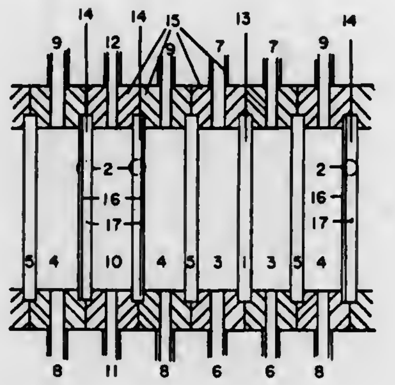
APPARATUS FOR THE ELECTROLYTIC PRODUCTION OF ALKALI

Olle Lindstrom, L. Taby, Sweden, assignors to Hooker Chemical & Plastics Corp., Niagara Falls, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,623

Int. Cl. C22d *1/02;* **B01k** *3/10*

U.S. Cl. 204—265 **2 Claims**



1. An electrolytic apparatus which comprises a cell, said cell having disposed therein a cathode and an anode, said cathode and anode being separated by a fluid permeable diaphragm to form an anode compartment containing said anode and a cathode compartment containing said cathode, said apparatus having means for passing hydrogen gas through said anode into said anode compartment, said anode including a catalyst for the electrochemical oxidation of hydrogen gas to hydrogen ions, said anode being formed in two layers, said first layer being a porous sintered coarse layer of platinized titanium and said second layer being a porous sintered finer layer of titanium, said anode being positioned so that the hydrogen gas is passed initially through said first layer and then through said second layer into the anode compartment.

3,864,237

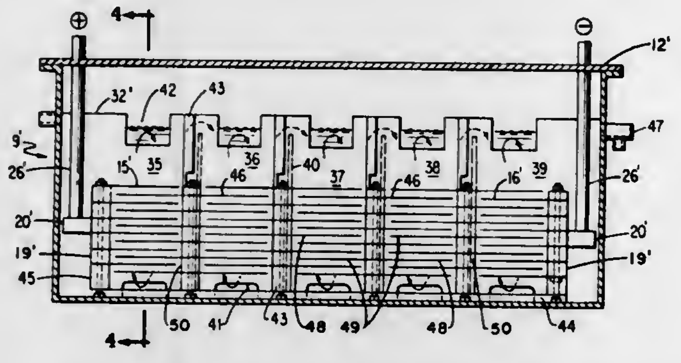
BIPOLAR DIAPHRAGMLESS ELECTROLYTIC CELLS

Richard E. Loftfield, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 220,902, Jan. 26, 1972, Pat. No. 3,791,947. This application Oct. 9, 1973, Ser. No. 404,492

Int. Cl. B01k *3/04*

U.S. Cl. 204—268 **4 Claims**



3. In an electrolytic cell comprising side, end, and bottom walls defining an electrolyte chamber, said chamber having disposed therein a multiunit electrode assembly, the improvement wherein said assembly comprises:

A. a terminal anode assembly consisting essentially of a plurality of parallel, horizontally disposed, foraminous, dimensionally stable anodes;

B. a terminal cathode assembly consisting essentially of a like number of parallel, horizontally disposed, foraminous, cathodes;

C. at least one bipolar electrode assembly intermediate said terminal anode and terminal cathode assemblies, each bipolar assembly consisting essentially of a vertically disposed, electrically insulating and liquid impervious partition and a plurality of parallel, horizontally disposed, foraminous, bipolar electrodes extending through said partition, the portion of the bipolar electrode adjacent the terminal anode assembly being cathodes and being interleaved with the terminal anodes in an alternate, face-to-face, spaced apart arrangement, the portion of the bipolar electrode adjacent the terminal cathode assembly being dimensionally stable anodes and being interleaved with the terminal cathodes in an alternate, face-to-face, spaced apart arrangement, all other bipolar electrode portions being interleaved with horizontally adjacent bipolar electrode portions in a like fashion;

D. the entire multiple unit electrode assembly being substantially enclosed on four sides; and

E. said terminal anode and cathode assemblies being connected to an electrical source.

4. The cell according to claim 3 wherein a central wall is positioned intermediate the side walls of the chamber and divides the chamber into a circulation area and an electrode assembly area, a portion of the central wall adjacent the bottom wall of the chamber being open to permit circulation of the solution through the entire cell chamber.

3,864,238

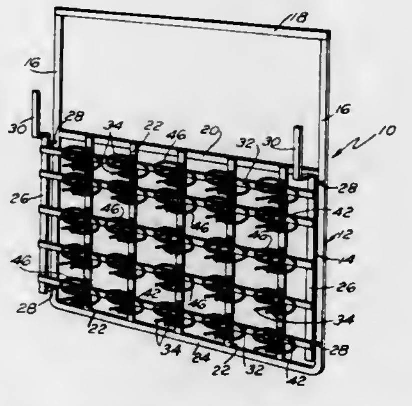
MEANS FOR ELECTROPOLISHING DENTURE FRAMES

Samuel Nash, 50 Althea Drive, Cranston, R.I. 02920, and Melvin Nash, 825 Pontiac Ave., Cranston, R.I. 02910

Filed Mar. 30, 1973, Ser. No. 346,579

Int. Cl. C23b *5/70*

U.S. Cl. 204—297 W **4 Claims**



1. A rack for electrochemically polishing dentures comprising a rear frame portion, a front frame portion dielectrically mounted in spaced relation in front of said rear frame portion, said rear frame portion having spaced vertical strips, said front frame portion having spaced horizontal strips, means on said vertical strips at the intersection of said strips for holding a denture in position for electropolishing, said means comprising a pair of stiff, resilient, titanium arms extending outwardly in a V-shape, said arms having an integral apex held to said vertical strip by a titanium bolt, said arms having holding notches adjacent their free ends, and a soft lead wire mounted on said horizontal strip and bendable around a denture in said holding means in spaced relation to the denture.

3,864,239

MULTITARGET SEQUENTIAL SPUTTERING APPARATUS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Rindge Shima, 1344 Franklin St., Santa Monica, Calif. 90404

Filed Apr. 22, 1974, Ser. No. 462,705

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **15 Claims**

1. A sputtering apparatus comprising:

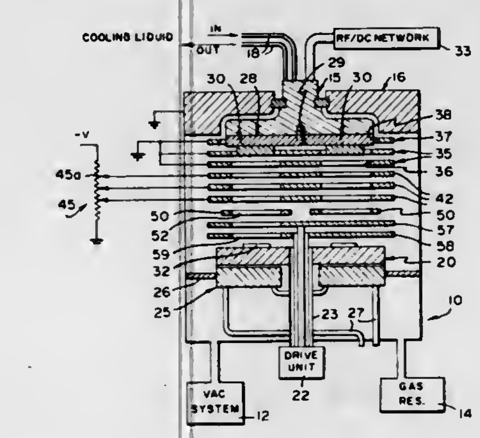
a chamber for containing an inert gas at a selected pressure;

a single stationary cathode in said chamber said cathode having means to support a plurality of different target materials connected thereto;

a rotatable anode in said chamber spaced apart from said cathode along a chamber axis and having selected area means for supporting a plurality of substrates;

a plurality of spaced apart elements supported between said anode and said cathode, each element defining a plurality of apertures, whereby each of said targets is exposable through a different set of apertures of said plates to a selected area of said anode aligned with the target-material along a different axis parallel to said chamber axis;

power means for applying a potential difference across said anode and cathode to ionize said gas to form plasma containing gas ions and electrons, said ions striking said targets to dislodge neutral material particles therefrom, at least some of which are directed to said anode;



potential means for controlling the potentials of said elements so as to control the ionization current of each plasma between each target and directed to said anode through a different set of apertures of said elements, said plates and apertures being spaced between said anode and cathode whereby when the selected area of said anode is aligned with a first of said targets only neutral material particles from said first target reach said selected area, with neutral material particles from either or both said first and second elements reaching said selected anode area continuously as said anode is rotated and the selected anode area is moved from alignment with said first target to alignment with said second target.

3,864,240

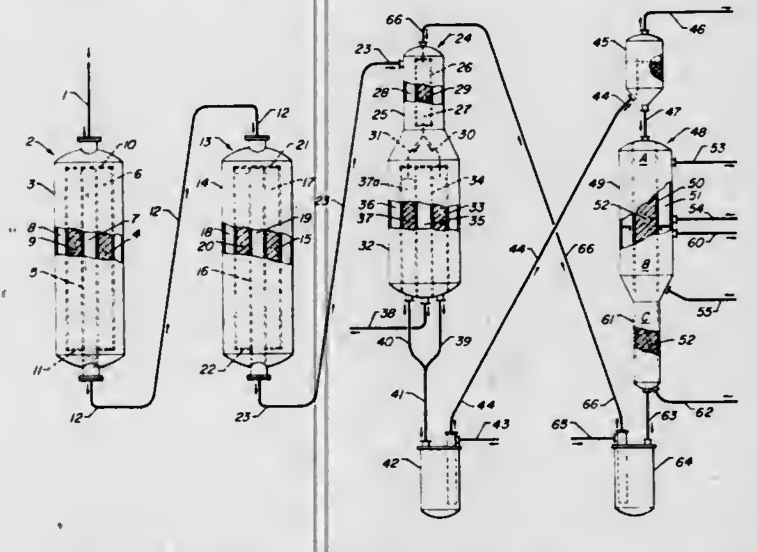
INTEGRATION OF A REACTION SYSTEM HAVING GRAVITY-FLOWING CATALYST PARTICLES WITH A FIXED-BED SYSTEM

Richard D. Stone, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 9, 1973, Ser. No. 339,820

Int. Cl. C10g *35/04, 35/08*

U.S. Cl. 208—64 **5 Claims**



1. A multiple-stage process for the catalytic reforming of a hydrocarbon feed stream which comprises the steps of:

a. reacting said feed stream in a plurality of fixed-bed, catalytic first reaction zones, said feed stream contacting said fixed-bed catalysts in lateral, radial flow, said fixed beds being in series flow with each other;

b. introducing at least a portion of the resulting first zone effluent downwardly into a second reaction zone containing a bed of catalyst movable downwardly therethrough via gravity-flow, and further reacting said effluent in contact with said movable catalyst;

c. withdrawing, at least periodically, catalyst from said second reaction zone, while simultaneously recovering converted hydrocarbon effluent therefrom; and.

d. at least periodically adding fresh, or regenerated catalyst to said second reaction zone.

3,864,241

BIMETALLIC CATALYTIC REFORMING WITH WATER ADDITION

Richard E. Rausch, Mundflein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 187,579, Oct. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application Oct. 12, 1973, Ser. No. 406,134The portion of the term of this patent subsequent to July 10, 1990, has been disclaimed.

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **17 Claims**

1. A process for catalytically reforming a gasoline fraction, which process comprises continuously introducing a gasoline fraction, a hydrogen stream and water or a water-producing substance into a reforming zone and therein contacting the resulting mixture at reforming conditions with catalytic composite comprising a combination of a platinum group component, a tin component and a halogen component with a porous carrier material, wherein the components are present in amounts sufficient to result in the composite containing, on an elemental basis, about 0.01 to about 2 wt. percent platinum group metal, about 0.01 to about 5 wt. percent tin and about 0.01 to about 3.5 wt. percent halogen, wherein the tin component is uniformly dispersed throughout the porous carrier material in a particle size of less than 100 A. in maximum dimension, wherein substantially all of the platinum group component is present in the composite as an elemental metal, wherein substantially all of the tin component is present in the composite in an oxidation state above that of the elemental metal and wherein the total amount of water or water-producing substance introduced into said zone continuously corresponds to about 10 to about 50 wt. ppm. of the gasoline fraction, calculated on the basis of equivalent water.

3,864,242

TREATING MUDDY-LIKE WASTE OILY MATERIAL

Shichie Watanabe, Fukuoka, Japan, assignor to Kabushiki Kaisha Imamura Seisakusho, Wakamatsu-Ku, Kitakyushu, Japan

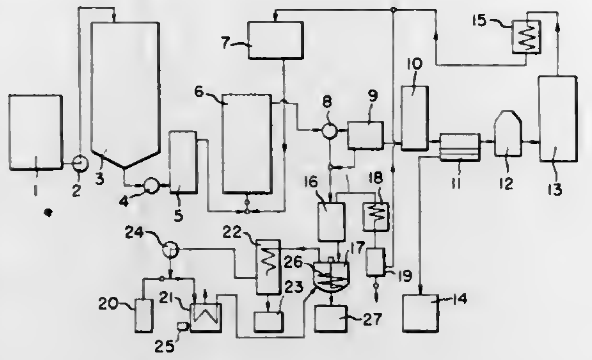
Filed Dec. 13, 1973, Ser. No. 426,725

Int. Cl. C10g *27/100*

U.S. Cl. 208—180 **5 Claims**

1. A process for treating muddy-like waste oily materials characterized by comprising a first step of settling and separating the muddy-like oily material layer and a layer containing water and a solid material in a settling tank while maintaining a temperature of the said tank to 50°–70°C.; the second step of conditioning the pH of the said muddy-like oily material to 2–4; the third step of extracting a low sulfur containing fuel oil from the said muddy-like oily material coming from the second step with a paraffin base saturated hydrocarbon having a boiling point of 30°– 250°C. in an extracting tower while maintaining a temperature ot 5°–25°C.; a fourth step of centrifuging the said muddy-like oil material coming from the third step to separate the low sulfur containing fuel oil fraction containing the said paraffin base saturated hydrocarbon and

an asphalt base sludge which is discarded as a coke-like sludge not containing any oil material after dry-distillating the said asphalt base sludge at a temperature of 500°-600° C. in a sludge dry distillating still, and a fifth step of fractionally distillating the said paraffin base saturated hydrocarbon from the said low sulfur containing fuel oil fraction to produce the said low sulfur containing fuel oil.



3,864,243
REMOVAL OF CHEMICALLY COMBINED CHLORINE AND OTHER IMPURITIES FROM HYDROCARBONS

Robert E. Reusser; Bruce C. Benedict, and Homer J. Sarrett, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 9, 1973, Ser. No. 349,182

Int. Cl. C07c *7/12*

U.S. Cl. 208—262 **7 Claims**

1. A method for treating hydrocarbons containing impurities comprising chemically combined chlorine consisting essentially of organically combined chlorine to remove said organically combined chlorine, said method comprising contacting said hydrocarbons with an amount of high surface area, porous alumina for a time sufficient, at ambient temperature, to adsorb said chemically combined chlorine onto said alumina.

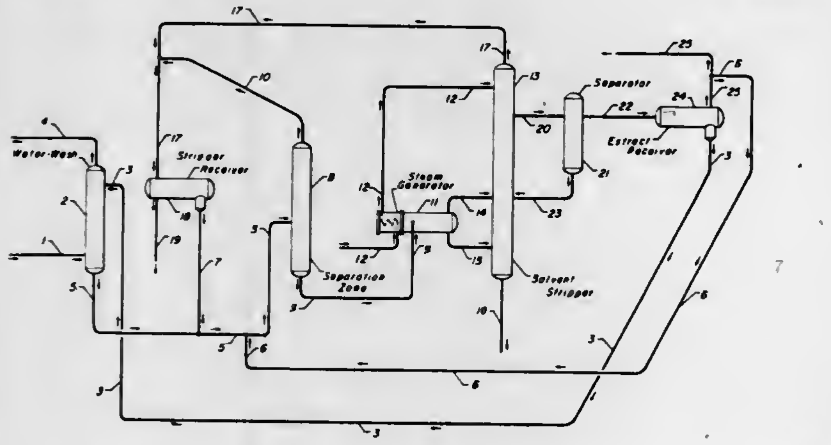
3,864,244
SOLVENT EXTRACTION WITH INTERNAL PREPARATION OF STRIPPING STEAM

Harry M. Van Tassell, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plains, Ill.

Filed Nov. 23, 1973, Ser. No. 418,698

Int. Cl. C10g *21/28*

U.S. Cl. 208—321 **8 Claims**



1. In a process for the recovery of polar hydrocarbons from a mixture thereof with non-polar hydrocarbons, wherein:

i. said mixture is contacted with a water-soluble, oxygen-containing solvent, selective for the extraction of said polar hydrocarbons;

ii. there is recovered an extract stream containing polar hydrocarbons and a major proportion of said water-soluble solvent, and a raffinate stream containing non-polar hydrocarbons and a minor proportion of said water-soluble solvent;

iii. said raffinate stream is contacted with water to recover said solvent and to provide a hydrocarbon concentrate substantially free from said solvent; and,

iv. said extract stream is contacted with steam, in a solvent stripping zone, to remove hydrocarbons from said water-soluble solvent and to recover substantially solvent-free polar hydrocarbons;

the method of internally preparing steam, for use in said solvent stripping zone, substantially free from non-polar hydrocarbons, which method comprises the steps of:

a. contacting said raffinate stream with a first water stream to provide a second raffinate stream, substantially free from solvent, and a second water stream containing solvent and a minor quantity of non-polar hydrocarbons;

b. admixing said second water stream with a first polar hydrocarbon-rich stream and separating the resulting mixture to provide a second polar hydrocarbon stream containing non-polar hydrocarbons and a third water stream substantially free from non-polar hydrocarbons;

c. introducing said extract stream into the upper portion of said solvent stripping zone;

d. generating steam from said third water stream and introducing said steam into a lower portion of said solvent stripping zone;

e. recovering, from said stripping zone, an overhead stream comprising hydrocarbons, steam and solvent, an aqueous extract stream rich in polar hydrocarbons and a bottoms solvent-rich stream;

f. commingling said overhead stream with said second polar hydrocarbon stream and separating the resulting mixture to provide a fourth water stream and a hydrocarbon-rich stream; and

g. commingling said fourth water stream with said second water stream and said first polar hydrocarbon-rich stream.

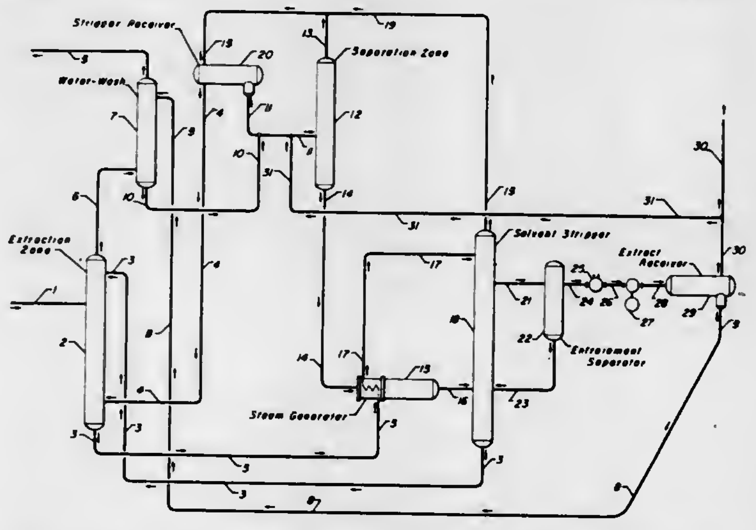
3,864,245
SOLVENT EXTRACTION WITH INCREASED POLAR HYDROCARBON PURITY

Harry M. Van Tassell, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 23, 1973, Ser. No. 418,699

Int. Cl. C10g *21/28*

U.S. Cl. 208—321 **11 Claims**



1. In a process for the solvent extraction of polar hydrocarbons from a mixture thereof with non-polar hydrocarbons, the method of recovering said polar hydrocarbons, substantially free from solvent, which comprises the steps of:

a. contacting said mixture in a solvent extraction zone with a water-soluble solvent selective for the adsorption of polar hydrocarbons to form a polar hydrocarbon-rich solvent stream and a solvent-lean raffinate stream;

b. contacting said polar hydrocarbon-rich solvent stream from the solvent extraction zone with steam to provide (i) a first solvent concentrate substantially free from polar hydrocarbons, (ii) a vaporous stream containing steam, solvent and hydrocarbons and (iii) a vaporous first polar hydrocarbon concentrate of reduced solvent content, and containing steam;

c. separating said first polar hydrocarbon concentrate, in a first separation zone, to provide (i) a second solvent-rich stream and (ii) a vaporous second polar hydrocarbon concentrate of reduced solvent content, and containing steam;

d. passing said second polar hydrocarbon concentrate through a zone of turbulence at a temperature of about 60°F. to about 180°F.; and,

e. separating the resulting turbulent polar hydrocarbon concentrate, in a second separation zone, to provide (i) a water concentrate, containing solvent, and (ii) a third polar hydrocarbon concentrate substantially free from solvent.

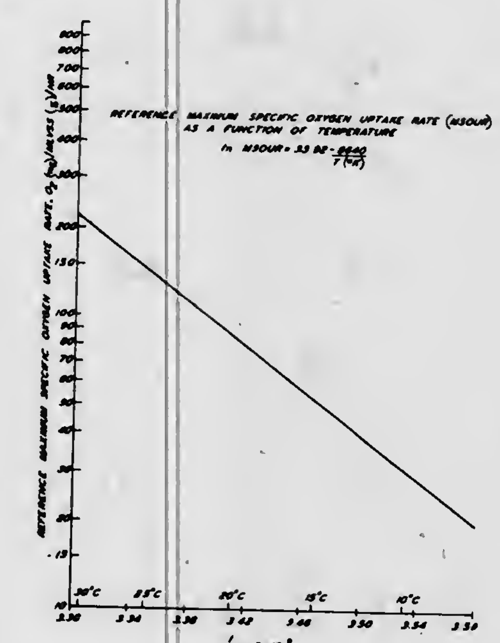
3,864,246
NON-BULKING ACTIVATED SLUDGE PROCESS

Jeremiah P. Casey; Curtis S. McDowell, both of Macungie, Pa.; Marshall L. Spector, Belle Mead, N.J., and Alan J. Zupko, Malvern, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 24, 1973, Ser. No. 326,377

Int. Cl. C02c *1/06*

U.S. Cl. 210—7 **5 Claims**



1. In the operation of an activated sludge system having at least two successive aeration stages, the method of inhibiting proliferation of filamentous biomass which comprises: aerating in an initial stage a mixed liquor comprising BOD-containing aqueous waste in admixture with activated sludge while controlling at least one variable selected from the group consisting of initial stage influent residence time, activated sludge recycle rate, and initial stage MLVSS concentration such that the ratio of soluble food to active biomass as determined by the expression F_s/M_a is at least 4 and there is maintained in the mixed liquor during said initial stage a dissolved oxygen content numerically equal in parts per million to at least 2 or one-tenth the numerical value of the ratio F_s/M_a, whichever is the greater, wherein F_s is equal to 1.5 times the weight of soluble BOD_5 charged per day to the mixed liquor and M_a is equal to the quantity of MLVSS in the mixed liquor in said stage multiplied by an activity coefficient determined by the ratio of the maximum specific oxygen uptake rate of the volatile suspended solids (VSS) under aeration to the predetermined reference maximum specific oxygen uptake rate MSOUR for the same temperature, MSOUR being determined by the equation:

$$1n\ \text{MSOUOR} = 33.92 - 8640/T(°\text{K}).$$

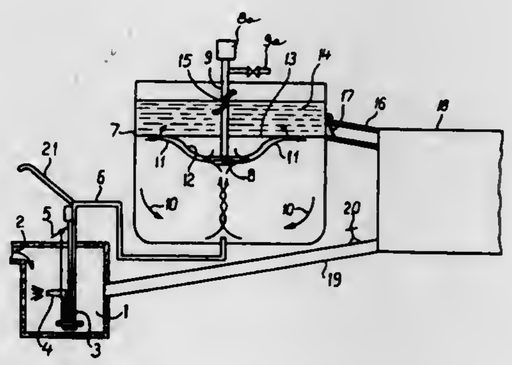
3,864,247
BIOLOGICAL DECOMPOSITION OF ORGANIC MATERIAL BY THERMOPHILIC MICROORGANISMS

Hubert K. E. Fuchs, Mayen, Germany, assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 128,097, March 25, 1971, Pat. No. 3,745,113. This application Aug. 23, 1972, Ser. No. 282,980

Int. Cl. C02c *1/02*

U.S. Cl. 210—12 **1 Claim**



1. A method for biologically decomposing organic material by means of thermophilic microorganisms, said method comprising the steps of supplying to a treatment vessel an aqueous liquid containing organic material and having a biologic oxygen demand during five days of at least 1,500 mg of oxygen gas per liter of liquid, intimately contacting the liquid in said vessel, and in the presence of the thermophilic microorganisms, with oxygen in a quantity corresponding to at least 1.1 times and at most 6 times the quantity of oxygen which theoretically can be consumed by the organic material by means of the thermophilic microorganisms, and during said contacting step, and without heat addition, maintaining the liquid heat-insulated and heated to a temperature of at least 42° C by the heat-producing activity of the thermophilic microorganisms, the liquid at the start of the biologic decomposition being heated by the activity of mesophilic microorganisms to said temperature of at least 42° C where the thermophilic microorganisms are active.

3,864,248
PRESSURE MODULATOR FOR AN ARTIFICIAL BLOOD CIRCUIT

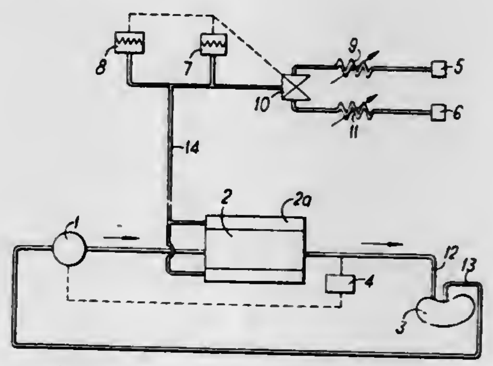
Alain Granger; Jean Lissot, both of Seine et Marne, and Andre Sausse, Hauts-de-Seine, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Apr. 13, 1972, Ser. No. 243,658

Claims priority, application France, Apr. 13, 1971, 71.12959

Int. Cl. B01d *13/00*

U.S. Cl. 210—19 **6 Claims**



1. A pressure modulator for an artificial blood circuit, said modulator comprising, in combination:

a. at least one resilient wall defining part of a blood chamber;

b. an inlet duct and an outlet duct for said blood chamber;

c. a pair of substantially rigid plates arranged one on either side of said blood chamber, and forming part of said rigid blood exchanger;

d. at least one pulsation chamber disposed on the side of at least one of said plates remote from said blood chamber; and

e. a fluid pulse generator connected to said at least one pulsation chamber, effective to cause slight flexing of said substantially rigid plates and thereby pulsing of liquid in said blood chamber, according to a time/pressure curve which is very close to the physiological curve at a peripheral artery.

3,864,249
SEPARATOR

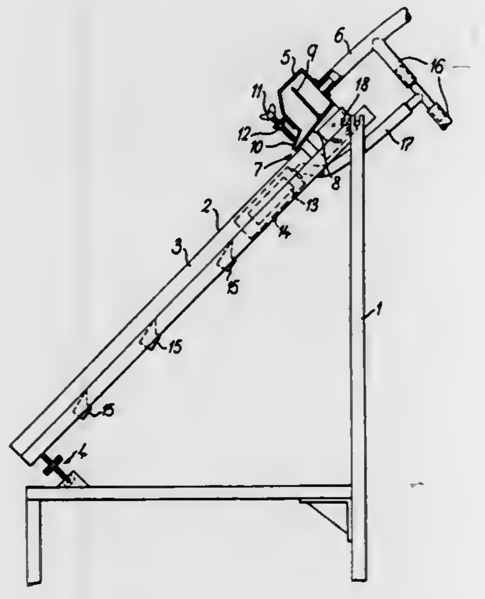
James William Wallis, Rochester, England, assignor to Wallis Separators Limited, Kent, England

Filed Mar. 14, 1973, Ser. No. 340,944

Claims priority, application Great Britain, Mar. 24, 1972, 013884/72

Int. Cl. 209 *1*; **B01d** *35/20*

U.S. Cl. 210—19 22 Claims



1. A separator for effecting separation of solid materials from liquids which comprises a filter screen, means for directing a mixture of a solid material and a liquid into contact with the filter screen and means for subjecting the filter screen to acoustic pressure waves comprising an acoustic pressure wave transducer arranged close to but not touching the filter screen so that in operation liquid passing through the screen couples acoustic pressure waves from the transducer to the screen, the arrangement being such that in operation liquid passes through the filter screen and solid materials are retained thereon and travel along the filter screen.

3,864,250
LIQUID-SOLID ADSORPTION CHROMATOGRAPHY

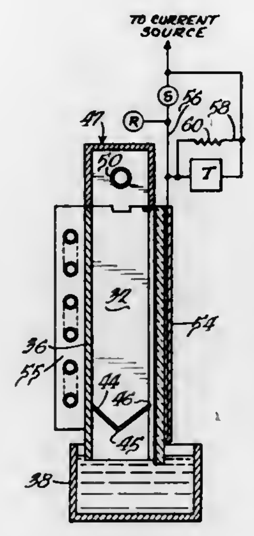
John A. Perry, Chicago, Ill., assignor to Regis Chemical Company, Morton Groove, Ill.

Filed Mar. 16, 1973, Ser. No. 342,195

Int. Cl. B01d *15/08*

U.S. Cl. 210—31 C 44 Claims

1. A process of performing an analysis on a material by thin layer chromatography comprising the steps of depositing a sample of said material upon a surface having a thin adsorbent layer, partially immersing said surface in a reservoir with said sample being located above the level of said liquid, allowing the liquid to advance through said adsorbent by capillary forces, and during such advance, varying the temperature of the liquid in said adsorbent by the application of heat, whereby to increase the diffusivity of said material in said liquid and to increase the speed of liquid advance.



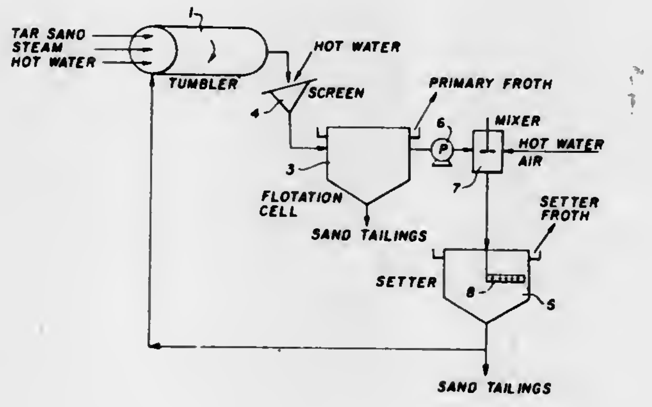
3,864,251
TREATMENT OF MIDDLINGS STREAM FROM HOT WATER PROCESS FOR RECOVERING BITUMEN FROM TAR SAND

Lubomyr M. O. Cymbalisty, Edmonton, Alberta, Canada, assignor to Canada-Cities Service, Ltd.; Atlantic Richfield Canada, Ltd.; Imperial Oil Limited and Gulf Oil Canada, part interest to each

Filed Jan. 22, 1974, Ser. No. 435,515

Int. Cl. B01d *21/00*

U.S. Cl. 210—44 3 Claims



1. In a continuous process for recovering bitumen from tar sand comprising combining the tar sand with air and hot water in a tumbler to disintegrate the tar sand and produce a hot slurry, diluting the slurry with water, introducing the dilute slurry into a separation cell wherein coarse solids settle out to form a tailings product, aerated bitumen rises to the surface of the cell contents and forms a froth product, and a middlings stream is withdrawn from the cell, said stream comprising bitumen, fine solids and water, the improvement which comprises:

- diluting the middlings stream with hot water; and
- introducing the diluted middlings stream into a settler vessel and holding it therein for a sufficient period of time to allow the major portion of the bitumen in the stream to rise to the surface of the vessel contents and form a froth product;
- withdrawing the froth product; and
- withdrawing a tailings stream from the base of the vessel, said tailings stream comprising the major portion of the fine solids and water introduced into the vessel.

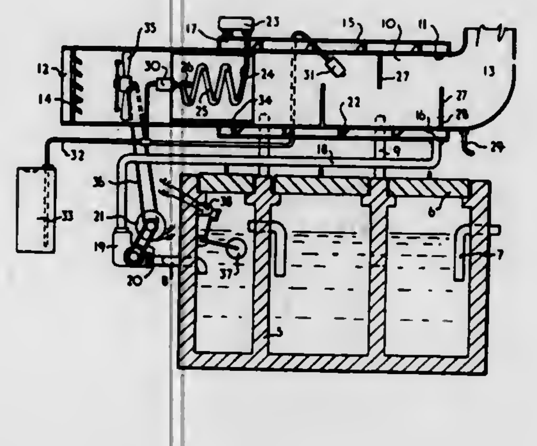
3,864,252
METHOD OF APPARATUS FOR TREATING SEWAGE

Albert Z. Morin, and Thomas H. Boyd, both of North Bay, Ontario, Canada, assignors to Trans-Continental Purification Research and Development Ltd., North Bay, Ontario, Canada

Filed Apr. 4, 1973, Ser. No. 347,800

Int. Cl. C02b *1/18*

U.S. Cl. 210—59 5 Claims



1. A method of treating clear run-off from a septic tank, separating unit, lagoon, or the like comprising the steps of heating the liquid waste to a high temperature near 212°F producing steam and water vapour, spraying such steam and water vapour into an open flame to raise the temperature of said steam and vapour and burn any volatile combustibles therein, and releasing at least some of said steam, water vapour and the products of combustion to the atmosphere, wherein the heating consists of initially warming the liquid waste and subsequently raising the temperature thereof in the area of the open flame to a high temperature near 212°F and wherein the steps of heating, evaporating and burning are carried out in an enclosed elongated horizontal passage through which a forced air stream is passed from an open air inlet at one end to a vertical outlet to the atmosphere at the other end, characterized in that the initial warming of the liquid waste is produced by progressively moving said liquid waste in a heating jacket surrounding said passage and in a direction from the outlet end toward the inlet end of said passage and in heat exchange relation with said passage in which the burning is carried out and the subsequent raising of the temperature of said liquid waste to a high temperature near 212°F is obtained by moving said liquid waste in a direction leading toward the air inlet end of said passage and in a feeding coil in the immediate vicinity of the open flame where the direction of travel of said liquid waste is reversed so it is sprayed into the flame in a direction leading toward the outlet end of said passage.

3,864,253
SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 28, 1973, Ser. No. 374,279

Int. Cl. A01n *9/20*; **C02b** *3/06*

U.S. Cl. 210—62 8 Claims

3. A method for controlling the growth of the microorganism Aerobacter aerogenes in an aqueous system which comprises adding to said system an effective amount of a composition comprised of 2,2-dibromo-3-nitrilopropionamide and sodium linear dodecyl benzene sulfonate, as 35 percent solution, wherein the weight ratio of the amide to the sulfonate ranges from about 5:95 to about 95:5 respectively.

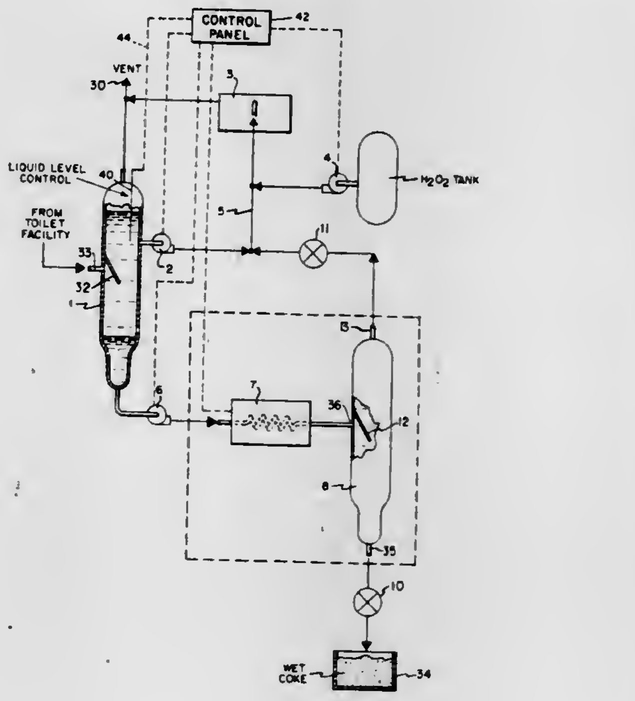
3,864,254
SEWAGE TREATMENT UNIT

Howard V. Hess, Glenham; William F. Franz, Gardiner, and Edward L. Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,637

Int. Cl. C02b *1/02, 3/08*

U.S. Cl. 210—63 2 Claims



1. A process for treating aqueous waste sewage comprising conveying said sewage to a primary settling zone; separating liquid from solid wastes; flowing said liquid to a water storage and treating zone and synchronously supplying hydrogen peroxide to said liquid, coking said solid waste under a pressure of about 500 to 3000 psig at a temperature between about 550°F and 750°F to form coke and a liquid effluent; separating said coke from said effluent; recycling said effluent to said water storage and treating zone and periodically treating said effluent with hydrogen peroxide as said effluent passes to said zone.

3,864,255
SOLIDS SEPARATION SYSTEM

Roger Swanson, Wayne, Ill., assignor to Babson Brothers Company, Oak Brook, Ill.

Filed Sept. 15, 1972, Ser. No. 289,268

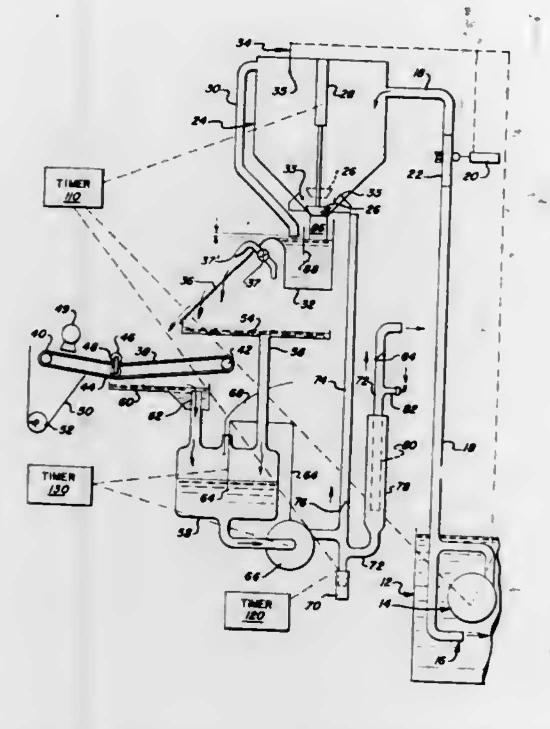
Int. Cl. B01d *37/00*

U.S. Cl. 210—67 4 Claims

4. A method for separating grass from liquid manure which comprises

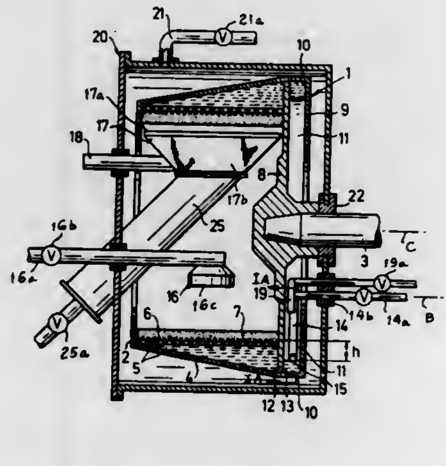
- delivering the liquid manure to a holding zone,
- directing the liquid manure from the holding zone to a primary separation zone and screening solid grass from said manure in said primary separation zone while washing the manure with water,
- delivering the grass from said primary separation zone to a secondary separation zone,
- squeezing said grass in said secondary separation zone with sufficient force to break capillaries in the grass and further reduce the moisture content of the grass,
- recovering liquid from said primary and secondary separation zone as fractions separate from said grass,
- recycling at least a portion of the recovered liquid as washing liquid to said holding zone,
- delivering a portion of the recovered liquid as effluent from the system, and
- filtering the effluent in a vertical discharge pipe as it is discharged from the system, then venting the discharge

pipe above the filter whereby the liquid in the discharge pipe flows back through the filter and backwashes the same, and delivering the backwash liquid to the holding tank.



3,864,256
FILTER CENTRIFUGE AND METHOD OF OPERATING SAME

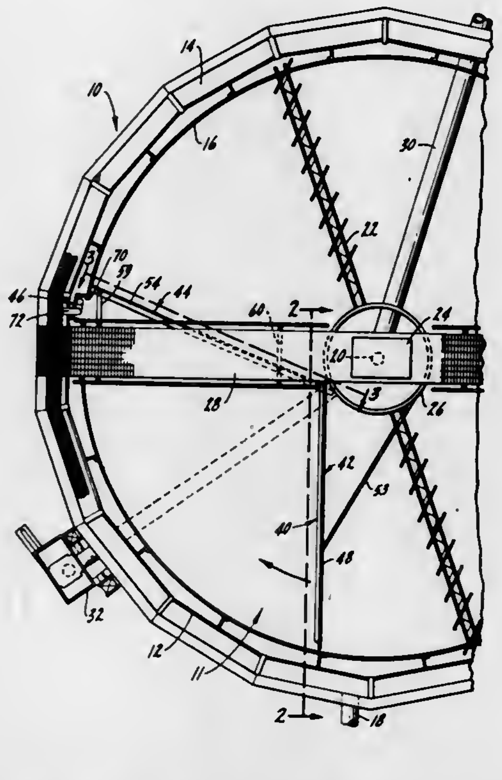
Gunther Hultsch; Kurt Zeppenfeld; Peter Niedner, and Peter Ostermeyer, all of Munich, Germany, assignors to Krauss-Maffer Aktiengesellschaft, Munich, Germany
Continuation-in-part of Ser. No. 423,579, Dec. 10, 1973. This application June 17, 1974, Ser. No. 480,159
Claims priority, application Germany, June 19, 1973, 2331196
Int. Cl. B01d *21/26*
U.S. Cl. 210—78 14 Claims



1. A filter centrifuge comprising:
- a housing;
- a drum rotatable in said housing and formed with a support for a filter medium centered on the axis of rotation of the drum and adapted to accumulate a filter cake upon introduction of a suspension of solids in a liquid phase into said drum;
- means forming a liquid-collecting compartment outwardly of said filter medium in said drum and provided with at least one outlet radially outward of said filter medium; and
- pump means including a venturi in said drum having a suction conduit opening into said compartment at a location radially inward of said outlet for sucking air from said compartment.

3,864,257
METHOD AND APPARATUS FOR SURFACE SKIMMING

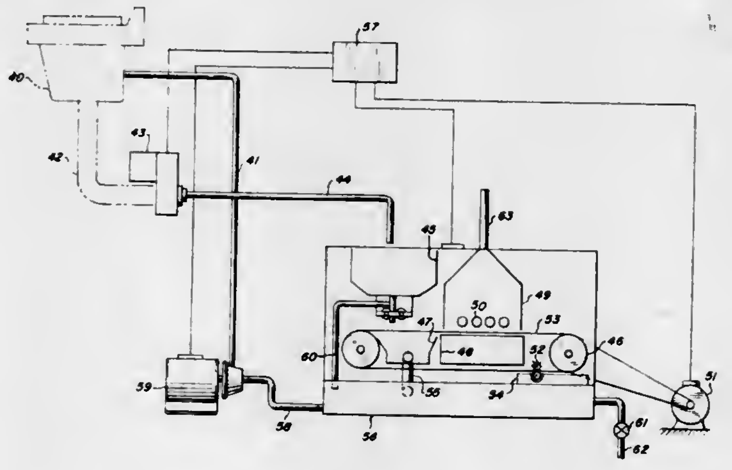
Robert L. Shaffer, Olathe, Kans., assignor to Ecodyne Corporation, Lincolnshire, Ill.
Filed Sept. 17, 1973, Ser. No. 398,289
Int. Cl. B01d *21/00*
U.S. Cl. 210—83 8 Claims



1. In combination with a circular tank adapted to receive liquid, means for removing floating matter from the surface of the liquid, said means comprising:
- a. a surface skimming arm positioned within said tank for rotation about a centrally disposed vertical axis so as to push the floating matter ahead of it; and
- b. an anti-rotation arm radially affixed within said tank, said skimming arm and said anti-rotation arm forming a wedge therebetween which becomes smaller and moves outward as said skimming arm approaches said anti-rotation arm so as to direct said floating matter trapped therein outward towards the periphery of said tank.

3,864,258
APPARATUS FOR TREATING SEWAGE

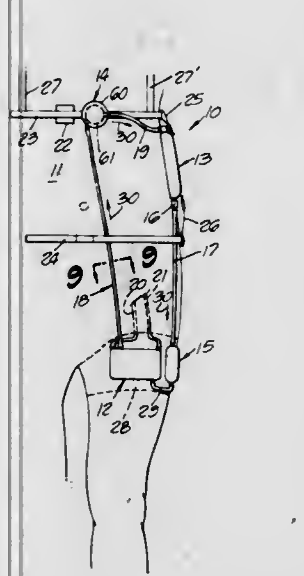
John M. Richardson, Key Largo, Fla., and George W. Reid, Norman, Okla., assignors to RSC Industries,Inc., Opa-Locka, Fla.
Filed Mar. 26, 1973, Ser. No. 344,766
Int. Cl. B01d *33/14;* **C02b** *3/04*
U.S. Cl. 210—85 4 Claims



1. A self contained, non-contaminating waste disposal system, comprising a toilet for waste matter, a macerator pump receiving sid waste matter, conduit means to said macerator pump for conveying comminuted waste produced and terminating in a distributor means, a movable endless and porous belt below said distributor means for separating solids and liquids of controlled particle size, a sump for receiving said separated liquids, a thermal destruction chamber directly adjacent to said distributor means, said porous belt extending through said destruction chamber, means for moving said porous belt to carry said solids through said thermal destruction chamber, means for heating said thermal destruction chamber by radiant heat for subjecting said solids to high temperature oxidation at temperatures in the range of 900° to 1,800°F. to convert said solids to an inert ash in the thermal destruction chamber, means for exhausting thermally destructed gases from said thermal destruction chamber externally to the atmosphere, means for removing said ash from the thermal destruction chamber to an external receptacle, means for cleaning said porous belt, reservoir means for receiving said separated liquid from said sump, means for evaporating excess liquid, means for disinfecting said separated liquids, means for recycling separated liquid from the reservoir means for flushing the toilet, means for controlling the level in said reservoir means, and means for adding makeup water to said reservoir means.

3,864,259
AMBULATORY HEMODIALYSIS APPARATUS

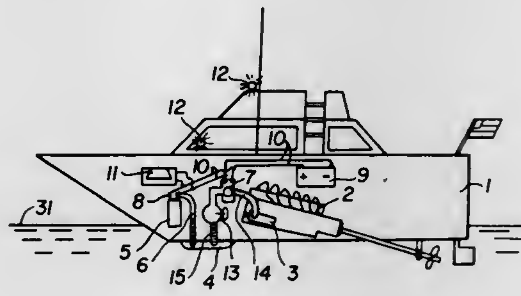
Earle E. Newhart, 1815 Galatea E. Ter., Corona Del Mar, Calif. 92625
Filed Aug. 16, 1972, Ser. No. 281,183
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—88 10 Claims



1. An ambulatory self contained hemodialysis apparatus, in combination comprising:
- an ambulatory hemodialysis perfusion unit having equal length multiple small internal diameter dialysis tubules disposed in an opposed pair of header plates, said header plates secured in the interior of a rigid boundary case in a fluid exchanger configuration, said boundary case having a pair of opposed dialysate conduits secured thereto and a pair of blood conduits manifolded to said opposed pair of header plates;
- an ambulatory dialysate reservoir having each one of an opposed pair of reservoir conduits secured to each one of a pair of dialysate tubular conductors, each one of said dialysate tubular conductors separately secured to one of said dialysate conduits, the inlet conduit of said reservoir having a flexible, gravity positionable downspout conductively secured thereto inside said reservoir, the downspout length adapted to provide dialysate circulation in upright or reclining reservoir position, said reservoir having a dialysate additive inlet and addition inlet closure, said reservoir adapted to securing to the body of a patient;
- valve means conductively secured to said dialysate tubular conductors providing dialysate unidirectional flow;
- an ambulatory pump means conductively secured to said dialysate reservoir, said pump means displacing dialysate in unidirectional flow, said pump means actuated by patient generated pulses; and,
- an ambulatory voiding valve conductively secured to said dialysate conduction circuit, providing dialysate removal.

3,864,260
MARINE WATER INLET DEVICE MEANS

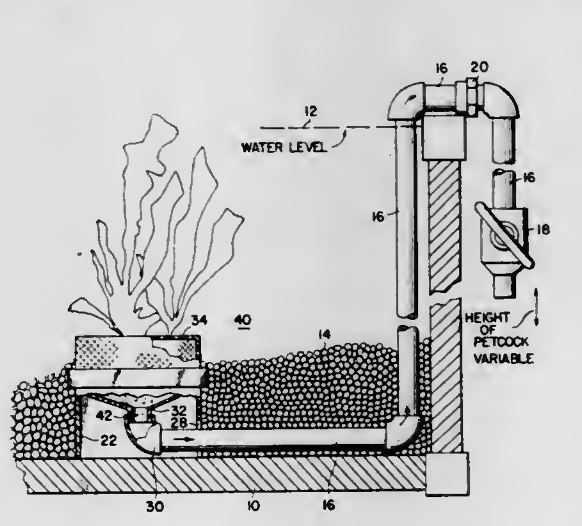
Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y. 11758
Filed Mar. 20, 1973, Ser. No. 343,121
Int. Cl. B01d *35/16*
U.S. Cl. 210—108 15 Claims



1. A water inlet device adapted for liquids flowing therethrough and subject to becoming clogged comprising an enclosure including a top and a bottom associated therewith, means to connect a pipe to said enclosure, a source of pressurized substance, and means to connect said source to said enclosure and discharging therein to blow out any clogged materal.

3,864,261
AQUARIUM SEDIMENT TRAP

Liebert J. Masterjoseph, Yonkers, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Jan. 14, 1974, Ser. No. 433,078
Int. Cl. B01d *35/02*
U.S. Cl. 210—163 1 Claim



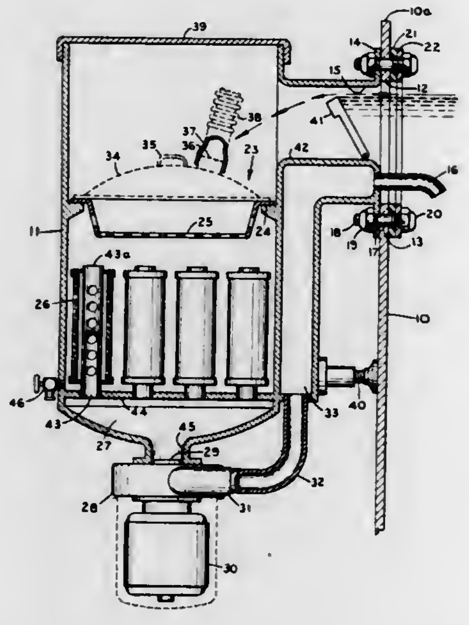
1. In combination with an aquarium tank having a suction pipe running along the inside bottom surface, a sediment trap comprising:
- a vertical hollow rectangular member open at top and bottom and resting on said inside bottom surface, said member having a side opening in one wall, said pipe extending through said opening with a suction end disposed in the member, said member having a raised vertical periphery surrounding the top thereof;
- a container removably disposed in the open top of the member, said container having a surface which extends downwardly and inwardly to a central drain hole, said surface being rectangularly shaped with an X-shaped diagonally disposed gutter centered on said hole;

means securing the suction end of said pipe to the bottom of said drain hole; and

a hollow cover enclosing said container surface and having small openings through which water can be drawn from the tank into the pipe, said cover having a bottom periphery with an outwardly extending lip which is inserted with snap fit into the raised member periphery for engagement therewith.

3,864,262
POOL FILTER SYSTEM

Robert S. Lang, and Robert L. Carnot, both of Tampa, Fla., assignors to L. F. Lang & Son Pools, Inc., Tampa, Fla.
Filed Mar. 14, 1973, Ser. No. 341,108
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **5 Claims**



1. A pool filter system for attachment at a single water level opening in an above-ground pool wall comprising:

a unitary housing having a vertical chamber therein and a horizontal support plate extending across said chamber near its lower end;

a pump suspended from the lower end of said housing and having its inlet communicating with said chamber below said support plate;

said support plate having a plurality of vertical openings therein, a plurality of apertured pipes mounted in said openings in the support plate and extending upward therefrom inside said chamber, a plurality of generally cylindrical filter cartridges mounted on said pipes above said plate to filter the water passing down through said chamber and through said cartridges and pipes and said openings in the support plate into the pump inlet;

said housing at one side thereof near its upper end having a laterally outwardly offset portion integral therewith which presents a horizontal inlet passage leading into said chamber near the latter's upper end and a horizontal discharge passage immediately below said inlet passage, each of said passages being open at the outer end thereof away from said chamber in the housing for registration with said opening in the pool wall;

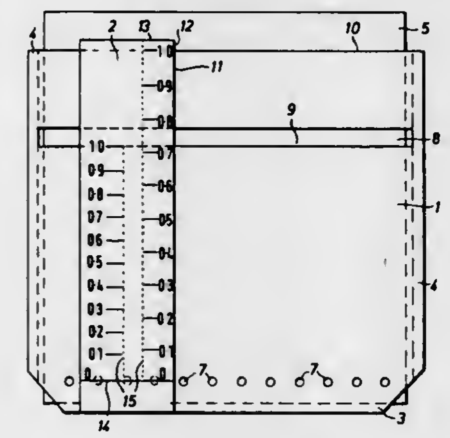
said housing at said one side thereof having an outer portion thereof which is offset laterally inward from the outer ends of said inlet and discharge passages and defines a vertical pressure chamber located outside said firstmentioned chamber in the housing, said pressure chamber having its lower end connected to the outlet of said pump and having its upper end opening into said discharge passage;

means for sealingly attaching the outer end of said offset portion of the housing to the outside of the pool wall around the single opening therein with the outer ends of said inlet and discharge passages both registering directly with said opening in the pool wall;

and rigid stand-off means extending laterally outward from said outer portion of the housing at a location thereon substantially below said offset portion of the housing for engagement with said pool wall to space the lower end of the housing rigidly from the pool wall.

3,864,263
CHROMATOGRAPHIC PLATE DEVICE

Keshavlal Raghavji Jethwa, Kingston, and Maurice Henry Bennie, Greenhithe, both of England, assignors to The Wellcome Foundation Limited, London, England
Filed Apr. 11, 1973, Ser. No. 349,997
Claims priority, application Great Britain, Apr. 13, 1972, 17051/72; Mar. 7, 1973, 5934/73
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **14 Claims**

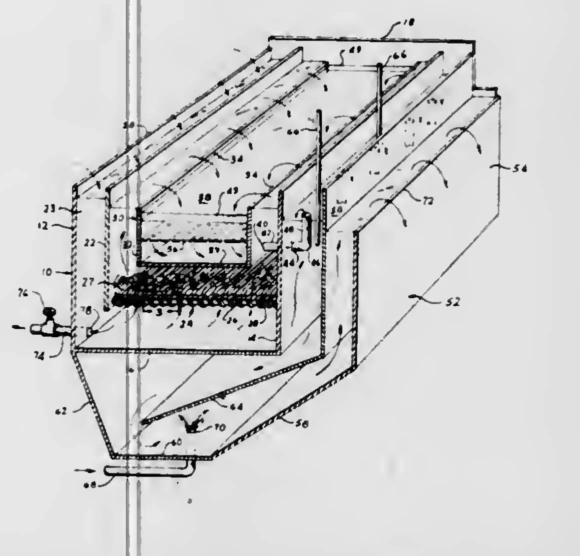


1. A measuring device suitable for use in thin-layer chromatography which device comprises in combination a substantially transparent plate having two opposed side walls which elevate said plate above a plane surface when placed thereon, a base wall between the side walls to locate a chromatographic sheet when placed beneath the plate, relative to the plate, and a linear array of orifices in said plate adjacent and substantially parallel to the base wall; and a cursor comprising a measuring portion of substantially transparent material slidable on the plate and having a scale for the measurement of Rf values of chemical components in a chromatographic sheet when placed beneath the plate, a locating portion for sliding co-operation with an edge of the plate which lies parallel to the linear array of orifices to enable Rf values to be read and wherein the unit of length is greater than or equal to the length of the run on a chromatographic sheet when used therewith.

3,864,264
APPARATUS FOR THE TERTIARY TREATMENT OF LIQUIDS

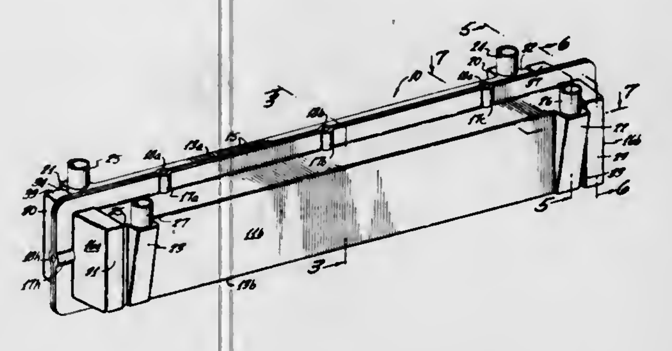
Guenter Spohr, Davidsonville, Md., and Vaughan R. Sparham, Bournemouth, England, assignors to Hendrick Manufacturing Company, Carbondale, Pa.
Filed Sept. 6, 1973, Ser. No. 394,815
Int. Cl. C02b *3/08*
U.S. Cl. 210—199 **2 Claims**

1. Unitary apparatus for the treatment of water comprising: a tank in which water to be treated is contacted with a disinfectant, an upflow clarifier mounted within said tank, said clarifier traversed by a foraminous septum, means disposed within said tank and above the base of said tank forming a plenum below and in communication with said septum, said clarifier having wall means surrounding said septum and forming a chamber thereabove, tray means supported by said wall means within said chamber, said tray means having a bottom spaced above said septum and having a wall portion projecting upwardly from said tray bottom to provide a weir over which water disposed in said chamber may flow to enter said tray means, perforate means spaced above said bottom supporting a downflow treatment medium in said tray means whereby water overflowing said weir may trickle downwardly through said medium and through said perforate means into the space under said perforate means, outlet means communicating from said space through said wall means to discharge water from said tray means to said tank, said tank having a partition wall spaced from said wall means, water from said tray means discharged through said outlet means to the space between said partition wall and said wall means, said partition wall extending between opposite sides of said tank, said partition wall spaced above the base of said tank, said tank having an outlet weir, said partition wall spaced from said outlet weir, water received from said tray means flowing downwardly in said tank to one side of said partition wall, and then through the space between said partition wall and the base of said tank and upwardly in said tank to said outlet weir on the other side of said partition wall, said apparatus further including means to admit a disinfectant to said water discharged from said tray means, standpipe means to receive water to be treated, said standpipe means having communication with said plenum and maintaining a hydraulic head effective to advance said water upwardly through said septum and over said weir for percolation through said treatment medium and descent through said outlet means to said tank, drainage means to drain water from said tank and having communication with said plenum and said standpipe means below the level of said septum, said including valve means operatively connected to and normally closing said drainage means for selectively opening said drainage means to withdraw water disposed below said septum thus to induce a downflow of water through said septum.



3,864,265
EDGE SEALED FOLDED MEMBRANE

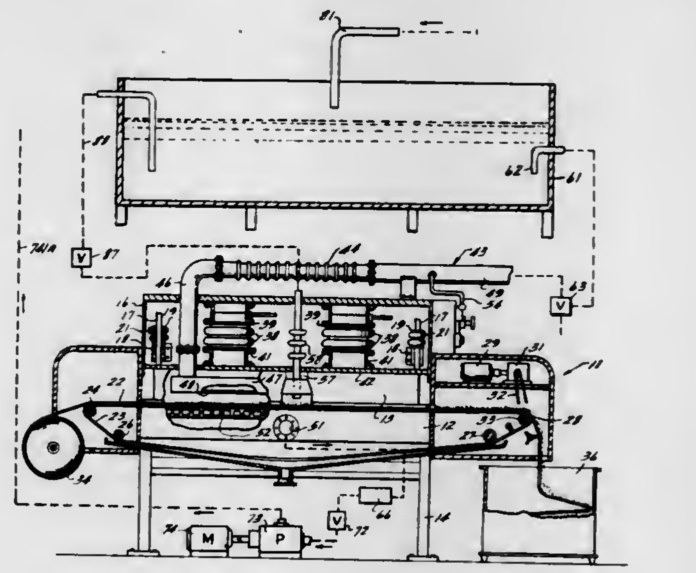
Finley W. Markley, Tustin, Calif., assignor to Galen Laboratories, Inc., Santa Ana, Calif.
Filed June 25, 1973, Ser. No. 373,160
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **28 Claims**



1. Fluid flow transfer apparatus comprising
a membrane having
first and second surfaces,
first and second end edges,
first and second side edges,
said membrane being folded to form a stack of folds having a first end fold terminating at said first end edge intermediate the sides of a first end of the stack and having a second end fold terminating at said second end edge intermediate the sides of the other end of the stack, said stack including a plurality of fold edges collectively forming opposite sides of the stack,
a case encompassing said stack and including
first and second case sides extending along respective sides of said stack adjacent said end folds,
first and second case ends extending along the respective side edges of te folded membrane,
said case including a plurality of flow ports in said case sides in communication with said first and second membrane surfaces at said fold edges,
a plurality of spacer members positioned between selected folds of said stack in contact with one of said membrane surfaces,
means for positioning a portion of at least one of said end folds including the end edge thereof at a distance from the adjoining case top and at a distance from an adjacent membrane fold to provide first and second end edge sealing spaces on oppostie surfaces of said end fold,
a solidified fluid material within said first and second sealing spaces encapsulating said one end edge, and means for blocking flow of said fluid material from said first and second sealing spaces to said flow ports of said case sides.

3,864,266
FILTER SYSTEM

Gerald P. Dietrick, 523 Ridgeview Dr., Florence, Ky. 41042
Filed May 11, 1973, Ser. No. 359,310
Int. Cl. B01d *29/02*
U.S. Cl. 210—329 **5 Claims**



1. In combination with a pair of filters each including a filter strip and hollow upper and lower shells for forming an enclosure surrounding a section of the filter strip, a liquid storage tank, inlet conduit means connecting the tank alternately to the upper shells to supply liquid to the upper shells, an outlet conduit connected to each lower shell, a pair of enclosed prime tanks, there being an upright weir in each prime tank dividing the prime tank into two sections, each outlet conduit discharging into one of the sections of one of the prime tanks, a prime tank discharge line, means for alternately connecting the prime tank discharge line to the other section of each prime tank below an upper edge of the weir, a pump connected to the prime tank discharge line to draw liquid from the prime tanks, a jet ejector connected to an upper portion of each prime tank, and means for directing liquid from the pump through the ejectors to power the ejectors to draw fluid from the upper portions of the prime tanks.

3,864,267

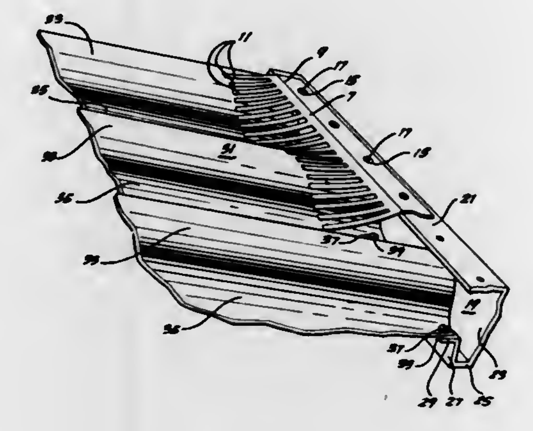
GUTTER FILTER FOR CORRUGATED ROOF SURFACES

Clarence Nelems, 908 S. Wildrose, Brea, Calif. 92621

Filed Oct. 26, 1973, Ser. No. 409,963

Int. Cl. B01d *23/00*

U.S. Cl. 210—474 **5 Claims**



1. A gutterfilter for the end frame gutter channel of a corrugated roof surface wherein said gutter channel has a flat surface extending above the roof surface adjacent the edge thereof, said filter comprising:

an elongated base member for connection to the flat surface of the end frame gutter of a corrugated roof surface; and a multiplicity of flexible tines attached to said base member, said tines extending outwardly at an angle from said base member to bias the tips of said tines against the corrugated roof, said tips being misaligned to engage and contact the undulating surface of the corrugated roof adjacent the end frame gutter in a manner to intercept and hold debris which may accumulate on the surface from entering the end frame gutter channel.

3,864,268

OIL-SOLUBLE AMINATED OXIDIZED OLEFIN COPOLYMERS

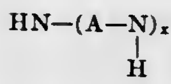
George S. Culbertson, Downers Grove, and Robert E. Karll, Batavia, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 8, 1972, Ser. No. 278,720

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 R **12 Claims**

1. The oil-soluble product prepared by the process comprising, reacting at a temperature of from about 140° to about 350°F. an oxidized high molecular weight amorphous copolymer of essentially ethylene and propylene, said copolymer having a number average molecular weight of at least about 1,500, and at least 150 pendant methyl groups per 1,000 chain carbon atoms, with a primary or secondary aliphatic amine selected from the group consisting of an alkyl amine having from about 2 to about 12 carbon atoms, an aliphatic diamine of the general formula $H_2N(CH_2)_yNH_2$ wherein y is an integer of from about 3 to about 10, and a polyalkylene polyamine of the general formula



$$HN—(A—\underset{\displaystyle H}{\underset{|}{N}})_xH$$

wherein A is a divalent alkylene radical of from about 2 to about 6 carbon atoms, and x is an integer of from 1 to about 10, said reactants being used in the molar ratio of from about 1:2 to about 1:20, respectively.

3,864,269

HALOGENATED ALKENYL SUCCINIC ANHYDRIDE-AMINE REACTION PRODUCT

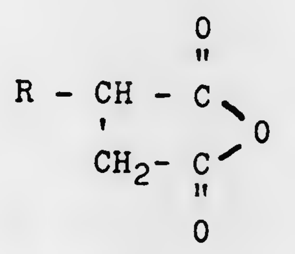
William P. Cullen, Fishkill, and Harry Chafetz, Poughkeepsie, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed July 9, 1973, Ser. No. 377,473

Int. Cl. C10m *1/36*

U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil composition comprising a major amount of a hydrocarbon oil of lubricating viscosity and between about 0.1 and 50 wt. % of a reaction product of halogenated alkenyl succinic anhydride and alkylene polyamine prepared by the method comprising reacting under neat conditions, i.e. in the absence of either hydroxylic solvent or inert solvent, an alkenyl succinic anhydride characterized by the formula:



where R is a monoolefinic, monovalent polyalkene radical of from 30 to 300 carbons with a halogen selected from the group consisting of chlorine and bromine at a temperature between about 50° and 150°C. utilizing a mole ratio of alkenyl succinic anhydride to said halogen of between about 1:0.5 and 1:2 to form a monohaloalkenyl succinic anhydride containing intermediate, contacting under neat conditions, i.e. in the absence of either hydroxylic solvent or inert solvent, said intermediate with an alkylene polyamine of the formula:

$$H_2N(CH_2)_x—NH(CH_2)_yNH—_z—(CH_2)_xNH_2$$

where x is an integer of from 1 to 6, y is an integer from 2 to 6 and z is an integer from 0 to 4 at a temperature between about 100° and 200°C. utilizing a mole ratio of said intermediate to alkylene polyamine of between about 1:1 and 1:10 to form said halogenated alkenyl succinic anhydride alkylene polyamine reaction product.

3,864,270

DEHYDROHALOGENATED POLYALKENE-MALEIC ANHYDRIDE REACTION

William P. Cullen, Fishkill; Harry Chafetz, Poughkeepsie, and Edward F. Miller, Wappingers Fall, all of N.Y., assignors to Texaco, Inc., New York, N.Y.

No Drawing. Filed July 9, 1973, Ser. No. 377,474

Int. Cl. C10m *1/36*

U.S. Cl. 252—51.5 A **4 Claims**

1. A lubricating oil composition containing at least about 50 wt. percent hydrocarbon lubricating oil and between about 0.1 and 50 wt. % of a nitrogenous dispersant derivative of a dehydrohalogenated polyalkene-maleic anhydride reaction product prepared by contacting polyalkene of from 30 to 300 carbons with a halogen selected from the group consisting of chlorine or bromine at a temperature of between about 20° and 150°C. utilizing a mole ratio of polyalkene to halogen of between about 1:0.5 and 1:3 to form a halogenated polyalkene, heating said halogenated polyalkene at a temperature of between about 150° and 250°C. and recovering dehydrohalogenated polyalkene from the reaction mixture, contacting said dehydrohalogenated polyalkene with maleic anhydride at a temperature of between about 100° and 250°C. utilizing a mole ratio of dehydrohalogenated polyalkene to maleic anhydride of between about 1:0.5 and 1:5 to form the dehydrohalogenated polyalkene-maleic anhydride reaction product, contacting said dehydrohalogenated polyalkene-maleic anhydride reaction product with an alkylene polyamine of the formula:

$H_2N—CH_2—_x\text{-}HN(CH_2—_yNH—_z—CHh_2—_xNH_2$

where x is an integer of from 1 to 6, y is an integer of from 2 to 6, and z is an integer of from 0 to 4 at a temperature of between about 100° and 200°C. utilizing a mole ratio of dehydrohalogenated polyalkene-maleic anhydride reaction product to alkylene polyamine of between about 1:0.5 and 1:5.

3,864,271

STABILIZED ACIDIC HYDROGEN PEROXIDE SOLUTIONS

Neil J. Stalter, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 4, 1972, Ser. No. 311,976

Int. Cl. C11d *7/08, 7/18, 7/56*

U.S. Cl. 252—99 **23 Claims**

1. An aqueous, acidic, oxidizing solution stabilized against copper ion-catalyzed degradation at temperatures of up to about 90°C. containing about 0.01 to 50 percent hydrogen peroxide by weight, a strong inorganic acid at a concentration of about 0.01 to 50 percent by weight, and a stabilizing amount of a stabilizer selected from the group consisting of adipic acid, glutaric acid, succinic acid, and mixtures thereof.

4. The solution of claim 3 wherein the stabilizer concentration is about 0.03 to 0.1 percent by weight.

3,864,272

PROCESS FOR MAKING TRANSLUCENT SOAP BARS

Khairy Toma, Romeoville, and Thomas J. Hassapis, Chicago, both of Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Filed Jan. 12, 1973, Ser. No. 323,131

Int. Cl. C11d *9/26*

U.S. Cl. 252—125 **10 Claims**

1. In a process for the production of translucent soap in which fatty acids are saponified, the resulting soap spray dried, refined and formed into bars, the improvement in which there is added to said soap after the saponifying step and before the soap is subjected to spray drying, polyethylene glycol in an amount of from 1 – 3 percent, said percentages being based on the weight of said soap.

3,864,273

PROCESS FOR RECLAIMING RARE-EARTH PHOSPHORS

Ronald G. Forbes, Kirtland, and Michael Turjanica, Lyndhurst, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 13, 1972, Ser. No. 305,957

Int. Cl. C09k *1/10, 1/14, 1/44*

U.S. Cl. 252—301.4 R **10 Claims**

1. A reclamation process for contaminated rare-earth phosphors to remove zinc sulfide and zinc cadmium sulfide phosphor contaminants which comprises:

a. heating a contaminated europium activated rare-earth phosphor in an oxidizing atmosphere at elevated temperatures in the range between about 300°C and 900°C sufficiently to volatilize the organic binder which is present,

b. slurrying the phosphor in a liquid solution of a soluble hypochlorite compound to convert the sulfide phosphor contaminants to partially soluble oxygen compounds,

c. reacting the partially soluble oxygen compounds with a soluble ammonium compound to completely dissolve said partially soluble oxygen compounds as ammonium complex ions, and

d. physically separating the phosphor from the dissolved products.

3,864,274

METHOD OF PRODUCING HALOPHOSPHATE PHOSPHOR UTILIZING EXTREMELY RAPID PRECIPITATION OF CALCIUM HYDROGEN ORTHOPHOSPHATE

Herman R. Heytmeijer, Whippany, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1973, Ser. No. 345,173

Int. Cl. C09k *1/36;* **C01b** *25/32*

U.S. Cl. 252—301.4 P **3 Claims**

1. In a method wherein halophosphate phosphor is prepared by precipitating calcium hydrogen orthophosphate di-hydrate, separating said di-hydrate crystals, converting said calcium di-hydrate crystals to anhydrous calcium hydrogen orthophosphate by stirring said di-hydrate crystals in an acid solution, preparing a raw mix containing said anhydrous calcium hydrogen orthophosphate and firing said raw mix to form said halophosphate phosphor; the improvement which comprises:

a. precipitating said di-hydrate crystals by mixing solutions of calcium chloride or calcium nitrate and diammonium phosphate in approximately stoichiometric proportions, the entire amount of both of said solutions being combined in less than 10 seconds to form a thickened mixture having a viscosity of greater than 500 centipoises; and

b. stirring said thickened mixture for at least about four minutes to form a crystalline calcium hydrogen orthophosphate di-hydrate precipitate.

3,864,275

PROCESS FOR ENVELOPING FINE DROPS OF DISPERSED LIQUIDS

Masao Kan, Chigasaki; Hiroshi Hyodo, Tokyo; Hirofusa Matsuoka, Kamakura; Akio Watanabe, Kanagawa, and Shigekazu Enami, Hiratsuka, all of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 30,963, April 22, 1970, , which is a continuation-in-part of Ser. No. 405,258, Oct. 20, 1964, abandoned. This application Nov. 21, 1972, Ser. No. 308,453

Claims priority, application Japan, Oct. 21, 1963, 38-56555; Dec. 13, 1963, 38-66527; Sept. 9, 1964, 39-51808; Sept. 9, 1964, 39-51809; Sept. 9, 1964, 39-51810

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **2 Claims**

1. A process for encapsulating or enveloping fine drops of a dispersed liquid which comprises

a. preparing
   1. a hydrophobic liquid A which is or contains epichlorohydrin as a first substance and
   2. a hydrophilic liquid B which is or contains a polyamine selected from the group consisting of tetramethylene diamine, pentamethylene diamine, hexamethylene diamine and an epoxy resin-amine addition compound as a second substance, and

b. dispersing the liquid A, in the form of fine drops, into the liquid B to cause the first and second substances to react at the interface between liquids A and B, thereby causing a polyaddition reaction at the interface of liquids A and B to produce a polyaddition polymerizate which is insoluble in both liquids A and B, whereby fine drops of the dispersed liquid are encapsulated or enveloped by the polymerizate.

3,864,276

LIGNIN DISPERSING AGENTS AND METHOD OF MAKING SAME

Julius Benko, Sillery, and Gilles Daneault, Sainte Foy, both of Quebec, Canada, assignors to Dryden Chemical Limited, Ontario, Calif.

Filed Oct. 2, 1972, Ser. No. 293,898

Int. Cl. B01f *17/50*

U.S. Cl. 252—354 **8 Claims**

1. A dispersant composition consisting essentially of a blend of Kraft liquor solids cross-linked with spent sulphite liquor

solids, said solids being selected from the group consisting of the unfractionated liquor solids and the high molecular weight fractions thereof and said Kraft liquor solids comprising from about 10 percent to about 85 percent of said blend, on a solids weight basis, with said sulphite liquor solids comprising the remainder.

6. A process for improving the dispersant properties of a blend of (1) from about 10 to about 85 percent Kraft liquor solids, on a solids weight basis, and (2) spent sulphite liquor solids comprising the remainder, both said solids being selected from the group consisting of the unfractionated liquor solids and high molecular weight fractions thereof, which comprises subjecting said blend in a 25 to 50 percent w/v aqueous solution to heat treatment at a temperature in the range of about 115°C to 160°C for from 1 to 3 hours.

3,864,277
HARD GRANULAR ACTIVATED CARBON AND PREPARATION FROM A CARBONACEOUS MATERIAL A BINDER AND AN INORGANIC ACTIVATING AGENT

Julius Louis Kovach, Columbus, Ohio, assignor to North American Carbon, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 37,858, May 15, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,118

Int. Cl. C01b *31/08*

U.S. Cl. 252—423 **6 Claims**

5. A chemical activation method of manufacturing granular activated carbon comprising the steps of forming a mixture having a consistency permitting the pelleting of granular shaped solid particles, said mixture including a ground raw carbonaceous material possessing an oxygen content of at least approximately 25 percent by weight on a moisture and ash free basis and taken from a group consisting of wood, straw and low rank brown coals, a carbonaceous binder material taken from a group consisting of lignosulphonates and polyvinyl alcohols which are soluble or emulsifiable in water or solutions of phosphoric acid and zinc chloride, and an effective amount of an inorganic activating agent to substantially carbonize and activate said mixture of raw material and binder taken from a group consisting of phosphoric acid and zinc chloride, the amount of said binder material being sufficient to contribute at least approximately 24 percent by weight of the carbon in the initial mixture based upon the total amount of carbon contributed by the raw material and the binder material; forming shaped granular pellets from said mixture and subsequently heat treating said pellets at effective temperature levels to achieve conventional carbonization and activation levels and a ball-pan hardness of the pelleted end product of at least 85 percent.

3,864,278
POLYMERIZATION CATALYST

Gerardus E. La Heij, and Gerrit J. van Amerongen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 24, 1973, Ser. No. 409,111

Claims priority, application Great Britain, Dec. 4, 1972, 55860/72

Int. Cl. C08d *1/14*

U.S. Cl. 252—429 B **11 Claims**

1. A process for the preparation of a $TiCl_3$-based polymerization catalyst having increased activity which consists essentially of admixing $TiCl_4$, trihydrocarbyl aluminum and ether having the formula $R''—O—R'$, wherein R' and R'' are the same or different alkyl, cycloalkyl, aryl or alkenyl groups, in a molar ration of ether to $TiCl_4$ of from about 0.1 to about 10.0 and in a molar ratio of trihydrocarbyl aluminum to $TiCl_4$ of from about 0.8 to about 1.2, thereafter aging the catalyst mixture thus obtained, and adding from about 0.05 to about 2 moles of a dihydrocarbyl aluminum chloride per atom of titanium to the aged catalyst mixture, prior to being brought into contact with monomer.

3,864,279
TIN-PHOSPHORUS OXIDATIVE DEHYDROGENATION CATALYST

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 134,880, April 16, 1971, Pat. No. 3,775,508. This application Sept. 6, 1973, Ser. No. 394,835

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **16 Claims**

1. A method of preparing a catalyst composition consisting essentially of phosphorus, tin, and oxygen, said catalyst composition containing from about 0.1 to about 16 weight percent phosphorus and from about 15 to about 75 weight percent tin which comprises:

1. forming a wet gel catalyst base consisting essentially of at least one tin-containing component and at least one phosphorus-containing component,
2. admixing said wet gel catalyst base with at least one heat-decomposable, heat-volatile, activity-stimulating ammonium salt so that the resulting admixture contains from about 2 to about 20 weight percent of said ammonium salt based on the total weight of said catalyst composition, and
3. calcining said admixture at a temperature in the range of about 800° to about 1,500°F for a time in the range of about 0.1 to about 24 hours to remove said ammonium salt, said ammonium salt being selected from the group consisting of ammonium carbamate, ammonium carbonate, ammonium nitrate, ammonium nitrite, ammonium sulfate, and ammonium salts of carboxylic acids having up to 12 carbon atoms per molecule.

12. A method in accordance with claim 1 wherein said tin-containing component is stannic chloride; said phosphorus-containing component is phosphoric acid; and said ammonium salt is ammonium sulfate.

3,864,280
CATALYST FOR A N-BUTANE OXIDATION TO MALEIC ANHYDRIDE

Ronald A. Schneider, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 263,883, June 19, 1972,. This application Oct. 24, 1972, Ser. No. 298,074

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **16 Claims**

1. A crystalline phosphorus-vanadium mixed oxide hydrocarbon oxidation catalyst composition containing pentavalent phosphorus, vanadium and oxygen, said vanadium having an average valence in the range from about plus 3.9 to plus 4.6, said oxide having a phosphorus to vanadium atomic ratio in the range from about 0.9–1.8 to 1, and an intrinsic surface area in the range from about 7 to 50 square meters per gram.

3,864,281
PROCESS FOR THE MANUFACTURE OF A DEHALOGENATION CATALYST

Alexander Ohorodnik, Erftstadt Liblar; Klaus Gehrmann; Joachim Hundeck, both of Hurth-Knapsack, and Hermann Vierling, Hurth, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 13, 1973, Ser. No. 387,755

Claims priority, application Germany, Aug. 17, 1972, 2240466

Int. Cl. B01j *11/08*

U.S. Cl. 252—447 **8 Claims**

1. In the process for the manufacture of a catalyst comprised of a fine-particulate carrier and palladium metal for the partial dehalogenation of di- and/or trichloracetic acids in the presence of hydrogen to produce monochloroacetic acid, wherein the dry porous carrier is impregnated with a palladium salt solution and the palladium absorbed by the carrier is reduced to palladium metal with the use of a suitable reducing agent, the improvement comprising concentrating the palladium metal exclusively on the surface of a silicic acid or active carbon carrier having a BET-surface area between about 10 and 800 square meters/gram, a volume of pores between about 0.1 and 1.8 milliliters/gram and a mean particle size between about 10 and 800 microns by impregnating and partially saturating the dry, fine-particulate carrier with water; by continuing impregnation until complete saturation of the carrier so pretreated with the necessary quantity of an aqueous palladium salt solution; and by reducing the palladium salt applied to the carrier to palladium in known manner.

3,864,282
ZEOLITIC POROUS REFRACTORY OXIDE PARTICLES

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 8, 1973, Ser. No. 321,749

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **6 Claims**

1. The method of reducing the particle size of a zeolitic refractory oxide having a surface area of at least about 100 square meters per gram including the steps of heating said oxide at an average rate of at least about 0.5°F per millisecond to a temperature of at least about 1,000°F over a temperature differential of at least 500°F sufficient to reduce the average particle size of said oxide.

3,864,283
HYDROCARBON CONVERSION CATALYST

Hans U. Schutt, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 19, 1972, Ser. No. 298,920

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **9 Claims**

1. A method of preparing a mixed crystalline aluminosilicate zeolite hydroconversion catalyst which comprises first physically mixing about 10–90%wt of channel pore structure zeolite selected from the group consisting of L-sieve and mordenite with about 90–10%wt of three-dimensional pore structure Y-sieve zeolite, decationizing the zeolites either before or after mixing to reduce the alkali metal content to less than bout 0.5%wt, then incorporating a catalytic amount of a hydrogenation metal component selected from the group consisting of Group VIII and Group VIB metals of the periodic chart into the mixed zeolites and drying and calcining the catalyst.

3,864,284
PLATINUM-TIN CATALYST ON AN ALUMINA CARRIER

Everett Clippinger, San Rafael, and Bernard F. Mulaskey, Fairfax, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 137,440, April 26, 1971, abandoned, which is a division of Ser. No. 55,125, July 15, 1970, Pat. No. 3,631,215, which is a division of Ser. No. 732,588, May 28, 1968, Pat. No. 3,531,543. This application June 1, 1973, Ser. No. 365,938The portion of the term of this patent subsequent to Sept. 29, 1987, has been disclaimed.

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **3 Claims**

1. A catalytic composite useful for producing aromatic hydrocarbons comprising platinum, tin, and alumina carrier and wherein for each 100 parts by weight of alumina, there is 0.05 to 5 parts of platinum and for each atom of platinum, there is from about 0.01 to 3 atoms of tin.

3,864,285
NOVEL ODORANTS

Giuliano Bozzato, Kusnacht, and Mario Pesaro, Zurich, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed June 13, 1972, Ser. No. 262,411

Claims priority, application Switzerland, June 23, 1971, 9148/71

Int. Cl. A61k *7/00*

U.S. Cl. 252—522 **1 Claim**

1. An odorant composition which contains an olfactorily-effective amount of 10-methyl-$\Delta^{1,9}$-octalone-2 and at least one carrier commonly used in odorant compositions.

3,864,286
DETERGENT COMPOSITION WITH DISULFONATED CATECHOL AS DETERGENT BUILDER

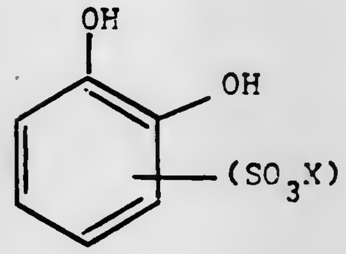
Robert G. Anderson, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 6, 1972, Ser. No. 304,179

Int. Cl. C11d *1/12*

U.S. Cl. 252—559 **11 Claims**

1. A heavy-duty detergent composition comprising an organic water-soluble anionic, nonionic, ampholytic or zwitterionic detergent-active material and as a builder in an amount sufficient to enhance the detergency of the composition, a salt of a catechol disulfonate having the following formula:



in which X is a water-soluble salt-forming cation, the weight ratio of said detergent-active material to said builder being from about 8 to 1 to 1 to 8.

3,864,287
PROCESS FOR POLYMERIZING TETRAHYDROFURAN

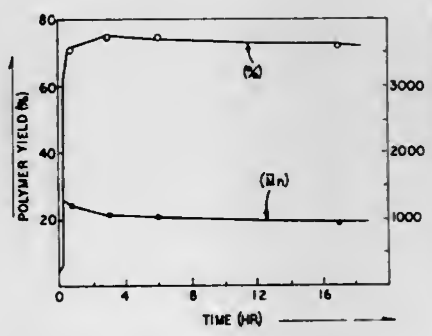
Kazuo Matsuda, Wakayama; Yoshiaki Tanaka, Osaka, and Takeyo Sakai, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1973, Ser. No. 428,668

Claims priority, application Japan, Dec. 29, 1972, 48-2657

Int. Cl. C08g *23/02*

U.S. Cl. 260—2 XA **6 Claims**



1. A process for the polymerization of tetrahydrofuran, which comprises polymerizing tetrahydrofuran in the substantial absence of water and in the presence of (a) from 0.001 to 0.45 moles, per mole of tetrahydrofuran, of acid salt selected from the group consisting of sodium perchlorate, magnesium perchlorate, lithium perchlorate, barium perchlorate, sodium trifluoromethane sulfonate, silver trifluoromethane sulfonate, trifluoromethane sulfonic acid amine salt and mixtures thereof, (b) from 0.005 to 0.5 moles, per mole of tetrahydro-

furan, of organic anhydride selected from the group consisting of acetic anhydride, succinic anhydride, maleic anhydride, orthosulfobenzoic anhydride and mixtures thereof and (c) from 1 to 2 moles, calculated as 100% sulfuric acid, per mole of said acid salt, of sulfuric acid having a concentration of at least 50 wt.%, at a polymerization temperature in the range of from −40° C to +80° C, and then hydrolyzing the terminal groups of the polymer molecules.

3,864,288

QUATERNIZED POLYEPIHALOHYDRIN THICKENING AGENT

Chang Kiu Riew, Akron, and Robert K. Schlatzer, Jr., Chagrin Falls, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

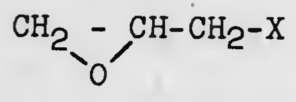
Filed Oct. 15, 1973, Ser. No. 406,234

Int. Cl. C08g *23/20, 25/00*

U.S. Cl. 260—2 A **10 Claims**

1. A crosslinked, quaternized epihalohydrin polymer product prepared by the reaction of

1. an epihalohydrin polymer of molecular weight above about 100,000 consisting of at least 50 percent to 100 percent by weight of polymerized units of an epihalohydrin monomer(s) of the formula



wherein X is Cl, Br, I, or F, and up to 50 percent by weight of polymerized units of an oxide monomer(s) selected from the group consisting of alkylene oxides, cycloaliphatic oxides, glycidyl ethers, glycidyl acrylate, glycidyl methacrylate, allyl glycidyl ether, styrene oxide, and furan, with

2. from about 0.005 to about 0.07 mole of an aliphatic, heterocyclic, aromatic, or alicyclic polyamine, and
3. from about 1 mole to about 5 moles of an aliphatic, heterocyclic, aromatic or alicyclic tertiary monoamine, said moles of polyamine and tertiary monoamine based upon 1 mole equivalent of halogen present on the epihalohydrin polymer.

3,864,289

PREPARATION OF CELLULOSIC SEMI-PERMEABLE MEMBRANES

John L. Rendall, Greenville, S.C., assignor to Koratec, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 132,215, April 7, 1971, abandoned. This application Dec. 19, 1973, Ser. No. 426,133

Int. Cl. B01d *39/14;* **C08g** *21/08*

U.S. Cl. 260—15 **15 Claims**

13. In a process for the preparation of self-supporting cellulosic semi-permeable membranes in which said membranes are cast from a membrane formulation, the improvement comprising casting said membrane from a formulation containing a film forming cellulosic membrane material, a cellulosic cross-liking agent, a catalyst to facilitate cross-linking of said cellulosic membrane, and a chemical blocking agent to facilitate holding open of the polymer molecules within the membrane, and thereafter elevating the temperature of said cast membrane to cause cross-linking to occur and to cure said membrane.

3,864,290

CEMENT SET ACCELERATOR

Richard B. Peppler, and Philip A. Rosskopf, both of South Euclid, Ohio, assignors to Martin Marietta Corporation, New York, N.Y.

Division of Ser. No. 179,240, Sept. 9, 1971, Pat. No. 3,767,436. This application Mar. 23, 1973, Ser. No. 344,149

Int. Cl. C08g *37/32*

U.S. Cl. 260—17.5 **6 Claims**

1. A hydraulic cement mix additive comprising a mixture of (a) a water soluble adduct product resulting from the condensation reaction of 2,4,6-triamino-sym-triazine with an aldehyde under alkaline conditions and (b) an agent adapted to affect the rate of setting of concrete which agent is a lignosulfonate of calcium, sodium or ammonium or a water soluble formate salt, whereby upon incorporating said additive in the hydraulic cement mix of portland cement, aggregate and sufficient water to effect hydraulic setting of the cement, the rate of hardening of said cement mix is advantageously controlled while the amount of water required in the mix for a given consistency is considerably reduced as compared with a plain mix, and without undesired toxic or corrosive effects.

3,864,291

KRAFT OR SODA BLACK LIQUOR ADHESIVE AND PROCEDURE FOR MAKING THE SAME

Terje Ulf Eugen Enkvist, Runebergsgatan 30A, Helsinki, Finland

Filed July 5, 1973, Ser. No. 376,889

Int. Cl. C08g *37/18*

U.S. Cl. 260—17.5 **4 Claims**

1. A process for preparing an adhesive based on black liquor from the pulping industry having a dry matter content of more than 25%, comprising reacting the black liquor with a formaldehyde or cresol to form an adhesive and combining it with a separately prepared phenol-formaldehyde or cresol-formaldehyde adhesive in proportions such that the amount of phenol or cresol used is 15-50% of the sum of the phenol or cresol used and the organic matter of the black liquor.

3,864,292

BAKED ALKYD RESIN ENAMEL COATING COMPOSITIONS CROSS-LINKED WITH ETHERIFIED TRIMETHYLOLATED CROTONYLIDENEDIUREA OR ETHERIFIED METHYLOLATED 2,7-DIXO- 4, 5 -DIMETHYL- DECAHYDROPYRIMIDO- (4, 5-D) -PYRIMIDINE

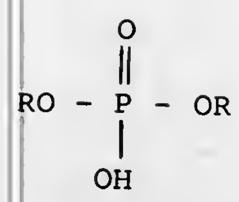
Edward J. Kuzma, Woodbridge, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 144,270, May 17, 1971, Pat. No. 3,808,039. This application Feb. 4, 1974, Ser. No. 439,467

Int. Cl. C08g *9/24, 37/34;* **C09d** *3/64*

U.S. Cl. 260—21 **1 Claim**

1. A coating compostion adapted for producing baked enamel coatins comprising (1) between about 40 and about 95 per cent by weight of an alkyd resin coating composition; (2) between about 5 and about 60 per cent by weight of an aminoplast selected from the group consisting of etherified trimethylolated crotonylidenediurea and etherified methylolated 2,7-dioxo-4,5-dimethyl-decahydropyrimido-[4,5-d]-pyrimidine, the proportion of components (1) and (2) being based upon the total weight of the alkyd resin and aminoplast; and (3) a catalytically effective amount of amyl acid phosphate having the formula:



$$RO-\overset{\overset{\displaystyle O}{\|}}{\underset{\underset{\displaystyle OH}{|}}{P}}-OR$$

wherein R is a hydrogen substituent or an n-amyl subtituent and at least one of said R substituents is n-amyl.

3,864,293

PHOTO-DEGRADABLE STYRENE RESIN COMPOSITION

Hiroshi Miyoshi, Takatsuki, Hirohumi Mori, Suita; Yoriko Tanoue, Suita, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 24, 1971, Ser. No. 174,557

Claims priority, application Japan, Aug. 25, 1970, 45-75053; Dec. 4, 1970, 45-107896; Dec. 28, 1970, 45-126946; Dec. 28, 1970, 45-126947

Int. Cl. C08d *11/00*

U.S. Cl. 260—23.7 R **3 Claims**

1. A photo-degradable styrene resin composition comprising a sytene-diene copolymer of a diene monomer content of from 0.1 to 10 % by weight, wherein said diene is selected from the group consisting of butadiene and isoprene, and, incorporated therein, at least 0.001 parts by weight, per 100 parts by weight of said styrene resin of at least one transition metal salt of an organic carboxylic acid, said transition metal being selected from the group consisting of iron, cobalt, manganese and copper and further including, as a photo-degrading accelerator, at least 0.01 parts by weight, per 100 parts by weight of said styrene resin of at least one brominated aliphatic hydrocarbon which contains at least one carbon atom to which at least two bromine atoms are bonded.

3,864,294

GELLED COATING COMPOSITIONS AND METHOD OF MAKING SAME

Francis W. Busch, Jr., Clinton, Ohio, assignor to Chesebrough-Pond's, Inc., Greenwich

Filed Nov. 2, 1972, Ser. No. 303,084

Int. Cl. C08c *11/70;* **C08f** *45/52;* **C09d** *11/12;* **C08h** *9/06;* **A61k** *7/04*

U.S. Cl. 260—28.5 A **10 Claims**

1. A coating composition in the form of a gel capable of being broken up for application to a suitable substrate by a relatively small shearing force at a relatively small shearing rate comprising a rheological control system comprising an amine-modified montmorillonite clay, a swelling agent therefor which is a phosphoric acid, a non-volatile oleaginous wetting agent having polar groups and an affinity for wetting the clay and a solvent system.

3,864,295

FORMING SYNTHETIC MATERIAL WITH GLYCERYL TRIMONTANATE AS A LUBRICANT

Jean Boussely, Paris, France, assignor to Societe Sapchim-Fournier-Cimag, Paris, France

Filed Mar. 11, 1974, Ser. No. 450,085

Int. Cl. C08f *45/36, 45/52;* **C10m** *3/20*

U.S. Cl. 260—28.5 D **8 Claims**

1. A method of forming a mass of synthetic material selected from the group consisting of polyvinyl chloride and vinyl copolymer, comprising admixing with said material a small but effective amount of glyceryl trimontanate as a lubricant, and thereafter contacting said mass with a solid member to impart a desired form to said mass, said amount being effective to increase the time during which said mass can be in contact with said member without sticking to said member.

3,864,296

AQUEOUS PRINTING FLUIDS FOR PAPER

Robert W. Faessinger, Media, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation-in-part of Ser. Nos. 424,221, Jan. 8, 1965, abandoned, and Ser. No. 424,223, Jan. 8, 1965, abandoned, and Ser. No. 424,224, Jan. 8, 1965, abandoned, and Ser. No. 424,225, Jan. 8, 1965, abandoned. This application Feb. 28, 1967, Ser. No. 619,210

Int. Cl. C08g *51/24, 51/66*

U.S. Cl. 260—29.2 N **33 Claims**

1. A low-viscosity printing fluid for printing cellulose webs which comprises an aqueous solution of a water-soluble, cationic thermosetting resin and a water-soluble dye compatible with said resin, said dye and resin mixture having a stability of from about 1 hour to in excess of 4 months, a transference value of from about 0 to about 4, and viscosity of less than 20 cps. at 77°F.

3,864,297

EMULSION POLYMERIZATION OF VINYL BROMIDE

Edwin D. Hornbaker, and Bryan Sparks, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 147,620, May 27, 1971, abandoned. This application Oct. 20, 1972, Ser. No. 299,250

Int. Cl. C08f *45/24, 3/22*

U.S. Cl. 260—29.6 R **20 Claims**

1. A process for the production of poly(vinyl bromide) latex comprising adding an aqueous solution of a reducing agent to an emulsion of vinyl bromide containing a water soluble peroxidic compound, wherein said emulsion is at a temperature of from about 0°C to about 75°C, and said aqueous solution of said reducing agent is added to said emulsion at a rate of:

a. at least about 2.8×10^{-4} equivalent of said reducing agent per hour per hundred parts by weight of vinyl bromide monomer, said emulsion containing about 1.5×10^{-3} equivalent of a peroxidic compound per hundred parts by weight of said vinyl monomer, but

b. not more than about 8.7×10^{-4} equivalent of said reducing agent per hour per hundred parts by weight of said vinyl bromide monomer, said emulsion containing about 4.6×10^{-3} equivalent of a peroxidic compound per hundred parts by weight of monomer.

3,864,298

FLUOROELASTOMER COMPOSITION

Yutaka Kometani; Shun Koizumi, both of Osaka; Takeshi Suzuki, Kyoto; Yasuyoshi Furukawa; Masayasu Tomoda, and Kiyoichi Kondo, all of Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

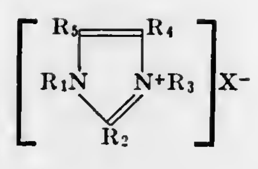
Filed Nov. 6, 1972, Ser. No. 303,764

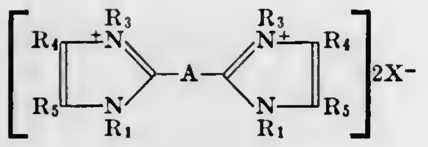
Claims priority, application Japan, Nov. 11, 1971, 46-90488; July 25, 1972, 47-74848

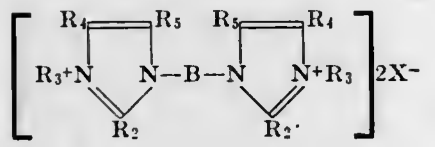
Int. Cl. C08f *45/24*

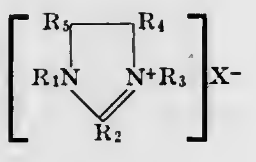
U.S. Cl. 260—29.6 F **15 Claims**

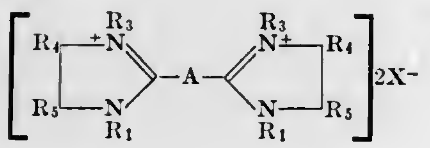
1. A fluoroelastomer composition consisting essentially of (a) a fluoroelastomer, (b) 2 to 30 parts of at least one member selected from the group consisting of a bivalent metal oxide, a bivalent metal hydroxide and a mixture of bivalent metal oxide or metal hydroxide with a metal salt of weak acid, (c) 0.5 to 5 parts of an aromatic polyhydroxy compound, (d) 0.2 to 10 parts of a quaternary ammonium compound having the general formula:


(1)

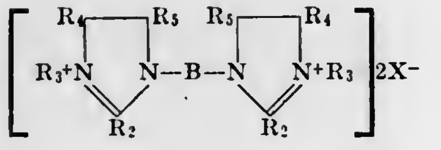

(2)


(3)


(4)


(5)

or


(6)

wherein R_1 is alkyl group having 1 to 20 carbon atoms, carbocyclic group, heterocyclic group having 1 to 3 nitrogen atoms or aralkyl group having 7 to 20 carbon atoms, R_2 is hydrogen, alkyl group having 1 to 12 carbon atoms, carbocyclic group, heterocyclic group having 1 to 3 nitrogen atoms, phenyl group, aralkyl group having 7 to 12 carbon atoms, alkoxyl group having 1 to 12 carbon atoms, benzyloxy group, hydroxyl group, carboxyl group, alkoxycarbonyl group, acyl group, benzoyl group or cyclohexylcarbonyl group, R_3 is alkyl group having 1 to 20 carbon atoms or aralkyl group having 7 to 20 carbon atoms, R_4 and R_5 are hydrogen or lower alkyl group, A is alkylene group or phenylene group, B is alkylene group, and X^- is an anion selected from the group consisting of a halide ion, hydroxylate ion, alkoxylate ion, phenoxide ion, carboxylate ion, sulfonate ion, sulfate ion, sulfite ion and carbonate ion, and (e) 0.1 to 10 parts of water or 0.5 to 30 parts of a metal compound which produces water by reacting with hydrogen fluoride, said parts of (b), (c), (d) and (e) being parts by weight per 100 parts of (a).

3,864,299

HIGHLY REACTIVE SELF-CROSSLINKABLE COPOLYMERS AND A PROCESS FOR THEIR PRODUCTION

Gunter Kolb, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 25, 1973, Ser. No. 409,407

Claims priority, application Germany, Oct. 28, 1972, 2253067

Int. Cl. C08f *15/16, 15/36, 15/38*

U.S. Cl. 260—29.7 H **4 Claims**

1. In process for producing highly reactive, self-crosslinkable copolymers of acrylamidomethylene carbamic acid esters or methacrylamidomethylene carbamic acid esters as monomer producing crosslinking sites and at least one other copolymerizable monomer by emulsion polymerization at temperatures of below about 60°C. in the presence of a radical forming catalyst, the improvement wherein acrylamidomethylene carbamic acid allyl ester, methacrylamidomethylene carbamic acid allyl ester, acrylamidomethylene carbamic acid methallyl ester or methacrylamidomethylene carbamic acid methallyl ester is used as the monomer to produce crosslinking sites.

3,864,300

WATER REDUCIBLE COATING COMPOSITIONS AND METHOD FOR PRODUCING THE SAME

Luther Clifton Robey, 2755 Brandon Ave., S.W., Roanoke, Va. 24015

Continuation-in-part of Ser. No. 288,302, Sept. 12, 1972, abandoned. This application May 24, 1973, Ser. No. 363,335

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 UA **10 Claims**

1. A water-soluble or dispersible coating composition base consisting essentially of a mixture of (1) a water-soluble or dispersible organic amine neutralized synthetic film-forming resin and (2) an aldehyde selected from the group consisting of 3,4-dihydroxybenzaldehyde and 4-hydroxy-3-methoxybenzaldehyde, said synthetic film-forming resin comprising a combination of (i) a member selected from the group consisting of an oil modified alkyd resin, an acrylic resin and a polyester resin and (ii) an aminoplast resin, the parts by weight ratio of aminoplast resin to said member being about 1–50:99–50, said aldehyde being present in amounts effective to essentially eliminate obnoxious odors and toxic effects of vapors emitted by said composition when heated.

3,864,301

HOT ADHESIVES

Manfred H. Dollhausen, Odenthal, and Gerhard Hohmann, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

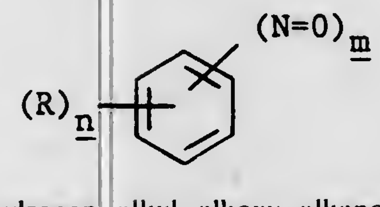
Filed Oct. 23, 1973, Ser. No. 408,849

Claims priority, application Germany, Oct. 26, 1972, 2252457

Int. Cl. C08f *45/36*

U.S. Cl. 260—31.2 R **8 Claims**

1. An adhesive composition comprising (a) 5 to 50 parts by weight of a copolymer of ethylene and a vinyl ester of an organic acid having 2 to 10 carbon atoms; (b) 5 to 50 parts by weight of a chlorination product of at least one member of the group consisting of polyethylene, polypropylene, natural rubber and polyisoprene, said chlorination product having a chlorine content of 60 to 70% by weight; (c) 5 to 50 parts by weight of a chlorinated polyphenyl resin which is solid at room temperature and is obtained by chlorinating a mixture consisting essentially of isomers of diphenylbenzene and quaterphenyls up to a chlorine content of from 20 to 70% by weight; (d) 1 to 40% by weight, based on the total weight of components (a), (b) and (c), of an aromatic polynitroso compound of the formula



wherein R is hydrogen, alkyl, alkoxy, alkanolamine, cycloalkyl, phenylalkyl, phenyl, phenylalkoxy, phenylamine, phenylnitrosoamine or halogen, *n* is an integer from 0 to 5 and *m* is 1 or 2 and (e) 30 to 90% by weight, based on the weight of the adhesive composition, of at least one solvent selected from the group consisting of aromatic hydrocarbons, chlorinated hydrocarbon ketones, esters and alcohols.

3,864,302

FLAME RESISTANT POLYAMIDES

Patrick Joseph Foley, Jr., Roselle, Ill., assignor to E. I. du Pont de Nemours and Co., Wilmington, Del.

Continuation-in-part of Ser. No. 341,872, March 16, 1973, abandoned. This application Jan. 23, 1974, Ser. No. 435,406

Int. Cl. C08g *51/56*

U.S. Cl. 260—37 N **11 Claims**

1. A polyamide composition containing a synthetic polyamide having recurring carbonamide linkages as an integral part of the chain and about 1 to 10 percent by weight of at least one ferrite selected from the class consisting of zinc ferrite and magnesium ferrite and about 1 to 20 percent by weight of at least one organic halide flame retardant which is thermally stable at the fabrication temperature of the polyamide but which is reactive at the temperature of flaming of the polyamide.

3,864,303

METHOD OF MANUFACTURING FRICTION MEMBERS OF THE THERMOSETTING RESIN TYPE

Kazuyôshi Saiki, Tokyo; Kaneyoshi Nomaguchi, Kamakura; Keiro Yoshizue, Tachibana, and Tsutomu Nagoya, Ashiarashimo, all of Japan, assignors to Sankyo Chemical Industries Ltd. and Tokyo Buhin Kogyo Company Ltd., both of Tokyo, Japan

Continuation of Ser. No. 172,564, Aug. 17, 1971, abandoned. This application Aug. 24, 1973, Ser. No. 391,325

Claims priority, application Japan, Aug. 31, 1971, 46-76061

Int. Cl. C08g *51/10*

U.S. Cl. 260—38 **7 Claims**

1. A heat-hardenable composition comprising

a. a thermosetting phenolic resin,

b. an acrylamide, and

c. fibres,

wherein said acrylamide (b) comprises from about 10 to about 100% by weight of said resin (a), wherein (b) is selected from the group consisting of acrylamide, methacrylamide, N-methyl acrylamide, N-methylmethacrylamide, N-methylolacrylamide, diacetone acrylamide, hydroxymethyl diacetone acrylamide, methylene-bisacrylamide, nitrilo-tris-acrylamide, nitrilo-tris-methacrylamide, homopolymers thereof, and copolymers thereof with acrylic acid, an acrylic acid salt, an acrylic acid ester and acrylonitrile, and wherein said fibres are selected from the group consisting of asbestos fibres, metal fibres, glass fibres and carbon fibres.

2. The composition of claim 1, wherein said acrylamide (b) comprises from about 10 to about 40% by weight of said resin (b).

3,864,304

FRICTION PARTICLE FOR BRAKE LINING

Frank S. Grazen; Melvin L. Buike, and Frank M. Bryzinsky, all of North Tonawanda, N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Division of Ser. No. 188,598, Oct. 12, 1971, Pat. No. 3,781,241, which is a division of Ser. No. 872,753, Oct. 30, 1969, Pat. No. 3,658,751. This application Dec. 27, 1972, Ser. No. 318,950

Int. Cl. C08g *37/18, 51/10*

U.S. Cl. 260—38 **7 Claims**

1. A friction particle comprising a non-catalyzed product of the reaction at about 225° to about 400° F. of a non-hydroxyalkylated, hydroxy aromatic hydrocarbon-aldehyde resole containing substantially no etherified aromatic hydroxyl groups with an alkylated hydroxy aromatic hydrocarbon-aldehyde resole, until the resulting product is substantially insoluble in acetone, infusible, and does not soften slightly under mechanical force at a temperature below 400° F. and has substantially no cohesive or bonding strength, wherein said non-hydroxyalkylated resole comprises about 60 to about 95% of the weight of the resin components, wherein the alkylated groups are substituted on the aromatic ring and are selected from the group consisting of:

a. alkyl groups of 1 to 60 carbon atoms,

b. cycloalkyl groups of 5 to 12 carbon atoms,

c. alkyl, aryl and cycloalkyl ketonic groups wherein the hydrocarbon portion is as defined in (a) and (b),

d. alkyl, aryl and cycloalkyl carboxylic groups wherein the hydrocarbon portion is as defined in (a) and (b),

e. aryl groups of 6 to 24 carbon atoms, and

f. aryl substituted alkyl wherein the aryl is phenyl, lower alkyl-substituted phenyl or hydroxy substituted phenyl.

3,864,305

CARBON BLACK REINFORCED COMPOSITIONS

Merrill E. Jordan, Walpole; William G. Burbine, Whitman, and Frank R. Williams, Quincy, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Apr. 2, 1973, Ser. No. 346,979

The portion of the term of this patent subsequent to Mar. 26, 1991 has been disclaimed.

Int. Cl. C08c *11/18*

U.S. Cl. 260—42.47 **10 Claims**

1. A composition of matter comprising a rubber selected from the group consisting of natural and synthetic rubbers and a carbon black product selected from the group consisting of furnacetype carbon black products characterized by having a value for the tint factor relationship of [tint + 0.6 (D_a)], wherein D_a is apparent diameter, of at least 311 to 316, a value for the tint contribution ratio of tint to tint factor of at least 0.75 to 0.82, a pH value of at least 4, an iodine surface area of at least 67 to about 145 m^2/g and a value for the BET total surface area of less than 160 m^2/g, wherein the carbon black product is present in amounts of from about 10 to about 250 parts by weight per 100 parts by weight of rubber.

3,864,306

ESTERS OF BROMINATED DIPENTAERYTHRITOL AND POLYMERIC COMPOSITIONS CONTAINING SAME

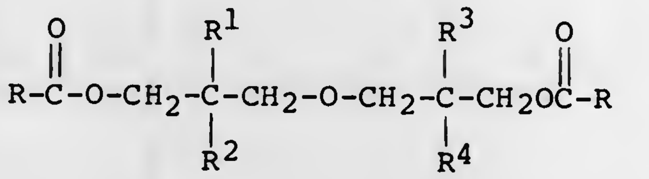
Steffen F. Dieckmann, Sharpley-Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 47,897, June 19, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 300,036

Int. Cl. C08f *45/56*

U.S. Cl. 260—45.75 B **6 Claims**

1. A flame retardant composition comprising a blend of a readily flammable polyolefin, polyester, polyamide or polyurethane and as a flame retardant, based on the weight of the composition from about 3 to about 15 percent of a bromine compound having the formula



$$R-\overset{O}{\overset{\|}{C}}-O-CH_2-\underset{R^2}{\overset{R^1}{C}}-CH_2-O-CH_2-\underset{R^4}{\overset{R^3}{C}}-CH_2O\overset{O}{\overset{\|}{C}}-R$$

where R is an alkyl, bromoalkyl or chloroalkyl group containing 1 to 6 carbon atoms, phenyl or a phenyl group substituted with bromine, chlorine, hydroxy, lower alkyl or lower alkoxy substituents, R^1 is a bromine substituted methyl group and R^2, R^3 and R^4 are R^1 or $-CH_2OH$ and from 0 to about 5 percent of an antimony compound, said bromine compound being present in an amount sufficient to provide to the composition at least 1.9 percent of bromine when it is the sole flame retardant and at least 1.0 percent of bromine when present in combination with the antimony compound.

3,864,307

NATURAL AND SYNTHETIC DIENE POLYMERS STABILIZED WITH CRESOL DERIVATIVE ANTIOXIDANTS

Roland Nast, Dormagen-Hackenbroich; Wolfgang Redetzky, Opladen-Quettingen; Gustav Sinn, Bergisch Neukirche; Theo Kempermann; Joseph Witte, both of Cologne, and Gunter Marwede, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

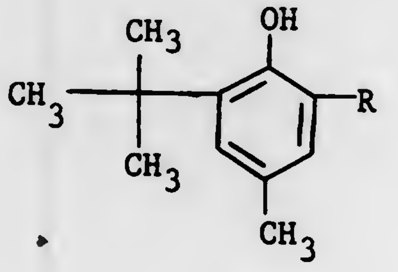
Division of Ser. No. 100,362, Dec. 21, 1970, abandoned. This application July 10, 1973, Ser. No. 378,015

Claims priority, application Germany, Jan. 3, 1970, 2000180

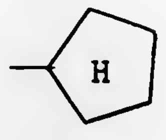
Int. Cl. C08c *7/10;* **C08d** *11/04*

U.S. Cl. 260—45.95 H **6 Claims**

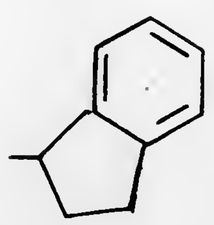
1. A method for protecting natural and synthetic diene polymers against degradation through oxidation which comprises incorporating 0.01 to 5 parts by weight of a compound of the formula



wherein R is



or



3,864,308

NOVEL PHOTOSENSITIVE POLYMER

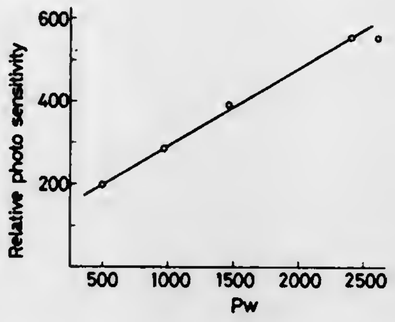
Masao Kato, Yokohama; Masaki Hasegawa, Tokyo, and Taro Ichijyo, Kamakura, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

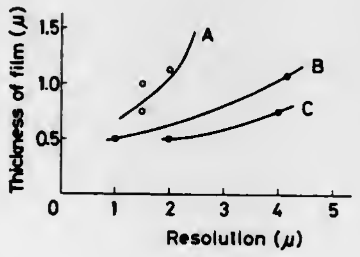
Continuation-in-part of Ser. No. 46,836, June 16, 1970, abandoned. This application June 8, 1972, Ser. No. 261,015

Claims priority, application Japan, June 17, 1969, 44-47753; June 17, 1969, 44-47754; Dec. 19, 1969, 44-192745; Dec. 19, 1969, 44-192746; Dec. 25, 1969, 44-1455; Dec. 25, 1969, 44-1456; Apr. 14, 1970, 45-31827

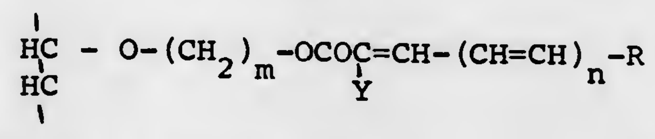
Int. Cl. C08f *3/34, 7/00, 15/02*

U.S. Cl. 260—47 UA **4 Claims**





1. A photosensitive homopolymer having a polymerized vinyl chain with repetitive units of the formula



$$\begin{array}{l} \;| \\ HC - O-(CH_2)_m-OCO\underset{Y}{C}=CH-(CH=CH)_n-R \\ \;| \\ HC \\ \;| \end{array}$$

wherein Y is a hydrogen atom or a cyano group, R is a phenyl or a substituted phenyl, the substituent present in the aromatic ring of said substituted phenyl being one member selected from the group consisting of halogens, nitro, lower alkyl, methoxy, acetyl, benzoyl and cyano groups, *m* is an integer having the value of 2–4 inclusive and *n* is 0 or 1.

3,864,309

COPOLYMER OF POLYIMIDE OLIGOMERS AND TEREPHTHALONITRILE N,N-DIOXIDE AND THEIR METHODS OF PREPARATION

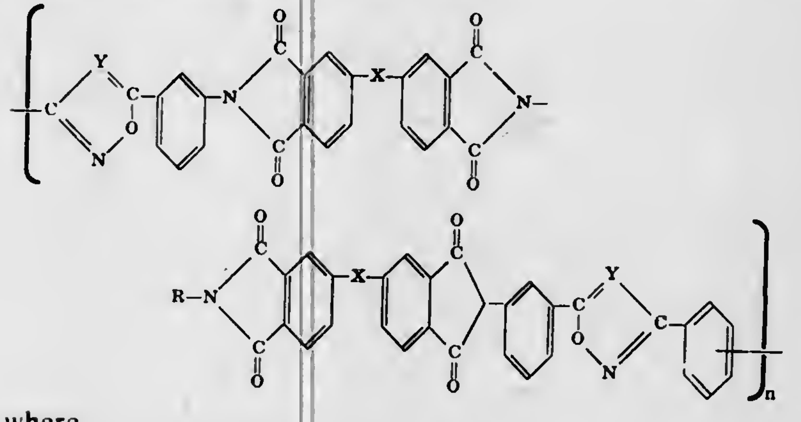
Norman Bilow, Los Angeles; Abraham L. Landis, Northridge, and Leroy J. Miller, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 16, 1973, Ser. No. 416,483

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 UA **10 Claims**

1. Copolymers of addition cured polyimides formed from the reaction of aromatic bis(nitrileoxides) and cyano- or acetylene-substituted polyimide oligomers and consisting essentially of the following general formula:



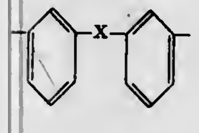
where

$X = CO, O, CH_2, SO_2,$ or $-CF_2-_n$

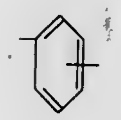
$Y = CH$ or N, and

$R = -C_6H_4OC_6H_4-$, $-C_6H_4OC_6H_4OC_6H_4-$, or $-C_6H_4OC_6H_4OC_6H_4OC_6H_4-$

and where



may be replaced by



3,864,310

HIGH PERFORMANCE HETEROCYCLIC POLYMER POLYMERIZATION VIA MOLTEN LEWIS ACID EUTECTICS

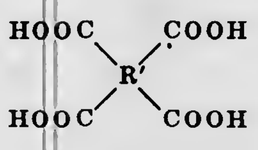
Lowell Saferstein, Piscataway, N.J., assignor to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 221,780, Jan. 28, 1972, abandoned. This application Nov. 14, 1973, Ser. No. 415,706

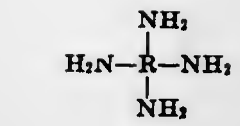
Int. Cl. C08g *20/20*

U.S. Cl. 260—47 CP **10 Claims**

1. In a process for synthesizing poly (benzimidazobenzphenanthrolines) from a tetracarboxylic acid reactant represented by the formula



wherein R′ is a tetravalent aromatic or cyclo-aliphatic radical, wherein each of the four carbonyl groups is attached directly to a carbon atom present in a ring of said aromatic or cycloaliphatic radical in a position which is ortho- or peri- to another carbon atom to which another of said carboxyl groups is also directly attached, or the corresponding anhydride and a tetra-amine reactant represented by the general formula



$$H_2N-\underset{NH_2}{\overset{NH_2}{R}}-NH_2$$

wherein R is an aromatic or cycloaliphatic tetravalent radical and wherein each of the four amino groups is attached directly to a carbon ring present in a ring of said aromatic or cycloaliphatic radical in a position which is ortho- or para- to another carbon atom, to which another set of amino groups is also directly attached, by heat reacting said reactants at a temperature below their decomposition temperature, the improvement which comprises:

> utilizing as a catalyst a heavy metal halide in admixture with a salt component which is non-reactive with said heavy metal halide and which forms a eutectic mixture therewith wherein said eutectic mixture has a melting point below the reaction temperature of said reactants and a melting point lower than that of the pure heavy metal halide.

3,864,311

COMPOSITIONS PREPARED BY THE REACTION OF AMINES WITH HYDROXYALKYLATED AND ALKOXYALKYLATED DERIVATIVES OF N-3-OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

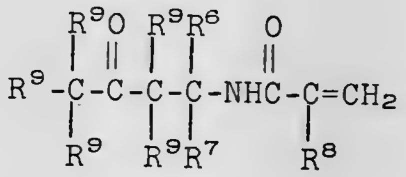
Richard William Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed June 5, 1972, Ser. No. 259,889

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 N **27 Claims**

1. A method for the preparation of a composition of matter which comprises reacting (A) a primary or secondary amine with (B) a water-soluble composition prepared by reacting, in the presence of an alkaline reagent, an aliphatic aldehyde containing not more than about 4 carbon atoms, or a reversible polymer thereof, with a substituted acrylamide of the formula



$$R^9-\underset{R^9}{\overset{R^9}{C}}-\overset{O}{\overset{\|}{C}}-\underset{R^9}{\overset{R^9}{C}}-\underset{R^7}{\overset{R^6}{C}}-NH\overset{O}{\overset{\|}{C}}-\underset{R^8}{C}=CH_2$$

wherein each R^9 is individually hydrogen or a hydrocarbon radical, at least one such R^9 being hydrogen; each of R^6 and R^7 is hydrogen or a hydrocarbon radical; and R^8 is hydrogen or a lower alkyl radical; the reaction between said aldehyde and substituted acrylamide being effected in a diluent comprising (1) water, or (2) an organic liquid which is a solvent for the reactants or the product or both, or (3) a mixture of diluents 1 and 2.

3,864,312

PROCESS FOR PRODUCING A CATIONIC CARBAMOYL POLYMER PREPARED BY AMINOALKYLATION OF CARBAMOYL POLYMER IN MIXTURE OF WATER AND WATER-MISCIBLE ORGANIC SOLVENT

Mamoru Suzuki; Eiichi Hirata, and Sigenori Taziri, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 10, 1973, Ser. No. 358,998

Claims priority, application Japan, May 11, 1972, 47-47016

Int. Cl. C08g *9/04, 9/24*

U.S. Cl. 260—67.5 **12 Claims**

1. A process for producing a water-soluble powdered cationic carbamoyl polymer, which comprises reacting a carbamoyl polymer with a formaldehyde and an amine or with an

amine-formaldehyde adduct in a mixture of water and at least one organic solvent which is miscible with water and not capable of dissolving said carbamoyl polymer, the water content in said mixture of water and organic solvent being 20 to 70 percent by weight.

3,864,313

LATENT CURING AGENT FOR ISOCYANATE TERMINATED PREPOLYMERS

Samuel Eugene Susman, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed July 10, 1974, Ser. No. 487,418

Int. Cl. C08g *22/36*

U.S. Cl. 260—75 NC **7 Claims**

1. A heat-curable, storage-stable composition of matter comprising an isocyanate-terminated polyester or polyether based polyol urethane prepolymer of at least difunctionality in admixture with a curing amount of 1,1-dimethyl-3-cyanoguanidine.

3,864,314

FLEXIBLE POLYESTER RESINS

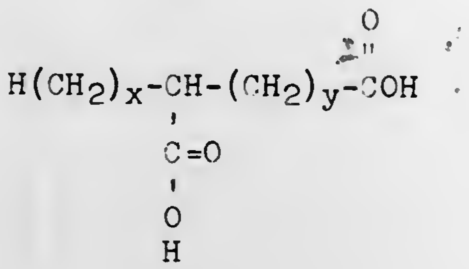
Robert F. Modler, and Stuart A. Harrison, both of Minneapolis, Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed May 21, 1973, Ser. No. 362,642

Int. Cl. C08g *17/06;* **C09j** *3/16*

U.S. Cl. 260—75 R **1 Claim**

1. A polyester having an inherent viscosity of about 0.4 to 1.0 measured in orthochlorophenol solvent, at a concentration of 0.5 percent by weight and at a temperature of 30°C. consisting essentially of the condensation product of 1,4-butanediol, terephthalic acid, isophthalic acid and heptadecane dicarboxylic acid having the formula



$$\mathrm{H(CH_2)_x{-}\underset{\begin{array}{c}|\\ C{=}O\\ |\\ O\\ H\end{array}}{CH}{-}(CH_2)_y{-}\overset{\overset{O}{\|}}{C}OH}$$

where x is from 1 to 15, y from 1 to 15 and the sum of x and y is 16, wherein the 1,4-butanediol component and the total acid component are in an equivalent ratio of about 1:1 and the equivalent percent of the acids based upon the total acid equivalent are about 73 to 85 equivalent percent terephthalic acid, about 10 to 22 equivalent percent isophthalic acid and about 5 to 10 equivalent percent heptadecane dicarboxylic acid.

3,864,315

FIBER-FORMING POLYESTER COMPOSITION INCLUDING A POLYALKYLENE ETHER

Koji Ohno; Takaakira Tsuji, and Nobusuke Takeuchi, all of Kurashiki City, Japan, assignors to Kuraray Co. Ltd., Okayama Prefecture, Japan

Filed Mar. 23, 1971, Ser. No. 127,340

Claims priority, application Japan, Mar. 23, 1970, 45-24719; Mar. 23, 1970, 45-24720

Int. Cl. C08g *17/14, 17/18*

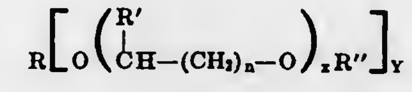
U.S. Cl. 260—75 R **7 Claims**

1. A fiber-forming polyester having improved dyeability and resistance to pilling consisting essentially of the reaction product of

an ester prepared from at least one acid component consisting essentially of an aromatic dicarboxylic acid or lower alkyl ester thereof and at least one alkylene glycol having 2 to 10 carbon atoms;

wherein before the completion of the polymerization reaction is added

- a. not more than Y/Y − 2 mole percent and not less than Y/15 (Y − 2) mole percent, based on the total acid component, of a polyalkylene oxide compound expressed by the general formula



$$\mathrm{R\Big[O\Big(\overset{\overset{R'}{|}}{C}H{-}(CH_2)_n{-}O\Big)_x R''\Big]_Y}$$

wherein R is a straight chain or cyclic aliphatic hydrocarbon having 4 to 25 carbon atoms or a Y-valent residue of an aliphatic ether having 4 to 25 carbon atoms, R′ is a hydrogen atom or a lower alkyl group, n is an integer of 1 to 3, x is an integer of 1 to 50, R″ is a hydrogen atom or a hydrocarbon group with 1 to 10 carbon atoms having a carboxyl group or ester thereof, or a hydroxyl group or ester thereof, and Y is an integer of 3 to 6; and

- b. ϕ to Y times the weight of compound (a) of an ester-forming compound having at least 7 carbon atoms, which has one —COOH, —OH, —COOR‴, or —OOCR‴ group, wherein R‴ is a lower alkyl group; and completing the polymerization after said addition.

3,864,316

SOLID EPOXY RESINS FROM HYDROGENATED BISPHENOLS AND AROMATIC DICARBOXYLIC ACIDS

Glenn Clarke Robinson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

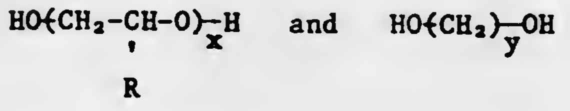
Continuation-in-part of Ser. No. 366,389, June 4, 1973,. This application Feb. 7, 1974, Ser. No. 440,413

Int. Cl. C08g *30/00, 30/10*

U.S. Cl. 260—78.4 EP **26 Claims**

1. A solid epoxy resin having a Durran's softening point of at least 80°C which can be comminuted into a stable, free-flowing powder prepared by reacting

- A. an epoxy resin selected from
  - 1. a diglycidyl ether of a hydrogenated bisphenol and
  - 2. a polyglycidyl ether of a hydrogenated novolac having a functionality of from about 2.01 to about 2.6, or
  - 3. mixtures thereof; with
- B. a mixture consisting of
  - 1. from about 10 to about 25 percent by weight, based upon the total weight of components (A) and (B), of an aromatic dicarboxylic acid or cycloaliphatic dicarboxylic acid and
  - 2. from about 1 to about 10 percent by weight, based upon the total weight of components (A) and (B), of
    - a. an aliphatic dicarboxylic acid having from 4 to about 10 carbon atoms,
    - b. an acid terminated adduct of an aromatic or cycloaliphatic dicarboxylic acid or anhydride with an aliphatic dihydroxyl containing compound represented by the general formulas



$$\mathrm{HO\big(CH_2{-}\underset{\underset{R}{|}}{C}H{-}O\big)_x H} \quad \text{and} \quad \mathrm{HO\big(CH_2\big)_y OH}$$

wherein each R is independently hydrogen, methyl, ethyl, chloromethyl, bromomethyl or iodomethyl, x has a value of from 1 to about 3 and y has a value of from 3 to about 10, or

- c. mixtures thereof;

wherein the quantities of components (A) and (B) are such as to provide the resultant solid epoxy resin with a percent epoxide of from about 2 to about 6 and a softening point of at least 80°C.

3,864,317

DURABLE ANTISTATIC AGENT, HYDROPHOBIC FIBERS AND FIBROUS STRUCTURES HAVING DURABLE ANTISTATIC PROPERTY AND METHOD OF MAKING SAME

Yuzuro Ogata, Wakayama, and Yukihisa Niimi, Osaka, both of Japan, assignors to Kao Soap Co., Ltd. and Kanebo, Ltd., both of Tokyo, Japan

Filed Aug. 30, 1972, Ser. No. 284,863

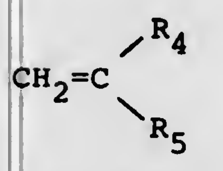
Claims priority, application Japan, Sept. 1, 1971, 46-67297

Int. Cl. C08f *3/92, 15/36, 3/62*

U.S. Cl. 260—79.3 M **10 Claims**

1. An antistatic agent soluble in organic solvents, for imparting a durable antistatic property to hydrophobic fibers and structures made therefrom when applied in an organic solvent system, said agent consisting essentially of a complex compound of

- A. poly(2-methacryloyloxyethyltrialkylammonium) cationic polymer, containing from zero to one moles, per mole of 2-methacryoyloxyethyltrialkylammonium units, of units of a second monomer having the formula



wherein R_4 is H or methyl, and R_5 is alkoxycarbonyl, alkoxy, $—CONH_2$, —COOH, —CN or $—C_6H_5$,

the anions of said polymer having been replaced by,

- B. counter anion of at least one surfactant selected from from the group consisting of anionic surfactants containing 2 to 8 ethylene oxide units, ester-bonded sulfonates, alkylamidocarboxylic acid salts and amphoteric surfactants of the carboxylic acid type.

3,864,318

ACRYLIC AND METHACRYLIC MONOMERS, POLYMERS AND COPOLYMERS

Gerardo Caporiccio, Milan, and Ezio Strepparola, Treviglio, both of Italy, assignors to Monteratini Edison S.p.A, Milan, Italy

Division of Ser. No. 108,573, Jan. 21, 1971, Pat. No. 3,766,251. This application June 25, 1973, Ser. No. 373,268

Claims priority, application Italy, Jan. 24, 1970, 19750/70

Int. Cl. C08f *3/90, 15/02*

U.S. Cl. 260—80.3 N **9 Claims**

1. A polymer having a molecular weight of at least about 10,000 as determined by measurement of the intrinsic viscosity of a solution thereof, and which is selected from the group consisting of homopolymers of a monomer having the formula:

$$A—O\ (C_3F_6O)_m(CF_2O)_n—CF_2—Z—CO—CR{=}CH_2$$

and copolymers of a mixture of at least two of said monomers wherein:

- C_3F_6 represents a group obtained by the opening of the double bond of a hexafluoropropene molecule,
- $—C_3F_6O—$ and $—CF_2O—$ are repeating oxyperfluoroalkylene units which, when simultaneously present, are distributed randomly along the chain,
- m is zero or an integer from 1 to 20, n is an integer from 1 to 20, the sum of $m+n$ is an integer from 1 to 20,
- A is a $CF_3—$ or $CF_3—O—CF(CF_3)—$ terminal group,
- Z is $—CH_2NR'—$ wherein R and R′ are the same or different and are hydrogen or CH_3.

3,864,319

METHOD FOR PREPARING ALTERNATING COPOLYMERS USING A FRIEDEL-CRAFTS CATALYST AND A FREE RADICAL INITIATOR IN AN AQUEOUS MEDIUM

Norman G. Gaylord, New Providence, N.J., assignor to Gaylord Research Institute, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 66,887, Aug. 25, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,964

Int. Cl. C08d *1/09, 1/18, 1/22*

U.S. Cl. 260—82.3 **9 Claims**

1. In a process for preparing equimolar alternating copolymers by copolymerization of a hydrocarbon electron donating monomer consisting of conjugated dienes with an electron accepting monomer selected from the group consisting of alkyl and aryl acrylates and methacrylates, acrylonitrile and methacrylonitrile, the improvement which comprises carrying out said copolymerization at a temperature within the range of about 0° to 100°C., in an aqueous medium containing 0.01 to 5 moles per mole of electron accepting monomer of a Friedel-Crafts halide which is at least divalent and stable to hydrolysis at the reaction temperature and 0.001 to 10 percent by weight based on the weight of the monomers of a water-soluble peroxygen compound free radical initiator.

3,864,320

MODIFICATION OF ACRYLATE POLYMERS BY TREATMENT WITH METAL CARBONYL

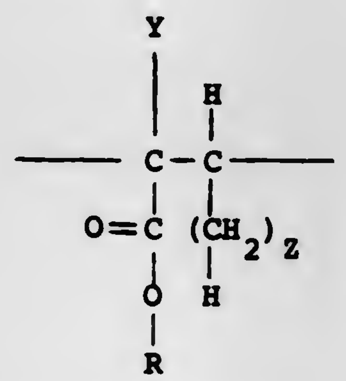
John H. Rolker, Altadena, and Thomas C. Glasner, Los Angeles, both of Calif., assignors to Bell and Howell Co., Chicago, Ill.

Filed Jan. 22, 1973, Ser. No. 325,492

Int. Cl. C08f *27/00*

U.S. Cl. 260—86.1 E **9 Claims**

1. A method of modifying polymers which method comprises contacting a selected normally non-reactive thermoplastic polymer with a selected catalyst in a contacting zone, said polymer being a homopolymer or copolymer consisting essentially of the structural formula:



wherein R is an alkyl, cycloaliphatic alkyl or aryl radical containing from 1 to about 20 carbon atoms, Y is CH_3 or H, and Z is an integer from 0 to 12, said catalyst comprising a metal carbonyl of a group VIII transition element, said contacting being affected for a time sufficient to change the characteristics of said polymer, and recovering the resulting modified polymer from said contacting zone as a new product.

3,864,321

STYRENE CHLOROPRENE COPOLYMERS

Toshio Sakomura; Hideshige Hayashi; Takayuki Kino; Takeshi Hironaka, and Fumishige Nakane, all of 4560 Oaza Tonda, Shin-Nany Shi, Japan

Continuation-in-part of Ser. No. 205,379, Dec. 6, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,205

Int. Cl. C08f *1/80*

U.S. Cl. 260—87.5 R **3 Claims**

1. A process for the production of a chloroprene copolymer which comprises copolymerising in an aqueous emulsion a

monomer mixture of 95 to 80 percent by weight of chloroprene and 5 to 20 percent by weight of styrene at a temperature in the range 45° to 60°C to a conversion in the range of 60 to 75 percent in the presence of a free radical initiator and an amount of dialkyl xanthogen disulphide wherein each alkyl group contains from 1 to 8 carbon atoms to ensure a final copolymer having a Mooney Viscosity (ML 1+4) in the range of 30 to 130.

3,864,322
PERFLUOROCARBON COPOLYMER POWDERS AND PREPARATION BY SPRAY DRYING

Michael D. Yallourakis, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Apr. 12, 1973, Ser. No. 350,646
Int. Cl. C08f *15/06, 29/16*
U.S. Cl. 260—87.5 A **10 Claims**

1. A perfluorocarbon polymer coating composition consisting essentially of spherical powder particles of about 1 to 75 microns in diameter of an agglomerate of submicron particles of the perfluorocarbon polymer wherein the perfluorocarbon polymer is a copolymer of tetrafluoroethylene and another copolymerizable fluorinated monomer and the powder contains about 0.5–15 per cent by weight of a nonionic surfactant.

3,864,323
METHOD OF MANUFACTURING POLYCOAGULANTS

Artur Stoy, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Narodni/Prague, Czechoslovakia
Filed June 29, 1971, Ser. No. 158,103
Claims priority, application Czechoslovakia, July 2, 1970, 4627-70
Int. Cl. C08f *3/76, 15/02, 27/14*
U.S. Cl. 260—88.7 R **6 Claims**

1. A method of manufacturing a polycoagulant comprising polymerizing 10 to 20 percent by weight of acrylonitrile in a nitric acid solution of about 50 to 65 percent concentration, said polymerization being carried out at a temperature between 10° and 20°C in the presence of an inorganic free radical catalyst, and thereafter subjecting the resultant polymer solution to an increased temperature for a period of time ranging between about 4 - 10 hours at 41° - 50°C and 5 - 12 days at 22° - 25°C sufficient to effect partial acid hydrolysis of said polymer until said polymer forms a polycoagulant completely soluble in an aqueous solution of a weak alkali.

3,864,324
METHOD FOR PRODUCING HYDROXYL FUNCTIONAL POLYMERS

Toshio Yukuta; Takashi Ohashi; Yoshiko Taniguchi, and Katsuhiko Arai, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Aug. 1, 1973, Ser. No. 384,536
Claims priority, application Japan, Aug. 1, 1972, 47-77180
Int. Cl. C08d *5/04*
U.S. Cl. 260—94.7 A **18 Claims**

1. A solution method for producing hydroxyl functional polymers having a number average molecular weight of about 500 to 50,000 and containing hydroxyl functional groups at both ends and/or on the side chain, which comprises ozonizing some of the double bonds of homopolymers or copolymers having a high molecular weight and containing olefinically unsaturated double bonds represented by at least one of the general formulae

$$—CH{=}CH— \quad \text{and} \quad CX_2{=}Ch—$$

wherein X is hydrogen, an alkyl or an aryl group, with a gaseous mixture of carrier gas containing ozone in an amount of 0.1 - 0.5% by weight based on carrier gas, and reducing the resulting ozonides with 0.5 to 3.0 equivalents based on equivalent of said ozonides of sodium bis(2-methoxyethoxy)aluminum hydride at a temperature of −20°C to +100°C to convert the ozonides into the hydroxyl functional polymers.

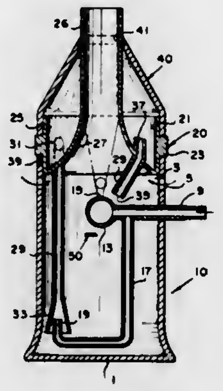
3,864,325
(N^{AL}, N^{BL}, N^{B29}, CARBAMOYL)-(O^{A14}, O^{B16}, O^{B26}ARYL) INSULIN DERIVATIVES

Derek George Smyth, Stanmore, England, assignor to National Research Development Corporation, London, England
Continuation-in-part of Ser. No. 221,061, Jan. 26, 1972, abandoned. This application Nov. 13, 1972, Ser. No. 306,369
Claims priority, application Great Britain, Nov. 18, 1971, 53622/71; Nov. 18, 1971, 53623/71
Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *17/02*
U.S. Cl. 260—112.7 **10 Claims**

1. An insulin in which at least one of the amino groups of the A_1 (glycine), B_1 (phenylalanine) and B_{29} (lysine) amino acid units is blocked by a carbamyl substituent or a substituted carbamyl substituent of the formula $R_1R_2NCO—$ wherein R_1 and R_2 is hydrogen, lower alkyl, or phenyl and at least one of A_{14}, A_{19}, B_{16} and B_{26} tyrosine hydroxyl groups is substituted by acetyl, chloroacetyl, ethoxycarbonyl, glutaryl, stearyl, octadecylsuccinyl, naphthoyl, carbamyl or substituted carbamyl of the formula $R_1R_2NCO—$, wherein R_1 and R_2 are as above defined.

3,864,326
SPRAYING DEVICES, IN PARTICULAR NEBULIZING DEVICES

Robert S. Babington, 1113 Ingleside Ave., McLean, Va. 22101
Filed May 22, 1972, Ser. No. 255,681
Int. Cl. F02m *15/04*
U.S. Cl. 261—142 **26 Claims**



1. A nebulizing unit comprising in combination, a base flask having an open top; a closure member for said flask, said closure member including at least one vertical chimney having a flaring lower end; a collar surrounding the lower end of the chimney and defining first, a support for the chimney and, secondly, with the chimney end, an annular holding reservoir; a first conduit opening into said reservoir and having a lower terminal end disposed beneath the reservoir at a point closely adjacent the bottom of the base flask; at least a second conduit opening into said holding reservoir and having one end disposed in the lowermost point thereof and the opposite end disposed below the bottom of the holding reservoir and projecting into the base flask adjacent its mouth; at least one plenum chamber having a spherical end with an aperture therein disposed within the base flask and beneath the terminal end of said second mentioned conduit; and its opposite end disposed outside of the side wall of said base flask; a branch line in communication with said plenum chamber and having a terminal end disposed adjacent the bottom of said base flask and in registry with said first mentioned conduit opening into said holding reservoir and discharging therein.

3,864,327
REMOVAL OF MERCURY FROM SOLUTIONS

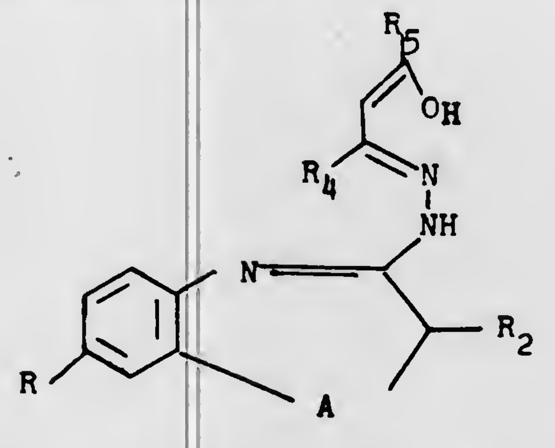
Wayne N. Marchant, Sparks, Nev., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Sept. 19, 1973, Ser. No. 398,908
Int. Cl. C08b *21/34*
U.S. Cl. 260—231 A **5 Claims**

1. An adsorbent for removal of mercury from aqueous solution consisting essentially of a cellulose matrix having grafted thereto a plurality of vicinal dithiol-substituted hydrocarbon radicals.

3,864,328
2-HYDRAZINO BENZODIAZEPINE DERIVATIVES

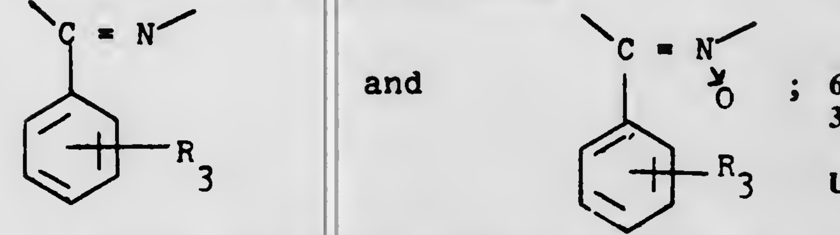
Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.
Filed Oct. 19, 1973, Ser. No. 408,245
Int. Cl. C07d *53/04, 57/02*
U.S. Cl. 260—239 BD **2 Claims**

1. A compound of the formula



wherein

A is selected from the group consisting of

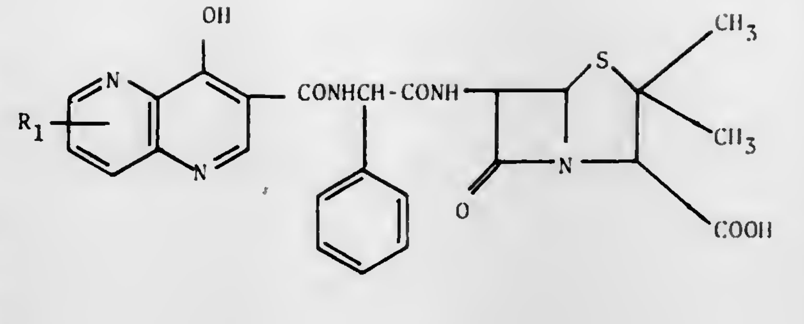


R is selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, lower alkyl, and lower alkoxy; R_2 signifies hydrogen or lower alkyl; R_3 signifies hydrogen or halogen; and R_4 and R_5 are individually hydrogen or lower alkyl, with at least one of R_4 and R_5 being lower alkyl.

3,864,329
PENICILLINS SUBSTITUTED WITH HETEROCYCLIC GROUPS

Hisao Tobiki, Osaka; Kozo Shimago, Takarazuka; Shigeru Okano, Osaka; Toshiaki Komatsu; Toyozo Katsura, both of Takarazuka; Yasushi Taira, and Yasuko Eda, both of Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Continuation-in-part of Ser. No. 213,745, Dec. 29, 1971, abandoned. This application Sept. 26, 1972, Ser. No. 292,325
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **12 Claims**

1. A penicillin of the formula:

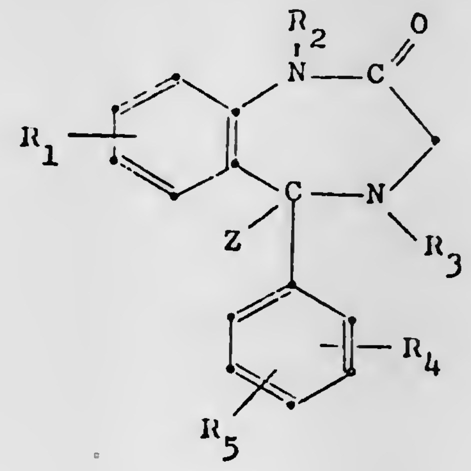


wherein R_1 is hydrogen, lower alkyl, lower alkoxy, lower alkylthio, amino, lower alkylamino, di(lower)alkylamino, hydroxyl, acetoacetylamino, acetylamino or benzyloxycarbonylamino.

3,864,330
BENZODIAZEPINE DERIVATIVES AND PRODUCTION THEREOF

Junki Katsube, Toyonaka; Yoshinori Takashima, Minoo; Toshiyuki Hirohashi, Ashiya; Kikuo Ishizumi, Ikeda; Mitsuhiro Akatsu, Toyonaka; Kazuo Mori, Kobe; Isao Katsuki, Minoo; Yoshiharu Kume, Takarzuka; Hiromi Sato, Takarzuka; Shigeho Inaba, Takarzuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited
Filed Aug. 21, 1972, Ser. No. 282,012
Claims priority, application Japan, Aug. 31, 1971, 46-67310; Nov. 5, 1971, 46-88569; Nov. 8, 1971, 46-89237; Jan. 31, 1972, 47-11729; Apr. 26, 1972, 47-43036
Int. Cl. C07d *33/06*
U.S. Cl. 260—239.3 D **9 Claims**

1. A compound of the formula:

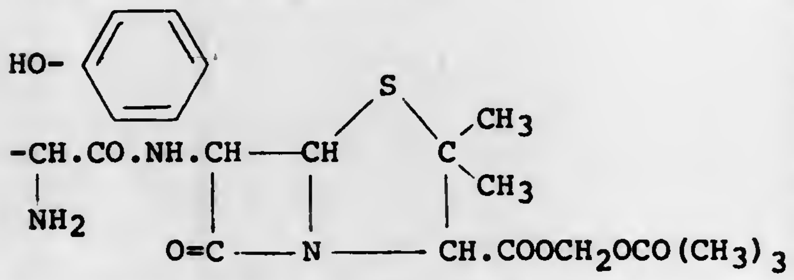


wherein R_1 is a halogen atom or nitro, R_2 is hydrogen or C_1 — C_6 alkyl; R_3 is C_1 — C_4 alkyl; R_4 and R_5 are hydrogen or ortho-halogen and Z is amono, C_1 — C_4 alkyl amino, hydroxy-C_1 — C_4 alkyl amino, an N′,N′-dilower alkylamino -C_1 — C_4 alkyl, benzylamino, hydrazino, cyano, C_1 — C_6 alkyl, C_2 — C_7 alkoxy, 3′-tetrahydropyranyloxy-1′-propynyl or 3′-(3″-azabicyclo(3,2,2,)-2″-nonyl)-1′-propynyl.

3,864,331
ACYLOXYMETHYL ESTERS OF α-AMINOPENICILLINS

Erling Knud Frederiksen, Holte, and Wagn Ole Godtfredsen, Vaerlose, both of Denmark, assignors to Loven kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark
Filed Mar. 10, 1970, Ser. No. 18,355
Claims priority, application Great Britain, Mar. 13, 1969, 13402/69; July 18, 1969, 36407/69. The portion of the term of this patent subsequent to Oct. 20, 1989, has been disclaimed.
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **2 Claims**

1. A compound of the formula

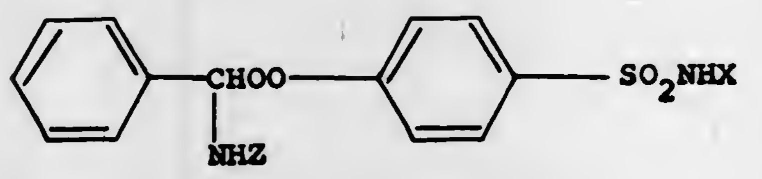


and pharmaceutically acceptable salts thereof.

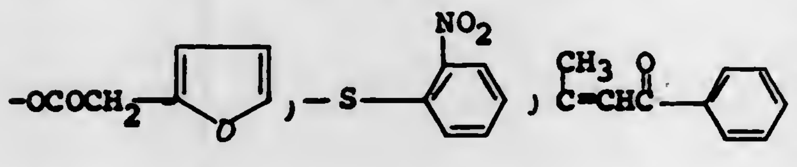
3,864,332
METHOD OF PREPARING α-AMINOBENZLPENICILLIN

Meri Solomonovna Rabinovich, ulitsa 1812 Goda, 2, kv. 168; Leonard Sergeevich Povarov, ulitsa Krasikova 19, kv. 28, and Galina Sergeevna Pavljuk, Euranskaya ulitsa, 26, korp. 1, kv. 140, all of Moscow, U.S.S.R.
Filed May 18, 1972, Ser. No. 254,677
Claims priority, application U.S.S.R., May 18, 1971, 1651444; Apr. 24, 1972, 1772937
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **6 Claims**

1. A method for preparing α-aminobenzylpenicillin comprising reacting an acylal derivative of 6-aminopenicillinanic acid with an activated ester of N-protected D(−)α-aminophenylacetic acid having the formula:



where Z is selected from the group consisting of:

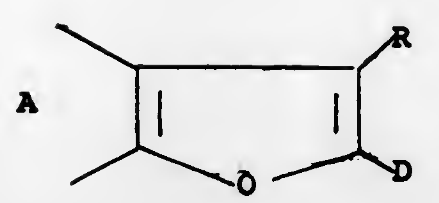


X is selected from the group consisting of hydrogen and 2-pyrimidyl, at room temperature in a reaction-inert organic solvent medium in the presence of acetic acid, and hydrolyzing the reaction product to remove the protecting groups.

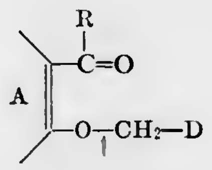
3,864,333
PROCESS FOR THE PREPARATION OF FURANE COMPOUNDS

Wilfried Sahm, and Anton Horn, both of Kelkheim/Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany
Filed Aug. 10, 1972, Ser. No. 279,645
Claims priority, application Switzerland, Aug. 13, 1971, 11926/71
Int. Cl. C07d *5/40*
U.S. Cl. 260—240 D **5 Claims**

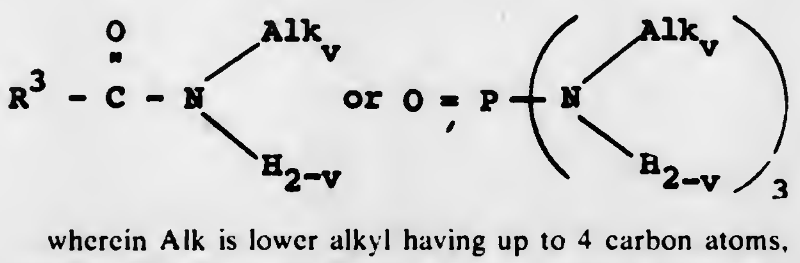
1. A process for the preparation of a compound of the formula



in which A is a benzene or naphthalene nucleus two adjacent carbon atoms of which are condensed with the furane nucleus in the manner indicated, R is hydrogen, lower alkyl or phenyl and D is phenyl, naphthyl, styryl, benzoxazolyl, naphthoxazolyl, benzofuranyl, naphthofuranyl or phenyl, biphenylyl or styryl substituted by benzofuranyl or naphthofuranyl, which substituents D and A are unsubstituted or substituted by lower alkyl, lower alkoxy, lower alkenyl, lower alkylene, carboxy, lower carboalkoxy, carboxylic acid amide, carboxylic acid mono- and di-(lower alkyl) amide, carboxylic acid piperidide or morpholide, cyano, sulfo, sulfonic acid lower alkyl ester, sulfonic acid amide or mono- or di-(lower alkyl) amide, or halogen, which process comprises splitting off water from an ether of the formula



in which A, R and D are as defined above by reacting said ether at a temperature of about −20° to about 200° C. with a strongly alkaline condensating agent selected from the group consisting of an alkali metal hydroxide, an alkaline earth metal hydroxide, an alkali metal sulfide, an alkaline earth metal sulfide, an alkali metal amide, an alkaline earth metal amide, aluminum amide, an alkali metal hydride, an alkaline earth metal hydride, aluminum hydride, an alkali metal alcoholate, an alkaline earth metal alcoholate, an aluminum alcoholate and a strongly basic ion exchanger in a solvent selected from the group consisting of those of the formulae

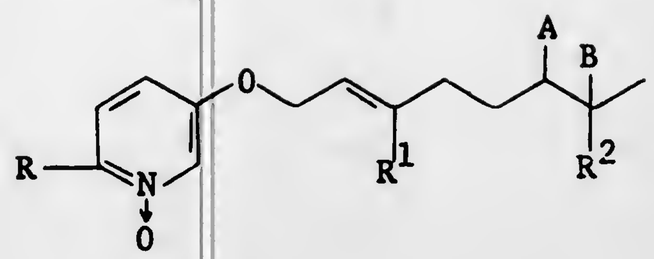


wherein Alk is lower alkyl having up to 4 carbon atoms, wherein R^3 is H or alkyl having 1 to 3 carbon atoms and wherein *v* is zero or the numbers 1 or 2, tetramethyl urea, N-methyl-2-pyrrolidone, acetonitril, pyridine and a mixture of said solvents.

3,864,334
DERIVATIVES OF CERTAIN N-OXYPRIDYL GERANYL ETHERS AND THEIR USE IN CONTROLLING INSECTS

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Filed Nov. 2, 1973, Ser. No. 412,091
Int. Cl. C07d *31/28*
U.S. Cl. 260—240 H **3 Claims**

1. a compound of the formula:

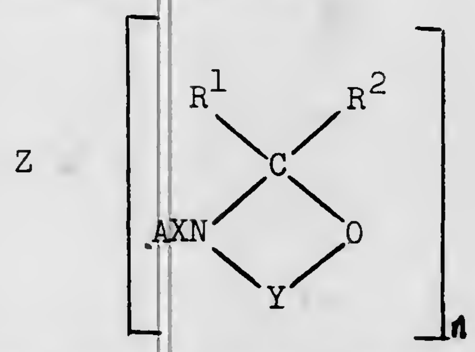


in which R is hydrogen; halogen; or alkyl having one to four carbon atoms; R^1 is methyl or ethyl; R^2 is methyl or ethyl; A and B together form an oxygen bridge or a bond, or A is hydrogen and B is hydrogen, methoxy or ethoxy.

3,864,335
POLYFUNCTIONAL ESTER OXAZOLIDINES

William D. Emmons, Huntingdon Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Continuation-in-part of Ser. No. 768,905, Oct. 18, 1968, abandoned. This application Feb. 11, 1972, Ser. No. 225,673
Int. Cl. C07d *85/26*
U.S. Cl. 260—240 R **14 Claims**

1. A compound of the formula



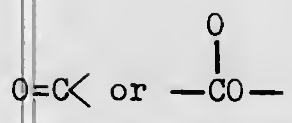
(I)

wherein *n* is an integer equal to the valence of Z of two or three;

Z is saturated divalent hydrocarbon alkylene having 1 to 34 carbon atoms, di- or trivalent phenylene or halo-substituted phenylene, the divalent hydrocarbon residue of 1,1,3-trimethyl-5-carboxy-3-(p-carboxyphenyl) indane, $(C_2\text{-}C_3)$ divalent alkenyl or

$O{=}C<;$

A is -O- when Z is

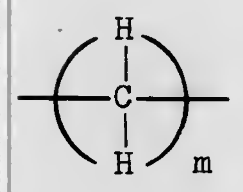


$$O{=}C< \text{ or } -\overset{O}{\overset{|}{C}}O-$$

(the free carbonyl being connected to Z) when Z is other than

$O{=}C<;$

X is

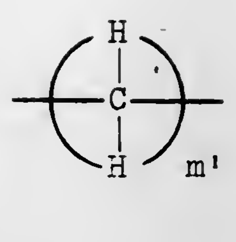


wherein *m* is 2 or 3;

R^1 is hydrogen, phenyl, benzyl or $(C_1\text{-}C_{12})$alkyl;

R^2 is hydrogen or $(C_1\text{-}C_4)$alkyl or R^1 and R^2 can be taken together to form pentamethylene, tetramethylene or $(C_1\text{-}C_2)$-alkyl-substituted pentamethylene or tetramethylene; and

Y is

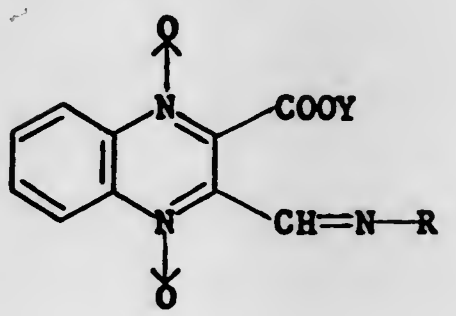


wherein *m'* is 2 or 3.

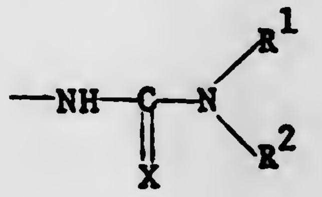
3,864,336
IMINES, THEIR PREPARATION AND THEIR PHARMACEUTICAL USE

Florin Seng, Koln-Buchheim; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 130,007, March 31, 1971,. This application May 11, 1973, Ser. No. 359,308
Claims priority, application Germany, Apr. 2, 1970, 2015676
Int. Cl. C07d *51/78*
U.S. Cl. 260—240 G **12 Claims**

1. A compound of the formula



or a pharmaceutically acceptable non-toxic salt thereof wherein Y is hydrogen, an alkali metal cation or the cation $R^5—N^+H_3$; and each of R and R^5 is



in which

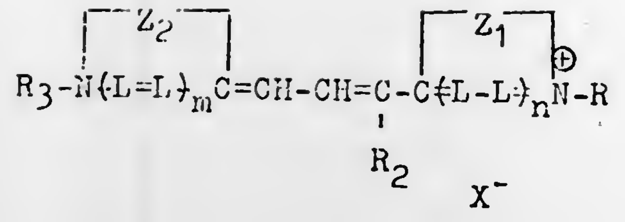
X is O, S or NH, and

each of R^1 and R^2 when taken independently is identical to or different from the other, and is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and hydroxyalkyl of 1 to 4 carbon atoms, or R^1 and R^2 together with the nitrogen atom to which they are attached form a morpholino or S,S-dioxothiomorpholino ring.

3,864,337
8-SUBSTITUTED CARBOCYANINE DYES, SUBSTITUTED VINYL CYANINE DYE INTERMEDIATES, PROCESSES FOR PREPARATION AND NOVEL PHOTOGRAPHIC ELEMENTS

John R. Owen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 30, 1971, Ser. No. 185,453
Int. Cl. C09b *23/06*
U.S. Cl. 260—240.6 **9 Claims**

1. A carbocyanine dye having the formula:



wherein R_1 and R_3 each independently represent a lower alkyl group, a lower alkenyl group or an aryl group of 6 to 10 carbon atoms: R_2 represents a substituent selected from the group consisting of anilino, p-toluidino, lower alkyl substituted anilino, N-lower alkyl anilino, N-lower alkyl-p-toluidino, N-lower alkyl carbonyl anilino, and N-lower alkyl carbonyl p-toluidino; each L represents a methine group; *m* and *n* each represent 0 or 1; X^- represents an acid anion; and Z_1 and Z_2 each represent the non-metallic atoms necessary to complete a 5 to 6 membered heterocyclic ring selected from the group consisting of a thiazole nucleus, an oxazole nucleus, a selenazole nucleus, a thiazoline nucleus, a 2-pyridine nucleus, a 4-pyridine nucleus, an imidazole nucleus, a quinoline nucleus, a 3,3-dialkylindolenine nucleus, a (4,5-b)quinoxaline nucleus, a 3H-pyrrolo(2,3-b)-pyridine nucleus, or a thiazolo(4,5-b) quinoline nucleus.

3,864,338

PROCESS FOR THE PREPARATION OF Δ^2-CEPHALOSPORIN ALDEHYDES

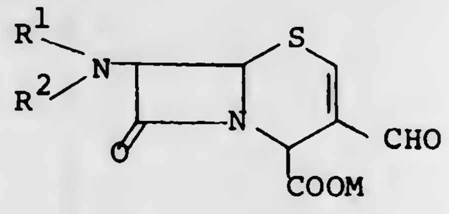
Ekkehard Bohme, Highstown, and Joseph E. Dolfini, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Aug. 11, 1970, Ser. No. 63,007

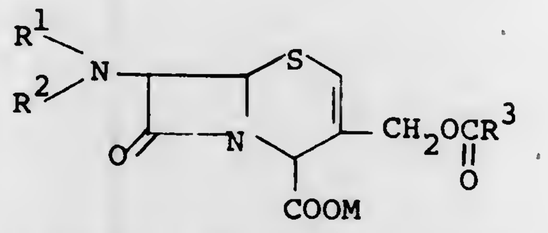
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **5 Claims**

1. A process for producing Δ^2-cephalosporin-3-aldehydes having the formula



wherein R^1 is selected from the group consisting of lower alkanoyl, thienylacetyl, phenylacetyl, phenoxyacetyl, benzoyl, chloroacetyl, 2-amino-2-phenylacetyl, and α-amino-cyclohexadienylacetyl; R^2 is hydrogen; R^1R^2N taken together are phthalimido; and M is selected from the group consisting of hydrogen, lower alkyl, trichloroethyl, and a pharmaceutically acceptable nontoxic salt thereof; which comprises treating a compound having the formula



wherein R^3 is selected from the group consisting of lower alkyl, phenyl, chlorophenyl, lower alkoxyphenyl, benzyl, and styryl; with a halogenating agent selected from the group consisting of N-bromosuccinimide, N-chlorosuccinimide, N-chlorophthalimide, N-bromoacetamide, sulfuryl chloride, t-butylhypoiodite, molecular chlorine, and molecular bromine; in the presence of a catalytic amount of a catalyst selected from the group consisting of hydrogen peroxide, benzoyl peroxide, t-butyl hydroperoxide, acetyl peroxide and azobisisobutyronitrile and a solvent selected from the group consisting of chloroform, methylene chloride, and dimethoxyethane.

3,864,339

SUBSTITUTED 1 H-OXAZOLO(4,3-C)(1,4)THIAZINIUM

Robert Thomas, Guildford, England, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

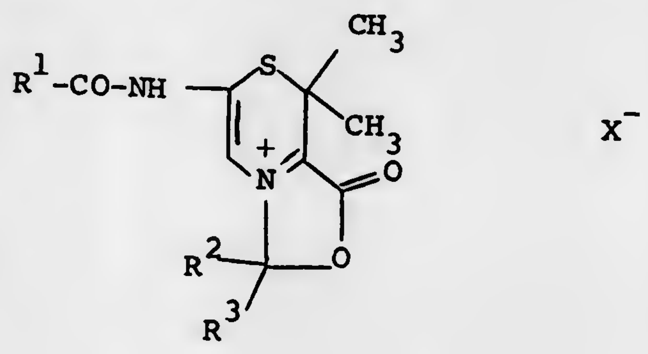
Filed Sept. 28, 1973, Ser. No. 401,797

Claims priority, application Great Britain, Jan. 3, 1973, 410/73

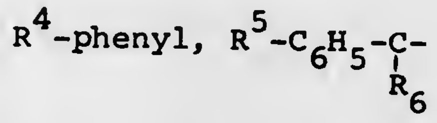
Int. Cl. C07d *93/10*

U.S. Cl. 260—243 R **6 Claims**

1. A compound of the formula



wherein R^1 is lower alkyl,
R^4-phenyl,



$$R^4\text{-phenyl},\ R^5\text{-}C_6H_5\text{-}\underset{R_6}{\underset{|}{C}}\text{-}$$

phenoxymethyl, thienyl, furyl, pyridyl, cyclohexadienyl, cyclohexadienylmethyl, thienylmethyl, furylmethyl, pyridylmethyl;
R^2 and R^3 each is lower alkyl or phenyl;
R^4 is hydrogen, halogen or lower alkyl;
R^5 is hydrogen, halo, hydroxy, lower alkoxy or lower alkyl;
R^6 is hydrogen, amino, halo, carboxy or lower alkoxy and X is halogen.

3,864,340

PROCESS FOR PRODUCING 7-ACYLAMIDO-3-CEPHEM-4-CARBOXYLIC ACIDS

Toshiyasu Ishimaru, Osaka, and Yutaka Kodama, Toyama-ken, both of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

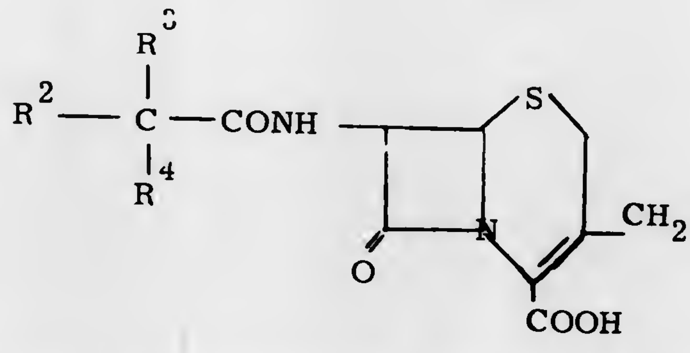
Filed Dec. 27, 1972, Ser. No. 318,714

Claims priority, application Japan, Dec. 28, 1971, 46-2201; Dec. 28, 1971, 46-2202

Int. Cl. C07d *99/24*

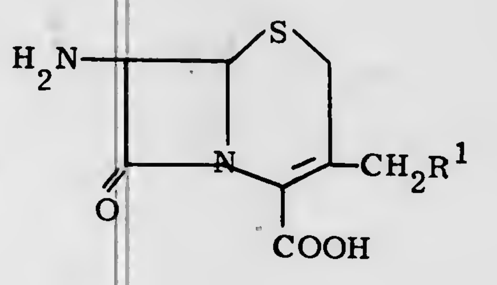
U.S. Cl. 260—243 C **10 Claims**

1. In a process for producing 7-acylamido-3-cephem-4-carboxylic acids represented by the formula:

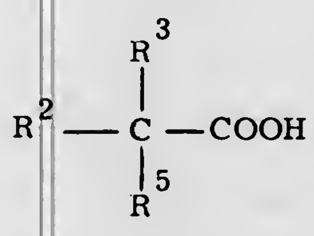


wherein R^1prepresents hydrogen, halogen, azido, acetoxy, lower alkyloxy, phenoxy or 5-lower alkyl-1,3,4-thiadiazol-2yl thio group: R^2represents hydrogen, lower alkyl, phenyl, hydroxyphenyl, thienyl, tetrazolyl or a $C_{4\text{-}7}$cycloalkenyl group; R^3represents hydrogen, phenoxy or pyridylthio group and R^4represents hydrogen or amino group, the improvement which comprises:

reacting an alkali salt or a tertiary amine salt selected from the group consisting of trimethylamine, triethylamine, tripropylamine, tributylamine, N-methylpiperidine, N-ethylpiperidine, N-methylmorpholine, dimethylethylamine, pyrrolidine, piperidine and diethylamine salts of 7 -amino-3-cephem-4-carboxylic acid of the formula:

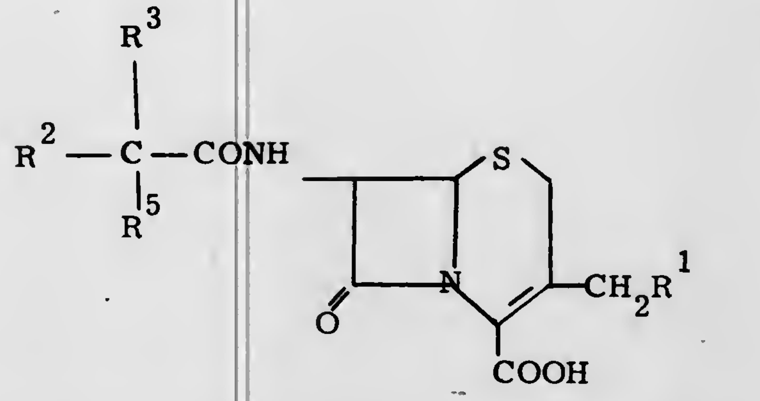


wherein $R^1$is the same as defined above, with a reactive derivative of a carboxylic acid of the formuls:



$$R^2-\overset{\overset{R^3}{|}}{\underset{\underset{R^5}{|}}{C}}-COOH$$

wherein R^5represents hydrogen or an amino group protected in the form of a salt of hydrochloric acid, hydrobromic acid or p-toluenesulfonic acid or an N protected amino group wherein said protecting group is lower alkoxycarbonyl, halo lower alkoxycarbonyl, nitrophenoxycarbonyl, benzyloxycarbonyl, benz-hydryloxycarbonyl, cyclopentyloxycarbonyl, furfuryloxycarbonyl, formyl, trifluoroacetyl, phthaloyl, succinoyl, trityl, bis(p-methoxyphenyl)-methyl, bis (p-methoxyphenyl)-phenyl methyl, o-nitrophenylsulfenyl or 2, 4-dinitrophenyl-sulfenyl or an enamine compound of an aldehyde, a β-diketone, a β-keto-acid ester or a β-keto acid amide and $R^2$and $R^3$are the same as defined above, in the presence of a $C_{1\text{-}3}$mono-,di,or trihydric alcohol as a solvent to produce a compound of the formula:



wherein R^1, R^2, $R^3$and R^5aare as defined above, and then removing the protecting group of the amino group when R^5represents an N-protected amino group or an amino group protected in the salt form.

3,864,341

3-MORPHOLINO-2-CYANOACRYLAMIDE

Ronald M. Cresswell, Scarsdale; John W. Mentha, Hartsdale, and Russell Seaman, Chappaqua, all of N.Y., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 781,590, Dec. 5, 1968, Pat. No. 3,682,957. This application Apr. 14, 1972, Ser. No. 244,305

Claims priority, application Great Britain, Feb. 2, 1968, 5397/68

Int. Cl. C07d *87/44*

U.S. Cl. 260—247.2 A **1 Claim**

1. 3-morpholino-2-cyanoacrylamide.

3,864,342

HERBICIDAL N-SUBSTITUTED-DITHIOAMINO AND N-SUBSTITUTED- OXYTHIOAMINO TRIAZINES

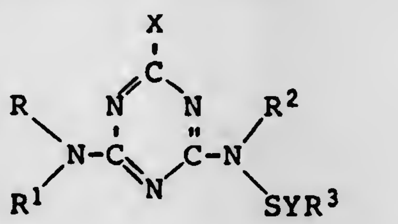
James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 251,088, May 8, 1972,. This application Jan. 2, 1974, Ser. No. 430,321

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **11 Claims**

1. Triazine compound of the formula



wherein X is fluorine, chlorine, bromine, alkoxy of 1 to 4 carbon atoms, or alkylthio of 1 to 4 carbon atoms, R is hydrogen or alkyl of 1 to 4 carbon atoms, R^1 is alkyl of 1 to 4 carbon atoms, R^2 is alkyl of 1 to 4 carbon atoms, R^3 is alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms, cycloalkyl of 3 to 8 carbon atoms or carbocyclic mononuclear or binuclear aryl of 6 to 12 carbon atoms and of up to 2 fluorine, chlorine, bromine, trifluoromethyl, nitro or alkoxy of 1 to 4 carbon atoms, and Y is oxygen or sulfur.

3,864,343

7-ALKOXYCARBONYL-4-HYDROXYMETHYL-1-PHTHALAZONE COMPOUNDS

Michiro Inoue, 26-3 6-Chome Kokurgo-Cho; Masayuki Ishikawa, 14-13 3-Chome Akazutsumi; Takashi Tsuchiya, 17-25,5-Chome Minomikoiwa, and Takio Shimamoto, 13-Kitamachi, Shinjuku-Ku, all of Tokyo, Japan

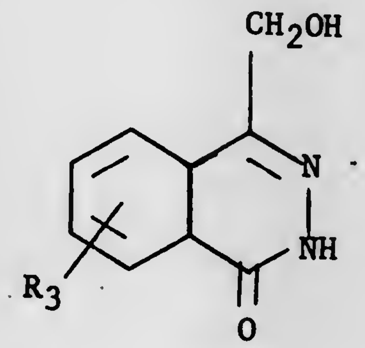
Filed July 24, 1972, Ser. No. 275,171

Claims priority, application Japan, Aug. 5, 1971, 46-58643

Int. Cl. C07d *51/06*

U.S. Cl. 260—250 P **2 Claims**

1. A compound of the following formula:



wherein R_3 is alkoxycarbonyl having C_1–C_5 alkoxy and the water-soluble pharmaceutically acceptable acid salts thereof.

3,864,344

3-(BENZOYL)-2-(4'-ANILINO CARBONYL OR BENZOXY-ALKYL PIPERAZINO)-PROPIONITRILES

Thomas Raabe, Heusenstamm Uber Offenbach, Germany; Adolf Stachel, deceased, late of Frankfurt (Main)-Fechenheim, Germany (by Ingeburg Lydia Katharina Stachel, heiress); Josef Scholtholt, Frankfurt (Main)-Fechenheim, and Rolf-Eberhard Nitz, Bergen-Enkheim, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt (Main)- Fechenheim, Germany

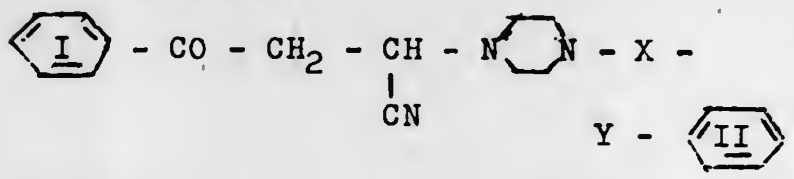
Division of Ser. No. 239,359, March 29, 1972,. This application May 11, 1973, Ser. No. 359,442

Claims priority, application Germany, Apr. 2, 1971, 2116293

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 CN **6 Claims**

1. A compound of the formula



wherein X stands for alkylene having 1 to 4 carbon atoms,

Y stands for a member selected from the group consisting of —O—CO— and —CO—NH—

the nucleus I being selected from the group consisting of phenyl, methylphenyl, chlorophenyl, fluorophenyl and mono-, di- and tri-methoxyphenyl, the nucleus II being selected from the group consisting of phenyl, chlorophenyl, mono-, di- and tri-methylphenyl, mono- di-, and tri-methoxyphenyl, or a pharmaceutically acceptable acid addition salt of said compound.

3,864,345

PROCESS FOR PREPARING NOVEL N-(PIPERAZINYLETHYL)-CARBAMATES

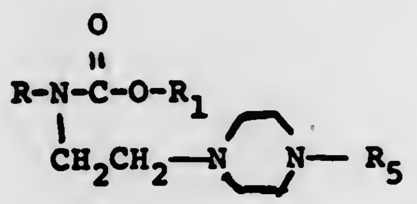
Franklin W. Abbate, and William J. Farrissey, Jr., both of North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 15,925, March 2, 1970, Pat. No. 3,719,680. This application Dec. 13, 1972, Ser. No. 314,611

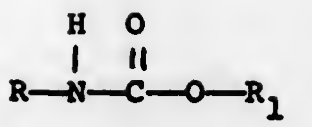
Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R **10 Claims**

1. A process for preparation of a compound of the formula:



wherein R is a hydrocarbon group selected from the group consisting of alkenyl having 2 to 12 carbon atoms, and cycloalkyl and cycloalkenyl having 4 to 8 carbon atoms, and aryl and aralkyl and alkaryl having 7 to 12 total carbon atoms: R_1 is selected from the group consisting of CH_3 and straight chain lower alkyl of from 2 to 8 inclusive carbon atoms; $CH_2CH_2R_3$, wherein R_3 is selected from the group consisting of CH_3O and straight chain lower alkoxy of from 2 to 8 inclusive carbon atoms, and aryloxy of from 6 to 12 carbon atoms and with the proviso that when R_5 is $CH_2CH_2R_3$, then R_1 is the same substituent group; which comprises the step of reacting a carbamate of the formula:



$$R-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-O-R_1$$

wherein R and R_1 have the same meaning as previously defined, with triethylenediamine and an alkylating agent of the formula:

$$R_4COOR_5,$$

wherein R_4 is selected from the group consisting of CH_3 and straight chain lower alkyl of from 2 to 8 inclusive carbon atoms, CH_3O and straight chain lower alkoxy of from 2 to 8 inclusive carbon atoms, R_5 is selected from the group consisting of CH_3 and straight chain lower alkyl of from 2 to 8 inclusive carbon atoms; and with the proviso that when R_4 is CH_3 or straight chain lower alkyl, then R_5 is CH_3; and when R_4 is CH_3O or straight chain lower alkoxy, the alkyl group thereof has the same number of carbon atoms as R_5 aryl being selected from the group of phenyl and naphthyl; said reaction being conducted in the presence of an inert organic solvent which is a liquid at room temperature.

3,864,346

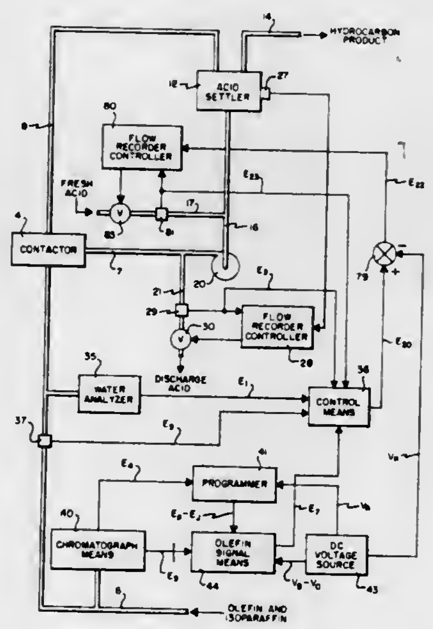
MEANS AND METHOD FOR CONTROLLING THE STRENGTH OF ACID IN AN ALKYLATION UNIT

Edward T. Child, Hacienda Heights, Calif.; John E. May, Nederland, Tex., and William D. Stephanek, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 169,385, Aug. 5, 1971, Pat. No. 3,733,473. This application Aug. 21, 1972, Ser. No. 282,092

Int. Cl. C07c *3/14;* **G01n** *31/08;* **G06g** *7/58*

U.S. Cl. 260—683.59 **3 Claims**



3. A method for controlling the strength of an acid in an alkylation processing unit wherein an isoparaffin is reacted with olefin in the presence of the acid to provide an acid-hydrocarbon mixture to a settler where the hydrocarbon is separated from the acid to provide a hydrocarbon product and a portion of the acid is recycled while the remaining acid is discharged from the alkylation unit and wherein fresh acid is added to the recycle acid to affect the strength of the acid, which comprises determining the composition of the olefin, determining the water content of the olefin and isoparaffin, sensing the flow rates of the olefin and isoparaffin, the fresh acid and the discharge acid, determining the quantity of an alkylate compound being formed from the olefin and isoparaffin in the acid and immediately leaving the acid phase after formation, determining the quantity of an acid contaminate compound being formed in the acid phase from the alkylate compound and which can return to the alkylate compound, determining the quantity of another acid contaminate compound being formed from the alkylate compound and which cannot return to the alkylate compound, and controlling the flow rate of one of the acids of the fresh acid and discharge acid relative to the flow rate of the other acid so as to control the acid strength in accordance with the determination of the water content of the olefin and isoparaffin, with the determination of the flow rates of the olefin and isoparaffin, the fresh acid and the discharge acid, and with the determination of the quantities of the alkylate and acid contaminate compounds.

3,864,347

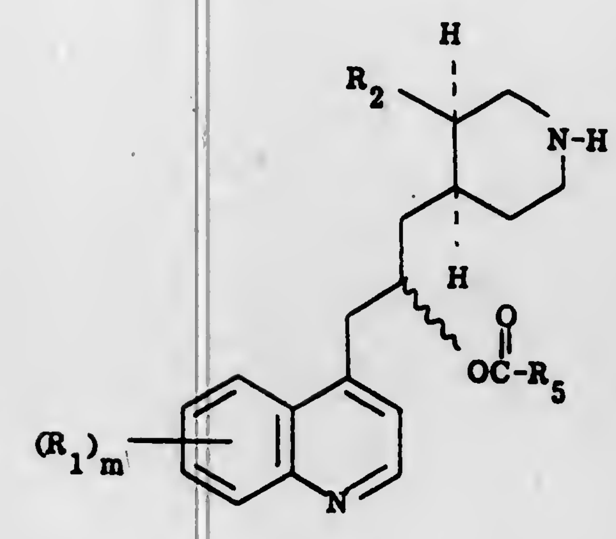
Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Uskokovic, Milan Radoje, Montclair, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 212,774, Dec. 27, 1971, Pat. No. 3,772,302, which is a continuation-in-part of Ser. No. 108,784, Jan. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 837,354, June 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,914, July 2, 1968, abandoned. This application Aug. 1, 1973, Ser. No. 384,765

Int. Cl. C07d *43/24*

U.S. Cl. 260—287 R **5 Claims**

1. An epimeric compound of the formula



wherein *m* is 0, 1 or 2; Rphd 1 is hydrogen, hydroxy, chloro, trifluoromethyl, methyl, methoxy, ethyl, propyl, butyl, or, when *m* is 2, R_1 with an adjacent R_1, additionally is methylenedioxy; R_2 is vinyl or ethyl; and R_5 is lower alkyl of 1 to 7 carbon atoms, phenyl or benzyl;

3,864,348

1-OXA-3,8-DIAZA SPIRO (4,5) DECANE COMPOUNDS

Gilbert Regnier, Chatenay Malabry; Roger Canevari, Villebon/Yvette; Jean-Claude Poignant, Bures/Yvette, and Jacques Duhault, Chatou, all of France, assignors to "Science Union et Cie, Societe Francaise de Recherche Medical", Suresnes, France

Filed Oct. 6, 1972, Ser. No. 295,731

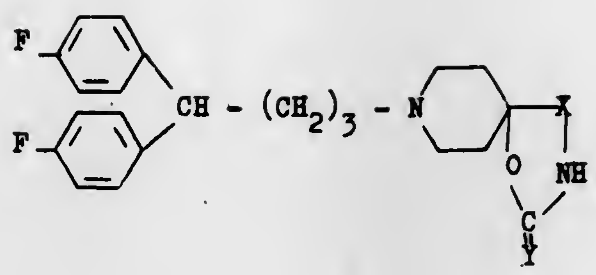
Claims priority, application France, Oct. 29, 1971, 71.38875

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.66 **4 Claims**

1. A compound selected from the group consisting of:

A. 1-oxa-3,8-diaza spiro (4,5) decane compounds of the formula:



wherein:

X is selected from the group consisting of methylene and carbonyl, and

Y is selected from the group consisting of oxygen and sulfur; and

B. physiologically tolerable addition salts thereof.

3,864,349

HYDRAZONIUM SALTS

Minoru Nagao, Ibaraki; Takashi Iwata, Kyoto; Hideo Yagi, Osaka; Saburo Tamura, Tokyo; Hisae Haruta, Ibaraki, and Kazuo Nakanishi, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

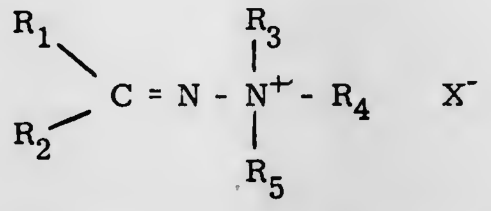
Filed June 2, 1971, Ser. No. 149,352

Claims priority, application Japan, June 11, 1970, 45-50920; July 25, 1970, 45-65235

Int. Cl. C07d *29/12*

U.S. Cl. 260—293.65 **25 Claims**

1. A hydrazonium salt of the formula



$$\begin{matrix}R_1 \\ R_2\end{matrix}\!\!>C=N-\overset{R_3}{\overset{|}{\underset{\underset{R_5}{|}}{N^+}}}-R_4\qquad X^-$$

wherein R_1 is a hydrogen atom or a lower alkyl radical; R_2 is a 5 to 7-membered cycloalkenyl radical of from 5 to 10 carbon atoms, a 5 to 10-membered cycloalkenyl-(lower)alkenyl radical of 7 to 12 carbon atoms, or R_1 and R_2 are both lower alkyl radicals which are linked together to form a 5 to 7-membered cycloalkyl or cycloalkenyl group of not more than 10 carbon atoms; R_3 and R_4 are each a lower alkyl radical which may be linked directly together to form a 5 to 7-membered saturated heteromonocyclic group containing a nitrogen atom; R_5 is a lower alkyl radical and X is a halogen atom.

3,864,350

PRIDYL-1H-BENZIMIDAZOLE N-OXIDES

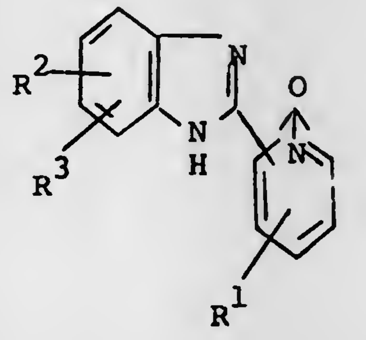
Rudiger D. Haugwitz, Titusville, and Venkatachala Lakshmi Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 18, 1974, Ser. No. 452,245

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **5 Claims**

1. A compound of the formula



wherein R^1 and R^3 each is hydrogen or lower alkyl; R^2 is isothiocyanato; and acid physiologically acceptable acid addition salts thereof.

3,864,351

1-(α-CARBOXYMETHOXYBENZOYL-2-(2′-PYRIDYL)BENZIMIDAZOLES

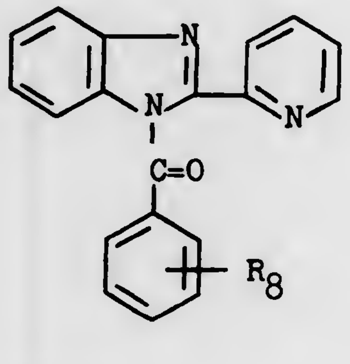
Reinhard Sarges, Old Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 186,446, Oct. 4, 1971, Pat. No. 3,751,428, which is a division of Ser. No. 714,416, March 20, 1968, Pat. No. 3,625,954. This application Apr. 9, 1973, Ser. No. 349,222

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 B **2 Claims**

1. A compound selected from the group having the structural formula:



wherein R_8 is $-OCH_2CO_2H$.

3,864,352

MANUFACTURE OF BIPYRIDYLIUM SALTS

John Edward Colchester; John Francis Cairns, and John Gerard Carey, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, Millbank, London, England

Filed Dec. 5, 1969, Ser. No. 882,701

Claims priority, application Great Britain, Dec. 23, 1968, 61010/68

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **19 Claims**

1. A process for the manufacture of a 1,1′ lower alkyl or carbamido lower alky-disubstituted-4,4′-bipyridylium salt which comprises forming the corresponding 1,1′-disubstituted-1,1′-dihydro-4,4′-bipyridyl by treating the corresponding 1,1′-disubstituted-1,1′,4,4′-tetrahydro-4,4′-bipyridyl with an organic compound which has a redox potential in water more positive than -1.48 volts as compared with the saturated calomel electrode and which accepts a hydride ion removed from said tetrahydrobipyridyl to form an unstable anion which under the conditions of the reaction has a redox potential more negative than -0.45 volts as compared with the saturated calomel electrode, and subsequently oxidizing the resulting interaction product containing the said dihydrobipyridyl with an oxidizing agent selected from oxygen and an oxidizing agent which has a redox potential in water more positive than -0.50 volt as compared with the saturated calomel electrode.

3,864,353

1-(1-IMIDAZOLYL) (1,2,4) THIADIAZOLO (4,5-ALPHA) BENZIMADAZOLES

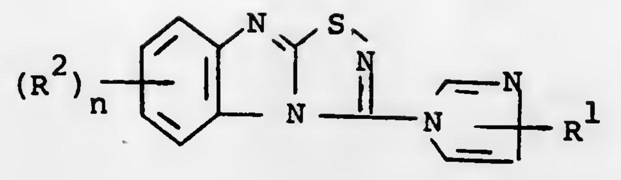
Rudiger D. Haugwitz, Titusville, and Venkatachala Lakshmi Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 17, 1973, Ser. No. 425,448

Int. Cl. C07d *99/10*

U.S. Cl. 260—306.8 F **9 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, lower alkyl, phenyl or substituted phenyl wherein the phenyl substituent is halo or nitro; R^2 is hydrogen, lower alkyl, nitro, halo or benzoyl; and *n* is 1 or 2.

3,864,354

BENZOXAZOLE AND OXADIAZOLE ULTRAVIOLET STABILIZERS

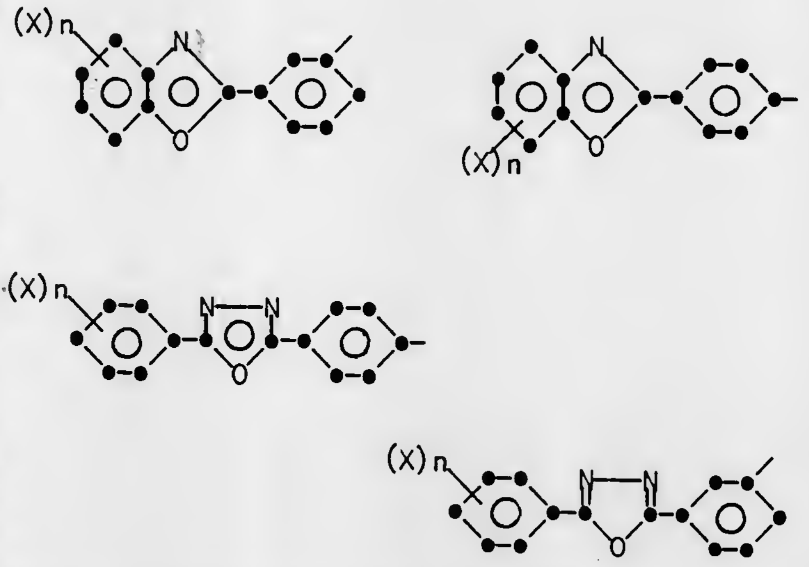
Gether Irick, Jr.; Charles A. Kelly, both of Kingsport, and James C. Martin, Johnson City, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,040

Int. Cl. C07d *85/54*

U.S. Cl. 260—307 D **6 Claims**

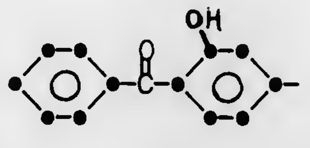
1. A composition of matter comprising compounds of segments A and B or A and C wherein segment A is of the structure:



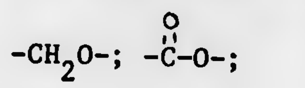
wherein X is meta or para to the heterocyclic ring and X may be the following:

C_6H_5, Cl, Br and lower alkyl,

where n = 0-2; segment B is of the structure:

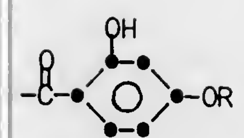


wherein the radical bond is either meta or para to the carbonyl group, A being linked through a group selected from



$$-CH_2O-;\ -\overset{O}{\overset{\|}{C}}-O-;$$

and segment C is of the structure



wherein R is CH_3 or $Cn'H_2n' + 1$, where n′ = 2–18; A and C being linked through a carbon-carbon bond.

3,864,355

ANTIVIRAL

3-ARYL-5-(CYANOBENZYLIDENE)OXAZOLIDIENE 2,4-IONES

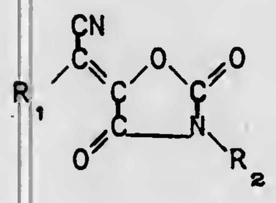
Ronald E. Hackler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 23, 1973, Ser. No. 353,926

Int. Cl. C07d *85/34*

U.S. Cl. 260—307 B **6 Claims**

1. A compound of the formula,



wherein R_1 is a monovalent aryl group selected from the group consisting of phenyl and p-chlorophenyl and R_2 is a monovalent aryl group selected from the group consisting of phenyl, p-chlorophenyl, and 1-naphthyl, with the limitation that when R_2 is 1-naphthyl, R_1 is phenyl.

3,864,356

METHOD FOR PREPARING S-TRIAZOLO (4,3-A) (1,4) BENZODIAZEPINE DERIVATIVES

Kanji Meguro, and Yutaka Kuwada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

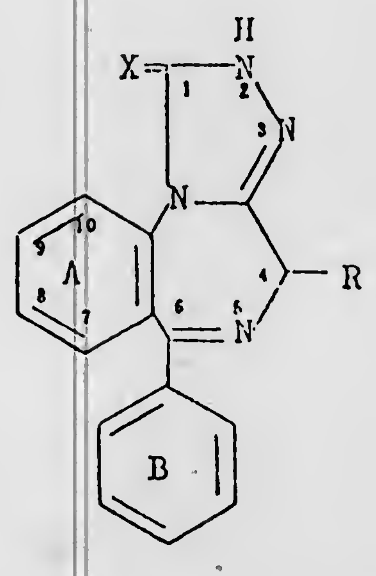
Continuation of Ser. No. 90,422, Nov. 17, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,412

Claims priority, application Japan, Nov. 18, 1969, 44-92366

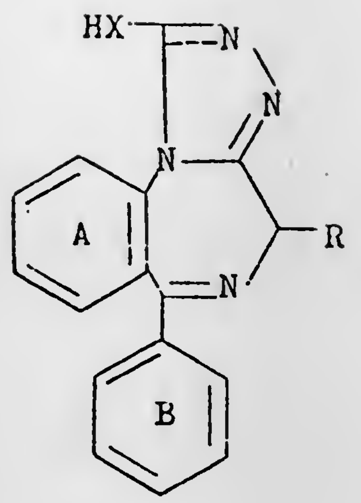
Int. Cl. C07d *57/02*

U.S. Cl. 260—308 C **2 Claims**

1. A method for producing a 1-oxo- or 1-thioxo-s-triazolo[4,3-a][1,4] benzodiazepine derivative of the formula

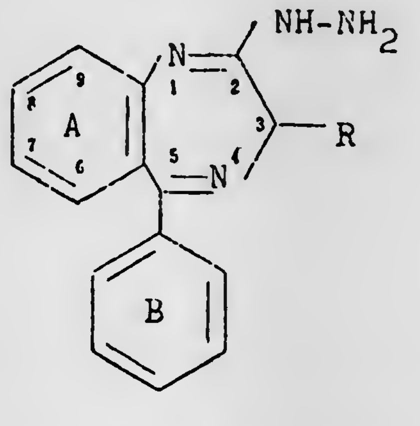


wherein rings A and B independently are unsubstituted or substituted by one or more members selected from the group consisting of halogen, nitro, trifluoromethyl, alkyl of up to 6 carbon atoms and alkoxy of up to 4 carbon atoms, R is hydrogen or lower alkyl and X is oxygen or sulfur, a corresponding 5N-oxide thereof or tautomer thereof of the formula



wherein rings A and B, R and X have the same meaning as defined above

which comprises reacting a 2-hydrazino-1,4-benzodiazepine derivative of the formula

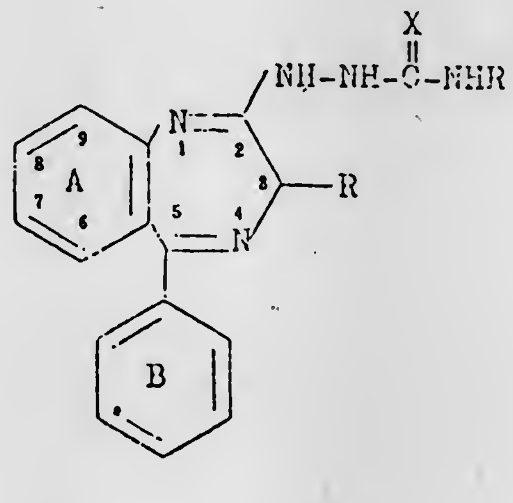


wherein rings A and B, and R have the same meaning as defined above, or a corresponding 4N-oxide thereof with an isocyanic or isothiocyanic acid ester of the formula

R′NCX

wherein R′ is a member selected from the group consisting of alkyl of 1–8 carbon atoms, cycloalkyl of 3–8 carbon atoms, phenyl, naphthyl and phenyl lower alkyl, and X has the same meaning as defined above

and heating the resultant 2-(4-substituted semicarbazido) or 2-(4-substituted thiosemicarbazido)-1,4-benzodiazepine derivative of the formula



wherein rings A and B, R, R′ and X have the same meaning as defined above, or a corresponding 4N-oxide thereof, to a temperature of from about 120° to 250°C to cause cyclization thereof.

3,864,357
ACRYLIC ACID ESTERS CONTAINING A N,N-HETEROCYCLIC RING

Daniel Porret, Binningen, and Jurgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

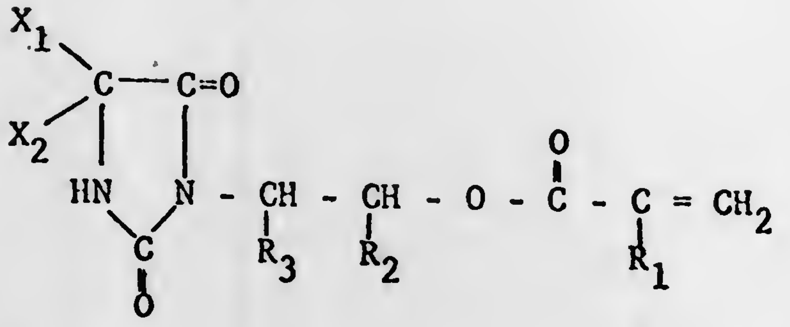
Filed July 9, 1973, Ser. No. 377,698

Claims priority, application Switzerland, July 12, 1972, 10424/72

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **10 Claims**

1. Acrylic acid esters of the formula



wherein X_1 and X_2 each represent a hydrogen atom or an alkyl radical with 1–4 carbon atoms or together represent the tetramethylene or pentamethylene radical, R_1 and R_3 independently of one another each represent a hydrogen atom or the methyl group and R_2 represents a hydrogen atom or the methyl or phenyl group, or wherein R_2 and R_3 together represents the trimethylene or tetramethylene radical.

3,864,358
EPOXY-ACRYLIC ACID ESTERS

Daniel Porret, Binningen, and Jurgen Habermeier, Pfeffingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

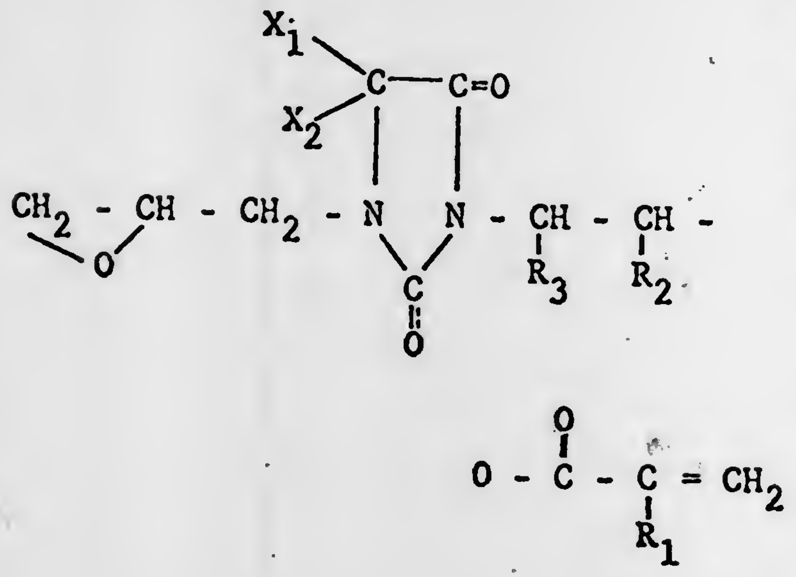
Filed July 9, 1973, Ser. No. 377,699

Claims priority, application Switzerland, July 12, 1972, 10425/72

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **6 Claims**

1. Epoxyacrylic acid esters of the formula



wherein X_1 and X_2 each represent a hydrogen atom or an alkyl radical with 1–4 carbon atoms or together represent the tetramethylene or pentamethylene radical, R_1 and R_3 independently of one another each represent a hydrogen atom or the methyl group and R_2 represents a hydrogen atom, the methyl or phenyl group, or where R_2 and R_3 together represent the trimethylene or tetramethylene radical.

3,864,359
5-AMINO-3-ETHYL-1-PHENYL-4-PYRAZOLECARBOXAMIDES AND METHOD OF PREPARATION THEREOF

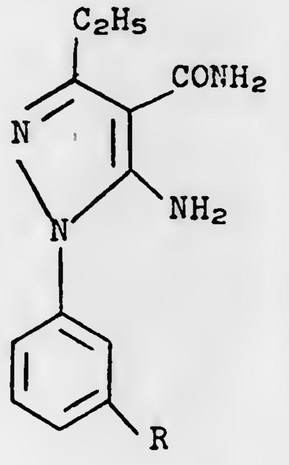
Joseph William Marsico, Jr., Pearl River, N.Y.; Joseph Peter Joseph, Cliffside Park, N.J., and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 248,990, May 1, 1972, Pat. No. 3,760,082. This application May 3, 1973, Ser. No. 356,979

Int. Cl. C07d *49/20*

U.S. Cl. 260—310 R **5 Claims**

1. A pyrazolecarboxamide of the formula:



wherein R is hydrogen, chloro or fluoro, or non-toxic acid addition salt thereof.

3,864,360
N-(2-[3-HYDROXY-3-PHENYL-2-PHTHALIMIDINYL]-ETHYL)-SULFONAMIDES

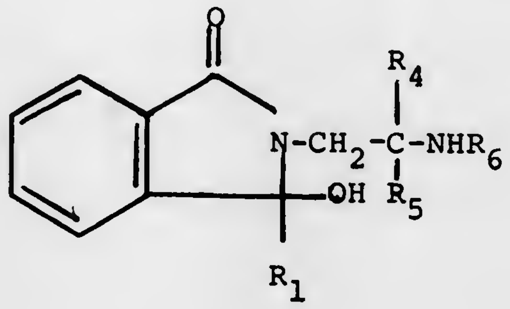
Theodore S. Sulkowski, Wayne, and Albert A. Mascittl, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 10,984, Feb. 12, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,634

Int. Cl. C07d *27/50*

U.S. Cl. 260—325 PH **7 Claims**

1. A compound selected from the group consisting of those having the formula:



wherein R_1 is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl, diOlower)alkoxyphenyl; R_4 and R_5 are selected from the group consisting of hydrogen and lower alkyl; R_6 is selected from the group consisting of lower alkylsulfonyl, phenylsulfonyl, monohalophenylsulfonyl, dihalophenylsulfonyl, mono(lower)alkylphenylsulfonyl, di(lower)alkylphenylsulfonyl and lower alkoxyphenylsulfonyl.

3,864,361
STEREOSPECIFIC HYDROGENATION PROCESS USING UNSUPPORTED RUO_2 CATALYST

Neil W. Stillman, Madison, and Edmond R. Osgood, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 15, 1973, Ser. No. 332,721

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.8 **5 Claims**

1. A process for hydrogenating 2,5-dimethylpyrrole to 2,5-dimethylpyrrolidine which consists essentially of contacting said 2,5-dimethylpyrrole at a temperature of 75°–160° C and under a hydrogen pressure of 200–1,000 psig with from about 0.2 to 0.8 %, by weight of the 2,5-dimethylpyrrole, of an unsupported ruthenium dioxide as the sole hydrogenation catalyst, said ruthenium dioxide having an average crystallite size ranging up to about 1,000 A, and recovering the saturated 2,5-dimethylpyrrolidine product predominantly in cis-isomer form.

3,864,362
ISO FLAVONES

Laszlo Feuer; Mihaly Nogradi; Agnes Gottsegen; Borbala Vermes; Janos Streliszky; Andras Wolfner; Lorant Farkas; Sandor Antus; Maria Kovacs, and Nee Toth, all of Budapest, Hungary, assignors to Chinoin Gyogyszer-Es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 146,773, May 25, 1971, Pat. No. 3,833,730. This application June 27, 1973, Ser. No. 374,056

Claims priority, application Hungary, May 27, 1970, C1-996

Int. Cl. C07d *7/32*

U.S. Cl. 260—345.2 **5 Claims**

1. The catabolic and anorexigenic compound 7-isobutoxyisoflavone.

3,864,363
FURAN PURIFICATION

Glenn F. Kile, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 10, 1973, Ser. No. 377,990

Int. Cl. C07d *5/14*

U.S. Cl. 260—346.1 R **10 Claims**

1. A method for pretreating a bed of base treated zinc oxide before said bed is placed into adsorption service to selectively adsorb contaminants from a furan-containing stream which comprises cycling a fluid stream of dry furan through said bed of adsorbent while gradually increasing the temperature and pressure of said fluid stream until said bed of adsorbent is dry, and then placing said bed into adsorption service.

3,864,364
AZIDES

Clive A. Henrick, Palo Alto, Calif., and Zoecon Corporation, Palo Alto, Calif.

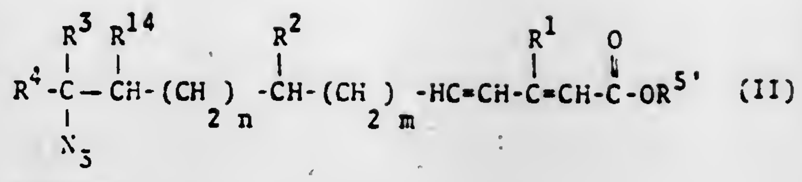
Division of Ser. No. 310,749, Nov. 30, 1972,. This application Mar. 25, 1974, Ser. No. 454,193

Int. Cl. C07c *117/00*

U.S. Cl. 260—349 **4 Claims**

1. A compound selected from those of the following formula (II)

formula (II)



$$R^4\text{-}\underset{N_3}{\overset{R^3}{C}}\text{—}\overset{R^{14}}{CH}\text{-}(CH_2)_n\text{-}\overset{R^2}{CH}\text{-}(CH_2)_m\text{-}HC{=}CH\text{-}\overset{R^1}{C}{=}CH\text{-}\overset{O}{\overset{\|}{C}}\text{-}OR^{5'}\qquad (II)$$

wherein,

each of R^1, R^2, R^3 and R^4 is lower alkyl;
R^{14} is hydrogen or methyl;
R^5 is lower alkyl;
m is zero or the positive integer one; and
n is the positive integer one or two.

3,864,365
CARBONIC ACID DERIVATIVES OF ESTRADIOL AND PROCESSES FOR THEIR PRODUCTION

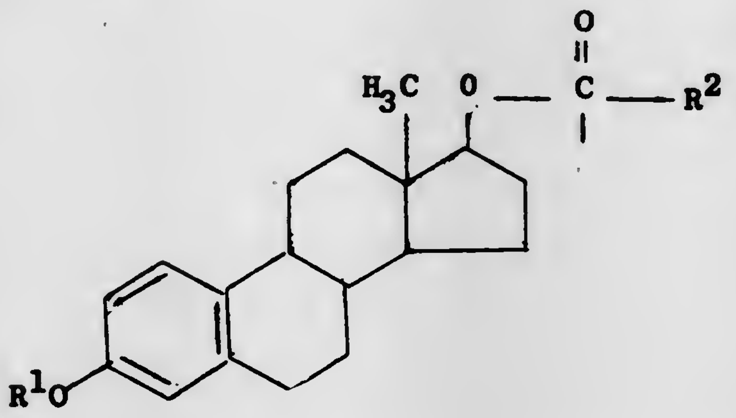
Peter Grosse; Kurt Ponsold; Richard Prousa; Ralf Schnabel, and Jutta Von Zychlinski, all of Jena, Germany, assignors to Veh Venapharm Jena, Jena, Germany

Filed July 27, 1973, Ser. No. 383,445

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.5 **40 Claims**

1. A carbonic acid derivative of estradiol having the following formula:



in which R^1 is a hydrogen or methyl radical, and R^2 is a chlorine, amino, methylamino, ethylamino, benzylamino, cyclohexylamino, dimethylamino, diethylamino, phenylamino, p-tolylamino, p-hydroxphenylamino, 2,2-dimethylhydrazino, isopropylidenehydrazino, p-tolylsufonamido, ethylmercapto, phenylmercapto, 2-cyanoisopropoxy, propargyloxy, phenoxy, p-methoxyphenoxy, p-nitrophenoxy, 8-quinolyloxy, azido, cyano, isopropylideneaminooxy, isothioureido, or N,N-diethylaminoethoxy radical.

3,864,366
NOVEL ACYLAMIDOPHENOL PHOTOGRAPHIC COUPLERS

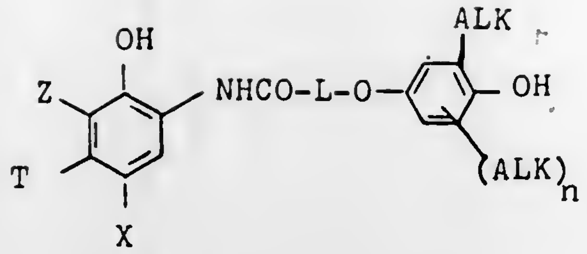
Philip T. Lau; Ilmari F. Salminen, and Leo E. Beavers, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 213,812, Dec. 29, 1971, abandoned. This application June 14, 1973, Ser. No. 370,111

Int. Cl. C07c *103/30*

U.S. Cl. 260—404 **12 Claims**

1. A compound of the formula



wherein:

n is 0–1

L is a divalent alkylene group of 10–20 carbon atoms;

ALK is an alkyl group of 1–8 carbon atoms;

X is (1) hydrogen, (2) a halo group, (3) an alkoxy group, or (4) a phenylthio group,

T is (1) a halo group, (2) an alkyl group or (3) an alkoxy groupl and

Z is individually defined as in T.

3,864,367

DIFUNCTIONAL FATTY SOAP BASED GREASES

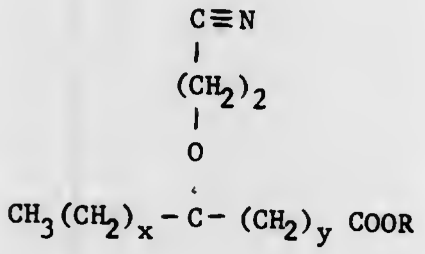
Harold E. Kenney, Jenkintown; Edward T. Donahue, Philadelphia, and Gerhard Maerker, Oreland, all of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 25, 1972, Ser. No. 275,011

Int. Cl. C08h *17/36*

U.S. Cl. 260—404 **14 Claims**

1. A difunctional fatty soap of the general formula



$$CH_3(CH_2)_x-\overset{\overset{\overset{C\equiv N}{|}}{\overset{(CH_2)_2}{|}}}{\overset{O}{C}}-(CH_2)_y\ COOR$$

wherein the sum of *x* and *y* is a number from 10 to 20 and R is a metallic ion selected from the group consisting of lithium, sodium, calcium, barium, and aluminum.

3,864,368

POLYAMIDE OF A MIXTURE OF SECONDARY AND TERTIARY MONOCARBOXYLIC ACIDS

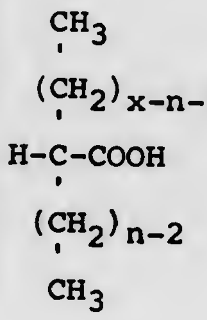
Robert J. Hartle, Gibsonia, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 5, 1973, Ser. No. 367,180

Int. Cl. C07c *103/30*

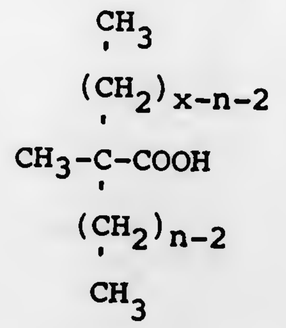
U.S. Cl. 260—404.5 **11 Claims**

1. A polyamide of a mixture of secondary and tertiary monocarboxylic acids and a polyalkylene polyamine containing about 2 to about 6 alkylene units, there being from 2 to 4 carbon atoms in each alkylene group, said mixture of secondary and tertiary monocarboxylic acids falling within each of the following general structures



$$\begin{array}{c} CH_3 \\ | \\ (CH_2)_{x-n-1} \\ | \\ H-C-COOH \\ | \\ (CH_2)_{n-2} \\ | \\ CH_3 \end{array}$$

wherein *x* is a number from 18 to 30 and *n* is the integer 2, 3 4 up to *x*/2 for even integers between 18 and 30 and 2, 3, 4 up to (*x*+1)/2 for odd integers between 18 and 30, and



$$\begin{array}{c} CH_3 \\ | \\ (CH_2)_{x-n-2} \\ | \\ CH_3-C-COOH \\ | \\ (CH_2)_{n-2} \\ | \\ CH_3 \end{array}$$

wherein *x* is a number from 18 to 30 and *n* is the integer 2, 3, 4 and to *x*/2 for even integers between 18 and 30 and 2, 3, 4 up to (*x*+1)/2 for odd integers between 18 and 30, said polyamide containing about 1 to about 3 amine groups in addition to amide groups.

3,864,369

METHOD OF PREPARING CARBOXYLIC ACID SALTS

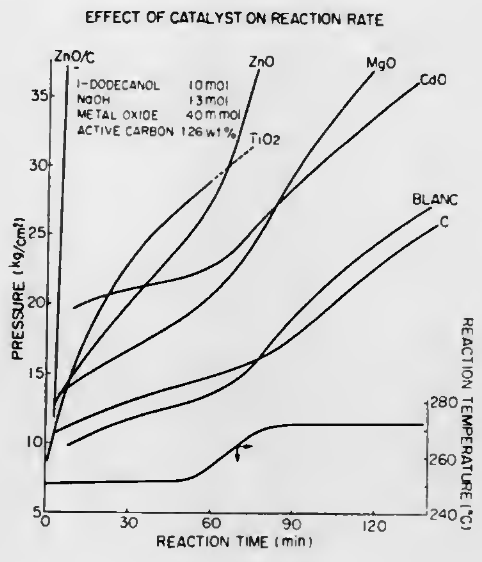
Hiroshi Isa, Funabashi-shi; Takeo Inagaki, Narashino-shi; Takeshi Takemoto, Ichikawa-shi, and Kazuo Endoh, Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1971, Ser. No. 138,984

Claims priority, application Japan, May 9, 1970, 45-39528

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **8 Claims**



1. A process for preparing carboxylic acid salt from alcoholic oxygen-containing organic reactant selected from the group consisting of primary alcohols, aldehydes; aldols, esters, alkanolamines and aluminum alcoholates, comprising reacting said alcoholic oxygen-containing organic reactant with an alkali metal compound selected from the group consisting of alkali metal oxides and hydroxides, under oxidative dehydrogenation conditions of a temperature in the range of 150° to 350°C and a pressure in the range of 2 to 100 atmospheres, in the presence of from 0.01 to 10% by weight, based on the weight of said alcoholic oxygen-containing reactant, of catalyst consisting essentially of a mixture of (a) at least one member selected from the group consisting of zinc, copper, the oxides of metals of Group IB, Group II and Group IV of the Periodic Table, zinc chloride and zinc hydroxide, and (b) solid carbon having a surface area in the range of from 25 to 1,700 m²/g, the weight ratio of (a):(b) being in the range of about 100:1 to 1:100.

3,864,370

METHOD OF REFINING CRUDE SYNTHETIC FATTY ACIDS

Takashi Yamashita, and Sadayoshi Ninagawa, both of Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,239

Claims priority, application Japan, Aug. 6, 1971, 46-59425

Int. Cl. C09f *5/10*

U.S. Cl. 260—419 **4 Claims**

1. A method of purifying crude fatty acid produced by oxidation of paraffin and essentially consisting of pure fatty acid and, as contaminants, ester of said fatty acid and at least one member of the group consisting of estolide, alcohol, lactone, and hydroxycarboxylic acid, which method comprises:

a. holding a liquid phase essentially consisting of said crude fatty acid in contact with a solid catalyst at 150° to 350°C until the amount of said ester is substantially decreased, whereby said fatty acid is purified,
  1. said catalyst being insoluble in said crude fatty acid and inert to said pure fatty acid at said temperature,
  2. said catalyst essentially consisting of oxide of at least one member of the group consisting of aluminum, silicon, titanium, and zirconium; and

b. separating the purified fatty acid from said catalyst.

3,864,371

BISAZOMETHINE PIGMENT AND PROCESS FOR ITS MANUFACTURE

Eric Richard Inman, Bridge of Weir; James McGeachie McCrae, Stewarton; Christopher Midcalf, Kilbarchan, and Alison Turner, Houston by Johnstone, all of Scotland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

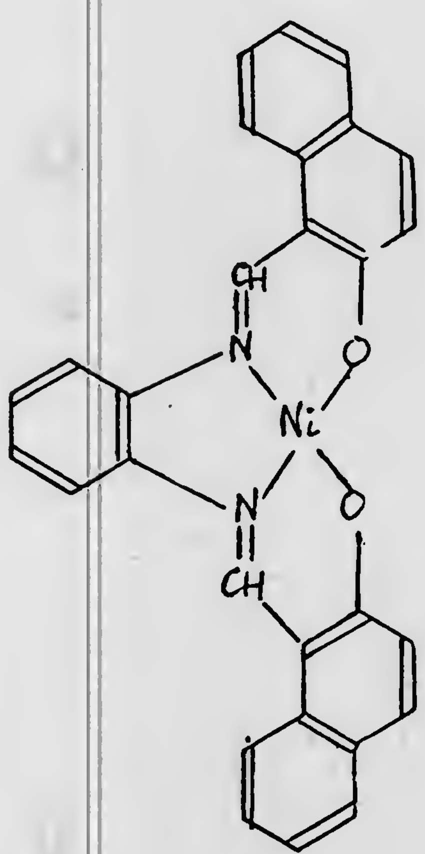
Filed Feb. 20, 1973, Ser. No. 333,598

Claims priority, application Great Britain, Feb. 24, 1972, 8517/72

Int. Cl. C07f *15/04*

U.S. Cl. 260—439 R **8 Claims**

1. A compound having the formula:



in the pigmentary form in which it has an orange-red colour and has an X chromaticity co-ordinate of from 0.59 to 0.63 and a Y chromaticity of from 0.33 to 0.36.

3,864,372

PROCESS FOR THE PRODUCTION OF UNSATURATED ORGANOSILICON COMPOUNDS

Petr Svoboda; Vera Vaisarova; Martin Capka; Jiri Hetflejs; Milos Kraus, and Vladimir Bazant, all of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Filed Dec. 1, 1972, Ser. No. 311,270

Claims priority, application Czechoslovakia, Dec. 10, 1971, 8523-71; Dec. 16, 1971, 8758-71; Mar. 2, 1972, 1362-72; Mar. 29, 1972, 2102-72

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 E **7 Claims**

1. A process for the production of unsaturated organosilicon compounds which comprises contacting a silicon compound containing one hydrogen atom attached to silicon per molecule, with a dienic hydrocarbon containing conjugated C=C double bonds and having from four to eight carbon atoms per molecule in the presence of a palladium complex selected from the group consisting of

L_2PdX_2, $L_2{}^1PdX_2$, L^3PdXCl_2, and $(\pi—C_3H_5)PdCl/_2$

where L is a member selected from the group consisting of tertiary phosphines having at least one phenyl group attached to phosphorus per molecule, X is a member selected from the group consisting of halogens, L^1 is benzonitrile, L^3 is 1,2-bis(triphenylphosphine) ethane or 1,2-bis(cyanomethyl)benzene, and where $\pi—C_3H_5$ is a pi-allyl group.

3,864,373

MANUFACTURE OF TRIALKOXYSILYLAMINO COMPOUNDS

Claus-Dietrich Seiler, Rheinfelden; Hans-Joachim Vahlensieck, Wehr, Baden, and Peter Gerhardt, Oberwihl, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

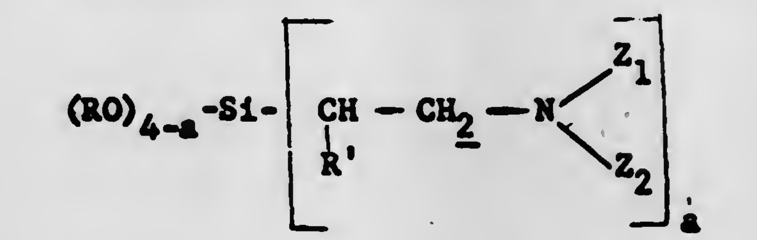
Filed Dec. 7, 1972, Ser. No. 313,074

Claims priority, application Germany, Dec. 13, 1971, 2161716

Int. Cl. C07f *7/10, 7/18*

U.S. Cl. 260—448.8 R **14 Claims**

1. An alkoxysilylethylamino compound of the formula



$$(RO)_{4-a}-Si-\left[\underset{\underset{R'}{|}}{CH}-CH_2-N\begin{matrix} Z_1 \\ Z_2 \end{matrix}\right]_a$$

in which *a* is 1, 2 or 3, R represents a lower substituted or unsubstituted alkyl radical of one to eight carbon atoms, R′ represents a substituted or unsubstituted alkyl radical of one to eight carbon atoms, Z_1 and Z_2 each represent hydrogen or alkyl, alkenyl, cycloalkyl $—CH_2CH_2—NH_2$ or phenyl radicals.

3,864,374

MANUFACTURE OF ALKALI METAL XANTHATES

Chu-jen Chia, Brossard, Quebec; Jack Ellwood Currah, Poin-Te-Claire, Quebec, and George Russell Lusby, Mont-Saint-Hilaire, Quebec, all of Canada, assignors to Canadian Industries, Limited, Quebec, Canada

Filed Nov. 19, 1973, Ser. No. 416,753

Int. Cl. c07c *154/02*

U.S. Cl. 260—455 B **7 Claims**

1. A process for the manufacture of alkali metal xanthates comprising the steps of

1. contacting an alkali metal hydroxide with a stoichiometric excess of carbon disulphide and of an aliphatic alcohol having two to six carbon atoms in the molecule, the carbon disulphide and alcohol being in the gas phase and in admixture with an inert gas, at a temperature in the range

50° C. to 120° C., thus bringing about a reaction between the alkali metal hydroxide, carbon disulphide and alcohol to form solid alkali metal xanthate and water vapour, and 2. separating the gaseous mixture of unreacted carbon disulphide, unreacted alcohol, by-product water vapour and inert gas from the solid alkali metal xanthate.

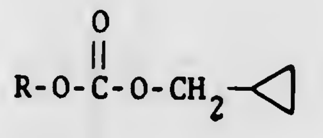
3,864,375
THIN-FILM TYPE SULFONATION PROCESS
Kyozo Kitano, Ichikawa; Junichi Nakayama, Tokyo, and Sadao Toyoda, Funabashi, all of Japan, assignors to Lion Fat & Oil, Ltd., Tokyo, Japan
Filed Apr. 20, 1973, Ser. No. 352,911
Claims priority, application Japan, Apr. 28, 1972, 47-42794
Int. Cl. C07c *139/00, 143/06*
U.S. Cl. 260—459 **5 Claims**

1. In a process for effecting the thin film sulfonation of organic sulfonateable material, in which a feed stream of organic material is flowed in the form of a thin film along a reaction surface having a length of about 0.5 to 3 meters, and is contacted with a gaseous stream of SO_3 and inert gas wherein the SO_3 concentration is in the range of about 1 to 8 vol. %, and the reaction temperature is in the range of about 30° to 60° C, the improvement which comprises:

employing as the feedstream a mixture consisting essentially of (1) a sulfonatable material selected from the group consisting of olefins having 12 to 22 carbon atoms and fatty alcohols having 8 to 22 carbon atoms, and (2) from 30 to 10,000 ppm by weight, based on the weight of (1), of a non-ionic surface active agent selected from the group consisting of (a) ethylene oxide or propylene oxide adducts of higher fatty alcohols, alkylphenols, fatty acids and fatty acid amides, (b) fatty acids diethanolamides and (c) fatty acid esters of glycerol, sorbitan, sorbitol and sucrose.

3,864,376
CYCLOPROPYLMETHYL CARBONATES
Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
Filed Apr. 30, 1973, Ser. No. 355,845
Int. Cl. C07c *69/00, 154/00;* **A01n** *9/24*
U.S. Cl. 260—463 **6 Claims**

1. A compound of the formula A

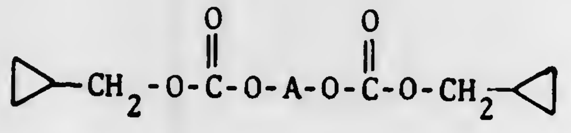


$$R-O-\overset{O}{\overset{\|}{C}}-O-CH_2-\triangleleft \qquad (A)$$

wherein,

R is alkyl of ten to 16 carbon atoms or aryl or aralkyl or six to 10 carbon atoms.

5. A compound of formula B



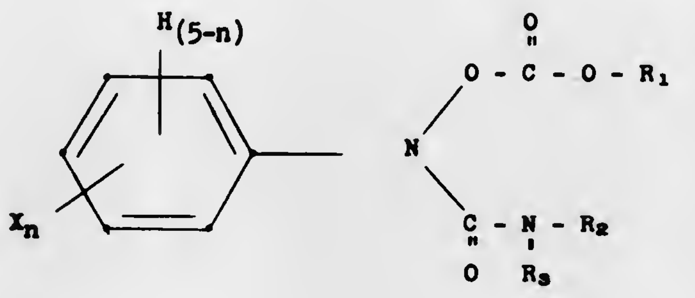
$$\triangleright-CH_2-O-\overset{O}{\overset{\|}{C}}-O-A-O-\overset{O}{\overset{\|}{C}}-O-CH_2-\triangleleft \qquad (B)$$

wherein,

A is alkylene, alkenylene or alkynylene of two to 10 carbon atoms.

3,864,377
ARYL UREA CARBONATES
John Krenzer, Oak Park, and Sidney B. Richter, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
Filed Jan. 3, 1968, Ser. No. 695,338
Int. Cl. C07c *69/00*
U.S. Cl. 260—463 **6 Claims**

1. A compound of the formula



wherein each X is independently selected from the group consisting of halogen, lower alkyl, lower alkenyl, lower haloalkyl, nitro, lower alkoxy and lower alkylthio; *n* is an integer from 0 to 3; R_1 is selected from the group consisting of lower alkyl, lower alkenyl, and lower haloalkyl; and R_2 and R_3 are independently selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower haloalkyl. **2.** The compound of claim **1**, 1-(3,4-dichlorophenyl)-1-methoxycarbonyloxy-3-methylurea.

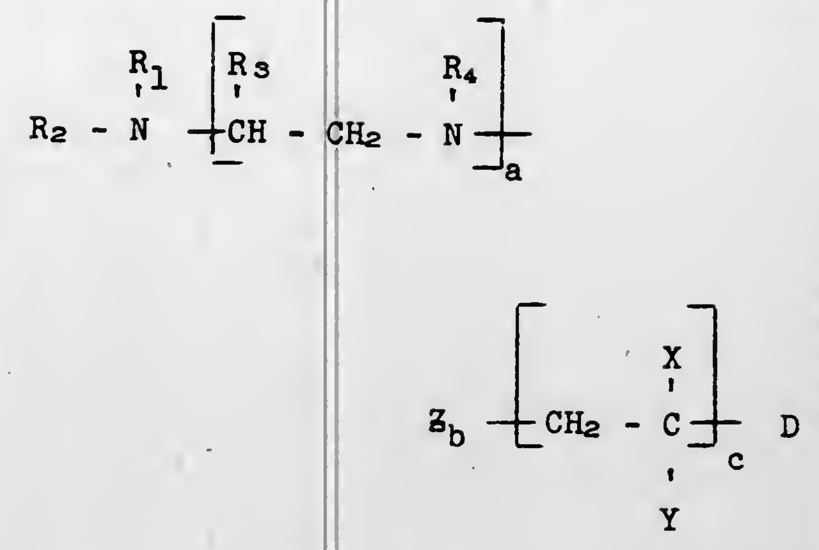
3,864,378
PROCESS FOR PREPARING 2-HYDROXYETHYLIMINODIACETONITRILE
Otto A. Homberg, Easton, and Carl E. Fries, Jr., Northhampton, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed Feb. 5, 1973, Ser. No. 329,803
Int. Cl. C07c *121/02, 121/42*
U.S. Cl. 260—465.5 A **10 Claims**

1. A process for the synthesis of 2-hydroxyethyliminodiacetonitrile comprising:

reacting monoethanolamine, formaldehyde and hydrogen cyanide at from about pH 7 to about pH 9, said reaction being carried out in the absence of any alkali or alkaline earth metal hydroxide and wherein said reaction is carried out in aqueous medium, the formaldehyde and hydrogen cyanide are initially present in about 30 to 50 percent stoichiometric excess, and said reaction is carried out at a temperature of from about 40°–70° C to form 2-hydroxyethyliminodiacetonitrile.

3,864,379
ADDITION POLYMERS WITH POLYETHYLENIMINE TERMINAL GROUPS
Darrell R. Thompson, Somerville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 776,751, Nov. 18, 1968, abandoned. This application Apr. 5, 1972, Ser. No. 241,400
Int. Cl. C07c *121/34, 121/42*
U.S. Cl. 260—465.4 **9 Claims**

1. A polymeric material of the formula



$$R_2-\overset{R_1}{\overset{|}{N}}-\left[\overset{R_3}{\overset{|}{CH}}-CH_2-\overset{R_4}{\overset{|}{N}}\right]_a-$$

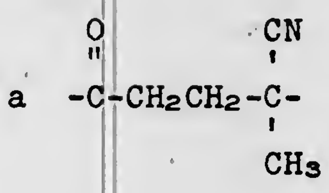
$$Z_b-\left[CH_2-\underset{\underset{Y}{|}}{\overset{\overset{X}{|}}{C}}\right]_c-D$$

where

R_1, R_2 and R_4 are hydrogen or alkyl radicals of 1 through 4 carbon atoms,

R_3 and X are hydrogen or alkyl radicals of 1 through 4 carbon atoms;

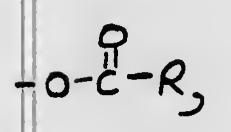
Z_b is a



Z_b is a $-\overset{O}{\overset{\|}{C}}-CH_2CH_2-\underset{\underset{CH_3}{|}}{\overset{\overset{CN}{|}}{C}}-$ radical;

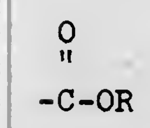
radical;

Y is an alkyl radical of 1 through 4 carbon atoms, halogen,



$$-O-\overset{O}{\overset{\|}{C}}-R,$$

or



$$-\overset{O}{\overset{\|}{C}}-OR$$

where

R is an alkyl radical of one through 18 carbon atoms;

D is hydrogen;

a is a number 1 through 2000;

b is 0 or 1;

and

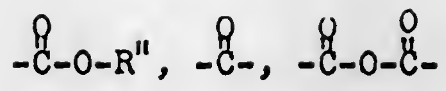
c is a number 5 through 5000;

the *c/a* quotient being greater than 1.

3,864,380
HYDROCYANATION OF OLEFINS
Charles M. King, and Michael T. Musser, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.
Filed Jan. 17, 1974, Ser. No. 434,020
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.8 R **5 Claims**

1. In a process of hydrocyanating a nonconjugated unsaturated organic compound containing from two to 20 carbon atoms and having at least one olefinic carbon-carbon double bond, the unsaturated organic compound being selected from the group consisting of

a. monoolefinic aliphatic and aromatic hydrocarbons and monoolefinic aliphatic and aromatic hydrocarbons containing a functional group of the group consisting of —CN, —OR″,

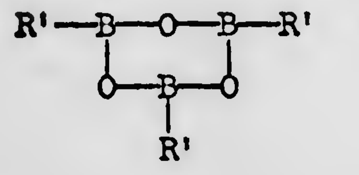


$$-\overset{O}{\overset{\|}{C}}-O-R'',\ -\overset{O}{\overset{\|}{C}}-,\ -\overset{O}{\overset{\|}{C}}-O-\overset{O}{\overset{\|}{C}}-$$

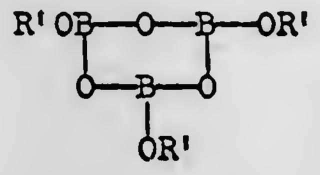
and $—NR''_2$ wherein R″ is selected from the group consisting of hydrogen, alkyl and aryl radicals having up to 10 carbon atoms and each open bond other than that required for connection of the functional group to the olefinic radical is connected to a radical of the group consisting of hydrogen, aliphatic, and aromatic hydrocarbon radicals, wherein the carbon-carbon double bond is separated from the aforesaid functional group by at least one carbon atom, and

b. polyolefinic aliphatic hydrocarbons wherein the carbon-carbon double bonds are separated from each other by at least one carbon atom, by contacting the unsaturated organic compound with hydrogen cyanide in the presence of a nickel catalyst consisting essentially of a zerovalent nickel complex of the group consisting of $Ni(PXYZ)_4$, N-bonded nitrile complexes of the formula $Ni(PXYZ)_3R^2CN$ and olefin-bonded complexes of the formula $Ni(PXYZ)_2A$ wherein X is OR, Y and Z are R or OR and R is of the group consisting of alkyl and aryl radicals of up to 18 carbon atoms, wherein the R radicals of a given PXYZ ligand of $Ni(PXYZ)_4$, $Ni(PXYZ)_3R^2CN$ and $Ni(PXYZ)_2A$ may be the same or different, wherein the R radicals of a given PXYZ ligand of $Ni(PXYZ)_3R^2CN$ and $Ni(PXYZ)_2A$ are so chosen that the ligand has a cone angle of 130° to 170°, wherein R^2 is of the group consisting of alkyl, alkenyl, cyanosubstituted alkyl and aryl radicals having one to 20 carbon atoms and when R^2 is alkenyl the carbon-carbon double bond of the alkenyl radical is separated from the nitrile functional group by at least one carbon atom, wherein A is an unsaturated organic compound of the groups set forth under (a) and (b) above,

the improvement which comprises carrying out the hydrocyanation in the presence of a boron compound of the group consisting of $(R'_2B)_2O$, $R'B(OH)_2$, R'_2BOH and



and



wherein R′ is an hydrocarbyl alkyl or aryl radical having one to 10 carbon atoms, wherein the mole ratio of boron compound to the nickel catalyst is in the range of 0.1:1.0 to 5.0:1.0 wherein the mole ratio of unsaturated compound to nickel catalyst is in the range of about 1:5 to 2000:1, at a temperature in the range of −50° to 200° C. and recovering the hydrocyanated organic compound.

3,864,381
RECOVERY OF DICYANOBUTENE FROM DICYANOBUTENE PROCESS BRINE
Alvin C. Vaught, Victoria, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 15, 1973, Ser. No. 388,649
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.8 R **6 Claims**

1. A process for recovering dicyanobutene from a process brine resulting from reaction of dichlorobutene with sodium cyanide and sodium cuprocyanide catalyst in an aqueous medium and acidification of the aqueous medium with hydrochloric acid to precipitate and reclaim the catalyst which comprises

a. contacting the brine with granular activated carbon to adsorb dicyanobutene contained in the brine

b. contacting the carbon on which the dicyanobutene is adsorbed with at least a volume equal to the granular activated carbon of a steam distillable organic liquid at a temperature in the range of about 20° C. to the boiling point of the organic liquid, the organic liquid having a boiling point in the range of about 80° to 175° C. and being one in which the dicyanobutene is soluble to the extent of at least one percent by weight at 25° C., to remove the adsorbed dicyanobutene from the carbon,

c. separating the granular activated carbon from the organic liquid containing the dicyanobutene and

d. recovering the dicyanobutene from the organic liquid.

3,864,382

PROCESS FOR THE PREPARATION OF NITRILES CONTAINING AMINO GROUPS

Helmut aus der Funten, Mondorf, and Hermann Richtzenhain, Schwellenbach, both of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

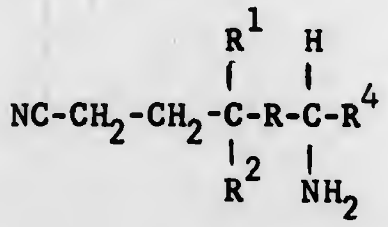
Filed Feb. 12, 1970, Ser. No. 11,020

Claims priority, application Germany, Feb. 26, 1969, 1908466

Int. Cl. C07c *121/42, 121/78*

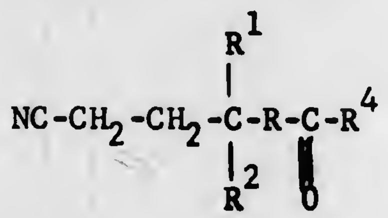
U.S. Cl. 260—465 E **5 Claims**

1. In the process for the preparation of amino-group-containing nitriles of the general formula



$$NC-CH_2-CH_2-\overset{\overset{R^1}{|}}{\underset{\underset{R^2}{|}}{C}}-R-\overset{\overset{H}{|}}{\underset{\underset{NH_2}{|}}{C}}-R^4$$

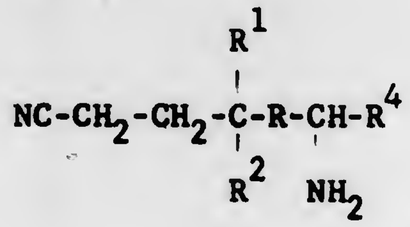
wherein R is $-CH_2CHR^3-$, R^1 and R^2 are alkyl having 1 to 4 carbon atoms, R^3 is hydrogen or an alkyl having 1–4 carbon atoms, and R^4 is a hydrogen atom, an alkyl having 1 to 4 carbon atoms or a phenyl radical, and in which R^3 and R^4 when taken together form a carbocyclic ring having 5 or 6 carbon atoms, by hydrogenating in the fluid state a carbonyl-group-containing nitrile of the general formula



$$NC-CH_2-CH_2-\overset{\overset{R^1}{|}}{\underset{\underset{R^2}{|}}{C}}-R-\underset{\underset{O}{\|}}{C}-R^4$$

in which R is $CH=CR^3$ or CH_2-CHR^3 and R^1-R^4 have the above-given meaning at a temperature of about 60°–180°C, at a hydrogen pressure of at least about 50 atmospheres gauge, and with the addition of an at least stoichiometric quantity of ammonia; the improvement comprising catalyzing the aminative reduction with at least one member selected from the group consisting of platinum and palladium.

5. An amino nitrile of the formula:



$$NC-CH_2-CH_2-\overset{\overset{R^1}{|}}{\underset{\underset{R^2}{|}}{C}}-R-\underset{\underset{NH_2}{|}}{CH}-R^4$$

wherein

R is CH_2-CH_2-,

R^1 and R^2 are each methyl

and R^4 is phenyl.

3,864,383

PROCESS FOR THE PREPARATION OF UNSATURATED NITRILES

Hans Fernholz, Fischbach/Taunus, and Dieter Freudenberger, Diedenbergen/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister & Bruning, Frankfurt am Main, Germany

Continuation of Ser. No. 218,507, Jan. 17, 1972, abandoned. This application Mar. 23, 1973, Ser. No. 344,161

Claims priority, application Germany, May 19, 1971, 2124755

Int. Cl. C07c *12/04*

U.S. Cl. 260—465.9 **9 Claims**

1. A gas phase process for the preparation of olefinic nitriles having 3 to 6 carbon atoms selected from the group consisting of allyl cyanide, methallyl cyanide, butenyl cyanide and pentenyl cyanide, from hydrocyanic acid and esters of unsaturated alcohols having 2 to 5 carbon atoms, said unsaturated alcohols being selected from the group consisting of allyl alcohol, methallyl alcohol, butenol, pentenol, butenediol and pentadienol and carboxylic acids having 1 to 10 carbon atoms selected from the group consisting formic, acetic, propionic, butyric, valeric, caproic, enanthic, caprylic, pelargonic and capric acid, wherein the reactants are passed at a temperature from 50° to 350°C and under a pressure of from 0.5 to 50 atmospheres absolute, over a supported catalyst consisting essentially of from 5 to 40 percent by weight of total catalyst, of a compound selected from the group consisting of the chlorides, bromides, nitrates, cyanides, sulfates and acetates of bivalent copper or bivalent cobalt or mixtures thereof and wherein an auxiliary agent selected from the group consisting of hydrogen chloride, water, molecular oxygen, gases containing molecular oxygen and mixtures thereof, are passed either simultaneously with the reactants or alternatively therewith over the said catalyst.

3,864,384

SUBSTITUTED PHENYLACETIC ACID COMPOUNDS

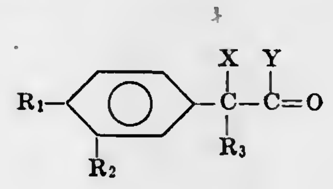
Julius Diamond, Lafayette Hill, and Norman J. Santora, Roslyn, both of Pa., assignors to William H. Rorer Inc., Fort Washington, Pa.

Filed May 5, 1970, Ser. No. 34,870

Int. Cl. C07c *63/32, 69/62*

U.S. Cl. 260—469 **16 Claims**

1. A substituted phenylacetic acid compound selected from the group consisting of a substituted phenylacetic acid compound of the formula



wherein

R_1 is a member selected from the group consisting of cycloalkyl with 5 to 7 carbon atoms and lower alkyl substituted cycloalkyl;

R_2 is a member selected from the group consisting of halogen, nitro, cyano, trifluoromethyl and lower alkylsulfonyl;

R_3 is hydrogen;

X is halogen;

Y is hydroxyl;

the lower alkyl members in said formula being lower alkyl with 1 to 8 carbon atoms;

and the substantially non-toxic, pharmaceutically acceptable esters and salts of said substituted phenylacetic acid compounds of the above given formula; said esters being selected from the group consisting of those formed from

a lower aliphatic alcohol having 1 to 8 carbon atoms;

an alicyclic alcohol having 6 to 14 carbon atoms;

a terpene having 6 to 14 carbon atoms,

a hydrocarbon aryl alcohol having 6 to 14 carbon atoms,

a hydrocarbon aralkyl alcohol having 7 to 14 carbon atoms, and a heterocyclic alcohol selected from the group consisting of furfuryl alcohol, piperidinoethanol, pyrrolidinoethanol and piperazinoethanol; and said salts being selected from the group consisting of

an alkali metal salt,

an alkaline earth metal salt,

an ammonium salt,

a di-lower alkyl ammonium salt,

a hydroxy lower alkylammonium salt,

a piperazinium salt,

a piperidinium salt, and

a lower alkyl benzylammonium salt.

3,864,385

NEW 5-AMINOISOPHTHALIC ACID DERIVATIVES, SALTS AND ESTERS THEREOF AND METHODS FOR THEIR PREPARATION

Peter Werner Feit, and Herta Bruun, both of Graested, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

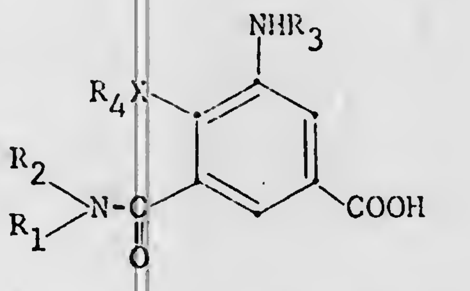
Filed Sept. 27, 1972, Ser. No. 292,525

Claims priority, application Great Britain, Oct. 5, 1971, 46291/71; Dec. 14, 1971, 58100/71

Int. Cl. C07c *149/42*

U.S. Cl. 260—470 **7 Claims**

1. Compounds of the general formula I



I

in which X is —S—; R_1 is selected from the group consisting of hydrogen and aliphatic hydrocarbon radicals with from one to four carbon atoms; R_2 is selected from the group consisting of hydrogen, saturated and unsaturated, straight and branched aliphatic hydrocarbon radicals with from one to six carbon atoms; R_3 is selected from the group consisting of saturated and unsaturated, straight and branched aliphatic hydrocarbon radicals with from one to six carbon atoms, and aryl substituted aliphatic hydrocarbon radicals with from one to four carbon atoms, and R_4 is a phenyl radical; and pharmaceutically acceptable salts and lower alkyl esters of these compounds.

3,864,386

DI-SUBSTITUTED BETA-PHENETHYLCARBBAMIC ACID ESTERS

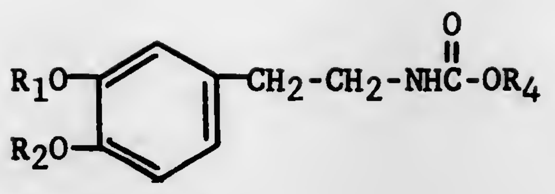
John Hans Biel, Lake Bluff, Ill., and Irwin L. Klundt, Brookfield, Wis., assignors to Aldrich Chemical Company, Milwaukee County, Wis.

Division of Ser. No. 96,586, Dec. 9, 1970, Pat. No. 3,801,624. This application Aug. 2, 1973, Ser. No. 385,008

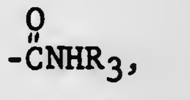
Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **4 Claims**

1. A compound of the formula

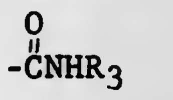


wherein R_1 is hydrogen or



$$-\overset{\overset{O}{\|}}{C}NHR_3,$$

R_3 being loweralkyl, loweralkenyl or loweralkynyl; R_2 is



$$-\overset{\overset{O}{\|}}{C}NHR_3$$

and R_4 is loweralkyl, loweralkenyl, loweralkynyl, lowerhaloalkyl or cyclopropylmethyl, with the limitation that each R_3 cannot be ethyl when R_4 is ethyl.

3,864,387

5-OXA PHENYL-AND PHENOXY-SUBSTITUTED PROSTAGLANDIN F_1 ANALOGS

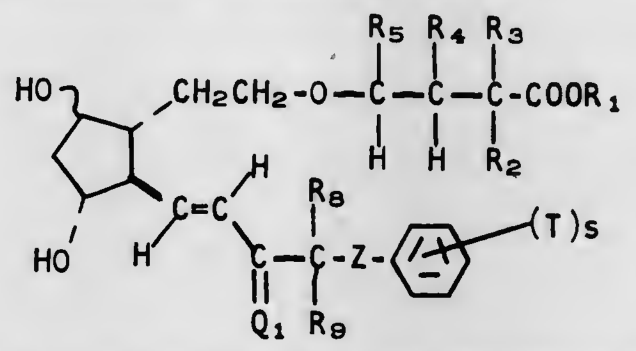
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed May 21, 1973, Ser. No. 361,990

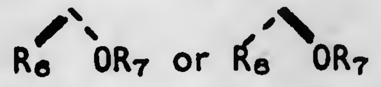
Int. Cl. C07c *61/32, 63/60, 69/71*

U.S. Cl. 260—473 A **22 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms, inclusive, between $-CR_8R_9-$ and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_{10}$, wherein R_{10} is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and *s* is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when *s* is 2 or 3 the T's are either the same or different; wherein Q_1 is



wherein R_6 and R_7 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein when Z is oxa (—O—), R_8 and R_9 are hydrogen or alkyl of one to 4 carbon atoms, being the same or different, and, when Z is C_jH_{2j}, $_{R8}$ and R_9 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that R_9 is fluoro only when R_8 is hydrogen or fluoro; wherein R_3 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, wherein R_2 is hydrogen or fluoro, with the proviso that R_2 is fluoro only when R_3 is hydrogen or fluoro; and wherein R_4 and R_5 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of R_3, R_4, and R_5 is alkyl;

and wherein ~ indicates attachment of hydroxyl to the ring in alpha or beta configuration; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,864,388
ALKYNYL ESTERS OF α-ALKOXY-α-PHENYL ALKENOIC ACID

Shigeyoshi Kitamura; Yositosi Okuno, both of Toyonaka, and Masachika Hirano, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

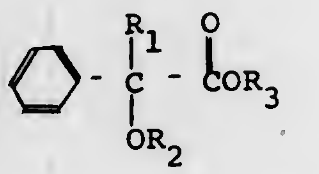
Filed Dec. 13, 1971, Ser. No. 207,542

Claims priority, application Japan, Dec. 29, 1970, 45-124365; Aug. 6, 1971, 46-59784; Aug. 16, 1971, 46-62412

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 A **3 Claims**

1. A compound of the formula,



wherein R_1 is a $C_{2\text{-}6}$ alkenyl, R_2 is a $C_{1\text{-}6}$ alkyl, and R_3 is terminally unsaturated $C_{3\text{-}6}$ alkyl.

3,864,389
N-(2-HYDROXYHYDROCARBYL) IMINODICARBOXYLATES

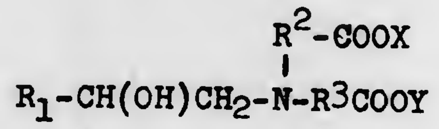
Bjorn Sundby, Piscataway; Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 880,992, Nov. 28, 1969, Pat. No. 3,725,473. This application Jan. 17, 1973, Ser. No. 324,314

Int. Cl. C07c *101/72*

U.S. Cl. 260—501.11 **5 Claims**

1. A compound of the formula



$$R_1\text{-CH(OH)CH}_2\text{-}\underset{}{\overset{\displaystyle R^2\text{-COOX}}{\overset{|}{N}}}\text{-}R^3\text{COOY}$$

wherein R^1 is alkyl of 12 to 20 carbon atoms, or alkenyl of 12 to 20 carbon atoms containing one or two ethylene double bonds, R^2 and R^3 are alkylene or arylene of 1 to 9 carbon atoms and at least one of R^2 and R^3 is arylene and X and Y which may be the same or different are selected from the group consisting of hydrogen, alkali metal, ammonium, monoalkylamine, dialkylamine, trialkylamine, monoalkanolamine, dialkanolamine and trialkanolamine, in which the alkyl and alkanol groups are of 1 to 4 carbon atoms.

3,864,390
1-FORMYLPHENOXY-3-AMINO-2-PROPANOL DERIVATIVES

David J. Le Count, and Christopher John Squire, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

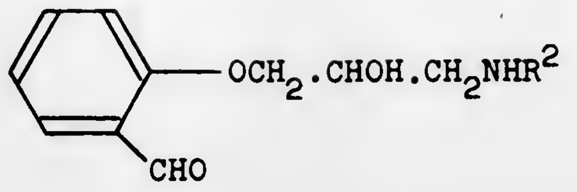
Filed June 29, 1972, Ser. No. 267,535

Claims priority, application Great Britain, July 28, 1971, 35480/11

Int. Cl. C07c *95/08*

U.S. Cl. 260—501.17 **3 Claims**

1. An alkanolamine derivative selected from a compound of the formula:



where R^2 is isopropyl, s-butyl, or t-butyl, and a hydrochloride; hydrobromide, phosphate, sulphate, oxalate, lactate, tartrate, acetate, salicylate, citrate, benzoate, β-naphthoate, adipate or 1,1-methylene-bis-(2-hydroxy-3-naphthoate) salt thereof.

3,864,391
2,5-DIPHENYLCYCLOALIPHATIC ALKYLAMINES

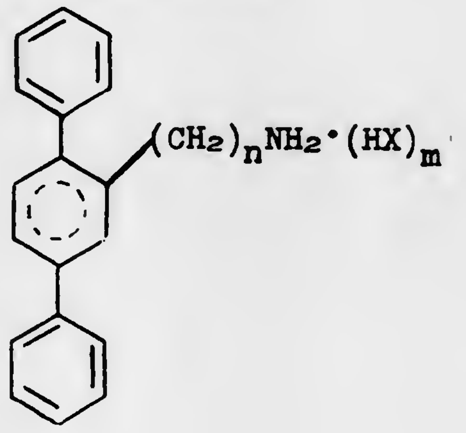
Gilbert H. Berezin, West Chester, Pa., and Joel G. Whitney, Kenneth Square, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1972, Ser. No. 293,814

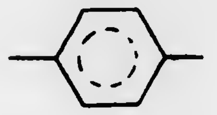
Int. Cl. C07c *87/28*

U.S. Cl. 260—570.5 CA **3 Claims**

1. A compound of the formula



wherein



is selected from the group consisting of cyclohexylene, cyclohexenylene, cyclohexadienylene and phenylene; *n* is 1 or 2; *m* is 0, ½ or 1; and X is halogen, sulfate or bisulfate.

3,864,392
OLIGOMERS OF HYDROLYZED ACRYLAMIDE-SULFUR DIOXIDE COPOLYMERS

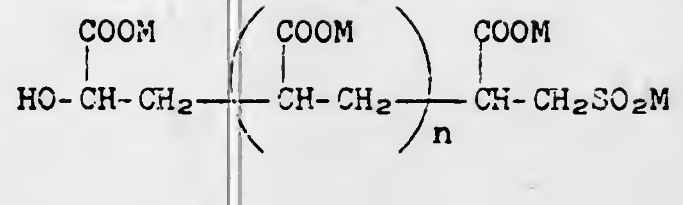
Hans Peter Panzer, Stamford; William Charles Firth, Jr., Wilton; Anthony Thomas Coscia, South Norwalk, and Lucille Elma Palmer, Darien, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 134,057, April 14, 1971, Pat. No. 3,792,027. This application Sept. 11, 1973, Ser. No. 396,167

Int. Cl. C07c *145/00*

U.S. Cl. 260—513.7 **3 Claims**

1. An oligomer having the formula



$$\text{HO-}\overset{\displaystyle\text{COOM}}{\overset{|}{\text{CH}}}\text{-CH}_2\text{—}\left(\text{—}\overset{\displaystyle\text{COOM}}{\overset{|}{\text{CH}}}\text{-CH}_2\text{—}\right)_n\text{—}\overset{\displaystyle\text{COOM}}{\overset{|}{\text{CH}}}\text{-CH}_2\text{SO}_2\text{M}$$

wherein *n* is a whole, positive integer of 1–9, inclusive, and M is an alkali metal or alkaline earth metal.

3,864,393
PROCESS FOR THE PRODUCTION OF OXALIC ACID

Hermann Rohl, and Wilhelm Knepper, both of Marl, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Filed Jan. 7, 1974, Ser. No. 431,373

Claims priority, application Germany, Jan. 11, 1973, 2301197

Int. Cl. C07c *51/24*

U.S. Cl. 260—538 **10 Claims**

1. In a process for the production of oxalic acid by the oxidation of ethylene oxide wherein a stream of gaseous ethylene oxide is introduced into aqueous nitric acid in the presence of gaseous oxygen, the improvement which comprises introducing a mixture of nitrogen oxides and gaseous oxygen into the nitric acid concurrently with the introduction of the ethylene oxide and maintaining the nitric acid at a temperature of 30°–70° C. and at a concentration of 50–70 percent by weight of HNO_3.

3,864,394
PROCESS FOR PREPARING PHENYLPHOSPHONOUS DICHLORIDE

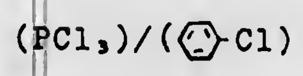
Francis A. Via, Yorktown, N.Y.; Eugene H. Uhing, Ridgewood, N.J., and Arthur D. F. Toy, Stamford, Conn., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 19, 1973, Ser. No. 417,172

Int. Cl. C07f *9/52*

U.S. Cl. 260—543 P **12 Claims**

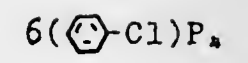
1. In a method for preparing phenylphosphonous dichloride by the reaction of monochlorobenzene, phosphorus trichloride and elemental phosphorus substantially all in the yellow or white form in an autoclave, the improvement which comprises reacting said reactants at a temperature (T) within the range of from about 275°C. to about 400°C. for a period of time (*t*) of from about one-fourth hour to about 30 hours using a concentration of phosphorus trichloride, phosphorus, and chlorobenzene in amounts sufficient to provide a molar ratio (C) of



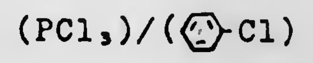
within the range of from about 0.6 and about 3, and a molar ratio (Z) of elemental phosphorus to said chlorobenzene within the range of from about 0.5 to about 2.0, said temperature, time and molar ratios being selected in such a manner sufficient to satisfy the requirements of the formula:

$$Y = \frac{(A)\qquad(t)}{A/R + t + \dfrac{(B_3)(R)(t^2)}{1000}} + B_8$$

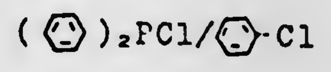
wherein Y equals % yield based on the amount of charged chlorobenzene and phosphorus relative to the ratio of



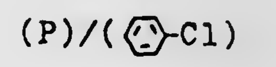
t equals time in hours
A equals $(E)(C)/[(E/100B_7) + C]$
R equals $(Z)\,[10^{[B + B\,(T-300)]}]$
E equals $B_4 + B_5\,(T-300) + B_6(\text{Rec})$
T equals temperature in degrees centigrade
C equals



molar ratio
Rec equals



molar ratio
Z equals



molar ratio
B_1 equals 1.9556
B_2 equals 0.0327
B_3 equals 0.00674
B_4 equals 215.26
B_5 equals − 0.508
B_6 equals 147.39
B_7 equals 15.23
B_8 equals − 87.46

wherein the time, temperature and molar ratios are selected to provide a yield of at least 60% or higher, said formula having a confidence limit of ± 18.0% on the percent yield with the proviso that the yield be at least 60%.

3,864,395
PHENYL UREAS, THEIR USE AS SELECTIVE HERBICIDES

Henry Martin, Basel; Otto Rohr, Therwil; Dieter Duerr, Bottmingen; Stefan Janiak, Basel, all of Switzerland; Georg Pissiotas, Loerrach, Germany, and Werner Toepfl, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 816,375, April 15, 1969, abandoned. This application Oct. 8, 1971, Ser. No. 187,831

Int. Cl. C07c *127/18*

U.S. Cl. 260—553 A **2 Claims**

1. N-(3-chloro-4-methoxymethoxyphenyl)-N′,N′-dimethyl urea.

3,864,396
ACYLATED PERFLUOROALKANESULPHONAMIDES

Adolf Staffe, Oplanden, and Klaus Gerlach, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

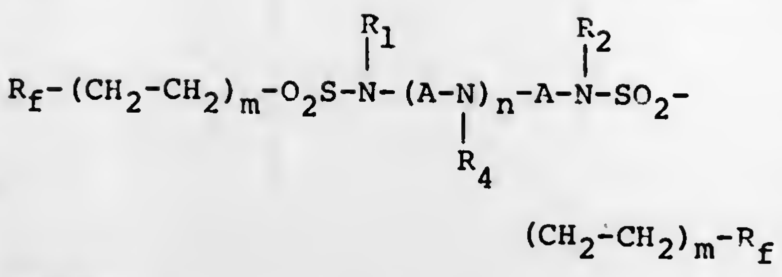
Filed Dec. 8, 1972, Ser. No. 313,276

Claims priority, application Germany, Dec. 10, 1971, 2161341

Int. Cl. C07c *143/74*

U.S. Cl. 260—556 F **7 Claims**

1. Perfluoroalkanesulphonamide of the formula



$$R_f-(CH_2-CH_2)_m-O_2S-\overset{R_1}{\overset{|}{N}}-(A-\underset{\underset{R_4}{|}}{N})_n-A-\overset{R_2}{\overset{|}{N}}-SO_2-(CH_2-CH_2)_m-R_f$$

in which

R_1 and R_2 independently of one another are hydrogen; C_1–C_4-alkyl; or C_1–C_4-alkyl substituted by nitrile or lower alkoxy;

A is C_2–C_{10}-alkylene or C_2–C_{10}-alkylene interrupted by oxygen;

n is a number from 1 to 3;

R_f is perfluorinated butyl;

m is 1 or 0; and

R_4 is hydrogen; benzoyl; acetyl; propionyl; butyryl; acrylyl, methacryl; carbonamide; or carbonamide substituted with C_1–C_6-alkyl, cyclohexyl, methoxymethyl, phenyl or tolyl.

3,864,397
2,6-DIHALOBENZALDEHYDE SULFONYL HYDRAZONES

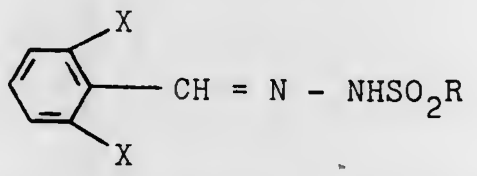
Tomas L. Fridinger; Edward L. Mutsch, both of Woodbury Twsp., Washington City, and David R. Pauly, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 90,074, Nov. 16, 1970, Pat. No. 3,709,936. This application Oct. 16, 1972, Ser. No. 297,970

Int. Cl. C07c *143/74, 143/78*

U.S. Cl. 260—556 H **7 Claims**

1. A compound having the formula



wherein X is halogen and R can be alkyl and haloalkyl having from 1 to 4 carbon atoms, phenyl and substituted phenyl wherein the phenyl substituents are selected from the group consisting of halogen, nitro and alkoxy, alkyl and haloalkyl having from 1 to 4 carbon atoms.

3,864,398
PROCESS FOR THE PREPARATION OF ACYLAMINO ALKANOL DERIVATIVES

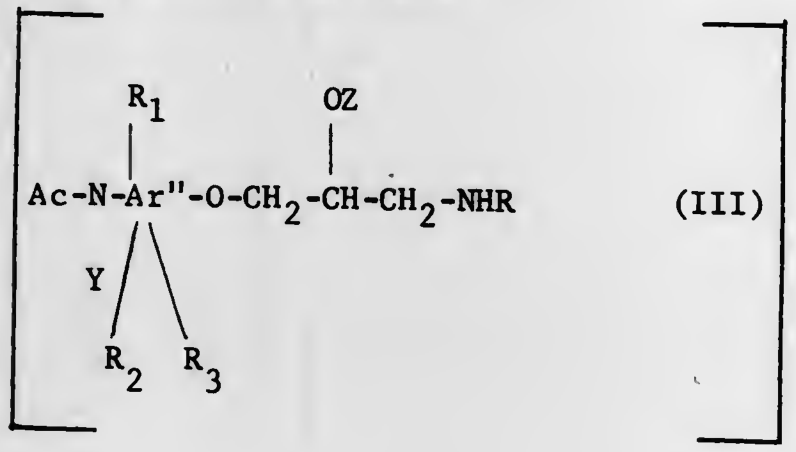
Yasushi Suzuki, Yokohama, and Kunio Tsukamoto, Zushi, both of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Minato-ku, Tokyo, Japan

Filed May 1, 1972, Ser. No. 249,196

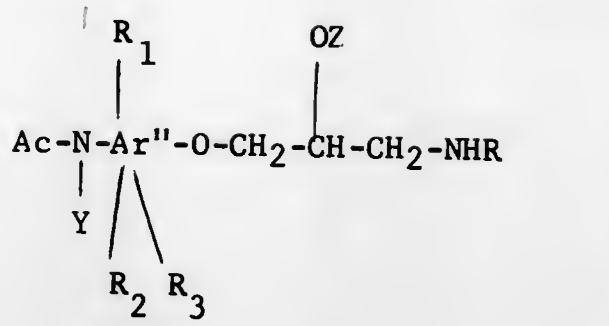
Int. Cl. C07c *103/38*

U.S. Cl. 260—562 A **11 Claims**

1. A process for the preparation of a 1-aryloxy-3-aminopropanol derivative of the formula

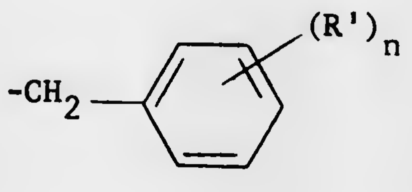


(III)

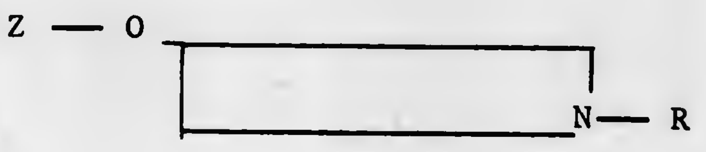


(III)

wherein R represents a straight or branched chain alkyl group having up to 12 carbon atoms or an aralkyl group having 7 to 9 carbon atoms; Ar'' represents a benzene or naphthalene ring; R_1, R_2 and R_3 represent, independently, a hydrogen atom, an alkyl or alkenyl group haing 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a hydroxyl group or an amino group, or R_1 and R_2 may be bonded together to form an alkylene or ketoalkylene group or to form a 5- or 6-membered heterocyclic ring with a hereto atom; Ac represents an organic acid residue selected from the group consisting of organic carboxylic acid residue, organic sulfonyl groups, organic sulfinyl groups, organic sulfenyl groups, organic phosphonyl groups and triphenylmethyl groups; Y represents hydrogen atom, an alkyl group having up to 3 carbon atoms or the group Ac, or Y may be bonded to the group Ac to form an ethylenedicarbonyl, maleyl, phthalyl or naphthalyl group; and Z is a hydrogen atom, an alkoxyalkyl group, a benzyloxymethyl group or a group of the formula

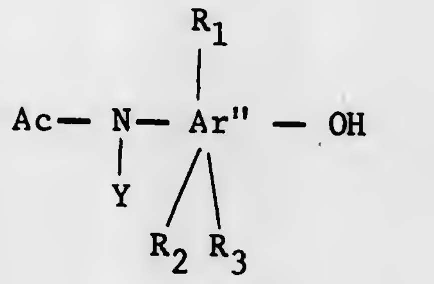


wherein R' is a hydrogen atom or an electron donor group selected from the group consisting of an alkoxy group having up to 3 carbon atoms, an alkyl group having up to 3 carbon atoms, a halogen atom, a halogenated alkyl group having up to 3 carbon atoms, amino group and nitro group; and n is an integer of 1 to 3; which comprises reacting a compound of the formula



(I)

wherein Z and R as as defined above, with a compound of the formula



(II)

wherein R_1, R_2, R_3, Ar'', Ac and Y are as defined above.

3,864,399
CATALYTIC REDUCTION OF NITROPARAFFINS TO OXIMES AND CATALYST THEREFOR

John W. McDowell, Odessa, Tex., and Leon O. Winstrom, East Aurora, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 863,357, Oct. 2, 1969, abandoned. This application Jan. 29, 1973, Ser. No. 327,554

Int. Cl. C07c *131/04*

U.S. Cl. 260—566 A **11 Claims**

1. A process for the production of an oxime which comprises contacting a nitroparaffin selected from the group consisting of primary and secondary nitroparaffins containing at least two carbon atoms and nitrocyclohexane with hydrogen in the presence of a catalyst which comprises about 55 to 75 weight percent copper, about 20 to 40 weight percent zinc, and about 0.1 to 10 weight percent silver at a pressure less than about 300 p.s.i.g. and a reaction temperature within the range of about 20°C. to the degradation temperature of said oxime.

3,864,400
PRODUCTION OF ARYL-(4,4'-BIS-(DIALKYLAMINO)-BENZHYDRYL)-SULFONES

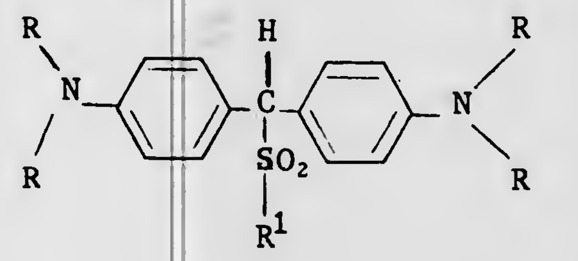
Walter Seibert, 46 Leuschnerstrasse, 6700 Ludwigshafen, Germany

Filed Feb. 20, 1973, Ser. No. 333,644

Int. Cl. C07c *85/00*

U.S. Cl. 260—570 D **2 Claims**

1. A process for the production of a 4,4'-bis-(dialkylamino)-benzhydrylsulfone of the formula (I):

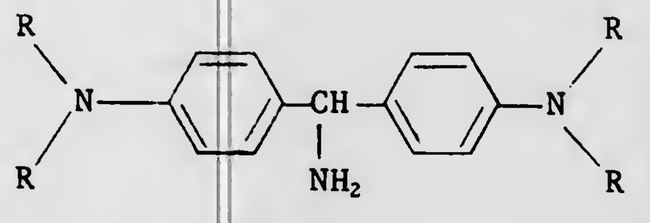


(I)

in which:

R is methyl or ethyl; and

R^1 phenyl or phenyl substituted by methyl, chloro or nitro ps wherein a compound of the formula (II):



(II)

is condensed in acid solution at a pH of less than 6 with a compound of the formula (III):

$R^1—SO_2H$ (III).

3,864,401
SUBSTITUTED 2-AMINOMETHYL-4,6-DIHALOPHENOLS

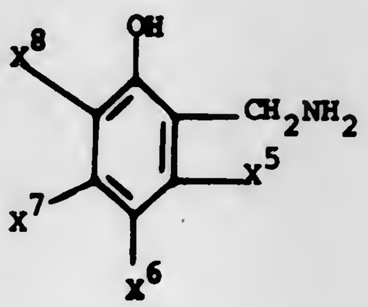
Everett M. Schultz, Ambler, and Edward J. Cragoe, Jr., Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 23, 1970, Ser. No. 101,195

Int. Cl. C07c *87/28*

U.S. Cl. 260—570.9 **4 Claims**

1. A compound of the formula:



wherein:

X^5 is methyl, ethyl or methoxy;

X^7 is methyl, ethyl or methoxy; and

X^6 and X^8 are chloro, bromo, iodo or fluoro and the non-toxic pharmaceutically acceptable salts thereof.

3,864,402
PURIFICATION OF SECONDARY ALKYL AMINES

Ronald W. Swanson, Croton-on-Hudson; Edwin R. Kerr, and William Smolin, both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed May 7, 1973, Ser. No. 358,236

Int. Cl. C07c *85/16*

U.S. Cl. 260—583 N **14 Claims**

1. A process for separating secondary alkyl primary amines containing 8 to 40 carbon atoms from mixtures containing from about 5 to 30 percent by weight of said amines from their contaminants, including inert non-polar paraffinic contaminants by treatment of said amines contained in the mixture with carbon dioxide to form secondary alkyl primary amine-carbon dioxide complexes, and extracting said complexes into inert polar solvent selected from the group consisting of alkanols containing 1 to 4 carbon atoms, mixtures of alkanols containing 1 to 4 carbon atoms and mixtures of alkanols containing 1 to 4 carbon atoms with water, said process consisting essentially of:

a. admixing said mixture of secondary alkyl primary amines and said contaminants at about 15° to 100°C under pressures of carbon dioxide, ranging from about 0 psig to 500 psig, in an amount and for a time sufficient to form substantial amounts of said amine-carbon dioxide complexes, in the presence of said inert polar solvent to form two phases, an inert polar solvent phase which contains substantially all of said amine-carbon dioxide complexes, and a paraffinic phase which contains substantially all of said contaminants,

b. separating said two phases from each other and springing said secondary alkyl primary amine from said amine-carbon dioxide complexes in said inert polar solvent phase.

3,864,403
PREPARATION OF 6-METHYL-5-HEPTEN-2-ONE

George Ember, Hackensack, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 10, 1973, Ser. No. 387,554

Int. Cl. C07c *49/04*

U.S. Cl. 260—593 R **9 Claims**

1. A process for obtaining 6-methyl-5-hepten-2-one, comprising heating a reaction mixture, containing:

a. 2,2,6-trimethyl-3,4-dihydropyran, 6-methyl-6-hepten-2-one or a mixture thereof, and

b. 0.001 to 0.5 weight percent of a strong acid selected from the group consisting of lower alkyl sulfonic acids, trifluoromethanesulfonic acid, camphorsulfonic acid, naphthalene-1-sulfonic acid, naphthalene-2-sulfonic acid, benzenesulfonic acid, p-nitrophenylsulfonic acid, 4-chlorobenzenesulfonic acid and p-toluene sulfonic acid and mixtures thereof to a temperature of 100°C. to 300°C. at a pressure at or above the vapor pressure of the reaction mixture.

3,864,404

SYNTHESIS OF ETHYL VINYL KETONE

James D. McClure, Oakland, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Nov. 6, 1969, Ser. No. 874,676

Int. Cl. C07c *45/08*

U.S. Cl. 260—597 R **6 Claims**

1. The process of producing predominantly ethyl vinyl ketone by reacting ethylene and carbon monoxide in the presence of water at a temperature of from about 150° to about 210°C. and at a pressure of 1,000 to 4,500 psig and an ethylene to carbon monoxide molar ratio of from 5 to 1 to about 12 to 1 in an inert liquid phase reaction solvent selected from the group consisting of hydrocarbons, alkyl ethers, aromatic ethers, alkyl esters, cyclic olefinic oxides aliphatic ketones and aromatic ketones, each containing from 4 to 15 carbon atoms in the presence of a cuprous alkanone carbonyl complex as catalyst, wherein the water is present in a ratio of 1.0 to about 5 moles of water per mole of said cuprous catalyst wherein the amount of cuprous metal catalyst present in the amount of from 0.01% mole to about 10% mole based on the amount of carbon monoxide present.

3,864,405

1,1-BIS-(PHENYL)-2-NITROPROPANES

George Holan, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

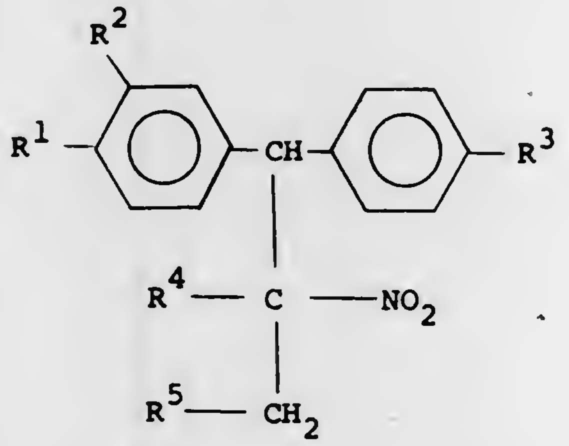
Division of Ser. No. 174,265, Aug. 23, 1971, Pat. No. 3,823,192. This application Dec. 20, 1973, Ser. No. 426,592

Claims priority, application Australia, Aug. 31, 1970, 2367/70; Feb. 5, 1971, 3947/71; Feb. 12, 1971, 4010/71

Int. Cl. C07c *149/32*

U.S. Cl. 260—609 F **3 Claims**

1. A compound of the formula:



wherein R′ is a methylthio, ethylthio or propylthio group; R^2 is hydrogen; R^3 is a methoxy, ethoxy, propoxy, methylthio, ethylthio or propylthio group; and one of the groups R^4 and R^5 is hydrogen and the other of said groups is hydrogen or a methyl group.

3,864,406

PROCESS FOR THE PRODUCTION OF MANNITOL AND SORBITOL

Asko J. Melaja, and Lauri Hamalainen, both of Kantvik, Finland, assignors to Suomen Sokeri Osakeyhtio (Finnish Sugar Company), Helsinki, Finland

Filed Apr. 25, 1973, Ser. No. 354,392

Int. Cl. C07c *29/24, 31/26*

U.S. Cl. 260—637 R **7 Claims**

1. The method of separating mannitol and sorbitol from solutions consisting essentially of both polyols and water which comprises

a. providing a column of alkaline earth metal salt of a polystyrene sulfonate cation exchanger, cross coupled with di-vinyl benzene;

b. submerging the column of resin in water;

c. feeding a solution consisting essentially of water, mannitol and sorbitol, in uniform supply to the resin surface in the column at a flow rate of 0.2 to 1.5 cubic meters per hour per square meter of the cross-section of the resin column followed by elution of the column with water; and

d. recovering successively from the downstream side of the resin bed

1. a first fraction rich in mannitol, and
2. a second fraction rich in sorbitol.

3,864,407

CATALYTIC PROCESS FOR PRODUCING HIGHER MOLECULAR WEIGHT

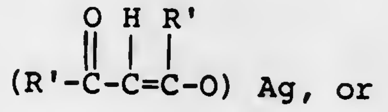
James E. Yates, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 6, 1973, Ser. No. 367,687

Int. Cl. C07c *29/00, 31/02*

U.S. Cl. 260—642 C **10 Claims**

1. A process for producing higher molecular weight hydrocarbon alcohols by condensing at least one lower molecular weight alkanol having a methylene group adjacent to the hydroxylated carbon atom; said process being carried out in liquid phase at about 80° to about 300°C in the presence of an alkali catalyst and a catalytic amount of an organic silver compound while simultaneously removing water as it forms; said alkali catalyst being an alkali metal, alkali metal hydroxide, alkali metal oxide, alkali metal bisulfite or alkali metal hydrocarbon alcoholate; and said organic silver compound being defined by



$$(R'-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{C}=\overset{\overset{R'}{|}}{C}-O)\ Ag, \text{ or}$$

$$(R''-SO_3)\ Ag$$

wherein R′ and R″ are each, independently, a saturated or unsaturated, cyclic or acyclic, branch or straight chain hydrocarbon group.

3,864,408

METHYLENE CHLORIDE STABILIZED WITH METHYL ACETATE

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 23, 1973, Ser. No. 335,364

Int. Cl. C07c *17/40, 17/42*

U.S. Cl. 260—652.5 R **2 Claims**

1. A stabilized methylene chloride composition consisting essentially of methylene chloride and stabilizing amounts of from about 0.05 to about 2.0 percent by weight of the methylene chloride of each of methyl acetate and propylene oxide.

3,864,409

METHOD FOR VINYL HALIDES

Bill J. Pope, c/o Department of Chemical Engineering, Brigham Young University, Provo, Utah 84601

Filed Nov. 30, 1970, Ser. No. 93,742

Int. Cl. C07c *21/02*

U.S. Cl. 260—656 R **6 Claims**

1. A method for the preparation of vinyl halides which comprises thermally or catalytically cracking methane, ethane, propane, butane, naphtha, or natural gas at a temperature above 500°C. and for a time sufficient to produce acetylene precursor free radicals and quenching the cracked product with a halogen or hydrogen halide to a temperature below 400°C.

3,864,410

PROCESS FOR HALOGENATING PARAFFINS

Charles M. Selwitz, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 22,711, March 25, 1970, Pat. No. 3,689,577. This application May 22, 1972, Ser. No. 255,645The portion of the term of this patent subsequent to Sept. 5, 1989, has been disclaimed.

Int. Cl. C07c *17/10*

U.S. Cl. 260—659 R **8 Claims**

1. A process for preparing a halogenated paraffin selected from the group consisting of chloro paraffins and bromo paraffins which comprises heating at a temperature of about 50° to about 150° C. a paraffin having from 41 to about 400,000 carbon atoms with a halogen ion selected from the group consisting of chloride ions and bromide ions, said chloride ions and bromide ions being obtained from hydrogen chloride and hydrogen bromide, respectively, nitrate ions, sulfuric acid and water, wherein the amount of halogen ion relative to the paraffin on a weight basis is from about 20:1 to about 1:10, the amount of nitrate ion relative to the paraffin on a weight basis is from about 2:1 to about 1:500, the amount of sulfuric acid relative to the paraffin on a weight basis is from about 50:1 to about 1:5 and the amount of water relative to the paraffin on a weight basis is from about 50:1 to about 1:2.

3,864,411

SELECTIVE CHLORINATION OF OLEFINS IN FUSED SALTS

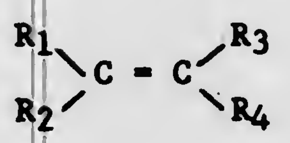
Wolfgang H. Mueller, Elizabeth, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Jan. 27, 1967, Ser. No. 612,078

Int. Cl. C07c *17/02*

U.S. Cl. 260—660 **5 Claims**

1. A halogenation process which comprises reacting a mono-olefinic hydrocarbon selected from the group consisting of (a) C_2–C_{20} compounds of the general formula:



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen, C_1–C_{14} alkyl and C_6–C_{10} aryl radicals, and (b) C_3–C_{18} cyclic hydrocarbons with a halogen selected from the group consisting of chlorine and bromine, the reaction being conducted in a liquefied halide salt melt bath at temperatures ranging from about 100° to 400°C., wherein the liquefied halide salt melt bath is comprised of an aluminum halide and not less than a total of one molar equivalent, based on aluminum halide, of at least one halide selected from the group consisting of alkali metal halides, ammonium halides, and mixtures thereof.

3,864,412

REMOVAL OF CARBONYL COMPOUNDS FROM 4-VINYLCYCLOHEXENE

Donald E. Murphy, University Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 31, 1973, Ser. No. 365,512

Int. Cl. C01c *13/20*

U.S. Cl. 260—666 A **4 Claims**

1. A process for removing carbonyl compounds from 4-vinylcyclohexene to less than 50 ppm wherein 4-vinycyclohexene is contacted with attapulgite clay.

3,864,413

STABILIZED METAL CHLOROFORM

Norman L. Beckers, 11799 Joyacre Ln., Chardon, Ohio 44024, and Edward A. Rowe, 7129 Andover, Mentor, Ohio 44060

Continuation-in-part of Ser. No. 5,101, Jan. 22, 1970, abandoned. This application Apr. 11, 1972, Ser. No. 243,072

Int. Cl. C07c *17/40, 17/42*

U.S. Cl. 260—652.5 R **1 Claim**

1. A composition of matter which consists essentially of methyl chloroform stabilized with a mixture of

a. 0.1 to 2.0 percent by eight of a nitroalkane of from 1 to 3 carbon atoms,

b. 0.05 to 0.5 percent by weight of an aliphatic epoxide selected from the group consisting of propylene oxide, butylene oxide, epichlorohydrin, and methyl glycidyl ether,

c. 0.1 to 1.0 percent by weight of trioxane,

d. 0.1 to 2.0 percent by weight of propylene glycol monomethyl ether,

e. 0.1 to 2.0 percent by weight of t-amyl alcohol,

f. 0.1 to 2.0 percent by weight of heptane, and

g. 0.001 to 0.10 percent by weight of N-methyl morpholine.

3,864,414

METHOD FOR PURIFICATION OF TECHNICAL HEXACHLORBUTADIENE FROM CHLORORGANIC ADMIXTURES

Vadim Dmitrievich Simonov, Kolsevaya ulitsa, 49, kv. 20; Anatoly Vasilievich Ivanov, ulitsa Kosmonavtov, 18, kv. 22, both of UFA; Lev Markovich Kogan, Kutuzovsky prospekt, 9, kv. 90, Moscow; Markus Vladimirovich Ljubarsky, prospekt Oktyabrya, 105/3, kv. 49, UFA; Gennady Timofeevich Dremin, Pekinskaya ulitsa, 20, kv. 14, UFA; Boris Ivanovich Voronenko, Rossiiskaya ulitsa, 5, kv. 33, UFA, and Svetlana Fedorovna Burova, ulitsa Ostuzheva, 13, kv. 29, Voronezh, all of U.S.S.R.

Filed Feb. 3, 1972, Ser. No. 223,290

Int. Cl. C07c *21/20*

U.S. Cl. 260—655 **6 Claims**

1. A method for purification of technical hexachlorobutadiene containing chloroorganic admixtures including perchloroethylene, hexachloroethane, hexachloracyclopentadiene and polychlorobutanes comprising reacting said technical hexachlorobuadiene with chlorosulfonic acid at a molar ratio of 1:1–4 and at a temperature of 100°–150°C; cooling the reaction mixture to a temperature not above 80°C with formation of a layer of purified hexachlorobutadiene and a layer containing chlorosulfonic acid and oxidized chloroorganic admixtures; separating the layer of purified hexachlorobutadiene and neutralizing, washing with water and drying the separated layer of purified hexachlorobutadiene.

3,864,415

NOVEL COMPOUNDS AND METHOD

Joseph G. Atkinson, Montreal, and Michael O. Luke, Beloeil, Quebec, both of Canada, assignors to Charles E. Frosst & Co., Kirkland, Quebec, Canada

Division of Ser. No. 66,657, Aug. 24, 1970, Pat. No. 3,748,634, which is a continuation-in-part of Ser. No. 724,429, April 26, 1968, abandoned. This application Dec. 4, 1972, Ser. No. 311,601

Claims priority, application Canada, Apr. 29, 1967, 989262

Int. Cl. C07c *1/00*

U.S. Cl. 260—666 P **9 Claims**

1. Deuterated saturated cyclic and acyclic hydrocarbons having from 10 to 36 carbon atoms, having an isotopic purity of at least 95 atom % D, selected from the group consisting of n-decane-d_{22}, n-dodecane-d_{26}, n-hexadecane-d_{34}, n-octadecane-d_{38}, n-tetracosane-d_{50}, n-hexatriacontane-d_{74}, 2,2,4,4,6,8,8-heptamethylnonane-d_{34}, 2,6,10,14-tetramethylpentadecane-d_{40}, Decalin-d_{18}, cyclododecane-d_{24}, 1,2-dicyclohexylethane-d_{26}, squaline-d_{62}, pristane-d_{40}, n-octacosane-d_{58}, n-petadecane-d_{32}, and 2,6,11,15-tetramethylhexadecane-d_{42}.

3,864,416

SEPARATION OF TETRA-ALKYL SUBSTITUTED AROMATIC HYDROCARBON ISOMERS

Douglas R. Campbell, Brookfield, and James W. Priegnitz, Elgin, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 18, 1974, Ser. No. 452,481

Int. Cl. C07c *7/12*

U.S. Cl. 260—674 A **20 Claims**

1. A process for separating tetra-alkyl substituted monocyclic aromatic hydrocarbon isomers, the alkyl constituents containing from 1 to 4 carbon atoms each, from a feed mixture comprising at least two of said isomers which process comprises contacting said feed with a crystalline aluminosilicate selected from the group consisting of type X structured and type Y structured zeolites containing at exchangeable cationic sites at least one cation selected from the group consisting of cations of Group I-A metals thereby selectively adsorbing at adsorption conditions one or more of said isomers.

3,864,417

SATURATED HYDROCARBON DISPROPORTIONATION AT LOW TEMPERATURES

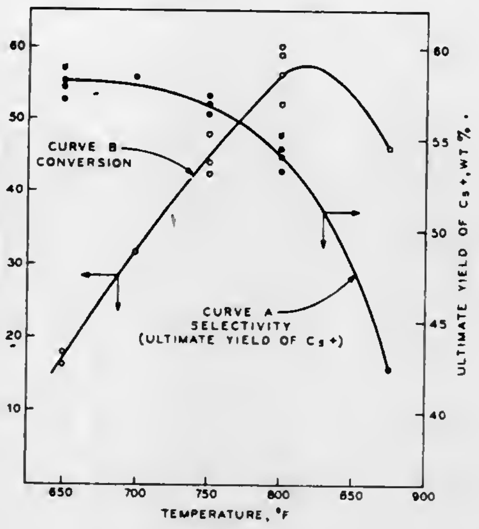
Thomas R. Hughes, Orinda, Calif., assignor to Chevron Reseach Company, San Francisco, Calif.

Continuation of Ser. No. 3,303, Jan. 16, 1970,. This application Aug. 1, 1973, Ser. No. 384,853The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl. C07c *9/00, 3/00*

U.S. Cl. 260—676 R **5 Claims**

1. In a process for disproportionation of saturated hydrocarbons which comprises contacting the saturated hydrocarbons in a disproportionation reaction zone, with a catalytic mass having a component with catalytic activity for alkane dehydrogenation and a second component with catalytic-activity for olefin disporportionation, the improvement which comprises carrying out said contacting at a temperature between 400°F and 850°F, and at an elevated pressure of at least 100 psig, and in the presence of no more than 5 weight percent olefins, and withdrawing from the disproportionation reaction zone product saturated hydrocarbons containing no more than 5 weight percent olefins.



3,864,418

PROCESS OF SEPARATING COMPLEXABLE MATERIALS EMPLOYING SEMIPERMEABLE POLYMER FILM

Robert D. Hughes, and Edward F. Steigelmann, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Mar. 12, 1973, Ser. No. 339,975

Int. Cl. C07c *11/00*

U.S. Cl. 260—677 A **16 Claims**

1. In a method for separating a material from a mixture which comprises contacting said mixture containing said material with a first side of an essentially solid, water-insoluble, hydrophilic, semi-permeable membrane having therein an aqueous liquid barrier having metal ions which combine with said material to form a water-soluble complex, the partial pressure of said material on a second side of said semi-permeable membrane being sufficiently less than the partial pressure of said material in said mixture to provide separated material on said second side of said semi-permeable membrane, said separated material having a transfer rate across said liquid barrier that is greater than at least one other component of said mixture, and removing said separated material from the vicinity of said second side of said semi-permeable membrane, the improvement which comprises employing as said semi-permeable membrane a semi-permeable polymer film having therein an aqueous liquid barrier having in solution said complex-forming metal ions which combine with said material to form a water-soluble complex, said polymer film having an increased permeability to said material resulting from forming the semi-permeable polymer film from a solution having dissolved therein film-forming material and an amount of pore-forming material sufficient to increase the permeability of the film when removed from the film and removing the pore-forming material from the film.

3,864,419

TERTIARY MONO OLEFIN EXTRACTION WITH MIXED ACIDS

Donald E. Murphy, University Heights, Ohio, assignor to The B. F. Goodrich Co., Akron, Ohio

Filed Oct. 30, 1973, Ser. No. 411,049

Int. Cl. C07c *11/00*

U.S. Cl. 260—677 S **3 Claims**

1. A process for extracting tertiary mono olefins from a liquid refinery C_4 to C_8 hydrocarbon stream wherein said stream is contacted with a mixture containing (A) from about 44% to about 71% by weight sulfuric acid, (B) from about 1% to about 50% by weight of at least one aliphatic monocarboxylic acid containing from 2 to 6 carbon atoms, and (C) water

in a molar ratio of water to olefin of at least 1.5/1, said water making up the difference between total acid percentage and 100% of said mixture, the weight ratio of said mixture to said hydrocarbon stream is at least 0.7/1, and mixture is contacted with said hydrocarbon stream at a temperature in the range from about −10°C to about 50°C.

3,864,420

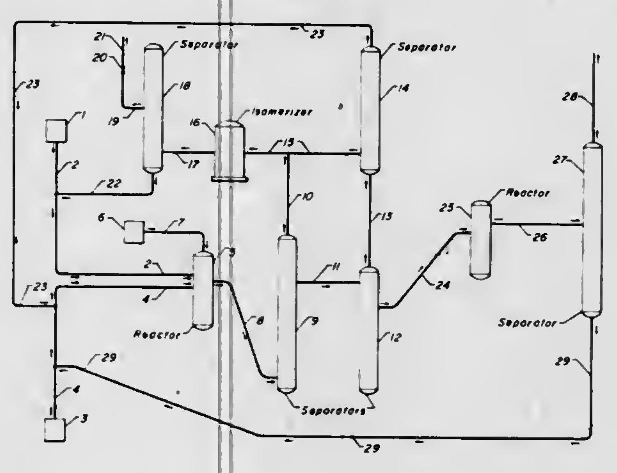
ALPHA OLEFIN SEPARATION PROCESS

Robert A. Dombro, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 2, 1974, Ser. No. 466,387

Int. Cl. C07c *11/02*

U.S. Cl. 260—677 A **11 Claims**



1. A process for the separation of alpha olefins from a feedstock comprising alpha and internal olefins at a temperature of from about 50°C to about 150°C and a pressure of from about 1 atmosphere to about 100 atmospheres which comprises:

a. contacting said feedstock with a thiophenolic compound in the presence of a catalyst comprising an organic peroxide material selected from the group consisting of di-t-butyl peroxide, t-butyl perbenzoate and benzoyl peroxide to produce secondary and normal saturated sulfides;

b. separating said secondary saturated sulfides from said normal saturated sulfides;

c. contacting the normal saturated sulfides with a catalyst comprising a material selected from the group consisting of alumina, activated alumina, silica magnesia, thallia and zirconia compound to produce a thiophenolic compound and the desired alpha olefins;

d. separating said thiophenolic compounds from said alpha olefins and recovering the resultant alpha olefins.

3,864,421

HYDROALKYLATION OF AROMATIC HYDROCARBONS

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed May 7, 1973, Ser. No. 358,217

Int. Cl. C07c *15/12*

U.S. Cl. 260—668 R **18 Claims**

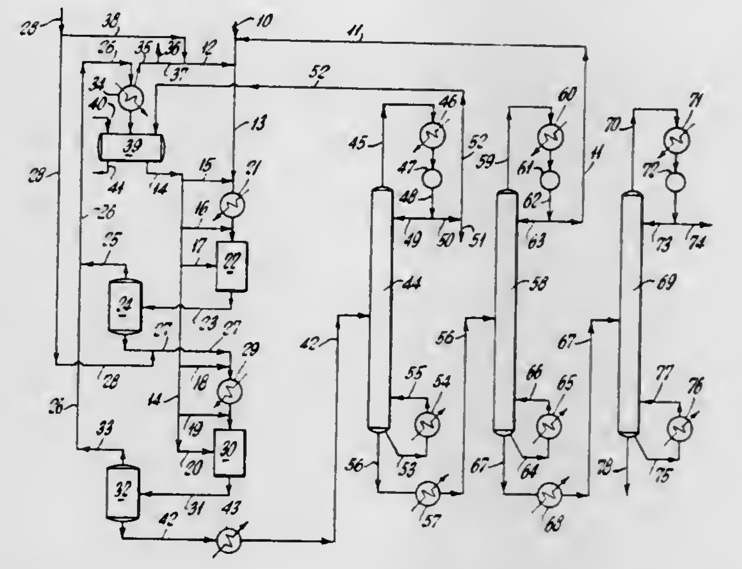
1. The process for hydroalkylating a charge mononuclear hydrocarbon with a hydroalkylating quantity of hydrogen which comprises

passing said charge hydrocarbon, said hydroalkylating quantity of hydrogen, and an inert diluent in liquid phase, through a hydroalkylation operation at hydroalkylating conditions in the presence of hydroalkylation catalyst thereby exothermically hydroalkylating said charge hydrocarbon and forming a product stream containing hydroalkylate;

withdrawing said product stream containing said hydroalkylate from said hydroalkylation operation;

passing said withdrawn product stream to a separation operation;

forming in said separation operation (i) a vapor containing said volatilized inert diluent and (ii) a cooled product stream;



withdrawing from said separation operation (i) said vapor containing said volatilized inert diluent and (ii) said cooled product stream; and

recovering said product stream containing hydroalkylate.

3,864,422

CYCLOPENTADIENE REMOVAL FROM ISOPRENE PROCESS STREAMS

Richard W. Hein, Hudson, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 400,728

Int. Cl. C07c *7/04*

U.S. Cl. 260—681.5 R **3 Claims**

1. A process for the removal of cyclopentadiene from isoprene comprising (A) contacting isoprene containing from about 0.1% to about 2% by weight cyclopentadiene with a compound selected from the group consisting of benzoquinone and naphthoquinone to form a high boiling adduct and (B) removing said adduct from said isoprene by fractionation, thereby reducing cyclopentadiene level in said isoprene to less than 1 ppm, wherein said isoprene contains from 0% water up to about saturation with water and beyond to about 1% free water, benzoquinone or naphthoquinone is in a molar ratio to cyclopentadiene of from about 0.5/l to about 4/l, and said contacting occurs at a temperature from about 10°C. to about 95°C.

3,864,423

ALKYLATION OF HYDROCARBONS

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 21, 1972, Ser. No. 282,230

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.51 **5 Claims**

1. A process for the alkylation of hydrocarbons in the presence of hydrogen fluoride catalyst and a catalyst activator selected from the group consisting of primary alkyl fluorides having from 1 to 8 carbon atoms wherein said catalyst activator is present in an amount ranging from about 5 to about 30 weight percent, based on weight of catalyst and catalyst activator, comprising:

a. contacting in an alkylation reaction zone under alkylation conditions at least one paraffinic hydrocarbon and at least one olefinic hydrocarbon with said catalyst and said catalyst activator to obtain a reaction product comprising alkylate, propane, alkyl fluoride, unreacted hydrocarbons and hydrogen fluoride;

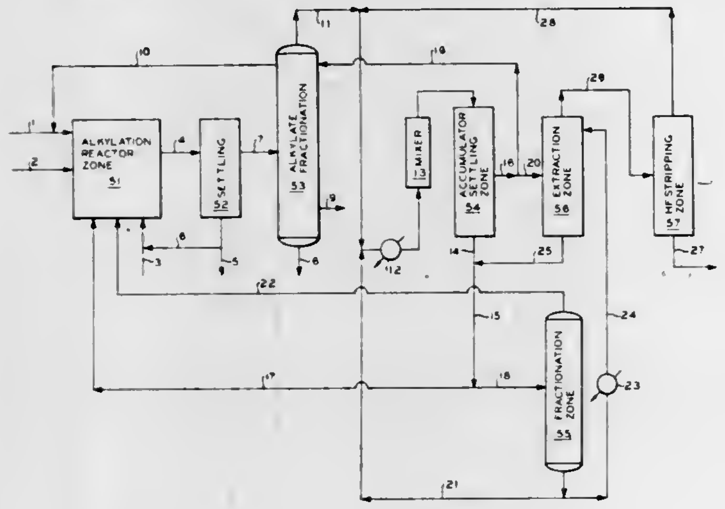
b. passing said reaction product to a phase separation zone and separating therefrom a hydrocarbon phase comprising alkylate, propane, alkyl fluoride, unreacted hydrocarbons and a minor amount of hydrogen fluoride;

c. passing said hydrocarbon phase to a first fractionation zone and withdrawing therefrom a liquid stream comprising alkylate product and a vapor stream comprising propane, alkyl fluoride and hydrogen fluoride;

d. condensing said vapor stream and passing said condensed stream to a separation zone wherein said condensed stream is separated into a liquid hydrocarbon phase comprising propane and alkyl fluoride and a liquid acid phase comprising hydrogen fluoride and alkyl fluoride;

e. passing at least a portion of said liquid hydrocarbon phase to an extraction zone;

f. passing at least a portion of said liquid acid phase to a second fractionation zone and separating therefrom a light stream comprising hydrogen fluoride and alkyl fluoride and a liquid stream consisting essentially of hydrogen fluoride;



g. combining a first portion of said liquid stream from step (f) with said vapor stream from step (c) prior to condensing said vapor stream in step (d);

h. passing a second portion of said liquid stream from step (f) to said extraction zone;

i. extraction in countercurrent fashion in said extraction zone said liquid hydrocarbon phase from step (d) with the liquid hydrogen fluoride from step (f) thereby separating said propane from said alkyl fluoride;

j. withdrawing from said extraction zone a raffinate comprising propane and hydrogen fluoride;

k. separately recovering from said raffinate a hydrocarbon stream consisting essentially of propane;

l. recovering from said raffinate an overhead stream comprising propane and hydrogen fluoride; and

m. combining said overhead stream with said vapor from step (c) prior to condensing said vapor in step (d).

3,864,424
ISOMERIZATION PROCESS

John F. Brennan, and Herman S. Bloch, both of Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 30, 1973, Ser. No. 356,008

Int. Cl. C07c *5/30*

U.S. Cl. 260—683.2 **7 Claims**

1. A process for the isomerization of a double bond located on the tertiary carbon atom of a branch-chained mono-olefin in which process the double bond is isomerized to a different situs involving the tertiary carbon atom without appreciable formation of disubstituted ethylenes or dimers, said process comprising treating said branch-chained mono-olefin at a temperature of from about 20° to about 80°C. with a catalyst consisting essentially of partially dehydrated weakly acidic gamma alumina containing less than 0.1% chloride, said alumina having been treated in an air stream at a temperature of about 550°C., and recovering the resultant isomerized product.

3,864,425
RUTHENIUM-PROMOTED FLUORIDED ALUMINA AS A SUPPORT FOR SBF_5-HF IN PARAFFIN ISOMERIZATION

Lloyd E. Gardner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1973, Ser. No. 398,086

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.68 **10 Claims**

1. A method of isomerizing paraffin hydrocarbons containing 4 to 8 carbon atoms contained in a feedstream which comprises passing said feedstream and hydrogen into contact with a composition comprising a ruthenium-promoted fluorided alumina catalyst comprising SbF_5-HF to isomerize said hydrocarbons and recovering the isomerized hydrocarbons.

3,864,426
THERMAL SHOCK RESISTANT EPOXY COMPOSITIONS

George A. Salensky, Metuchen, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 23, 1973, Ser. No. 363,188

Int. Cl. C08g *45/04*

U.S. Cl. 260—837 R **6 Claims**

1. A cured article having good thermal shock resistance, said article comprising the molded reaction product of a solid composition, fusible at elevated temperatures and suitable for use in molding, containing (a) a polyglycidyl ether of a polyhydric phenol, having an oxirane oxygen equivalency greater than one, (b) an epoxy curing agent and (c) an acrylic graft copolymer comprising an alkyl methacrylate polymer and an alkyl acrylate polymer, said alkyl methacrylates polymer having been polymerized in intimate contact with said alkyl acrylate polymer, wherein the acrylic graft copolymer contains from 40 to 75 weight percent of alkyl acrylate and from 60 to 25 weight percent of alkyl methacrylate, the percentage being based on weight of said acrylic graft copolymer.

3,864,427
MOLDING COMPOSITIONS

Ryuichi Nakane, Kobe, and Hisatsugu Minamida, Osaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 26, 1972, Ser. No. 301,246

Claims priority, application Japan, Nov. 1, 1971, 46-86924; Oct. 7, 1972, 47-13412

Int. Cl. c08f *43/08*

U.S. Cl. 260—862 **21 Claims**

1. A molding composition comprising (1) an unsaturated polyester produced by reacting an α,β-unsaturated aliphatic dicarboxylic acid, or a mixture of the dicarboxylic acid and at least one of a saturated aliphatic dicarboxylic acid and an aromatic dicarboxylic acid, with a polyol, (2) a monomer polymerizable with the unsaturated polyester and having one vinyl group per molecule, and (3) a crystalline styrene polymer in which at least about 95 weight parts of the polymer is insoluble in methyl ethyl ketone at 40°c, and the insoluble portions of the polymere melt or soften at about 210° to about 230°C, or a copolymer of (a) styrene or a mixture of styrene and a monomer copolymerizable therewith and having one vinyl group per molecular and (b) a low molecular weight compound containing two non-conjugated ethylenically unsaturated double bonds per molecule.

3,864,428
POLYESTER/POLYCARBONATE/GRAFT COPOLYMER THERMOPLASTIC RESIN COMPOSITION

Yositugu Nakamura; Ryoichi Hasegawa, and Hiroaki Kubota, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 27, 1973, Ser. No. 392,002

Claims priority, application Japan, Aug. 30, 1972, 47-86283

Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **8 Claims**

1. A thermoplastic resin composition consisting essentially of

A. 25 to 85 percent by weight of an aromatic polyester,

B. 10 to 75 percent by weight of an aromatic polycarbonate, and

C. 2 to 35 percent by weight of a graft copolymer of a butadiene polymer-vinyl monomer which is selected from the group consisting of methacrylic esters, aromatic monovinyl compounds, vinyl cyanide compounds, and mixtures thereof,

the proportion of the butadiene polymer component in the graft copolymer being 1 to 30 percent by weight based on the total weight of the components (A), (B) and (C).

3,864,429
BLEND OF POLYVINYL CHLORIDE RESINS WITH MERCAPTAN-MODIFIED MBS RESINS

Takashi Tanaka, and Shinichi Suzuki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 12, 1973, Ser. No. 331,880

Claims priority, application Japan, Feb. 18, 1972, 47-017061

Int. Cl. C08f *15/00, 19/00*

U.S. Cl. 260—876 R **3 Claims**

1. An impact-resistant vinyl chloride polymer resin composition having improved weather resistance which comprises a blend of (a) from 3 to 30 parts by weight of a modified MBS resin obtained from an addition-reaction of an alkyl mercaptan having 2 to 20 carbon atoms with a butadiene-styrene-methyl methacrylate graftpolymer resin, the amount of alkyl mercaptan being 1/100 to 1 mole per mole of conjugated diolefin in the MBS resin and (b) from 97 to 70 parts by weight of a vinyl chloride homopolymer or copolymer resin wherein said copolymer of vinyl chloride is a copolymer of a major quantity of vinyl chloride and a minor quantity of another monomer selected from the group consisting of vinylidene chloride, acrylic esters, methacrylic esters, fatty acid vinyl esters, acrylonitrile and mono-olefins.

3,864,430
RUBBER COMPOSITIONS CONTAINING CIS-POLYBUTADIENE AND 1,2-POLYBUTADIENE

Masashi Umeno, Kawasaki; Mitsuo Ichikawa, Hachioji; Yasumasa Takeuchi, Yokohama, and Eiichiro Shiratsuchi, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 308,093

Int. Cl. C08d *9/04;* **C08f** *29/08*

U.S. Cl. 260—894 **6 Claims**

1. A rubber composition which consists essentially of a blend of 97 to 80 percent by weight of cis-polybutadiene and 3 to 20 percent by weight of 1,2-polybutadiene having a 1,2-addition units content of 70 percent or higher and crystallinity of 5 percent or higher.

3,864,431
STABILIZED POLYOLEFINS USEFUL AS WIRE INSULATION IN PETROLEUM-JELLY FILLED CABLES

Donald E. Reid, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 254,553, May 18, 1972, Pat. No. 3,798,286. This application Oct. 12, 1973, Ser. No. 406,070

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 R **4 Claims**

1. A polymer selected from the group consisting of high density polyethylene and crystalline polymers of propylene containing stabilizing amounts of the following additives:

A. from 0.1 to 1.5 parts per 100 parts of polymer (php) of a resonous condensation product of a terpene and phenol, having a molecular weight of at least 400,

B. from 0.1 to 1.0 php of a polymeric ester of a thiodialkanoic acid and a polyhydric alcohol, having a molecular weight of at least 500, and

C. from 0.02 to 0.5 php of oxalic acid bis(benzylidene hydrazide) or adipic acid bis(acetyl hydrazide).

3,864,432
PROCESS FOR THE PRODUCTION OF AN ELASTICIZED THERMOPLASTIC POLYMER MIXTURE IN A POURABLE POWDER FORM

Klaus Adler; Johann Bauer; Rupert Englbrecht; Werner Turba; Englbert Pichler, and Adolf Maluschka, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Nov. 22, 1972, Ser. No. 308,738

Claims priority, application Germany, Dec. 7, 1971, 2160743

Int. Cl. C08f *37/18*

U.S. Cl. 260—897 B **4 Claims**

1. A process for the production of an elastomer treated thermoplastic polymer in a pourable powder form consisting essentially of adding a maximum of 50 parts of an aqueous elastomeric ethylene/vinyl acetate copolymer dispersion to 100 parts of a thermoplastic polymer powder in such an amount that not more than 25 parts by weight of water in said aqueous dispersion are present per 100 parts by weight of said thermoplastic polymer powder, mixing the two components under high sheer agitation at agitation speeds of from 1,000 to 3,000 RPM, at below the gelling temperature of said thermoplastic powder for a time sufficient to obtain a homogeneous distribution of the elastomeric resin on said thermoplastic powder and to obtain a substantially anhydrous powder, and recovering said elastomer treated thermoplastic polymer in a pourable powder form.

3,864,433
CURED RUBBER COMPOSITION COMPISING EPR OR EPDM AND A FLUORINE CONTAINING ETHYLENEPOLYMER

Yoshiharu Tatsukami, Niihama; Takashi Futami, Hirakata, and Yasuhiro Oda, Takatsuki, all of Japan, assignors to Sumitomo Chemical company Limited and Daikin Kogyo Co. Ltd., both of Osaka, Japan

Filed Apr. 22, 1974, Ser. No. 463,032

Claims priority, application Japan, Apr. 23, 1973, 48-46505

Int. Cl. C08f *29/22*

U.S. Cl. 260—897 C **16 Claims**

1. A cured rubber composition prepared by curing, with an organic peroxide as a curing agent, a composition consisting essentially of (A) 95 to 5 parts by weight of an amorphous ethylene-propylene and rubber and (B) 5 to 95 parts by weight of a fluorine-containing ethylene polymer selected from the group consisting of ethylene-herafluoropropene copolymer and ethylene-hexafluoropropene-ethylenically unsaturated monomer terpolymer, said copolymer or terpolymer containing 10 to 50 mole% of hexafluoropropene.

3,864,434

GRAFT COPOLYMERS OF LACTONE POLYESTERS AND BLENDS WITH POLYVINYL CHLORIDE

Frank E. Critchfield, South Charleston, and Joseph V. Koleske, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

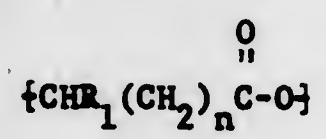
Division of Ser. No. 273,300, July 19, 1972, Pat. No. 3,816,566, which is a division of Ser. No. 109,982, Jan. 26, 1971, Pat. No. 3,760,034. This application Feb. 8, 1974, Ser. No. 440,799

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **4 Claims**

1. Polyblend of polyvinyl chloride and about 10 to about 100 parts of graft copolymer, per hundred of polyvinyl chloride, said graft copolymer comprising:

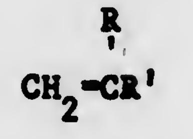
a. lactone polyesters having a reduced viscosity of about 0.2 to 2.0 dl./gm., a molecular weight of about 5000 to 150,000 and repeating units having the general formula:



$$\left\{CHR_1(CH_2)_n\overset{O}{\overset{\|}{C}}-O\right\}$$

wherein R_1 is H or an alkyl group containing 1 to about 6 carbon atoms, and *n* is an integer having a value of at least 3; and

b. graft copolymerized thereon about 1 to about 20% by weight based on the weight of said lactone polyesters of an ethylenically unsaturated monomer having the general formula:



$$CH_2=\overset{R}{\overset{|}{C}}R'$$

wherein R is a monovalent radical selected from the group consisting of -H and methyl and R′ is phenyl.

3,864,435

OLIGOMERIC PHOSPHORODIAMIDATE

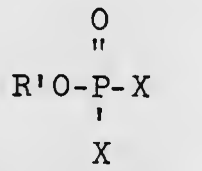
Haakon Haugen, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 210,238, Dec. 20, 1971, Pat. No. 3,810,838. This application Sept. 19, 1973, Ser. No. 398,612

Int. Cl. C07f *9/24*

U.S. Cl. 260—926 **4 Claims**

1. A method of preparing an oligomeric O-alkyl-N,N′-bis(alkaryl)phosphorodiamidate having an average of 1 to 4 phosphorodiamidic groups therein and a phosphorus content between about 2 and 10 wt. percent comprising contacting an amine of the formula RNH_2 where R is alkaryl of from 12 to 24 carbons with an alkyl dihalophosphate of the formula:



$$R'O-\underset{X}{\underset{|}{\overset{O}{\overset{\|}{P}}}}-X$$

where R′ is alkyl of from 2 to 6 carbons and X is chlorine or bromine utilizing a mole ratio of said amine to said dihalophosphate of between about 1.7:1 and 2.3:1 at a temperature between about 170 and 200°C. in the absence of inert diluent solvent and in the absence of catalyst while continuously blowing the reaction mixture with an inert gas and recovering said oligomeric phosphorodiamidate.

3. The oligomeric O-alkyl-N,N′-bis(alkaryl)phosphorodiamidate of claim 1.

3,864,436

PROCESS FOR THE PREPARATION OF BIS-(2,3-DIBROMOPROPYL) PHOSPHORYL CHLORIDE

Dilip K. Ray-Chaudhuri, Sommerville, and Carmine P. Iovine, Somerset, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,214

Int. Cl. C07f *9/14*

U.S. Cl. 260—975 **3 Claims**

1. A process for preparing bis-(2,3-dibromopropyl) phosphoryl chloride containing less than 0.5 percent, by weight, of 2,3-dibromopropyl dichlorophosphate impurities which comprises reacting at temperatures ranging from about 50° to 125°C. essentially stoichiometric concentrations of 2,3-dibromopropanol and phosphorus oxychloride.

3,864,437

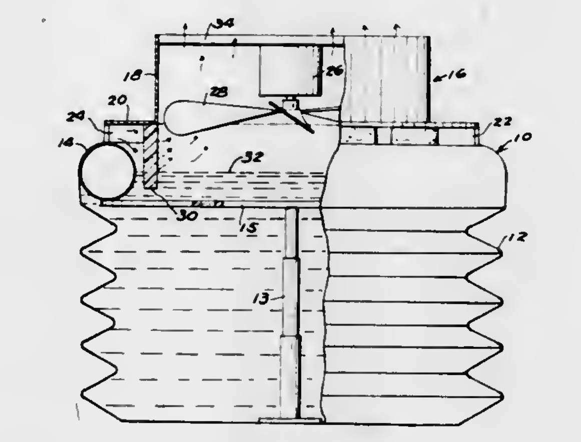
HUMIDIFIER

Henry Blaszkowski, P.O. Box 114, Southfield, Mich. 48075

Continuation of Ser. No. 89,623, Nov. 16, 1970, abandoned. This application June 14, 1973, Ser. No. 370,066

Int. Cl. B01f *3/04*

U.S. Cl. 261—24 **26 Claims**



1. A humidifier comprising a receptacle for water, float means adapted to be bouyantly supported by water in the receptacle, said receptacle having a vertically expandable and contractible side wall, said float means being connected to said side wall adjacent the upper end thereof, air moisturizing means supported by the float means to rise and fall with the water level in the receptacle, said moisturizing means having an outlet opening exteriorly of the receptacle for discharging moisture into the surrounding atmosphere.

3,864,438

FLOTATION MACHINE

Tatsuya Nagahama, Tokyo, Japan, assignor to Mitsui Mining & Smelting Co., Ltd, Tokyo, Japan

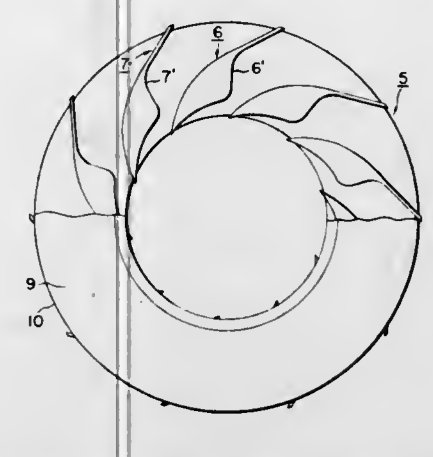
Filed Mar. 15, 1973, Ser. No. 341,675

Claims priority, application Japan, Mar. 18, 1972, 47-27602

Int. Cl. B03d *1/16*

U.S. Cl. 261—87 **8 Claims**

6. in a flotation machine comprising a flotation cell having an air inlet pipe for introducing air into the liquid being treated, a rotatable impeller for mixing the air with the liquid and circulating same in the cell, and an annular dispersing unit having a central opening in which said impeller is disposed and having a series of circumferentially spaced guide vanes defining flow passages for directing flow of the air and the liquid from the impeller, the improvement which comprises: a projecting portion disposed in each of said flow passages between the opposing surfaces of the adjacent guide vanes that define the flow passage, the projecting portion being located in the flow passage between and spaced radially from said central opening and the periphery of said dispersing unit, the projecting portion extending from one side of the flow passage toward the other side of the flow passage partway across the flow passage and narrowing the width of said flow passage, with the width of said flow passage being enlarged on opposite sides of said projecting portion.



3,864,439

GAS-LIQUID CONTACTING APPARATUS

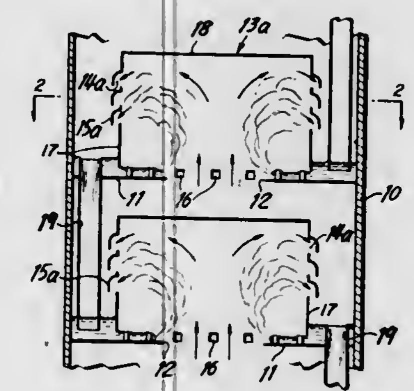
Shogo Tanigawa, and Takesi Yokoyama, both of Tamanoshi, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd, Tokyo, Japan

Filed Dec. 12, 1972, Ser. No. 314,380

Claims priority, application Japan, Dec. 29, 1971, 47-2666; Dec. 21, 1971, 46-21439; Dec. 21, 1971, 46-21440

Int. Cl. B01f *3/04*

U.S. Cl. 261—114 R **1 Claim**



1. Gas-liquid contacting apparatus comprising a column having trays provided at spaced intervals, each tray being provided with a weir means for maintaining a depth of liquid thereon, a downcomer communicating with the weir means, openings communicating with the space below the tray, gas-liquid contacting devices surrounding said openings each having a cover to prevent gas and liquid from ascending and a wall having a plurality of rectangularly-shaped inclined gas-liquid apertures, and a deflecting plate located adjacent each aperture at the outside of the wall to deflect downwardly and tangentially a gas-liquid mixture flowing outwardly through the apertures.

3,864,440

HUMIDIFIER AND HEATER FOR DELIVERED GAS

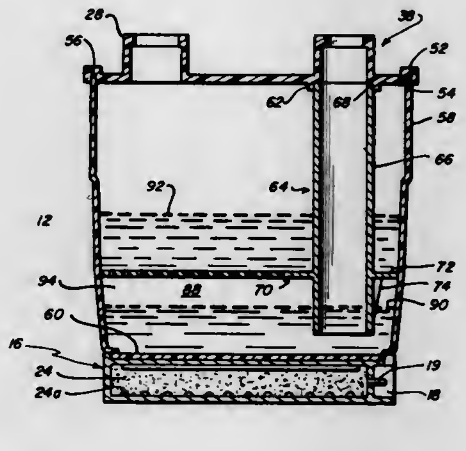
George Giocoechea, Chicago, Ill., assignor to Respiratory Care, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 219,697, Jan. 21, 1972, Pat. No. 3,757,082. This application Aug. 2, 1973, Ser. No. 384,940

Int. Cl. B01f *3/04;* **A61m** *15/00*

U.S. Cl. 261—122 **8 Claims**

1. A humidifier for delivered gases, including
a water container having continuous sidewalls and a bottom wall,
a top cover for the water container,
an inlet on the cover for introduction of water and gas,
an outlet in the cover for discharge of humidified gas, and
a gas conveying assembly within said water container, said assembly having a gas delivery tube and a diffuser plate, said plate having a continuous edge extending to and contacting the sidewalls of the container to define a gas rebound chamber between the plate and the bottom of the container, the gas delivery tube having a major portion of its length extending from the plate to the inlet on the cover, and a minor portion extending below the diffuser plate but stopping short of the bottom, said minor length being operable to maintain a gas plenum between a body of water in the rebound chamber and a body of water above the plate, said body of water above the plate raising the level of water in the rebound chamber above the end of the minor portion of the tube when the level of the water in the rebound chamber falls below the end of said minor portion, thereby maintaining the gas plenum under pressure, said gas delivery tube joining said plate adjacent an edge portion, said outlet passage in the cover being above the plate adjacent an opposite edge portion, and said plate having a plurality of apertures spreading towards the remaining edge portions of the plate.



3,864,441

DIFFUSED AERATION PIPE APPARATUS FOR USE WITH AN AERATION TANK

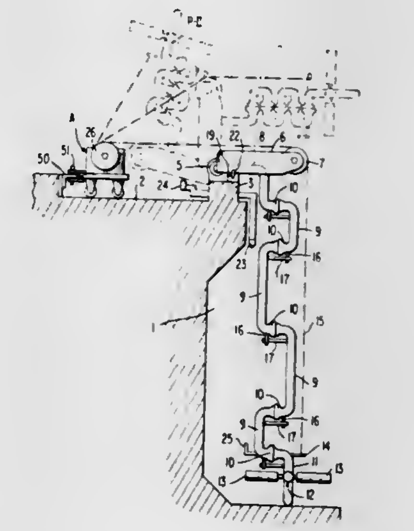
Shigeru Suzuki, Ageo, Japan, assignor to Nigata Engineering Co., Ltd., Tokyo, Japan

Filed May 17, 1974, Ser. No. 470,780

Claims priority, application Japan, Aug. 30, 1973, 48-101713; May 17, 1973, 48-54863

Int. Cl. B01d *47/02*

U.S. Cl. 261—122 **8 Claims**



1. In an aeration tank having an air supply pipe mounted on a support adjacent one of the upper edges of said tank, an aeration piping system comprising:

a. a first pipe having one end pivotably attached to said air supply pipe, the other end opening generally horizontally,

b. a plurality of generally U-shaped pipes each having their ends pivotably jointed, one of said pipes having one end pivotably attached to said other end of said first pipe,

c. aeration diffusion means attached to an open end of one of said plurality of pipes,

d. means attached to said plurality of pipes adjacent each of said pivot joints to limit the angle of rotation between said joined pipes,

e. means selectably engaging said first pipe to prevent said first pipe from moving relative to said supply pipe,

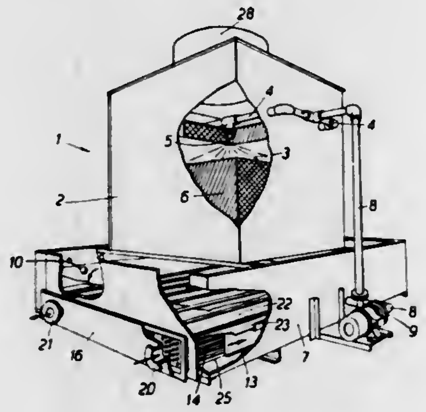
f. guide means pivotably attached to said support,

g. reversible rotating reel means, and

h. a cable having one end attached to said reversible rotating reel means, the other end attached to the piping system and passing over said guide means.

3,864,442
COOLING SYSTEM

Andrew Wilson Percy, Glasgow, Scotland, assignor to Hall-Thermotank International Limited, London, England
Filed June 11, 1973, Ser. No. 368,890
Int. Cl. B01f *3/04*
U.S. Cl. 261—151 **6 Claims**



1. Cooling apparatus for cooling a fluid flow, comprising in combination; a vertical casing; a discharge outlet for primary liquid arranged at an upper part of the vertical casing so as to discharge a downward flow of primary liquid within the casing; means for creating an induced or forced draft of gas to mix with the primary liquid within the casing for heat exchange between the gas and the primary liquid; a reservoir for primary liquid at the foot of the vertical casing including vertical baffle means defining a series of parallel culverts within the reservoir; the culverts being arranged for sinuous flow of primary liquid therethrough; an end channel located at one end of the reservoir; an inlet to the reservoir for flow of primary liquid from the end channel into the reservoir for flow therethrough; duct means in the casing for directing primary liquid to said end channel; an outlet for primary liquid from the reservoir; recycling conduit means for recycling primary liquid from the reservoir outlet to the primary liquid discharge outlet; heat exchange conduit means for secondary liquid extending into the culverts so that heat exchange occurs between the primary and secondary liquids in the reservoir; and an inlet to and an outlet from the heat exchange conduit means for secondary liquid.

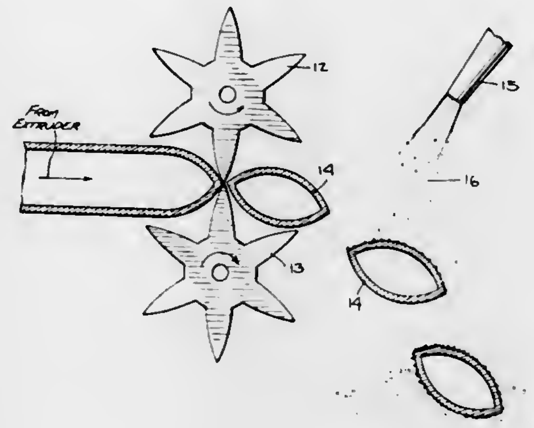
3,864,443
METHOD OF MAKING LIGHT-WEIGHT CONCRETE AGGREGATE

Arthur Hopkins, Stove Bridge Rd., Cornwall, N.Y.
Filed May 27, 1970, Ser. No. 40,786
Int. Cl. C03c *25/02*; **B29d** *23/00*; **B28b** *11/06*
U.S. Cl. 264—42 **10 Claims**

1. The method of making aggregate for use in a concrete matrix, said method comprising the steps of:

A. continuously extruding a tube of moldable material through a die, said material having structural characteristics suitable for an aggregate, said tube having a diameter appropriate to aggregate,

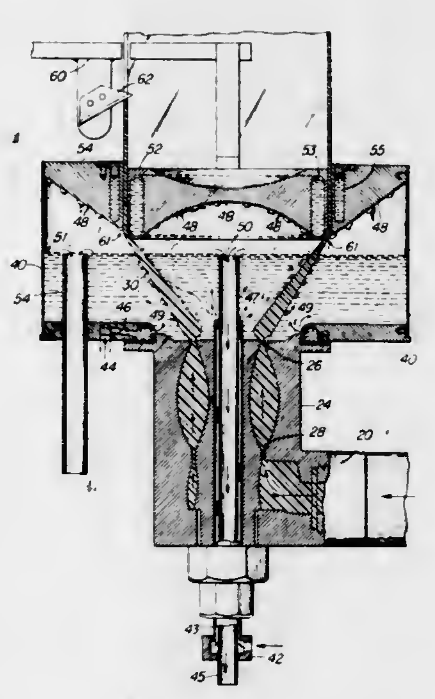
B. sealing and sectioning the tube to form individual aggregate elements; and



C. treating the surface of the individual elements, while still moldable, to improve their adhesion characteristics.

3,864,444
METHOD OF PRODUCING A FOAMED POLYSTYRENE SHEET HAVING A DENSITY GRADIENT DECREASING FROM THE EXTERNAL SURFACES INWARDLY

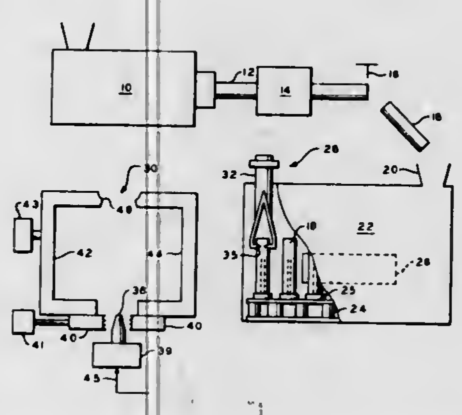
David Emil Johnson, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Sept. 4, 1973, Ser. No. 394,039
Int. Cl. B29d *27/00*
U.S. Cl. 264—48 **4 Claims**



1. In the method of producing a polystyrene foam sheet by forming an extrudable, foamable mass comprising polystyrene; extruding such mass in tubular form; drawing said tubular extrudate over a forming calender ring of a diameter greater than the extruded diameter of said tubular extrudate; and then slitting said tube to convert such into flat sheeting; the improvement which comprises extruding such foamable composition directly into boiling water maintained at substantially the same height, both inside and outside said tubular extrudate; foaming said extrudate in said boiling water under cooling conditions whereby said tubular extrudate as formed has a density gradient decreasing from the external surfaces inwardly.

3,864,445
GRASPING PARISON PREFORM AT RIGHT ANGLE TO MOLD PARTING LINE

Jimmie L. Dean, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 220,970, Jan. 26, 1972, Pat. No. 3,758,254. This application June 29, 1973, Ser. No. 375,145
Int. Cl. B29c *17/07*
U.S. Cl. 264—89 **6 Claims**



1. A method for forming biaxially oriented hollow articles comprising:

forming a tubular extrudate of an extrudable polymer;

cooling said extrudate to a solid state;

severing said thus cooled extrudate into an individual open end parison preform;

passing said open end parison preform, while in a vertical position, through an oven to reheat same;

applying pressure to opposed sides of an open end of said parison to flatten and grip same and to thereby align said parison such that the axis thereof is coincident with a plane passing through the longitudinal direction of the flattened end;

transferring said thus gripped parison into position in a molding zone with the longitudinal direction of said flattened end aligned parallel to the direction of travel of mold halves forming said zone;

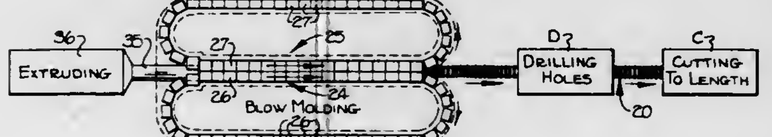
moving said mold halves together to form a molding zone, bottom wall forming portions of said mold halves cooperating to further align said parison such that the axis thereof is also coincident with a plane perpendicular to the longitudinal direction of said flattened end and to thereafter seal and sever said parison at a point adjacent said flattened end;

introducing fluid pressure to expand said parison out into conformity with said molding zone; and

removing the thus formed article.

3,864,446
METHOD OF CONVERTING CORRUGATED PIPE MOLDING MACHINE

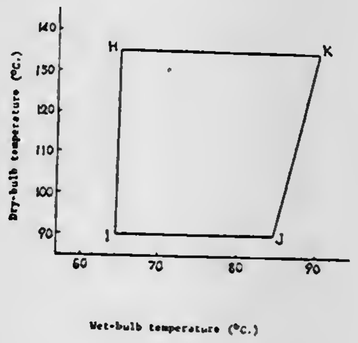
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc., Roseboro, N.C.
Division of Ser. No. 261,780, June 12, 1972, Pat. No. 3,784,346. This application Dec. 10, 1973, Ser. No. 422,993
Int. Cl. B29c *17/07, 17/10, 17/16*
U.S. Cl. 264—95 **12 Claims**



1. In a method of molding plastic pipe wherein an annular tube of molten plastic material is extruded and directed into a molding machine having pairs of cooperating mold sections arranged to receive the extruded tube and move the same through an elongate molding zone and wherein at least some of the mold sections have alternating semicircular transverse ribs and valleys with the ribs and valleys of one section of each pair cooperating with the ribs and valleys of the other section of the same pair to form respective annular valleys and ribs on the plastic pipe being molded therein, the improvement comprising positioning and securing at least one insert in one of the valleys of at least one of the mold sections and thereafter molding plastic pipe against the mold section whereby the insert serves for forming an interrupting gap in the corresponding rib being molded.

3,864,447
METHOD OF PRODUCING ACRYLIC COMPOSITE FIBERS

Hideto Sekiguchi, Kanaoka; Nobuhiro Tsutsui, Sumiyoshicho, and Takehiko Sumi, Kanaoka, all of Japan, assignors to Japan Exlan Company Limited, Osaka, Japan
Continuation of Ser. No. 672,634, Oct. 3, 1967, abandoned. This application Feb. 4, 1972, Ser. No. 223,795
Claims priority, application Japan, Oct. 7, 1966, 41-68532; Oct. 7, 1966, 41-68533; Oct. 7, 1966, 41-68534
Int. Cl. D01d *5/22*
U.S. Cl. 264—168 **11 Claims**



	Dry-bulb temperature (°C.)	Wet-bulb temperature (°C.)
H	135	65
I	90	65
J	90	85
K	135	90

1. A method of producing an acrylic composite fiber consisting of two components arranged in layers in side-by-side relationship throughout the length of the fiber, which comprises wet-spinning two different acrylic spinning solutions to form a composite fiber, washing the composite fiber with water, stretching the composite fiber to form a swollen gel fiber having a moisture content of at least 40%, relaxing the swollen gel fiber for 5 – 20 minutes, without drying, in hot water or steam at 60° – 130°C in a non-tensioned state, and drying the relaxed fiber under correlated conditions of temperature and humidity within the graphical area defined by coordinates of wet-bulb temperature-ordinate, dry-bulb temperature-abscissa in °C of 65,135, 65,90 85,90 and 90,135, the spinning solutions being selected to provide fiber components respectively formed therefrom having a difference in degree of irreversible swelling of 0.05 –3 so as to cause a difference in shrinkage between the fiber components.

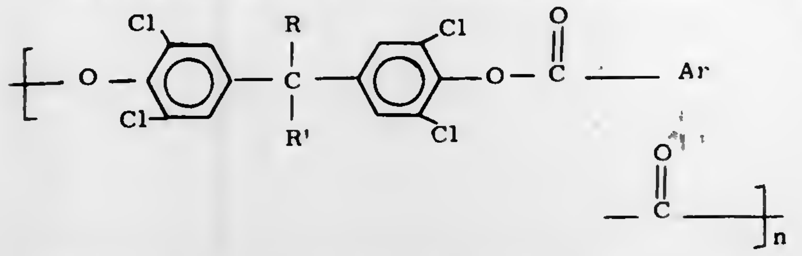
3,864,448
DRY-SPINNING TETRACHLORINATED ARMOATIC POLYESTER FILAMENTS FROM METHYLENE CHLORIDE SOLUTIONS

Robert W. Stackman, Morris Township, and Clifford M. Vogt, Madison, both of N.J., assignors to Celanese Corporation, New York, N.Y.
Filed Aug. 17, 1972, Ser. No. 281,585
Int. Cl. D01f *7/00*
U.S. Cl. 264—205 **6 Claims**

1. An improved dry-spinning process for forming aromatic polyester filaments which comprises extruding a stable solution consisting essentially of

from about 70 to 82 percent by weight of the solution of methylene chloride; and

from about 30 to about 18 percent by weight of the solution of a polymer having a recurring structural formula:



wherein n is so chosen that the molecular weight of the polymer is from about 10,000 up to about 200,000 and R and R' may be the same or different and represent lower alkyl groups or hydrogen or may, together, constitute a cyclic hydrocarbon; and Ar is a mixture of from about 20 to about 40 percent paraphenylene and from about 80 to about 60 percent metaphenylene; the stable solution having a viscosity of from about 100 to about 3,000 poises,

through an opening into an evaporative atmosphere for the methylene chloride to form the filaments in the absence of polymer phase-out from said solution prior to said extrusion.

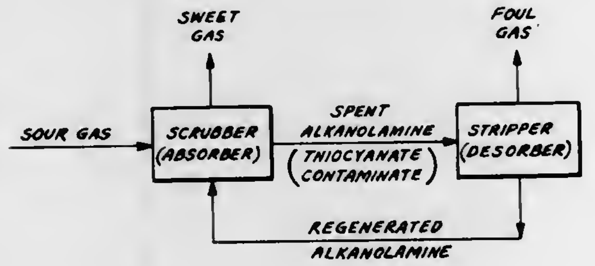
3,864,449
REGENERATION OF ALKANOLAMINE ABSORBING SOLUTION IN GAS SWEETENING PROCESSES

Otto A. Homberg, Easton; Charles W. Sheldrake, Bethlehem, and Alan H. Singleton, Emmaus, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 17, 1973, Ser. No. 361,389

Int. Cl. B01d *53/34*

U.S. Cl. 423—228 **18 Claims**



1. In combination with an aqueous alkanolamine absorption/desorption process wherein industrial gases are sweetened by removal of acid gases including hydrogen cyanide and sulfide gases, a process for preventing irreversible deterioration of the alkanolamine solution comprising:

maintaining sufficient ammonium ions in the alkanolamine solution during absorption to insure a continued presence of said ammonium ions in the alkanolamine solution during the absorption process, said ammonium acting as a deterrent with respect to the formation of thiocyanates whereby irreversible deterioration of said alkanolamine solution by said thiocyanates is suppressed.

3,864,450
PROCESS FOR REMOVING NITROGEN OXIDES FROM GASEOUS MIXTURES

Tetsu Takeyama; Ryoh Endoh, and Keizo Masuda, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,643

Claims priority, application Japan, June 24, 1971, 46-45243

Int. Cl. B01d *53/34*

U.S. Cl. 423—239 **5 Claims**

1. In a process for the removal of a nitrogen oxide impurity from a gaseous mixture, wherein the gaseous mixture subjected to the treatment contains both a nitrogen oxide impurity and oxygen, the steps comprising contacting the gaseous mixture with a catalyst consisting essentially of carbon impregnated with sodium hydroxide or potassium hydroxide, while maintaining said catalyst at a temperature in the range from about 250° C. to 480° C.

3,864,451
METHOD FOR REMOVING NITRIC OXIDE FROM COMBUSTION GASES

Yuan C. Lee, and Jules M. Kline, both of Newport Beach, Calif., assignors to Environics, Inc., Huntington Beach, Calif.

Filed Aug. 16, 1973, Ser. No. 281,034

Int. Cl. B01d *53/34*

U.S. Cl. 423—239 **3 Claims**

1. A method for selectively removing nitric oxide in the presence of sulfur dioxide from a flue gas containing nitric oxide, oxygen, carbon monoxide, carbon dioxide, water vapor and between 10 parts per million and 300 parts per million of sulfur dioxide, which comprises: mixing ammonia with said flue gas, the amount of ammonia, by volume, being at least equal to the volume of nitric oxide, and contacting the resulting mixture of flue gas and ammonia with a platinum catalyst on a support at a temperature between about 550°F and 600°F.

3,864,452
PROCESS FOR PURIFYING SULFUR COMPOUND CONTAMINATED GAS STREAMS

Chang W. Chi; Hanju Lee, both of Columbia, and Philip K. Maher, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,459

Int. Cl. C01b *17/00;* **B01j** *9/04, 9/08, 9/12, 9/16, 9/20;* **C01b** *17/02*

U.S. Cl. 423—244 **17 Claims**

1. A cyclic four-stage method for purifying a sour gas stream by removing sulfurous contaminants therefrom comprising providing at least four high pressure adsorbent beds and at least two low pressure adsorbent beds; at least two of said high pressure adsorbent beds being on adsorption steps during any of said four stages, and at least two of said high pressure adsorbent beds being on regeneration steps and interconnected to a low pressure adsorbent bed during any of said four stages whereby during regeneration said contaminants which had been removed from the sour gas are not allowed to pass into the atmosphere; said adsorption steps comprising passing the sulfurous contaminated gas to said high pressure adsorbent beds to adsorb said sulfurous contaminants and flow a purified gas therefrom; said regeneration steps comprising depressurizing a high pressure adsorbent bed through a low pressure adsorbent bed, passing an oxygen containing gas through the high pressure adsorbent bed and then through the low pressure adsorbent bed thereby converting adsorbed sulfur compounds to elemental sulfur; heating the high pressure adsorbent bed and the low pressure adsorbent bed to greater than 825°F by passage of a heated gas and collecting said elemental sulfur, cooling said high pressure adsorbent bed and said low pressure adsorbent bed and purging said adsorbent beds to remove any oxygen containing gases prior to switching the high pressure adsorbent bed to an adsorption step.

3,864,453
PROCESS FOR THE PRODUCTION OF ALKALI FERROCYANIDE

Helmut Reinhardt, Rodenkirchen; Karl Trebinger, and Gottfried Kallrath, both of Wesseling, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Mar. 20, 1973, Ser. No. 343,171

Claims priority, application Germany, Mar. 27, 1972, 2214827

Int. Cl. C01c *3/12*

U.S. Cl. 423—367 **11 Claims**

1. A process for the production of an alkali or ammonium ferrocyanide comprising (1) reacting at 10° to 100°C. an aqueous solution of calcium hexacyanoferrate (II) with an aqueous solution of an iron (II) salt, washing the insoluble iron (II) hexacyanoferrate II complex formed with water until it is free of calcium ions and then (2) adding an aqueous solution of sodium, potassium or ammonium cyanide at 20° to 200°C. to the washed product to form an aqueous solution of the corresponding alkali or ammonium hexacyanoferrate (II).

3,864,454
PROCESS FOR THE PRODUCTION OF ALKALI PERCARBONATE

Horst Pistor, Rheinfelden, Germany; Edmund Simmersbach, deceased, late of Reinfelden, Germany; by Ingeborg Mohler, heiress, Denzlingen, Germany; Artur Schaller, Rheinfelden, Germany, and Gerd Knippschild, Wehr, Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Rossler, Postfach, Germany

Filed May 30, 1973, Ser. No. 365,249

Claims priority, application Germany, June 2, 1972, 2227014

Int. Cl. C01b *15/10*

U.S. Cl. 423—415 **9 Claims**

1. A process for producing alkali metal percarbonate comprising spraying solid alkali metal carbonate with aqueous hydrogen peroxide solution having a concentration of 35 to 90% and holding the alkali metal percarbonate at either (1) a time of between about 10 minutes and about 30 minutes at about 40° to 60°C. or (2) at a time between about 30 minutes and 110 minutes at 30° to 40°C. in a thin layer and then drying at 20° to 90°C. in a carbon dioxide containing gas which is either pure carbon dioxide or a mixture of carbon dioxide with air.

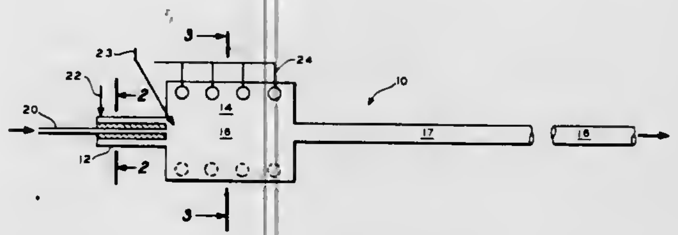
3,864,455
CARBON BLACK STRUCTURE REDUCTION USING A URANIUM ADDITIVE

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 10, 1972, Ser. No. 295,827

Int. Cl. C01b *31/02;* **C08h** *17/08*

U.S. Cl. 423—450 **8 Claims**



1. In a process for making carbon black by the thermal decomposition of a fluid hydrocarbon feed in a carbon black forming zone at a temperature of greater than 1,700°F, the improvement comprising introducing into said zone from 1—1000 parts by weight of uranium per million parts by weight of feed.

3,864,456
MANUFACTURE OF CHLORINE DIOXIDE, CHLORINE AND ANHYDROUS SODIUM SULPHATE

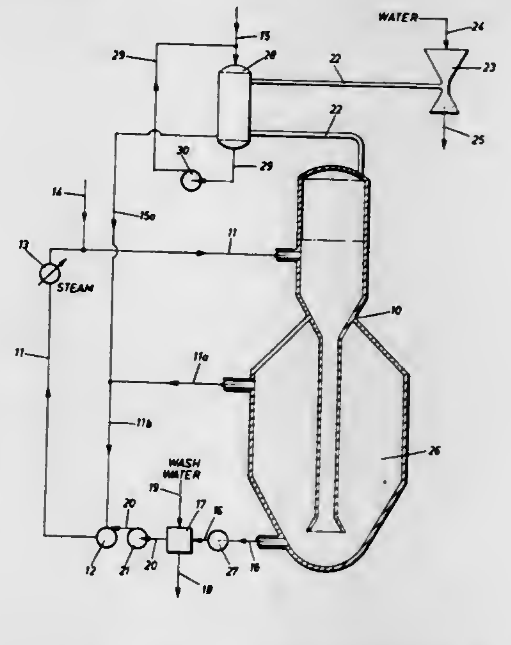
John D. Winfield, Scarborough, Ontario; Herbert C. Scribner, Islington, Ontario, and James D. Mc Gilvery, Port Credit, Ontario, all of Canada, assignors to Electric Reduction Company of Canada, Ltd., Toronto, Ontario, Canada

Continuation of Ser. No. 471,132, July 12, 1965, abandoned. This application June 3, 1970, Ser. No. 41,762

Claims priority, application Great Britain, Aug. 13, 1964, 33093/64

Int. Cl. C01b *11/02*

U.S. Cl. 423—478 **7 Claims**



1. A continuous process for the generation of chlorine dioxide and chlorine and the production of anhydrous sodium sulphate (Na_2SO_4) which comprises: maintaining an aqueous reaction solution containing sodium chlorate, sodium chloride and sulphuric acid and having an acidity between about 1.0 and 2.4 molar in a reaction zone, in the proportions required to generate chlorine dioxide and chlorine from the reaction solution by continuously feeding sodium chlorate, sodium chloride and sulphuric acid to said reaction zone, maintaining said reaction zone under subatmospheric pressure, maintaining the reaction solution at its boiling point at the prevailing absolute pressure on said reaction solution, and at a temperature between about +30°C. and a temperature above which substantial decomposition of said chlorine dioxide would occur, to evaporate water continuously from said reaction solution, continuously generating chlorine dioxide and chlorine from said reaction solution, continuously forming a gaseous mixture of said generated chlorine dioxide and chlorine and evaporated water in said reaction zone, continuously withdrawing said gaseous mixture from said reaction zone, continuously precipitating said Na_2SO_4 from said reaction solution in said reaction zone, and recovering said Na_2SO_4 from said reaction zone.

3,864,457
PROCESS FOR THE PRODUCTION OF CHLORINE DIOXIDE

Howard H. Hoekje, Akron, and Cletus N. Welch, Clinton, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1972, Ser. No. 317,569

Int. Cl. C01b *11/02;* **C01d** *5/02, 5/00*

U.S. Cl. 423—480 **8 Claims**

1. A process for the generation of chlorine dioxide which comprises

a. introducing sulfur dioxide and chlorine to an equilibrated, acidic alkali metal chlorate reaction liquor which is 5.0 to 6.4 normal in sulfuric acid, 0.9 to 1.7 molar in chlorate, and contains chloride in a concentration of from 0.1 to 0.6 molar to form chlorine dioxide and alkali metal sulfate;

b. neutralizing the reaction liquor to an acid level of 4.5 normal or less; and
c. precipitating and recovering alkali metal sulfate from the reaction liquor.

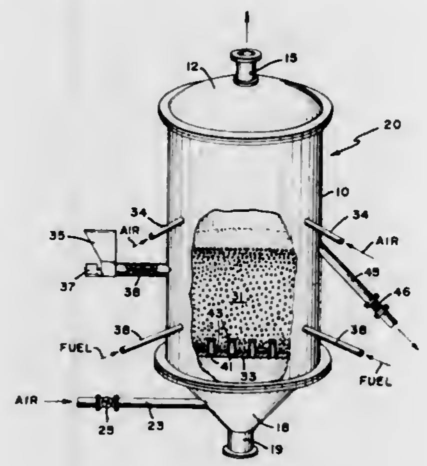
3,864,458
FLUID BED INCINERATION OF CHLORIDE-CONTAINING WASTE STREAMS

Ellicott J. Roberts, Westport, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed June 11, 1973, Ser. No. 368,535

Int. Cl. C01b *7/08;* C01d *5/00;* C01f *11/40*

U.S. Cl. 423—481 **9 Claims**



1. A process for destruction by incineration of aqueous, primarily organic combustible waste including as a contaminating constituent one or more chlorides of the alkali and alkaline earth metals, comprising the steps of,

a. establishing a fluidized bed of inert particles which is maintained in the fluidized state by an upward flow of an oxygen-containing gas,
b. introducing the aqueous combustible waste directly into said fluidized bed for combustion therein,
c. maintaining the operating temperature of said fluidized bed in he range from 1150°F to 1450°F by in-bed combustion of said aqueous waste and introduction of additional fuel directly into said bed as required to assure odor-free destruction of said waste,
d. preventing formation of low-melting eutectics in said fluidized bed and consequent defluidization by introducing sulfur into said bed for reaction in the fluidized bed environment with said chloride-containing contaminant and with carbonates formed during combustion, thereby forming an inert ash composed of relatively refractory sulfur-containing compounds of said alkali and alkaline earth metals and the volatile reaction product, HCl, and
e. removing said HCl with the exhaust combustion gases and disposing of said inert ash.

3,864,459
PROCESS FOR THE ECONOMICAL USE OF REFRACTORY REDUCING GASES FOR THE REDUCTION OF SULFUR DIOXIDE

Alvin B. Stiles, 1301 Grayson Rd., Wilmington, Del. 19803

Continuation-in-part of Ser. No. 818,026, April 21, 1969, abandoned. This application Mar. 26, 1971, Ser. No. 128,558

Int. Cl. C01b *17/04*

U.S. Cl. 423—564 **8 Claims**

1. In a process of reducing sulfur dioxide with a refractory gas selected from the group methane, ethane, benzene, natural gas and mixtures thereof to produce elemental sulfur, hydrogen sulfide, carbonyl sulfide, and carbon disulfide, along with carbon monoxide and elemental hydrogen which can be further utilized in reduction of SO_2, and carbon dioxide and water; the improvement for providing substantially complete oxidation of the refractory gas at efficient space velocities and temperatures, which comprises contacting, in essentially stoichiometric proportion, a reactant gas stream comprising sulfur dioxide and the refractory reducing gas with a supported catalyst selected from the group consisting of the oxides of manganese, chromium, barium, strontium, calcium, tantalum, and the rare earth chromites and mixtures and solid state reaction products thereof in combination with thoria and lanthanum at a temperature of at least 650°C. at a space velocity of at least 100 hr.$^{-1}$.

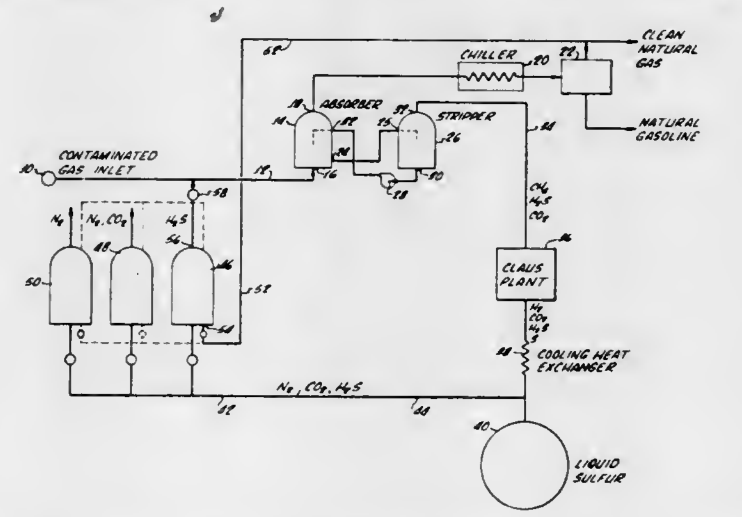
3,864,460
METHOD FOR REMOVING HYDROGEN SULFIDE FROM HYDROCARBON GAS STREAMS WITHOUT POLLUTION OF THE ATMOSPHERE

Joseph A. Connell, Fountain Valle, Calif., assignor to NRG Incorporated, Phoenix, Ariz.

Filed July 12, 1973, Ser. No. 378,395

Int. Cl. C01b *17/02;* B01d *53/02*

U.S. Cl. 423—574 **2 Claims**



1. A method for removing hydrogen sulfide from a gas stream and substantially eliminating air pollution from tail gas comprising the steps of:

passing a hydrogen sulfide contaminated input gas through a hydrogen sulfide absorber to remove hydrogen sulfide therefrom and produce a resultant clean gas output stream;
converting a portion of the removed hydrogen sulfide to sulfur in a sulfur conversion plant;
passing tail gas containing unconverted hydrogen sulfide from the sulfur conversion plant to an adsorber plant to thereby reversibly adsorb substantially all of the unconverted hydrogen sulfide; and
periodically desorbing said adsorbed unconverted hydrogen sulfide and recycling the desorbed hydrogen sulfide into the hydrogen sulfide absorber and sulfur conversion plants to effect further conversion of hydrogen sulfide to sulfur, whereby substantially all of the hydrogen sulfide in the input gas is ultimately converted to sulfur and sulfur containing tail gas is not vented to the atmosphere.

3,864,461
PROCESS FOR THE PRODUCTION OF ALUMINA

Arthur William Miller, Frodsham, and William Atkinson, Penketh, Warrington, both of England, assignors to Laporte Industries Limited, London, England

Filed Aug. 29, 1972, Ser. No. 284,540

Int. Cl. C01f *7/14*

U.S. Cl. 423—628 **16 Claims**

1. A process for the production of hydrous alumina comprising the steps of:

forming an aqueous solution of aluminum sulphate having a concentration of at least 2% by weight calculated as Al_2O_3,
forming an aqueous solution of sodium aluminate,
forming a mixture of the solutions to precipitate hydrous alumina in the form of a slurry, having a concentration of from 2% to 7% by weight, by introducing the sodium aluminate solution, until the mixture reaches a composition of from 10% excess aluminum sulphate to 10% excess sodium aluminate, and until the resulting solution has a pH in the range between 7.3 to 10, at such a rate and with sufficient agitation that a substantial proportion of the hydrous alumina precipitates under acidic conditions, whilst maintaining the mixture at a temperature within a range selected from the ranges 12° to 35°C and 45° to 70°C
separating the hydrous alumina from its mother liquor and washing the separated hydrous alumina.

3,864,462
PROCESS FOR PRODUCING ALUMINA MONOHYDRATE FROM BASIC ALUMINUM NITRATES

Charles P. Bruen, Basking Ridge, and Donald H. Kelly, Gladstone, both of N.J., assignors to Reynolds Metal Company, Richmond, Va.

Continuation of Ser. No. 730,936, May 2, 1968, abandoned

Filed June 18, 1970, Ser. No. 48,919

Int. Cl. C01k *7/02, 7/34*

U.S. Cl. 423—631 **1 Claim**

1. The process foı producing alumina monohydrate which comprises: (1) adding to a basic aluminum nitrate having the empirical formula

$$Al_2O_3.xAl(NO_3)_3.yH_2O$$

wherein x is a numeral from 0.667 to 6.0 inclusive, and y is a numeral from 4 to 38 inclusive, about 7.2 moles H_2O to about 28.2 moles H_2O per mole of NO_3 in said basic aluminum nitrate to provide an aqueous solution having in solution a nitrate concentration between about 10 percent and about 25 percent by weight calculated as NO_3, respectively, (2) heating said solution at a temperature between about 180°C. and about 235°C. under autogenous pressure for a period sufficient to convert substantially all the free alumina in the basic aluminum nitrate to solid alumina monohydrate, wherein oxides of nitrogen released therefrom are substantially N_2O_5, and (3) recovering the alumina monohydrate thus produced.

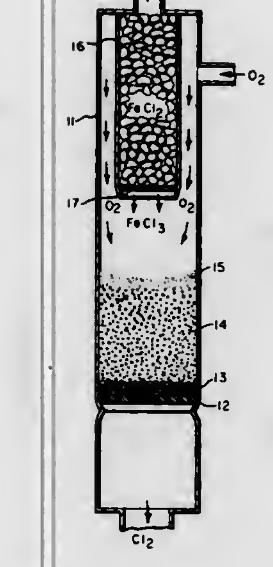
3,864,463
PROCESS FOR MANUFACTURE OF ALPHA FE_2O_3PLATELETS

Tze Chao, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 358,861, May 10, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 449,723

Int. Cl. C01g *49/02;* C09c *1/24;* C01b *7/02*

U.S. Cl. 423—633 **3 Claims**



1. In a process for the manufacture of α-Fe_2O_3 by the reaction of an oxygen-containing gas with $FeCl_3$ in the vapor phase at a temperature of 400°–750°C. in a static bed of inert particles, the improvement for producing α-Fe_2O_3 in platelet form having a particle diameter of from about 2 to 100 microns and a ratio of diameter to thickness of at least 4 wherein the reaction is effected in the presence of inert generally spheroidal particles having an average diameter not in excess of 1 mm, there being present in the bed an alkali metal halide in an amount of 0.01 to 10 percent based upon the weight of particles, and the linear velocity of gas through the bed being from 0.3 cm/sec. to about 10 cm/sec.

3,864,464
PREPARATION OF BERYLLIUM HYDRIDE

Lawrence H. Shephard, Jr.; Paul Kobetz, both of Baton Rouge; Roy J. Laran, Greenwall Springs, all of La., and Robert W. Johnson, Jr., Savannah, Ga., assignors to Ethyl Corporation, New York, N.Y.

Filed Jan. 27, 1965, Ser. No. 430,237

Int. Cl. C01b *6/00*

U.S. Cl. 423—645 **9 Claims**

1. Process for the preparation of beryllium hydride which comprises reacting, at a temperature of from 75° to about 200°C., an organodiborane of the general formula $R_4B_2H_2$ with a dihydrocarbyl beryllium compound of the general formula $R_2'Be$ wherein R and R′ represent radicals selected from the group consisting of alkyl, monocyclic cycloalkyl and monocyclic aryl radicals containing from 1 to about 10, 5 to about 10 and 6 to about 10 carbon atoms, respectively, and recovering beryllium hydride from the reaction product.

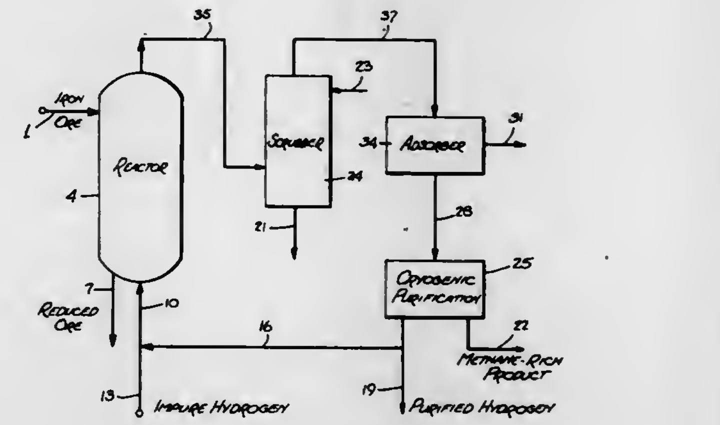
3,864,465
PRODUCTION OF HIGH PURITY HYDROGEN

Franklin D. Hoffert, Mountainside, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Dec. 15, 1972, Ser. No. 315,418

Int. Cl. C01b *1/26, 1/28, 1/32*

U.S. Cl. 423—648 **3 Claims**



1. A process for the purification of an impure hydrogen stream having a hydrogen content of below 90% and containing impurities including one or more members selected from the group consisting of carbon dioxide, carbon monoxide, oxygen, nitrogen, water vapor, hydrogen sulfide and hydrocarbon substances which comprises:

a. feeding said impure hydrogen stream through a fluidized bed of iron ore wherein said bed is maintained at a pressure between 100 and 1000 psi and at a temperature between 600° and 1100°F whereby impurities in the hydrogen are converted and iron oxide present in the iron ore is reduced to iron metal;
b. removing said hydrogen stream and said converted impurities from said bed;
c. separating said converted impurities from said hydrogen;
d. removing a purified hydrogen product stream containing at least 90 percent hydrogen.

3,864,466

PROCESS FOR OBTAINING DEUTERIUM

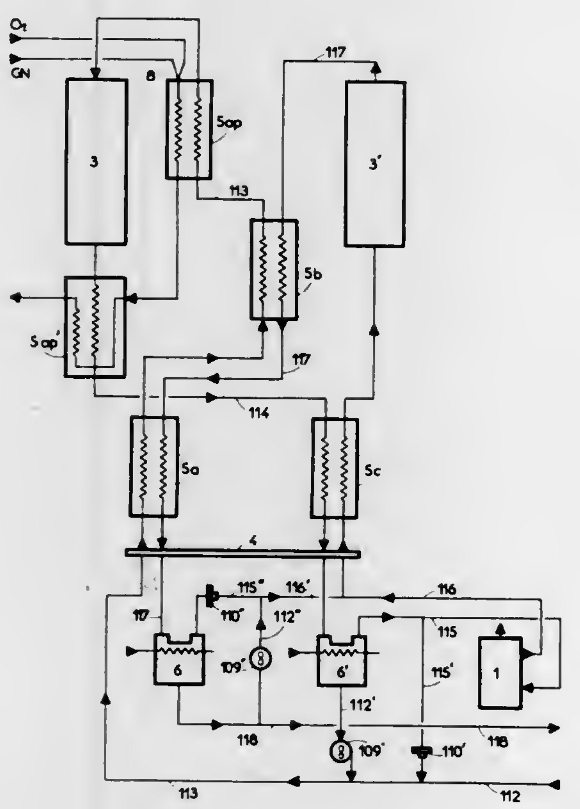
Jean Trichet, Orangis; Guy Simonet, Paris, and Jean-Pierre Guellaff, Vincennes, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude, Paris, France

Filed Jan. 20, 1971, Ser. No. 108,073

Claims priority, application France, Jan. 27, 1970, 70.02779

Int. Cl. C01b *4/00, 5/02*

U.S. Cl. 423—648 **7 Claims**



1. A process for obtaining deuterium comprising:

a. passing first a gaseous stream consisting of water vapor and hydrogen to a metallic mass consisting essentially of divided iron;

b. oxidizing the metallic mass with said first gaseous stream at a temperature of about 800° C to provide a second gaseous stream of hydrogen and water vapor, which leaves said oxidized metallic mass at a temperature of about 400° C.;

c. cooling said second gaseous stream, condensing the water from said second stream and separating the hydrogen from the water;

d. recycling at least a portion of the water separated in step (c) to said first stream used in oxidizing step (b);

e. separating deuterium in a manner known per se from at least a portion of the hydrogen from step (c) to provide deuterium-free hydrogen;

f. regenerating the metallic mass with a third gaseous stream consisting of hydrogen and water vapor at a temperature of about 400° C. said stream being free of deuterium, to obtain a fourth gaseous stream of water vapor and hydrogen which leaves said metallic mass at a temperature of about 800° C.;

g. cooling said fourth stream of water and hydrogen from step (f) to condense the water, and separating the water from the hydrogen; and

h. mixing the hydrogen from step (g) with at least part of the deuterium-free hydrogen from step (c) and using the hydrogen mixture for said third gaseous stream for said regeneration step (f).

3,864,467

METHOD FOR DIAGNOSIS OF INFECTIOUS MONONUCLEOSIS

E. Juhani Leikola, Helsinki, Finland, assignor to Orion-yhtyma Oy. Orion Pharmaceutical Co., Helsinki, Finland

Filed Apr. 12, 1972, Ser. No. 243,421

Claims priority, application Finland, Apr. 14, 1971, 1032

Int. Cl. G01n *31/02, 33/16;* **C12k** *1/00*

U.S. Cl. 424—12 **6 Claims**

1. A method for diagnosis of infectious mononucleosis comprising forming an absorbent by treating sheep or horse red blood cells with a proteolytic enzyme or neuraminidaze in order to destroy the mononucleosis receptors, hemolyzing the red blood cells by adding a hemolyzing agent, separating the resulting stromata from the hemoglobin, and preparing a stroma suspension from the stromata and diluted saline which suspension is free from blood cells interfering with the diagnosis; and mixing blood serum to be tested, said absorbent and sheep or horse blood on a slide whereby if mononucleosis antibodies are present agglutination takes place.

3,864,468

ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Seymour Hyman, New York, N.Y.; Bruce S. Bernstein, Somerville, N.J., and Ramesh Kapoor, Seaford, Del., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Division of Ser. No. 112,053, Feb. 2, 1971, Pat. No. 3,705,938, Continuation-in-part of Ser. No. 593,267, Nov. 10, 1966, abandoned. This application May 19, 1972, Ser. No. 255,250

Int. Cl. A61l *3/00*

U.S. Cl. 424—16 **10 Claims**

1. A polymeric article having insecticidal properties comprising

a solid, non-porous, polymeric substrate, and

a solid, non-porous layer of a polymeric composition adherently applied to at least one surface of said substrate, said composition containing at least one insecticidal activating agent distributed within said polymeric composition and capable of migrating from said layer into and throughout said substrate, said agent being present in said layer in sufficient amount so that upon migration from said layer into said substrate an effective level of insecticidal activity is provided throughout said substrate, and on at least one other surface of said substrate which is not in direct contact with said layer.

3,864,469

XANTHINES IN PHARMACEUTICAL PREPARATIONS AND FOR STABILIZATION OF VITAMINS

Mario Reiser; Lothar Nook, both of Wiesbaden, and Emil Eidebenz, Mainz-Gonsenheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 145,347, May 20, 1971, abandoned, which is a continuation-in-part of Ser. No. 782,462, Dec. 9, 1968, abandoned. This application Feb. 8, 1973, Ser. No. 330,654

Claims priority, application Germany, Dec. 16, 1967, 1617418

Int. Cl. A61k *27/12, 15/00, 15/12*

U.S. Cl. 424—22 **28 Claims**

1. A therapeutically-active and pharmaceutically-acceptable solidified homogeneous intimate admixture of

a. at least one pharmaceutically-active substance and

b. at least one molten pharmaceutically-active substance; at least one active substance of which is more rapidly and at least one of which is more slowly absorbable;

the solidified homogeneous admixture comprising, as two of the pharmaceutically-active substances:

I. a xanthine which is substituted in each of two of the 1-, 3- and 7-positions by an alkyl group having at most two carbon atoms and is substituted in the remaining of said positions by:

a. a hydrocarbon group having from 3 to 20 carbon atoms and being bound by an acyclic carbon atom which is part of such group, or

b. an aliphatic hydrocarbon group substituted by at least one substituent selected from the group consisting of hydroxy and oxo, the hydrocarbon group having from 6 to 20 carbon atoms, being saturated or olefinically unsaturated, and being bound by an acyclic carbon atom which is part of such group; and

II. a member selected from the group consisting of nicotinic acid, a therapeutically-active derivative of nicotinic acid, an unstable vitamin and a therapeutically-active equivalent thereof selected from the group consisting of a salt, an ester and a provitamin thereof;

the xanthine being present in the admixture in a proportion sufficient to stabilize any unstable vitamin therein.

3,864,470

VISUALLY CLEAR TOOTHPASTE CONTAINING A SYNTHETIC PRECIPITATED HYDRATED SILICA

Charles Andrew Watson, Ruislip, England, assignor to Lever Brothers Company, New York, N.Y.

Filed July 16, 1973, Ser. No. 379,295

Claims priority, application Great Britain, July 21, 1972, 34358/72

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **2 Claims**

1. A visually clear toothpaste comprising a particulate solid polishing agent and a liquid phase of substantially the same refractive index as the polishing agent, characterised in that the polishing agent comprises a synthetic precipitated hydrated silica of average aggregate particle size of from about 2 to about 30 microns, said synthetic precipitated hydrated silica being present in an amount of from about 5 to about 50 percent by weight of the toothpaste.

3,864,471

STABLE DENTIFRICES CONTAINING A MONOFLUOROPHOSPHATE, AN INSOLUBLE METAPHOSPHATE, AND CALCIUM CARBONATE

William James King, River Edge; Leo Thomas Murray, East Brunswick, and Gerhard Martin Salzmann, Franklin Lakes, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 878,241, Nov. 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 785,731, Dec. 20, 1968, abandoned. This application Sept. 9, 1971, Ser. No. 176,396

Int. Cl. A61k *7/16*

U.S. Cl. 424—52 **5 Claims**

1. A packaged dentifrice composition comprising an unlined aluminum container and in contact therewith a dentifrice composition comprising a water-soluble monofluorophosphate in amount which provides about 0.01-1% by weight fluorine to the dentifrice and about 20-95% by weight of a water-insoluble compatible polishing material consisting essentially of a mixture of calcium carbonate and an insoluble alkaline metal metaphosphate wherein the ratio of said carbonate to said metaphosphate is about 3:1 to about 1,000:1.

3,864,472

CLEAR LEMON-FLAVORED MOUTHWASH

Philip Pensak, New Brunswick, and Joseph P. Januszewski, Somerville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,040

Int. Cl. A61k *7/16*

U.S. Cl. 424—54 **3 Claims**

1. A visually clear lemon flavored mouthwash formulation comprising

a. from about 60 to about 95 percent by weight of water

b. from about 5 to about 25 percent by weight of an alcohol chosen from the group consisting of ethanol and isopropanol

c. from about 0.05 to about 1.0 percent by weight of lemon oil

d. from about 0.1 to about 5.0 percent by weight of polyoxyethylene (20) sorbitan monoisostearate and

e. from about 0.01 to about 0.1 percent by weight of an anti-bacterial agent chosen from the group consisting of benzethonium chloride, diisobutyl phenoxy ethoxy ethyl dimethyl benzyl ammonium chloride, N-alkylpyridinium chloride, N-cetyl pyridinium bromide, sodium N-lauroyl sarcosine, sodium N-palmitoyl sarcosine, lauroyl sarcosine, N-hyristoyl glycine, and potassium N-lauroyl sarcosine

f. the weight ratio of said surfactant to said lemon oil being greater than about 1.5 to 1.

3,864,473

SUBSTANTIVE POLYMERIC SUNSCREEN COMPOSITION

Joseph P. Ciaudelli, Ramsey, N.J., assignor to Avon Products, Inc., New York, N.Y.

Filed June 12, 1972, Ser. No. 261,621

Int. Cl. A61l *23/00*

U.S. Cl. 424—60 **9 Claims**

1. A method of protecting the human skin from erythema inducing ultraviolet radiation which comprises applying to the skin a composition containing from 1 percent to about 75 percent based on the total weight of the composition of a polymeric reaction product of at least one p-di-C_1-C_4-alkylaminobenzoyl halide with polyethylenimine having an average molecular weight ranging from about 500 to 100,000 in a topical skin cosmetic carrier material selected from the group consisting of water-lower alcohol mixture, and an aminal, vegetable and mineral oil base.

3,864,474

SUNSCREENING COMPOSITIONS CONTAINING SULFONIUM SALTS

John Fred Gerecht, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 820,280, April 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 492,316, Oct. 1, 1965, abandoned. This application May 28, 1971, Ser. No. 148,158

Int. Cl. A61l *23/00*

U.S. Cl. 424—60 **2 Claims**

1. A sunscreening composition comprising from **0.1** percent to **25** percent by weight of 3-paranitrobenzamidopropyldodecylmethyl sulfonium bromide as a skin-substantive sunscreening agent having a prominent spectral absorption peak within the range of **250–400** millimicrons and a skin-compatible, non-toxic carrier which is compatible with said agent.

3,864,475

METHOD OF TREATING HUMAN HAIR TO ENHANCE SOFTNESS AND IMPROVE THE GENERAL APPEARANCE THEREOF

John W. Willard, Sr., 1314 S. Seventh St., Rapid City, S. Dak. 57701

Continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,775

Int. Cl. A61k *7/06*

U.S. Cl. 424—70 **21 Claims**

1. A method of treating human hair to enhance softness and improve the general appearance thereof comprising

intimately contacting the hair with an effective amount of an aqueous treating composition containing water and an effective amount of a catalyst until the softness of the hair is enhanced and the general appearance thereof is improved,

the catalyst being prepared by a process comprising admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0;

the alkali metal silicate having an alkali metal oxide to silicon dioxide ratio between about 0.0:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form catalyst micelles comprising said finely divided particles of the reaction product upon agitating the aqueous medium, and

agitating the aqueous medium containing said finely divided particles of the reaction product and surfactant to form said catalyst micelles.

3,864,476

SOLUTION FOR PERMANENT COLD WAVING OR STRAIGHTENING OF HAIR

Frederick J. Altieri, 40 Edna St., Bridgeport, Conn. 06610

Continuation-in-part of Ser. No. 356,159, April 1, 1973,. This application Apr. 8, 1974, Ser. No. 458,528

Int. Cl. A61k *7/10*

U.S. Cl. 424—71 **9 Claims**

1. A hair treating lotion comprising an aqueous solution including:

a sulphur dioxide source in the range of 1.910 to 4.92 parts by weight selected from the group consisting of sodium bisulphite, potassium meta-bisulphite, potassium bisulphite, sodium sulphite and potassium sulphite,

a borate source in the range of 0.637 to 4.10 parts by weight selected from the group consisting of sodium borate and potassium borate,

a carbonate source in the range of 0.637 to 4.10 parts by weight selected from the group consisting of sodium carbonate, sodium bicarbonate, and potassium carbonate, and

an alkanol amine in the range of 1.274 to 9.84 parts by weight selected from the group consisting of monoethanolamine, diethanolamine, triethanolamine, triethylene tetramine, and triisopropanolamine.

3,864,477

NEW COMPOSITIONS

Yvonne Thuillier, Paris, and Marcel Antoine Perrault, Saint Cloud, both of France, assignors to Albert Rolland S.A., Paris, France

Continuation-in-part of Ser. No. 110,271, Jan. 27, 1971, abandoned, which is a continuation of Ser. No. 709,897, March 4, 1968, abandoned. This application Apr. 12, 1973, Ser. No. 350,530

Int. Cl. A61k *19/00*

U.S. Cl. 424—94 **3 Claims**

1. A method for treating stria distensae, and *pseudoxanthoma elasticum* which comprises applying topically to a human host in need of such treatment a cosmetic composition, in a therapeutically effective amount, comprising an elastolytically active enzymatic material prepared from delipidated pancreatic material, said enzymatic material having an isoelectric point of about 9.5 ± 0.5, a slight solubility in water having a pH below 4.5, peaks in the ultraviolet spectrum at 2,200 and 2,800 A and having two main constituents, the first constituent of said enzymatic material electrophoretically demonstrates a mobility slower than gamma globulins and digests elastin and the second constituent electrophoretically demonstrates a mobility comparable to $\beta 1$ and $\beta 2$ globulins, said enzymatic material being produced in accordance with the following steps:

1. conventional extraction of the pancreas with acetone and ether to obtain a delipidated pancreas powder;
2. extraction of said powder with an M/100 sodium acetate buffer at a pH between 4.8 and 5;
3. precipitation of active material by addition to extract of ammonium sulfate in a concentration of between about 48 to 55%;
4. demineralization of said precipitate of active material by dialysis;
5. fractional precipitation with ethanol or methanol comprising the steps of:
   a. a first precipitation in about 50% ethanol or methanol to remove inactive material, and
   b. a second precipitation in about 80% ethanol or methanol of active material;
6. solution of active material in an M/100 sodium acetate buffer at a pH between 4.7 and 5; and
7. lyophilization, said steps being carried out at a temperature less than about 5°C;

and wherein the amount of said enzymatic material present in said cosmetic composition is from about 0.01 to about 1% by weight, further comprising calcium chloride in amount sufficient to stabilize said cosmetic composition and polyethyleneglycols having mean molecular weights of 400 and 4000, in equal quantities, the pH of the composition being adjusted between 6.8 and 8.0 with HCl as a neutralizing agent.

3,864,478

STORAGE-STABLE HEMOGLOBIN SOLUTIONS AND METHOD FOR THEIR PREPARATION

Klaus Bonhard, Sandeldamm 16, Hanau, Germany

Filed Oct. 3, 1973, Ser. No. 403,141

Claims priority, application Germany, Oct. 3, 1972, 2248475

Int. Cl. A61k *17/00*

U.S. Cl. 424—101 **15 Claims**

1. Method for obtaining a hemoglobin solution having a stabilized 2,3-diophospho-glycerate level which method comprises

a. treating a starting material containing human erythrocytes with a diluted solution of β-propiolactone at temperatures between 5° and 15°C. to result in a mixture containing β-propiolactone in an amount of from 4 to 12 g per liter of erythrocyte sediment, thereafter treating the mixture with a neutral or weakly alkaline washing solution to wash out the excess β-propiolactone and its reaction products,

c. then mixing the erythocytes with distilled water to form a hemolysate which is treated with a cation exchange resin in H^+—form, until the pH-value has dropped to 5.0 to 5.5, to result in precipitation of a stroma-lipid mass,

d. separating the hemolysate from the resin and the precipitated stroma mass by centrifuging, and e. recovering the hemoglobin solution by sterile filtration.

3,864,479

BOROMYCIN AS A COCCIDIOSTAT

Brinton M. Miller, Middletown, and Richard W. Burg, Murray Hill, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 28, 1974, Ser. No. 446,875

Int. Cl. A61k *21/00, 27/00*

U.S. Cl. 424—185 **3 Claims**

1. A method for treating coccidiosis in poultry which comprises orally administering to an animal susceptible to coccidiosis an anticoccidially effective amount of a compound selected from the group consisting of boromycin or a salt thereof.

3,864,480

CINERUBIN A AND B AS ANTIPARASITIC AGENTS

Ching C. Wang, Watchung, N.J., Justo Martinez Mata, and Sebastian Hernandez, both of Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 6, 1974, Ser. No. 467,324

Int. Cl. A61k *21/00*

U.S. Cl. 424—120 **3 Claims**

1. A method for the prevention and treatment of coccidiosis in poultry which comprises orally administering to poultry an anti-coccidially effective amount of Cinerubin A, Cinerubin B, or a non-toxic acid addition salt thereof.

3,864,481

ANTI DISEASE PRODUCING SYNTHETIC MATERIAL FOR THE PREVENTION SUPPRESSION AND DIAGNOSIS OF MULTIPLE SCLEROSIS AND METHOD OF TREATMENT THEREFOR

George A. Hashim, Barney Park, N.Y., assignor to St. Luke's Hospital, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,140

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 **9 Claims**

1. The method of treating a mammal which is useful for the prevention, suppression and diagnosis of multiple sclerosis which comprises:

administering to said mammal from about 0.001 mg to about 1,000 micrograms per kilogram of body weight of a synthetic material having the general formula selected from the class consisting of compounds of the formula:

$$(R_1\text{—}R_2\text{—}R_3\text{—Gln - }R_4\text{—}R_1)$$

where;

each R_1 is an animo acid residue;

R_2 is selected from the class consisting of Trp and Tyr;

R_3 is an amino acid residue;

R_4 is selected from the class consisting of Lys, Arg and His; *a* is 0–4; *b* and *c* are each 0 or at least 1 and *n* is at least 1;

and compounds of the formula:

$$(R_5\text{—Gln — }R_4\text{—}R_1)$$

where;

R_5 is selected from the class consisting of R_1 and R_2 as defined above; and R_4, b, c and n are as defined above.

3,864,482

METHOD FOR FACILITATING EGG-LAYING RECUPERATION OF HEN UNDER MOULTING AND AQUEOUS PREPARATION THEREFOR

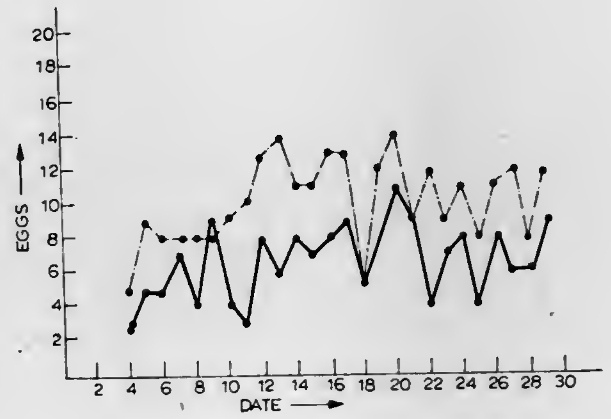
Etsuo Naito, Han-Nou, and Katsuhide Tanaka, Toyota, both of Japan, assignors to Eisai Co., Ltd., Bunkyo-ku, Tokyo, Japan

Filed Oct. 3, 1973, Ser. No. 403,073

Claims priority, application Japan, Oct. 9, 1972, 47-100657

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 **5 Claims**



1. A method for facilitating egg-laying recuperation of hen during moulting which comprises administering 1.0γ– 30γ of LH-RH through intramuscular injection to hen under natural or artifically forced moulting.

3,864,483

ADENOSINE-5′-CARBOXYLIC ACID AMIDES

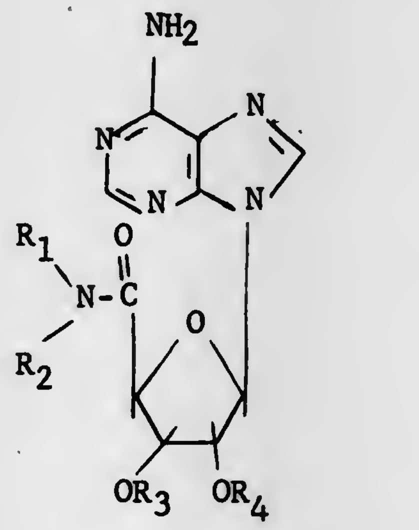
Herman Hal Stein, Skokie, Ill., and Raj Nandan Prasad, Pierrefonds, Quebec, Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 236,980, March 22, 1972, , which is a continuation-in-part of Ser. No. 125,893, March 18, 1971,. This application June 14, 1973, Ser. No. 370,084

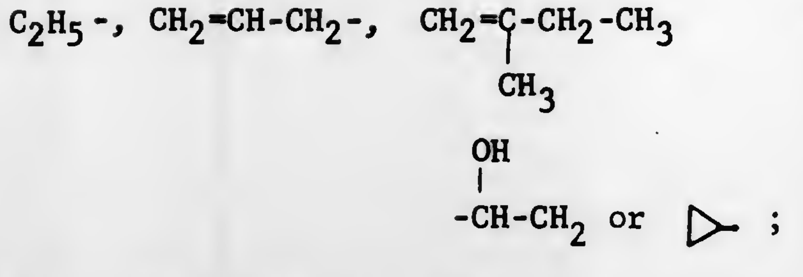
Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **1 Claim**

1. A method of relieving inflammation and its concommitant symptoms of pain, swelling and tenderness in a mammalian patent comprising administering to said patient a therapeutically effective amount of a compound of the formula



wherein R_1 is



$\mathrm{C_2H_5-,\ CH_2{=}CH{-}CH_2-,\ CH_2{=}\underset{CH_3}{\underset{|}{C}}{-}CH_2{-}CH_3}$

$\mathrm{\overset{OH}{\overset{|}{-CH}}{-}CH_2}$ or ;

R_2 is hydrogen; R_3 and R_4 are hydrogen with the provision that when R_1 is cyclopropyl, R_3 and R_4 are hydrogen or acetyl.

3,864,484
THERAPEUTIC COMPOSITIONS AND METHODS USING SILYMARIN COMPRISING POLY-HYDROXYPHENYL CHROMANONES

Rolf Madaus, Cologne-Merheim, Germany, assignor to Dr. Madaus & Co., Cologne, Germany

Division of Ser. No. 828,353, May 27, 1972, Pat. No. 3,777,932. This application May 19, 1972, Ser. No. 255,177
Int. Cl. A61k *27/14*

U.S. Cl. 424—195 **7 Claims**

1. A method for treating subjects for hepatitis, cirrhosis or chemical-induced liver damage, which comprises administering to such a subject a therapeutically effective amount of a Silymarin composition comprising polyhydroxyphenyl chromanones obtained by a process which comprises the steps of (1) subjecting the dried fruits of *Silybum marianum Gartn.* to high mechanical pressure whereby the cell walls of the fruits are ruptured and the major amount of fatty oils contained in the fruits is separated therefrom, (2) exhaustively extracting the remaining solid residue which still contains fatty oils in an amount of about 5 to 10 percent with ethyl acetate, (3) evaporating the ethyl acetate, (4) dissolving the oil-greasy, partially lumpy dry residue thereby obtained in a solvent mixture comprising methanol, water and petroleum ether whereby an upper phase and a lower phase are formed and wherein said chromanones are contained in the lower phase, (5) centrifuging said solvent mixture to remove any solid material present therein and separating the upper and lower phases, (6) thereafter subjecting the liquid portion comprising the lower phase to multiple counter-current contact with petroleum ether, whereby a thorough mixing and separation of both phases occurs, and (7) recovering the polyhydroxyphenyl chromanones from the lower phase by evaporation of the solvent to dryness.

3,864,485
SCRUBBER

Caperton B. Horsley, Wellesley, and Edward F. Kent, Brockton, both of Mass., assignors to Braxton Corporation, Medfield, Mass.

Continuation-in-part of Ser. No. 267,954, June 30, 1972, abandoned. This application May 14, 1973, Ser. No. 359,696
Int. Cl. B01d *53/14*

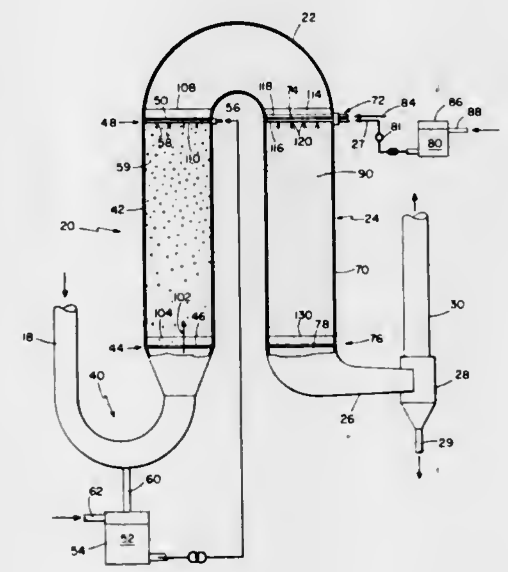
U.S. Cl. 423—210 **13 Claims**

1. Scrubbing apparatus for treating a stream of stack gas with an alkaline chemical to remove sulfur dioxide therefrom comprising

a treatment chamber with a straight reaction portion of uniform cross-section having an inlet and an outlet for said stream, said portion being free of flow disturbance therein,

a flow equalizing plate with orifices therein affixed in said treatment chamber across the inlet of said straight portion, said equalizing plate partially impeding said stream and producing a pressure drop greater than pressure differences transverse to the flow direction, said pressure drop having a gradient transverse to the flow direction of the stack gas compensating flow concentration by structure upstream of said equalizing plate to equalize the flow in said straight portion,

an isolating plate with orifices therein, affixed in said treatment chamber across the outlet of said straight portion, said isolating plate partially impeding said stream and producing a pressure drop greater than pressure differences transverse to the flow direction, said pressure drop produced by the isolating plate having a gradient transverse to the flow direction compensating pressure variations produced by structure downstream of said isolating plate to isolate flow within said straight portion from flow concentrating effects of downstream structure,



sprayers supported in said chamber at the inlet to said straight section and connected to a supply of said alkaline chemical dissolved in water close to its limit of solubility, said sprayers discharging a spray of drops predominantly less than 0.005 cm diameter uniformly distributed across the cross-section of said straight section, said sprayers discharging said alkaline chemical at a rate close to stoichiometric ratio to the sulfur dioxide in said stream,

a saturator chamber connected to said treatment chamber upstream thereof for saturating said stream with water vapor prior to entry into said treatment chamber, and

equipment connected to said treatment chamber downstream thereof for removing drops from said stream.

3,864,486
THERAPEUTIC COMPOSITIONS OF BROMAZEPAM AND SULPIRIDE

Johannes Ernst Blum, Basel, Switzerland, assignor to F. Hoffmann La Roche & Co. Aktiengesellschaft, Basel, Switzerland
Filed Sept. 12, 1973, Ser. No. 396,651
Claims priority, application Switzerland, Sept. 21, 1972, 13805/72
Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **3 Claims**

1. A therapeutic composition possessing anxiolytic, antipsychotic, antidepressant and antiemetic activity comprising a therapeutically inert, pharmaceutically acceptable carrier material and, as an active ingredient, one part by weight bromazepam or the equivalent amount of a pharmaceutically acceptable salt thereof and from about 5 to about 200 parts by weight sulpiride or the equivalent amount of a pharmaceutically acceptable salt thereof.

3,864,487
ANTIARHYTHMIC PHARMACEUTICAL PREPARATION CONTAINING ETHYL 10-(β-MORPHOLYLPROPIONYL) PHENTHIAZINE-2-CARBAMATE HYDROCHLORIDE

Anna Nikitichna Gritsenko, Volokolamskoe shosse, 80, kv. 28; Jury Ivanovich Vikhlyaev, Dorogomilovskaya ulitsa, 6/8, kv. 12; Semen Vladimirovich Zhuravlev, Minsskaya ploschad, 3/8, kv. 38; Natalya Veniaminovna Kaverina, Noropeshanaya ulitsa, 3, kv. 32; Zlata Petrovna Senova, Mytnaya ulitsa, 23, korpus 2, kv. 67, and Olga Vasilievna Ulyanova, 2 ulitsa Oktyabrskogo polya, 21, kv. 46, all of Moscow, U.S.S.R.

Division of Ser. No. 870,444, Oct. 10, 1969, Pat. No. 3,740,395. This application Aug. 16, 1971, Ser. No. 172,216
Int. Cl. A61b *27/00*

U.S. Cl. 424—247 **5 Claims**

1. An antiarhythmic pharmaceutical preparation comprising an antiarhythmically effective amount of ethyl 10-(β-morpholylpropionyl)-phenthiazine-2-carbamate hydrochloride and a pharmaceutically acceptable carrier.

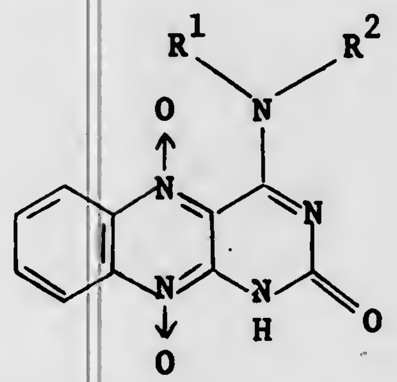
3,864,488
COMPOSITIONS CONTAINING A QUINOXALINE-5,10-DIOXIDE AND METHOD OF USING SAME

Florin Seng, Cologne; Kurt Ley, Odenthal-Globusch, and Karl Georg Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft

Division of Ser. No. 249,702, May 2, 1972, Pat. No. 3,814,756. This application June 11, 1973, Ser. No. 368,477
Claims priority, application Germany, May 7, 1971, 2122571
Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **21 Claims**

1. An antimicrobial composition comprising an antimicrobially effective amount of a compound selected from the group consisting of a 1,2-dihydro-2-oxo-4-aminopyrimido[4,5-*b*]quinoxaline-5,10-dioxide of the formula:



wherein each of R^1 and R^2 independent of the other is lower alkyl of 1 to 6 carbon atoms or (lower alkoxy)lower alkyl in which "lower alkyl" contains 1 to 6 carbon atoms and "lower alkoxy" contains 1 to 6 carbon atoms or R^1 and R^2 together with the nitrogen atom to which they are attached are pyrrolidino, piperidino, hexamethyleneimino or morpholino; and a pharmaceutically acceptable acid addition salt thereof and an inert pharmaceutical carrier.

3,864,489
TREATMENT OF HYPERKINETIC CONDITIONS WITH CAFFEINE

Salvatore F. Biscardi, Cornwall, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 236,239, March 20, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,902
Int. Cl. A61k *27/00*

U.S. Cl. 424—253 **4 Claims**

1. A method of alleviating hyperkinetic conditions, comprising orally administering to a subject exhibiting said conditions a dosage amount of caffeine effective to alleviate said conditions.

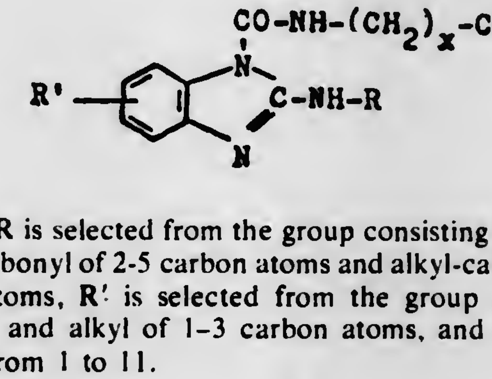
3,864,490
N-(ω-CYANO-ALKYL)-CARBAMYL BENZIMIDAZOLES USED AS INSECTICIDES, ACARICIDES AND OVICIDES

Werner Daum, Krefeld-Bockum; Hans Scheinpflug; Paul-Ernst Frohberger, both of Leverkusen, and Ferdinand Greene, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 206,180, Dec. 8, 1971, Pat. No. 3,794,728, which is a division of Ser. No. 880,399, Nov. 26, 1969, Pat. No. 3,673,210. This application Aug. 29, 1973, Ser. No. 392,833
Claims priority, application Germany, Nov. 30, 1968, 1812000
Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **11 Claims**

1. A method of combating insects, acarids, insect ova or acarid ova which comprises applying to 9a) said insects, 9b) said acarids, (c) said insect ova, (d) said acarid ova or (e) the corresponding habitats thereof, an insecticidally, acaricidally, or ovicidally effective amount of a N-(ω-cyano-alkyl)-carbamyl-benzimidazole of the formula



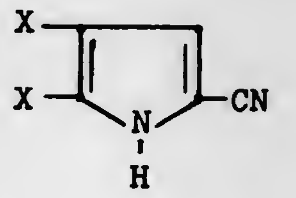
in which R is selected from the group consisting of hydrogen, alkoxycarbonyl of 2-5 carbon atoms and alkyl-carbonyl of 1–5 carbon atoms, R' is selected from the group consisting of hydrogen and alkyl of 1–3 carbon atoms, and *x* is a whole number from 1 to 11.

3,864,491
ANTIBACTERIAL AND ANTIFUNGAL 4,5-DIHALOPYRROLE-2-CARBONITRILES

Denis M. Bailey, E. Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Filed Nov. 4, 1971, Ser. No. 195,817
Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **8 Claims**

1. An antibacterial or antifungal composition consisting essentially of an effective antibacterial or antifungal amount of a 4,5-dihalopyrrole-2-carbonitrile having the formula:



where X is chlorine, bromine or iodine as the active ingredient and a conventional diluent especially adapting the composition for application to areas to be disinfected of deleterious bacteria or fungi.

3,864,492

METHOD OF TREATING DEPRESSION USING 1,4′-DIHYDROXY-3-N-PENTYL-6,6,9-TRIMETHYL-6A,7,10,10A-TETRA-HYDRODIBENZO[B,D]PYRAN

Earl Elmer Fager, Lake Villa, and Norman Earl Wideburg, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 384,555, Aug. 1, 1973, abandoned, which is a division of Ser. No. 298,900, Oct. 19, 1972, Pat. No. 3,808,234. This application Mar. 21, 1974, Ser. No. 453,227

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **3 Claims**

1. A method of treating the symptoms of depression comprising administering a therapeutically effective amount of 1,4′-dihydroxy-3-n-pentyl-6,6,9-trimethyl-6*a*,7,10,10*a*-tetrahydrodibenzo[*b*,*d*]pyran to a patient in need of such treatment.

3,864,493

COMPOSITIONS AND METHODS FOR THE PREVENTION OF ASTHMATIC SYMPTOMS

Hugh Cairns, Sandbach, and Robert Minshull, Brereton, both of England, assignors to Fisons Limited, Felixstowe, Suffolk, England

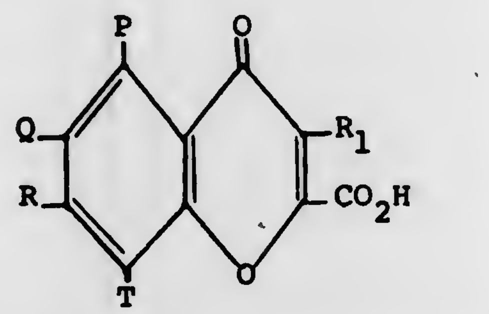
Division of Ser. No. 62,170, Aug. 7, 1970, Pat. No. 3,718,668, Continuation-in-part of Ser. No. 751,753, Aug. 12, 1968, abandoned. This application Dec. 8, 1972, Ser. No. 313,266

Claims priority, application Great Britain, Aug. 17, 1967, 37912/67; Apr. 2, 1970, 15577/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **12 Claims**

1. A pharmaceutical composition for the prevention of the symptoms of asthma comprising an effective amount for the prophylactic treatment of asthma of a compound of formula,



I

in which one or more adjacent pairs of P, Q, R and T, together form the chain $-CO-CR_1=C(COOH)-O-$ which may be bonded to the benzene ring in either sense; the remainder of P, Q, R and T are the same or different and each is hydrogen; alkyl containing from 1 to 10 carbon atoms, alkyl containing from 1 to 10 carbon atoms and carrying a halo; hydroxy; lower alkoxy; acetoxy; carboxy; amino; lower alkylamino; lower dialkylamino; or a hydroxylamino substituent group; unsaturated alkyl containing from 1 to 10 carbon atoms; phenylalkyl, halophenylalkyl or alkylphenylalkyl wherein the alkyl groups contain from 1 to 10 carbon atoms; phenyl; naphthyl, or phenyl and naphthyl carrying a halo; lower alkyl; nitro, carboxy or hydroxy substituent group; pyridyl; furyl; pyrrolyl; cycloalkyl containing from 4–6 carbon atoms; cycloalkyl containing from 4 to 6 carbon atoms and carrying a hydroxyl, lower alkoxy or carboxy substituent group; nitrile; nitro; nitroso; hydroxy; alkoxy containing 1 to 10 carbon atoms; alkoxy containing from 1 to 10 carbon atoms and carrying a hydroxy, lower alkoxy, carboxy, halo, amino, lower alkylamino, or lower dialkylamino substituent group; alkenloxy or alkynyloxy containing from 1 to 10 carbon atoms; benzyloxy; phenyloxy; naphthyloxy; pyridyloxy; cyclohexyloxy; cyclopentyloxy; epoxyloweralkoxy; amino; lower alkylamino; lower dialkylamino; cycloalkylamino containing from 4 to 6 carbon atoms; phenylamino; naphthylamino; diphenylamino; haloloweralkylamino; lower alkenylamino; aminoloweralkylamino; hydroxylamino; lower alkanoyl amino; ureyl; thioureyl; guanidino; thiol; lower alkyl thiol; phenyl thiol; sulphonic acid, halogen or one or more of P, Q, R and T may be a group of OY wherein Y is an alkyl group having from 1 to 10 carbon atoms substituted by lower alkyl or phenyl-lower alkyl in which one or more of the CH_2 groups has been replaced by oxygen, sulphur or carbonyl, which alkyl or phenyl lower alkyl may carry one or more hydroxyl or carboxyl substituent groups; or an adjacent pair of P, Q, R and T (together with the adjacent carbon atoms in the benzene ring) together form a benzene ring, or a chain $-(CH_2)_4-$, $-(CH_2)_3-$, $\sim=C(COOH)-O-$, $-O(CH_2)_3-$, $-O(CH_2)_2-$, $\sim_3)=CH-CO-O-$, $-O(CH_2)_2O-$, $-CH_2-CH(CH_3)-O-$, $-CH=CH-O-$, $-CH=C(CH_3)-O-$, $-OCH_2O-$, $-NH-C(R^4R^5)-CH_2-O-$, $NR^5CH=CH-O-$ or $-NR^4CH=CH-NR^4-$ (wherein R^4 is hydrogen or lower alkyl or lower alkoxy and R^5 is hydrogen, or R^4 and R^5 together form a $=O$ group), and each R_1 may be the same or different and is hydrogen, alkyl containing from 1–10 carbon atoms, alkoxy containing from 1–10 carbon atoms or phenyl, or a pharmaceutically acceptable salt thereof, in association with a pharmaceutically acceptable carrier or diluent.

3,864,494

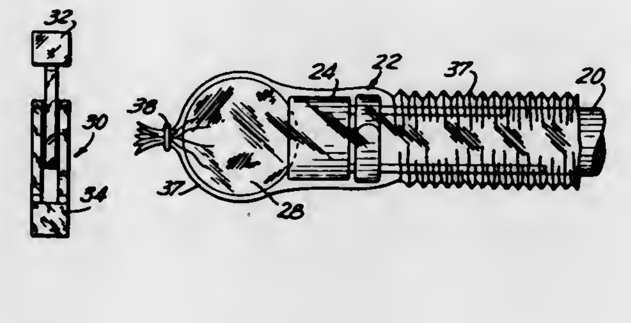
METHOD FOR PRODUCING A LARGE SAUSAGE PRODUCT HAVING A PRE-FLATTENED END

Vytautas Kupcikevicius, Chicago, and Michael Joseph Myles, Downers Grove, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 212,914, Dec. 28, 1971, Pat. No. 3,808,638. This application Mar. 18, 1974, Ser. No. 452,188

Int. Cl. A22c *11/00*

U.S. Cl. 426—284 **1 Claim**



1. A method for obtaining a large sausage product having a pre-flattened end including the steps of;

a. supporting a flat circular disc at the discharge end of a stuffing tube, the flat surfaces of the flat circular disc being disposed in general alignment with the longitudinal axis of the stuffing tube;
b. sheathing a large sausage casing having a closed end over the thusly supported flat circular disc and stuffing tube;
c. restraining said sausage casing adjacent the end of said stuffing tube in an annular passage;
d. rotating said flat circular disc within the said sausage casing until the flat surfaces of the flat circular disc are disposed transverse to the longitudinal axis of the stuffing tube;
e. gathering the large sausage casing over and about the stuffing tube until the closed end of the large sausage casing is drawn closely adjacent to one flat surface of the flat circular disc and the other flat surface of the flat circular disc abuts the discharge end of the stuffing tube, and;
f. admitting a food emulsion into the large sausage casing having the flat circular disc thusly positioned therein until the large sausage casing is stuffed with the food emulsion.

3,864,495

SULPHONAMIDES COMPOSITIONS AND METHOD FOR TREATING EDEMA

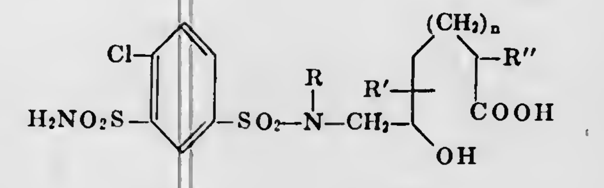
Harald Horstmann, Wuppertal-Vohwinkel; Hartmund Wollweber, and Karl Meng, both of Wup Pertal-Elberfeld, all of Germany

Division of Ser. No. 829,123, May 29, 1969, Pat. No. 3,629,442, which is a division of Ser. No. 643,822, June 6, 1967, Pat. No. 3,499,000. This application Aug. 10, 1970, Ser. No. 62,639

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **6 Claims**

1. A pharmaceutical composition useful in a human or animal to eliminate excess or undesired salt from the body fluids, in the treatment of edema and in the treatment of hypertension which consists of an effective amount of a compound of the formula:



wherein:

R is hydrogen or methyl;
R′ is hydrogen or lower alkyl;
R″ is hydrogen or lower alkyl; and
n is 0 or 1;

or a pharmaceutically acceptable non-toxic salt thereof, in combination with a pharmaceutically acceptable inert diluent or carrier.

3,864,496

1-SUBSTITUTED BIGUANIDES FOR TREATING GASTROINTESTINAL HYPERACIDITY OR ULCERATION

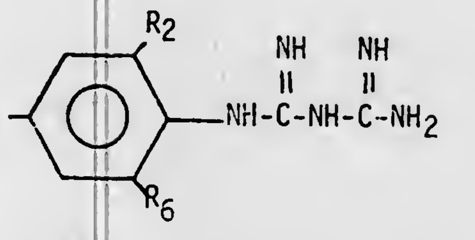
Julius Diamond, Lafayette Hill; George H. Douglas, Paoli, and Bernard J. Burns, Philadelphia, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 89,005, Nov. 12, 1970, abandoned. This application May 12, 1971, Ser. No. 142,794

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **15 Claims**

1. A method of treating gastrointestinal hyperacidity or ulceration in humans and mammals which comprises orally or parenterally administering thereto betwen 0.5 mg/kg – 70 mg/kg per day of a compound of the formula



where:

R_2 and R_6 are chloro or bromo and
R_4 is p-chlorophenyl or p-chlorophenoxy, and
a non-toxic acid addition salt thereof.

3,864,497

ACARICIDAL AND INSECTICIDAL 1,5-DIPHENYL-3-METHYL-1,3,5-TRIAZAPENTA-1,4-DIENER

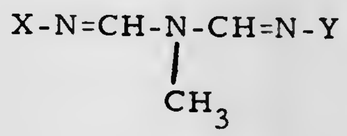
Ian Robert Harrison, Bleasby; John Felix McCarthy, Bramcote Hills, and Bryan Harper Palmer, Burton Joyce, all of England, assignors to Boots Pure Drug Company Limited, Nottingham, England

Division of Ser. No. 94,209, Dec. 1, 1970, Pat. No. 3,781,355, which is a continuation-in-part of Ser. No. 00,430, Jan. 2, 1970, abandoned. This application July 9, 1973, Ser. No. 377,840

Int. Cl. A01n *9/20*

U.S. Cl. 424—326 **8 Claims**

1. An acaricidal and insecticidal composition which comprises a carrier and, as the active ingredient, an acaricidally or insecticidally effective amount of a compound having the formula



$$X\text{-}N=CH\text{-}\underset{\displaystyle CH_3}{\underset{|}{N}}\text{-}CH=N\text{-}Y$$

in which X and Y are each selected from the group consisting of 2,3-dimethylphenyl, 2,4-dimethylphenyl, 2,6-dimethylphenyl, 2,4,6-trimethylphenyl, 2,4,5-trimethylphenyl, 2,3,4-trimethylphenyl, 2-methyl-4-halophenyl, 2-ethyl-4-halophenyl, 2-halo-4-methylphenyl, 2-halo-4,6-dimethylphenyl, 2,4-dihalo-6-methylphenyl, 2-methyl-4-methoxyphenyl, phenyl and methylphenyl, provided that (a) when X and Y are identical, they are not selected from the group consisting of phenyl and methylphenyl and (b) when X and Y are different, one of them is selected from the group consisting of 2,3-dimethylphenyl, 2,4-dimethylphenyl, 2,4,6-trimethylphenyl, 2,3,4-trimethylphenyl, 2-methyl-4-halophenyl and 2-halo-4-methylphenyl.

3,864,498

METHOD OF PREPARING A COLLAGENOUS SHRIMP AND FISH FEED

Robert A. Whitmore, 705 E. Mermaid Ln., Philadelphia, Pa. 19118, and Howard W. Jones, 49 Pawnee Rd., New Britain, Pa. 18901

Division of Ser. No. 294,958, May 19, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,251

Int. Cl. A23k *1/18*

U.S. Cl. 426—1 **1 Claim**

1. A process for preparing an improved shrimp and fish feed, comprising the following steps:

a. mixing collagenous comminuted hide with water to obtain a suspension having a pH of about 6.5;
b. warming the comminuted hide suspension to a temperature above 40°C.
c. treating the warm comminuted hide suspension with a high shear field until the collagenous material becomes a viscous liquid homogenate containing about 7.0% solids and that is capable of forming a gel which will not melt upon prolonged boiling in water;
d. Combining the homogenate of step (c) with dried sweet whey powder and water to obtain a mixture containing from 3 to 5% of the homogenate and about 70% solids.
e. Extruding the mixture through a plate having perforations ranging in diameter from about 1/16 to about ⅛ inches to form rods;
f. Drying the extruded rods; and
g. Cutting the dried rods into pellet-sized lengths of feed that, upon being put in water, swell to a firm gel and do not disintegrate at temperatures up to 50°C.

3,864,499

ADJUVENT CONTAINING POLYMERIC SAUSAGE CASING AND METHOD OF PREPARATION

Albin F. Turbak, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 710,717, March 6, 1968, abandoned. This application July 20, 1970, Ser. No. 56,654

Int. Cl. A22c *13/00*

U.S. Cl. 426—138 22 Claims

1. A method of preparing an adjuvant-containing shaped article formed of a hydrophilic film-forming polymer which comprises

a. preparing a solution of at least one oil capable of forming colloidal sized particles or droplets when dispersed in the film-forming polymer and an oil-soluble adjuvant in an inert co-solvent which is soluble or dispersible in a solution of said film-forming polymer or a derivative thereof,

b. dispersing said solution of said oil and said oil-soluble adjuvant into said polymer-containing solution,

c. extruding the resulting dispersion to produce a shaped article,

d. coagulating and regenerating said extruded shaped article, and

e. removiing said inert co-solvent to produce a dispersion of said adjuvant throughout said extruded article as a solution in fine particles or droplets of said oil of colloidal size.

3,864,500

PROCESS OF PREPARING AN EGG YOLK SUBSTITUTE AND RESULTING PRODUCTS FROM ITS USE

Charles C. Lynn, 102-30 66th Rd., Forest Hills, N.Y. 11375

Continuation-in-part of Ser. No. 144,328, May 17, 1971, abandoned. This application July 23, 1973, Ser. No. 381,416

Int. Cl. A23j *3/02*

U.S. Cl. 426—195 27 Claims

1. The process of preparing an egg yolk substitute comprising the steps of:

combining non-elastic protein material, oil and salt and heating at a low simmering temperature;

adding a mild acid to the foregoing and continuing heating for a period of time sufficient to bring out flavor characteristics;

adding water and vegatables and boiling;

adding additional water and non-elastic protein material and continuing boiling;

adding a thickening agent and continuing boiling to obtain a material of high protein content,

the foregoing ingredients forming said high protein material selected in such proportions that the protein content of said material is between approximately 25 and 55 percent of said material, the fat content is between approximately 5 to 15 percent of said material and the carbohydrate content is between approximately 25 and 50 percent of said material; and,

adding to the high protein content material a food grade emulsifier to form an egg yolk substitute, said food grade emulsifier comprising 1–12 percent, by weight, of said egg yolk substitute.

3,864,501

METHOD OF ENHANCING COLORATION OF FRUITS AND VEGETABLES WITH A DIALHYLAMINO-ALKOXYBENZENE

Henry Yokoyama; Wan-Jean Hsu, both of Pasadena, and Stephen M. Poling, Seal Beach, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 10, 1973, Ser. No. 404,980

Int. Cl. A23l *1/27*

U.S. Cl. 426—268 16 Claims

1. A process for enhancing the coloration of harvested fruits and vegetables which contain carotenogenic tissue, which comprises applying to the surface of the fruit or vegetable a compound of the structure

$$(\mathrm{Alk})_2\mathrm{N}—(\mathrm{CH}_2)_n—\mathrm{O}—\phi—\mathrm{R}'$$

wherein Alk is lower alkyl of 1–4 carbon atoms, n is an integer from 2 to 4, and R′ is a member of the group consisting of H, —OH, lower alkyl of 1–4 carbon atoms, and lower alkoxy of 1–4 carbon atoms; and holding the fruit or vegetable for a period long enough to develop an enhanced coloration.

3,864,502

METHOD FOR PREPARING PROTEIN FOOD PRODUCT

Takashi Sakita, and Gyoto Taguchi, both of Yokohama, Japan, assignors to Nisshin Seiyu Kabushiki Kaisha, Tokyo, Japan

Filed June 16, 1972, Ser. No. 263,444

Claims priority, application Japan, Mar. 8, 1972, 47-23792

Int. Cl. A23j *3/00*

U.S. Cl. 426—364 1 Claim

1. A process of preparing a spinning solution comprising

mixing a protein curd and an alkaline solution from an input line in an inline mixing means wherein the mixture of protein curd and alkaline solution is pressurized and passed to an outlet line of the inline mixing means,

passing a portion of the pressurized mixture of protein curd and alkaline solution from the outlet line of the inline mixing means through a first pipe back to the input line of the inline mixing means,

passing the remaining portion of the pressurized mixture of protein curd and alkaline solution from the outlet line of the inline mixing means through a second pipe into an open tank,

passing the mixture of protein curd and alkaline solution in the open tank into a third pipe,

filtering the mixture of protein curd and alkaline solution in the third pipe by applying the mixture of protein curd and alkaline solution in the third pipe under pressure to one side of a filter means to form a filtered mixture of protein curd and alkaline solution on the other side of the filter means, and

passing the filtered mixture of protein curd and alkaline solution from the other side of the filter means to a spinerette means.

3,864,503

METHOD OF PACKAGING SELF-BASTING POULTRY

Ken Steenolsen, South Pasadena, Calif., assignor to Poppy Food Company, Los Angeles, Calif.

Filed June 12, 1972, Ser. No. 261,819

Int. Cl. B65b *29/08, 25/22*

U.S. Cl. 426—232 8 Claims

1. The method of packaging a food item for self-basting cooking, comprising the steps of:

a. placing the food item inside a polyester bag which is open at one end;

b. inserting a selected quantity of semi-liquid basting and seasoning material into the bag at different points on the peripheral surface of the food item;

c. evacuating the bag through its open end, and then closing and sealing it;

d. briefly applying heat to the external surface of the bag sufficient to shrink the bag tightly around the food item and its accompanying basting and seasoning material, so as to spread the basting and seasoning material in a thin coating about the food item, said heat being effective to partially melt the basting and seasoning material; and

e. subjecting the bag and its contents to atmospheric temperature for a period of time sufficient to further disseminate the basting and seasoning material;

the packaged product being then adapted for quick cooking of the food item in the bag.

3,864,504

PROCESS TO PRODUCE HIGH CONCENTRATION TOMATO PUREE BY TRANSFORMING COLLOIDS

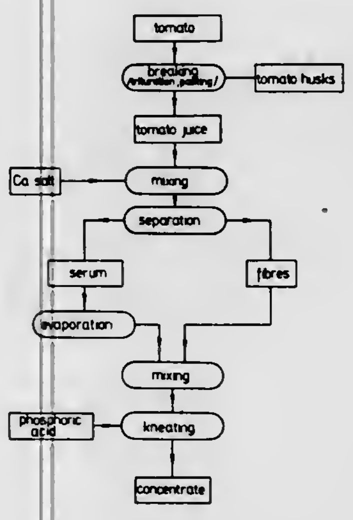
Zoltan Szabo, and Frigyes Hirschberg, both of Budapest, Hungary, assignors to Komplex Nagyberendezesek Export Import Vallalata, Budapest, Hungary

Continuation of Ser. No. 266,389, June 26, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,589

Claims priority, application Hungary, June 26, 1971, KO 243

Int. Cl. A23l *1/02*

U.S. Cl. 426—373 2 Claims



1. A process of producing tomato puree of high concentration, comprising triturating tomatoes to produce tomato juice and tomato husks, separating the tomato juice from the tomato husks, precipitating a coagulum in the tomato juice by adding a small but effective amount of calcium chloride to the tomato juice leaving a serum, said amount being effective to precipitate said coagulum, separating the coagulum and the serum, evaporating the serum, remixing the coagulum and the serum and adding to the remixed serum and coagulum a small but effective amount of a compound selected from the group consisting of phosphate and citrate whose cations have a valence of one, the latter said amount being effective to break the coagulum thereby to produce a high concentration tomato puree.

3,864,505

METHOD OF SHAPING FRIED FARINACEOUS DOUGH PRODUCTS AFTER REMOVAL FROM THE FRYING MEDIUM

John Earl Hunter, Springfield Township, Hamilton County, and Alexander Leon Liepa, Montgomery, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 294,730, Sept. 29, 1972, abandoned. This application May 28, 1974, Ser. No. 473,861

Int. Cl. A23l *1/10*

U.S. Cl. 426—346 17 Claims

1. In the process of preparing shaped, crisp snack foods from coherent farinaceous doughs, said process comprising preparing a coherent farinaceous dough, sheeting said dough, cutting said sheet into desired snack food pieces, completely frying said dough pieces in a frying oil to a final moisture content of 12 percent or less, and removing said completely fried dough pieces from the frying oil, the improvement comprising shaping said dough pieces into a desired uniform geometrical shape after removal from the frying oil but before said fried dough pieces become rigid.

3,864,506

PROCESS FOR PRETREATING RAW CHEESE WHEY

Donald A. Grindstaff, Minnetonka, Minn., and William P. Ahern, Visalia, Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 20, 1974, Ser. No. 452,878

Int. Cl. A23c *21/00*

U.S. Cl. 426—356 6 Claims

1. A process for pretreating a raw cheese whey comprising:

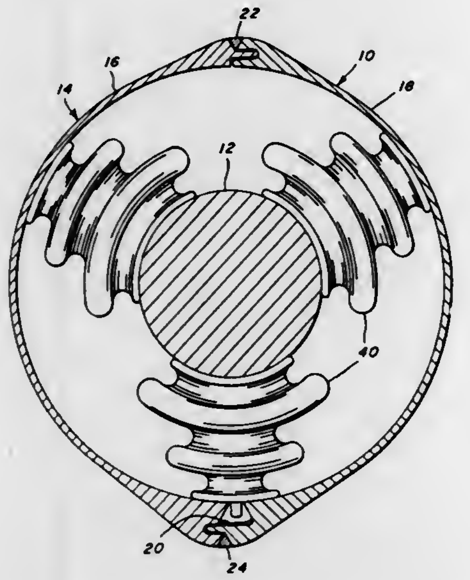
a. forming a phosphate-treated solution of raw cheese whey by admixing raw cheese whey containing at least 70 percent (weight basis) sweet cheese whey with an alkali metal phosphate selected from the group consisting of potassium acid pyrophosphate, sodium acid pyrophosphate, potassium tripolyphosphate, sodium tripolyphosphate, tetrasodium pyrophosphate, tetrapotassium pyrophosphate, and mixtures thereof at a concentration from about 0.6 grams per liter to about 2.0 grams per liter at a pH from about 5.5 to about 4.0.

b. adjusting the pH of said phosphate-treated solution to a range of from about 6.5 to about 8.0 by the addition of a base to form a precipitate and a pretreated cheese whey and

c. separating said precipitate from said pretreated cheese whey.

3,864,507
ELECTRICAL CONDUCTOR

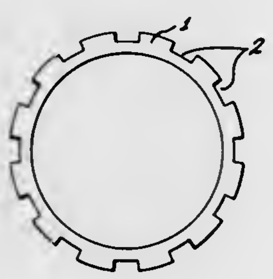
D. Marshall Fox, Highton, Victoria, Australia, and Richard B. Weiss, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 25, 1974, Ser. No. 445,543
Int. Cl. H01b *9/06*
U.S. Cl. 174—14 R **9 Claims**



1. A conductor assembly for transmission of high voltage electrical power comprising a hollow cylindrical metal sheath, a core conductor, a plurality of insulators in the sheath at spaced intervals along the length thereof supporting the core substantially concentrically centered in the sheath, and compressed insulating gas in the sheath, said sheath comprising one or more elongate staves each of which comprises a portion of the circumference of the sheath and having a groove along one longitudinal edge thereof open toward the adjoining edge of the adjacent stave and a tongue along the other longitudinal edge projecting into the groove in the adjoining edge of the adjacent stave and the staves welded together along their adjacent longitudinal edges exteriorly of said tongue and groove engagement so that welding will not contaminate the interior of the sheath, and further having a particle trap in the interior surface of said sheath comprising a longitudinally extending upwardly open groove in the bottom of the sheath as disposed for use in the transmission of electrical power.

3,864,508
CARRIER FOR CONDUCTORS IN AN ELECTRICAL CABLE FOR LOW TEMPERATURE

August Beck, Langenhagen, Germany, assignor to Kabel-und Mettallwerke Gutehoffnungshutte AG, Hannover, Germany
Filed Apr. 11, 1974, Ser. No. 460,028
Claims priority, application Germany, Apr. 13, 1973, 2318617
Int. Cl. H01v *11/00*
U.S. Cl. 174—15 C **9 Claims**

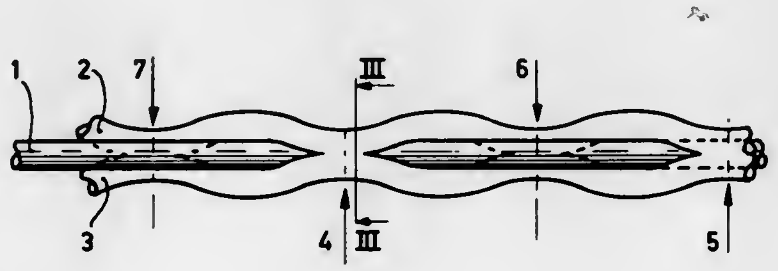


1. In an electrical cable to be operated at low temperatures and having several concentric tubes and electrical conductors in the innermost tube to be placed therein in immediate contact with a coolant flowing through the innermost tube, a carrier assembly for the conductors comprising:

- a plurality of individual, cylindrical short tube sections as carrier elements having longitudinally running grooves in their outer periphery; and
- connecting elements interconnecting the carrier elements with a gap between adjacently positioned carrier elements so that liquid coolant as flowing through the elements may pass through the gap for flow in and along the grooves, the conductors being disposed on the elements as interconnected.

3,864,509
COAXIAL CABLE WHOSE DIELECTRIC PARTLY CONSISTS OF AIR

Hubertus Johannes Josephus Gommans, Venlo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 4, 1974, Ser. No. 430,789
Claims priority, application Netherlands, Feb. 2, 1973, 7301495
Int. Cl. H01b *11/18*
U.S. Cl. 174—28 **4 Claims**



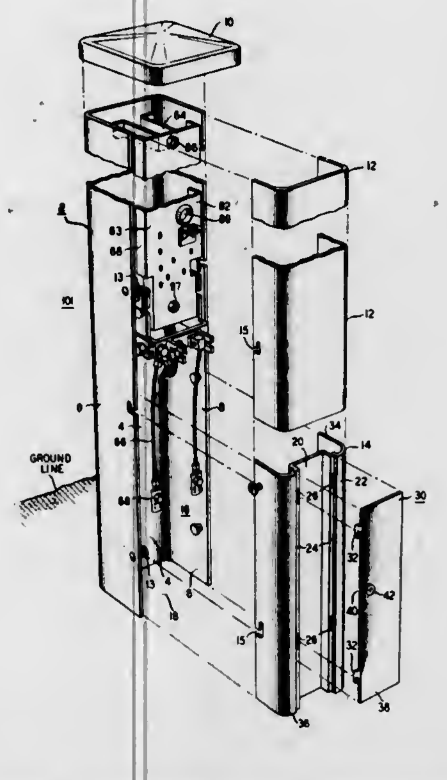
1. A coaxial cable having a dielectric which consists partly of air in which filaments of electrically insulating material serving as spacers around a central conductor, wherein the spacers consist of at least two filaments of electrically insulating material which surround the central conductor in accordance with spatial wavelines and which are interconnected at regular spaces over a short distance and thus jointly surround the entire circumference of the central conductor.

3,864,510
PEDESTAL CLOSURE FOR BURIED CABLE

Edward Lewis Ramsey, Jr., Martinsville, and Arnold Ray Smith, Chester, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 15, 1974, Ser. No. 442,851
Int. Cl. H02g *9/02*
U.S. Cl. 174—38 **14 Claims**

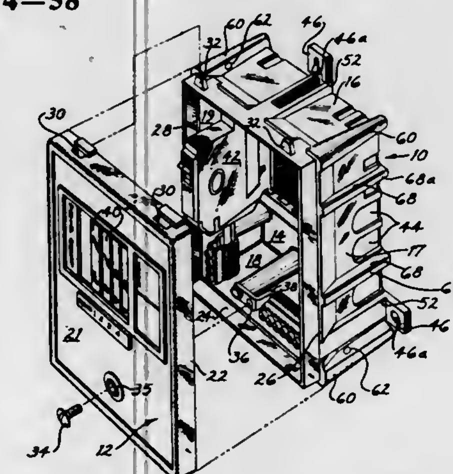
1. An enclosure for above-ground terminals of a buried cable installation comprising a rear member having a vertically elongated rear wall and forwardly projecting side walls, a cap at the top of said rear member, and upper and lower front cover members detachably secured to said rear member to define a terminal chamber for housing said terminals, characterized in that:

said lower front cover member includes a vertically oriented channel formed in the exterior face thereof adapted for receiving conductors therein and providing access for said conductors into said chamber.



3,864,511
NON-METALLIC LOAD CENTER FOR SURFACE AND RECESSED WALL MOUNTING

John Alfred Morby, Bristol; Joseph Francis Rich, New Britain, and George Henry Grade, Jr., Simsbury, all of Conn., assignors to General Electric Comapny, New York, N.Y.
Filed June 14, 1973, Ser. No. 369,821
Int. Cl. H02g *3/08*
U.S. Cl. 174—58 **2 Claims**



1. An enclosure for electrical equipment comprising, in combination:

A. A molded, electrically insulative housing including a backwall and integrally formed, upstanding sidewalls,
   1. said sidewalls terminating in a perimetrical lip circumscribing the open front of said housing,

B. A molded cover having
   1. a front wall, and
   2. a perimetrical flange integrally formed in perpendicular relation to said front wall;
   3. said flange and lip arranged to telescopically interfit upon application of said cover to said housing in closure relation to the open front thereof;

C. a pair of spaced reinforcing ribs integrally formed with each of an opposed pair of said sidewalls and extending between said lip and said backwall, said ribs being formed to provide mounting surfaces lying in a common plane perpendicular to said front wall of said cover when applied in closure relation to said housing;

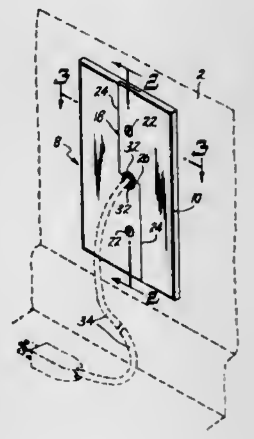
D. corner ribs integrally formed with said housing and extending exteriorly from each junction of said sidewalls, each said pair of reinforcing ribs located intermediate said corner ribs;

E. mounting means formed in each said corner rib to facilitate recessed mounting said enclosure to a wall stud,
   1. whereby upon mounting said enclosure, said mounting surfaces bear against the side of the wall stud to orient said cover front wall in substantially parallel, flush relation to a finished wall; and

F. at least one mounting tab integrally formed with one of said sidewalls and extending exteriorly therefrom at a location adjacent said reinforcing ribs, said mounting tab facilitating mounting said enclosure to the surface of a wall.

3,864,512
COVER FOR UTILITY OUTLET

Theodore B. Meadow, 2610 Pine Valley Rd., Albany, Ga. 31707
Filed Feb. 13, 1974, Ser. No. 442,194
Int. Cl. H02g *3/14*
U.S. Cl. 174—66 **5 Claims**



1. A cover for a utility outlet box, said cover having a front face and a rear face, comprising:

- two separable complementary side-by-side plate members arranged in edge abutment to define a generally rectangular cover, the abutting edges of at least the front face portions of said plate members defining a juncture line extending from one end of said cover, laterally offset from the center line thereof, to the opposite end, laterally offset to the other side of the center line and spaced inwardly from the side edges of said cover and thus having laterally offset end portions and an intermediate portion;
- a front face portion of each plate adjacent a corresponding end portion of said juncture line being in overlapping relation to a rear face portion of the other plate, said rear face portions being spaced apart at said intermediate portion of said juncture whereby to leave the region behind said intermediate portion free of obstructions;
- complementary means on said plate members, at said intermediate portion of said juncture, delineating an opening through said cover; and
- aligned openings through said overlapping portions of said plate members for receiving fastening means to secure said cover to an outlet box and simultaneously hold said plate members in the described relationship.

3,864,513

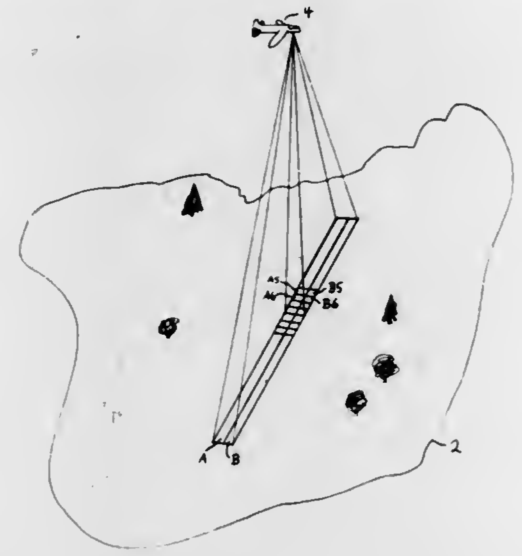
COMPUTERIZED POLARIMETRIC TERRAIN MAPPING SYSTEM

John D. Halajian, Levittown, and Herbert B. Hallock, Huntington, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,876

Int. Cl. H04b *9/00*

U.S. Cl. 178—6.6 **16 Claims**



1. A system for mapping an array of terrain segments in order to display a map indicating the interrelationship between at least two polarimetric components of the natural light reflected from each segment comprising:

A. means for scanning the array to generate and store simultaneously a first and a second matrix of digital values corresponding to a first and a second polarimetric component value of the light reflected from segments of the array corresponding to respective values in the matrices,

B. computer means for performing a matrix operation with values from the first and the second matrix to derive values for a third matrix indicating said interrelationship, and

C. display means for displaying the values of the third matrix as said map.

3,864,514

FACSIMILE SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 225,172, Aug. 27, 1962, , which is a continuation-in-part of Ser. No. 668,348, June 27, 1957, Pat. No. 3,051,777, which is a continuation-in-part of Ser. No. 823,600, May 12, 1969, which is a continuation-in-art of Ser. Nos. 279,030, April 1, 1963, abandoned, and Ser. No. 723,075, Feb. 28, 1958, Pat. No. 3,084,213. This application Oct. 24, 1972, Ser. No. 300,424

Int. Cl. H04n *1/32*

U.S. Cl. 178—6.8 **7 Claims**

1. Facsimile apparatus for transmitting and recording full-frame video picture information comprising in combination:

a television camera,

means for positioning a document containing a pictorial representation of information to be transmitted to a location remote from said camera, in the scanning field of said camera,

said camera having a reading electron beam and deflection control circuits for causing the reading-beam of the camera to rpedeterminately scan the image field presented to the camera,

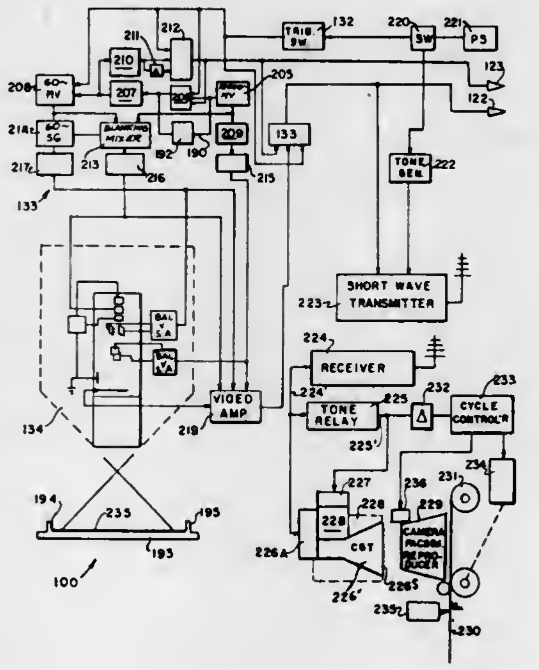
signal generating means for generating a sequence of deflection control signals and applying said signals to energize said deflection control circuits of said camera to cause said camera reading beam to full-frame scan its image field,

control means for said signal generating means including a control switch, an input circuit energized by closing said control switch for initiating operation of said signal generating means to generate and apply the signals generated thereby to said deflection control circuits whereby said reading beam is caused to full-frame scan the complete image field presented to the camera and to terminate the scanning action of said reading beam when the complete image field has been scanned thereby,

means including said reading beam for generating a composite video picture signal on the output of said camera including separable picture and synchronizing signal elements,

a receiving station,

means for effecting a communication link between the output of said camera and said receiving station,



receiving means at said receiving station operable for receiving the signals generated by said transmitting means, and including a video receiver having a cathode ray tube and write-beam generating means for generating an image on a display screen of said tube,

horizontal and vertical deflection control means for the write-beam of said receiving station cathode ray tube connected to receive signals from said receiving means, means at said receiving station for separating said synchronizing signal elements from the picture signal elements from each composite video picture signal received thereby and applying said synchronizing elements to said horizontal and vertical deflection control means for said write-beam of said receiving station cathode ray tube and for simultaneously applying the separated picture signal elements to intensity modulate said write-beam of said cathode ray tube to cause said beam to full-frame scan and generate an image on the display screen of said tube which image is representative of the document scanned by said television camera,

relay means connected to said receiving means of said receiving station and responsive to the code signal generated when said control switch is closed for conditioning said receiving means of said receiving station to receive signals generated by said sending station transmitting means,

means optically coupled to said display screen of said receiving station cathode ray tube for generating a hard copy reproduction of images generated by said display screen, and

means at said receiving station connected to said receiving means and responsive to the control signal received from said sending station for controlling the operation of said hard copy generating means to generate a hard copy print of the image displayed on the display screen of said cathode ray tube.

3,864,515

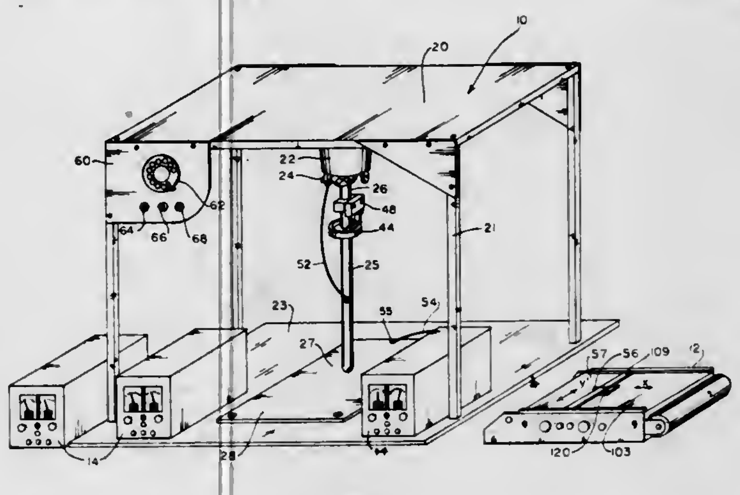
WRITING MACHINE ASSEMBLY FOR PRODUCING REDUCED GRAPHIC CHARACTERS CORRESPONDING TO GROSS MOVEMENTS OF A WRITER'S ARM

James W. Fee, Jr., 16 Cottage Ave., Bay Shore, N.Y. 11706

Filed Sept. 24, 1973, Ser. No. 399,958

Int. Cl. G08c *21/00*

U.S. Cl. 178—18 **7 Claims**



1. A writing assembly comprising:

a support;

a gimbal means carried by said support having two gimbal sets rotatable respectively on mutually perpendicular horizontal axes,

an axially vertical joy stick pivotally carried by said gimbal means and having its lower end movable in all directions in a horizontal plane to outline a character;

a bias means connecting said joy stick to said gimbal means so that said joy stick is axially movable;

a first index switch means carried by said gimbal means and operable by said joy stick when the same is lifted axially; a signal pickup means operatively connected to said gimbal sets, and carried by said support so that signals are produced as said joy stick is moved;

a recorder having a recording pen movable in all directions on a table for writing characters thereon; said recorder having an electromechanical drive means for moving said pen; and having input terminal means for applying a signal to said electromechanical drive means;

a first step switch means connected to said first index switch means so that said first step switch means moves one step each time said first index switch is closed; and

a first voltage divider means connected in circuit with said first step switch means and said input terminal means of said recorder for applying said signals thereto, so that said pen is indexed one space at a time along a line of writing on said table each time said first index switch means is closed by the lifting of said joy stick.

3,864,516

FOUR-CHANNEL STEREOPHONIC SOUND REPRODUCING SYSTEM

Akio Kameoka, Kawasaki; Mamoru Kuriyagawa, Kamakura, and Shinichi Nakamura, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 7, 1973, Ser. No. 338,938

Claims priority, application Japan, Mar. 7, 1972, 47-22747

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **7 Claims**

1. A four-channel stereophonic sound reproducing system for reproducing four individual audio information signals on four separate loudspeakers adapted to be arranged around a listener, said four individual audio information signals corresponding to four original signals generated from four separate microphones respectively placed at left front, right front, left rear and right rear of the listener, said four original signals being contained in encoded first and second composite signals L and R which are defined by the following equations:

$$L = (Lf+jLb)\cos\theta + (Rf+jRb)\sin\theta$$

$$R = (Rf-jRb)\cos\theta + (Lf-jLb)\sin\theta$$

where Lf=left front, Rf=right front, Lb=left rear and Rb=right rear; said sound reproducing system comprising:

first and second input terminals to which said first and second composite signals L and R are respectively applied;

a decpder matrix circuit connected to said input terminals and combining said first and second composite signals L and R to derive four reproduced signals Lf_1, Rf_1, $Lb_1$and Rb_1which are defined by the following equations:

$$Lf_1 = L\cos\theta + R\sin\theta$$

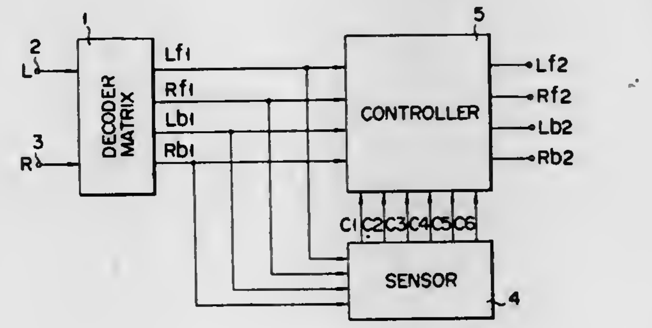
$$Rf_1 = R\cos\theta + L\sin\theta$$

$$Lb_1 = L\cos\theta - \sin\theta$$

$$Rb_1 = R\cos\theta - L\sin\theta$$

a sensor circuit for producing at least one of four judgment signals C_1, C_2, $C_3$and C_4as a function of said reproduced signals Lf_1, Rf_1, $Lb_1$and Rb_1, said sensor circuit having first, second, third and fourth level detectors respectively detecting the level of said four reproduced signals Lf_1, Rf_1, $Lb_1$and Rb_1; a first mixer connected to receive the outputs of said first and third level detectors for producing a sum of the signal levels of the outputs of said first and third level detectors; a second mixer connected to receive the outputs of said third and fourth level detectors for producing a sum of the signal levels of the outputs of said third and fourth level detectors; a third mixer connected to receive the outputs of said second and fourth level detectors for producing a sum of the signal levels of the outputs of said second and fourth level detectors; a fourth mixer connected to receive the outputs of said first and second level detectors for producing a sum of the signal levels of the outputs of said first and second level detectors; a first level comparator having negative and positive input terminals for respectively receiving the outputs of said first and third mixers at an amplitude ratio of $1/(1+\sqrt{2}):1$ to produce said first judgment signal C_1; a second level comparator having positive and negative input terminals for respectively receiving the outputs of said first and third mixers at an amplitude ratio of $1:1/(1+\sqrt{2})$ to produce said second judgment signal C_2; a third level comparator having positive and negative input terminals for respectively receiving the outputs of said second and fourth mixers at an amplitude ratio of $1:1/(1+\sqrt{2})$ to produce said third judgment signal C_3; and a fourth level comparator having negative and positive input terminals for respectively receiving the outputs of said second and fourth mixers at an amplitude ratio of $1/(1+\sqrt{2}):1$ to produce said fourth judgment signal C_4; and

a controller circuit for controlling the respective levels of the four reproduced signals Lf_1, Rf_1, $Lb_1$and $Rb_1$from said decoder matrix circuit in response to the four judgment signals C_1 to C_4 from said sensor circuit, to provide four audio information signals Lf_2, Rf_2, Lb_2 and Rb_2 having decreased cross-talk between adjacent channels.



3,864,517

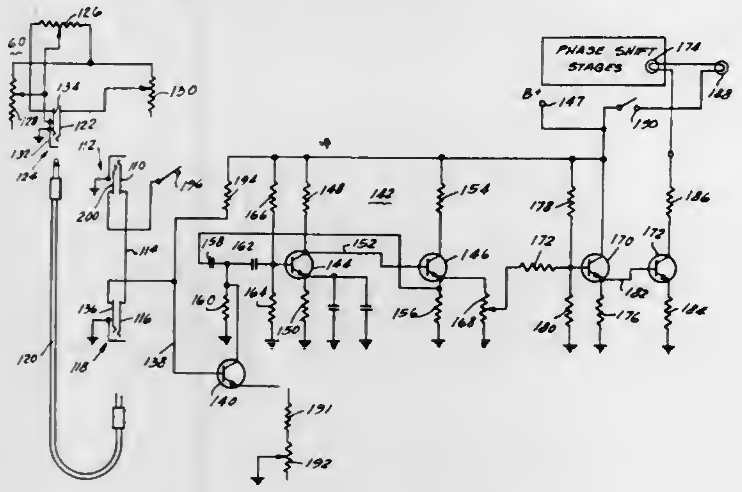
SPEED CONTROL FOR ELECTRONIC ORGAN ROTATING HORN

Dallas Richard Wilder, 715 N. Kedzie Ave., Chicago, Ill. 60612

Filed Oct. 2, 1972, Ser. No. 294,024

Int. Cl. H02p *5/34;* **G01h** *1/02*

U.S. Cl. 179—1 J **8 Claims**



1. For use with an organ amplifier having a loudspeaker with a stationary transducer and a horn mounted at an angle relative to the axis of said transucer for rotation about the axis of said transducer, the combination comprising a single phase a.c. motor for driving said horn, a variable frequency oscillator for generating electrical a.c. power at a variable frequency, means for applying said a.c. power to said motor, and means for manually controlling the frequency of oscillation of said oscillator, said last named means including first variable resistance means for continuously controlling the speed of said motor between upper and lower limits, upper limit variable resistance means for selecting an upper limit for the frequency controlled by said manual control, and lower limit variable resistance means for selecting a lower limit for the frequency controlled by said manual control, said upper and lower limit variable resistance means selecting their respective limits substantially independently, whereby a change in one of said limits has substantially no effect on the other of said limits, and wherein said upper and lower limit variable resistance means comprises first and second variable resistors connected in parallel with each other, and a third variable resistor connected between said variable frequency oscillator and a common terminal of said first and second variable resistors, the maximum resistance of said third variable resistor being substantially lower in resistance than said first and second variable resistors.

3,864,518

SIGNAL CONVERSION APPARATUS

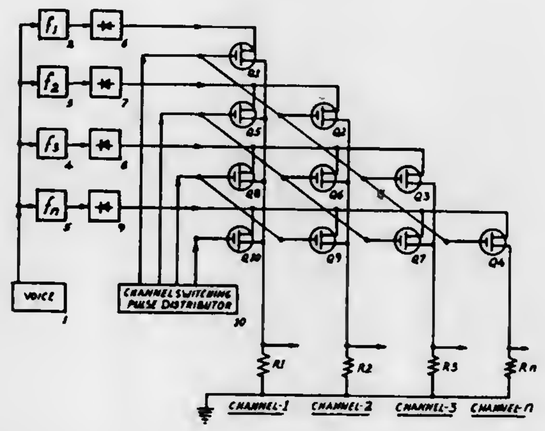
Meguer V. Kalfaian, 962 Hyperion Ave., Los Angeles, Calif. 90029

Continuation of Ser. No. 235,943, March 20, 1972. This application June 8, 1973, Ser. No. 368,265

Int. Cl. G10l *1/00*

U.S. Cl. 179—1 SA **2 Claims**

1. The system normalizing spectral variations of a group of information-bearing harmonically related frequency peak resonances in a complex sound wave by converting and standardizing the channel-location identities of said resonances, the system comprising a plurality of band-pass filters for separating the resonances of said complex wave in divisions such that the center frequency of said filters are arranged in a monotonically increasing series of frequencies; said series comprising a plurality of sub-series, all sub-series having the same number of channels such that each frequency in a sub-series is harmonically related to the same-placed frequency in the other sub-series; said filters being numbered sequentially for identity from the reference numeral one; a plurality of detectors for derivng detected signals from said band-pass filters, said detectors having numerical identities the same as the associated filters; a signal conversion switching arrangement comprising a plurality of input and output channels numbered sequentially, said switching comprising a plurality of AND-gates numerically identified from a reference numeral; first parallel connections of the first inputs of the corresponding AND-gates to corresponding input channels, second inputs of corresponding AND-gates to corresponding channel-switching control-gate inputs, third parallel connections of the outputs of corresponding AND-gates to corresponding output channels; coupling means from said detectors to corresponding first inputs of AND-gates; means for energizing said parallel-connected second inputs sequentially for said signal-switching conversion, all input channels being switched simultaneously to sequentially lower-number channels, until said group of detected signals are admitted to the output channels in an order such that the detected signal having the lowest numerical identity within the input group of signals is switched to the output channel having said reference numeral one, while the other detected signals of the input group are switched to corresponding output channels, such that the information concerning input frequency harmonic ratios is maintained relative to the input fundamental frequency, and thereby having input channels to a normalized group of output channels.



3,864,519

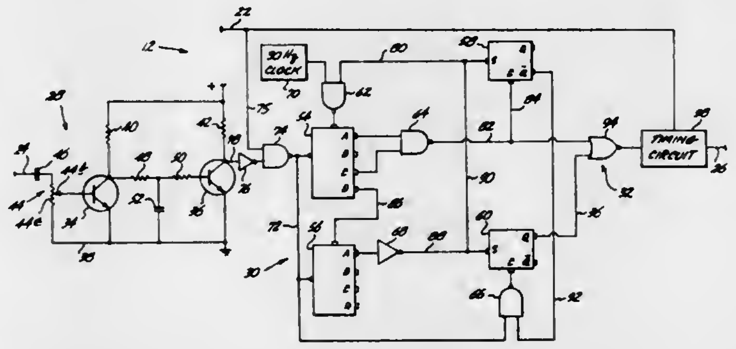
SPEECH-GAP-RESPONSIVE CONTROL APPARATUS

James Owen, Milwaukie, Oreg., assignor to Ford Industries, Inc., Portland, Oreg.

Filed May 11, 1973, Ser. No. 359,476

Int. Cl. H04m *1/00*

U.S. Cl. 179—1 VC **4 Claims**



1. Signal-monitoring control apparatus for use in combination with a telephone line and the like to verify the presence therein of a signal having certain signal gap characteristics, said apparatus comprising

- an input circuit adapted to be operatively coupled to such a line to receive an electrical signal carried therein, constructed to produce an output response of one type with a signal present in the line, and an output response of another type in the absence of such a signal,
- digital counting circuitry operatively connected to said input circuit operable during times that said input circuit produces an output response of said other type to produce a count reflective of the duration of such a response,
- digital monitoring circuit means operatively connected to said counting circuitry for monitoring the different counts produced thereby during different output responses of said other type from said input circuit,
- a resettable timing circuit having a timing cycle at the end of which it produces an output signal, and
- means interconnecting said monitoring circuit means and said timing circuit for resetting said timing circuit on a recurring basis when the monitoring circuit detects, prior to the expiration of a timing cycle, recurrent counts in said counting circuitry each of which exceeds a first predetermined count but is less than a second predetermined count, whereby the production of an output signal from said timing circuit is prevented.

3,864,520

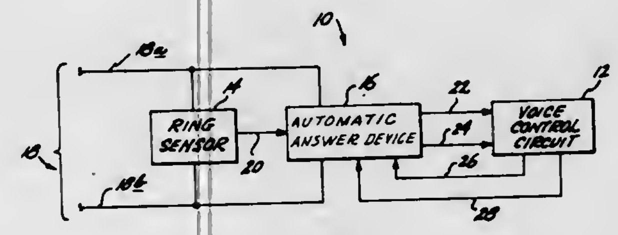
SIGNAL MONITORING CONTROL APPARATUS

James Owen, Milwaukie, Oreg., assignor to Ford Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 274,856, July 25, 1972, abandoned. This application Mar. 6, 1974, Ser. No. 448,560

Int. Cl. H04m *1/64*

U.S. Cl. 179—1 VC **6 Claims**



6. Voice-signal-monitoring control apparatus usable in combination with a telephone line and the like for detecting the presence and continuity of a voice signal in such a line, where such a signal is characterized throughout its duration by a chain of successive alternating talking and nontalking intervals, with both kinds of such intervals no longer than one time span, and with the nontalking intervals no less than another time span which is shorter than said one time span, said apparatus comprising

- a first resettable digital timing means for producing anoutput signal on having continuously timed for a first certain time interval equaling said one time span,
- a second resettable digital timing means for producing a control signal on having continuously timed for a second certain time interval equaling said other time span,
- first coupling means coupling said first and second timing means whereby a control signal produced by the latter is effective to reset the former, and
- second coupling means for coupling said second timing means to a telephone line for the communication to the former of signals in the latter, whereby during each interval that a signal exists in the line the second timing means is held reset, and during each interval that a signal is absent from the line the second timing means is enabled to time.

3,864,521

FREQUENCY DIVISION MULTIPLEX TELEPHONE SYSTEM

Vincent R. DeLong, Marion; Merrill T. Ludvigson, Cedar Rapids; Frank M. Apple; John L. Leeson, both of Marion, and Edwin G. Houghton, Cedar Rapids, all of Iowa, assignors to Rockwell International Corporation, Dallas, Tex.

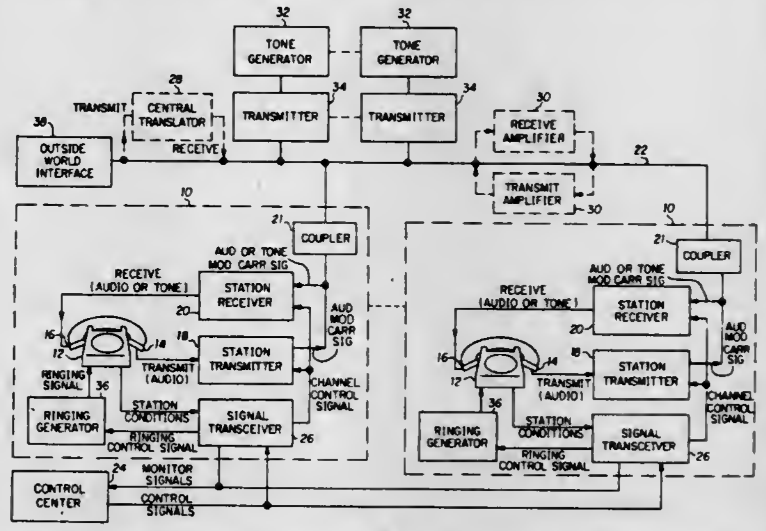
Filed Oct. 25, 1973, Ser. No. 409,527

Int. Cl. H04j *1/06*

U.S. Cl. 179—2.5 R **27 Claims**

1. A frequency division multiplex telephone system for serving a plurality of telephone stations by a common cable using a plurality of telephone channels wherein each channel provides an individual communication path over the cable through a carrier signal having a unique frequency which is modulated by a signal to be transmitted, comprising:

- a plurality of station transmitters, one for each station interconnecting its telephone transmitter with the cable for providing a telephone channel over which to transmit audio signals generated therein and wherein the channel so provided is determined by a channel control signal applied thereto, there being a different channel control signal for each telephone channel;
- a plurality of station receivers, one for each station interconnecting its telephone receiver with the cable for providing a telephone channel over which to receive modulated carrier signals wherein the channel so provided is determined by the channel control signal applied thereto; a plurality of signal transceivers, one for each station for generating monitor signals indicative of various conditions at its associated station and for receiving and applying the channel control signals; and
- a control center for monitoring and allocating the utilization of telephone channels and for generating and selectively applying to said transceivers the channel control signals in response to monitor signals received therefrom, whereby an audio communication path is established between a calling and called station via a telephone channel assigned thereto by said control center in a predetermined manner by application of the associated channel control signal to their respective transceivers.



3,864,522

AUTOMATIC TELEPHONE LOCATION SYSTEM

Raymond L. DeKozan; Edwin M. Salkeld, Jr., both of San Diego, and Elsmore W. Bush, La Jolla, all of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Nov. 2, 1972, Ser. No. 303,109

Int. Cl. H04m *15/06*

U.S. Cl. 179—5.5 **6 Claims**

1. An automatic telephone location system for determining the location or address of telephones used in making calls to telephones at certain stations in automatic telephone systems having a plurality of telephones connected by telephone networks through a central office or the like, comprising,

- a plurality of first telephones connected to a telephone network,
- a second telephone located at a second station and being connected to the telephone network,
- storage means at each of said first telephones for storing a coded address representing the location of the particular first telephone,
- interrogating signal means at said second telephone for sending an interrogation signal to said first telephone in response to a telephone call from said first telephone to said second telephone,
- detector means at said first telephone for detecting and receiving said interrogation signal and activating said storage means to send out a signal to said second tele-

phone that is coded to the address of said first telephone, receiver means at said second telephone for receiving said address coded signal and decoding said address coded signal to identify the location of said first telephone,

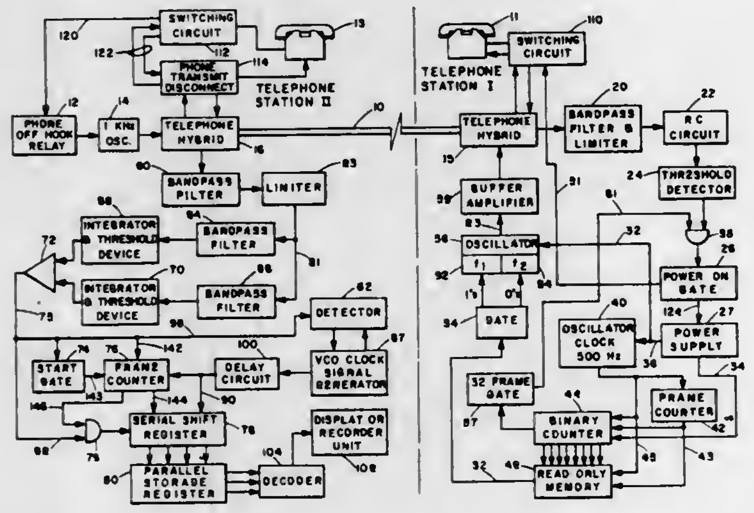
said storage means at said first telephones including a programmed memory unit,

clock signal means for interrogating said programmed memory unit,

tone generator means for generating serial two tone output signals of binary coded address information that are coded by signal outputs from said programmed memory unit,

said receiver means including a tone detector means for detecting the difference between serially received serial tones,

an address detector means for detecting the output of said tone detector means providing decoded address output signals corresponding to the address of the first telephones,



means for displaying or storing the received decoded address output signals,

said detector means including filter means for filtering a signal having the particular frequency of the interrogating signal,

threshold detector means for receiving a signal from said filter means,

said clock signal means including oscillator means for providing clock signals in response to an output signal from said threshold detector means,

said program memory unit providing a digital output signal upon being interrogated by said clock signals,

said digital output corresponding to the individual components of the address of the first telephones,

and second oscillator means for providing a first frequency for a given digital signal of said digital output and a second frequency for a second digital signal of said digital output providing said two-tone output signal of binary coded addressed information.

3,864,523

METHOD FOR TESTING A MULTIPLEX TRANSMISSION SYSTEM

Reiner Kellermann, Schaferstr. 16, 407 Rheydt, Germany

Continuation-in-part of Ser. No. 334,437, Feb. 21, 1973, abandoned. This application June 6, 1974, Ser. No. 477,312

Claims priority, application Germany, Feb. 23, 1972, 2208364

Int. Cl. H04j ***3/12***

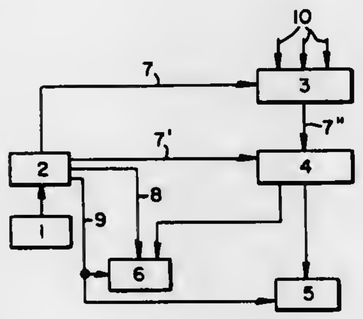
U.S. Cl. 179—15 BF **4 Claims**

1. A method for testing short circuits, line breaks, and the like, in a multiplex transmission system including a multiplexer and a demultiplexer used to transmit command signals for control of machine tools and the like, said method comprising:

A. generating a number of different square wave impulse sequences, said number of impulse sequences being at least equal to the desired number of multiplex command signals, each of said impulse sequences having at least four intervals, said first and third intervals defining first and second command intervals, respectively, and said second and fourth intervals defining first and second test intervals, respectively, said square wave impulses of each sequence being the same between their respective first and second command intervals and their first and second test intervals;

B. simultaneously transmitting each of said impulse sequences through said multiplex system;

C. transmitting through said multiplex system command signals by means of said impulse sequences during said first and second command intervals;



D. generating at least one test signal having a first and second signal level, said first signal level being generated during said first command and test intervals and said second level being generated during said second command and test intervals;

E. transmitting through said multiplex system said first test signal level during said first test interval and said second test signal level during said second test interval; and

F. comparing the transmitted test signals with said generated test signals during their respective test intervals to detect any error in the multiplex system.

3,864,524

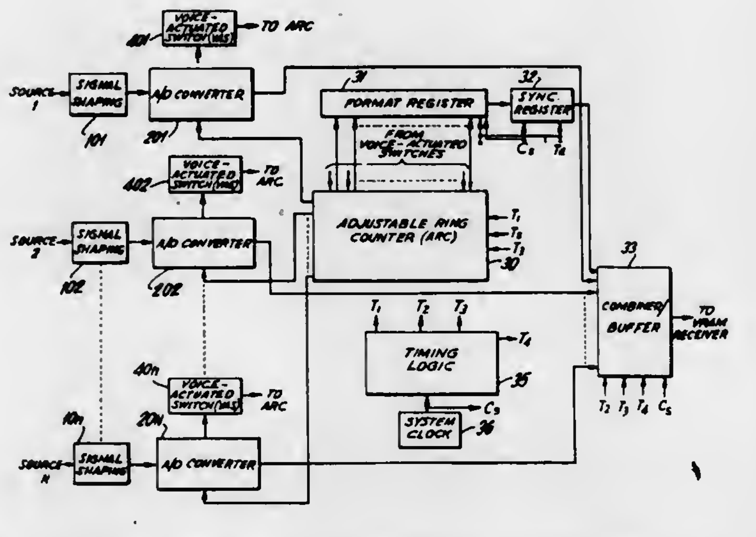
ASYNCHRONOUS MULTIPLEXING OF DIGITIZED SPEECH

Neil Edward Walker, Tampa, Fla., assignor to Electronic Communications, Inc., St. Petersburg, Fla.

Continuation of Ser. No. 85,671, Oct. 30, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,663

Int. Cl. H04j ***3/16***

U.S. Cl. 179—15 BA **4 Claims**



1. A variable rate speech multiplexing transmitter in which time slots occurring at a fixed predetermined rate are allocated among a constantly changing number of active speech courses comprising:

a plurality of speech sources each presenting an analog speech signal when in an active state, each source including means for shaping the analog original;

a plurality of converter means each associated with a particular speech source for converting the analog signal received therefrom to a digitally companded delta sigma modulated signal, each converter means including a companding loop and a tap connected to the loop which presents a full wave rectified signal that follows the average amplitude of the analog speech signal converted therein;

a plurality of voice actuated switch means each connected to the tap of one of the converter means to receive a signal therefrom and indicating the active or inactive state of the speech source associated with that converter means, said active or inactive state being determined with reference to a preselected threshold noise level;

a plurality of bi-stable storage latch means each connected to a particular voice actuated switch means, the storage latch means being interconnected to form a loop;

gating means for periodically supplying timing pulses to the storage latch means and thereby resetting each storage latch means to indicate the active or inactive state of the connected speech source; and

register means for combining digitized speech signals received from said converter means to form a data stream including digitized time division signals from only those converter means associated with speech sources that the storage latch means indicates are active, the register means thus providing an output in which the rate at which any active speech source is sampled varies and is dependent upon the number of other simultaneously active speech sources in the system.

3,864,525

TIME STAGE SYSTEM FOR A PCM EXCHANGE

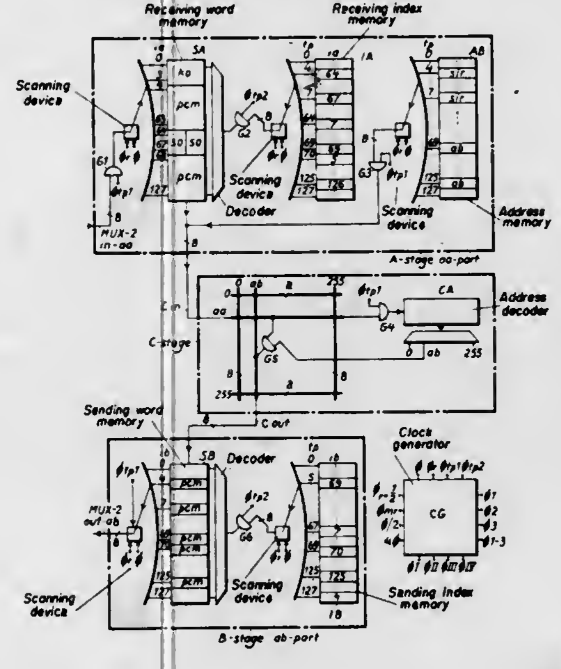
Nils Herbert Edstrom, Stockholm; Stig Gustaf Wilhelm Lindqvist, Enskede, and Gunnar Erik William Sparrendahl, Handen, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 19, 1973, Ser. No. 325,057

Claims priority, application Sweden, Feb. 8, 1972, 1442/72

Int. Cl. H04q ***11/04***

U.S. Cl. 179—15 AQ **2 Claims**



1. A time stage system for a PCM exchange utilizing an assemblage including a first time stage, a space stage with file contact planes and a second time stage with files connecting the first time stage to the contact planes of the space stage and further files connected the contact planes of the space stage to the second time stage wherein PCM words are received on incoming transmission links connected to the first time stage and the PCM words are transmitted on outgoing transmission links connected to the second time stage in first time slots associated with a first time division multiplex system, wherein the PCM words are transferred from the first time stage via the files and the space stage to the second time stage in second time slots associated with a second time division multiplex system, each of the PCM words being identified by a receiving and sending index and an address number allotted to the file through which the PCM words will be transferred from the first time stage to the second time stage, a clock means for the exchange including a clock generator defining the first and second time slots to have equal durations and the start of a first time slot coinciding with the start of a second time slot, the clock means also including means for generating in each of the second time slots two successive activating pulses, the exchange further including first and second scanning means connected to the clock means for performing memory scanning operations in synchronism with the first and second time division multiplex systems, respectively, said time stage system comprising a plurality of time substages, each of said time substages being connected to at least one associated incoming link and to at least one associated outgoing link of the transmission links and comprising a plurality of identical time stage units each being connected to all of the incoming and outgoing links connected to its time substage and furthermore connected to one associated file of the files going to and connected to one associated file of the files coming from the file contact plane cooperating with the time stage unit, each time substage including as many time stage units as there are file contact planes in the space stage, each time stage unit comprising at least one receiving word memory and at least one sending word memory which for writing and reading of PCM words, respectively, are connected to their respective link of the links associated with the time substage and to the first scanning means whereby PCM words are transferred between the associated links and the sending and receiving word memories under the control of said first scanning means, said receiving and sending word memories being provided with a receiving and a sending decoder means for decoding receiving and sending indices, respectively, and being connected to the outgoing and incoming file associated with the time stage unit, each time stage unit further comprising a receiving index memory and a sending index memory for storage of the receiving and sending indices, means for connecting said receiving index memory and said sending index memory to said receiving and sending decoder means, respectively, and means for connecting said second scanning means to said sending index memory and said receiving index memory whereby PCM words are transferred between the associated files and the sending and receiving memories at times indicated by the index memories under control of said second scanning means, and an address memory for storage of the address numbers allotted to the files coming from the space stage, said address memory when reading being connected to the second scanning means and to the file going to the space stage, each time stage unit furthermore comprising first blocking means connected to the clock generator for preventing, during the first of the successive activation pulses, reading from the receiving word memories and writing into the sending word memories, and for preventing, during the second of said successive activation pulses, writing into the receiving word memories and reading from the sending word memories and from the address memory.

3,864,526

TELEPHONE CALL DISTRIBUTION SYSTEM WITH TRUNK INDENTIFICATION

Robert M. Pirnie, Jr., and Robert M. Pirnie, III, both of Montgomery, Ala., assignors to Communication Equipment & Contracting Co., Inc., Union Springs, Ala.

Division of Ser. No. 227,736, Feb. 22, 1972, Pat. No. 3,780,227. This application June 28, 1973, Ser. No. 374,417

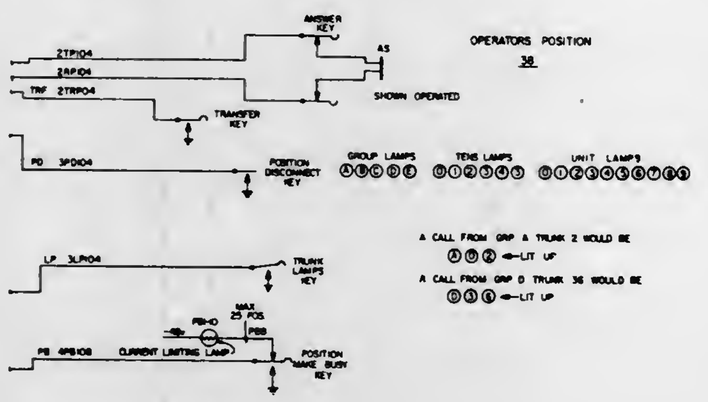
Int. Cl. H04q ***3/72***

U.S. Cl. 179—27 DB **1 Claim**

1. For use with a call answering and allotting transfer system having a plurality of incoming trunk lines at least one trunk

group, and a plurality of operator serviced position circuits and at least one position group; a trunk and position preference and selector circuit comprising:

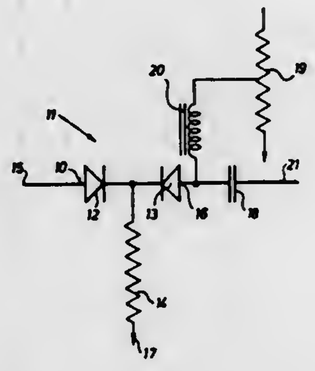
a. electrically conductive means in circuit with said trunk lines for detecting a calling signal on a trunk,
b. means in circuit with said trunk lines for determining which of said trunk groups has an incoming calling trunk,
c. search means adapted to be conductively placed in said position circuit to initiate search of said trunk group to locate an incoming calling trunk,



d. position trunk identifier means for indicating to the operator at an operator serviced position which of the plurality of trunks is the calling trunk, and
e. conductive means adapted to be placed in circuit with said position group to connect said operator serviced position to said incoming calling trunk.

3,864,527
INTERCOMMUNICATION SYSTEM USING CONTROLLED GATES

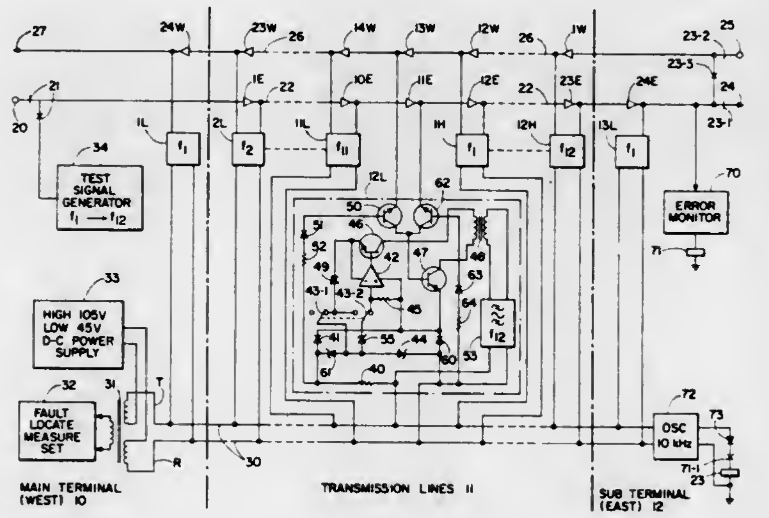
Robert Topping, Port Glasgow, Scotland, assignor to James Henry Knox, Devon, England
Filed Dec. 8, 1972, Ser. No. 313,338
Claims priority, application Great Britain, Dec. 9, 1971, 57141/71
Int. Cl. H04m *9/02*
U.S. Cl. 179—38 **13 Claims**



1. A network incorporating a plurality of three port controlled gates each comprising respective first and second unidirectionally conductive elements connected together with their conduction directions in opposition,
respective first biasing means biasing said first unidirectionally conductive elements to their conduction states, each by a different selected voltage,
a common signal line interconnecting all said second unidirectionally conductive elements,
means for applying signals to said common signal line, and adjustable second biasing means for applying a selected voltage to said common signal line, whereby signals applied to said common signal line by said signals applying means are passed by whichever of said controlled gates has a first unidirectionally conductive element biased, by the associated said first biasing means, by a voltage matching that of said selected voltage applied by said second biasing means, the remaining gates blocking said signals.

3,864,528
FAULT LOCATING SYSTEM FOR A DIGITAL TRANSMISSION SYSTEM

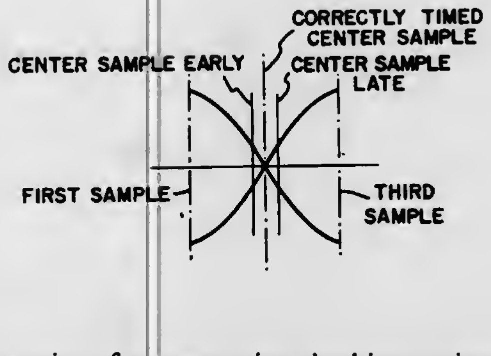
Jan Heynen, Ottawa, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada
Filed Aug. 22, 1973, Ser. No. 390,426
Int. Cl. H04b *1/60, 3/46*
U.S. Cl. 179—175.31 R **3 Claims**



1. A fault locating system for a bipolar digital transmission system including first and second transmission lines having pairs of line repeaters serially connected in opposite directions at adjacent intervals therealong;
a frequency selective filter circuit at each location connected to the outputs of the pair of line repeaters for monitoring the performance thereof, the circuits being divided into two groups which are responsive to corresponding test frequencies, each of the frequencies being unique within a group;
means for transmitting a bipolar test signal along said first transmission line having recurrent unipolar pulses at one of said test frequencies;
a common fault locate line connected to a signal output of each of said frequency selective filter circuits;
means for powering said circuits from said common fault locate line;
each of said frequency selective filter circuits including a control means to actuate the circuits in one group only when the powering voltage is below a selected value and to actuate the circuits in the other group only when the powering voltage is above said selected value;
each of said frequency selective circuits also including means for selecting the output of one or the other of the pair of line repeaters connected thereto in response to the d-c polarity of the powering voltage connected to said common fault locate line;
means for detecting errors in the bipolar signal being received at the end of said first transmission line;
means for detecting the d-c powering voltage on the common fault locate line; and
means responsive to the error detector and the voltage detector for routing the output of the first transmission line back to the input of the second transmission line.

3,864,529
RECEIVER FOR DECODING DUOBINARY SIGNALS

Robert J. Tracey, and Robert P. Lombaerde, both of San Mateo, Calif., assignors to Lynch Communication Systems, Inc., San Francisco, Calif.
Filed Sept. 14, 1972, Ser. No. 288,968
Int. Cl. H04l *7/02*
U.S. Cl. 178—69.5 R **13 Claims**

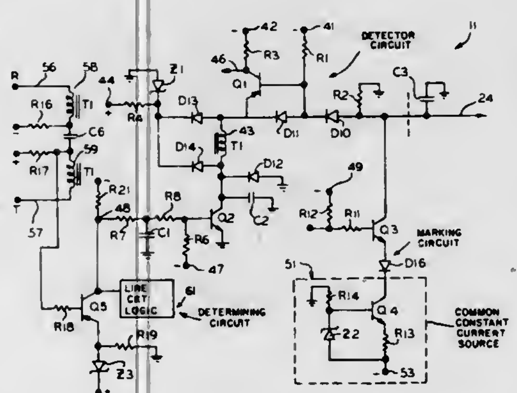


1. In a receiver for converting duobinary signals to binary data, a self-correcting clock circuit comprising:

a. a source of duobinary signals;
b. a source of strobe signals;
c. comparator means connected to said signal sources so as to compare the level of said duobinary signal at the node of its "eye" pattern to a plurality of predetermined reference levels;
d. clock means for producing clock pulses, said strobe signals having the same frequency as said clock pulses;
e. means for varying the frequency of said clock means;
f. binary logic means connected to said comparator means and said clock means for producing a binary timing correction output in accordance with the relation of the center sample of a sample sequence representing a ±1, 0, ∓1 transition of the duobinary analog signal to one of said reference levels; and
g. integrator means connected to said logic means for integrating said binary correction output over a substantial number of cycles;
h. the output of said integrator means being connected to said clock-frequency-varying means to vary said frequency in such a manner as to shift the phase of said strobe signals to keep them centered upon the node of the duobinary "eye."

3,864,530
LINE CONTROL CIRCUIT

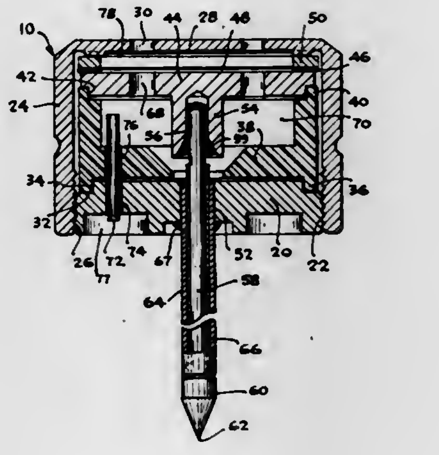
Alfred Hestad, 2518 N. Kilbourn, Chicago, Ill. 60639
Filed June 21, 1973, Ser. No. 372,224
Int. Cl. H04q *3/52*
U.S. Cl. 179—18 GE **9 Claims**



1. An improved line circuit arrangement for use in conjunction with multi-stage switching networks,
said arrangement including a plurality of line circuits,
at least some of said line circuits connected to a first stage switching matrix of the multi-stage switching network over a first multiple,
at least some of said line circuits including detector means connected to said first multiple operating to determine when a path is switched through said switching network, said detector means operative when the telephone associated with a line circuit having a detector means is in the off hook or the on hook condition,
making means operated responsive to the operation of said detector means for marking said first multiple, and
said marking means comprising a constant current source common to a plurality of said line circuits.

3,864,531
MICROPHONE AND CONNECTOR UNIT THEREFOR

Alan Reed Watson, Niles, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.
Filed Oct. 29, 1973, Ser. No. 410,811
Int. Cl. H04r *1/02, 1/28, 19/04*
U.S. Cl. 179—121 R **14 Claims**



1. A microphone unit adapted to engage a connector unit disposed on the opposite side of a part of the clothing of a person using the microphone comprising a housing provided with a front perforated side, a back side opposite the front perforated side having an opening confronting the front perforated side, and a continuous peripheral wall acoustically sealed at the perimeter of the front side and the back side to define an inner chamber acoustically coupled to the exterior of the housing through the front perforated side, an electrically conducting plate disposed within the chamber and having a flat surface confronting the front perforated side, said plate being acoustically sealed on the peripheral wall to form a first cavity between the said surface of the plate and the front perforated side of the housing and a second cavity between the plate and the back side of the housing, a plastic diaphragm disposed in the first cavity spaced from and parallel to the flat surface of the plate, said diaphragm having an electrically conducting film on the surface thereof and carrying an electrical charge with respect to the plate, an electrical connector assembly mounted on the back side of the housing and extending through the opening thereof, said assembly having a unitary rigid elongated central pin of electrically conducting material in abutment with and electrically connected at one end on the plate and extending from the chamber of the housing to the exterior thereof, said electrical connector assembly having a rigid electrically conductive sleeve disposed about the pin and spaced therefrom, said sleeve being electrically connected to the film of the diaphragm.

3,864,532

TONE RINGER WITH A NEGATIVE IMPEDANCE AMPLIFIER

Petrie Johan Van Der Plaats, Hilversum, and Eduard Willem Van Zuuren, Emmasingel Eindhoven, both of Netherlands. assignors to U.S. Philips Corporation, New York, N.Y

Filed Nov. 11, 1971, Ser. No. 197,855

Claims priority, application Netherlands, Nov. 24, 1970, 7017136

Int. Cl. H04m *1/26*

U.S. Cl. 179—84 T **11 Claims**

1. A device for producing acoustic power in response to ringing signals, comprising an electroacoustic converter that exhibits an impedance variation as a function of frequency and is provided with two electrical connection terminals and an acoustic resonator, a two-port amplifier having a negative impedance amplifier, a supply device for converting the ringing signals into a supply voltage for the amplifier, means directly connecting the two electrical connection terminals of the electro-acoustic converter to the two ports of said amplifier, the electro-acoustic converter being arranged so that at a given frequency there occurs a maximum magnitude of electrical impedance between the electrical connection terminals with the angle of this impedance being equal to zero.

3,864,533

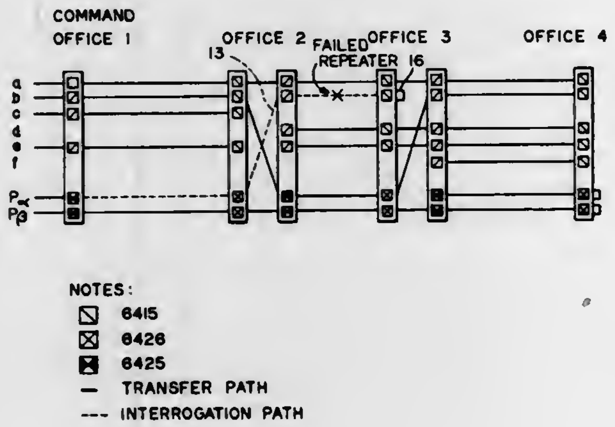
AUTOMATIC LINE TRANSFER SYSTEM AND METHOD FOR A COMMUNICATIONS SYSTEM

Anthony H. Erlund, Sunnyvale, Calif., assignor to Vidar Corporation, Mountain View, Calif.

Filed June 1, 1973, Ser. No. 365,846

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 R **14 Claims**



1. In a communications system having a plurality of working lines each of said working lines including a plurality of spans having ends beginning and terminating at offices remote from a command office, an automatic line transfer system for automatically switching the ends of a working line corresponding to both ends of a failed span of one of said plurality of working lines to a protection line without service interruption said transfer system comprising: means for sensing a failed span of a working line; means responsive to said sensing means for switching said ends of said working line corresponding to both ends of said failed span to a corresponding span of said protection line whereby said failed span is looped around; and means for cross-connection said failed span to the preceding span of said protection line to connect said failed span to said command office.

3,864,534

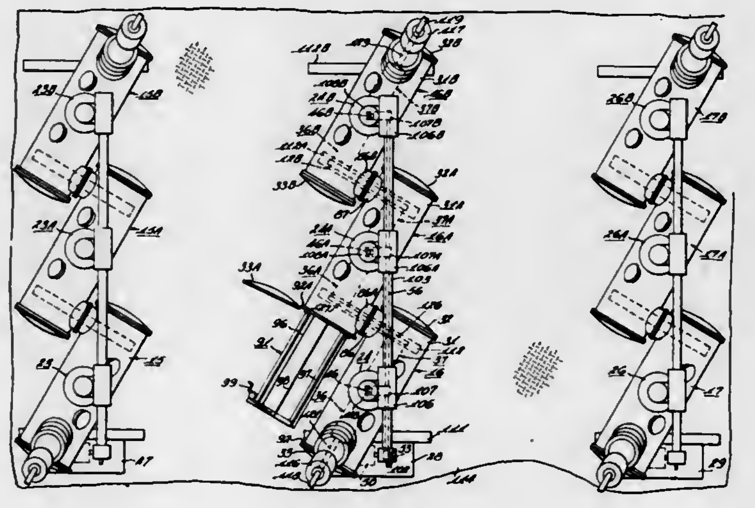
MODULAR GAS INSULATED CIRCUIT BREAKER SYSTEM

Edwin C. Goodwin, Jr., Canton; Lynne A. Holden, Jamaica Plain, and Gerardus J. Meinders, Norfolk, all of Mass., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed July 18, 1973, Ser. No. 380,249

Int. Cl. H01h *33/54*

U.S. Cl. 200—148 R **6 Claims**



1. In a modular substation;

a plurality of gas insulated circuit breaker units arranged in axial parallelism wherein each circuit breaker unit includes;

an enclosure containing an insulating gas at a first pressure;

a pair of series connected contacts;

a separate tank carried by said enclosure exteriorly thereof and containing an insulating gas at a relatively higher second pressure;

blast valve means carried by said enclosure and operatively arranged to interconnect said high pressure gas tank to the interior of said enclosure;

contact and blast valve actuating means carried by said enclosure and operably connected to be operated simultaneously to effect substantially simultaneous opening of said contacts and said blast valve means;

port means operatively interconnecting said enclosures of said circuit breaker units in communicating relationship to provide an electrical passageway between adjacent enclosures;

sealing means within said interconnecting means to isolate one circuit breaker unit from another to maintain the gas tight integrity of each enclosure;

means extending between said circuit breaker units within said enclosures through said port means and said sealing means to establish an electrical series relationship between the contacts of said circuit breaker units; and,

a single mechanical operating means external of said circuit breaker unit enclosures and operably connected to effect the simultaneous operation of each of said circuit breaker contact and blast valve actuating means.

3,864,535

CONTROL SWITCH ASSEMBLY

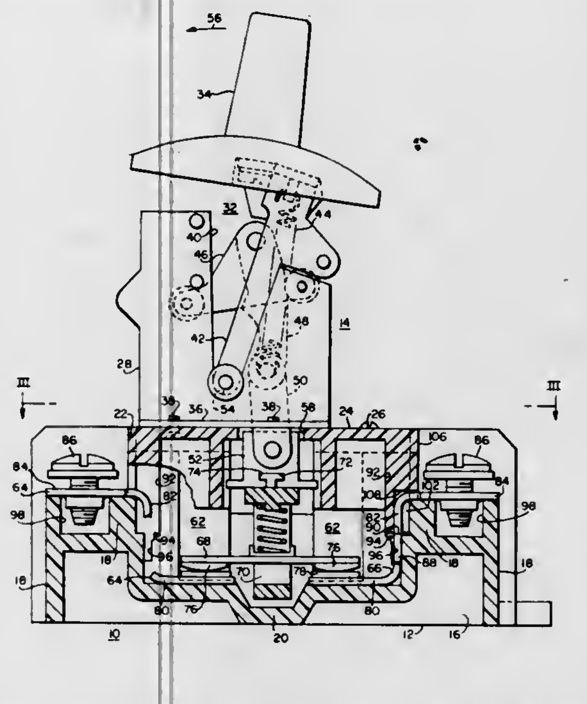
Edward L. Richards, Aliquippa, and Stephen S. Dobrosielski, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 410,154

Int. Cl. H01h *9/08*

U.S. Cl. 200—281 **12 Claims**

1. A switch device comprising an electrically insulating housing having housing walls forming a chamber, a cover detachably mounted on the housing, at least one set of contacts within the housing and comprising stationary contacts and movable contacts movable between open and closed positions with the stationary contacts, means for moving the movable contacts, the stationary contacts for each set of contacts comprising contact structure having a contact portion, an intermediate portion, and a terminal portion, the cover and housing having mutually interfitting portions for clampingly retaining the stationary contacts in place within the chamber when the cover is in place on the housing, the stationary contacts being removable from the chamber when the cover is detached, the cover and housing forming an access opening through which the terminal portion extends, the mutually interfitting portions comprise a projection on the cover extending in the direction of insertion of the cover onto the housing, and the projection being in surface-to-surface contact with the intermediate portion of the stationary contacts.



3,864,536

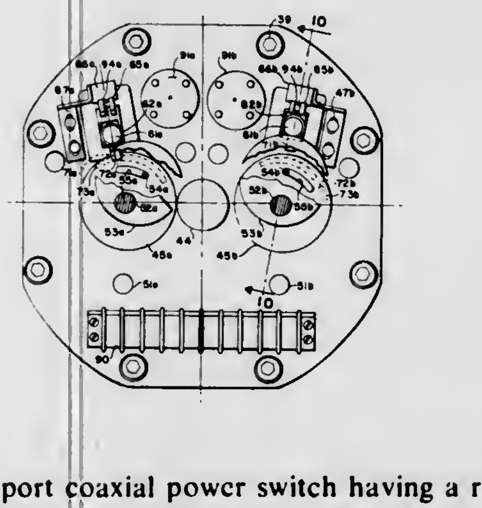
COAXIAL TRANSFER SWITCH

Thomas J. Vaughan, 201 Ray St., Manchester, N.H. 03104, and Richard A. Hickey, 622 Prescott St., Manchester, N.H. 03103

Filed Nov. 16, 1972, Ser. No. 307,193

Int. Cl. H01h *43/00*

U.S. Cl. 200—37 A **10 Claims**



1. In a multi-port coaxial power switch having a rotor for interconnecting ports, means for actuating the rotor comprising,

a first electrical drive for driving the coaxial switch from a second position to a first position,

first drive means from the first electrical drive to the rotor, said first drive means including a first cam and a first gear directly driving the rotor and first means inter-connecting the first cam and first gear,

a second electrical drive for driving the coaxial switch rotor in the opposite direction from the first position to the second position,

second drive means from the second electrical drive to the rotor,

switching means for coupling electrical power from a source to the first and second electrical drives,

whereby the first and second electrical drives are energized at different first and second intervals to position the switch at the first and second positions, respectively.

3,864,537

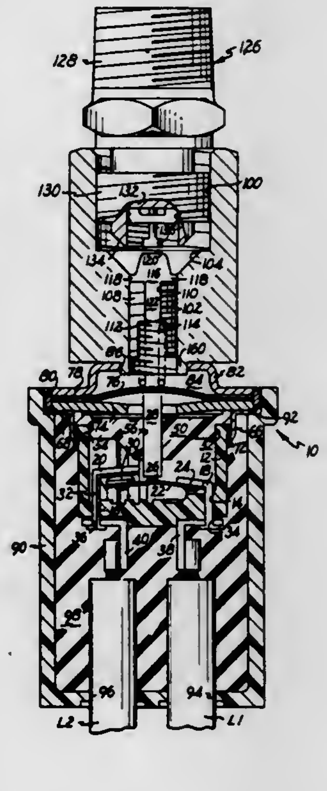
PRESSURE RESPONSIVE APPARATUS INCLUDING VALVE ACTUATING MEANS

Peter O. Fiore, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1973, Ser. No. 351,751

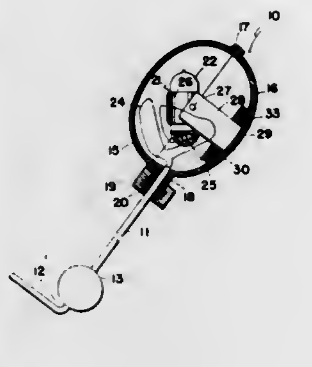
I... Cl. H01h *35/34*

U.S. Cl. 200—83 S **6 Claims**



1. In combination with a pressure responsive switch having a housing and a pressure responsive diaphragm mounted in the housing and movable from a first configuration to a second opposite configuration the motion from the diaphragm transmitted to a movable electric contact which is adapted to move into and out of engagement with a stationary contact upon movement of the diaphragm from one configuration to the opposite configuration and a port fitting for reception of pressure to a surface of the diaphragm, the port fitting provided with a threaded bore, a bored adjustive screw disposed in the threaded bore and a spring extending from the screw to the pressure responsive diaphragm whereby the bias of the spring can be adjusted by movement of the adjusting screw, a coupling containing an axially actuatable valve and on which the port fitting is mounted, the improvement which comprises an actuating element positioned in the port fitting in alignment with the axially actuatable valve whereby the valve is actuated upon mounting of the port fitting on the coupling, the actuator element being formed of material having a first hardness and the port fitting is formed of material having a second hardness softer than the said first hardness and the element is pressed into and cuts threads of the threaded bore of the port fitting to lock it in place, the actuator element having a stem depending therefrom, the stem extends into the bore of the adjusting screw and fits loosely enough to permit relative movement between screw and stem and tightly enough to prevent any tendency of the actuating element to twist.

3,864,538
FLOAT TYPE LIQUID LEVEL SWITCH
Arthur George Paradis, and Guy B. Paradis, both of Box 96, Dunrea, Manitoba, Canada
Filed May 4, 1973, Ser. No. 357,398
Claims priority, application Canada, May 18, 1972, 142635
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 B **1 Claim**

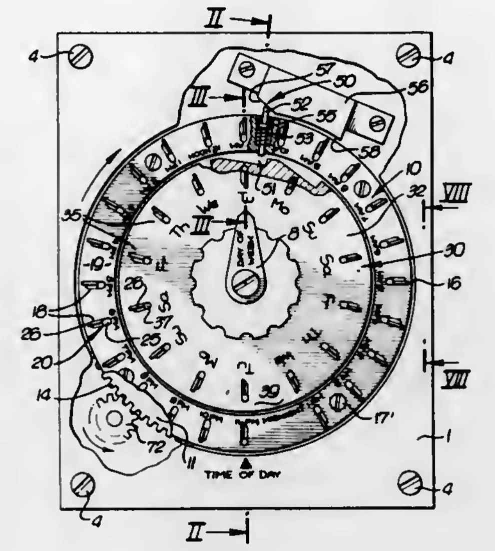


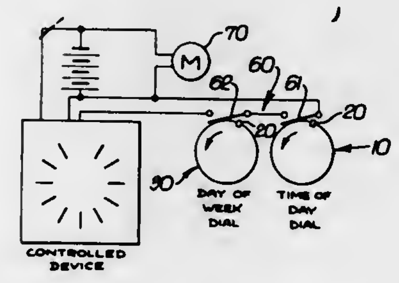
1. In a liquid level float assembly which includes a supporting electrical conductor and means adjacent to but spaced from the lower end of said conductor to maintain said conductor relatively vertical; a sealed plastic shell, a screw threaded stem extending from one end of said shell, gland nut means screw threadably engageable around said conductor and said screw threaded stem to sealably secure said shell to the lower end of said conductor with said lower end entering said shell, means controlled by the attitude of said shell to make and break electrical connections within said lower end of said cable, said last means including a tube capable of adopting a switched closed attitude and a switched open attitude, switch contacts in one end of said tube being operatively connected to said lower end of said cable a quantity of mercury within said tube sufficient to envelop said switch contacts when said tube is in the switched closed attitude and means pivotally mounting said tube intermediate the ends thereof whereby said tube can pivot around a transverse axis thereof to said switched closed and to said switched open position, said means pivotally mounting tube including a pair of upwardly extending spaced and parallel supports secured to the base of said shell, a support clip surrounding said tube centrally thereof, means to pivot said support clip to said supports for tilting action, and shock absorber means on said base to receive the ends of said tube when same tilts from one position to the other and vice versa.

3,864,539
DAY AND HOUR CONTINUOUSLY CYCLING TIMING CONTROLLER WITH ADJUSTABLE CAM ACTUATORS
Fred Hauser, 1544 Midvale, Los Angeles, Calif. 90024
Filed Feb. 19, 1974, Ser. No. 443,380
Int. Cl. H01h *43/20*
U.S. Cl. 200—38 DA **15 Claims**

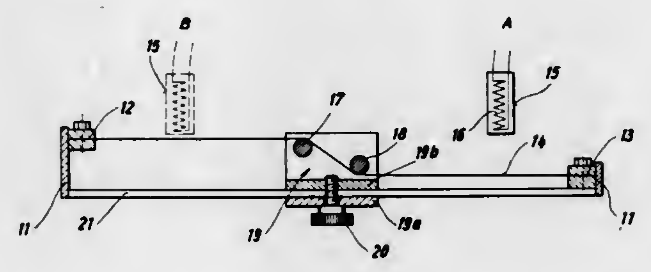
1. A day and hour timer apparatus for activating a controlled device at selectable times over a period of days comprising:

a. an hour timer having a plurality of locations corresponding to hours of the day and adjustable switch actuating means at each location on said hour timer;
b. a day timer having a plurality of locations corresponding to days of the week and adjustable switch actuating means at each location on said day timer;
c. mounting means for mounting said hour timer and said day timer concentrically and for concentric rotation under urging of an associated drive means; and
d. switch means and means for positioning said switch means in association with said timers for actuation by said switch actuating means.





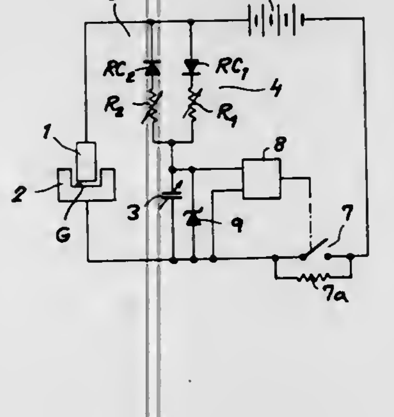
3,864,540
CONTROL ARRANGEMENT FOR ACTUATING A SWITCHING CONTACT ON A MOVABLE MACHINE PART
Wilhelm Saumer, Emmerdingen, Germany, assignor to Kloeckner-Ferromatik GmbH, Malterdingen, Germany
Filed Nov. 17, 1971, Ser. No. 199,594
Claims priority, application Germany, Nov. 21, 1970, 2057277
Int. Cl. H01l *36/00*
U.S. Cl. 200—153 R **1 Claim**



1. In a machine having movable parts, a control arrangement for actuating at least one switching contact, comprising in combination,

an actuating member;
a switching contact, said actuating member and switching contact being adapted to move relative to each other, said movement corresponding to the movement of a part of said machine;
a flexible flat band operatively mounted in said actuating member;
said switching contact being adapted to be actuated by said flat band when said switching contact has reached a predetermined first position relative to said flexible flat band and being adapted to be de-actuated when said switching contact has moved from said first position to a predetermined second portion relative to said flat band;
means operatively connected to said flat band for adjusting the position of said flat band relative to said switching contact; and
a shaft rotatably mounted in said actuating member and being biased to rotate in one direction, one end of said flexible flat band being secured to said shaft and the other end of said flat band being secured to said adjusting means, said adjusting means being adjustably movably mounted longitudinally with respect to said flat band on said actuating member.

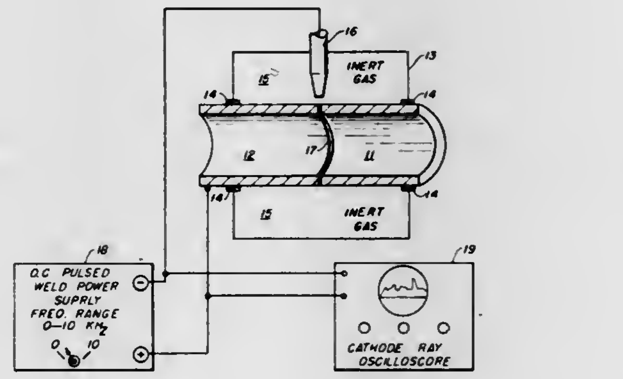
3,864,541
SYSTEM FOR THE CONTROLLING OF AN APPARATUS FOR THE ELECTRIC DISCHARGE MACHINING ETC.
Kiyoshi Inoue, 16-8, 3-chome, Kamiyoga, Setagayaku, Tokyo, Japan
Continuation-in-part of Ser. No. 272,463, July 17, 1972, Pat. No. 3,781,507, which is a division of Ser. No. 19,364, March 13, 1970, Pat. No. 3,686,461. This application Oct. 23, 1973, Ser. No. 408,382
Claims priority, application Japan, Feb. 20, 1973, 48-20341; Feb. 21, 1973, 48-21015; Mar. 3, 1973, 48-25832; May 17, 1973, 48-55019; July 26, 1973, 48-83586; Sept. 12, 1973, 48-102208; Mar. 13, 1969, 44-18991; Apr. 2, 1969, 44-25317; Apr. 2, 1969, 44-25318; Apr. 30, 1969, 44-33960; May 30, 1969, 44-42188; Nov. 1, 1969, 44-87832; Nov. 26, 1969, 44-94741; Nov. 26, 1969, 44-94742
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 C **12 Claims**



1. In an electric discharge machining apparatus in which a tool electrode is spacedly juxtaposed with a workpiece electrode across a dielectric-swept gap, the improvement which comprises:

a source of machining current connected to said electrodes;
on-off switch means in circuit with said source and said electrodes and adapted to be rendered conductive and nonconductive selectively by a gating signal to apply a voltage pulse to said gap, thereby effecting an electrical discharge between said electrodes;
means for deriving an analog signal representing the current traversing said gap;
converter circuit means for transforming said analog signal into a train of digital pulses of a frequency proportional to said analog signal;
a counter for counting said digital pulses and producing an output signal upon the number of digital pulses detected by said counter attaining a predetermined number; and
a gate circuit connected to said counter and operated by said signal for terminating said gating signal to said switch means to terminate the discharge.

3,864,542
GRAIN REFINEMENT CONTROL IN TIG ARC WELDING
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; William F. Iceland, 11711 Reagan St., Los Alamitos, Calif. 90720 and Edwin L. Whiffen, 1019 Verona Dr., Fullerton, Calif. 92635
Filed Nov. 13, 1973, Ser. No. 415,486
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **5 Claims**



1. A method for controlling grain size and weld puddle agitation in an inert gas atmosphere welding operation, comprising the steps of:

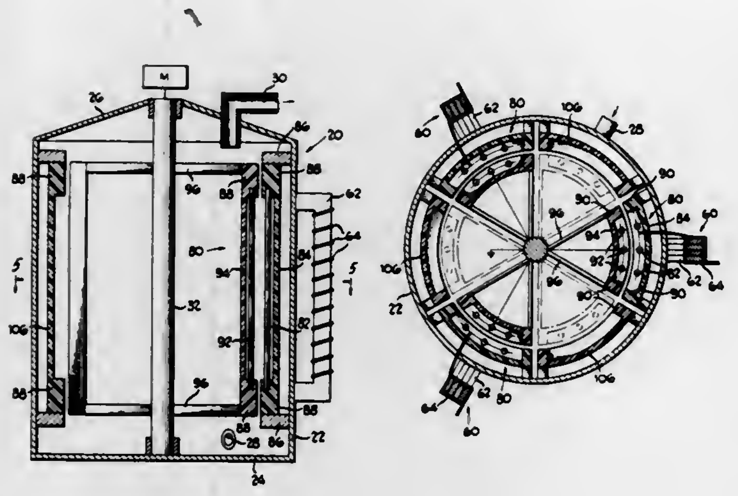
supplying DC voltage pulses between a welding electrode and a pair of members to be welded in the presence of an inert gas atmosphere, said DC voltage pulses being of equal time duration;
sensing the voltage in the electric arc formed in said inert gas between said electrode and said member being welded;
varying the operating frequency of said DC voltage pulses from a lower frequency to a higher frequency over a preselected frequency range;
selecting the frequency in said preselected frequency range which produces a maximum value of said sensed arc gas voltage; and
maintaining the operating frequency at said selected frequency producing said maximum value of arc gas voltage to thereby produce maximum weld puddle agitation and fine, uniform grain size in the weld zone.

3,864,543
CONTINUOUSLY MODULATED ELECTRODE BOILER
Glenn R. Mohr, Linthicum, Md., assignor to Mohr-Baker Co., West Chicago, Ill.
Filed May 29, 1973, Ser. No. 364,679
Int. Cl. H05b *3/60, 1/02*
U.S. Cl. 219—285 **11 Claims**

1. An electrode boiler comprising:

A. An electrically conductive container means;
B. A pair of relatively movable electrodes within said container means for creating a current path through a fluid within said container means;
C. A variable reactance adapted to be connected to a power

source and in series with the movable electrodes, said reactance being mounted upon said container and including an inductance means for passing flux through the container means to induce a current therein.



3,864,544

ELECTRIC HEATING UNIT FOR LIQUID

Edward van Amerongen, Wilmette, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.

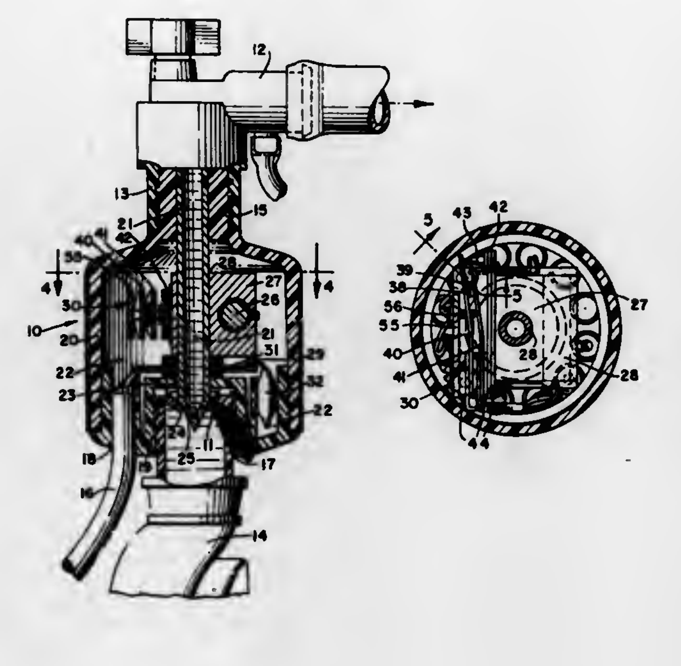
Filed Sept. 13, 1973, Ser. No. 396,782

Int. Cl. H05b *1/02;* **B67d** *5/62*

U.S. Cl. 219—301 **10 Claims**

1. An electric heating unit for heating a rising column of liquid adapted to be screwed onto a liquid receptacle having an upwardly facing threaded portion adapted to receive the unit, the receptacle being closed at said threaded portion by a breachable membrane, and adapted to be screwed onto a nebulizer having a downwardly facing threaded portion adapted to receive the unit, so that the unit can be functionally disposed between the receptacle and the nebulizer, comprising:

a housing having an upwardly facing threaded portion which can be mated with the threaded portion of said nebulizer, and a downwardly facing threaded socket whereby the unit can be screwed onto the threaded portion of said receptacle, said socket having concentrically a tubular apertured breaching means adapted at one end to extend into the threaded portion of the receptacle when the unit is screwed thereon to breach said membrane;
a tubular member within said housing having one and in fluid communication with the other end of said tubular means and the other end disposed concentrically within the upward facing threaded portion of said housing;
an electric heater disposed in heat exchange relationship to the tubular member;
a thermostat disposed adjacent said heater and electrically connected to control said heater; and
an electric power cord passing into said housing through a hole therein and connected to the heater and the thermostat.



3,864,545

APPARATUS AND METHOD FOR HEATING SOLID SURFACES

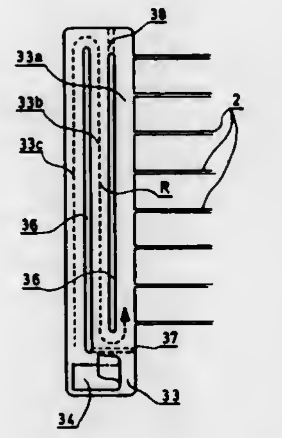
Wolfgang Schafer, and Helmut Brook, both of Aachen, Germany, assignors to Saint-Gobain Industries, Neuilly sur Siene, France

Filed Sept. 27, 1972, Ser. No. 292,770

Claims priority, application France, Sept. 30, 1971, 71.35161

Int. Cl. B60l *1/02*

U.S. Cl. 219—203 **6 Claims**



1. A window comprising a transparent sheet, a plurality of opaque resistive conductors substantially coextensive in length adhered in spaced substantially parallel relation to a surface of the sheet, said conductors having a width small compared to their spacing, at least two bus bands made of electrically conductive material and having a width wider than said conductors, said bus bands adhered to said surface of the sheet and connecting said conductors electrically in parallel, a current terminal connecting to each of said bus bands, and at least one of said bus bands having elongated aperture means therethrough extending lengthwise of said bus band with an end of said aperture means close to said terminal, said conductive material being removable selectively from said sheet whereby upon said selective removal over a path extending from said aperture means to the outer periphery of said at least one bus band the current path between the current terminal connecting to said at least one bus band and said conductors will be increased in length.

3,864,546

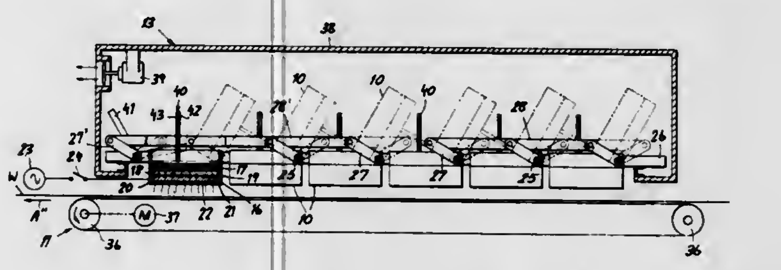
SYSTEM FOR IRRADIATING A DISCONTINUOUSLY MOVING WEB

Hugo N. Cahnman, Kew Gardens, N.Y.; Frank Sterne, Wyckoff, N.J., and Douglas M. Canfield, White Plains, N.Y., assignors to Casso-Solar, Kew Gardens, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,530

Int. Cl. H05b *3/20*

U.S. Cl. 219—354 **2 Claims**



1. An apparatus for radiantly treating a discontinuously displaced web, said apparatus comprising:

a plurality of panels each having a radiation-emitting surface normally directed at said web at a location and pivoted about a respective axis;
means for detecting displacement of said web past said location;
means connected between said detecting means and said panels for pivoting each of said panels about said axis and directing said surface away from said web upon detection of an interruption in displacement of said web, said pivoting means being operatively connected to all of said panels; and
respective shields each displaceable into a position between a respective radiation-emitting surface and said web in the position of said panels wherein the surfaces are directed away from said web, at least one of said shields extending from the back of one of said panels generally perpendicularly thereto and being engageable with the panel immediately adjacent thereto when said panels are directed away from said web.

3,864,547

SAFETY PORTABLE RADIANT TYPE ELECTRICAL HEATER

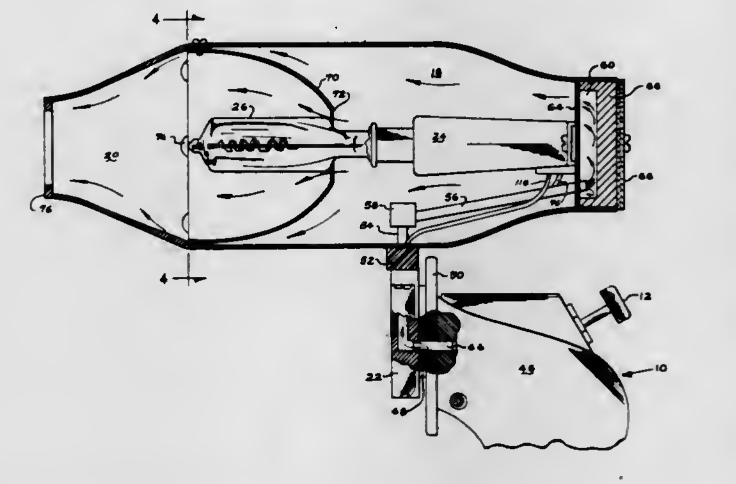
Jimmy C. Ray, Denison, Tex., assignor to Industrial Innovations, Inc., Denison, Tex.

Continuation-in-part of Ser. No. 239,692, March 30, 1972, Pat. No. 3,792,230. This application Sept. 21, 1973, Ser. No. 399,607

Int. Cl. H05b *1/02;* **F21v** *29/00;* **H05b** *3/00*

U.S. Cl. 219—343 **2 Claims**

1. In a soldering device having
a. a base,
b. a lamp attached to the base,
c. a reflector surrounding the lamp for focusing the heat rays emitted therefrom, and
d. a power source of electricity for the lamp connectable thereto,
e. The improved Structure for cooling the lamp and reflector and for purging the work comprising:
f. a shroud having
  i. a circular cross section with
  ii. an axis extending along the focal axis of the reflector,
  g. a base plate to which the base is attached in the shroud,
gg. said shroud
  i. surrounding said base, lamp, and reflector,
  ii. spaced from the reflector to form an annular area therebetween, and
  iii. having an open front through which the heat rays are projected by the reflector,
h. a block in the rear end of the shroud, including means cooperating with the base plate to form
j. a plenum between the base plate and block,
k. tube means for supplying pressurized gas to the plenum,
  m. perforations through the base plate to pass gas from the plenum around the base and into the space between the reflector and the shroud,
n. an opening in the reflector around the lamp to pass gas around the lamp,
0. a nozzle attached to the front of the shroud,
p. tuyeres between the shroud and the reflector at the nozzle attachment to pass gas from the annular area outside the reflector into the nozzle,
q. said nozzle having an outlet through which said gas and said heat rays are emitted,



r. the cross sectional area of the attachment of the nozzle to the shroud being at least four times greater than the cross sectional area of the outlet of the nozzle,
s. said nozzle also functioning to protect the bulb from breakage,
t. a switch means responsive to the flow of gas to the plenum for connecting the power source to the lamp,
u. a flow path for gas connected to said tube means,
v. a movable magnet in the flow path, wherein
w. said switch means is magnetically actuated responsive to the position of said magnet, and
x. a pistol-grip handle having
  i. an index finger bight,
  ii. a forward portion where the fingers encircle the grip, and
  iii. a back where the palm contacts the grip,
y. said pistol-grip handle attached to the shroud,
z. the entire device having a center of gravity,
aa. the center of gravity located between lines extended from the forward portion of the grip and the back of the grip.

3,864,548

MACHINE FOR READING ARTICLE CARRING CODED INDICIA

John Tettemer O'Neil, Jr., Princeton; Angelo Pelios, Somerville; Allen Henry Simon, Hightstown, all of N.J., and Frank George Nickl, Morthboro, Mass., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,322

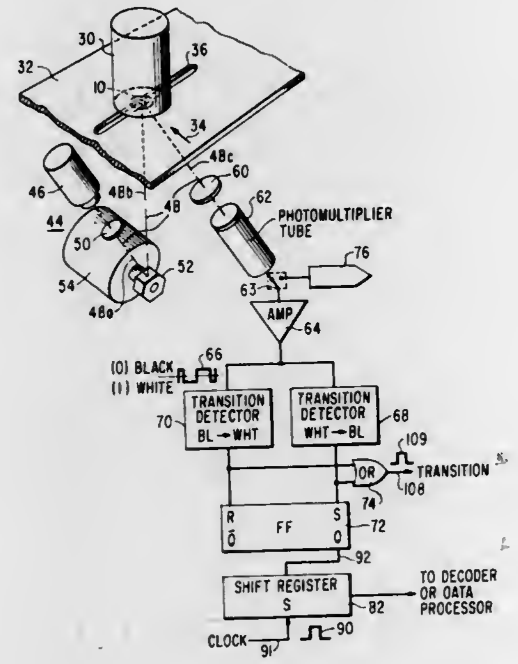
Int. Cl. G06k *7/10;* **G08c** *9/06*

U.S. Cl. 235—61.11 E **9 Claims**

1. Apparatus for reading a label of the type having binary information exhibiting two contrasting characteristics presented serially along a reference line, the label having a start section and a data section, the start section comprising a

plurality, X, of said two contrasting characteristics in an alternating pattern, each characteristic being of a given unit width U, the data section comprising a plurality of said characteristics in an alternating pattern, each of said plurality of characteristics of said data section being of any multiple from one through N of unit width U, where N is an integer greater than two, comprising in combination:

means for scanning said label along said reference line, at a rate which may vary as the scan progresses, for producing a scan signal corresponding to the characteristic pattern being scanned, the scan passing first over said start section than over said data section;



means responsive to the transitions in said scan signal while scanning said start section for determining and storing a signal indicative of the average time to scan a unit width U;

means responsive to said scan signal while scanning said data section and to said signal indicating the average time to scan a unit width U for determining the number of unit widths of a characteristic being scanned; and

means responsive to a transition from one characteristic to the other in the data section, and to the number of unit widths most recently scanned for modifying the signal indicative of the time to scan one unit width.

3,864,549
N-POSITION SCANNER HAVING PLURAL SEQUENTIALLY ENABLED DECODERS

Michael Joseph Yaccino, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 7, 1973, Ser. No. 422,955

Int. Cl. G06r *7/00*

U.S. Cl. 235—61.11 R **10 Claims**

1. A multiple position scanning circuit comprising:

first and second interconnected binary counters, each binary counter having a plurality of stages;

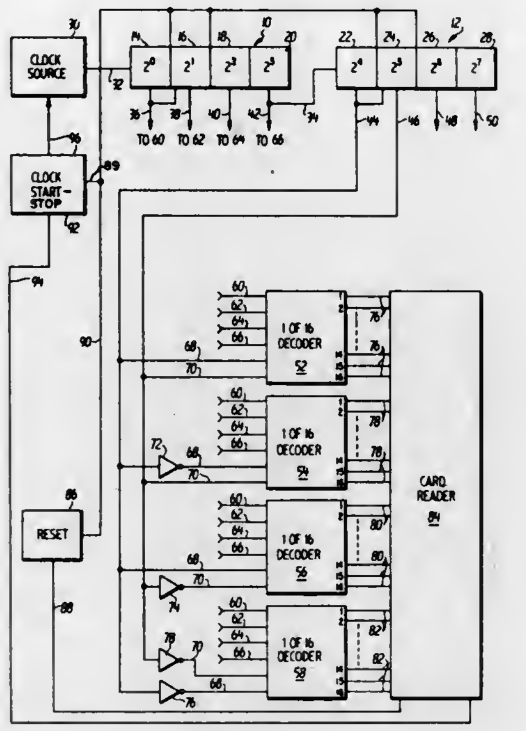
counter stage output means coupled to each of said plurality of stages for providing output signals representative of the state of each said stage,

a source of clock signals coupled to said binary counters for permitting said counters,

a plurality of 1-of-*n* decoders coupled to said binary counters, each having a plurality of decoding inputs, a plurality of enabling inputs and a plurality of scanning outputs,

first circuit means coupled between said counter stage output means of said first binary counter and said decoding inputs of each of said decoders for applying said signals representative of the state of each counter stage to said decoders; and,

second circuit means coupled between at least one of said counter stage output means of said second binary counter and said enabling inputs of each of said decoders for sequentially enabling said plurality of decoders,



whereby said scanning outputs of said plurality of decoders are sequentially scanned as said clock signals are applied to said binary counters.

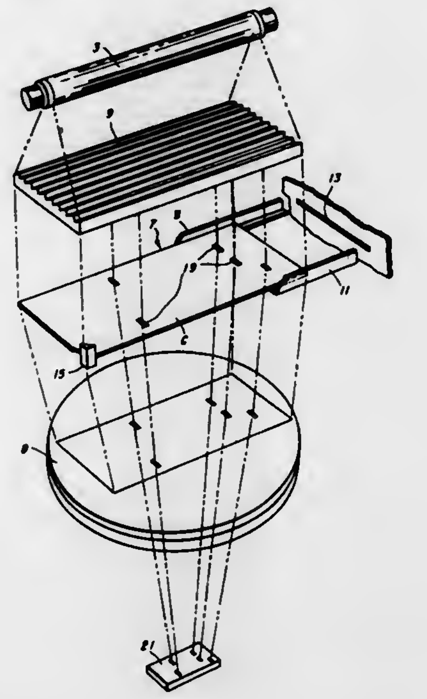
3,864,550
CHARGE COUPLED DEVICE

Harvey George Cragon, Austin, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 27, 1974, Ser. No. 446,172

Int. Cl. G06k *7/10;* G11c *11/34, 11/42*

U.S. Cl. 235—61.11 E **4 Claims**



1. A reader for reading information stored in cards by means of holes formed therein, which comprises:

a. means for holding punched cards with predetermined alignment, said cards having locations thereon in which holes have been formed in a predetermined patter;

b. a charge coupled imager having a plurality of frames; and

c. means for directing light through said holes in the punched card and for focussing said light on corresponding frames of said charge coupled imager;

d. said frames of the charged coupled imager having a total area greater than the focussed area of the punched card.

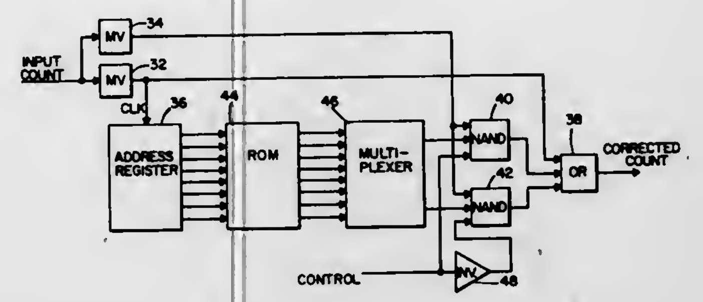
3,864,551
COINCIDENCE CORRECTION CIRCUIT

Arthur Oefinger, Stratford, Conn., assignor to General Science Corp., Bridgeport, Conn.

Filed Mar. 1, 1974, Ser. No. 447,530

Int. Cl. G06m *11/00;* H03k *21/34*

U.S. Cl. 235—92 PC **11 Claims**



1. In a particle counting system including a transducer having an aperture through which particle-containing liquid is caused to flow and means for generating electrical pulses in response to particles passing through said aperture, circuitry for providing correction for the coincident passage of multiple particles through said aperture, said circuitry comprising:

means for providing first pulses in response to said electrical pulses and representative of measured particle count;

means for providing second pulses in response to said electrical pulses;

memory means containing data representing predetermined particle counts at which correction is to occur;

address means operative in response to said first pulses to address said memory means to cause the provision of parallel output codes therefrom;

multiplexer means operative in response to said parallel output codes to provide at least one gating signal;

first gate means operative in response to said at least one gating signal and to said second pulses to provide a correction pulse; and

second gate means operative in response to said first pulses and said correction pulse to provide output pulses representative of a corrected particle count.

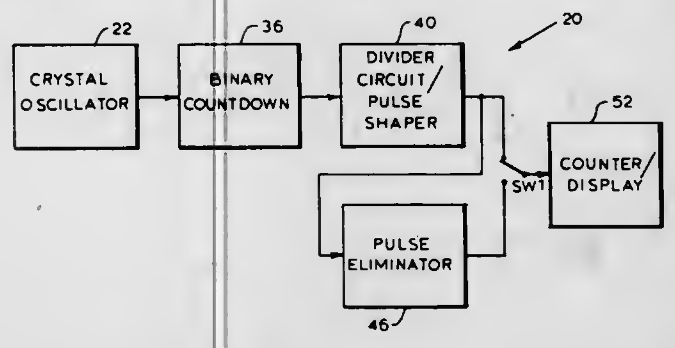
3,864,552
SPEEDCLOCK

Melvin Richard Phillips, P.O. Box 5334, Titusville, Fla. 32780

Filed Mar. 15, 1973, Ser. No. 341,329

Int. Cl. H03k *21/16*

U.S. Cl. 235—92 T **5 Claims**



1. An odometer and speedclock combination comprising:

an odometer for measuring an actual distance of travel;

means for generating a repetitive train of electric pulses;

means coupled to said generating means for counting a given number of said pulses during successive incremental time periods, said number of pulses during each incremental time period being preselected to represent a predetermined increase in a distance equal to a constant speed rate multiplied by the sum of said incremental time periods;

means positioned adjacent said odometer and coupled to the output of said counting means for displaying a count of said pulses as a desired distance of travel;

a pulse eliminating circuit for selectively eliminating a number of input pulses per cycle of input pulses into said counting means;

said input pulses into said counting means being proportional to an increase in a distance equal to a constant speed rate multiplied by the sum of said incremental time periods; and wherein

said odometer and said display means are positioned such that said desired distance of travel can be readily compared to said actual distance measured by said odometer.

3,864,553
RESETTING DEVICE FOR COUNTER DRUMS

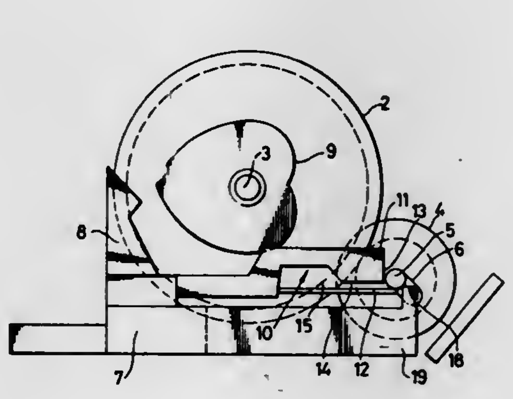
Hans Gunter Krauss, Vohrum, Germany, assignor to Elmeg Elektro-Mechanik GmbH, Peine, Germany

Continuation of Ser. No. 325,428, Jan. 22, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,538

Claims priority, application Germany, Jan. 24, 1972, 2203250

Int. Cl. G06c *15/42*

U.S. Cl. 235—144 HC **10 Claims**



1. In a reset device for resetting the digit drums of a counter wherein the digit drums are couplable by transfer pinions carried on a common shaft, which is movable to disconnect the transfer pinions from digit drums during the return movement of the digit drums the device having means for resetting the digit drums upon advance of a reset slide and holding the digit drums in the reset position unitl the reset slide is being retracted, the improvement of a control member connected to the reset slide and having a particularly contoured cam surface, in which the pinion shaft is engaged for displacement of the pinion shaft, the cam surface of the control member having a first cam surface aligned, so that, in a first phase of actuation and advance of the reset slide, the pinion shaft is engaged therein and the transfer pinions are moved out of engagement with the digit drums; a second cam surface continuing the first cam surface but in a different direction, so that in a second phase of continued and advance actuation of the reset slide, the pinion shaft as engaged therewith causing the out-of-engagement position of the transfer pinions to be maintained, so that the digit drums can be reset by the means for resetting while remaining disengaged from the transfer pinions; and a third cam surface continuing the second surface, again in a different direction, so that in a final phase of the still continued actuation and advance of the reset slide the pinion shaft as engaged therewith is displaced, so that the transfer pinions are moved back and into engagement with the digit drums, while the reset position of the digit drums is actively maintained by the means for resetting, said member and said shaft constructed for relative displacement transverse to the movement of the shaft by operation of the first and third cam surfaces, so that as said reset slide is being moved back to its starting position, the third and second cam surface bypass said pinion shaft and the reset position of the digit drums is not being altered as the reset slide moves back.

3,864,554
TIME DELAY COMPENSATION IN A CLOSED-LOOP PROCESS CONTROL SYSTEM

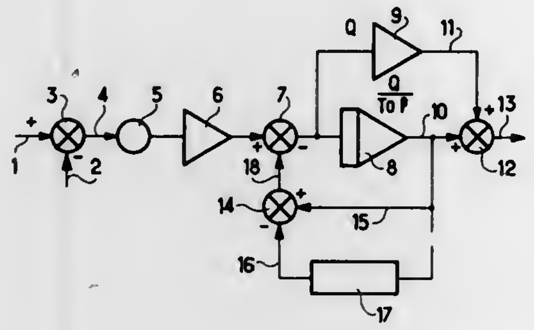
Gabriel Chevalier, Grenoble, and Roland Rouxel, Biviers, both of France, assignors to Societe Generale De Constructions Electriques et Mecaniques (Alsthom), Cedex, France

Continuation-in-part of Ser. No. 211,803, Dec. 23, 1971, Pat. No. 3,790,764. This application Nov. 27, 1972, Ser. No. 309,883

Claims priority, application France, Nov. 29, 1971, 71.42791

Int. Cl. G05f *11/01*

U.S. Cl. 235—150.1 **2 Claims**



1. A feedback control system for regulating a time-retarded process having a transfer function F×G where G represents an equivalent unretarded transfer function and F represents a factor of retardation, the control system input being coupled to a control signal representative of the deviation of a process output from a reference value, the control system comprising: first and second subtracters;

a first group of first linear elements for coupling the error signal from the control system input to the first input of the first subtracter;

a second group of elements including an integrating element and a second linear element, an adder having first and second inputs and an output constituting the output of the control system, first means for connecting the output of the second linear element to the first input of the adder, and second means for connecting the output of the integrating element to the second input of the adder;

third means for connecting the output of the first subtracter to the inputs of the integrating element and the second linear element;

fourth means for connecting the output of the integrating element to the first input of the second subtractor;

a retarding circuit having a transfer function equal to F and coupled between the output of the integrating element and the second input of the second subtractor; and

fifth means for connecting the output of the second subtractor to the second input of the first subtractor.

3,864,555
BEARING DISPLAY DEVICE FOR A PLURALITY OF TARGETS

Francis R. Brinker; Eugene R. Roeschlfin, and David L. Zeph; all of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,311

Int. Cl. G06f *15/50*

U.S. Cl. 235—150.2 **5 Claims**

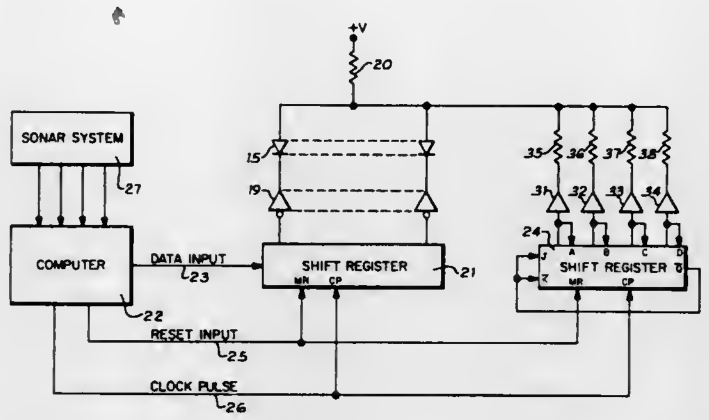
1. A device for displaying positions of a plurality of targets detected by a sonar system relative to a craft comprising,

a stationary housing,

a dial rotatably attached to said stationary housing for indicating direction of travel of a craft,

a plurality of lighting elements positioned around a circumference on said stationary housing for indicating positions of targets,

means for individually energizing said lighting elements, computing means for periodically updating the selection of said lighting elements to be energized, and



means for keeping a constant current flow through each said lighting element that is energized when different numbers of lighting elements are energized.

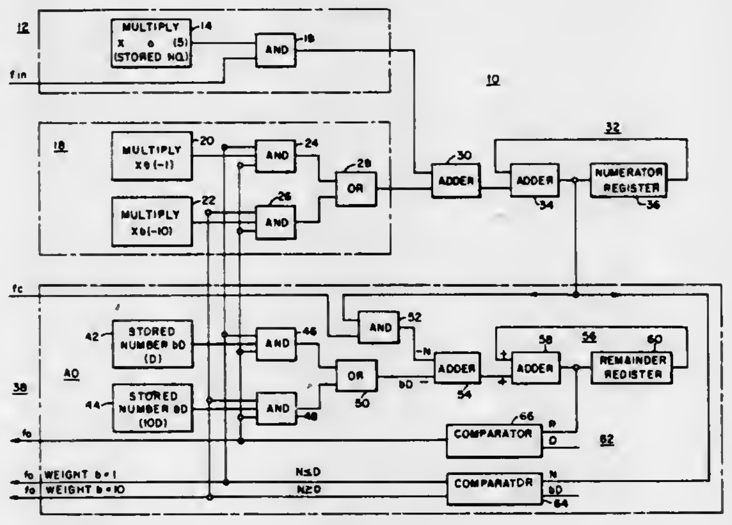
3,864,556
APPARATUS FOR DIGITAL FREQUENCY SCALING

Francis A. Fluet, Clarence, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1973, Ser. No. 411,543

Int. Cl. G01r *23/02*

U.S. Cl. 235—150.3 **7 Claims**



1. Apparatus for digital frequency scaling comprising:

a. means for deriving a signal *afin* where *a* is a multiplication factor which may be an integer or a fraction, and *fin* is an input pulse train;

b. means for deriving a weighted scale signal *bfo* where *b* is a scale number 1,2,3,4 ...*m*, and *fo* is the output frequency of said apparatus;

c. means for integrating the signals *afin* – *bfo* to derive a signal *N;*

d. means for deriving a signal *bD* where *D* is a preselected stored number;

e. means enabled by a clock pulse signal *fc* for integrating the signals *bD–N* to derive a signal *R;* and

f. means for comparing *N* with *bD* and *R* with 0, for selecting the smallest scale number *b* such that $N<bD$ and for delivering output signal *fo* when $R<0$.

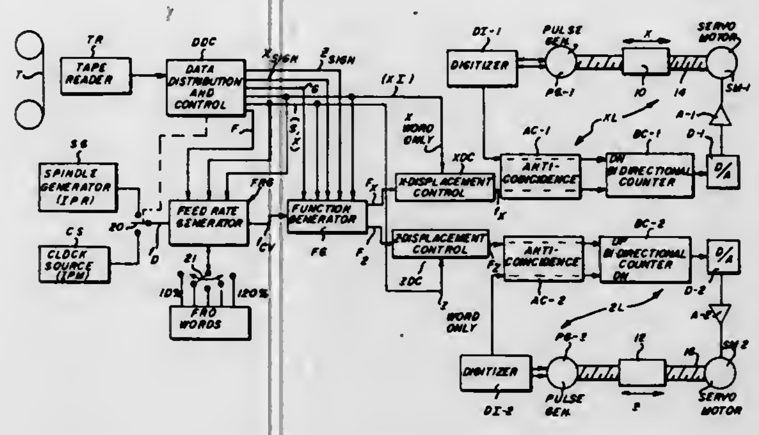
3,864,557
INTERPOLATOR FOR MACHINE TOOL CONTROL

Emmett F. Sindelar, Moreland Hills, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Aug. 29, 1973, Ser. No. 392,684

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.11 **21 Claims**



1. A control for use in controlling movement of a machine tool comprising:

a source of pulses having a first pulse rate,

feed rate generator means including first pulse rate multiplying means having a plurality of states for modifying the pulse rate of pulses derived from said pulse source in accordance with a multiplier having a value *M/N*, where *N* is of a fixed value corresponding with the maximum number of states of said multiplying means and *M* is a first modifying signal having a value depending upon a function of the values of first, second, and third signals, means for receiving a said first, second, and third signal and deriving as said functions thereof the normalized value of each of said signals, and means for developing from said normalized first, second, and third signals a said first modifying signal *M;* and

function generator means including second and third pulse rate multiplying means for each receiving the said modified output pulses from said feed rate generator means and multiplying the pulse rate thereof by a multiplier *M'/N'* wherein *M'* for said second rate multiplier is a second modifying signal having a value corresponding with said first signal and *M'* for said third rate multiplier is a third modifying signal having a value corresponding with said second signal, and wherein *N'* is variable having a maximum value of the same amount for each of said second and third rate multiplier means corresponding with the maximum number of states of each of said second and third rate multiplier means, said second and third rate multipliers having means for respectively receiving said first signal and said second signal, and means for effectively normalizing said first and second signals by varying the value of *N'* by the same extent in each of said second and third multiplier means in dependence upon the value of the larger of said first and second signals.

3,864,558
ARITHMETIC COMPUTATION OF FUNCTIONS

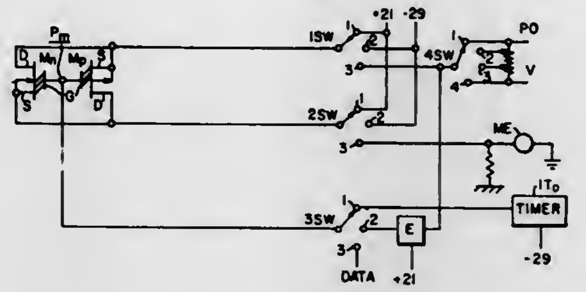
Karl Ka-Chung Yu, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 14, 1973, Ser. No. 360,256

Int. Cl. G06g *7/20*

U.S. Cl. 235—193 **15 Claims**

1. Apparatus for determining the square of difference between a first magnitude and a second magnitude including an n-channel MINSTOR and a p-channel MINSTOR, each MINSTOR having a substrate, a source, a drain and a gate, means connecting in a network the source and drain of one of said MINSTORS in anti-parallel with the source and drain of the other MINSTOR, means, connected to said network, for impressing a voltage between the sources and drains of said MINSTORS, means for connecting one of said gates to the other of said gates, means for applying polarizing voltage between the gates and substrates of said MINSTORS to impress a threshold voltage, which measures said first magnitude, between the gates and the substrates of said MINSTORS, means for impressing a gate voltage which measures said second magnitude between the gate and the source of one of said MINSTORS, and current-measuring means connected to said network to measure the current passed by said sources and drains.



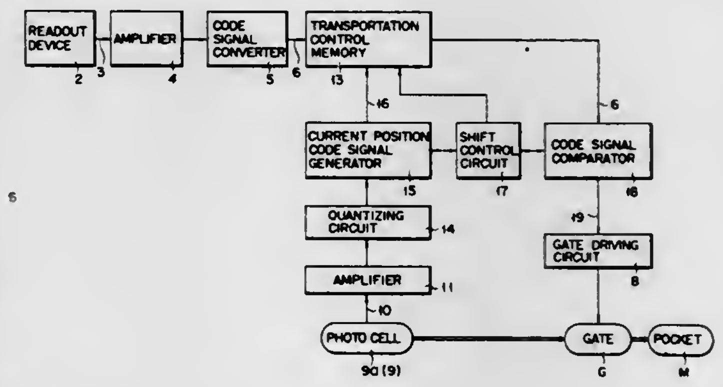
3,864,559
APPARATUS FOR CLASSIFYING SHEET-LIKE MATERIAL

Kenichi Mori, Yokohama; Naoto Nakayama, and Takeshi Osawa, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 21, 1973, Ser. No. 427,239

Int. Cl. G06k *9/00;* **G06f** *15/48*

U.S. Cl. 235—151.2 **5 Claims**



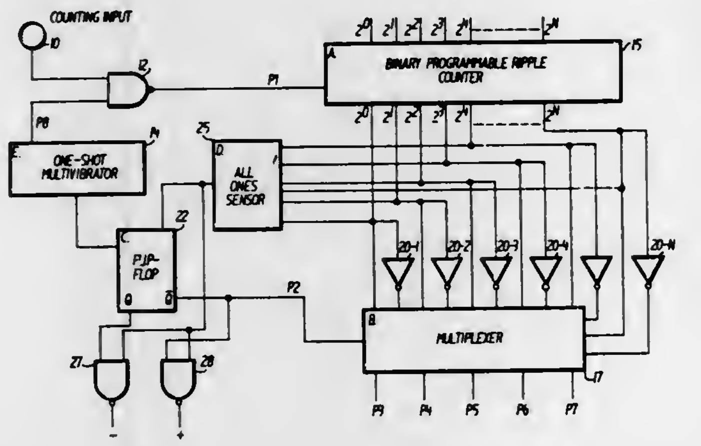
1. An apparatus for classifying sheet-like written material designed to transport a series of written pieces one by one on a passageway and receive a particular written piece in the designated one of a plurality of pockets provided along the passageway which corresponds to the classification code of the written piece, characterized in that the apparatus comprises means for reading out the classification code of a written piece and supplying a pocket designating code signal designating the pocket in which the written piece is to be received; means for supplying a current position code signal of a traveling written piece which means comprises a plurality of detectors disposed along the passageway and including those corresponding to each of the pockets and supplies the current position code signal when the traveling written piece passes through the detectors; a time-counting device for counting a length of time required for a transported written piece to cover a distance between any two adjacent detectors; a memory device including at least as many storing sections as a plurality of written pieces jointly traveling on the passageway at a given time, each of said storing sections being stored with a pocket-designating code signal designating a pocket associated with a given traveling written piece, data on the current position thereof and data on a length of time counted by the time-counting device; means for replacing the preceding time count of the time-counting device stored in the storing section by another time count freshly obtained thereby as

a traveling written piece passes through a distance between any two succeeding adjacent detectors; means for detecting whether the time count stored in the storing section lies within a prescribed range and, in that case, replacing data on the first current position of a written piece already stored in the storing section by data on the second current position of the written piece corresponding to a detector following that associated with the first current position of the written piece; means for comparing the pocket-designating data with data on the second current position of a written piece and, when a predetermined coincidence is detected to exist between both data, receiving the written piece in the designated pocket; and means for detecting whether a time count stored in the storing section lies outside of a prescribed range, and in that case, taking proper measures to cope with the abnormal condition in which a written piece was transported on the passageway.

3,864,560

DEVIATION VALUE GENERATOR

Daniel R. Dening, Quincy, Ill., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Dec. 11, 1972, Ser. No. 314,264
Int. Cl. G06f *7/50*
U.S. Cl. 235—151.13 **7 Claims**



1. Apparatus for continuously indicating the deviation of actual counted events from a predetermined count of events, comprising

programmable counter means programmed to count received incoming pulses in accordance with said predetermined count, for generating a pattern of digitally encoded outputs in response to each received said incoming pulse and being representative of an actual count of said received incoming pulses,

means for supplying pulses representative of occurrence of selected events as the input to said programmable counter means, and

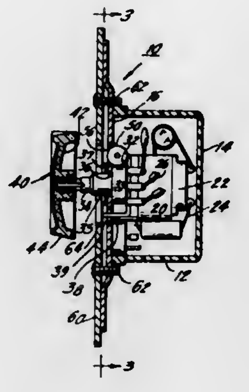
means responsive to each said pattern of digitally encoded outputs of said programmable counter means, for converting said pattern of digitally encoded outputs to digital representations of the deviation of each actual count from the predetermined count, said digital representations including the sense of each deviation relative to the predetermined count,

and wherein said counter means exhibits the characteristic of having two successive incoming pulse actuated nondeviation count conditions corresponding with a full count condition and a successive empty count condition, inhibiting means responsive to said full count condition for effectively inhibiting said counter from beinig successively actuated to a full count condition and then to said empty count condition in response to two successively received incoming pulses.

3,864,561

DIMMER SWITCH WITH ILLUMINATED KNOB

Joel S. Spira, Allentown; Joseph Licata, Schnecksville; Ira J. Pitel, and Lester E. Wenger, both of Quakertown, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.
Continuation of Ser. No. 342,532, March 19, 1973, abandoned. This application Apr. 23, 1974, Ser. No. 463,408
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 SP **12 Claims**



1. An illuminated electric light dimmer switch which can be wall-mounted and which is interchangeable with conventional wall-mounted on-off switches; said dimmer switch comprising, in combination:

an on-off switch and series-connected dimmer control means for controlling the flow of load current to an electric light load;

a manually adjustable potentiometer connected to said dimmer control means for manually controlling said dimmer control means; said potentiometer including an enclosed housing having a rotatably operable operating shaft extending therefrom, and an operating knob on the end of said operating shaft; said operating shaft being further operatively connected to said on-off switch to operate said on-off switch;

a fixed light source means for illuminating said operating knob; said light source means connected across said series-connected on-off switch and said dimmer control means, thereby to be energized at least when said on-off switch is in an off position;

a dimmer switch housing having said on-off switch, said dimmer control means, said light source means and said potentiometer enclosed housing mounted therein; said dimmer switch housing being mountable within the conventional well of the wall into which said dimmer switch is mounted;

a generally flat mounting plate secured across a side of said dimmer switch housing for mounting said dimmer switch; said mounting plate having a central opening therein; said potentiometer operating shaft extending through said opening, and said potentiometer enclosed housing having portions secured to the interior surface of said mounting plate and sealing said central opening;

said potentiometer enclosed housing having a second portion spaced away from the said interior surface of said mounting plate;

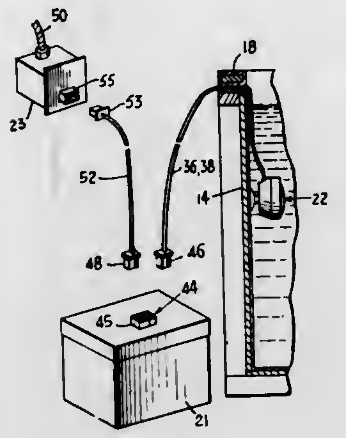
said mounting plate having a lamp opening therein which is removed from said central opening, but which is beneath said operating knob of said potentiometer, and which lamp opening is juxtaposed with said second portion of said potentiometer enclosed housing;

said light source means being fixedly mounted in the space between said interior surface of said generally flat mounting plate and said second portion of said potentiometer enclosed housing and adjacent said lamp opening whereby said light source means can illuminate the rear surface of said knob.

3,864,562

MEANS FOR ILLUMINATING UNDERWATER AREAS OF SWIMMING POOLS

Donald K. Hawkins, 5 Victory Ct., East Norwalk, Conn. 06855
Filed Oct. 19, 1973, Ser. No. 408,163
Int. Cl. F21p *1/00*; **F21v** *25/04, 31/00*
U.S. Cl. 240—26 **9 Claims**



1. An underwater safety light for illuminating water-filled pools, comprising in combination:

a. a sealed beam incandescent lamp,
b. a cup-shaped molded plastic casing having a wide mouth constituting a window for passing light therethrough,
c. means for mounting the lamp in the casing in a position to direct light outward through the casing window, the face of said lamp spanning the window of the casing,
d. said casing constituting an enclosure in which the lamp is mounted,
e. current carrying lines passing through a wall of the casing, said lines being connected to the lamp to effect energization thereof,
f. means carried by said casing for mounting the same on an inside wall of the pool below the waterline thereof,
g. a battery disposed at a location exterior of the pool,
h. said current carrying lines extending to the battery to receive energization therefrom,
i. said battery being characterized by an output voltage of a sufficiently low magnitude so as to present no shock hazard to personnel inadvertently coming in contact with current carrying portions of said lines and lamp,
j. means for charging the battery,
k. a line cord leading from said battery and connected with said charging means to supply energy to the battery, and
l. safety means adapted to disconnect said current carrying lines from said battery and to connect the latter with the charger, whereby said lamp and current carrying lines are thereby positively electrically isolated from the charger and the battery whenever a circuit is established between the charger and the battery.

3,864,563

APPARATUS FOR RADIOGRAPHING THE JOINTS OF THE JAWS

Kazuo Hozumi, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Fushimi-ku, Kyoto, Japan
Filed July 9, 1973, Ser. No. 377,620
Claims priority, application Japan, July 18, 1972, 47-72248
Int. Cl. G03b *41/16*
U.S. Cl. 250—320 **19 Claims**

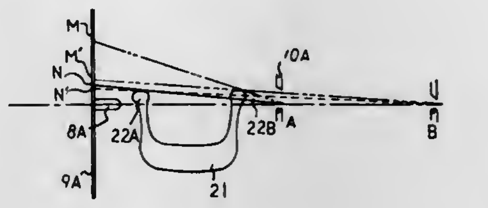
1. Apparatus for radiographing the joints of the jaws of a patient's head along a straight line connecting said joints so as to form a relatively clear image of one joint and a relatively blurred image of the other joint, said apparatus comprising:

head support means for supporting the head of a patient in a fixed position;

film support means located on one side of said head support means for supporting a film in a position such that said film will intersect an extension of the straight line connecting the joints of the jaws of a patient's head when a patient's head is held by said head support means;

an X-ray source;

X-ray source means for supporting said X-ray source on the other side of said head support means in a position such that the X-rays emitted by said X-ray source will travel along the straight line connecting the joints of the jaws of a patient's head when a patient's head is held in said head support means; and

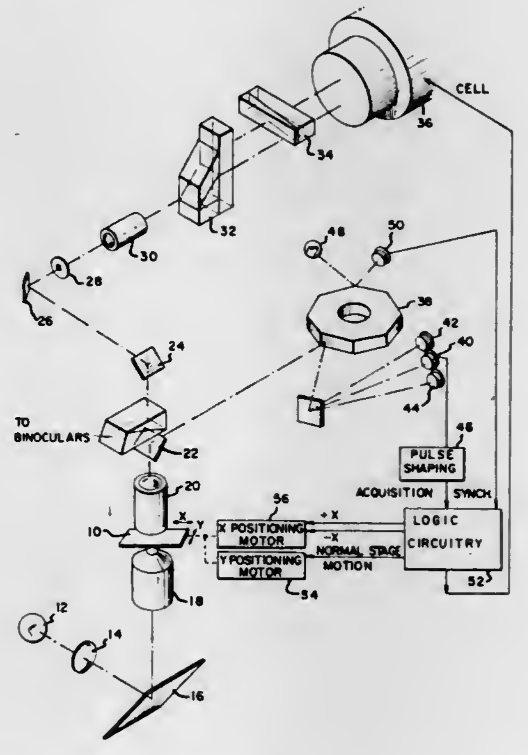


X-ray moving means operatively connected to said X-ray support means for moving said X-ray support means and said X-ray source along a path defined by an extension of the straight line connecting the joints of the jaws of a patient's head when a patient's head is held by said head support means as said X-ray source projects X-rays toward said film whereby a relatively clear image of the joint of the jaws nearest to said film and a relatively blurred image of the joint of the jaws nearest to said X-ray source are formed on said film.

3,864,564

ACQUISITION SYSTEM FOR SLIDE ANALYSIS

William J. Adkins, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.
Filed Sept. 26, 1973, Ser. No. 400,915
Int. Cl. G01j *1/20*
U.S. Cl. 250—201 **15 Claims**



1. In a system producing an electrical output representing the optical characteristics of an analytical slide containing a specimen of interest, including:

conversion means producing said electrical output representing the optical characteristics of said slide,

means for projecting an optical image of said analytical slide to said conversion means,

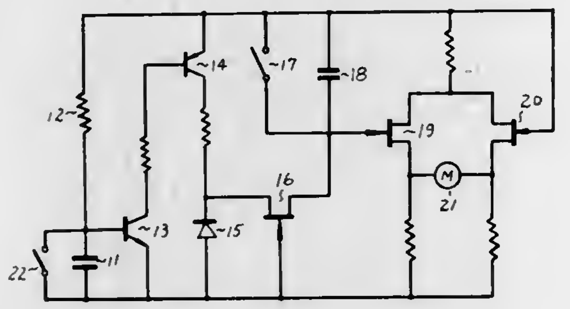
a light sensing device,

means for successively scanning a portion of said optical image, said light sensing device producing an output

representing the light absorption of the area of the slide being scanned,
a pulse shaping means connected to the output of said light sensing device and producing an acquisition signal when the area of the slide being scanned contains a specimen of interest, and
a positioning mechanism for positioning said slide, an acquisition system comprising:
synchronizing means producing a synchronizing signal at a predetermined point in each scan, and
logic circuitry responsive to said synchronizing signal and to said acquisition signal for producing control signals, said control signals being used to control said positioning mechanism to position said slide so that the image of a specimen of interest is centered on said conversion means.

3,864,565
LIGHT AMOUNT INTEGRATION MEANS

Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Sept. 13, 1973, Ser. No. 396,894
Claims priority, application Japan, Sept. 21, 1972, 47-109952
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 P **3 Claims**

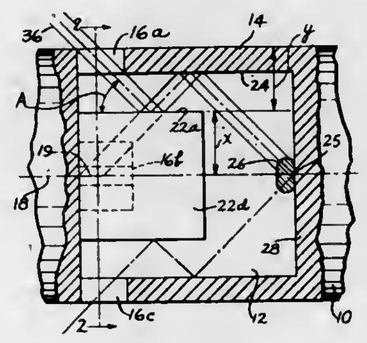


1. Apparatus for measuring and indicating light amount, which comprises a field effect transistor having a source, a gate, and a drain, and arranged in a grounded-gate circuit configuration; a light receiving element which is connected between the gate and the source and which develops a signal proportional to the amount of light it is receiving; a capacitor connected to be charged by current flowing through the field effect transistor, and a switching element connected to the source of the field effect transistor for controlling a charging operation in which said signal causes current to flow through the field effect transistor to charge the capacitor across which there is developed a voltage proportional to the integral of the current and thereby also proportional to the amount of light received over a specific time duration.

3,864,566
OPTICAL SYSTEMS AND ASSOCIATED DETECTING MEANS

George R. Simpson, South Woodstock, and Stephen M. MacNeille, Thompson, both of Conn., assignors to American Optical Company, Southbridge, Mass.
Filed Sept. 18, 1957, Ser. No. 685,062
Int. Cl. H04j *3/14*
U.S. Cl. 250—216 **7 Claims**

1. An opaque main supporting housing and a light-collecting and detecting system disposed within said main supporting housing at a location intermediate the spaced opposite ends thereof said housing surrounding said light-collecting and detecting system and said system being arranged to simultaneously view from said location all parts of a predetermined endless annular object field outwardly of said main housing and in concentric relation to a longitudinal axis extending centrally through said housing, said system comprising a single photosensitive detecting element of relatively small predetermined size disposed at a fixed axial location in said main housing for detecting any appreciable change in light intensity occurring in any part of said object field, a plurality of similar light apertures circumferentially arranged in side wall portions of said housing, said light apertures being appreciably spaced from one another in said wall portions and with said wall portions between each pair of adjacent light apertures being of substantially equal size, each of said light apertures being of relatively small dimensions considered in both the axial and circumferential directions of said housing, and each being arranged in like angular relation to said longitudinal axis at said fixed axial location, thereby each of said light apertures will be disposed so as to face outwardly toward a different predetermined sector of said endless annular object field, each light aperture being formed so as to view a sector of appreciable circumferential angular value, and to admit into said housing light from all parts of the sector aligned therewith, and all of said light apertures being so disposed relative to each other in said housing as to jointly simultaneously admit into said housing light from all parts of said endless annular object field, a plurality of optical systems within said housing, each of said optical systems being optically aligned with a different one of said light apertures, respectively, and with said photosensitive detecting element, and each of said optical systems comprising means providing a plurality of spaced optical surfaces including means having an optical surface for collecting substantially all of the light from said object field which enters the light aperture aligned therewith and for directing substantially all of the light so collected toward means providing a second optical surface, said second optical surface being a positive optical surface disposed so as to receive substantially all of said light and direct same as a convergent beam onto said photosensitive detecting element.

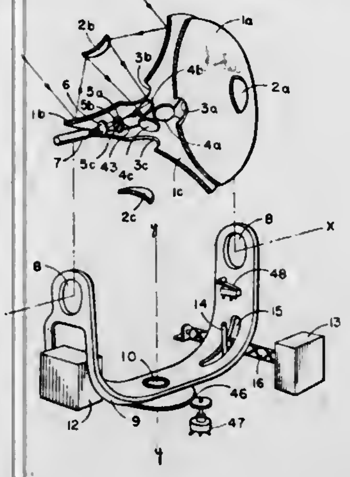


3,864,567
INFRARED DETECTOR SYSTEM

Robert V. Bez, Cincinnati, Ohio, assignor to Cincinnati Electronics Corporation, Evendale, Ohio
Filed June 13, 1957, Ser. No. 666,278
Int. Cl. G01d *5/36*
U.S. Cl. 250—232 **12 Claims**

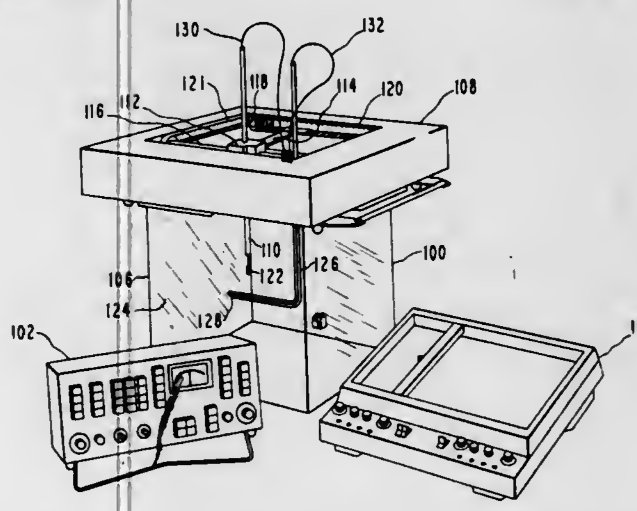
1. An optical detector system comprising: a support having a vertical axis and being mounted for rotation on said vertical axis; a photodetector mounted on said support in fixed relationship to said support; an optical system having a horizontal axis, said optical system being mounted on said support for rotation on said horizontal axis, said optical system comprising three optical sets radially mounted on said support in fixed spaced relationship relative to one another 120 degrees apart, said optical sets being adapted to sweep in turn a predetermined vertical angle in space; each of said optical sets including a parabolic reflector for focusing optical images each of said reflectors having an optical axis, said parabolic reflector having a central aperture, a secondary mirror mounted along the optical axis of each reflector to reflect said focused images through said apertures, and a plane mirror mounted opposite each aperture for redirecting the reflected images from said secondary mirror and toward said photodetector; means for rotating said optical system at a high rate of speed about said horizontal spin axis; and means for rotating said support at a relatively slow rate of speed about said vertical axis.

4. A passive optical detector comprising: a support having a vertical axis of rotation; a reflector system mounted on said support, said reflector system having a horizontal axis of rotation, said reflector system comprising at least one reflector, each reflector having an optical axis extending radially of said horizontal axis; photodetector apparatus mounted on said support in fixed relation with respect to said support; means in said reflector system for directing images from said reflector onto said photodetector apparatus; means for rotating said reflector system on said horizontal axis at a high rate of speed; and means for simultaneously oscillating said support at a slow rate of speed through a predetermined angle on said vertical axis.



3,864,568
AUTOMATIC ISODOSE PLOTTER

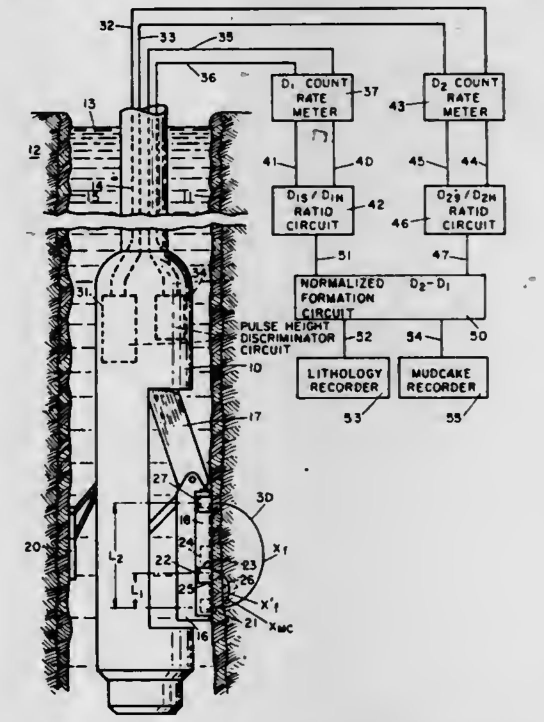
Alan L. Helgesson, Los Altos Hills, Calif., assignor to SHM Nuclear, Sunnyvale, Calif.
Filed June 19, 1972, Ser. No. 264,230
Int. Cl. G01n *23/00*
U.S. Cl. 250—252 **32 Claims**



1. Isodose plotting apparatus for plotting penetration type radiation measurements comprising:
phantom means at which a radiation source is directed and in which radiation measurements are taken,
detection means for taking radiation intensity measurements in said phantom means, said detection means having a moveable detector means which generates signals for measuring direct radiation intensity,
drive means having a plurality of drive axes for moving said detector means in said phantom means,
control means having a velocity control and a servo control responsive to signals from said detector means for moving said detector means under velocity control on a first drive axis and under servo control on a second drive axis along a path representative of a predetermined dosage within said phantom means, sensing means for sensing that a predetermined distance of movement of said detector on an axis under servo control has occurred relative to a predetermined distance of movement of an axis under velocity control, and
switching means responsive to said sensing means for automatically interchanging the drive axes under said velocity control and said servo control when a predetermined distance of movement of said detector means on said axis under servo control has occurred relative to a predetermined distance of movement on said axis under velocity control.

3,864,569
WELL LOGGING PROCESSING METHOD AND APPARATUS

Jay Tittman, Danbury, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.
Continuation of Ser. No. 32,504, April 14, 1970, abandoned, which is a division of Ser. No. 654,414, July 19, 1967, Pat. No. 3,521,063. This application Apr. 13, 1973, Ser. No. 351,060
Int. Cl. G01t *1/16*
U.S. Cl. 250—264 **23 Claims**



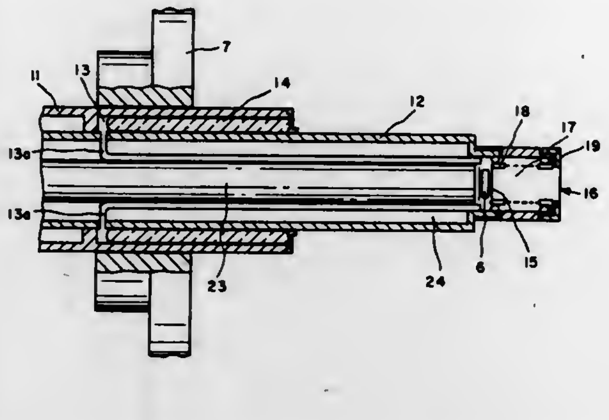
1. A computer for identifying earth formation characteristics, comprising means for producing a first and a second signal corresponding to an energy spectrum of a plurality of photon intensities, said first signal corresponding to photon intensities in an energy spectrum below a predetermined energy level and the second signal corresponding to photon intensities in an energy spectrum greater than a predetermined energy level, means for normalizing said first and second signals, means for producing third and fourth signals that correspond to an energy spectrum of a plurality of photon intensities, said third signal corresponding to the photon intensities in an energy spectrum below a predetermined energy level and said fourth signal corresponding to photon intensities in an energy spectrum greater than a predetermined energy level, means for normalizing said third and fourth signals and means for combining said normalized signals to produce at least one signal that identifies earth formation characteristics.

3,864,570
LOW ENERGY X-RAY DETECTOR

William P. Zingaro, 22 Clubway, Hartsdale, N.Y. 10530
Filed Sept. 24, 1973, Ser. No. 399,838
Int. Cl. G01n *23/20*
U.S. Cl. 250—272 **8 Claims**

1. A detector for low energy x-rays adapted to operate in an evacuable chamber in which said x-rays are produced comprising a contaminant-sensitive element responsive at cryogenic temperatures to low-energy x-rays, a pair of spaced x-ray permeable membranes separating said x-rays responsive element from the interior of said chamber, said membranes defining a space which is connected with the interior of said

chamber through a passageway, filter means within said passage for removing foreign materials which are capable of contaminating said x-ray-responsive element and rendering



said element inoperative, and means in contact with said x-ray responsive element to maintain said x-rays responsive element at a cryogenic temperature.

3,864,571

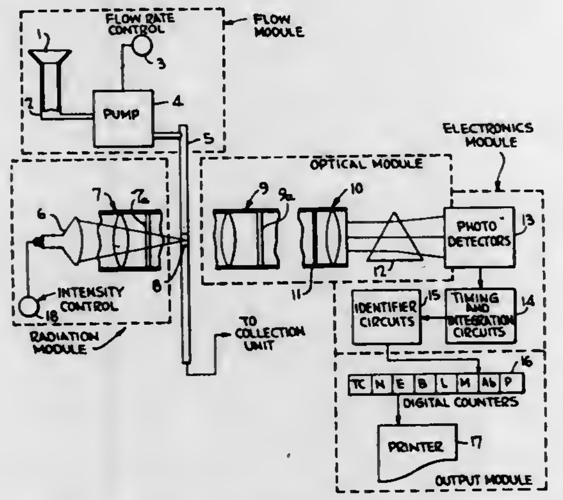
METHOD AND APPARATUS FOR AUTOMATICALLY, IDENTIFYING AND COUNTING VARIOUS CELLS IN BODY FLUIDS

Irving M. Stillman, Columbia; Neil M. Trowe, and Jules R. Clemens, both of Potomac, all of Md., assignors to Wheeler International, Inc., Washington, D.C.

Filed Feb. 10, 1971, Ser. No. 114,297

Int. Cl. G01n *21/26*

U.S. Cl. 250—302 **43 Claims**



1. The process of differentiating leukocytes in a sample of body fluid comprising the steps of:

a. Obtaining at least a one cubic millimeter sample of the body fluid;

b. Treating said sample with a fluorochrome material that will cause radiation of a characteristic wavelength to be emitted from at least one of the sub-cellular materials when subjected to radiation in the range of 0.30 to 30 microns;

c. Initiating relative movement between the sample and a radiation source which has at least one associated coplanar radiation detection means;

d. Continuing the relative motion until the complete sample has passed the radiation source and the at least one coplanar radiation detector in a manner so that the leukocytes in a substantial portion of the sample are in a single cellular array as they pass said plane;

e. Causing said radiation source to irradiate the sample as the leukocytes pass in said single cellular array;

f. Measuring the overall cell sizes of the cells passing said plane by detecting the initiation of the secondary fluorescent emissions with said radiation detection means and continuing said detection until each cell has passed said plane;

g. Simultaneously determining the amount of each subcellular material present in each cell as it passes said plane by detecting the characteristic radiations being emitted by each sub-cellular material in each cell;

h. Feeding these determinations for each cell as it passes said plane to a logic means wherein the cell is identified on the basis of total cell size and the relative amounts of sub-cellular material present;

i. Causing a separate counter for each type of leukocyte to be advanced when a leukocyte of that type is identified by steps;

j. Repeating steps (e) to (i) to until substantially all of the leukocytes is said sample have passed said plane and have been identified.

3,864,572

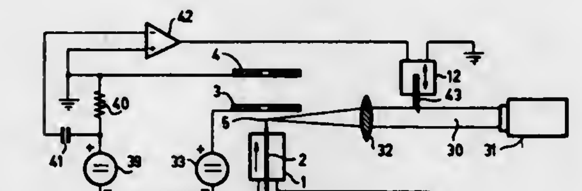
ELECTRON BEAM APPARATUS COMPRISING A POINT CATHODE

Karel Diederick van der Mast, and James Edmond Barth, both of Delft, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 2, 1973, Ser. No. 402,844

Int. Cl. H01j *37/26*

U.S. Cl. 250—306 **9 Claims**



1. An electron beam source, comprising:

a cathode wire having a free tip;

means for generating an electric field at said tip of approximately 10^5 to 10^6 KV/m for drawing electrons away from said tip;

means for heating said tip to a temperature where deformation of said tip occurs due to said electric field;

means for forming an electron beam from electrons drawn away from said tip; and

means for supporting said cathode wire and for slowly advancing said wire in the axial direction thereof in accordance with the evaporation rate of said tip to maintain said tip in substantially the same position,

whereby said tip is maintained substantially point-like with a substantially constant radius of curvature of approximately 0.2 to 2 microns.

3,864,573

WIDE-RANGE RADIATION GAGE FOR DETERMINING A MATERIAL PROPERTY

Carvel D. Hoffman, Whitehall, and Duane T. Jones, Coopersburg, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 20, 1973, Ser. No. 389,749

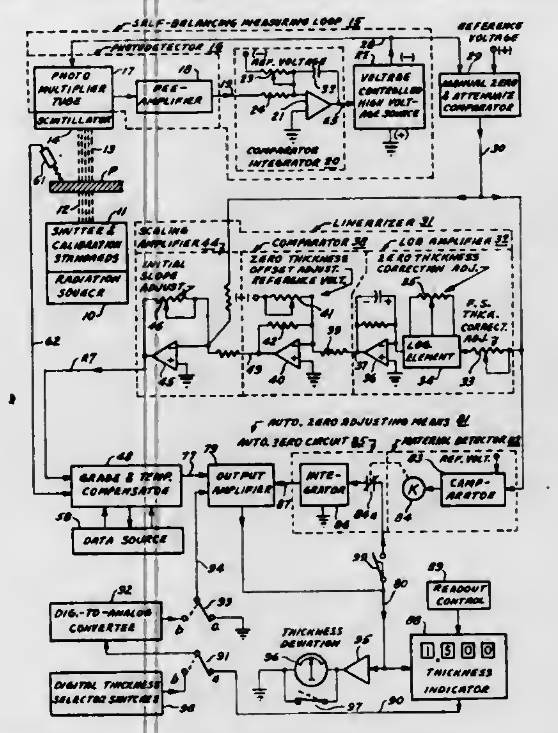
Int. Cl. G01t *1/20*

U.S. Cl. 250—358 **16 Claims**

1. In a material measuring system which converts radiation into a light source that varies as a function of a material property and a conversion error due to radiation source decay, said system having a self-balancing measuring loop which includes a controlled-gain photodetector responsive to said variable light source and subject to a gain error caused by photodetector aging, said measuring loop also including comparator means operative therein to cause the production of a material measuring signal which varies as a function of said variable light source and said conversion and gain errors, said errors having an undesirable effect on measuring loop stability, the improvement comprising:

a. integrator means circuited to modify said comparator means for stabilizing the self-balancing measuring loop against the undesirable effects of said conversion and gain errors, and

b. means for utilizing the stabilized measuring signal to determine a value of said material property.



3,864,574

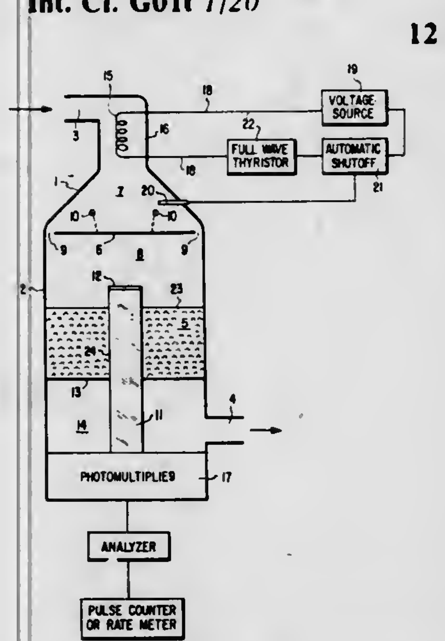
APPARATUS FOR MEASURING IODINE

Jurgen Wilhelm, Karlsruhe; Kurt Gerlach, Buechenau, and Heinrich Mahnau, Hamburg, all of Germany, assignors to Gesellschaft fur Kermforschung mbH, Karlsruhe and Herfurth GmbH, Hamburg, both of, Germany

Filed Mar. 14, 1973, Ser. No. 341,172

Int. Cl. G01t *1/20*

U.S. Cl. 250—364 **12 Claims**



1. An apparatus for measuring the radioactive iodine isotope 131 in air by means of detecting the quantum radiation generated by the decomposition of said iodine, said iodine being present in air in elemental and chemically bound form, comprising:

a. a conduit carrying air containing said iodine, said conduit having an inner wall face;

b. a scintillator disposed in said conduit and oriented in an axially coextensive relationship therewith;

c. a filter for adsorbing said iodine in its elemental form and in its chemically bound form, said filter entirely surrounding at least one length portion of said scintillator and fully occupying the entire cross section of said conduit between said scintillator and said inner wall face along any point of said length portion; and

d. means provided in said conduit downstream of said filter for accommodating a photomultiplier at an end of said scintillator, said end being situated downstream of said filter.

3,864,575

CONTACT IONIZATION ION SOURCE

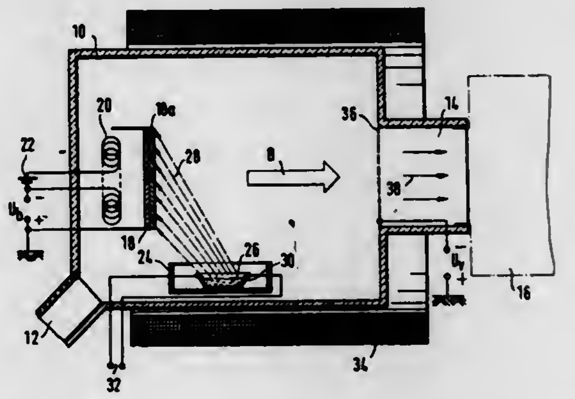
Nujeeb Hashmi, Konigsbergerstrasse 10, Garching, and Adriaan Julius Van Der Houven Van Oordt, Oneginstrasse 8, Munich, both of Germany

Continuation of Ser. No. 162,489, July 14, 1971, abandoned. This application May 31, 1973, Ser. No. 365,621

Claims priority, application Germany, July 25, 1970, 2037029

Int. Cl. H01j *39/34*

U.S. Cl. 250—423 **8 Claims**



1. An ion source for use in an evacuated vessel, said source comprising:

means for supplying a gaseous or vaporized ionizable material in said evacuated vessel;

an ionization electrode having at least one active surface of substantial area formed of a material capable of ionizing said ionizable material by contact therewith;

means for heating said ionization electrode;

an open-structured electrode having a multiplicity of openings therein and spaced from said active surface or surfaces by space free of intervening field-affecting structures;

means for producing and maintaining, in the space between said active surface or surfaces and said open-structured electrode, a magnetic field of a character favoring the formation in said space of a stable plasma, and

means for applying to said open-structured electrode an electro-negative potential barely sufficient to repel electrons issuing from said plasma and to favor movement through said electrode of ions issuing from said plasma.

3,864,576

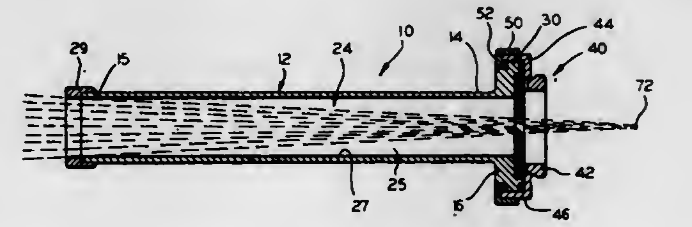
POSITION INDICATING DEVICE FOR DENTAL X-RAY MACHINES

Charles F. Stevenson, Elgin, Ill., assignor to Rinn Corporation, Elgin, Ill.

Filed Sept. 27, 1973, Ser. No. 401,409

Int. Cl. G21f *5/04*

U.S. Cl. 250—505 **4 Claims**



1. In a position indicating device for x-ray machines, wherein said device includes a tubular member that is rectilinear axially of same, with said member defining a bore of rect-

angular transverse cross-sectional configuration that extends the length of same and having its internal surfacing lined for x-ray absorption and defining an x-ray receiving end and an x-ray emitting end, and an adapter member for securing said tubular member to an x-ray machine and secured to said x-ray receiving end of said tubular member,

the improvement wherein:

said tubular member at said x-ray receiving end of same is formed to define a round hub portion having a peripheral rib integral therewith and thereabout defining annular bearing surfaces on either side of same that lie in parallel planes extending normally of said tubular member,

with one of said bearing surfaces facing in the direction of said tubular member x-ray emitting end and the other of said bearing surfaces facing in the direction of said tubular member x-ray receiving end,

said member hub portion being formed with a circular counterbore that faces oppositely of said x-ray emitting end of said member and lies at said x-ray receiving end thereof,

said counterbore defining a side wall that is in circumambient relation about said tubular member bore,

collimating material received in said counterbore and extending from said counterbore side wall across said tubular member bore and being formed to define an x-ray collimating opening centered within said tubular member bore and being of a shape complementing that of said tubular member emitting end,

said member hub portion being formed to define between said counterbore and said other bearing surface an annular face that forms the terminal end surface of said tubular member at said x-ray receiving end of same,

with an annular retaining disc being received in said counterbore about the portion of said collimating material adjacent said counterbore side wall,

means for fixing said retaining disc to said tubular member to secure said collimating material to said tubular member within said counterbore,

said disc extending short of said tubular member end surface axially of said tubular member and being separated from said adapter member,

said adapter member further comprising:

a hub portion including means for securing same to the x-ray machine in the mounted position of said device,

said adapter member hub portion defining a radial flange having a bearing surface and an axially extending rim wall defining a socket in which said tubular member hub portion is received with said peripheral rib being encompassed by said adapter member rim wall and said adapter member flange bearing surface opposing said rib other bearing surface,

a securing collar received over said adapter member rim wall and defining a radial flange directed radially inwardly of said collar and having a bearing surface that opposes said rib one bearing surface,

a first antifriction ring interposed between said one bearing surface of said rib and said collar flange bearing surface in face to face engagement therewith,

a second antifriction ring interposed between said rib other bearing surface and said adapter member flange bearing surface in face to face engagement therewith,

said collar and said adapter member rim wall having threaded engagement for clamping said rings against said tubular member rib under predetermined compression to journal said tubular member in said adapter member,

and means for keying said collar and adapter member rim wall together for maintaining said predetermined compression of said rings,

said first antifriction ring being proportioned axially of said tubular member to space said collar flange from said adapter member rim wall when said first ring is clamped between said rib one bearing surface and said collar flange bearing surface,

said second antifriction ring being proportioned axially of said tubular member to space said adapter member flange from said tubular member end surface when said second ring is clamped between said rib other bearing surface and said adapter member flange bearing surface,

said rib defining a peripheral surface that is spaced from said adapter member rim wall radially inwardly of said adapter member rim wall,

said collar flange defining a bore having an internal diameter proportioned to space said collar flange from said tubular member,

whereby, on rotation of said tubular member relative to said adapter member for adjustment of said tubular member relative to said adapter member, said collimating opening remains stationary axially of said adapter member for 360 degrees of such rotation, and said collar and said adapter member are free of engagement with said tubular member whereby said rotational movement of said tubular member relative to said adapter member is opposed by frictional forces only at said bearing surfaces.

3,864,577
TANK FILLING MONITOR

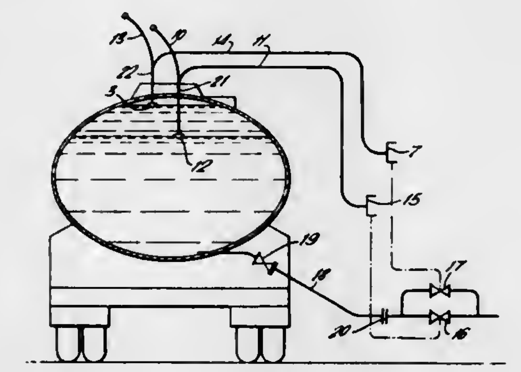
Jacques Pierre Pellett, Chatou; Henri Bernard Andre Baisan, St. Genie les Ollieres; Jean Llevaux, Pantin, and Georges Patchett, Le Chesnay, all of France, assignors to The British Petroleum Company Limited, London, England

Filed Nov. 7, 1973, Ser. No. 413,497

Claims priority, application France, Nov. 7, 1972, 72.39401

Int. Cl. G01n *21/46*

U.S. Cl. 250—577 **3 Claims**



1. An apparatus for providing a desired liquid level during filling of a contaianer having a filler valve coupled thereto comprising:

a first prism having a downwardly pointing apex, said first prism being totally internally reflecting in air and substantially transmitting when immersed in a container including liquid;

light source means and first light detecting means positioned remote from said first prism;

first optical fibers optically coupling said light source means, said first prism, and said first light detecting means, for transmitting light from said light source means into said first prism and for transmitting light which is totally internally reflected in said first prism to said first light detecting means, said first optical fibers including a portion common to the incident light and the reflected light from said first prism;

said first light detecting means initiating closure of the filler valve when the light intensity received from said first prism falls below a predetermined threshold;

a second prism having a downwardly pointing apex, said second prism being totally internally reflecting in air and substantially transmitting when immersed in a container including liquid, said second prism being positioned at a lower level than the desired liquid level which is determined by said first prism;

a second light detecting means positioned remote from said second prism;

second optical fibers optically coupling said light source means, said second prism, and said second light detecting means, for transmitting light from said light source means into said second prism and for transmitting light which is totally internally reflected in said second prism to said second light detecting means, said second optical fibers including a portion common to the incident light and the reflected light from said second prism; and

said second light detecting means reducing the flow of liquid through the filler valve when the light intensity received from the second prism falls below a predetermined threshold.

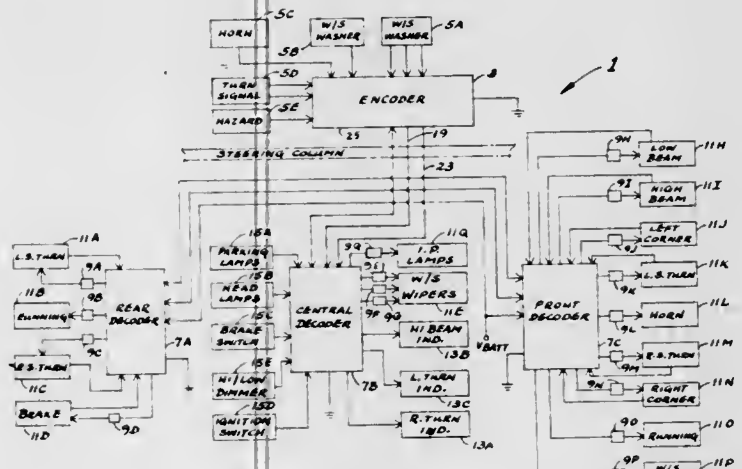
3,864,578
MULTIPLEX SYSTEM FOR A VEHICLE

Robert P. Lackey, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1973, Ser. No. 428,289

Int. Cl. G08c *15/12*

U.S. Cl. 307—10 R **26 Claims**



1. A multiplex system for controlling operation of vehicle components such as windshield wipers, turn signals, and cornering lamps responsive to the positioning of respective corresponding operator actuatable controls, said multiplex system comprising:

encoding means responsive to the position of each of said controls for providing a timing signal and a code signal having signal components corresponding to the respective positions of each of said controls, said encoding means having a standby mode of operation wherein said encoding means provides no signals and draws no significant current;

decoding means remote from said encoding means and responsive to said signals selectively to provide a plurality of respective outputs in response to the respective code signal components, said decoding means being responsive to the absence of at least one of said signals to go into a standby mode of operation wherein it supplies none of said outputs and draws no significant current; and

relay means respectively responsive to said outputs of said decoding means for selectively energizing each of said vehicle components whereby said operator actuatable controls control energization of corresponding vehicle components without connection of each of said controls by individual conductors to said respective relay means.

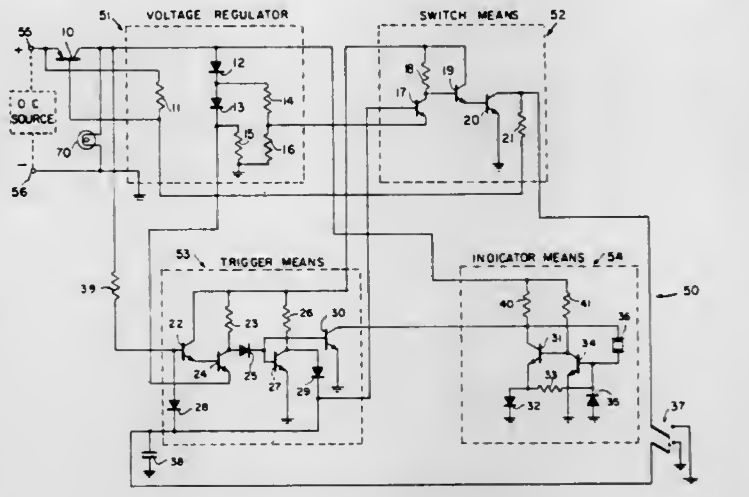
3,864,579
VOLTAGE REGULATING CIRCUIT PROVIDING PLURAL OUTPUTS

Charles H. Klasing, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Division of Ser. No. 152,085, June 11, 1971, Pat. No. 3,763,488, which is a continuation of Ser. No. 752,576, Aug. 14, 1968, abandoned. This application June 29, 1973, Ser. No. 374,909

Int. Cl. H02j *1/00*

U.S. Cl. 307—15 **2 Claims**



1. In a voltage regulating means wherein a single variable output voltage provides two output voltages, the ratio of the output voltages remaining constant, a first diode in series with said output voltage, and a parallel combination of a second diode and a resistance means connected in series and serially connected resistance means, said parallel combination connected to said first diode, one of said output voltages connected between said second diode and said resistance means, the other of said output voltages connected to said serially connected resistance means.

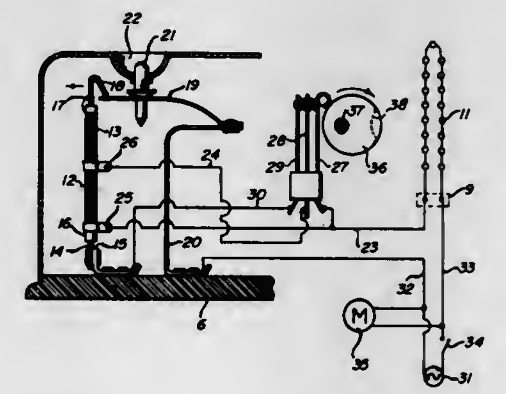
3,864,580
CHRISTMAS TREE LIGHTING CONTROL

George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md. 20034

Continuation-in-part of Ser. Nos. 342,433, March 19, 1973, , and Ser. No. 338,832, March 7, 1973,. This application Nov. 23, 1973, Ser. No. 418,262

Int. Cl. H02j *3/00*

U.S. Cl. 307—31 **15 Claims**



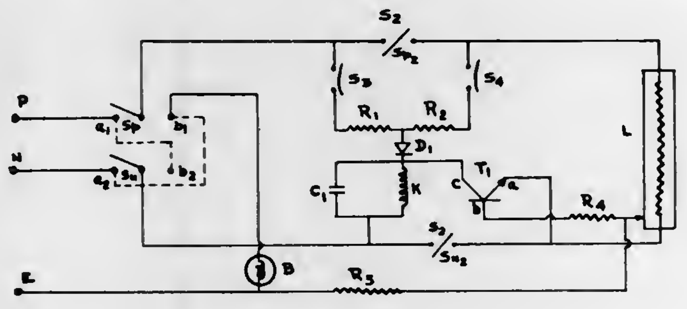
1. A light intensity control for Christmas tree lighting including in combination connector means for connecting said control to a power supply source, an electrical outlet continuously in circuit with said power supply connector means for connecting thereto one or more strings of Christmas tree lights, voltage dropping resistor means forming a part of said control and electrically connected in series with said outlet for reducing the voltage to said outlet proportional to the resistance in said circuit, circuit controlling means electrically connected across said resistor means and operable to intermittently short out portions of said resistor means to increase and

decrease in predetermined fixed increments, the voltage to said outlet.

3,864,581
SHOCK PREVENTION DEVICE

Varahur Srinivasa Satyanarayana, 38C Irwin Rd., New Delhi, India

Filed Jan. 22, 1973, Ser. No. 325,419
Int. Cl. H02h *3/16*
U.S. Cl. 307—92 **10 Claims**

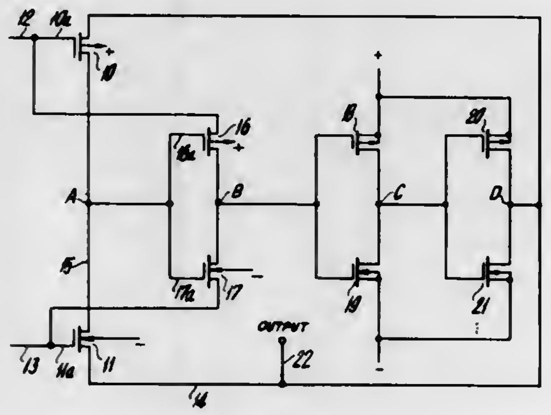


1. A device adapted to disconnect a load from a power source upon a leakage occurring in said load comprising an energizing coil adapted to be connected to a main source, a first switch capable of being closed upon the energization of said coil and thereby connecting a load to the power source, a transistor connected to the energizing coil and having a biasing means, said transistor and biasing means adapted to be connected to said load, such that upon a leakage occurring in the body of the load the transistor is biased and thereby deenergizes said coil and whereby said first switch is opened, and means for preventing a shock to a human body upon contacting a live conductor of the load and which comprises a current transformer connected to said first switch, the secondary of said transformer connected to said transistor through a second biasing means such that said transistor is capable of being biased by said first and/or second biasing means and whereby the coil is deenergized and the first said switch opened.

3,864,582
MOSFET DYNAMIC CIRCUIT

Eugene R. Keeler, Suffern, N.Y., assignor to Timex Corporation, Waterbury, Conn.

Filed Jan. 22, 1973, Ser. No. 325,302
Int. Cl. H03k *21/00, 23/02*
U.S. Cl. 307—225 C **2 Claims**



1. A divide-by-two dynamic counter circuit consisting of at least three inverters, each of which is a complementary pair of MOSFET transistors, each of said transistors having a control gate electrode and a drain electrode, and a source electrode; the circuit including a first pair of such transistors, each of which has its source electrodes connected to respective sources of reversing relative polarity so that each source receives reversals of polarity which are out-of-phase in respect to each other;

a second pair of such transistors, each of such second pair of transistors having its gate electrode connected to between common drain electrodes of said first pair and whose source electrodes are connected to said respective sources of reversing polarity and whose drain electrodes are connected together; and

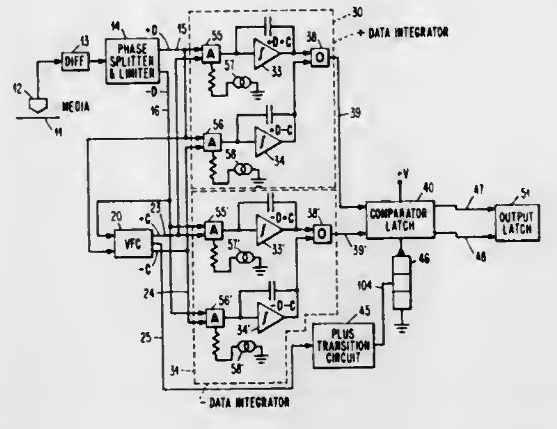
a third pair of such transistors whose gate electrodes are both connected to said common drain electrodes of said second pair;

the output being taken at the common drain electrodes of said third pair, and the gate electrodes of said first pair being connected to the common drain electrodes of said third pair.

3,864,583
DETECTION OF DIGITAL DATA USING INTEGRATION TECHNIQUES

Benjamin C. Florino, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 197,906, Nov. 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 76,145, Sept. 28, 1970, abandoned. This application Apr. 23, 1973, Ser. No. 353,824
Int. Cl. H03k *5/18, 5/153;* **H03d** *3/18*
U.S. Cl. 307—235 R **55 Claims**



13. Predetection integration for use with amplitude limited signals, a first-limited signal being supplied along a first line and a second limited signal being supplied along a second line; timing means responsive to one of said limited signals for generating a clocking signal having first and second signal states of respective durations substantially equal to predetermined durations of corresponding first and second signal states of said one limited signal;

first integration means jointly responsive to said first limited signal being in a first signal state and to said clock signal being in a first signal state to integrate time duration of said limited signal being in said first signal state and being further responsive to said clock signal being in a second signal state to alter the integrated signal toward a reference state at a rate slightly greater than said rate of integration;

second integration means jointly responsive to said first limited signal being in said first signal state and to said clock signal being in said second signal state to integrate the duration of said limited signal being in said first signal state and being further responsive to said clock signal being in said first signal state to alter the integrated signal toward a reference value at a rate sightly greater than the rate of integration;

third integration means jointly responsive to said second limited signal being in a second signal state and to said clock signal being in said first signal state to integrate the duration of said second limited signal being in said second signal state and being further responsive to said clock signal being in said signal state to alter the integrated signal toward a reference state at a rate slightly greater than the rate of integration;

fourth integration means jointly responsive to said second limited signal being in said second signal state and to said clock signal being in said second signal state to integrate the duration of said limited signal being in said second signal state and being further responsive to said clock signal being in said first signal state to alter the integrated signal toward a reference state at a rate slightly greater than the rate of integration; and

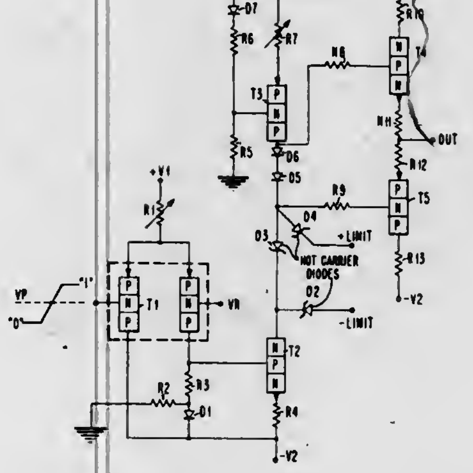
signal combining means respectively combining the integrated signals from said first and second integration means for supplying a first combined signal indicating duration of the first signal state in said first limited signal and further combining integrated signals from said third and fourth integrator means for supplying a second combined signal indicating the duration of said second limited signal being in said second signal state.

14. The subject matter set forth in claim 13 further including voltage comparison means including bistable means jointly responsive to said combined signals for setting the bistable means to a first signal state when the first combined signal has an amplitude greater than the second combined signal and to the second signal state in the reverse situation, a change in the stable states of bistable means indicating that said limited signals have changed signal states.

3,864,584
HIGH SPEED PROGRAMMABLE DRIVER CIRCUIT

David J. Hutson, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1973, Ser. No. 420,120
Int. Cl. H03k *5/12*
U.S. Cl. 307—268 **1 Claim**



1. A circuit, for controlling turn-on and turn-off delays of a digital switching circuit, comprising:

means for generating a constant current;

a first hot carrier diode connected between said constant current generator means and a first limit voltage;

a second hot carrier diode connected to a second limit voltage for establishing a second voltage limit;

switch means connected to said second hot carrier diode and to a first element of a third hot carrier diode which has a second element thereof connected to a junction of said constant current generator and said first hot carrier diode;

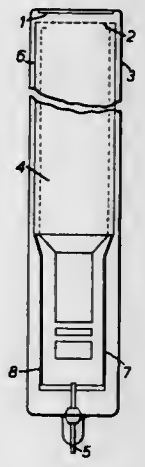
wherein said first hot carrier diode establishes a first voltage limit for an output signal and said second hot carrier diode establishes a second voltage limit for said output signal, and

wherein said first and second hot carrier diodes control circuit turn-on and turn-off delays within predetermined limits.

3,864,585
VIDICON HAVING MESH ON END OF CYLINDER COAXIAL WITH ANODE

Hans Scholz, Essex, England, assignor to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed July 5, 1973, Ser. No. 376,551
Claims priority, application Great Britain, July 6, 1972, 31662/72
Int. Cl. H01j *31/38, 29/45, 29/08*
U.S. Cl. 313—390 **5 Claims**

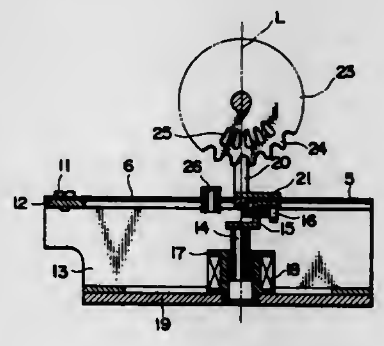


1. A vidicon tube including within an envelope, a target, a target electrode in electrical contact with the target, an anode of which the portion nearest the target is cylindrical, a field mesh electrically isolated from the positioned closely adjacent the target electrode between the target electrode and the cylindrical portion of the anode, terminal means passing through the envelope, and electrical connection means electrically connecting the terminal means to the field mesh; wherein, the electrical connection means includes a conductive cylindrical member coaxial with and surrounding the anode and extending at least approximately to the end of the cylindrical portion of the anode, the opposite end portions of the cylindrical member being electrically connected, respectively, to the perimeter of the field mesh and to a plurality of electrical conductors which are disposed symmetrically about the axis of the tube and extend to the terminal means.

3,864,586
VIBRATOR AND VIBRATORY SYSTEM

Hiroshi Saito, Omiya, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Sept. 13, 1973, Ser. No. 396,675
Claims priority, application Japan, Sept. 14, 1972, 47-92301; Oct. 20, 1972, 47-105064
Int. Cl. H02k *7/06*
U.S. Cl. 310—21 **9 Claims**



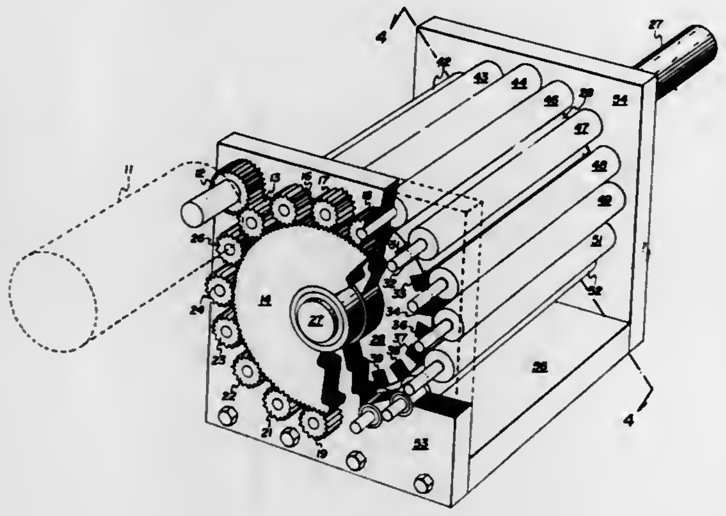
1. A mechanical vibrator for a timepiece or the like comprising: a vibratory unit composed of resilient sheet material and having two main vibratory arms disposed in spaced-apart generally parallel relationship, two connecting end portions each interconnecting adjacent ends of said two main vibratory arms, and two central vibratory arms connected to respective ones of said connecting end portions and extending inwardly towards each other, and configured to vibrate, when sup-

ported at one said connecting end portion and suitably energized, in a normal vibrational mode wherein said two main vibratory arms along with the one central vibratory arm which is located remote from said one connecting end portion all flexurally vibrate in the same sense about their respective ends of connection while the other central vibratory arm which is connected to said one connecting end portion flexurally vibrates in the opposite sense about its end of connection such that the free end of said one central vibratory arm undergoes substantial linear vibratory movement; and means including a magnet secured to the free end of said one central vibratory arm for energizing said vibratory unit in its normal vibrational mode.

3,864,587
MAGNETIC TRANSMISSION

Alfred Landry, 7589 Calvocado St., Lemon Grove, Calif. 92045

Filed Aug. 23, 1972, Ser. No. 283,077
Int. Cl. H02k *49/06*
U.S. Cl. 310—103 **8 Claims**



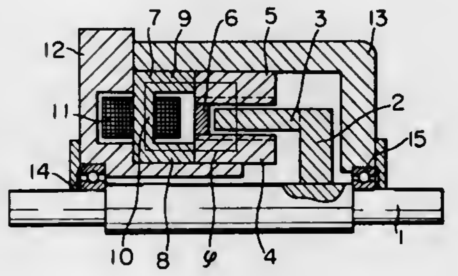
1. A magnetic transmission comprising:
- a. an output shaft,
- b. a free-rotating armature carried by said output shaft,
- c. a plurality of permanent magnets carried by said armature,
- d. said permanent magnets being magnetically oriented with each adjacent magnet having opposite magnetic polarities,
- e. a plurality of drive rotor permanent magnets rotatably mounted on an axis,
- f. each drive rotor axis having a fixed radial position with respect to the axis of said output shaft and disposed in magnetic proximity with said permanent magnets carried by said armature, and
- g. an input drive means coupled to said drive rotor permanent magnets for rotating said drive rotor permanent magnets in a synchronous relationship,
- h. said drive rotor permanent magnets being magnetically oriented for rotating said armature at a speed proportional to the rotating speed of said drive rotor permanent magnets,
- i. said permanent magnets carried by said armature and said drive rotor permanent magnets being disposed in discreet sectors in 360°,
- j. the permanent magnets carried by said armature having an odd number in each sector and said drive rotor magnets having one less than said odd number in each sector.

3,864,588
ELECTRIC PULSE MOTOR

Seiuemon Inaba, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 110,084, Jan. 27, 1971, abandoned. This application Nov. 8, 1972, Ser. No. 304,657

Claims priority, application Japan, Feb. 7, 1970, 45-12589[U]; Feb. 7, 1970, 45-12590[U]
Int. Cl. H02k *1/22*
U.S. Cl. 310—266 **4 Claims**



1. An electric pulse motor comprising: a rotor provided with a single cup-shaped rotor element rotatable about an axis of rotation of the rotor shaft, the rotor element having a plurality of circumferentially spaced rotor-teeth disposed circumferentially of the axis of rotation of the rotor element, said rotor-teeth extending axially and having an equal spacing, thereby having a common and equal pitch, said rotor-teeth comprising magnetic polepieces; a stator provided with a plurality of U-shaped separate stator elements disposed circumferentially of the single cup-shaped rotor element to encircle the rotor element and corresponding to a predetermined number of different phases, each stator element having a base leg axially spaced from the rotor-teeth defining axial gaps therebetween, each of said stator elements having two legs radially spaced from the rotor teeth and disposed on opposite sides of the rotor-teeth and having teeth opposed to the rotor-teeth and spaced therefrom, defining radial gaps on opposite sides of the rotor-teeth, the teeth of the stator elements behaving as polepieces upon excitation and being shifted in a circumferential direction out of exact radial registry with said corresponding rotor-teeth, and electrically energizable windings on each of said stator elements for developing flux across the gaps between said rotor-teeth polepieces and said stator-teeth polepieces for rotatably driving the motor.

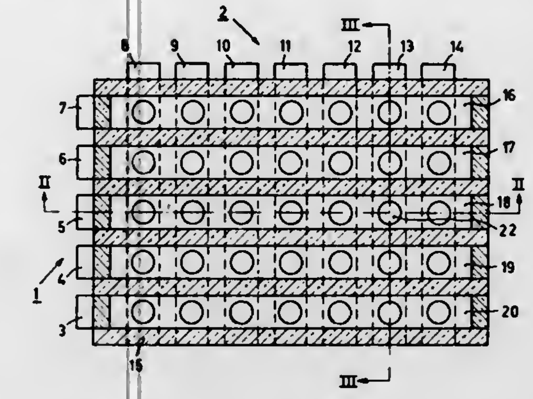
3,864,589
MATRIX PICTURE DISPLAY DEVICE USING LIQUID THAT IS REVERSIBLY REDUCIBLE AND OXIDISABLE BY ELECTRIC CURRENT

Cornelis Johannes Schoot; Johannes Jacobus Ponjee; Rudolf Alexander Van Doorn, and Pieter Tammo Bolwijn, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1974, Ser. No. 447,849

Claims priority, application Netherlands, Mar. 16, 1973, 7303674
Int. Cl. G02f *1/28;* **H01j** *1/58*
U.S. Cl. 313—232 **4 Claims**

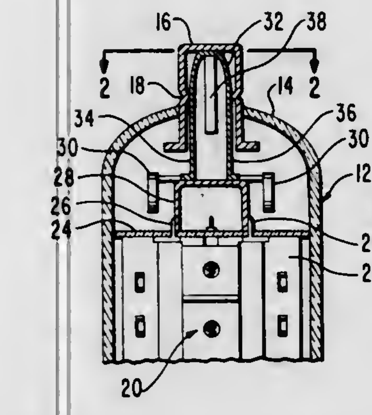
1. A picture display device comprising between two supporting plates of which at least one is transparent a solution of a material which is reversibly reducible and oxidisable by means of an electric current, which solution is in contact with at least two electrodes, characterized in that the space between the two supporting plates comprises a number of elongate non-communicating compartments which are filled with the said solution, that an elongate electrode extends in each of the said compartments and belongs to a first set of electrodes and is in contact with liquid in the relevant compartment only, and that the device comprises a second set of elongate electrodes which are each in contact with the liquid in each of the said compartments.



3,864,590
ELECTRON DISCHARGE DEVICE HAVING A HOLLOW CONDUCTOR INTEGRAL WITH THE ENVELOPE THEREOF

Richard William Young, Madison, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,473
Int. Cl. H01j *5/52*
U.S. Cl. 313—318 **2 Claims**



1. An electric discharge device comprising a closed envelope, an electrode within said envelope, a hollow metal conductor sealed through said envelope, said hollow conductor having a closed portion extending outside said envelope and an open portion extending within said envelope, and a metal connector fixed to said electrode and having a part extending into said open portion of said hollow conductor, said connector part comprising a plurality of resilient appendages press-fitted into said open conductor portion and in resilient contact with the inner wall of said hollow conductor.

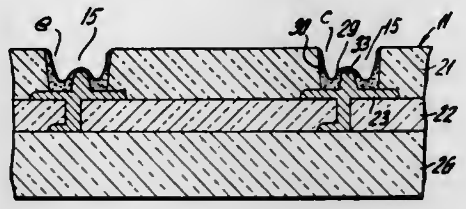
3,864,591
LUMINESCENT DISPLAY TUBE ANODE ASSEMBLY COMPRISING ANODE STRUCTURES HAVING CHANNEL-SHAPED CONDUCTIVE LAYERS

Fumitake Akahane; Masaki Kobayakawa, and Kazufumi Yawata, all of Kagoshima, Japan, assignors to Nippon Electric Kagoshima, Limited, Kogoshima, Japan

Filed May 8, 1974, Ser. No. 468,294

Claims priority, application Japan, May 14, 1973, 48-56967[U]; June 8, 1973, 48-68439[U]
Int. Cl. H01j *1/66, 63/02*
U.S. Cl. 313—496 **9 Claims**

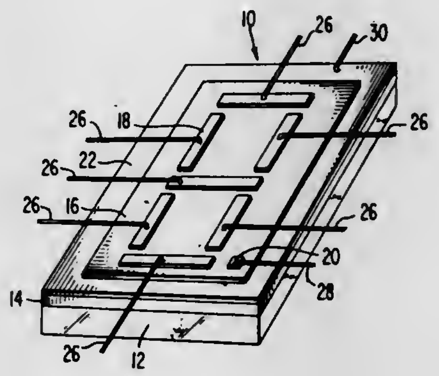
1. An anode assembly for a luminescent display tube includes:
- a substrate having a plurality of recesses formed in a major surface of said substrate, each of said recesses having a bottom surface and a peripheral wall surface;
- a plurality of anode structures, each of said anode structures being disposed in one of said recesses, each of said anode structures including a layer of electrically conductive material disposed on said bottom surface of said one recess, at least one projecting member of electroconductive material which projecting member is contiguous with and extends outwardly from said electrically conductive layer, and a layer of luminescent material covering said electrically conductive layer and said at least one projecting member.



3,864,592
ELECTROLUMINESCENT SEMICONDUCTOR DISPLAY

Jacques Isaac Pankove, Princeton, N.J., assignor to RCA Corporation, ISE City, Mie Prefecture, Japan

Filed Mar. 22, 1973, Ser. No. 343,736
Int. Cl. H05b *33/14*
U.S. Cl. 313—503 **4 Claims**



1. A semiconductor electroluminescent display comprising: a substrate of an electrically insulating, optically transparent material,
- a layer of optically transparent, conductive gallium nitride on a surface of said substrate,
- a continuous body of insulating gallium nitride on a surface of said conductive gallium nitride layer, said body being of an area smaller than the area of the surface of said conductive gallium nitride layer so that a portion of the surface of said conductive gallium nitride layer is not covered by said body,
- a metal contact on the uncovered surface of said conductive gallium nitride layer, and
- a plurality of electrically conductive electrodes on the surface of said body away from the conductive gallium nitride layer, with said electrodes being arranged in a desired display pattern.

3,864,593
FLAT FLUORESCENT LETTER DISPLAY TUBES

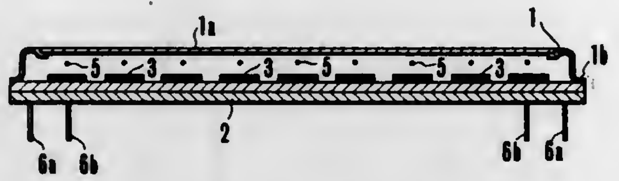
Kazuhiko Kasano, Ise, Japan, assignor to Ise Electronics Corporation, ISE City, Mie Prefecture, Japan

Filed May 23, 1973, Ser. No. 362,919

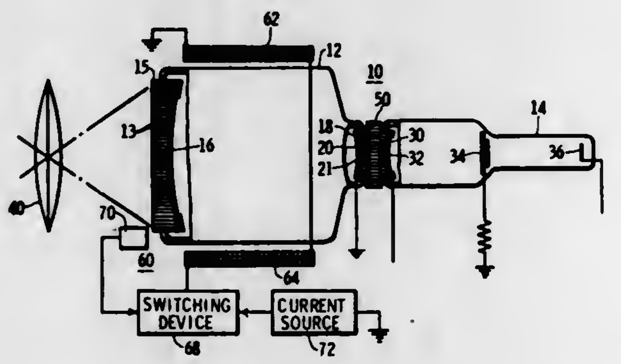
Claims priority, application Japan, May 23, 1972, 47-50396
Int. Cl. H01j *7/42*
U.S. Cl. 313—514 **2 Claims**

1. In a flat fluorescent letter display tube of the type wherein a plurality of letter display units are arranged on a straight line on an insulative substrate, each of said letter display units having a plurality of segment electrodes arranged in a predetermined configuration, an electrode provided with perforations adapted to contain said segment electrodes and a control

grid mounted on said perforated electrode to cover said perforations and said segment electrodes and disposed in a sealed envelope including a transparent upper half and a lower half which are joined together in an air tight fashion, said display tube further comprises a plurality of filament supports mounted on said substrate on both sides of the array of said letter display units, a plurality of filaments mounted on the opposing filament supports, such that at least one filament extends above each letter display unit, the improvement in which said plurality of segment electrodes, terminals for said electrodes with perforations, terminals for said filaments and a metal film are printed on said substrate; and means for heating said metal film and air tightly joining said upper half to said substrate thereby completing said sealed envelope.



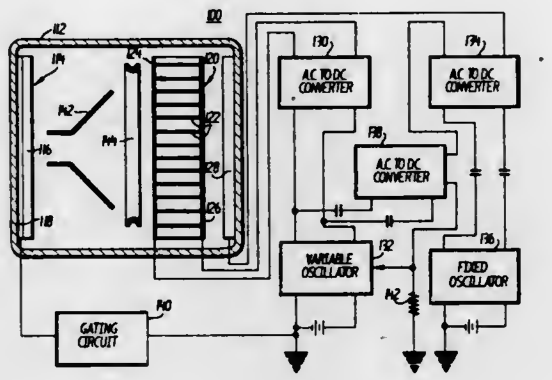
3,864,594
PROTECTION SYSTEM FOR AN IMAGE TUBE
Emil L. Svensson, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1969, Ser. No. 889,602
Int. Cl. H01j *31/26*
U.S. Cl. 315—10 **6 Claims**



1. An image system comprising an image tube, said image system responsive to input radiations, said image tube comprising means for generating an electron beam and directing it onto a target, deflection means positioned exterior to said image tube for deflecting said electron beam, means responsive to said input radiations greater than a predetermined value to cause energization of said deflection means to deflect said electron beam from the active area of said target.

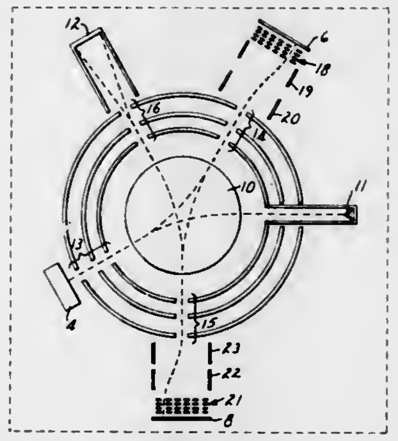
3,864,595
AUTOMATIC BRIGHTNESS CONTROL FOR GATED MICRO-CHANNEL PLATE INTENSIFIER
George N. Lawrence, Baltimore, Md., and Melvin C. Seid, Aspen, Colo., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 19, 1973, Ser. No. 352,825
Int. Cl. H01j *29/70*
U.S. Cl. 315—12 **7 Claims**

1. An image intensifier device comprising:
- a. photocathode means responsive to incident radiation image for generating a corresponding electron image;
- b. electron multiplying means for multiplying the electron image derived from said photocathode means, said electron multiplying means including an input electrode and an output electrode;
- c. display means responsive to the multiplied electron image for providing a visual radiation image corresponding thereto;
- d. gating means interconnected between said input electrode and said photocathode means for selectively permitting the flow of electrons from said photocathode means to be directed onto said electron multiplying means;



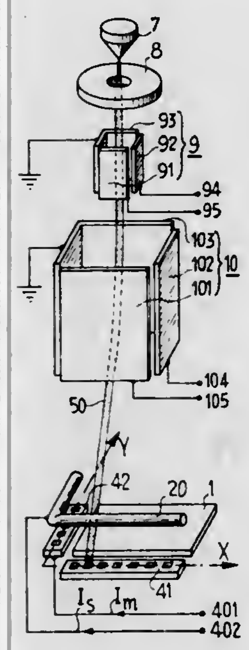
- e. brightness control means responsive to the current of the multiplied electron image directed onto said display means for varying the potential applied between said input electrode and said output electrode to prevent substantially the saturation of said display means; and
- f. display supply means responsive to the variable voltage applied between said input and output electrodes for applying a selectively variable voltage to said display means such that a substantially constant potential is maintained between said output electrode and said display means.

3,864,596
MULTIPLE ELECTRON MIRROR APPARATUS
Kent N. Maffitt, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 18, 1972, Ser. No. 272,778
Int. Cl. H01j *29/52*
U.S. Cl. 315—30 **10 Claims**



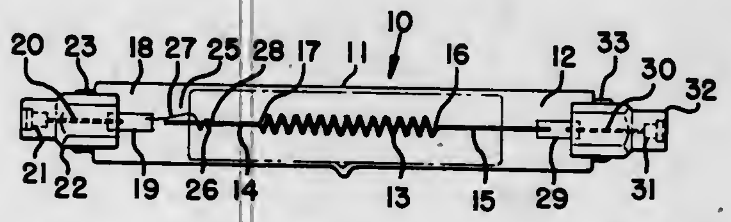
1. An electron beam system including
a magnetic prism;
an electron beam source for providing an electron beam and positioned to direct the electron beam to the magnetic prism;
a plurality of electrically biased electron mirrors,
with one positioned to initiallly receive the electron beam from the magnetic prism, said one electron mirror biased to return the electron beam to the magnetic prism and
another of said plurality of electron mirrors positioned to receive the electron beam returned to the magnetic prism by said one electron mirror.

3,864,597
DEVICE FOR INCREASING THE ACCURACY OF ADDRESSING AN ELECTRON BEAM STRIKING A TARGET
Jacques Trotel, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Apr. 13, 1973, Ser. No. 350,719
Claims priority, application France, Apr. 25, 1972, 72.14639
Int. Cl. H01j *29/70*
U.S. Cl. 315—31 R **10 Claims**



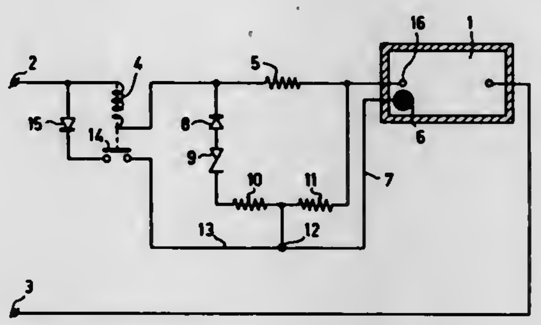
1. A device for increasing the accuracy of addressing an electron beam striking a surface, comprising in an evacuated enclosure a cathode capable of emitting an electron beam in an electric field;
an electron beam deflection system;
an anode consisting of a target surface;
two levelling-rods perpendicular to one another said levelling rods respectively having graduations, said graduations being made of a substance responding to electron impact, in another manner than that of the remainder of the rods; means for detecting the response to said electron impact; means for adressing a predetermined point of said target, by scanning successively in the directions of one rod, and of the other, for impinging upon the corresponding graduation of the rods.

3,864,598
INCANDESCENT LAMP WITH INTERNAL FUSE
John G. Cardwell, Jr., Kirtland, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1973, Ser. No. 384,744
Int. Cl. H01k *1/66*
U.S. Cl. 315—74 **7 Claims**



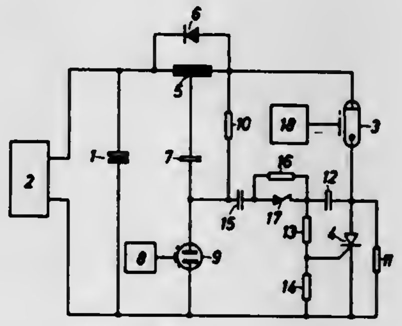
1. An electric incandescent lamp comprising an envelope of vitreous material having at least one pinch seal at one end of the envelope, an incandescible filament of the coiled-coil type made of fine wire connected at one end to a formed spud, said spud having its opposite end sealed in said pinch seal in insulating relationship to a lead-in conductor, and a fuse member electrically connected to the spud at one end and a lead-in conductor at the other end, said fuse member comprising a coiled portion fitted over the formed spud which is sealed in said pinch seal and a leg portion, said leg portion being attached to a foliated section of the lead-in conductor, said filament being unsupported by said fuse member.

3,864,599
GAS DISCHARGE LIGHTING ARRANGEMENT WITH REVERSIBLE ION SUPPLY
Gustaaf Adolf Wesselink; Richard Bleckrode; Hendrik Roelofs, and Pieter Hendrik Broerse, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 16, 1973, Ser. No. 341,987
Claims priority, application Netherlands, Mar. 25, 1972, 7204033
Int. Cl. H01j *17/26*
U.S. Cl. 315—109 **14 Claims**



1. A lighting arrangement comprising an electric discharge lamp including a pair of spaced electrodes defining a discharge space, two input terminals adapted to be connected to a voltage source for supplying the discharge lamp, a reservoir in communication with the lamp discharge space for producing ions of a material participating in the electric discharge in said discharge space and located so that in the operating condition of the lamp the reservoir is substantially exclusively heated by the electric discharge present in the discharge space, means providing an auxiliary direct voltage between the reservoir and the discharge space so that ions produced in the reservoir are transported by means of said auxiliary direct voltage from said reservoir to the discharge space, and means for reversing the polarity of the auxiliary direct voltage so that ions can be withdrawn from the discharge space into the reservoir.

3,864,600
ELECTRONIC FLASH APPARATUS
Arthur Schneider, Volkenrode, Germany, assignor to Rollei-Werke Franke & Heidecke, Branschweig, Germany
Continuation-in-part of Ser. No. 307,605, Nov. 17, 1973,. This application Jan. 22, 1974, Ser. No. 435,594
Claims priority, application Germany, Feb. 2, 1973, 2305022
Int. Cl. H05b *41/32*
U.S. Cl. 315—241 P **4 Claims**

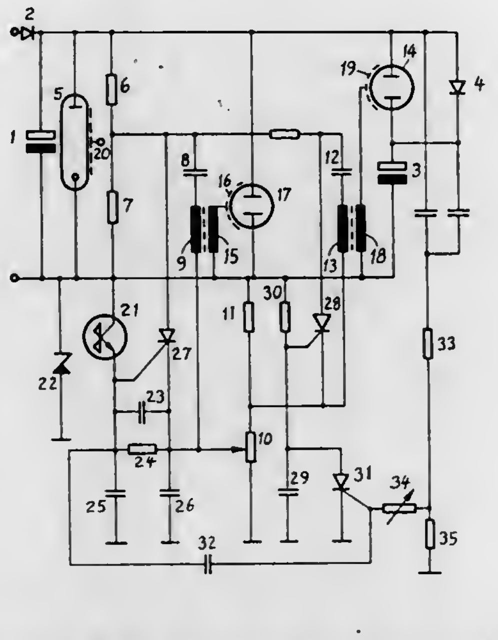


1. Electronic flash apparatus comprising a storage capacitor, a flash tube and a thyristor in series with each other and in parallel with said storage capacitor, ignition means for igniting said flash tube so that current from said storage capac-

itor may flow through said tube to create a flash of photographic light therein, and extinction means for stopping flow of current through said tube to stop emission of light therefrom when sufficient light for the photographic purpose has been produced, said extinction means including an impedance located in the discharge circuit between said storage capacitor and said tube, said impedance having an intermediate tap, a commutating capacitor and an electronic switch connected in series with each other and in parallel with said tube and thyristor through said intermediate tap, a by-pass resistor in parallel with said commutating capacitor and a portion of said impedance, a third capacitor and a potentiometer circuit in series with each other and in parallel with said thyristor, the gate of said thyristor being connected to an intermediate point of said potentiometer circuit, and a circuit connection from a junction between said third capacitor and said potentiometer circuit to a junction between said commutation capacitor and said electronic switch, said circuit connection including diode means and a fourth capacitor in series with each other.

3,864,601
ELECTRONIC FLASH DEVICE

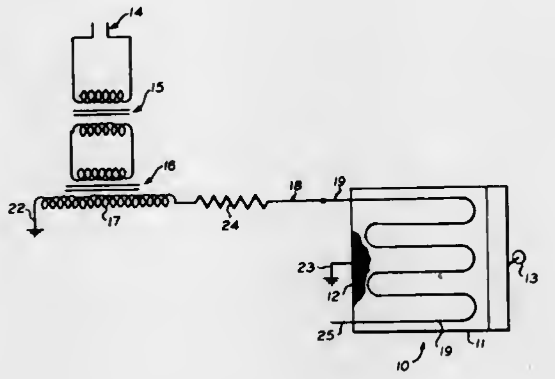
Arthur Schneider, Volkenrode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Filed May 14, 1973, Ser. No. 360,197
Claims priority, application Germany, May 19, 1972, 2224443
Int. Cl. G01j *1/16*; H05b *41/32*
U.S. Cl. 315—241 P **7 Claims**



1. Electronic flash apparatus for photographic purposes comprising flash tube means for generating a light flash, a first storage capacitor for initially powering said flash tube means, a second storage capacitor for supplying additional power when needed to said flash tube means, light sensitive means for deriving a changing voltage the rate of which is a function of the light flash reflected from a subject being photographed, quench means shiftable from an inoperative state to an operative state and effective, when shifted to its operative state, to terminate a flash then in progress, first circuit means for operatively connecting said second storage capacitor to said flash tube means when the rate of said changing voltage is below a given rate and operatively disconnecting it from said flash tube means when the rate of said changing voltage is above said given rate, said first circuit means including an ignition thyristor, an integration capacitor for triggering said ignition thyristor when said rate of changing voltage is below said given rate, integration circuit means for controlling operation of said quench means, said integration circuit means being responsive to light reflected from a subject being photographed and a control thyristor bridging said integration capacitor, said control thyristor having a gate coupled to said means for deriving a changing voltage through a differentiation capacitor, said control thyristor serving to short circuit said integration capacitor when the rate of said changing voltage exceeds a predetermined rate.

3,864,602
PREVENTING AGGLOMERATION OF PARTICLES DURING SCREENING DUE TO ELECTRICAL EFFECTS

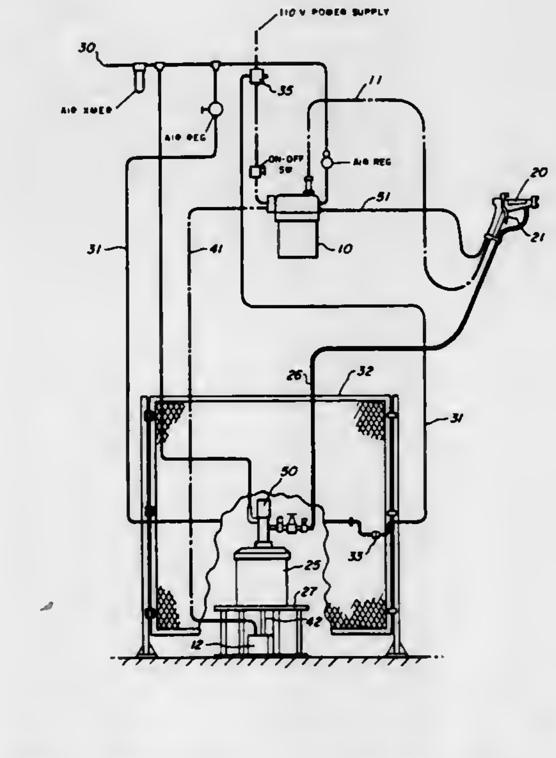
Friedhelm R. Feder, Memphis, Tenn., assignor to Wedco, Inc., Bloomsbury, N.J.
Filed July 24, 1973, Ser. No. 382,250
Int. Cl. H05f *3/00*
U.S. Cl. 317—2 R **21 Claims**



1. In the process of screening a mass of particles comprising feeding the particles to a moving screen for the screening thereof, the particles having a tendency to agglomerate during the screening operation due to electrical phenomena so that the screening is interfered with, the improvement for counteracting said tendency which comprises impressing a voltage on an insulated conductor resting directly on the screen during the screening, the voltage being sufficiently high to reduce agglomeration of the particles, but insufficient to cause a glow discharge along the conductor.

3,864,603
HIGH VOLTAGE SAFETY APPARATUS

David A. Kozinski, Palatine; Bernard W. Siczek, Chicago, and Kenneth L. Carlson, Wheeling, all of Ill., assignors to Graco Inc., Minneapolis, Minn.
Filed Nov. 12, 1973, Ser. No. 415,096
Int. Cl. H02h *3/00*
U.S. Cl. 317—9 R **8 Claims**

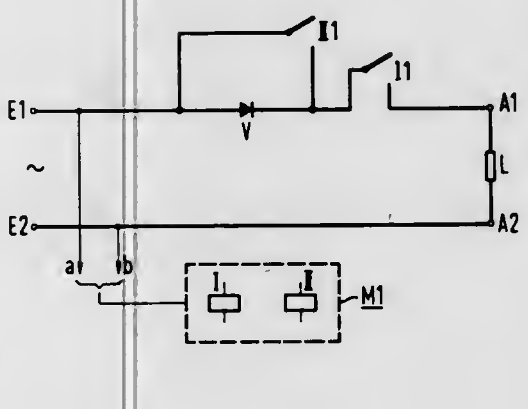


1. Safety apparatus for confining voltage-charged paint spraying equipment and for discharging components thereof retaining residual voltage charges, comprising:

- a. enclosure means for enclosing said voltage-charged equipment, including an access gate for entry and exit;
- b. pneumatic alarm means, attached to said enclosure means, for providing a pneumatic signal when said access gate is opened, said pneumatic alarm means including an interruptable pressurized connection at said gate opening point;
- c. pneumatic signal receiving means connected to said alarm means for receiving said pneumatic signal indicating an open access gate and for generating a corresponding first voltage signal;
- d. a sealed container having therein a spring-biased solenoid, said solenoid having a first solenoid arm position in electrical contact with said components retaining residual voltage charges and a second solenoid arm position displaced from electrical contact, said solenoid being activated by the first voltage signal from said pneumatic signal receiving means, and said solenoid arm being electrically connected to ground potential.

3,864,604
ELECTRICAL SWITCHING DEVICE

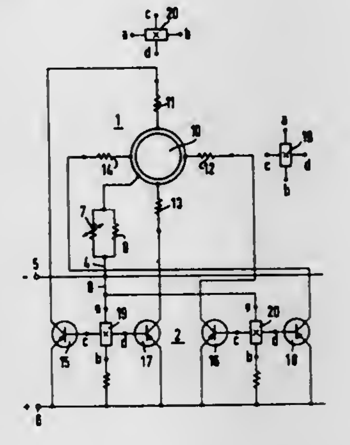
Josef Pfanzelt, Am Neugereuth 10, Freising, Germany
Filed May 8, 1973, Ser. No. 358,267
Claims priority, application Germany, May 8, 1972, 2222517; Aug. 17, 1972, 2240435
Int. Cl. H02h *3/00, 7/00*
U.S. Cl. 317—11 A **20 Claims**



1. A hybrid switching device for connecting a load to an alternating current supply, comprising a half-wave rectifier, a first contactor connected in series with said rectifier between said load and said supply, a second contactor connected in parallel with said rectifier, each of said contactors comprising contacts operable to an open and a closed condition for completing an electrically conductive path and electrically energized operating means for opening and closing said contacts, and a control circuit for controlling the energization of said operating means to switch said load on and off, said control circuit comprising oppositely directed asymmetrically conducting elements and switching elements operable to close said first contactor contacts to connect the load to said rectifier during a half-cycle in which said rectifier is nonconductive and thereafter to close said second contactor contacts during a half-cycle in which said rectifier is conductive thereby applying an input current to said load, and operable to open said second contactor contacts during a half-cycle in which said rectifier is conductive and thereafter to open said first contactor contacts during a half-cycle in which said rectifier is non-conductive thereby removing said input current from said load.

3,864,605
OVERLOAD PROTECTION FOR MINIATURE D-C MOTORS

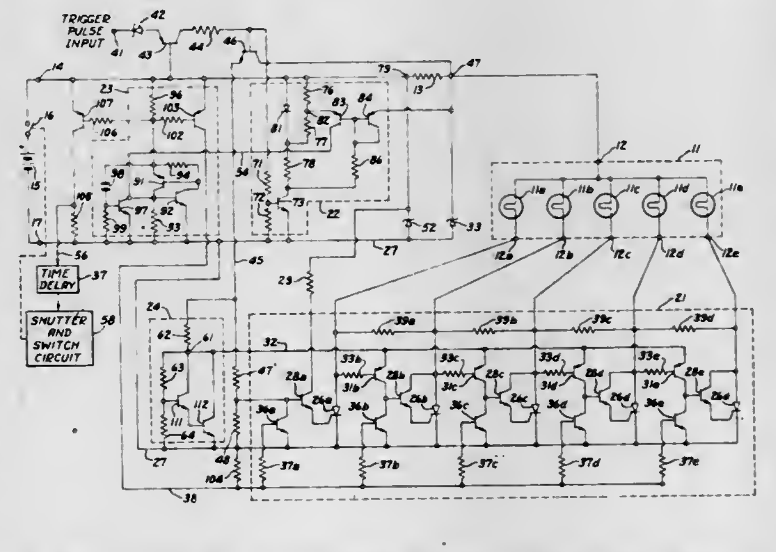
Hans Kuhnlein, Nurnberg-Grossgrundlach, and Helmut Rehahn, Nurnberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Dec. 27, 1973, Ser. No. 428,689
Claims priority, application Germany, Dec. 29, 1972, 2264134
Int. Cl. H02h *7/08*
U.S. Cl. 317—13 R **3 Claims**



1. In a d-c motor system including a d-c motor having a permanent magnet rotor and a Y connected multi-phase stator winding and an electronic commutation device for driving the motor with the return from the motor being a line coupling the common terminal of Y connected stator winding and a voltage terminal, an improved overload protection circuit comprising a resistor having a positive temperature coefficient of resistivity placed in the common lead coupling the phase windings to the voltage terminal.

3,864,606
COMPENSATED SEQUENCING CIRCUIT FOR FIRING PHOTOFLASH LAMPS

Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Oct. 24, 1972, Ser. No. 299,652
Int. Cl. F23q *7/02*
U.S. Cl. 317—80 **11 Claims**



1. In a circuit for sequentially flashing a plurality of photoflash lamps and comprising a plurality of electrical terminals adapted to be connected respectively to filaments of said flash lamps, a pair of operating voltage terminals, and a sequencing circuit comprising a plurality of semiconductor switch devices connected in circuit paths respectively between said plurality of electrical terminals and one of said operating voltage terminals, said sequencing circuit further comprising a plurality of sequencing circuit stages successively connected from one to another of said semiconductor switch devices, each of said sequencing stages including a semiconductor sequencing de-

vice the operating characteristics of which are subject to change with changes in operating temperature and voltage, the improvement comprising a temperature and voltage compensator circuit comprising a transistor amplifier including a current feed means, electrical means connecting said amplifier and its current feed means in series in a circuit across said operating voltage terminals thereby causing a compensating voltage to be produced in said current feed means, and electrical means connecting a point of said current feed means that is between said operating voltage terminals to an electrode of at least one of said semiconductor sequencing devices so as to apply said compensating voltage to said sequencing device.

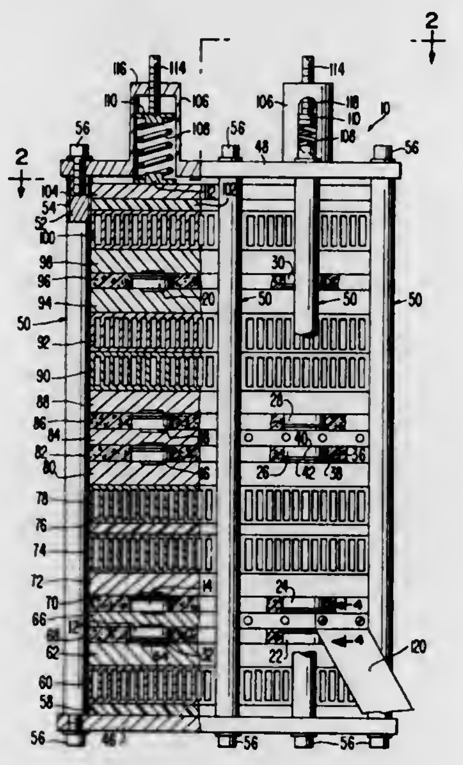
3,864,607
STACKABLE HEAT SINK ASSEMBLY

Edward H. Phillips, Los Altos, Calif., assignor to Programmed Power, Inc., Menlo Park, Calif.

Filed Mar. 16, 1972, Ser. No. 235,188

Int. Cl. H02b *1/00*

U.S. Cl. 317—100 **8 Claims**



1. A heat sink assembly for a plurality of circuit components of the type enabled by the application of mechanical pressure thereto comprising: a number of heat conducting mounting plates, there being a pair of mounting plates for each circuit component, respectively, each mounting plate having a pair of opposed, flat faces, each pair of mounting plates being disposed with respective faces in thermal contact with respective sides of the corresponding circuit component; a heat sink member for at least one of each pair of mounting plates, said heat sink member having a plurality of open-end air passages therethrough and a working surface in thermal contact with the adjacent face of the corresponding mounting plate, the working surface and the adjacent face having an area greater than the area of the adjacent side of the corresponding component to minimize the thermal impedance between the surface and the face; cage means defining a holder for confining a stack of said circuit components, said mounting plates and said heat sink members, the mounting plates and heat sink members being stackable one-by-one in the holder; and means coupled with the holder for applying a predetermined mechanical pressure simultaneously to the stack of parts held thereby.

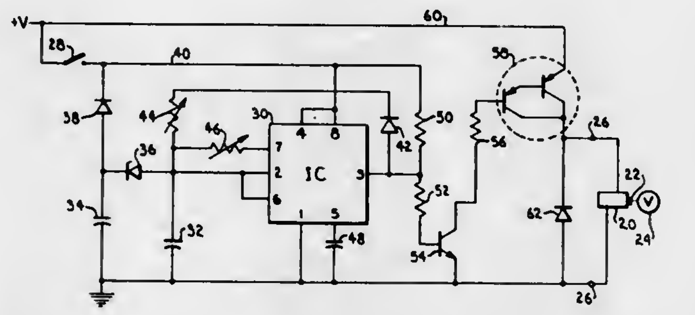
3,864,608
COMBINATION MONOSTABLE AND ASTABLE INDUCTOR DRIVER

James M. Normile, Kansas City; Victor M. Mathews, Jr., Leawood, and Eugene Brooks Lilly, Overland Park, all of Kans., assignors to MKC Electronics Corporation, Kansas City, Kans.

Filed May 21, 1973, Ser. No. 361,959

Int. Cl. H01h *47/32*

U.S. Cl. 317—148.5 R **8 Claims**



1. In actuator apparatus employing a solenoid characterized by a relatively high ratio of required pull-in current to required holding current, a driver for operating said solenoid comprising:

supply terminal means connected to said solenoid for supplying the latter with operating potential;

electrically responsive, bistate switching means connected with said terminal means for applying said potential thereto when said switching means is in a first operational state, and for interrupting application of said potential to said terminal means when said switching means is in a second, normal operational state; and

control means coupled with said switching means for delivering an electrical control signal thereto in accordance with a timing program selected to provide the pull-in current requirements of said solenoid and hold the solenoid following pull-in,

said control means upon activation thereof causing said switching means to initially assume said first state for a predetermined, uninterrupted time period at the outset of said program corresponding to said pull-in requirements, and thereafter cycling said switching means between said first and second states to provide a pulse width and spacing at said terminal means which supplies sufficient holding current to the solenoid,

said control signal having first and second levels and said control means delivering said signal at said first level during said time period at the outset of said program and thereafter cycling said signal between said first and second levels to cause said switching means to assume said first and second states thereof respectively in response to said first and second levels of the signal,

said control means including first capacitor means, charging and discharging circuit means connected with said first capacitor means, operating means responsive to predetermined minimum and maximum voltages developed across said first capacitor means for causing the latter to charge via said circuit means when the voltage across said first capacitor means falls to said minimum, and to discharge via said circuit means when said voltage rises to said maximum, and output means for delivering said control signal at said first level during charging of the first capacitor means and at said second level during discharge thereof, whereby said first capacitor means, charging and discharging circuit means, and operating means control said pulse width and spacing at said terminal means to provide a predetermined duty cycle following said uninterrupted time period at the outset of said program,

said control means being provided with second capacitor means of substantial capacitance, and means electrically connecting said second capacitor means with said circuit means during charging operation thereof but electrically isolating said second capacitor means therefrom during discharging operation of said circuit means, whereby upon said activation of the control means both the first and second capacitor means charge over a time duration terminating when said voltage reaches said maximum, said time duration defining said uninterrupted time period at the outset of said program.

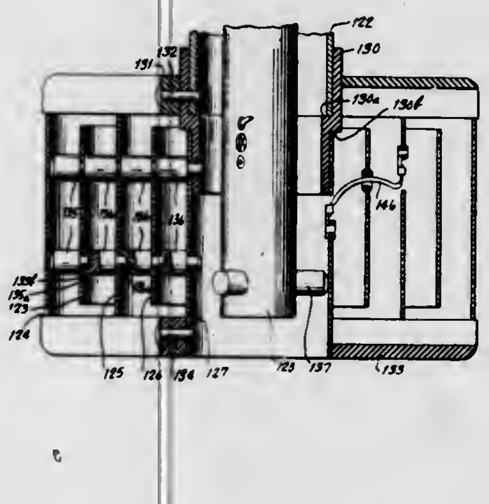
3,864,609
FUEL IMMERSIBLE CAPACITOR FOR MEASUREMENT OF DIELECTRIC CONSTANT OF LIQUID FUEL IN A TANK

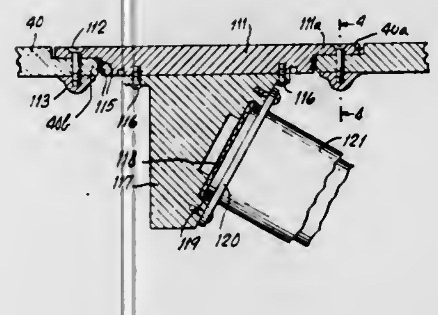
Sebastian F. Di Giacomo, Merrick, N.Y., assignor to Gull Airborne Instruments, Inc., Smithtown, N.Y.

Division of Ser. No. 237,718, March 24, 1972, Pat. No. 3,798,515. This application Jan. 2, 1974, Ser. No. 429,896

Int. Cl. H01g *5/01*

U.S. Cl. 317—249 R **5 Claims**





1. Capacitor means adapted to be immersed in a fluid and to have its capacitance vary with the dielectric constant of the fluid, comprising:

a. a plurality of pairs of concentric cylindrical plates;

b. two terminals;

c. means electrically connecting one set of radially alternate plates together to one terminal;

d. means electrically connecting the other set of radially alternate plates together to the other terminal:

e. said plates being held against relative radial and longitudinal movement by a plurality of radial rows of interfitting insulating radial buttons;

f. each button except the outermost in each row having on its inner end a shoulder encircling a shank received in an aperture in the inner one of the adjacent plates, and having on its outer end a convex surface engaging the inner surface of the outer one of the two adjacent plates, said surface encircling a recess receiving the shank on the next outermost button; and

g. the outermost button of the row having a convex surface on its outer end to engage the inner surface of the outermost plate.

3,864,610
SPEED CONTROL DEVICE FOR BRUSHLESS DC MOTOR

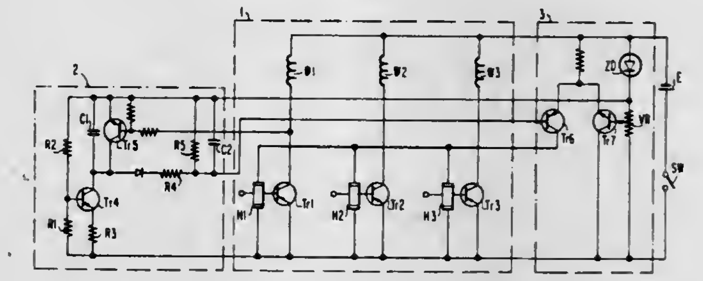
Nobuhiko Kawamoto; Tositaka Nakajima, and Tomoyuki Okubo, all of Kawasaki, Japan, assignors to Fuji Electric Company Limited, Kanagawa, Japan

Filed June 28, 1973, Ser. No. 374,435

Claims priority, application Japan, June 30, 1972, 47-65762

Int. Cl. H02k *29/00*

U.S. Cl. 318—317 **6 Claims**



1. A speed control device for a brushless d.c. electric motor including a permanent magnet rotor and a stator having stator winding means energized by a d.c. power supply, comprising switch means for controlling the energizing phase of said stator winding means in response to the rotary position of the rotor, means for detecting the energizing time period of said stator winding means, means for converting the detected period to a corresponding voltage amplitude, means for comparing the converted voltage amplitude with a preset voltage amplitude corresponding to a set speed to produce an error signal for controlling the amplitude of the current in said stator winding means in response to the difference between said converted voltage amplitude and said preset voltage to maintain the motor speed at said set speed.

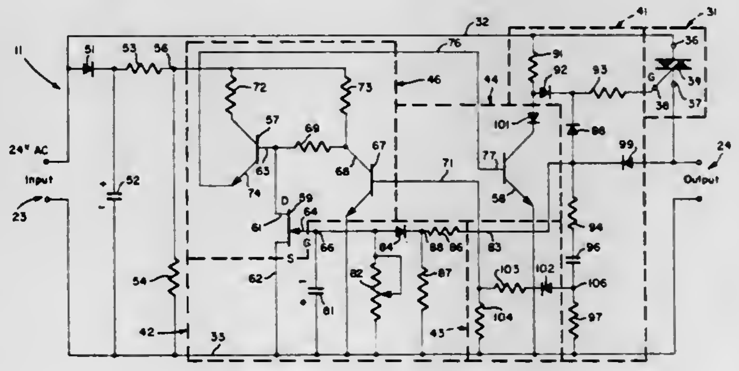
3,864,611
SOLID STATE CONTROL CIRCUIT FOR INTERMITTENTLY ENERGIZED LOADS

Thomas C. Chang, Irvine, Calif., assignor to Corona Controls, Inc., Corona, Calif.

Filed Oct. 29, 1973, Ser. No. 410,355

Int. Cl. H02h *3/08*

U.S. Cl. 318—484 **10 Claims**



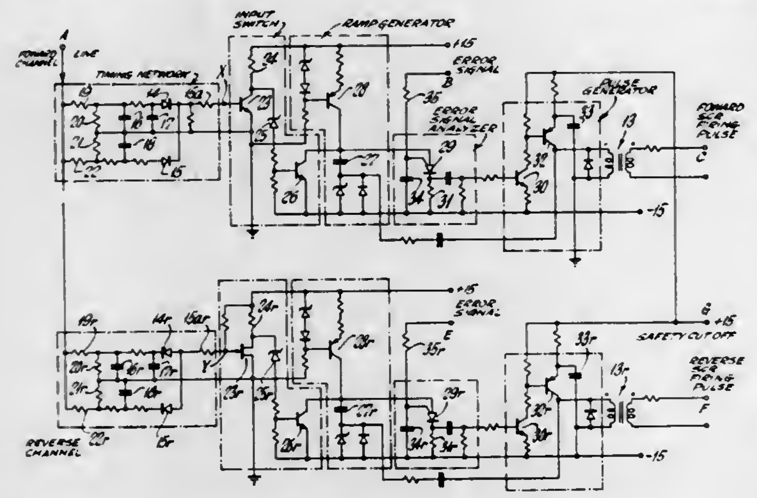
1. In a control system for energizing an electrical load in response to a source of intermittently applied alternating current control voltage, comprising:

a solid state bi-directionally conducting switching means for selectively connecting said source of control voltage to and for energizing said electrical load;

trigger circuit means connected between said source of control voltage and said solid state switching means to repetitively trigger said switching means by said control voltage to its bi-directionally conducting state for energizing said load;

- electrical delay circuit means connected to said switching means and being effective after a pre-determined interval of said conduction to provide a time delay period initiated upon termination of said switching means conduction;
- sensing circuit means connected to said switching means for detecting termination of said conduction;
- trigger disablement circuit means connected to and for selectively disabling said trigger circuit means to prevent triggering of said switching means by said control voltage; and
- logic circuit means connected and responsive to said delay circuit means and said sensing circuit means and being connected to and for operating said trigger disablement circuit means in response to the detected termination of said switching means conduction and for the duration of said time delay period defined by said delay circuit means, whereby said electrical load is substantially immediately energized in response to an initial application of said source of control voltage whereas the load will not be immediately re-energized until after the expiration of said delay period in the event of a brief loss of said source of control voltage.

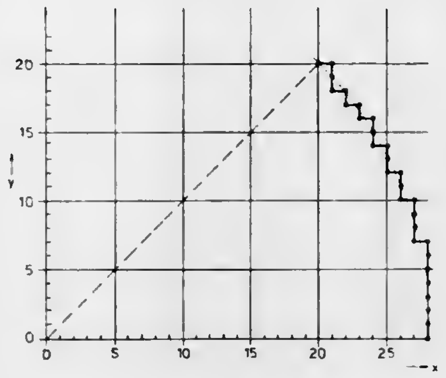
3,864,612
FIRING ANGLE RETARDATION CONTROL
James Sidney Whited, Rt. 3, Box 501, Radford, Va. 24141
Filed Mar. 9, 1973, Ser. No. 339,581
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **6 Claims**



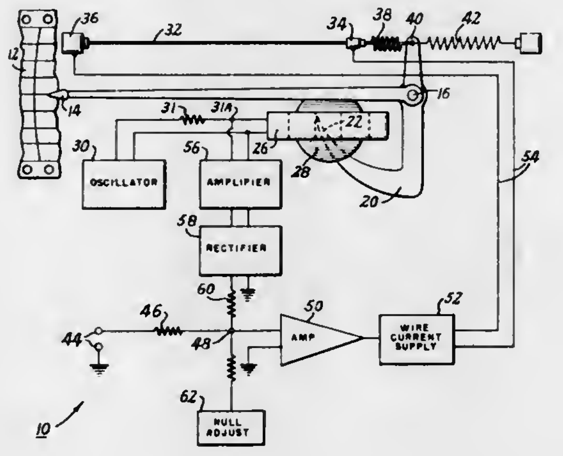
1. A control system for a D-C motor operable from an alternating current input power supply comprising:
- A. a control circuit connected to the power supply and to the motor to provide recitifed power to the motor;
- B. a gated rectifying network in the control circuit including a first bank of forward conducting SCR's and a second bank of reverse conducting SCR's which are rendered conductive by firing pulses;
- C. a pulse generating system including means for generating a ramp signal, and means responsive to the ramp signal and an error signal for producing firing pulses when a predetermined relationship exists between the ramp signal and the error signal; and
- D. means for developing a timing signal referenced to the alternating current input signal from the power supply, said timing signal means coupled to the pulse generating system for regulating the duration of the ramp signal to provide for the generation of firing pulses over an operating range unrestricted by the zero crossover point of the alternating current input signal.

3,864,613
PATH GENERATING SYSTEM FOR NUMERICAL CONTROL APPARATUS
Hymie Cutler, 16230 Santa Rosa, Detroit, Mich. 48221
Filed Dec. 29, 1972, Ser. No. 319,317
Int. Cl. G05b *19/24*
U.S. Cl. 318—573 **7 Claims**

1. Apparatus for generating axis command pulses to be supplied to first and second axis drives to produce a resultant circular movement of a member driven thereby in accordance with a predetermined circular path programmed in a program store, the program store including axes command data and feedrate command data, the apparatus comprising a path generator system operative to generate, in response to the program store axis command data, a train of axes command pulses for each axis to be supplied to the respective drives, and a control system operative to compare the program store feedrate command data with the generated axes command pulses and to produce feed pulses controlling the path generator system; said path generator system comprising: a data register for each of said axes, each register storing the command data for its respective axis from the program store; an error register; command pulse generating means effective to generate, for each feed pulse, an axis command pulse for said first axis when the error register is of one sign and an axis command pulse for said second axis when the error register is zero or of the opposite sign; and error register control means effective, upon the generation of each axis command pulse, to cause only the contents of the axis data register corresponding to the axis of the command pulse generated to be added into the error register when the error register is of said one sign and to be subtracted from the error register when the error register is of said opposite sign or zero, such as to cause the contents of the error register always to approach zero.



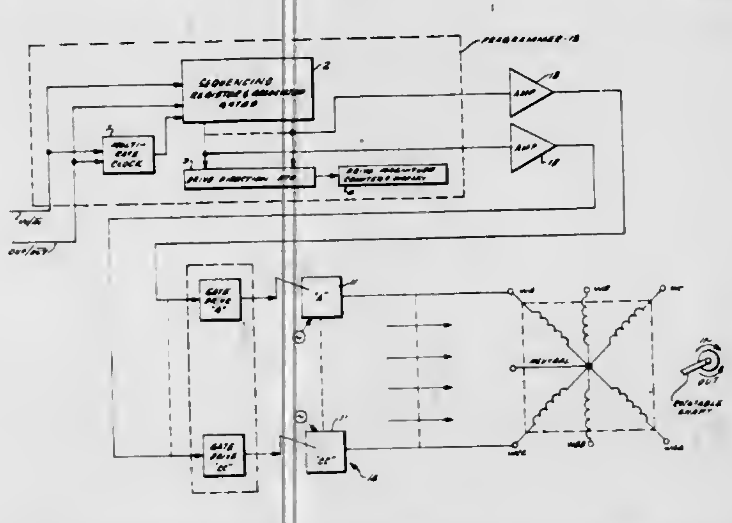
3,864,614
ELECTRO-MAGNETIC POSITION TRANSDUCER FOR A THERMO-ELECTRIC LINEAR MOTOR FORCE REBALANCE SYSTEM
Everett O. Olsen, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.
Continuation of Ser. No. 63,092, Aug. 12, 1970, abandoned. This application Apr. 27, 1972, Ser. No. 248,286
Int. Cl. G05b *11/01*
U.S. Cl. 318—676 **13 Claims**



1. A positioning transducer comprising magnetic material defining a closed-loop magnetic circuit interrupted at one part of said loop with an air-gap;
- an inductive winding magnetically coupled to said closed-loop magnetic circuit to present an inductive impedance responsive to the reluctance of said magnetic circuit;

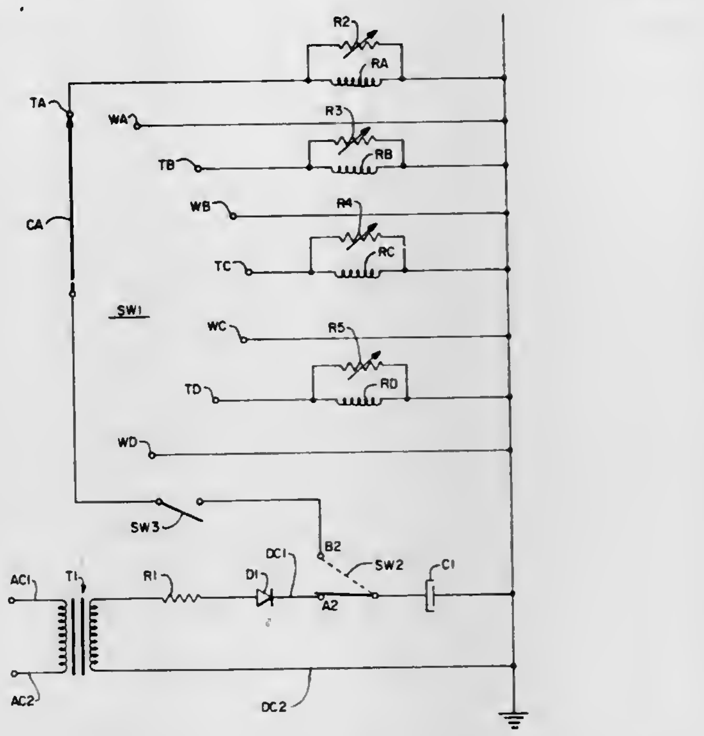
- means producing an a-c current in said winding to develop flux around said magnetic circuit, said flux crossing said air-gap;
- a flux-masking element within said air-gap and adapted to be moved in the air-gap by a device the position of which is to be monitored;
- said element being characterized by non-magnetic, conductive means occupying a portion of said air-gap and arranged to intercept and alter the net flux crossing said air-gap portion by the development of eddy currents responsive to said flux, so as to alter the net flux around said closed-loop magnetic circuit, said element means being constructed and aranged such that the magnitude of the occupied air-gap portion varies with changes in position of said element and alters the amount of eddy current generated and thereby alters the total amount of said flux crossing said air-gap as said element moves with said device, whereby to change the effective inductance of said winding; and
- circuit means to produce a signal responsive to the inductance of said winding as determined by the position of said flux-masking element.

3,864,615
ELECTRONIC PROGRAMMER FOR MULTI-PHASE MOTOR
Lee A. Williams, Santa Ana, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.
Filed Sept. 13, 1971, Ser. No. 179,867
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **14 Claims**



1. In a system having a multi-phase motor having a stator comprising n independently energizable windings arranged in a preselected winding configuration, a rotatable shaft responsive thereto, and a power supply having n triggerable devices for independently supplying single polarity voltage to the independently energizable windings, a programmer for sequencing the operation of the triggerable devices to power the motor for step-by-step movement of the motor shaft,
- the programmer including a plurality of binary storage devices arranged to form a register having at least **2n** phase defining states each representative of a different shaft position with a first set of n phase defining states indicating that m triggerable devices should supply voltage to the multi-phase motor and with a second set of n phase defining states indicating the $m + 1$ triggerable devices should supply voltage to the multi-phase motor;
- means for sequencing the register through each of the $2n$ states such that each change from an existing state to a changed state results in the changed state being in a different one of the two sets from the existing state;
- means responsive to the register for triggering the triggerable devices in accordance with the indication provided by the register; and
- counting means responsive to changes of state by the register for providing an indication of the magnitude of motor shaft movement ordered by the programmer.

3,864,616
COIN-OPERATED CONTROL CIRCUIT FOR SELECTIVELY ENERGIZING A PLURALITY OF MACHINES
John C. Hiortdahl, Rt. 1, Box 185A, Davidsonville, Md. 21035
Filed May 3, 1973, Ser. No. 356,776
Int. Cl. H01h *47/00*
U.S. Cl. 320—1 **7 Claims**



1. A system for energizing a selected load means in a group of load means comprising:
- a. capacitor means for storing an amount of electrical energy substantially equal to the energy necessary to energize a single selected load means;
- b. first selector switch means for selectively discharging said capacitor means through said selected load means, said switch means including a first set of terminals connected to the respective load means of said group, and movable contact means for selectively engaging a selected one of said terminals in said first set, said contact means being selectively connected in series with said capacitor means;
- c. voltage generating means for supplying said capacitor means with said electrical energy; and
- d. a second set of terminals interspaced between each of said first set of terminals, said second set of terminals being directly connected to ground, whereby any residual energy in said capacitor remaining after the energization of a selected load means will be discharged to ground when said movable contact engages any of said second set of terminals

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3,864,617
CHARGE CONTROL MEANS FOR MOTIVE POWER BATTERY CHARGER
Howard A. Smith, and William E. Renick, both of Raleigh, N.C., assignors to ESB Incorporated, Philadelphia, Pa.
Filed July 12, 1973, Ser. No. 378,788
Int. Cl. H02j *7/10*
U.S. Cl. 320—23 **6 Claims**

1. In a battery charging device having an input and an output, the input being connectable to a source of power and the output being connectable to a storage battery for supplying a charging current thereto, the improvement which comprises:
- a. a voltage reference having an output;
- b. a voltage comparator having a first input, a second input and an output, the first input being connected to the output of the voltage reference, the second input being connected to the output of the charging device, the comparator comparing the voltage of the battery with the

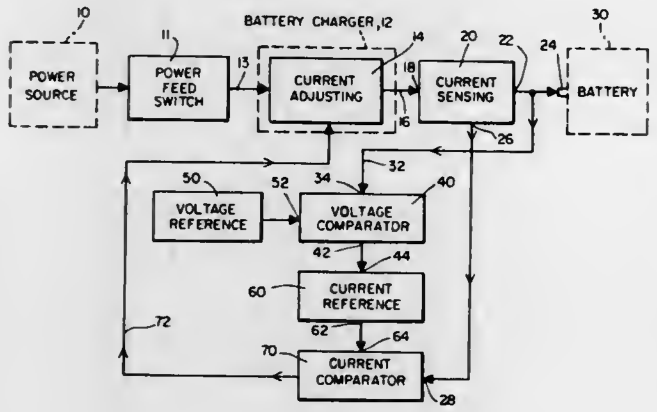
voltage of the voltage reference and producing a first reference signal at its output as a result thereof;

c. a current reference having an input and an output, the input being connected to the output of the voltage comparator the current reference supplying to its output a second reference signal whose magnitude is related to the signal received by the input thereof in accordance with a preselected charge program relating a desired battery charging current to the battery voltage, said second signal being proportional to the desired charging current;

d. a charge current sensor having a current input, a current output and a sensing output, the current input thereof being connected to the output of the charging device, the current output thereof being connectable to the battery to be charged, and the sensing output providing a third reference signal, the magnitude of which being proportional to the magnitude of the battery charging current;

e. a current adjusting device for adjusting the magnitude of the battery charging current, the device having a power input, a power output and a control input, the power input and the power output of the current adjusting device being connected in the charging device so as to provide current thereto, the control input controlling the adjustment of the device; and,

f. a current comparator for supplying a control signal to the current adjusting device, the current comparator having a first input, a second input and an output, the first input being connected to the output of the current reference, the second input being connected to the output of the current sensor, and the output being connected to the current adjusting device, the current comparator comparing the third reference signal received from the current sensor to the second reference signal received from the current reference and supplying the control signal as a result thereof, the control signal causing the third reference signal to continuously equal the second reference signal.



3,864,618
ELECTRO-MECHANICAL VIBRATORY DRIVE CONTROL

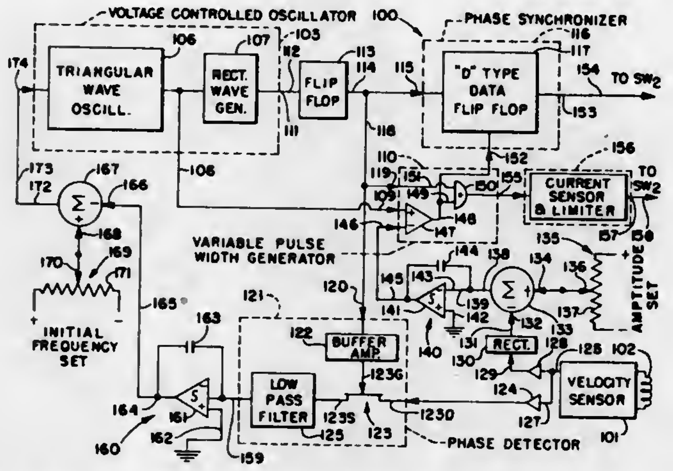
Peter W. Hammond, Chagrin Falls, Ohio, assignor to MEM Controls, Inc., Wickliffe, Ohio

Filed Nov. 13, 1972, Ser. No. 305,982

Int. Cl. H02m *7/00*

U.S. Cl. 321—9 A **20 Claims**

1. A control circuit for providing first and second control signals comprising variable frequency oscillator means for producing first and second output signals at a frequency determined by an input signal thereto, such first and second output signals maintaining substantially constant phase relation, and such first output signal also forming one of the control signals, and variable pulse width generator means for producing from such first and second output signals and a reference input signal the other one of the control signals.



3,864,619
DC TO AC INVERTER WITH THYRISTOR FOR ISOLATING LOAD CIRCUIT FROM COMMUTING REACTOR

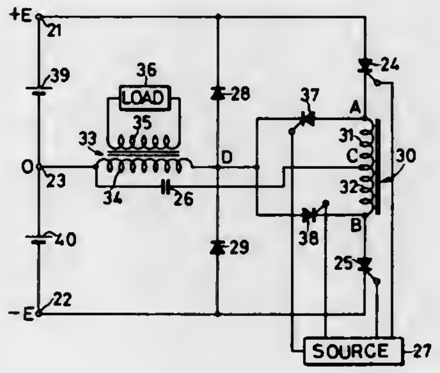
Shinya Tanaka; Mitsuo Nakamura, and Kazuo Hirose, all of Niiza, Japan, assignors to Sanken Electric Company Limited, Saitama-ken, Japan

Filed Oct. 29, 1973, Ser. No. 410,514

Claims priority, application Japan, Nov. 14, 1972, 47-114085

Int. Cl. H02m *7/52*

U.S. Cl. 321—16 **10 Claims**



1. An inverter circuit for DC to AC conversion comprising, in combination:

a DC supply system having positive, neutral, and negative terminals;

a commuting reactor having a winding connected across said positive and negative terminals of said DC supply system, said winding of said commuting reactor being center tapped to be substantially divided into first and second halves;

a first thyristor connected between said positive terminal of said DC supply system and said first half of the commuting reactor winding so as to permit current flow from the former to the latter when conductive;

a second thyristor connected between said second half of said commuting reactor winding and said negative terminal of said DC supply system so as to permit current flow from the former to the latter when conductive;

a load circuit having first and second terminals, said first terminal of said load circuit being connected to said neutral terminal of said DC supply system;

a third thyristor connected between said first thyristor and said second terminal of said load circuit so as to permit current flow from the former to the latter when conductive;

a fourth thyristor connected between said second terminal of said load circuit and said second thyristor so as to permit current flow from the former to the latter when conductive;

a capacitor connected between the center tap terminal of said commuting reactor winding and said first terminal of said load circuit;

a first diode connected substantially in parallel with said first thyristor, the direction of current flow through said first diode being opposed to that through said first thyristor;

a second diode connected substantially in parallel with said second thyristor, the direction of current flow through said second diode being opposed to that through said second thyristor; and

a source of gate signals connected to the gate electrodes of said first, second, third and fourth thyristors;

whereby a voltage of positive polarity is delivered to said load circuit when said first and third thyristors are gated conductive, and a voltage of negative polarity is delivered to said load circuit when said second and fourth thyristors are gated conductive.

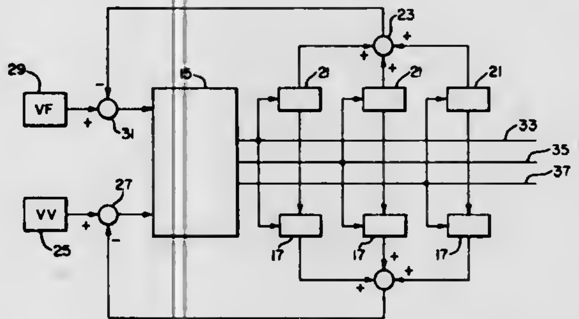
3,864,620
ARRANGEMENT OF PARALLEL STATIC AC POWER SOURCES PROPORTIONS

Alberto Abbondanti, Penn Hills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 11, 1973, Ser. No. 396,161

Int. Cl. H02m *5/00*

U.S. Cl. 321—27 R **8 Claims**



1. An arrangement of parallel static AC power sources autonomously assuming the proper proportions of load current comprising:

first and second converter circuits connected in parallel;

first current sensing means to produce a signal representative of the output load current of said first converter;

first phasing means responsive to the signal from said first current sensing means to produce a first control signal representative of a first component of the load current of said first converter and a second control signal representative of a second component of the load current of said first converter, said second signal component being in quadrature with said first component;

first control means comprising a voltage reference source, a voltage summing node and an error amplifier, said voltage reference source providing a voltage reference signal, said voltage reference signal and said first control signal being applied to said voltage summing node, said error amplifier controlling the voltage amplitude of said first converter in response to the difference between the output of said voltage summing node and a similarly scaled representation of the amplitude of the output voltage of said first converter, said first control means being responsive to said first control signal produced by said first phasing means to control the amplitude of the voltage of said first converter in such a fashion as to cause said first proportion converter to tend to supply a constant predetermined proportion of the total load current;

second control means responsive to said second control signal produced by said first phasing means to control the frequency of the voltage of said first converter in such a fashion as to cause said first converter to tend to supply a constant predetermined proportion of the total load current; and

an external input to said voltage summing node to adjust the amplitude of the voltage of said first converter in proportion to a similar adjustment in the amplitude of the voltage of said second converter.

3,864,621
TRANSISTORIZED CONTROL CIRCUIT FOR MAGNETO MOTOR IGNITION SYSTEMS

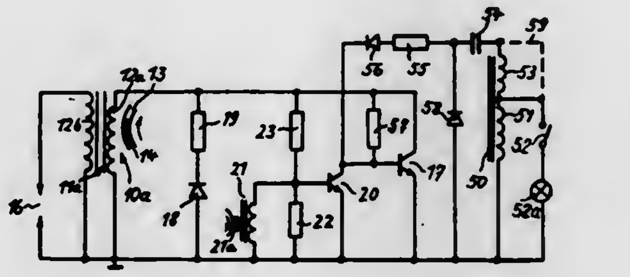
Georg Haubner, Berg; Walter Hofer, Schwabach, and Peter Schmaldienst, Nurnberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 31, 1973, Ser. No. 384,380

Claims priority, application Germany, Aug. 29, 1972, 2242326

Int. Cl. F02p *1/00, 1/08, 9/00*

U.S. Cl. 322—17 **6 Claims**



1. In an internal combustion engine ignition system having a magneto generator with a magneto armature provided with at least one winding arranged to be excited by a magnetized rotor driven by the engine, and having voltage step-up means coupled with said magneto armature, which means is coupled with a low-voltage winding of said armature and connected by ignition cable to at least one spark plug, said ignition system having also a spark-timing pulse generator operated in synchronism with said engine,

an ignition control circuit for connection to said low-voltage winding of said armature, comprising:

a controllable semiconductor device (**17**) having its switching path in circuit with said low-voltage winding;

means to supply the output of said pulse generator (**27**) to the control electrode of said semiconductor device (**17**); control winding means (**24, 30, 53, 60*b***) for electromagnetically deriving from electrical power supplied by said magneto generator, a voltage to supply control path current to said semiconductor device (**17**) during those half cycles of the output of said magneto armature for which said semiconductor device (**17**) is poled favorably for conduction, said control winding means having one end connected to the circuit in which said low-voltage winding is connected and being subject to a changing magnetic flux during the rise of current in said circuit;

resistance means (**15**) and at least one capacitor (**54**) connected in series between the other end of said control winding means and said control electrode of said semiconductor device (**17**); and

a diode (**58**) having its anode connected to the side of said circuit grounded to the casing of said engine and its cathode connected to the junction of said resistance means (**55**) and said capacitor (**54**).

3,864,622

TRANSISTORIZED CONTROL CIRCUIT FOR MAGNETO MOTOR IGNITION SYSTEMS

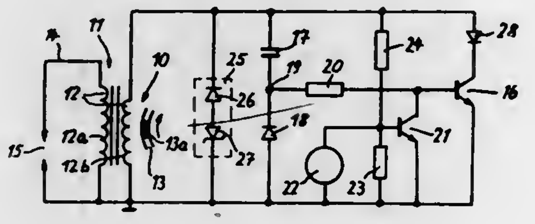
George Haubner, Berg; Walter Hofer, Schwabach, and Peter Schmaldienst, Nurnberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 31, 1973, Ser. No. 384,381

Claims priority, application Germany, Aug. 29, 1972, 2242327

Int. Cl. F02p *1/00, 1/08, 9/00*

U.S. Cl. 322—17 **9 Claims**



1. In an internal combustion engine ignition system having a magneto armature provided with at least one winding arranged to be excited by a magnetized rotor driven by the engine, and having voltage step-up means coupled with said magneto armature, which means is coupled with a low-voltage winding of said armature and connected by ignition cable to at least one spark plug, said ignition system having also a spark-timing pulse generator operated in synchronism with said engine,

- an ignition control circuit for connection to said low-voltage winding of said armature, comprising:
- a controllable semiconductor device (**16**) having a switching path and a control path and having its switching path in circuit with said low-voltage winding and its control path in a control circuit;
- means (**21**) to supply the spark-timing pulse output of said pulse generator (**22**) to the control circuit of said semiconductor device (**16**) in such polarity as to put the switching path of said semiconductor device quickly into its non-conducting condition and thereby interrupt the current in said low-voltage winding;
- a series combination of a capacitor (**17**) and a diode (**18**) connected so as to bridge at least a substantial part of said low-voltage winding (**12b**), said diode being poled for conduction in the direction opposite to the direction of conduction of said switching path of said semiconductor device (**16**), and
- a resistively conductive connection between said control electrode of said semiconductor device (**16**) and the common connection (**19**) of said capacitor (**17**) and said diode (**18**).

3,864,623

PSEUDO BALANCED CONSTANT CURRENT SUPPLY

David W. Luce, Pacific Palasades, Calif., assignor to Computer Transmission Corporation, El Segundo, Calif.

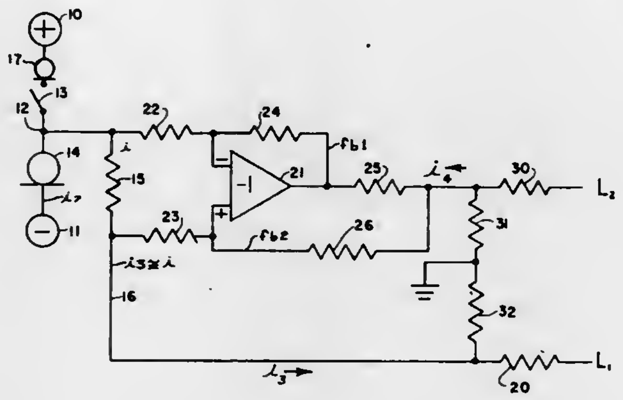
Filed Oct. 5, 1973, Ser. No. 403,998

Int. Cl. G05f *1/46*

U.S. Cl. 323—1 **3 Claims**

1. Current supply circuit for a pair of line conductors comprising:

- a voltage supply;
- said voltage supply comprising a negative polarity constant current source and a positive polarity constant current source and switch means for selectively applying one or both of said constant current sources to a common output terminal of said voltage supply;
- a pair of line conductors;
- a first resistance connected in series between the said output terminal of said supply and the first of said pair of line conductors;
- an amplifier having a gain of substantially minus one and a pair of input terminals;
- means connecting the input terminals of said amplifier to the opposite ends of said first resistance whereby the input voltage to said amplifier is a voltage drop proportional to the current in the first of said pair of line conductors;
- a first feedback path from the output of said amplifier to one of said pair of input terminals;
- a second resistance equal in value to said first resistance and connected in series with the output of said amplifier and the second of said line conductors; and
- a second feedback path between the end of said second resistance remote from said amplifier to the second of said pair of input terminals of said amplifier.



3,864,624

STANDARD VOLTAGE GENERATING CIRCUIT

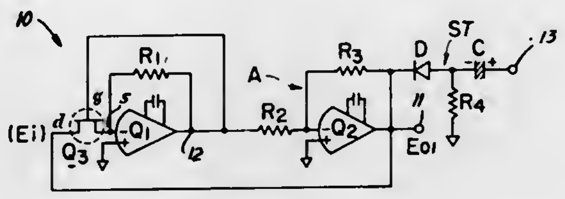
Takashi Sugiyama; Minoru Odajima, and Yoshiro Tamezumi, all of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed May 24, 1973, Ser. No. 363,477

Claims priority, application Japan, May 31, 1972, 47-53924; May 31, 1972, 47-53925

Int. Cl. G05f *1/56;* **H03f** *1/14*

U.S. Cl. 323—19 **19 Claims**



1. A circuit for generating a highly stable and accurate standard DC voltage comprising:

- an operational amplifier having an input and an output;
- a negative feedback circuit between the operational amplifier output and input and having a constant gain;
- a positive feedback circuit extending between the operational amplifier output and input; and
- means in the positive feedback circuit for limiting the current passing therethrough to the operational amplifier input to a constant stable level, the current limiting means having a condition of operation in which current remains constant despite variations in voltage thereacross, the current limiting means being arranged to operate in said constant current condition at said stable current level;
- thereby to produce a stable DC output voltage at the output of the operational amplifier.

3,864,625

METHOD AND A DEVICE FOR MEASURING THE THICKNESS OF THE WALL OF A TUBE OF NON-CONDUCTING MATERIAL LEAVING AN EXTRUDER NOZZLE

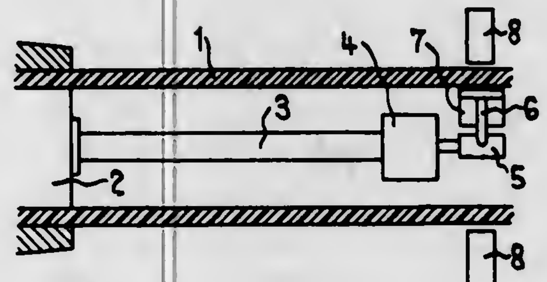
Bruno Zumbach, Orpund, and Peter Nopper, Lyss, both of Switzerland, assignors to Zumbach Electronic Automatic, Canton, Berne, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,334

Claims priority, application Switzerland, Dec. 13, 1971, 18201/71

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 TK **21 Claims**



1. A method of measuring the wall thickness of a tube of non-conductive material leaving an extruder nozzle, including the steps of locating an electrically conductive article inside the tube, approaching to and maintaining a measuring device at a predetermined distance from the outer surface of the tube for measurement of the distance between said article and said measuring device, providing means for producing a relative movement between said measuring device and the article such that the distance between them passes through a minimum with said article in a defined position relatively to the inner surface of the tube, detecting the value measured by said measuring device at this minimum, said value being a measure for the tube thickness where said article is located within the tube during detection of said value.

3,864,626

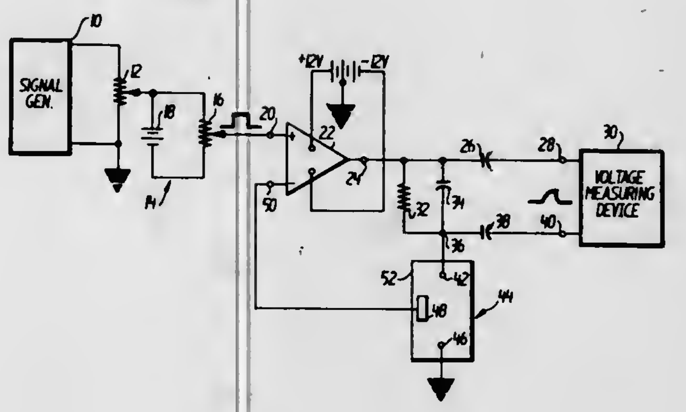
METHOD AND APPARATUS FOR EVALUATING PROPERTIES OF MATERIALS

Alexander F. MacLean, Durham, N.H., and Ilmar L. Kalnin, Millington, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 26, 1973, Ser. No. 326,711

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **21 Claims**



10. A method for determining a relative physical property of a fiber comprising the steps of:

- a. sensing the capacitance of a capacitive cell having two electrodes and having a reference fiber of known physical properties as one of the electrodes;
- b. sensing the capacitance of said capacitive cell having a second fiber of unknown physical properties as said one of the electrodes; and
- c. evaluating an unknown physical property of the second fiber relative to a known physical property of the reference fiber as a function of the two sensed capacitances.

3,864,627

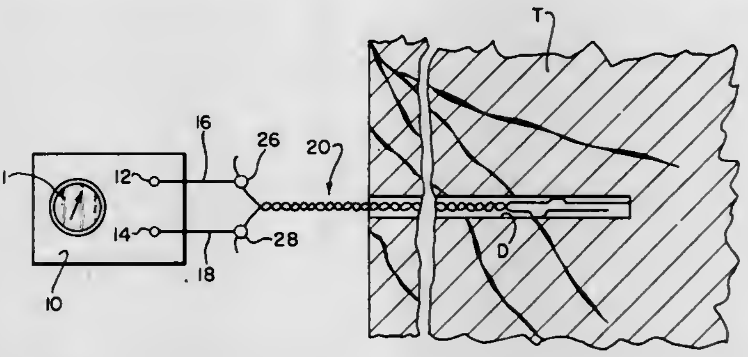
PROBING FOR DETECTION OF DECAY IN WOOD

Alex Shigo, Mifflin, Pa., assignor to Northeast Electronic Corporation, Concord, N.H.

Filed Dec. 3, 1973, Ser. No. 420,932

Int. Cl. G01r *27/02*

U.S. Cl. 324—65 P **10 Claims**



1. Probing apparatus for measuring cation concentration in wood structure comprising,

- means including first and second insulatedly separated wires defining a probing element for establishing a portion of a current path in the interior of wood,
- the probing element defining means comprising means forming an axially elongated insertable end thereof with spaced points thereon for conductive contact with internal walls of said wood,
- said means defining an insertable end being yieldable to within a first compressed geometric cross-section envelope for insertion through narrow internal passages within the wood and expandable to positively contact internal walls of the wood when measuring,
- means defining a flexible, stiff major length portion of the probing element,
- and means for essentially insulating said wires from the wood except in the region of said spaced points.

3,864,628

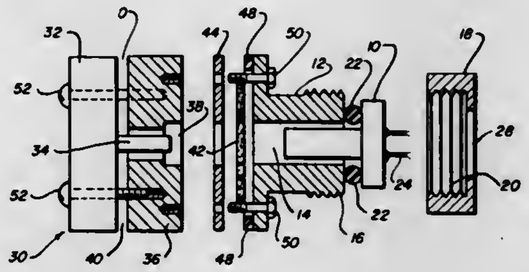
SELECTIVE SOLID-STATE GAS SENSORS AND METHOD

Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 29, 1973, Ser. No. 364,755

Int. Cl. G01n *27/00*

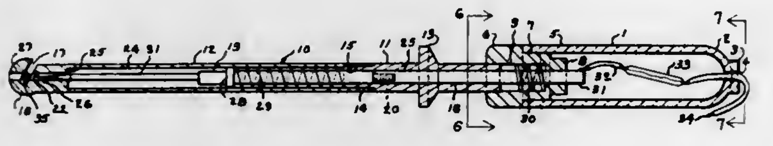
U.S. Cl. 324—71 SN **15 Claims**



1. A method for detecting a selected gas with a solid state gas sensor present in an electric circuit with output detection means, including the steps of

- exposing said gas sensor to gases, including the selected gas, only through a gas permeable membrane which is highly selective for permeating said selected gas, and
- determining the characteristic time response lag of said sensor to said selected gas by actuation of the circuit detection means.

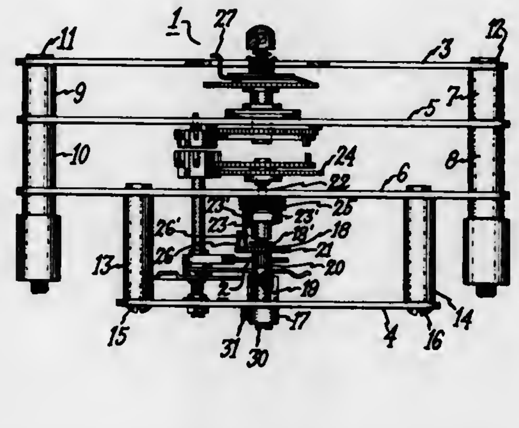
3,864,629
ELECTRICAL CIRCUIT TESTER
Patrick Danna, 1303 Kingsbury, Dearborn, Mich. 48121
Filed Mar. 23, 1973, Ser. No. 344,187
Int. Cl. G01r *31/02*
U.S. Cl. 324—72.5 **5 Claims**



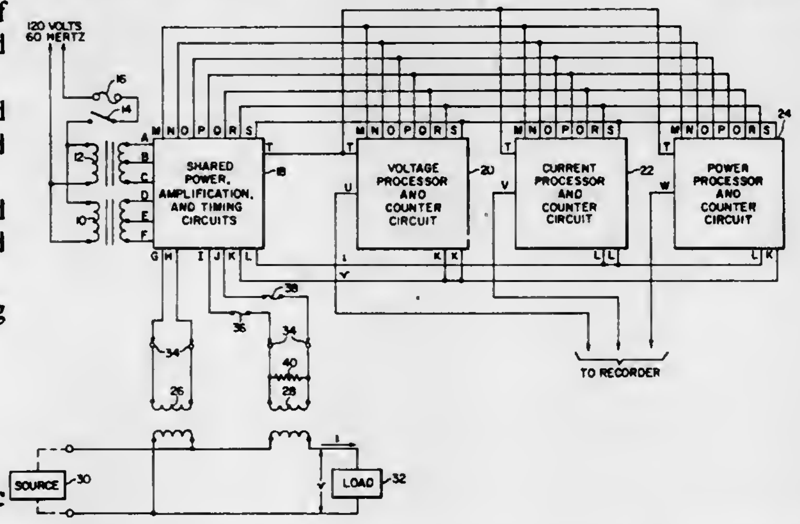
1. The combination with an electrical circuit tester, including
- a hollow tubular handle having a closed end and an open end,
- a closure removably applicable to said handle to close said open end,
- an elongated, electrically conductive rod having a near end portion extending into said handle and a pointed end portion, remote from said handle, and
- an electrical conductor connected to said near end, within said handle, to make a desired electrical contact, of
- an elongated, tubular sleeve having an interior elongated slideway extending its full length,
- a recess in the outer end portion of said sleeve, formed to intersect said slideway, and receive an electrically conductive wire disposed transverse to and in the path of said slideway,
- said sleeve having a normal position in which its outer end substantially coincides with and encompasses said pointed end, so that said pointed end obstructs said recess,
- said sleeve having reciprocable, sliding travel longitudinally of said rod, toward said handle to a retracted position exposing said pointed end for desired, selective electrical contact, or away from said handle to an extended position, to withdraw said recess from said pointed end, whereby said recess may receive a wire for physical and electrical contact by said pointed end upon reversal of said sliding travel, toward said normal position of said sleeve,
- a first yieldably resistance means reacting between said rod and said sleeve to urge said sleeve toward said retracted position, and
- a second yieldably resistance means reacting between said closure and said sleeve to urge said sleeve toward said extended position,
- said first and second means resistance, jointly establishing said sleeve in said normal position.

3,864,630
SELF-ALIGNING BEARING ASSEMBLY
Donald M. Ham, Rochester, N.H., assignor to General Electric Company
Division of Ser. No. 246,458, April 21, 1972, Pat. No. 3,789,300. This application Sept. 4, 1973, Ser. No. 393,971
Int. Cl. G01r *19/16;* **F16c** *23/00*
U.S. Cl. 324—103 R **6 Claims**

1. An assembly having a self-aligning bearing assembly comprising an elongated bearing rigidly mounted on a support member, wall means defining a passageway axially through said bearing, said wall means being formed to include a lip portion that defines a minimum diameter orifice in said passageway, a bushing sleeve positioned through said orifice, a plurality of bosses formed on said bushing sleeve, said bushing sleeve having a flange formed on one end thereof, and including a gear rotatably mounted on the outer surface of said bushing sleeve between said flange and said bosses, said flange being effective to maintain the gear on said sleeve, each of said bosses being in "force fit" engagement with the lip portion of said passageway thereby to prevent the sleeve from rotating with respect to the bearing, means defining a shaft-receiving aperture through said bearing sleeve in which a shaft can be rotatably mounted, said bushing sleeve being operable to pivot about the points of engagement between said bosses and the lip portion of said passageway thereby to enable the shaft-receiving aperture in said bushing sleeve to be easily moved into alignment with a shaft inserted into it, and including a pusher member mounted on said gear at a point spaced radially outward from the axis of rotation of the gear, and also including a shaft rotatably mounted in said bushing sleeve, said shaft having a lever arm affixed to it for rotation therewith, said lever arm being operable to be engaged by said pusher member and to be rotated in response to rotation of the pusher member when engaged thereby.



3,864,631
ELECTRONIC MULTIMETER HAVING A PLURALITY OF VOLTAGE-TO-FREQUENCY CONVERTERS
William E. Zitelli, Media, and Andras I. Szabo, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 16, 1974, Ser. No. 461,333
Int. Cl. G01r *15/08, 17/06*
U.S. Cl. 324—115 **5 Claims**



120 VOLTS 60 HERTZ
16
14
12
10
A
B
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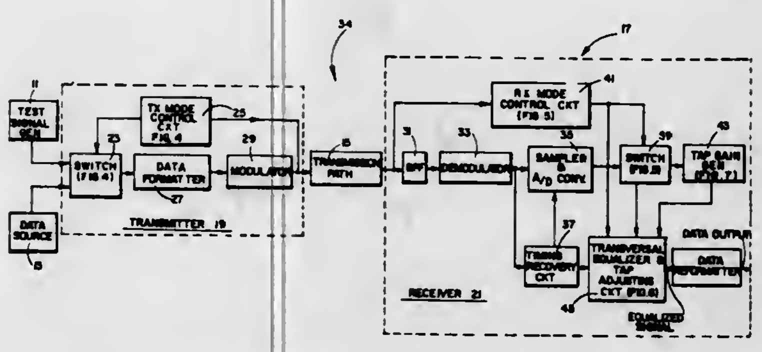
D
E
F
M N O P Q R S
T
SHARED POWER, AMPLIFICATION, AND TIMING CIRCUITS
18
VOLTAGE PROCESSOR AND COUNTER CIRCUIT
20
U
CURRENT PROCESSOR AND COUNTER CIRCUIT
22
V
POWER PROCESSOR AND COUNTER CIRCUIT
24
W
G H I J K L
38
36
34
40
26
28
TO RECORDER
SOURCE
30
LOAD
32

1. A multimeter for measuring first and second electrical signals, comprising:
- a timing signal generator;
- first and second input circuits which respectively transfer the first and second electrical signals;
- first and second multiplier circuits each having two inputs and an output which is responsive to the product of the signals applied to the inputs, with the inputs of said first and second multiplier circuits being appropriately coupled to the first and second input circuits to provide the desired output products;
- a first voltage-to-frequency converter connected to the output of said first multiplier circuit and to said timing signal generator, said converter providing output pulses proportional in number to the output from said first multiplier circuit;
- a first programmable electronic dividing circuit connected to said first voltage-to-frequency converter, said dividing circuit providing one output pulse when the output pulse from said voltage-to-frequency converter occurs a predetermined number of times;
- first counter and first display means which furnish an indication of the number of output pulses provided by the dividing circuit;
- a second voltage-to-frequency converter connected to the output of said second multiplier circuit and to said timing signal generator, said converter providing output pulses proportional in number to the output from said second multiplier circuit;
- a second programmable electronic dividing circuit connected to said second voltage-to-frequency converter, said dividing circuit providing one output pulse when the output pulse from said voltage-to-frequency converter occurs a predetermined number of times; and,
- second counter and second display means which furnish an indication of the number of output pulses provided by the second dividing circuit.

3,864,632
FAST EQUALIZATION SYSTEM
Tien-Lin Chang, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Oct. 1, 1973, Ser. No. 402,424
Int. Cl. H04b *1/10*
U.S. Cl. 325—42 **11 Claims**



1. An equalization system for automatically adjusting the tap settings of a transversal equalizer to correct for distortions of a data signal received from a transmission channel, said system comprising:
- first means responsive to a first signal in the time domain from the transmission channel for developing time domain samples of the first signal;
- second means for performing a discrete fast Fourier transform on the time domain samples of the first signal to develop samples in the frequency domain;
- third means for developing reciprocal values of the samples in the frequency domain; and
- fourth means for performing an inverse discrete fast Fourier transform on said reciprocal values of the samples in the frequency domain to develop time domain tap gains for automatically adjusting the tap settings in the transversal equalizer circuit

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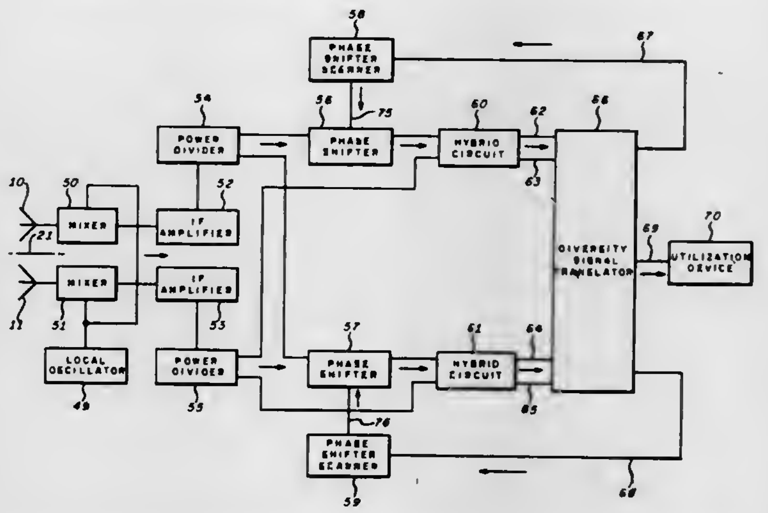
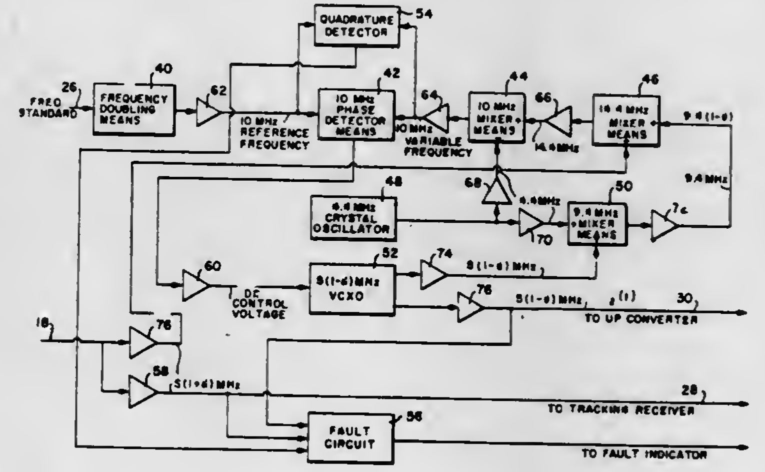
3,864,633
ANGLE DIVERSITY COMMUNICATION SYSTEM
Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 283,242
Int. Cl. H04b *1/10, 7/02*
U.S. Cl. 325—304 **15 Claims**

3. Apparatus as described in claim 1 further including between said sum output port means and said diversity signal translator means and between said difference output port means and said diversity signal translator means respective first and second substantially similar signal converter means each comprising in series relation:
- mixer means for forming an intermediate frequency signal, and
- detector means for detecting said intermediate frequency signal for providing an output signal substantially proportional in amplitude to the amplitude of said intermediate frequency signal.



3,864,634
DOPPLER CORRECTION CIRCUIT
Philip G. Dragonetti, Largo, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 1, 1973, Ser. No. 411,615
Int. Cl. H04b *1/16*
U.S. Cl. 325—419 **4 Claims**



1. A circuit for correcting Doppler shift in a transmitted signal for use with a tracking receiver providing an output signal containing positive Doppler information comprising, in combination: 'phase-lock-loop means comprising phase-detector means, loop amplifier means, voltage-controlled oscillator means (VCO) and mixer means, all being connected in said loop in the order named and receiving as an input the output of the preceding means in said loop;
- frequency standard means the output of which is connected as an input to said phase-detector means; and
- oscillator means connected to supply one input signal to said mixer means,
- said positive Doppler signal being fed to said mixer means as a third input, the output of said mixer means being a signal having minute Doppler content corresponding to the Doppler shift in the output of the tracking receiver, the output of the mixer means being compared in phase by said phase-detector means to the output of said frequency standard means and the phase difference being detected to provide a control signal which is amplified by the loop amplifier and used to control the operation of the VCO,
- the output of the VCO being a signal containing the positive Doppler information in inverted form.

3,864,635

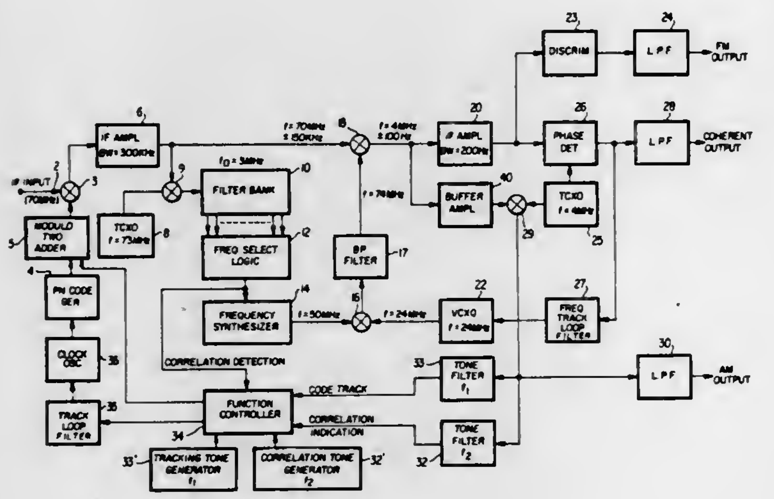
CORRELATION RECEIVER WITH RAPID FREQUENCY, TIME AND PHASE ACQUISITION

Walter Ewanus, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,938

Int. Cl. H04b *15/00*

U.S. Cl. 325—421 **18 Claims**



1. A receiver for resolving frequency and phase uncertainties of a received signal, comprising

means for identifying the frequency of a received signal within one of a plurality of differing slots each of limited frequency uncertainty and the plurality of differing frequency slots encompassing the entire range of frequency uncertainty of a received signal,

means for generating a synthesized frequency signal having a first nominal frequency

means for generating an adjustable frequency oscillation signal having a second nominal frequency so related to the first nominal frequency of the synthesized frequency signal that the combination of the first and second nominal frequencies corresponds to a third nominal frequency differing from the frequency of the received signal by a desired IF value,

said synthesized frequency generating means being responsive to said frequency identification means to generate said synthesized frequency signal at a frequency value, relative to said first nominal frequency, which corresponds to the frequency slot identification of said received signal.

means for mixing the adjustable frequency oscillation signal and the synthesized frequency signal to produce a combined signal having said third nominal frequency,

means for mixing the combined signal with the received signal to convert the received signal to an IF signal having a nominal frequency of the desired IF value,

means for producing a reference oscillation signal at the said desired IF value,

phase detection means responsive to the IF signal and the reference oscillation signal to detect and produce an output representing any difference in phase therebetween and

said adjustable frequency oscillation signal generating means is responsive to the output of said phase detection means to adjust the frequency of said adjustable frequency oscillation signal generated thereby, to achieve phase acquisition of the received signal

3,864,636

LOCAL OSCILLATION DEVICE FOR A TELEVISION RECEIVER SET

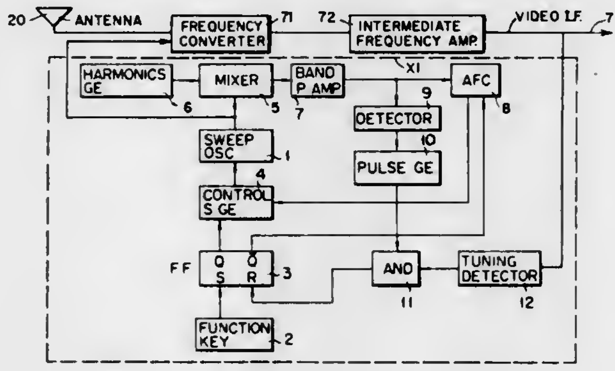
Takeo Fukuda, Yokohama; Kenichi Torii, Tokyo, and Kazuo Nishibayashi, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 20, 1973, Ser. No. 343,100

Claims priority, application Japan, Nov. 9, 1972, 47-112419; Nov. 9, 1972, 47-112420

Int. Cl. H03b *3/08*

U.S. Cl. 325—421 **13 Claims**



1. A local oscillation device for a television receiver set comprising:

a harmonics generator for producing simultaneously a plurality of frequency spectra having a frequency separation equal to the frequency separation among a plurality of channels, the frequency of each spectrum being an integral multiple of said separation frequency;

a sweeping oscillator for initiating its sweep in response to a start-of-sweep signal and varying its oscillation frequency;

means for supplying the output frequency from said sweeping oscillator to a frequency converter which mixes said output frequency with a television broadcasting wave frequency to obtain a predetermined video intermediate frequency, said output frequency to be supplied to the frequency convertor at a tuning condition not an integral multiple of said separation frequency;

a mixer coupled to said harmonics generator and said sweeping oscillator for obtaining beat signals produced between the frequency of said harmonics and the frequency of said sweep generator;

a band pass filter coupled to said mixer for deriving beat signals from said mixer when a predetermined frequency difference exists between the output frequency of said harmonics generator and the output frequency of the sweeping oscillator;

means coupled to said band pass filter for deriving marker signals corresponding to the respective channel positions from the output of said band pass filter;

key means coupled to said sweep oscillator througn a control means for producing said start-of-sweep signal;

means for selecting a desired channel with the aid of said marker signals after the start-of-sweep and for stopping the sweep through said control means; and

an automatic frequency control (AFC) circuit for maintaining the output frequency of said sweeping oscillator constant after the stop-of-sweep.

3,864,637

FREQUENCY REGULATION OF VOLTAGE CONTROLLED OSCILLATORS USING CLOCK-DRIVEN DIGITAL COUNTERS

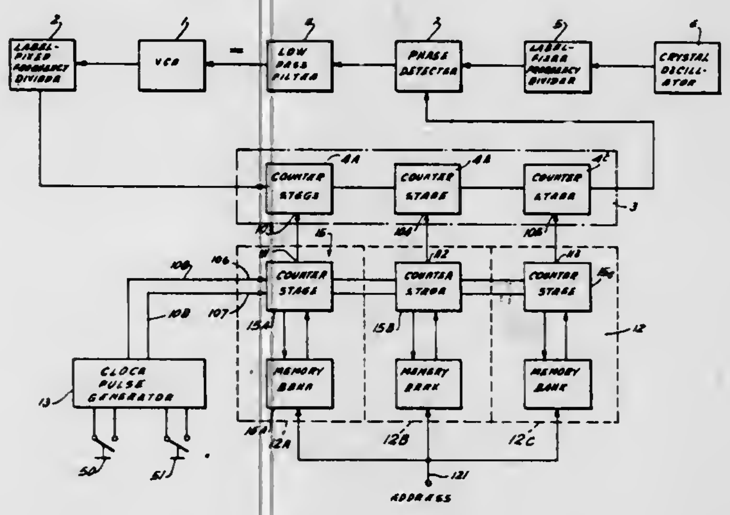
Willy Kanow, Berlin, Germany, assignor to Loew Opta GmbH, Berlin, Germany

Filed Mar. 7, 1973, Ser. No. 338,986

Claims priority, application Germany, Mar. 10, 1972, 2211664

Int. Cl. H04b *1/32*

U.S. Cl. 325—470 **7 Claims**



5. In an apparatus for regulating the output frequency of a voltage controlled oscillator which is disposed in the tuning stage of a signal-seeking communications receiver and which is adjustable to sweep a selected portion of the frequency band received by the receiver, the receiver having facilities for detecting within the swept band a signal whose amplitude exceeds a predetermined threshold, wherein the apparatus includes a first programmable digital counter having N successively higher order cascaded stages each of which has an auxiliary S-bit parallel input responsive to digital command signals for individually adjusting the count of such stage, the output frequency of the oscillator being divided by a factor proportional to the total count of the first counter; and wherein the output frequency of the oscillator is adjusted by an error signal derived from a comparison of the divided frequency and a reference frequency, an improved arrangement for successively varying the instantaneous count of the first counter to sweep the frequency band and for terminating the sweep upon the detection of a signal having an amplitude above the threshold, which comprises:

a second digital counter having N cascaded stages, each such stage including an auxiliary S-bit parallel output representative of the instantaneous count of such stage; a normally unoperated clock pulse generator;

first means for coupling the output of the clock pulse generator to the counting input of the lowest order stage of the second counter;

second means for individually coupling the auxiliary outputs of each stage of the second counter to the auxiliary inputs of the corresponding stages of the first counter to sweep a desired portion of the frequency band when the clock pulse generator is operated;

normally deenergized switching means having a first input energizable to operate the clock pulse generated and to initiate the sweep of the frequency band and a second input energizable to disable the clock pulse generator to terminate the sweep; and

means responsive to the reception of a signal having an amplitude above the threshhold for energizing the second input of the switching means.

3,864,638

HIGH SPEED PHASE METER

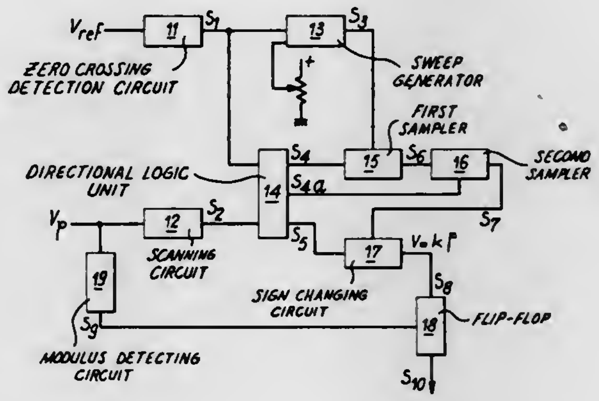
Bernard Audenard, Seclin; Michel Pigeon, Bures-Sur-Yvette, and Claude Stach, Faches-Thomesnil, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed July 24, 1973, Ser. No. 382,053

Claims priority, application France, Aug. 3, 1972, 72.28120

Int. Cl. H03b *3/04*

U.S. Cl. 328—134 **8 Claims**



1. A high-speed phase meter essentially comprising:

a reference signal source, a source of a signal to be scanned, a sweep waveform generator connected to said reference source controlled by the shaped reference signal, (V ref) a first and a second memory sampler connected to said generator which sample said sweep waveform,

a directional logic unit connected to said sources and to said samplers controlled by the reference signal and the shaped signal to be scanned ($V\phi$) which delivers two signals for controlling said samplers and a logical signal for the direction of the phase shift,

a sign-changing circuit connected to said logic circuit and to said second sampler controlled by said directional logic unit and by said second sampler so as to deliver an analog signal ($V = \pm k\phi$) which is representative of the value and sign of the phase shift after transition through a sinusoidal cycle between the reference signal (V ref) and the signal ($V\phi$) to be scanned,

a modulus detecting circuit connected to said source of signal to be scanned, an analog gate connected to said sign-changing circuit and to said modulus detecting circuit controlled by said analog signal and by a signal from said modulus detecting circuit for controlling the peak of the modulus of the signal to be scanned in order to block the output signal when the modulus is smaller than a predetermined value.

3,864,639

FREQUENCY CONTROL CIRCUITS

Gerald Musgrave, Tong Park Baildon, and Alan Michael Hayes, Shipley, both of England, assignors to George Kent Limited, Luton, Bedfordshire, England

Filed Feb. 20, 1973, Ser. No. 333,711

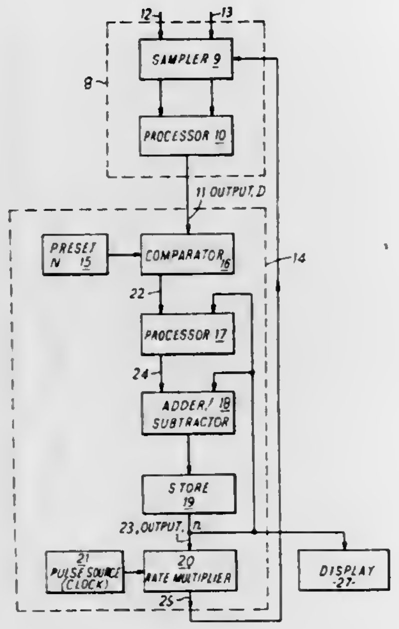
Claims priority, application Great Britain, Feb. 24, 1972, 8643/72

Int. Cl. H03k *5/00*

U.S. Cl. 328—151 **9 Claims**

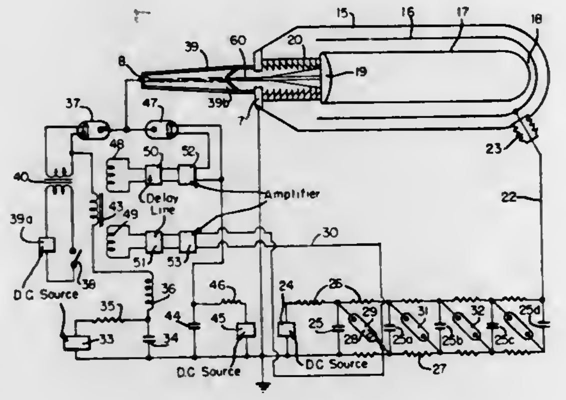
1. A sampling frequency control circuit for controlling the frequency at which an input signal is sampled by apparatus for sampling and processing data, comprising means for providing a pre-set signal representative of a desired value of output signal from the sampling and processing apparatus, comparator means for comparing and providing an output signal dependent upon the relationship between the pre-set signal and the output signal of the sampling and processing apparatus, frequency correction means supplied with and adapted to employ the output signal of the comparator means and a signal dependent upon the sampling frequency so as to provide an output signal representative of a corrected sampling fre-

quency, signal generating means supplied with the output signal of the frequency correction means and adapted thereby to generate an output signal dependent upon a corrected value of sampling frequency and means for supplying the output signal of the signal generating means to the sampling and processing apparatus thereby to adjust the sampling frequency to a value as to bring the output signal of the sampling and processing apparatus into correspondence with the pre-set signal.



3,864,640
CONCENTRATION AND GUIDANCE OF INTENSE RELATIVISTIC ELECTRON BEAMS

Willard H. Bennett, 605 Appleton Dr., Apt. B., Raleigh, N.C. 27606
Filed Nov. 13, 1972, Ser. No. 306,246
Int. Cl. H01j *29/58*
U.S. Cl. 328—228 **7 Claims**

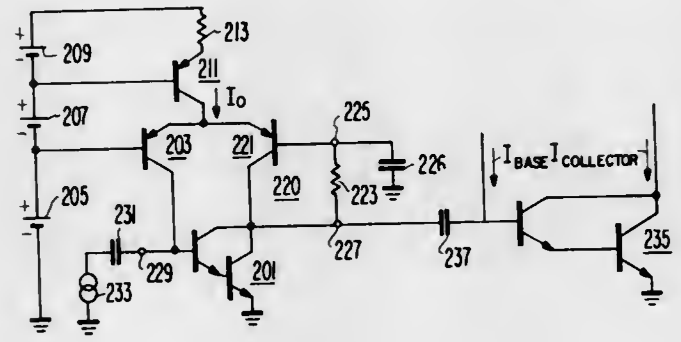


1. An electron beam apparatus comprising
a. electron beam producing means for concentrating an electron beam discharge having a self-magnetic field,
b. guide pinch means for directing and confining said discharge,
c. means for actuating said discharge.

3,864,641
HIGH-INPUT-IMPEDANCE AMPLIFIER

Adel Abdel Aziz Ahmed, Clinton Township, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jan. 2, 1973, Ser. No. 320,633
Int. Cl. H03f *3/18*
U.S. Cl. 330—17 **39 Claims**

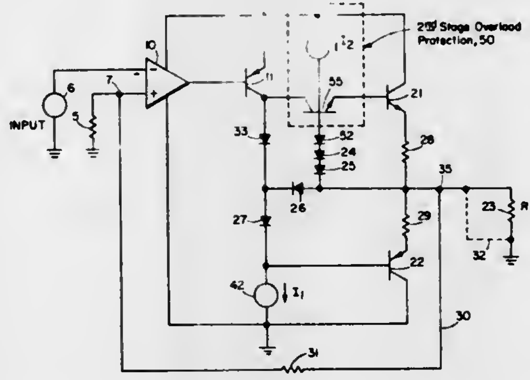
1. An amplifier comprising, in combination:
first and second transistors of complementary conduction types each having base, emitter and collector electrodes, said first transistor being a bipolar type and having its emitter electrode direct current conductively coupled to a point of reference potential, said second transistor collector electrode being direct current conductively connected to said first transistor base electrode;
means for applying an input signal to said first transistor base electrode;



a load having a direct current path therethrough connected between said first transistor collector electrode and said second transistor emitter electrode; and
supply means including a constant current supply connected between said second transistor emitter electrode and said point of reference potential, and means for providing a biasing potential to said second transistor base electrode.

3,864,642
SECOND STAGE OVERLOAD PROTECTION FOR AMPLIFIERS

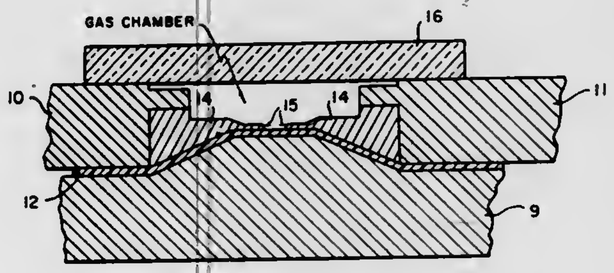
Ernest L. Long, Tempe; Ronald W. Russell, Mesa, and James E. Solomon, Scottsdale, all of Ariz., assignors to Motorola Inc., Franklin Park, Ill.
Continuation of Ser. No. 111,454, Feb. 1, 1971, abandoned. This application Apr. 13, 1973, Ser. No. 351,047
Int. Cl. H03f *21/00*
U.S. Cl. 330—207 P **7 Claims**



1. In an amplifier circuit including a gain stage connected to a supplemental amplification stage, an output stage having an output transistor and an output terminal, said output transistor having a base and an emitter, said amplifier circuit having feedback means coupled between said output stage and said gain stage, said supplemental amplification stage having an input transistor having a collector, an overload protection circuit comprising:
switchable resistive coupling circuit means connected between said collector of said input transistor and said base of said output transistor for
switching overload currents in said switchable resistive coupling circuit means to cause a voltage to develop across said switchable resistive coupling circuit means under overload conditions at said output terminal, said voltage being sufficiently large in magnitude to saturate said input transistor.

3,864,643
TRAVELING WAVE VACUUM SPARK AND A TRAVELLING WAVE FLASHLAMP

Ronald W. Waynant, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 23, 1973, Ser. No. 418,345
Int. Cl. H01s *3/09, 3/02, 3/22*
U.S. Cl. 331—94.5 PE **6 Claims**

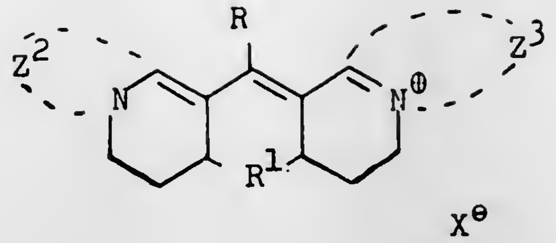


1. An improved traveling wave fast rise time excitation system for production of laser emission comprising first and second flat plate transmission lines separated by an insulating sheet of polyethylene, said first transmission line separated across the middle to form spaced plate sections, an elongated electrode secured to each spaced plate section in the space formed between said plate sections facing each other in parallel alignment with a spacing between said electrodes, a chamber formed by an upper window enclosing said spacing between said spaced plate sections, means for adding a gas within said chamber, a plurality of equally spaced shorting switches secured to one edge of said flat plate transmission lines, and a switch means and conductors secured to said shorting electrodes to sequentially fire each of said switches, in order, to produce an electromagnetic wave at an angle with respect to said electrodes on said spaced plate, the improvement comprising;
a plurality of equally spaced small pin-like electrodes secured to each of said elongated electrodes in spaced relationship along the entire length thereof and insulated from said plate transmission line; and
means for exciting a gas within said chamber and simultaneously vaporizing and ionizing said pin-like electrodes progressively along the length of said plate electrode from one end to the other end to produce a plasma within said chamber.

3,864,644
DYE LASERS INCLUDING RIGIDIZED CARBOCYANINE DYES

Lewis Lauren Lincoln, and Donald Warren Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 126,988, March 22, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,476
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 L **6 Claims**

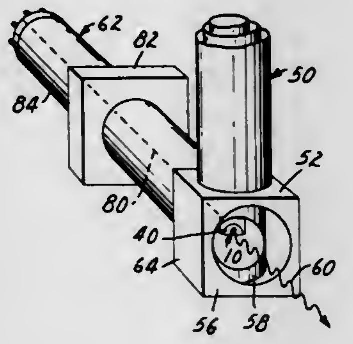
1. A method of producing coherent laser emission in the operation of a dye laser in the wavelength range of from about 500 to about 800 nm comprising the steps of optically pumping a dye solution to produce a population inversion in said solution and stimulating the emission of a beam of radiation therefrom, said solution containing about 10^{-2} to about 10^{-4} molar concentration of a lasing dye in a non-interfering solvent, said dye having a formula as follows:



wherein:
a. each of Z and Z^1 represents the non-metallic atoms necessary to complete a heterocyclic nucleus of the type used in cyanine dyes selected from the group consisting of an imidazole nucleus, a thiazole nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, a thionaphtheno-7′,6′,4,5-thiazole nucleus, an oxazole nucleus, a benzoxazole nucleus, a naphthoxazole nucleus, a selenazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, and a 2-quinoline nucleus,
b. R represents a member selected from the group consisting of a hydrogen atom, an alkyl radical and an aryl radical,
c. R^1 represents a member selected from the group consisting of an oxygen atom, a sulfur atom, a selenium atom and a N-R^2 group wherein R^2 represents a member selected from the group consisting of a hydrogen atom, an alkyl radical having from 1 to 6 carbon atoms, an aryl radical having from 6 to 10 atoms in a mono- or polycyclic nucleus and an amino radical, and,
d. X^- represents an anion.

3,864,645
ELECTRON BEAM LASER OPTICAL SCANNING DEVICE

James R. Packard; Donald A. Campbell, both of St. Paul; William C. Tait, Village of Oak Park Heights, and Gunther H. Dierssen, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 42,437, June 1, 1970, Pat. No. 3,757,250, which is a continuation-in-part of Ser. No. 32,330, April 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 599,576, Dec. 6, 1966, abandoned. This application Jan. 2, 1973, Ser. No. 320,254. The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 H **2 Claims**



1. An optical scanning device for transmitting graphic information in the form of modulated electromagnetic radiation, comprising
means for producing electromagnetic radiation by stimulated emission from a light resonant cavity including a semiconductor crystal, comprising
a light resonant cavity including a II–VI compound direct band-gap semiconductor crystal having a pair of major broad optically smooth opposing parallel surfaces;
means for providing almost totally reflective surfaces parallel to each major broad crystal surface for defining said cavity, with one reflective surface being more reflective than the other; and

means for exciting said crystal into stimulated emission by directing at one of said major broad surfaces an electron beam having sufficient energy to create in said crystal, an active region excited into a state of stimulated emission corresponding to the penetration region of the electron beam, to cause coherent electromagnetic radiation to be emitted from said cavity through the least reflective of the reflective surfaces in a direction which is substantially normal to the major broad crystal surfaces;

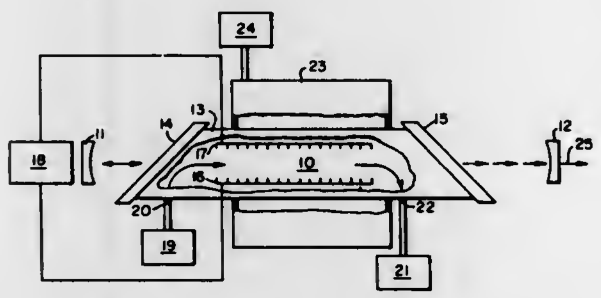
wherein when said coherent electromagnetic radiation is emitted, the active region depth is less than the crystal thickness in the direction normal to the parallel surfaces;

means for scanning the electron beam across said one broad crystal surface; and

means for modulating the electron beam.

3,864,646
CO CHEMICAL LASER FROM KETENE GAS
David C. Phillips, and Nathan T. Melamed, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 22, 1973, Ser. No. 372,723
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 G **10 Claims**

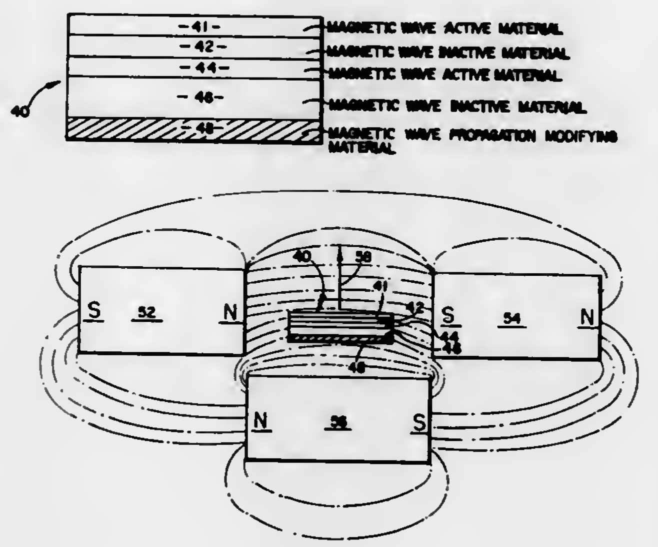


1. A CO chemical laser, capable of producing stimulated laser emission, comprising:
a. an enclosure;
b. a gas comprising the ketene CH_2CO;
c. means for introducing said gas into the enclosure;
d. means for supplying excitation energy to the gas comprising the ketene CH_2CO, to form an active laser medium comprising vibrationally excited CO gas by decomposition of the ketene CH_2CO;
e. means for stimulating the emission of radiation from said active laser medium.

3,864,647
SUBSTANTIALLY LINEAR MAGNETIC DISPERSIVE DELAY LINE AND METHOD OF OPERATING IT
Wayne L. Bongianni, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 26, 1973, Ser. No. 428,505
Int. Cl. H03h *9/30, 9/32;* **G11c** *11/16*
U.S. Cl. 333—30 M **5 Claims**

1. In combination, a magnetic delay line comprising:
a layer of electrically conductive material;
at least one layer of magnetic-wave-inactive material;
a plurality of layers of magnetic-wave-active material comprised of yttrium iron garnet disposed in stacked relation, and;
at least one of said layers of magnetic-wave-active material being spaced apart from another layer of magnetic-wave-active material and from the layer of electrically conductive material by one of said at least one layer of magnetic-wave-inactive material.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MAGNETIC WAVE ACTIVE MATERIAL
MAGNETIC WAVE INACTIVE MATERIAL
MAGNETIC WAVE ACTIVE MATERIAL
MAGNETIC WAVE INACTIVE MATERIAL
MAGNETIC WAVE PROPAGATION MODIFYING MATERIAL
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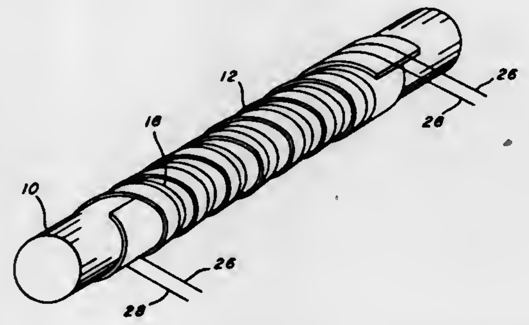
S

3,864,648
MICROWAVE PHASE SHIFTER AND METHOD FOR ITS MANUFACTURE
Jack C. McVickers, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 20, 1974, Ser. No. 452,865
Int. Cl. H03h *7/30, 13/00*
U.S. Cl. 333—31 R **7 Claims**

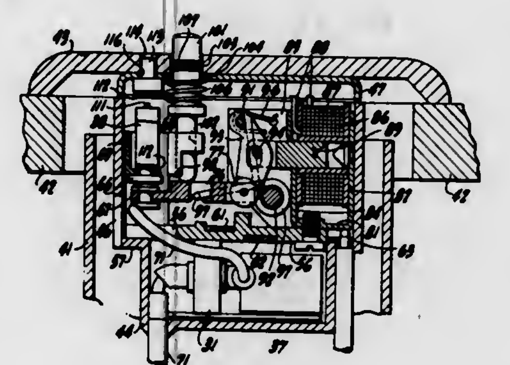


1. In a ferrite phase shifter, the combination of an elongated bar of ferrite material, and a spirally-wound laminate surrounding said body with successive convolutions of the laminate overlapping preceding convolutions, the laminate comprising a ribbon of insulating material having an inner coating of electrically conductive material thereon whereby a capacitive effect will be produced between successive overlapping portions of the convolutions.

3,864,649
ELECTRICAL SAFETY DEVICE WITH IMPROVED TRIP MECHANISM
Richard C. Doyle, Benicia, Calif., assignor to The Rucker Company, Concord, Calif.

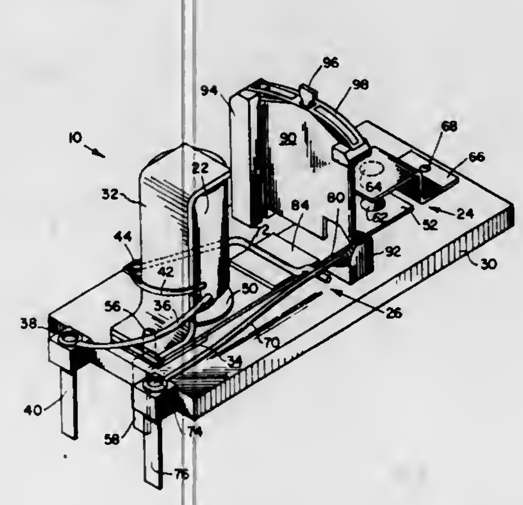
Division of Ser. No. 271,988, July 14, 1972, , which is a continuation-in-part of Ser. No. 141,151, May 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 87,713, Nov. 9, 1970, abandoned. This application Mar. 20, 1974, Ser. No. 452,956
Int. Cl. H01h *73/02*
U.S. Cl. 335—21 **5 Claims**

1. In an electrical safety device for controlling the flow of current in a conductor and interrupting the flow in the event of a predetermined current: first and second contacts for making and breaking a circuit with the conductor, a floating contact arm having the first contact mounted thereon and movable relative to the second contact, a latch member releasably engaging the contact arm at a point spaced from the first contact, resilient means engaging the contact arm between the first contact and the latch member for urging contacts together when the latch member is engaging the contact arm, said resilient means serving to pivot the arm about the contacts to provide rocking movement between the contacts when the latch member is disengaged from the arm, means for disengaging the latch member from the contact arm in response to the predetermined current, and a fulcrum member positioned for engaging the contact arm between the first contact and the resilient means when the arm has pivoted a predetermined distance about the contacts and thereafter cooperating with the resilient means to separate the contacts.



3,864,650
MANUALLY SET MAGNETIC RELAY
Thomas E. Evans, Rehoboth, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

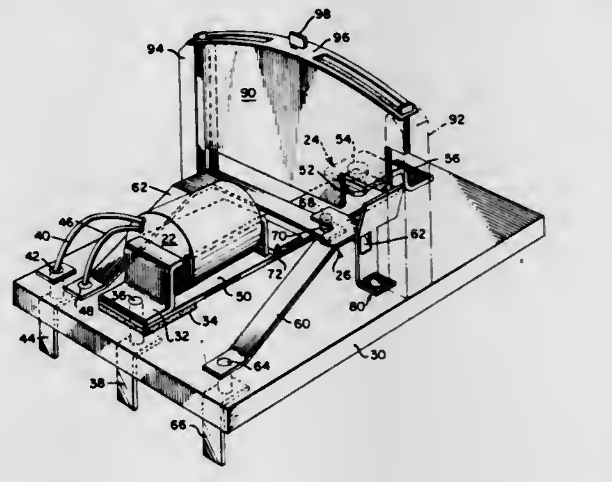
Filed Dec. 5, 1973, Ser. No. 421,902
Int. Cl. H01h *45/00*
U.S. Cl. 335—186 **9 Claims**



1. A manually set magnetic relay for one-time operations comprising:
first switch means operatively connectible in a load circuit;
electromotive force generating means including an electromagnetic coil operatively connected to the first switch means for completing the load circuit upon energization of the coil;
second switch means serially coupled to the coil to permit energization and de-energization of the coil, the second switch means including first and second movable conductors positioned with portions of the conductors in overlying relationship for movement in and out of electrical contact to close or open the circuit through the second switching means and the coil;
latch means operatively engageable with the first conductor of the second switch means for holding the first conductor in a latched position out of contact with the second conductor of the second switch means;
the electromotive force generating means also being operatively coupled to the second conductor of the second switch means for moving the first conductor into the latched position; and
manually operable actuator means engagable with the first conductor of the second switch means for moving the first conductor out of the latched position.

3,864,651
MANUALLY SET MAGNETIC RELAY
Charles D. Flanagan, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 5, 1973, Ser. No. 421,903
Int. Cl. H01h *45/00*
U.S. Cl. 335—186 **6 Claims**



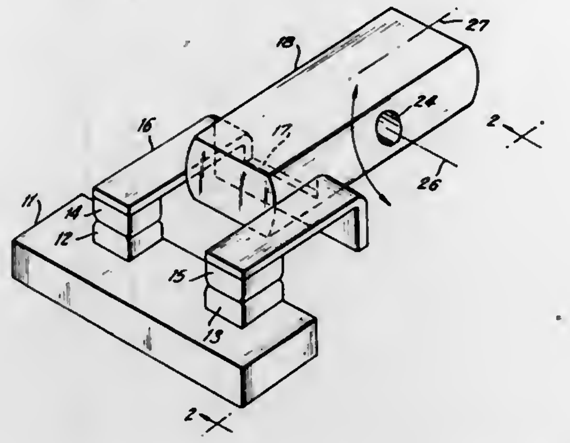
1. A manually set magnetic relay for one-time operations comprising:
first switch means operatively connectible in a load circuit and including a cantilevered, flexible clapper arm;
electromotive force generating means including a coil operatively connected with the clapper arm of the first switch means for closing the first switch means upon energization of the coil;
second switch means serially coupled with the coil to permit energization of the coil, the second switching means including first and second conductors having portions positioned in overlying relationship for flexing in and out of contact to thereby close and open the second switch means, the second conductor extending in transverse relationship to the clapper arm of the first switch means and being engaged by the clapper arm for flexing in and out of contact with the first conductor of the second switch means;
latch means operatively engageable with the first conductor of the second switch means for holding the first conductor in a latched position out of contact with the second conductor of the second switch means;
the electromotive force generating means being operatively coupled to the first conductor of the second switch means for moving the first conductor into the latched position; and
manually operable actuator means engageable with the latching means for releasing the first conductor of the second switch means from the latched position.

3,864,652
FLOATING CONTACT MEANS
Martin V. Zubaty, Bellefontaine, Ohio; Frank W. Kussy, Haverford, and Gustave E. Heberlein, Jr., Chalfont, both of Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed Mar. 4, 1974, Ser. No. 447,654
Int. Cl. H01h *3/06*
U.S. Cl. 335—194 **10 Claims**

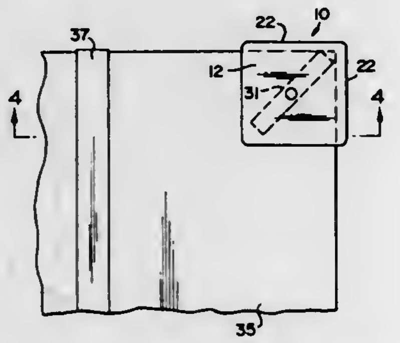
1. A switch device including stationary contact means positioned generally in a first plane, movable contact means oper-

able into and out of engagement with said stationary contact means, an elongated arm having said movable contact means mounted thereto at its forward end, means defining a main axis positioned to the rear of said movable contact means, said movable contact means being mounted for pivotal movement about said main axis as a center to disengage said stationary contact means, with said pivotal movement being generally in a second plane at right angles to said first plane, said stationary contact means including spaced first and second contacts insulated from one another when said switch device is open, said first and second contacts being positioned so that a line extending therebetween is generally parallel to said main axis, said movable contact means includes third and fourth contacts engageable with the respective first and second contacts, a rigid conducting bridge to which said third and fourth contacts are fixedly mounted, said bridge comprising a conducting path between said first and second contacts when said switch device is closed, and means defining a single auxiliary axis about which said movable contact means is pivotable to seat said movable contact means in engagement with said stationary contact means, said auxiliary axis extending generally parallel to the longitudinal axis of said arm and at right angles to said first axis generally parallel to said second plane.



3,864,653
MAGNETIC CORNER GUARD

Richard L. Walker, 2596 Wadsworth Rd., Norton, Ohio 44203
Filed Apr. 1, 1974, Ser. No. 457,089
Int. Cl. H01f *7/20*
U.S. Cl. 335—285 **8 Claims**

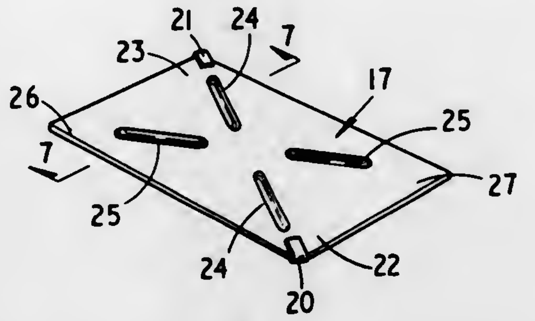


4. A magnetic corner guard according to claim 1, wherein said magnet is attached to said end portion.

3,864,654
ELECTRICAL SWITCHES

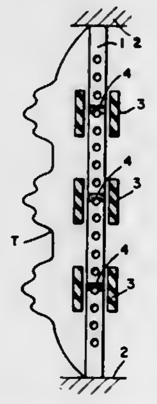
David Charles Bradbury, Weoley Castle, and George Henry Brown, Birmingham, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England
Filed July 25, 1973, Ser. No. 382,382
Claims priority, application Great Britain, July 25, 1972, 34684/72
Int. Cl. H01h *61/00*
U.S. Cl. 337—135 **3 Claims**

1. An electrical switch of the intermittently operating type comprising a body, a fixed contact on said body, a resilient, rectangular vane mounted on said body to be flexed between a first position and a second position, said vane being embossed so that flexing occurs with a snap-action and so that said vane is inherently biased into its second position, a contact movable with said vane and arranged to engage said fixed contact when said vane is in one of its positions and to be displaced from said fixed contact when said vane is in the other of its positions, and a heat extensible, electrically conducting strip connected to diagonally opposite corners of said vane so as to hold the latter in its first position when said strip is unheated but to allow said vane to snap into its second position when said strip is heated, said strip being electrically connected with said movable contact and a terminal on said body, wherein said vane is formed with two sets of embossments thereon, one set of embossments being formed by recesses formed in one surface on said vance so as to define projections on the other surface of said vane, and the other set of embossments being formed by recesses in said other surface of said vane so as to define projections on said one surface of said vane, said recesses of said other set of embossments comprising a pair of longitudinally spaced elongate recesses on the diagonal joining said diagonally opposite corners of said vane, and said recesses of said one set of embossments comprising a pair of longitudinally spaced elongate recesses extending along the diagonal joining the other diagonally opposite corners of said vane.



3,864,655
ELECTRIC FUSE FOR ELEVATED CIRCUIT VOLTAGES HAVING A PLURALITY OF RIBBON FUSE LINKS CONNECTED IN PARALLEL

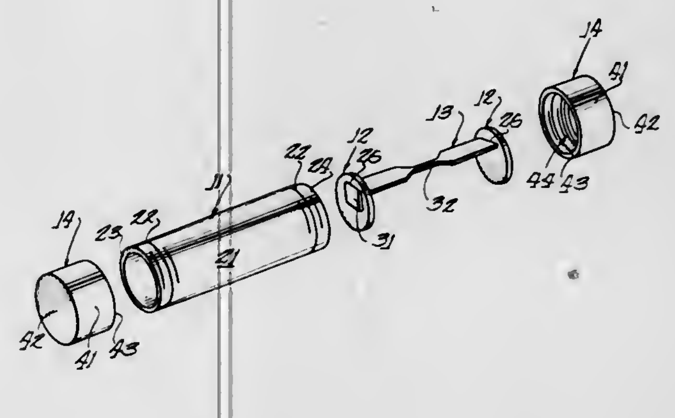
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Continuation-in-part of Ser. No. 250,175, May 4, 1972. This application Mar. 4, 1974, Ser. No. 448,074
Int. Cl. H01h *85/04*
U.S. Cl. 337—160 **6 Claims**



1. An electric fuse for elevated ciruit voltages including
- a. a tubular casing of electric insulating material;
- b. a pair of electroconductive terminal elements closing the ends of said casing,
- c. a pulverulent arc-quenching filler of quartz particles inside said casing;
- d. a plurality of fusible elements forming parallel current paths conductively interconnecting said pair of terminal elements, each of said plurality of fusible elements having serially arranged alternating points of relatively small cross-sectional area and of relatively large cross-sectional area;
- e. a plurality of metal-severing low fusing point overlays on said plurality of fusible elements, at least one of said plurality of metal-severing low fusing overlays being supported by each of said plurality of fusible elements, and
- f. a plurality of pellets of a gas-evolving material having a smaller thermal conductivity than said arc-quenching filler mounted on and supported by each of said plurality of fusible elements, said plurality of pellets having holes therein allowing each of said plurality of fusible elements to be threaded through one of said holes, and each of said plurality of fusible elements supporting at least one of said plurality of pellets arranged to cover one of said plurality of metal-severing low fusing point overlays, and each of said plurality of fusible elements further supporting at least one of said plurality of pellets arranged to cover one of said points of relatively small cross-sectional area from which a metal-severing low fusing point overlay is absent.

3,864,656
CARTRIDGE FUSE

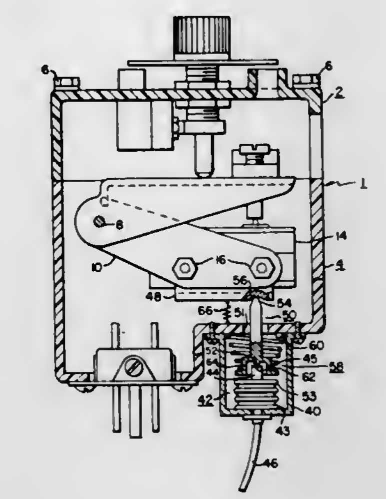
Bernard C. Labelle, 324 Valley Brook Dr., Lancaster, Pa. 17601
Filed Feb. 19, 1974, Ser. No. 443,901
Int. Cl. H01h *85/30*
U.S. Cl. 337—206 **3 Claims**



1. A renewable cartridge link fuse comprising:
- an open ended sleeve type substantially tubular body member of transparent polysulfone material providing unobscured visibility therethrough;
- a pair of substantially flat disc shaped terminal plate members each having a slotted opening provided therein, each plate member having a diameter greater than the interior diameter of said body member and less than the exterior diameter of said body member, each plate member adapted to restingly engage an associated end of said body member concentric with the axis of said body member;
- a solid fusible electrical conductive link element adapted to melt at a given temperature, each end of said link adapted to pass through an associated slotted opening of an associated plate member and then be bent at an angle of about ninety degrees to overlie the exterior surface of said plate member; and
- a pair of external electrical circuit connection means, each of said means adapted to be mounted to an associated end of said body member and electrically connect to said fusible link providing a series electrical circuit through said fusible link element.

3,864,657
CONDITION RESPONSIVE CONTROL DEVICE

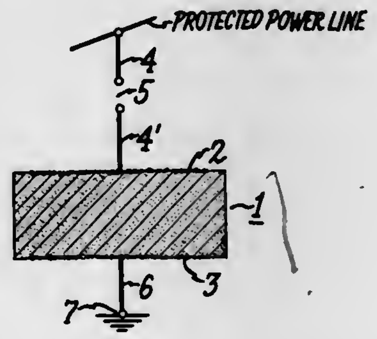
Ronald W. Brown, Minneapolis, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed Jan. 14, 1974, Ser. No. 433,335
Int. Cl. H01n *37/36*
U.S. Cl. 337—311 **4 Claims**



1. A control device including:
- a frame;
- an expandable bellows member attached at one end to said frame and having a condition responsive movable end;
- a lever arm movably supported on said frame to actuate electric switch means;
- a linkage member to be interposed between said bellows movable end and said lever arm and having a first knife edge engaging said lever arm and a second knife edge engaging said bellows movable end whereby relative displacement of said bellows movable end are transmitted through said linkage to thereby cause said lever arm to be moved;
- a cup-shaped spring engaging means extending from said linkage member to surround its second end; and
- conical spring means having a base end and an apex end, said base end engaging said frame portion and said apex end being received by said cup-shaped means, to thereby bias said linkage member against said bellows member movable end and provide a desired alignment of said linkage.

3,864,658
ELECTRODE FOR A GRANULAR ELECTRICAL CIRCUIT ELEMENT AND METHOD OF MAKING SAME

John J. Pitha, Lenox, Mass., and Howard F. Ellis, Stephentown, N.Y., assignors to General Electric Company
Division of Ser. No. 277,887, Aug. 4, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,337
Int. Cl. H01c *7/12*
U.S. Cl. 338—21 **4 Claims**



1. A non-linear resistor having a body constituted of a mass of carbide grains of the class consisting of silicon carbide, tungsten carbide and boron carbide, in combination with at least one low resistance electrode affixed to a predetermined surface area of said body in electrical conducting relationship

therewith, said electrode comprising a composition consisting of at least 30 percent by weight of Ti and 20 percent by weight of Cr contained in a matrix.

3,864,659
HUMIDITY SENSOR

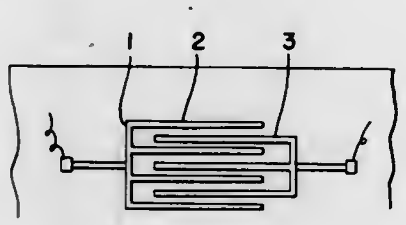
Shigemasa Furuuchi; Hironiri Ohta; Koichi Sugaya, and Tadatoshi Kamimori, all of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,517

Claims priority, application Japan, July 25, 1972, 47-73809; Mar. 27, 1973, 48-34096

Int. Cl. H01c *13/00*

U.S. Cl. 338—35 **4 Claims**



1. In a humidity sensor which comprises a pair of electrodes which are arranged parallel to one another with a suitable gap therebetween and which are fitted on the surface of a glass plate to automatically detect the formation of condensed moisture within the gap between the electrodes, the improvement which comprises the application of a membrane over the electrodes of said humidity sensor and the gap between the electrodes wherein said membrane is prepared by curing an amino group containing organosilicon compound, wherein said amino group containing organosilicon compound is an amino-organofunctional alkoxysilane.

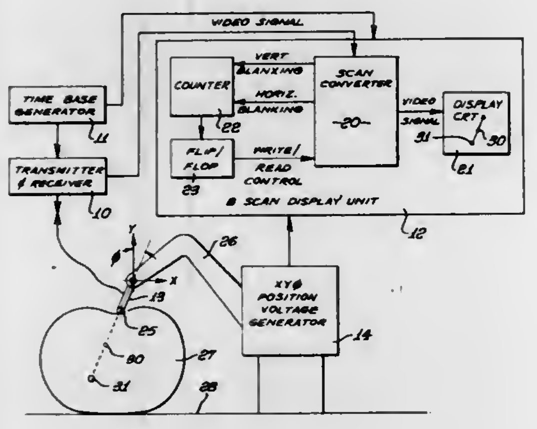
3,864,660
ULTRASCOPE

Ralph Ranalli, Anaheim, and Kenneth R. Torrence, Santa Ana, both of Calif., assignors to Rohe' Scientific Corporation, Santa Ana, Calif.

Filed Sept. 10, 1973, Ser. No. 395,427

Int. Cl. G01s *7/56, 7/62*

U.S. Cl. 340—1 R **4 Claims**



1. An ultrasonic system having transmitter, ultrasonic transducer, receiver and display unit,

said display unit including a display screen with a sweep pattern and a scan converter with mode selection means for selecting separate write and read modes for the converter;

timing means for determining write mode periods and read mode periods each of a duration a portion of the sweep pattern duration;

means for synchronizing said timing means with said sweep pattern; and

means for controlling said mode selection means as a function of said timing means providing write and read modes at separate times in said scan converter corresponding to said write and read periods.

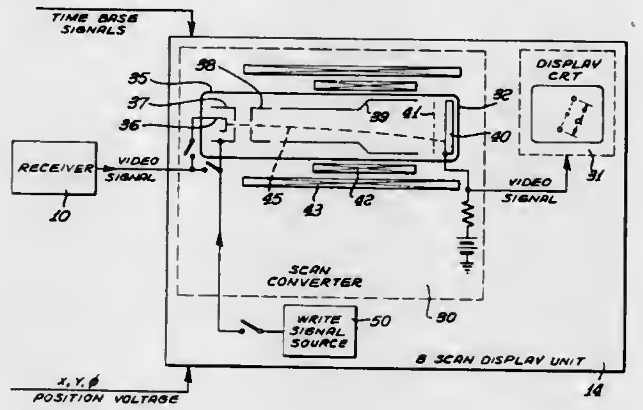
3,864,661
ULTRASCOPE

Ralph Ranalli, Anaheim, Calif., assignor to Rohe' Scientific Corporation, Santa Ana, Calif.

Filed Sept. 10, 1973, Ser. No. 395,426

Int. Cl. G01s *7/56, 7/62*

U.S. Cl. 340—1 R **5 Claims**



1. In an ultrasonic system having transmitter, ultrasonic transducer, receiver and display unit,

said receiver providing a video signal to said display unit, said display unit including a scan converter with storage tube and having write, read and erase modes,

the system including in combination

a write signal source,

means for said connecting said write signal source to said storage tube when in the write mode for writing a solid picture, and

means for connecting said receiver video signal to said storage tube when in the erase mode for selective erasing from said solid picture as a function of said video signal.

3,864,662
TELEMETRY SYSTEMS EMPLOYING ACTIVE TRANSPONDERS

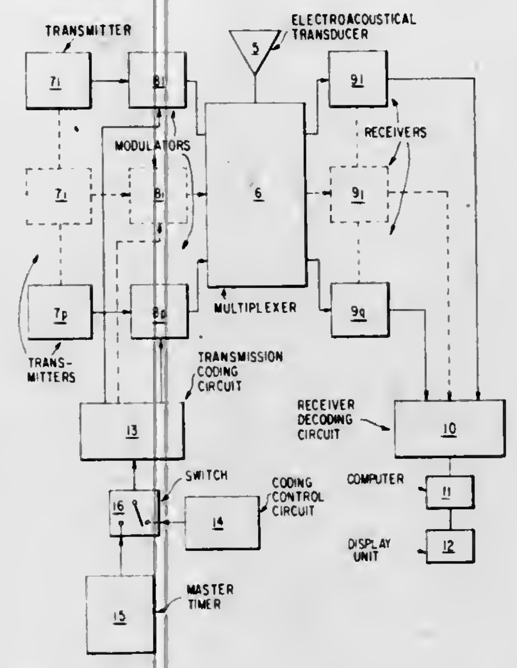
Pierre Y. David, Lyon, and Joel M. Charles, La Velette, both of France, assignors to Etat Francais, represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction Technique des Constructions, Paris, France

Filed May 18, 1973, Ser. No. 361,427

Int. Cl. G01s *9/68, 5/18*

U.S. Cl. 340—3 R **4 Claims**

1. A telemetry method for positioning at least a first body, carrying an interrogator, relative to at least two stationary active transponders whose relative coordinates are initially unknown, wherein positioning is performed by transmitting an interrogation code to which the transponders respond according to their individual codes, the interrogation code comprising a plurality of distinct frequencies equal in number to $n + 2$ where the number of reference transponders is 2^n, said method being characterized by redundantly determining, prior to any operation in the positioning of the body, the coordinates of the transponders using a first interrogation code which, in addition to the n frequencies used in identifying the reference transponders, comprises an additional frequency termed the general frequency such that when a said interrogation code made up of the general frequency and the identification code of a particular reference transponder is transmitted, only that particular transponder responds to this said general frequency while the other transponders respond responsive to their receiving the response to the general frequency of the transponder initially interrogated, and determining, using said interrogator, the periods, corresponding to the distances between each transponder and the body and to the sum of the distances between the interrogated transponder and the other transponders; the determination being repeated for each reference transponder to provide a redundant measurement of the distance between each of the reference transponders and the system of relative coordinates being completely determined when the reference transponders have transmitted a characteristic code representative of the distance in a horizontal reference plane in response to further, predetermined interrogation code.



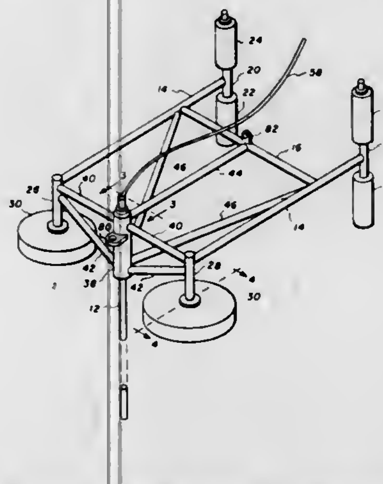
3,864,663
FLOATING ELECTRODE HOLDING APPARATUS

David R. Bon, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 12, 1973, Ser. No. 424,236

Int. Cl. B63b *21/52*

U.S. Cl. 340—4 R **7 Claims**



1. Electrode holding apparatus for supporting a rod-like electrode in a predetermined position in a body of water, said apparatus comprising:

a generally rectangular frame adapted to lie in a plane that is substantially parallel to the surface of said body of water when said apparatus is in a position of use, said frame comprising a pair of spaced, parallel, side members and a plurality of transverse members, said side and transverse members being formed of tubular metal;

a plurality of first legs extending from one end of said frame, orthogonal to said plane, and to one side thereof;

a plurality of second legs extending from the other end of said frame, orthogonal to said plane, and to both sides thereof;

flotation means, connected to said frame for supporting said frame in said plane, said flotation means comprising a plurality of first floats each fixed to a corresponding one of said plurality of first legs, a plurality of second floats each fixed to a corresponding one of said plurality of second legs, and said second floats being disposed on the end portions of said second legs extending to one side of said plane;

a sleeve member, comprising a tubular metal member carried by said frame substantially at one end thereof, said sleeve member being supported between first ends of said side members and defining an electrode receiving passage extending substantially normal to said plane;

electrode means, extending vertically through said sleeve member and into said body of water, for providing electrical contact with said body of water; and

said apparatus further comprising a liner of electrically insulating material disposed in said passage of said sleeve member so as to electrically insulate said electrode from said frame.

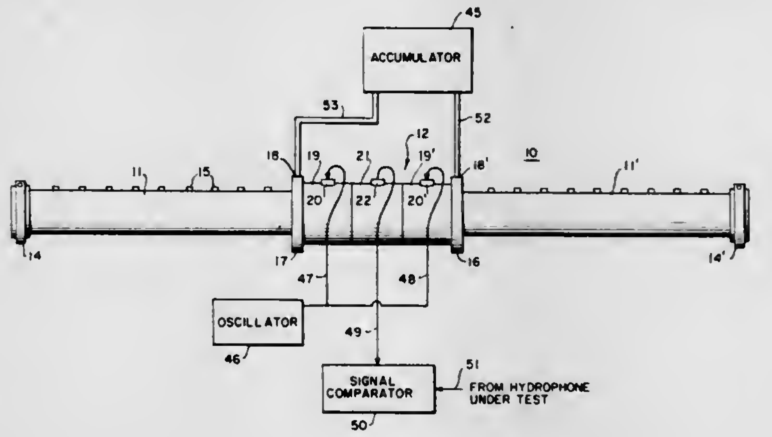
3,864,664
LINE HYDROPHONE ARRAY ELEMENT CALIBRATOR

W. James Trott, Annandale, and Joseph F. Zalesak, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1973, Ser. No. 373,323

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 C **14 Claims**



1. A hydrophone testing system comprising:

a tubular unit open at both ends containing means for producing and receiving sound pressure and for receiving a hydrophone to be tested, said means having a sound receiving tube and sound producing tubes located coaxial with and adjacent to each end of said sound receiving tube, said tubular unit being adapted to be submerged in water.

3,864,665
PROCESS FOR RECORDING ACOUSTIC, SYNTHETIC AND MICROWAVE HOLOGRAMS

Dietlind Pekau, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 14, 1973, Ser. No. 332,374

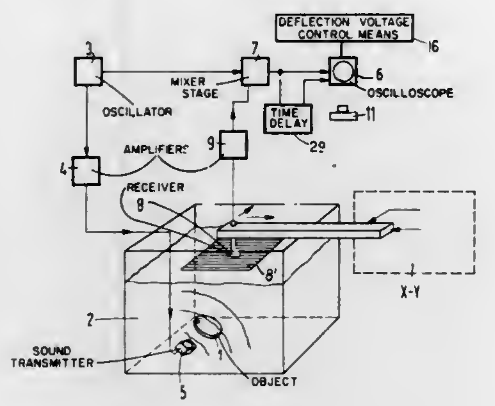
Claims priority, application Germany, Feb. 21, 1972, 2208061

Int. Cl. G03b *41/00*

U.S. Cl. 340—5 H **6 Claims**

1. In a process of recording acoustic, synthetic and microwave holograms in which process an object wave field emanating from an object is scanned point by point and row by row by a receiving transducer which produces an electrical output signal which are transformed into light signals that are recorded as holograms on a light sensitive medium point by point in rows, the improvement comprising recording each row a second time on the light sensitive medium to provide a first and second recorded row for each row scanned by the

receiving transducer, the recording of each second recorded row on the light sensitive medium being controlled to displace



the position of the second recorded row both perpendicular and parallel to the position of its respective first recorded row.

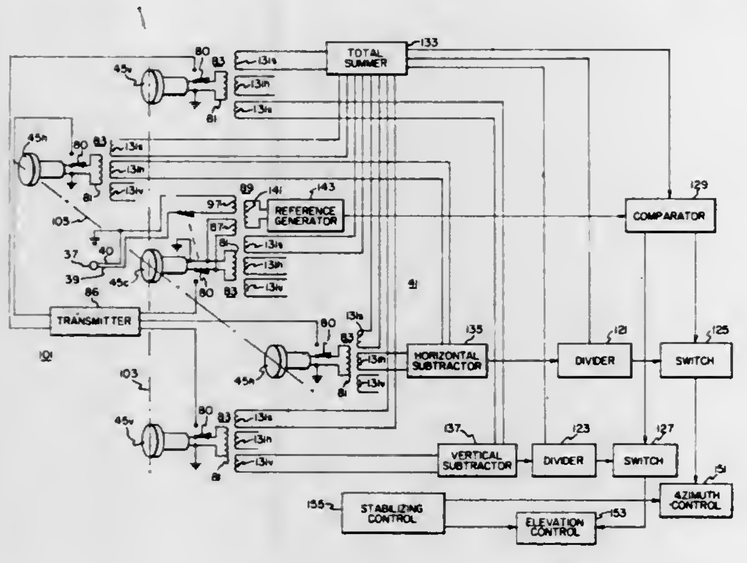
3,864,666
DIRECTIONAL SONAR APPARATUS

George R. Douglas, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed June 12, 1973, Ser. No. 369,329

Int. Cl. G01s *3/80*

U.S. Cl. 340—6 R **12 Claims**



1. Directional sonar apparatus for receiving signals from sources in predetermined directions with respect to said apparatus, said apparatus including an array of main electroacoustic transducers, said electroacoustic transducers being spacially distributed with respect to each other so that the response of said array to said signals is directional, the directional pattern of said response having a main lobe and at least one side lobe, the response to said signals along the direction of said main lobe being substantially greater than the response to said signals along the direction of said side lobe, at least one predominately omnidirectional auxiliary electroacoustic transducer in receiving relationship with said signals, said auxiliary transducer being connected to at least one of said main electroacoustic transducers to produce a combined response with said one transducer, actuable means connected to said array and said auxiliary transducer to be actuated thereby, and means connecting said auxiliary electroacoustic transducer and said one main electroacoustic transducer in comparison relationship with said array of main transducers so that said combined response of said auxiliary transducer and said one main transducer modifies the response of said array so as to suppress the actuation of said actuable means responsive to signals along the direction of said side lobes but to permit actuation of said actuable means along the direction of said main lobe.

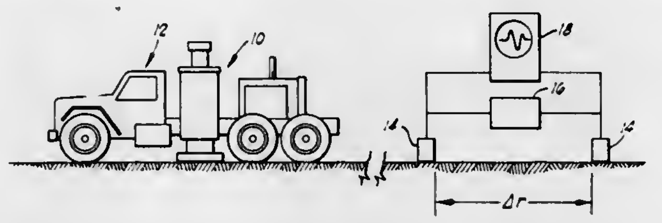
3,864,667
APPARATUS FOR SURFACE WAVE PARAMETER DETERMINATION

Dhari S. Bahjat, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 11, 1970, Ser. No. 71,488

Int. Cl. G01v *1/28*

U.S. Cl. 340—15.5 SW **3 Claims**



1. Apparatus for determining the observed frequency and the observed phase shift of a surface wave at a particular test location, the observed frequency and the observed phase shift being utilized to determine the parameters of a near surface layer of the earth, comprising:

- means for generating a continuously varying frequency seismic signal through the earth;
- a pair of detectors disposed at the test location adapted to detect the surface wave component of the seismic signal, the detectors being spaced a predetermined distance apart;
- means for measuring the observed frequency of the surface wave detected by the two detectors; and
- means for measuring the observed phase shift of the surface wave detected by the two detectors.

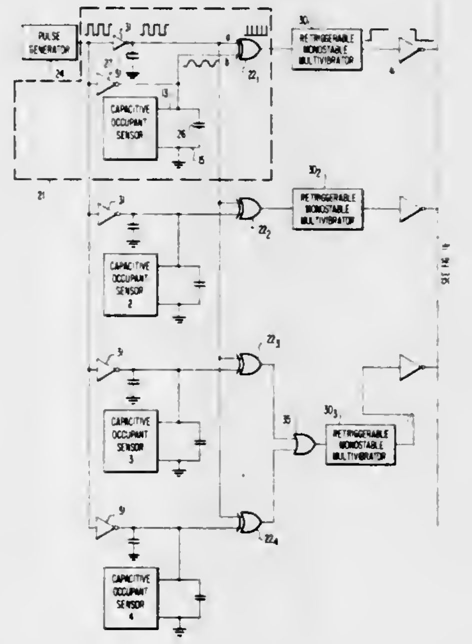
3,864,668
SEAT BELT WARNING AND IGNITION INTERLOCK SYSTEM

David Edward Bickford, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 31, 1973, Ser. No. 328,224

Int. Cl. B60r *21/10*

U.S. Cl. 340—52 E **4 Claims**


PULSE GENERATOR
CAPACITIVE OCCUPANT SENSOR 1
CAPACITIVE OCCUPANT SENSOR 2
CAPACITIVE OCCUPANT SENSOR 3
CAPACITIVE OCCUPANT SENSOR 4
RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
RETRIGGERABLE MONOSTABLE MULTIVIBRATOR

1. In a seat belt warning system for vehicles an occupant detector means for detecting the presence of an individual seated on the vehicle seat comprising:

- a variable capacitive means responsive to the presence of a seated occupant to assume a first value of capacitance and responsive to the absence of a seated occupant to assume a second value of capacitance;
- means for producing a series of electrical pulses having a first predetermined rise time;
- signal coincidence means having first and second inputs;
- first circuit means for supplying said series of electrical pulses directly to a first input of said coincidence means; and
- second circuit means including said variable capacitive means for supplying said series of electrical pulses to the second input of said coincidence means;
- said second circuit means constructed to supply output pulses to said coincidence means having the same rise time as the pulses supplied through said first circuit means to the first input of said coincidence means when said variable capacitance means assumes its second value; said second circuit means further constructed to alter the rise time of said pulses supplied to said coincidence means when said variable capacitive means assumes its first value;
- said altered rise time of said pulses being different from said predetermined rise time;
- said coincidence means responsive to the pulses supplied to its first and second input leads to provide an output of a first magnitude when said rise times are identical and to produce an output of a second magnitude when said rise times are different.

3,864,669
CORRECTION ARRANGEMENT FOR ELECTRONIC TYPEWRITERS

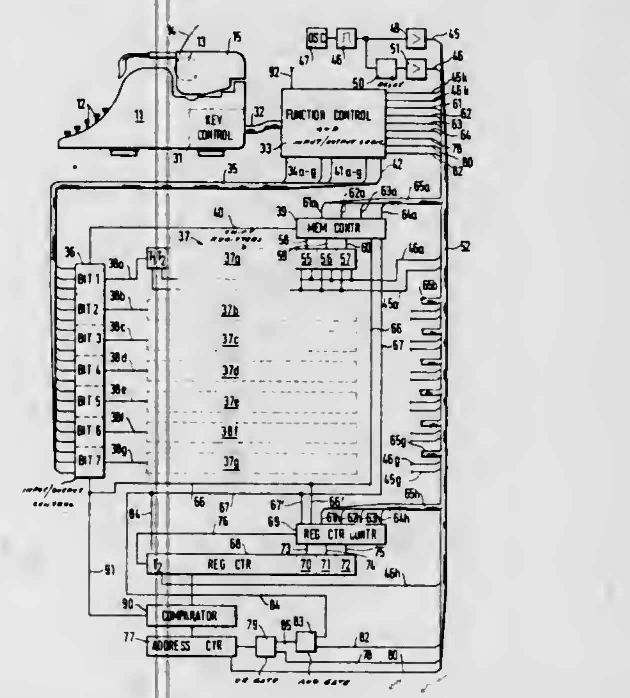
Klaus Schlickeiser, Boll/Hech, and Hartmut Linke, Hechingen, both of Germany, assignors to Walter Buhmann Elektro-Apparatebau GmbH, Stetten bei Hechingen, Germany

Filed Sept. 11, 1972, Ser. No. 288,000

Claims priority, application Germany, Sept. 10, 1971, 2145287

Int. Cl. G11c *19/00;* **B41j** *5/00*

U.S. Cl. 340—172.5 **15 Claims**



1. In a system for furnishing a visual output corresponding to selected ones of a plurality of alphanumeric inputs each represented by a code word having a predetermined number of places, and having function control means for furnishing a selected one of a plurality of function signals including a "write" signal and a "delete" signal upon external activation, a correction arrangement for deleting from said visual output a determined one of said alpha-numeric inputs, comprising, in combination, memory means for storing said code words, said memory means comprising a plurality of synchronously operable circulating storage means, one for each of said places, each having a determined pluralitv of storage locations arranged in a predetermined order, said plurality of storage locations including a first storage location, a last storage location, a next to the last storage location immediately preceding said last storage location in said predetermined order, and a third last storage location immediately preceding said next to the last storage location in said predetermined order; synchronizing means connected to said memory means, for furnishing synchronizing signals to said plurality of synchronously operable circulating storage means in such a manner that said storage means transfers information from each of said storage locations to the next subsequent one of said storage locations in said predetermined order in response to each of said synchronizing signals; first counting means connected to said synchronizing means for counting said synchronizing signals and furnishing a first counting signal signifying the number of so-counted synchronizing signals; externally operable address signal furnishing means for furnishing address signals each signifying one of said storage locations in said predetermined order; comparator means connected to said address signal and furnishing a comparator output signal when said first counting signal corresponds to said address signal; memory control means connected to said comparator means, said function control means and said memory means for selectively connecting the outputs of said last or next to the last storage locations to said first storage locations under control of said function signals and said comparator output signal in such a manner that said last storage location is disconnected from said first storage location when the code word representing said determined one of said alpha-numeric inputs is in said last storage location, whereby said code word is deleted from the sequence of code words stored in said memory means; and output means connected to said memory means for furnishing said visual output in correspondence to said sequence of code words stored in said memory means.

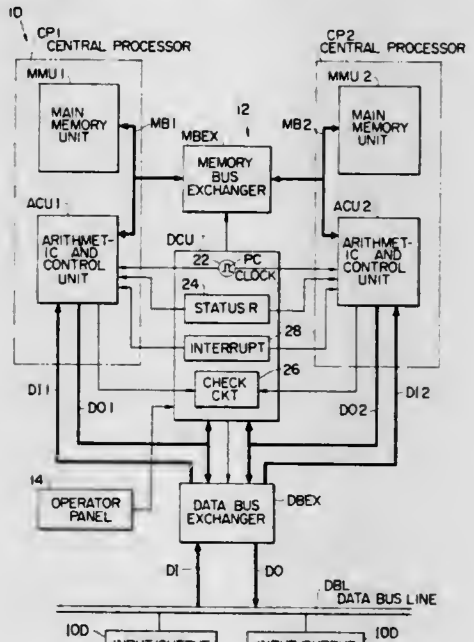
3,864,670
DUAL COMPUTER SYSTEM WITH SIGNAL EXCHANGE SYSTEM

Tadanari Inoue, and Osamu Tada, Kazutaka, Watanabe, Tokyo, all of Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 182,489, Sept. 21, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,857

Int. Cl. G06f *15/16, 15/20*

U.S. Cl. 340—172.5 **8 Claims**



1. A dual computer system for highly reliable use in industrial process instrumentation for complex processes having a number of variable process conditions such as temperature, flow rate, and the like, and arranged to receive signals representing the values of various process conditions, the store data comprising programs and base data for performing computations respecting process conditions, and to produce corresponding output signals for use in controlling the process, said dual computer system comprising:

a pair of synchronized central processors, one of which acts as a principal central processor and the other of which acts as an auxiliary central processor, each central processor comprising an arithmetic and control unit, having registers for data storage, a main memory unit for data storage, a memory bus which connects the arithemtic and control unit with the main memory unit, means for exchanging memory data signals on the memory bus between the main memory unit and the registers of the arithmetic and control unit, and input/output terminals for receiving input data signals into and transferring output data signals from the arithmetic and control unit;

input/output devices for exchanging process input/output data signals with the dual computer system;

a data bus line connecting to the input/output devices;

data bus exchange means for controlling the connections between the input/output terminals of the principal and auxiliary central processors and the data bus line;

a memory bus exchange means for controlling the connections between the memory bus of the principal central processor and the memory bus of the auxiliary central processor and thereby allowing the two central processors to exchange memory data signals; and

a dual control unit supplied with the output data signals from the arithmetic and control units of the two central processors and arranged to control the data bus exchange means and memory bus exchange means, said dual control unit comprising a clock circuit for synchronizing the pair of central processors, means responsive to the output data signals from the two arithmetic and control units of the two central processors for detecting a lack of coincidence therebetween corresponding to the failure of one of the central processors, means responsive to detection of lack of coincidence between said output data signals for causing the data bus exchange means to disconnect the data bus line from both central processors, means including diagnostic programs stored in both central processors and operating upon detection of lack of coincidence between said output data signals for determining the failed central processor, means responsive to said failure determination means for causing the data bus exchange means to connect the data bus line with the input/output terminals of the normal central processor for resumption of computations respecting process conditions by the normal central processor while the failed central processor undergoes repair, means for controlling the memory bus exchange means to transfer memory data signals from the normal central processor to a repaired central processor to equalize the memory of the repaired central processor with the instantaneous memory content of the operating normal central processor, and means for starting the repaired central processor with equalized memory to cause it to operate in synchronism with the normal central processor and to cause the data bus exchange means to supply input data signals to both arithmetic and control units,

whereby if a fault occurs in one of the central processors, the faulty central processor is located, repaired and restored to dual operation, and either of the two central processors is responsible for input/output operations, except for short intervals during error diagnosis, whereby the two central processors provide a very reliable and effective dual computer system for process control.

3,864,671
PACKAGE STRUCTURE FOR MOVABLE MAGNETIC DOMAIN DEVICES

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 10, 1972, Ser. No. 242,475

Int. Cl. G11c *11/14*

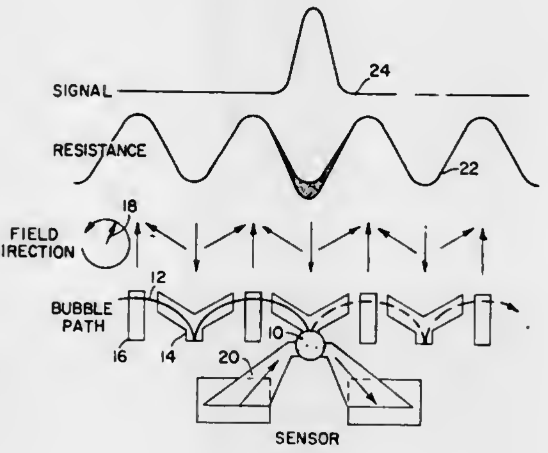
U.S. Cl. 340—174 MA **5 Claims**

1. In combination:

a. a digital signal translating device of the type employing mobile magnetic domains in uniaxially anisotropic magnetic media capable of sustaining said domains in the presence of a predetermined magnetic biasing field and operative in response to electrical signals applied to said device over electrical conductors while such magnetic bias field is simultaneously applied thereto to move said magnetic domains between predtermined locations in said magnetic media;

b. a package protectively enclosing said device, said package having means forming a rigid structural frame member of said package and consisting of a material which is both a high coercivity permanent magnet and an electrical insulator for simultaneously providing said package structural member, a magnetic biasing field, and an electrically insulating terminal strip for said conductors providing said electrical signals to said device in said package;

c. means to support said device within said frame member in fixed relationship thereto;



d. said support means including an optically non-distorting transparent portion positioned to permit visual inspection of said signal translating device during manufacturing assembly of said package device to determine by a visual image of said magnetic material that the intended mobile domains have, in fact, been created at the desired locations;

e. electrical conductors for terminating the circuits of said signal translating device, said electrical conductors being insulatively supported by said frame member; and,

f. electrically insulating cover means to close said package, said cover means including a transparent portion aligned with said transparent portion of said support means to permit said visual inspection of said signal translating device, said structrual frame member entirely surrounding said signal translating device in at least one plane of said device and said insulating cover means and said support means forming with said structural frame member a totally closed package in which said signal translating device is housed.

3,864,672
MATRIX STORE WIRING PATTERN

Pierre Ingelaere, Evreux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 6, 1973, Ser. No. 377,070

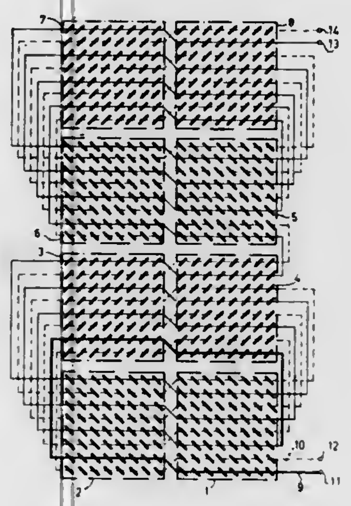
Claims priority, application France, July 12, 1974, 74.25285

Int. Cl. G11c *11/02, 5/02*

U.S. Cl. 340—174 M **5 Claims**

1. A matrix store, comprising toroidal magnetic storage elements arranged in arrays of rows and columns each array comprising a plurality of rectangular fields each side of said array comprising an integer multiple of two fields, said storage

elements in each field being oriented diagonally with respect to said rows and columns and provided with a row selection wire per row and a column selection wire per column and two sense wires, a first plurality of said fields operatively responsive to a first plurality of adjacent row selection wires being identified as higher fields, a second plurality of said fields operatively responsive to a second plurality of adjacent row selection wires being identified as lower fields, each of said sense wires being operatively responsive to one half of the columns of each field said sense wires forming, while crossing each other, at a transition between a higher and lower field, respectively which adjoin each other in the column direction, a bipolar propagation line, all of said storage elements within a field being orientated parallel to a single diagonal to said columns and rows, said storage elements of two fields which adjoin each other in the direction of said rows being orientated according to two different diagonals to said columns and rows, said sense wires being arranged such that they form a spiral having substantially right angle turns, the widths of said turns being substantially equal to the width of said fields in the direction of the rows and consisting of two half-turns which are staggered in each turn with respect to each other, one of said half turns extending between identically sequenced columns in adjacent higher fields, and the other of said half turns extending between columns of different sequence than said one half turn, successive turns overlapping preceding and succeeding turns.



3,864,673
ANNUNCIATOR FOR AN ELECTRICAL SYSTEM INCLUDING BUILT-IN TEST EQUIPMENT

Geary L. Thomas, Cypress; Raymond G. Kostanty, Long Beach, and David San Julian, Stanton, all of Calif., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 17, 1973, Ser. No. 425,480

Int. Cl. G08b *29/00*

U.S. Cl. 340—214 **8 Claims**

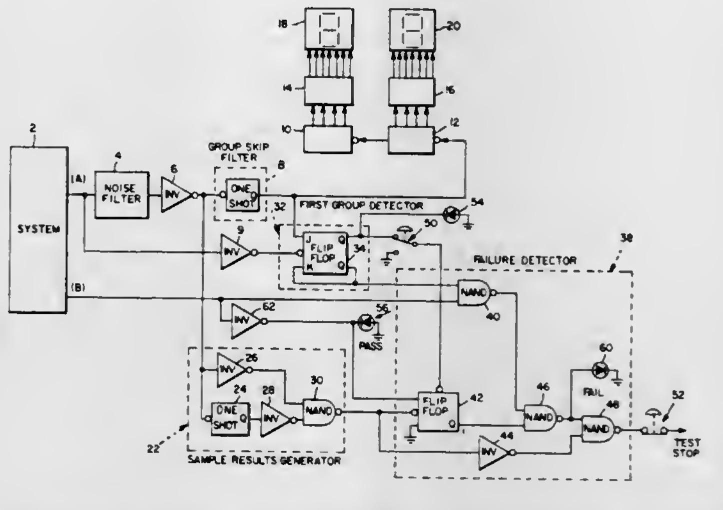
1. For use with a system of the type including built in test equipment for self-testing purposes, and which system provides first pulses indicative of the count of the steps in a test sequence and second pulses indicative of the successfully completed steps, an annunciator comprising:

counting means connected to the system and responsive to the first pulses for annunciating the count of the steps in the test sequence;

sampling means connected to the system for sampling the first pulses prior to the completion of a test step and for providing an output indicative of a failure of said step;

test step group detecting means connected to the system and responsive to the first pulses for detecting the completion of a predetermined first group of test steps in the test sequence and for providing an output indicative of the completion of said first group; and

failure detecting means connected to the system, the sampling means and the group detecting means and responsive to the second pulses, the sampling means output and



the group detecting means output for providing an output indicative of a failed test step in a group other than the first group.

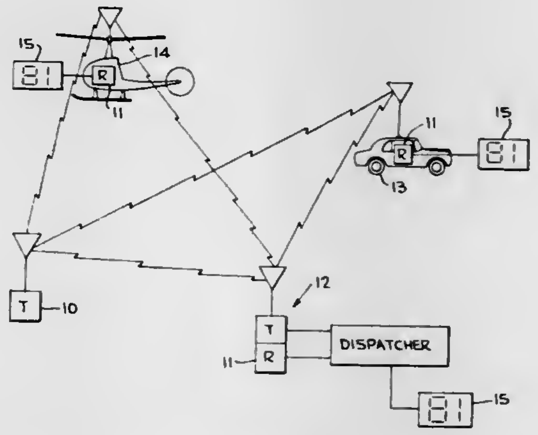
3,864,674
EMERGENCY RADIO WARNING SYSTEM

Robert Worsham, Opa Locka, and Stephen J. Martin, Miami, both of Fla., assignors to Criminalistics, Inc., Opa Locka, Fla.

Filed Dec. 18, 1972, Ser. No. 315,856

Int. Cl. H04b *7/00*; H04q *11/02*

U.S. Cl. 340—224 **16 Claims**



1. An emergency radio warning system comprising:

a sensor operable upon an emergency condition;

means operated by the sensor in response to an emergency condition for generating and transmitting a radio signal having a predetermined frequency;

means for modulating the generating and transmitting means with an identification signal having one or more simultaneously generated frequencies selected from a group of four frequencies in accordance with an identifying binary coded decimal digit;

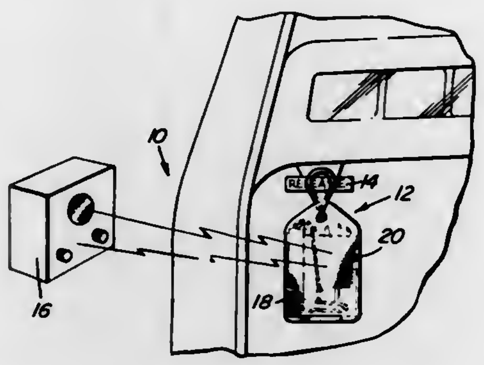
said modulating means including one or more oscillator circuits, each having in circuit a tuning fork filter resonant at a respective selected frequency;

means for receiving the modulated radio signal and detecting the identification signal;

said receiving and detecting means including four tuning fork filters resonant at the respective four frequencies; and

means responsive to the identification signal for displaying the decimal digit corresponding to the detected identification signal to indicate the location of the emergency condition.

3,864,675
MOTION RESPONSIVE SWITCH AND ALARM SYSTEM
Floyd A. Colibert, P.O. Box 11395, Salt Lake City, Utah 84111
Filed June 13, 1973, Ser. No. 369,490
Int. Cl. G08b *13/02;* **B60r** *25/10*
U.S. Cl. 340—224 7 Claims



1. A self-contained detector for an alarm system to provide signals to a remote receiver, said detector comprising

an enclosure;

mounting means attached to said enclosure whereby said enclosure is adapted to be freely suspended beneath said mounting means;

motion responsive switch means having

an elongate housing in said enclosure, said housing being arranged to be substantially vertical when the enclosure is suspended by the mounting means,

an upper electrical contact member extending into the housing at the top thereof when said enclosure is suspended beneath the mounting means,

a lower electrical contact member extending into the housing at the bottom thereof when the enclosure is suspended from the mounting means,

an electrical conductive movable contact member, and means resiliently mounting the movable contact member in the housing and electrically connected to the upper contact member whereby the entire movable contact is closely spaced above the lower contact member when the means resiliently mounting the movable contact is stretched by the weight of the movable contact member; and

transmitter means mounted in said enclosure to provide signals to the remote receiver in response to actuation of said motion responsive switch means.

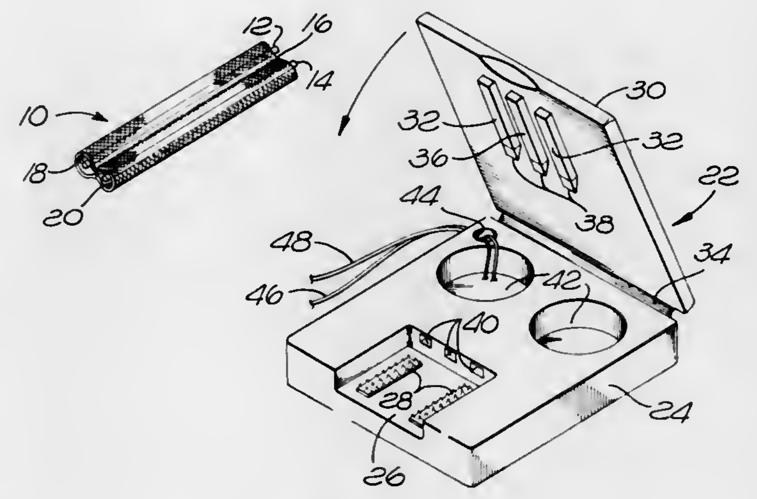
3,864,676
MOISTURE DETECTOR
Helene Macias, and Angos Winke, both of 1535 N. Serrano Ave., Hollywood, Calif. 90027
Filed Sept. 10, 1973, Ser. No. 395,722
Int. Cl. G08b *21/00;* **A61b** *19/00*
U.S. Cl. 340—235 10 Claims

1. A portable moisture detector for sensing and indicating the flow of fluid in a specified region, comprising:

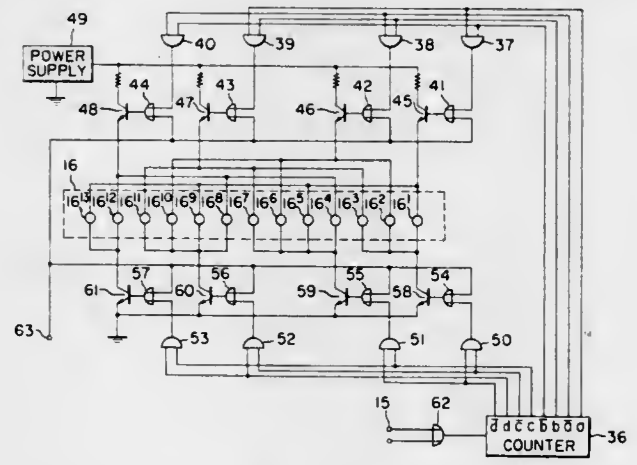
a sensor portable with the body of the user comprising two closely spaced, elongated, flexible conductors, each conductor being enclosed in a soft, porous sheath separating the conductors from each other and from the user's body to normally provide electrical isolation between the conductors but allowing an electrical short between them in the presence of a bridging fluid;

signal generator and alarm means electrically connected to said sensor to provide an indication of a short between said conductors; and

an electrically insulated connector for receiving one end of said sensor and providing said electrical connection between said sensor and said signal generator and alarm means, said connector comprising a slotted connector base, a connector cover, and means for providing an enclosed electrical connection between said sensor and said signal generator and alarm means and for mechanically gripping and supporting the end of said sensor inserted into the connector slot when the connector cover is closed.



3,864,677
REGISTER OVERFLOW WARNING DEVICE
Shigeharu Bekki, Yokohama; Akihiro Yamataka, Funabashi; Takashi Mikami, and Juji Kishimoto, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 13, 1972, Ser. No. 288,739
Claims priority, application Japan, Sept. 17, 1971, 46-84504; Sept. 17, 1971, 46-84505
Int. Cl. G08b *5/00*
U.S. Cl. 340—248 R 8 Claims



1. An overflow warning device comprising:

input means for entering digital information;

a register having a predetermined storage capacity for storing the information entered by said input means;

a plurality of digit indicators each having a first and a second electrode for indicating the digit of the information entered in said register;

means for detecting the overflow of the information entered in said register beyond the predetermined storage capacity of said register;

means for producing indication controlling signals by which a flashing period of said indicators is determined;

a plurality of first switching means connected to selected ones of said first electrodes of said digit indicators;

a plurality of second switching means connected to selected one of said second electrodes of said digit indicators;

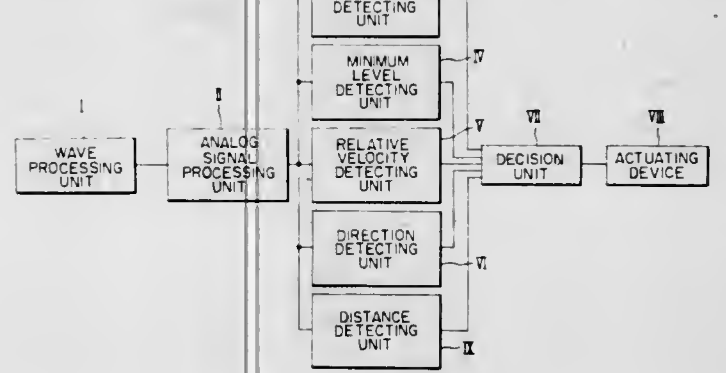
counting means having a plurality of bit outputs for counting the indication controlling signals;

means for applying some bit outputs of said counting means to said first switching means to control the operation of said first switching means;

means for applying other bits outputs of said counting means to said second switching means to control the operation of said second switching means; and

means for supplying power to said digit indicators through said first and second switching means whereby the digit indicators will light and extinguish intermittently and in sequence upon the occurrence of said overflow.

3,864,678
VEHICLE COLLISION ANTICIPATING DEVICE
Teruo Yamanaka, Seto; Takayuki Kato, Oaza Nishiishiki; Osamu Ozeki, Nagoya; Kazuo Sato, and Minoru Bito, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi-ken, Japan
Filed Apr. 4, 1973, Ser. No. 347,776
Claims priority, application Japan, Apr. 8, 1972, 47-35337
Int. Cl. G01s *9/44*
U.S. Cl. 343—9 19 Claims


I
WAVE PROCESSING UNIT
II
ANALOG SIGNAL PROCESSING UNIT
COLLISION TIME DETECTING UNIT
III
MINIMUM LEVEL DETECTING UNIT
IV
RELATIVE VELOCITY DETECTING UNIT
V
DIRECTION DETECTING UNIT
VI
DISTANCE DETECTING UNIT
IX
VII
DECISION UNIT
VIII
ACTUATING DEVICE

1. A vehicle collission anticipating device comprising

wave processing means for transmitting a wave by a transmitting antenna installed at a predetermined position and angle of a vehicle, for receiving a reflected wave from an object by a receiving antenna installed at predetermined position and angle of the vehicle, and for generating a low frequency wave by mixing said transmitted and reflected waves, said receiving antenna being so installed that the beam axis of said receiving antenna intersects that of said transmitting antenna in a predetermined range,

analog signal processing means connected to said wave processing means for signal processing said low frequency wave into at least one Doppler signal obtained from said low frequency wave, and for generating additional signals corresponding to the intensity and frequency of the various frequency components of said low frequency wave,

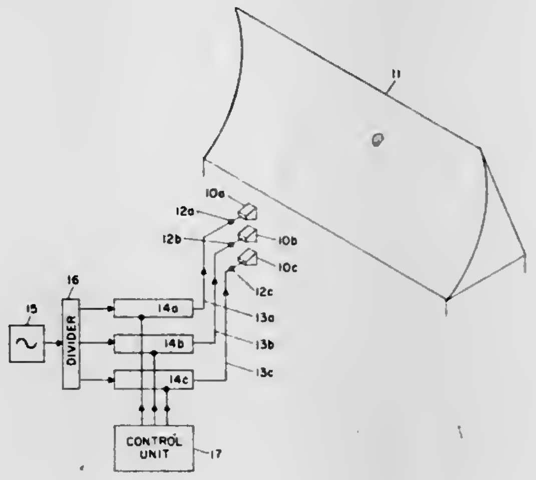
collision time detecting means connected to said analog signal processing means for detecting a collision time which is determined by a distance between the vehicle and object and a relative velocity of the object with respect to the vehicle in response to the additional signals from said analog signal processing means, and for generating a signal when said collision time reaches a predetermined time,

minimum level detecting means connected to said analog signal processing means for detecting an intensity of said Doppler signal obtained from said low frequency wave, and for generating a signal when said intensity of said Doppler signal reaches a predetermined minimum level so as to detect the obiect to enter a predetermined detection range defined by the positions and angles of the transmitting and receiving antennas, and

decision means connected to said collision time detecting means and minimum level detecting means for generating a signal in response to the simultaneous generation of signals by said collision time detecting means and minimum level detecting means,

thereby anticipating a collision of the object against the vehicle.

3,864,679
ANTENNA SYSTEM FOR RADIATING DOPPLER CODED PATTERN USING MULTIPLE BEAM ANTENNA
Peter W. Hannan, and Harold A. Wheeler, both of Smithtown, N.Y., assignors to Hazeltine Corporation, Greenland, N.Y.
Filed Apr. 3, 1973, Ser. No. 347,506
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D 16 Claims



1. An antenna system for radiating wave energy into a desired region of space during a selected time period in a desired radiation pattern, wherein the frequency of said radiated energy within said region of space varies with at least one of the components of angular direction from said antenna system comprising:

an antenna unit capable of radiating a plurality of beams in different directions within said region of space from a common aperture, and having a plurality of wave energy input ports such that each of said ports corresponds to one of said beams;

and means for simultaneously supplying a plurality of wave energy signals during said time period, one to each of said ports of said antenna unit, each of said wave energy signals having a phase, measured with respect to the phase of the wave energy signal supplied to the port corresponding to an adjacent antenna beam, which varies during said time period between a predetermined pair of values, said variation being less than 360° and the sense of said variation being alike for pairs of antenna ports corresponding to similarly adjacent beams;

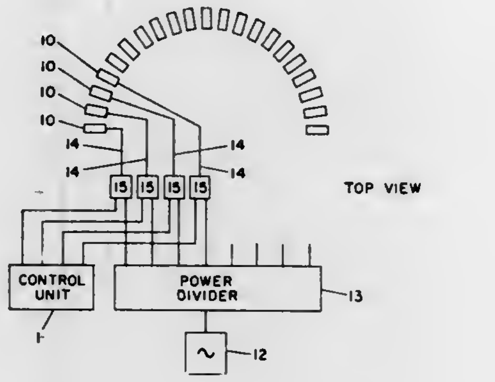
whereby when said signals are supplied to said antenna ports, said antenna radiates said desired radiation pattern.

3,864,680
ARRAY ANTENNA FOR RADIATING DOPPLER CODED PATTERN USING PHASE CONTROL
Peter W. Hannan, Smithtown, N.Y., assignor to Hazeltine Corporation, Greenland, N.Y.
Filed Apr. 3, 1973, Ser. No. 347,507
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D 16 Claims

1. An antenna system for radiating wave energy into a region of space during a time period and in a desired radiation pattern wherein the frequency of said radiated energy within said region varies with at least one of the components of angular direction from said antenna system comprising:

an array of antenna element columns arranged along a predetermined path for radiating supplied wave energy signals, said columns comprising one or more antenna elements and means for coupling supplied wave energy signals to said elements;

means for supplying wave energy signals to said columns curing said time period;

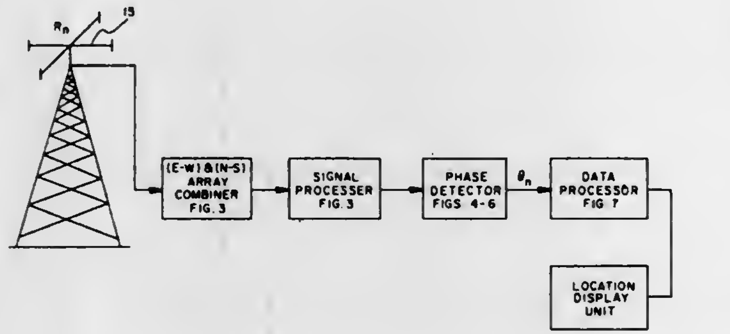


and means for controlling the phase of the individual wave energy signals supplied to each of said columns to produce phase reinforcement of the energy radiated by adjacent columns in a direction which continuously changes during said period, no two pairs of adjacent columns having the same direction of phase reinforcement at any particular time during said period;

thereby causing said antenna system to radiate said desired radiation pattern.

3,864,681
SYSTEM AND PROCESS FOR LOCATING SOURCES OF RADIATION

George A. Olive, 229 Mill Run Ct., Moorestown, N.J. 08057
Filed Feb. 28, 1973, Ser. No. 336,409
Int. Cl. G08g *5/00;* **G01s** *5/04*
U.S. Cl. 343—112 R **13 Claims**



1. A vehicle location system for determining the coordinate location of a vehicle through radio transmission radiation from the vehicle comprising:

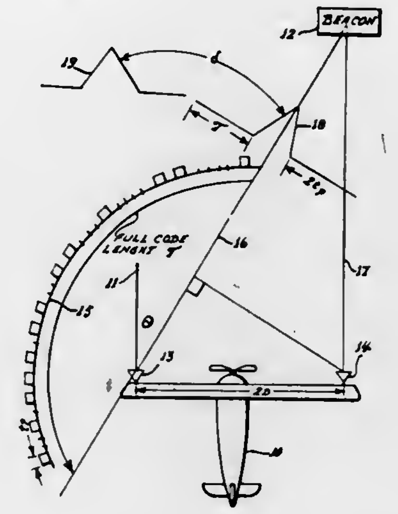
a plurality of receiver sites at known coordinate locations each having antenna-coupler means providing means providing first and second signals whose phase difference is approximately linearly related to the azimuth angle of the received signal from the radiation source;

phase detector means for each receiver site responsive to the first and second signals to provide a binary expression linearly related to the phase difference between the first and second signals; and

electronic data processing means programed to determine the coordinates of the radiation source from the plurality of binary expressions.

3,864,682
BINARY PHASE CODED NAVIGATION SYSTEM (BICONS)

James J. Maier, 37 Kellogg St., Utica, N.Y. 13323
Filed Sept. 12, 1969, Ser. No. 857,403
Int. Cl. G01s *5/02*
U.S. Cl. 343—113 R **5 Claims**



1. A binary phase coded navigation system in combination comprising:

a ground-based beacon emitting a carrier frequency, said carrier frequency being phase coded to provide a binary phase coded signal, said binary phase coded signal being a pseudo-random code, said binary phase coded signal having a code length,

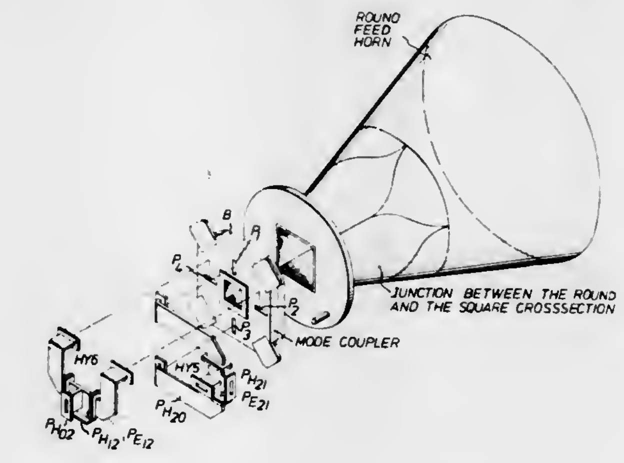
a first airborne receiving means for receiving said binary phase coded signal,

a second airborne receiving means displaced from said first airborne receiving means by a predetermined distance, said second airborne receiving means also receiving said binary phase coded signal, and

a correlation means connected to said first and second receiving means, said correlation means correlating said binary phase coded signals from said first and second airborne receiving means to provide a correlation pulse.

3,864,683
ARRANGEMENT FOR AN AUTOMATIC RESETTING SYSTEM FOR MICROWAVE ANTENNAS

Gunter Morz, Ludwigsburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany
Filed Mar. 19, 1973, Ser. No. 342,427
Claims priority, application Germany, Mar. 17, 1972, 2212996
Int. Cl. G01s *3/14*
U.S. Cl. 343—113 R **10 Claims**



1. In an automatic direction finding system for resetting microwave antennas when signals are received from a moving transmitter wherein the antenna exciter has a generally doubly polarizable wave-guide cross section and wherein means are provided for detecting and using the higher waveguide modes produced in the azimuth plane and in the elevational plane of the antenna exciter as the deviation information used to reset the antenna; the improvement comprising:

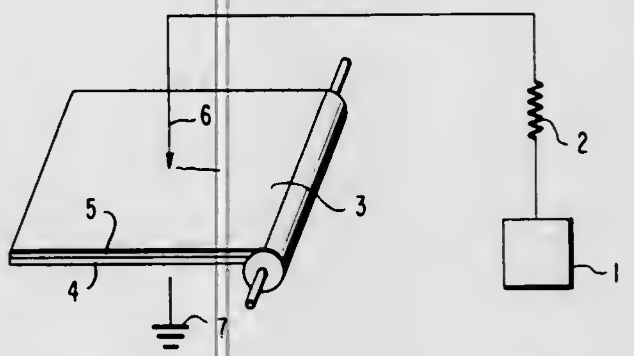
a transition section between said antenna exciter cross section and a waveguide with a square cross section;

a mode coupler means, which is provided with a microwave network, connected to said waveguide for separating the deviation information in the received signal from the useful signal and producing an output signal containing same; and

comparator circuit means connected to the output of said mode coupler and responsive to the output signal therefrom containing the deviation information for processing same to produce the deviation signals necessary to reset the antenna.

3,864,684
MULTICOLOR ELECTROTHERMIC RECORDING SHEET

Kazuo Shimuzu, Tokyo, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
Filed Mar. 22, 1974, Ser. No. 453,907
Int. Cl. G01d *15/34*
U.S. Cl. 346—135 **7 Claims**



1. A multicolor electrothermic recording sheet which comprises a support having thereon a layer of a metal compound which can be electrically reduced to a metal or a lower valency metallic compound in a heat sensitive element layer comprising a combination of (1) a polyhydroxy compound or a weak acid compound and (2) a color forming leuco dye which undergoes a color forming reaction upon contact with said polyhydroxy compound or said weak acid compound and a high molecular weight binder, whereby said metal compound is electrically reduced by electrothermic energy to form a metallic color and said leuco dye is thermally developed.

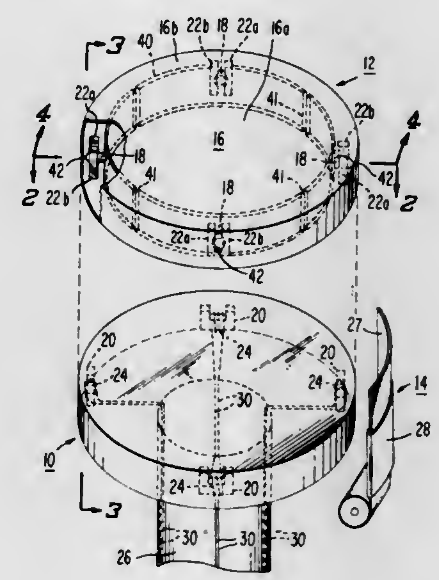
3,864,685
REPLACEABLE FLUID CARTRIDGE INCLUDING MAGNETICALLY OPERABLE FLUID JET DEVICES

Kenneth Henry Fischbeck, Mercer, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 29, 1974, Ser. No. 456,127
Claims priority, application Great Britain, May 21, 1973, 24139/73
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **10 Claims**

1. An ink cartridge for an ink jet printing apparatus of the type wherein ink jets in relative motion to a recording medium are operated in response to electrical control signals to deposit drops of ink on the recording medium, comprising:

a housing member including a cavity extending substantially throughout said housing member, said cavity forming an ink reservoir for storing ink within said housing member, said housing member being adapted to be replaceably mounted on a support member; and

a magnetically operable ink jet mounted on said housing member and communicating with said reservoir to be supplied with ink from said reservoir for directing jets of ink outwardly from said housing member and on to said recording medium, said magnetically operable ink jets being operable in response to a magnetic field coupled to said magnetically operable ink jets from the support member;

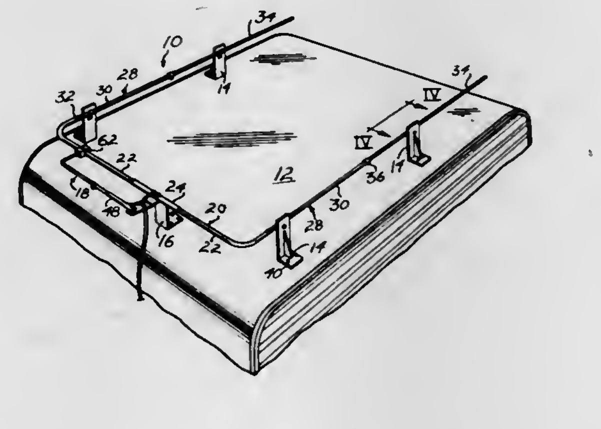


said support member including magnetic means coupled to said electrical control signals for coupling said magnetic field to said magnetically operable ink jet in response to said electrical control signals;

said housing member and said support member being adapted to mate to form a magnetic field path between said magnetic means and said magnetically operable ink jet.

3,864,686
ROOF MOUNTED VEHICLE ANTENNA

William G. Owen, 7934 Napoleon Rd., Jackson, Mich. 49201
Filed Nov. 14, 1973, Ser. No. 415,538
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **5 Claims**



1. An antenna particularly suitable for vehicle roof mounting and Citizen Band frequency usage comprising, in combination, a U-shaped tubular antenna body having a base portion and substantially parallel leg portions, the spacing between said leg portions being one-seventh to one-eighth the wavelength of the radio frequency being transmitted, a plurality of supports connected to said leg portions for supporting said antenna body in spaced relation to a supporting surface, a base support connected to said base portion, a gamma tube assembly connected to said base support positioned in parallel spaced relationship to said base portion, an antenna conductor connected to said gamma tube, and grounding means connected to said antenna body.

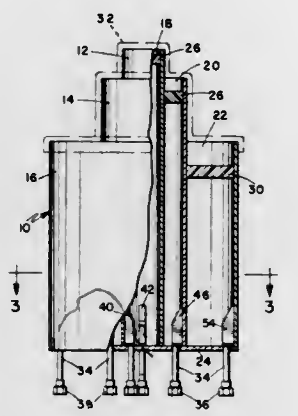
3,864,687
COAXIAL HORN ANTENNA

Glenn A. Walters, Poway; Edward E. VonKline, La Mesa, and Duane Tubbs, San Diego, all of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed June 18, 1973, Ser. No. 370,612

Int. Cl. H01q *13/00*

U.S. Cl. 343—778 **1 Claim**



1. A coaxial horn antenna, comprising:

a plurality of at least three progressively sized tubular horns secured together in coaxial alignment and defining concentric radiating apertures at one end,

the innermost horn having a pair of feeds coupled thereto that are spaced 90° and the intermediate and outermost horns having four feeds coupled that are spaced 90°, each of said feeds having means for connection to a signal source,

said horns are axially staggered with the innermost horn extending a preset distance from said one end, and the intermediate horn extending an intermediate distance between the innermost horn and the outermost horn,

each of said feeds includes a coaxial to wave guide transition element coupled to the inner surface of the respective horn,

said means for connection comprising a coaxial conductor to said transition element,

and the ratio of cross sectional size between adjacent horns is approximately 2 to 1.

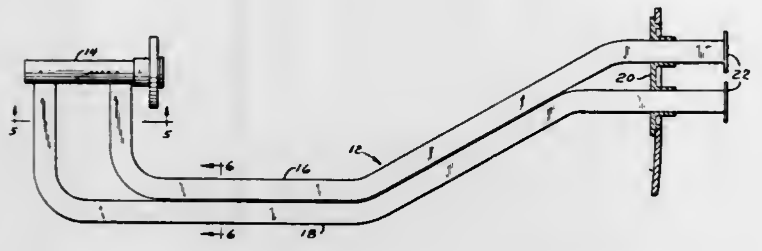
3,864,688
CROSS-POLARIZED PARABOLIC ANTENNA

Laurence H. Hansen, Oak Lawn; Robert E. Massey, Oak Forest, and Aloysius Wojnowski, Worth, all of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Continuation of Ser. No. 331,172, Feb. 9, 1973, , which is a continuation of Ser. No. 237,727, March 24, 1972, abandoned. This application Mar. 26, 1974, Ser. No. 454,814

Int. Cl. H01q *19/14, 1/16*

U.S. Cl. 343—756 **7 Claims**



1. In a cross-polarized antenna comprising a parabolic reflector, a horn feed at the focus of the reflector, a pair of rectangular waveguides connected to the feed, the improvement characterized by the longer transverse H-plane dimension of both waveguides being aligned in a common radial plane, and the feed including a 90° polarization rotator between the point of connection of one waveguide and the point of connection of the other.

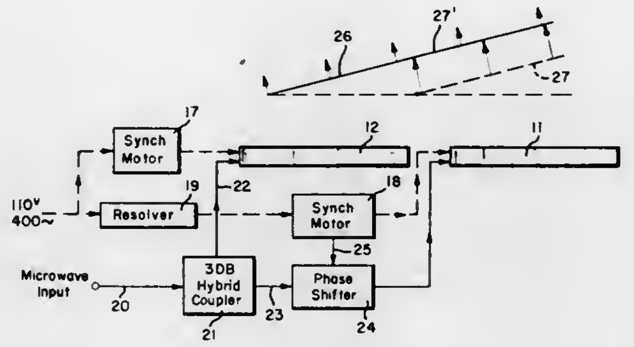
3,864,689
HYBRID SCAN ANTENNA

David W. Young, 627 N. Beachwood Dr., Burbank, Calif. 91506

Filed Aug. 2, 1973, Ser. No. 385,085

Int. Cl. H01q *3/26*

U.S. Cl. 343—854 **3 Claims**



1. A hybrid scan antenna comprising, in combination:

a. at least two physically separated elongated wave guide antenna sections;

b. coupler means for receiving electromagnetic energy from a single source and dividing it to feed equal amounts to said antenna sections;

c. mechanical means for scanning radiant energy emitted by each of said antennas, said scanning being sychronized;

d. phase shift means exterior of the antenna sections including means positioned to receive the energy fed to one of said sections and shift its phase relative to the energy fed to the other of said sections; and,

e. control means connected to said phase shift means and responsive to the scanned position of radiant energy emitted by the antennas to cause the phase shift means to shift the phase of the energy fed to said one antenna in a manner such that said radiant energy is in the form of a single beam which is scanned the same as though the sections were connected end to end to form a single long continuous wave guide antenna, said phase shift means shifting the phase of energy received thereby in a continuous manner as a linear function of a varying input signal, said control means including means for deriving said varying input signal for the phase shift means from said mechanical means for scanning radiant energy.

3,864,690
MULTIFREQUENCY OPERATING RADOME

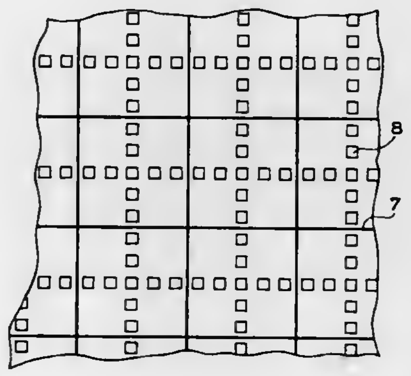
Robert Pierrot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 1, 1973, Ser. No. 411,911

Claims priority, application France, Nov. 3, 1972, 72.38959

Int. Cl. H01q *1/42*

U.S. Cl. 343—872 **12 Claims**



1. A multifrequency operating radome comprising:

a monolithic dielectric wall for transmitting a first wave of a first frequency and its harmonics;

a first network of continuous wires, said network being integral with said wall, for constituting with said wall an assembly tuned for a second wave to a second frequency lower than the first frequency, said network being the origin of grating lobes at the first frequency, and,

a second network of discontinuous metal elements, said second network being likewise integral with said wall, for compensating for said grating lobes; and

wherein the network of continuous wires and the network of discontinuous elements are printed on a dielectric substrate, said substrate subsequently being stuck to the internal face of the dielectric wall.

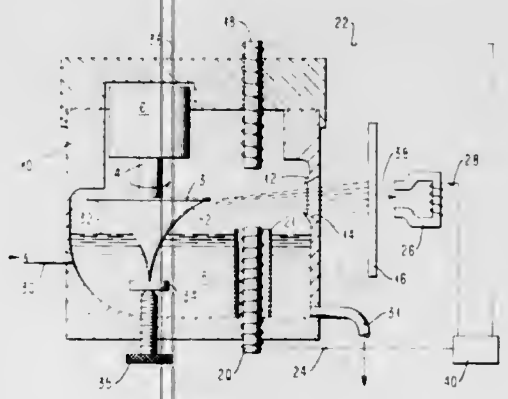
3,864,691
METHOD AND APPARATUS FOR PRINTING CODE PATTERNS BY NONIMPACT MEANS

Eugene Nelson Schroeder, Bethesda, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,979

Int. Cl. G01d *15/12, 15/18*

U.S. Cl. 346—74.1 **5 Claims**



1. A nonimpact printer comprising:

a housing having thereon an aperture for the emission of magnetic ink and containing therein a magnetic ink reservoir;

spinning means for delivering said magnetic ink from said reservoir towards said aperture along a projected path, said spinning means being in the shape of a cone with the tip of said cone pointing downward and immersed into said reservoir and the base of said cone terminating into a thin edge positioned above said reservoir and in substantially the same horizontal plane as said aperture, to prevent clogging of said printer by magnetic particles in said magnetic ink; and

deflecting means along said magnetic ink projection path from said spinning means to said aperture to intermittently deflect said magnetic ink away from said aperture so that a document to be printed, passing adjacent to said aperture, is printed with a discernable code, said deflecting means being electromagnets controlled by electrical signals so that said magnetic ink is deflected according to said electrical signals, thereby printing said discernable code.

3,864,692
TIME DEPENDENT DEFLECTION CONTROL FOR INK JET PRINTER

James A. McDonnell, Binghamton; Robert E. McGuire, and Raymond Radlinsky, both of Endwell, all of N.Y., assignors to International Business Machine Corporation, Armonk, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,006

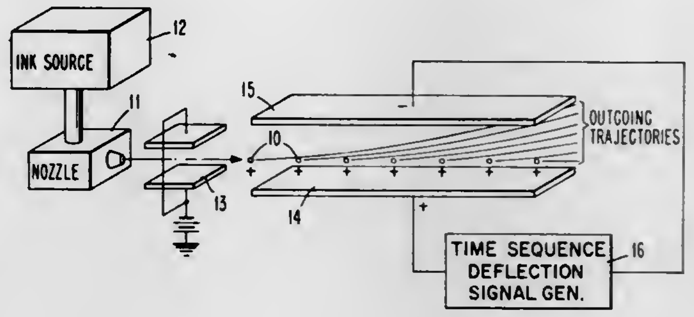
Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **15 Claims**

1. A fluid drop control system comprising:

means for directing a series of drops of marking fluid of like deflection characteristics along a path;

selectively energizable means adjacent said path for establishing a deflection field simultaneously encompassing said drop series and having a force component transversely of said path acting to deflect said drops moving along said path; and



means for energizing said deflection means for a predetermined time to subject each drop in said series of drops to said transverse force for different times for unidirectional deflection and impart to each drop in said series a different trajectory from said path beyond said deflection means according to the time subjected to said force.

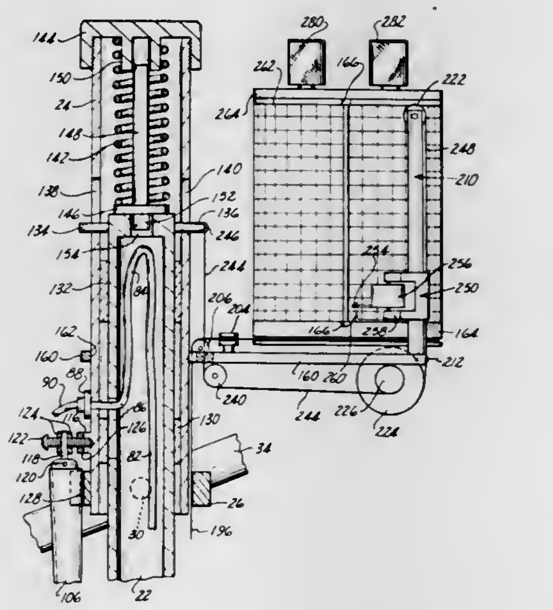
3,864,693
STRIP CHART RECORDING MECHANISM

Edward M. Hawes, 32418 Berkshire, Saint Clair Shores, Mich. 48082

Division of Ser. No. 286,640, Sept. 6, 1972, Pat. No. 3,797,301. This application July 10, 1973, Ser. No. 377,988

Int. Cl. G01d *9/38, 15/28*

U.S. Cl. 346—125 **2 Claims**



1. A recording mechanism comprising a rotatable drum having a removable closure for one of its ends; longitudinal slot means in the drum side wall extending from the aforementioned removable closure for a substantial portion of the drum length; chart strip storage means comprising a supply spool and a take-up spool rotatably mounted on the removable closure for disposition within the drum; an externally accessible manual operator connected to at least the take-up spool for turning same to cause the chart strip to wind off the supply spool, through the slot means, around the circumference of the drum, and back through the slot means onto the take-up spool; the aforementioned closure and spools being removable from the drum as a unit to remove and replace the chart, the longitudinal slot means having a mouth communicating with said one end of the drum to accommodate movement of the

chart strip into the slot means during the chart replacement process.

3,864,694
RECORDING INSTRUMENTS

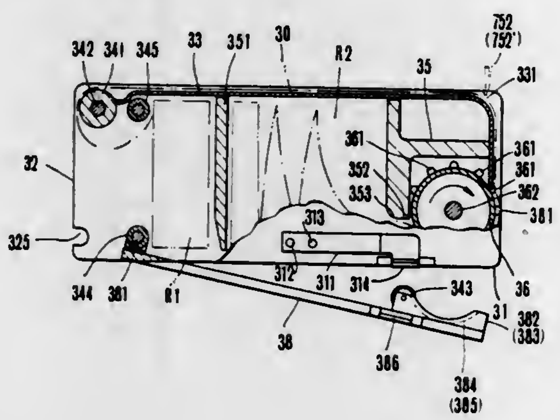
Sadao Tamura, Tokyo, Japan, assignor to Yokogawa Electric Works, Limited, Tokyo, Japan

Continuation of Ser. No. 130,715, April 2, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,480

Claims priority, application Japan, Apr. 7, 1970, 45-29016; Dec. 14, 1970, 45-111507

Int. Cl. G01d *15/30, 15/16*

U.S. Cl. 346—136 **9 Claims**



4. A cassett-type recording instrument for a Z-folded paper stack comprising: a frame, torque generating means and torque transmission means on said frame; a cassette removably mounted on said frame, said cassette having: a housing enclosing a rectangular volume with internal dimensions corresponding to the sheet size of said stack and subdivided by a transverse wall to define first and second internal regions having said internal dimensions to accept and confine the edges of separate stacks of Z-folded paper, recording paper feed means at one end of said housing, said recording paper feed means being cooperatively connected to said torque transmission means when said cassette is mounted on said frame as as to be rotated, a turning guide at the other end of said housing positioned to guide a continuous web of Z-folded recording paper which is stored in said first internal region of said cassette and engaged with said recording paper feed means so as to be drawn from said first region over said turning guide and fed in an unfolded condition over the outer surface of said cassette, deflecting guide means mounted at said one end of said housing and forming an end wall for said second region adjacent said feed means, said end wall forming a slot through which said feed means propells said web through said slot to be projected past said deflecting guide approximately normal to the surface of said transverse wall and refolded within said second region solely by the force of projection through said slot; and means mounted on said frame at a position opposed to said outer surface for recording a measured quantity on the recording paper while it is unfolded.

3,864,695
PEN HAVING VERTICAL MOVEMENT CONTROL

Hironobu Nagashima, and Masato Hara, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 393,888

Claims priority, application Japan, Sept. 14, 1972, 47-107261[U]; Sept. 25, 1972, 47-111195[U]

Int. Cl. G01d *15/24*

U.S. Cl. 346—139 R **16 Claims**

1. A device for producing the vertical movement of a pen in a scribing apparatus comprising:

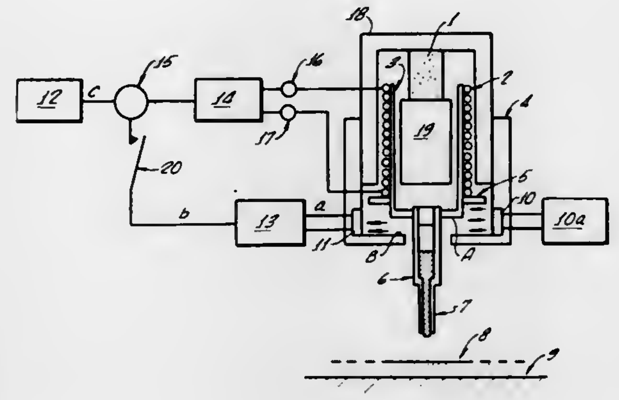
a frame member;

a movable coil mounted on said frame member;

means attached to said frame member for holding said pen;

means electrically connected to said movable coil for supplying a drive current to move said coil;

a first magnetic pole piece located within said frame member;



a second magnetic pole piece located outside of said frame member, said coil having a winding width greater than the longitudinal width of said first pole piece, so that the writing pressure of said pen is constant within the movable range of said coil; and

a feedback control device for controlling said drive current to said movable coil to insure that said pen makes a proper stroke with no bounce thereof on a work surface.

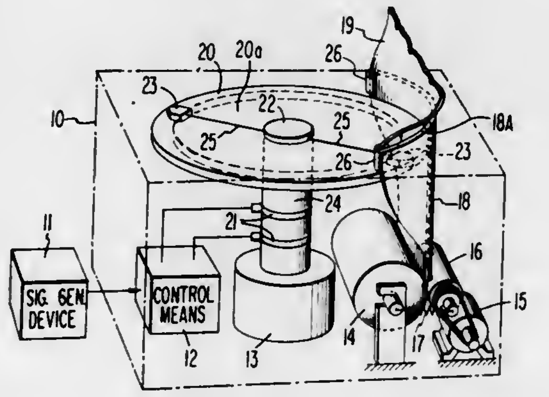
3,864,696
PRINTING APPARATUS

Kenneth Henry Fischbeck, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 192,209, Oct. 26, 1971, abandoned. This application Nov. 12, 1973, Ser. No. 414,756

Int. Cl. G01d *15/18*

U.S. Cl. 346—140 **5 Claims**



1. A printing apparatus wherein ink is deposited onto a recording medium in response to electrical control signals comprising:

a shaft;

means for rotatably driving said shaft about its axis;

a circular disc member coaxially and replaceably mounted on said shaft to be rotated by said shaft;

an electrically operable metering ink jet mounted at the periphery of said disc member for directing jets of ink drops radially outward from said disc, said ink jet being of the type susceptible to the formation of bubbles;

said disc member being arranged to serve as a replaceable ink cartridge wherein said disc member includes a cavity extending substantially throughout said disc member and located generally radially inward from said ink jet, said cavity forming an ink reservoir for storing said ink within said disc member and adapted to supply ink to said ink jet;

said bubbles being urged radially inward in response to a pressure gradient established by centrifugal forces acting on said ink when said disc member is rotated;

means responsive to said electrical control signals for controlling said ink jets to provide jets of ink drops in accordance with the information manifested by said signals;

a warped surface guide member formed of a warped surface having a straight line portion at one end and a curved line portion at the opposite end, said curved line portion of said guide member being conformed to the circular periphery of said disc member and proximate therefrom;

means for driving said recording medium contiguously through said guide member over said straight line portion to egress over said curved portion conforming said recording medium to the warped surface of said guide member as said recording medium is guided past the circular periphery of said disc member.

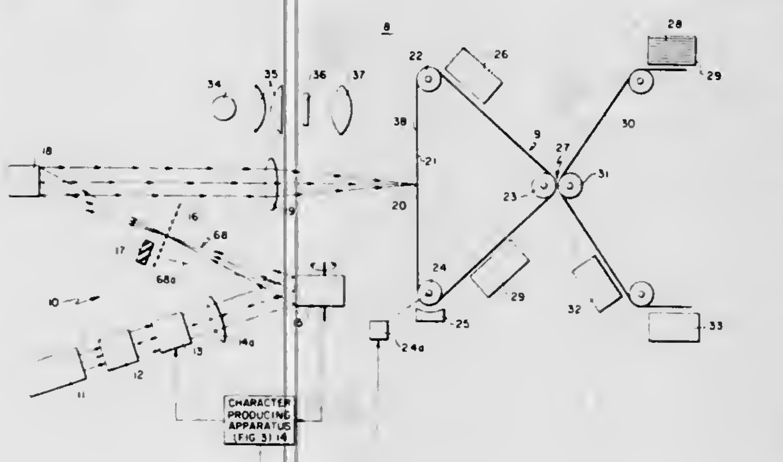
3,864,697
NON-IMPACT PRINTER

Peter L. P. Dillon, Rochester, and Donald C. Hoesterey, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 25, 1973, Ser. No. 382,609

Int. Cl. B41b *13/00*

U.S. Cl. 354—5 **10 Claims**



1. A non-impact printing apparatus for recording information from a source onto a receiving medium, comprising:

a. optical character generating means including a simultaneous multi-beam acoustooptic cell coupled to said source and responsive to the information therein for simultaneously producing a plurality of light beams which have such information;

b. movable mirror scanning means for scanning and reflecting the light beams; and

c. electrographic apparatus for receiving the reflected beams to reproduce the information in said light beams on such medium.

3,864,698
OPTICAL LIGHTING INSTRUMENT

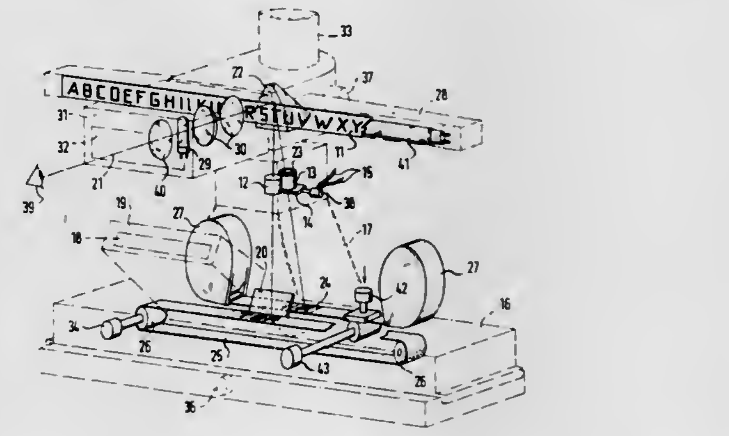
Bernd Holthusen, Hamburg, Germany, assignor to Dr. Boger Photosatz GmbH

Filed Sept. 14, 1972, Ser. No. 288,946

Int. Cl. B41b *27/38*

U.S. Cl. 354—5 **10 Claims**

1. In an optical lighting instrument for composing symbols on a photosensitive material, which includes a light source, a photosensitive material and a phosphorescent material in coplanar adjacent relationship, a symbol carrier, optical means for imaging a symbol movable by the carrier into a focal plane of the optical means individually onto the photosensitive and phosphorescent materials, the imaging onto the phosphorescent material serving to provide a visible image identical to that recorded by the photosensitive material at least until a subsequent symbol is imaged, so that a desired relationship of successive symbols can be set utilizing visual observation, and the symbol carrier and light source on one hand and the optical means on the other hand being relatively movable in the direction of the optical axis of said optical means, the improvement wherein said optical means includes two objective elements movable in common in the direction of the optical axis which image a symbol from the symbol carrier at two adjacent coplanar spaced positions, the imaged symbols being of equal size and non-overlapping, the photosensitive material is located at one of said spaced positions and



the phosphorescent material at the other, a shutter is arranged to selectively obstruct rays passing through the objective element that image onto the photosensitive material and is adapted to be opened for a predetermined time for recording an image on the photosensitive material, and wherein means is included to regulate the intensity of the rays that image onto the phosphorescent material between a setting intensity, by which no visible trace is left behind on the phosphorescent material, and a much stronger intensity which by acting for a predetermined time, brings out an easily visible phosphorescence.

3,864,699
AUTOMATIC EXPOSURE CONTROL SYSTEM FOR TTL METERING TYPE SINGLE-LENS REFLEX CAMERA

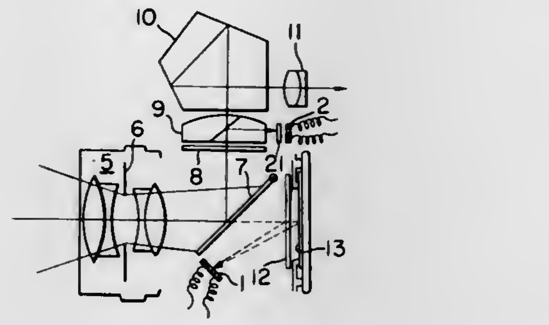
Tokuichi Tsunekawa, Yokohama, and Soichi Nakamoto, Goro Hasegawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 6, 1973, Ser. No. 394,750

Claims priority, application Japan, Sept. 11, 1972, 47-91090

Int. Cl. G03b *7/08*

U.S. Cl. 354—31 **3 Claims**



1. An automatic exposure control system for a through-the-lens photometry type single-lens reflex camera comprising:

a finder optical system having a movable mirror;

a first photoelectric converter element having a surface for receiving a light flux passing through said finder optical system;

a second photoelectric converter element disposed outside of the light path of said finder optical system and having a surface for receiving a light flux reflected by at least one of a shutter curtain and a film surface, the electrical response properties of the second photoelectric converter element being selected to be substantially the same as those of the first photoelectric converter element and those two elements being connected in parallel with each other; and

means for controlling the exposure including said parallel-connected first and second photoelectric converter elements and controlling the exposure by simultaneously utilizing the response rise property of said first photoelectric converter element and the response fall-off characteristic of said second photoelectric converter characteristic during transfer of exposure control from one of said converter elements to the other.

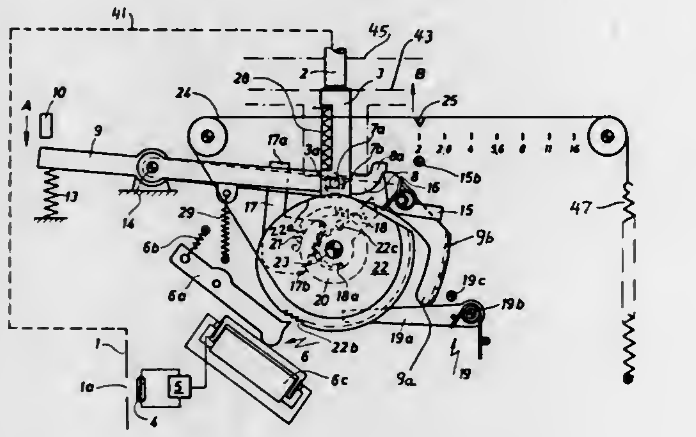
3,864,700
DIAPHRAGM ADJUSTING MECHANISM FOR PHOTOGRAPHIC CAMERAS

Bodo Mielke, Wolfenbuttel, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed May 20, 1974, Ser. No. 471,36⁷

Int. Cl. Go3b *7/08*

U.S. Cl. 354—43 **17 Claims**



1. Exposure controlling mechanism for photographic cameras, comprising a diaphragm having an adjustable aperture, an aperture value storage member movable to different positions representing different diaphragm apertures, diaphragm drive means effective upon actuation to close the diaphragm down from maximum aperture to minimum aperture, positioning means including a photoelectric converter effective during the closing down of the diaphragm to position said storage member in a position representing an optimum aperture for an exposure, and return means for opening the diaphragm up to an aperture corresponding to the position of said storage member.

3,864,701
AUTOMATIC EXPOSURE CONTROL CIRCUIT

Gerhard Krause, Edersberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

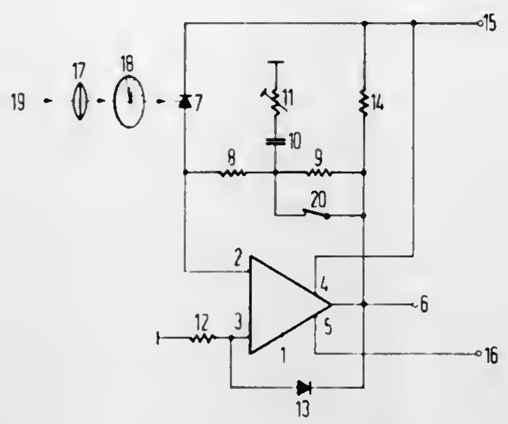
Filed Mar. 2, 1973, Ser. No. 337,727

Claims priority, application Germany, Mar. 7, 1972, 2210958

Int. Cl. G03b *7/08*

U.S. Cl. 354—49 **12 Claims**

1. In a camera having a shutter and a device, means for exposing said photoresponsive device to light from a scene to be photographed, and means for varying the amount of such exposure during the open period of said camera shutter the combination comprising an amplifier with high pass characteristic, means for connecting an input of said amplifier with said photoresponsive device, and a threshold value detector connected with the output of said amplifier and adapted to respond to the signal produced at the output of said amplifier to produce a control signal adapted for use in effecting the setting of the exposure of the camera.



3,864,702
LIGHT MEASURING OPTICAL SYSTEM FOR USE IN A REFLEX CAMERA

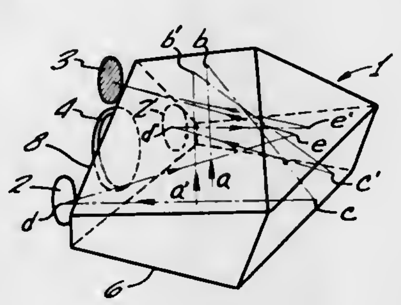
Takahiro Sugiyama, and Michiro Oishi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 22, 1974, Ser. No. 444,722

Claims priority, application Japan, Mar. 1, 1973, 48-26156[U]

Int. Cl. G03b *19/12*

U.S. Cl. 354—56 **8 Claims**



1. A light measuring optical device for use with a reflex camera, said device comprising:

- a pentaprism mounted on said camera, said pentaprism having a first surface for receiving said light and a second surface for exiting said light;
- a reflecting mirror mounted adjacent said second surface of said pentaprism, said reflecting mirror diverting said light back into said pentaprism; and
- a detector element for measuring light intensity mounted adjacent said pentaprism to receive said light after it has been diverted back into said pentaprism.

3,864,703
PHOTOGRAPHIC APPARATUS

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 375,500, July 2, 1973,. This application June 3, 1974, Ser. No. 475,627

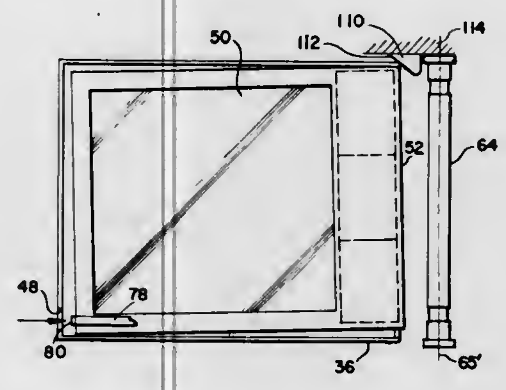
Int. Cl. G03b *17/50*

U.S. Cl. 354—86 **5 Claims**

1. Photographic apparatus for use with a film unit having leading and trailing edges separated by a substantially rectangular viewing area comprising:

- means for locating the film unit in position for exposure;
- pressure-applying means adapted to define a longitudinally extending gap through which the film unit is adapted to be advanced, subsequent to exposure, to spread a processing composition across a photosensitive layer of the film unit;

- means for mounting said pressure-applying means with said longitudinally extending gap and the leading edge of the film unit being parallel with each other;
- means for canting the film unit as it is advanced from said exposure position toward said pressure-applying means such that the leading edge of the film unit defines an acute angle with said longitudinally extending gap; and



- means for recanting the film unit such that its leading edge is substantially parallel with said longitudinally extending gap prior to moving into said gap, whereby the processing composition is spread over an area substantially coextensive with the viewing area.

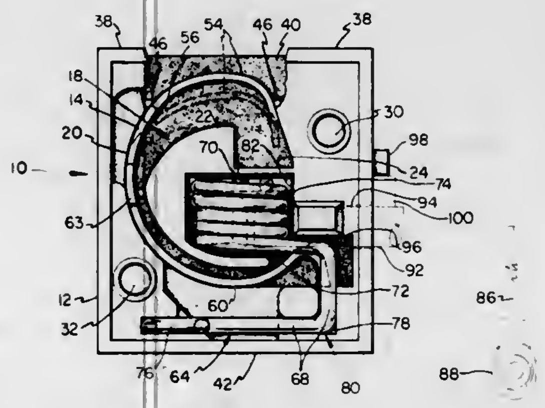
3,864,704
PHOTOGRAPHIC FOOT ATTACHMENT WITH RETRACTABLE HOT CONTACT

David C. Smart, Westminster, and Dean M. Peterson, Littleton, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 20, 1973, Ser. No. 399,276

Int. Cl. G03b *15/05*

U.S. Cl. 354—126 **3 Claims**



1. In combination, an electrical plug and a mounting base for an electronic flash unit, said base having a retractable hot center contact, said base comprising a housing having a wall portion of insulative material, said contact comprising an electrically conductive spring mounted in said housing and having a coil portion and a hot contact portion connected to said coil portion, said housing having first and second openings in said wall portion, said hot contact portion extending through said first opening in a first position and being retracted inside said housing in a second position; said coil portion being positioned relative to said second opening such that insertion of said plug through said second opening to contact and displace said coil portion effects movement of said hot contact portion from said first position to said second position.

3,864,705
PHOTOGRAPHIC APPARATUS WITH EXPANSIBLE HOUSING

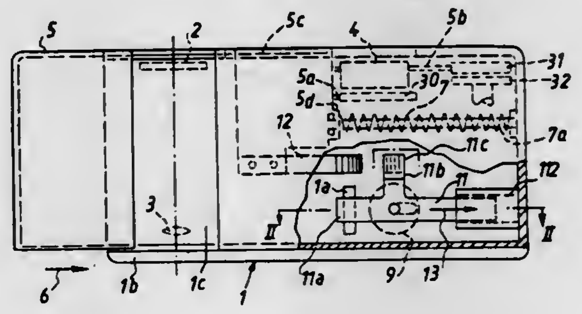
Alfred Winkler, Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 23, 1973, Ser. No. 344,366

Claims priority, application Germany, Mar. 27, 1972, 2214955

Int. Cl. G03b *17/04*, *19/04*

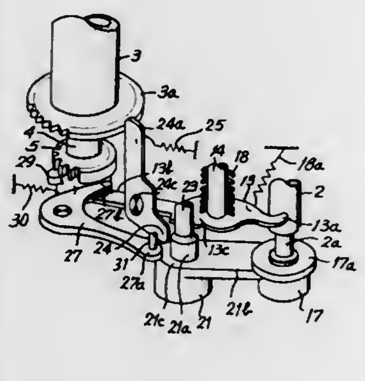
U.S. Cl. 354—187 **14 Claims**



1. In a photographic apparatus, particularly in a still camera, a combination comprising an elongated housing including a first section and a second section supported by and movable relative to said first section in the longitudinal direction of said housing between first and second positions in which one of said sections respectively conceals and exposes a portion of the other of said sections and in which the overall length of said housing is respectively reduced and increased; picture taking lens means and view finder means in said other section, at least one of said means being installed in said portion of said other section so that said one means is at least partially concealed in said first position of said second section; film transporting means mounted in one of said sections and being operable to transport the film in response to movement of said second section between said first and second positions thereof; resilient means reacting against said first section and arranged to bias said second section to said second position so that the movement of said second section to said first position takes place against the opposition of said resilient means and said resilient means at least assists the movement of said second section to said second position; detent means for said second section, said detent means having a member movable to an inoperative position in which said second section can be moved, as often as desired, relative to said first section between said first and second positions thereof, and said member of said detent means being further movable, in either position of said second section, to an operative position in which said second section is locked in said first position against movement from said first position under the action of said resilient means as long as said member of said detent means is located in said operative position while said second section assumes said first position thereof; and actuating means operable by hand to move said member of said detent means from said inoperative to said operative position or from said operative to said inoperative position, said actuating means having a first position of rest which corresponds to said operative position of said member of said detent means and from which said actuating means must be moved by hand in order to move said member of said detent means from said operative position, and said actuating means further having a second position of rest which corresponds to said inoperative position of said member of said detent means and from which said actuating means must be moved by hand in order to move said member of said detent means from said inoperative position.

3,864,706
MULTIPLE EXPOSURE STRUCTURE FOR CAMERAS

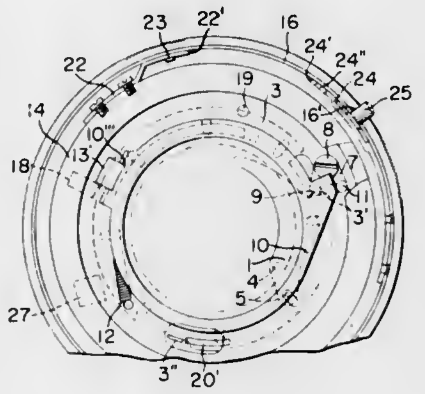
Fumio Urano, Wako, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed July 26, 1973, Ser. No. 382,878
Claims priority, application Japan, July 28, 1972, 47-75148
Int. Cl. G03b *19/04*
U.S. Cl. 354—209 **9 Claims**



1. In a camera, film-transporting means, transmission means for transmitting movement to said film-transporting means, clutch means operatively connected between said transmission means and film-transporting means and having an engaged position for transmitting movement between said transmission means and film-transporting means and a disengaged position for preventing transmission of movement from said transmission means to said film-transporting means, take-up spool means for taking up exposed film, connecting means connecting said transmission means to said spool means for turning the latter except when said spool means is blocked against movement, blocking means having a non-blocking position freeing said spool means to be turned by said transmission means and a blocking position engaging said spool means to block the latter against movement when said transmission means operates, and manually operable means having a rest position at which said blocking means is in said non-blocking position thereof and said clutch means is in said engaged position thereof, said manually operable means having a rewind position cooperating with said clutch means for placing the latter in said disengaged position thereof while said blocking means still remains in said non-blocking position thereof, and said manually operable means having a multiple exposure position cooperating both with said blocking means and said clutch means for placing said blocking means in said blocking position thereof and said clutch means in said disengaged position thereof so that in said multiple exposure position of said manually operable means said transmission means may be operated simultaneously with cocking of a shutter of the camera without transporting film while when said manually operable means is in said rewind position thereof film may be rewound from said take-up spool back into a film cartridge, said transmission means acting through said clutch means, when the latter is engaged, on said film-transporting means for transporting film frame-by-frame during successive operating cycles of said transmission means, respectively, and safety means cooperating with said manually operable means for preventing the latter from assuming said multiple exposure position except at the end of one complete operating cycle of said transmission means when transportation of a complete frame has been completed and the next operating cycle for transporting the next film frame has not yet started.

3,864,707
INTERCHANGEABLE LENS WITH A STOP PRESET DEVICE

Takayuki Shirasaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 27, 1973, Ser. No. 391,853
Claims priority, application Japan, Sept. 6, 1972, 47-89217
Int. Cl. G03b *9/07*
U.S. Cl. 354—271 **2 Claims**



1. Aan interchangeable lens for a camera provided with a stop preset device, comprising:

a variable aperture stop;

a cam member for presetting said stop;

a member for automatic stop presetting, said member being engageable with said cam member;

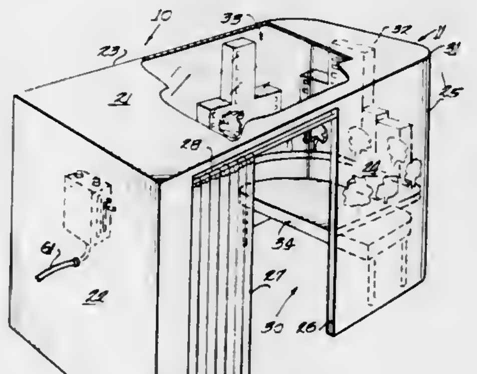
a manually operating member having a manual stop presetting position range, wherein said cam member is adjusted by said manually operating member, and an automatic stop presetting position wherein said cam member is freed from said manually operating member and is caused to be subject to adjustment through said automatic stop presetting member, by an exposure meter provided in the camera;

means for limiting said operating member to positions within the manual stop presetting position range, and

means for releasing said operating member from the limiting means and permitting the operating member to be shifted to the automatic stop presetting position.

3,864,708
AUTOMATIC PHOTOGRAPHIC APPARATUS AND POSTCARD VENDING MACHINE

Brian S. Allen, P.O. Box 611, Ironton, Ohio 45638
Filed Dec. 4, 1973, Ser. No. 421,589
Int. Cl. G03b *15/00*
U.S. Cl. 354—290 **1 Claim**



1. A coin or token operable automatic photographic apparatus and postcard vending machine for the taking, developing and vending of photographs in a picture postcard format, the apparatus comprising, in combination:

a cubicle accessible to an individual using the apparatus and having a horizontal top wall surface, a vertical back wall surface, a vertical front wall surface forming a picture end wall surface, and a pair of vertically extending closed sidewall surfaces interconnecting adjacentmost edges of the vertical front and back wall surfaces;

a compartment defined interiorly of the cubicle between the wall surfaces;

a doorway defined in one of the side wall surfaces providing ingress and egress of the cubicle compartment;

a horizontally extending curtain rod disposed along the topmost edge of the doorway extending between the opposite vertical edges of the doorway;

a curtain suspended from the rod within the doorway and slidably operable thereon between a position opening the doorway to provide access to the compartment and a position closing the doorway to provide privacy to an individual within the compartment;

the front end wall surface forming the picture end wall surface having rounded side edges which bend contiguously into the sidewall surfaces to provide a smooth continuous background;

a panoramic scene of the scenery around the cubicle disposed on the picture end wall surface extending completely across the rounded edges thereof to provide a smooth panoramic scenery background;

a bench forming seat extending transversely of the compartment between the side wall surfaces and having a curved back to fit snugly against the curved picture end wall surface in a position immediately beneath the panoramic scenery, the seat intended for use by an individual to sit on the same during the picture taking procedure with the portion of the individual's body above the individual's waist projecting in front of the panoramic scenery background;

a camera of the self-developing Polaroid type wherein an exposed picture is developed automatically upon being dispensed from the camera;

a hollow box-like housing affixed to the interior of the compartment's back wall surface and having a top surface, a bottom surface, a front surface, a back surface, and opposed side wall surfaces;

a chamber defined interiorly of the hollow box-like housing within the surfaces thereof;

an aperture disposed in the front wall surface of the housing and in communication with the chamber, the aperture being in a position above said seat to provide a line of vision through the aperture to the panoramic scenery background;

said camera mounted within said housing chamber with the lens of the camera in alignment with said aperture to provide a free line of vision to the lens and at a level spaced vertically above the bottom of the cubicle compartment selected for appropriate field of vision viewing of the lens in a manner to encompass an individual sitting on the seat and the panoramic scene behind the individual;

said lens having an adjustable focal lens to vary the field of vision thereof between a close-up position where only the individual will be on the photograph taken by the camera and a panoramic scene position where both the individual and the surrounding panoramic scene will be within the field of vision of the lens and be imprinted on the photograph taken by the camera;

a knob rotatively mounted on the exterior of said housing top surface for rotation about its axis;

a linkage assembly interconnecting said knob to said camera lens for adjusting said lens relative to the rotation of said knob between said close-up and said panoramic scene position;

a timer adjustable from zero to thirty seconds;

a knob rotatively mounted on the exterior of the housing top surface and projecting outwardly therefrom and rotatable about its axis;

a shutter associated with the camera lens and operable from a position exteriorly of the camera;

a linkage assembly interconnecting the timer to the camera shutter mechanism to provide operation of said shutter by said timer;

a drive mechanism interconnecting said second mentioned knob to said timer for adjustively setting said timer between a shutter actuating position and zero to thirty second time delay position providing a selective adjustment to an individual in the cubicle compartment for selecting the desired time delay for actuation of the camera shutter mechanism to provide sufficient time for the individual to pose and seat themselves on the bench seat prior to the picture being taken by the camera;

the rotation of said second mentioned knob to the desired time delay position activating the timer for the set period of time with said shutter mechanism being activated upon expiration of said time delay period for the taking of the picture;

a slot extending vertically in the side surface of the housing in communication with the chamber;

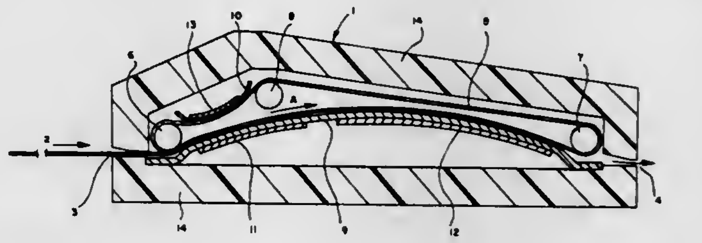
a photograph dispensing lever operatively associated with the camera to effect dispensing of the photographs therefrom with the free end of the lever projecting outwardly from the camera and extending through the slot, the lever being movable in a vertical blade from an initial position downward to a dispensing position;

a vertically disposed dispensing slot provided in the housing side wall surface adjacent the dispensing lever slot;

the movement of the dispensing lever effecting the dispensing of the exposed photograph from the camera outwardly of the camera housing for delivery to an individual with the photograph being in a picture postcard type format having a rigid cardboard backing suitable for use in the mails.

3,864,709
APPARATUS FOR PROCESSING RECORDING MATERIAL

Andrew Reiner Bruns, Beaverton, Oreg., assignor to Textronix, Inc., Beaverton, Oreg.
Filed Oct. 4, 1973, Ser. No. 403,690
Int. Cl. G03d *3/00*
U.S. Cl. 354—297 **1 Claim**



1. An apparatus for processing dry silver recording material, comprising:

insulated housing means having an input opening through which the recording material is introduced into said insulated housing means and an output opening out of which the recording material is extracted from said insulated housing means;

first platen means disposed in said insulated housing means extending from said input opening to said output opening along which the recording material moves;

heating means provided on said first platen means for heating said first platen means therealong for developing information on the recording material;

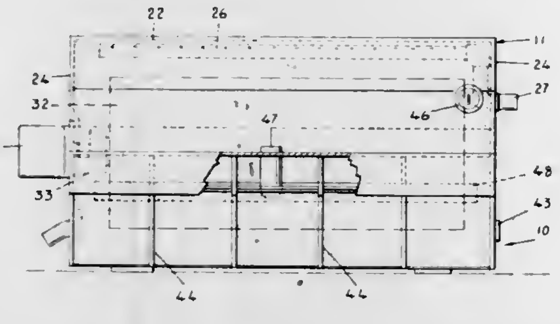
continuous belt means disposed in said insulated housing means;

roller means disposed in said housing means including input roller means adjacent said input opening, output roller means adjacent said output opening, and intermediate roller means between said input roller means and said output roller means, said continuous belt means movably mounted onto said input roller means, output roller means, and said intermediate roller means, said continuous belt means adapted to be moved via said roller means so that said continuous belt means engages said first platen means thereby frictionally moving the recording material along said first platen means;

second platen means disposed in engagement with said continuous belt means between said input roller means and said intermediate roller means; and

heater means provided on said second platen means for heating said second platen means which heats said continuous belt means above the temperature of said first platen means whereby said continuous belt means raises the temperature of the emulsion side of the recording material to development temperature at a fast rate.

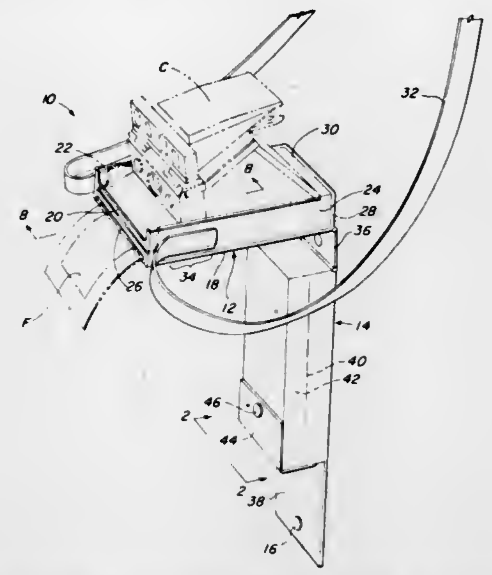
3,864,710
PHOTOGRAPHIC PROCESSING APPARATUS
Edward F. Zuber, R.R. No. 2, Lyndhurst, Ontario, and Udo F. Rumpf, 1710 John St., Thornhill, Ontario, both of Canada
Filed Dec. 3, 1973, Ser. No. 421,332
Int. Cl. G03d *17/00*
U.S. Cl. 354—316 **11 Claims**



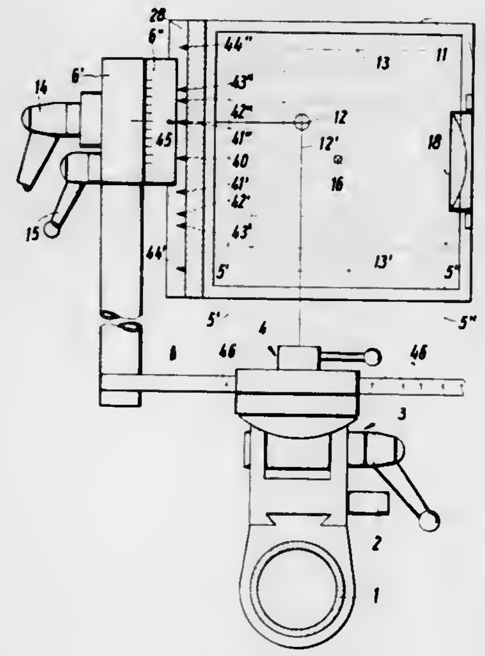
1. An apparatus for processing photographic sheet material comprising a light-tight housing, a tray-like container for processing solution mounted in the housing, a rotary carrier providing a cylindrical support surface journalled in said housing for rotation about a horizontal axis, and a plurality of discrete attachment means distributed over said support surface for engagement with the rear side only of sheet material carried by the rotary carrier whereby to hold said material to said surface, said attachment means comprising a plurality of suction cups mounted on the carrier and uniformly distributed over a major sector of said cylindrical support surface, the carrier being positioned in relation to the tray-like container so as to contact the sheet material with the processing solution as the drum rotates.

3,864,711
CAMERA CARRYING CASE
Donald H. Matthews, Quaker Bottom Rd., Sparks, Md. 21152
Filed Jan. 24, 1974, Ser. No. 436,083
Int. Cl. G03b *17/56*
U.S. Cl. 354—354 **8 Claims**

1. A camera carrying case comprising a substantially rigid rectangular case body with front, rear, bottom, top and sides, the top having an opening therein for receiving a camera and rearwardly forming with the sides, bottom and rear a socket for retaining self-developing type camera received in said opening, the front comprising a transverse bar connecting the sides, with an opening therebelow located for registration with the picture ejection opening of a self-developing type camera when carried in said case and the upper portion of the transverse bar bounded by the top opening, the bottom having a discontinuous portion forwardly therein comprising a full width yielding portion extending rearwardly along a substantial portion of the length of the case body for permitting downward motion of a portion of a said self-developing type camera during operation thereof, a cover proportioned for covering all said openings, and means for hinging the cover to the case body at the rear.



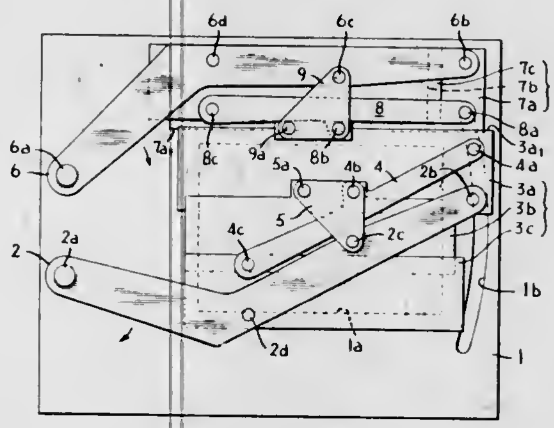
3,864,712
PHOTOGRAPHIC CAMERA FOCUSING SCREEN CARRIER
Helmuth von Stwolinski, Zurich, Switzerland, assignor to Anstalt, Studio Gesellschaft fur Industrie-und Modephotographie, Vaduz, Liechtenstein
Filed June 7, 1972, Ser. No. 260,407
Claims priority, application Germany, Sept. 3, 1971, 2144262; Sept. 3, 1971, 7133731
Int. Cl. G03b *13/24*
U.S. Cl. 354—354 **17 Claims**



1. In a photographic camera, more particularly a focusing screen camera, having, between an objective carrier and an emulsion or focusing screen carrier, an extension adjustable along a camera bed, in which camera at least the focusing screen carrier is pivotable about two mutually perpendicular pivoting axes intersecting in the plane of the focusing screen, the improvement in which: the focusing screen carrier is linearly displaceable relative to each of the pivoting axes defined by pivoting devices in the direction of the respective other pivoting axis and over the entire image plane, so that the point of intersection of the axis in the image plane of the focusing screen is selectable over the area of the focusing screen; and in which the carrier is mounted on a standard having at least one vertical and one horizontal arm and provided on its, in normal position of use, vertical arm with the pivoting device defining the first, normally horizontal, pivoting axis, relative to

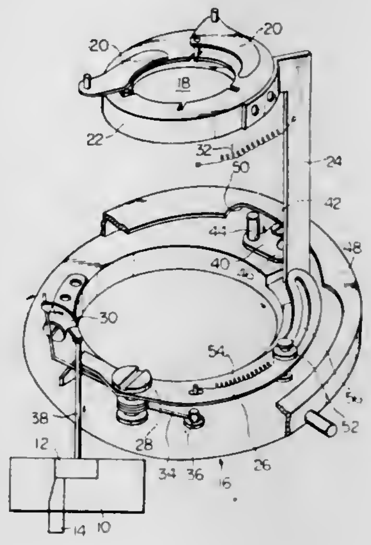
the rotatable portion of which pivoting device the carried is linearly displaceable; and the other, in normal position of use, horizontal arm of the standard is connected to the camera bed via the second pivoting device defining the second pivoting axis, and is laterally linearly displaceable relative to the second pivoting device.

3,864,713
FOCAL PLANE SHUTTER BLADE SUPPORT DEVICE
Kiyoshi Kitai, Tokyo; Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan
Filed May 8, 1973, Ser. No. 358,261
Claims priority, application Japan, May 8, 1972, 47-053480
Int. Cl. G03b *9/42, 9/16*
U.S. Cl. 354—246 **3 Claims**



1. In a focal plane shutter, support means having a shutter aperture, a first plurality of shutter-opening blades closing the shutter when in a cocked condition, a first parallel link mechanism comprising two parallel link mechanism comprising two parallel links and said shutter-opening blades for supporting and operating the blades from a shutter-closing position to a shutter-opening position, a second plurality of shutter-closing blades disposed in a superposed relationship clear of said exposure aperture when said cocked condition exists and operable to a shutter-closing position closing the shutter aperture, a second parallel link mechanism comprising two parallel links and said shutter-closing blades for supporting and operating the shutter-closing blades, each of the first plurality of shutter-opening blades and said second plurality of shutter-closing blades having a slit-defining shutter blade having a straight edge for defining a slit of varying width as the shutter aperture is opened, and closed, each link mechanism comprising a rotationally driven main link and an auxiliary link parallel with a portion of said main link, each link mechanism haing a plate pivotally supporting the auxiliary link on a respective main link, each said plate mounting the slit-defining blade of its corresponding plurality of shutter blades on a corresponding auxiliary link, pivot means rotatably supporting the main link only of each link mechanism independently on said support means on a common side of said shutter aperture, a guide on each of the parallel links of each link mechanism for maintaining each respective straight edge of a corresponding slit-defining shutter blades in a plane normal to a medial plane passing through said aperture, and an arcuate slot on said support means within which said guide means are guided during travel of the slit-forming shutter blades.

3,864,714
LENS STOP-DOWN MECHANISM
Saburo Sasaki, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 18, 1974, Ser. No. 451,822
Claims priority, application Japan, Apr. 2, 1973, 48-37705
Int. Cl. G03b *9/07*
U.S. Cl. 354—272 **13 Claims**



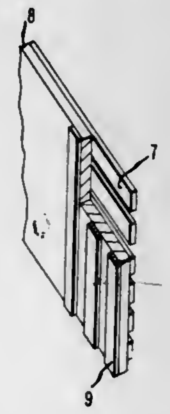
1. A stop-down mechanism for a lens having adjustable aperture means urged by biasing means toward a maximum open position, comprising:

stopper means being manually adjustable to engage with the aperture means and limit movement thereof away from the maximum open position to a position corresponding to the desired aperture setting;

actuating means arranged to move the aperture means from the maximum open position to the position corresponding to the desired aperture setting when manually actuated; and

inertial mass means arranged to be accelerated by movement of said actuating means and transfer kinetic energy to the aperture means in substantial simultaneity with the engagement thereof with said stopper means in a direction to cancel the force of rebound of the aperture means from the stopper means.

3,864,715
DIODE ARRAY-FORMING ELECTRICAL ELEMENT
Sebastian Vito Rocco Mastrangelo, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 22, 1972, Ser. No. 317,382
Int. Cl. H01l *19/00*
U.S. Cl. 357—1 **15 Claims**



1. A layered electrical element which comprises:

a. an activatable electrode composition consisting essentially of an insulating binder having insulatively coated metal particles dispersed therein, with the particles and binder together constituting an insulator in the unactivated state but being capable of becoming electrically conductive on exposure to an activating potential, and

b. a semiconductor component disposed in an insulating binder in contact with (a),

said layered element presenting a first surface and a second opposing surface and a volume therebetween which are normally non-conductive, said element being normally insulative but capable of exhibiting rectifying properties with respect to current flow between said surfaces upon electrical activation, said surfaces being capable of remaining laterally non-conductive and said volume being capable of becoming conductive between said surfaces on exposure to said activating potential.

3,864,716

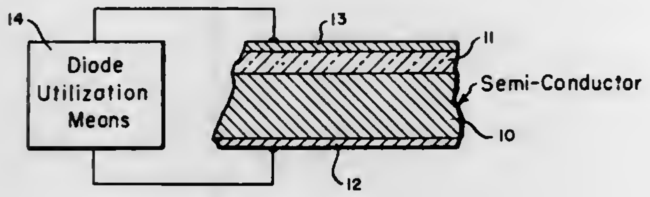
RECTIFYING JUNCTION DEVICE EMPLOYING A GLASSY AMORPHOUS MATERIAL AS AN ACTIVE LAYER

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Division of Ser. No. 227,933, Feb. 22, 1972, Pat. No. 3,801,879, which is a continuation-in-part of Ser. No. 122,420, March 9, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,433

Int. Cl. H01l *3/00*

U.S. Cl. 357—2 **21 Claims**



1. A semiconductor junction device of the type comprising a first semiconducting (active) layer of material having one type of electronic conductivity and, disposed in contact with said first semiconducting layer forming a rectifying (diode) junction therewith, a second semiconducting (active) layer of material having the other type of electronic conductivity, said device characterized in that at least one of said semiconducting (active) layers of material is a (an insulating) layer of noncrystalline glassy amorphous material having a specific resistivity in excess of about 10^{12}ohm-cm.

3,864,717

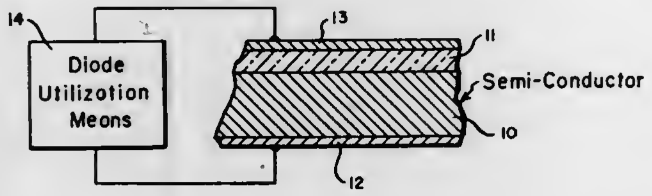
PHOTORESPONSIVE JUNCTION DEVICE EMPLOYING A GLASSY AMORPHOUS MATERIAL AS AN ACTIVE LAYER

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Division of Ser. No. 227,933, Feb. 22, 1972, Pat. No. 3,801,879, and a continuation-in-part of Ser. No. 122,420, March 9, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,434

Int. Cl. H01l *15/00*

U.S. Cl. 357—2 **17 Claims**



1. A photoresponsive junction device for sensing light of given intensity comprising:

a semiconducting substrate having one type of electronic conductivity;

disposed upon said semiconducting substrate and forming a rectifying junction therewith, a layer of glass having the other kind of electronic conductivity from that of said substrate, said layer being sufficiently thin to possess a useful level of conductivity;

said device possessing a reverse bias breakdown voltage which is dependent upon the presence or absence of light; and

means for applying across the junction between said layer and said substrate a bias voltage of a value between the breakdown voltage of the junction in the absence of light and the breakdwon voltage in the presence of light of said given intensity.

3,864,718

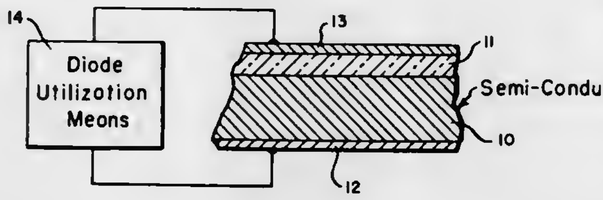
MULTIPLE JUNCTION DEVICE EMPLOYING A GLASSY AMORPHOUS MATERIAL AS AN ACTIVE LAYER

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Division of Ser. No. 227,933, Feb. 22, 1972, Pat. No. 3,801,879, which is a continuation-in-part of Ser. No. 122,420, March 9, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,435

Int. Cl. H01l *3/00*

U.S. Cl. 357—2 **9 Claims**



1. A multiple junction device of the type comprising at least three successive semiconducting layers of material, said successive layers of material having alternating types of electronic conductivity thereby forming at least two successive rectifying junctions thereamong, said device characterized in that at least one of said semiconducting layers is a layer of a glassy amorphous material.

3,864,719

SEMICONDUCTOR DEVICES HAVING NEGATIVE RESISTANCE AND STEPPED VOLTAGE-TO-CURRENT CHARACTERISTICS

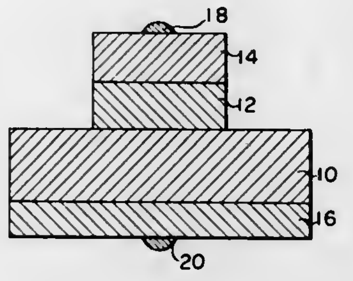
Shigeyuki Uematsu, and Haruhiko Abe, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 269,241, July 5, 1972, abandoned. This application Oct. 5, 1973, Ser. No. 403,781

Claims priority, application Japan, July 7, 1971, 46-50042; July 9, 1971, 46-50786

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—4 **6 Claims**



1. A semiconductor device receptive in operation of a reverse bias potential thereacross comprising means developing in operation a stepped voltage-to-current characteristics wherein said means developing said stepped voltage-to-current characteristic comprises, a substrate of semiconductive material selected from a group consisting of silicon and germanium having an impurity concentration from about 10^{14} to 10^{16} atoms per cubic centimeter and having a pair of opposite major surfaces, a thin film of a nitride of a valve metal selected from a group consisting of molybdenum, tantalum, tungsten, titanium, and niobium disposed on a major surface of said substrate and being from about 100 to 10,000 A. thick, a first electrode comprising a layer of conductive material disposed on a major surface of said substrate opposite said major surface bearing said thin film, and a second electrode comprising a layer of conductive material disposed on said thin film.

3,864,720

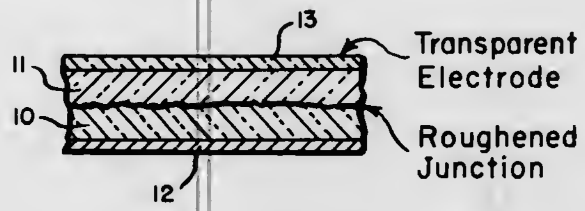
LIGHT EMITTING JUNCTION DEVICE EMPLOYING A GLASSY AMORPHOUS MATERIAL AS AN ACTIVE LAYER

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Division of Ser. No. 227,933, Feb. 22, 1972, Pat. No. 3,801,879, and a continuation-in-part of Ser. No. 122,420, March 9, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,436

Int. Cl. H01l *15/00*

U.S. Cl. 357—17 **9 Claims**



1. A light emitting diode comprising a first active layer of semiconductor material having one type of electronic conductivity, and disposed upon said first layer and forming a rectifying junction therewith, a second semiconducting active layer of material having the other type of conductivity, said device characterized in that said second layer is a layer of noncrystalline glassy amorphous material having a thickness which is sufficiently thin to possess conductivity.

3,864,721

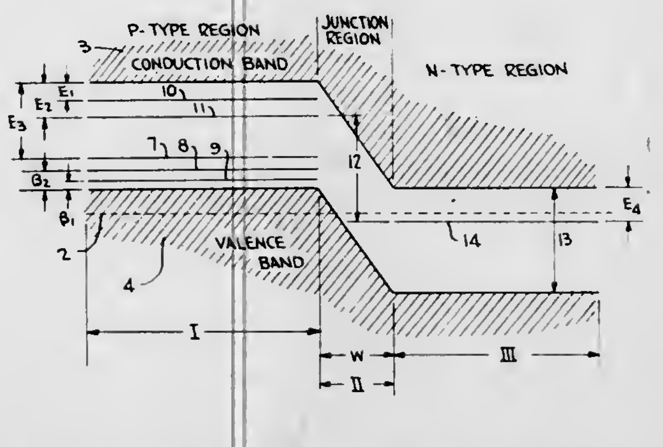
TUNNELING ELECTROLUMINESCENT DIODE WITH VOLTAGE VARIABLE WAVELENGTH OUTPUT

Marvin M. Cohen, Rochville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 18, 1973, Ser. No. 371,334

Int. Cl. H05b *33/00*

U.S. Cl. 357—17 **3 Claims**



1. A light emitting tunnel diode comprising

a semiconductive body having a first region of P-type conductivity and a second region of N-type conductivity which forms a junction with said first region wherein the impurity concentration in said N-type region is twice that in said P-type region and the width of said junction is several hundred angstrom units to facilitate tunneling, said first region having a plurality of different P-type impurities therein which create a plurality of different electron-devoid P-type impurity energy levels and a lesser number of N-type impurities therein which create a lesser number of electron-devoid N-type impurity levels,

said N-type region having a single N-type impurity therein which creates a single electron-filled N-type impurity energy level beneath said energy levels in said P-type region, said junction is forward biased to raise said single N-type energy level equal to the energy of any of said impurity levels in said P-type region whereby electrons tunnel cross said junction from said N-type to said P-type region.

3,864,722

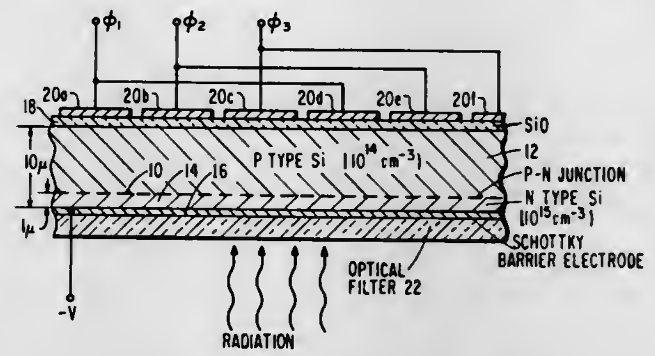
RADIATION SENSING ARRAYS

James Edward Carnes, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 2, 1973, Ser. No. 356,323

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—24 **9 Claims**



1. A radiation sensing array comprising, in combination:

a semiconductor substrate having a radiation receiving surface and an opposite surface and comprising a relatively thin semiconductor region of one conductivity type adjacent to said radiation receiving surface forming a junction with a relatively thicker semiconductor region of different conductivity type located between said junction and said opposite surface;

a relatively transparent, relatively thin metal film on said radiation receiving surface and forming a Schottky barrier therewith;

a plurality of electrode means at said opposite surface for creating surface potentials thereat for the accumulation, at a plurality of locations, of minority charge carriers; and means for reverse biasing said Schottky barrier at a level sufficient to deplete both semiconductor layers, whereby when radiation excitation is applied to said metal film, photoexcited majority charge carriers pass through said relatively thin semiconductor region and junction and appear as minority carriers in the relatively thicker semiconductor region, which may be collected as surface charge signals at said opposite surface.

3,864,723

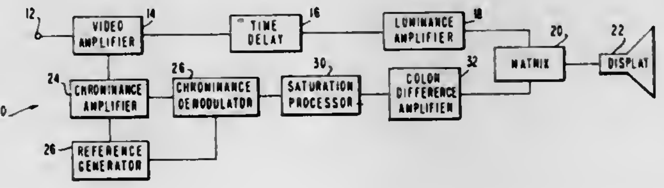
SYSTEM FOR PROCESSING CHROMINANCE SIGNALS

David H. Carpenter, Fairfield, Conn., assignor to Matsushita Electric Corporation of America, New York, N.Y.

Filed June 13, 1973, Ser. No. 369,526

Int. Cl. H04n *9/38*

U.S. Cl. 358—28 **13 Claims**



5. A color television receiver adapted to receive a composite video signal including a chrominance signal and a luminance signal for displaying a color image on a display device comprising means for providing a chrominance signal, means

for amplifying said chrominance signal including means for increasing the amplification of said chrominance signal for at least a portion of said chrominance signal having amplitudes above a first predetermined amplitude and means for decreasing the amplification of said chrominance signal for at least a portion of said chrominance signal having amplitudes above a second predetermined amplitude for controlling the saturation of the color image displayed on said display device.

3,864,724
TARGET STRUCTURE FOR SINGLE TUBE TYPE COLOR TELEVISION CAMERAS

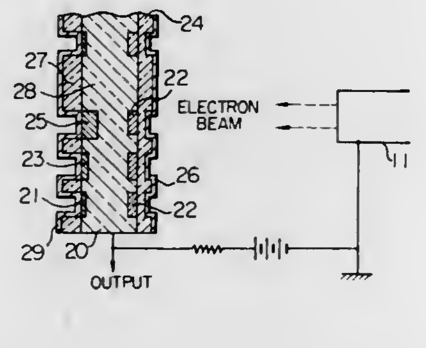
Shuji Kubo, and Yoshio Ando, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Oct. 10, 1973, Ser. No. 405,097

Claims priority, application Japan, Oct. 11, 1972, 47-102126; Sept. 25, 1973, 48-108171

Int. Cl. H01j *31/26*

U.S. Cl. 357—31 **8 Claims**



1. A target structure for a color television camera tube, comprising:

a semiconductive substrate of one conductivity type having first and second opposed surfaces for transmitting to said first surface an optical image incident on said second surface;

a first array of regions of the opposite conductivity type on said first surface; and

a second array of groups of first, second and third regions on said second surface in correspondence with said first array of regions, said first region being doped with an impurity of said one conductivity type at a first concentration to a first depth for generating carriers in response to the full visible spectrum range, said second region having a carrier concentration equal to that of said substrate for generating carriers in response to the medium to longer wavelength range of the spectrum, and said third region being doped with an impurity of said opposite conductivity type at a second concentration to a second depth for generating carriers in response to the longer wavelength range of the spectrum.

3,864,725
PHOTOCONDUCTIVE JUNCTION DEVICE EMPLOYING A GLASSY AMORPHOUS MATERIAL AS AN ACTIVE LAYER

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Division of Ser. No. 227,933, Feb. 22, 1972, Pat. No. 3,801,879, and a continuation-in-part of Ser. No. 122,420, March 9, 1971, abandoned. This application Nov. 13, 1973, Ser. No. 415,437

Int. Cl. H01l *15/00*

U.S. Cl. 357—31 **9 Claims**

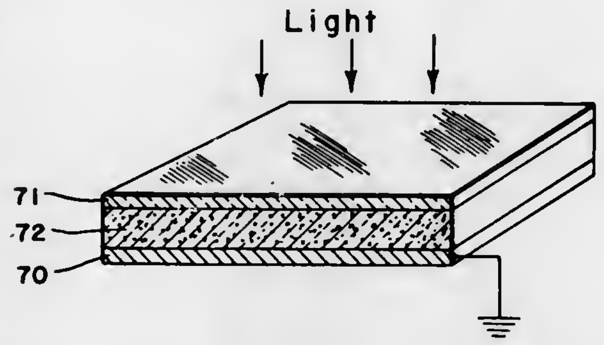
1. An electrostatic image reproducing element comprising: a semiconductive substrate having one kind of electronic conductivity; and

disposed upon said semiconductive substrate and forming a rectifying junction therewith, a layer of non-crystalline glass having the other kind of electronic conductivity from that of said substrate, said layer being sufficiently thin to possess a useful level of conductivity and having a specific resistivity in excess of about 10^{12} ohm-cm.

8. The process for forming a latent electrostatic charge pattern on a surface which comprises the steps of:

providing an electrostatic image reproducing element comprising a semiconductor substrate having one kind of electronic conductivity; disposed upon said semiconductor substrate and forming a rectifying junction therewith, a layer of non-crystalline glass having the other kind of electronic conductivity and a specific resistivity in excess of about 10^{12} ohm-cm; and conductive means for making electrical contact with said semiconductor substrate;

electrostatically charging the surface of said glass layer; and exposing said surface to a pattern of activating electromagnetic radiation to form a latent electrostatic image.



3,864,726
CONTROLLABLE SEMICONDUCTOR RECTIFIER

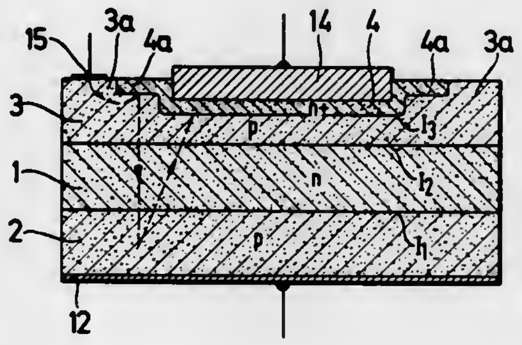
Horst Schafer, Zirndorf, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronid G.m.b.H., Nurnberg, Germany

Filed July 30, 1973, Ser. No. 383,565

Claims priority, application Germany, July 28, 1972, 2237086

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—38 **5 Claims**



1. In a controllable semiconductor rectifier device including: a monocrystalline semiconductor body having planar major outer surfaces and four layer-type zones of alternatingly opposite conductivity types with the one of the inner zones of said semiconductor body which serves as the base zone, and which is adjacent to the one of the outer zones of said semiconductor body which serves as the emitter zone of the device, having a portion thereof which extends to the same one of said major outer surfaces of said semiconductor body as said emitter zone; a respective load current electrode ohmically contacting each of the two outer zones of said semiconductor body; and a control electrode ohmically contacting said portion of said base zone, the improvement wherein: said emitter zone has a first section with a substantial portion of its major outer surface being recessed from said one major outer surface of said semiconductor body, said first section extending to a first depth below said one major outer surface of said semiconductor body, and (b) a second section disposed at least at the edge of said first section of said emitter zone adjacent said control electrode, said second section lying along said one major outer surface of said semiconductor body and extending to a second depth from said one major outer surface of said semiconductor body which is less than said first depth; said respective load current electrode contacting said emitter zone only contacts the recessed portion of said major outer surface of said first section of said emitter zone; and said second section of said emitter zone and said base zone form a pn-junction having a major portion lying in a plane substantially parallel to said one major outer surface of the semiconductor body.

3,864,727
SEMICONDUCTOR DEVICE

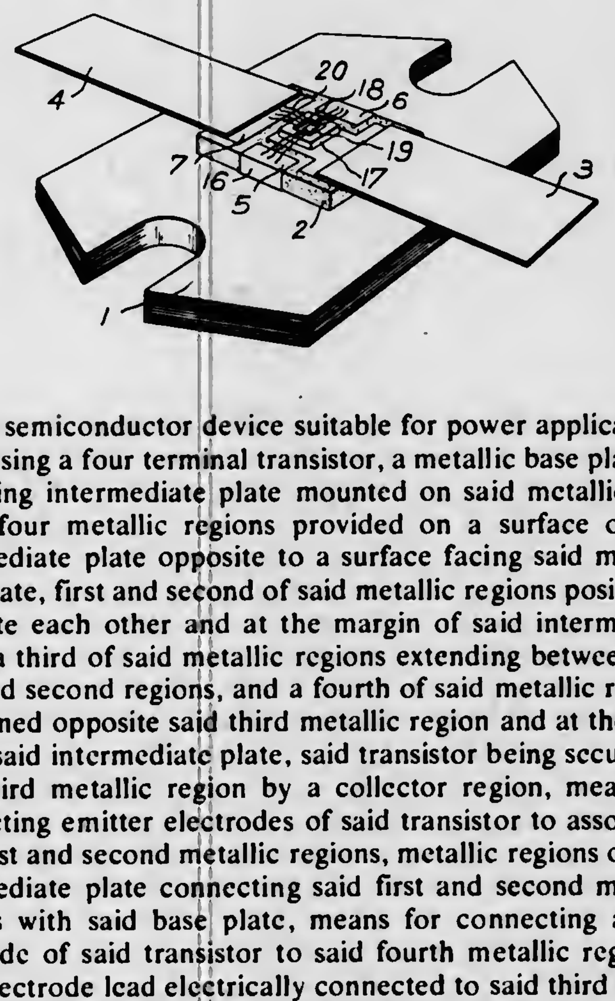
Werner Schoberl, Heilbronn, Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 17, 1970, Ser. No. 20,203

Claims priority, application Germany, Mar. 21, 1969, 1914442

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—65 **12 Claims**



1. A semiconductor device suitable for power applications, comprising a four terminal transistor, a metallic base plate, an insulating intermediate plate mounted on said metallic base plate, four metallic regions provided on a surface of said intermediate plate opposite to a surface facing said metallic base plate, first and second of said metallic regions positioned opposite each other and at the margin of said intermediate plate, a third of said metallic regions extending between said first and second regions, and a fourth of said metallic regions positioned opposite said third metallic region and at the margin of said intermediate plate, said transistor being secured to said third metallic region by a collector region, means for connecting emitter electrodes of said transistor to associated said first and second metallic regions, metallic regions on said intermediate plate connecting said first and second metallic regions with said base plate, means for connecting a base electrode of said transistor to said fourth metallic region, a strip electrode lead electrically connected to said third metallic region, and a strip electrode lead electrically connected to said fourth metallic region.

3,864,728
SEMICONDUCTOR COMPONENTS HAVING BIMETALLIC LEAD CONNECTED THERETO

Hanns-Heinz Peltz; Hubert Pretsch, and Detlev Schmitter, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

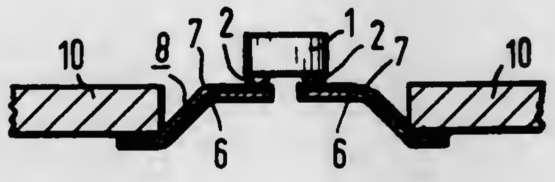
Continuation of Ser. No. 199,135, Nov. 16, 1971, abandoned. This application Aug. 27, 1973, Ser. No. 391,599

Claims priority, application Germany, Nov. 20, 1970, 2057126

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 357—71 **5 Claims**

1. In a system comprising a semiconductor body having a pair of contact pads projecting therefrom, a pair of carriers and a pair of electrically conductive connecting means, each connecting means electrically connecting a respective one of the contact pads to a respective one of the carriers, the improvement in which each of the connecting means is in the form of a bimetallic ribbon one face and 5 to 20 μ of the thickness of which is constituted of copper and the other face and 4 to 8 μ of the thickness of which is constituted of tin, the extremities of the contact pads and one of the faces of each of the carriers lie in respective spaced parallel planes, each of the ribbons having one end portion a face of which is coincident with the plane of the extremities of the contact pads and which is in contact with the extremity of a respective one of the contact pads, an opposite end portion a face of which is coincident with the plane of said faces of the carriers and which is in contact with said face of a respective one of the carriers and an intermediate portion connecting said end portions and lying in a plane oblique to said parallel planes.



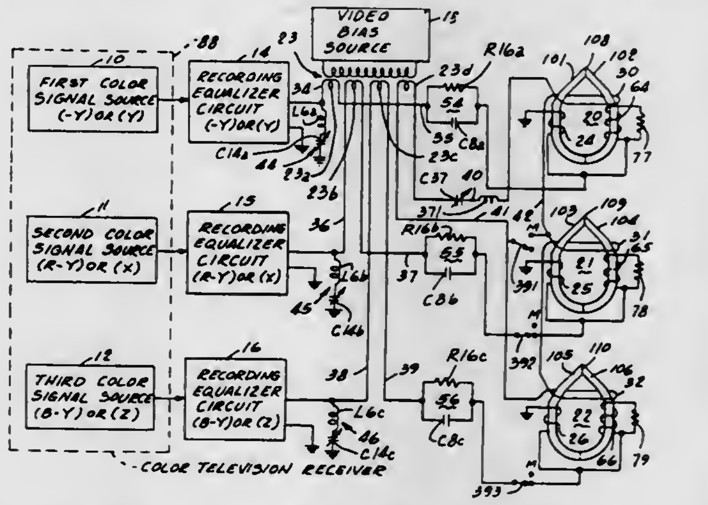
3,864,729
VIDEO TRANSDUCING APPARATUS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 182,211, Sept. 20, 1971, abandoned, which is a division of Ser. No. 34,504, May 4, 1970, Pat. No. 3,705,954, which is a division of Ser. No. 649,256, June 27, 1967, Pat. No. 3,596,008, which is a continuation-in-part of Ser. No. 528,934, Feb. 21, 1966, abandoned. This application Apr. 4, 1973, Ser. No. 347,689

Int. Cl. H04n *5/76, 9/02*

U.S. Cl. 358—4 **3 Claims**


VIDEO BIAS SOURCE
FIRST COLOR SIGNAL SOURCE (-Y)OR(Y)
RECORDING EQUALIZER CIRCUIT (-Y)OR(Y)
SECOND COLOR SIGNAL SOURCE (R-Y)OR(X)
RECORDING EQUALIZER CIRCUIT (R-Y)OR(X)
THIRD COLOR SIGNAL SOURCE (B-Y)OR(Z)
RECORDING EQUALIZER CIRCUIT (B-Y)OR(Z)
COLOR TELEVISION RECEIVER
R16a
R16c
54
56
393

1. A color television recording system comprising

receiver circuitry for supplying respective color television signals,

a video transducer head for coupling to a record medium to record the respective color television signals on the record medium, and

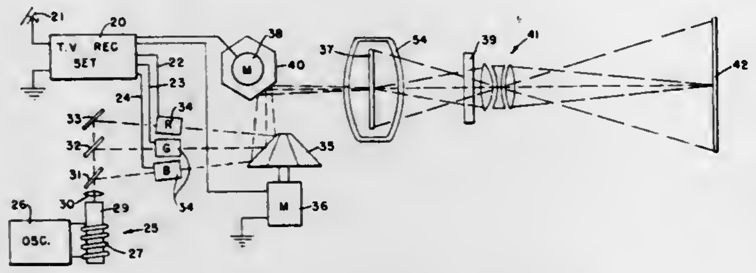
coupling means connected to said receiver circuitry and to said transducer head for transmitting the respective color television signals to said transducer head during recording.

said transducer head comprising at least two video head units scanning respective first and second channels of a record medium for recording respective color television signals containing information relative to a color image on said channels during a color image recording operation,

means for selectively rendering one of said head units inoperative during a monochrome signal recording operation and for supplying a monochrome signal containing luminance information to the other of said head units, and means for selectively recording a monochrome signal on each of said first and second channels during the monochrome signal recording operation.

3,864,730
TELEVISION RECEIVER INCLUDING A LARGE SCREEN PROJECTION SYSTEM

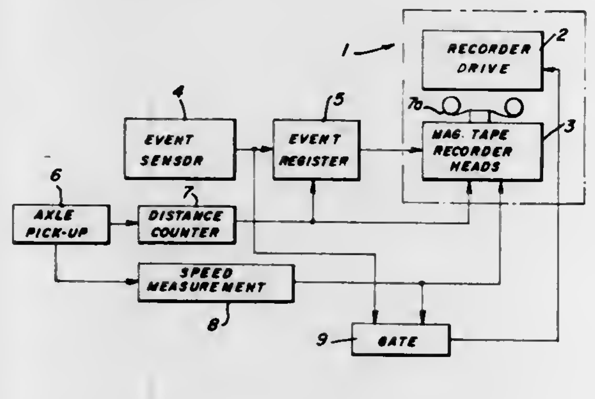
Solo S. Roth, One Sherwood Ter., Yonkers, N.Y. 10704
Filed Nov. 5, 1973, Ser. No. 412,694
Int. Cl. H04n *9/14*
U.S. Cl. 358—63 9 Claims



1. A large screen television receiver comprising:
a. a laser for generating a concentrated beam of light;
b. Optical means for dividing the beam into three equal spaced beams;
c. modulation means positioned in the path of each beam for modulating the beam energies in accordance with a three color television signal;
d. horizontal and vertical scanning means for forming a three color pattern of a television signal in a first image plane;
e. an intermediate screen positioned in the first image plane, said screen including a transparent supporting sheet, a plurality of strips of a metal which is rendered incandescent when struck by a laser beam, and a plurality of color filters positioned adjacent to the strips for filtering the light produced by the metal strips;
f. optical means for focusing the light generated by the intermediate screen and projecting it to a second image plane; and
g. a viewing screen positioned in the second image plane for showing the television signal.

3,864,731
VEHICLE DATA RECORDER EMPLOYING DATA COMPRESSION

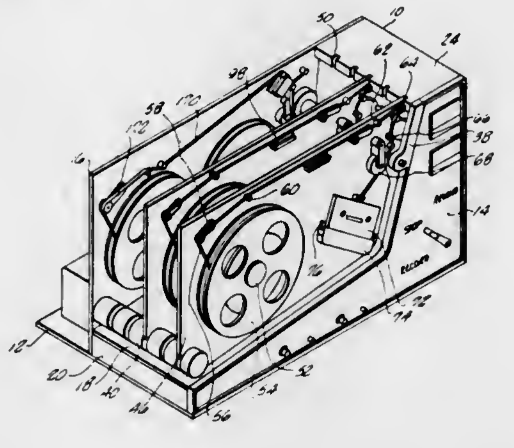
Bernard E. Callahan, Hoffmann Estates, Ill., assignor to Vapor Corporation, Chicago, Ill.
Filed July 16, 1973, Ser. No. 379,371
Int. Cl. G11b *5/00*
U.S. Cl. 360—5 9 Claims



1. A vehicle data recorder comprising:
means connected to at least one wheel that is connected to the vehicle for generating signals corresponding to distance travelled by the vehicle;
means connected to the signal generating means for counting the signals;
means connected to the counter for periodically detecting a preselected count corresponding to a particular distance travelled by the vehicle;
clock means connected to the output of the detecting means for produciing the clock pulse of predetermined width upon detection of the preselected count;
comparator means enabled by the clock means for an interval sufficient to receive data from the counting means, corresponding to the present vehicle speed;
storing means for storing speed data from a previous clock cycle;
means connecting storing means to the comparator means for determining whether a change in speed occurred;
means connecting the output of the storing means to means for recording speed data when a print function exists;
second counting means connected to the clock means for counting accumulated clock pulses corresponding to accumulated distance travelled; and
means connecting the output of the second counting means to the recording means for recording accumulated distance travelled by the vehicle when a print function exists.

3,864,732
TAPE DUPLICATING DEVICE

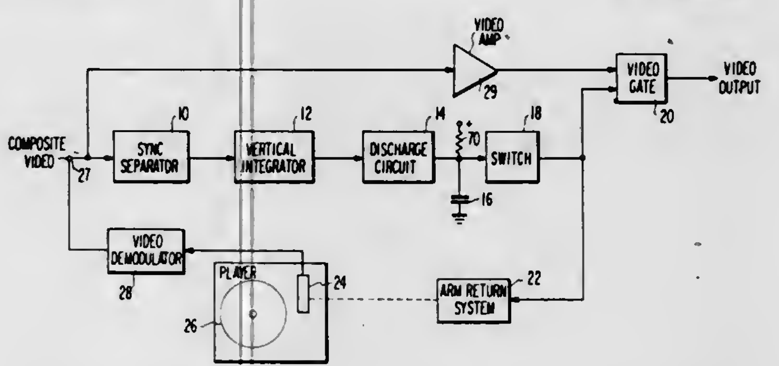
Robert M. Grindley, Glendale, and Michael J. Strong, Simi, both of Calif., assignors to International Audio-Visual Hong Kong Ltd., Hong Kong, Hong Kong
Filed Apr. 19, 1972, Ser. No. 245,572
Int. Cl. G11b *5/86*
U.S. Cl. 360—15 22 Claims



1. A tape duplicating device comprising a frame; a back mounting plate positioned on said frame; means for mounting a master magnetic tape on said back mounting plate; at least one mounting panel removably positioned on said frame, each of at least said one mounting panel including means for mounting a receiving magnetic tape, having a copy supply spindle rotatably mounted to said mounting panel, a copy take-up spindle rotatably mounted to said mounting panel, and guide means for defining the path of the receiving magnetic tape between said copy supply spindle and said copy take-up spindle; at least one magnetic tape recording head positioned on said frame to intercept the path of the receiving magnetic tape defined by said guide means on at least said one mounting panel; a capstan mounted on said frame; means for clamping the receiving magnetic tape on at least said one mounting panel against said capstan, said means being pivotally mounted on at least said one mounting panel; electronic means for transmitting information from a master magnetic tape onto receiving magnetic tapes; means to drive said mounting means for mounting a master magnetic tape and said capstan; and means mounted on at least said one mounting panel for driving said copy take-up spindle using said capstan; at least said one mounting panel, said means for mounting a receiving magnetic tape, said means for clamping the receiving magnetic tape against said capstan and said means for driving said copy take-up spindle being in operable association with said capstan and at least said one magnetic tape recording head such that said mounting panel may be positioned on and removed from said frame without rethreading of the receiving magnetic tape.

3,864,733
CONTROL SIGNAL APPARATUS FOR VIDEO DISC PLAYER

Charles D. Boltz, Jr., Greenwood, Ind., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 19, 1973, Ser. No. 342,374
Claims priority, application Great Britain, Apr. 19, 1972, 18041/72
Int. Cl. H04n *5/78*
U.S. Cl. 360—33 15 Claims

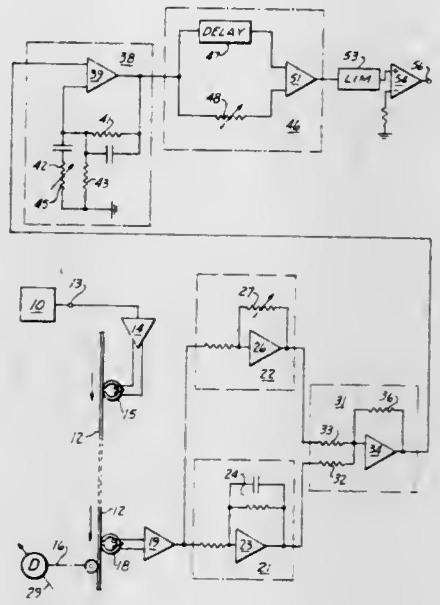


1. A control system for an image reproducing system comprising:
apparatus for providing electrical signals representative of informtion stored in a spiral pattern on a storage medium, said signals including varying image-representative components and regularly recurring synchronizing components;
means for separating said image-representative and regularly recurring synchronizing components;
detecting means responsive to said regularly recurring synchronizing components for providing a first control signal in response to the presence of said synchronizing components and a second control signal in response to the absence of said synchronizing components for a predetermined length of time, said predetermined length of time being greater than the time required to provide a first control signal upon the appearance of said synchronizing components; and
control means coupled to said detecting means for inhibiting operation of said electrical signal providing apparatus in response to said second control signal and permitting operation of said electrical signal providing apparatus in response to said first control signal.

3,864,734
PULSE-CODE MODULATION DETECTOR AND EQUALIZER

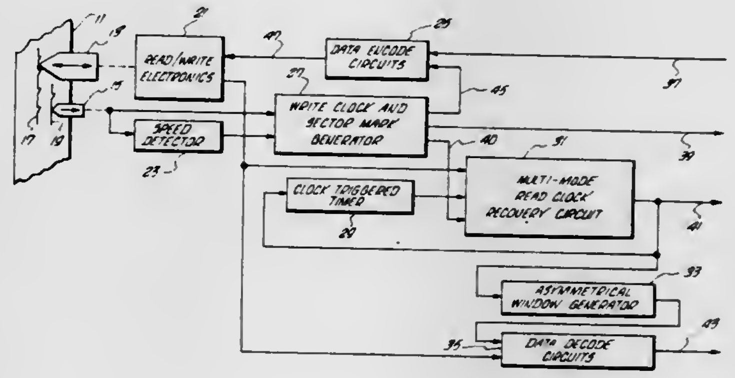
David B. Gish, Pasadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 5, 1973, Ser. No. 321,198
Int. Cl. G11b *5/09*
U.S. Cl. 360—41 7 Claims

1. In apparatus for recovering pulse-code modulated digital data from a readback signal, the improvement comprising in combination:
means for partially equalizing said readback signal comprising low-frequency equalizing means, mid-frequency equalizing means, and partial high-frequency equalizing means including only RC filter means as passive filter means; and
means connected to said partial equalizing means for completing said partial equalization of said readback signal and for detecting said data, including means for delaying said partially equalized readback signal, means for providing a relatively undelayed version of said readback signal, and means for providing a digital signal corresponding to the difference between said delayed readback signal and said relatively undelayed version of said readback signal, said delay means including further filter means including only RC filters as passive filter means for completing said partial equalization with the aid of said means for providing said undelayed version and said means for providing said difference signal.



3,864,735
READ/WRITE SYSTEM FOR HIGH DENSITY MAGNETIC RECORDING

Martin F. Davis, Thousand Oaks; Francis J. Schwanauer, Agoura; Ivan E. Walenta, Westlake Village, and Gary J. Walker, Thousand Oaks, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed Sept. 12, 1973, Ser. No. 396,479
Int. Cl. G11b *5/09*
U.S. Cl. 360—51 5 Claims

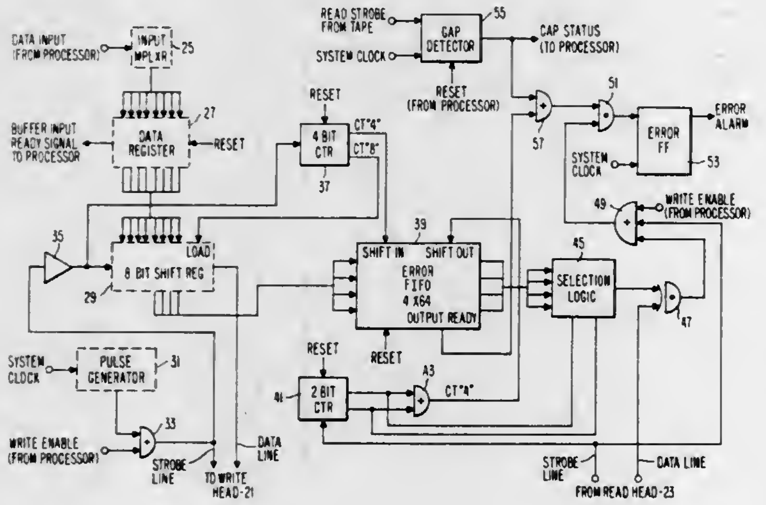

READ/WRITE ELECTRONICS
DATA ENCODE CIRCUITS
WRITE CLOCK AND SECTOR MARK GENERATOR
SPEED DETECTOR
CLOCK TRIGGERED TIMER
MULTI-MODE READ CLOCK RECOVERY CIRCUIT
ASYMMETRICAL WINDOW GENERATOR
DATA DECODE CIRCUITS

1. In a system for reading and writing self-clocking binary encoded data on a moving storage medium having data writing and reading apparatus and apparatus for generating a signal indicating the speed of said storage medium, binary data encoding and decoding apparatus, comprising:
means responsive to the speed indicating signal for generating write clock signals;
means utilizing the write clock signals for encoding input binary data, encoded according to a non-self-clocking encoding scheme, into a self-clocking binary data pattern for writing on the storage medium;
means responsive to the storage medium speed indicating signal and the self-clocking binary data pattern read from the storage medium for generating read clock signals;

- means responsive to the read clock signals for generating asymmetrical data windows; and,
- means utilizing the asymmetrical data windows for decoding the self-clocking binary data pattern read from the medium into a binary data pattern representative of the non-self-clocking input binary data.

3,864,736
MAGNETIC RECORDING VERIFICATION

Michael J. Hazzard, Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed June 25, 1973, Ser. No. 373,270
Int. Cl. G11b *5/09*
U.S. Cl. 360—53 **8 Claims**

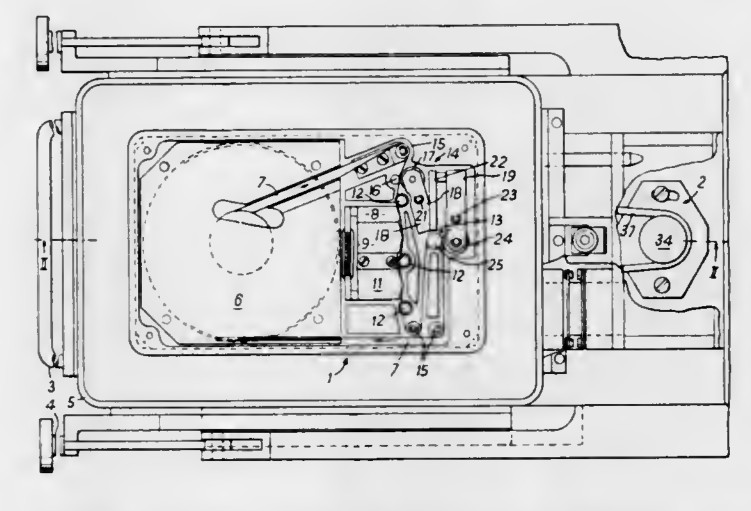


1. Apparatus, receiving and sending signals to a digital processor, for bit-by-bit verification, immediately upon recording, of digital data serially recorded onto a magnetic medium, including a dual write-read head and a shift register having a parallel input and output and a serial output connected to the write portion of said dual head, comprising:

- means for generating strobe pulses and then feeding same to said recording head, said means being connected to said write head;
- means responsive to said generated strobe for controlling the shifting of said shift register;
- means connected to said read head for comparing data as read from said medium with characters recorded on a bit-by-bit basis;
- means associated with said comparison means for generating an alarm when respective bits do not compare;
- a first-in, first-out matrix register having parallel input and output, shift-in and shift-out controls and output ready terminal, said inputs of said matrix register being connected to a portion of the parallel output of said shift register;
- a first counter means connected to said strobe generating means, for providing a first signal output and a second signal output, said first signal output being connected to said shift-in terminal of said matrix register, said second signal output being connected to said load control of said shift register;
- a second counter connected to the strobe pulse read head winding; and
- a first and-gate with inputs connected to the output of said second counter.

3,864,737
DATA RECORDERS

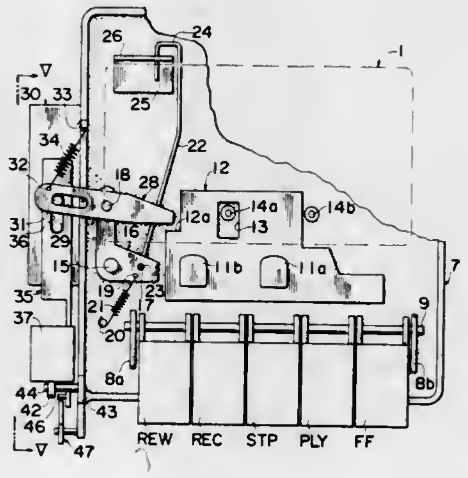
David James Maxwell, Bracknell, and Frank Richard Towner, Wokingham, both of England, assignors to Sperry Rand Limited, London, England
Filed Aug. 29, 1973, Ser. No. 392,707
Claims priority, application Great Britain, Sept. 6, 1972, 41232/72
Int. Cl. G11b *15/12*
U.S. Cl. 360—63 **7 Claims**



1. A data recorder comprising a movable magnetic recording medium in the form of a base material with a coating of magnetic material thereon, the magnetic material being removed from the base material at a plurality of areas spaced in the direction of movement of the recording medium, said areas forming a predetermined pattern at a predetermined position on said medium, and sensing means including magnetic head means operable to sense the presence of said areas in accordance with said pattern passing said magnetic head means and to produce a signal indicative thereof, thereby detecting said predetermined position on said medium.

3,864,738
TAPE RECORDING AND REPRODUCING APPARATUS WITH A MECHANISM FOR CHANGING OVER THE ELECTRICAL CHARACTERISTICS OF THE APPARATUS

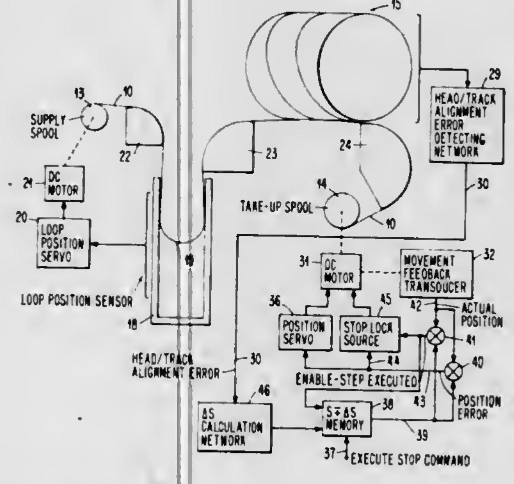
Keisuke Syohji, Nagoya-shi, Aichi-ken, Japan, assignor to Shin-Shirasuna Electric Corporation, Aichi-Ken, Japan
Filed May 15, 1973, Ser. No. 360,575
Claims priority, application Japan, Aug. 31, 1972, 47-101973[U]
Int. Cl. G11b *15/02, 5/47*
U.S. Cl. 360—69 **2 Claims**



1. A cassette-type magnetic tape recording and reproducing apparatus employing a tape cassette containing a pair of reels and a magnetic tape of a predetermined length transported therebetween, said magnetic tape being formed either by a first type of magnetic material having first characteristics or a second type of magnetic material having second characteristics, said tape cassette being provided at the back wall thereof with means indicating the type of the magnetic tape contained therein, a depressable-key board including at least a playback key, magnetic head means, a carrier means having said magnetic head means mounted thereon and being forwardly movable by depressing said playback key so that said magnetic head means is brought into engagement with said magnetic tape, and a mechanism including switch means for changing over the electrical characteristics of said magnetic tape recording and reproducing apparatus so as to match the type of the magnetic material forming said magnetic tape, characterized in that said change-over mechanism comprises detector means contacting said indication means of said tape cassette and assuming a first or position according to the type of the magnetic material forming said magnetic tape contained in said tape cassette, shifter means mechanically coupled to said detector means, and actuator means pivotally mounted on said shifter means for actuating said switch means, said shifter means assuming in accordance with the position of said detector means either a first position where said actuator means is engaged by said carrier means when the latter is forwardly moved in response to the depression of said playback key or a second position where said actuator means is not engaged by said carrier means when the latter is caused to effect said movement, wherein when said detector means assumes said first position and said playback key is depressed, said actuator means is engaged by said carrier means and is pivotally moved to actuate said switch means, thereby changing over the electrical characteristics of said apparatus.

3,864,739
TAPE MOTION CONTROL IN AN INCREMENTING MAGNETIC TAPE TRANSPORT

Howard C. Jackson, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 24, 1973, Ser. No. 391,405
Int. Cl. G11n *15/18, 5/52*
U.S. Cl. 360—71 **15 Claims**

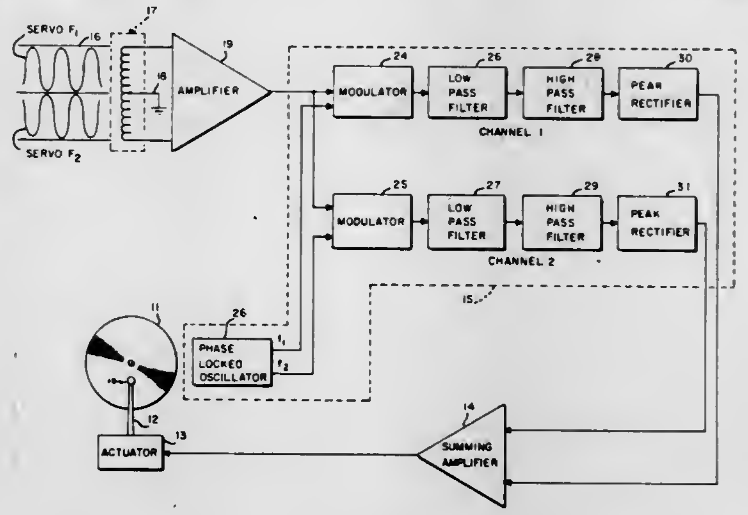


4. In combination:

- a tape take-up spool and a motor connected to rotate the same,
- a tape supply,
- a tape buffer buffering a quantity of magnetic tape as the tape extends from said supply to said takeup spool,
- a movement transducer connected to be driven by said take-up motor, and providing an output indicative of the rotational distance moved by said tape take-up spool
- a magnetic transducer cooperating with the length of tape extending between said tape buffer and said take-up spool, and transducing the tape while said tape is relatively stationary,
- said tape having a plurality of spaced data fields and having servo indicia for at least certain of said data fields,
- means generating a tape step command,
- a position servo controlled by said step command and the output of said movement transduucer, and operable to energize said take-up motor to execute step rotation of said tape take-up spool, said rotation resulting in a change in the tape radius at said tape take-up spool so that the tape moves a distance at least as great as one data field in response to said step command,
- said servo indicia being operable to identify desired stop positions for said tape adjacent said magnetic transducer,
- means operable to read said servo indicia when a step has been executed and to originate an alignment error signal representing misalignment of said desired stop positions and said magnetic transducer, and
- step modification means controlled by said alignment error signal and operable to modify a subsequent step command in accordance therewith, said modification resulting in a reduced alignment error signal after a subsequent step rotation of said take-up spool.

3,864,740
TRACK FOLLOWING SERVO SYSTEM

Frank J. Sordello, Los Gatos, and John Cuda, San Jose, both of Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.
Filed Nov. 5, 1973, Ser. No. 412,675
Int. Cl. G11b *21/10, 5/02*
U.S. Cl. 360—77 **5 Claims**



1. A servo system for positioning a transducer relative to a storage medium to read information stored on the medium, said system comprising:

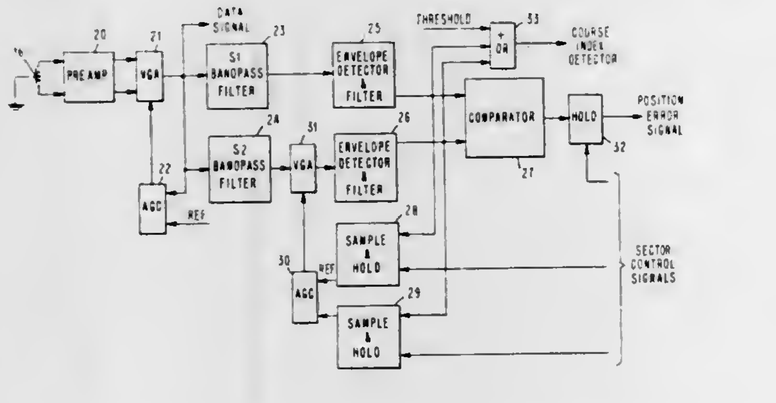
- positioning means energizeable for moving the transducer laterally to preselected recording positions relative to the storage medium,
- means to effect relative movement between the storage medium and the transducer thereby to enable the transfer of information between the medium and transducer,
- a plurality of side-by-side closely-spaced first and second servo waveforms recorded on the medium such that a pair of first and second servo waveforms identifies a preselected position on the medium and wherein the first and second waveforms are at different but similar cyclic frequencies whereby movement of the transducer to a position near said preselected position will enable the transducer to generate a position signal resulting from reading both servo waveform signals with the magnitude of such position signal being indicative of the lateral position of the transducer relative to that servo waveform,
- first and second channels receiving the position signal from the transducer and each including modulators capable of mixing cyclic signals,
- means to supply to the first and second channel modulators, first and second modulating signals respectively having frequencies similar to the frequencies of the first and second servo waveforms respectively to generate a difference signal resulting by the subtraction of the position

signal and the modulating signal in each channel with each difference signal having a magnitude indicative to the relative position of the transducer to one servo waveform,

means to detect the difference signal in each channel,

and means to energize the positioning means responsive to the magnitudes of the difference signals thereby to move the transducer towards the preselected position between the servo waveforms.

3,864,741
SERVO CHANNEL EQUALIZATION NETWORK
Theodore A. Schwarz, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 28, 1973, Ser. No. 374,294
Int. Cl. G11b *21/10*
U.S. Cl. 360—77 **5 Claims**



1. In a system for following a target path, said system deriving a first path following signal from a first servo path on one side of said target path and a second path following signal from a second servo path on the other side of said target path, means for generating 100 percent off-track conditions comprising

a first portion which contains said first signal on both said servo paths, said portion located on said servo paths so that said first signal is derived from each of said servo paths during a first common time period to generate a 100 percent off-track condition,

a second portion which contains said second signal on said servo paths, said second portion located on said servo paths so that said second signal is derived from each of said servo paths during a second common time period to generate a second and different 100 percent off-track condition.

3,864,742
AUTOMATIC TAPE LOADING MECHANISM FOR A RECORDING AND/OR REPRODUCING APPARATUS
Hiroshi Katoh, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama City, Kanagawa-ken, Japan
Filed June 20, 1973, Ser. No. 371,837
Claims priority, application Japan, June 24, 1972, 47-63578; June 24, 1972, 47-63579; June 24, 1972, 47-63580; July 20, 1972, 47-72753; July 26, 1972, 47-74087; June 24, 1972, 47-74981[U]; June 24, 1972, 47-74982[U]
Int. Cl. G11b *15/66*, *5/52*
U.S. Cl. 360—85 **9 Claims**

1. An automatic tape loading mechanism for a recording and/or reproducing apparatus comprising:

a. a cylindrical tape guide means having at least one rotating head associated therewith;

b. a ring-shaped means rotatably supported to encircle said tape guide means;

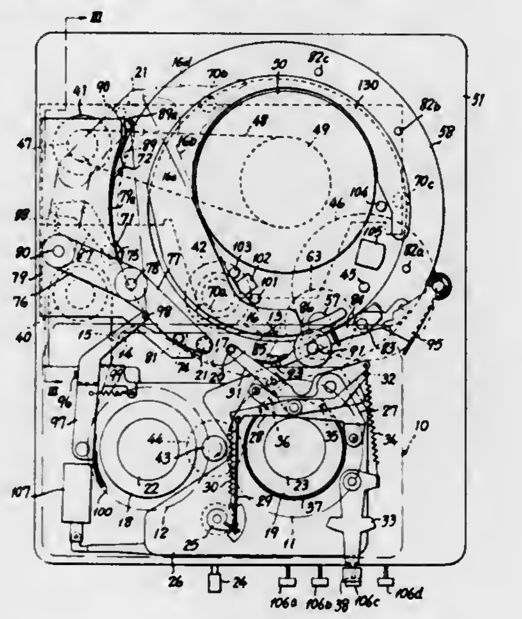
c. means for rotating a shaft in one direction,

d. roller means for driving said ring-shaped means;

e. first transmitting means for pressing said roller means against a rim of said ring-shaped means and transmitting the torque of said rotating shaft to said roller means to turn said ring-shaped means in a specific direction during a loading mode;

f. tape drawing out and guiding means separate from said ring-shaped means for drawing a tape out of a housing structure by engaging with said ring-shaped means and moving interrelatedly with the turning of said ring-shaped means during the loading mode;

g. means for locking the engagement of said tape drawing out and guiding means with said ring-shaped means while said ring-shaped means turns through a predetermined angle, said locking means disengaging said tape drawing out and guiding means from said ring-shaped means at a position which said ring-shaped means reaches after turning through the predetermined angle and locking said tape drawing out and guiding means at a position which is disengaged from said ring-shaped means;



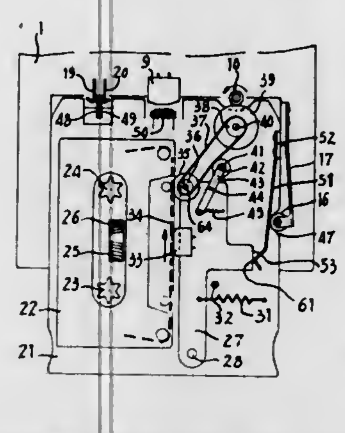
h. tape pulling around and guiding means mounted on said ring-shaped structure and moving together therewith for intercepting the tape drawn out by said tape drawing out and guiding means and for pulling the tape to wrap it around the peripheral surface of said cylindrical tape guide means, with the wrap engaging the cylindrical tape guide over a specific angularly extent thereof;

i. means responsive to the completion of the wrapping of the tape around the guiding means for stopping the rotation of said roller means; and

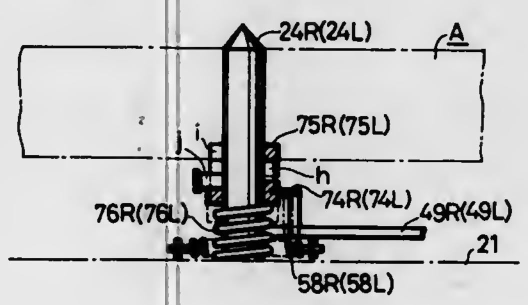
j. second transmitting means for transmitting the torque of said rotating shaft to said roller means to rotate said ring-shaped means in a direction opposite to the specific direction during an unloading mode.

3,864,743
ARRANGEMENT FOR PLAYING RECORDING ON AN ENDLESS TAPE IN CARTRIDGES OF DIFFERENT TYPES
Marcel Jules Helene Staar, 479 avenue Louise, Brussels, Belgium
Continuation of Ser. No. 823,883, May 12, 1969, abandoned. This application Mar. 13, 1972, Ser. No. 234,250
Claims priority, application Belgium, May 29, 1968, 715838
Int. Cl. G11b *23/04*
U.S. Cl. 360—94 **13 Claims**

1. In a box-type tape record player for playing an endless-magnetic tape cartridge, an aperture in said player adapted to slidingly receive said cartridge, said player comprising tape driving means and playback means including a first playback head for the magnetic tape contained in said cartridge; an improvement comprising said aperture in said player being adapted to slidingly receive upon withdrawal of said cartridge, a converter having exterior geometrical dimensions and operative characteristics substantially corresponding to those of said endless-magnetic tape cartridge; said converter including an aperture dimensioned to receive and position a magnetic-tape-containing cartridge of generally smaller exterior dimensions than said first-mentioned cartridge; a second playback head in said converter for reading the magnetic tape of the smaller-dimensioned cartridge positioned therein; means in said converter for driving said last-mentioned magnetic tape, said tape driving means being connectable with the driving means of the player, said smaller dimensioned cartridge including a pair of rotatable spools, a magnetic tape containing said recordings being wound about said spools and extending therebetween, said tape being adapted to be wound and unwound respectively, from one spool to the other, said playback means comprising a capstan in said player rotatably driven by a motor positioned in said player along said aperture edge, drive roller means in said converter for imparting rotation to said spools, a longitudinally inextensible flexible belt in said converter drivingly interconnecting said roller means and said capstan for moving said tape along said second playback head, a pivotable lever on said converter, said lever having a rectilinear edge which in the operative position of said converter extends in proximity to said further cartridge, said second playback head and said drive roller means being mounted on said lever; and spring means urging said lever out of contact with the tape, said lever including a projection, a slope on said projection, said projection being adapted to make contact with the internal surface of the aperture formed in the player so as to cause said lever to pivot and the second head and roller means contact with the tape in said smaller-dimensioned cartridge upon insertion of the converter in said player.

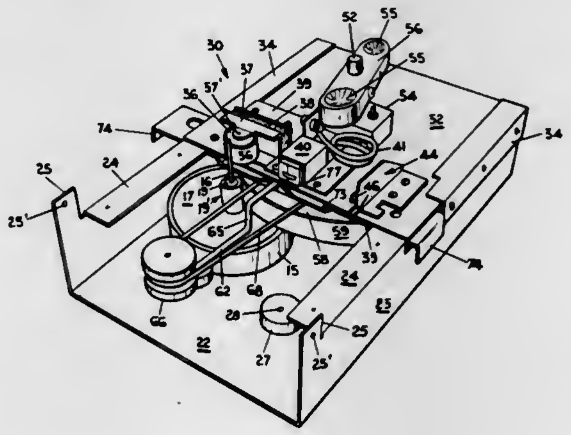


3,864,744
APPARATUS FOR DETECTING THE LOADING OF A CASSETTE ON A CASSETTE TAPE DECK
Yasuhiro Uemura, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan
Filed June 19, 1972, Ser. No. 263,969
Claims priority, application Japan, June 20, 1971, 46-44082; June 20, 1971, 46-44083; June 20, 1971, 46-44084
Int. Cl. G11b *15/02*, *15/18*; B65h *17/20*
U.S. Cl. 360—96 **2 Claims**



1. Apparatus for detecting the loading of a cassette on a cassette tape deck; said cassette having a magnetic tape wound on reels having central apertures respectively in a casing; said casing having a first major face having formed therein at least capstan receiving apertures, reel drive shaft receiving apertures and guide pin receiving holes and a second major face having formed therein at least a magnetic head receiving window and pinch roller receiving windows and being substantially perpendicular to said first major face; said deck having a capstan, a pinch roller making rotary contact with said capstan, a magnetic head, a reel drive shaft and a guide pin, said capstan, said reel drive shaft and said guide pin being so positioned as to be inserted into said capstan receiving apertures, said reel drive shaft receiving aperture and said guide pin receiving hole of said cassette respectively only when said cassette is loaded on said deck; and said magnetic head being movable between operative and inoperative positions and being inserted into said magnetic head receiving window at its operative position only when said cassette is loaded on said deck; a sliding member slidably mounted on said guide pin, said sliding member being biased by a first spring means toward the upper end of said guide pin and having a groove formed therein to extend perpendicular to a direction of sliding of said sliding member, and a member movably mounted on said deck and biased by a second spring means toward said guide pin and having an engaging member engageable with said groove of said sliding member, whereby operative loading of said cassette on said deck is detected based upon sliding of said sliding member against said first spring means and engagement of said engaging member with said groove of said sliding member.

3,864,745
MANUAL SOUND REPRODUCTION APPARATUS
Stephen A. Platt, Grand Haven, Mich., assignor to Stephen A. Platt and Vernet B. Platt, both of Grand Haven, Mich.
Filed Sept. 21, 1972, Ser. No. 290,877
Int. Cl. G11b *5/54*, *15/40*
U.S. Cl. 360—96 **22 Claims**



1. In a manually operated mechanism for reproducing information recorded on a tape comprising:

tape carrier means including a pair of drive spindles;

a base assembly including a carriage movably positioned on said base assembly;

a tape playback head positioned on said carriage for movement between tape engaging and non-engaging positions; and

manually operated drive means positioned on said carriage and selectively engageable with one of said drive spindles for alternatively rotating one of said spindles to transport said tape across said playback head in first or second directions.

3,864,746
END OF MESSAGE UNIT FOR USE IN PUSH TO TALK MICROPHONES
Edward S. Burgess, 101 Morse Ave, Rutherford, N.J. 07070
Filed Aug. 13, 1973, Ser. No. 388,079
Int. Cl. G11b *15/18*, *15/40*, *27/00*
U.S. Cl. 360—97 **12 Claims**

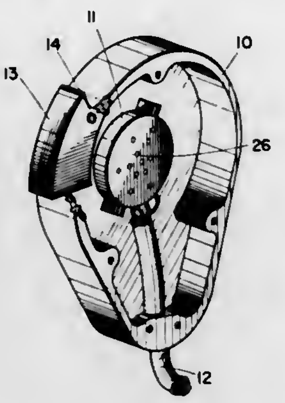
8. A signal producing device including:

a housing;

a disc of magnetic material;

means for mounting said disc of magnetic material for rotation in response to a force applied in a first manner and to vibrate in response to sound waves impinging thereon; and

a magnetic pick-up device mounted on said housing adjacent to said disc to provide a signal representation of magnetic information stored on said disc in response to rotation thereof and to the vibrations of said disc in response to sound wave impingement thereon thereby serving the dual function of both a magnetic recorder and a microphone.



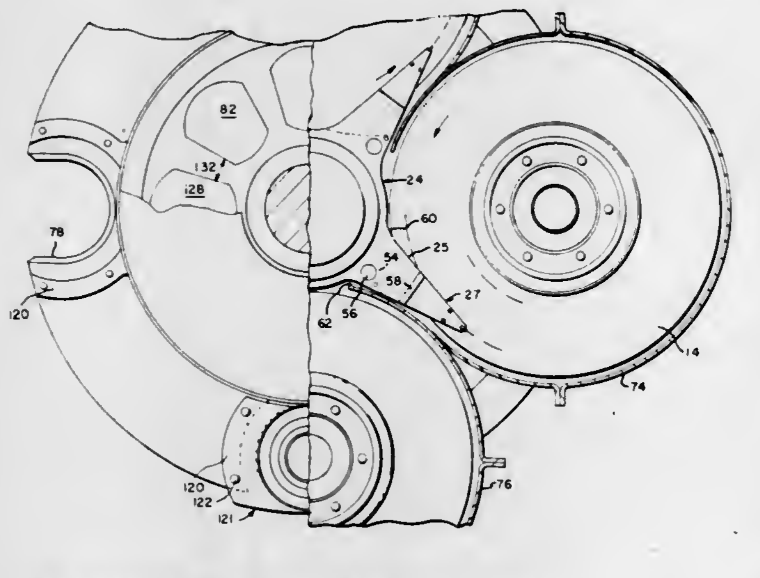
3,864,747
MULTIPLE PACK MAGNETIC DISK SYSTEM

Ivan Pejcha, San Jose, Calif., assignor to Storage Disk Corporation, Louisville, Colo.

Filed May 29, 1973, Ser. No. 364,950

Int. Cl. G11b *17/00*

U.S. Cl. 360—98 **25 Claims**



1. A magnetic disk subsystem comprising:

a plurality of packs of magnetic disks,

a plurality of pack spindles, each pack of disks being mounted in nonremovable fashion on a spindle,

a baseplate, the pack spindles being mounted on said baseplate with their axes parallel to one another and with the edges of disks of adjoining pack spindles in close proximity one to the other,

one single rotary access mechanism including:

- a plurality of magnetic heads,
- a plurality of arrays of arms mounted for common rotation, one array for each of said disk packs, each array including arms carrying said magnetic heads into read/write relationship with the tracks of one pack of magnetic disks,
- a stationary shaft affixed to said baseplate to be parallel to and in the middle of said spindles, and
- a positioning rotor mounted for rotation on said shaft, said positioning rotor having a large diameter such that the periphery of said positioning rotor is in close proximity to the edges of said disks whereby the length of said arms is minimized.

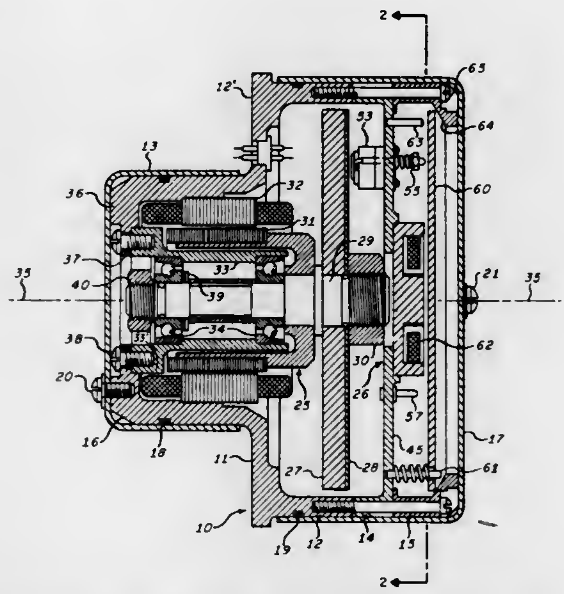
3,864,748
MAGNETIC DISK MEMORY

Craig T. Herdman, and Peter E. Jacobson, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed July 23, 1973, Ser. No. 381,817

Int. Cl. G11b *5/60*

U.S. Cl. 360—102 **10 Claims**



1. A magnetic disk memory apparatus comprising

a closed housing containing a gas atmosphere,

a disk member having a magnetizable surface and motive means supported within said housing for spinning said disk at high speed about its axis of symmetry,

at least one read/write head assembly including at least one core and coil element carried by an integral support member, a portion of said core element only extending from a surface of said support member normally adjacent said disk surface,

said head assembly further comprising flexure means coupled between said housing and said core support member including means for forcing said support member toward said disk surface, and

said extending core portion including a gas pressure generating configuration on its leading edge relative to disk velocity for generating a gas pressure opposing said flexure force to thereby provide a gas bearing support for said core and support member.

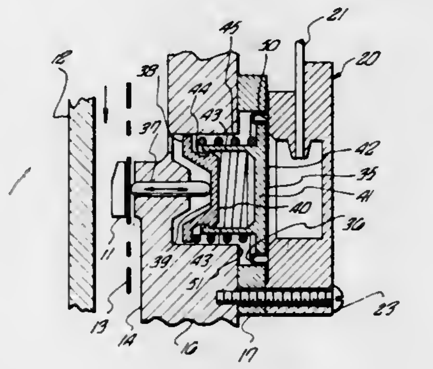
3,864,749
ACTUATED SPRING MECHANISM FOR POSITIONING MAGNETIC HEADS

Alpheus F. Stansell, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,478

Int. Cl. G11b *5/60*

U.S. Cl. 360—103 **9 Claims**



1. An actuating device for moving a magnetic head toward or away from a magnetic medium comprising in combination:

a. spring means having first and second ends, both said first and second ends being movable toward or away from said magnetic medium;

b. a first movable member adjacent the first end of said spring means, said first movable member being adapted for coupling the first end of said spring means to said movable head;

c. a second movable member adjacent the second end of said spring means, said second movable member being adapted for moving the second end of said spring means between first and second positions, the second position of the second end of said spring means being closer to said magnetic medium than the first position of the second end of said spring means;

d. means mechanically intercoupled between said first and second movable members for maintaining said spring means in compression and setting the maximum spacing between the first and second ends of said spring means; and

e. controllable means coupled to said second movable member for moving said second movable member between said first and second positions, said second position being chosen so that the force urging said head towards said medium at said second position is substantially independent of said controllable means.

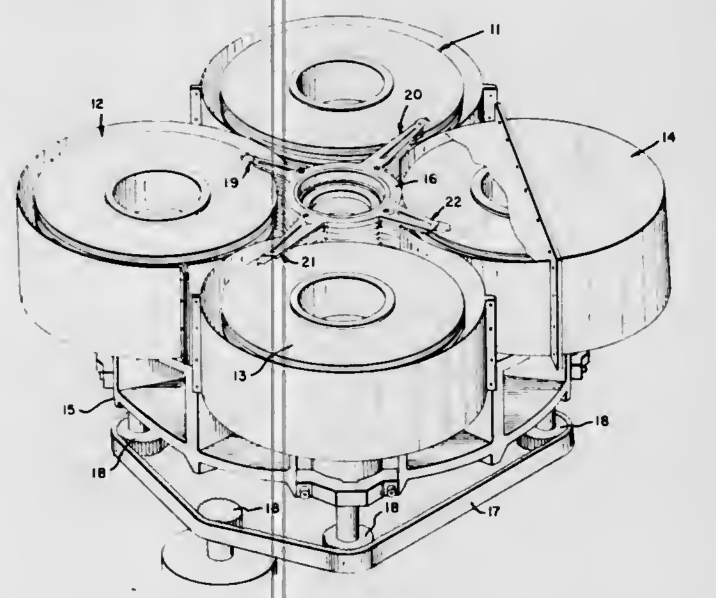
3,864,750
CANTILEVERED ROTARY ACCESS MECHANISM ARMS FOR MAGNETIC DISK SYSTEM

Roy Applequist, Redwood City, Calif., assignor to Storage Disk Corporation, Louisville, Colo.

Filed Oct. 19, 1973, Ser. No. 407,886

Int. Cl. G11b *5/54*

U.S. Cl. 360—105 **1 Claim**



1. In a magnetic disk subsystem of the type including:

a plurality of packs of magnetic disks, each pack of disks being mounted on a spindle, said packs being disposed with the spindles parallel to one another and with the edges of the disks in adjoining packs in close proximity one to the other,

a rotary access mechanism shaft mounted parallel to, and in the middle of said spindles, and

magnetic heads carried into read/write relationship with the tracks of each pack of magnetic disks, the improvement comprising:

- a plurality of positioning rotors, each having a central circular opening through which said access mechanism shaft extends, said positioning rotors being stacked on said shaft,
- a plurality of rigid arms integrally formed with each positioning rotor, said arms extending between adjacent disks of each pack and terminating in a pair of opposing flexible members, each flexible member having disposed thereon a magnetic head; and
- a plurality of coil springs, one of said coil springs being disposed between the flexible members of each arm in a compressed state for urging the heads apart to provide the sole loading of the heads on the surfaces of said disks.

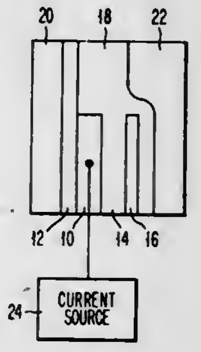
3,864,751
INDUCED BIAS MAGNETORESISTIVE READ TRANSDUCER

Thomas Joseph Beaulieu, San Jose, and Daniel Andrew Nepela, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,702

Int. Cl. G11b *5/30*

U.S. Cl. 360—113 **11 Claims**



1. A magnetoresistive read transducer assembly comprising:

a magnetoresistive conductive layer formed of magnetic material;

a soft highly permeable magnetic bias film disposed substantially parallel to said layer and spaced from said layer but magnetostatically coupled thereto, said layer and film having a prescribed ratio of thicknesses;

insulating material disposed between said layer and said bias film;

means coupled to said layer for applying a drive current to said layer, so that said bias film is magnetically saturated and produces a back magnetic field that is applied as a linear biasing field to said magnetoresistive element, the magnitude of said biasing field being a function of the magnitude of said drive current.

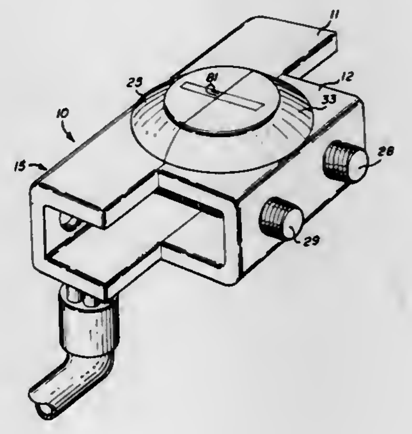
3,864,752
MAGNETIC HEAD ASSEMBLY HAVING A SLOTTED BODY PORTION OF ELASTIC MATERIAL FOR CLAMPING A TRANSDUCER AND METHOD OF MANUFACTURE THEREFOR

Herbert E. Thompson, Los Gatos, Calif., assignor to Shugart Associates, Inc., Sunnyvale, Calif.

Filed Dec. 10, 1973, Ser. No. 423,170

Int. Cl. G11b *5/16, 5/26*

U.S. Cl. 360—121 **19 Claims**



1. A magnetic haead assembly comprising:

a magnetic transducer assembly including a first magnetic core and a second magnetic core, each core having a certain width;

a first body member comprised of an elastic material including a first mating surface having a first slot therein, opposed surfaces of said first slot defining first core-gripping surfaces that are normally spaced-apart less than said certain width, said first core being disposed within said first slot when external forces are applied to said first body member to elastically open said first slot to a width more than said certain width, said first slot thereafter being permitted to elastically close so that said first core-gripping surfaces clampingly engage said first core;

a second body member comprised of an elastic material including a second mating surface having a second slot therein, opposed surfaces of said second slot defining second core-gripping surfaces that are normally spaced-apart less than said certain width, said second core being disposed within said second slot when external forces are applied to said second body member to elastically open said second slot to a width more than said certain width, said second slot thereafter being permitted to elastically close so that said second core-gripping surfaces clampingly engage said second core; and

means for securing said first and said second body members together with said first and second mating surfaces in abutting relationship and with said first and second cores aligned to define a magnetic transducing gap.

3,864,753

TRANSDUCER HEAD WITH SPACER MATERIAL MADE OF STAINLESS STEEL

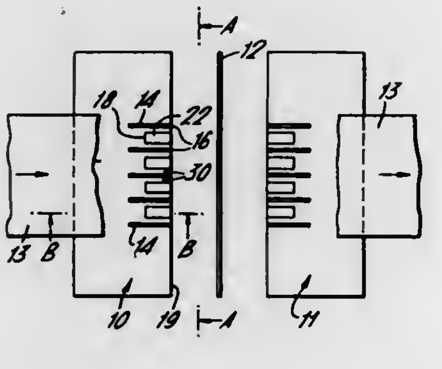
Robert Sidney Becker, Pyrford; Eric Frank Painter, Shepperton, and Gerrard Charles Rickard, Woodham, all of England, assignors to Gresham Inforag Ltd., Weybridge, England

Filed May 9, 1973, Ser. No. 358,698

Claims priority, application Great Britain, May 9, 1972, 21638/72

Int. Cl. G11b *5/12, 5/22, 5/26*

U.S. Cl. 360—121 **10 Claims**



1. A multi-track tape electromagnetic transducer head comprising a body having a surface over which a tape is adapted to pass, a plurality of respective magnetic tracking circuits supported in said body and each having a pole piece having a face flush with and forming part of said surface, each said face contacting a respective longitudinally extending area of said tape for the transfer of information between the associated magnetic and the associated area of the tape, characterised in that said surface is at least partially of stainless steel between said magnetic tracking circuits.

3,864,754

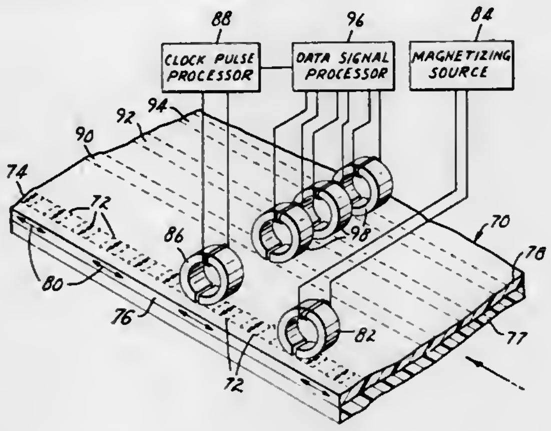
MAGNETIC RECORD MEDIUM HAVING PERMANENT RECORD PATTERN AND INFORMATION PROCESSING SYSTEM USING SAID MEDIUM

Richard L. Miklos, Maplewood, and Jack E. Blackburn, Oakdale, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St Paul, Mich.

Filed May 2, 1973, Ser. No. 356,605

Int. Cl. G11b *5/74*

U.S. Cl. 360—131 **13 Claims**



1. In a magnetic recording medium comprising a backing and a layer thereon having a smooth outer surface, which layer comprises uniformly dispersed magnetizable material having magnetic anisotropy which magnetizable material is predominantly physically aligned parallel to an intended direction of movement, wherein the improvement comprises the magnetizable material at a plurality of selected locations spaced along a track extending in said intended direction of movement of the medium being physicaly aligned in a direction transverse thereto to provide a series of spaced magnetically detectable permanent position/clocking marks.

3,864,755

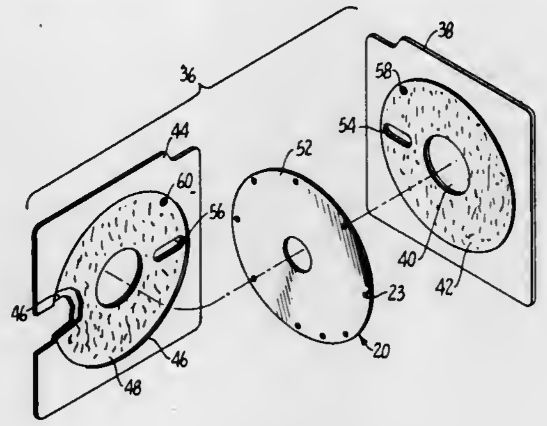
THERMOFORMED CARTRIDGE FOR A MAGNETIC RECORD DISC

James V. Hargis, Saratoga, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Aug. 20, 1973, Ser. No. 389,993

Int. Cl. G11b *5/16*

U.S. Cl. 360—133 **7 Claims**



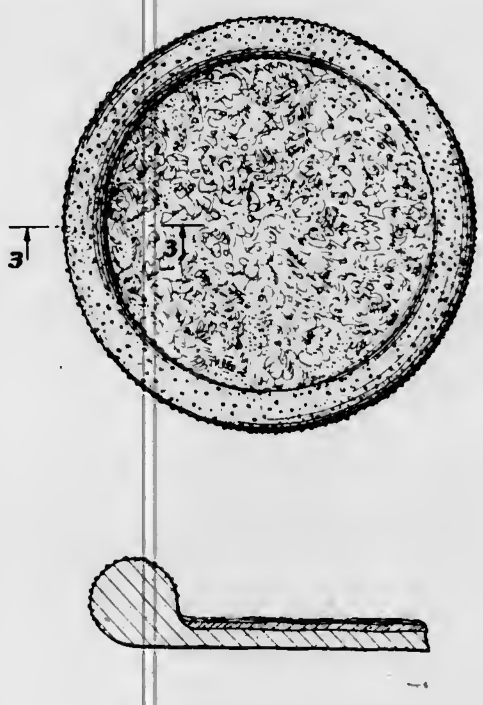
1. A cartridge for containing a flexible, rotary, magnetic record memory disc comprising a substantially rigid first cover having an interior flat surface and a second cover which is substantially thinner than the first cover and which is deformed to provide a recess coextensive with the circumferential edge of the memory disc, the second cover having an interior surface which is bonded to the flat interior surface of the first cover along a path immediately adjacent to and exterior of the recess in the second cover to provide a circumferentially sealed cavity for housing the memory disc, the junction of the interior surface of the first and second covers lying entirely in a plane which is parallel to and spaced from the memory disc's plane of rotation.

DESIGNS

GRANTED FEBRUARY 4, 1975

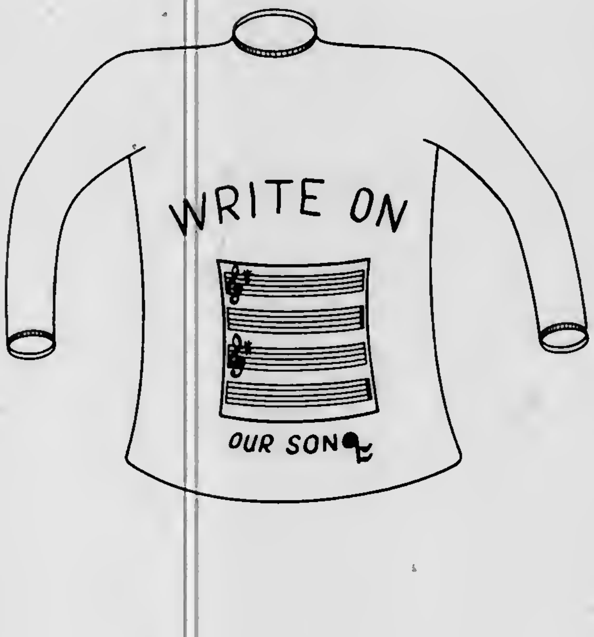
234,233
PIZZA

Charles Silvestri, 280 85th St., Brooklyn, N.Y. 11209
Filed Oct. 31, 1972, Ser. No. 302,568
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—11



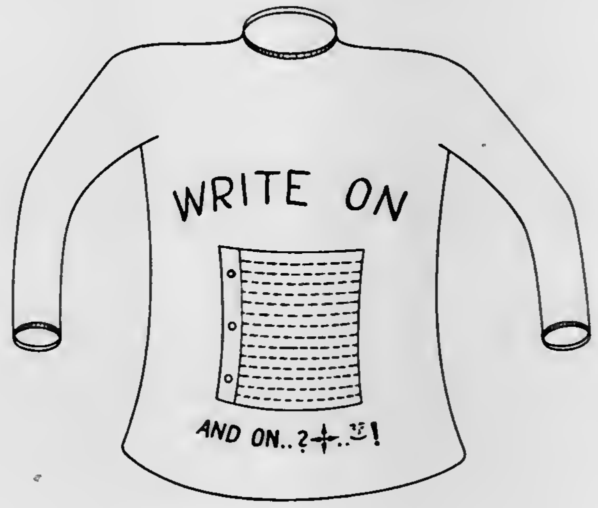
234,234
SWEATSHIRT

Phillip L. Nally, 302 W. Muir Ave.,
Bardstown, Ky. 40004
Filed Feb. 5, 1973, Ser. No. 329,813
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—44



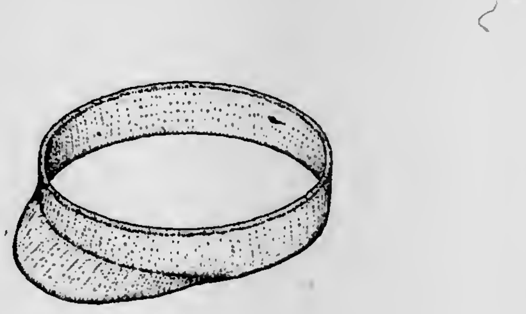
234,235
SWEATSHIRT

Phillip L. Nally, 302 W. Muir Ave.,
Bardstown, Ky. 40004
Filed Feb. 5, 1973, Ser. No. 329,839
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—44

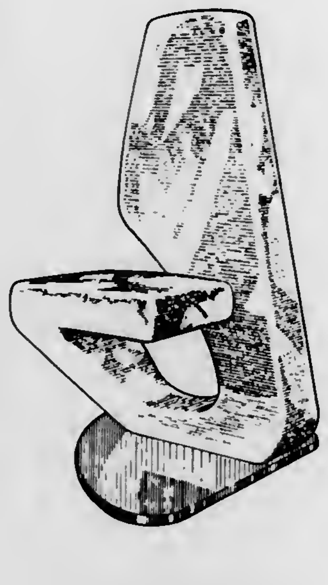


234,236
COMBINED SWEATBAND AND VISOR

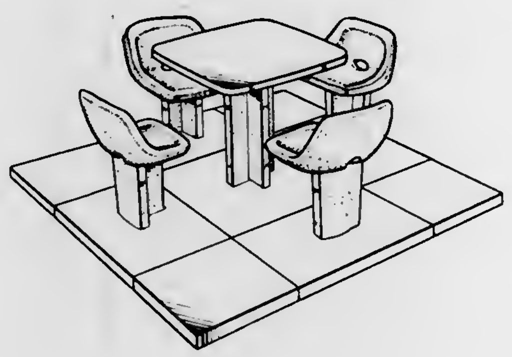
Jon B. Miller, 2625 Garfield Ave., Silver Spring, Md. 20910, and Arthur W. Lynn, Drawer D, Marietta, Ga. 30060
Filed Sept. 4, 1973, Ser. No. 393,730
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—247



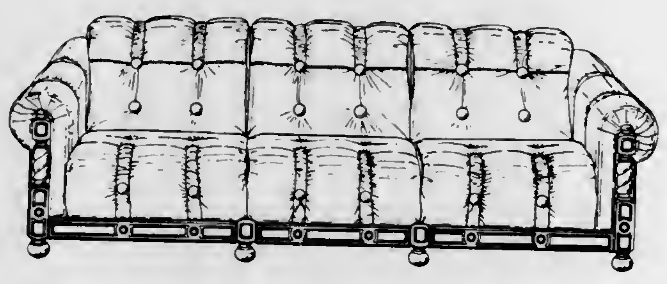
234,237
CHAIR
Maxine Gibson, 750 Congo St., San Francisco, Calif. 94131
Filed Mar. 8, 1973, Ser. No. 339,405
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



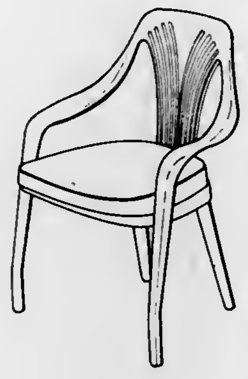
234,238
COMBINED TABLE AND MULTIPLE CHAIR UNIT FOR OUTDOOR USE
James E. Miller, Birmingham, Mich., assignor to Form, Incorporated, Livingston, Mich.
Filed Jan. 16, 1973, Ser. No. 324,203
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—45



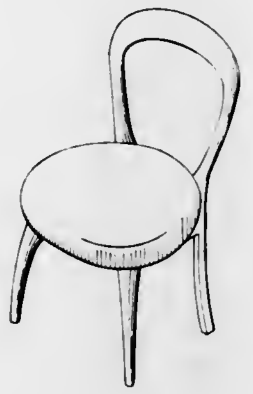
234,239
SOFA
Stapleton Long, 1629 Christmas Drive, Morristown, Tenn. 37814
Filed Nov. 28, 1972, Ser. No. 310,017
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



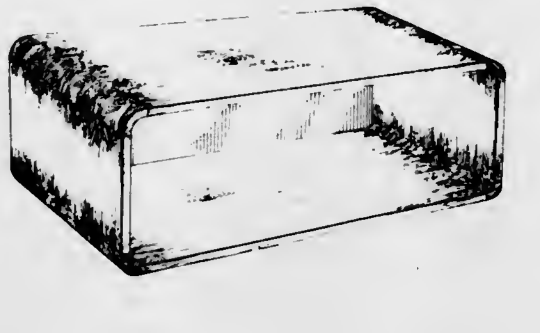
234,240
CHAIR
Akihiko Noda and Kunio Onoguchi, Tokyo, Japan, assignors to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,482
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



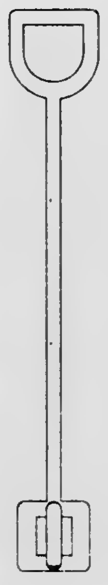
234,241
CHAIR
Kunio Onoguchi, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,439
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



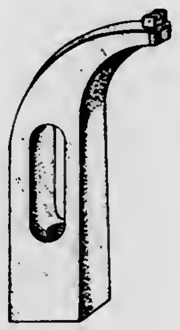
234,242
CABINET FOR A WALL SYSTEM
Joseph Reiter, 11255 Suzor Cote, Montreal, Quebec, Canada
Filed Feb. 16, 1972, Ser. No. 227,016
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130



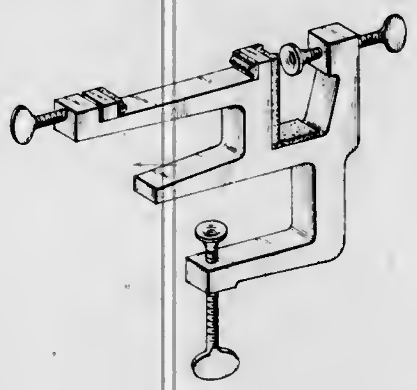
234,243
GARMENT HANGER LINKAGE
David H. Lindemann, 228 SW. 21st Terrace, Fort Lauderdale, Fla. 33304
Filed Jan. 26, 1973, Ser. No. 326,690
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—257



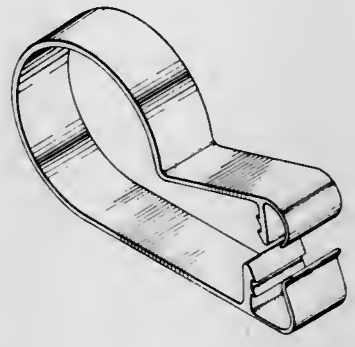
234,244
SPLICING ANVIL
Irwin Zahn, New York, N.Y., assignor to General Staple Company, Inc., New York, N.Y.
Filed July 10, 1972, Ser. No. 270,153
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—46



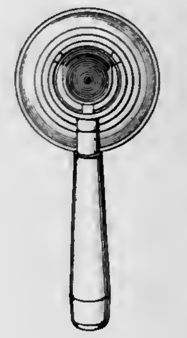
234,245
SKI VISE
Weldon L. McGee, 2512 S. Highway 100, Apt. 433, St. Louis Park, Minn.
Filed Aug. 15, 1973, Ser. No. 388,364
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74



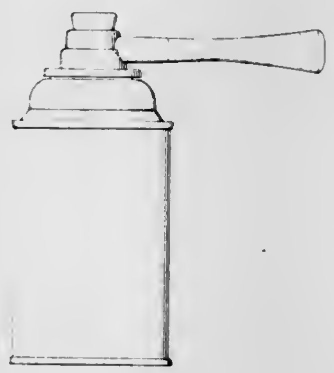
234,246
TENSION BAND
Leo J. Martini, South Gate, Calif., assignor to Master Fence Fittings, Inc., La Habra, Calif.
Filed June 29, 1973, Ser. No. 375,117
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



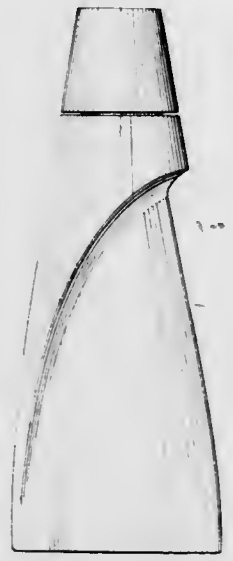
234,247
AEROSOL CONTAINER
Carol Schafer, 4022 Ingraham St., Los Angeles, Calif. 90005
Filed Dec. 22, 1969, Ser. No. 20,581
Term of patent 14 years
The term of this patent subsequent to Apr. 4, 1986, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D9—9



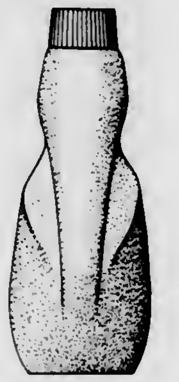
234,248
AEROSOL CONTAINER
Carol Schafer, 4022 Ingraham St., Los Angeles, Calif. 90005
Filed Dec. 22, 1969, Ser. No. 20,584
Term of patent 14 years
The term of this patent subsequent to Feb. 4, 1986, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D9—9



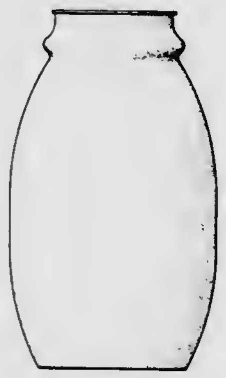
234,249
BOTTLE
John R. Holzaepfel, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Apr. 30, 1973, Ser. No. 355,835
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71



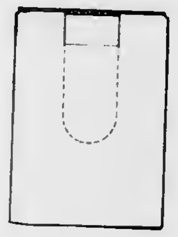
234,250
COMBINED BOTTLE AND CAP THEREFOR
John R. Holzaepfel, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Jan. 12, 1973, Ser. No. 323,028
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—83



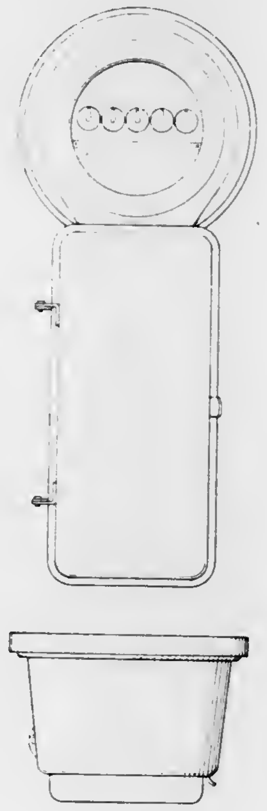
234,251
BEVERAGE BOTTLE OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of abandoned design application Ser. No. 247,933, Apr. 26, 1972. This application May 23, 1973, Ser. No. 362,976
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



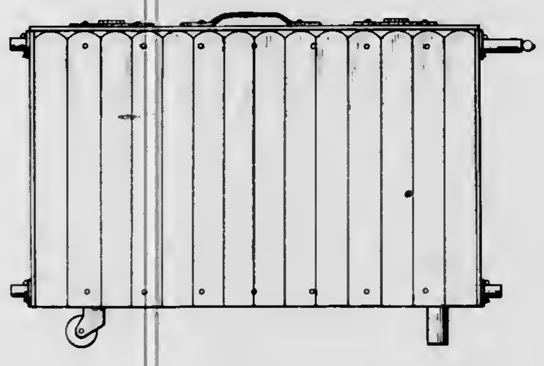
234,252
BOX
Ronald L. Gerson, Newton, Mass., assignor to Louis M. Gerson Co., Inc., Middleboro, Mass.
Filed Apr. 14, 1972, Ser. No. 244,350
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

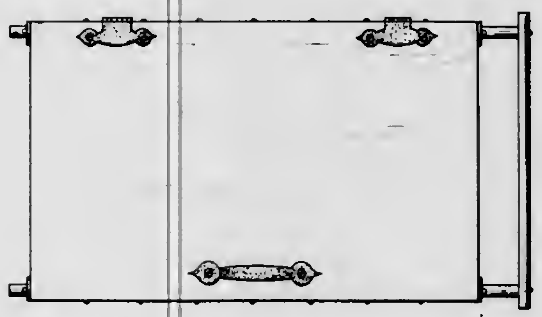


234,253
COMBINED ELECTRICAL LOAD RECORDER AND METER
Murray C. Carney, Springfield, Ill., assignor to Sangamo Electric Company, Springfield, Ill.
Filed Jan. 10, 1973, Ser. No. 322,380
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—75

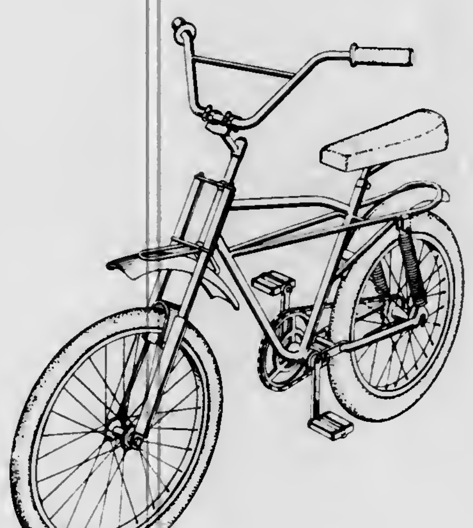


234,254
MOBILE TRASH RECEPTACLE
James Edwin Mead, Chatham, N.J.
(28 Burgess Place, Wayne, N.J. 07470)
Filed Mar. 5, 1973, Ser. No. 338,181
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—27

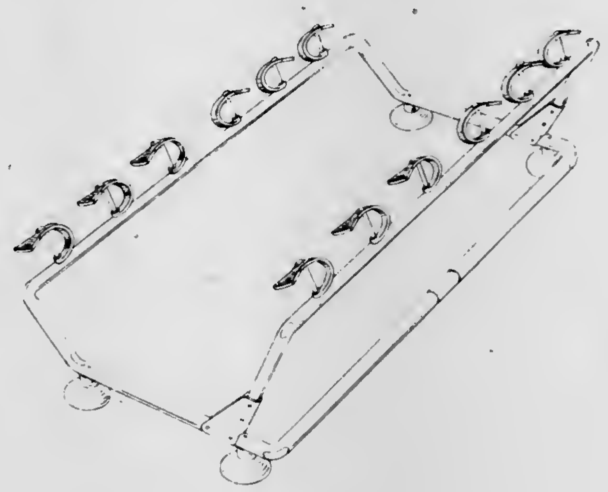




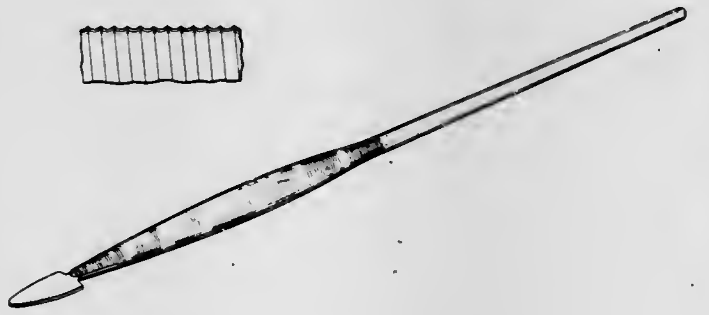
234,255
BICYCLE
Darwin Zenser, El Monte, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.
Filed Jan. 21, 1974, Ser. No. 435,225
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



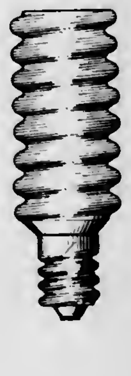
234,256
SKI CARRIER
Ronald W. Parsons, Tottenham, Ontario, Canada, assignor to A.L. & W. Limited, Bramalea, Ontario, Canada
Filed Jan. 8, 1974, Ser. No. 431,614
Claims priority, application Canada July 16, 1973
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



234,257
DENTAL GINGIVAL PACKING TOOL
Robert Philip Berger, 17110 Clemons Drive, Encino, Calif. 91316
Filed Dec. 29, 1969, Ser. No. 20,653
Term of patent 14 years
The term of this patent subsequent to Jan. 4, 1986, has been disclaimed
Int. Cl. D24—*02*
U.S. Cl. D24—1 D

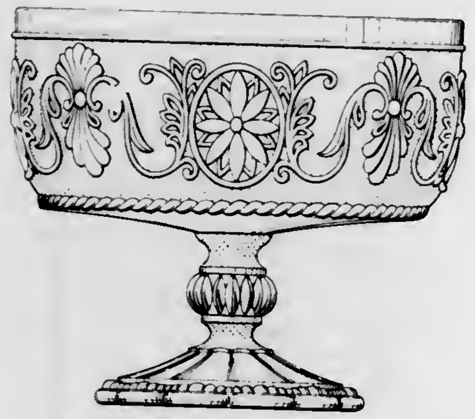


234,258
ELECTRIC LAMP BULB
Jack N. McCarthy, Meadowood Road, Tolland, Conn. 06084
Filed May 8, 1973, Ser. No. 358,286
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8



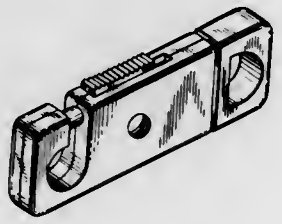
234,259
VASE OR SIMILAR ARTICLE

Arthur L. Harshman, Dunkirk, Ind., and James I. Messmer, Detroit, Mich., assignors to Indiana Glass Company, Dunkirk, Ind.
Filed Sept. 21, 1973, Ser. No. 399,366
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28 R



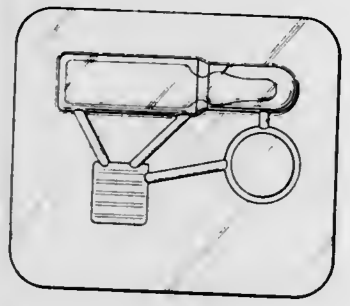
234,260
LATCH FOR PET LEASHES

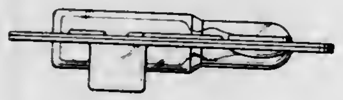
Ness Eastman, Rego Park, N.Y., assignor to The Hartz Mountain Corporation, Harrison, N.J.
Filed Sept. 21, 1973, Ser. No. 399,557
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—39



234,261
IDENTIFICATION KIT FOR BODY FLUID ANALYSIS

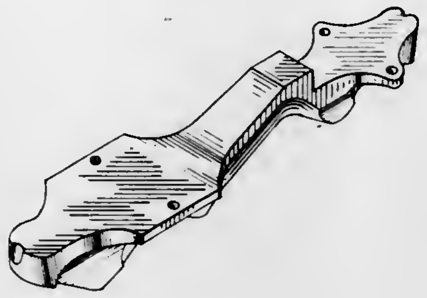
Edward B. Walton, Marina Del Rey, Calif. 90291
Filed Sept. 7, 1973, Ser. No. 395,224
Term of patent 14 years
Int. Cl. D24—*02;* D9—*04*
U.S. Cl. D32—1 R





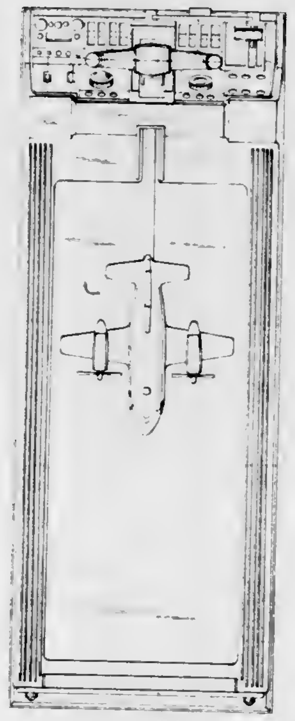
234,262
ROLLER SKATE PLATE

John F. Willhoft, 5500 Myrtle St., Lincoln, Nebr. 68506
Filed Mar. 30, 1973, Ser. No. 346,697
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C



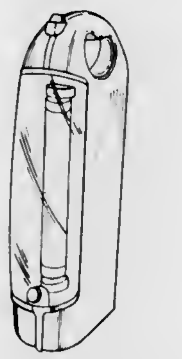
234,263
AIRPLANE TOY PILOTING DEVICE

Yukio Sugihara, Mibu-machi, Japan, assignor to Toytown Corporation, Tokyo, Japan
Filed Nov. 16, 1972, Ser. No. 307,080
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AM



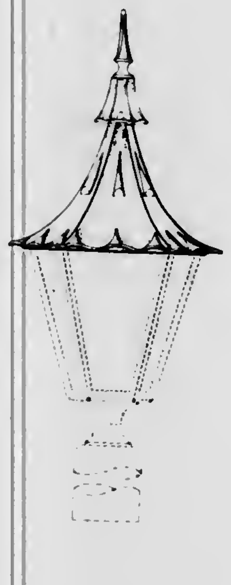
234,264
LANTERN

Kwong Yip Wan, Kowloon, Hong Kong, assignor to Chung Ah Manufacturing Company Limited, Kowloon, Hong Kong
Filed Oct. 23, 1973, Ser. No. 408,588
Claims priority, application Great Britain Sept. 25, 1973
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



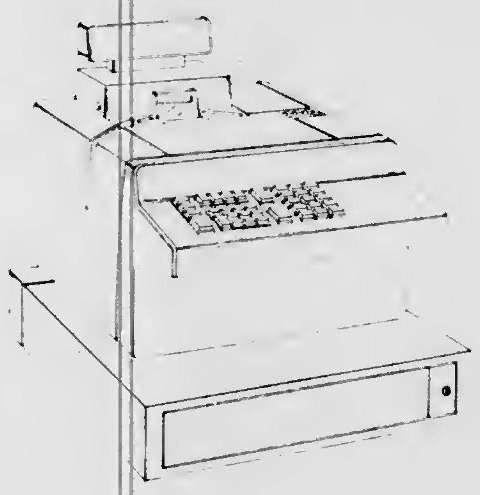
234,265
ROOF FOR LIGHTING FIXTURE

Howard A. Daum, Hanover, Pa., assignor to Hadco Products, Inc., Littlestown, Pa.
Original Design Patent No. 199,143, dated Sept. 15, 1964, Ser. No. 74,610, Apr. 25, 1963. Application for reissue May 2, 1973, Ser. No. 335,134
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



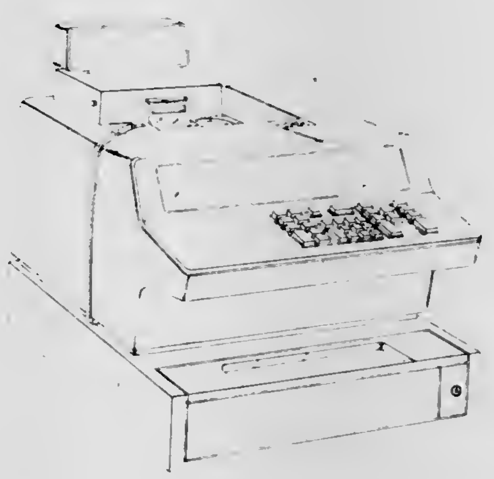
234,266
POINT OF SALE TERMINAL

Alfonso W. Merino, Edward J. Sabella, and Roger C. Williams, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 13, 1973, Ser. No. 369,617
Term of patent 14 years
Int. Cl. D14—*02;* D20—*02*
U.S. Cl. D52—4 A



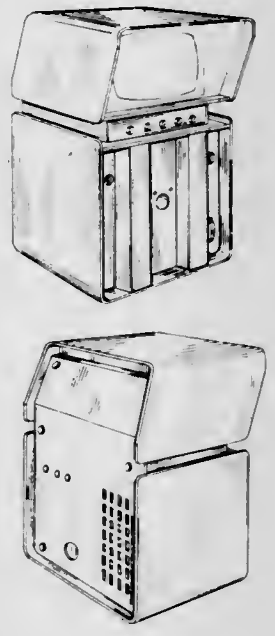
234,267
POINT OF SALE TERMINAL

Alfonso W. Merino, Edward J. Sabella, and Roger C. Williams, Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 13, 1973, Ser. No. 369,618
Term of patent 14 years
Int. Cl. D14—*02;* D20—*02*
U.S. Cl. D52—4 A



234,268
TELEVISION MICROSCOPE HOUSING

Michael D. Burridge, Santa Barbara, Calif., assignor to Circon Corporation, Goleta, Calif.
Filed Aug. 3, 1972, Ser. No. 277,797
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

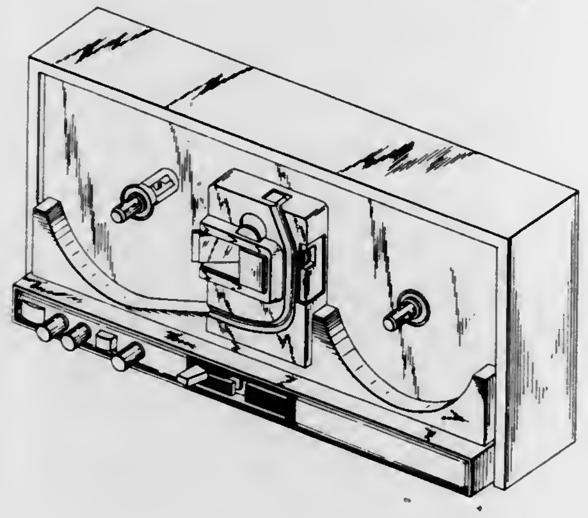


234,269

MOTION PICTURE PROJECTOR OR THE LIKE

Dianne B. Ainslie, 901 Elmgrove Road,
Rochester, N.Y. 14650
Filed July 16, 1973, Ser. No. 379,904
Term of patent 14 years
Int. Cl. D16—*02*

U.S. Cl. D61—1 K

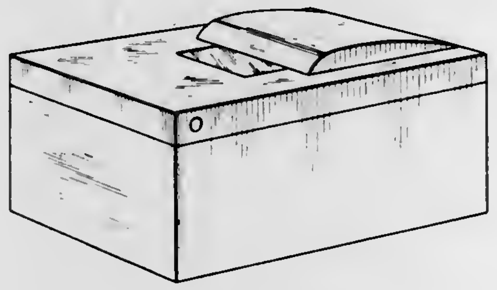


234,270

SOUND REDUCING COVER FOR TELEPRINTER, TICKET WRITER, OR THE LIKE

Berndt Ebbe Frick, 9 Herrgardsvagen,
135 00 Tyreso, Sweden
Filed Apr. 30, 1973, Ser. No. 355,432
Claims priority, application Sweden Dec. 18, 1972
Term of patent 14 years
Int. Cl. D18—*99*

U.S. Cl. D64—11 R

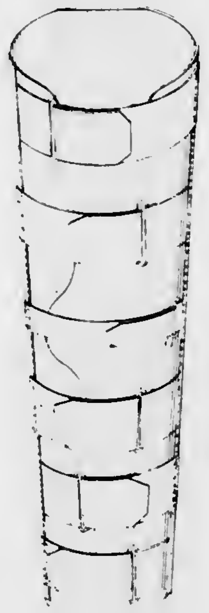


234,271

KNEE BRACE

Robert R. Moore, 5401 San Leandro St.,
Hayward, Calif. 94601
Filed Oct. 20, 1972, Ser. No. 299,210
Term of patent 14 years
Int. Cl. D24—*04*

U.S. Cl. D83—1 J

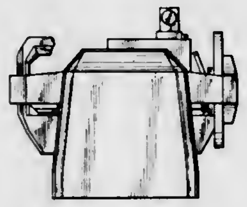


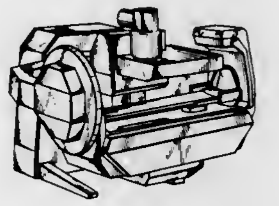
234,272

FRAME OF MEDICAL X-RAY TELEVISION APPARATUS

Seijiro Umezono, Yokohama, Japan, assignor to Tokyo
Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Nov. 27, 1972, Ser. No. 309,776
Term of patent 14 years
Int. Cl. D24—*01*

U.S. Cl. D83—1 H



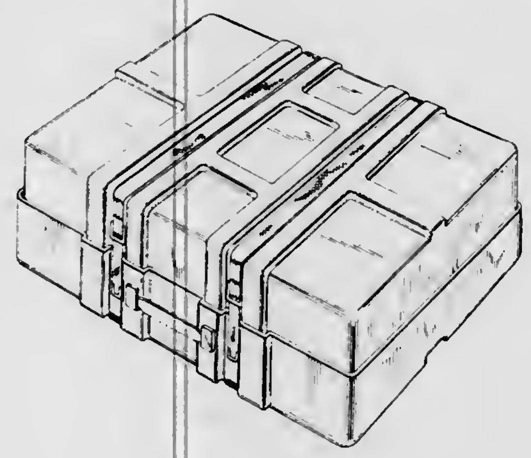


234,273

SHIPPING CONTAINER

Gregory K. Wilson, New Vernon, and Paul H. Lowman,
Parsippany, N.J., assignors to William Bal Corporation,
Elizabeth, N.J.
Filed Apr. 2, 1973, Ser. No. 346,728
Term of patent 14 years
Int. Cl. D9—*03*

U.S. Cl. D87—1 R

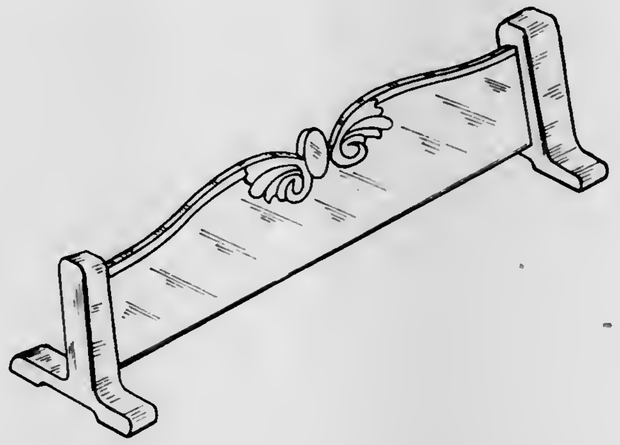


234,274

NAMEPLATE

Alvin Seyler, Vintage St., Campbell City (or P.O. Box
428), Kissimmee, Fla. 32741
Filed Nov. 8, 1973, Ser. No. 413,838
Term of patent 14 years
Int. Cl. D20—*03*

U.S. Cl. D96—12 F



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- A. J. Gerrard & Company: *See—*
  - Simich, Emil, 3,863,297.
- A. O. Smith Corporation: *See—*
  - Wasson, Loerwood C., 3,864,234.
- A/S Teknova: *See—*
  - Bonne, Adam; and Hogh, Jorgen, 3,863,666.
- A-T-O Inc.: *See—*
  - Carter, Sidney T., 3,864,187.
- AB Garphytte Bruk: *See—*
  - Ramqvist, Lars Henry; and Werme, Henrik, 3,864,221.
- Abbate, Franklin W.; and Farrissey, William J., Jr., to Upjohn Company, The. Process for preparing novel N-(piperazinylethyl)-carbamates. 3,864,345, Cl. 260-268.00R.
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- Boke, Artur Olov, to Saab-Scania Aktiebolag. Lock nut cooperable with electrical terminal block. 3,864,003, Cl. 339-198.00R.
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- Cymbalisty, Lubomyr M. O., to Canada-Cities Service, Ltd.; Atlantic Richfield Canada, Ltd.; Imperial Oil Limited; and Gulf Oil Canada, part interest to each. Treatment of middlings stream from hot water process for recovering bitumen from tar sand. 3,864,251, Cl. 210-44.000.
- Dadds, Floyd S.: *See—*
  - Grawey, Charles E.; Untz, Robert W.; Satzler, Ronald L.; Berchtold, Jesse R.; and Dadds, Floyd S., 3,864,188.
- Daenen, Robert H. C. M.: *See—*
  - Swett, James B.; and Daenen, Robert H. C. M., 3,863,833.
- Dagiel, Richard T.; and Plough, Russell H., to Symons Corporation. Removable guard rail assembly and stanchion bracket therefor. 3,863,900, Cl. 256-59.000.
- Dagiel, Richard T.: *See—*
  - Gregory, R. Kirk; and Dagiel, Richard T., 3,863,878.
- Daikin Kogyo Co., Ltd.: *See—*
  - Kometani, Yutaka; Koizumi, Shun; Suzuki, Takeshi; Furukawa, Yasuyoshi; Tomoda, Masayasu; and Kondo, Kiyoichi, 3,864,298.
  - Tatsukami, Yoshiharu; Futami, Takashi; and Oda, Yasuhiro, 3,864,433.
- Dainippon Ink and Chemicals, Incorporated: *See—*
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- Dakss, Mark L.; and Zemon, Stanley A., to GTE Laboratories Incorporated. Holographic fiber to waveguide coupler. 3,864,016, Cl. 350-96.0WG.
- Daktronics, Inc.: *See—*
  - Godes, Giles P., 3,863,872.
- Dalia, Nichola, Jr. Electronic scanning switch for sonar. 3,863,724, Cl. 177-25.000.
- Dalmaso, Reno. Portable, foldable rifle or gun support. 3,863,376, Cl. 42-94.000.
- Daneault, Gilles: *See—*
  - Benko, Julius; and Daneault, Gilles, 3,864,276.
- Daniele, Giuliano: *See—*
  - Stradella, Guiseppe; Gatti, Fernando; Daniele, Giuliano; and Strdella, Umberto, 3,863,887.
- Daniels, Ben G., to Continental Can Company, Inc. Cap feeding hopper. 3,863,802, Cl. 221-68.000.
- Daniels, Raymond Alex: *See—*
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- Danna, Patrick. Electrical circuit tester. 3,864,629, Cl. 324-72.500.
- Dart Industries Inc.: *See—*
  - Swett, James B.; and Daenen, Robert H. C. M., 3,863,833.
- Daum, Werner; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Greene, Ferdinand, to Bayer Aktiengesellschaft. N-(w-cyano-alkyl)-carbamyl benzimidazoles used as insecticides, acaricides and ovicides. 3,864,490, Cl. 424-273.000.
- David, Pierre Y.; and Charles, Joel M., to Etat Francais, represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction Technique des Constructions. Telemetry systems employing active transponders. 3,864,662, Cl. 340-3.00R.
- Davidoff, Charles. Metal-containing fibrous material. 3,864,160, Cl. 117-212.000.
- Davidoff, Charles. Production of metal pattern containing fabric. 3,864,179, Cl. 156-3.000.
- Davis, Anthony Roger, to Vickers Limited. Conical bearings. 3,863,997, Cl. 308-160.000.
- Davis, George B., Jr. Christmas tree lighting control. 3,864,580, Cl. 307-31.000.
- Davis, Martin F.; Schwanauer, Francis J.; Walenta, Ivan E.; and Walker, Gary J., to Burroughs Corporation. Read/write system for high density magnetic recording. 3,864,735, Cl. 360-51.000.
- Davis, William E. Carburetor. 3,864,105, Cl. 55-259.000.
- Day, Wallace; Postell, Alvin E.; and Postell, William D., to Georgia Iron Works Co. Foundry sand reducer and reclaimer. 3,863,847, Cl. 241-14.000.
- Dayco Corporation: *See—*
  - Fisher, David G.; Krueger, Mark W.; and Bishop, Clinton L., 3,863,516.
  - Meadows, Roger D., 3,863,515.
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  - Infante-Diaz, Francisco; De La Parra, Jose Rene Perez; Gaona-Ortiz, Luis; and Gutierrez-Castaneda, Aurea, 3,863,804.
- De Laval Separator Company, The: *See—*
  - Fuchs, Hubert K. E., 3,864,247.
- Dean, Jimmie L., to Phillips Petroleum Company. Grasping parison preform at right angle to mold parting line. 3,864,445, Cl. 264-89.000.
- Dean, John O. Radiator filler. 3,863,690, Cl. 141-364.000.
- Deatherage, Jay W.: *See—*
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- Decair Helicopters, Inc.: *See—*
  - McWilliams, Roy J., 3,863,736.
  - McWilliams, Roy J., 3,863,911.
- De Cerjat, Aymon; Cuche, Claude; Jeanneret, Roger, deceased (by Jeanneret, Marguerite, legal representative); Jeanneret, Pierre-Bernard, legal representative; and Zimmerman, Heinrich H. Electromagnetic selection device for the needles of a knitting machine. 3,863,465, Cl. 66-50.00R.
- Deere & Company: *See—*
  - Hanser, Paul Edmund; and Gebauer, Thomas Edward, 3,863,722.
  - Muncke, Ludwig; Gross, Gerhard; and Buchmuller, Josef, 3,863,955.
  - Von Fummetti, Cy William; and Latham, David Dennis, 3,863,729.
- DeKozan, Raymond L.; Salkeld, Edwin M., Jr.; and Bush, Elsmore W., to Cubic Corporation. Automatic telephone location system. 3,864,522, Cl. 179-5.500.
- Delin, Heinz; and Voss, Werner, to H. Maihak A.G. Apparatus for determining the content of organic substances in water. 3,864,088, Cl. 23-253.0PC.
- De Lisle, Robert W., to du Pont de Nemours, E. I., and Company. Substrate loader. 3,863,320, Cl. 29-203.00B.

- DeLong, Vincent R.; Ludvigson, Merrill T.; Apple, Frank M.; Leeson, John L.; and Houghton, Edwin G., to Rockwell International Corporation. Frequency division multiplex telephone system. 3,864,521, Cl. 179-2.50R.
- De Maria, Louis. Variable depth hair coloring applicator. 3,863,650, Cl. 132-9.000.
- Den-Tal-Ez Mfg. Co.: *See—*
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- Dengler, Ludwig: *See—*
  - Mueller, Joachim; and Dengler, Ludwig, 3,863,602.
- Dening, Daniel R., to Harris-Intertype Corporation. Deviation value generator. 3,864,560, Cl. 235-151.130.
- Denning, Richard F.; and Bresnick, Stuart D., to General Atomic Corporation. Method for Reducing Hydrogen Absorption of Zirconium by Anodizing. 3,864,220, Cl. 204-37.00R.
- Dennison Manufacturing Company: *See—*
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- Deordiev, Nikolai Trifonovich; Kononov, Ivan Vasilievich; Maslennikov, Ivan Egorovich; Modzheevsky, Gennady Vitalievich; Platonov, Vladimir Nikiforovich; and Sukhanov, Vasily Tikhonovich. Hydraulic press with pulsating load. 3,863,488, Cl. 72-453.000.
- DePauw, Richard A., to International Harvester Company. Discharge chute and expansion chamber for an axial flow-type combine. 3,863,643, Cl. 130-27.00T.
- Design Link: *See—*
  - Milik, Rudolf Ferdinand Leon, 3,863,904.
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- Diamond, Julius; Douglas, George H.; and Burns, Bernard J., to William H. Rorer, Inc. 1-Substituted biguandies for treating gastrointestinal hyperacidity or ulceration. 3,864,496, Cl. 424-326.000.
- Diamond Shamrock Corporation: *See—*
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- Dibrell, James W., to Microwire Corporation. Augmented hydrostatic extrusion of fine wire. 3,863,481, Cl. 72-9.000.
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- Dierssen, Gunther H.: *See—*
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- Dietrich, William C.; and Manning, Delmer L., to United States of America, Atomic Energy Commission. Uranium-Sensitive Electrode Membrane. 3,864,233, Cl. 204-195.00M.
- Dietrick, Gerald P. Filter system. 3,864,266, Cl. 210-329.000.
- Di Giacomo, Sebastian F., to Gull Airborne Instruments, Inc. Fuel immersible capacitor for measurement of dielectric constant of liquid fuel in a tank. 3,864,609, Cl. 317-249.00R.
- Dilchert, Heinz, to Dynamit Nobel Aktiengesellschaft. Solid propellant charge having a short burning time for rocket engines. 3,863,573, Cl. 102-101.000.
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  - United States of America, National Aeronautics and Space Administration; Dillon, Robert F., Jr.; and Mayne, Robert C., 3,863,881.
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- Dimova, Lidia Petrovna: *See—*
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- Dinning, Robert W., to Macco Oil Tool Company, Inc. Latching device. 3,863,961, Cl. 285-39.000.
- Dinning, Robert W., to Macco Oil Tool Company, Inc. Well tool apparatus. 3,863,974, Cl. 294-86.300.
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- Dobrosielski, Stephen S.: *See—*
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- Doerner, William A., to du Pont de Nemours, E. I., and Company. Rotary heat engine powered two fluid cooling and heating apparatus. 3,863,454, Cl. 60-669.000.
- Dolfini, Joseph E.: *See—*
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- Dombro, Robert A., to Universal Oil Products Company. Alpha olefin separation process. 3,864,420, Cl. 260-677.00A.
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  - Steever, Andrew B.; and Kelleher, David, 3,863,577.
- Dosch, Robert G.; and Prevender, Thomas S., to United States of America, Atomic Energy Commission. Process and electrolyte for applying barrier layer anodic coatings. 3,864,219, Cl. 204-33.000.
- Doschko, Werner; and Gilch, Heinz. False twisting of yarn. 3,863,434, Cl. 57-157.0TS.
- Dostal, Pravomil. Device for driving movable machine parts in reverse direction. 3,863,681, Cl. 139-55.000.
- Dotson, Barett O. Two-wheel foldable dolly. 3,863,946, Cl. 280-36.00C.
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- Dow Chemical Company, The: *See—*
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- Doyle, Edward R. Chair. 3,863,981, Cl. 297-278.000.
- Doyle, Richard C., to Rucker Company, The. Electrical safety device with improved trip mechanism. 3,864,649, Cl. 335-21.000.
- Dragonetti, Philip G., to United States of America, Navy. Doppler correction circuit. 3,864,634, Cl. 325-419.000.
- Dremin, Gennady Timofeevich: *See—*
  - Simonov, Vadim Dmitrievich; Ivanov, Anatoly Vasilievich; Kogan, Lev Markovich; Ljubarsky, Markus Vladimirovich; Dremin, Gennady Timofeevich; Voronenko, Boris Ivanovich; and Burova, Svetlana Fedorovna, 3,864,414.
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- Dryden Chemical Limited: *See—*
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- Dumbaugh, William H., Jr.; and Schultz, Peter C., to Corning Glass Works. Method of Producing Glass by Flame Hydrolysis. 3,864,113, Cl. 65-60.000.

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Enkvist, Terje Ulf Eugen. Kraft or soda black liquor adhesive and procedure for making the same. 3,864,291, Cl. 260-17.500.
Enomoto, Satoru, to Kureha Kagaku Kogyo Kabushika Kaisha. Water resisting and anticorrosive painting method and the painted articles. 3,864,153, Cl. 117-75.000.
Enterprise de Recherches et d'Activites Petrolieres: *See—*
  LeFur, Jean-Pierre, 3,864,062.
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Erlund, Anthony H., to Vidar Corporation. Automatic line transfer system and method for a communications system. 3,864,533, Cl. 179-175.30R.
Ertl, Herbert, to Messerschmitt-Bolkow-Blohm GmbH. Refuse-collecting vehicle including pick-up means. 3,863,787, Cl. 214-302.000.
ESB Incorporated: *See—*
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  Shephard, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,864,464.
Eucken, Harry, to Leo Gottwald, K.G. Telescopic crane jib. 3,863,407, Cl. 52-115.000.
Eukumoto, Ryoichi, to Aisin Seiki Kabushiki Kaisha. Door hinge mechanism. 3,863,293, Cl. 16-191.000.
Evans, Thomas E., to Texas Instruments Incorporated. Manually set magnetic relay. 3,864,650, Cl. 335-186.000.
Evdokia Nikolaevna Bobrova, administrator: *See—*
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  Sinclair, John T.; and Clark, Franklin P., 3,864,095.
  Zapp, Robert L.; and Oswald, Alexis A., 3,864,229.
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Farrington, Grant M., Jr.; and Staut, Ronald, to General Refractories Company. Direct bonded refractory brick having improved hot strength and its method of manufacture. 3,864,136, Cl. 106-59.000.
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Feder, Friedhelm R., to Wedco, Inc. Preventing agglomeration of particles during screening due to electrical effects. 3,864,602, Cl. 317-2.00R.
Fee, James W., Jr. Writing machine assembly for producing reduced graphic characters corresponding to gross movement of a writer's arm. 3,864,515, Cl. 178-18.000.
Feit, Peter Werner; and Bruun, Herta, to Lovens Kemiske Fabrik Produktionsaktieselskab. New 5-Aminoisophthalic Acid Derivatives, Salts And Esters Thereof And Methods For Their Preparation. 3,864,385, Cl. 260-470.000.
Feldner, Walter, to U.S. Philips Corporation. Luminaire having a holder for a capless miniature incandescent lamp. 3,864,006, Cl. 339-17.00D.
Fell, Charles Raymond. Log cabin structure. 3,863,409, Cl. 52-233.000.
Fernholz, Hans; and Freudenberger, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of unsaturated nitriles. 3,864,383, Cl. 260-465.900.
Ferrigno, Thomas Howard. Pigmentary compositions with reduced water absorption. 3,864,140, Cl. 106-308.00Q.
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Finike Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C.: *See—*
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Finkelstein, Laurence Stephen; and Gellert, Gabor, to Cantreco Ltd.; and Cantreco Ltd. Upright support. 3,863,876, Cl. 248-188.700.
Fiore, Peter O., to Texas Instruments Incorporated. Pressure responsive apparatus including valve actuating means. 3,864,537, Cl. 200-83.00S.
Fiorino, Benjamin C., to International Business Machines Corporation. Detection of digital data using integration techniques. 3,864,583, Cl. 307-235.00R.
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Fischbeck, Kenneth Henry, to RCA Corporation. Replaceable fluid cartridge including magnetically operable fluid jet devices. 3,864,685, Cl. 346-140.000.
Fischbeck, Kenneth Henry, to RCA Corporation. Printing apparatus. 3,864,696, Cl. 346-140.000.
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Fisher, David G.; Krueger, Mark W.; and Bishop, Clinton L., to Dayco Corporation. Endless power transmission belt. 3,863,516, Cl. 74-233.000.
Fisher, Edwin N. Deployable system for containing oil spills. 3,863,694, Cl. 150-1.000.
Fisher, Glen W.; and Franz, Fred A., to Technovators, Inc. Laminar flow bin. 3,863,811, Cl. 222-145.000.
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Fleischer, Helmut; Schnaibel, Eberhard; Gotz, Werner; and Maisch, Wolfgang, to Robert Bosch G.m.b.H. Wheel braking control system. 3,863,993, Cl. 303-21.0BE.
Fleming, Philip F., to Gehl Company. Blade sharpening device for rotatable chopping cylinders including hydraulic drive means. 3,863,403, Cl. 51-249.000.
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Focht, John Richard, to Precision Valve Corporation. Variable flow rate actuator button for a pressurized aerosol dispenser. 3,863,816, Cl. 222-402.170.

Foley, Patrick Joseph, Jr., to du Pont de Nemours, E. I., and Company. Flame resistant polyamides. 3,864,302, Cl. 260-37.00N.

Folkman, M. Judah. Method for measurement of oxygen content in blood and other liquids by oxygen inhibition of chemical reactions. 3,864,084, Cl. 23-230.00R.

Forbes, Ronald G.; and Turjanica, Michael, to General Electric Company. Process for reclaiming rare-earth phosphors. 3,864,273, Cl. 252-301.40R.

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Foster, Kenneth William Samuel; Wallace, Neil McIntosh; and Irons, Duncan Kinloch, to Renold Limited. Hydraulic motors and driving systems employing same. 3,863,447, Cl. 60-425.000.

Foulke, Richard F.; and Kelly, James E., to Mech-El Industries, Inc. Tailless wire bonder. 3,863,827, Cl. 228-5.000.

Fowler, Larry G., to Sugar Cane Growers Cooperative of Florida. Apparatus for harvesting and cleaning windrowed cane. 3,863,431, Cl. 56-502.000.

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Frank, Eldon M. Implement device and method of mounting same on tractor. 3,863,786, Cl. 214-131.00A.

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Franz, William F.; Hess, Howard V.; Cole, Edward L.; and Neisser, Kenneth E., to Texaco Inc. Integrated process for coking spent base sulfite pulping liquors. 3,864,205, Cl. 162-31.000.

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Fraser, Myron B. Security device for a door. 3,863,968, Cl. 292-260.000.

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Frederiksen, Erling Knud; and Godtfredsen, Wagn Ole, to Lovens Kemiske Fabrik Produktionsaktieselskab. Acyloxymethyl esters of α-aminopenicillins. 3,864,331, Cl. 260-239.100.

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Fryer, Rodney Ian; and Walser, Armin, to Hoffmann-La Roche Inc. 2-Hydrazino benzodiazepine derivatives. 3,864,328, Cl. 260-239.0BD.

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Fuller, Richard Buckminster. Floatable breakwater. 3,863,455, Cl. 61-5.000.

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Gallup, Leslie E. Method for providing cooled aerated water. 3,863,605, Cl. 119-3.000.

Gannaway, Edwin L., to Sundstrand Corporation. Suction muffler tube for compressor. 3,864,064, Cl. 417-312.000.

Gante, Joachim; and Schneider, Gerhart, to Merck Patent Gesellschaft mit beschrankter Haftung. Herbicidal agents. 3,864,117, Cl. 71-115.000.

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Garwood, William Guy. Bicycle security rack. 3,863,767, Cl. 211-5.000.

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Gaubert, Rene J. Film unwinding and splicing apparatus and method. 3,863,855, Cl. 242-58.400.

Gawthrop, Theo C. Boat trailer backup guide. 3,863,594, Cl. 116-28.00R.

Gay, Derek J.; and Smedley, William H., to Mattel, Inc. Changeable music box toy. 3,863,539, Cl. 84-94.000.

Gaylord, Norman G., to Gaylord Research Institute, Inc. Method for preparing alternating copolymers using a friedel-crafts catalyst and a free radical initiator in an aqueous medium. 3,864,319, Cl. 260-82.300.

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Gealy, William E.; and Vrendenburgh, Walter A., to Hercules Incorporated. Inhibiting color change in solutions of vinylaromatic resins in chlorinated solvents. 3,864,078, Cl. 8-142.000.

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Geiss, Johannes; and Eberhardt, Peter, to OMEGA Louis Brandt & Frere S.A. Method for stabilizing the temperature of an instrument, particularly of a wrist watch. 3,863,707, Cl. 165-1.000.

Geist, Kenneth R.; and Walsh, James E., to said Brust, by said Geist, a part interest. Apparatus for measuring gaseous quality of a substance. 3,864,086, Cl. 23-253.00R.

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Farrington, Grant M., Jr.; and Staut, Ronald, 3,864,136.

General Science Corporation: *See—*

Oefinger, Arthur, 3,864,551.

George Kent Limited: *See—*

Musgrave, Gerald; and Hayes, Alan Michael, 3,864,639.

Georgia Iron Works Co.: *See—*

Day, Wallace; Postell, Alvin E.; and Postell, William D., 3,863,847.

Gerecht, John Fred, to Colgate-Palmolive Company. Sunscreening compositions containing sulfonium salts. 3,864,474, Cl. 424-60.000.

Gerhardt, Klaus, to G. Siempelkamp & Co. Method and apparatus for drying a gypsum board or the like. 3,863,361, Cl. 34-191.000.

Gerhardt, Klaus, to G. Siempelkamp & Co. Apparatus for spreading comminuted partly cementitious material on a moving support. 3,864,066, Cl. 425-84.000.

Gerhardt, Peter: *See—*

Seiler, Claus-Dietrich; Vahlensieck, Hans-Joachim; and Gerhardt, Peter, 3,864,373.

Gerlach, Klaus: *See—*

Staffe, Adolf; and Gerlach, Klaus, 3,864,396.

Gerlach, Kurt: *See—*

Wilhelm, Jurgen; Gerlach, Kurt; and Mahnau, Heinrich, 3,864,574.

Gesellschaft fur Kermforschung mbH: *See—*

Wilhelm, Jurgen; Gerlach, Kurt; and Mahnau, Heinrich, 3,864,574.

Geute, Harvey J.: *See—*

Moomey, Henry, 3,863,413.

Giannotti, Hugo V., to Ski Dynamics Inc. Ski anti-crossing device. 3,863,943, Cl. 280-11.37E.

Giatti, Filippo, to AMF Incorporated. Device for forming pairs of axially aligned cigarettes with an interposed double filter. 3,863,750, Cl. 198-20.00C.

Gibson, John; and Nelson, James. Chain tensioning devices and drive assemblies for mining. 3,863,522, Cl. 74-661.000.

Gidon Industries, Inc.: *See—*

Wright, Peter C.; and Kirsch, Donald L., 3,863,483.

Gilbreth Company: *See—*

Spiegel, Jacob; and Miller, Albert (said Miller assors. to), 3,863,837.

Gilch, Heinz: *See—*

Doschko, Werner; and Gilch, Heinz, 3,863,434.

Gillespie, Herman L. Loop device for mounting on boat. 3,863,588, Cl. 114-218.000.

Gillespie, Peter James: *See—*

Mills, Terence; Wiacek, Marian; Gillespie, Peter James; and Hatcher, Clive Douglas, 3,864,171.

Gillette Company, The: *See—*

Perry, Roger L., 3,863,340.

Wellinger, Roger Paul; Vauthier, Francis Andre; and Botta, Alberto, 3,863,338.

Gilli, Paul Viktor: *See—*

Beckmann, Georg; Gilli, Paul Viktor; and Lippitsch, Josef, 3,863,711.

Gillings, Peter Richard, Jr. Knee-chair. 3,863,978, Cl. 296-63.000.

Gillis, Robert E. Shelter structure. 3,863,659, Cl. 135-4.00R.

Gilmore-Tatge Manufacturing Co., Inc.: *See—*

Chaffee, Robert C.; and Toburen, Delmar, 3,863,815.

Giocoechea, George, to Respiratory Care, Inc. Humidifier and heater for delivered gas. 3,864,440, Cl. 261-122.000.

Girling Limited: *See—*

Kinman, George, 3,863,740.

Gish, David B., to Bell & Howell Company. Pulse-code modulation detector and equalizer. 3,864,734, Cl. 360-41.000.

Giunia, Joseph S.: *See—*

Bengel, Thomas G.; Giunia, Joseph S.; and Nicely, Thomas E., 3,863,356.

Givaudan Corporation: *See—*

Bozzato, Giuliano; and Pesaro, Mario, 3,864,285.

Giwosky, Harry L., to Jordan Controls, Inc. Fluid positioning apparatus. 3,863,446, Cl. 60-388.000.

GKN Transmissions Limited: *See—*

Pagdin, Brian Colin, 3,863,615.

Glabiszewski, Richard, to Otto Boch Orthopadische Industries KG. Articulate joint for prosthetic devices. 3,863,274, Cl. 3-27.000.

Glacier Metal Company, The: *See—*

MacDonald, Frank; Gardner, David Michael; and Stephens, Roy, 3,863,485.

Glaeser, Werner T. Method and apparatus for controlling sunlight transmission. 3,863,660, Cl. 135-20.00R.

Glaser, Hans-Joachim; Graw, Gunther; and Makowicki, Karl-Heinz, to Flachglas Aktiengesellshaft DELOG-DETAG. Electro-optical display device. 3,864,023, Cl. 350-160.0LC.

Glasner, Thomas C.: *See—*

Rolker, John H.; and Glasner, Thomas C., 3,864,320.

Glatzel, Erhard, to Carl Zeiss Stiftung (a.k.a. Carl Ziess). Wide angle photographic lens. 3,864,026, Cl. 350-214.000.

Glickstein, Joseph: *See—*

Ishida, Takanobu; Popowicz, Anthony M.; and Glickstein, Joseph, 3,863,669.

Goddard, Norman H., to JCN Wire Industries Ltd.; and JCN Wire Industries Ltd. Structural members for providing releasable connections and structures incorporating the members. 3,863,769, Cl. 211-182.000.

Godes, Giles P., to Daktronics, Inc. Readout panel. 3,863,872, Cl. 248-27.000.

Godfrey, Charles S., to Physics International Company. Hole drill and debris clearance method and means. 3,863,723, Cl. 175-4.500.

Godin, Thomas J.: *See—*

Jones, Alan Richardson; and Godin, Thomas J., 3,863,507.

Godtfredsen, Wagn Ole: *See—*

Frederiksen, Erling Knud; and Godtfredsen, Wagn Ole, 3,864,331.

Goett, Joseph E.: *See—*

Webber, Philip S.; and Goett, Joseph E., 3,863,518.

Goff, James R., to Nelson, Robert J. Apparatus for supporting work means on vertically disposed surface. 3,863,393, Cl. 51-9.000.

Gohrbandt, Wilhelm: *See—*

Popp, Gottfried; Haebler, Wolfgang; and Gohrbandt, Wilhelm, 3,864,077.

Gold, Nicholas, to Polaroid Corporation. Photographic apparatus. 3,864,703, Cl. 354-86.000.

Goldman, Leon: *See—*

Marsico, Joseph William, Jr.; Joseph, Joseph Peter; and Goldman, Leon, 3,864,359.

Goldsberry, Fred L., to Lone Star Gas Company. Refrigerant expander compressor. 3,864,065, Cl. 417-406.000.

Goltz, Kurt; and Blum, William Adrian, to Pennwalt Corporation Chromate rinse for phosphate coated metals and metal products. 3,864,175, Cl. 148-6.200.

Gommans, Hubertus Johannes Josephus, to U.S. Philips Corporation. Coaxial cable whose dielectric partly consists of air. 3,864,509, Cl. 174-28.000.

Good, Lawrence R.: *See—*
Waters, Frank J.; and Good, Lawrence R., 3,863,668.

Goodwin, Edwin C., Jr.; Holden, Lynne A.; and Meinders, Gerardus J., to Allis-Chalmers Corporation. Modular gas insulated circuit breaker system. 3,864,534, Cl. 200-148.00R.

Gordon, Gilbert W.: *See—*
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Gordon, Robert L.; and Siegele, John C., to International Paper Company. Food container. 3,863,832, Cl. 229-30.000.

Gorling, Karl Goran: *See—*
Jensfelt, Torsten Eli; and Gorling, Karl Goran, 3,864,121.

Gosling, Samuel, to Scrogg Ernest Sons Limited. Yarn Heater. 3,864,074, Cl. 432-59.000.

Gottlieb, C. Robert; and Lewis, Eugene C., to Diamondhead Corporation. System for placing factory prefabricated housing units. 3,863,780, Cl. 214-38.0CA.

Gottlieb, Carl R.; and Fathauer, Jack E., to Midland-Ross Corporation. Fork truck spreader for cargo containers. 3,863,970, Cl. 294-67.0DA.

Gottsegen, Agnes: *See—*
Feuer, Laszlo; Nogradi, Mihaly; Gottsegen, Agnes; Vermes, Borbala; Streliszky, Janos; Wolfner, Andras; Farkas, Lorant; Antus, Sandor; Kovacs, Maria; and Toth, Nee, 3,864,362.

Gotz, Werner: *See—*
Fleischer, Helmut; Schnaibel, Eberhard; Gotz, Werner; and Maisch, Wolfgang, 3,863,993.

Graco Inc.: *See—*
Kozinski, David A.; Siczek, Bernard W.; and Carlson, Kenneth L., 3,864,603.

Grade, George Henry, Jr.: *See—*
Morby, John Alfred; Rich, Joseph Francis; and Grade, George Henry, Jr., 3,864,511.

Graham, Roy R., to PPG Industries, Inc. Glass fiber size and resulting product. 3,864,155, Cl. 117-126.0GB.

Gram, Hans. Vacuum curettage device. 3,863,624, Cl. 128-2.00B.

Granger, Alain; Lissot, Jean; and Sausse, Andre, to Rhone-Poulenc S.A. Pressure modulator for an artificial blood circuit. 3,864,248, Cl. 210-19.000.

Graw, Gunther: *See—*
Glaser, Hans-Joachim; Graw, Gunther; and Makowicki, Karl-Heinz, 3,864,023.

Grawey, Charles E.; Untz, Robert W.; Satzler, Ronald L.; Berchtold, Jesse R.; and Dadds, Floyd S., to Caterpillar Tractor Company. Tire Wrapping Machine. 3,864,188, Cl. 156-397.000.

Gray, Eric G. Anti-blinding wiper assembly for vibratory separator. 3,863,765, Cl. 209-323.000.

Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., to Hooker Chemicals & Plastics Corporation. Friction particle for brake lining. 3,864,304, Cl. 260-38.000.

Green, Norman W.; and Dunning, Richard W. Carbon Detection. 3,864,083, Cl. 23-230.0PC.

Green, William Edward. Soil treatment. 3,864,114, Cl. 71-3.000.

Greene, Ferdinand: *See—*
Daum, Werner; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Greene, Ferdinand, 3,864,490.

Grega, John M., to Dresser Industries, Inc. Refractory gas distributor for a fluidized solids reactor. 3,863,359, Cl. 34-57.00R.

Gregg, Rodman I., to Hercules Incorporated. Method for scouring and blooming pile carpet. 3,864,079, Cl. 8-151.000.

Gregory, R. Kirk, to Symons Corporation. Traction head for a column-mounted shoring bracket. 3,863,877, Cl. 248-295.000.

Gregory, R. Kirk; and Dagiel, Richard T., to Symons Corporation. Column-mounted shoring bracket assembly for overhead formwork. 3,863,878, Cl. 248-295.000.

Gresham Infomaq Ltd.: *See—*
Becker, Robert Sidney; Painter, Eric Frank; and Rickard, Gerrard Charles, 3,864,753.

Grewe, Ronald E.; and Hoersten, Eugene L., to Huffman Manufacturing Company, The. Wheel ramp. 3,863,895, Cl. 254-88.000.

Griffies, David R.; Robison, Russell O.; and Taylor, Robert W., to Rockwell International Corporation. Saber saw. 3,863,342, Cl. 30-393.000.

Grimes; executrix, Mary E.: *See—*
Grimes, George R., deceased, 3,863,708.

Grimes, George R., deceased (by Grimes; executrix, Mary E.), to Amax Inc. Modulatable heat exchanger with restraint to avoid condensation. 3,863,708, Cl. 165-1.000.

Grindley, Robert M.; and Strong, Michael J., to International Audio-Visual Hong Kong Ltd. Tape duplicating device. 3,864,732, Cl. 360-15.000.

Grindstaff, Donald A.; and Ahern, William P., to Stauffer Chemical Company. Process For Pretreating Raw Cheese Whey. 3,864,506, Cl. 426-356.000.

Grinshpon, Semen Yakovlevich: *See—*
Medovar, Boris Izrailevich; Lanevsky, Valery Evgenievich; Alferov, Jury Fedorovich; Dubinsky, Rudolf Solomonovich; Berezovsky, Mikhail Elevich; Chekotilo, Leonty Vasilievich; Pavlov, Leonid Viktorovich; Ishunkin, Veniamin Alexandrovich; Shevtsov, Anatoly Ivanovich; and Grinshpon, Semen Yakovlevich, 3,863,699.

Grischowsky, Daniel R.: *See—*
Armstrong, John A.; and Grischowsky, Daniel R., 3,864,020.

Gritsenko, Anna Nikitichna; Vikhlyaev, Jury Ivanovich; Zhuravlev, Semen Vladimirovich; Kaverina, Natalya Veniaminovna; Senova, Zlata Petrovna; and Ulyanova, Olga Vasilievna. Antiarhythmic Pharmaceutical Preparation containing Ethyl 10-(B-Morpholylpropionyl) Phenthiazine-2-Carbamate Hydrochloride. 3,864,487, Cl. 424-247.000.

Gross, Gerhard: *See—*
Muncke, Ludwig; Gross, Gerhard; and Buchmuller, Josef, 3,863,955.

Grosse, Peter; Ponsold, Kurt; Prousa, Richard; Schnabel, Ralf; and Von Zychlinski, Jutta. to Veh Venapharm Jena. Carbonic acid derivatives of estradiol and processes for their production. 3,864,365, Cl. 260-397.500.

Groupement Atomique Alsacienne Atlantique: *See—*
Carbonnel, Henri; and Moriaud, Guy, 3,864,061.

Grubb, Leland L.: *See—*
Gurganus, Thomas B.; and Grubb, Leland L., 3,863,325.

Grumman Aerospace Corporation: *See—*
Halajian, John D.; and Hallock, Herbert B., 3,864,513.

Grundell, Carl-Erik. Document files, folder, registers and the like. 3,863,998, Cl. 312-184.000.

Grunert, Hellmuth; and Vitt, Theodor, to Prameta Prazisionsmetall-und Kunststofferzeuginsse G. Baumann & Co. Concealed hinge for furniture. 3,863,292, Cl. 16-164.000.

Grunwald, John J.; D'Ottavio, Eugene; and Lombardo, Michael S., to MacDermid Incorporated. Method of improving the bonding capability of polymer surfaces for subsequently applied coatings, and products thereof. 3,864,147, Cl. 117-47.00A.

GTE Laboratories Incorporated: *See—*
Dakss, Mark L.; and Zemon, Stanley A., 3,864,016.

GTE Sylvania Incorporated: *See—*
Aldrich, Floyd E.; and Hovey, Fred A., 3,863,312.
Kimball, Stephen F.; and Gates, Paul E., 3,863,313.
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Guellaff, Jean-Pierre: *See—*
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Guetens, Edward G.: *See—*
Worrell, George R.; Guetens, Edward G.; and O'Toole, James T., 3,864,216.

Guienne, Paul Francois; and Prouhet, Jacques Francois Robert, to Bertin & Cie. Fender system. 3,863,589, Cl. 114-219.000.

Guille, Robert, to Etablissements Oliver Guille & Fils S. A. Article of footwear and a method for the manufacture of said article. 3,863,272, Cl. 2-239.000.

Gulf Oil Canada: *See—*
Cymbalisty, Lubomyr M. O., 3,864,251.

Gulf Research & Development Company: *See—*
Ek, Arvid, 3,864,099.
Hartle, Robert J., 3,864,368.
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Gull Airborne Instruments, Inc.: *See—*
Di Giacomo, Sebastian F., 3,864,609.

Gund, Heinz K.: *See—*
Thompson, Robert G.; and Gund, Heinz K., 3,863,614.

Gunther, Bernd, to Thermo Electron Corporation. Engine timing meter. 3,863,498, Cl. 73-118.000.

Gurganus, Thomas B.; and Grubb, Leland L., to Aluminum Company of America. Glass cloth in metal forging. 3,863,325, Cl. 29-423.000.

Gutierrez-Castaneda, Aurea: *See—*
Infante-Diaz, Francisco; De La Parra, Jose Rene Perez; Gaona-Ortiz, Luis; and Gutierrez-Castaneda, Aurea, 3,863,804.

Gutzwiller, Juerg Albert Walter; and Uskokovic, Milan Radoje, to Hoffman-La Roche Inc. α[3(R)-alkyl-4(R) piperidyl methyl]-β-(6,7 substituted-4 quinolyl)-2-alkanoyloxy propane and racemates. 3,864,347, Cl. 260-287.00R.

Guyot, Raymond, to Compagnie Industrielle de Textiles Artificiels et Syntheliques. Tire cord for pneumatic tires and pneumatic tires containing the same. 3,863,683, Cl. 139-426.00R.

H. Maihak A.G.: *See—*
Blunck, Otto; and Retzow, Karl-Heinz, 3,863,490.
Delin, Heinz; and Voss, Werner, 3,864,088.

Haberle, Wilhelm. Device for manufacturing double-walled cups. 3,863,326, Cl. 29-208.00F.

Habermeier, Jurgen: *See—*
Porret, Daniel; and Habermeier, Jurgen, 3,864,357.
Porret, Daniel; and Habermeier, Jurgen, 3,864,358.

Hackler, Ronald E., to Eli Lilly and Company. Antiviral 3-aryl-5-(cyanobenzylidene)oxazolidene 2,4-diones. 3,864,355, Cl. 260-307.00B.

Haebler, Wolfgang: *See—*
Popp, Gottfried; Haebler, Wolfgang; and Gohrbandt, Wilhelm, 3,864,077.

Hafskjold, Petter Sigvardt, to Ingenior F. Selmer A/S. Submarine foundation and offshore working platform. 3,863,457, Cl. 61-46.500.

Haker, Leroy C. Sand blast room. 3,863,392, Cl. 51-8.00R.

Halajian, John D.; and Hallock, Herbert B., to Grumman Aerospace Corporation. Computerized polarimetric terrain mapping system. 3,864,513, Cl. 178-6.600.

Hall, John B., Jr.; and Williams, Edwin F., to United States of America, National Aeronautics and Space Administration. Automatic liquid inventory collecting and dispensing unit. 3,864,060, Cl. 417-36.000.

Hall-Thermotank International Limited: *See—*
Percy, Andrew Wilson, 3,864,442.

Hallerberg, William L.; and Gordon, Gilbert W., to Cabot Corporation. Centrifugal casting method. 3,863,702, Cl. 164-114.000.

Halliburton Company: *See—*
Streich, Steven G., 3,863,716.

Hallock, Herbert B.: *See—*
Halajian, John D.; and Hallock, Herbert B., 3,864,513.

Ham, Donald M., to General Electric Company. Self-aligning bearing assembly. 3,864,630, Cl. 324-103.00R.

Hamalainen, Lauri: *See—*
Melaja, Asko J.; and Hamalainen, Lauri, 3,864,406.

Hamano, Masai. Rotary shearing machine. 3,863,535, Cl. 83-196.000.

Hammond, Peter W., to MEM Controls, Inc. Electro-mechanical vibratory drive control. 3,864,618, Cl. 321-9.00A.

Handman, Lawrence M.; Spangler, Charles E.; and Thompson, Raymond F., to Westinghouse Electric Corporation. Apparatus for Monitoring the Oxygen Content of High Temperature Fluids. 3,864,232, Cl. 204-195.00S.

Hanisch, Harald, to Gebr. Boehler & Co. AG. Apparatus for cooling liquid metals in atomic reactors. 3,864,210, Cl. 176-60.000.

Hannan, Peter W.; and Wheeler, Harold A., to Hazeltine Corporation. Antenna system for radiating doppler coded pattern using multiple beam antenna. 3,864,679, Cl. 343-106.00D.

Hannan, Peter W., to Hazeltine Corporation. Array antenna for radiating doppler coded pattern using phase control. 3,864,680, Cl. 343-106.00D.

Hans List: *See—*
Thien, Gerhard; and Fachbach, Heinz, 3,863,617.

Hans Lubberr: *See—*
Reich, Elmar; and Kohle, Alfons, 3,863,773.

Hansen, Erik J., to Inter-Nation Research Corporation. Air filter. 3,864,109, Cl. 55-324.000.

Hansen, Laurence H.; Massey, Robert E.; and Wojnowski, Aloysius, to Andrew Corporation. Cross-polarized parabolic antenna. 3,864,688, Cl. 343-756.000.

Hanser, Paul Edmund; and Gebauer, Thomas Edward, to Deere & Company. Motor grader blade-shifting hydraulic actuator and mount therefor. 3,863,722, Cl. 172-795.000.

Hanson, Sigurd A., to Bar Mates Fluidic Systems, Inc. Plural sources beverage dispensing apparatus. 3,863,810, Cl. 222-129.100.

Hara, Masato: *See—*
Nagashima, Hironobu; and Hara, Masato, 3,864,695.

Harada, Kenichi, to Olympus Optical Company Limited. Telephoto lens system having small overall length. 3,864,027, Cl. 350-216.000.

Harada, Toshio; Nakamata, Shinichi; Araki, Shiro; Nakashima, Koei; Kawasaki, Hironori; Watanabe, Kazuo; Kawasaki, Muneo; and Niino, Shuhei, to Nippon Steel Corporation; and Mitsubishi Electric Corporation. System for controlling rolling mills. 3,863,478, Cl. 72-6.000.

Hardinge, Arthur D., to Raymond Lee Organization, Inc., The, a part interest. Vehicle supported collapsible shelter. 3,863,977, Cl. 296-23.0MC.

Hargett, Louie Deprez; Rose, Ellis; and Dial, Aught Boone. Hydro-ski boat structure. 3,863,586, Cl. 114-66.50H.

Hargis, James V., to Memorex Corporation. Thermoformed cartridge for a magnetic record disc. 3,864,755, Cl. 360-133.000.

Harman, Frederick George, to British Mathews Limited, The. Apparatus for transferring discrete loads to or from pallets. 3,863,776, Cl. 214-6.00P.

Harris-Intertype Corporation: *See—*
Dening, Daniel R., 3,864,560.

Harris, Joe G.: *See—*
Ballard, Lee R.; and Harris, Joe G., 3,863,866.

Harris, William Brown: *See—*
Dobbie, Charles Herbert; and Winders, John David, 3,863,771.

Harrison, David E., to Bencke Division, Beatrice Foods Co. Soft toilet seat. 3,863,277, Cl. 4-237.000.

Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, to Boots Pure Drug Company Limited. Acaricidal and insecticidal 1,5-diphenyl-3-methyl-1,3,5-triazapenta-1,4-diener. 3,864,497, Cl. 424-326.000.

Harrison, Stuart A.: *See—*
Modler, Robert F.; and Harrison, Stuart A., 3,864,314.

Hartle, Robert J., to Gulf Research & Development Company. Polyamide of a Mixture of Secondary and Tertiary Monocarboxylic Acids. 3,864,368, Cl. 260-404.500.

Hartwig, Walter J., to Allis-Chalmers Corporation. End stripper for a traveling grate conveyor. 3,863,755, Cl. 198-230.000.

Haruta, Hisae: *See—*
Nagao, Minoru; Iwata, Takashi; Yagi, Hideo; Tamura, Saburo; Haruta, Hisae; and Nakanishi, Kazuo, 3,864,349.

Harwood, William James. Portable guide jig for hand drill. 3,864,053, Cl. 408-110.000.

Hasada, Yoshiaki, to Eho Industries Co., Ltd. Bark stripping machine. 3,863,692, Cl. 144-208.00E.

Hasegawa, Masaki: *See—*
Kato, Masao; Hasegawa, Masaki; and Ichijyo, Taro, 3,864,308.

Hasegawa, Ryoichi: *See—*
Nakamura, Yositugu; Hasegawa, Ryoichi; and Kubota, Hiroaki, 3,864,428.

Hashim, George A., to St. Luke's Hospital. Anti disease producing synthetic material for the prevention suppression and diagnosis of multiple sclerosis and method of treatment therefor. 3,864,481, Cl. 424-177.000.

Hashimoto, Kametaro: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenji; Serino, Yoichi; Suganuma, Tetsuya; Mitani, Seishu; and Imanishi, Kunizo, 3,863,318.

Hashmi, Nujeeb; and Van Der Houven Van Oordt, Adriaan Julius. Contact ionization ion source. 3,864,575, Cl. 250-423.000.

Hassapis, Thomas J.: *See—*
Toma, Khairy; and Hassapis, Thomas J., 3,864,272.

Hastings, Dana B., to Dennison Manufacturing Company. Multiline offset printing machine. 3,863,567, Cl. 101-252.000.

Hata, Hideaki, to Brighton Corporation Ltd. Vacuum retaining jar. 3,863,794, Cl. 215-13.000.

Hatcher, Clive Douglas: *See—*
Mills, Terence; Wiacek, Marian; Gillespie, Peter James; and Hatcher, Clive Douglas, 3,864,171.

Hatcher, Constance Bannister. Self-balancing support. 3,863,882, Cl. 248-453.000.

Hatt, Brian William: *See—*
Barker, Sidney Alan; Somers, Peter John; and Hatt, Brian William, 3,864,166.

Haubner, Georg; Hofer, Walter; and Schmaldienst, Peter, to Robert Bosch G.m.b.H. Transistorized control circuit for magneto motor ignition systems. 3,864,621, Cl. 322-17.000.

Haubner, George; Hofer, Walter; and Schmaldienst, Peter, to Robert Bosch G.m.b.H. Transistorized control circuit for magneto motor ignition systems. 3,864,622, Cl. 322-17.000.

Haugen, Haakon, to Texaco Inc. Oligomeric phosphorodiamidate. 3,864,435, Cl. 260-926.000.

Haugwitz, Rudiger D.; and Narayanan, Venkatachala Lakshmi, to E. R. Squibb & Sons, Inc. Pridyl-1H-benzimidazole N-oxides. 3,864,350, Cl. 260-294.80C.

Haugwitz, Rudiger D.; and Narayanan, Venkatachala Lakshmi, to E. R. Squibb & Sons, Inc. 1-(1-imidazolyl) (1,2,4) thiadiazolo (4,5-alpha) benzimadazoles. 3,864,353, Cl. 260-306.80F.

Hause, Gilbert K., to General Motors Corporation. Hydrostatic transmission. 3,863,450, Cl. 60-487.000.

Hauser, Fred. Day and hour continuously cycling timing controller with adjustable cam actuators. 3,864,539, Cl. 200-38.0DA.

Hauser, Milton J.: *See—*
Brytczuk, Walter L.; and Hauser, Milton J., 3,864,227.

Hausleithner, Andreas, to Heinrich Wunder KG. Device for use with ski bindings for selectively retaining binding members which can be lifted from the ski. 3,863,941, Cl. 280-11.35E.

Haverstock, Charles B. Bandage construction. 3,863,640, Cl. 128-335.000.

Hawes, Edward M. Strip chart recording mechanism. 3,864,693, Cl. 346-125.000.

Hawkins, Donald K. Means for illuminating underwater areas of swimming pools. 3,864,562, Cl. 240-26.000.

Hayashi, Hideshige: *See—*
Sakomura, Toshio; Hayashi, Hideshige; Kino, Takayuki; Hironaka, Takeshi; and Nakane, Fumishige, 3,864,321.

Hayashi, Katsumi: *See—*
Tanaka, Mitsugu; Hayashi, Katsumi; and Arai, Atsuaki, 3,864,131.

Hayes, Alan Michael: *See—*
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Hayfield, Peter Charles Steele: *See—*
Cotton, Joseph Bernard; Hayfield, Peter Charles Steele; and Scholes, Ian Robert, 3,864,224.

Hayward, Robert J.: *See—*
Molins, Desmond W.; Labbe, Francis A. M.; Parkinson, Harry; Kirk, Peter; and Hayward, Robert J., 3,863,491.

Hazard, Robert E., to Polytop Corporation. Dispensing closures with integral spout latches. 3,863,818, Cl. 222-531.000.

Hazeltine Corporation: *See—*
Hannan, Peter W.; and Wheeler, Harold A., 3,864,679.
Hannan, Peter W., 3,864,680.

Hazzard, Michael J., to Burroughs Corporation. Magnetic recording verification. 3,864,736, Cl. 360-53.000.

Heath, Robert A., to Tenneco Inc. Heat shields for exhaust system. 3,863,445, Cl. 60-299.000.

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Heimann, Bernard, to Zero Manufacturing Company. Vacuum regulator control. 3,863,671, Cl. 137-526.000.

Hein, Richard W., to B. F. Goodrich Company, The. Cyclopentadiene removal from isoprene process streams. 3,864,422, Cl. 260-681.50R.

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Heller, Ferdinand P., to Amchem Products, Inc.,. Pretreatment compositions and use thereof in treating metal surfaces. 3,864,139, Cl. 106-287.00R.

Heller, William C., Jr.; and Shatzkin, Leonard, to said Heller, by said Shatzkin. Book section. 3,863,957, Cl. 281-27.000.

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Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Cyclopropylmethyl carbonates. 3,864,376, Cl. 260-463.000.

Herb, Carl C., to Carrier Corporation. Apparatus for mounting a ceiling air terminal. 3,863,879, Cl. 248-327.000.

Herbst, Herbert H. Stair layout scale. 3,863,348, Cl. 33-111.000.

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Herrera, Jose Pardo. Perfected device: a folding spring bed convertible into a table. 3,863,278, Cl. 5-3.000.

Hershey, Gerald, to Coleman Company, Inc., The. Chip-retaining bushing for threaded assembly. 3,863,963, Cl. 285-334.000.

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Hestad, Alfred. Line control circuit. 3,864,530, Cl. 179-18.0GE.

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Heytmeijer, Herman R., to Westinghouse Electric Corporation. Method of producing halophosphate phosphor utilizing extremely rapid precipitation of calcium hydrogen orthophosphate. 3,864,274, Cl. 252-301.40P.

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Hines, Paul D. Power operated fluid control valve. 3,863,888, Cl. 251-130.000.

Hiortdahl, John C. Coin-operated control circuit for selectively energizing a plurality of machines. 3,864,616, Cl. 320-1.000.

Hirafuji, Van, to Ricoh Co., Ltd. Apparatus for conveying sheets. 3,863,913, Cl. 271-265.000.

Hiramatsu, Tsunehisa; and Nosaka, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Curved surface scanning apparatus. 3,863,496, Cl. 73-67.80S.

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Holbrook, LeGrand K.; and Ostler, David S., to Medical Development Corporation. Vacuum-operated fluid bottles in serial flow system. 3,863,664, Cl. 137-205.000.

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Holthusen, Bernd, to Dr. Boger Photosatz GmbH. Optical lighting instrument. 3,864,698, Cl. 354-5.000.

Homberg, Otto A.; and Fries, Carl E., Jr., to Bethlehem Steel Corporation. Process for preparing 2-hydroxyethyliminodiacetonitrile. 3,864,378, Cl. 260-465.50A.

Homberg, Otto A.; Sheldrake, Charles W.; and Singleton, Alan H., to Bethlehem Steel Corporation. Regineration of alkanolamine absorbing solution in gas sweetening processes. 3,864,449, Cl. 423-228.000.

Honeywell Inc.: *See—*

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Hope, Eric; and Petty, John William Edward, to Richard Castain Limited. Support devices for structures, and methods and systems embodying the same. 3,863,896, Cl. 254-98.000.

Hopkins, Arthur. Method of making light-weight concrete aggregate. 3,864,443, Cl. 264-42.000.

Hori, Hironobu, to Tokyo Boshi Kabushiki Kaisha. Method for producing pen core from filament tows. 3,864,183, Cl. 156-180.000.

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Huber, John Henry, to AMP Incorporated. Coaxial ribbon cable connector. 3,864,011, Cl. 339-103.00M.

Hudson, Billy C. Waxing tool. 3,864,045, Cl. 401-1.000.

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Hughes, Robert D.; and Steigelmann, Edward F., to Standard Oil Company. A Process of Separating Complexable Materials Employing Semipermeable Polymer film. 3,864,418, Cl. 260-677.00A.

Hughes, Thomas R., to Chevron Research Company. Saturated hydrocarbon disproportionation at low temperatures. 3,864,417, Cl. 260-676.00R.

Hukuba, Hiroshi. Carpet sweeper. 3,863,285, Cl. 15-48.000.

Hultsch, Gunther; Zeppenfeld, Kurt; Niedner, Peter; and Ostermeyer, Peter, to Krauss-Maffer Aktiengesellschaft. Filter centrifuge and method of operating same. 3,864,256, Cl. 210-78.000.

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Indelicato, Paolo; and Indelicato, Carmelo. Machine and process for simultaneously extracting the juice and essential oil of citrus fruit. 3,863,560, Cl. 100-37.000.

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Inoue, Kiyoshi. System for the controlling of an apparatus for the electric discharge machining etc. 3,864,541, Cl. 219-69.00C.

Inoue, Michiro; Ishikawa, Masayuki; Tuschiya, Takashi; and Shimamoto, Takio. 7-Alkoxycarbonyl-4-hydroxymethyl-1-phthalazone compounds. 3,864,343, Cl. 260-250.00P.

- Inoue, Tadanari; and Tada, Osamu, to Yokogawa Electric Works Limited. Dual computer system with signal exchange system. 3,864,670, Cl. 340-172.500.
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- Klein, Samuel, to Leather Tree, Inc. Dual key ring holder. 3,863,477, Cl. 70-456.00R.
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- Kozinski, David A.; Siczek, Bernard W.; and Carlson, Kenneth L., to Graco Inc. High voltage safety apparatus. 3,864,603, Cl. 317-9.00R.
- Kramb, Kenneth D.; Cramer, Richard L.; and Isabell, Walter J., to K.I.C. Incorporated. Empty container washer. 3,863,658, Cl. 134-131.000.
- Kramer, George A. Building block game. 3,863,918, Cl. 273-1.00R.
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- Kreuter, Walter, to Linde Aktiengesellschaft. Tube furnace for thermal decomposition process. 3,863,607, Cl. 122-333.000.
- Krieger, Frank C., to United States of America, Army. Low conductivity thermal insulator for thermal batteries. 3,864,170, Cl. 136-83.00T.
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- Kuehn, Erich, to Atlas Chemical Industries, Inc. Flame retardant and intumescent compositions. 3,864,135, Cl. 106-15.0FP.
- Kuehnle, Manfred R., to Coulter Information Systems, Inc. Shutterless camera system. 3,864,035, Cl. 355-14.000.
- Kugle, John L.; and Futty, Robert C., to Irl Daffin Associates, Inc. Dust abatement system for mixing apparatus. 3,863,849, Cl. 241-152.00A.
- Kuhlmann, Peter; and Beschorner, Franz, to Maschinenfabrik-Augsburg-Numberg Aktiengesellschaft. Heater apparatus of a hot gas external combustion piston engine. 3,863,451, Cl. 60-522.000.
- Kuhnlein, Hans; and Rehahn, Helmut, to Siemens Aktiengesellschaft. Overload protection for miniature d-c motors. 3,864,605, Cl. 317-13.00R.
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- Olson, Gust A. Optical display device. 3,864,024, Cl. 350-161.000.
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- Owen, James, to Ford Industries, Inc. Signal monitoring control apparatus. 3,864,520, Cl. 179-1.0VC.
- Owen, John R., to Eastman Kodak Company. 8-Substituted carbocyanine dyes, substituted vinyl cyanine dye intermediates, processes for preparation and novel photographic elements. 3,864,337, Cl. 260-240.600.
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Pissiotas, Georg: *See—*
  Martin, Henry; Rohr, Otto; Duerr, Dieter; Janiak, Stefan; Pissiotas, Georg; and Toepfl, Werner, 3,864,395.
Pistor, Horst; Simmersbach, Edmund, deceased; by Mohler, Ingeborg, heiress; Schaller, Artur; and Knippschild, Gerd, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Process for the production of alkali percarbonate. 3,864,454, Cl. 423-415.00P.
Pitel, Ira J.: *See—*
  Spira, Joel S.; Licata, Joseph; Pitel, Ira J.; and Wenger, Lester E., 3,864,561.
Pitha, John J.; and Ellis, Howard F., to General Electric Company. Electrode for a granular electrical circuit element and method of making same. 3,864,658, Cl. 338-21.000.
Pitt, W. Wilson, Jr.: *See—*
  Tiffany, Thomas O.; Mailen, James C.; Johnson, Wayne F.; Scott, Charles D.; and Pitt, W. Wilson, Jr., 3,864,089.
Pitzer, Emory W., to Phillips Petroleum Company. Tin-Phosphorus Oxidative Dehydrogenation Catalyst. 3,864,279, Cl. 252-435.000.
Plas/Steel Products, Inc.: *See—*
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  Platt, Stephen A., 3,864,745.
Plough, Russell H.: *See—*
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Plyler, Robert G.; and Russo, Andrew, Jr., to General Motors Corporation. Printed circuit connector terminal. 3,864,007, Cl. 339-17.0LC.
PMD Entwicklungswerk fur Kunststoff-Maschinen GmbH & Co., K.G.: *See—*
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Ponjee, Johannes Jacobus: *See—*
  Schott, Cornelis Johannes; Ponjee, Johannes Jacobus; Van Doorn, Rudolf Alexander; and Bolwijn, Pieter Tammo, 3,864,589.
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Popa, Ioan Pop D., to Institutul Pentru Creatie Stiintifica Si Technica. Thoracic drainage catheter. 3,863,641, Cl. 128-350.00R.
Pope, Bill J. Method For Vinyl Halides. 3,864,409, Cl. 260-656.00R.
Popeil, Samuel J., to Popul Brothers, Inc. Compactor. 3,863,563, Cl. 100-102.000.
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  Ishida, Takanobu; Popowicz, Anthony M.; and Glickstein, Joseph, 3,863,669.
Popp, Gottfried; Haebler, Wolfgang; and Gohrbandt, Wilhelm, to Bayer Aktiengesellschaft. Non-Aqueous Dyestuffs with a Phthalic Acid Dialkyl Ester. 3,864,077, Cl. 8-173.000.
Poppy Food Company: *See—*
  Steenolsen, Ken, 3,864,503.
Popul Brothers, Inc.: *See—*
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Porret, Daniel; and Habermeier, Jurgen, to Ciba-Geigy Corporation. Epoxy-acrylic acid esters. 3,864,358, Cl. 260-309.500.
Postell, Alvin E.: *See—*
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Postell, William D.: *See—*
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  Hoekje, Howard H.; and Welch, Cletus N., 3,864,457.
  Shorr, Norman; and Littell, Harry E., Jr., 3,864,204.
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Price, Ralph E., to Landis Tool Company. Workpiece orienting device for a machine tool. 3,863,402, Cl. 51-216.0ND.
Price, Samuel T., to Enterprise Machine and Development Corporation. Yarn texturing air jet. 3,863,309, Cl. 28-1.400.
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Puckett, James E. Spark plug cleaner. 3,863,286, Cl. 15-104.01R.
Purdy, Paul J., to J. I. Case Company. Pressure compensated pump. 3,863,448, Cl. 60-422.000.
Purlia, John M. Illuminated fishing lure with line attachment. 3,863,380, Cl. 43-17.600.
Pyo, Hong Sung: *See—*
  Il, Ryou Dong; and Pyo, Hong Sung, 3,863,760.
Quenot, Michel, to Mabo, Stanley. Rigid measuring rod. 3,863,346, Cl. 33-88.000.
Quenot, Michel, to Mabo, Stanley. Case for a linear measuring device. 3,863,860, Cl. 242-84.800.
Quick, Donald J., to International Harvester Company. Drive mechanism for jib cranes. 3,863,406, Cl. 52-115.000.
R. A. Jones & Company, Inc.: *See—*
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R. Collin Consulting AB: *See—*
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R. M. Hardy Associates Ltd.: *See—*
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Raabe, Thomas; Stachel, Adolf, deceased (by Stachel, Ingeburg Lydia Katharina, heiress); Scholtholt, Josef; and Nitz, Rolf-Eberhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. 3-(Benzoyl)-2-(4′-aniline carbonyl or benzoxy-alkylpiperazins)-propionitriles. 3,864,344, Cl. 260-268.0CN.
Rabinovich, Meri Solomonovna; Povarov, Leonard Sergeevich; and Pavljuk, Galina Sergeevna. Method of preparing α-aminobenzlpenicillin. 3,864,332, Cl. 260-239.100.
Rackett, Gerald F.; and Sacks, Ralph. Continuous loop film cartridge and drive mechanism. 3,863,852, Cl. 242-55.19R.
Radlinsky, Raymond: *See—*
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Rafferty, Edson H.: *See—*
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Rain Bird Sprinkler Mfg. Corporation: *See—*
  Bumpstead, John G., 3,863,845.
Ramer, James L. Explosive actuated punch. 3,863,341, Cl. 30-358.000.
Ramqvist, Lars Henry; and Werme, Henrik, to Rederiaktiebolaget Nordstjernan; and AB Garphytte Bruk. Coating of a steel or iron with a chromium containing surface layer. 3,864,221, Cl. 204-38.00R.
Ramsey, Edward Lewis, Jr.; and Smith, Arnold Ray, to Bell Telephone Laboratories, Incorporated. Pedestal closure for buried cable. 3,864,510, Cl. 174-38.000.
Ranalli, Ralph; and Torrence, Kenneth R., to Rohe' Scientific Corporation. Ultrascope. 3,864,660, Cl. 340-1.00R.
Ranalli, Ralph, to Rohe' Scientific Corporation. Ultrascope. 3,864,661, Cl. 340-1.00R.
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Rausch, Richard E., to Universal Oil Products Company. Bimetallic Catalytic Reforming with Water Addition. 3,864,241, Cl. 208-139.000.
Ravitz, Benjamin D., to Lipsitz, Harold D., a part interest. Pressed metal scrap block and method of recovering scrap metal. 3,864,092, Cl. 29-186.000.
Ray-Chaudhuri, Dilip K.; and Iovine, Carmine P., to National Starch and Chemical Corporation. Process For The Preparation Of Bis-(2,3-Dibromopropyl) Phosphoryl Chloride. 3,864,436, Cl. 260-975.000.
Ray, Jimmy C., to Industrial Innovations, Inc. Safety portable radiant type electrical heater. 3,864,547, Cl. 219-343.000.
Ray, Lowell Elmo, to American Can Company. Labeled side-seamed can body. 3,863,374, Cl. 40-306.000.
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  Stillwell, Elbert M., 3,863,282.
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  Boltz, Charles D., Jr., 3,864,733.
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  Fischbeck, Kenneth Henry, 3,864,685.
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  O'Neil, John Tettemer, Jr.; Pelios, Angelo; Simon, Allen Henry; and Nickl, Frank George, 3,864,548.
  Pankove, Jacques Isaac, 3,864,592.
  Schade, Otto Heinrich, Jr., 3,863,331.
  Young, Richard William, 3,864,590.
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Recognition Equipment Incorporated: *See—*
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Reeber, Rudolf; Hofmeister, Peter; Strobl, Heinrich; and Muller, Johann, deceased (by Muller, Katharina, legal representative), to Friedrich Deckel Aktiengesellschaft. Engraving and copy milling machine having a pantograph. 3,863,544, Cl. 90-13.100.
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Regnier, Gilbert; Canevari, Roger; Poignant, Jean-Claude; and Duhault, Jacques, to "Science Union et Cie, Societe Francaise de Recherche Medical". 1-Oxa-3,8-diaza spiro (4,5) decane compounds. 3,864,348, Cl. 260-293.660.
Rehahn, Helmut: *See—*
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Reich, Elmar; and Kohle, Alfons, to Hans Lubberr. Rotary tower crane suitable for highway transportation. 3,863,773, Cl. 212-46.00B.
Reid, Donald E., to Hercules Incorporated. Stabilized Polyolefins useful as Wire Insulation in Petroleum-Jelly filled Cables. 3,864,431, Cl. 260-897.00R.
Reid, George W.: *See—*
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Rein, Charles R., to United States of America, Navy. Underwater heat sink. 3,863,459, Cl. 62-48.000.
Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler. Process for the production of alkali ferrocyanide. 3,864,453, Cl. 423-367.000.
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Reiser, Mario; Nook, Lothar; and Eidebenz, Emil, to Hoechst Aktiengesellschaft. Xanthines in pharmaceutical preparations and for stabilization of vitamins. 3,864,469, Cl. 424-22.000.
Reitz, Arnold B. Woodworking jig. 3,863,397, Cl. 51-131.000.
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Reusser, Robert E.; Benedict, Bruce C.; and Sarrett, Homer J., Jr., to Phillips Petroleum Company. Removal of chemically combined chlorine and other impurities from hydrocarbons. 3,864,243, Cl. 208-262.000.
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- Rheinmetall G.m.b.H., Firma: *See—*
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- Rheintechnik Weiland & Kaspar OHG: *See—*
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  - Pillet, Jean, 3,863,344.
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- Richard, Gerhard Yves, to Societe d'Application de Produits Industriels et Chimiques Sarl Departement SIGMA. Apparatus for cooling and drying solid material in granular or powder form. 3,863,656, Cl. 134-57.00R.
- Richards, Edward L.; and Dobrosielski, Stephen S., to Westinghouse Electric Corporation. Control switch assembly. 3,864,535, Cl. 200-281.000.
- Richards, Kenneth. Pressure-type tablet hypochlorinating device. 3,864,090, Cl. 23-267.00E.
- Richardson, Frederick Denys. Apparatus for measuring in a continuous manner oxygen in a molten metal. 3,864,231, Cl. 204-195.00S.
- Richardson, John M.; and Reid, George W., to RSC Industries,Inc. Apparatus for treating sewage. 3,864,258, Cl. 210-85.000.
- Richter Gedeon Vegyeszeti Gyar R.T.: *See—*
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- Ries, Gordon E. Life support system and rebreather. 3,863,629, Cl. 128-142.000.
- Riew, Chang Kiu; and Schlatzer, Robert K., Jr., to B. F. Goodrich Company, The. Quaternized polyepihalohydrin thickening agent. 3,864,288, Cl. 260-2.00A.
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- Risser, Ross Eugene, Jr. Turbine meter. 3,863,806, Cl. 222-23.000.
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  - Haubner, George; Hofer, Walter; and Schmaldienst, Peter, 3,864,622.
  - Naser, Joachim; Horn, Fritz; Specknew, Ludwig; Sturm, Theo; Schmid, Olaf; Ebenhoh, Erich; and Berthel, Karl, 3,864,002.
- Roberts, Ellicott J., to Dorr-Oliver Incorporated. Fluid bed incineration of chloride-containing waste streams. 3,864,458, Cl. 423-481.000.
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- Robey, Luther Clifton. Water reducible coating compositions and method for producing the same. 3,864,300, Cl. 260-29.4UA.
- Robins, Peter; and Osborn, Leroy G., to Westrex Company Limited. Kinematograph projection apparatus. 3,863,862, Cl. 242-181.000.
- Robinson, Bernie E.; and Sachs, Alfred L., to Milwaukee Valve Company, Inc. Gate valve. 3,863,889, Cl. 251-328.000.
- Robinson, Glenn Clarke, to Dow Chemical Company, The. Solid epoxy resins from hydrogenated bisphenols and aromatic dicarboxylic acids. 3,864,316, Cl. 260-78.4EP.
- Robinson, John W.: *See—*
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- Rockwell International Corporation: *See—*
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- Roeschlfin, Eugene R.: *See—*
  - Brinker, Francis R.; Roeschlfin, Eugene R.; and Zeph, David L., 3,864,555.
- Rogers, Crit H., III; and Rocheleau, Joseph Sarto, Jr., to Rogers Industries, Inc. Sheath arrangement for male urinal device. 3,863,638, Cl. 128-295.000.
- Rogers Industries, Inc.: *See—*
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  - Ranalli, Ralph, 3,864,661.
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- Rohm and Haas Company: *See—*
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- Rohr, Otto: *See—*
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- Rolker, John H.; and Glasner, Thomas C., to Bell & Howell Company. Modification of Acrylate Polymers by Treatment with Metal Carbonyl. 3,864,320, Cl. 260-86.10E.
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  - Butzow, Neil W.; Eggert, Glenn J.; Krivec, Bert; and Rollinger, Gary J., 3,863,781.
- Roper, John H. Device for marking material. 3,863,598, Cl. 118-202.000.
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- Roy, Gerald L., to Kerr Glass Manufacturing Corporation. Safety closure. 3,863,796, Cl. 215-220.000.
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  - Keldany, Rachid, 3,863,822.
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- Saari, Oliver E., to Illinois Tool Works Inc. Epitrochoidal surface engaging device. 3,863,353, Cl. 33-174.00R.
- Saccoccio, Louis. Adjustable operating cylinder for a gravity casting machine. 3,863,884, Cl. 249-137.000.
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- Sakwa, Waclaw; Jura, Stanislaw; and Labecki, Mariusz. Process of Producing Manganese Cast Steel on High Impact Strength. 3,864,123, Cl. 75-129.000.
- Salensky, George A., to Union Carbide Corporation. Thermal shock resistant epoxy compositions. 3,864,426, Cl. 260-837.00R.
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- Sawdai, Joseph, to United States Steel Corporation. Door operating mechanism. 3,863,390, Cl. 49-360.000.
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- Scaglione, Paul J. Fluid flow control valve. 3,863,674, Cl. 137-614.160.
- Scarborough, William M.; and Wilcox, Doyle E. Accelerometer. 3,863,508, Cl. 73-516.00R.
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- Schafer, Wolfgang; and Brook, Helmut, to Saint-Gobain Industries. Apparatus and method for heating solid surfaces. 3,864,545, Cl. 219-203.000.
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- Schmidt, Erich, to Maschinenfabrik Zuchermann Komm-Ges. Wien. Contour copying lathe. 3,863,691, Cl. 142-7.000.
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- Schroeder, Eugene Nelson, to International Business Machines Corporation. Method and apparatus for printing code patterns by nonimpact means. 3,864,691, Cl. 346-74.100.
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- Seibert, Walter. Production of aryl-(4,4′-bis-(dialkylamino)-benzhydryl)-sulfones. 3,864,400, Cl. 260-570.00D.
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- Selvaag, Olav. Arrangement at an expansion joint. 3,863,411, Cl. 52-251.000.
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- Seng, Florin; Ley, Kurt; and Metzger, Karl Georg, to Bayer Aktiengesellschaft. Compositions containing a quinoxaline-5,10-dioxide and method of using same. 3,864,488, Cl. 424-248.000.
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- Stillman, Irving M.; Trowe, Neil M.; and Clemens, Jules R., to Wheeler International, Inc. Method and Apparatus for Automatically, Identifying and Counting Various Cells in Body Fluids. 3,864,571, Cl. 250-302.000.
- Stillman, Neil W.; and Osgood, Edmond R., to Diamond Shamrock Corporation. Stereospecific hydrogenation process using unsupported RuO_2 catalyst. 3,864,361, Cl. 260-326.800.
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- Stockman, Richard F., to Air Preheater Company Inc., The. Ram type refuse loader. 3,863,779, Cl. 214-23.000.
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  - Elmore, J. Russell; and Gehrke, Gerard William, 3,863,742.
- Tosic, Milorad. Folding bed. 3,863,281, Cl. 5-136.000.
- Toth, Joseph W.: *See—*
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- Toth, Nee: *See—*
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- Tovarys, Zdenek, to Vitkovicke zelezarny Klementa Gottwalda narodni podnik. Arrangement for binding together packs of elongated objects such as rods and similar articles by a self-sticking band. 3,864,191, Cl. 156-468.000.
- Towner, Frank Richard: *See—*
  - Maxwell, David James; and Towner, Frank Richard, 3,864,737.
- Townsend Engineering Company: *See—*
  - Townsend, Ray T., 3,863,556.
- Townsend, Ray T., to Townsend Engineering Company. Machine for injecting fluids into meat products. 3,863,556, Cl. 99-487.000.
- Toy, Arthur D. F.: *See—*
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- Toyama Chemical Co., Ltd.: *See—*
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- Tractel S. A.: *See—*
  - Cavalieri, Michel, 3,863,893.
- Tramontini, Vernon N., to Stewart-Warner Corporation. Heat exchanger. 3,863,713, Cl. 165-158.000.
- Trans-Continental Purification Research and Development Ltd.: *See—*
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- Transfer Systems Incorporated: *See—*
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- Trask, R. Pierce, II, to United States of America, Army. Apparatus for measuring the diameter for through holes. 3,863,492, Cl. 73-37.500.
- Traub GmbH: *See—*
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- Treuer, Allan J. Flake ice producing machine. 3,863,462, Cl. 62-345.000.
- Trezise, Richard Dale, to Singer Company, The. Shift lock mechanism. 3,863,748, Cl. 197-107.000.
- Trichet, Jean; Simonet, Guy; and Guellaff, Jean-Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des procedes Georges Claude. Process for obtaining deuterium. 3,864,466, Cl. 423-648.000.
- Trippel, Karl: *See—*
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- Trotel, Jacques, to Thomson-CSF. Device for increasing the accuracy of addressing an electron beam striking a target. 3,864,597, Cl. 315-31.00R.
- Trott, W. James; and Zalesak, Joseph F., to United States of America, Navy. Line hydrophone array element calibrator. 3,864,664, Cl. 340-5.00C.
- Trowe, Neil M.: *See—*
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- Trueblood, Jon H.; Rossomondo, Roger M.; and Carlton, William H., to Medical College of Georgia Foundation Inc. Method for microscintigraphic evaluation studies. 3,863,623, Cl. 128-2.00A.
- Trumbo, Cecil Dale. Wire tie device. 3,863,558, Cl. 100-33.000.
- Trumbore, Forrest A.: *See—*
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- TRW Inc.: *See—*
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  - White, Hollis N., Jr., 3,863,449.
- Tso, Tien C., to United States of America, Agriculture. Process for treating tobacco. 3,863,645, Cl. 131-17.00R.
- Tsubakinoto Chain Co.: *See—*
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- Tsuji, Hitoshi; Murayama, Takeshi; Kawahata, Shigeo; Komine, Isamu; Huziwara, Satoshi; and Ueki, Mikio, to Nippon Kokan Kabushiki Kaisha. Apparatus for drawing wires and tubes. 3,863,484, Cl. 72-274.000.
- Tsuji, Takaakira: *See—*
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- Tsukamoto, Kunio: *See—*
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- Tsunekawa, Tokuichi; and Nakamoto, Soichi, to Canon Kabushiki Kaisha. Automatic exposure control system for ttl metering type single-lens reflex camera. 3,864,699, Cl. 354-31.000.
- Tsutsui, Nobuhiro: *See—*
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- Tubbs, Duane: *See—*
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- Tuckett, William F.; and Peterson, Ivan A., to Phillips Petroleum Company. Dehydration of gases. 3,864,103, Cl. 55-32.000.
- Tunjic, Peter. Lift up garage doors. 3,863,389, Cl. 49-205.000.
- Turba, Werner: *See—*
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- Turbak, Albin F., to Tee-Pak, Inc. Adjuvent containing polymeric sausage casing and method of preparation. 3,864,499, Cl. 426-138.000.
- Turjanica, Michael: *See—*
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- Tyssee, Donald Armon, to Monsanto Company. Electrolytic Carboxylation of Substituted Olefins. 3,864,225, Cl. 204-59.00R.
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- Uchida, Suekichi, to Uchida Sharyo Co., Ltd. Chair with a detachable seat. 3,863,698, Cl. 160-327.000.
- Uchikawa, Hiroshi; and Uchida, Shunichiro, to Onoda Cement Company, Limited. Process for regulating setting time of hydraulic cement. 3,864,138, Cl. 106-89.000.
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- Ueda, Hirozo; Shiba, Keisuke; and Sato, Akira, to Fuji Photo Film Co., Ltd. Silver bromoiodide photographic emulsion with improved green sensitivity. 3,864,134, Cl. 96-124.000.
- Ueki, Mikio: *See—*
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- Uematsu, Shigeyuki; and Abe, Haruhiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor devices having negative resistance and stepped voltage-to-current characteristics. 3,864,719, Cl. 357-4.000.
- Uemura, Yasuhiro, to Teac Corporation. Apparatus for detecting the loading of a cassette on a cassette tape deck. 3,864,744, Cl. 360-96.000.
- Uenishi, Akira: *See—*
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- Ueno, Kunimitsu, to Kabushiki Kaisha Komatsu Seisakusho. Device for sinking and retrieving underwater heavy article. 3,863,458, Cl. 61-69.00R.
- Uhing, Eugene H.: *See—*
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- Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Endless magnetic tape cartridge. 3,863,853, Cl. 242-55.19A.
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- Unger, Richard A. Pipe smoking. 3,863,647, Cl. 131-179.000.
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  - Critchfield, Frank E.; and Koleske, Joseph V., 3,864,434.
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    - Cline, Carl F.; and Wilkins, Mark L., 3,863,541.
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    - Gazza, George E.; and Lindley, Michael W. (said Gazza assors. to), 3,864,154.
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    - Russell, James T., 3,864,043.
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    - Dillon, Robert F., Jr.; and Mayne, Robert C. Shock absorbing mount for electrical components. 3,863,881, Cl. 248-358.00R.
    - Iceland, William F.; and Whiffen, Edwin L. Grain refinement control in tig arc welding. 3,864,542, Cl. 219-137.000.
    - Shima, Rindge. Multitarget sequential sputtering apparatus. 3,864,239, Cl. 204-298.000.
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- Urano, Fumio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Multiple exposure structure for cameras. 3,864,706, Cl. 354-209.000.
- Urban, Peter, to Universal Oil Products Company. Process for converting cellulose. 3,864,096, Cl. 44-50.000.
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- Utter, Robert P.; and Kohl, Vance L., to King-Seeley Thermos Co. Ice making apparatus. 3,863,463, Cl. 62-354.000.
- Uvanni, Joseph R. Weighted chess piece. 3,863,930, Cl. 273-137.00W.
- V-Mark Automation Ltd.: *See—*
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- Vachon, Bertrand. Hydraulic wheel. 3,863,548, Cl. 91-495.000.
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- Vaiano, Vincent. Automatic hair washer, conditioner and dryer combination. 3,863,651, Cl. 132-9.000.
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- Valbona, Bruno M.; and Voglesonger, Harry M., to Dynamics Corporation of America. Room odor control. 3,864,080, Cl. 21-53.000.
- Valcic, Albino. Cigarette dispenser with swivel acting ejector. 3,863,803, Cl. 221-210.000.
- van Amerongen, Edward, to Respiratory Care, Inc. Electric heating unit for liquid. 3,864,544, Cl. 219-301.000.
- van Amerongen, Gerrit J.: *See—*
  - La Heij, Gerardus E.; and van Amerongen, Gerrit J., 3,864,278.
- Van Bennekom, Hans Lochmann, to Burroughs Corporation. Bursting, Separating and/or Die Cutting Apparatus for Continuous Forms. 3,863,821, Cl. 225-93.000.
- Van Bonin, Wulf; Nehen, Ulrich; and Von Gizycki, Ulrich, to Bayer Aktiengesellschaft. Hydrogen peroxide blowing agent for silicate foams. 3,864,137, Cl. 106-75.000.
- Vancil, Rayburn D., to Olin Corporation. Rotary connection for a safety bag inflation system. 3,863,948, Cl. 280-150.0AB.
- Van Der Houven Van Oordt, Adriaan Julius: *See—*
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- Van Der Leegte, Joseph Wilhelmus Johannes Maria: *See—*
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- van der Mast, Karel Diederick; and Barth, James Edmond, to U.S. Philips Corporation. Electron beam apparatus comprising a point cathode. 3,864,572, Cl. 250-306.000.
- Van Der Plaats, Petrie Johan; and Van Zuuren, Eduard Willem, to U.S. Philips Corporation. Tone ringer with a negative impedance amplifier. 3,864,532, Cl. 179-84.00T.
- Vanderveen, John W., to Phillips Petroleum Company. Carbon black structure reduction using a uranium additive. 3,864,455, Cl. 423-450.000.
- van de Vaart, Herman; Matthews, Hugh B.; and Worley, James C., to Sperry Rand Corporation. Acoustic delay surface wave motion transducers. 3,863,497, Cl. 73-71.200.
- Van Doorn, Rudolf Alexander: *See—*
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  - Van Paesschen, August Jean; Van Gossum, Lucien Janbaptist; and Priem, Jan Jozef, 3,864,128.
- Vanheerentals, Jacques, to Agfa-Gevaert Aktiengesellschaft. Apparatus for controlling exposure. 3,864,036, Cl. 355-68.000.
- Van Huisen, Allen T., to Watase, Kinichi. Geothermal-nuclear waste disposal and conversion system. 3,864,208, Cl. 176-39.000.
- Van Lake, Carmen J., to United States Steel Corporation. Flat wire conveyor belt with improved covering. 3,863,754, Cl. 198-195.000.
- Van Paesschen, August Jean; Van Gossum, Lucien Janbaptist; and Priem, Jan Jozef, to Agfa-Gevaert. Electrophotographic sheet material employing a hydrophobic film support and hydrophilic layer. 3,864,128, Cl. 96-1.800.
- Van Regenmortel, Ludovicus Carolus, to Agfa-Gevaert. Adjustable coating pan. 3,863,600, Cl. 118-419.000.
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- Van Tassell, Harry M., to Universal Oil Products Company. Solvent extraction with increased polar hydrocarbon purity. 3,864,245, Cl. 208-321.000.
- Van Zuuren, Eduard Willem: *See—*
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- Vapor Corporation: *See—*
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- Varner, Reed W. Selective tropical crop herbicides. 3,864,116, Cl. 71-92.000.
- Vasilantone, Michael. Expander, device for stretching a fabric sheet. 3,863,368, Cl. 38-102.500.
- Vaughan, Thomas J.; and Hickey, Richard A. Coaxial transfer switch. 3,864,536, Cl. 200-37.00A.
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- Vauthier, Francis Andre: *See—*
  - Wellinger, Roger Paul; Vauthier, Francis Andre; and Botta, Alberto, 3,863,338.
- Veeder Industries, Inc.: *See—*
  - Batson, Bradley L., 3,863,839.
- Vega, Raul Antonio. Dismountable column applicable to automatic record players. 3,863,934, Cl. 274-10.00S.
- Veh Venapharm Jena: *See—*
  - Grosse, Peter; Ponsold, Kurt; Prousa, Richard; Schnabel, Ralf; and Von Zychlinski, Jutta, 3,864,365.
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- Vernede, Louis Antoine; Nitzki, Leopold; Liedke, Heinrich; and Schror, Friedrich, to Aktiengesellschaft "Weser". Marine cargo vessel. 3,863,585, Cl. 114-43.500.
- Versatile Structures, Incorporated: *See—*
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- Vertue, Charles R., to Volstatic of Canada Limited. Particulate material conveying apparatus. 3,863,808, Cl. 222-82.000.
- Via, Francis A.; Uhing, Eugene H.; and Toy, Arthur D. F., to Stauffer Chemical Company. Process for preparing phenylphosphonous dichloride. 3,864,394, Cl. 260-543.00P.
- Vicard, Pierre Georges, to Societe"Lab.". Recovery of combustible gases from furnaces in general and more particularly from converters. 3,863,906, Cl. 266-16.000.
- Vickers Limited: *See—*
  - Davis, Anthony Roger, 3,863,997.
- Vickers, William S. Garage door lock. 3,863,965, Cl. 292-66.000.
- Victor Company of Japan, Ltd.: *See—*
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- Vierling, Hermann: *See—*
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- Viglione, Sam S.; Ordon, Vladimir A.; Martin, William B.; and Kesler, Carl C., Jr., to United States of America, Health Education and Welfare. Epileptic seizure warning system. 3,863,625, Cl. 128-2.10B.
- Vignon, Louis, to Heberlein Hispano S.A. Feeding devices for textile machines. 3,863,751, Cl. 198-27.000.
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Yates, James E., to Continental Oil Company. Catalytic Process For Producing Higher Molecular Weight. 3,864,407, Cl. 260-642.00C.
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Yokoyama, Henry; Hsu, Wan-Jean; and Poling, Stephen M., to United States of America, Agriculture. Method of enhancing coloration of fruits and vegetables with a dialhylamino-alkoxybenzene. 3,864,501, Cl. 426-268.000.
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Young, Richard J. Electrical resistance fusible link for a sprinkler head. 3,863,720, Cl. 169-59.000.
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Yukuta, Toshio; Ohashi, Takashi; Taniguchi, Yoshiko; and Arai, Katsuhiko, to Bridgestone Tire Company Limited. Method for producing hydroxyl functional polymers. 3,864,324, Cl. 260-94.70A.
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Zingaro, William P. Low energy x-ray detector. 3,864,570, Cl. 250-272.000.
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Zumbach, Bruno; and Nopper, Peter, to Zumbach Electronic Automatic. Method and a device for measuring the thickness of the wall of a tube of non-conducting material leaving an extruder nozzle. 3,864,625, Cl. 324-34.0TK.
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Carr, Ethbert S., Jr., and G. P. Morie. Method of monitoring plasticizer concentration in filter tow by measuring fluorescence intensity. T931,005, 2-4-75, Cl. 250—302.
Du Pont de Nemours, E. I., and Co.: *See*—
Wilkinson, William K. T931,002.
Firestone Tire & Rubber Co., The: *See*—
Laman, Joseph R. T931,006.
Fryd, Michael, and A. R. Krueger. Polymeric soaps. T931,002, 2-4-75, Cl. 260—79.30.
Hercules Inc.: *See*—
Klug, Eugene D. T931,004.
Klug, Eugene D., to Hercules Inc. Reconstituted tobacco. T931,004, 2-4-75, Cl. 131—17.
Krueger, Achim R.: *See*—
Fryd, Michael, and Krueger. T931,002.
Laman, Joseph R., to The Firestone Tire & Rubber Co. Sound-attenuating coatings and coated products. T931,006, 2-4-75, Cl. 117—132.
Morie, Gerald P.: *See*—
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O'Neal, Grady M.: *See*—
Reife, Abraham, and O'Neal. T931,001.
Reife, Abraham, and G. M. O'Neal. Process of dyeing using monoazo disperse dyes. T931,001, 2-4-75, Cl. 8—21.
Wilkinson, William K., to E. I. du Pont de Nemours and Co. Dry spinning process. T931,002, 2-4-75. Cl. 264—206.

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NCR Corp.: *See*—
Milligan, Gene E. Re. 28,330.
Milligan, Gene E. to NCR Corp. Self-clocking five bit record-playback system. Re. 28,330, 2-4-75, Cl. 360—48.
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596	3,863,335
597	3,863,336
630C	3,863,337
CLASS 30	
43.92	3,863,338
162	3,863,339
346.58	3,863,340
358	3,863,341
393	3,863,342
CLASS 32	
1	3,863,343
10A	3,863,344
15	3,863,345
CLASS 33	
88	3,863,346
98	3,863,347
111	3,863,348
169R	3,863,349
	3,863,350
	3,863,351
174R	3,863,352
	3,863,353
233	3,863,354
286	3,863,356
324	3,863,355
	3,863,357
367	3,863,358
CLASS 34	
57R	3,863,359
155	3,863,360
191	3,863,361
CLASS 35	
8B	3,863,362
42.5	3,863,363
43	3,863,364
44	3,863,365
CLASS 36	
14	3,863,366
CLASS 37	
8	3,863,367
CLASS 38	
102.5	3,863,368
CLASS 40	
2R	3,863,369
106.1	3,863,370
124.2	3,863,371
132R	3,863,372
306	3,863,373
	3,863,374
CLASS 42	
69R	3,863,375
94	3,863,376
CLASS 43	
6	3,863,377
6.5	3,863,379
17.6	3,863,380
25	3,863,381
42.28	3,863,378
43.13	3,863,382
44.8	3,863,383
114	3,863,384
CLASS 44	
1G	3,864,094
2	3,864,095
50	3,864,096
	3,864,097
58	3,864,098
CLASS 46	
1H	3,863,385
135R	3,863,386
CLASS 47	
29	3,863,387
56	3,863,388
CLASS 48	
73	3,864,100
CLASS 49	
205	3,863,389
360	3,863,390
382	3,863,391
CLASS 51	
8R	3,863,392
9	3,863,393
109R	3,863,394
121	3,863,395
124R	3,863,396
131	3,863,397
134.5	3,863,398
151	3,863,399
165.77	3,863,400
206.4	3,863,401
216ND	3,863,402
249	3,863,403
298	3,864,101
CLASS 52	
27	3,863,404
108	3,863,405
115	3,863,406
	3,863,407
224	3,863,408
233	3,863,409
249	3,863,410
251	3,863,411
483	3,863,412
484	3,863,413
630	3,863,415
646	3,863,416
659	3,863,414
741	3,863,417
745	3,863,418
747	3,863,419
749	3,863,420
758F	3,863,421
CLASS 53	
29	3,863,423
55	3,863,422
192	3,863,424
211	3,863,425
237	3,863,426
382	3,863,427
CLASS 55	
30	3,864,102
32	3,864,103
71	3,864,104
259	3,864,105
288	3,864,106
290	3,864,107
302	3,864,108
324	3,864,109
440	3,864,110
CLASS 56	
10.2	3,863,428
249	3,863,429
345	3,863,430
502	3,863,431
CLASS 57	
52	3,863,432
106	3,863,433
157TS	3,863,434
159	3,863,435
CLASS 58	
50R	3,863,436
57.5	3,863,437
90B	3,863,438
127R	3,863,439
CLASS 59	
14	3,863,440
93	3,863,441
CLASS 60	
258	3,863,442
265	3,863,443
289	3,863,444
299	3,863,445
388	3,863,446
422	3,863,448
425	3,863,447
456	3,863,449
487	3,863,450
522	3,863,451
524	3,863,452
539	3,863,453
669	3,863,454
CLASS 61	
5	3,863,455
46	3,863,456
46.5	3,863,457
69R	3,863,458
CLASS 62	
48	3,863,459
54	3,863,460
137	3,863,461
345	3,863,462
354	3,863,463
CLASS 64	
11R	3,863,464
CLASS 65	
31	3,864,111
43	3,864,112
60	3,864,113
CLASS 66	
50R	3,863,465
163	3,863,466
CLASS 68	
18F	3,863,467
CLASS 70	
50	3,863,468
74	3,863 469
100	3,863,470
116	3,863,471
186	3,863,472
	3,863,473
360	3,863,475
419	3,863,476
456R	3,863,477
CLASS 71	
3	3,864,114
88	3,864,115
92	3,864,116
100	3,863,474
115	3,864,117
CLASS 72	
6	3,863,478
9	3,863,481
12	3,863,479
50	3,863,480
186	3,863,482
219	3,863,483
274	3,863,484
345	3,863,485
405	3,863,486
421	3,863,487
453	3,863,488
CLASS 73	
23.1	3,863,489
28	3,863,490
37	3,863,491
37.5	3,863,492
	3,863,493
54	3,863,494
61.1C	3,863,495
67.8S	3,863,496
71.2	3,863,497
118	3,863,498
167	3,863,499
181	Re.28,327
194B	3,863,500
	3,863,501
336	3,863,502
395	3,863,504
398R	3,863,505
421B	3,863,506
423A	3,863,507
516R	3,863,508
CLASS 74	
10.33	3,863,509
64	3,863,510
89.15	3,863,511
217B	3,863,512
221	3,863,513
230.17A	3,863,514
231R	3,863,515
233	3,863,516
242.16	3,863,517
340	3,863,518
347	3,863,503
474	3,863,519
475	3,863,520
551.4	3,863,521
661	3,863,522
754	3,863,523
765	3,863,524
CLASS 75	
3	3,864,118
	3,864,119
5	3,864,120
9	3,864,121
11	3,864,122
129	3,864,123
212	3,864,124
CLASS 76	
107R	3,863,525
	3,863,526
CLASS 79	
5	3,863,527
CLASS 82	
21A	3,863,528
47	3,863,529
CLASS 83	
5	3,863,530
27	3,863,532
54	3,863,531
100	3,863,533
126	3,863,534
196	3,863,535
299	3,863,536
503	3,863,537
676	3,863,538
CLASS 84	
94	3,863,539
385	3,863,540
CLASS 89	
36A	3,863,541
37GM	3,863,542
CLASS 90	
13C	3,863,543
13.1	3,863,544
CLASS 91	
45	3,863,545
375R	3,863,546
416	3,863,547
495	3,863,548
CLASS 93	
35R	3,863,549
58.3	3,863,550
80	3,863,551
94R	3,863,552
CLASS 96	
1LY	3,864,125
1.5	3,864,126
1.8	3,864,127
	3,864,128
38.3	3,864,130
50R	3,864,129
66R	3,864,131
85	3,864,132
115P	3,864,133
124	3,864,134
CLASS 98	
32	3,863,553
50	3,863,554
CLASS 99	
487	3,863,556
637	3,863,555
CLASS 100	
33PB	3,863,557
33	3,863,558
37	3,863,559
	3,863,560
53	3,863,561
93RP	3,863,562
102	3,863,563
CLASS 101	
35	3,863,564
44	3,863,565
248	3,863,566
252	3,863,567
CLASS 102	
13	3,863,568
35.6	3,863,569
49.4	3,863,570
81	3,863,571
	3,863,572
101	3,863,573
CLASS 104	
148LM	3,863,574
CLASS 106	
15FP	3,864,135
59	3,864,136
75	3,864,137
89	3,864,138
287R	3,864,139
308Q	3,864,140
315	3,864,141
CLASS 108	
111	3,863,575
136	3,863,576
CLASS 110	
8R	3,863,577
	3,863,578
CLASS 112	
113	3,863,579
212	3,863,580
255	3,863,581
258	3,863,582
CLASS 113	
120A	3,863,583
CLASS 114	
16D	3,863,584
43.5	3,863,585
66.5H	3,863,586
191	3,863,587
218	3,863,588
219	3,863,589
230	3,863,590
	3,863,591
CLASS 115	
17	3,863,592
18R	3,863,593
CLASS 116	
28R	3,863,594
63R	3,863,595
CLASS 117	
10	3,864,143
34	3,864,144
36.2	3,864,145
36.8	3,864,146
47A	3,864,147
	3,864,148
64R	3,864,149
71M	3,864,150
72	3,864,151
73	3,864,152
75	3,864,153
100S	3,864,142
123B	3,864,154
126GB	3,864,155
136	3,864,156
138.8E	3,864,157
201	3,864,158
212	3,864,159
	3,864,160
	3,864,161
213	3,864,162
217	3,864,163
	3,864,164
235	3,864,165
CLASS 118	
5	3,863,596
126	3,863,597
202	3,863,598
256	3,863,599
419	3,863,600
505	3,863,601
636	3,863,602
637	3,863,603
CLASS 119	
3	3,863,605
148	3,863,604
CLASS 122	
4D	3,863,606
333	3,863,607
483	3,863,608
CLASS 123	
8.07	3,863,609

8.27	3,863,610
8.45	3,863,611
41.08	3,863,612
75R	3,863,613
119A	3,863,615
119F	3,863,614
148E	3,863,616
195C	3,863,617
198DC	3,863,618
CLASS 126	
200	3,863,619
248	3,863,620
270	3,863,621
CLASS 127	
46R	3,864,166
CLASS 128	
1R	3,863,622
2A	3,863,623
2B	3,863,624
2.06F	3,863,626
2.1B	3,863,625
10	3,863,627
66	3,863,628
142	3,863,629
145.6	3,863,630
214R	3,863,631
221	3,863,632
260	3,863,633
276	3,863,634
	3,863,635
285	3,863,636
287	3,863,637
295	3,863,638
303R	3,863,639
335	3,863,640
350R	3,863,641
352	3,863,642
CLASS 130	
27T	3,863,643
CLASS 131	
9	3,863,644
17R	3,863,645
173	3,863,646
179	3,863,647
186	3,863,648
192	3,863,649
CLASS 132	
9	3,863,650
	3,863,651
11A	3,863,652
33	3,863,653
88.7	3,863,654
91	3,863,655
CLASS 134	
57D	3,863,657
57R	3,863,656
131	3,863,658
CLASS 135	
4R	3,863,659
20B	3,863,661
20R	3,863,660
CLASS 136	
6LN	3,864,167
	3,864,168
75	3,864,169
83T	3,864,170
107	3,864,171
173	3,864,172
181	3,864,173
CLASS 137	
75	3,863,662
205	3,863,663
	3,863,664
218	3,863,665
269	3,863,666
318	3,863,667
375	3,863,668
386	3,863,669
437	3,863,670
526	3,863,671
596.18	3,863,672
614.11	3,863,673
614.16	3,863,674
624.27	3,863,675
CLASS 138	
31	3,863,676
	3,863,677
37	3,863,678
106	3,863,679
CLASS 139	
12	3,863,680
55	3,863,681
134	3,863,682
426R	3,863,683
CLASS 140	
93.4	3,863,684
CLASS 141	
1	3,863,685
20.5	3,863,686
45	3,863,687
59	3,863,688
115	3,863,689
364	3,863,690
CLASS 142	
7	3,863,691
CLASS 144	
208E	3,863,692
CLASS 145	
50R	3,863,693
CLASS 148	
1.5	3,864,174
6.2	3,864,175
11.5R	3,864,176
CLASS 149	
36	3,864,177
109.4	3,864,178
CLASS 150	
1	3,863,694
CLASS 152	
356	3,863,696
361FP	3,863,695
427	3,863,697
CLASS 156	
3	3,864,179
	3,864,180
79	3,864,181
175	3,864,182
180	3,864,183
	3,864,184
208	3,864,185
272	3,864,186
364	3,864,187
397	3,864,188
415	3,864,189
443	3,864,190
468	3,864,191
CLASS 159	
4A	3,864,192
CLASS 160	
327	3,863,698
CLASS 161	
2	3,864,193
6	3,864,194
66	3,864,195
68	3,864,196
96	3,864,197
109	3,864,198
112	3,864,199
135	3,864,200
160	3,864,201
162	3,864,202
175	3,864,203
190	3,864,204
CLASS 162	
31	3,864,205
103	3,864,206
365	3,864,207
CLASS 164	
87	3,863,700
98	3,863,701
114	3,863,702
128	3,863,703
130	3,863,704
202	3,863,705
252	3,863,699
255	3,863,706
CLASS 165	
1	3,863,707
	3,863,708
	3,863,709
46	3,863,710
145	3,863,711
	3,863,712
158	3,863,713
CLASS 166	
53	3,863,714
70	3,863,716
217	3,863,715
279	3,863,717
285	3,863,718
305R	3,863,719
CLASS 169	
59	3,863,720
CLASS 172	
40	3,863,721
795	3,863,722
CLASS 174	
14R	3,864,507
15C	3,864,508
28	3,864,509
38	3,864,510
58	3,864,511
66	3,864,512
CLASS 175	
4.5	3,863,723
CLASS 176	
39	3,864,208
50	3,864,209
60	3,864,210
78	3,864,211
CLASS 177	
25	3,863,724
52	3,863,725
CLASS 178	
6.6	3,864,513
6.8	3,864,514
18	3,864,515
69.5R	3,864,529
CLASS 179	
1GQ	3,864,516
1SA	3,864,518
1VC	3,864,519
	3,864,520
1J	3,864,517
2.5R	3,864,521
5.5	3,864,522
15AQ	3,864,525
15BA	3,864,524
15BF	3,864,523
18GE	3,864,530
27DB	3,864,526
38	3,864,527
84T	3,864,532
121R	3,864,531
175.3R	3,864,533
175.31R	3,864,528
CLASS 180	
5A	3,863,726
5R	3,863,727
68P	3,863,728
69R	3,863,729
82R	3,863,730
90	3,863,731
124	3,863,732
CLASS 181	
42	3,863,733
49	3,863,734
CLASS 182	
81	3,863,735
150	3,863,736
CLASS 188	
77R	3,863,738
296	3,863,739
322	3,863,740
CLASS 191	
12.2A	3,863,741
CLASS 192	
45	3,863,742
84C	3,863,743
91R	3,863,744
93R	3,863,745
106F	3,863,746
106.2	3,863,747
CLASS 195	
103.5R	3,864,212
	3,864,213
CLASS 197	
107	3,863,748
151	3,863,749
CLASS 198	
20C	3,863,750
27	3,863,751
109	3,863,752
179	3,863,753
195	3,863,754
220CC	3,863,756
230	3,863,755
271	3,863,757
CLASS 200	
37A	3,864,536
38DA	3,864,539
83S	3,864,537
84B	3,864,538
148R	3,864,534
153R	3,864,540
281	3,864,535
CLASS 202	
186	3,864,214
CLASS 203	
11	3,864,215
49	3,864,216
CLASS 204	
15	3,864,217
29	3,864,218
33	3,864,219
37R	3,864,220
38R	3,864,221
43G	3,864,222
48	3,864,223
56R	3,864,224
59R	3,864,225
98	3,864,226
108	3,864,227
159.18	3,864,229
159.2	3,864,228
181	3,864,230
195M	3,864,233
195S	3,864,231
	3,864,232
197	3,864,234
206	3,864,235
265	3,864,236
268	3,864,237
297W	3,864,238
298	3,864,239
CLASS 206	
84	3,863,758
203	3,863,759
250	3,863,760
390	3,863,761
405	3,863,762
CLASS 208	
64	3,864,240
139	3,864,241
180	3,864,242
262	3,864,243
321	3,864,244
	3,864,245
CLASS 209	
111.7	3,863,763
111.8	3,863,764
323	3,863,765
469	3,863,766
CLASS 210	
7	3,864,246
12	3,864,247
19	3,864,248
	3,864,249
31C	3,864,250
44	3,864,251
59	3,864,252
62	3,864,253
63	3,864,254
67	3,864,255
78	3,864,256
83	3,864,257
85	3,864,258
88	3,864,259
108	3,864,260
163	3,864,261
169	3,864,262
198C	3,864,263
199	3,864,264
321	3,864,265
329	3,864,266
474	3,864,267
CLASS 211	
5	3,863,767
49D	3,863,768
182	3,863,769
CLASS 212	
14	3,863,770
	3,863,771
21	3,863,772
46B	3,863,773
94	3,863,774
CLASS 214	
1QE	3,863,775
6P	3,863,776
10.5R	3,863,784
16B	3,863,777
16.4R	3,863,778
23	3,863,779
38CA	3,863,780
62R	3,863,781
75H	3,863,782
83.26	3,863,783
130C	3,863,785
131A	3,863,786
302	3,863,787
	3,863,788
305	3,863,790
314	3,863,789
	3,863,791
340	3,863,792
518	3,863,793
CLASS 215	
13	3,863,794
201	3,863,795
220	3,863,796
225	3,863,797
301	3,863,798
CLASS 219	
69C	3,864,541
137	Re.28,326
	3,864,542
203	3,864,545
285	3,864,543
301	3,864,544
343	3,864,547
354	3,864,546
CLASS 220	
1.5	3,863,799
214	3,863,800
267	3,863,801
CLASS 221	
68	3,863,802
210	3,863,803
251	3,863,804
CLASS 222	
14	3,863,805
23	3,863,806
43	3,863,807
82	3,863,808
105	3,863,809
129.1	3,863,810
145	3,863,811
146HA	3,863,813
146C	3,863,812
153	3,863,814
238	3,863,815
402.17	3,863,816
530	3,863,817
531	3,863,818
569	3,863,819
	3,863,820
CLASS 225	
93	3,863,821
CLASS 226	
97	3,863,822
142	3,863,823
CLASS 227	
10	3,863,824
130	3,863,825
CLASS 228	
1	3,863,826
5	3,863,827
CLASS 229	
1.5R	3,863,828
14BA	3,863,830
16D	3,863,829
23R	3,863,831
30	3,863,832
43	3,863,833
51TS	3,863,834
69	3,863,835
73	3,863,836
87R	3,863,837
CLASS 233	
2	3,863,838
CLASS 235	
61.11E	3,864,548
	3,864,550
61.11R	3,864,549
92PC	3,864,551
92T	3,864,552
94R	3,863,839
144HC	3,864,553
150.1	3,864,554
150.2	3,864,555
150.3	3,864,556
151.11	3,864,557
151.13	3,864,560
151.2	3,864,559
193	3,864,558
CLASS 238	
8	3,863,840
CLASS 239	
266	3,863,841
283	3,863,842
318	3,863,843
452	3,863,844
542	3,863,845
CLASS 240	
2SP	3,864,561
26	3,864,562
CLASS 241	
1	3,863,846
14	3,863,847
101.7	3,863,848
152A	3,863,849
186R	3,863,850
CLASS 242	
18PW	3,863,851
55.19A	3,863,853
55.19R	3,863,852
58.2	3,863,854
58.4	3,863,855
68.3	3,863,856
72B	3,863,857
75.2	3,863,858
77	3,863,859
84.8	3,863,860
128	3,863,861
181	3,863,862
182	3,863,863
192	3,863,864
209	3,863,865
222	3,863,866
CLASS 244	
12D	3,863,867
16	3,863,868
23D	3,863,869
173	3,863,870
CLASS 248	
15	3,863,871
27	3,863,872
110	3,863,873
150	3,863,874
188.1	3,863,875
188.7	3,863,876
295	3,863,877
	3,863,878
327	3,863,879
349	3,863,880
358R	3,863,881
453	3,863,882
477	3,863,883
CLASS 249	
137	3,863,884
184	3,863,885
192	3,863,886
CLASS 250	
201	3,864,564
214P	3,864,565
216	3,864,566
232	3,864,567
252	3,864,568
264	3,864,569
272	3,864,570
302	3,864,571
306	3,864,572
320	3,864,563
358	3,864,573
364	3,864,574
423	3,864,575
505	3,864,576
577	3,864,577
CLASS 251	
25	3,863,887
130	3,863,888
138	3,864,031
328	3,863,889
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51.5A	3,864,099
	3,864,269
	3,864,270
51.5R	3,864,268
99	3,864,271
125	3,864,272
301.4P	3,864,274
301.4R	3,864,273
316	3,864,275
354	3,864,276
423	3,864,277
429B	3,864,278
435	3,864,279
	3,864,280
447	3,864,281
455Z	3,864,282
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466PT	3,864,284
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28.5D	3,864,295
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29.4UA	3,864,300
29.6F	3,864,298
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75R	3,864,314
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[Notice of Dec. 16, 1969, 869 O.G. 6877]

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U. S. GOVERNMENT PRINTING OFFICE : O - 1975

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OFFICIAL GAZETTE

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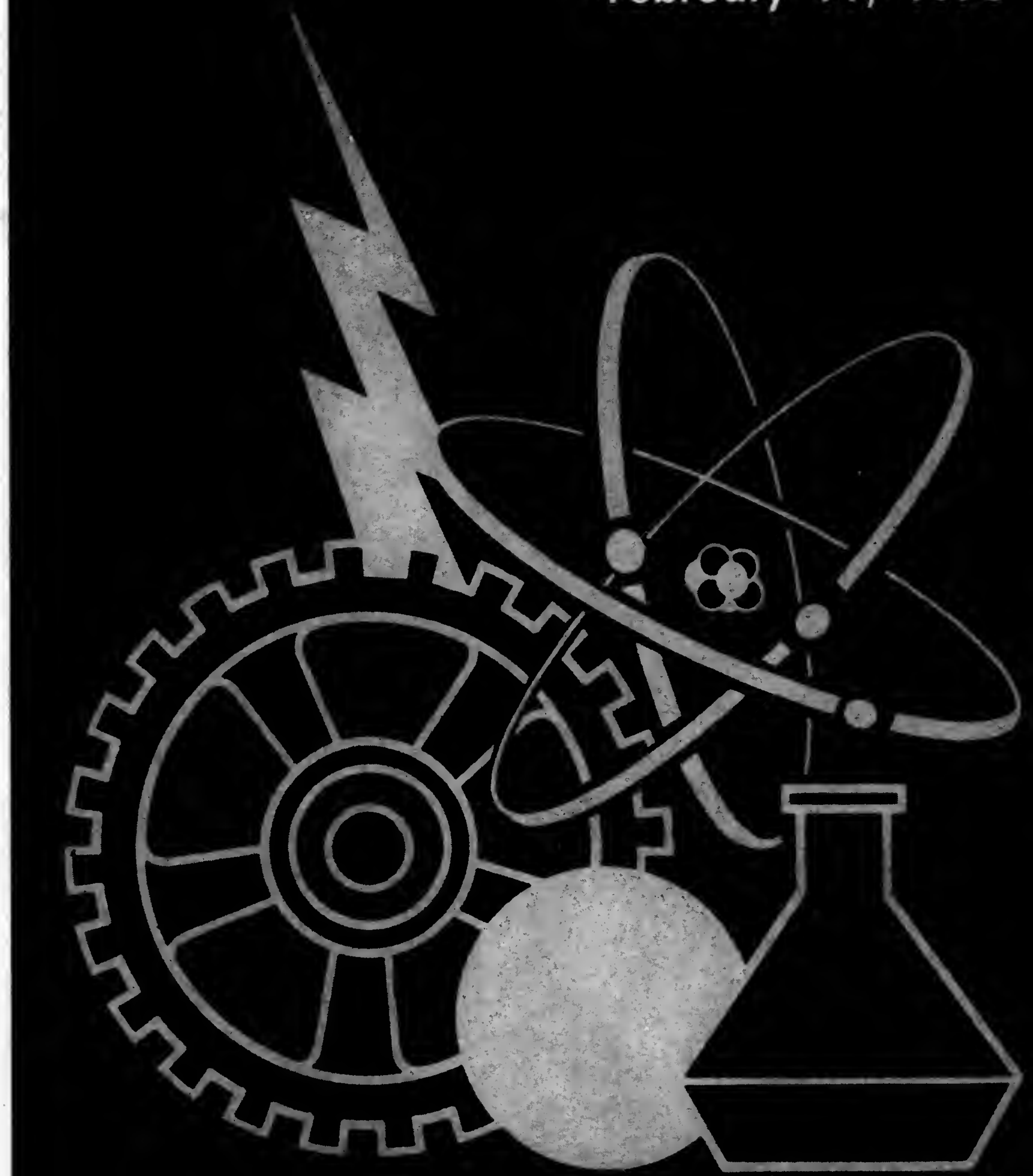

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C. MARSHALL DANN,
Jan. 15, 1975 *Commissioner of Patents and Trademarks.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before March 10, 1975.

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Chairman, Committee on Enrollment.

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2,770,458. (See 2,704,209.)

2,774,087, J. D. Bozza, METHOD FOR SECURING TOGETHER MOCCASIN VAMPS AND PLUGS; **2,946,069,** same, METHOD OF MANUFACTURING MOCCASINS; **2,999,323,** same, MOCCASINS AND FOOTWEAR, **filed** Nov. 21, 1968, D.C., S.D.N.Y., Doc. 68–C–4608, *The Jo-An Shoe Manufacturing Co., Inc. v. Conaway-Winter, Inc.* Filed stipulation and order of dismissal, Nov. 2, 1973.

2,882,940, C. Zellweger, FILLING VALVES FOR LIQUIFIED GAS LIGHTERS: **Re. 24,163,** same, VALVES FOR FILLING PYROPHORIC LIGHTERS FOR LIQUIFIED GAS, **filed** Mar. 11, 1964, D.C., S.D.N.Y., Doc. 64–C–779, *Ronson Corp. and La Nationale SA v. Zaima Corp. of America.* Stipulation and order of dismissal with prejudice, Feb. 22, 1973.

2,939,707, J. H. Lemelson, PLASTIC TOYS, **filed** Mar. 29, 1968, D.C., S.D.N.Y., Doc. 68–C–1286, *Jerome H. Lemelson v. Ideal Toy Corporation.* Filed Stipulation and order dismissing all claims and counterclaim in this action, Nov. 30, 1972.

2,946,609. (See 2,774,087.)

2,975,495, Wolf and Kaplan, COVERED BACKWASHERS, **filed** July 29, 1968, D.C., S.D.N.Y., Doc. 68–C–3077, *Peter S. Wolf, individually and doing business as Pivot Metal Works, et ano. v. Mershon Metal Specialties, Inc.* Filed plaintiff's dismissal pursuant to Rule 41(a)(1) with prejudice, Oct. 5, 1972.

2,999,323. (See 2,744,087.)

3,075,330, E. W. Swezey, APPARATUS FOR PACKAGING ARTICLES; **3,195,284,** W. B. Crane, Jr., APPARATUS AND METHOD FOR FORMING AND CLOSING A DISPLAY PACKAGE; **3,788,032,** Heffernan, Hair and Nielsen, METHOD AND APPARATUS FOR FORMING ARTICLES-HOLDING DISPLAY PACKAGES, **filed** July 17, 1974, D.C.N.J. (Newark), Doc. 74–1080, *International Inpak Inc. v. New Jersey Electronic Co.*

3,149,431, M. B. Blish, SELF-ALIGNING NECK CARD LABEL, **filed** Jan. 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c194, *Matthew B. Blish v. Goldblatt Bros. Inc. et al.* On stipulation of the parties, it is hereby adjudged that the complaint be dismissed with prejudice, May 17, 1973.

3,243,917, Giammarino and Brand, ELECTRICAL MOTOR OPERATED TOY VEHICLE, **filed** Aug. 22, 1969, D.C., S.D.N.Y., Doc. 69–C–3692, *Aurora Plastics Corp. v. Charles Merzbach Company Inc.* Filed stipulation and order of dismissal (R. 41(a)), Mar. 8, 1974.

3,245,548, Kesilman, Penn and Kravitz, COMMERCIAL DISH WASHER RACK, **filed** Jan. 28, 1969, D.C., S.D.N.Y., Doc. 69–C–335, *William Hodges & Co. and Green Valley Products v. The General Tire & Rubber Co.* Filed order that the complaint is dismissed with prejudice, Apr. 5, 1972.

3,297,831, W. O. Stanton, MAGNETIC STEREOPHONIC PHONOGRAPH PICKUP, **filed** Jan. 5, 1971, D.C., S.D.N.Y., Doc. 71–C–31, *Pickering & Company Inc. v. Brooks Radio and Television Corporation.* Filed consent judgment—ordered that defendants are perpetually enjoined and restrained as indicated, Feb. 17, 1971.

3,195,284. (See 3,075,330.)

3,322,378, C. T. Thompson, TRIPPED DRILL SUPPORT, **filed** Aug. 14, 1974, D.C., S.D. W. Va. (Charleston), Doc. CA 74–321–CH, *Joy Manufacturing Company v. Ingersoll-Rand Company.*

3,339,744, A. Ginsberg, TIE RACK, **filed** Oct. 24, 1972, D.C., S.D.N.Y., Doc. 72–C–4519, *Royal London Ltd. v. Swank Inc.* Dismissed voluntarily without prejudice, June 19, 1974.

3,379,612, De Stevens and Werner, PHARMACEUTICAL COMPOSITIONS OF 6-CHLORO-7-SULFAMYL-3,4-DIHYDRO-2H-[1,2,4]-BENZOTHIADIAZINE 1,1-DIOXIDE AND AN INDOLE ALKALOID OF THE APOCYNACEAE FAMILY, **filed** Aug. 9, 1974, D.C.N.J. (Newark), Doc. 74–1225, *Ciba-Geigy Corporation v. Merck & Co., Inc.*

3,385,322, K. A. Brandenberg, AND VALVE FOR FLUID LOGIC CIRCUITS; **3,389,720,** same, NOT VALVE FOR FLUID LOGIC CIRCUITS; **3,403,693,** same, OR VALVE FOR FLUID LOGIC CIRCUITS; **3,419,032,** same, DIFFERENTIATOR VALVE FOR FLUID LOGIC CIRCUITS, **filed** July 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1732, *The ARO Corporation v. Flick Reedy Corp.* By agreement cause dismissed with prejudice, May 2, 1974.

3,387,147, J. A. Radwan, MUSCLE STIMULATING PULSE GENERATOR, **filed** Oct. 8, 1968, D.C., S.D.N.Y., Doc. 68–C–3955, *Dynatone Electronics Corporation v. Equality Products, Inc.* Filed order dismissing action for lack of prosecution without prejudice, Sept. 22, 1972.

3,389,720. (See 3,385,322.)

3,403,693. (See 3,385,322.)

3,419,032. (See 3,385,322.)

3,422,189, J. A. Rider, METHOD AND COMPOSITIONS FOR THE TREATMENT OF GASTRO-INTESTINAL DISORDERS, **filed** July 15, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1471, *Moraine Products, Inc. v. Block Drug Company, Inc.* Case dismissed pending outcome of action in Eastern District of Michigan, Apr. 27, 1973.

3,443,459, Mackey and Mackey, Jr., DRILL; **3,521,405,** Mackey, Jr. and Naureckas, DRILL GRINDING APPARATUS; **3,592,555,** B. A. Mackey, Sr., DRILL WITH DISCONTINUOUS CUTTING LIPS; **3,656,264,** Mackey, Jr. and Naureckas, METHOD OF GRINDING DRILLS, **filed** Feb. 25, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c521, *International Carbide Corporation et al. v. Donald H. Geiger.* Memorandum opinion and order—defendant's motion to dismiss the complaint is granted, May 22, 1974.

3,519,617, Rast and Steiner, RED PHENYL-AZO-NAPHTHOL DYESTUFFS FOR EDIBLE COMPOSITIONS; **3,640,733,** same, EDIBLE SUBSTRATES COLORED WITH MONOAZO DYESTUFFS, **filed** Apr. 2, 1974, D.C., E.D. Mo. (St. Louis), Doc. 74–240–C (1), *Warner-Jenkinson Company v. Allied Chemical Corp.* Stipulation and order of dismissal without prejudice, filed July 3, 1974.

3,521,405. (See 3,443,459.)

3,592,555. (See 3,443,459.)

3,640,733. (See 3,519,617.)

3,648,075, R. J. Mankovitz, ZERO VOLTAGE SWITCHING AC RELAY CIRCUIT, **filed** Aug. 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV 74–2473, *Teledyne, Inc. v. International Rectifier Corporation.*

3,656,264. (See 3,443,459.)

3,752,105, R. L. Hackett, RUDDER CONSTRUCTION FOR SAILBOATS; **3,756,182,** same, CENTERBOARD FOR SAILBOATS, **filed** Aug. 13, 1974, D.C., W.D. Mich. (Grand Rapids), Doc. G 74–296–CA 7, *Richard L. Hackett v. Anchor Fibreglass Products Corp. and Control Engineering Company.*

3,752,433, M. R. Berman, TRANSLUCENT PLASTIC CANDLE MOLD, **filed** Jan. 17, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c147, *Avalon Industries, Inc. v. Rapco, Inc.*

3,756,182. (See 3,752,105.)

3,788,032. (See 3,075,330.)

Re. 24,163. (See 2,882,940.)

Change in Name of the Patent Office

(Public Law 93–596)

On January 2, 1975, President Ford signed into law H.R. 7599, a bill changing the name of the Patent Office to the "Patent and Trademark Office" and the title of the Commissioner of Patents to the "Commissioner of Patents and Trademarks." This change reflects the dual role of the Patent Office in administering both the patent law (Title 35, United States Code) and the Trademark Act of 1946 (60 Stat 427, 15 U.S.C. 1051, et seq.)

In order to minimize the cost of implementing this law (P.L. 93–596) and because of the similarity of the old and new names, existing stationery, printed forms, publications, etc. will continue in use until such supplies are exhausted. During the interim, the terms "Patent Office" and "Commissioner of Patents," appearing on patent grants and other official documents issued or dated on and after January 2, 1795, shall be construed to mean "Patent and Trademark Office" and "Commissioner of Patents and Trademarks." This same interpretation shall apply to the use of these terms in the patent and trademark rules of practice, 37 CFR, Parts 1 and 2, until such time as the Code of Federal Regulations is revised and new rules of practice are published.

In addition, the public is encouraged to minimize its costs in complying with this new law by exhausting reasonable quantities of existing stationery and forms which contain printed reference to the Patent and Trademark Office as the the Patent office and the Commissioner of Patents and Trademarks as the Commissioner of Patents. In preparing other written matter for submission to the Patent and Trademark Office, the public should use the new deisgnations.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved: Jan. 27, 1975.
BETSY ANCKER-JOHNSON, PH.D.,
Assistant Secretary for Science and Technology.

Public Law 93-596
93rd Congress, H. R. 7599
January 2, 1975

An Act

88 STAT. 1949

To amend the Trademark Act of 1946 and title 35 of the United States Code to change the name of the Patent Office to the "Patent and Trademark Office".

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Patent Office. Name change.

SECTION 1. The Trademark Act of 1946, 60 Stat. 427, as amended (15 U.S.C. sec. 1051 et seq. (1970)), and title 35 of the United States Code, entitled "Patents", are amended by striking out each time they appear "Patent Office" and "Commissioner of Patents" and inserting in lieu thereof "Patent and Trademark Office" and "Commissioner of Patents and Trademarks", respectively. 35 USC 1 et seq.

SEC. 2. Section 29 of the Trademark Act of 1946 is further amended by striking out "Reg. U.S. Pat. Off." and inserting in lieu thereof "Reg. U.S. Pat. & Tm. Off." 15 USC 1111.

SEC. 3. The terms "Patent Office" and "Commissioner of Patents" in all laws of the United States shall mean "Patent and Trademark Office" and "Commissioner of Patents and Trademarks", respectively. 35 USC 1 note.

SEC. 4. This Act shall become effective upon enactment. However, any registrant may continue to give notice of his registration in accordance with section 29 of the Trademark Act of 1946 (60 Stat. 427), as amended Oct. 9, 1962 (76 Stat. 769), as an alternative to notice in accordance with section 29 of the Trademark Act as amended by section 2 of this Act, regardless of whether his mark was registered before or after the effective date of this Act. Effective date. 15 USC 1111 note.

Approved January 2, 1975.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-523 (Comm. on the Judiciary).
SENATE REPORT No. 93-1399 (Comm. on the Judiciary).
CONGRESSIONAL RECORD:
Vol. 119 (1973): Oct. 15, considered and passed House.
Vol. 120 (1974): Dec. 18, considered and passed Senate.

Public Law 93-600
93rd Congress, H. R. 8981
January 2, 1975

88 STAT. 1955

An Act

To amend the Trademark Act to extend the time for filing oppositions, to eliminate the requirement for filing reasons of appeal in the Patent Office, and to provide for awarding attorney fees.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Trademarks. Extension for filing oppositions. 15 USC 1063.

SECTION 1. Section 13 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by deleting the second sentence and substituting therefor: "Upon written request prior to the expiration of the thirty-day period, the time for filing opposition shall be extended for an additional thirty days, and further extensions of time for filing opposition may be granted by the Commissioner for good cause. The Commissioner shall notify the applicant of each extension of the time for filing opposition.".

15 USC 1071.

SEC. 2. Section 21 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by deleting subsections (2), (3), and (4) from paragraph (a) and substituting therefor:

Notice of appeal.

"(2) Such an appeal to the United States Court of Customs and Patent Appeals shall be taken by filing a notice of appeal with the Commissioner, within sixty days after the date of the decision appealed from or such longer time after said date as the Commissioner appoints. The notice of such appeal shall specify the party or parties taking the appeal, shall designate the decision or part thereof appealed from, and shall state that the appeal is taken to said court.

Hearing, notice.

"(3) The court shall, before hearing such appeal, give notice of the time and place of the hearing to the Commissioner and the parties thereto. The Commissioner shall transmit to the court certified copies of all the necessary original papers and evidence in the case specified by the appellant and any additional papers and evidence specified by the appellee, and in an ex parte case the Commissioner shall furnish the court with a brief explaining the grounds of the decision of the Patent Office, touching all the points involved in the appeal.

"(4) The court shall decide such appeal on the evidence produced before the Patent Office. The court shall return to the Commissioner a certificate of its proceedings and decision, which shall be entered of record in the Patent Office and govern further proceedings in the case.".

Attorney fees. 15 USC 1117.

SEC. 3. Section 35 of the Trademark Act of 1946 (60 Stat. 427), as amended, is amended by adding the following sentence at the end thereof: "The court in exceptional cases may award reasonable attorney fees to the prevailing party.".

Effective date. 15 USC 1063 note.

SEC. 4. This Act shall become effective upon enactment, but shall not affect any suit, proceeding, or appeal then pending.

Approved January 2, 1975.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-524 (Comm. on the Judiciary).
SENATE REPORT No. 93-1400 (Comm. on the Judiciary).
CONGRESSIONAL RECORD:
Vol. 119 (1973): Oct. 15, considered and passed House.
Vol. 120 (1974): Dec. 18, considered and passed Senate.

Public Law 93-601
93rd Congress, H. R. 9199
January 2, 1975

An Act

88 STAT. 1956

To amend title 35, United States Code, "Patents", and for other purposes.

Patents.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 3, title 35, of the United States Code is amended to read as follows:

35 USC 3.

"§ 3. Officers and employees

"(a) There shall be in the Patent Office a Commissioner of Patents, a Deputy Commissioner, two Assistant Commissioners, and not more than fifteen examiners-in-chief. The Deputy Commissioner, or, in the event of a vacancy in that office, the Assistant Commissioner senior in date of appointment shall fill the office of Commissioner during a vacancy in that office until the Commissioner is appointed and takes office. The Commissioner of Patents, the Deputy Commissioner, and the Assistant Commissioners shall be appointed by the President, by and with the advice and consent of the Senate. The Secretary of Commerce, upon the nomination of the Commissioner, in accordance with law, shall appoint all other officers and employees.

"(b) The Secretary of Commerce may vest in himself the functions of the Patent Office and its officers and employees specified in this title and may from time to time authorize their performance by any other officer or employee.

"(c) The Secretary of Commerce is authorized to fix the per annum rate of basic compensation of each examiner-in-chief in the Patent Office at not in excess of the maximum scheduled rate provided for positions in grade 17 of the General Schedule of the Classification Act of 1949, as amended."

5 USC 5332 note. Board of Appeals.

SEC. 2. The first paragraph of section 7 of title 35 of the United States Code is amended to read as follows:

Review.

"The examiners-in-chief shall be persons of competent legal knowledge and scientific ability, who shall be appointed under the classified civil service. The Commissioner, the deputy commissioner, the assistant commissioners, and the examiners-in-chief shall constitute a Board of Appeals, which on written appeal of the applicant, shall review adverse decisions of examiners upon applications for patents. Each appeal shall be heard by at least three members of the Board of Appeals, the members hearing such appeal to be designated by the Commissioner. The Board of Appeals has sole power to grant rehearings."

Delayed payment.

SEC. 3. The last sentence of section 151 of title 35 of the United States Code is amended to read as follows: "If any payment required by this section is not timely made, but is submitted with the fee for delayed payment and the delay in payment is shown to have been unavoidable, it may be accepted by the Commissioner as though no abandonment or lapse had ever occurred.".

Issue fees, late payment. 35 USC 151 note. 35 USC 41.

SEC. 4. (a) The Commissioner of Patents may, in accordance with Section 3 of this Act, accept late payment of issue fees, the payment of which was governed by the provisions of Public Law 89-93: *Provided:* the term of the patent for which late payment of such an issue fee is accepted shall expire earlier than the time specified in Section 154 of Title 35, United States Code, by a period equal to the delay between the time the application became abandoned or the patent lapsed for failure to pay the issue fee and the time the late payment is accepted after enactment of this Act: *Further Provided:* no patent with respect to which the payment of the issue fee was governed by the provisions of PL 89-83 and for which a late payment of the issue fee is accepted under the authority created by Section 3 of this Act, shall abridge or affect the right of any person or his successors in business who made, purchased or used anything covered by the patent, after the date of the application became abandoned or patent lapsed for failure to pay the issue fee but prior to the grant or restoration of the patent, to continue the use of or to sell to others to be used or sold, the specific thing so made, purchased, or used. A court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased or used as specified, or for the manufacture, use or sale of which substantial preparation was made after the date the application became abandoned or patent lapsed for failure to pay the fee but prior to the grant or restoration of the patent, and it may also provide for the continued practice of any process covered by the patent, practiced, or for the practice of which substantial preparation was made, after the date the application became abandoned or patent lapsed for failure to pay the issue fee but prior to the grant or restoration of the patent, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the grant or restoration of the patent.

Effective date. 35 USC 3 note.

(b) This Act shall be effective upon enactment. Examiners-in-chief in office on the date of enactment shall continue in office under and in accordance with their then existing appointments.

Approved January 2, 1975.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 93-856 (Comm. on the Judiciary).
SENATE REPORT No. 93-1401 (Comm. on the Judiciary).
CONGRESSIONAL RECORD, Vol. 120 (1974):
    Mar. 18, considered and passed House.
    Dec. 18, considered and passed Senate.

Certificates of Correction for the Week of Feb. 11, 1975

D. 232,051
D. 232,560
D. 233,495
D. 233,760
3,423,505
3,497,215
3,551,797
3,605,068
3,607,493
3,609,144
3,628,327
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3,854,212
3,855,014
3,855,086
3,855,680
3,856,064
3,856,343
3,857,046

Disclaimers

3,335,351.—*Herbert E. Morris,* Roanoke, Va. DC MOTOR CONTROL CIRCUIT. Patent dated Aug. 8, 1967. Disclaimer filed June 6, 1974, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to all claims of said patent.

3,576,539.—*George H. Huber,* Cinnaminson, and *Kenrick O. Stephenson, Jr.,* Upper Montclair, N.J. COUNTER CONTROLLER CREDIT VERIFICATION SYSTEM. Patent dated Apr. 27, 1971. Disclaimer filed Sept. 15, 1972, by the assignee, *Digital Data Systems Corp.*

Hereby enters this disclaimer to claims 22 and 25 of said patent.

3,581,641.—*Hubert Nerwin,* Rochester, N.Y. FILM CARTRIDGE AND CAMERA. Patent dated June 1, 1971. Disclaimer filed June 22, 1972, by the assignee, *Eastman Kodak Company.*

Hereby enters this disclaimer to claims 1–12 of said patent.

3,696,891.—*Lloyd Richard Poe,* Beverly Hills, Calif. ENERGY ABSORBING DEVICE. Patent dated Oct. 10, 1972. Disclaimer filed July 6, 1973, by the assignee, *Hartwell Corporation.*

Hereby enters this disclaimer to claims 1, 3 and 7 of said patent.

3,744,039.—*George W. Hrbek,* Arlington Heights, *Adrianus Korpel,* Prospect Heights, and *William H. Watson,* Roselle, Ill. SINGLE-LASER SIMULTANEOUS MULTIPLE-CHANNEL CHARACTER GENERATION SYSTEM. Patent dated July 3, 1973. Disclaimer filed Oct. 17, 1974, by the assignee, *Zenith Radio Corporation.*

Hereby enters this disclaimer to claims 1–8, 10, 11 and 13–19 of said patent.

3,809,017.—*Michael Eskeli,* Dallas, Tex. HEAT AND STEAM GENERATOR. Patent dated May 7, 1974. Disclaimer filed Apr. 4, 1974, by the inventor.

Hereby enters this disclaimer to claim 16 of said patent.

Dedication

2,975,073.—*Herbert K. De Long* and *Donald E. Ritzema,* Midland, Mich. CORROSION RESISTANCE OF ELECTROLESS NICKEL PLATE. Patent dated Mar. 14, 1961. Dedication filed Aug. 9, 1974, by the assignee, *The Dow Chemical Company.*

Hereby dedicates to the Public the remaining term of said patent.

Disclaimer and Dedication

3,827,745.—*Billy Gene Pugh,* Corpus Christi, Tex. PERSONNEL OR CARGO NET. Patent dated Aug. 6, 1974. Disclaimer and dedication filed Oct. 4, 1974, by the inventor.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Service by Publication

John T. Urton

In accordance with Rule 47(b) of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on February 4, 1974, of an application for patent entitled "Injectable Adjuvant and Compositions Including Such Adjuvant," and identifying John T. Urton, whose last known address is 6840 Delmar, Prairie Village, Kansas 66208, as a joint inventor. The application was made in compliance with Rule 47(b) and 35 U.S.C. 118 by Haver-Lockhart Laboratories, Inc. without execution by the said John T. Urton.

Any action to be taken by the said John T. Urton in connection with the said application must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner for Patents.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

Douglas J. Campion,
Patent Program Coordinator,
National Technical Information Service.

U.S. Atomic Energy Commission

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 468,314. Shocked Plate Metal Atom Oxidation Laser. Filed May 9, 1974. PC $3.25/MF $2.25.

Patent application 469,737. Metal Atom Oxidation Laser. Filed May 13, 1974. PC $3.25/MF $2.25.

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AF/JACP, Washington, D.C. 20314

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Hyattsville, Md. 20782

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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U.S. ATOMIC ENERGY COMMISSION

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Patent 3,817,793. High Temperature Thermocouple Alloy Systems. Filed Nov. 19, 1968. Patented June 18, 1974. Not available NTIS.

Patent 3,818,375. Multisided Electron Beam Excited Electrically Pumped Gas Laser Systems. Filed Mar. 27, 1973. Patented June 18, 1974. Not available NTIS.

Patent 3,821,053. Thermocouple and Method of Making Same. Filed Sept. 20, 1972. Patented June 28, 1974. Not available NTIS.

U.S. DEPARTMENG OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,743,380. Polarized Light Source for Underwater Use. Filed Jan. 31, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,383. High Power Beam Combiner. Filed Mar. 23, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,835. Laser Image and Power Level Detector Having Thermographic Phosphor. Filed Mar. 23, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,775,734. Echo-Range Equalizer Sonar System. Filed May 5, 1971. Patented Nov. 27, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent application 511,334. Spatial Filter for Q-Switched Lasers. Filed Oct. 2, 1974. PC $3.25/MF $2.25.

Patent application 511,887. Atomic Standard With Variable Storage Volume. Filed Oct. 3, 1974. PC $3.25/MF $2.25.

Patent application 511,888. Double Discharge Metal Vapor Laser With Metal Halide as a Lasant. Filed Oct. 3, 1974. PC $3.25/MF $2.25.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 18, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-14-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-12-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-10-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	6-17-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-1-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-18-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-1-74

Expiration of patents: The patents within the range of numbers indicated below expire during February 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,821,713 to 2,825,063, inclusive
Plant Patents	Numbers 1,677 to 1,685, inclusive

REISSUES

FEBRUARY 11, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,331

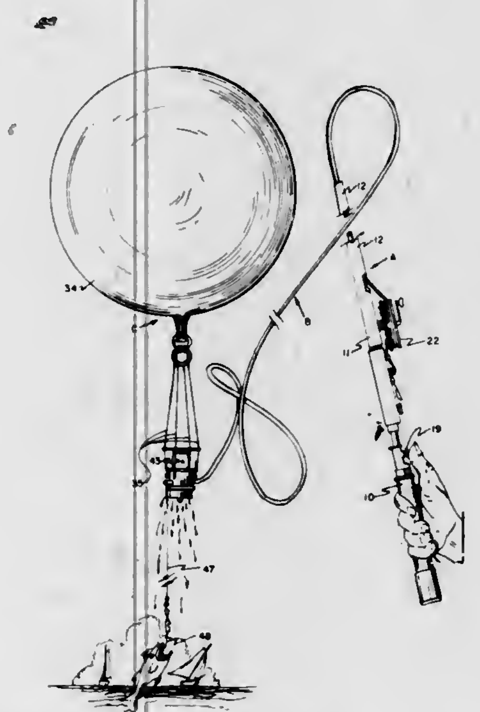
FISHING APPARATUS

Gerald C. Nordeen, 1612 Victoria Park Road
Fort Lauderdale, Fla. 33305

Original No. 3,698,121, dated Oct. 17, 1972, Ser. No. 142,311, May 11, 1971. Application for reissue Oct. 17, 1973, Ser. No. 407,233

Int. Cl. A01k *93/00*

U.S. Cl. 43—43.14 **3 Claims**



1. A fishing apparatus comprising:
(a) a rod;
(b) a float, said float having means thereon extending downwardly therefrom and adapted to carry a fish lure and catching means thereon;
(c) means incorporated in the float for varying the weight thereof from a maximum wherein the float will rest upon the water, to a minimum wherein the float will become lighter than air and be lifted from the water;
(d) a line connecting the rod and the float; and
(e) means on the rod and operable through the line for changing the weight of the float.

28,332

METHOD AND APPARATUS FOR PREVENTING ICE DAMAGE TO MARINE STRUCTURES

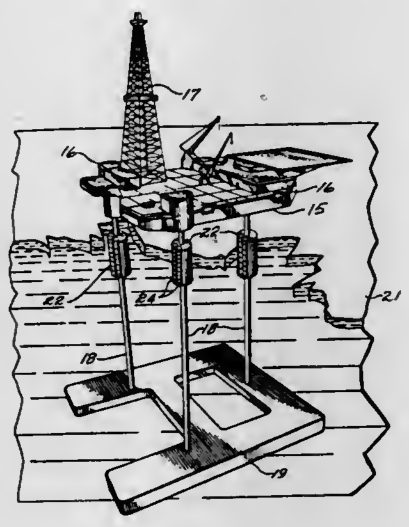
Joseph F. Schirtzinger, Pasadena, Calif., assignor to Sea-Log Corporation, Pasadena, Calif.

Original No. 3,669,052, dated June 13, 1972, Ser. No. 46,273, June 15, 1970. Application for reissue Oct. 25, 1973, Ser. No. 409,747

Int. Cl. B63b *35/08*

U.S. Cl. 114—.5 R **15 Claims**

1. Apparatus for preventing ice damage comprising:
a structure fixedly positioned in water subject to moving ice floes;
means connected to the structure adjacent the water line for comminuting ice floe in a region between the advancing ice floe and the balance of the structure, said means for comminuting comprising means for applying high velocity impacts on local areas of the ice; and



means for traversing the means for comminuting about at least a portion of the structure adjacent the water line.

28,333

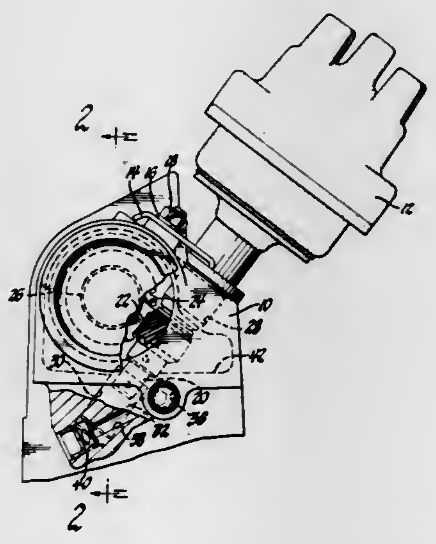
DISTRIBUTOR DRIVE ARRANGEMENT

Harold M. Haskew, Milford and David A. Martens, Washington, Mich., assignors to General Motors Corporation, Detroit, Mich.

Original No. 3,662,726, dated May 16, 1972, Ser. No. 27,675, Apr. 13, 1970. Application for reissue May 14, 1973, Ser. No. 359,975

Int. Cl. F02p *7/00*

U.S. Cl. 123—146.5 A **2 Claims**



1. A distributor drive arrangement for an internal combustion engine having a [cam] shaft journaled in the [cylinder head] *housing* of the engine provided with a gear thereon, and a distributor having a journaled drive shaft with a gear thereon extending from one end thereof and positioned on the [cylinder block] *housing* with the gear on the drive shaft in mesh with the gear on the [cam] shaft, said distributor drive arrangement including

bushing means in said [cylinder head] *housing* located concentric with said drive shaft, said bushing means having a partly closed end, said drive shaft having an extension shaft portion journaled in said bushing means, said extension shaft portion extending into said bushing to a position at which its free end is closely adjacent said partly closed end whereby said bushing means serves as a cylinder and said extension shaft portion serves as a piston therein, and passage means in said [cylinder head] *housing* in communication with said bushing means and adapted to be connected to a source of oil under pressure, said passage means opening into said bushing adjacent said partly closed end whereby said drive shaft is hydraulically loaded in one direction by oil under pressure acting on said free end of said extension shaft portion, the clearance between the inside diameter of said bushing means and the outer peripheral surface of said extension shaft portion being such that upon rotation of said extension shaft portion in said bushing means viscous shearing of oil will occur to provide a viscous drag on said drive shaft.

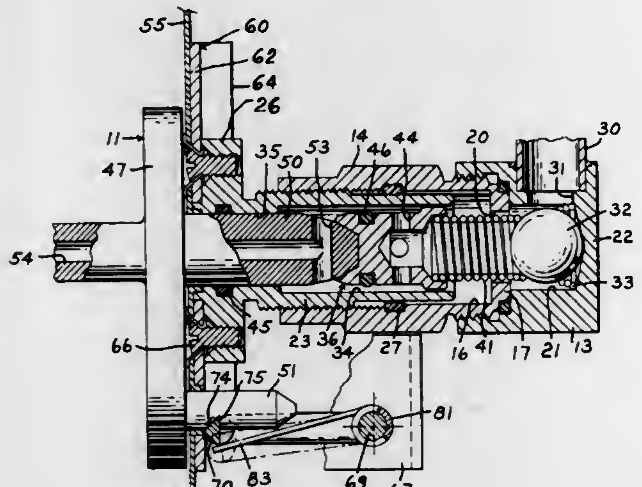
28,334
COUPLER ASSEMBLY

Bidwell C. Cranage, Ferguson, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Original No. 3,448,760, dated June 10, 1969, Ser. No. 556,173, June 8, 1966, which is a division of abandoned application Ser. No. 329,319, Dec. 9, 1963. Application for reissue Nov. 16, 1973, Ser. No. 416,713

Int. Cl. F16l *5/02, 33/00, 37/08*

U.S. Cl. 137—360 **2 Claims**



1. In a coupler assembly:

(a) a station for a designated fluid comprising a valve plug-receiving means having a forward head portion,

(b) a cover plate for the station having an opening communicating with the plug receiving means, the cover plate having a fluid designation conforming to that of the station,

(c) a bracket secured to one side of the cover plate, the bracket having spaced flanges extending from the cover plate, and

(d) a key or slot located in a predetermined position on the bracket depending on the fluid designation on the cover plate, the key or slot interfitting respectively a coacting slot or key located in a predetermined position on the head portion, the predetermined positions of the coacting key and slot being different for each fluid,

(1) the head portion being located between the flanges to align the plug-receiving means with the cover plate opening when the coacting key and slot of a compatible bracket and head portion for a particular designated fluid are interfitted, the interfitted key and slot assuring that the cover plate having the correct fluid designation will be mounted to the station for that designated fluid.

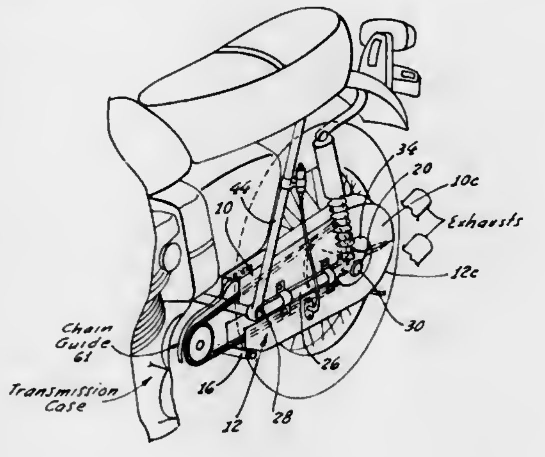
28,335
MOTORCYCLE CHAIN GUARD

George R. Wood, 528½ E. Fairview Inglewood, Calif. 90302

Original No. 3,724,582, dated Apr. 3, 1973, Ser. No. 190,252, Oct. 18, 1971. Application for reissue Apr. 12, 1973, Ser. No. 350,511

Int. Cl. B62j *13/04*

U.S. Cl. 180—33 R **8 Claims**



1. A motorcycle chain guard for a motorcycle including a frame with a lower midframe cross member, an engine and a rear wheel mounted on an axle extending between the rear ends of a pair of swing arms and driven by a chain extending between a first sprocket on the engine drive shaft and a second sprocket on said rear wheel, said chain guard comprising:

A. An upper U-shaped elongated shell extending from the motorcycle's lower midframe cross member to a point beyond the rear wheel chain sprocket and any chain tensioner extending rearwardly therefrom;

B. A lower U-shaped elongated shell of similar extent to that of the upper shell;

C. A plurality of bracket means, each said means being secured between one side of the said upper shell and a side of the said lower shell to secure said shells in opposed parallel spaced relationship to each other about the exposed portion of the motorcycle chain which extends rearward from the engine to the second sprocket, said bracket means adjacent the swinging arm being closely looped about said arm to provide some support for the two thus-secured shells therefrom;

D. The forward ends of said thus-secured shells resting upon a cross frame member for further support therefrom, and said shells being secured together at their trailing ends;

E. Said shells being configured along their adjacent edges axially opposite the rear wheel axle to provide a greater ventilating spacing about the sprocket;

F. An oil reservoir mounted beneath the motorcycle seat, said reservoir including a tube extending downwardly therefrom and controllable valve means to regulate the quantity of the oil which is passed from the reservoir into said tube;

G. One of said shells having a removable plate, said plate being orificed to pass therethrough the lower end of said tube and to dispose the same to drip oil upon the chain; and

H. The lower shell being orificed in its lowermost rear area to vent oil accumulated therein rearwardly therefrom.

28,336
CARBON BLACK DISPERSIONS, THEIR PREPARATION AND FILM PRODUCTS THEREWITH

Harold R. Dalton, 931 Rydol Road Jenkintown, Pa. 19046

Original No. 3,509,088, dated Apr. 28, 1970, Ser. No. 579,778, Sept. 15, 1966, which is a continuation-in-part of abandoned application Ser. No. 502,614, Oct. 22, 1965. Application for reissue Oct. 26, 1973, Ser. No. 409,883

Int. Cl. C08f *45/08;* **H01b** *1/04*

U.S. Cl. 252—511 **16 Claims**

1. The method of preparing the electric-signal-responsive film for a recording blank, which method comprises

(a) preparing a continuity-structure-providing suspension comprising carbon black particles dispersed in a film-forming multi-phase resin-complex comprising as its essential constituents a continuity-structure-providing film-forming resin effective for said signal-responsive film and a volatile organic solvent wherein the resin content of said complex is only partially dissolved thereby to provide in said multi-phase resin-complex from about 20 to about 80 percent of its resin content in particulate form as at least one member of the class consisting of (i) solid particles and (ii) *individual* particles swelled with imbibed solvent, said *individual* particles in the dry state free of solvent being from about 1 to about 50 microns in size; and

(b) applying a layer of said suspension over a surface whereon the desired signal-responsive film is to be formed, and allowing the volatile solvent content of said layer to evaporate off.

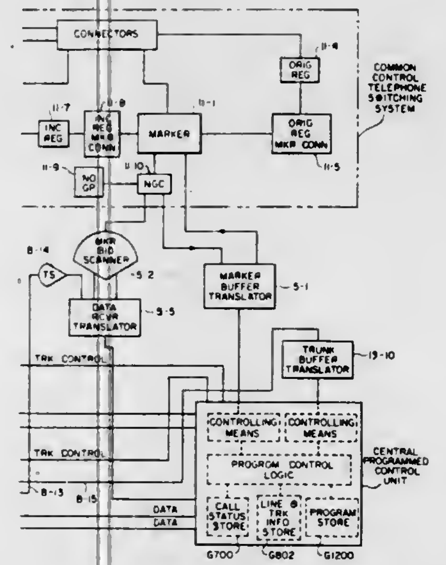
28,337
TELEPHONE SWITCHING SYSTEM WITH PROGRAMMED AUXILIARY CONTROL FOR PROVIDING SPECIAL SERVICES

Fred J. Singer, Chatham, N.J., assignor to Northern Telecom Inc., Boston, Mass.

Original No. 3,555,196, dated Jan. 12, 1971, Ser. No. 669,436, Sept. 21, 1967. Application for reissue Feb. 22, 1974, Ser. No. 444,785

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **33 Claims**



1. A telephone switching system comprising:

(a) transmission paths;

(b) first switching means for interconnecting the transmission paths;

(c) a common controlling means connected to the switching means for controlling the operation of the switching means; and

(d) programmed controlling means connected to *and acting in consort with* the common controlling means, for modifying the *sequence of* operation thereof in a program responsive manner, in response to a request by the common controlling means for such connection, upon recognition by the common controlling means of its inability to process a request for service from one of the transmission paths without such connection.

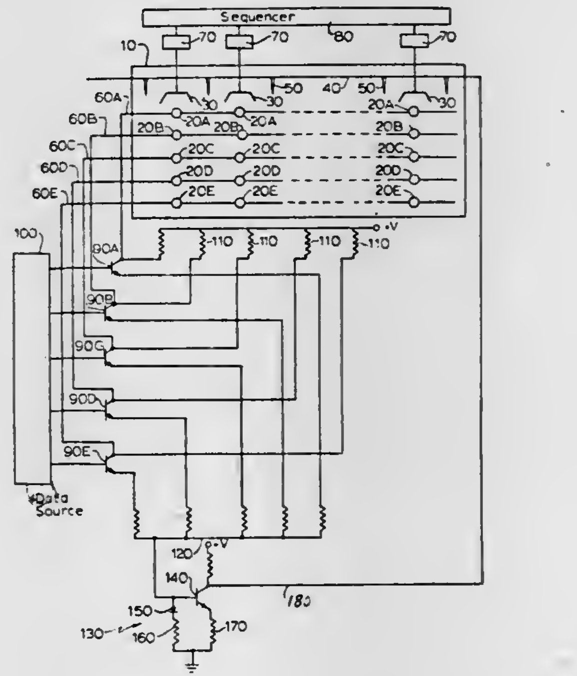
28,338
CIRCUIT FOR OPERATING MULTIPLE POSITION DISPLAY TUBES

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Original No. 3,694,693, dated Sept. 26, 1972, Ser. No. 87,058, Nov. 5, 1970. Application for reissue Mar. 7, 1973, Ser. No. 338,887

Int. Cl. H05b *37/00*

U.S. Cl. 315—167 **11 Claims**



1. A circuit for operating a display tube comprising a gas-filled envelope containing a plurality of groups of electrodes arrayed in spaced-apart relationship, each group including a plurality of glow cathodes spaced apart in a plane and an associated anode positioned for electric discharge therewith, the cathodes in each group being so arrayed that they can be energized in different combinations to represent different characters and each group having cathodes which correspond in location to the cathodes of said other groups, and an auxiliary electrode common to all of said groups of electrodes and shielding said groups of electrodes from each other, said circuit comprising:

means for applying a first energizing potential to said anode electrodes from a source of operating potential,

a common cathode conductor interconnecting the corresponding cathode electrodes of the different groups of cathodes,

means for applying a second operating potential to each common cathode conductor, there being a current path from each anode through each cathode and the source of operating potential, and

a circuit module coupled to all of said current paths and to the common auxiliary electrode for receiving the total current flowing in each group of cathodes as each is energized, said circuit module including means for conducting a current proportional to said total current and coupling it to said common auxiliary electrode.

PLANT PATENTS

GRANTED FEBRUARY 11, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,682
ROSE PLANT
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed July 23, 1973, Ser. No. 381,853
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—5 **1 Claim**

1. A new and distinct cultivar of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its climbing habit of growth; abundant, large mildew resistant folliage, large quantities of blooms of Begonia (*Wilson's*) color which change to Porcelain Rose (*Wilson's*); and habit of blooming in large clusters on ends of main canes and on short stems from lateral growth.

3,683
PEONY PLANT
Carl George Klehm, Arlington Heights, Ill., assignor to Klehm Properties, Inc., Arlington Heights, Ill.
Filed Oct. 24, 1973, Ser. No. 409,174
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of peony plant substantially as herein shown and described, characterized by the very large size of its full, rose type, double blossoms and the silver edging of the pale pink coloration of the blossom petals.

3,684
PEONY PLANT
Carl George Klehm, Arlington Heights, Ill., assignor to Klehm Properties, Inc., Arlington Heights, Ill.
Filed Oct. 26, 1973, Ser. No. 410,209
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of peony plant substantially as herein shown and described, characterized by the bomb shape of its white flower, interspersed with an inner blush of yellow before maturity, the earliness of flowering, the long lasting quality as a cut flower, and the extra long length of its flowering stems.

3,685
ROSE PLANT
Reimer Kordes, Sparrieshoop, near Elmshorn in Holstein, Germany, assignor to Jackson & Perkins Co., Medford, Oregon
Filed Nov. 9, 1973, Ser. No. 414,420
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—16 **1 Claim**

1. A new and distinct cultivar of rose plant of a class intermediate between floribunda class and hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combinations of its heavily branched and clustering plant habit; hybrid tea type and size of flowers; medium sized and dark leathery foliage; Burnt Orange color of bud and open flower.

3,686
GRAPEVINE
Fay E. Triplett, 749 E. Keyes Road
Ceres, Calif. 95307
Filed Jan. 2, 1974, Ser. No. 430,033
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—47 **1 Claim**

1. A new and distinct table-wine variety of grapevine, substantially as illustrated and described, which is of medium vigor, upright, medium dense, hardy, foliated with medium size, thick, cordate leaves, and productive of medium size, long conical clusters of medium size, black, uniform, spherical, easy to harvest berries having a bluish bloom; the berries sugaring early and high while retaining high acid and low pH, and ripening early to mid-season in comparison to mid-season to late ripening of the Ruby Cabernet.

3,687
PECAN TREE
Micral K. Parker, Grand Prairie, Tex., assignor to O. S. Gray, Arlington, Va.
Filed Jan. 14, 1974, Ser. No. 433,120
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—31 **1 Claim**

1. A new variety of pecan tree, substantially as herein shown and described, characterized by its prolific production of large sized and very thin shelled nuts which are distinguished by their box-like and blunt-ended body form, and by the very large weight percentage of the kernels which are characteristically smoother and freer from wrinkles than those of most other nut varieties.

PATENTS

GRANTED FEBRUARY 11, 1975

ERRATA

For CLASS	See PATENT NO.
404-098	3,864,858
073-143	3,864,953
102-064	3,865,027
102-070	3,865,028
123-196	3,865,213
215-321	3,865,263
225-096	3,865,288
321-013	3,865,438
423-032	3,865,580
029-191	3,865,584
156-264	3,865,681
250-432	3,865,734
352-044	3,865,738
240-049	3,865,790

PATENTS

GRANTED FEBRUARY 11, 1975

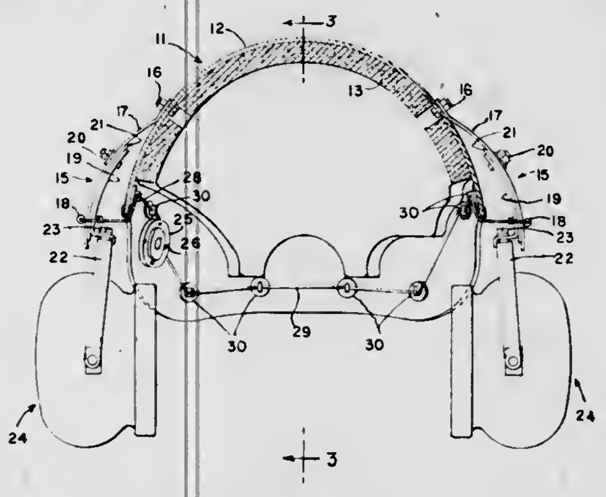
GENERAL AND MECHANICAL

3,864,756
ADJUSTABLE EARMUFFS

David N. Desimone, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 18, 1972, Ser. No. 315,967
Int. Cl. A42b *3/00*

U.S. Cl. 2—6 **2 Claims**



1. Headgear comprising, in combination;

a helmet;

a pair of ear covers formed to encompass the ears;

a pair of resilient support means mounted on said helmet each containing one of said ear covers for juxtapositioning said ear covers adjacent to respective ones of the ears; and

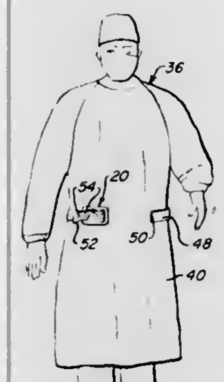
adjustment means for simultaneously pulling said ear covers toward the ears including take-up means operatively mounted on said helmet, guide means fixed to the inside of said helmet between said take-up means and said support means, and a pair of cords threaded through said guide means fixed at their respective one ends to said take-up means and extending laterally outward from said helmet, fixedly terminating at their respective other ends at respective ones of said support means.

3,864,757
BELT RETAINER

Edward G. Hartigan, Schaumburg, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Sept. 25, 1972, Ser. No. 292,022
Int. Cl. A41b *9/00*

U.S. Cl. 2—114 **10 Claims**



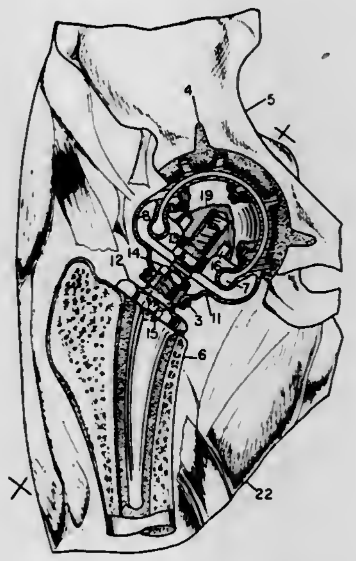
1. A retainer comprising, a belt; and a strip of flexible material having a first surface, a second surface, a pair of side edges, a pair of end edges connecting the side edges, a generally S-shaped cutout defining an upwardly extending tab and a depending finger intermediate said tab and one of said end edges, said tab and finger having first and second surfaces defined by the corresponding surfaces of said strip, with said finger having an edge facing toward the one end edge of said strip, and means along the finger edge for releasably engaging said belt, said belt passing over the first surface of said strip adjacent the other of said end edges, behind the second surface of said tab and finger, around the edge of the finger, and b[illegible]e second surface of the tab, with the engaging means retaining the belt at a selected position.

3,864,758
HIP JOINT BEARING PROSTHESIS

Sam Savo Yakich, 1266 E. St. Clair, Idaho Falls, Idaho 83401

Filed Aug. 31, 1973, Ser. No. 393,569
Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **1 Claim**



1. A joint prosthesis for use in a human bone joint such as the acetabulum or the like comprising, a one-piece hollow double wall spherical ball member defined by an inner wall hermetically sealed to an outer wall, said inner and outer walls being spaced from each other to form cavity therebetween which includes a lubricating fluid therein, said walls terminating in a lower terminal first annular skirt which is surrounded by a second elongated annular skirt, said second skirt adapted to to be attached to a portion of another prosthetic joint member to effect a seal therewith to prevent contact with body fluids and tissue, said hollow ball and annular skirts being fabricated from biomedically inert elastic material and being provided with means to attach the joint prosthesis to a human bone joint.

3,864,759
ARTICLE TO BE USED BY HUMAN FEMALES WHEN URINATING

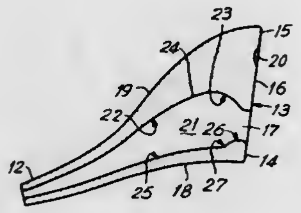
Akira Horiuchi, Tokyo, Japan, assignor to Yoshihide Fujimoto and Akigoshi Kurihara, both of Tokyo, Japan, part interest to each

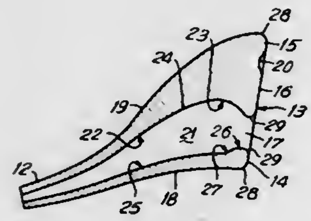
Filed June 12, 1973, Ser. No. 369,275
Claims priority, application Japan, June 19, 1972, 47-60428
Int. Cl. E03d *13/00;* **A61b** *19/00*

U.S. Cl. 4—110 **17 Claims**

1. For use by human females when urinating, an elongated solid body having a relatively large inlet end and an opposed relatively small outlet end adapted to be connected with a tube, said solid body gradually diminishing in cross section from said inlet to said outlet end thereof and being formed with an elongated passage extending from said inlet to said outlet end of said body longitudinally therethrough, said inlet

end of said body terminating in a substantially flat end surface and being of an elongated generally oval configuration to be comfortably positioned at a location where the end of said passage at said inlet end will receive urine from the urethra, said solid body having a cross section which diminishes more sharply at an intermediate region of the body substantially midway between the opposed ends thereof than in the region of said opposed ends thereof, and said body being of a generally muttonchop configuration and having between its opposed ends a pair of opposed side edges which are of substantially S-shaped configuration with one of said side edges being curved to a substantially greater degree than the other, and said body having a substantially uniform wall thickness extending between said outlet end and said intermediate region of said body, and said body having between said intermediate region and said inlet end thereof at least along said side edge of greater curvature a thickness which is substantially greater than the thickness of said body from said intermediate region thereof to said outlet end thereof.

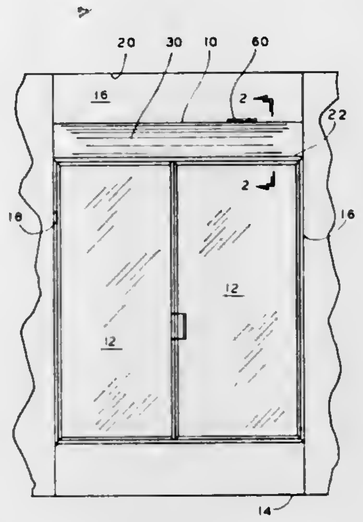




3,864,760
BATHING FACILITY

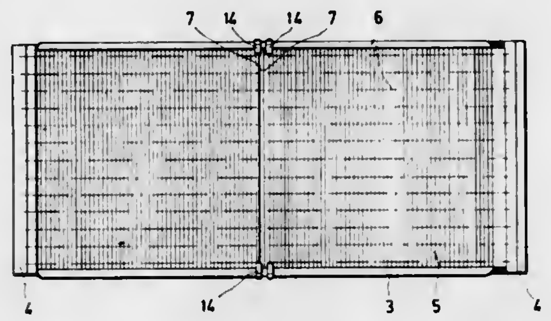
Duane C. Bowen, 2290 Nob Hill Dr., Carlsbad, Calif. 92008
Filed Apr. 26, 1972, Ser. No. 247,795
Int. Cl. A47k *3/22*
U.S. Cl. 4—146 **15 Claims**

1. An improvement in the combination of a bathroom and a bathing facility positioned therein, said facility being fitted between first and second parallel vertical end wall surfaces and a third vertical side wall surface meeting said first and second wall surfaces at right angles and a horizontal ceiling wall surface above said facility, said wall surfaces above said bathing facility being finished, and there being a horizontally slidable closure on the side of the facility opposite to said third wall surface extending between said first and second wall surfaces and which can be opened for access to said facility, said closure being supported from a top horizontal rail extending between said first and second wall surfaces and spaced below said ceiling surface, said improvement being means to substantially prevent passage of heated and moist air between said rail and said ceiling surface from said bathing facility into said bathroom when said closure is extended between said first and second walls, said means comprising and elongated sheet-like body with two parallel elongated side edges and two parallel transverse edges substantially bridging the space between said rail, said first and second wall surfaces and one of said other wall surfaces, and first interengaging means between one of said side edges of said body and said rail and second interengaging means between the other of said side edges of said body and said one of said other surfaces to support said body above said facility, said transverse edges being adjacent said first and second walls respectively said one of said other surfaces being said third vertical wall surface.



3,864,761
WITHDRAWABLE COVER FOR A SWIMMING POOL

Eduard Stalder, Sfein Rain 249, 4113 Fluh, Switzerland
Filed Nov. 12, 1973, Ser. No. 414,692
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.14 **8 Claims**



1. A withdrawable cover for a swimming pool, comprising in combination:

a drum adapted to be rotatably mounted about an axis;

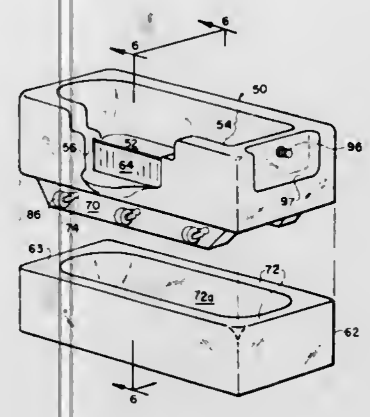
a first elongate member extending substantially parallel to said axis;

a plurality of mutually parallel and spaced apart cables each interconnecting said first elongate member and a peripheral portion of said drum;

a plurality of further elongate members each extending substantially parallel to the first elongate member and each overlying said cables, longitudinal edge portions of respective ones of said further elongate members being disposed in edge-to-edge relationship and being mutually intercoupled to permit said further elongate members to be rolled-up around the periphery of said drum, one of said further elongate members being disposed next adjacent said first elongate member and being connected thereto; whereby said further elongate members when unrolled from said drum may be supported along a major portion of their lengths by said cables to provide a cover extending over a swimming pool.

3,864,762
ELEVATED SAFETY BATHTUB

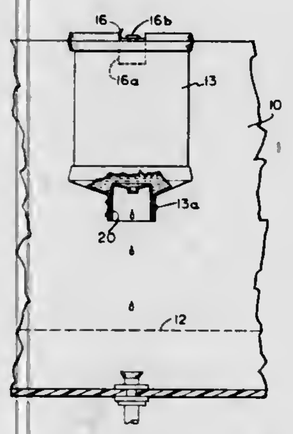
Eve B. Finch, 5190 S.W. Chestnut St., Beaverton, Oreg. 97005
Filed Mar. 1, 1972, Ser. No. 230,639
Int. Cl. A47k *3/00, 3/024*
U.S. Cl. 4—173 **9 Claims**



1. An improved safety bathtub comprising a tub having a floor supported at chair height and a surrounding wall for holding a quantity of water, said tub wall having an opening therein extending from the top of said wall downwardly toward said tub floor for permitting a person to seat himself on said tub floor through said opening preparatory to positioning himself wholly within said tub for bathing and a water-tight barrier associated with said opening for sealingly closing said opening after said person has positioned himself wholly within said tub, wherein the improvement comprises arm rest means formed in said tub wall adjacent to the sides of said opening at a height lower than the top of said wall for supporting the arms of said person seated on said tub floor and for use in entering and leaving said tub.

3,864,763
DISPENSING CAP FOR DISCHARGING LIQUID INTO FLUSH TANK FROM A BOTTLE DURING A FLUSHING CYCLE

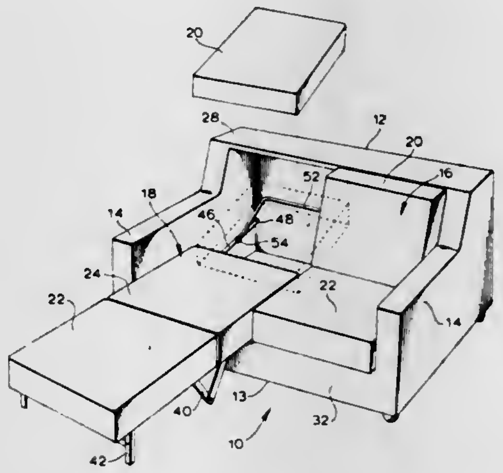
George B. Spransy, Oconomowoc, Wis., assignor to W. Braun Company, Chicago, Ill.
Filed Aug. 6, 1973, Ser. No. 385,791
Int. Cl. E03d *9/03*
U.S. Cl. 4—227 **3 Claims**



1. An integrally molded fitment for use with a bottle of predetermined volume containing a liquid whose characteristics make it desirable to introduce a small quantity into the flush tank of a toilet during a flushing cycle, said bottle having a neck in which is supported a fitment, said fitment being cup shaped and having a concave bottom cup wall provided with a centrally located nozzle structure extending inwardly of the cup, said nozzle structure containing a fine nozzle or passageway having a diameter of between about 0.010 inches and about 0.020 inches, and a length of about 1/16 inch to about ⅛ inch, depending upon the quantity of liquid to be discharged per cycle, a specific diameter dimension being maintained to a tolerance of less than 10% in production, said liquid in said bottle normally having a viscosity and surface tension of the same general order as that of water, said fitment having a well at each end of the passageway, the well at the liquid discharge end within said fitment being conical and having a suitable cone angle, the well at the liquid entrance end of the passageway having a flat bottom surrounding the end of said fine passageway, said fitment being adapted to be secured in an air-tight fit to said bottle and having the bottle and fitment inverted with the open ended cup chamber of the fitment extending downwardly from the bottle, said chamber defining a volume of the order of at least about one-two hundredths of the volume of the bottle interior, the water in the flush tank being adapted to cover the open end of said fitment chamber and rise therein and extend outside of said fitment above said open end for a distance of from about ½ inch to about 4 inches when said flush tank attains normal full condition in stand-by for a flushing operation, the water in said tank during flushing being adapted to drain from said tank so that the water level in said flush tank is below the bottom of said fitment with the open ended cup chamber being exposed to atmosphere, the fitment and bottle being adapted to cooperate with rising flush tank water level to force some air from said chamber through said fine passageway and into said bottle, said flush tank when water therein has drained so that the water level is below the level of said fitment permitting air in said bottle to expand and discharge a quantity of liquid from said bottle, the amount of said liquid discharged being dependent upon the dimensions of said passageway, the depth of immersion of said fitment in said tank water and the relative volumes of said fitment chamber and the bottle volume cooperating with the depth of immersion of said fitmentn below the surface of said water when said tank is in stand-by condition determining in part the amount of liquid discharged, the fitment dimensions and mounting being such that the tank water level within the fitment chamber is always below the nozzle structure.

3,864,764
CONVERTIBLE FURNITURE

Mieczyslaw Januse, 848 Norwich Blvd., Bay Ridges, Ontario, Canada
Filed Nov. 5, 1973, Ser. No. 413,030
Int. Cl. A47c *17/14*
U.S. Cl. 5—29 **5 Claims**



1. An article of convertible furniture, convertible between tub positions, in one position providing a seating unit, and in the other position providing a reclining unit, said article having a back portion and a seat portion and comprising;

intermediate cushion means having an upholstered surface located in said seat portion with said upholstered surface directed downwardly;

pivot means connected to said intermediate cushion whereby the same may be rotated outwardly from said seat portion, with said upholstered surface directed upwardly;

upper cushion means, having an upholstered surface located in said seat portion with said upholstered surface directed upwardly, super-adjacent said intermediate cushion means when in a seating position;

means pivotally connecting said intermediate cushion means and said upper cushion means whereby the same may be swung into alignment with one another into a reclining position;

support means for said upper cushion means supporting the same when swung into the reclining position as aforesaid;

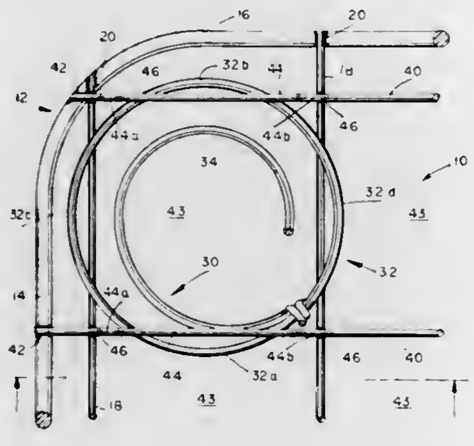
back cushion means having front and rear surfaces and located between said back portion and said upper cushion means, when said article is in its said seating position said back cushion being removeable;

main support frame means swingably mounted on said article between said back portion and said back cushion means and swingable outwardly for supporting said back cushion means in the reclining position, and,

secondary frame means swingably mounted on said main frame means for supporting said rear surface of back cushion means when the same is in the seating position.

3,864,765
BEDSPRING AND METHOD OF MAKING THE SAME

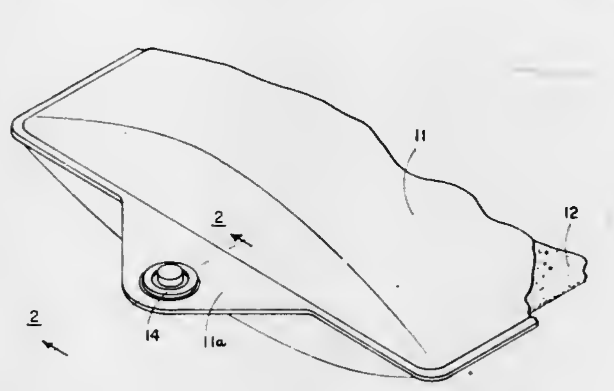
Irwin Anonauer, Oceanside, L. I., N.Y., assignor to Spring Associates, Inc., Brooklyn, N.Y.
Filed May 14, 1973, Ser. No. 359,988
Int. Cl. A47c *23/02*
U.S. Cl. 5—266 **7 Claims**



1. A bedspring comprising a series of spaced elongate transversely extending members arranged substantially in a common plane; a series of spaced elongate longitudinally extending members disposed on one side of said plane and fixedly connected to said transversely extending members to form an intersecting grid-like array defining a plurality of spaces; at least one of said series of members being provided with indentations recessed in a direction away from the other of said series of members; a frame extending around said grid-like array, the free ends of said elongate members being connected to said frame and being supported by the latter; a plurality of coil springs each having a coil turn at one end thereof positioned coextensively with a space of said grid-like array of members, each end coil turn having dimensions greater than the spacing between adjacent longitudinal members and being interposed between one pair of transversely extending members and one pair of longitudinally extending members to position opposite peripheral portions of each end coil turn within respective indentations, whereby each coil spring is fixed in position in said grid-like array and is prevented from separating from the bedspring members.

3,864,766
SELF-ADJUSTING CONTOUR PILLOW

Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.
Filed Oct. 1, 1973, Ser. No. 402,197
Int. Cl. A47c *27/08*
U.S. Cl. 5—337 **3 Claims**



1. A self-adjusting contour pillow comprising:

a flexible envelope fabricated of material substantially impervious to air;

said envelope including a flap portion extending outwardly from the edge thereof;

a manually operable air valve member for controlling the flow of air between the interior of said envelope and the ambient atmosphere;

said flap portion having an aperture formed therein, said aperture having sealing means running around the perimeter thereof for removably receiving said valve member in an air sealed relationship therewith; and

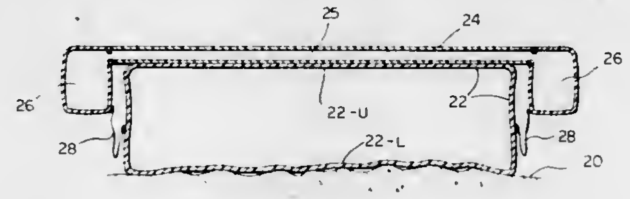
resilient filler means contained within and substantially filling said envelope, said filler means being highly permeable to air;

whereby when said air valve member is opened while said pillow is simultaneously being compressed in response to a body portion having a particular contour, the pillow retains said contour when the valve member is closed:

said air valve member comprises a body portion having an annular groove formed therein, said sealing means comprising an annular grommet fixedly attached to the perimeter of said flap portion aperture, said body portion being fitted in said aperture with said grommet matingly engaging the groove.

3,864,767
AIR MATTRESS SUPPORT SYSTEM

Larry D. Adams, Collingswood, N.J., assignor to Metrologic Instruments, Inc., Bellmawr, N.J.
Filed Feb. 26, 1973, Ser. No. 336,028
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 R **3 Claims**



1. Support apparatus adapted for supporting a given load upon an irregular surface above the highest irregularity of said surface, comprising:

a. a support bag inflated with air to a first pressure, having a first depth;

b. an air cushion loosely positioned on top of said support bag and inflated with air to a second pressure less than said first pressure;

c. said respective pressures being such that when said load is positioned upon said air cushion, said support bag maintains an air space between said air cushion and the highest irregularity of said irregular surface, and said air cushion maintains an air space between said load and said support bag, said support bag and said air cushion in mutual cooperative combination thereby providing a unitary well stabilized, relatively shock-insensitive suspension system for said load;

d. said second pressure being less than one atmosphere.

e. said air cushion having a pancake-like center portion having a second depth substantially less than said first depth for supporting said load and an outer bumper portion such that said air cushion is restrained from gross lateral displacement relative to said support bag, said bumper portion adapted to act as a reservoir to receive air from said center portion when a load is placed upon said center portion;

f. said support bag being made of a first material having a first thickness and said air cushion being made of a second material of a second thickness less than said first thickness;

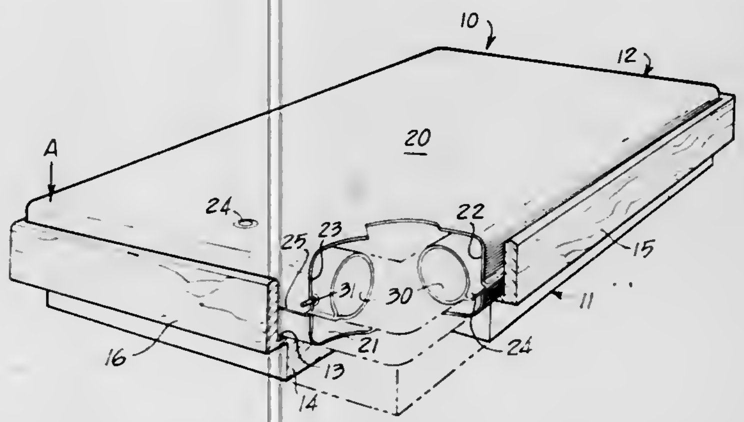
g. a lubricant positioned between said support bag and said air cushion;

h. wherein said outer bumper portion of said air cushion has a form complementary to said support bag, and overhangs around said support bag, and

i. straps being connected loosely to said support bag and said air cushion, to insure the non-separation of said support bag and said air cushion.

3,864,768
WATER MATTRESS WITH INTERNAL FLOAT TUBE

Richard Fraige, 1823 Alameda Ave., and Jerry Read, both of Alameda, Calif., assignors to Said Fraige by said Read
Filed July 13, 1973, Ser. No. 379,067
Int. Cl. A47c *27/08*
U.S. Cl. 5—348 WB **10 Claims**



1. An improved water mattress with edge support which is adapted to be confined in a rigid box-like waterbed frame comprising:

a water inflatable bag-like enclosure having a top panel, a parallel, spaced-apart bottom panel and edge panels sealingly interconnecting said top and bottom panels to form a water-tight enclosure;

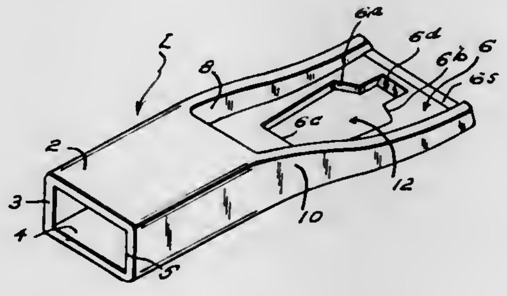
a water filling and valve means in one of said panels having fluid communication with the interior of said bag-like enclosure;

at least one float tube means hingedly connected at one edge internally within said enclosure adjacent to and along one edge panel thereof in a manner allowing it to move between said top and bottom panels independently of said one edge panel, said float tube means forming an internal, fluid-tight chamber within said bag-like enclosure; and

an air filling and valve means located in one of said panels and having fluid communication with said fluid-tight internal chamber whereby said float tube means can be pneumatically inflated to provide edge support for said top panel along the top of said one edge panel through its buoyancy in relation to the fluid filling said bag-like enclosure.

3,864,769
MEANS FOR MOVING A SKI BOOT BUCKLE INTO AND OUT OF A CLOSED POSITION

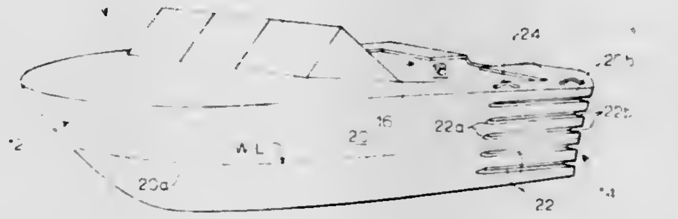
Munroe H. Hamilton, 66 Robbins Rd., Lexington, Mass. 02173
Continuation-in-part of Ser. No. 138,477, April 29, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,690
Int. Cl. B25f *1/00*
U.S. Cl. 7—17 **6 Claims**



1. Ski boot buckle operating means for manually positioning a ski boot buckle prong, said buckle operating means comprising a lever body having spaced apart gripper sides formed at one end thereof for engaging an extremity of said buckle prong, a lever arm portion extending outwardly from one of the gripper sides to constitute a handle part through which manually applied pressure may be exerted to move the buckle prong, and reinforcing means formed at the junction of the lever arm and an adjacent gripper side to resist flexing when the manually applied pressure is transmitted through the gripper sides to move the buckle prong, said gripper sides being connected at their outer edges by side walls to form a tubular enclosure and the gripper sides being further joined throughout a portion of their length by inner wall portions parallel with and occurring in spaced relation to the said side walls.

3,864,770
BOAT HULL CONSTRUCTION

Robert G. Zeilinger, 123L Sebring Dr., Depew, N.Y. 14043
Filed Oct. 31, 1973, Ser. No. 411,284
Int. Cl. B63b *3/00*
U.S. Cl. 9—6 **4 Claims**

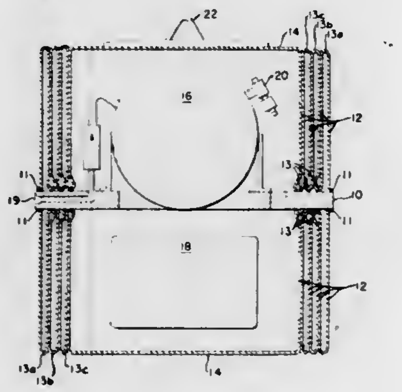


1. In a boat construction having a rear cockpit bounded in part by hull side walls and a transversely extending rear wall, said hull side walls having forward and rearward outer surface portions, said rearward outer surface portions being characterized as being essentially vertically disposed, the improvement of a ladder associated with at least one of said rearward outer surface portions for assisting a swimmer in climbing from the water directly into said cockpit, which comprises in combination:

at least one slot recess formed in said one of said rearward outer surface portions and arranged below the water line of said boat when at rest in the water, said recess being horizontally elongated and having lower tread, upper and rear surfaces, said recess having a forwardly disposed end thereof characterized as being of progressively reduced cross-sectional area in a direction towards one of said forward outer surface portions associated with said one rearward outer surface portion for affording smooth water flow transition therebetween, said recess having a rearwardly disposed end thereof opening through an outer surface of said rear wall for allowing unobstructed flow of water rearwardly through said recess, and said recess is characterized as having a generally rectangular cross-sectional configuration and as being dimensioned to at least receive the fingers/toes of a swimmer and as extending forwardly of said rear wall through a distance at least approximating shoulder width of said swimmer in order to facilitate entry of said swimmer directly into said cockpit.

3,864,771
DEPLOYABLE LOAD BUOYANCY SUPPORT CONTAINER OR SHELTER SYSTEM

William H. Bauer, Grand Island, N.Y., and Textron Inc., Providence, R.I.
Filed Aug. 21, 1972, Ser. No. 282,370
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **12 Claims**

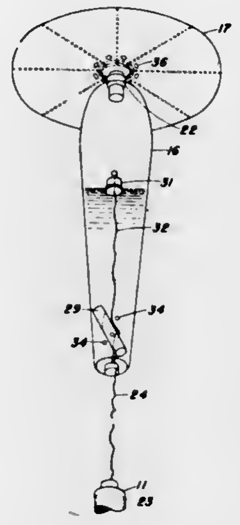


1. A buoy transportable in compacted small volume form and adapted to be subsequently extended into large volume condition, said sonobuoy comprising:
- a base member of ring-like form subtended at opposite sides thereof by wall members, each said wall members being formed of a plurality of internested ductile sheet material cylindrically shaped straight wall components of different diameters disposed concentrically about a common extension axis and interconnected by annular fold components and having an end closure component functionally integral therewith at opposite ends thereof,
- said straight wall components and said annular fold components being formed of the same material and being of substantially equal wall thickness throughout; and either the largest or smallest diameter wall component of said plurality being affixed to said base member;
- and means for causing said sonobuoy to unroll in the direction of said extension axis and to extend into a single generally cylindrical configuration closed at all side wall and end portions thereof.

3,864,772
DEPTH CONTROL

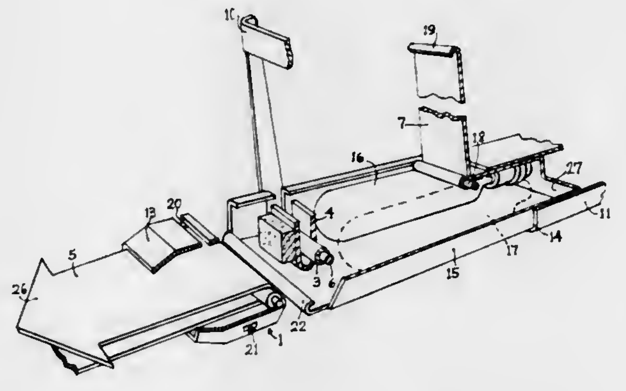
Roland M. Gogolick, Arlington; Richard L. Brown, Lexington, both of Mass., and William J. Finney, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 26, 1947, Ser. No. 788,106
Int. Cl. B63b *45/08, 45/00*
U.S. Cl. 9—8 R **6 Claims**

1. Apparatus for maintaining an underwater device at a substantially predetermined depth in water, comprising; gas release means including a valve body, a valve seat movable relative to the valve body, a balloon attached to the valve body and to said device, an umbrella attached to the valve seat adapted to move same relative to the valve body in accordance with velocity of the apparatus in a generally vertical direction, means for generating gas within the balloon, said gas release means communicating with the inside of the balloon, a valve cooperating with the valve seat, hydrostatic pressure responsive means for moving said valve relative to the valve body and valve seat in accordance with hydrostatic pressure, the construction and arrangement being such that the amount of gas released from the balloon by the gas release means is a function of said velocity and pressure.



3,864,773
INFLATABLE WATER-RESISTANT LIFE-SAVING APPARATUS

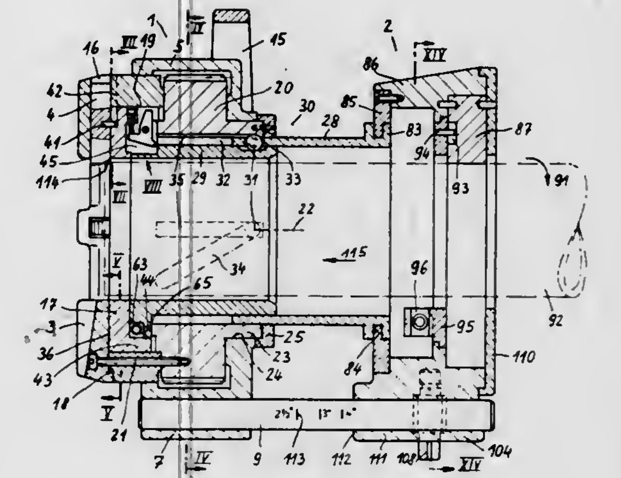
Neil Driscoll Geary, 73 Northcote Ave., Swansea, New South Wales, Australia
Filed Apr. 20, 1973, Ser. No. 352,918
Int. Cl. B63c *9/16*
U.S. Cl. 9—316 **4 Claims**



1. A fastening mechanism to attach a gas inflatable belt about a wearer's body, comprising
- a. a locking means for securing said belt under tension about the wearer,
- b. a housing for gas containers,
- c. a puncturing means to puncture said gas containers and inflate the belt,
- d. actuating means to actuate the puncturing means,
- e. a wearer operable lever including said actuating means to actuate said puncturing means to puncture said gas containers and inflate said belt, with said lever simultaneously releasing said locking means so that the belt is unfastened about the body of the wearer and free to float up under the wearer's arms during inflation of the belt.

3,864,774
THREAD CUTTING DEVICE

Arthur Fohl, Haubersbronn, Germany, assignor to Remswerk Christian Foll & Sohne, Waiblingen, Germany
Filed Mar. 5, 1973, Ser. No. 338,408
Claims priority, application Germany, Mar. 6, 1972, 2210668
Int. Cl. B23g *5/12, 11/00*
U.S. Cl. 10—120.5 **15 Claims**

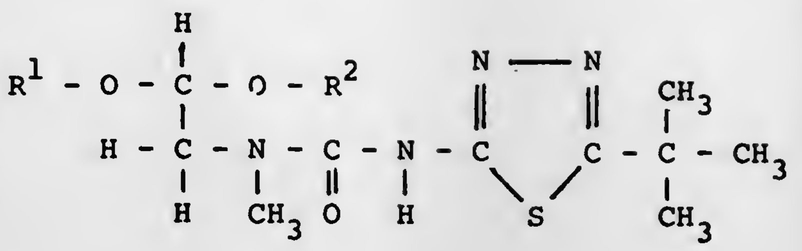


1. In a device for cutting male threads on a workpiece, especially conical threads such as pipe threads; a chuck housing adapted for receiving a workpiece from one side and having chuck means therein operable to grip a workpiece on the axis of the housing, a cutter housing on the other side of the chuck housing coaxial therewith and non-rotatably connected to the chuck housing but moveable axially relative thereto, a cutting jaw carrier rotatable in said cutter housing and including means for guiding thread cutters radially relative to the common axis of said housings, a control disc in said cutter housing rotatable relative to said carrier and including means for engaging cutters in said carrier and for actuating the cutters in the radial direction, a drive connected to said carrier for driving the carrier in rotation in said cutter housing whereby cutters in said carrier will cuttingly engage the end of a workpiece gripped in said chuck and cause axial movement of the workpiece and chuck housing relative to said cutter housing, drive means connected to said control disc and said chuck housing for rotating said control disc in a direction to cause cutters in said carrier to move radially outwardly, said drive means including a first sleeve element rotatably but nonaxially moveable connected to said chuck housing, a second sleeve element having one end telescoping one end of said first sleeve element, connecting means connecting the other end of said second sleeve element to said control disc, ball means captive in said one end of said first sleeve element, longitudinal guide means nonrotatable relative to said carrier engaging one radial side of said ball means, and helical groove means in said one of said second sleeve element engaging the other radial side of said ball means.

3,864,775
DIALKYL ACETALS OF HETEROCYCLIC UREIDOACETALDEHYDE

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
Division of Ser. No. 208,944, Dec. 16, 1971, Pat. No. 3,787,432. This application May 21, 1973, Ser. No. 362,033
Int. Cl. A01n *9/12*
U.S. Cl. 71—90 **5 Claims**

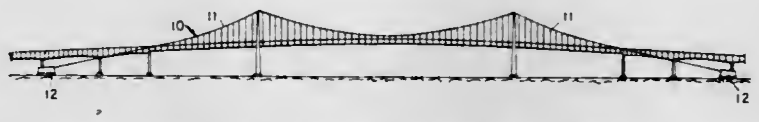
1. A herbicidal composition comprising an inert carrier and as an essential active ingredient, in a quantity toxic to weeds, a compound of the formula



wherein R^1 and R^2 are each alkyl of up to 3 carbon atoms.

3,864,776
PRESTRESSED POST TENSION SUSPENSION BRIDGE CABLE ANCHORAGE

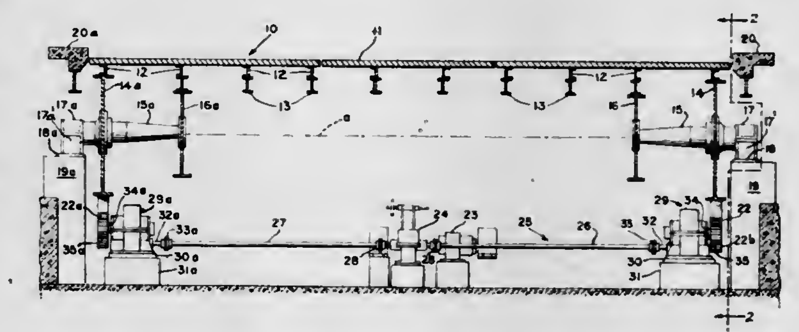
Alfred Hedefine, Sparta, N.J., and Louis G. Silano, Seaford, N.Y., assignors to Parson, Brinckerhoff, Quade & Douglas, Inc., New York, N.Y.
Filed Nov. 15, 1973, Ser. No. 416,092
Int. Cl. E01d *11/00*
U.S. Cl. 14—21 **34 Claims**



1. In a suspension bridge a cable anchorage construction comprising an anchorage mass, a cable, said cable including at least one cable strand, a bearing plate apposed to said cable, at least one rod opening in said bearing plate, at least one rod, said at least one rod gripped at least at one of its ends remote from said bearing plate, the other end of said at least one rod extending through at least one bearing plate opening, means to fasten said at least one extending rod held bearing upon said bearing plate, means bearing upon said bearing plate to hold said at least one said cable strand, tightening means including said bearing plate and said at least one rod to stress said cable anchor mass, means clear of said at least one rod held bearing upon said bearing plate to retain at least one cable strand, and means to tension said at least one cable strand against said anchorage mass's stress.

3,864,777
BRIDGE-OPERATING MACHINERY

George Perkons, and Orrell B. Schailey, both of Philadelphia, Pa., assignors to The Earle Gear and Machine Company, Philadelphia, Pa.
Filed Apr. 29, 1974, Ser. No. 465,099
Int. Cl. E01d *15/08*
U.S. Cl. 14—38 **19 Claims**



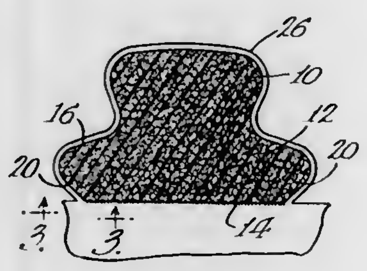
18. In a bascule bridge construction, a pair of trunnions, a bascule span including spaced main girder means each pivotally supported upon a corresponding one of said pair of trunnions, to accommodate swinging movements of said span about an axis defined by said trunnions, a pair of arcuately curved racks, each secured to a corresponding one of said main girder means with its center of curvature on said axis, and heavy-duty gear-drive means for driving said racks to swing said span and provide for opening and closing of the latter, said gear-drive means comprising: motor means; shafting coupled to said motor means, extending in general paral-

lelism with said axis, and substantially spanning the distance between the girder-supported racks; a pair of speed-reducer mechanisms for delivering power from portions of said shafting to a corresponding one of said racks, each speed-reducer mechanism including three parallel shafts, disposed in triangular array, and comprising an input shaft coupled to said shafting and carrying an input pinion, an intermediate shaft carrying an intermediate gear in driven engagement with said input pinion and carrying a second pinion, and an output shaft carrying an output pinion and having a gear in driven engagement with said intermediate pinion, the output pinion of each speed-reducer mechanism being in driving engagement with one of said racks; and means mounting each such speed-reducer mechanism as a single unitary assembly and protecting the same from corrosion, dirt and the like, said last means comprising rigid housing structure including parallel, spaced, walls each having three bearing-carrying openings disposed in triangular array corresponding to the shaft array, and confronting similar openings in the other wall, one set of corresponding and confronting openings, and the bearings thereof, serving to journal said input shaft with its pinion enclosed within said housing structure, another set of corresponding and confronting openings, and the bearings thereof, serving to journal said intermediate shaft with its gear and its pinion enclosed within said housing structure, and a third set of corresponding and confronting openings, and the bearings thereof, serving to journal said output shaft with its driven gear enclosed within said housing structure and its rack-driving pinion mounted exteriorly of said housing structure upon a free end portion of said output shaft which extends through one of the confronting openings of said third set.

3,864,778
CHALK ERASER MADE FROM CLOSED CELL FOAM PLASTIC

Frank E. Vopat, 809 Woodcliff Dr., South Bend, Ind. 46615, and Stephen L. Colucci, 1203 Hillcrest Rd., South Bend, Ind. 46617

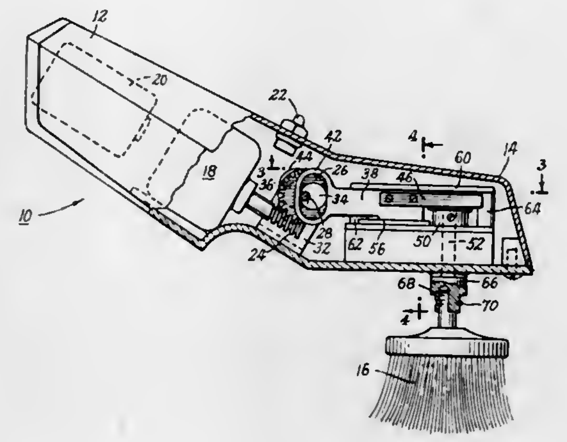
Filed Aug. 18, 1972, Ser. No. 281,714
Int. Cl. B43l ***21/00***
U.S. Cl. 15—105 5 Claims



1. An improved eraser for erasing chalkboards comprising an eraser body having a substantially flat and continuous erasing surface, said eraser being composed of substantially rigid expanded, closed cell, non-porous thermoplastic foam material, a longitudinal recess in each side of said body to protect the fingers of a user, said body including a section in the form of an integral handle, said handle having a fused plastic skin on at least a major portion thereof, opposite edges of said erasing surface being beveled, and said material on said erasing surface being abraided and feathered and exposing open cells in said surface contiguous with said closed cell body, whereby the open cells collect chalk dust without penetration of said dust into the body of the eraser.

3,864,779
OSCILLATING BRUSH

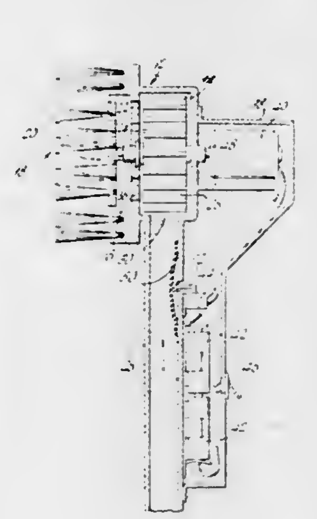
Alfred R. Thomas, 309 Lafayette Ave., Brooklyn, N.Y. 11238
Filed June 28, 1973, Ser. No. 374,313
Int. Cl. A46b ***13/02***
U.S. Cl. 15—22 R 1 Claim



1. An oscillating brush device comprising a housing, a pinion shaft mounted in said housing and extending therethrough, a brush secured to the pinion shaft outside said housing, a pinion mounted on the shaft within the housing, a pair of racks engaging said pinion respectively on opposing sides thereof, a motor mounted in said housing and having a rotary drive shaft, a worm screw in driven connection with said shaft, a worm wheel engaging said worm screw, a cam mounted on each face of said worm wheel in opposite phase, each of said racks being operatively connected to one of said cams whereby oscillatory motion is imparted to said brush upon rotation of said shaft.

3,864,780
CLEANING BRUSH WITH REVOLVING BRISTLES

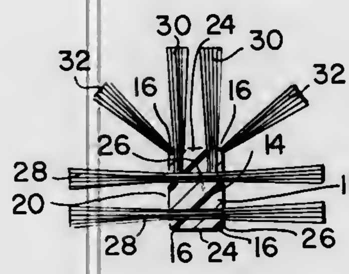
Jasper Watkins, P.O. Box 94, Clifton, N.J. 07015
Filed Dec. 26, 1973, Ser. No. 427,810
Int. Cl. A46b ***13/06***
U.S. Cl. 15—29 13 Claims



1. A brush comprising
a housing;
a bristle-bearing head rotatably mounted in said housing;
driven means connected to said head for rotating said head in response to fluid flow;
motor means connected to said head for rotating said head; and
fluid responsive control means for energizing said motor means as a function of fluid flow.

3,864,781
DEVICE FOR BRUSHING DENTURES

Joseph A. Leonard, Los Osos, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed June 26, 1973, Ser. No. 373,649
Int. Cl. A46b ***9/02, 9/04***
U.S. Cl. 15—106 1 Claim

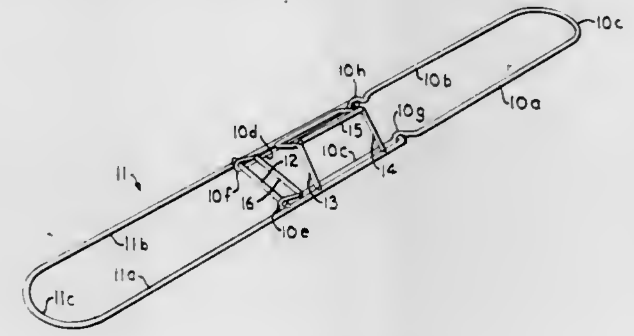


1. A device adapted to be manually operated to clean dentures by brushing, said device comprising:
an elongated handle with a head at one end, said head in cross section defining a rectangle with rounded corners and thus having four flat surfaces extending in the direction of elongation, oppositely disposed surfaces being parallel whereby two pairs of paralleled surfaces extend at right angles to each other, each two adjacent surfaces being interconnected by a rounded edge extending in the direction of elongation;
first bristle means secured to a first head surface and including first and second parallel rows of bristles extending in the direction of elongation and extending outward at right angles to the first head surface;
second bristle means secured to a second head surface parallel to the first head surface and oppositely disposed thereto, said second means including first and second parallel rows of bristles extending in the direction of elongation and extending outward at right angles to the second surface whereby the first and second means extend outward in opposite directions;
third bristle means secured to a third head surface which extends between the first and second surfaces at right angles, said third means including first and second parallel rows of bristles extending in the direction of elongation and extending outward at right angles to the third surface, said third means extending at right angles to the first and second means; and
fourth and fifth bristle means, each of the fourth and fifth bristle means including a single row of bristles extending in the direction of elongation and being secured to a corresponding one of the edges between the first, second and third surfaces, each of the fourth and fifth means extending outward at right angles to the corresponding edge and not intersecting with any other means.

3,864,782
COLLAPSIBLE MOP FRAME IMPROVEMENT

Harry T. Carter, Chanute, Kans., assignor to Fibrac, Inc., Chanute, Kans.
Filed Aug. 10, 1973, Ser. No. 387,467
Int. Cl. A47l ***13/253***
U.S. Cl. 15—147 A 2 Claims

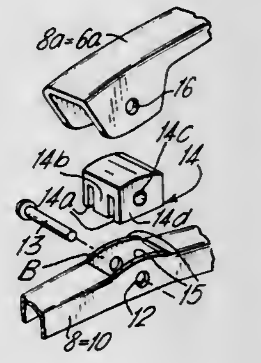
1. A collapsible mop frame, comprising
opposed first and second wing sections,
each said wing section of U-shaped configuration with an outboard closed arcuate portion and substantially parallel inboard legs, the first wing being of spring wire stock,
a transverse hinge bar connecting the legs of the second wing section intermediate the end thereof,
the inboard ends of the first section wrapped around the said transverse bar to form a hinge connection, whereby to allow hinged arcuate movement of the wing sections relative to one another,
the inboard ends of the first wing section lying inside of the inboard ends of the second wing section,
the inboard ends of the second wing section inwardly turned and limited portions of the first wing section legs arcuately configured intermediate the ends thereof whereby the former may underlie the latter when the sections are in plane with one another,
leg portions of the first wing section resiliently engagable and disengagable with the inwardly turned inboard ends of the second wing section by compression and release of the first section legs intermediate the ends thereof toward and away from one another,



transverse bar means interconnecting the second section legs between their inboard inturned ends and the hinge bar whereby to rigidly position said legs with respect to one another,
transverse bar means interconnecting the first section legs closely adjacent their inboard ends whereby to rigidly fix the first section legs with respect to one another next to the hinge, and
means connected to said second wing section inboard of the hinge bar operative to receive attachment of a mop handle.

3,864,783
METAL ARTICULATED SUPPORTS FOR WIPER BLADES OF WINDSHIELD WIPERS ON MOTOR VEHICLES

Dario Arman, 15 Piazza Adriano, Turin, Italy
Filed May 10, 1973, Ser. No. 359,148
Claims priority, application Italy, May 13, 1972, 68510/72
Int. Cl. B60s ***1/04, 1/40***
U.S. Cl. 15—250.42 2 Claims



1. A windshield wiper assembly comprising:
a. a principal bar articulated at its midpoint to a connector element for connection to the end of an oscillating arm of a motor vehicle,
b. a pair of rocker arms each articulated at its midpoint to an end of said principal bar,
c. each of said bar and rocker arms having a U-shaped cross-section defining parallel side walls and a connector wall between them, each said connector wall having an opening at its midpoint between the ends of its respective bar or rocker arm,
d. said connector element and each end of said bar having a U-shaped cross-section defining parallel side walls, the side walls of said connector element being spaced apart a distance greater than the width of the midpoint of said

bar and the side walls at each end of said bar being spaced apart a distance greater than the width of the midpoint of its respective rocker arm,

e. aligned holes in the side walls of said connector element and the side walls at the midpoint of said bar and a pivot pin extending through all said holes, and aligned holes in the side walls of each end of said bar and in the side walls of each rocker arm at its midpoint and a pivot pin extending through aligned holes at each end of said bar, and

f. three molded plastic spacer elements each having substantially the shape of a regular hexahedron, each spacer element having two parallel slots extending into the body of the element from one face of the spacer element and a through hole perpendicular to said slots,

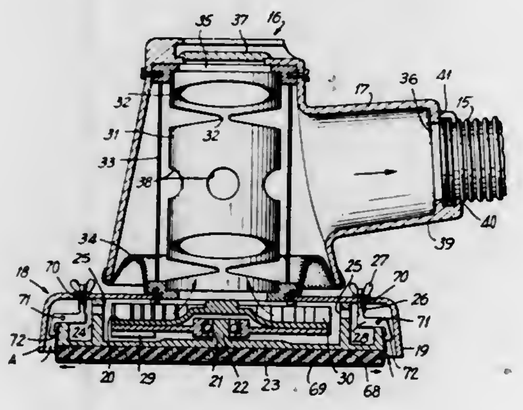
g. one of said spacer elements being arranged between the side walls of said connector element with its slots accommodating the side walls at the midpoint of said bar, the portion of said spacer element between the slots fitting through the opening in the connector wall of said bar, and the through hole in said spacer element being aligned with the holes in the side walls of said connector element and at the midpoint of said bar, said pivot pin passing through said through hole, and

h. each of the other two of said spacer element being arranged between the side walls at each end of said bar with its slots accommodating the side walls at the midpoint of each rocker arm, the portion of said spacer element between the slots fitting through the opening in the connector wall of its respective rocker arm, and the through hole in said spacer element being aligned with the holes in the side walls of the respective end of said bar and at the midpoint of its respective rocker arm, the respective pivot pin passing through said hole.

3,864,784
SURFACE TREATING ATTACHMENT DEVICE

Lars Gunnar Kilstrom, Taby, and Goran Arvid Henning Ridderstrom, Stockholm, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 5, 1973, Ser. No. 338,370
Int. Cl. A47l *5/30, 9/24*
U.S. Cl. 15—380 **15 Claims**

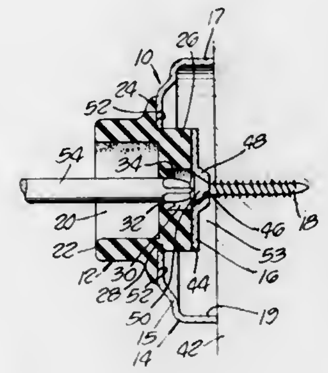


1. A surface treating attachment device adapted to be connected to a source of at least a partial vacuum comprising: an air flow channel extending from a location adjacent to the surface to be treated to said vacuum source, a rotatable fan wheel in said air flow channel, a handle-shaped part, said fan wheel having a weight placed outside the axis of rotation thereof whereby movement of the fan wheel by the air striking the vanes of the fan wheel generates an oscillating motion, a surface engaging working member operatively connected to said fan wheel whereby the oscillating motion generated by the fan wheel is transmitted to the working member which in turn oscillates in a plane that is generally parallel to the work surface, and energy absorbing means for operatively connecting said handle-shaped part to said working member which absorbs the movement of the working member in two directions that are generally perpendicular to each other.

3,864,785
DOORSTOP

William E. Hoppock, Whittier, Calif., assignor to Builders Brass Works, Los Angeles, Calif.

Filed Feb. 5, 1973, Ser. No. 329,812
Int. Cl. F16f *1/36*
U.S. Cl. 16—86 A **5 Claims**

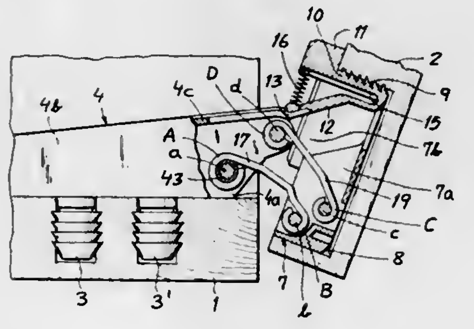


1. A doorstop of the type generally mounted on a wall comprising a rigid base member having a front wall portion and aperture therethrough, a resilient bumper having a base portion and an annular flange portion extending radially therefrom, said base portion extending through said aperture, said flange portion abutting said front wall portion of said base member and said base portion being disposed at a distance from the wall to which said doorstop is to be secured upon said base member being placed against said wall, a support plate secured to said base portion of said resilient bumper, said support plate having an aperture therethrough, means for securing said support plate to the base portion of said bumper and a fastening means adapted to extend through said aperture in said support plate and into said wall to extend said base portion of said bumper until said support plate abuts said wall, thereby securing said stop to said wall.

3,864,786
SELF-CLOSING PIVOTAL JOINT WITH CONCEALED HINGE

Luciano Salice, Via del Ronco, Carimate, Italy

Filed May 23, 1973, Ser. No. 363,117
Claims priority, application Italy, May 24, 1972, 24777/72
Int. Cl. E05d *3/06*
U.S. Cl. 16—163 **14 Claims**



1. A pivotal joint for two relatively swingable components, comprising:

a first member adapted to be secured to one of said components;

a second member adapted to be secured to the other of said components, said first member being provided with a channel open toward said second member, said second member having an extension received in said channel in one limiting position of said members;

an articulated linkage interconnecting said members, said linkage including a first pair of parallel pintles on said first member disposed in said channel, a second pair of parallel pintles on said second member and two hinge straps each anchored to a respective pintle of each pair, one pintle of said second pair being mounted on said extension;

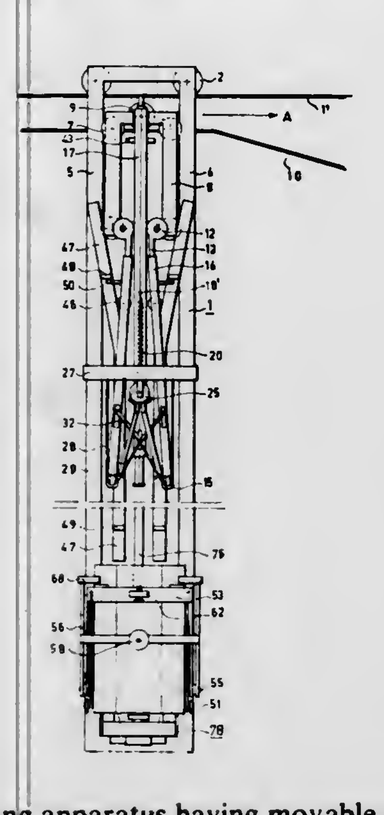
a resilient tongue on said first member extending from within said channel toward said second member and having a free end outside said channel disposed to engage said one pintle in an intermediate position remote from said one limiting position upon relative swinging of said members toward said one limiting position for exerting upon said second member a camming force tending to complete the swing, said tongue becoming disengaged from said one pintle upon a partial swinging of said members toward an opposite limiting position, said tongue extending generally tangentially of said one pintle in said intermediate position; and

an elastically compressible insert wedged in between said tongue and a wall portion of said first member bounding said channel, said insert bearing upon said free end in a sense resisting deflection of said tongue by said one pintle upon initial engagement thereof by said free end.

3,864,787
DEVICE FOR MODELLING POULTRY (PART 1)

Jacob Hendrik Mosterd, En Merkenbureau De Wit n.v. 11, Surinamestraat, Barneveld, Netherlands

Filed Sept. 11, 1972, Ser. No. 287,790
Claims priority, application Netherlands, Sept. 10, 1971, 71.12520
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **17 Claims**

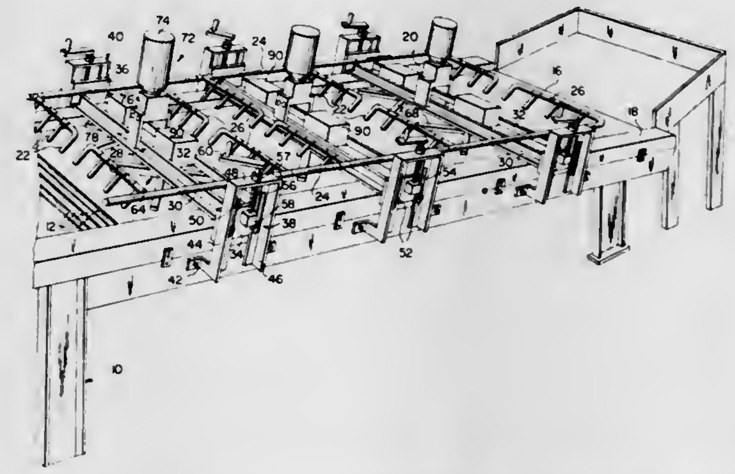


1. In poultry packing apparatus having movable suspension means for suspending a fowl by its legs, a device supported generally in longitudinal alignment with said movable suspension means for folding the wings of poultry against the body, comprising a first member having a concave internal surface that in each part contains a straight line portion, hinge connections at the two ends of said first member, the pivot axes of said hinge connections being mutually parallel and said straight line portions being parallel to said pivot axes, two further members, one each pivotally connected to one of said hinge connections, said further members having concave internal surfaces that in each part contain a straight line portion parallel to said pivot axes, means for controlled pivoting of the said further members with respect to said first member from a first position, in which said first member and further members constitute an open shell, into a second position, in which said first and further members constitute a tube, and means for moving said suspension means toward and away from said first and further members so as to move a suspended fowl into the space encompassed by said first and further members.

3,864,788
SCALLOP SPREADING MACHINE

Elmer D. Willis, Williston, N.C., assignor to Willis Brothers, Inc., Williston, N.C.

Filed Nov. 19, 1973, Ser. No. 417,125
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **9 Claims**



1. A scallop spreading machine for use with a scallop eviscerator formed by a plurality of counter-rotating rollers rotatably mounted on a frame to form an inclined path, with the axes of the rollers aligned transversely of the path, said spreading machine comprising:

a. at least one support frame mounted on the eviscerator frame and extending across the inclined path of the eviscerator frame;

b. adjustment means connected to said support frame for varying the height of said support frame above the eviscerator rollers;

c. at least one rotary spreader fan mounted on said support frame having an axis of rotation extending in the direction of the rollers, said axis being substantially perpendicular to the plane of the rollers, and said fan having blades radiating outwardly from said axis for distributing the scallop meats more evenly on the rollers, lengthening the time the scallops are subjected to the action of the eviscerator rollers and urging the scallops into the nips of the rollers; and

d. drive means connected to said support frame for rotating said spreader fan blades in a plane parallel with the inclined path.

3,864,789
SPRING CLIPS

Kajetan Leitner, Winacker, 8177 Bad Tölz, Bavaria, Germany

Filed June 19, 1973, Ser. No. 371,344
Claims priority, application Germany, June 21, 1972, 2230309; Nov. 28, 1972, 2258213; Feb. 23, 1973, 2309144
Int. Cl. A44b *21/00, 19/06*
U.S. Cl. 24—73 MF **4 Claims**

1. A spring clip adapted to secure a strip to a wall by engaging flanges on the strip and projecting through an aperture in the wall, the clip comprising

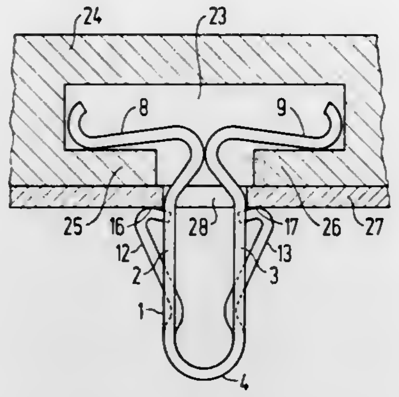
a curved part,

a pair of parallel legs extending from said curved part, said legs being spaced apart approximately by the width of the aperture in the wall,

a bent portion at the end of each leg opposite from said curved part, said bent portions extending in toward each other such that they almost touch,

a spring arm extending out from each of said bent portions, said arms extending away from each other and being resiliently formed back toward said curved part,

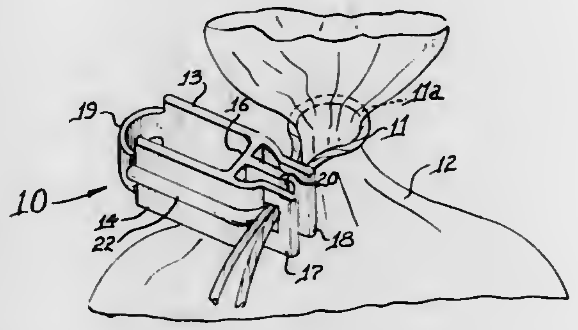
a resilient bracing lug extending out from each of said legs toward said spring arms and biased away from said legs, and a curved pressure surface at the end of each bracing lug curved in and back away from the spring arms for holding the wall and the flange on the strip between said pressure surfaces and said spring arms, the curved pressure surfaces preventing damage to the wall.



3,864,790
ROPE LOCK DEVICE

Ernest William Reinwall, Jr., 3816 W. Idle Dell, McHenry, Ill. 60050

Filed Mar. 25, 1974, Ser. No. 454,178
Int. Cl. B65d *77/10;* **F16g** *11/00*
U.S. Cl. 24—129 R 9 Claims

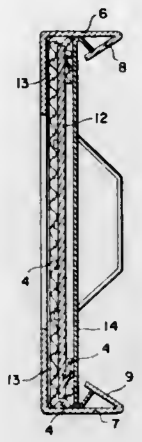


1. In a rope lock device for receiving a length of flexible rope and holding the rope against movement until selectively released therefrom, the combination comprising: a yieldable, central support member, a pair of spaced apart arm means secured to said yieldable, central support member and extending therefrom in a first direction selectively to be pressed together from a neutral position for bending of said yieldable, central support member, first and second spaced apart, movable gripping members secured to said yieldable, central support member and extending therefrom in a second direction, said first and second gripping members having aligned apertures formed therethrough of a size to receive at least one length of a rope of given diameter, said first and second spaced apart gripping members being movable away from and toward one another upon pressing and releasing, respectively, of said arm means, and a third gripping member secured to said yieldable, central support member to be positioned between said first and second spaced apart movable gripping members, said third gripping member having an aperture therethrough which is substantially completely out of registry with the apertures through said first and second gripping members when said pair of arms are in their neutral position for forming a bight portion of the rope segment passing through said apertures of said first, second and third gripping means to lock the rope in place, the apertures of said first, second and third gripping members being placed in substantial registry with one another when said arm means are pressed together, thereby removing said bight portion from said rope segment for releasing the rope for free movement through said first, second and third gripping members.

3,864,791
DECORATIVE BELT BUCKLE

Virginia H. Bishop, 2864 N.E. 25th Ct., Fort Lauderdale, Fla. 33305

Filed Apr. 26, 1973, Ser. No. 354,548
Int. Cl. A44b *11/00*
U.S. Cl. 24—163 3 Claims



1. A belt buckle, comprising:

a. a frame member having a generally U-shaped cross-section with a rectangular front wall portion having four sides which define a central opening therein, two opposed side walls extending generally perpendicular to said rectangular front wall portion in the rearward direction, and return securement portions extending inwardly from the rearward-most edge of each of said side walls at an acute angle with respect to each said respective side wall, said frame member defining a channel having free access from at least one end thereof in the direction parallel to said opposed side walls,

b. means for mounting a decorative fabric including a first slide member similar in shape to, and smaller than the outer dimensions of said rectangular front wall portion and being adapted for slidable insertion into said frame member channel while having a decorative fabric stretched across the front face and folded around the edges thereof so as show through said central opening of said frame member rectangular front wall portion, said first slide member further having a plurality of projections extending rearwardly around the periphery of its rear face for engaging and securely holding said decorative fabric taut across said front face of said first slide member,

c. a second slide member of substantially the same size and shape as said first slide member for sliding between said first slide member and said return securement portions of said frame member so as to firmly hold said first slide member in place, said second slide member having at least one integral loop for a belt.

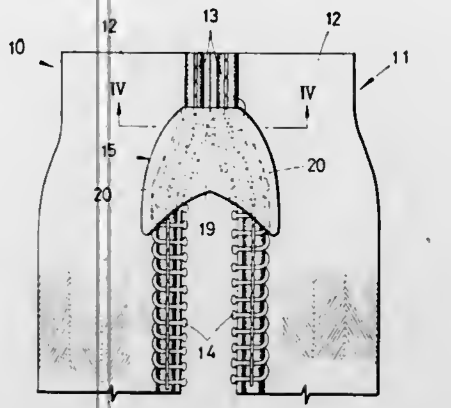
3,864,792
BRIDGE TOP STOP FOR SLIDE FASTENERS

Kihei Takahashi, Uozu, and Hideo Takabatake, Kurobe, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 21, 1974, Ser. No. 481,835
Claims priority, application Japan, June 25, 1973, 48-72115
Int. Cl. A44b *19/36*
U.S. Cl. 24—205.11 R 5 Claims

1. In a slide fastener including a pair of stringers each having a tape carrying a row of interlocking fastener elements on one inside edge thereof, and a slider slidable along said rows of fastener elements for coupling and uncoupling the same, a bridge top stop comprising a body adapted to be secured in position to the adjacent edges of said pair of stringers, and means on said body for defining a downwardly diverging, inverted Y-shaped guide channel therethrough, said guide channel being adapted to receive corresponding parts of said

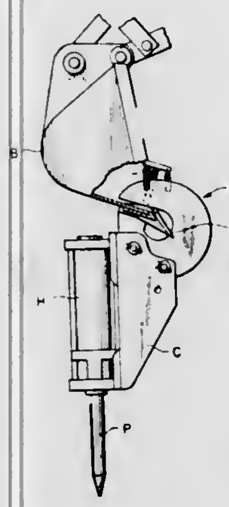
rows of fastener elements throughout the entire length thereof, in such a manner that some of the fastener elements including the topmost ones of the respective stringers interengage within said body.



3,864,793
MULTIPLE TOOL ATTACHMENT

William H. Guest, Apt P7-5, Panther Valley, Hackettstown, N.J. 07840

Continuation-in-part of Ser. No. 266,097, June 26, 1972, abandoned. This application Sept. 11, 1973, Ser. No. 396,265
Int. Cl. A44b *21/00;* **E02f** *3/76*
U.S. Cl. 24—243 CC 18 Claims



1. Apparatus for attaching alternately useable tools to the bucket of an earth working machine comprising:

a. means for defining a generally C-shaped structure comprising a pair of spaced arms having a slot between them for reception of a plate of a bucket in the slot, said means comprising a pair of spaced parallel plates each of generally C-shape,

b. bearing means,

c. means movably carried by one said arm and supporting said bearing means for moving said bearing means toward and away from said other arm,

d. bearing bar means extending transversely of said slot and attached to said other arm,

e. and means on said structure for supporting a tool.

3,864,794
APPARATUS FOR SLITTING AND OPENING A KNIT TUBE

Heinz Baumann, Falkensteinstr. 5a, Augsburg, Germany

Filed Nov. 14, 1973, Ser. No. 415,765
Claims priority, application Germany, Nov. 7, 1972, 2254371
Int. Cl. D06h *7/08;* **D06c** *5/00*
U.S. Cl. 26—55 C 10 Claims

1. An apparatus for opening a knit tube advancing along an axis, said apparatus comprising:

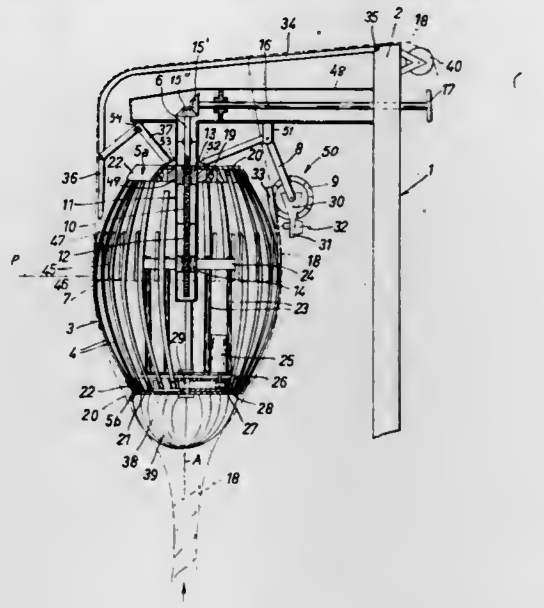
a pair of axially spaced supports rotatable about and centered on said axis;

an array of like elongated flexible elements angularly equispaced about said axis and bridging said supports;

means for displacing at least one of said supports axially toward and away from the other support thereby bowing said flexible elements and changing the maximum diameter of said array;

cutting means for slitting a knit tube drawn axially over said array; and

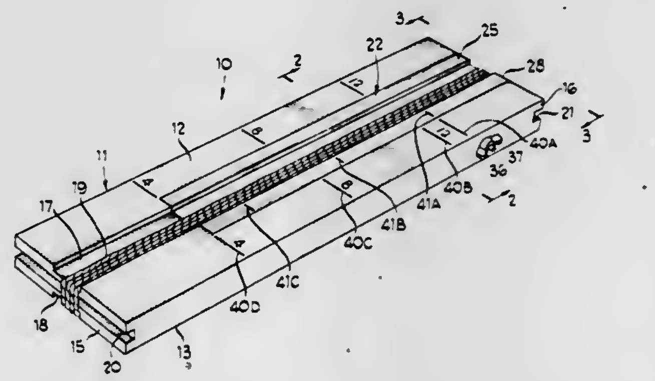
mechanism for directing said cutting means tangentially at the region of said array corresponding to said maximum diameter.



3,864,795
FRINGE MEASURE

Josephine Francis Fisher, 44 Emerson Dr., Norwood, Mass. 02062

Filed July 9, 1973, Ser. No. 377,645
Int. Cl. D04d *7/08*
U.S. Cl. 28—2 1 Claim



1. A fringe making device including a base member having an upper surface, a lower surface and a pair of end surfaces; fringe receiving means comprising a laterally extending groove formed in at least one of said upper or lower surfaces adapted to receive and confine strands of fringe material wound around said base member parallel to said groove; a cutting groove defined in at least one of said end surfaces disposed at an angle to said laterally extending groove; an extensible insert member having an upper surface and a lower surface including a laterally extending groove formed in at least one of said upper or lower surfaces, said insert member adapted to be positioned relative to said base member such that said laterally extending groove of said insert member is in registry with said laterally extending groove of said base member, said insert member being cooperative with said base member to extend from said base member to increase the effective length of said firnge making device, and releasable fastening means disposed between said base member and said

insert member adapted to releasably secure said base member and said insert member in any of a number of predetermined relationships.

3,864,796
METHOD AND APPARATUS OF HANDLING WOUND SKEINS

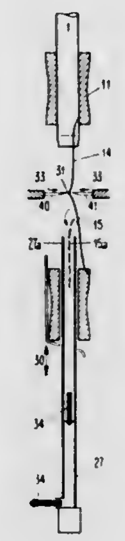
Walter Risi, Frauenfeld, and Rudolf Knecht, Kollbrunn, both of Switzerland, assignors to G & W Maschinen AG, Pfaffikon, Switzerland

Filed Jan. 2, 1974, Ser. No. 429,851

Claims priority, application Switzerland, Sept. 3, 1973, 12629/73

Int. Cl. B65h *67/04*

U.S. Cl. 28—21 **10 Claims**



7. In an automatic skein winding machine comprising parallely disposed rotating spindles an apparatus for automatic simultaneous handling of a series of skeins after the winding, said apparatus comprising per spindle a separating device for separating the connecting yarn between the skein ejected from the spindle and the non-ejected skein, said separating device having movable members for directing the connecting yarn before the separation to a predetermined locality, the apparatus further comprising a catching device synchroneous to said separating device for catching the yarn end of the ejected skein after the separation, said catching device having members positionable to said locality.

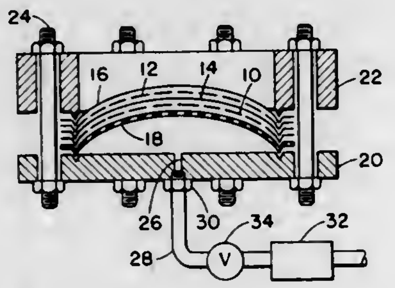
3,864,797
METHOD OF MAKING DISHED ION THRUSTER GRIDS

Bruce A. Banks, Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautic and Space Administration, Washington, D.C.

Filed Apr. 18, 1973, Ser. No. 352,381

Int. Cl. H01j *9/02*

U.S. Cl. 29—25.18 **8 Claims**



1. A method of forming matched pairs of dished grids to a substantially hemispheroidal configuration for ion thruster accelerator systems comprising the steps of placing an elastic sheet on a rigid base member,

aligning a pair of substantially flat grid blanks to form an assembly with said elastic sheet,

clamping the marginal peripheral portions of said assembly with a ring to prevent slippage of said assembly and to form an expansible fluid chamber between said elastic sheet and said rigid base member,

applying a fluid pressure to said elastic material thereby inflating the same whereby said blanks are dished to the curvature of said inflated elastic material,

removing the dished grids from said assembly, and

stress relieving said dished grids simultaneously.

3,864,798
METHOD OF ENCAPSULATING END-CONTACTED ELECTRICAL COMPONENTS

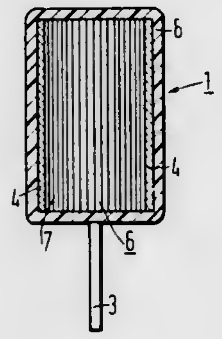
Ferdinand Utner, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 22, 1973, Ser. No. 390,393

Claims priority, application Germany, Sept. 1, 1972, 2243203

Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **8 Claims**



1. A method of encapsulating an electrical component with a continuous layer of synthetic resin material which serves as insulation and protection, the component including end contacts, comprising the steps of: attaching a metal foil to the component so that there is electrical discontinuity between the end contacts while contemporaneously electrically insulating the metal foil from the entire component; placing the component in an environment of synthetic resin powder; and heating the comonent while in the synthetic resin powder environment to sinter resin powder adhering to the component.

3,864,799
TOOL HOLDER

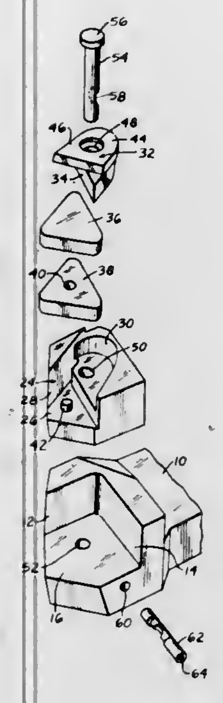
James F. McCreery, Latrobe, and Dennis G. Jones, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jan. 19, 1973, Ser. No. 325,014

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **6 Claims**

1. In a turning tool; shank means having an upwardly opening first pocket of substantial size formed therein at one end, a nest member having an upwardly opening second pocket formed therein for receiving a polygonal shim-insert combination with the insert lying on top of the shim while leaving the top face and at least a part of the periphery of the insert exposed, said second pocket having two angularly related surfaces that engage the insert and three angularly related surfaces that engage the shim, said nest member being of substantial size and loosely seated in said first pocket, a clamp member on the nest member having a portion overlying an insert in said second pocket and engaging two surfaces of said insert, said clamp member also having a portion overlying said nest member, a clamp pin extending through said clamp member and said nest member and into said shank means, a head on said clamp pin engaging the side of said clamp member which faces away from said nest member, a notch formed in said clamp pin and a cam rotatable in said shank means and having an eccentric region engaging said notch in said clamp pin and operable to urge said clamp pin in the axially downward direction in said shank means to cause said clamp member to clamp an insert in said second pocket while simultaneously clamping said nest member in said first pocket.



3,864,800
MANUFACTURING OF SHOES FOR VEHICLE BRAKES

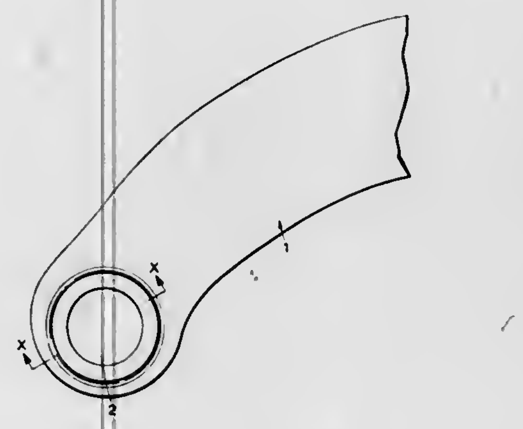
Robert Valentine Mathers, Chester, and Derek Unsworth, Wrexham, both of England, assignors to Rubery Owen-Rockwell, Limited, Darlaston, England

Filed Aug. 6, 1973, Ser. No. 385,879

Claims priority, application Great Britain, Aug. 12, 1972, 37694/72

Int. Cl. B21d *53/10*

U.S. Cl. 29—149.5 R **4 Claims**



1. A method of forming the bearing opening for the pivot pin in the web of a shoe of an internal shoe-drum brake comprising the steps of piercing the web at the required position, extruding the web at the pierced hole, forming the extruded portion to increase the thickness of the web around the opening, and finally machining the opening to suit the pivot pin.

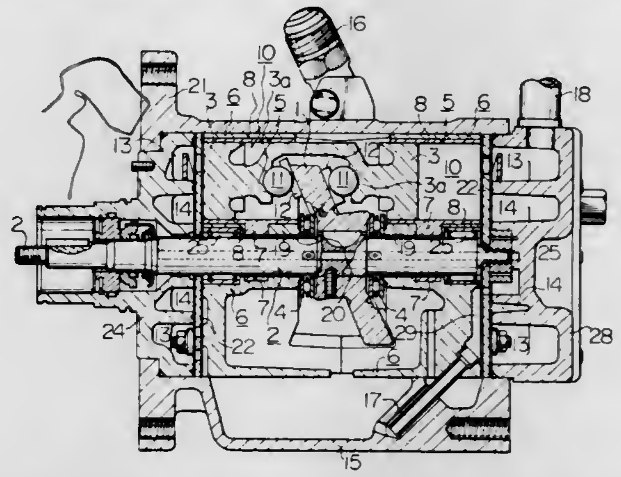
3,864,801
SWASH PLATE COMPRESSOR

Shozo Nakayama, and Masayuki Kurahashi, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan

Continuation of Ser. No. 118,252, Feb. 24, 1971, abandoned. This application Nov. 20, 1973, Ser. No. 417,533

Int. Cl. B23p *15/00;* **F04b** *1/14*

U.S. Cl. 29—156.4 WL **2 Claims**



1. A method of manufacturing a compressor cylinder block comprising providing an integral unit having a plurality of integrally joined sleeves defining corresponding cylinder bores assembled in fixed relationship, said integral unit comprising a bore defining a drive shaft bearing joining said sleeves integrally and holding said sleeves in fixed assembly accurately relative to each other and said bore, machining internal surfaces defining said bores, casting a cylinder block having cast portions bonded to said integral unit fixing said integral unit in said casting and fixing said sleeves for access to said bores thereof from exteriorly of said casting.

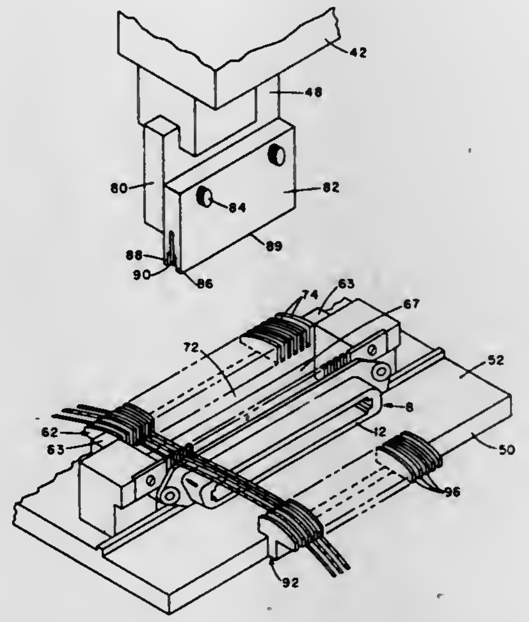
3,864,802
APPARATUS FOR TRIMMING CONDUCTORS AND INSERTING TRIMMED CONDUCTORS INTO CONNECTING DEVICES

John James Tucci, Winston Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 15, 1974, Ser. No. 442,958

Int. Cl. H01r *43/00;* **H05k** *13/06*

U.S. Cl. 29—203 MW **9 Claims**



1. Apparatus for simultaneously trimming each of a plurality of conductors and inserting the trimmed conductors into the conductor-receiving portions of electrical contact terminals which are contained in an electrical device such as a multi-contact electrical connector, said apparatus comprising: press means comprising a press ram and a press platen, said

ram being reciprocable along a predetermined path towards and away from said platen,

locating means on said platen for locating said electrical device in a predetermined position with said conductor-receiving portions of said contact terminals opposed to said ram,

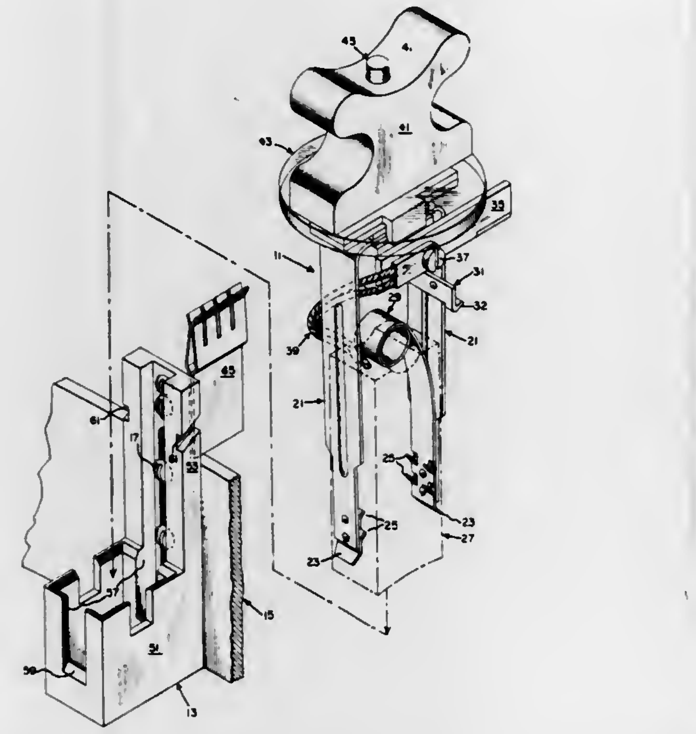
conductor jig means, said jig means having a central opening and having conductor-positioning means on each side of said central opening for positioning said conductors in parallel spaced-apart relationship at locations corresponding to the locations of said conductor-receiving portions of said contact terminals in said electrical device, said conductor jig means having fixed shearing edge means extending along ond side of said central opening, means on said jig means for positioning said jig means on a connector supported on said platen with said fixed shearing means in alignment with said conductor-receiving portions of said contact terminals, and

shearing and inserting means on said ram, said shearing and inserting means comprising a movable shearing edge means cooperable with said fixed shearing edge means when said ram moves towards said platen to shear and trim said conductors, and insertion punch means on said ram for inserting said conductors, after trimming, into said conductor-receiving portions of said contact terminals whereby

upon positioning said electrical device on said platen, placing said locating means on said electrical device, locating conductors in said jig means, and moving said ram towards said platen, said conductors are trimmed and are moved through said central opening and into said conductor receiving portions of said contact terminals.

3,864,803
CARTRIDGE BRUSH HOLDER

Harry O. Ohmstedt, Saratoga Springs; William H. Ruth, and Edward E. Gibbs, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Feb. 14, 1974, Ser. No. 442,506
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 R **9 Claims**



1. A device for mounting and removing an electrically conductive brush adjacent a dynamoelectric machine rotating part; the device comprising:

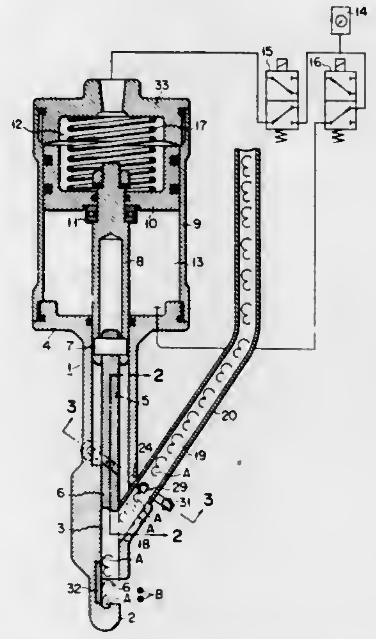
a U-shaped brush holder including a pair of inwardly biased resilient legs for gripping a brush therebetween;

a brush box attached to the dynamoelectric machine adjacent the rotating parts; and,

means for biasing apart the brush holder legs as it is inserted into the brush box to release the brush into the brush box.

3,864,804
CLIP FASTENING DEVICE

Isao Kawaguchi, Hiroshima-ken, Japan, assignor to NHK Spring Co., Ltd., Isogo-ku, Yokohama-shi, Japan
Filed Feb. 27, 1974, Ser. No. 446,277
Int. Cl. B23q *7/10;* **B23p** *11/00*
U.S. Cl. 29—211 M **8 Claims**



1. A clip fastening device comprising, in combination,

a. a device body arranged in an upright direction and including a guide passage provided in its longitudinal direction and a clip feeding outlet open at one side surface of the guide passage;

b. an operating rod slidably mounted within the guide passage of the device and having an upper jaw;

c. a lower jaw provided at the lower end of the device body so as to oppositely face the upper jaw;

d. an air cylinder mechanism mounted at the upper end of the device body to cause the operative rod to be reciprocably moved up and down;

e. an air pressure supply source for supplying air pressure to the air cylinder mechanism;

f. control means for controlling the supply of the air pressure from the supply source to the air cylinder mechanism;

g. a clip case disposed in a substantially upright direction and having its lower end mounted to the clip feeding outlet, said clip case having loaded therein a plurality of clips tending to be sequentially dropped through the clip feeding outlet into the guide passage under a gravitational force; and

h. a clip drop control mechanism adapted to be normally engaged with a bottommost clip within the clip case so as to prevent a drop of the loaded clips down into the guide passage and adapted to be disengaged from the bottommost clip in association with the up and down movement of the operating rod so that the loaded clips are intermittently dropped one by one for each reciprocatory movement of the operating rod.

3,864,805
MACHINE FOR INDEXING AND SCREW-MOUNTING OBJECTS TO A WORK PIECE

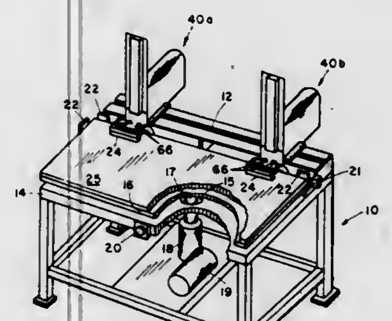
Edward O. Klukos, 2855 E. Judson, Spring Lake, Mich. 49456
Division of Ser. No. 290,876, Sept. 21, 1972, Pat. No. 3,811,170. This application Jan. 23, 1974, Ser. No. 435,866
Int. Cl. B23q *7/10;* **B23p** *19/04*
U.S. Cl. 29—211 R **26 Claims**

1. A machine for attaching objects to a work piece comprising:

a housing supporting reciprocating means having a powered fastening tool mounted thereto, said reciprocating means including gripping means at one end for releasably gripping fastening means;

means for holding a work piece in predetermined relationship to said housing;

means for receiving fastening means and positioning said fastening means in alignment with said gripping means;

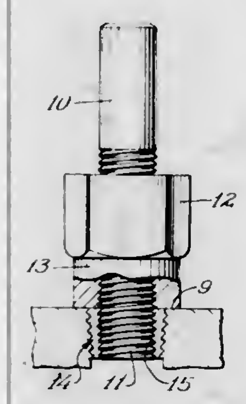


dispensing means for singly dispensing objects to be attached to said work piece in predetermined alignment with said gripping means; and

control means for sequentially actuating said reciprocating, gripping and positioning means to advance fastening means in a manner to capture an object from said dispensing means and further advance said fastening means into contact with said work piece whereupon said gripping means releases said fastening means and permits the object to be attached to said work piece by said fastening tool.

3,864,806
METHOD OF REPAIRING STRIPPED SPARK PLUG THREADS IN ENGINE HEADS

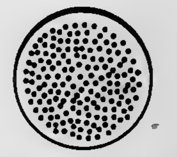
Le Roy P. Hanson, 170 Pine So., Prescott, Wis. 54021, and Calvin E. Trost, Rt. 4, Hastings, Minn. 55033
Continuation of Ser. No. 196,357, Nov. 8, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 396,066
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **1 Claim**



1. The method of repairing spark plug apertures in engine head made of resilient soft metal which have stripped threads, the method consisting in threading a slightly externally tapered and internally threaded imperforate and unnotched sleeve of hard metal free of cutting edges onto a supporting shank against an abutment, said externally threaded surface having unbroken and uninterrupted threads through its length, the peripheries of said threads being on said externally tapered surface, applying the smaller diameter end of said sleeve to an end of said stripped aperture, rotating the sleeve to thread the sleeve into the aperture, the hard metal of said sleeve acting to displace the soft metal during the formation of the new threads so that no loose particles are formed, said threading action acting to compact the soft metal outwardly of the aperture, removing the shank and threadably inserting a spark plug into said sleeve.

3,864,807
METHOD OF MANUFACTURING A SHAPED ELEMENT OF FIBER-REINFORCED MATERIAL

Friedrich Schneider, and Dieter Stockel, both of Pforzheim, Germany, assignors to G. Rau, Pforzheim, Germany
Continuation of Ser. No. 203,381, Nov. 30, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,778
Claims priority, application Germany, Dec. 2, 1970, 2059179
Int. Cl. B23p *17/00*
U.S. Cl. 29—419 R **7 Claims**



1. A method for producing a shaped element formed of a homogeneous matrix substance and having intimately embedded therein a plurality of substantially circular reinforcing fibers of a diameter in the magnitude of microns, the ductility properties of said matrix substance and said fibers being substantially different, said method consisting essentially of the steps of:

rigidly and metallurgically connecting to each of a plurality of substantially circular wires of reinforcing material a jacket of said matrix substance, each of said wires having a diameter in the magnitude of millimeters;

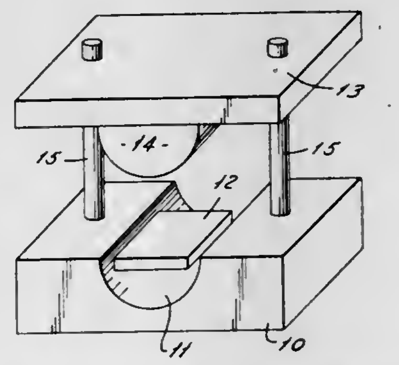
arranging said plurality of thus jacketed wires in a loose bundle in contact with each other; and

subjecting said bundle to a non-cutting mechanical working operation;

thereby reducing the cross-sectional area of said wires and said jackets, the cross-sectional area of said wires being reduced from a magnitude of mm^2 to a magnitude of $10^{-6}mm^2$, mechanically bonding said jackets together into a uniform homogeneous matrix, subjecting said jacketed wires to a diffusion treatment to facilitate the mechanical bonding of said matrix, and generating said substantially circular micron sized fibers embedded in said uniform homogeneous matrix, thereby reinforcing said matrix.

3,864,808
METHOD OF DEFORMING SINTERED MAGNETS WITHOUT SIGNIFICANTLY REDUCING MAGNETIC PROPERTIES

Manfred Doser, Edmore, Mich., assignor to General Electric Company, Schenectady, N.Y.
Filed Sept. 6, 1973, Ser. No. 394,634
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **6 Claims**



1. The method of forming a sintered magnet produced from powdered metal into various shapes by plastic deformation without significantly reducing desired magnetic properties which comprises:

heating said magnet to a temperature below the melting temperature but at a temperature at which plastic deformation can take place,

and, while maintaining said temperature, die-forming said magnet at a rate slow enough to prevent recrystallization.

3,864,809

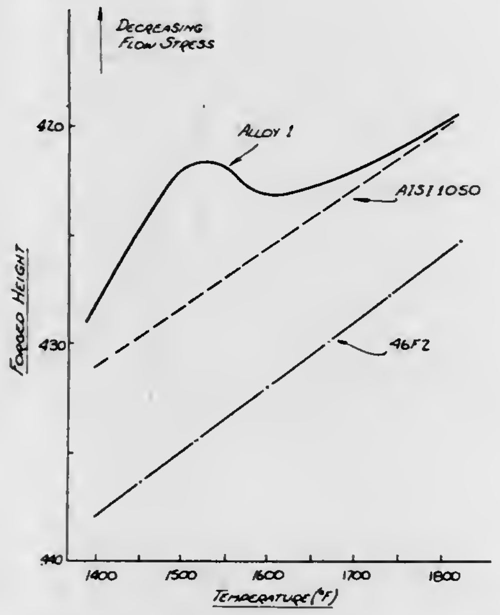
PROCESS OF PRODUCING BY POWDER METALLURGY TECHNIQUES A FERRITIC HOT FORGING OF LOW FLOW STRESS

Stephen James Donachie, New Windsor, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,981

Int. Cl. B22f *3/24*

U.S. Cl. 29—420.5 **5 Claims**



5. In the process of producing by powder metallurgy techniques a steel hot forging wherein die wear is reduced, which process comprises forming a preform from a ferritic alloy steel powder, and hot forging said preform at a temperature not greater than about 1550°F., said powder consisting essentially of from 0.25 to less than 1.5 percent nickel, 0.75 to 2.25 percent copper, 0.1 to 0.6 percent molybdenum, up to 0.5 percent manganese, up to 0.3 percent silicon, up to 0.5 percent chromium, up to 0.02 percent boron, up to 0.05 percent carbon and the balance essentially iron.

3,864,810

PROCESS AND COMPOSITE LEADLESS CHIP CARRIERS WITH EXTERNAL CONNECTIONS

Billy M. Hargis, Cleveland, Ohio, assignor to Minnesota mining and Manufacturing Company, St. Paul, Minn.

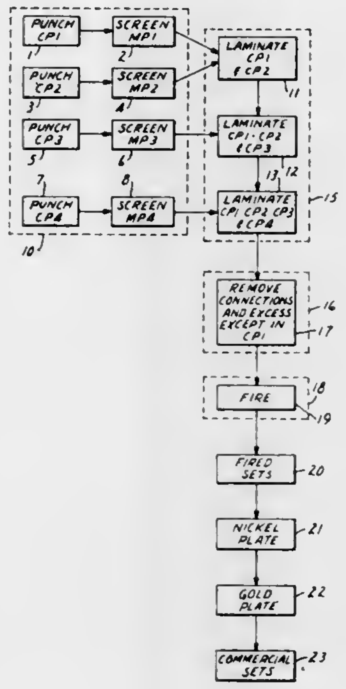
Filed Sept. 27, 1972, Ser. No. 292,806

Int. Cl. B23p *17/00*

U.S. Cl. 29—423 **4 Claims**

1. A process for the production of ceramic sets of devices such as chip carriers comprising pluralities, of at least about four, of conjunct small multilayer ceramic devices having exterior and interior electrical contacts comprising the steps of:

1. preparing a green ceramic base sheet and at least two green ceramic structural sheets, said base sheet being provided with at least one terminal for each of said ceramic devices and an electrically connecting network between at least all said terminals for each of said ceramic sets, and each structural sheet being provided with
   - a. at least one hole having edge metallizing for each of said ceramic devices, and,
   - b. at least one metallized pad area for each of said ceramic devices near said hole and further holes laterally adjacent to said pad area, each said pad area being connected to said edge metallizing,
2. erecting a multiplicity of connected multilayer green devices by successive lamination of said green ceramic structural sheets on said green ceramic base sheet in registry to one another so that edge metallizing of successive structural sheets is commonly connected, at least in the same set, to the electrically connecting network of said base sheet,
3. removing green ceramic material connecting said multilayer green devices and superfluous thereto while substantially retaining said edge metallizing and interconnections of green ceramic of said base sheet and at least the electrically connecting network for each said set whereby green sets comprising a plurality of electrically connected multilayer green ceramic devices connected by green ceramic are formed and,
4. firing said green sets to maturity whereby sets of ceramically and electrically connected conjunct small multilayer ceramic devices are obtained in which there is interconnection of all exposed metallic surfaces.



3,864,811

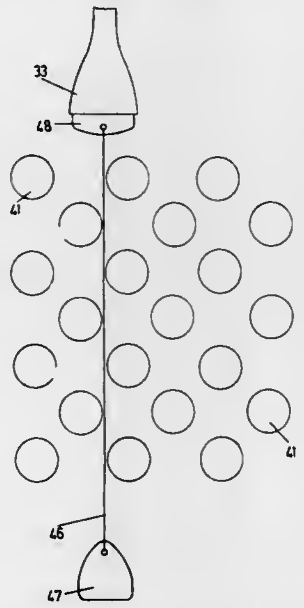
METHODS OF ASSEMBLING TUBE SUPPORTS

Frank Walker, Stoneclough, England, assignor to Hick, Hargreaves and Company Ltd., Bolton, England

Filed Oct. 13, 1972, Ser. No. 297,482

Int. Cl. B21d *39/00*; F28d *7/00*

U.S. Cl. 29—455 **3 Claims**



1. In a method of assembling heat-exchange apparatus comprising a metal tube bundle, and flexible resilient tubing threadable between the tubes of said metal tube bundle by means of a detachable clamping and insertion tool adapted to pass between adjacent metal tubes, said tool including two clamping members disposable face to face and of which one is pivotable on the other about an axis substantially perpendicular to the mating faces between a first position in which the two members are face to face so as to form a clip for sealing the end of the resilient tubing, and a second position in which the mating faces are separated and the tubing is released from between the members or can be inserted for subsequent gripping by the members and said tool being provided with remote manipulation means; the improvement comprising: inserting one end of the resilient tubing between said clamping members in the second position of the latter; effecting relative pivoting of said members into the first position thereof to sealingly clamp said one end of the resilient tubing; evacuating said resilient tubing so as to deform the tubing into a flattened condition; sealing the remote end of said resilient tubing; pushing the tool between adjacent tubes of said metal tube bundle by operation of said manipulation means to draw the flattened resilient tubing between said tubes; effecting relative pivoting of said members about said axis into the second operative position of the latter for releasing the resilient tubing from said members and to expand the tubing into its initial configuration; and withdrawing said tool from said metal tube bundle.

3,864,812

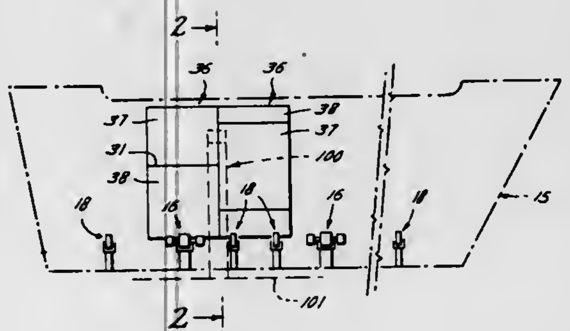
METHOD FOR ASSEMBLY OF CYLINDRICAL WELDED TANKS IN SITU IN HORIZONTAL POSITION

Harry J. Fiegel, Jr., Leaque City, and Russell S. Thatcher, Alvin, both of Tex., assignors to Kelso Marine, Inc., Galveston, Tex.

Filed Jan. 30, 1973, Ser. No. 327,957

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.1 **1 Claim**



1. A method of assembling a cylindrical container in situ in horizontal position comprising the steps of:

- a. positioning a first ring of predetermined size on support roller means so that the longitudinal axis of the ring is substantially horizontal;
- b. positioning a predetermined number of additional rings on support roller means in end to end relation to the first ring;
- c. simultaneously rotating the rings while welding them together at their circumferential joint formed by adjacent rings;
- d. closing the ends of the cylindrical container;
- e. removing the roller support means from the container; and
- f. providing a plurality of spaced saddle means to support the container when the roller means are removed.

3,864,813

PROCESS FOR CONDITIONING THE WELDING AREA OF THE CYLINDRICAL BODY OF A PACKING CAN

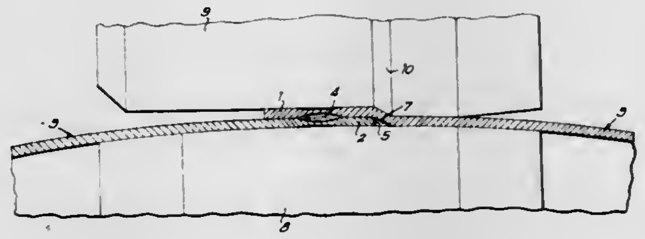
Jean Morjan, Koekelberg-Brussels, Belgium, assignor to Etablissements J. B. Gabriels S.P.R.L., Brussels, Belgium

Filed July 3, 1973, Ser. No. 376,115

Claims priority, application Belgium, June 6, 1973, 52820

Int. Cl. B23k *31/02*

U.S. Cl. 29—475 **2 Claims**



1. A process for conditioning the welded lapped seam area of the body of a cylindrical packing can comprising:

- a. lap seam welding the ends of the body of a cylindrical packing can to produce a joint having an inner free edge;
- b. passing said welded lapped seam area along the weld direction through a roller pair comprising a first inner roller having an outer transverse contour corresponding to the internal diameter of said can body and a second outer roller having two sections of different diameters separated by an offset step portion of a height substantially equal to the thickness of said can body, said rollers being separated by a distance substantially equal to the thickness of the can body in the area between the larger diameter section of the second roller and said first roller, and a distance substantially equal to the lapped seam thickness in the area between the smaller diameter section of said second roller and said first roller, said lapped seam area passing through said roller pairs so that said offset step portion of said second outer roller is positioned closely opposite said inner free edge of the welded lapped seam during the conditioning process.

3,864,814

SEAMING METHOD FOR SHEET METAL DUCTS

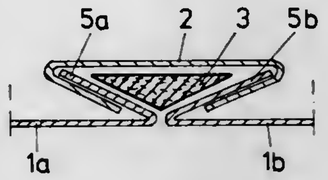
John Bagge, Turku, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed June 22, 1973, Ser. No. 372,705

Claims priority, application Finland, July 3, 1972, 1890/72

Int. Cl. B21d *39/02*

U.S. Cl. 29—514 **3 Claims**



1. Method of seaming the opposed edges of sheet metal ducts, particularly for use in transversely seaming ducts, comprising:

providing on the edges to be joined, half-closed bends diverging from each other; placing upon the bends a packing;

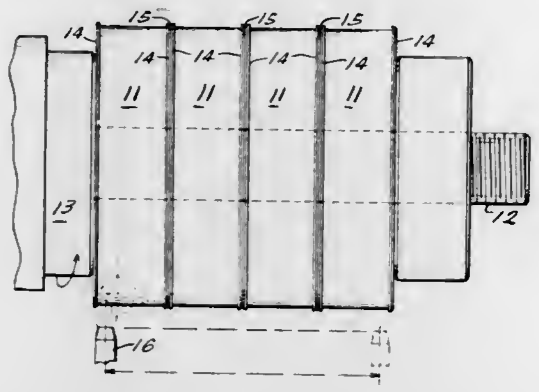
uniting the bends with a strip having a substantially triangular cross-section and encircling the bends; and

tightening the seam produced by the above steps by pressing the central part of the strip against the packing and at the same time providing support of the seam under the strip, between the strip and the edges, so that the strip, thus pressed tight, assumes a V-shape projecting from the duct wall from its center towards its margins.

3,864,815
METHOD OF MAKING A LINED DIE CASTING BY EMPLOYING A TRANSPLANT COATING

James H. Koch, Oregon, Ohio, assignor to N. L. Industries, Inc., New York, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,065
Int. Cl. B23p *17/00*
U.S. Cl. 29—527.3 **4 Claims**

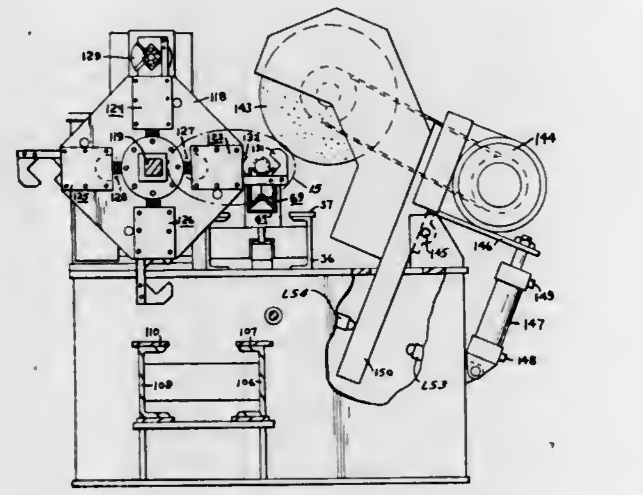


1. A method of forming a die casting having an interior longitudinal bore surface which is coated with a hard wear resistant material and side faces which are initially formed with bead portions that are machined off in the finishing of the completed casting, which method comprises assembling on an arbor a group of die cores and interposed masking plates between the cores, spraying the coating material over the exposed peripheral surfaces of the cores and masking plates, individually separating the core assemblies from each other so that each core remains attached to at least one masking plate and the coating thereon remain undisturbed, introducing the coated core and attached masking plate into a die, introducing molten metal into the die under normal die casting pressures to adhere to the coating material, removing the completed casting and core and masking plate from the die as a unit, separating the core and masking plate from the casting leaving a coated longitudinal bore and a coated extending bead portion in that area where the masking plate occurred, and machining away the extending bead and its coating material to leave a smooth active side face of the die casting.

3,864,816
CYLINDRICAL STOCK MACHINING APPARATUS

Paul C. Brusch, 342 W. Ridge Pike, Limerick, Pa. 19468

Filed Apr. 1, 1974, Ser. No. 456,978
Int. Cl. B23q *7/00;* **B23p** *23/00*
U.S. Cl. 29—563 **28 Claims**



27. Apparatus for cutting to size and machining the ends of elongated cylindrical stock material, comprising in combination,

a. stock feeding means for securely holding a long piece of cylindrical stock and effective when actuated for shifting the latter along its cylindrical axis,

b. stock size sensing means for sensing when the leading section of the long stock piece being axially shifted by said stock feeding means is of a pre-determined length,

c. stock cutting means effective when actuated to sever the leading section of said stock from the remainder of said long piece of cylindrical stock, the said severed leading section constituting a work-piece,

d. work-piece end machining means effective when actuated to carry out a desired machining operation on at least one end of said work-piece,

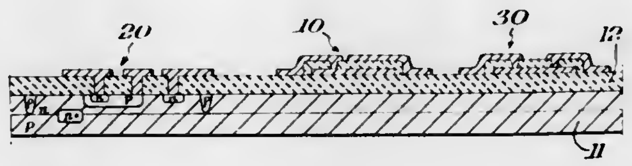
e. work-piece transport means effective when actuated to transport said work-piece from said stock cutting means to said machining means and from said machining means to a work-piece discharge station, and

f. means operative to automatically initiate and complete successive cycles of the operations sequentially performed by the aforesaid means upon said elongated piece of stock material until the same is exhausted.

3,864,817
METHOD OF MAKING CAPACITOR AND RESISTOR FOR MONOLITHIC INTEGRATED CIRCUITS

Jerome F. Lapham, Jr., Shrewsbury, and John A. Mataya, Grafton, both of Mass., assignors to Sprague Electric Co., North Adams, Mass.

Division of Ser. No. 266,199, June 26, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,362
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **4 Claims**



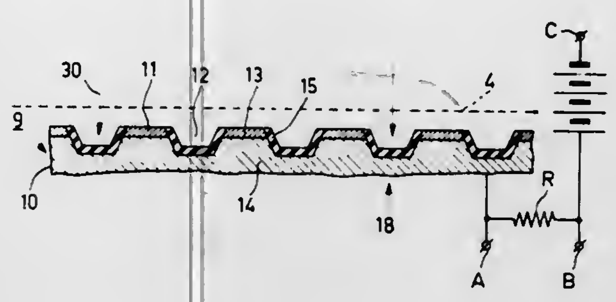
1. A method of making a planar monolithic integrated circuit having a bipolar NPN transistor and a compatible capacitor, said method comprising growing an epitaxial N-type silicon layer on a P-type silicon substrate, producing a P-type base region within said epitaxial layer at a surface thereof, covering said epitaxial layer and said base region with a dielectric silicon dioxide layer, growing a polycrystalline silicon capacitor plate on a portion of said dielectric layer laterally spaced from said base region, diffusing N-type imparting material into said base region to form an emitter region and into said polycrystalline plate to dope said plate heavily N-type, providing a silicon oxide covering over said plate, contacting said plate through said oxide covering, and depositing a second capacitor plate over said oxide covering.

3,864,818
METHOD OF MAKING A TARGET FOR A CAMERA TUBE WITH A MOSAIC OF REGIONS FORMING RECTIFYING JUNCTIONS

Else Kooi, and Arthur Marie Eugene Hoeberechts, both of Emmasingel, Eindhover, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 31,516, April 24, 1970, Pat. No. 3,737,702. This application Feb. 20, 1973, Ser. No. 334,035
Claims priority, application Netherlands, May 6, 1969, 6906939
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 **10 Claims**

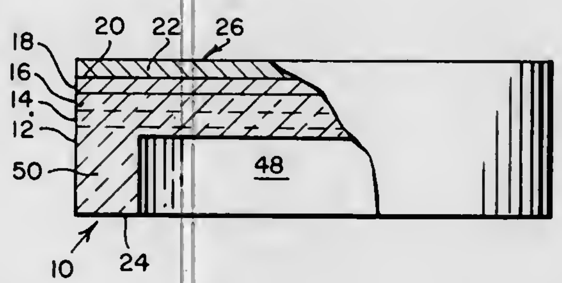
1. A method of manufacturing a radiation-sensitive target plate for use in a camera tube comprising a semi-conductor plate having on one side thereof a mosaic of projecting regions separated from one another by grooves and each forming with the plate a rectifying junction comprising the steps of providing an apertured masking layer on one surface of a plate of semi-conductor material having adjacent said surface a zone of one conductivity type, removing material from the surface of the plate at the area of the apertures in said apertured masking layer to obtain grooves of a given depth separating the regions, oxidizing the semiconductor plate only in the grooves to provide a first insulating oxide layer thereon, then removing the mask and leaving the underlying surface of said plate exposed so as to provide the mosaic of projecting regions.



3,864,819
METHOD FOR FABRICATING SEMICONDUCTOR DEVICES

Robert S. Ying, Torrance, Calif., assignor to Hughes Aircraft Co., Culver City, Calif.

Continuation-in-part of Ser. No. 95,652, Dec. 7, 1970, abandoned. This application Sept. 29, 1971, Ser. No. 184,767
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **15 Claims**



1. A method for simultaneously fabricating a plurality of semiconductor devices from a metal plate and a semiconductor wafer comprising a two-faced substrate having a doped surface at one face and a second surface at the second face comprising the steps of:

metallizing the doped surface of the wafer;

affixing the wafer at its metallized surface to a disc of substantially the same circumferential configuration as that of the wafer by use of wax at a temperature and for a period of time to completely seal the wafer and the disc together at their matching surfaces;

press fitting the wafer and the disc in one end of a holder having a recessed opening means in one end thereof, the recessed opening means having substantially the same circumferential configuration as that of the wafer and having a dimensional depth sufficient to align the second surface of the water flush with the holder end;

sealing the holder end and the second surface of the wafer at the peripheral edge thereof with wax to expose only an interior portion of the second wafer surface, the interior portion having a surface area less than that of the wafer; uniformly etching the exposed interior portion in an etching solution by alternatively rotating the holder and stirring and agitating the solution to thin the interior portion, and to form a rim of substrate material protected by wax, the wax and the holder being of a material inert to the solution;

removing the holder, the wafer and its thinned exposed portion from the solution and rinsing the same with deionized water;

separating the thinned wafer from the holder, disc and wax;

thermocompression bonding the thinned wafer at its metallized surface to a plate at a pressure of 40,000 psi at 200°C;

removing the substrate rim from the wafer;

placing a photoresist layer on the thinned wafer;

removing selected portions of the masked layer of photoresist material to expose portions of the thinned wafer;

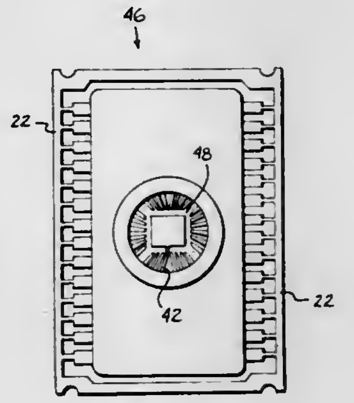
etching the exposed portions of the thinned wafer to form individual semiconductor elements on the plate; and

separating the semiconductor elements from one another by punching out sections of the plate.

3,864,820
FABRICATION PACKAGES SUITABLE FOR INTEGRATED CIRCUITS

Robert R. Brenan, Warren; Thomas D. Bunker, Bradford, and David F. Thompson, Warren, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 103,513, Jan. 4, 1971, abandoned. This application Dec. 14, 1972, Ser. No. 315,091
Int. Cl. B01j *17/00*
U.S. Cl. 29—591 **4 Claims**



1. A process for fabricating a package suitable for use in integrated circuits, said process comprising

a. fabricating an electrically conductive metal member comprising a frame extending around the perimeter of said member, a central pad and a high density of a plurality of individual leads each being connected to said pad and said frame, said leads each comprising a plurality of component leads and at least one connecting lead;

b. molding a ceramic portion that provides a support for said pad, covers and hermetic seals a large segment of each lead without covering and sealing the portions of each lead adjacent to the pad and the frame; and

c. removing a predetermined segment of the component leads adjacent to said pad and external to said ceramic without the removal of said ceramic or any portion of said connecting lead adjacent to said pad to establish a predetermined pattern between said pad and one end of said component leads by positioning said predetermined segments under a properly designed electrode and establishing a suitable potential difference between the predetermined segments and said electrode to achieve an electrical discharge between said electrode and said predetermine segments to simultaneously remove said segments and thus produce said desired pattern.

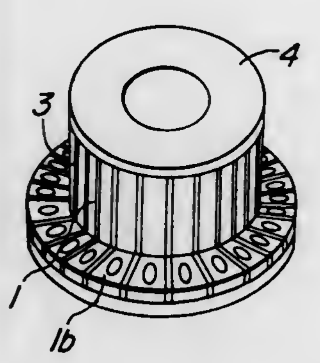
3,864,821
METHOD OF MAKING A COMMUTATOR

Shinichi Ito, Toyokawa, and Hideo Saji, both of, Nagoya, Japan, assignors to Nippondenso Co., Ltd.,, Aichi-ken, Japan

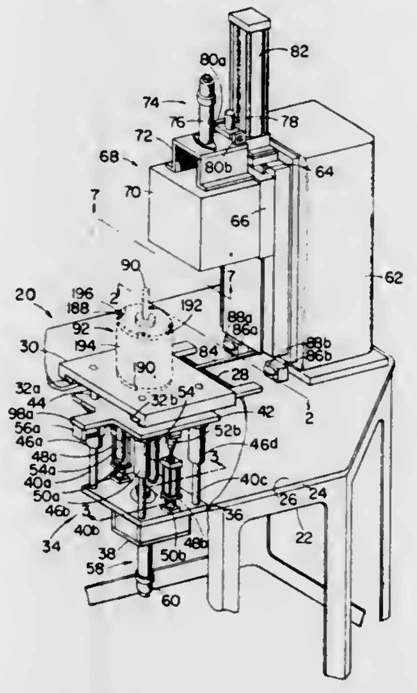
Continuation of Ser. No. 167,278, July 29, 1971, abandoned. This application Jan. 24, 1973, Ser. No. 326,476
Claims priority, application Japan, Aug. 1, 1970, 45-06743
Int. Cl. H01r *43/00*
U.S. Cl. 29—597 **3 Claims**

1. A process of producing a commutator comprising the steps of: providing an annular conductive ring having a plural-

ity of parallel grooves formed on the inner periphery thereof, said grooves defining commutator segments held together by bridging portions formed across bottoms of said grooves; filling said parallel grooves with a first soft and brittle insulating material which is selected from the group consisting of: an intersticed resin, a mixture of a binder and a lubricative inorganic powder, and a mixture of a binder and a lubricative organic powder; then filling the volume defined by said conductive ring with a second insulating material having greater strength and hardness than said first insulating material; and then cutting the outer peripheral surface of said conductive ring to remove said bridging portions to thereby expose said first insulating material and isolate said commutator segments.



3,864,822
APPARATUS AND A METHOD FOR FINAL ASSEMBLING OF DYNAMOELECTRIC MACHINES
Robert E. Eash, and Robert C. Burkart, both of Fort Wayne, Ind., assignors to Farlow Associates Inc., Fort Wayne, Ind.
Filed Apr. 29, 1974, Ser. No. 464,846
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **23 Claims**



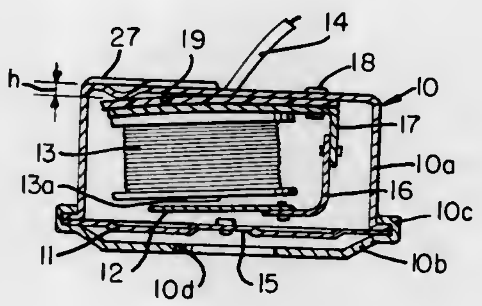
1. The method of finally assembling a dynamoelectric machine which includes a housing, a rotor rotatably disposed in the housing, and end plates closing the opposite ends of said housing, said end plates having bearings in which the rotor shafts are journalled, comprising the steps of:

a. loosely assembling said housing, rotor, and end plates with said rotor shafts journalled in said bearings,

b. securing said housing, rotor and end plates into rigid assembly while,

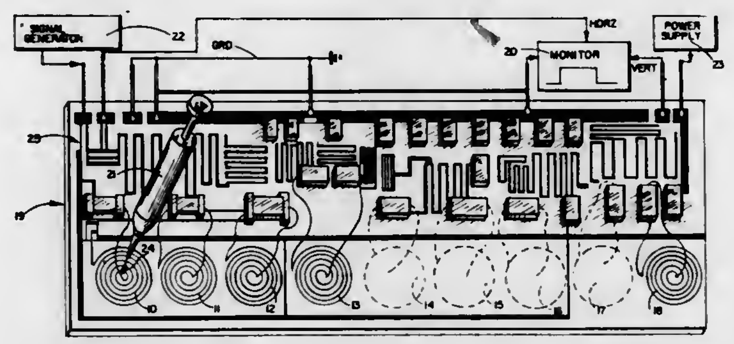
c. simultaneously spinning said shafts in said bearings.

3,864,823
METHOD OF MAKING A BUZZER STRUCTURE
Charles Berns, New Milford, Conn., assignor to General Signal Corp., Rochester, N.Y.
Filed Jan. 8, 1974, Ser. No. 431,802
Int. Cl. H01f *7/06*
U.S. Cl. 29—602 **7 Claims**



1. The method of optimally and permanently adjusting the relative positions of the elements of a nonoperative buzzer to render said buzzer operative, said buzzer being of the type comprising a housing having an energizable electric coil mounted therein and also having an armature mounted therein for movement adjacent said coil but initially spaced from said coil by a gap the dimensions of which are sufficiently large to prevent said armature from being attracted to said coil if said coil were energized, said method comprising the steps of energizing said coil, progressively deforming a portion of said housing adjacent said coil, on a side of said coil remote from said armature, to cause the deformed portion of said housing to engage said coil and to displace said energized coil toward said armature thereby to progressively reduce the dimensions of said gap, monitoring the operating condition of said buzzer as said progressive deformation step proceeds, and terminating said progressive deformation step and the resultant displacement of said coil when said monitoring step determines that said buzzer has commenced to operate.

3,864,824
TUNING AND MATCHING OF FILM INDUCTORS OR TRANSFORMERS WITH PARAMAGNETIC AND DIAMAGNETIC SUSPENSIONS
James C. Watson, Newport Beach, and Roy J. Hebert, Fullerton, both of Calif., assignors to Rockwell International Corp., El Segundo, Calif.
Continuation of Ser. No. 212,193, Dec. 27, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 410,143
Int. Cl. H01f *7/06*
U.S. Cl. 29—608 **4 Claims**



1. A method of altering the inductance of an inductive device comprising the steps of:

measuring the inductance of said device;

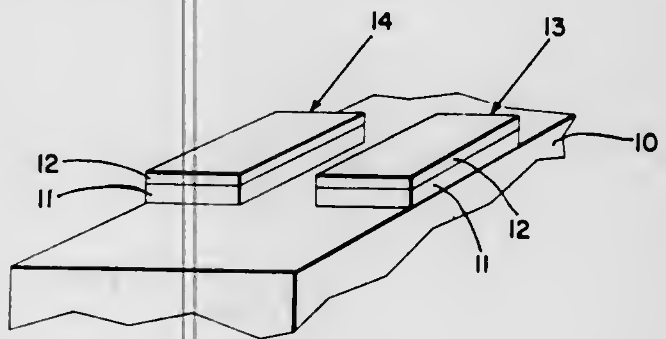
selecting a suspension of either a paramagnetic material or a diamagnetic material, the material selected depending on the relationship of the measured inductance value of said device to a preselected inductance value;

incrementally applying to said device the selected materials;

allowing said selected material to harden; and

again measuring the inductance of said device and applying a suspension of the other one of the paramagnetic and diamagnetic materials until said preselected inductance value is reached, said selecting step consisting of selecting the diamagnetic material when the measured inductance value of said device is greater than the preselected inductance value.

3,864,825
METHOD OF MAKING THIN-FILM MICROELECTRONIC RESISTORS
Edward S. B. Holmes, Almonte, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada
Division of Ser. No. 261,722, June 12, 1972, , which is a continuation of Ser. No. 450,076, March 11, 1974,. This application Nov. 12, 1973, Ser. No. 414,838
Int. Cl. H01c *1/14*
U.S. Cl. 29—621 **16 Claims**



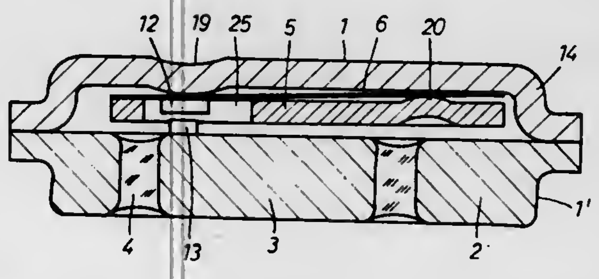
1. A method of forming a plurality of resistors upon a surface of a substrate member, comprising the steps of:

a. depositing upon the surface of said substrate member a stack of n layers of electrically conductive material of differing resistivity, where n is an integer greater than one, said layers being deposited in decreasing order of resistivity of the layer materials;

b. defining the required areal geometry of each of said plurality of resistors and isolating each of said plurality of resistors by masking and subsequently chemically removing said n layers of electrically conductive material from the surface of the substrate adjacent and exterior to the perimeter of each of said resistors;

c. forming spaced apart terminal means for each of said resistors, the terminal means corresponding to each of said resistors being electrically connected to the top electrically conductive layer of each of said resistors.

3,864,826
METHOD OF MANUFACTURING A SEALED CONTACT
Helmut Buttel, Leonberg-Eltingen, Germany, assignor to International Standard Electric Corp., New York, N.Y.
Filed Nov. 12, 1973, Ser. No. 415,029
Claims priority, application Germany, Dec. 1, 1972, 2258968
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 B **5 Claims**



1. A method of providing a sealed contact for use in an electromagnetic relay said contact having a flat base plate assembly containing a glass-to-metal seal, an electrical contact, a hood-shaped cover assembly including an armature fastened to the cover by means of an armature holding spring, the method comprising the following steps:

a. forming a pair of first holes of predetermined shape and location in said base plate assembly;

b. forming a pair of second holes of predetermined shape and location in said cover assembly;

c. positioning said base plate assembly by fitting said first holes over a first set of pegs in registry with said first holes;

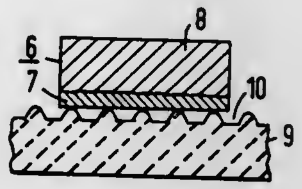
d. positioning said cover assembly upon said base plate by fitting said second holes over a second set of pegs in registry with said second holes;

e. sealing said cover assembly to said base plate assembly while said cover and said base plate assemblies are held in position by means of their respective pegs;

f. removing the contact from said pegs; and

g. mounting and aligning said contact in said relay by means of said first and second pairs of holes.

3,864,827
METHOD FOR MAKING AN ELECTRIC CONTACT BY POWDER METALLURGY AND THE RESULTING CONTACT
Horst Schreiner, and Bernhard Rothkegel, both of Nuremberg, Germany, assignors to Siemens Aktiengellschaft, Munich, Germany
Filed Aug. 24, 1972, Ser. No. 283,409
Claims priority, application Germany, Sept. 1, 1971, 2143844
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 C **4 Claims**



1. A powdered metallurgy method for making a two-layer contact or the like, comprising:

a. providing a first layer of intermixed refractory metal or metal compound powder and a low temperature melting metal powder;

b. providing a second layer of low temperature melting metal powder;

c. compacting said first and second layers together to form a coherent two-layer compact;

d. providing a refractory surface having a plurality of depressions on the surface thereof;

e. supporting said contact with said second layer on said refractory surface with said plurality of depressions therebeneath;

f. heating said compact under non-oxidizing conditions to a temperature above the melting temperature of said low temperature melting metal to impregnate the pores of said first layer with the metal of said second layer; and

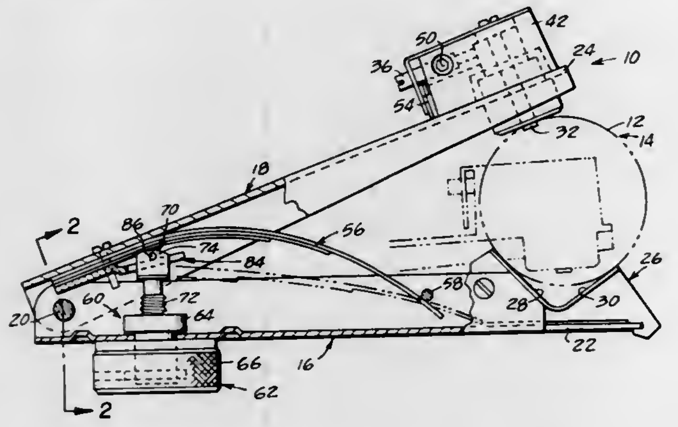
g. the step of providing said second layer including proportioning said second layer to provide said contact with a volume of said low temperature melting metal which will cause the formation on the bottom of said compact of a thin layer of low temperature metal and such that said low temperature melting metal will at least partially fill the pores in said compact.

3,864,828
CABLE SCRIBING TOOL

Robert A. Bilbrey, Orinda, and Walter J. Maytham, Los Altos, both of Calif., assignors to Speed Systems, Inc., Los Altos, Calif.

Filed Apr. 30, 1973, Ser. No. 355,958
Int. Cl. B26b *27/00*

U.S. Cl. 30—91.2 **4 Claims**



1. A tool for scribing the outer surface of a cable or the like comprising: first and second pivotally connected arms having first and second extended ends respectively; seating means associated with the first extended end and on which the cable is seatable between the first and second arms; a scriber blade associated with the second extended end and positioned to be brought into engagement with the outer surface of the cable when the cable is so seated and the first and second arms are pivoted relatively toward each other; resilient means interconnecting the first and second arms for urging the first and second arms together so that the cable therebetween is seated on said seating means and said blade is brought into engagement with the outer surface of the cable under the resilience of said resilient means; and means for selectively moving the first and second arms relatively apart against the resilience of the resilient means to allow relative insertion of the cable between and removal of the cable from between the arms, wherein the resilient means comprise a leaf spring interconnecting the first and second arms, wherein the leaf spring has one end thereof fixed to the second arm and the other end extending under a pin fixed to the first arm and disposed in bearing and sliding relation with said pin, wherein the means for selectively moving the first and second arms relatively apart comprise jack means associated with the first and second arms, and wherein said jack means comprise a first jack member associated with the first arm and defining an internally threaded bore, the first jack member being rotatable about the longitudinal axis of the bore and being generally limited from movement along said longitudinal axis of the bore, and a second jack member defining an outer threaded portion in threaded engagement with the threaded bore, the second jack member extending to adjacent the second arm, and movable along the longitudinal axis of the bore upon rotation of the first jack member, the jack means further comprising means for limiting the movement of the second jack member about the longitudinal axis of the bore, so that rotation of the first jack member in one direction moves the second jack member along the longitudinal axis of the bore to move the first and second arms relatively apart, and rotation of the first jack member in the other direction allows the first and second arms to move relatively toward each other under the resilience of the leaf spring.

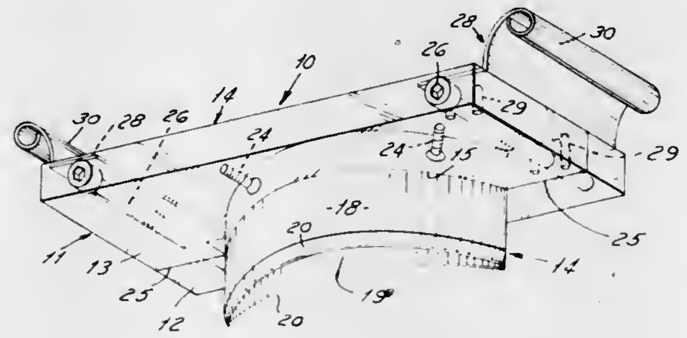
3,864,829
CUTTING TOOL

John Williams, 18331 Tipsilo Lake Rd., Fenton, Mich. 48430

Filed Aug. 10, 1973, Ser. No. 387,483
Int. Cl. B26b *3/08*

U.S. Cl. 30—130 **19 Claims**

1. A cutting tool comprising a rigid base fixedly supporting a cutter for an excising operation on a sheet-like object, said cutter presenting a knife edge defined by two knife edge portions of generally similar lunate contour, said knife edge being exposed well to a side of said base and shaped in the outline of an area on said object which is excised from the latter by the tool, said base having a lunate-shaped opening presenting mutually facing surfaces respectively shaped to complement and mate with opposite outwardly facing surfaces of said knife edge portions which partly extend into said lunate-shaped opening, which mutually facing surfaces of said opening have fixed mating and holding engagement with the respective outwardly facing surfaces of said knife edge portions, a stripping unit mounted on said base to act from the latter's side opposite that on which said knife edge portions are exposed, said unit comprising a stripping member of lunate-shaped outline slidably movable between and relative to said knife edge portions in engagement with said object area during excision of the latter, rod means fixed on said base and extending from said opposite base side, and a guide piece spaced from and fixed on said stripping member and guided on said rod means in said movement of said stripping member.

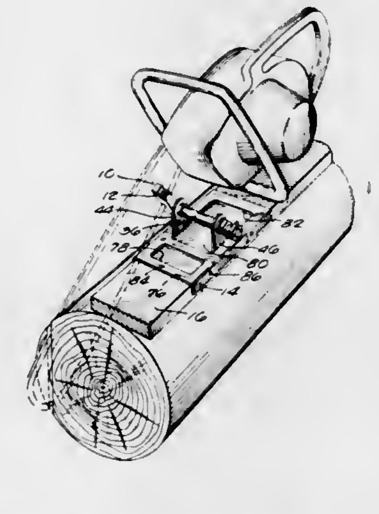


3,864,830
LUMBER MAKING ATTACHMENT FOR A CHAIN SAW

Jesse E. Haddon, Rt. 5, Burlington, Wis. 53105

Filed Feb. 28, 1973, Ser. No. 336,664
Int. Cl. B27b *17/02*

U.S. Cl. 30—371 **8 Claims**



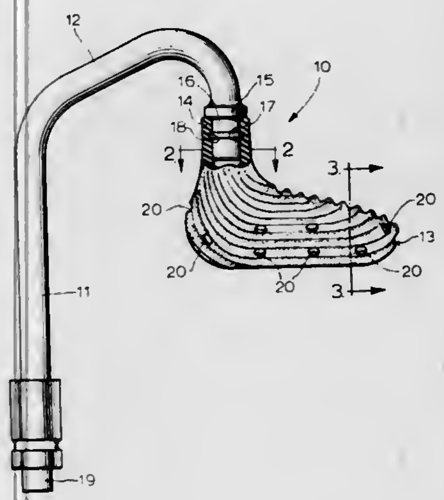
1. In combination, a chain saw with a cutter bar and a guide member, a lumber sawing attachment, said attachment comprising a clamp connectable to said cutter bar, a guide bracket adapted for sliding longitudinal movement on said guide member and means for pivotally connecting said clamp to said guide bracket to support said chain saw on said guide bracket for movement of said cutter bar in an arc parallel to the direction of longitudinal movement of said guide bracket on said guide member and afford adjustment of the angular position of the clamp with respect to the guide bracket about an axis, transverse to the direction of movement of said bracket and at right angles to said cutter bar and thereby afford control of the depth of cut of said cutter bar.

3,864,831
SALIVA EJECTOR

Daniel H. Drake, 1969 Carolina Ave. N.E., St. Petersburg, Fla. 33703

Filed Oct. 23, 1973, Ser. No. 408,754
Int. Cl. A61c *17/09*

U.S. Cl. 32—33 **5 Claims**



1. A pliant, light-weight saliva ejector for a patient comprising

a tubular stem adapted for communication with an aspirator means and having an inverted U-shaped end portion adapted to rest upon the lower jaw of said patient and terminating above the floor of said patient's mouth, and a hollow, flexible, elongated collector head mounted on said inverted U-shaped end portion in communication with said tubular stem and adapted to be received in said patient's mouth;

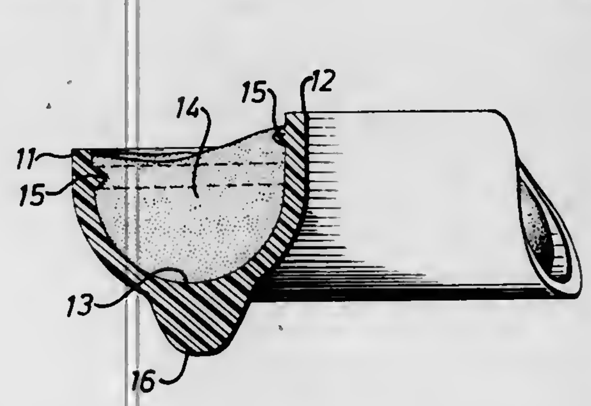
said collector head having a plurality of spaced perforations for inducting saliva therethrough and a plurality of substantially parallel accordion pleats in an outer wall of the collector head extending in a longitudinal direction about the periphery of the collector head and turning upward at each end providing adaptibility for said collector head to physical features of said patient's mouth by both lateral and vertical flexing.

3,864,832
THROW-AWAY TEETH PROTECTOR

Gunnar Olof Carlson, Eddagen 11, 182 63 Djursholm, Sweden

Filed Apr. 3, 1973, Ser. No. 347,365
Claims priority, application Sweden, Apr. 5, 1972, 4367/72
Int. Cl. A61c *11/00*

U.S. Cl. 32—40 R **6 Claims**



1. A throw-away teeth protector for use during medical incisions and treatments, comprising:

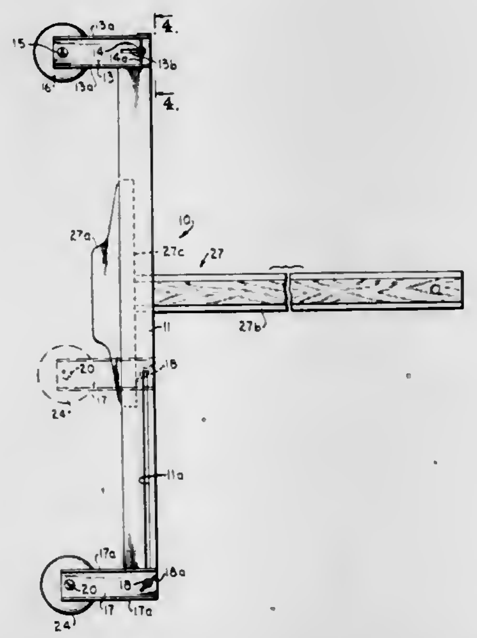
an arcuate base member formed of an elastic material, said base member having a substantially channel-shaped cross section with the inside wall thereof being higher than the outside wall and wherein the bottom of the channel on the outside is provided with protrusions which are spaced apart to form a free space between the base member of a protector applied on one jaw and the teeth of the opposite jaw, the bottom protrusions being positioned unsymmetrically with respect to the symmetry axis in the plane of the base member so that the bottom protrusions are displaced with regard to each other when two identical teeth protectors are used simultaneously in both jaws, the ends of the channel being open and a string of plastic material being positioned in the arcuate channel inside the ends of said base member, said string being plastic and elastic and non-curing at room temperature and said string having a free surface which is adapted to be forced against the points of the teeth to be protected, when the protector is to be used, so that the teeth are embedded at least partially in the plastic material, the plastic material being maintained plastic and non-curing in use.

3,864,833
DRAFTING DEVICE

Harold L. Bokelman, 532 E. Poplar, Olathe, Kans. 66061

Filed Dec. 17, 1973, Ser. No. 425,157
Int. Cl. B43l *7/02*

U.S. Cl. 33—76 R **2 Claims**



1. Removably attachable means for guiding a T-square across a flat work surface comprising, in combination:

an elongate, straight, beam member L-shaped in transverse section thereby to have a first portion thereof positionable substantially parallel to said flat working surface and a second portion thereof simultaneously positionable at substantial right angles to said working surface,

a leg at one end of the beam member fixed to and extending at right angles to the first portion thereof and of sufficient length to space upwardly the beam member from a working surface and a sufficient distance that the rule of a conventional T-square may slide under the second portion of said beam member without contacting same,

a pair of mounting arms pivotably secured to the first portion of said beam member, one adjacent each end thereof and fixable at substantial right angles to the longitudinal axis thereof,

one of said mounting arms transversely adjustable of said beam member, this adjustment provided by virtue of a slot formed in the said mounting arm,

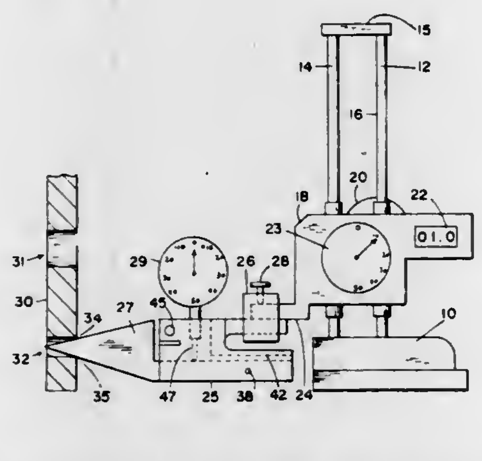
the other of said mounting arms longitudinally adjustable of said beam member, said adjustability achieved by virtue of an elongate slot formed in the first portion of said beam member, said slot extending substantially parallel to the longitudinal axis of the beam member, and

means on each of said mounting arms for removably securing same to said working surface, said securing means of length substantially that of the leg at the end of the beam member,

whereby to permit removable fixing of both said beam member and mounting arms as a U-shaped frame to said working surface, with the second portion of said beam member at substantial right angles to said surface, thereby to receive (inverted) the working head of a conventional T-square in sliding abutment there against with the elongate ruler of the T-square extending under the said second portion of the beam member at right angles thereto.

3,864,834
AUTOMATIC CENTERING HEIGHT GAUGE ATTACHMENT

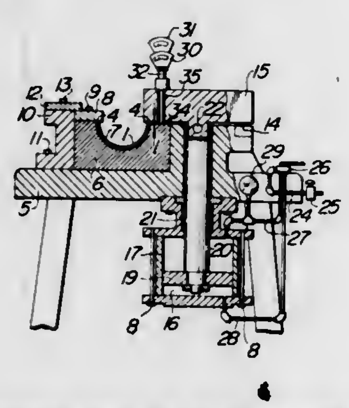
Herbert C. Horton, 866 N. Prior Ave., St. Paul, Minn. 55104
Filed Mar. 4, 1974, Ser. No. 448,535
Int. Cl. G01b *5/14*
U.S. Cl. 33—169 R **8 Claims**



1. An attachment to be used with a height gauge for measuring the locations of holes in a piece of stock comprising in combination:
- a housing having means thereon to connect said housing to the height gauge and further having a pivot support therein;
- a tapered probe pivoted about the pivot support in said housing, said probe being tapered at a first end so as to be insertable in the hole to be measured and having a pivot support engaging structure at the other end, and a linear distance measuring gauge mounted in said housing so as to bear against said probe at a point between the first end and the other end.

3,864,835
DEVICE FOR MEASURING THE INTERFERENCES AND THE INCLINATIONS OF ABUTTING SURFACES OF A HALF PLAIN BEARING

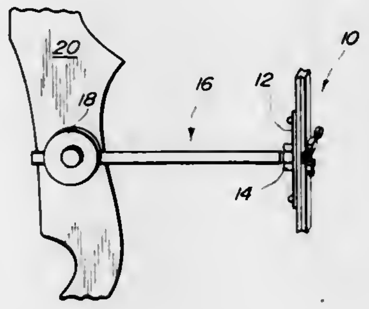
Nobukazu Morisaki, Aichi-ken, Japan, assignor to Daido Metal Company, Ltd., Kita-ku, Nagoya, Japan
Filed June 6, 1974, Ser. No. 477,049
Int. Cl. G01b *3/56*
U.S. Cl. 33—174 E **10 Claims**



1. A device for measuring the interferences and the inclinations of abutting surfaces of a half plain bearing comprising a bearing half piece supporting body having a receiving surface identical with the bearing half piece case of said half plain bearing and adapted to receive a bearing half piece of said half plain bearing, a supporting bed adapted to fix and support said bearing half piece supporting body, a stopper means which is provided on said bearing half piece supporting body and engages one abutting surface of said bearing half piece received on said receiving surface so that said one abutting surface is placed in a fixed positional relation with said bearing half piece supporting body, an abutting surface pressing means arranges such that said abutting surface pressing means is supported at one point thereon by a fulcrum means disposed on said supporting bed and extends over the other abutting surface of said bearing half piece to be in contact with and supported by said other abutting surface, a loading means having a piston shaft and adapted to apply a load to said abutting surface pressing means in which the end of said piston shaft is connected to said pressing means through a joint means which makes said pressing means swingable about each of two straight lines crossing at right angles to each other on a horizontal plane and which is adapted to operate in such a manner that with the movement of said piston shaft the portion of said pressing means extending over said other abutting surface comes into full contact with said other abutting surface and apply the load to said other abutting surface to compress said other abutting surface while inclining in accordance with the inclination of said other abutting surface, and a pair of dimension measuring instruments which are provided on said abutting surface pressing means and are adapted to measure the interference of said bearing half piece at their measuring positions spaced from each other in the axial direction of said bearing half piece.

3,864,836
VERNIER BOW SIGHT

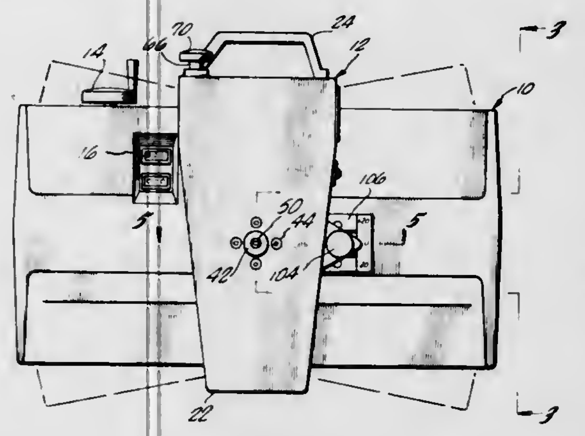
James R. Haines, 1217 Tonti St., La Salle, Ill. 61301
Filed Aug. 24, 1973, Ser. No. 391,207
Int. Cl. F41g *1/00;* **F41b** *5/00*
U.S. Cl. 33—265 **9 Claims**



1. A bowsight having a sighting element adjustably mounted on the bow for range and windage adjustment comprising:
- a. a range bar,
- b. an auxiliary member slidably mounted on the range bar and carrying the sighting element in vertical slidable relation along the range bar,
- c. a main member in slidable relation along the range bar spaced from the auxiliary member,
- d. a lock screw for locking the main member in fixed relation along the range bar,
- e. a first elastic force member connecting the auxiliary member and the main member and exerting a force therebetween in the direction of sliding,
- f. a first retention member of adjustable length connecting the auxiliary member and the main member and exerting a force therebetween in the direction of sliding, said force acting in opposition to the force exerted by the elastic force member so that the position of the auxiliary member along the range bar can be adjusted,
- g. a windage sight element support bar for carrying the sight element at one end thereof having a non-circular cross-section and moving transversely relative to and engaging the auxiliary member through a working clearance hole having a similar non-circular cross-section therein,
- h. a second elastic force member connecting the auxiliary member and the other end of the non-circular support bar opposite the sight element thereon and exerting a force therebetween in the direction of moving, and
- i. a second retention member having an adjustable position along said sight element support bar for exerting a reaction force against said auxiliary member in equilibrium against said elastic force.

3,864,837
MOUNTING ASSEMBLY FOR A LIGHT BEAM GENERATOR

Rudolph S. Myeress, Richmond Heights, Ohio, assignor to Allied Steel & Tractor Products, Incorporated, Cleveland, Ohio
Filed Nov. 1, 1973, Ser. No. 411,750
Int. Cl. G01c *15/00*
U.S. Cl. 33—299 **14 Claims**

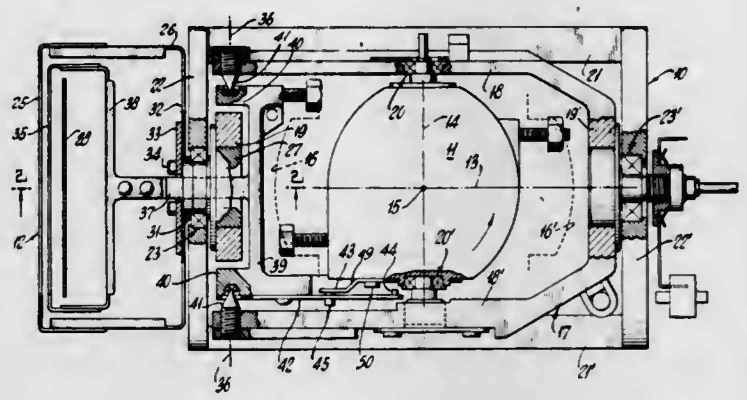


1. A mounting assembly for a variable elevation light beam generator said light beam generator having a housing, comprising:
- a support structure to which the light beam generator is pivotally mounted;
- an orientation reference member pivotally mounted to said support structure about an axis coincident with the pivot axis of the light beam generator, said orientation reference member being adjustably fixed relative to said support structure to define an orientation reference position; means mounted on said orientation reference member for sensing the orientation of said orientation reference member with respect to true level; and
- biasing means mounted partially on said orientation reference member and partially on the light beam generator housing for adjustably fixing the light beam generator relative to said orientation reference member to increase the effective range of elevations available with the variable elevation light beam generator.

3,864,838
ARTIFICIAL-HORIZON GYROSCOPE

Frederick J. Owens, and Jerry B. Bishop, both of Wichita, Kans.
Filed Mar. 8, 1971, Ser. No. 122,055
Int. Cl. G01c *19/44*
U.S. Cl. 33—329 **14 Claims**

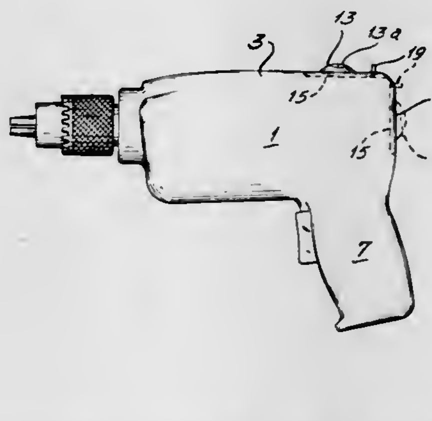
1. An artificial horizon gyroscope, comprising a frame, an attitude gimbal and roll-axis bearing means supporting said gimbal on a roll axis in said frame, said bearing means having a generally central passageway therethrough, display means including roll-indicating means connected via said bearing means to indicate motion of said gimbal in roll, a gyro rotor assembly and bearing means supporting the same on a pitch axis in said gimbal, said display means including pitch-indicating means having a pitch-transmitting linkage connection to said rotor assembly via the passageway in said roll-axis bearing means, said linkage including a transmitting arm pivotally supported by said gimbal on a pivot axis located between said pitch-axis bearing means and the passageway of said roll-axis bearing means, said arm extending through the passageway and supporting said pitch-indicating means, the opening of said passageway being such in relation to size and location of said arm as to permit pivoted movement of said arm through a range of direct pitch-transmitting connection to said rotor assembly corresponding at least to a limited pitch



range, and said linkage including lost-motion connecting means operative to position said transmitting arm and said pitch-indicating means in accordance with pitch motion of said gimbal within said limited pitch range and to hold a maximum displaced position of said pitch-indicating means for gimbal-pitch motion beyond said range.

3,864,839
DIRECTIONAL GUIDE FOR POWER HAND DRILL

Lloyd J. Wolf, Rt. 1, Box 45, Roanoke, Tex. 76262
Filed June 14, 1973, Ser. No. 369,924
Int. Cl. G01c *9/28, 9/36*
U.S. Cl. 33—334 **3 Claims**



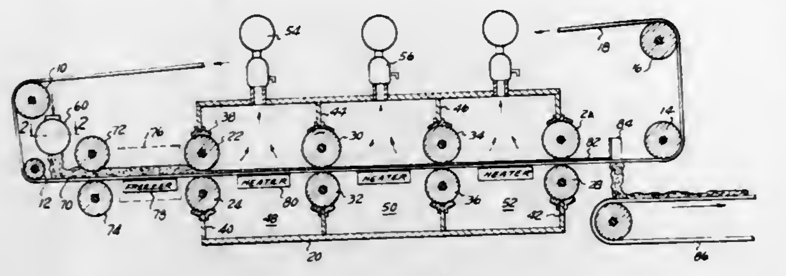
1. The combination including a power hand drill having a housing with its top wall generally parallel to the drill axis and its near end wall generally normal to the drill axis, a spirit level of the circular bubble type, and means for selectively securing said level to said drill parallel to and normal to the drill axis said selective securing means comprising a plate mounting said spirit level to form a low-profile assembly and a pair of slots along each of the top and rear end walls of said housing parallel to and normal to the drill axis respectively for alternately slidably receiving opposite edges of said plate.

3,864,840
LYOPHILIC WASTE DISPOSAL

Steven I. Baskin, East Lansing, Mich., assignor to Donnell R. Matthews, Jr., Lansing, Mich.
Filed July 16, 1973, Ser. No. 379,242
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **25 Claims**

1. The method of treating wet sewage containing solid pieces which comprises
- compacting the mass of wet solid pieces into a thin continuous layer,
- freezing the layer,

subjecting the layer in a substantial vacuum to mild heating to vaporize by sublimation all of the liquids therein,



and collecting the fully dried solid material for subsequent use.

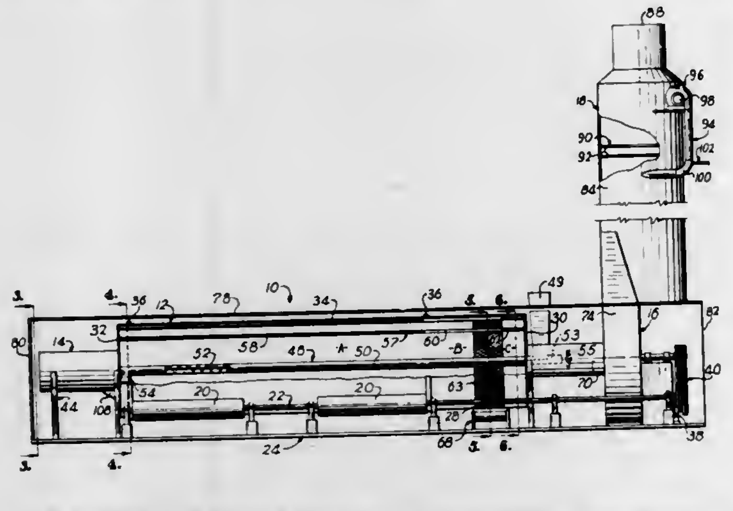
3,864,841
ROTARY DEHYDRATOR-GRANULATOR

Wallace L. Mc Gehee, 1004 W. 88th Ter., Kansas City, Mo. 64114

Division of Ser. No. 298,952, Oct. 19, 1972, Pat. No. 3,792,536. This application Oct. 25, 1973, Ser. No. 409,729

Int. Cl. F26b *7/00*

U.S. Cl. 34—11 **4 Claims**



1. A method of dehydrating and granulating moist materials including the steps of:

tumbling material within a rotating drum while subjecting the material to a current of heated air;

adding new moist material to the drum by conveying the same through the drum from one end of the latter toward the opposite end thereof without subjecting the newly added material to said tumbling action while it is being conveyed;

collecting partially dehydrated and granulated material within the newly added material throughout the full length of conveyance of the latter;

mixing partially dehydrated and granulated material with that newly added simultaneously with said collection and conveyance over the full length of such conveyance;

discharging the mixture into the stream of tumbling material; and

removing material which has become suitably dehydrated and granulated from the drum.

3,864,842
METHOD AND APPARATUS FOR DRYING CONTINUOUS SHEETS

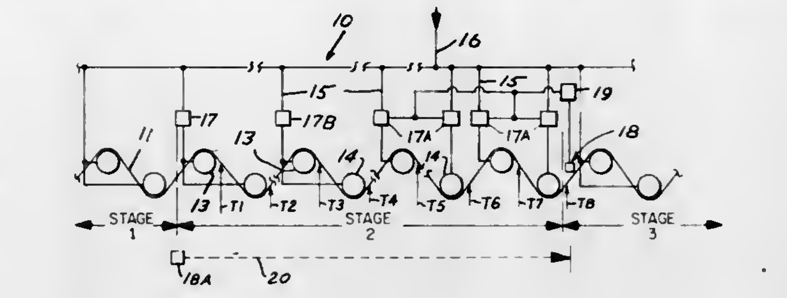
Willard C. Sawyer, Oxford, Maine, assignor to Gorham International Inc., Gorham, Maine

Filed Apr. 9, 1973, Ser. No. 348,934

Int. Cl. F26b *13/08*

U.S. Cl. 34—41 **15 Claims**

1. The method of drying a wet sheet that comprises the steps of conveying the sheet along a path with both surfaces in contact with rotatable, steam-heated drums establishing drum temperatures such that at the outfeed end, the sheet has a desired moisture content and during said drying has a zone where its moisture content becomes critical between an infeed zone where the drying rate is constant and an outfeed zone where the drying rate is falling, monitoring the sheet to determine whether in that zone the moisture content of at least one margin of the sheet is critical in that its moisture content is bound water and the intermediate portion still contains free water, and then, if such a difference in moisture content is detected, reducing the temperature of drums in the outfeed end of the zone of constant rate drying to an extent such that the moisture content of the sheet in the monitored zone becomes approximately uniform thereby to avoid defects that would result if the margin became overdried before the free water was removed.



3,864,843
APPARATUS FOR CONTINUOUSLY MEASURING THE SURFACE TEMPERATURE OF MOVING WEBS

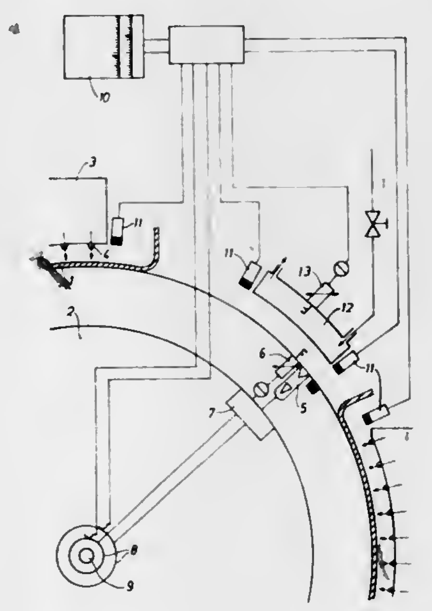
Peter Herzhoff, Leverkusen; Hans Gref, Cologne; Wolfgang Schweicher; Hans Frenken, both of Leverkusen; Josef Friedsam, Langenfeld, and Gunter Meinhardt, Leverkusen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,708

Claims priority, application Germany, Mar. 14, 1972, 22122276

Int. Cl. G01k *13/08;* **G01j** *5/18*

U.S. Cl. 34—43 **6 Claims**



1. An apparatus for continuously measuring the residual moisture in moving webs during the process of drying in which the web is carried upon the circumferential surface of a wheel rotating about a shaft and is moved successively under a plurality of jets of drying air directed onto the web along the peripheral path of the drying wheel, comprising a radiation pyrometer mounted within and adjacent the circumference of the wheel and directed toward the inner side of the web for measuring the temperature of a surface element of the web when passing through the drier, an air-temperature sensor mounted adjacent the rim of the wheel for measuring the temperature of the drying air ejected from successive nozzles along the drying path, means connecting said radiation pyrometer and air temperature sensor to sliding contacts at the shaft, a recording device, and sliding contacts at the shaft connecting the radiating pyrometer said air-temperature sensor to the recording device for transmitting the electrical signals produced by the radiation pyrometer and the air-temperature to the recording device and wherein the recorder has a moving element corresponding to the drying wheel, traversing means being connected to the moving element for providing a time-coordinated record of the temperature readings obtained by the radiating pyrometer and air temperature sensor, and the traversing means being synchronized with the drying wheel whereby a temperature record coordinated with each rotation of the wheel is obtained.

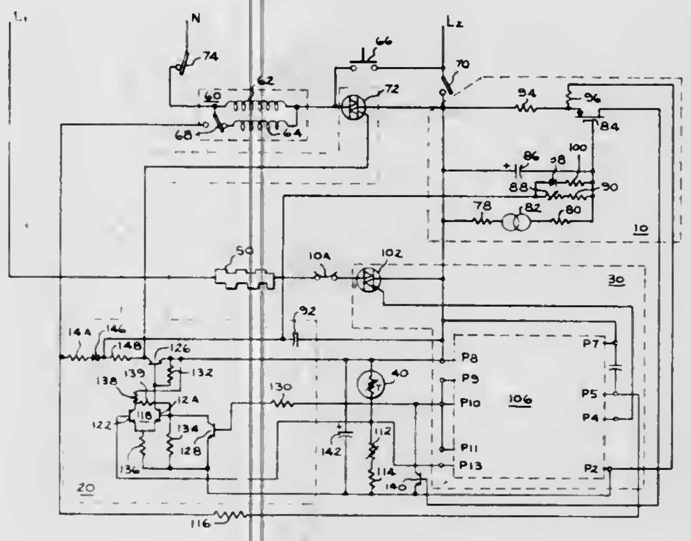
3,864,844
SOLID STATE DRYER CONTROL

Donald S. Heidtmann, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 26, 1973, Ser. No. 409,908

Int. Cl. F26b *19/00*

U.S. Cl. 34—45 **4 Claims**



1. In a fabric dryer of the type having a rotatable drum for tumbling fabrics and including heating means and drive means for rotating said drum, solid-state means for controlling the operating of said dryer comprising:

first sensing means including a moisture sensor, charging capacitor and switch for detecting the moisture content of fabrics disposed within said dryer, said first sensing means producing a signal when said moisture content has declined to a predetermined value;

transducer means for sensing the temperature within said dryer and producing a signal repesentative thereof;

first control means including a zero-voltage switch for receiving said signals produced by said first sensing means and said transducer means, said first control means regulating the operation of said heating means in response to signals received from said transducer means, said first control means further including a first gated bilateral switch for controlling current flow to said heating means and acting to de-energize said heating means upon reception of said signal produced by said first sensing means; and

second control means including voltage-level sensing trigger means for receiving said signals produced by said first sensing means and said transducer means, said second control means including a second gated bilateral switch for controlling current flow to said drive means and acting to terminate the operation of said drive means upon reception of signals from both said first sensing means and said transducer means.

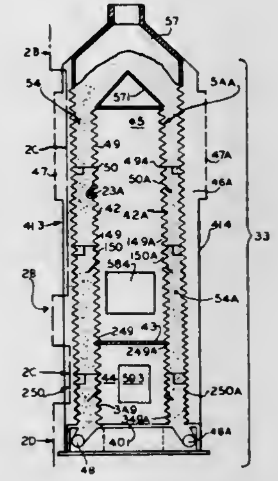
3,864,845
GRAIN DRYING PROCESS AND SYSTEM AND APPARATUS THEREFOR

Robert P Cooper, Rt. 1, Box 151, Amarillo, Tex. 79106

Filed Nov. 19, 1973, Ser. No. 416,739

Int. Cl. F26b *17/12*

U.S. Cl. 34—171 **4 Claims**



1. In a grain drier comprising a plurality of grain columns, each of said grain columns comprising an interior vertical perforated grid and an exterior perforated vertical grid parallel thereto with a space therebetween through which grain is moved, a hot air space between the interior grids of said columns, a heater and a fan assembly connected to said hot air space, said grids including perforations sufficiently large to allow air to pass therethrough freely and small enough to retain grain therein, a grain feeding means at the top of each of said columns and a discharge means at the bottom of each said column, the improvement which comprises a plurality of like grain distribution units in each column adjacent said hot air space, one such like grain distribution vertically above the other, each such grain distribution unit extending from its front edge adjacent to the interior grid of one of such grain columns to its rear edge at the exterior grid of said grain column, each said distribution unit comprising six firmly joined together rigid panels all impervious to said grain as follows:

a.
- i. a first flat rigid panel sloped in a downwardly and first sideways direction, said first sideways direction extending in a first vertical transverse plane, said first flat panel being sloped in said first direction at an angle to the horizontal greater than the angle of repose of said grain and said first panel having a straight horizontal bottom edge and a straight horizontal top edge parallel thereto, and parallel straight sideways and downwardly sloped front and rear edges, each such first panel front and rear edge being perpendicular to said top and bottom edges of said first panel;

b.
- i. a second flat rigid panel sloped downwardly in a second, forward, direction, said second direction extending in a second vertical plane transverse to said first vertical plane,
- ii. said second panel having a straight top horizontal edge and a straight horizontal bottom edge parallel thereto and parallel straight downwardly and forwardly sloped left and right side edges, each side edge perpendicular to said top and bottom edges of said second panel;
- iii. said top horizontal edge of said second panel being located in the same flat vertical plane as the rear edge of said first panel and the bottom edge of the second panel is at a vertical height which is above the intersection of a straight line extension in the plane of the rear edge of the first panel and plane of the first panel rear edge with the vertical plane in which the right edge of said second panel lies, and the top horizontal edge of

said second panel is at a vertical height no higher than the level at which a straight line intersecting the top edge of the first panel and lying in the flat vertical plane including said top edge of said second panel, and which straight line is at an angle to the horizontal equal to the angle of repose of said grain, intersects the vertical plane in which the right edge of said second panel lies;

c.

- i. a third flat panel sloped in a downwardly and third sideways direction at an angle in excess of the angle of repose of the grain, said third direction extending in a third vertical transverse plane parallel to said first vertical transverse plane, said third flat panel being downwardly sloped in said third direction at an angle to the horizontal which angle is the same in amount as the angle to the horizontal exhibited by said first flat panel;
- ii. said third panel having a straight horizontal bottom edge and a straight horizontal top edge parallel thereto and having parallel straight sloped front and rear edges, each said front and rear edge being perpendicular to said top and bottom edges of said third panel;
- iii. said bottom edge of said third panel being colinear with the bottom edge of the first panel, said top edge of said first panel and the top edge of said third panel being co-planar on the same horizontal plane, the right hand side edge of the second panel and the top edge of said third panel lying in the same flat vertical plane;

d.

- i. a fourth rigid flat panel sloped downwardly in a fourth, rearward, direction, said fourth direction extending in a fourth vertical plane transverse to said first and third vertical planes;
- ii. said fourth panel having a straight top horizontal edge and a straight horizontal bottom edge parallel thereto and parallel rearwardly sloped left and right side edges, each said side edge perpendicular to said top and bottom edges of said fourth panel;
- iii. said bottom edge of said fourth panel and said bottom edge of said second panel being parallel to each other and co-linear, said top horizontal edge of said fourth panel being located in the same flat horizontal plane as the top horizontal edge of the second panel and in the same vertical plane as the front edge of the third panel and said top edge of said fourth panel extending leftward of a vertical plane in which the bottom edge of the first and third panel lies by the same amount as the top horizontal edge of the second panel extends to the right thereof;

e. a fifth vertical triangular panel having a top edge and two adjoined bottom edges and a bottom vertex, the top edge extending from and firmly joined to the front end of the top edge of the first panel and the rear end of the top edge of the third panel and one of the side edges of said fifth panel is firmly attached to and extends from said front end of the top edge of the first panel along the front edge of the first panel to said bottom vertex and the other side edge of the fifth panel extends from said bottom vertex along the rear side edge of the third panel to the top edge of said third panel, said bottom edges being firmly joined to said side edges along the length thereof and in fixed position relative thereto;

f. a sixth vertical rigid panel having a top edge, a front vertical edge and a rear vertical edge and front and rear sloped bottom edges, said top edge being straight and in firm contact with and joined to the bottom edges of the first and third panels, the front edge of the sixth panel extending vertically from the front end of the bottom edge of the third panel to the right hand end of the top edge of the fourth panel and the rear edge of the sixth panel extending vertically from the rear end of the bottom edge of the first panel to the left end of the top edge of the second panel, and the bottom rear sloped edge of the sixth panel being firmly joined to the left side edge of the second panel and the bottom front edge of the sixth panel being firmly joined to the right hand side edge of the fourth panel.

3,864,846

AUTOMATED STEAMING APPARATUS

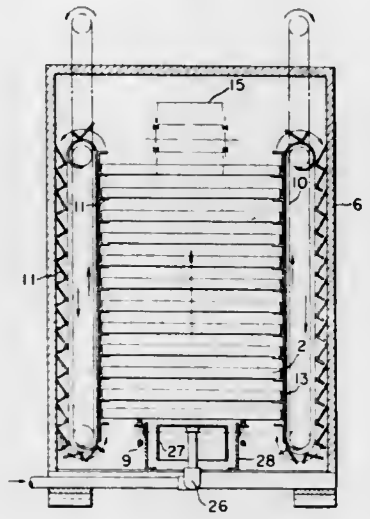
Torahiko Hayashi, 2-3, Nozawa-cho, Utsunomiya, Japan

Filed Sept. 11, 1972, Ser. No. 288,141

Claims priority, application Japan, Sept. 11, 1971, 46-70508

Int. Cl. F26b *11/18*

U.S. Cl. 34—189 **2 Claims**



1. An automated apparatus for processing food material, comprising,

a. an enclosed housing having an inlet door and an outlet door, one door near the bottom of the housing and the other door near the top of said housing,

b. conveyor means for receiving food trays positioned adjacent to said inlet door,

c. conveyor means for discharging food trays positioned adjacent to said outlet door,

d. a conveyor means for vertically transporting food trays positioned between said receiving and said discharging conveyor means and comprising at least a pair of vertical chain conveyors disposed adjacent to opposite inner walls of said housing,

e. a plurality of L-shaped bars mounted on said vertical chain conveyors,

f. said L-shaped bars being connected to the links of said chain conveyors by means of pins about which said L-shaped bars are rotatable,

g. one arm of each L-shaped bar being adapted to support a tray for food material in cooperation with an opposing bar on the other chain conveyor,

h. the other arm of said L-shaped bar slideably engaging a rail mounted along the inner passage of each of the chain conveyors,

i. whereby each of said bars, upon leaving said inner passage, rotate about said pin until said tray supporting arm of said L-shaped bar forms an angle other than a right angle with a vertical plane, thereby reducing the horizontal distance between said pin and the outermost end of said L-shaped bar.

3,864,847

NAIL POLISH DRYER

Fred Friedman, and Gertrude Friedman, both of 557 Golf Terrace Dr., Union, N.J. 07083

Filed June 20, 1974, Ser. No. 481,246

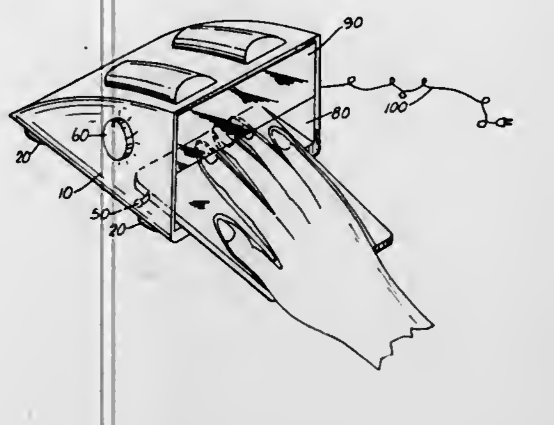
Int. Cl. F26b *19/00*

U.S. Cl. 34—202 **4 Claims**

1. A nail polish dryer comprising:

a horizontally disposed tray, the tray being mounted in a manner that it is free to slide forwardly and rearwardly in a horizontal plane;

a plurality of heat sources, the heat sources being disposed forward of and above the tray, in a position that sliding the tray forwardly places the tray in a position where the tray will be exposed to the heat produced by the heat sources; and



means cooperating with the said tray and heat sources, the means causing the heat sources to be energized when the tray is in its forward position and causing the heat sources to be deenergized when the tray is in its rearward position.

3,864,848

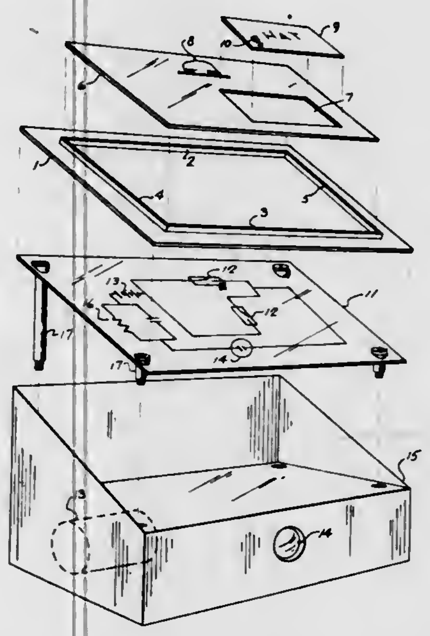
LEARNER FEEDBACK DEVICE

Harry M. Smith, Battleground, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.

Filed Sept. 13, 1973, Ser. No. 397,019

Int. Cl. G09b *5/02*

U.S. Cl. 35—9 D **11 Claims**



1. A learning feedback device comprising

a display board adapted to receive logic means and one or more symbol bearing means on the surface thereof;

at least one symbol bearing means sized for emplacement on said display board, said symbol bearing means including at least one magnet;

said logic means disposed in electrically non-contacting relationship with said symbol bearing means;

electric circuit means influenced by said magnet to become electrically conductive while remaining electrically isolated from said symbol bearing means upon a predetermined correct emplacement of said symbol bearing means in relation to said logic means;

an electrically actuated signal device connected in said electrical circuit means;

and power supply means connected in said electrical circuit means and adapted to actuate said signal device upon said electrical circuit means becoming conductive.

3,864,849

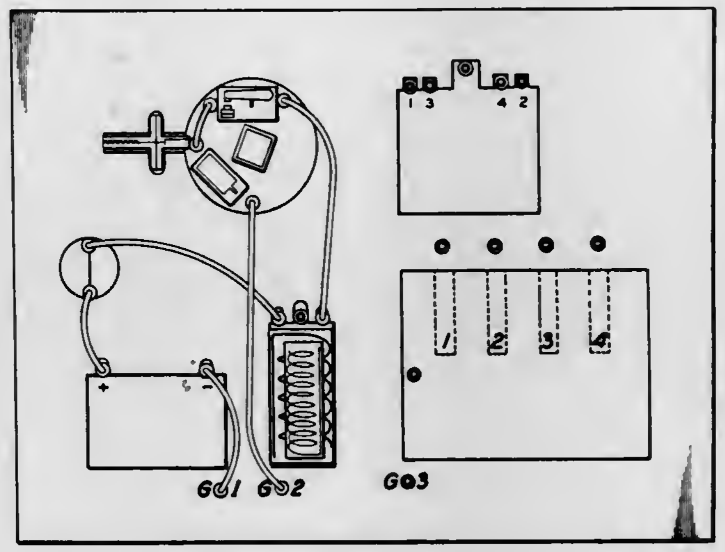
EDUCATIONAL DEVICE FOR LEARNING IGNITION SYSTEM FUNDAMENTALS

Charles G. Valentine, Stamford, Conn., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 345,920, March 29, 1973,. This application Oct. 12, 1973, Ser. No. 405,972

Int. Cl. G09b *25/02*

U.S. Cl. 35—13 **8 Claims**



1. An educational kit for teaching the assembly, relationship of parts, and operation of an automotive ignition system comprising:

a. a simulator board having a surface of magnetically attractive material and including graphic indicia on the surface thereof defining schematic diagrams of the outlines of various of the component parts of an automotive ignition system in its unconnected state, said board further having mounted thereon in association with said indicia a plurality of jack members for forming simulated electrical connections between various of said schematic diagrams;
b. a plurality of magnetically attractive manipulative pieces individually bearing on their surfaces specific graphic indicia defining specific elements of the component parts for an automotive ignition system or descriptive word indicia;

c. a plurality of plug wires each adapted for connecting two of said jack members; and

d. audiovisual instructional means; said manipulative pieces and plug wires adapted for manipulation on the simulator board and in association with the simulator board indicia by the user in response to said instructional means such that the assembly, relationship of parts, and operation of an automotive ignition system can be graphically and physically simulated, said magnetically attractive board or alternatively each of said magnetically attractive pieces being magnetic to provide a mutual attraction between said board and said pieces.

3,864,850

TEACHING AID

August Philip Helmecke, Massapequa, L. I., N.Y., assignor to Crocker Country Day School, Inc., Oceanside, N.Y.

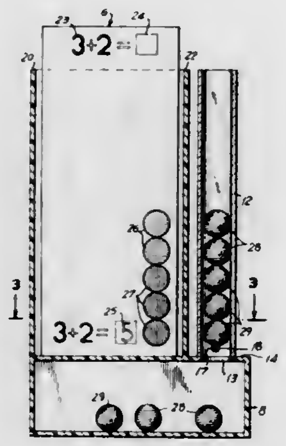
Filed July 11, 1973, Ser. No. 378,353

Int. Cl. G09b *19/02*

U.S. Cl. 35—31 R **7 Claims**

1. In a teaching device of the type which employs coded key cards and aids abstract learning through concrete application, the improvement comprising at least one key card bearing printed data and marked with a master code, said at least one key card being receivable in a card holder, said at least one key card including top and body portions, an abstract printed problem being located on said top portion thereof, a like abstract printed problem being located on said body portion thereof with an answer key thereto, at least a pair of color

coded subsets correlatable with said abstract printed problem located on a margin of said body portion of said at least one key card, a card holder for selectively displaying said at least one key card, said at least one key card being insertable therein, said card holder normally obscuring from view said body portion of said at least one key card and normally displaying said top portion of said at least one key card, said card holder including means for displaying said body portion of said at least one key card, as desired, and means for displaying at least a pair of companion color coded objects correlatable with said color codes subsets, said last mentioned means being aligned with said key card margin on which said color coded subsets are located.



3,864,851

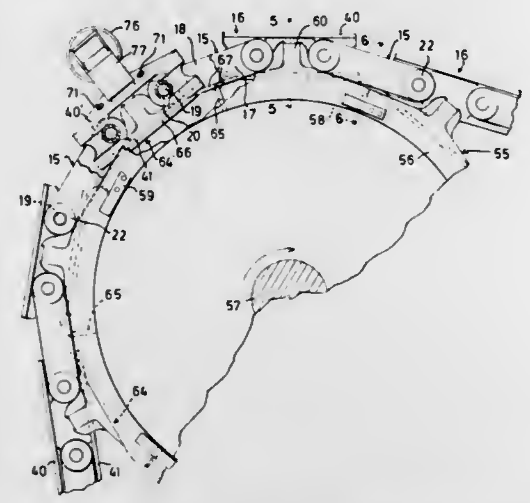
DREDGE CHAIN, SPROCKET, AND COMBINATION

Ronald M. Guntert, 2402 Clarendon St., Stockton, Calif. 95204

Filed Sept. 4, 1973, Ser. No. 393,952

Int. Cl. E02f *3/14*

U.S. Cl. 37—69 **15 Claims**



1. A drag chain adapted for connection with the dredge buckets of an endless bucket-line floatingly suspended in a substantially vertical plane for movement of the chain longitudinally thereof, said chain comprising:

a. adjacent pairs of pivotally connected, elongated links in generally end to end relation, each adjacent pair comprising a drive link and an intermediate link;

b. each drive link having a pair of elongated spaced, opposed drive bars in side by side relation, and each intermediate link having a pair of elongated, spaced, opposed intermediate bars in side by side relation with each pair of drive bars disposed in a plane at a right angle to each pair of intermediate bars;

c. intermediate spools between the end portions of the intermediate bars of each intermediate link with ends respectively adjacent said intermediate bars, and drive spools between the end portions of the drive bars of each drive link with ends respectively adjacent said drive bars and one of the drive spools at one of the ends of each drive link of said adjacent pairs of links extending between the intermediate spools at the end portions of each intermediate link;

d. said drive spools being rigid with said drive bars, and said intermediate spools being rigid with said intermediate bars, and said drive spools and said intermediate spools having arcuate, concavo-convex complementary outer wear surfaces between their ends in planes respectively at right angles to each other providing approximately 180° surface engagement between each drive spool and each intermediate spool in said planes;

e. said adjacent pairs of links having substantially unrestricted articulation relative to each in the plane of the chain when in endless form and means of said drive spool providing a predetermined degree of articulation between adjacent links laterally relative to said last mentioned plane.

3,864,852

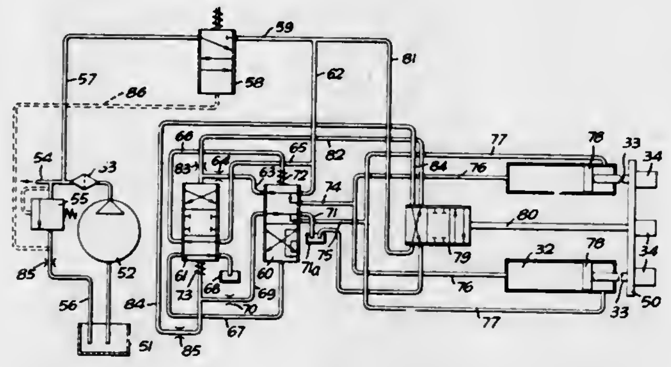
HYDRAULIC OSCILLATOR FOR DIGGING BUCKET TEETH

Leonard Marshall Lochrie, Salisbury, England, assignor to BTR Industries Limited, London, England

Filed Mar. 27, 1973, Ser. No. 345,355

Int. Cl. E02f *3/40, 9/22;* **F01l** *25/02*

U.S. Cl. 37—141 R **12 Claims**



1. An excavating device having a digging bucket provided with a mouth and having reciprocable cutting means mounted on at least one side of the mouth, comprising means for applying a steady force to the bucket to force it into material to be excavated to fill the bucket, a double acting piston and cylinder device for reciprocating the cutting means, the cylinder having outlet ports at only two spaced apart locations along the cylinder one on either side of the piston and two inlet ports nearer the ends of the cylinder respectively than the outlet ports, first valve means for controlling fluid flow to the cylinder, said valve means reciprocating the piston under normal working conditions in the region between the two outlet ports as said valve means are movable between a first condition in which one of said inlet ports and one of said outlet ports on the opposite side of the piston are open and the other of said inlet and outlet ports are closed, and a second condition in which said other inlet port and said other outlet port are open and said one inlet port and said one outlet port are closed, whereby when the piston drifts in either axial direction from said region the piston at least partly covers said one or said other of the outlet ports so that the fluid flow out of that outlet port is throttled thereby increasing the pressure of fluid in the cylinder on the same side of the piston as that outlet port to resist further movement of the piston in the same direction, and hydraulic oscillator means separate from said piston and cylinder device is provided for oscillating said first valve means between its first and second conditions.

3,864,853

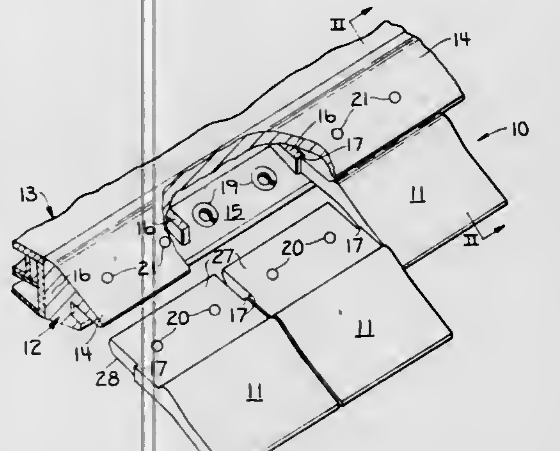
QUICK DISCONNECT CUTTING EDGE FOR EARTHWORKING IMPLEMENTS

Gene R. Klett, Joliet; Billy R. Bedford, Peoria, and Thomas P. Casey, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 27, 1973, Ser. No. 355,203

Int. Cl. E02f *3/76*

U.S. Cl. 37—141 T **7 Claims**



1. An earthworking implement disposed for movement along a longitudinal axis thereof comprising

a support defining a receptacle extending laterally relative to said axis, said support comprising spaced upper and lower support members and a plurality of laterally spaced webs secured between said support members to define a plurality of separate pockets in said receptacle,

a cutting edge comprising a plurality of individual cutting edge segments each having a mounting section disposed in a respective one of said pockets and a cutting section extending forwardly of said support, and

quick disconnect means detachably mounting the mounting section of each segment on said support comprising

a pin disposed in axially aligned apertures formed through said support and said mounting section and

annular locking means mounted on said pin to frictionally engage outer surface portions thereof for preventing axial movement of said pin relative to said support.

3,864,854

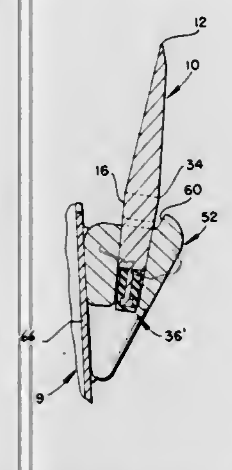
DIGGING TOOTH LOCKING DEVICE

Clifford J. Evans, 5307 Bryce, Fort Worth, Tex. 76107

Filed Oct. 1, 1973, Ser. No. 401,984

Int. Cl. E02f *9/28*

U.S. Cl. 37—142 A **12 Claims**



1. Locking device for releasably mounting a digging tooth within a tooth receiving pocket of excavation equipment comprising, in combination:

a body of resilient material, said body having opposed wall surfaces, ribs formed on said opposed wall surfaces, a T-shaped cutout forming spaced co-extensive legs with each leg providing one of said opposed wall surfaces, the juncture of said legs forming a portion of said T-shaped cutout;

a digging tooth and a tooth mounting pocket; said tooth having a tip portion for engaging the earth and a wedge portion for engaging the pocket; opposed wells formed in a marginal free end portion of said wedge portion which causes said marginal free end portion of said wedge portion to be dovetail in cross-sectional configuration, said dovetail being of a size to be received within said T-shaped cutout,

so that said ribs, when said wedge portion is forced into said pocket, are compressibly deformed in a manner to increase the wedge action between the tooth and the pocket.

3,864,855

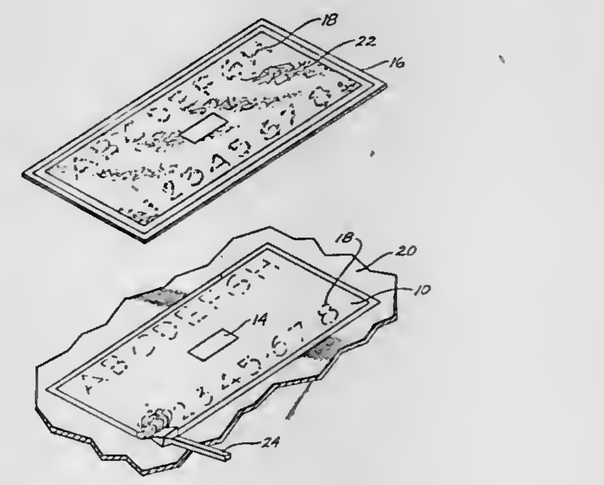
DESTRUCTIBLE LABEL SYSTEM

John A. Pekko, Whittier, and Wayne L. Richardson, Monrovia, both of Calif., assignors to Avery Products Corporation, San Marino, Calif.

Filed Dec. 8, 1969, Ser. No. 883,090

Int. Cl. G09f *3/03*

U.S. Cl. 40—2 R **15 Claims**



1. A destructible label system comprising:

a. a fragile label base at least one surface of which is imprintable with visual indicia;

b. an adhesive layer having first adhesive surface for adhesive contact with the surface opposed to the imprintable surface of the fragile label base and a second adhesive surface for adhesive contact with at least one substrate, the adhesivity of the second adhesive surface to the substrate exceeding the tear strength of said fragile label base; and

c. a self-supporting film at least transparent where visual indicia are to appear on said fragile label base said self-supporting film dimensioned to cover said fragile label base in overlapping relationship and having an adhesive surface for contact with said fragile label base and the substrate a portion of the adhesive surface of said self-supporting film being substantially non-adhesive with respect to a portion of said fragile label base.

3,864,856

EMERGENCY DATA BAND

Richard J. McManus, Denver, Colo., assignor to Hi-Tor Inventions, Corporation, San Antonio, Tex.

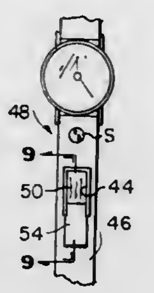
Filed Sept. 5, 1972, Ser. No. 286,447

Int. Cl. G09f *3/14*

U.S. Cl. 40—21 C **1 Claim**

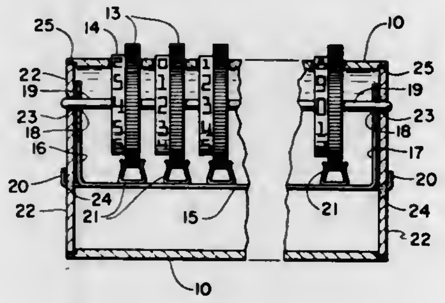
1. A watchband structure comprising in combination a flexible strap adapted to be secured to a watch to form an enclosed loop for encircling the wrist of a user, said strap having a longitudinal compartment extending longitudinally of said strap, said compartment including overhanging longitudinal edges along opposite sides, an information card disposed within said compartment having emergency information re-

corded thereon, longitudinal lip members extending along opposite sides of said compartment for releasably retaining the information card in the compartment, an opaque cover for the compartment defined by generally rectangular slide plate means retained between said longitudinal edges and said longitudinal lip members for slidable movement in a lengthwise direction along said flexible strap between an open and a closed position such that information recorded on the information card is exposed when the cover is open but is unexposed when the cover is closed, and finger-engaging handle means disposed at one end of said slide plate means to effect movement of said slide plate in a lengthwise direction along said flexible strap between said open and closed positions.



3,864,857
TELEPHONE NUMBER RECORDED AND REMINDER

Berton H. Brude, Rt. 1, Mankato, Minn. 56001
Filed Oct. 29, 1973, Ser. No. 410,792
Int. Cl. G09f *11/02*
U.S. Cl. 40—77.4 **3 Claims**

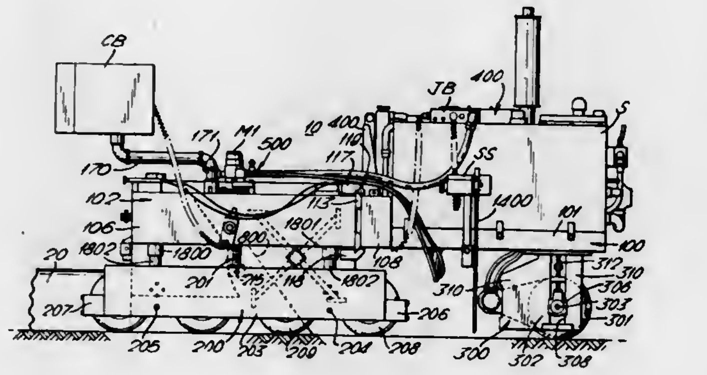


1. A telephone number indicating device adapted to be mounted to a telephone base comprising:

a. an elongated tubular housing including an elongated surface, said housing defining a plurality of openings in alignment with one another along the longitudinal length of said surface;
b. a shaft supported in said housing by means whereby it is held in parallel alignment with said openings;
c. U shaped bracket means having an elongated base portion, the opposed facing arms of said bracket defining openings for receiving said shaft;
d. a plurality of independently rotatable wheels mounted on said shaft, each of said wheels having integral first and second cylindrical portions with a common axis, said first wheel portion having a larger diameter than said second portion, the peripheral surface portion of each of said second portions of said wheels having number indicia thereon sequentially arranged about the circumference thereof;
e. U shaped spring members spaced along and mounted to the base portion of said U shaped bracket at intervals corresponding to the openings in the tubular housing surface, respectively, the opposed arm portions of each of said spring members being so shaped as to matingly engage, slidably and frictionally the opposite sides of respective rotatable wheel first portion to hold same in alignment with said openings, respectively, and against free rotation;
f. closure members for the ends of said tubular housing, said closure members defining shaft receiving openings positioned so that when the shaft is mounted therein and interior to said housing the first wheel portion of each of said wheels projects beyond its respective openings in said housing and said numbered indicia on the second portion of each said wheels is visible through their respective openings; and
g. means for restraining said U shaped bracket from rotating about said shaft when one of said wheels is rotated by an operator.

3,864,858
PAVEMENT, CURB AND GUTTER CONCRETE LAYING MACHINE

William P. K. Rochfort, Fargo, N. Dak., assignor to Kerbit Pty. Ltd., Townsville, Queensland, Australia
Filed June 8, 1973, Ser. No. 368,025
Claims priority, application Canada, June 16, 1972, 144917
Int. Cl. E01c *11/28*
U.S. Cl. 404—98 **14 Claims**



1. A machine for laying a plastic mixture such as concrete, asphalt or the like in a ribbon on a supporting surface as the machine travels forwardly over such surface, comprising:

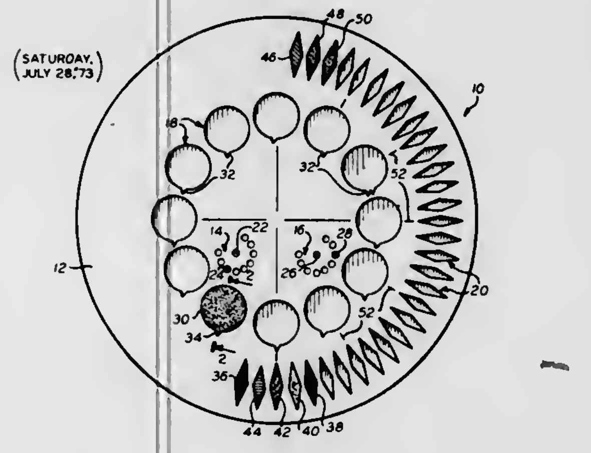
a. a frame having a rigid front portion supported on a steerable front wheel assembly and a rear portion comprising a cross-beam secured to said front portion and a pair of longitudinally extending beams projecting rearwardly therefrom;
b. means adjustably mounting at least one of said longitudinally extending beams on said cross-beam for movement toward and away from the other in a direction transverse to the direction of travel of the machine;
c. a pair of wheel support assemblies supporting respective ones of said longitudinally extending beams and connected thereto by a vertical height adjusting mechanism;
d. an open bottom hopper secured to said rear frame portion;
e. a downwardly facing open bottom slip forming mold detachably secured to said hopper and extending rearwardly from the open bottom of said hopper;
f. a paddle assembly rotatably mounted in said hopper for rotation about an axis transverse to the direction of travel of the machine to agitate the mixture in the hopper and transfer the same therefrom through the open bottom into said mold; and
g. means for driving said paddle assembly.

3,864,859
PERPETUAL CALENDAR

Len Kaufman, 500 Kappock St., Bronx, N.Y. 10463
Filed Aug. 6, 1973, Ser. No. 386,198
Int. Cl. G09d *3/00*
U.S. Cl. 40—107 **5 Claims**

1. A perpetual calendar requiring neither numbers, letters, words nor printed matter to be read, which comprises:

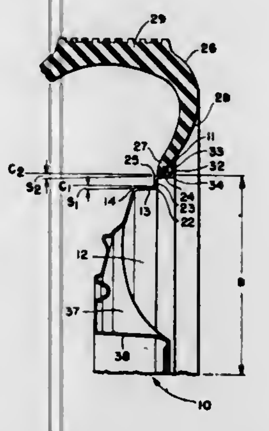
a planar base;
a decade-indicating marker;
means for locating and detachably affixing said decade-indicating marker selectively, within a first circular pattern on the planar surface of said base to correspond in position to the hourly markings on a clock dial from 1 o'clock to 9 o'clock inclusively;
a year-indicating marker;
means for locating and detachably affixing said year-indicating marker selectively, within a second circular pattern on the planar surface of said base to correspond in position to the hourly markings on a clock dial from 1 o'clock to 9 o'clock inclusively;
a month-indicating marker;



means for locating and detachably affixing said month-indicating marker selectively, within a third circular pattern on the planar surface of said base to correspond in position to the hourly markings on a clock dial from 1 o'clock to 12 o'clock inclusively;
seven day-indicating markers, visually distinguishable from each other; and
means for locating and detachably affixing said day-indicating markers selectively, within a fourth circular pattern on the planar surface of said base to correspond in position to the minute markings on a clock dial from 1 minute past the hour to 31 minutes past the hour inclusively,
whereby the relative location of each of said above markers, in combination, corresponds in position to the time display on a conventional clock dial with the composite display indicating a specific calendar date.

3,864,860
TIRE DISPLAY APPARATUS

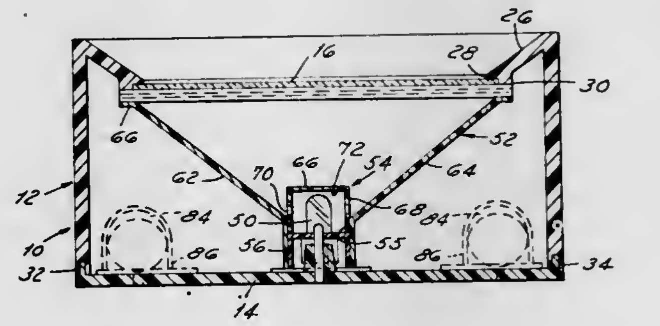
Leo A. Merzweiler, Bath, Ohio, assignor to Summit Plastic Corporation, Tallmadge, Ohio
Filed May 31, 1973, Ser. No. 365,473
Int. Cl. G09f *21/04*
U.S. Cl. 40—125 M **6 Claims**



1. A display for mounting on tires of the type having a toroidal shape with a crown portion, sidewalls extending radially inward from the crown portion and terminating in bead portions surrounding a central opening, comprising a first annular flange extending axially of the display, a first rim joined to said first flange and extending radially outward to a second annular flange extending axially away from said first rim, a second rim joined to said second annular flange at a position spaced from said first rim and extending radially outward, said first annular flange having a diameter substantially the same as the diameter of the bead portions of a first size tire for insertion into the central opening of said first size tire, said first rim having an outer diameter greater than the diameter of the bead portions to restrict insertion of said first flange into the opening, said second annular flange having a diameter substantially the same as the diameter of the bead portions of a second size tire for insertion into the central opening of the tire, said second rim having an outer diameter greater than the diameter of the bead portions of said second size tire to overlap the surface of the bead portions and restrict insertion of said second flange into the opening whereby said display may be mounted on said first size tire or said second size tire.

3,864,861
ILLUMINATED DISPLAY DEVICE

Richard H. Hill, Jr., 20173 Hull St., Detroit, Mich. 48203
Filed Sept. 21, 1973, Ser. No. 399,385
Int. Cl. G09f *13/14*
U.S. Cl. 40—132 R **6 Claims**



1. An illuminated indicia device comprising a continuous elongated frame of rectangular configuration, a base and a transparent cover plate forming a closed housing, a lamp mounted on said base within said housing an elongated first reflector mounted on said base within said housing around said lamp, said first reflector including four inclined side walls having reflecting surfaces, each of said side walls extending upwardly and outwardly from said base towards said cover plate and said frame respectively, with the upper edges of said side walls terminating in an outwardly turned continuous rim which is located near but spaced from said cover plate, an elongated second reflector opened at its ends mounted in said first reflector and extending across said lamp, said second reflector including a top panel and a pair of parallel side panels, each of said panels having light transmitting areas provided therein, said top panel being spaced from and extending across the top of said lamp and said side panels being spaced apart and extending along the opposite sides of said lamp, said reflectors being made from an opaque material, a transparent reflector cover mounted on said rim of said first reflector adjacent said cover plate, indicia mounted on said reflector cover, said reflector cover and said indicia occupying the space between said rim and said cover plate, and means for connecting said lamp to a source of current for energizing same, the light rays from said lamp when energized being emitted from the open ends of said second reflector and from said light transmitting areas provided in said panels and thereafter impinging upon and being reflected by the side walls of said first reflector to illuminate said cover plate and said indicia.

3,864,862
FIREARMS

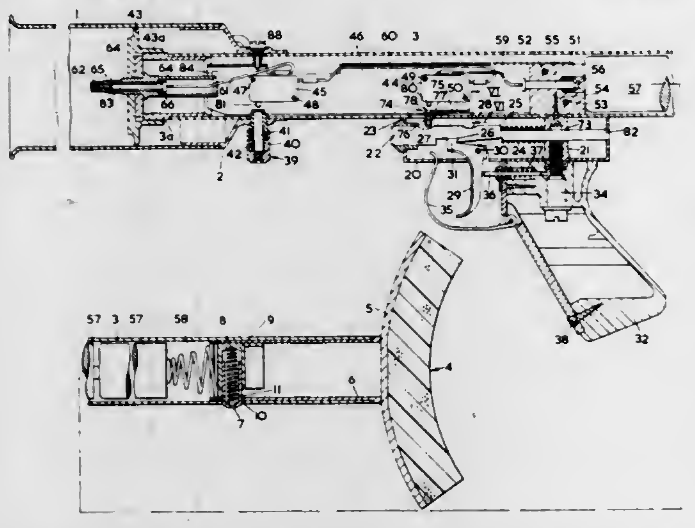
William Ernest Brunger, Maidstone; Stanley Gordon Madden, Salisbury, and Benjamin Robinson Sawyer, Cheshunt, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain, London, England

Filed June 15, 1973, Ser. No. 370,293

Claims priority, application Great Britain, June 15, 1972, 28063/72

Int. Cl. F41c *19/12, 27/06*

U.S. Cl. 42—84 **8 Claims**



1. A firearm which is held in both hands for firing having an electrical firing circuit which includes first and second spaced-apart hand operated switching means which are so positioned on the firearm as to be operable only by using both hands, one hand operating the said first switching means and the other hand operating the said second switching means, the said firing circuit being arranged to fire the firearm when the first switching means is operated at the same time as the second switching means is being operated, the said first switching means including a tripping mechanism, a trigger by means of which the tripping mechanism is actuable and an associated electrical switch forming part of the electrical firing circuit and arranged to be momentarily closed by said tripping mechanism when the latter is actuated by operation of the trigger.

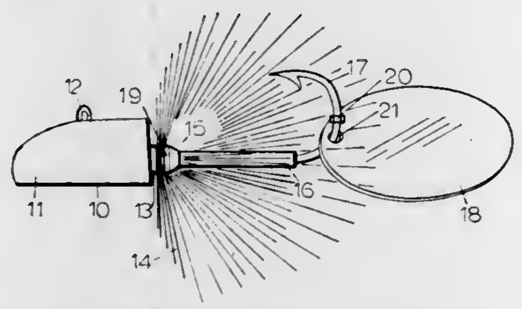
3,864,863
FISH LURE

Donald C. Neal, 1303 Pa. Ave. East, Warren, Pa. 16365

Filed June 30, 1972, Ser. No. 268,031

Int. Cl. A01k *93/00*

U.S. Cl. 43—42.15 **1 Claim**



1. An artificial fish lure comprising
a weighted head,
a single blade,
a barbed hook,
said head having an eyelet fixed thereon on the side of said head adjacent said hook,
an attracting means,
said hook having a tube disposed around it adjacent said head,
a grommet around said hook spaced from said tube,
said blade having a hole therein, said hook passing through said hole and said blade being disposed between said tube and said grommet,
said weighted head and said hook being fixed together,
said blade being generally oval in shape and having an area substantially larger than the cross sectional area of said said,
said head having a weight at least twice the weight of said blade,
said blade imparts a wriggling action to the lure without causing the entire lure to rotate, to attract fish.

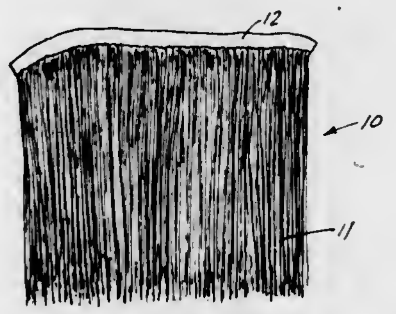
3,864,864
FISHING LURE COMPONENT

Margie F. Duescher, St. Paul, Minn., assignor to FisHair Incorporated, St. Paul, Minn.

Filed Nov. 2, 1971, Ser. No. 194,933

Int. Cl. A01k *85/08*

U.S. Cl. 43—42.25 **1 Claim**



1. An article of commerce, for future use as a plurality of fishing lure components, comprising:
a bundle of synthetic thermoplastic hair whose strands lie in a generally common direction, said strands having a narrow common bond of the hair at only one end thereof of such thickness to comprise a brittle fusion of the ends of only synthetic hair, said fusion being elongated transversely to said common direction and being manually fracturable in said common direction to provide individual lure components each having a selected quantity of hair at least temporarily supported only by the fusion.

3,864,865
FLAT BUTT TAPERED LEADER

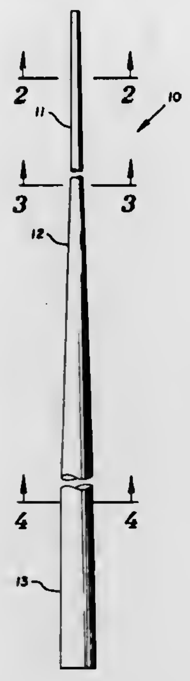
Rolla Douglas Swisher, Spirit Lake, Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa

Filed July 13, 1973, Ser. No. 378,919

Int. Cl. A01k *91/00*

U.S. Cl. 43—44.98 **7 Claims**

1. A fly line leader having a progressive taper along with a progressively reduced mass from butt-to-tip and including a tapered tippet segment of generally circular cross section, a tapered butt segment of generally elliptical cross section and having a substantially constant minor axis dimension, and a tapered transition segment of generally circular cross section extending between said tippet and butt segments and having a rate of taper greater than that of said tippet and butt segments.



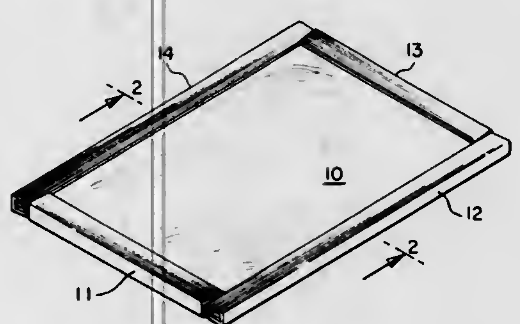
3,864,866
PEST CONTROL DEVICE

Nathan Kosinsky, 70 Batteny Ave., Brooklyn, N.Y. 11228

Filed Nov. 9, 1973, Ser. No. 414,549

Int. Cl. A01m *23/00*

U.S. Cl. 43—58 **2 Claims**



1. A pest control device comprising:
a first rigid rectangular panel;
a non-drying adhesive disposed on one surface of said panel;
a second rigid rectangular panel substantially the same size as said first panel and disposed over said first panel and in contact with the adhesive surface;
a rigid U-shaped plastic strip having opposed lateral surfaces coupled to each of the common edges of said panels, the surfaces of said strips having a spring-like force to urge the common panel edges together in sealing relationship so as to prevent the adhesive from leaking from the panels.

3,864,867
PEST CONTROL PACKAGE

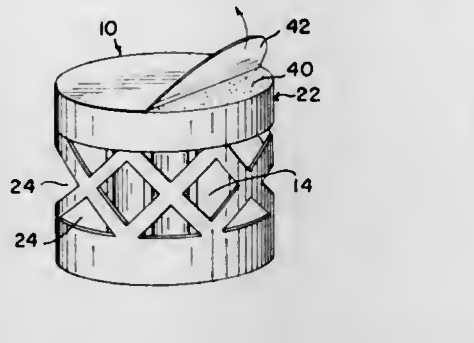
Clinton H. Dry, 1244 Juniper Ave., Redwood City, Calif.

Filed Nov. 1, 1973, Ser. No. 411,661

Int. Cl. A01m *1/20, 25/00*

U.S. Cl. 43—131 **7 Claims**

1. A package for use in controlling pests within a area which comprises a container of generally tubular form and having end closures, one of which is removable and replaceable, said container having apertures in at least one wall thereof providing access to the interior, and a replaceable cartridge of pest control material which is in a solid state enclosed within said container with the outer side wall of said cartridge spaced from the inner side wall of said container, and cooperating male and female members in the container and cartridge ends constituting means for holding said cartridge in a relatively fixed position in said container.



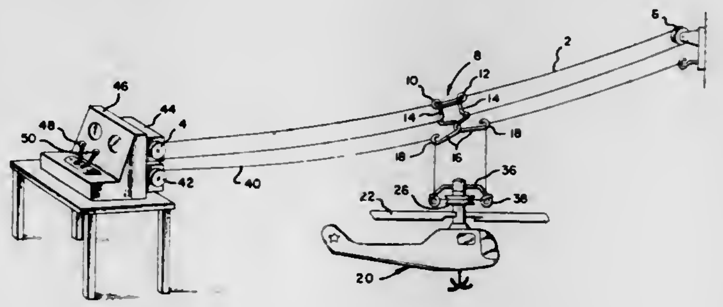
3,864,868
HELICOPTER TOY

Tobin Wolf, 285 Aycrigg Ave., Passaic, N.J. 07055

Filed June 6, 1973, Ser. No. 367,535

Int. Cl. A63h *27/12*

U.S. Cl. 46—1 H **23 Claims**



1. An amusement device comprising,
movable track means suspended between two spaced points, a traversing member supported by said track means for movement therewith,
a toy helicopter provided with a horizontal rotor,
a flexible line extending generally parallel to the track means,
means on the traversing member for movably supporting spaced portions of the line,
means on the helicopter engageable by the portion of the flexible line intermediate the spaced portions for suspending the helicopter and training the line against the rotor for rotating it during movement of the traversing member with the track means.

3,864,869
ROTATABLE OBJECT WITH POSITIVE LOCK AND MEANS TO UNLOCK AND ROTATE SAID OBJECT

Urs Leuenberger, Fontevrault, Quebec, Canada, assignor to Canada Wire and Cable Limited, Toronto, Ontario, Canada

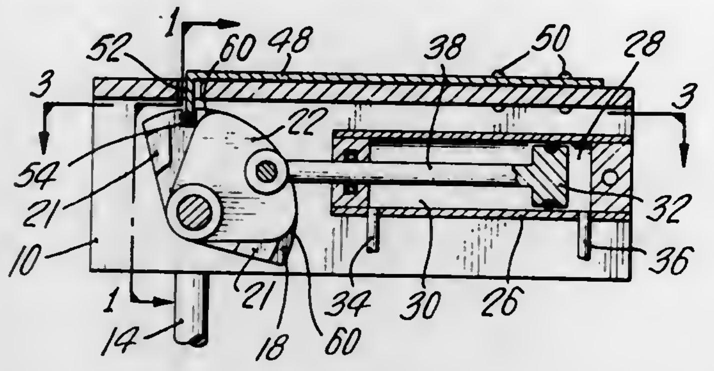
Filed Apr. 16, 1973, Ser. No. 351,597

Int. Cl. A63h *27/00*

U.S. Cl. 46—78 **12 Claims**

1. A positive lock rotating linkage comprising:
a. a supporting structure;
b. a first segment, means mounting said first segment for rotation on said supporting structure, and an object secured on said first segment to be rotated back and forth by a predetermined angle;
c. means located on said supporting structure for locking said first segment at each extreme position of its angular motion against angular rotation in both directions; and
d. a second segment, means mounting said second segment for rotation on said supporting structure coaxially and independently of said first segment, said second segment

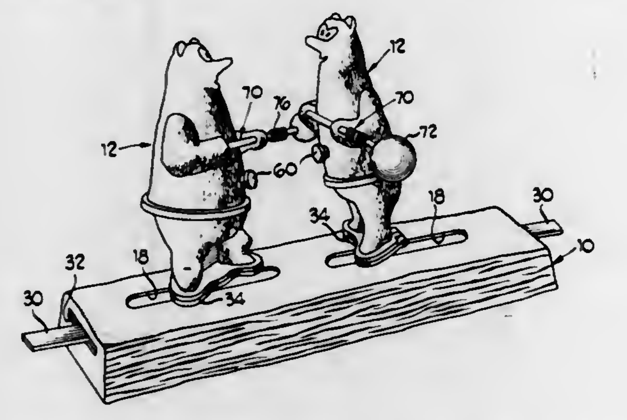
including means for coacting with said locking means to unlock said first segment at each extreme position of its angular motion and for subsequently rotating said first segment through said predetermined angle, said segments being constructed and arranged to allow said second segment a predetermined amount of free angular motion relative to said first segment before unlocking the first segment and subsequently rotating said first segment at each extreme position of its angular motion so as to render said first segment independent of the exact positioning of said second segment in the lock position.



3,864,870
FIGHTING FIGURE TOY

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 27, 1973, Ser. No. 391,792
Int. Cl. A63h *13/06*
U.S. Cl. 46—142 **11 Claims**

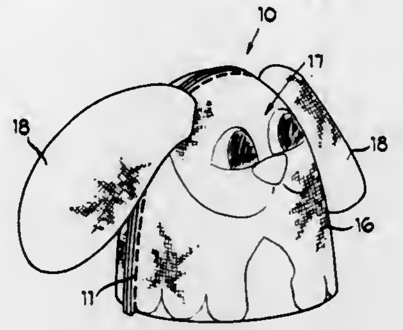


1. A fighting game comprising: a base and at least two figures above said base; a plurality of means, one for each figure, mounting the associated figure for compound movement on the base and including a slide mounted for reciprocal movement on the base, each said slide journalling a spur gear for rotation about a substantially vertical axis, each said figure being secured to the associated spur gear for rotation about said substantially vertical axis therewith, each said slide further pivotally mounting an operator having a gripping portion and an opposed gear portion in mesh with the associated spur gear whereby rotation of said gripping portion will cause rotation of the associated figure and reciprocation of said gripping portion will cause reciprocation of the corresponding figure; a plurality of means, one for each of said figures, mounting the associated figure for further movement between a substantially upright position and a substantially prone position relative to the base; means for normally biasing each figure towards said prone position; latching means operative to hold each figure in its normally upright position; and operating means for said latch means for unlatching said latching means to allow each figure to move to its substantially prone position; each figure including means adapted to contact the operating means of the latching means of the other figure to cause the other figure to move from said substantially upright position to said prone position.

3,864,871
HAND MANIPULATABLE FIGURE TOY

Bette M. Kaelin, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 3, 1973, Ser. No. 385,350
Int. Cl. A63h *3/14*
U.S. Cl. 46—154 **4 Claims**

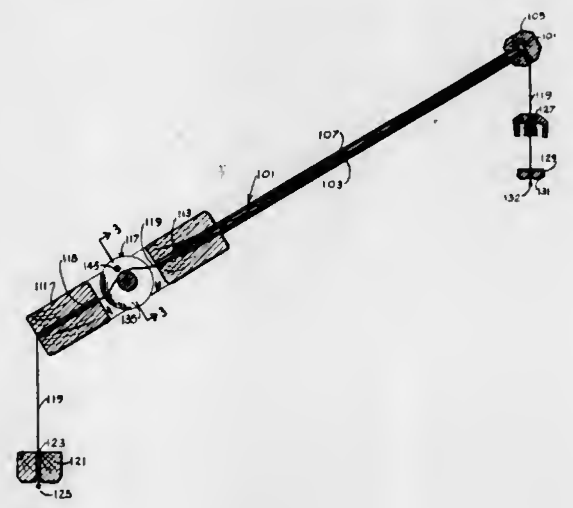


1. A hand manipulatable figure toy comprising: flexible material having two sides and being formed in a generally dome-like reversible configuration having an opening large enough to receive a hand into the interior of the dome, wherein one side of said dome has a design thereon depicting an animal and including appendages attached to said one side whereby the toy with said one side out can be used as a puppet, and the other side of said dome has indicia thereon defining another form of the toy which can be exposed to view by turning the dome with said other side out to change the form of the toy.

3,864,872
FISHING GAME

John H. Hoetzel, 650 Americana Ave., Annapolis, Md. 21403

Filed Feb. 21, 1973, Ser. No. 334,428
Int. Cl. A63h *33/26*
U.S. Cl. 46—241 **12 Claims**

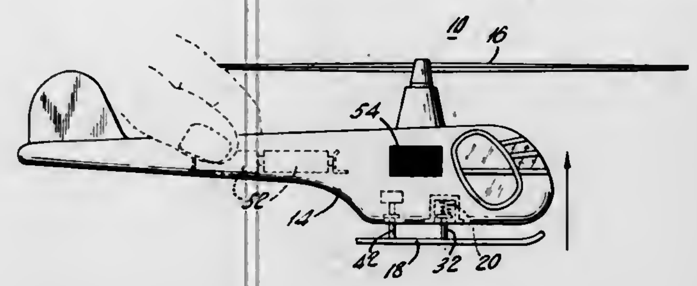


1. A toy for picking up objects comprising:
a. a pair of rods,
b. a common handle on one end of said rods and joining said rods thereto at said one end, the other ends of said rods being slightly spaced from each other,
c. a line ppssing through each of said rods and at least a portion of said handle,
d. means on the end of each of said lines remote from said handle for picking up an object,
e. a pair of independently operable means associated with said handle and connected to respective lines for pulling each of said lines substantially through said respective rods, said pulling means being closely adjacent each other so that a child can coordinate the pulling of one line with the pulling of the other line to assist in the improvement of eye-hand cordination and manual dexterity.

3,864,873
TOY WITH AUTOMATICALLY ACTUATED SPEAKER BOX

Jasper Watkins, P.O. Box 94, Clifton, N.J. 07015

Filed Dec. 26, 1973, Ser. No. 428,110
Int. Cl. A63h *27/12*
U.S. Cl. 46—232 **5 Claims**

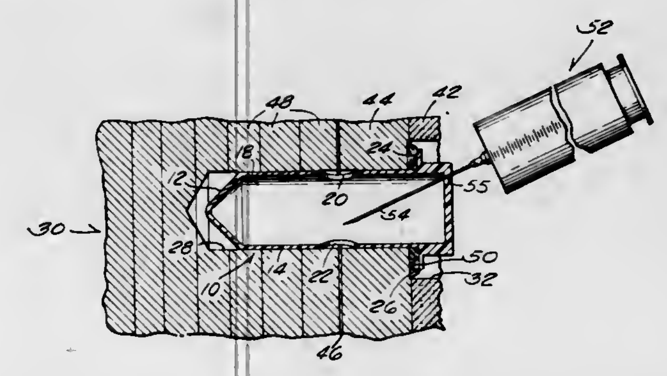


1. A toy adapted for simulated airborne flight and intended to be selectively raised and lowered with respect to a surface; said toy comprising:
a body;
sensing means movably mounted with respect to said body between first and second positions in response to said body being raised from and lowered onto said surface, respectively;
prerecorded message means for presenting a first preselected message in response to said sensing means moving to its said first position;
biasing means for biasing said sensing means toward its said first position, said biasing means including a landing-support element secured to said body and normally biased away therefrom, one end of said sensing means being secured to said landing-support element; and
normally closed circuit means to energize said message means, the other end of said sensing means maintaining said circuit means in an open condition when said body lands on said surface and said landing-support element is urged toward said body.

3,864,874
METHOD AND APPARATUS FOR INTRODUCING A FLUID INTO THE VASCULAR SYSTEM OF A TREE OR SIMILAR PLANT

Dale M. Norris, 101 S. Rock Rd.; John F. Reynolds, 109 Richland Ln., both of Madison, Wis. 53705, and Raymond L. Carroll, 4305 Crawford Dr., Madison, Wis. 53711

Filed Jan. 29, 1973, Ser. No. 327,496
Int. Cl. A01g *7/06*
U.S. Cl. 47—57.5 **1 Claim**

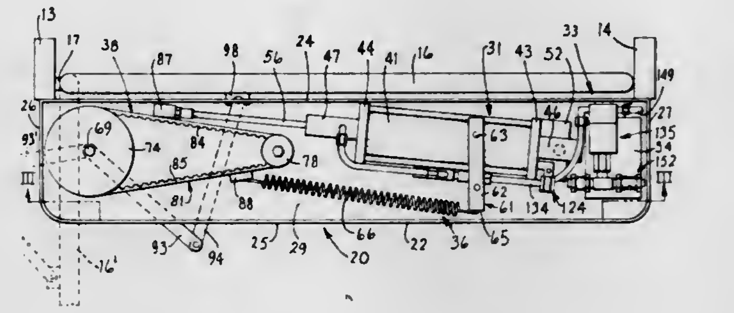


1. A method of introducing a treatment fluid into the vascular system of a tree comprising the following steps:
a. drilling and countersinking a cylindrical hole in the trunk of a tree, said countersink drilled through the bark of the tree to the phloem layer of the tree;
b. inserting a cylindrical implant capsule into the hole, said capsule having an annular shoulder formed at one end thereof and a gasket member mounted on the capsule adjacent said annular shoulder, said gasket upon installation becoming seated in the countersunk portion of the hole, said capsule being closed at both ends and having at least one opening in the cylindrical side wall portion thereof positioned in communication with the sap stream of the tree, said cylindrical hole drilled in the tree having a diameter slightly smaller than the outside diameter of the capsule to produce a friction fit between the capsule and the wall of the hole; and
c. introducing a treatment fluid into the implant capsule by puncturing the exposed end of the capsule to make a small opening therein and then inserting a tubular member through said small opening and injecting the treatment fluid therethrough into the capsule, said small opening located in the upper portion of the exposed end of the capsule.

3,864,875
SWING DOOR OPERATOR

Lew V. Hewitt, Corpus Christi, Tex., assignor to Overhead Door Corporation, Dallas, Tex.

Filed Apr. 16, 1973, Ser. No. 351,460
Int. Cl. E05f *17/00, 15/04*
U.S. Cl. 49—115 **26 Claims**



1. In a door operator for a door movable between an opened position and a closed position, the combination comprising:
a flexible endless loop member and door drive shaft means direct driven in opposite directions thereby for opening and closing said door;
motor means engaging a reach of said endless loop member and actuable for moving said endless loop member in one orbital direction;
return means also engaging a reach of said endless loop member and responsive to disabling of said motor means for closing said door through moving said endless loop member in the opposite orbital direction;
whereby said motor means and return means oppositely orbit said endless loop member to move said door between open and closed positions.

3,864,876
FIXTURE FOR A BLAST CLEANING MACHINE

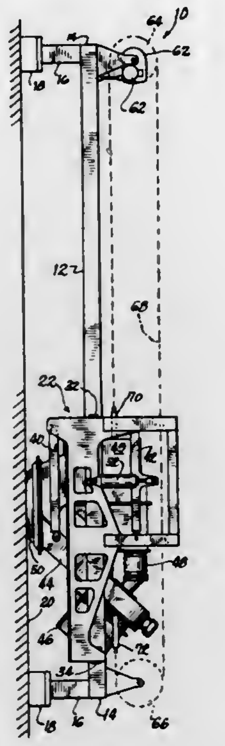
Philip H. Diehn, Mishawaka, Ind., assignor to Wheelabrator-Frye, Inc., Mishawaka, Ind.

Filed Apr. 15, 1974, Ser. No. 461,030
Int. Cl. B24c *3/06*
U.S. Cl. 51—9 M **11 Claims**

1. A portable device for movably securing a blast cleaning machine to a ferromagnetic surface comprising:
a. a rectangular frame;
b. electromagnetic means on said frame for releasably securing said frame to said surface;

c. a carriage movable on said frame; and

d. means for linking said blast cleaning machine to said carriage for movement therewith and for maintaining said machine in intimate contact with said surface.



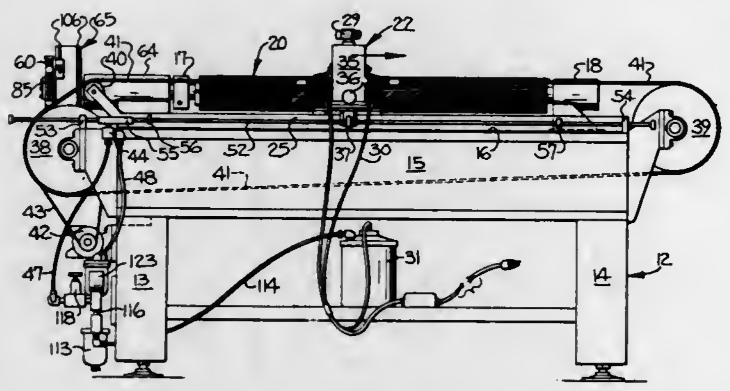
3,864,877
APPARATUS FOR FORMING SLITTING ROLL

Brendan L. Doll, Patterson, N.C., assignor to Cellu Products Company, Patterson, N.C.

Filed Mar. 22, 1973, Ser. No. 343,679

Int. Cl. B24b *19/02, 47/10, 3/00*

U.S. Cl. 51—34 F 18 Claims



1. An apparatus for forming a plurality of axially directed ribs on the peripheral surface of a cylindrical hard surfaced roll or the like and comprising

a frame defining a central axis,

means for rotatably mounting the roll on said frame coaxially with said central axis,

means including a rotatable machining wheel for removing material from the peripheral surface of the roll when said wheel is brought into operative engagement therewith,

means for relatively longitudinally reciprocating said machining wheel and roll such that said wheel moves with respect to the roll in a linear path of travel extending parallel to said central axis and along and beyond said peripheral surface of the roll such that said machining wheel operatively engages the peripheral surface to form an axially directed channel therein during a first portion of its travel and is free of all contact with the roll during a second portion of its travel, and

means for periodically indexing the roll about said central axis a predetermined angle during the second portion of the travel of said machining wheel so that a plurality of adjacent parallel channels may be formed in the peripheral surface and with an axially directed rib being defined between each pair of channels, said indexing means including an indexing wheel rotatably carried on said frame and adapted to be operatively connected to the roll for concurrent rotation, and means for periodically rotating said indexing wheel a predetermined increment with respect to said frame during the second portion of travel of said machining wheel.

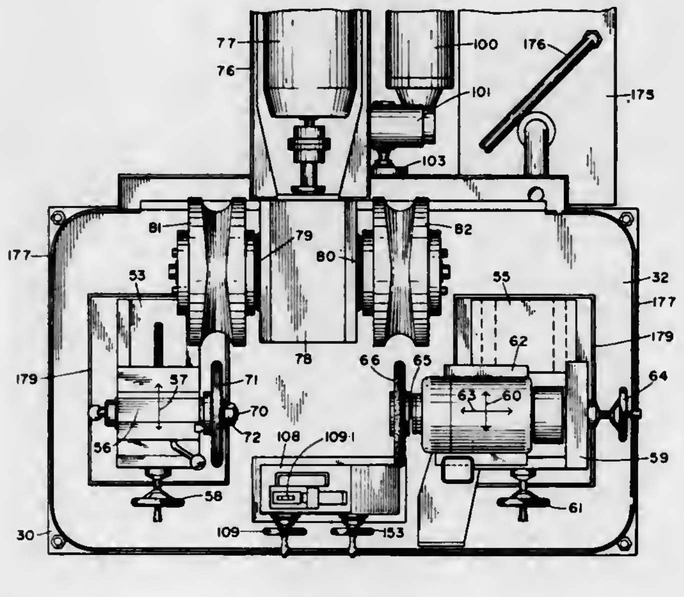
3,864,878
APPARATUS FOR MACHINING PILGER ROLLS AND THE LIKE

Harry C. Ledebur, Canfield, Ohio, and Harold R. Wilson, Wilmington, N.C., assignors to Wean United Inc., Youngstown, Ohio

Filed Mar. 13, 1972, Ser. No. 233,920

Int. Cl. B24b *17/02*

U.S. Cl. 51—50 PC 18 Claims



1. Apparatus for duplicating the contour of a non-uniform peripheral groove of a master roll in the periphery of a work roll, comprising:

a base,

shaft means rotatably carried by said base and supporting said master and work rolls,

motor means for driving said shaft means so that both rolls rotate at the same speed,

follower means cooperable with said master roll and cutter means cooperable with said work roll,

table means on which said follower and cutter means are mounted in fixed, spaced relation,

connection means between said table means and said base for supporting said table means for planar movement relative to said base,

a rotatable shaft carried by said base and having connection with said table means whereby rotation of said shaft effects shifting of said table in a plane,

means operable to urge said table means and thus said follower and cutter means in a direction whereby each engages respectively the periphery of said master roll and said work roll,

said follower means being moved toward and away from and laterally of the axis of said master roll through engagement with the contour surface of said groove in said master roll and translating such movement to said cutter means through said table means so that said cutter means duplicates such groove in said work roll,

said connection means between said table means and said base comprising a parallel linkage system which constrains said table means to orbital movement in its plane, whereby to maintain said follower and cutter means at a predetermined angle with respect to the axes of said master and work rolls, through the entire formation of the duplicate groove in said work roll.

3,864,879
CAM GRINDING

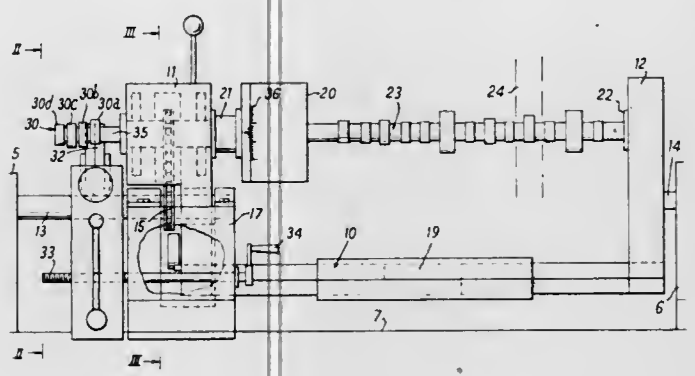
William Dixon Naismith, 176 Arthur Rd., Wimbledon Park, London, S.W. 19, England

Filed Apr. 26, 1973, Ser. No. 354,745

Claims priority, application Great Britain, Apr. 26, 1972, 19363/72

Int. Cl. B24b *17/02, 7/00, 9/00*

U.S. Cl. 51—101 R 13 Claims



1. For use with a grinding machine having a bed, a grinding wheel having a rotation axis, a headstock and a tailstock with a headstock-tailstock axis; a cam grinding attachment comprising a frame having means for pivotal mounting between the headstock and tailstock of the grinding machine, workpiece holding means carried by the frame having means to carry a cam workpiece to be ground with its axis parallel to but eccentric from the headstock-tailstock axis, drive means coupled to the workpiece holding means to provide substantially continuous rotation of a workpiece carried therein, a master cam holding means coupled with the workpiece holding means having an axis coaxial with the axis of the workpiece and having means to carry a master cam, a first support member, a guide member pivotally mounted on the support member for pivotal movement about an axis parallel to the axis of the master cam holding means but eccentric therefrom and having a guide surface for engagement with a master cam, adjustment means coupled with the guide member whereby the guide member may be pivotally adjusted so that the guide surface registers with the grinding wheel surface in a plane joining the axes of rotation of the grinding wheel and a cam workpiece whereby in use the frame pivots about its mounting means to carry the workpiece towards or away from the grinding wheel in accordance with the master cam on rotation of the cam workpiece.

3,864,880
BLADE SHARPENING APPARATUS

Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & Co., Modena, Italy

Filed May 3, 1973, Ser. No. 356,781

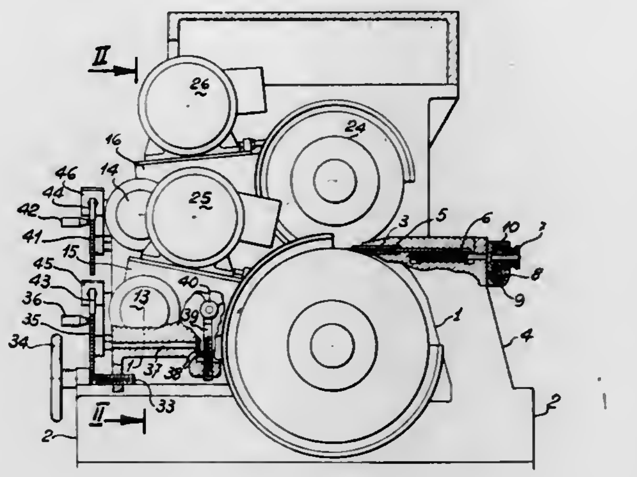
Claims priority, application Italy, May 12, 1972, 24245/72

Int. Cl. B24b *3/36, 19/00*

U.S. Cl. 51—247 7 Claims

1. An apparatus for sharpening the cutting edge of a blade, comprising the combination of

1. a support for the blade,
2. a carriage mounted for displacement horizontally in respect of the blade on the support and perpendicularly to the cutting edge of the blade,
3. means for displacing the carriage,
4. an upper and a lower arm pivotally mounted on the carriage for horizontal displacement therewith perpendicularly to the cutting edge of the blade,
5. two horizontal pivots extending substantially parallel to the cutting edge of the blade for pivotally supporting the two arms on the carriage,
6. **means for pivoting the arms in respective vertical places about the respective pivots,**
7. an upper and a lower grinding wheel respectively carried by a free end remote from the respective pivot of the upper and lower arm,
   a. the diameters and positions of the grinding wheels forming predetermined angles on opposed surfaces of the cutting edge of the blade, and
8. means for adjusting the upper arm in a horizontal direction relative to the carriage and perpendicularly to the cutting edge of the blade for varying the angle of the upper surface of the cutting edge relative to the angle of the lower surface of the cutting edge.



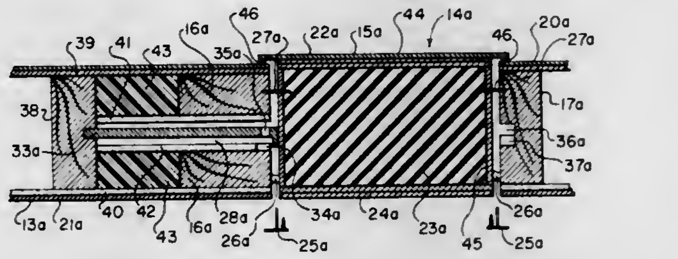
3,864,881
BLOWOUT PANEL SYSTEM FOR BUILDING WALLS

Clarence P. Wolf, 1302 Willowwood Ct., Irving, Tex. 75060

Filed July 12, 1973, Ser. No. 378,528

Int. Cl. E05f *15/20*

U.S. Cl. 52—1 7 Claims



1. A blowout panel system for use in a building wall comprising:

frame members defining a blowout opening in said wall;

a blowout panel shaped and dimensioned to fill said opening, said panel having means establishing a peripheral flange larger than said opening on the exterior side of the panel, whereby to prevent displacement of the panel inwardly through said opening but permit displacement thereof outwardly from said opening;

a passageway extending from said opening through one of said frame members, said passageway being of a length substantially equal to the distance said opening extends along said frame member;

track means extending through said passageway at each end thereof, said track means extending along opposite sides of said opening and interiorly of said building wall adjacent said opening for a distance substantially twice the dimension of said opening in the direction of extension of said track means;

and an emergency closure sheet slidably mounted on and supported by said track means, said sheet being moveable along said track means from a position in the interior of said building wall adjacent said opening when said blowout panel is positioned in said opening to a position across said opening, thereby closing it, when said panel is displaced from said opening.

3,864,882
GUTTER SUSPENSION MEANS

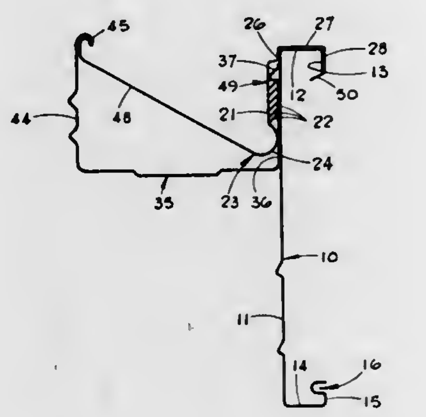
Jack Edward Lasscock, Adelaide,South Australia, Australia, assignor to Stratco Metal Proprietary Limited, South Australia, Australia

Filed Sept. 26, 1973, Ser. No. 400,711

Claims priority, application Australia, Sept. 27, 1972, 607/72

Int. Cl. E04d *13/00*; **E04b** *7/02*

U.S. Cl. 52—11 **8 Claims**



1. Gutter suspension means comprising in combination:

a gutter having a rear wall, tongue retention means comprising a longitudinally extending retention rib in the rear wall of the gutter near its upper edge, the retention rib projecting into the gutter,

a plurality of resilient clips each having a front portion depending into the gutter and at least portion of each said clip bearing against the front surface of said gutter rear wall,

there being a plurality of vertically-spaced gutter suspension points at which the gutter may be suspended by each said resilient clip, each gutter suspension point comprising a tongue on said front portion engageable with said tongue retention means, each said tongue sloping upwardly and rearwardly, said gutter suspension points being selectable so that the gutter fall is adjustable.

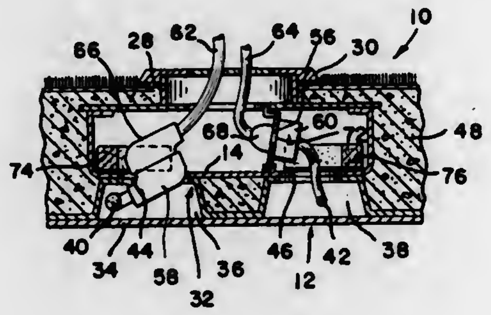
3,864,883
METHOD AND APPARATUS FOR CLOSING A PASSAGEWAY

Robert M. McMarlin, Murrysville, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Apr. 10, 1973, Ser. No. 349,767

Int. Cl. H02g *3/08*; **E04f** *17/08*

U.S. Cl. 52—221 **6 Claims**



1. Apparatus for closing a passageway in an underfloor access housing comprising,

an underfloor access housing having a base portion with an inlet opening therein and a top portion having an outlet opening therein and a passageway connecting said inlet opening and said outlet opening,

a body of intumescent material positioned in said housing and having dimensions less than the internal dimensions of said underfloor access housing,

said body of intumescent material operable to foam and expand when said underfloor access housing is subjected to elevated temperatures and substantially fill said access housing and close said passageway therein.

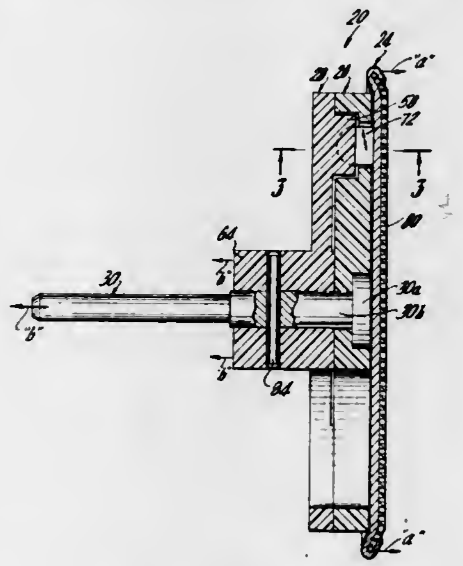
3,864,884
ABRADING TOOL AND HOLDER THEREFOR

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017

Filed Sept. 14, 1973, Ser. No. 397,376

Int. Cl. B24b *17/00*

U.S. Cl. 51—358 **30 Claims**



1. A motor driven holder for a tool having an abrasive surface and at least one deformable tab, said holder comprising:

a. a retainer plate adjacent which the tool is adapted to be mounted, said retainer plate having at least one slot through a portion thereof for receiving the tab of the tool;

b. a support plate including deforming means located adjacent the slot in said retainer plate for distorting the tab therein and thereby preventing removal of the tab from the slot when the tool is in use, the tool being removable from said retainer plate when not in use by the application of a force to the tool whereby the tab is restored to at least approximately the original condition thereof prior to being distorted so that the tab is movable through the slot; and

c. means for coupling said retainer plate to said support plate while permitting relative displacement therebetween whereby when one of said plated is moved said deforming means will bend the tab into a position that prevents removal of the tool during usage.

3,864,885
WALL STRUCTURES

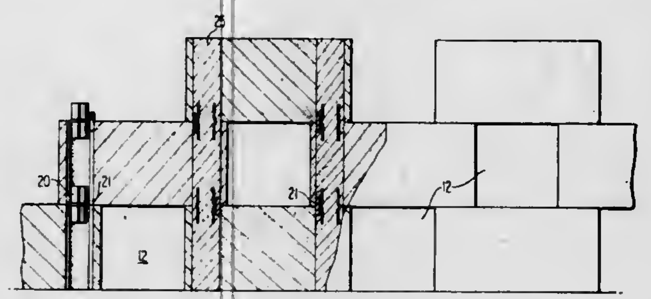
George B. Muse, Calhoun, Ga.

Continuation-in-part of Ser. No. 802,450, Feb. 26, 1969, Pat. No. 3,609,926, which is a continuation-in-part of Ser. Nos. 658,524, Aug. 4, 1967, Pat. No. 3,479,782, which is a continuation-in-part of Ser. No. 730,727, May 21, 1968, abandoned. This application Jan. 2, 1970, Ser. No. 252

Int. Cl. E04b *2/00, 5/46*; **E04c** *1/30*

U.S. Cl. 52—259 **16 Claims**

1. A wall structure comprising a plurality of substantially identical rectangular building blocks each having substantially impervious planar side wall and end wall surfaces and planar top and bottom wall surfaces with the length of each block being four times its width, said blocks each defining a substantially vertical generally circular opening extending therethrough from its top wall to its bottom wall surfaces centrally in each end one-fourth portion thereof, said blocks being arranged in a series of horizontal courses of blocks with each block in each course of blocks being spaced from the next adjacent blocks in its course and having its planar top wall and bottom wall surfaces overlying and in abutment with the next adjacent blocks in the courses of blocks next above and next below by one-fourth of its length at each of its ends and with the circular openings in each end one-fourth portion thereof being in alignment with the circular openings of its overlying blocks, radially expandable tubular inserts defining a slot from end-to-end positioned internally of said wall structure in at least some of said circular openings and extending between adjacent courses of blocks and expanded outwardly into engagement with the surfaces of said openings, columns of solidified cementitious substance at least partially filling some of said tubular inserts, the openings in the wall structure between the blocks in each course of blocks being substantially equal in size and shape and substantially equally spaced along the length of each course of blocks, and wall opening inserts positioned in at least some of said wall openings defined between the blocks in each course of blocks, said wall opening inserts being sized and shaped to substantially close said wall openings.



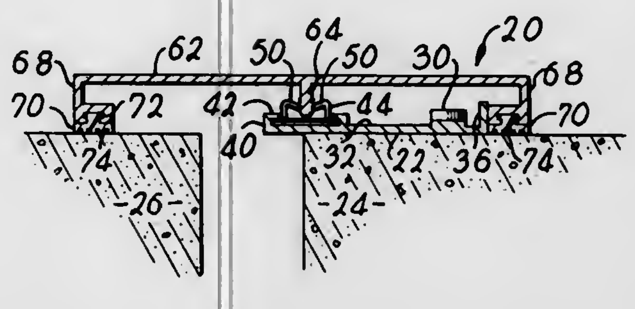
3,864,886
COVER ASSEMBLY FOR STRUCTURAL JOINTS

Wenzel W. Thom, Wichita, Kans., assignor to Architectural Art Mfg., Inc., Wichita, Kans.

Filed Aug. 13, 1973, Ser. No. 387,708

Int. Cl. E04b *1/68*

U.S. Cl. 52—469 **30 Claims**



1. An assembly for complementally covering the open joint defined by a pair of elongated, spaced, adjacent, relatively shiftable structural members comprising:

base structure adapted to be fixedly secured to one of said structural members and presenting a section having an elongated, continuous channel substantially parallel to said joint and defined by a pair of spaced, substantially parallel, upstanding sidewalls, each of the latter being provided with an elongated, continuous, integral, inwardly extending lip along the top thereof;

yieldable connector means comprising a plurality of yieldable metallic spring clips positioned within said channel and spaced along the length thereof, said clips being of lesser transverse dimensions than the distance between said lips;

means for retaining said springs clips within said channel and permitting limited shifting and tilting therein by the spring clips;

cover means disposed in covering relationship to said spring clips and joint and having connection structure attached to the inner face thereof and extending therefrom into secure interlocking relationship with the underlying springs clips; and

support structure adapted to engage the other of said structural members for supporting the end of said cover means remote from said base structure.

3,864,887
GRATING

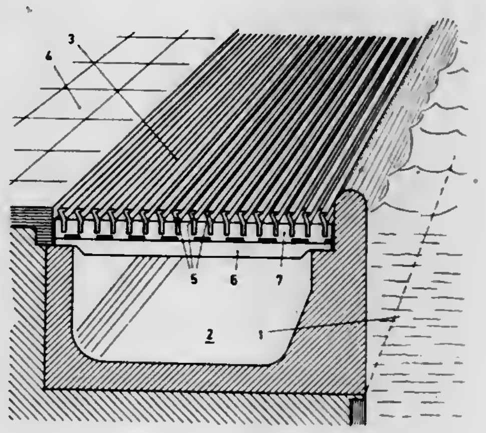
Erich Arens, Ewald-Rubsamen-Weg 4, 593 Huttental-Weidenau, Germany

Filed Sept. 10, 1973, Ser. No. 395,615

Claims priority, application Germany, Sept. 12, 1972, 2244661

Int. Cl. E04c *2/42*

U.S. Cl. 52—664 **7 Claims**



7. Grating for covering openings, wherein grate bars are held in spaced relationship by carrier bars extending transversely of their longitudinal direction, the grate bars (5, 25) consisting of profiled rails which have a laterally directed angled portion (9) above their fastening (7, 27, 37) to the carrier bars (6, 26, 36), the angled portions (9) of all the grate bars (5, 25) extending in the same direction, the angled portion (9) of the grate bars (5, 25) adjoining a foot portion (8) at an obtuse angle, the profiled rails constituting the grate bars (5, 25) having toothings (11) on the lateral surfaces of their foot portions (8), while linking pieces (7, 27, 37) fastened (50, 51) thereto have retaining slots (13) with correspondingly matched toothings (12), the toothings (11, 12) being capable of being positively latched to one another, the toothings (11, 12) having a saw-tooth profile, each tooth having one steep flank and one gently inclined flank, the steep flanks in the retaining slots (13) being directed towards the base of the slot and those on the foot portions (8) being directed away from the end of the foot,

characterized by the fact that the profiled rails constituting the grate bars (5, 25) are anchored by way of their foot portions (8) to said linking pieces (7, 27, 37) which rest positively by means of rearward retaining shoes on cutback ledges extending longitudinally of carrier bars (6, 26, 36).

3,864,888
APPARATUS AND METHOD FOR EMPLOYING GYPSUM BOARD AS FORMS FOR POURED CONCRETE CEILING AND FLOOR STRUCTURES

Burr E. Tupper, Oakland, Calif., and Luis Cejudo Alva, Edo De, Mexico, assignors to Kaiser Gypsum Company, Inc., Oakland, Calif.

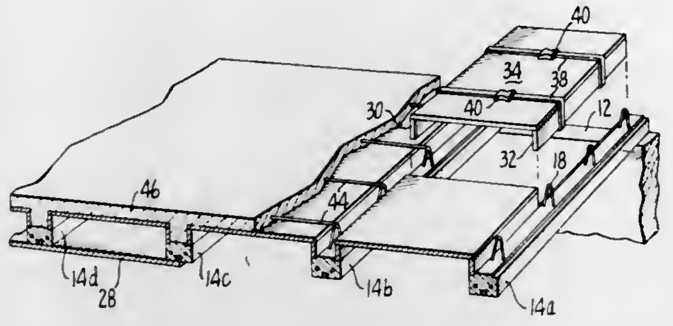
Filed May 22, 1973, Ser. No. 362,800

Int. Cl. E04g *21/00*

U.S. Cl. 52—741 **2 Claims**

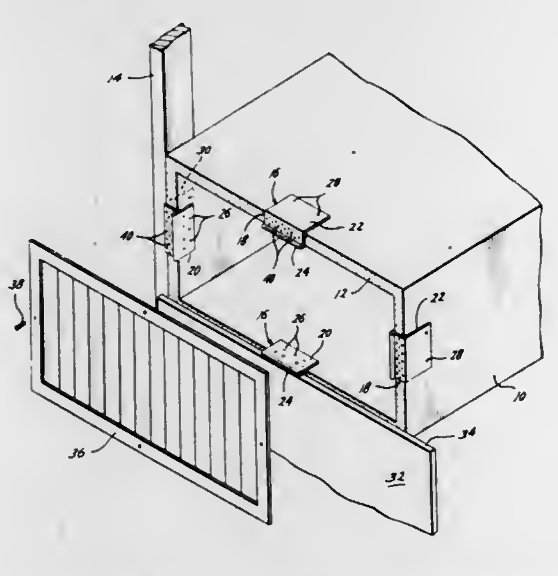
1. A method for forming a floor structure comprising the steps of providing at least two parallelly spaced beams having vertical abutments that define upward facing marginal shoulders thereon, providing first and second unitary gypsum board strips having a thickness corresponding to the width of the marginal shoulders, placing the strips on the respective shoulders with the strips in substantially vertical disposed relation, providing a unitary gypsum board sheet having a width corre-

sponding to the space between confronting vertical abutments of adjacent beams, placing the sheet on the upper edges of the strips so as to define, with said strips, an inverted channel-shaped configuration having a downwardly open concavity, supporting the medial region of the sheet with a transversely extending member contacting said sheet and the first and second strips, placing fluid concrete on top of the sheet, permitting the concrete to cure, terminating the supporting step by removing the transversely extending member and leaving said gypsum strips and sheet in place so as to create an integral structure comprised of concrete and said gypsum board strips and sheet.



3,864,889
DUCT-GRILLE CONNECTION CLIP

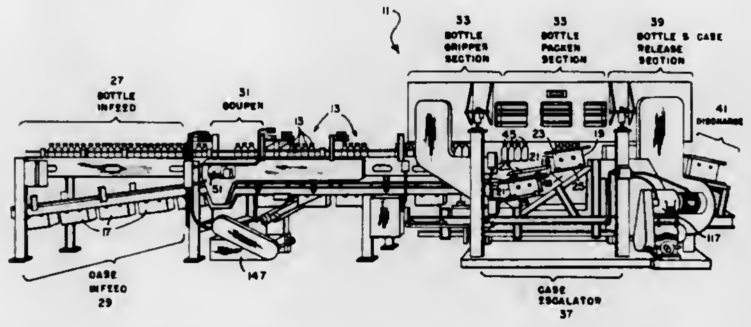
James R. Hobbs, 5303 Glenmont, Houston, Tex. 77036
Division of Ser. No. 144,848, May 19, 1971, Pat. No. 3,827,209. This application Feb. 20, 1973, Ser. No. 333,900The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.
Int. Cl. F16b *5/06*
U.S. Cl. 52—753 J **5 Claims**



1. The improvement in a duct-grille connection clip including:
a multi-walled, elongate ventilation duct,
a clip arranged to slip over one wall of the duct at the end of the duct,
the clip having a generally rectangular flat face,
first and second parallel legs extending from the face and encompassing a portion of the duct wall, with the flat face adjacent the end of the duct wall,
a ledge forming an extension of the first leg and extending outwardly from the end of the duct,
the first leg slipped over the inside wall of the duct,
a wallboard panel covering the face of the clip and the exposed edge of the duct wall,
the panel abutting the ledge of the clip and resting against the face of the clip,
the extension of the ledge from the face being no greater than the thickness of the panel abutting the ledge,
a ventilation duct grille,
the grille fitting over and covering the panel covered end of the duct wall, and
threaded fastening means extending through the grille, panel and clip face and arranged to fasten the grille to the clip.

3,864,890
BOTTLE PACKAGING MACHINE AND METHOD

John E. Ullman, Huntingdon Valley, Pa., assignor to Huntingdon Industries Incorporated, Bethayres, Pa.
Filed Jan. 8, 1973, Ser. No. 321,959
Int. Cl. B65b *5/06, 21/06, 21/18*
U.S. Cl. 53—26 **16 Claims**



1. In a continuous-flow bottle packer machine for loading bottles and the like into empty cases and the like, said cases including leading and trailing endwalls connected by sidewalls and a bottom, bottle suspension means for suspending groups of bottles, suspended-bottle conveyor means for conveying said bottle suspension means and suspended-bottle groups into a bottle packer section, and feeding and loading means for feeding empty cases in a concurrent-flow converging path under said supsended-bottle groups into the bottle packer section and for loading each bottle group into a moving case by moving the case to envelop and support said bottle group, wherein the improvement comprises in said bottle suspension means, bottle gripper means for positively gripping each bottle firmly around the neck, means for moving said bottle gripper means into open position around the neck of the bottle, means for closing the gripper means to close around the neck of the bottle while said gripper means and bottle are in motion, without the gripper means touching the cap of the bottle, and means for releasing the bottles from the bottle suspension means after the bottle group is supported by the case while both bottles and suspension means are in motion.

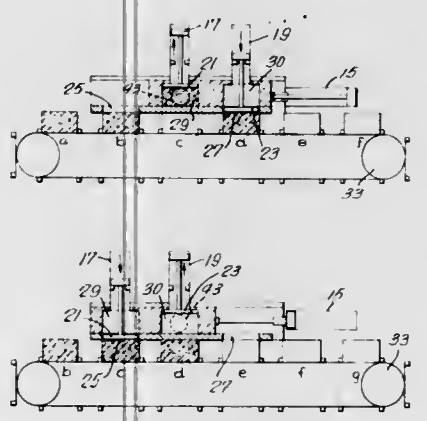
13. A method of packing bottles and the like into cases and the like, said cases including leading and trailing endwalls connected by sidewalls and a bottom, comprising the steps of suspending groups of bottles, moving said suspended-bottle groups into a bottle packer zone, feeding empty cases in a concurrent-flow converging path under said suspended-bottle groups into the bottle packer zone, and moving each case to envelop and support a bottle group, wherein the improvement comprises positively gripping each bottle firmly around the neck without touching the cap of the bottle and gripping while the bottle is in motion, and releasing the suspension from the bottle group after it is supported by the case while the bottles are in motion.

3,864,891
MEAT PACKAGING AND PRESSING APPARATUS AND METHOD

Ludwig Piereder, Pierrefonds, Quebec, Canada, assignor to A.B.R. Food Machinery (Canada) Limited, Dorval, P.Q., Canada
Filed Aug. 27, 1973, Ser. No. 391,863
Claims priority, application Canada, Sept. 1, 1973, 150853
Int. Cl. B65b *5/04, 63/00*
U.S. Cl. 53—35 **4 Claims**

2. Apparatus for packaging and pressing meat into a can or other container comprising:

a sliding assembly comprising a first and second cavity;
means for supporting cans to be filled beneath said cavities;
said assembly further comprising first and second meat receiving openings in vertical portions thereof;
said first meat receiving opening communicating with said first cavity and said second meat receiving opening communicating with said second cavity;
said assembly further comprising first and second meat discharging openings in bottom horizontal portions thereof;
said first meat discharging opening communicating with said first cavity and said second meat discharging cavity communicating with said second cavity;
means for positively discharging meat through said first and second meat discharging openings into cans to be filled;



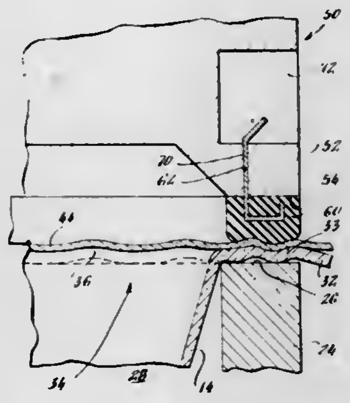
said sliding assembly being adapted to move in reciprocal motion over a platform;
said platform comprising an opening in a first position in a horizontal portion thereof and an opening in a second position in a further horizontal portion thereof;
said first and second positions being spaced from one another;
said platform further comprising an opening in a vertical portion thereof;
said opening in said vertical portion being adjacent a third position in said horizontal portion;
said third position being between said first and second positions; and
meat feeding means communicating with said opening in said vertical portion.

3,864,892
AUTOMATIC PACKAGING METHOD AND APPARATUS WITH HEAT-SEALING ELEMENTS HAVING RESILIENT HEAT CONDUCTING MEMBERS

Perry W. Molvar, Brooklyn, N.Y., assignor to Mahaffy & Harder Engineering Company, Totowa, N.J.
Filed May 29, 1973, Ser. No. 364,539
Int. Cl. B65b *7/28, 51/14*
U.S. Cl. 53—39 **8 Claims**

1. In automatic packaging apparatus of the type including means for supporting cup-shaped containers having peripheral flanges around the open mouths thereof; a sealing station; means for transporting said supported container into and through said sealing station; means for supplying to each container a sheet of material to serve as a top for the container; and means at said sealing station for heat-sealing the top to the container flanges to produce hermetically sealed packages, said heat-sealing means including first means to engage and support the under surface of the container flange during the heat-sealing operation;

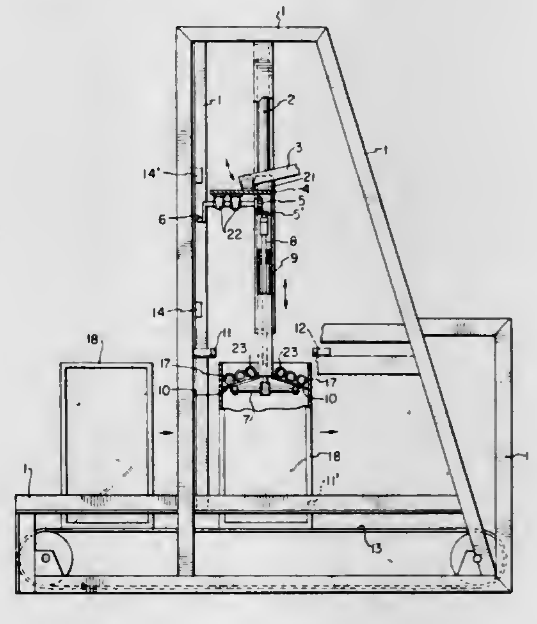
that improvement of said packaging apparatus wherein the sealing station further comprises:
resilient means mounted for relative reciprocal movement towards and away from said first means and arranged to press the top and the adjacent portion of the cup flange together against said first means with at least a moderate degree of sealing pressure;
heat conducting means forming part of said resilient means to provide substantially enhanced conduction of heat through said resilient means to the engaged surface thereof pressed against said top;



the engaged surface of said resilient means being sufficiently flexible to conform under said sealing pressure to irregularities presented by the flange surface of the container and to effect a close, intimate, heat-transferring contact between said resilient means, said top, and said container flanges throughout a region extending entirely around said flanges; and
means to supply heat to said resilient means for conduction through said heat conducting means to raise said engaged surface to an elevated temperature, said heat supply means and said heat conduction means cooperating to supply through said resilient means all of the heat required to seal said top to said flanges and providing effective heat-sealing thereof.

3,864,893
AUTOMATIC BOBBIN LOADER

Yoshio Murao, 55 Masuizumimati, Kanazawa, Japan
Filed Jan. 30, 1974, Ser. No. 437,863
Int. Cl. B65b *57/10, 35/54*
U.S. Cl. 53—59 R **3 Claims**



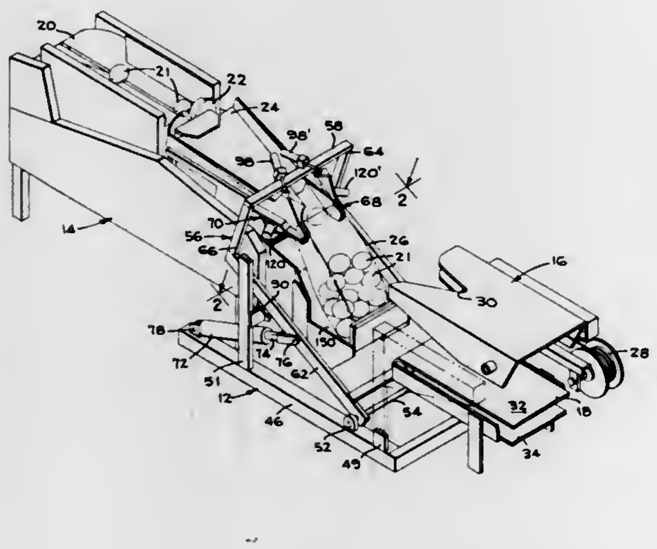
1. Apparatus for automatically loading a bobbin box with bobbins comprising:
a vertically movable elevator plate;
a receiving plate for the bobbins having two parts pivotally attached to opposite sides of said elevator plate and adapted to fit within a bobbin box;

- means for placing bobbins on said receiving plate;
- means for raising and lowering said receiving plate and elevator plate into and out of said bobbin box;
- a pin directly beneath the receiving plate for maintaining said receiving plate in a closed position whereby the bobbins remain on the receiving plate as the receiving plate is lowered into the bobbin box;
- means for sensing when the bobbins on said receiving plate reach a predetermined level and causing said receiving plate to be lowered; and
- means for rotating the pin in one direction when the receiving plate reaches a predetermined lower position in the bobbin box, whereby the weight of the bobbins opens the receiving plate and the bobbins fall into the bobbin box, and for rotating the pin to its original position when the receiving plate is raised to a predetermined upper position whereby the receiving plate is closed.

3,864,894
APPARATUS FOR TRANSFERRING BAGS

Charles E. Sheetz, Woodstock, and Wayne L. McClintic, Edinburg, both of Va., assignors to FMC Corporation, San Jose, Calif.

Filed May 4, 1973, Ser. No. 357,419
Int. Cl. B65b *57/06, 43/28*
U.S. Cl. 53—63 **24 Claims**



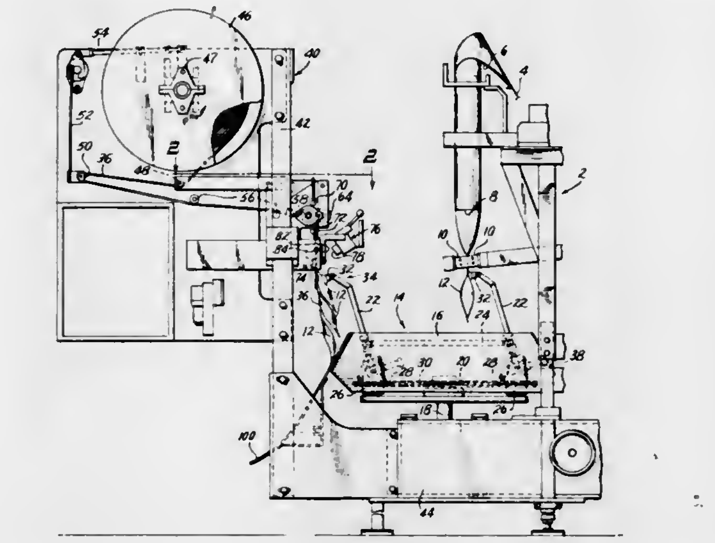
6. Apparatus for transferring a deformable bag along an arcuate path between a bag filling station and a bag tying station by releasably clamping the margin of the open end of the bag; said apparatus comprising:

- a mounting arm movable along an arcuate path through an upright position between the bag filling station at one end of the arcuate path and the bag tying station at the other end of the arcuate path;
- finger means mounted upon the upper end of the mounting arm for releasably clamping the margin of the open end of said deformable bag;
- means for pivoting said finger means to permit them to move over the side edges of a bag at said bag filling station, said pivoting means being arranged to thereafter cause said finger means to move into clamping engagement with said side edges of the bag;
- means for moving the mounting arm along the arcuate path; and
- axle means disposed below said mounting arm for pivotally supporting said mounting arm whereby said deformable bag is arcuately moved by said moving means between the bag filling station and the bag tying station through the upright position.

3,864,895
MULTI-PACK METHOD AND APPARATUS

James C. Petrea, Durham, N.C., assignor to Wright Machinery Company, Inc., Durham, N.C.

Division of Ser. No. 335,935, Feb. 26, 1973,. This application Jan. 18, 1974, Ser. No. 434,822
Int. Cl. B65b *35/30;* **B23q** *17/00*
U.S. Cl. 53—159 **5 Claims**



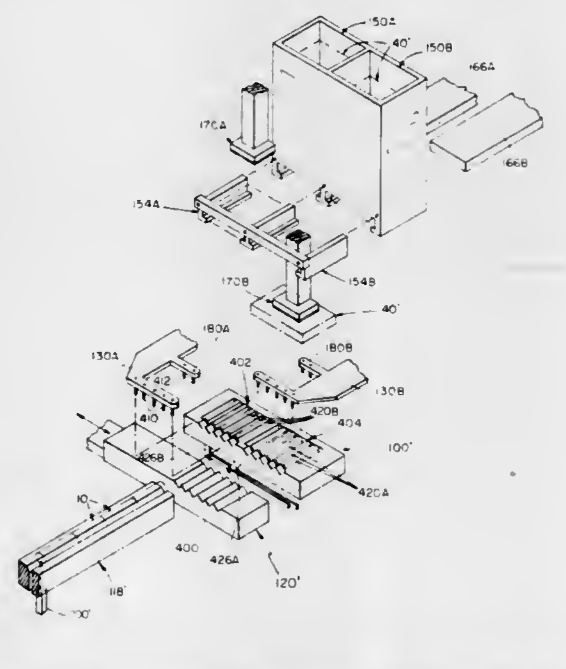
1. Apparatus for grouping a desired number of bags of a product, which bags are sequentially formed, filled and sealed by a first machine, comprising:

- transfer means arranged to sequentially grasp and hold bags as filled and sealed by said first machine and bodily carry them to position one end thereof at a securing station;
- means for holding a backing sheet at said securing station; and
- means operable in timed relation to said transfer means for securing said end of each bag to said backing sheet and thereafter releasing said bags from said transfer means.

3,864,896
ASSEMBLY APPARATUS

David C. Bailey, Jr., Amesbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 29, 1973, Ser. No. 374,942
Int. Cl. B65b *5/08, 35/40*
U.S. Cl. 53—159 **18 Claims**



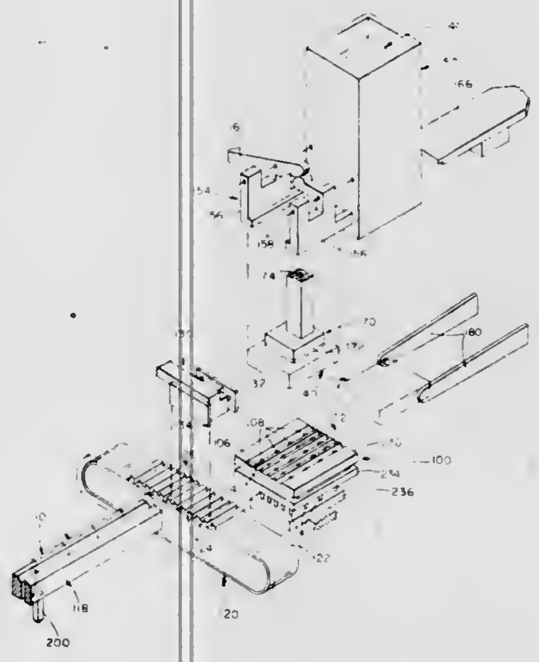
1. Apparatus for inserting a plurality of articles in corresponding compartments of a multi-compartment container, each said compartment having an open top and being separated from the adjacent compartment by a partition wall, comprising

- first input means for serially feeding articles,
- an assembly mechanism for receiving articles sequentially from said first input means and assembling said articles in spaced, aligned relation in a group,
- a loading station having a platform
- transfer mechanism for transferring said group of spaced, aligned articles from said assembly mechanism onto said platform,
- second input means for transferring a container to said loading station, said second input means being operative to hold said container with the open top of each compartment in engagement with said platform so that the group of articles on said platform are partly inserted into corresponding compartments of said container,
- an article insertion mechanism at said loading station, said insertion mechanism being operative to complete the insertion of said partly inserted articles into secured relation in their corresponding compartments,
- and control means for operating said insertion mechanism to complete the insertion of said group of articles at said loading station into the compartments of said container while said second input means is holding a container in engagement with said platform.

3,864,897
LOADING APPARATUS

William F. Hitchcock, West Newbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 29, 1973, Ser. No. 374,900
Int. Cl. B65b *35/40*
U.S. Cl. 53—159 **20 Claims**



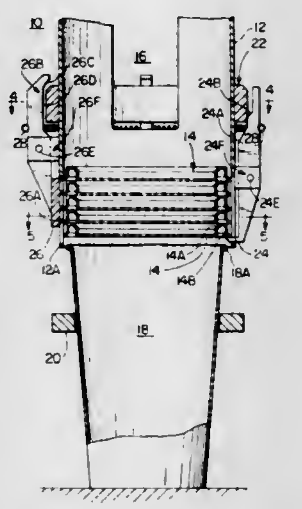
19. In apparatus for frictionally securing a plurality of articles such as razor blade units in corresponding compartments of a multi-compartment container comprising

- first input means for feeding razor blade units in series relation,
- an assembly mechanism for receiving razor blade units sequentially from said first input means and assembling said blade units in spaced, aligned relation in a group,
- a loading station having a platform,
- transfer mechanism for transferring said group of razor blade units from said assembly conveyor to said loading station,
- said second input means for transferring a container to said loading station,
- a blade unit insertion mechanism at said loading station, said insertion mechanism including a plurality of insertion pins that are mounted for vertical reciprocating movement and means for raising said insertion pins simultaneously to cam the blade units into their compartments with a rotary motion, each blade unit being free to slide laterally relative to the insertion pin that is driving it.

3,864,898
AUTOMATIC CONTAINER CAPPING AND LID DISPENSING DEVICE

John Barth West, Glyndon, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Aug. 21, 1973, Ser. No. 390,243
Int. Cl. B65b *7/28*
U.S. Cl. 53—328 **14 Claims**



7. Capping means for containers comprising:

- magazine means holding a plurality of container lids in a substantially vertical stack with each said lid disposed substantially horizontally;
- holding means for positioning an open mouthed container beneath said magazine means with the open mouth of said container in registry with said stack of lids;
- bearing means mounting said magazine for reciprocation on its longitudinal axis toward and away from said holding means;
- said lids and the mouth of said container having conformally shaped coacting rim structures to effect a force fit therebetween; and
- lid retaining and release means cooperating with said magazine and synchronized with the reciprocations thereof releasing the lowermost lid in said stack and retaining the remainder of said lids therein as said magazine approaches said container and subsequently applying a substantially vertical force to said rim structure of said lowermost lid to effect said force fit of said lid to said container.

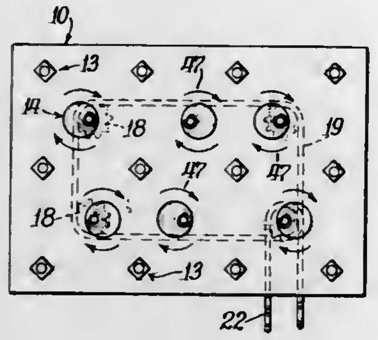
3,864,899
SPINDLE FOR FRUIT PICKER

Fred D. Lasswell, 1111 N. Westshore Blvd., Tampa, Fla. 33607

Filed Aug. 20, 1973, Ser. No. 389,972
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 R **7 Claims**

1. A fruit harvesting panel comprising a plurality of tree penetrating spindles mounted in a certain arrangement on one side thereof, certain of said spindles being stationary, certain of said spindles being rotatable and widely spaced apart each of the rotating spindles having a cam mounted thereon constituting a fruit harvesting area, each of said cams comprising smooth cylindrical cammed surfaces arranged on said rotating spindles, means for rotating all of the rotatable spindles in one direction for alternatively forming between adjacent rotating spindles on the panel a wide and a narrow gap, whereby when the panel of spindles is inserted into a tree the arrangement of

spindles is such that fruit hanging in the area of the cams on the spindles will upon the spindles being rotated be pushed against and thereby gripped and gently twisted by the cooperation of the cylindrical cammed surfaces of two adjacent rotating spindles as the cams close the gap between the spindles or engaged and twisted by the cooperative engagement of the cylindrical cammed surface of one rotating spindle and a stationary spindle.



Patent Not Issued For This Number

3,864,900

3,864,901
WETTING MECHANISM FOR A TEXTILE YARN PROCESSING MACHINE

Johannes Frentzel Beymes, Monchengladbach, and Christoph Quast, Moers, both of Germany, assignors to Palitex Project Company GmbH, Krefeld, Germany

Filed Oct. 18, 1973, Ser. No. 407,616

Claims priority, application Germany, Apr. 5, 1973, 2317053; Aug. 22, 1973, 2342284

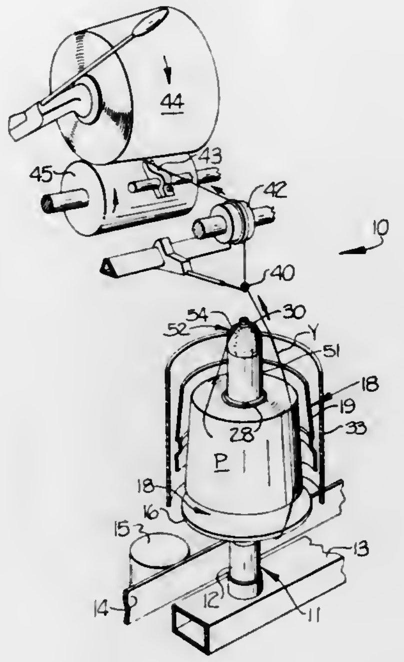
Int. Cl. D01h *1/10, 13/30*

U.S. Cl. 57—35 **18 Claims**

1. In a textile yarn processing machine, such as a twister, spinning frame or the like, having a spindle assembly for the processing of yarn which includes a carrier mechanism having a carrier member for supporting thereon a hollow supply package of yarn to be processed and a hollow yarn entry tube carried within said carrier member and extending outwardly therefrom axially of the supply package supported thereon for receiving the yarn from the supply package and providing a passageway for the yarn therethrough for processing by said spindle assembly; the improvement of a non-flexible, yarn wetting mechanism carried by said carrier mechanism for applying a wetting agent to the yarn as it passes in its path of travel from the supply package for processing by said spindle assembly, said yarn wetting mechanism comprising:

a reservoir means carrying a supply of wetting agent; and

a porous, firm, non-flexible, elongate wetting member having absorbent and capillary qualities, one integral, non-flexible end of said wetting member being positioned within said reservoir means and in contact with the wetting agent for absorbing the wetting agent and passing the wetting agent by capillary action to the other integral end of said wetting member which is positioned away from said reservoir means and in the path of travel of the yarn from the supply package to said yarn entry tube and which comprises a solid of revolution for contact with the traveling yarn for applying the wetting agent thereto.



3,864,902
APPARATUS AND METHOD FOR SPINNING YARNS COMPOSED OF FIBER BLENDS

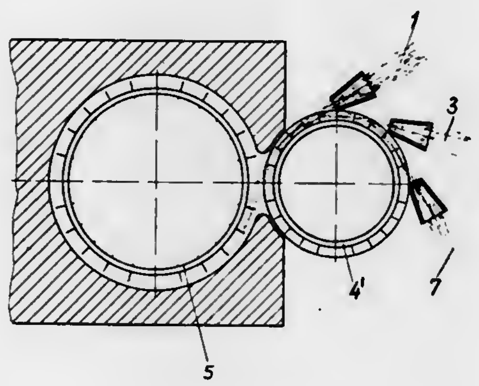
Rolf Wehling, and Rolf Neubert, both of Bremen, Germany, assignors to Fried. Krupp, Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Jan. 2, 1974, Ser. No. 429,770

Claims priority, application Germany, Jan. 10, 1973, 2300967

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **5 Claims**



2. In apparatus for spinning yarn formed of a blend of different types of fibers, the fiber types differing from one another with respect to at least one property, the apparatus including an open-end spinning machine composed of a rotating break-up roller and a spinning turbine rotating coaxially with the roller, and at least one feed roller rotatively mounted for delivering a stream of rovings of such fibers to the break-up roller, the improvement comprising means supplying each different type of fiber separately to said at least one feed roller; whereby the different types of fibers become mixed together only subsequent to being supplied to said at least one feed roller.

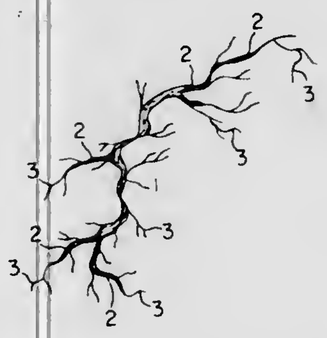
3,864,903
SYNTHETIC FIBROUS UNIT WHICH IS THREE-DIMENSIONALLY CRIMPED AND TWISTED

Isao Maki, Tokyo, Japan, assignor to Soko Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 24,658, April 1, 1970, abandoned. This application June 14, 1972, Ser. No. 262,635

Int. Cl. D02g *3/00, 3/02*

U.S. Cl. 57—140 J **3 Claims**



1. A synthetic fibrous unit made of a polyolefin consisting of a single stem having a predetermined cross-sectional width, a plurality of branches randomly formed integral of said stem, and a plurality of numerous fine hairs extending at random from said stem and said branches, the entire configuration of said fibrous unit being three-dimensionally crimped and twisted at random, said branches having a decreased cross-sectional width as compared with said predetermined cross-sectional width, said fine hairs having a cross-sectional width greatly decreased as compared with the cross-sectional widths of said stem and said branches, and numerous crevices are formed peripherally and internally throughout said fibrous unit.

3,864,904
WATCH WITH AN ADJUSTABLE TIME INTERVAL HAND

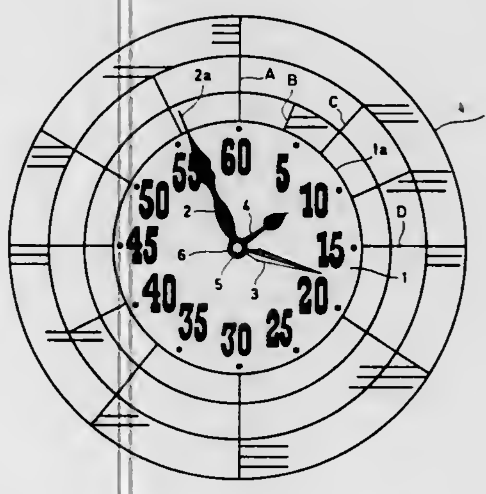
Botho Jung, Gruneburgweg 140, D-6000 Frankfurt (Main), Germany

Filed May 6, 1974, Ser. No. 467,475

Claims priority, application Germany, May 8, 1973, 172277[U]

Int. Cl. G04f *3/02*

U.S. Cl. 58—22.9 **10 Claims**



1. A watch comprising a shaft, a minute hand mounted on said shaft, first means associated with said minute hand for rotating it about said shaft, an hour hand mounted on said shaft, second means associated with said hour hand for rotating it about said shaft, a dial positioned transversely of and extending outwardly from said shaft and located so that said minute and hour hands pass over said dial, a legend-bearing disc associated with said dial, wherein the improvement comprises a time interval hand mounted on said shaft and arranged to pass over said dial, third means associated with said time interval hand and mounted on said shaft for axial displacement thereon between a first position for positively connecting said time interval hand for rotation with said minute hand, and a second position for freely rotating said time interval hand around the axis of said shaft.

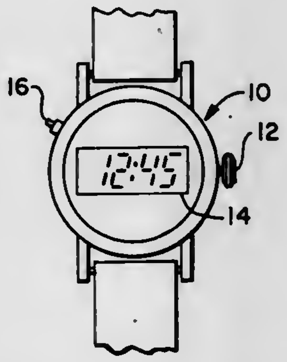
3,864,905
HOROLOGICAL INSTRUMENT INCORPORATING MEANS FOR ILLUMINATING A LIQUID CRYSTAL DISPLAY

Kenneth J. Richardson, Hudson, Ohio, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 14, 1973, Ser. No. 415,735

Int. Cl. G04b *19/30;* **G04c** *17/02*

U.S. Cl. 58—50 R **9 Claims**



1. A liquid crystal horological instrument including a display comprising a layer of liquid crystal material sandwiched between transparent parallel plates, transparent conductive patches on the plates adapted to form numerals when a source of potential is applied across selected ones of the patches, light reflective means on the side of the display opposite that which is viewed by an observer of the horological instrument, means for illuminating said display in the absence of ambient light, said latter-mentioned neans comprising a single electric lamp extending along an edge of the display, the lamp being shorter than the edge of the display and being positioned substantially midway between the edges of the display such that the lamp, without any dispersing means, will illuminate only the central portion of the display, a source of power for the lamp, and means for dispersing light produced by said lamp throughout substantially the entire area of said light reflective means.

3,864,906
CHAIN LINK

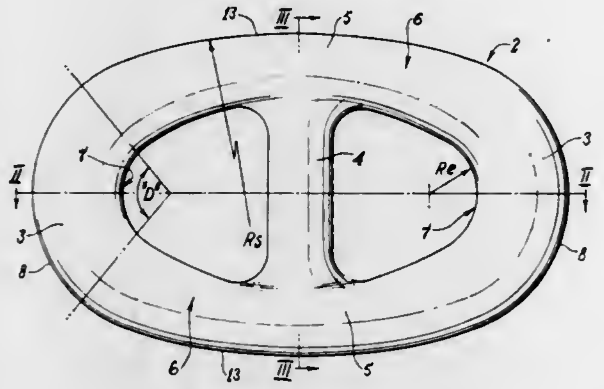
Clifford Frank Cullen, Lower Templestowe, Victoria, Australia, assignor to Vickers Ruwolt Pty. Ltd., Victoria, Australia

Filed June 22, 1973, Ser. No. 372,506

Int. Cl. F16g *15/12*

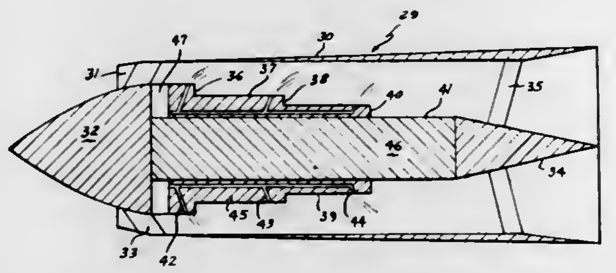
U.S. Cl. 59—84 **4 Claims**

1. A chain link including; an elongate body section comprising a bar formed as a closed loop; a transverse bar extending between and interconnecting two longitudinal side portions of said body section, at a location intermediate the length of said body section; the cross-sectional size of said body section bar being smaller intermediate the length of each said side portion than at the end portions of said body section; the transverse surfaces of each said side portion of the body section being concave, and the outside surface of each said side portion is convex and follows an arc having a radius substantially equal to the pitch length of said chain link; each end portion of said body section having an inside surface facing generally towards said transverse bar and an outside surface facing away from said transverse bar, both said inside and outside surfaces being curved so as to be convex in transverse cross section, and the curve of said inside surface being flatter than the curve of said outside surface; said inside surface being formed by an inner arcuate face and an outer arcuate face located on each side of said inner arcuate face, the radius of each said outer arcuate



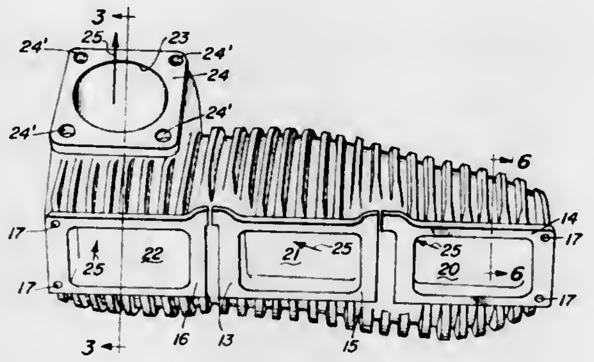
face being substantially equal to 62 percent of the radius of said inner arcuate face; said outside surface having a radius equal to substantially 50 percent of the radius of said inner arcuate face and the locus of said outside surface radius being located substantially midway between said inside and outside surfaces.

3,864,907
STEP CYLINDER COMBUSTOR DESIGN
Edward T. Curran, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.
Filed Nov. 5, 1973, Ser. No. 412,859
Int. Cl. F02k *7/08*
U.S. Cl. 60—261 **4 Claims**



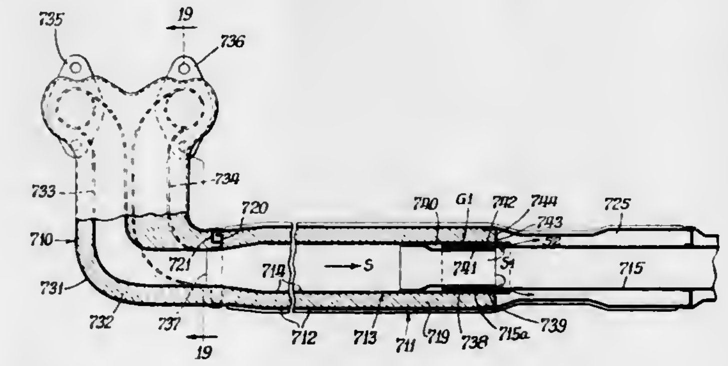
1. In a ramjet engine having a main duct member, an air inlet and an expansion nozzle-forming structure; combustor chamber means incorporated in said duct member and comprising; a plurality of substantially cylindrically-shaped, combustor chamber-sections disposed in direct and continuous alignment with each other and in open communication between said air inlet and expansion nozzle-forming structure, each combustor chamber-sections being formed into a constant area configuration and respectively increasing in size in the downstream direction to thereby provide for the periodic, non-divergent and relatively even expansion of flow in separate stages and in all directions inherently ensuring better fuel-air mixing and thus the more efficient combustion thereof; separate combustion stability means inherently incorporated with and disposed at or near the upstream end of each of said combustor chamber-sections; and individually actuatable, heat-adding means positioned immediately upstream of each said combustor stability means, and selectively and individually operable to add varying amounts of heat to said combustor chamber means to thereby provide a positive, built-in control and regulation of the speed being inherently produced during the operation of said ramjet engine.

3,864,908
DRY INSULATED PARTS AND METHOD OF MANUFACTURE
Paul G. LaHaye, 3 Adams St., South Portland, Maine 04106
Continuation-in-part of Ser. No. 264,199, June 19, 1972, abandoned. This application May 24, 1973, Ser. No. 363,725
Int. Cl. F01m *3/10*
U.S. Cl. 60—272 **7 Claims**



1. A cast metallic engine part
said part defining an outer irregularly shaped surface and being formed of an iron-containing metal defining a fluid carrying conduit therein uninterrupted by fluid seals,
an inorganic dry insulation layer overlying said outer surface and having a thermal conductivity in the range of from about 0.01 BTU/hr/ft/°F to 0.2 BTU/hr/ft/°F, and a cast metallic, protective encapsulating layer conforming to the shape of and covering said insulating layer,
said cast encapsulating layer being formed of a metal having a high thermal conductivity and selected from the group consisting essentially of aluminum, magnesium and alloys of these metals,
said encapsulating layer having a surface temperature below about 450° F at fluid temperatures within said part of from 500° F to at least 2,000° F,
said cast metallic encapsulating layer having a thermal coefficient of expansion matched to the thermal coefficient of expansion of said part so that over-all expansion of said part and metallic encapsulating layer are closely parallel to each other over the operating temperature range of said part.

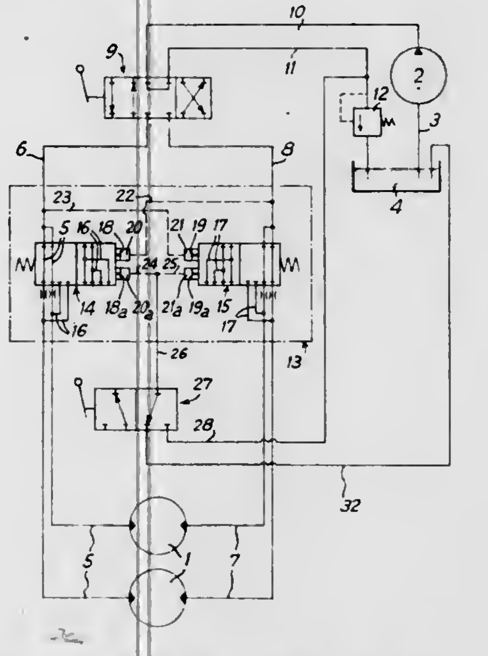
3,864,909
THERMAL REACTOR WITH RELATIVELY MOVABLE INTERNAL PIPE SECTIONS
Herbert Kern, Altensteig/Black Forest, Germany, assignor to Firma Friedrich Boysen, Stuttgart-Heumaden, Germany
Filed July 26, 1972, Ser. No. 275,336
Claims priority, application Germany, July 28, 1971, 2137699; Jan. 8, 1972, 2200815
Int. Cl. F01n *7/10*
U.S. Cl. 60—282 **17 Claims**



1. A thermal reactor having an entrance and a discharge end for use with exhaust systems of internal combustion engines comprising:

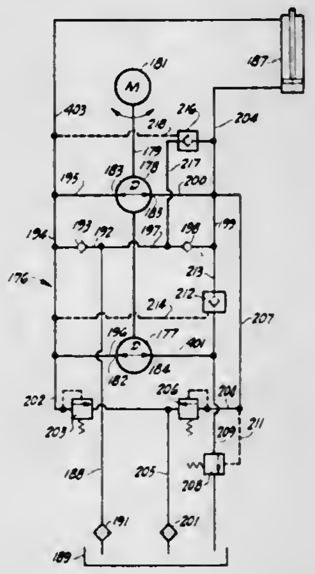
an internal pipe divided into a plurality of separate sections in communication with each other B1 and disposed adjacently to each other along the longitudinal axis of the reactor;
joint means interconnecting two of said internal pipe sections;
an external tubular sleeve surrounding at least one of said separate sections of said internal pipe and radially spaced therefrom to form an annular cavity therebetween, the ends of said external sleeve being connected in an air-tight manner to said internal pipe;
insulating material inserted in a portion of the annular cavity between said external sleeve and said internal pipe section, the portion of the reactor so insulated defining a reaction zone; and
a pressure equalization chamber disposed adjacent and rearwardly of said reaction zone and defined by that portion of the annular cavity between said external sleeve and said internal pipe section in which no insulation is present, said pressure equalization chamber being in flow communication with said internal pipe by way of said joint means.

3,864,910
DEVICE FOR SUPPLYING FLUID UNDER PRESSURE TO TWO REVERSIBLE LOAD ELEMENTS
Gerard H. Mechin, Nanteuil-le-Haudouin, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, France
Continuation-in-part of Ser. No. 256,324, May 24, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,445
Claims priority, application France, Nov. 17, 1972, 72.40991
Int. Cl. F15b *11/22*
U.S. Cl. 60—420 **13 Claims**



1. A device for supplying pressurized fluid to two load elements such as hydraulic motors, comprising two first conduits each connected to one load element and to a source of pressurized fluid, and two second conduits each connected to one load element and to an exhaust reservoir, a first flow divider being disposed in the first conduits, characterized in that the load elements are reversible, the first and second conduits are respectively placed in communication with the fluid source and the exhaust reservoir or vice versa, and a second flow divider is disposed in the second conduits, a third conduit connected to each first conduit and providing a by-pass for the first flow divider associated with the first conduits, a fourth conduit connected to each second conduit and providing a by-pass for the second flow divider associated with the second conduits, said by-passes being provided with position-controlling elements and so coupled as to maintain the two corresponding conduits in the same position, the control elements of the third and fourth conduits being respectively actuated by the pressure of the fluid in the second conduits downstream of the second flow divider with respect to the load elements and by the pressure of the fluid in the first conduits downstream of the first flow divider with respect to the load elements, so that the first and second conduits are respectively placed in communication with the fluid source, the free communication of the first and second conduits with the exhaust reservoir being assured by by-passing the first and second flow dividers, respectively.

3,864,911
HYDRAULIC SYSTEM WITH BI-ROTATIONAL PUMP
Robert K. Gellatly, Los Gatos; Joel B. Meredith, San Carlos, and Richard A. Green, Mountain View, all of Calif., assignors to General Cable Corporation, San Carlos, Calif.
Filed Feb. 14, 1974, Ser. No. 442,483
Int. Cl. F16h *39/48*
U.S. Cl. 60—430 **9 Claims**

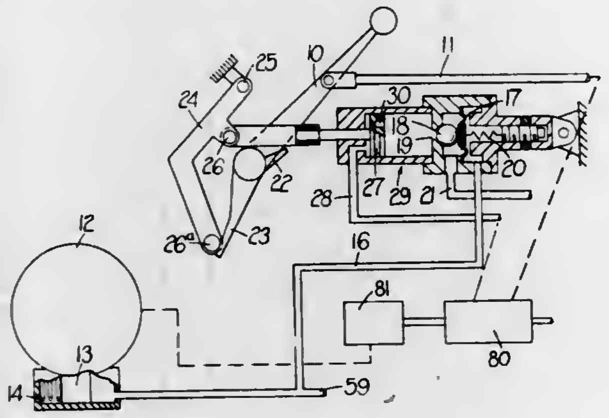


1. In a system for operating an hydraulic actuator, the combination of a first stage reversible pump, a second stage reversible pump, each pump having first and second ports and being capable of operating in a first mode in which its first and second ports assume respective suction and pressure functions and in a second mode in which its ports assume respective pressure and suction functions, fluid circuit means for directing fluid between the ports of the pumps and said actuator, said circuit means including fluid reservoir means, a suction circuit to direct fluid from the reservoir means to said ports, a first supply circuit to direct fluid under pressure from the first ports of said pumps to the actuator, a second supply circuit to direct fluid under pressure from the second ports of said pumps to said actuator, unloading valve means adapted to open for directing fluid from the second port of the first pump to the reservoir means responsive to pressure in the portion of the second supply circuit between the second port of the second pump and the actuator exceeding a given value, and duplexing valve means for precluding fluid flow from the second port of the second pump to the reservoir means when the loading valve means is open.

3,864,912
CONTROL APPARATUS FOR HYDRAULIC TRANSMISSION SYSTEM
Sidney Arthur Othen, St. Helens, and John Morris, Halsall near Ormskirk, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Filed June 18, 1973, Ser. No. 370,699
Int. Cl. F16h *39/46*
U.S. Cl. 60—431 **10 Claims**

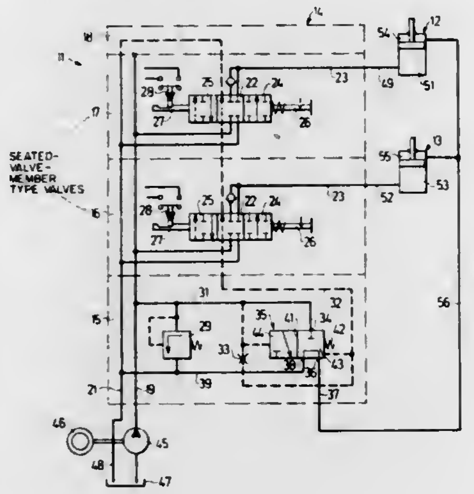
1. A control apparatus for a hydraulic transmission of the type having a fluid pump hydraulically connected to a fluid motor and in which the transmission ratio is variable by varying the ratio of the displacements of pump and motor, the pump being driven in use by an engine with which is associ-

ated a fuel control arrangement regulated by a signal pressure dependent on a throttle lever position and on the engine speed, said control apparatus comprising control means for varying the transmission ratio, an adjustable stop for limiting movement of said control means, a fuel pump forming part of said fuel control arrangement, said signal pressure being derived from said fuel pump, means sensitive to said signal pressure for providing a control signal, and an actuating means for said stop, said actuating means being responsive to said control signal, the arrangement being such that, at a predetermined value of said signal pressure, said actuating means moves said stop so as to cause said control means to reduce the transmission ratio.



3,864,913
CONTROL APPARATUS FOR HYDRAULIC-LIFT TAIL GATES OF VANS, AND THE LIKE

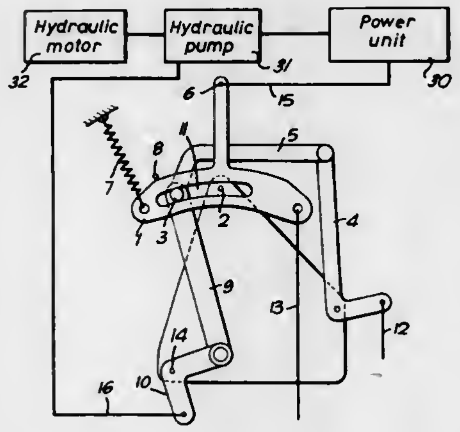
Walter Herrmann, Vaihingen/Enz, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany
Filed Nov. 29, 1973, Ser. No. 420,286
Claims priority, application Germany, Dec. 4, 1972, 2259294
Int. Cl. F15b *11/08, 11/16*
U.S. Cl. 60—433 **15 Claims**



1. In a hydraulic control apparatus for at least one double-acting consumer wherein at least one control valve includes at least one valve member movable between first operative, second operative and neutral positions to thereby respectively connect a first fluid-conveying line of said consumer with a supply conduit which is connected to a source of pressurized fluid, with a return conduit which is connected to a tank, and to seal said first line from said conduits, and wherein said valve member regulates the flow of fluid in a control conduit for a switch valve, the improvement which consists in said switch valve having a first port connected to said source of pressurized fluid, a second port connected to a second fluid-conveying line of said consumer, and a third port connected to said return conduit, and wherein said switch valve includes at least one valve member normally maintained in a first position establishing communication in said switch valve between said second and third ports and blocking flow through said first port and movable under the influence of fluid flow in said control conduit to a second position establishing communication in said switch valve between said first and second ports and blocking flow through said third port.

3,864,914
CONTROL LINKAGES

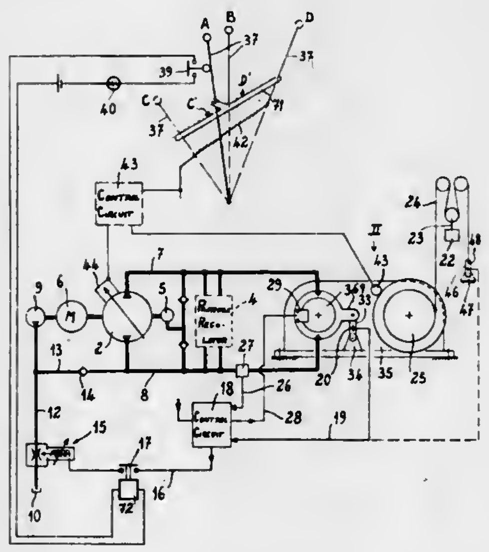
Sidney Timmins, Aldershot, England, assignor to Air-Log Limited, Hampshire, England
Filed July 24, 1973, Ser. No. 382,070
Int. Cl. G05g *13/00;* **F04b** *49/00*
U.S. Cl. 60—434 **9 Claims**



1. A control linkage comprising a control lever mounted for pivotal movement, means to pivot the control lever, a slide member constrained to slide along the control lever, means to control the movement of the slide member along the control lever, and a pivotally mounted output lever connected to the slide member by a link which link is pivotally connected to the output lever the slide member being constrained to slide along an arcuate path and the distance from the slide member to the pivotal connection between the output lever and the link being equal to the radius of curvature of the said arcuate path.

3,864,915
HYDRAULIC SYSTEM FOR DISPLACING A LOAD WITH AUTOMATIC HYDROSTATIC BALANCING

Roger Metailler, Grenoble, France, assignor to Societe Anonyme Richier, Paris, France
Filed July 30, 1973, Ser. No. 383,534
Claims priority, application France, July 28, 1972, 72.27952
Int. Cl. F15b *20/00;* **F16h** *39/46*
U.S. Cl. 60—468 **15 Claims**



1. A hydraulic system for displacing a load, comprising:

a lifting element operatively connected to said load;

a hydraulic motor operatively connected to said lifting element;

a variable-displacement hydraulic pump;

high-pressure and low-pressure hydraulic lines interconnecting said pump and said motor;

means for varying the displacement of said pump and thereby displacing said load at a rate proportional to the displacement of said pump;

brake means operatively connected to said lifting element for arresting said load;

an auxiliary hydraulic pump connectable to said high-pressure line;

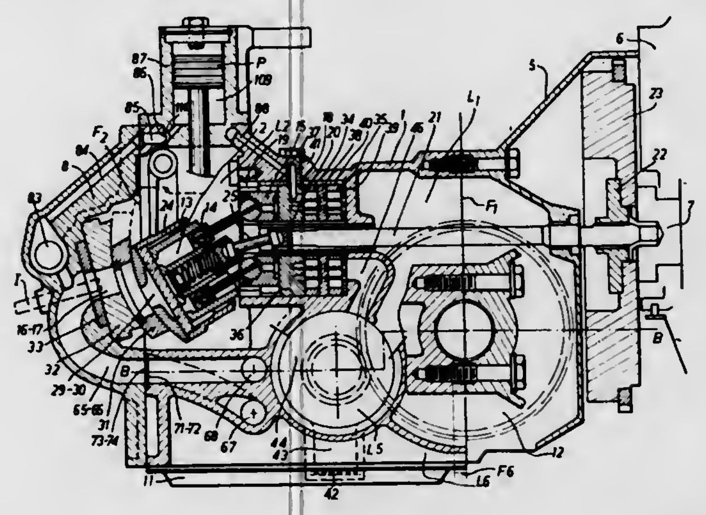
pressure sensing means for detecting the hydraulic pressure in said high-pressure line;

force sensing means operatively connected to said lifting element for detecting the force said load exerts thereon; and

electronic control means connected between said sensing means and said brake means for releasing said brake means when said pressure in said high-pressure line is sufficient to overcome said force.

3,864,916
HYDROSTATIC TRANSMISSIONS FOR MOTOR VEHICLES

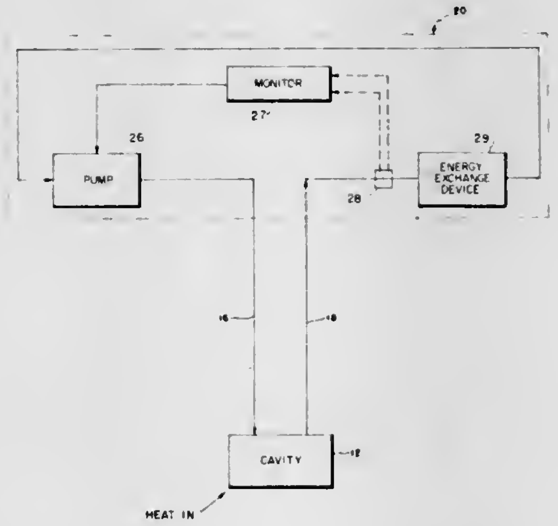
Roger A. Maistrelli; Francois C. Pruvot, and Henri Poletti, all of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed July 23, 1973, Ser. No. 381,519
Claims priority, application France, Sept. 25, 1972, 72.33843
Int. Cl. F16h *39/10, 39/46*
U.S. Cl. 60—485 **14 Claims**



1. Hydrostatic transmission for transmitting the mechanical power output of a thermal engine to the members driving the drive wheels of a motor vehicle, which comprises a main pump, two hydraulic motors, all three of the type comprising axial parallel pistons mounted in a common barrel of the broken axis and variable volumetric capacity type, duct means for interconnecting said hydraulic pump and motors, a reduction mechanism for dirving the wheels which is driven jointly from said hydraulic motors, a pump for over-feeding said connecting duct means, force-feed and overpressure valves, members for controlling the variation in the volumetric capacity of said main pump and hydraulic motors, a main casing closed by covers and secured to a casing of the reduction mechanism which is secured in turn to the thermal engine, said main casing comprising: a first chamber for receiving the reduction mechansim, which opens into the assembly or joint face of said reduction mechanism casing; a second chamber for receiving said main pump, which opens into the face opposite said assembly or joint face; a pair of chambers for said hydraulic motors, respectively, which are disposed symmetrically to a longitudinal vertical plane of said casing which extends centrally of the pump and reduction mechanism chambers, said motor chambers opening into the side faces of said main casing; antoher chamber for receiving the shafts of said hydraulic motors, which interconnects said hydraulic motor chambers and opens into said reduction mehanism chamber, and a further chamber constituting the oil reserve sump which opens into the lower face of said casing.

3,864,917
GEOTHERMAL ENERGY SYSTEM

Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clark Summit, Pa.
Filed Mar. 19, 1970, Ser. No. 21,052
Int. Cl. E21b *43/00;* **B65g** *5/00;* **B01a** *1/00*
U.S. Cl. 60—641 **3 Claims**



1. The method of providing a surface facility using heat energy at a predetermined heat flow rate by heat exchange from a fluid heat exchange medium having an initial temperature and flowing at a predetermined fluid flow rate such that the discharge temperature of the heat exchange medium is lowered to a known value, said heat exchange medium being chemically inert to and a non-solvent for sodium chloride salt, which method comprises the steps of:

a. determining the location of a salt dome which extends from a depth accessible by bore drilling techniques to a depth inaccessible by bore drilling techniques and into thermal continuity with a bed of elevated temperature material;

b. driving a bore hole into said salt dome to a selected accessible depth of at least about 10,000 feet at which the temperature of the salt is greater than said predetermined initial temperature of the heat exchange medium and at a point within said dome so as to maintain said thermal continuity with said bed of elevated temperature material;

c. solution mining salt at said point within the dome through said bore hole for a time sufficient to produce, at said selected accessible depth, a cavity having a heat transfer area of that particular size which will elevate the temperature of said heat exchange medium from said discharge temperature to said initial temperature thereof at said ground facility while the medium is introduced into and flows from said cavity at said predetermined fluid flow rate;

d. flushing said cavity through said bore hole with a fluid which will neither react with nor dissolve said salt thereby to terminate the solution mining of step (c) and maintain said particular size of the cavity;

e. circulating said fluid heat transfer medium through said bore hole, into said cavity and back to the ground surface at said predetermined fluid flow rate; and

f. abstracting heat energy from said heat transfer medium fluid at said desired heat flow rate at said surface facility.

3,864,918

POWERED MOBILE LIQUEFIED GAS CARRIERS

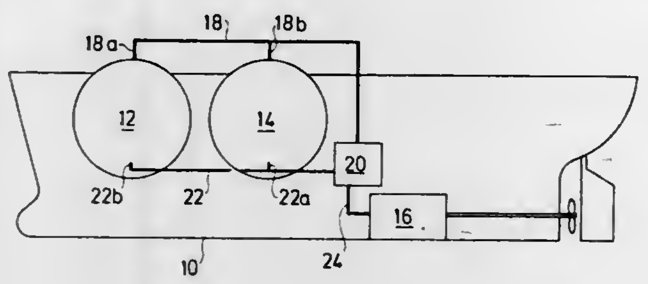
Michael Lorenz, Hamburg, Germany, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed May 17, 1973, Ser. No. 361,032

Claims priority, application Germany, May 27, 1972, 2225882; June 10, 1972, 2228382; June 21, 1972, 2230263

Int. Cl. F01k *25/08*

U.S. Cl. 60—651 **21 Claims**



1. A method of operating a powered mobile liquefied gas carrier in which liquefied gas is contained in at least one insulated vessel at the appropriate low temperature and substantially normal pressure, in which method gas produced by evaporation is collected and is divided into first and second part flows, the first part flow being compressed in itself and, while being cooled and liquefied, transferring heat to the second part flow, the re-liquefied gas of the first part flow being expanded and returned to the vessel and the heated second part flow being supplied as an energy source for driving the carrier.

3,864,919

RELIEF ARRANGEMENT FOR CLOSED GAS TURBINE INSTALLATION

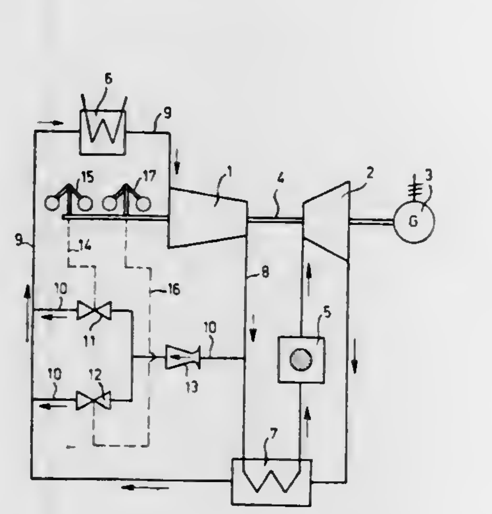
Hansulrich Frutschi, Bruggerstrasse 292, 5223 Riniken, Switzerland

Filed May 21, 1974, Ser. No. 472,047

Claims priority, application Switzerland, June 8, 1973, 8344/73

Int. Cl. F01d *17/06*

U.S. Cl. 60—657 **7 Claims**



1. Relief arrangement for a closed gas turbine installation comprising in an endless flow path for the operating medium a compressor, a heater and a turbine; a relief pipe being provided which leads from a position of high pressure in said flow path to a position of lower pressure in said flow path; said relief pipe comprising at least two jointly redundant regulating valves connected parallel to one another as regards said operating medium; the improvement that a quantity limiter connected in series with said regulating valves is incorporated into said relief pipe.

3,864,920

FLOATING BREAKWATER

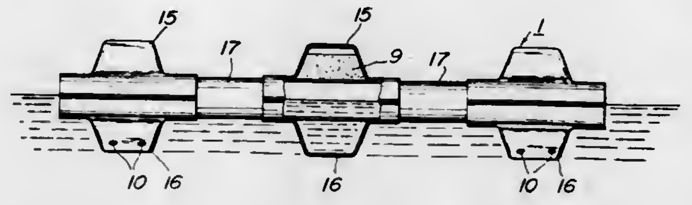
Sadanori Tazaki, and Yozo Ishida, both of Tokyo, Japan, assignors to Bridgestone Tire Company, Limited, Tokyo, Japan

Filed Sept. 18, 1973, Ser. No. 398,368

Claims priority, application Japan, Sept. 19, 1972, 47-107980; Sept. 30, 1972, 47-113640; May 9, 1972, 47-54312

Int. Cl. E02b *3/06*

U.S. Cl. 61—5 **3 Claims**



1. A floating breakwater assembly, comprising:

a. a plurality of substantially equally dimensioned, elongated, floating bodies each comprising a rigid hollow upper shell and a rigid hollow lower shell bonded together, each upper shell projecting upwardly and out of the water along its entire length to a height of at least one half of the average height of waves to be broken,

b. floatation material within each hollow upper shell,

c. ballast material within each hollow lower shell whereby the latter are submerged,

d. a plurality of spaced, elongated, rigid cylindrical members extending transversely of and between the floating bodies for bonding them together in a spaced assembly,

e. means for mooring the assembly to the sea bottom such that the floating bodies are generally perpendicular to the direction of movement of waves to be broken, and

f. the specific gravity of the overall assembly being from 0.15 to 0.75.

3,864,921

METHOD AND APPARATUS FOR LINING THE WALLS OF EXCAVATIONS

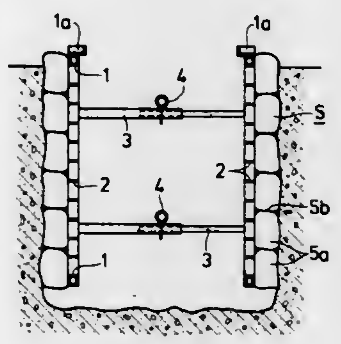
Karl Marx, Ansprengerstrasse 14, 8000 Munich 23, and Zacharias Sandbrand-Nisipeanu, Lauingerstrasse 42, 8000 Munich 50, both of Germany

Filed Mar. 5, 1973, Ser. No. 338,256

Claims priority, application Germany, Mar. 7, 1972, 2210988

Int. Cl. E21b *5/06*

U.S. Cl. 61—41 A **2 Claims**



1. A method for lining generally planar side walls of an open trench excavated within a ground surface for supporting the side walls of the trench comprising the steps of:

spraying the open trench side walls with a stabilizing means;

inserting generally planar supporting walls carrying inflatable envelopes, upon outside surfaces thereof, within the open trench in contiguous but spaced relation to the generally planar side walls of the open trench;

fixing the supporting walls in a stationary spaced posture within the open trench by adjustment of struts extending between inside surfaces of the supporting walls; and

inflating the inflatable envelopes carried upon the outside surfaces of the supporting walls to mutually cross-react through the supporting walls and the struts against opposing side walls of the open trench to firmly stabilize the side walls of the open trench.

3,864,922

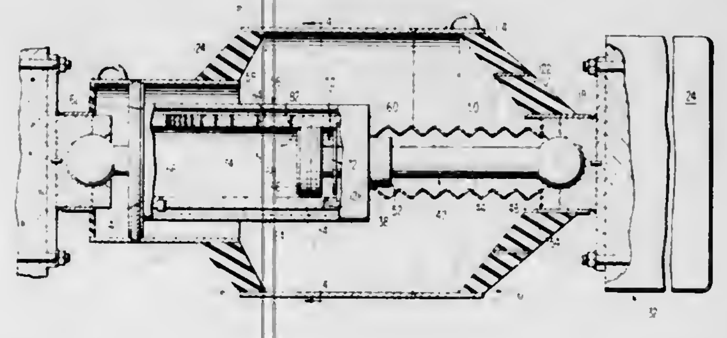
SEALED CUSHIONING UNIT

Darrell D. Dial, Fort Worth, and Robert J. von Bose, Arlington, both of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 22, 1974, Ser. No. 453,980

Int. Cl. E02b *3/22;* **B61g** *9/16*

U.S. Cl. 61—48 **16 Claims**



1. Apparatus operable to be positioned between a marine means and a protective bumper means for dissipating energy imparted to the protective bumper means by permitting cushioned relative movement of the protective bumper means relative to the marine means, said apparatus comprising:

cylinder means having wall means including,

side wall means,

first end wall means, and

second end wall means;

piston means slidably disposed within said cylinder means and including,

piston body means translatably mounted within said side wall means of said cylinder means, and

piston rod means translatably projecting through said first end wall means of said cylinder means and having a first end thereof connected to said piston body means;

means for operably connecting said second end wall means of said cylinder means to one of the marine means and the protective bumper means;

means for operably connecting said second, distal, end of said piston rod means to the other one of the marine means and the protective bumper means;

impedance means associated with said cylinder means and said piston means for cushioning translation of said piston body means from a normal position of adjacency to said first end wall wherein said apparatus is in an extended posture operably ready to dissipate energy imparted to the protective bumper means to a position of adjacency to said second end wall wherein said apparatus is in a closed posture operably following dissipation of energy imparted to the protective bumper means; and

means surrounding said cylinder means and said piston means, and generally extending between said means for operably connecting said second end wall to one of the marine means and the protective bumper means and said means for operably connecting a second, distal, end of said piston rod means to the other one of the marine means and the protective bumper means, for isolating said cylinder means and said piston means from a surrounding marine environment and for continuously biasing said piston body means to a normal position of adjacency to said first end wall wherein said apparatus is in an extended posture operably ready to dissipate energy imparted to the protective bumper means.

3,864,923

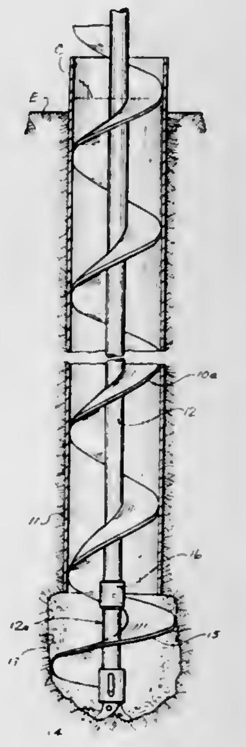
IMPACTED CASING METHOD FOR INSTALLING ANCHOR PILES OR TIEBACKS IN SITU

Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio 44312

Filed Sept. 18, 1973, Ser. No. 398,311

Int. Cl. E02d *5/38, 5/44;* **E21c** *17/00*

U.S. Cl. 61—53.6 **12 Claims**



1. A method of providing a pile or like body of self-hardenable cementitious material in an earth situs as for placing tiebacks or like members therein, comprising; the steps of providing a casing with a continuous flight auger rotatably and axially shiftably mounted therein, the auger having cutter means on the inner end thereof to be radially extendable and retractable by movement of the auger toward and from a projected position of the cutter means beyond the inner end of casing, driving said casing into the situs to define a bore of requisite depth, and rotating the continuous flight auger within said casing for removing earth from the defined bore along the auger flighting and through said casing; and further rotating said auger while said cutter means on an inner end thereof is projected beyond the inner end of the casing, with said cutter means radially extended to form an enlargement in the defined bore beyond said inner end of the casing.

3,864,924

DIVING BELL FOR WELLHEAD PLACING AND MAINTENANCE IN SHALLOW WATER

Maurice Joseph Piotin, Boulogne, France, assignor to Subsea Equipment Associates Ltd., Hamilton, Bermuda

Filed Oct. 17, 1973, Ser. No. 407,392

Claims priority, application France, Oct. 17, 1972, 72.36677

Int. Cl. B63c *11/44*

U.S. Cl. 61—69 R **16 Claims**

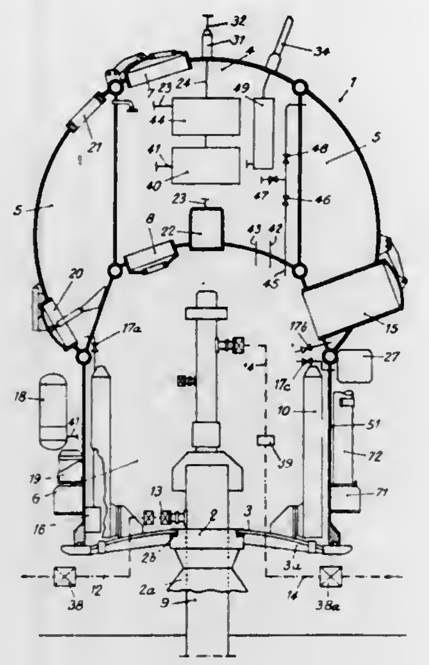
1. A diving bell adapted to rest on a base platform at the bottom of a body of water, said diving bell comprising:

a. a control chamber;

b. a work chamber beneath said control chamber, said work chamber being open at the bottom; and

c. an external ballast chamber, said ballast chamber having at least one outlet at its base and at least one outlet at its top, both of which connect the inside of said ballast chamber with the outside medium.

whereby, if both the upper and lower outlets are opened during immersion of the diving bell, the effect of the swell on



the diving bell is largely overcome, particularly when the level of the water lies between the upper and lower outlets.

3,864,925

APPARATUS FOR USE IN DRIVING TUNNELS

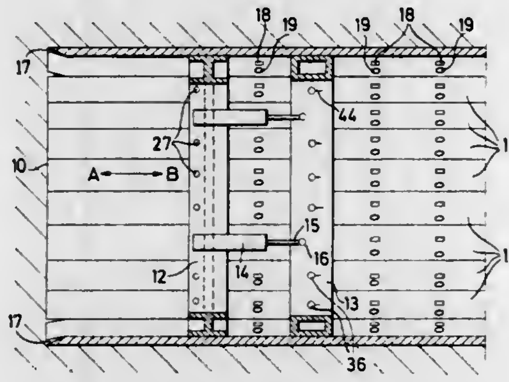
Adolf Foik, Altlunen, Germany, assignor to Gewerkshaft Eisenhutte Westfalia, Westfalia, Germany

Filed Apr. 18, 1973, Ser. No. 352,173

Claims priority, application Germany, Apr. 20, 1972, 2219271

Int. Cl. E01g *3/02*

U.S. Cl. 61—84 **17 Claims**



1. In an apparatus for use in driving tunnels or the like, the apparatus including two parallel, spaced-apart, substantially circular frames conforming to the general shape of the tunnel interior, a plurality of piston-cylinder units attached between the two frames for effecting relative displacement, and a plurality of elongated plank members arranged side by side around the outer peripheries of the frames to form a lining for the tunnel, the improvement therein comprising locking means for selectively locking and unlocking the elongated plank members to the frames to permit selected plank members to be moved forward lengthwise of the tunnel, said locking means comprising:

a the second of the two frames having a plurality of second locking pins mounted thereon, said second locking pins being independently movable radially; and

b. the elongated plank members each having a plurality of longitudinally spaced apart second locking pin receiving apertures formed on the interior plank surface, said second locking pins being selectively extended into said second apertures to permit selected plank members to be moved forwardly by said second frame, said second locking pins being retracted out of said second apertures to permit said second frame to be moved rearwardly without moving the plank members.

3,864,926

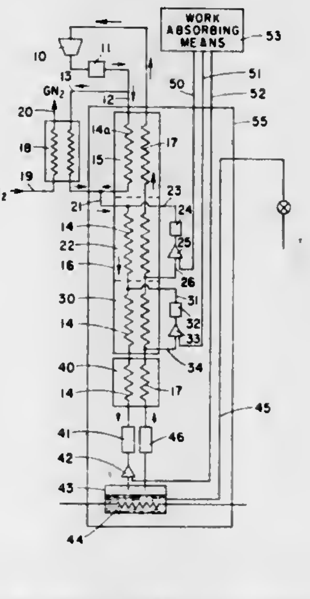
APPARATUS FOR LIQUEFYING A CRYOGEN BY ISENTROPIC EXPANSION

Samuel C. Collins, Oxon Hill, Md., assignor to Cryogenic Technology, Inc., Waltham, Mass.

Continuation of Ser. No. 81,937, Oct. 19, 1970, abandoned. This application June 21, 1973, Ser. No. 372,106

Int. Cl. F25j *3/00*

U.S. Cl. 62—38 **5 Claims**



1. An apparatus for liquefying helium, comprising in combination

a. high-pressure fluid flow path means;

b. low-pressure fluid flow path means;

c. heat exchange means arranged to provide heat exchange between high-pressure helium flowing in said high-pressure fluid flow path means and low-pressure helium flowing in said low-pressure fluid flow path means;

d. means to divert a portion of said high-pressure helium from said high-pressure fluid flow path means, to expand the helium so diverted and to introduce the resulting cooled low-pressure helium into said low-pressure fluid flow path means at at least one temperature level within said heat exchange means;

e. liquefied fluid receptacle means;

f. a slow-speed intermittent expansion engine arranged to periodically receive high-pressure cold helium and to isentropically expand said helium with the production of mechanical energy thereby to liquefy at least one portion of said high-pressure helium and discharge the at least partially liquefied helium into said receptacle means;

g. surge chamber means in said high-pressure fluid flow path means between said heat exchange means and said expansion engine and arranged to receive and store high-pressure cold helium discharged at the cold end of said heat exchange means and to deliver said high-pressure cold helium periodically to said expansion engine; and

h. means to return nonliquefied low-pressure helium from said receptacle means through said low-pressure fluid flow path means.

3,864,927

METHOD AND APPARATUS FOR STORAGE, TRANSPORT, AND USE OF CRYOGENIC GASES IN SOLID FORM

Chou H. Li, 379 Elm Dr., Roslyn, N.Y. 11576

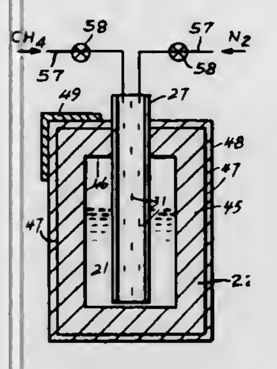
Filed Dec. 14, 1972, Ser. No. 315,184

Int. Cl. F17c *3/02*

U.S. Cl. 62—47 **36 Claims**

1. A cryogenic system for a single solid cryogenic medium normally in the gaseous state but capable of being liquefied and solidified at subatmospheric temperatures, comprising: a

plurality of adjoining, close-packed compartments adapted to store therein the single cryogenic medium; layered material forming walls separating and enclosing the compartments; the separating walls allowing any two adjoing compartments to mechanically interact directly therethrough; means for supplying the single cryogenic medium in the fluid state to all the compartments; and means for supplying a refrigerating fluid in heat exchange relationship with the cryogenic medium so as to solidify the fluid cryogenic medium into close-packed but disconnected cryogenic solid blocks of essentially uniform composition in all the compartments thereby preventing the information of a crack extending across the entire length of a dimension of the cryogenic system.



3,864,928

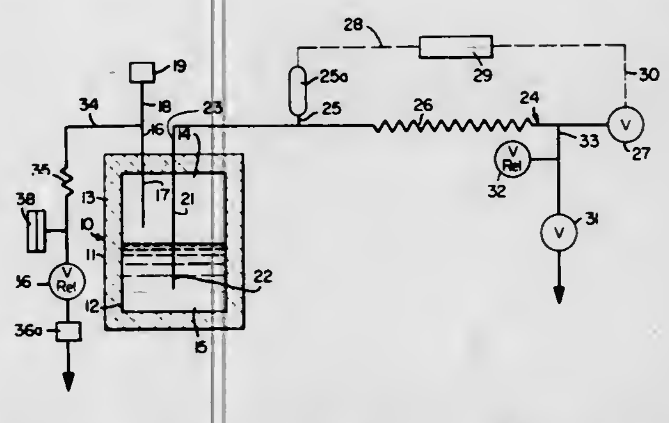
ALL-ATTITUDE CRYOGENIC VAPOR VENT SYSTEM

Lester Kurt Eigenbrod, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 311,091, Dec. 1, 1972, Pat. No. 3,797,262. This application Mar. 18, 1974, Ser. No. 452,119

Int. Cl. F17c *7/02*

U.S. Cl. 62—50 **10 Claims**



1. In a cryogenic liquid storage-gas supply system including a thermally insulated cryogenic liquid storage-dispensing containing having top and bottom ends and being invertible between top-up dispensing and bottom-up filling positions, gas vent-liquid fill conduit means with a first end terminating in the container top end and a second end outside said container top end, liquid withdrawal-gas vent conduit means with a first end terminating in the container bottom end and a second end outside said container top end, an invertible liquid vaporizing-gas vent control circuit outside the container and joined at a first inlet end to the liquid withdrawal-gas vent conduit means second end and including a first atmospheric vaporizer, and gas flow regulating means between said first atmospheric vaporizer and the gas discharge other end of said circuit: the improvement of an all-attitude gas relief circuit for said container comprising (a) first pressure relief means between said first atmospheric vaporizer and said gas flow regulating means, (b) branch conduit means having one end in flow communication with the gas vent-liquid fill conduit second end, (c) second flow restriction-pressure relief means in branch conduit (b) constructed to vent gas at lower pressure than said first pressure relief means and at maximum rate between 3 and 25 times the normal evaporation rate from the container, and (d) a second atmospheric vaporizer in flow communication at its inlet end with the branch conduit (b) one end and in flow communication at its discharge end with the second flow restriction-pressure relief means, and constructed with a heat transfer capacity not greater than one-third the first atmospheric vaporizer capacity and also sufficient to vaporize cryogenic liquid entering its inlet end and discharge gas at rate between 1.04 and 1.30 times the maximum vent rate of (c).

3,864,929

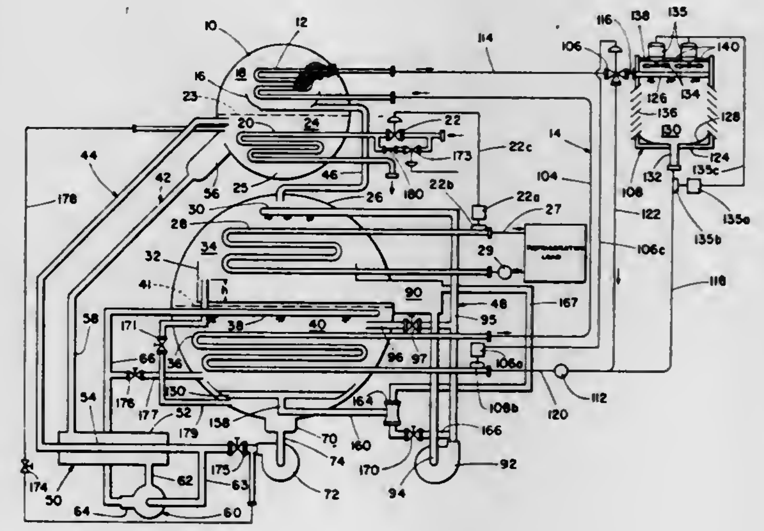
ABSORPTION REFRIGERATION SYSTEM

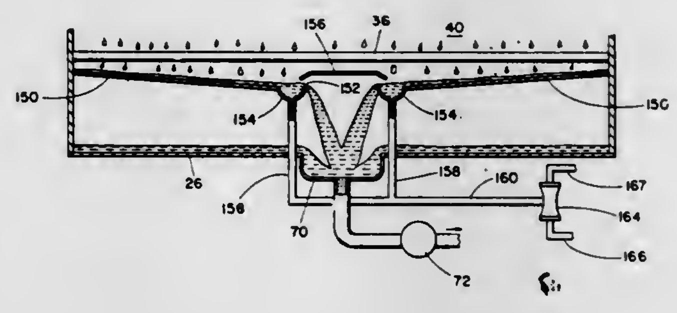
Neil E. Hopkins, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 5, 1973, Ser. No. 421,896

Int. Cl. F25b *15/06*

U.S. Cl. 62—101 **4 Claims**





1. An absorption refrigeration system comprising a generator, a condenser, an evaporator and an absorber connected in a closed, absorption refrigeration circuit; a common shell enclosing said evaporator and said absorber and having a lower portion thereof defining a sump; a first heat exchanger associated with said evaporator; a refrigeration circuit adapted to circulate refrigerant over said first heat exchanger and abstract heat from a fluid circulating therein; a second heat exchanger associated with said absorber through which a cooling medium may be circulated, said second heat exchanger being located above said sump; means for withdrawing absorbent solution collected in said sump and transferring at least a portion thereof over said second heat exchanger; means defining a first fluid flow path for absorbent solution passing over said second heat exchanger to said sump during normal operation of the system; and means defining a second, alternate fluid flow path for intercepting condensed refrigerant passing from the surface of said second heat exchanger and directing the same to said refrigeration circuit during the free cooling mode of said system, whereby solution may be stored in said sump during operation when refrigerant is being condensed on said second heat exchanger.

3,864,930

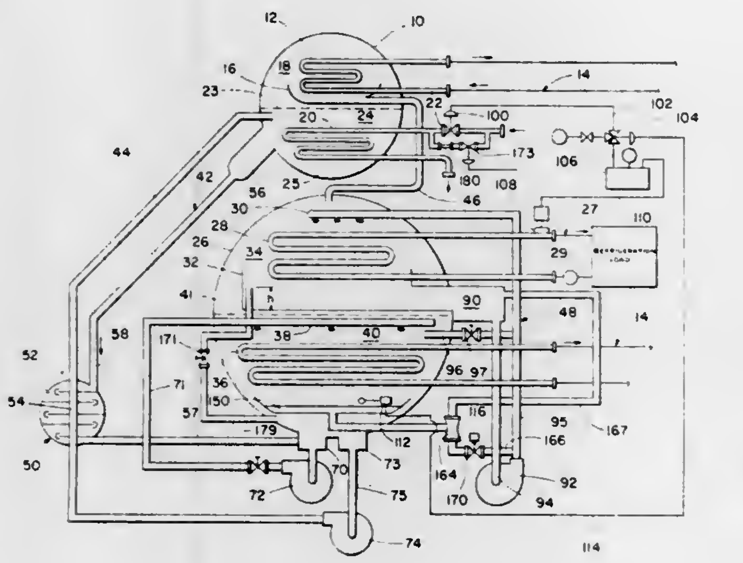
CONTROL FOR ABSORPTION REFRIGERATION SYSTEM

Neil E. Hopkins, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 5, 1973, Ser. No. 421,897

Int. Cl. F25b ***15/06***

U.S. Cl. 62—101 **6 Claims**



1. In a method of controlling refrigeration system of the type having an evaporator and an absorber connected in a closed circuit for normally conducting a refrigerant and an absorbent solution in an absorption refrigeration cycle, the absorber being arranged in the closed circuit to receive refrigerant vaporized in the evaporator and normally being provided with absorbent solution for absorption of the vaporized refrigerant; means defining a chilling circuit for circulating a chilled fluid in heat-exchange relation with a refrigeration load and including a first heat-exchanger in the evaporator for abstracting heat from the fluid and rejecting it to the refrigerant to chill the fluid and to vaporize the refrigerant; and means defining a cooling circuit for circulating a cooling medium and including a second heat-exchanger in the absorber for normally abstracting heat from the absorbent solution and rejecting it to the cooling medium; and a generator supplied with a heating medium to boil off refrigerant from the absorbent solution; the steps of operating the absorber to condense the vaporized refrigerant by circulating the cooling medium in the second heat exchanger at a temperature lower than a temperature of the chilled fluid which will satisfy the refrigeration load; circulating refrigerant condensed in the absosrber to the evaporator; and supplying heating medium to said generator at a reduced rate sufficient to prevent migration of refrigerant to said absorbent solution.

3,864,931

PROCESS AND APPARATUS FOR FOOD FREEZING

Manfred Guttinger, Leinfelden, Germany, assignor to Sandco Ltd., Ottawa, Canada

Filed Jan. 19, 1973, Ser. No. 325,047

Claims priority, application Germany, Jan. 19, 1972, 2202293

Int. Cl. F25d ***13/06***

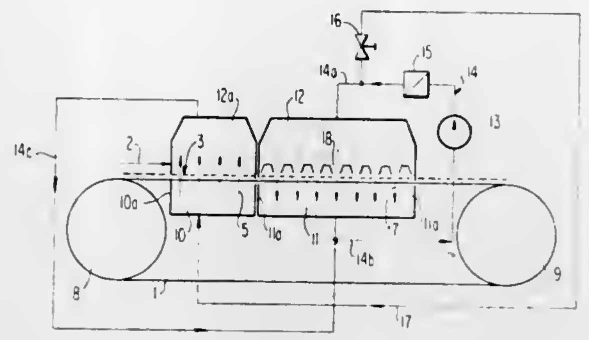
U.S. Cl. 62—63 **12 Claims**

1. Process for freezing foodstuffs comprising the successive steps of:

placing foodstuffs in a relatively flat layer on a support,

applying a first flow of cooling medium against said flat layer at a plurality of spaced positions on the support and in a direction from said support toward said flat layer so as to form frozen channel portions through said flat layer at said spaced positions,

and applying a second flow of cooling medium against said flat layer in a direction toward said support so as to freeze the remainder of said layer.



3,864,932

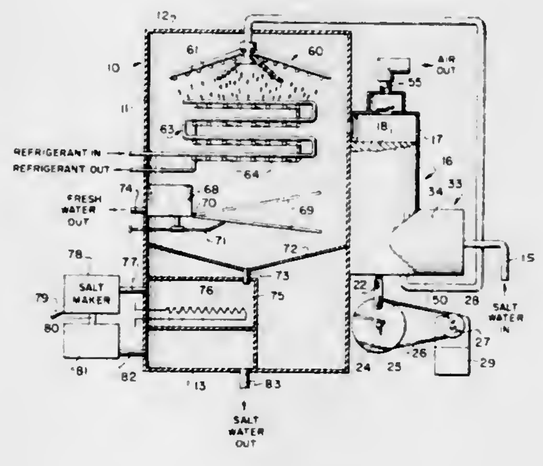
SEA WATER DESALTING APPARATUS

Wan-Om Hsiao, New Kowloon, Kowloon, Hong Kong, assignor to Pioneer Science Limited, Kowloon, Hong Kong

Filed June 12, 1973, Ser. No. 369,353

Int. Cl. B01d ***9/04***

U.S. Cl. 62—123 **9 Claims**



9. Saline water desalting apparatus comprising a chamber, pump means associated with said chamber, said pump means including a housing with piston means reciprocably mounted therein, said housing having a first portion communicating with the interior of said chamber through a unidirectional valve which permits flow of air from the chamber to said first portion, means for discharging air under pressure from the first portion of said housing, said housing having a second portion separated from said first portion by said piston means, means for introducing saline water into said second portion, a discharge line having one end communicating with the second portion of said housing, said piston means intermittently forcing the water from said second portion into said discharge line under pressure, the other end of said discharge line terminating within said chamber, means connected to the other end of said discharge line for atomizing the saline water under pressure and spraying the same into said chamber, and temperature modifying means in said chamber, whereby said pump means creates a subatmospheric pressure within said chamber and intermittently sprays atomized saline water into said chamber so that said temperature modifying means separates potable water from the saline water.

3,864,933

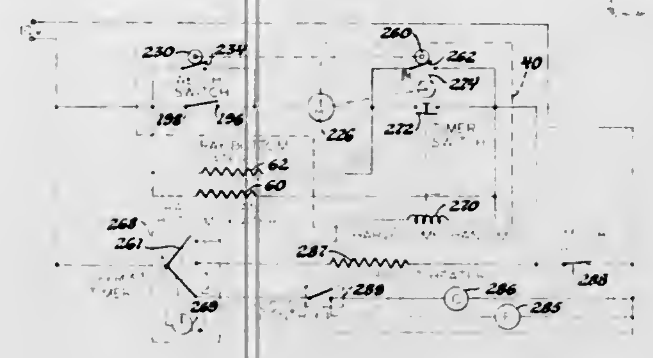
DEFROST TIMER ARRANGEMENT FOR MAKING CLEAR ICE

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1973, Ser. No. 419,942

Int. Cl. F25c ***5/18***

U.S. Cl. 62—137 **5 Claims**



1. A clear ice maker for a freezer having defrost means and a defrost timer for periodically defrosting said freezer, said ice maker comprising a tray having walls adapted to contain a body of water, a grid in said tray having cavity-forming means for displacing the body of water contained by said walls into the cavity, means distributing subfreezing air over the top planar surface of said body of water in said grid cavity for a sufficient period to initiate the freezing of clear ice in said grid cavity along the interface between said air and said top planar surface and to continue the freezing of clear ice downwardly in said grid cavity, and a bucket for storing said clear ice in said freezer and being removable from said freezer, tray heating means energizable to maintain said body of water in a liquid state adjacent said tray below the freezing clear ice, and harvesting mechanism operable in a harvest cycle by a drive motor for removing said grid and clear ice from said tray before the freezing of clear ice downwardly in said grid cavity reaches the bottom wall of said tray and for depositing said clear ice in said bucket, said harvesting mechanism including a weigh switch, a bistable first timer switch and said drive motor in series electrical flow relationship, said first timer switch having the characteristic of stability in both its open and closed positions and operating in its closed position to enable the initiation of said harvest cycle by operating said harvest mechanism when said weigh switch is closed, said weigh switch having a closed position when said bucket is empty and an open position when said bucket is full of clear ice or removed from said freezer, said harvesting mechanism having a second timer switch in shunt with said weigh switch and a third timer switch in shunt with said first timer switch, said drive motor operating to actuate said second and third timer switches to maintain the operation of said drive motor and harvesting mechanism once said harvest cycle is initiated irrespective of said weigh switch and said first timer switch, said drive motor operating to actuate said second and third timer switches to terminate said harvest cycle, and said drive motor operating to move said first timer switch to its stable open position after said second and third timer swiches have been actuated to maintain the operation of said drive motor and before said harvest cycle is terminated, said heating means comprising a heater for a wall of the tray in shunt with said weigh switch and said second timer switch and in series electrical flow relationship with said first timer switch, said defrost timer including ice maker means initially operable to move said first timer switch to its stable closed position when said freezer is not being defrosted and subsequently operable to permit the movement of said first timer switch to its stable open position whereby said heater is adapted for temporary energization when a harvest cycle is initiated by the movement of said first timer switch to its stable closed position and said bucket is either full of clear ice or removed from said freezer, said temporary energization continuing until said bucket is replaced in said freezer and is no longer full.

3,864,934

COOLING PUMP SYSTEM

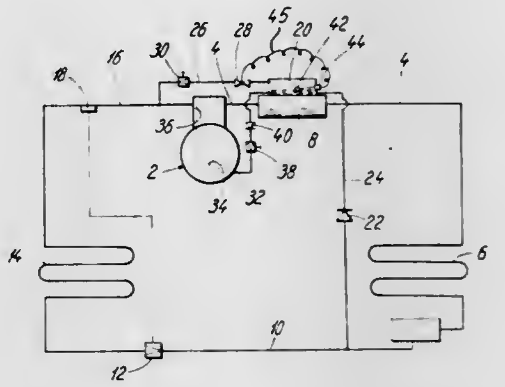
Carl-Eric Christian Jeding, Risskov, and Vagn Hovgaard Villadsen, Viby J., both of Denmark, assignors to Aktieselskabet Thomas Ths. Sabroe & Co., Aarhus Hojbjerg, Denmark

Filed Sept. 21, 1972, Ser. No. 291,026

Claims priority, application Denmark, Sept. 24, 1971, 4656/71

Int. Cl. F25b ***31/00***

U.S. Cl. 62—196 **13 Claims**



1. An apparatus having a heat developing part comprising: pump means for supplying a cooling medium to the heat developing part, said heat developing part being cooled by said cooling medium;

control means for regulating the supply of said cooling medium in response to heat generated by said heat developing part,

said pump means including a thermal positive displacement pump of the type having a closed container partly filled with a liquid pumping medium,

said closed container including an outlet pipe for said liquid pumping medium, an inlet pipe for refilling said liquid pumping medium into said closed container, said inlet pipe being connected to a reservoir of said liquid pumping medium, and inlet control means for regulating said refilling of said closed container; and

a heating source in heat conduction connection with said closed container for heating said closed container sufficiently to cause said liquid pumping medium in said closed container to boil so that the vapour pressure in said closed container is sufficiently increased to cause the liquid pumping medium to be forced out through said outlet pipe for supplying said cooling medium to said heat developing part;

wherein said heat developing part at least partly constitutes said heating source in heat conduction connection with said closed container so as to effectively cause the supply of the cooling liquid to be adjusted in direct response to the temperature variations of the heat developing part.

3,864,935

APPARATUS FOR IMPROVED SHIPPING OF CRUDE OIL RELATIVE TO ENVIRONMENT DAMAGE AND ECOLOGICAL PROBLEMS

Jesse M. Elson, 138 E. Washington Ave., Pearl River, N.Y. 10965

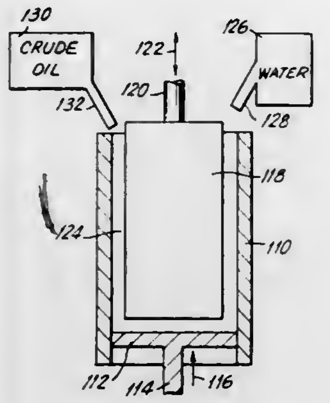
Filed Mar. 22, 1973, Ser. No. 343,925

Int. Cl. F25c ***1/04***

U.S. Cl. 62—356 **2 Claims**

1. Apparatus for avoiding ecological problems while moving crude oil between two geographically displaced locations, said apparatus comprising freezing means to freeze said oil into units, and transport means to transport said units from one location to the other, said freezing means including mold means to mold said units in like geometrical forms, said transportation means including a tube through which said units are transported, said tube having a cross-section corresponding to that of said geometrical forms, said freezing means including

mold means to freeze open containers from a fluid other than said crude oil, means to pour oil into said containers, and



means to close said containers, and means to close said containers with additional frozen fluid.

3,864,936
CONTAINER FOR SHIPPING PERISHABLES

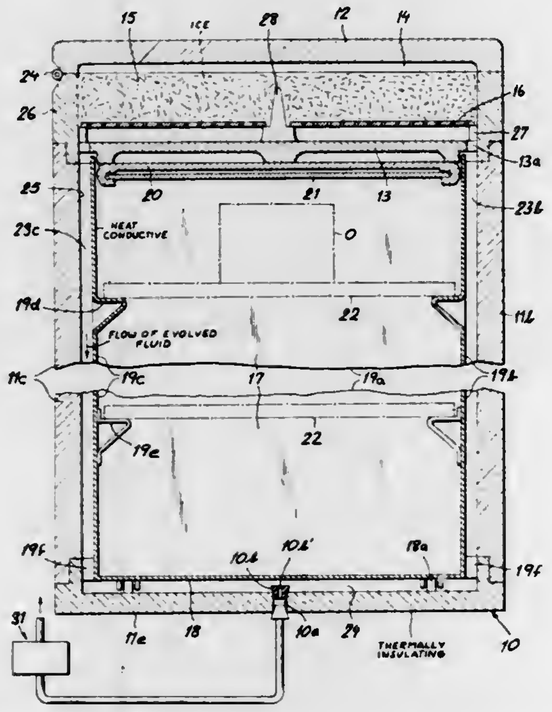
Martin Frank, Cologne, and Karl Frank, Linz am Rhine, both of Germany, assignors to Burger Eisenwerke AG, Herborn/Dillkreis, Germany

Filed Jan. 16, 1974, Ser. No. 433,651

Claims priority, application Germany, Jan. 31, 1973, 2304718

Int. Cl. F25d *3/12*

U.S. Cl. 62—385 **1 Claim**



1. A shipping container comprising: an outer box forming a substantially closed chamber having a base formed with an outlet opening outside said box and into said chamber;

- means in said chamber forming a substantially closed compartment adapted to receive freight;
- means in said chamber above the freight compartment for supporting ice and forming an ice compartment;
- means in said chamber defining a vertical passage next to and in heat-exchanging juxtaposition with said freight compartment and extending downwardly therepast from said ice compartment to said outlet, whereby fluid evolved from ice in said ice compartment flows down in said passage over said freight compartment to cool same and flows out of said chamber at said outlet, said box having a plurality of connected side walls, a top wall bridging said side walls above said ice compartment, and a bottom wall bridging said side walls below said freight compartment at said base, said walls being of insulating material, said means forming said freight compartment having at least two side walls spaced from two respective side walls of said box, a bottom wall spaced from the box bottom wall, and a top wall spaced from the box top wall and defining therewith said ice compartment, said side walls of said freight compartment beigh of heat-conducting material, said outlet being a throughgoing hole in the box bottom wall, said means forming said ice compartment including a rigid perforated support plate for said ice secured to said box side walls, at least one of the box side walls constituting a side wall of said compartment and being formed with an openable door, the latter wall being formed with at least one throughgoing hole opening on one side into said freight compartment and on the other side outside said box;
- means for collecting gas leaving said box through said outlet; and
- means for controlling the rate of evolution of fluid in said container by varying the cross-section of said outlet.

3,864,937
RECTIFIER CONSTRUCTION FOR ABSORPTION TYPE REFRIGERATOR

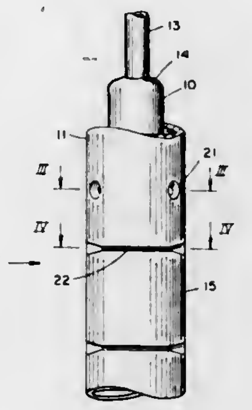
Amram Asher, Oberengstringen, and Nicolas Eber, Unterengstringen, both of Switzerland, assignors to Sarlab Aktiengesellschaft, Zurich, Switzerland

Filed Feb. 12, 1974, Ser. No. 441,808

Claims priority, application Sweden, Feb. 13, 1973, 730/73

Int. Cl. F25b *15/04*

U.S. Cl. 62—496 **8 Claims**



1. An absorption refrigerating apparatus provided with a boiler having a rectifier, said rectifier comprising two pipes in which one pipe is located concentrically within the other pipe to form a space therebetween functioning as a flow path, the raised absorption solution in said apparatus flows downwardly in said space while the refrigerant and the absorption medium vapors flow upwardly therein, said flow path having a series of constrictions formed in a part of one of said pipes above a zone in which heat is supplied to said boiler wherein each constriction has at least one angled, corner-shaped part forming a wide portion and at least one narrow portion that are interconnected.

3,864,938
REFRIGERANT FLOW CONTROL DEVICE

Richmond S. Hayes, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

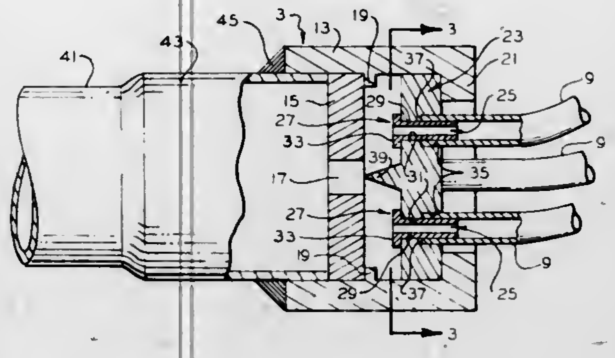
Filed Sept. 25, 1973, Ser. No. 400,475

Int. Cl. F25b *39/02*

U.S. Cl. 62—504 **5 Claims**

1. A refrigerant flow control device for controlling the flow of refrigerant to a multi-circuit evaporator in a refrigeration system, said device comprising:

- a distributor plate including refrigerant passages for passing refrigerant to feedlines leading to each of the circuits in the evaporators;
- metering jets having tubular means extending into said refrigerant passages, said tubular means being dimensioned to expand refrigerant flowing therethrough according to the load on the particular circuit receiving refrigerant from the respective metering jets;



- a casing; and
- an orifice plate having orifice means dimensioned to expand refrigerant flowing therethrough;
- said orifice plate and said distributor plate being mounted in spaced parallel relation in said casing.

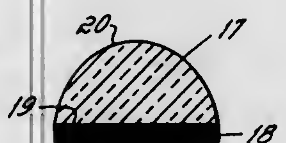
3,864,939
DOUBLET HAVING FIBER OPTICAL ELEMENT FOR CHATOYANT OR ASTERISMAL DISPLAY

Michael R. Phillips, and Jerome H. Ludwig, both of Cleveland, Ohio, assignors to Queensbury Opal Co. Ltd., Cleveland, Ohio

Division of Ser. No. 261,022, June 8, 1972, Pat. No. 3,742,731. This application Apr. 24, 1973, Ser. No. 354,100

Int. Cl. A44c *17/00*

U.S. Cl. 63—32 **6 Claims**



1. A doublet gemstone construction comprising a gem of light-transmitting material having an optical display surface and a base portion, said construction further comprising means for creating at least single-lined light display on said gem surface, said means including a fiber optical element mounted on said base portion, said element comprising a solid fused bundle of a multitude of fine, elongated visible light-conducting fibers having cores of high refractive light index surrounded with a clad layer of lower refractive light index, said fibers arranged to extend in parallel side-by-side relation to each other in a direction generally parallel to said base portion for conducting light and for said display of light on said gem surface.

3,864,940
FLEXIBLE COUPLING MEANS

Arthur L. Black, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

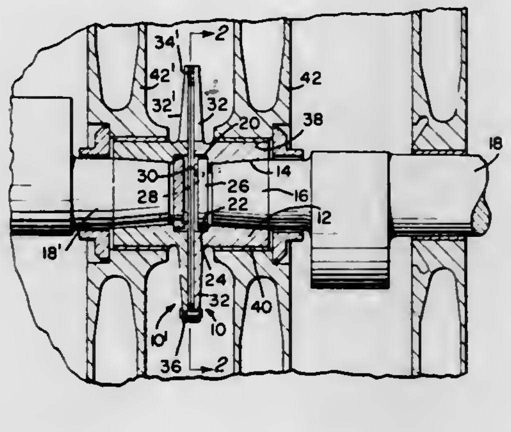
Filed Aug. 1, 1973, Ser. No. 384,449

Int. Cl. F16d *3/78*

U.S. Cl. 64—13 **4 Claims**

1. Flexible coupling means

- for use in coupling together first and second rotary elements, comprising:
- journal means for supporting one of the rotary elements in a bearing for rotation about an axis; and
- a plurality of axially flexible limbs, integral with, and extending radially from, said journal means, for coupling thereof to like limbs of a complementary, flexible coupling means supporting the other of the first and second rotary elements; wherein
- said journal/supporting means comprises a hub;
- said hub defining an annulus having a central, throughgoing bore for receiving an axial end portion of said one rotary element therewithin;
- said securing means comprises means for retaining said end portion within said bore;
- said bore is tapered, and further has an annular shoulder formed therewithin;



- said shoulder is bounded by a wall;
- said shoulder and wall define a recess for receiving said securing means therewithin;
- said securing means comprises a retainer plate;
- said plate having at least one bore hole formed therein for receiving a rotary-element-engaging fastener therethrough; and
- said limbs have bolt holes formed therein adjacent the radial outermost ends thereof, for receiving fasteners for replaceable coupling of said limbs to like limbs of a complementary, flexible coupling means.

3,864,941
MULTIFEED CIRCULAR KNITTING MACHINE

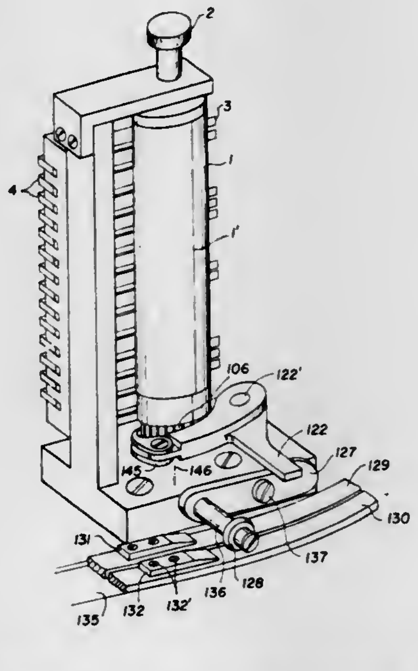
Falk Kuhn, Kiebingen, Germany, assignor to Firma Fouquet-Werk Frauz & Planck, Rottenburg, Germany

Filed Sept. 7, 1972, Ser. No. 287,053

Claims priority, application Germany, Sept. 9, 1971, 2145121

Int. Cl. D04b *9/38, 15/74*

U.S. Cl. 66—50 B **4 Claims**



1. Multifeed circular knitting machine to knit a plurality of *n* discrete patterns (A, B, C) located alongside each other on the knit fabric tube having

- a plurality of pattern drums (1–24) located around the circumference of the machine and having, each, a datum point;
- pattern selector means (3) located on the circumference of the drum with respect to said datum;

racking means (**106, 145, 146**) to index the pattern drums; and cam means (**131, 132**) engaging the racking means to cause indexing of the drums by a predetermined amount;

the improvement wherein

said cam means comprises a plurality of camming elements selectively located around the circumference of the machine and being formed to permit clamping of the camming elements at infinitely continuously adjustable circumferential positions with respect to the cylinder of the machine to adjust the position of the camming surfaces thereof with respect to any specific cylinder needle

to index the drums more than once for each machine revolution to permit knitting of fabric having a plurality of different pattern arrangements appearing on the fabric in predetermined widths and adjacent each other, the drums are associated in sequentially positioned *n* groups (**1–8; 9–16; 17–24**), first pattern selector means controlling a first pattern (**A**) being placed, starting from said datum, in first positions (**26A**) of a first group (**1–8**) of drums and subsequent pattern selector means controlling further patterns (**B, C**) being placed on sequential positions (**26B, 26C**) on the drums of the first group (**1–8**) of drums, the first pattern selector means (**27B, 28C**) for each different pattern (**B, C**) being placed, starting from said datum, in respective first positions of subsequent groups (**9–16; 17–24**) of the drums, so that any drum has placed thereon in sequential, adjacent positions (**26A, 26B, 26C; 27B, 27C, 27A; 28C, 28A′, 28B′, 28C′, 28A, 28B**) selector means controlling respective sequential knitted patterns (**A, B, C**).

3,864,942
PATTERN-SELECTING DEVICES FOR KNITTING MACHINES

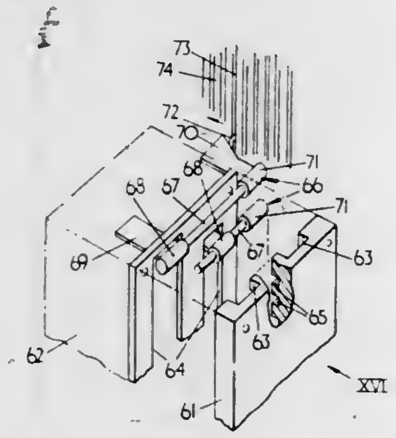
Sidney Clifford Savage, Wigston Magna, and Peter Sinclair Stock, Oadby, both of England, assignors to Wildt Mellor Bromley Limited, Leicester, England

Filed Dec. 14, 1972, Ser. No. 315,081

Claims priority, application Great Britain, Dec. 20, 1971, 59155/71; Mar. 30, 1972, 15006/72

Int. Cl. D04b *15/78*

U.S. Cl. 66—50 R **1 Claim**



1. In a pattern selecting device for a knitting machine, comprising a stack of selector members each having a butt-engaging portion movable between a butt-engaging position in which it is engageable with pattern butts on or associated with needles movable in relation to said pattern selecting device, and a butt-missing position in which the butt-engaging portion does not engage said pattern butts; the improvement that each selector member comprises an actuating part formed of magnetisable material and that the selecting device further comprises, associated with each selector member, a permanent magnet, pole pieces on said permanent magnet, opposed pole faces on said pole pieces, and an electromagnetic coil surrounding said permanent magnet and pole pieces, said actuating part of each selector member being movable transversely of the coil between the associated pole faces and being magnetisable by the associated coil for attraction to a selected one of the pole faces and repulsion from the other of the pole faces, and in that each selector member comprises a spindle freely mounted in a slot for rotational movement, each spindle carring a rocker forming the said actuating part and a rocker forming the butt-engaging portion each rocker angularly extending from the spindle in the direction in which the said mounting slot opens.

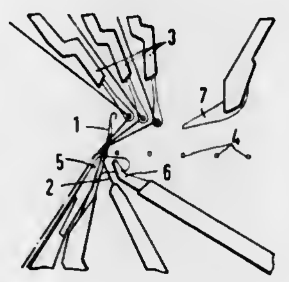
3,864,943
WARP KNITTING OR RASCHEL MACHINE

Roland Wunner, Bernstein/Wald, Germany, assignor to Liba Maschinenfabrik GmbH, Naila, Bavaria, Germany

Filed Sept. 6, 1973, Ser. No. 394,796

Int. Cl. D04b *23/06*

U.S. Cl. 66—84 A **3 Claims**



1. In a warp knitting or Raschel machine comprising a row of vertical needles, a plurality of thread guides for supplying warp thread to said needles, a plurality of trick plates with knock-over edges, means for feeding filler thread to said needles for producing knitted fabrics, a plurality of filler threads being prepared to arrive horizontally at the level of the upper edge of said trick plates, a sinker arrangement consisting of a plurality of sinker plates disposed above said needles and above said trick plates, said sinker plates performing a substantially orbital movement in timed relationship to the needle movement, and a plurality of filler sinkers extending into the space between said trick plates and said needles and movably mounted below said sinker arrangement, means for imparting to said filler sinkers a substantially rectangular movement consisting of consecutive horizontal and vertical sections in timed relationship with the needle action and thus with the operation of said sinker arrangement, said filler sinkers being adapted to separate a filler thread and transport it to the back side of said needles and cooperate at this position and instant with said sinker arrangement which holds the filler thread down to the upper edge of said trick plates during the rising of said needles.

3,864,944
METHOD FOR MAKING A DOUBLE FACED WARP KNIT FABRIC

George E. Jackson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 102,628, Dec. 30, 1970, Pat. No. 3,757,540. This application Aug. 20, 1973, Ser. No. 389,476

Int. Cl. D04b *23/02*

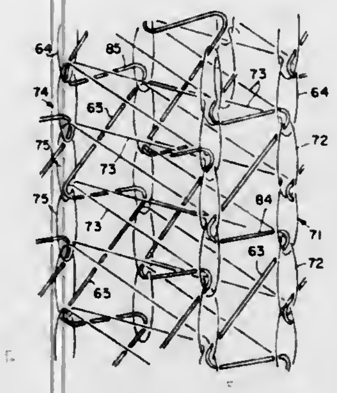
U.S. Cl. 66—87 **3 Claims**

1. The method of making a double faced, warp knit, fabric by means of a double needle bar multiple guide bar warp knitting machine which comprises the steps of:

warp knitting two fabrics back to back on said two needle bars, with each fabric having a chain stitch knitted structure,

guiding a set of common, chain stitch yarns back and forth between said structures at each course and in each wale to bind said structures together and knitting said common chain stitch yarns to form chain stitch pillars in each said structure with each said common chain stitch yarn forming each successive chain stitch in each pair of opposite wales in each opposite face of said fabric, and

interconnecting said pillars in each said structure to provide strength and stability thereto in both warpwise and coursewise directions.



3,864,945
SLIDE FASTENER AND METHOD OF MAKING SAME

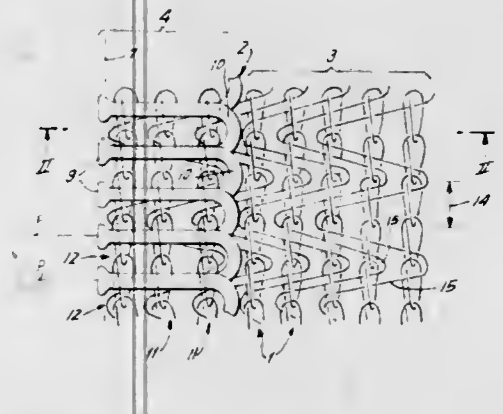
Alfons Frohlich, Essen, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Apr. 9, 1973, Ser. No. 349,005

Claims priority, application Germany, Apr. 7, 1972, 2216829

Int. Cl. D04b *23/08, 23/10*

U.S. Cl. 66—193 **14 Claims**



1. A slide-fastener half comprising:

an elongate monofilamentary coupling element forming a multiplicity of generally planar transverse loops each with two substantially parallel shanks interconnected by a bight portion, the bight portions of at least some of said loops bearing coupling heads engageable with complementary coupling heads on an adjoining slide-fastener half; and

a warp-knit fabric structure with chains of warp threads forming a plurality of parallel wales perpendicular to said loops, the shanks of each loop extending across several of said wales having chain stitches tied around at least one shank of each loop.

3,864,946
WARP-KNITTED FASTENER TAPES

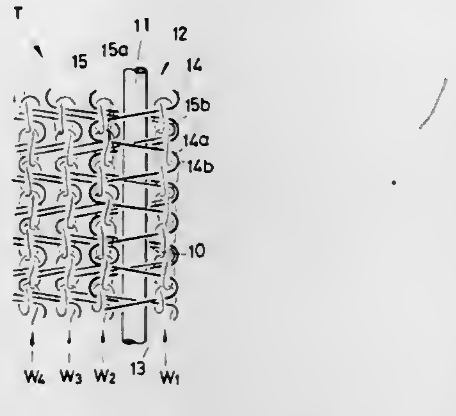
Yoshio Matsuda, Nyuzen-machi, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 427,848

Int. Cl. D04b *23/08*

U.S. Cl. 66—193 **5 Claims**

1. A supporting stringer tape for slide fasteners which comprises a warp-knitted structure comprising wales of longitudinally extending warp stitches connected coursewise by transversely extending weft threads, a reinforcing core inserted between two adjacent wales at the longitudinal inner edge portion of the tape along which a row of fastener elements is secured, and a first fastening weft thread laid in from one direction to overlie said reinforcing core and a second fastening weft thread laid in from the opposite direction to underlie said reinforcing core, said first and second fastening threads interconnecting at least said two adjacent wales.



3,864,947
APPARATUS FOR PRODUCING DYED AND CLEANED MATERIAL

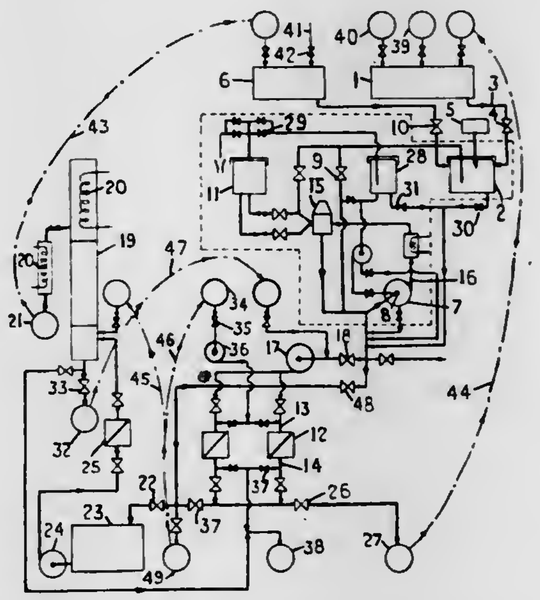
Robert Borland Gray, Kilbarchan, England, assignor to J. & P. Coats Limited, Glasgow, Scotland

Division of Ser. No. 239,421, March 30, 1972, Pat. No. 3,801,276. This application Oct. 11, 1973, Ser. No. 405,275

Claims priority, application Great Britain, Apr. 3, 1971, 8622/71

Int. Cl. D06p *1/68;* **B05c** *11/10;* **D06f** *43/08*

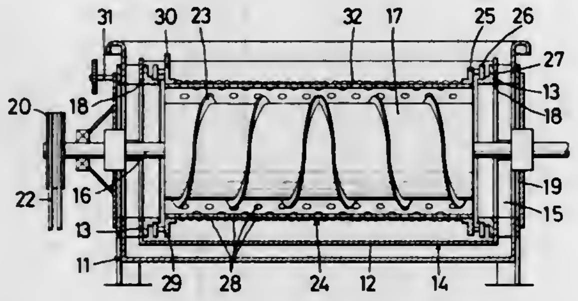
U.S. Cl. 68—18 R **13 Claims**



1. Apparatus for producing dyed and cleaned material comprising a dye carrier stock tank, a cleaning fluid stock tank, a mixing vessel connected to the dye carrier stock tank and the cleaning fluid stock tank by way of valve means, a kier for receiving material to be processed, a pump having inlet and outlet connections, valve means associated with the mixing vessel, the kier and the pump and operative to be set to connect the inlet of the pump to the mixing vessel and the outlet of the pump to the kier or to connect the kier to the inlet and the outlet of the pump at the same time to permit recirculation of the liquid contents of the kier, a filter capable of removing dye from the dye/dye carrier mixture and having an inlet and an outlet, the inlet being connectible by way of valve means to the kier and the outlet being connectible by way of valve means to a discharge outlet, and a cleaning fluid separator capable of separating cleaning fluid from the dye carrier and any dye contained therein, the cleaning fluid separator having an inlet connected by way of valve means to the outlet of the filter and discharge outlets for discharge of separated cleaning fluid and dye carrier with any dye remaining therein.

3,864,948
SUCTION DRUM WASHER

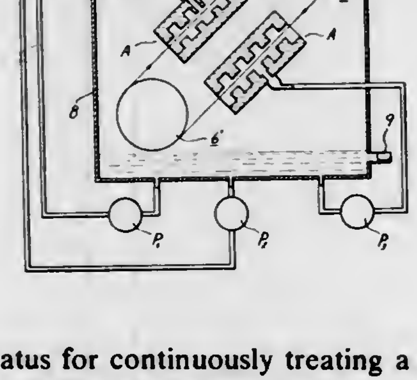
Akira Domoto, Wakayama, Japan, assignor to Daiwa Machinery Works, Ltd., Wakayama-shi, Japan
Filed Apr. 19, 1973, Ser. No. 352,643
Int. Cl. B05c *3/132, 8/04*
U.S. Cl. 68—184 **6 Claims**



1. A suction drum washer comprising a semi-cylindrical outer tank, a semi-cylindrical inner tank mounted within said outer tank and at a lower level than an upper edge of said outer tank, said inner and outer tanks being spaced apart, said inner tank having openings at both ends thereof communicating with the space between said outer and inner tanks, a hollow suction drum rotatably mounted in said inner tank and opened at both ends thereof correspondingly to said openings of said inner tank, said suction drum having a plurality of holes in the periphery thereof, and a cylindrical body rotatably mounted in said suction drum and having right and left symmetrical helical fins on the periphery thereof, said fins causing a flow of a washing liquid longitudinally along the periphery of the cylindrical body upon the rotation thereof.

3,864,949
APPARATUS FOR CONTINUOUSLY TREATING THREAD

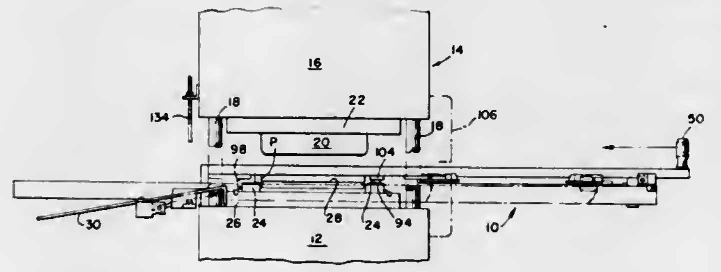
Toshiaki Inoue; Shinyo Nakajima, both of Osaka; Tohru Uraya; Toshiaki Kanamori, both of Kobe, and Kazuo Fukuda, Himeji, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 166,815, July 28, 1971, Pat. No. 3,766,581. This application Mar. 23, 1973, Ser. No. 344,249
Claims priority, application Japan, Aug. 5, 1970, 45-070503
Int. Cl. B05c *5/02*
U.S. Cl. 68—205 E **4 Claims**



1. An apparatus for continuously treating a strand of filamentary material with liquid, comprising: a pair of elongated, rotatable, strand-delivery rolls spaced apart from each other and having their axes of rotation inclined toward each other; at least one pair of opposed, spaced-apart, elongated, generally parallel plates positioned in the space between said rolls, said plates extending lengthwise in the space for substantially the full axial length of said rolls, said plates also being elongated in a direction transverse to said rolls so that said plates occupy a substantial portion of the space between said rolls, the opposing surfaces of said plates being spaced apart to define therebetween a passageway for a strand so that a strand can be passed helically around said rolls and a plurality of spaced-apart flights of said strand will pass through said passageway; at least one of said plates having inlet means for liquid for directing liquid into and through said passageway; the opposing surfaces of said plates having a series of transversely spaced-apart grooves extending perpendicular to said passageway for effecting repeated vortical flow of the liquid in a direction perpendicular to the strand moving through said passageway.

3,864,950
PUNCHPRESS FEED MECHANISM

Albert Dunkin, 12 Split Rock Rd., South Norwalk, Conn. 06854
Filed July 13, 1973, Ser. No. 379,161
Int. Cl. B21b *37/00*
U.S. Cl. 72—6 **17 Claims**



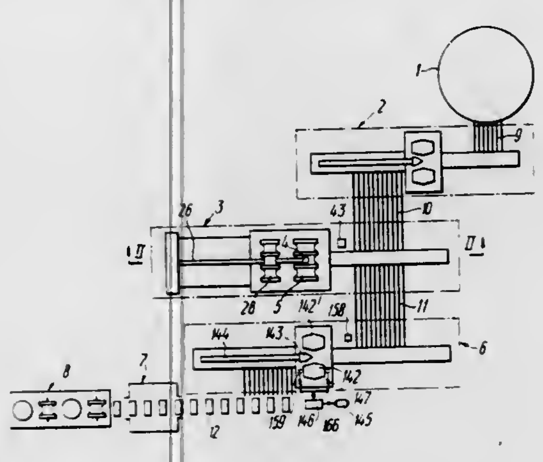
1. A blank feeding fixture for punch presses of the type having a pair of relatively movable dies cooperable to form a part upon movement against a blank positioned between the dies, said fixture comprising:

- blank carriage means movable between a retracted loading position remote from the press dies and an advanced transfer position at which a blank supported by said carriage means is placed between the press dies;
- retractable latch means engageable with said carriage means upon movement thereof to said retracted loading position and for retaining said carriage means in said retracted position;
- means for releasing said latch means from retaining engagement with said carriage means upon terminal movement of the press dies against a blank; and
- control means for enabling relative movement of the press dies against the blank only when said latch means is operative to retain said carriage means in said retracted loading position.

3,864,951
DEVICE FOR PRODUCING SEMI-PRODUCT TUBES OF CONSTANT INNER DIAMETER WITH THINNED ENDS

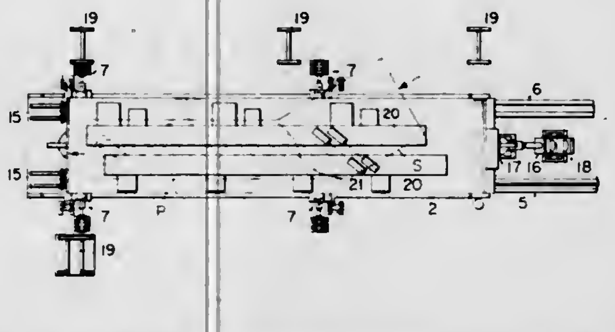
Gennady Ivanovich Gulyaev, ulitsa Sevastopolskaya, 10, kv. 52, Dnepropetrovsk; Jury Nikolaevich Neznamov, ulitsa Chubarya, 13, kv. 62, Nikopol; Anatoly Ionovich Nechiporenko, ulitsa Vysokovoltnaya, 28/39; Viktor Yakovlevich Ostrenko, ulitsa Komsomolskaya, 65, kv. 44, both of Dnepropetrovsk; Petr Ivanovich Kutsenko, ulitsa Pestelya 4, Nikopol; Viktor Kharitonovich Kurilenko, ulitsa Korbuta, 7, kv. 3, Nikopol; Ivan Vasilievich Ermolov, ulitsa lenina, 56, kv. 8, Nikopol; Alexandr Ilich Chekmarev, ulitsa Karla Marxa, 108, Nikopol; Vladimir Grigorievich Voronko, ulitsa Lenina, 63, kv. 4, Nikopol; Ivan Petrovich Boiko, ulitsa Rostovskaya, 22, kv. 30, Nikopol; Vladimir Romanovich Mamontov, prospekt Kirova, 76, kv. 45; Jury Ivanovich Pustovoichenko, ulitsa Sofii Kovalevskoi, 55, kv. 46, both of Dnepropetrovsk; Gennady Mikhailovich Volovik, ulitsa 40 let Oktyabrya, 1, kv. 11, Nikopol; Vladislav Georgievich Zakharenko, prospekt Lenina, 12, kv. 7, Nikopol, and Viktor Prokhorovich Paschenko, ulitsa imeni Pravdy, 7, kv. 75, Nikopol, all of U.S.S.R.
Filed Dec. 19, 1973, Ser. No. 426,220
Int. Cl. B21b *37/00, 17/10*
U.S. Cl. 72—6 **12 Claims**

1. An apparatus for forming tubes intermediate of their finished form at a constant inner diameter with end portions of reduced thickness comprising: a two-high mill having opposing rolls provided with grooves of semicircular form in cross section, plug means located between said rolls, roll adjustment means for altering the gap between said rolls and said plug means, control means for controlling the speed and direction of the displacement of said roll adjustment means to taper the end portions of a tube and limiting means for determining maximum and minimum roll gap.



3,864,952
APPARATUS FOR FORMING SPIRAL STEEL PIPE

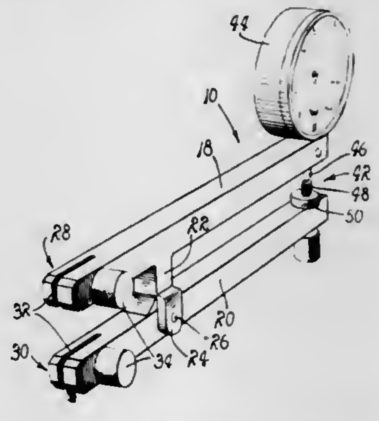
Akira Matsufuji, 1-7-15, Sawami, Tobata-ku, Kitakyushu, and Kenji Numajiri, 2406, Oaza Hikino, Yawata-ku, Kitakyushu, both of Japan
Filed Nov. 28, 1972, Ser. No. 310,082
Claims priority, application Japan, Nov. 29, 1971, 46-96514; July, 47-85300
Int. Cl. B21c *37/12*
U.S. Cl. 72—135 **5 Claims**



1. In an apparatus for forming spiral steel pipe by pressing a steel strip against exterior forming rolls by mandrel rolls so as to bend said steel strip spirally, the mandrel rolls being mounted on a mandrel roll supporting stand and the exterior forming rolls being mounted on exterior forming roll supporting stands, the mandrel roll supporting stand being above the exterior forming roll supporting stands, the improvement comprising a freely movable truck having said exterior forming roll supporting stands fixedly mounted on the upper surface thereof, rails on the base of the apparatus on which said truck is movably mounted, said rails having raisable and lowerable portions at the positions where said truck is supported thereon when said exterior forming rolls are at their operative positions on the apparatus, clamps along said base engageable with said truck for fixing said truck at a predetermined position on the base, and supporting frame means adjacent said rails for releasably supporting said mandrel roll supporting stand at its operative position above said exterior forming roll supporting stands, whereby with the exterior forming roll supporting stand resting on said truck, said rail portions can be raised and said mandrel roll supporting stand released from said supporting frame means to rest on said exterior forming roll supporting stand, and said truck can be moved along said rails to remove both stands from the apparatus, and the stands can be replaced in the apparatus by a reverse sequence of operations.

3,864,953
METER FOR USE IN DETECTING TENSION IN STRAPS HAVING PREDETERMINED ELASTIC CHARACTERISTICS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; George V. Buhler, 18570 Santa Ynez St., Fountain Valley, Calif. 92708, and Dale E. Havens, 323 Aulenda Cerritas, Newport Beach, Calif. 92660
Filed Oct. 11, 1973, Ser. No. 405,342
Int. Cl. G01l *5/06*
U.S. Cl. 73—143 **2 Claims**



1. In a meter for use in indicating tension in straps having predetermined elastic characteristics, the improvement comprising:

- a pair of mutually displaceable receivers, each receiver of said pair including a block having planar surfaces defining therewithin a slotted opening for receiving therebetween a selected portion of a strap having a propensity to elongate when placed in tension;
- means for securing said block to the strap including a clamping pin supported for axial reciprocation along a path intersecting the plane of said planar surfaces;
- a pair of elongated, juxtaposed arms, each arm of said pair being characterized by a distal end portion integrally related with one receiver of said pair whereby each receiver is supported at one end of said arm;
- means including a pivot pin for pivotally coupling one arm of said pair to the other arm thereof, whereby the arms are supported for pivotal displacement about a common axis as motion is imparted to the arms;
- pressure measuring means mounted on one arm of said pair, at the end opposite said distal end thereof, and having a plunger extended toward the other arm of said pair;
- means including an anvil mounted on said other arm of said pair in juxtaposition with said plunger for applying thereto pressure of a magnitude dictated by the magnitude of displacement imparted to said receivers;
- visual read-out means coupled with said pressure measuring means for indicating the magnitude of the pressure applied to said plunger;
- the distance between said pivot pin and said plunger being at least three times the distance between said pivot pin and said clamping pins.

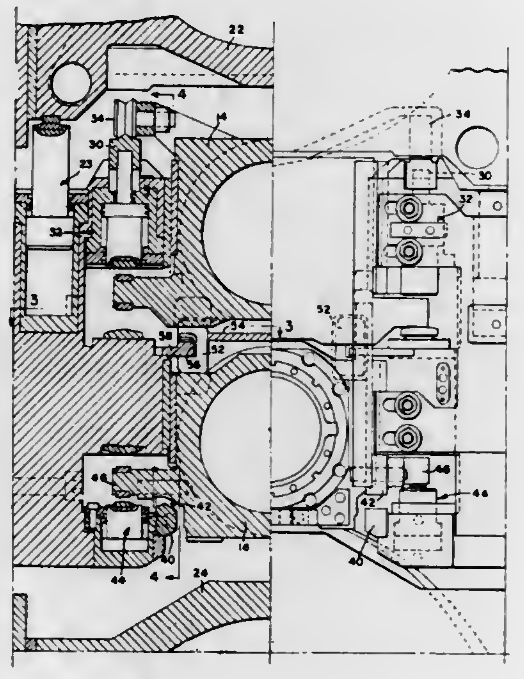
3,864,954
ROLL CHANGERS

Werner W. Eibe, and Andrew Andrascik, both of Pittsburgh, Pa., assignors to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.
Filed Dec. 4, 1973, Ser. No. 421,584
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **17 Claims**

1. In a rolling mill having upper and lower work rolls defining a pass line for the strip to be rolled therebetween, an operator side mill housing defining a window, upper and lower work roll chocks for rotatably supporting the upper and lower work rolls and adapted to be removably mounted in said operator side housing, a mill housing on the drive side of the mill defining a window, an upper and lower work roll chock

for rotatably supporting the upper and lower work rolls on the drive side of the mill and adapted to be removably mounted in said drive side housing window, means for supporting said work roll chocks and said work rolls supported thereby in a separated condition during movement thereof inside of the mill housing, means for supporting said work roll chocks and the work roll supported thereby in separated condition during movement outside of the mill housing, said last-named means comprising first stool means positioned within said operator side housing and adapted to be positiond between said operator side work roll chocks and second stool means positioned within said operator side housing and adapted to be positioned between said drive side work roll chocks, and means for supporting said first and second stool means in said operator side housing window at a location between said upper and lower work roll chocks.

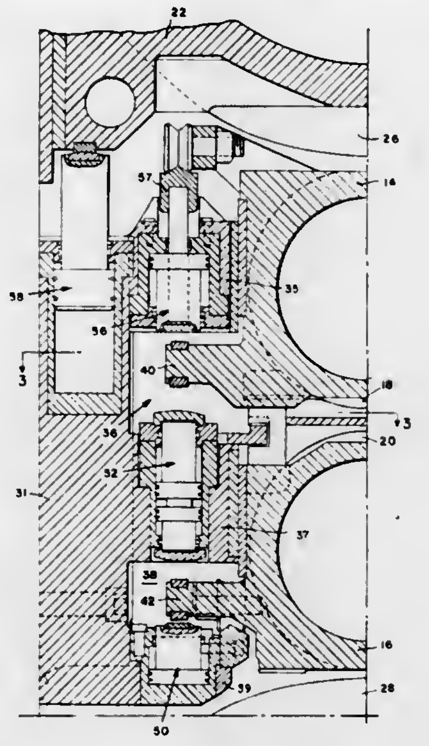
12. A side shift car for use in automatic changing of the work rolls of a mill stand of a rolling mill comprising a frame located adjacent the mill stand below the floor line of the mill and adapted to be shifted between a pair of roll changing positions, power operated means for actuating said frame between said pair of roll changing positions, and means mounted on said frame providing two pair of rails adapted to support two sets of work rolls at a location adjacent the rolling mill stand, said rail providing means comprising a plurality of floor plates mounted for movement between a horizontal position in which said floor plates provide a floor area adjacent the rolling mill and an upright position in which the upper ends of said floor plates provide horizontally extending rails adapted to support said work roll, the floor plates providing each pair of rails being positioned in edge-to-edge relationship in said horizontal position thereof to provide a closed floor area, one of said pair of rails in said upright position thereof being aligned with said mill stand when said frame is in one of said pair of roll changing positions, the other of said pair of rails in said upright position thereof being aligned with said mill stand when said frame is in the other of said pair of roll changing positions.



3,864,955
ROLLING MILL STAND

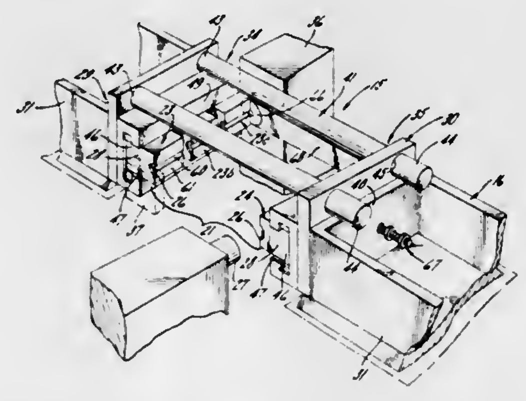
Werner W. Eibe, Pittsburgh, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.
Filed Dec. 4, 1973, Ser. No. 421,583
Int. Cl. B21b ***31/00, 31/34***
U.S. Cl. 72—238 **14 Claims**

1. In a rolling mill having upper and lower work rolls defining a pass line, a mill housing defining a window, upper and lower work roll chocks for rotatably supporting the upper and lower work rolls and adapted to be removably mounted in said housing window, said mill housing having housing portions on the vertical sides of said windows projecting inwardly from each vertical side in the region of said work roll chocks, said upper work roll chocks having outwardly projecting ears, said lower work roll chocks having outwardly projecting ears in opposed relation with said ears of said upper work roll chocks, said inwardly projecting housing portions being constructed to define recesses adapted to receive said ear portions, crown-out hydraulic cylinder means for one of said work rolls mounted in said housing portions for applying a force to one of said work roll chocks to produce a crown-out load thereon, said housing portion comprising a first portion located above said ears of said upper work roll chocks, a second portion located below said ears of said lower work roll chocks and a third portion located between said ears of said upper and lower work roll chocks, and transducer means independently mounted in said third housing portion and extending between opposed ears on said upper and lower work roll chocks.



3,864,956
DIE ASSEMBLY FOR USE IN A MACHINE AND METHOD FOR FORGING UPSETS ON A METAL BLANK

Walton W. Barry, 11085 Fourth St. East, Treasure Island, Fla. 33706
Filed May 29, 1973, Ser. No. 364,379
Int. Cl. B21j ***5/08***
U.S. Cl. 72—338 **9 Claims**

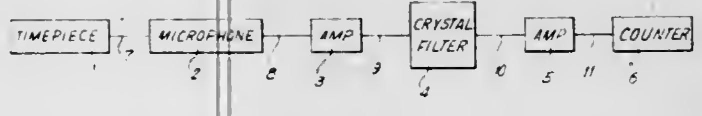


1. In a machine for forming a plurality of upsets on a metal blank, the combination of, a support, first and second spaced carriers movable on said support toward and away from each other, said carriers also being movable in unison from a receiving station where said blank is inserted between said carriers to a forging station where the upsets are formed on said

blank, a die assembly comprising first and second facing holders mounted on said first and second carriers, respectively, for movement therewith, a plurality of laterally spaced first die segments mounted on said first holder with one of said die segments being fixed on said first holder adjacent one end thereof and at least one other die segment being slidably mounted on said first holder for endwise movement in a direction laterally of said holder both toward and away from said fixed die segment, each of said die segments having at least one end cavity opening both in an endwise direction relative to said segment and toward said second holder, a plurality of second similar die segments similarly mounted on said second holder and facing said first die segments, each of said second die segments being paired with a corresponding similar one of said first die segments, said first and second die segments receiving said blank therebetween at said receiving station and coacting to clamp said blank therebetween as said carriers move said first and second segments together, means for severing said blank to a predetermined length as an incident to moving said carriers in unison from the receiving station and toward said forging station, said severing means including guide means for directing said blank into a position between said first and second die segments at said receiving station and coacting with said fixed die segments to sever the blank to its predetermined length as said die segments are moved in unison out of said receiving station and toward said forging station with said carriers, and means for sliding said movable die segments laterally of said holders toward said fixed die segments thereby to forge the upsets on the blank by causing some of the metal in the blank to flow into said cavities.

3,864,957
METHOD AND APPARATUS FOR MEASURING THE TIMING OF QUARTZ CRYSTAL TIMEPIECES

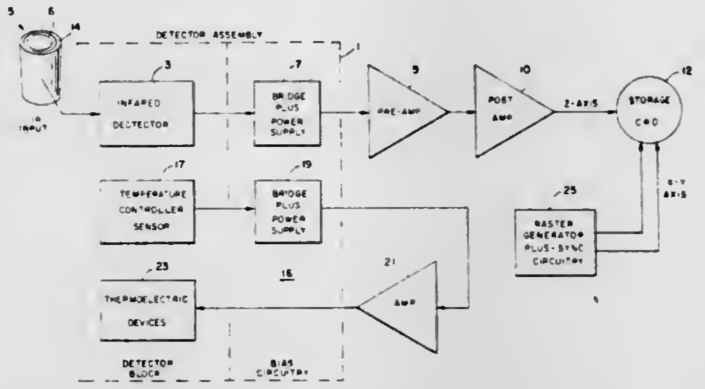
Kinji Fujita, Shimosuwa-machi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Feb. 9, 1972, Ser. No. 224,722
Claims priority, application Japan, Feb. 10, 1971, 46-5218
Int. Cl. G04d ***7/12***
U.S. Cl. 73—6 **2 Claims**



1. Apparatus for use with a timepiece including a casing in which a support supports a quartz crystal which vibrates in sine-wave manner at least proximate a fixed frequency; said apparatus comprising transducer means to pick up low magnitude, high frequency sine-wave sound produced directly by said support and corresponding to the vibrations of said crystal and to convert the same in entirety into a sine-wave electrical signal of corresponding frequency, electronic circuit means coupled to said transducer means to measure said frequency, said circuit means including pre-amplifier means coupled to said microphone, filter means coupled to said pre-amplifier means for filtering through only those frequencies at least substantially corresponding with those of said quartz crystal, and amplifier means coupled to said filter means, and indicating means coupled continuously to said amplifier means.

3,864,958
DIRECT DISPLAY OF THERMAL CONDUCTIVITY PROFILE FOR NON-DESTRUCTIVE TESTING OF INSULATED ROCKET MOTOR CASES

David R. Dreitzler, Huntsville; Charles R. Moore, Hazel Green, and Lawrence B. Thorn, Madison, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 10, 1973, Ser. No. 405,231
Int. Cl. G01n ***25/72***
U.S. Cl. 73—15 R **2 Claims**



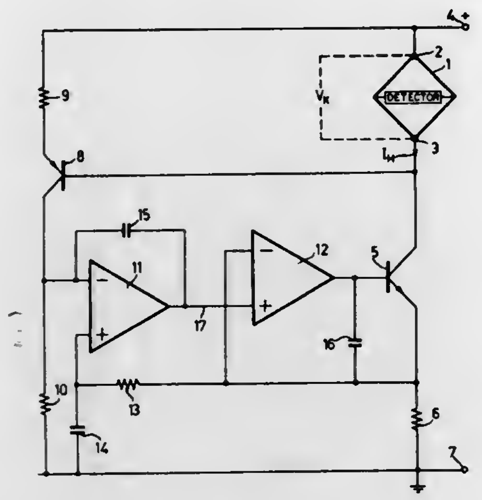
1. An easily interpretable display of insulation flaws system comprising an insulated object to be examined; radiation sensing means positioned such that a small area of the insulated object will be sensed at one point in time; moving means connected to said insulated object and said radiation sensing means for moving them relative to each other such that said radiation sensing means will scan a predetermined area of said insulated object; display means connected to an output of said radiation sensing means such that the area scanned will be displayed; said display means is an oscilloscope having X and Y scan and input terminals said radiation sensing means having an output connected to the Z input terminal of said oscilloscope such that it will intensity modulate the display of said oscilloscope; raster circuit means being connected to said X and Y input axes such that the area of display will correspond to the area scanned on said insulated object; said radiation sensing means is an infrared detector and said insulated object is a thin-wall insulated rocket motor case; said raster circuit means comprises a waveform generator having a long gentle slope output and a vertical sweep circuitry having a sawtooth output; amplifiers connected between the raster circuits and the X and Y input terminals of the oscilloscope; said vertical sweep circuitry comprises a constant current source connected directly to said Y axis; a capacitor connected in parallel with said constant current source; a reset switch being connected in parallel with said constant source and said capacitor; and synchronizing means connected to said reset switch and said moving means such that it will be periodically closed for a short period of time in synchronism with the scan of the insulated object.

3,864,959
THERMAL CONDUCTIVITY DETECTOR APPARATUS

John Marshall MacDonald, Cambridge, England, assignor to Pye Limited, Cambridge, England
Filed Dec. 16, 1971, Ser. No. 208,648
Int. Cl. G01n ***25/36***
U.S. Cl. 73—27 R **15 Claims**

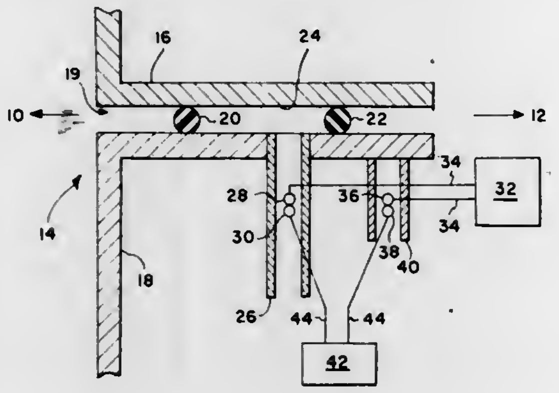
1. Thermal conductivity detector apparatus comprising, at least one sensing filament and at least one reference filament connected in a katharometer bridge, circuit, supply means coupled to the katharometer bridge input supply terminals for supplying heating current to said katharometer bridge circuit, and detector means for detecting an unbalance in said katharometer bridge circuit between the resistance of said sensing and reference filaments and for providing an output signal representative of said unbalance, said supply means including current regulating means connected in series circuit with the

katharometer bridge circuit and which regulates the heating current supplied to said katharometer bridge in response to variations in the resistance of said katharometer bridge appearing between the bridge input supply terminals such a way that the mean of the temperatures of said sensing and said reference filaments is maintained substantially constant despite variations in the magnitude of the detector unbalance.



3,864,960
VACUUM LEAK DETECTOR

James C. Fletcher, Administrator of the Natl. Aeronautics and Space Administration with respect to an invention of, and George P. Kazokas, Santa Monica, Calif.
Filed Oct. 2, 1973, Ser. No. 402,868
Int. Cl. G01m *3/26*
U.S. Cl. 73—46 **6 Claims**



1. An apparatus for the detection of vacuum leaks at a main seal between a first member and a second member which together form a barrier between a gaseous atmosphere and a vacuum environment comprising;

secondary seal means attached along the expected leak path enclosing a chamber on the vacuum side of the main seal, one boundary of which is the main seal;

gas flow exit means connecting said chamber to said vacuum environment;

first heat generating means mounted in said vacuum environment within said gas flow exit whereby gas leaking past the main seal vents to the vacuum environment by flowing past said heat generating means;

first temperature measurement means mounted adjacent to said first heat generating means whereby the temperature of said first heat generating means is measured;

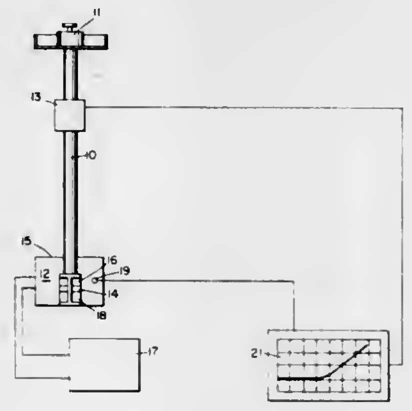
second heat generating means of identical characteristics to said first heat generating means mounted in said vacuum environment whereby said second heat generating means is isolated from said gas flow exit means;

second temperature measurement means of identical characteristic to said first temperature measurement means mounted adjacent to said second heat generating means whereby the temperature of said second heat generating means is measured; and

temperature comparison means interconnected to said first and second temperature measurement means for comparing the temperatures of said first heat generating means and said second heat generating means indicating the rate of gas flow cooling occuring at first heat generating means and thereby yielding a measure of gas leak rate past said main seal.

3,864,961
MICRO-PARALLEL PLATE PLASTOMETER AND VISCOMETRY METHOD

Lawrence C. Cessna, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed July 30, 1973, Ser. No. 383,756
Int. Cl. G01n *11/00*
U.S. Cl. 73—54 **6 Claims**



1. A method for obtaining data for calculating viscosities of very small samples of material comprising the steps of:

a. providing a disc-shaped sample of less than one gram, said sample having a diameter to thickness ratio of at least 10:1;

b. placing said sample between spaced coaxial cylinders having minimum diameters equal to the diameter of said specimen;

c. compressing said sample under constant uniform pressure;

d. heating said mample with a temperature schedule which consists of heating rates in the range of from 0℃./min. to 20℃./min.; and

e. continuously recording the temperature and thickness of said sample with respect to time.

3,864,962
CAPILLARY VISCOSIMETER

John-Hermann Stark; Jean-Claude Lambiel, both of Marly, and Markus Jungo, Tafers, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Apr. 10, 1973, Ser. No. 349,842
Claims priority, application Switzerland, Apr. 10, 1972, 5265/72
Int. Cl. G01n *11/06*
U.S. Cl. 73—55 **17 Claims**

1. A capillary viscosimeter, comprising:

a capillary through which liquid is arranged to flow during a viscosity measurement;

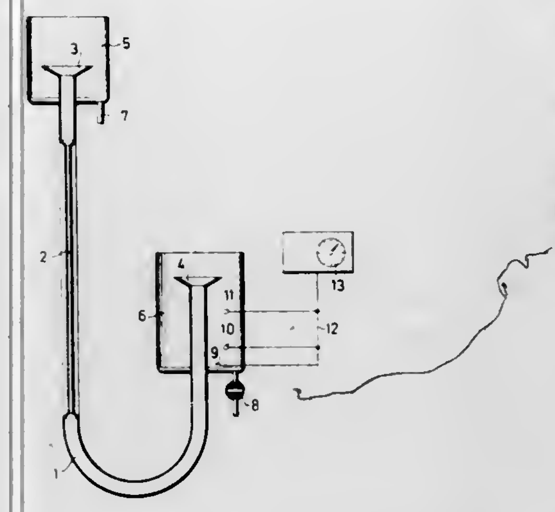
an overflow vessel connected upstream of said capillary and adapted to be supplied with an excess of said liquid during said viscosity measurement;

a discharge overflow vessel connected downstream of said capillary and arranged to discharge liquid which has passed through said capillary by overflow;

a measuring vessel positioned to receive the overflow from said discharge overflow vessel;

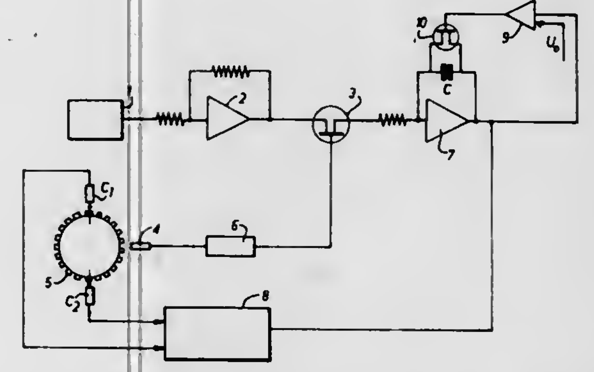
means within said measuring vessel for defining and sensing a lower and a higher liquid level within said measuring vessel; and

time measuring means connected to said level defining and sensing means for measuring the time interval required for the liquid level in said measuring vessel to rise from said lower to said higher level.



3,864,963
METHODS AND DEVICES FOR MEASURING INSTANTANEOUSLY A MEAN PRESSURE IN A FLUID MEDIUM

Jean-Pierre Rivere, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Sept. 18, 1973, Ser. No. 398,490
Claims priority, application France, Sept. 27, 1972, 72.34184
Int. Cl. G01m *15/00*
U.S. Cl. 73—115 **6 Claims**



1. A method for measuring a mean pressure in a fluid medium in synchronism with the rotation of an internal combustion engine, comprising the steps of:

measuring instantaneous values of pressure in said fluid medium;

converting said instantaneous measured pressures into an analog electrical signal;

sampling said analog signal at a pulse rate synchronized with the rotation of said engine;

integrating said sampled signal in an integrator to convert the voltage amplitude of said sampled signal into a time value to obtain an accurate measurement of the pulse information in its shortest period;

discharging an integrating capacitor in said integrator;

counting, in a counter circuit, clock pulses during the constant current discharge time of said integration capacitor; storing clock pulses counted during said discharge time in a buffer memory; and

resetting said counter circuit and said integrator upon completion of said counting of said clock pulses.

3,864,964
METHOD FOR DIAGNOSING MALFUNCTIONS IN INTERNAL COMBUSTION ENGINES

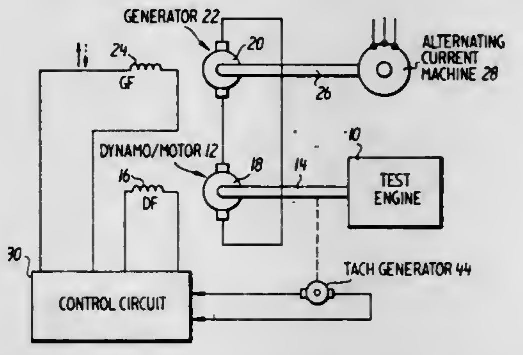
Frederick L. Voelz, Orland Park, Ill., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Nov. 23, 1970, Ser. No. 92,229
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 **10 Claims**

1. A method for diagnosing malfunctions of internal combustion engines which result in exhaust gases having unnecessarily high concentrations of carbon monoxide and hydrocarbons comprising:

1. analyzing for the carbon monoxide and hydrocarbon concentrations of the exhaust gases from said engine, said gases being sampled while said engine is being operated in modes (A) and (B), said engine operational modes being at essentially constant no load conditions at normal operating temperatures and (A) on the idle carburetion circuit and (B) on the main carburetion circuit, the engine being operated in modes (A) and (B) in any chronological sequence; and
2. comparing said carbon monoxide and hydrocarbon concentrations, wherein engine malfunctions resulting in an overly-rich air-fuel mixture to said engine are indicated when the carbon monoxide concentration obtained from operational mode (B) exceeds that from operational mode (A) and engine malfunctions resulting in improper fuel combustion are indicated when the hydrocarbon concentration obtained from operational mode (B) exceeds that from operational mode (A); and
3. correcting at least one of said indicated engine malfunctions and thereby reducing at least one of said carbon monoxide and hydrocarbon concentrations in said engine exhaust gases.

3,864,965
D. C. DYNAMOMETER SPEED CONTROL CIRCUIT

Harold E. Anderson, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Feb. 5, 1973, Ser. No. 329,398
Int. Cl. G01l *3/22*
U.S. Cl. 73—134 **12 Claims**



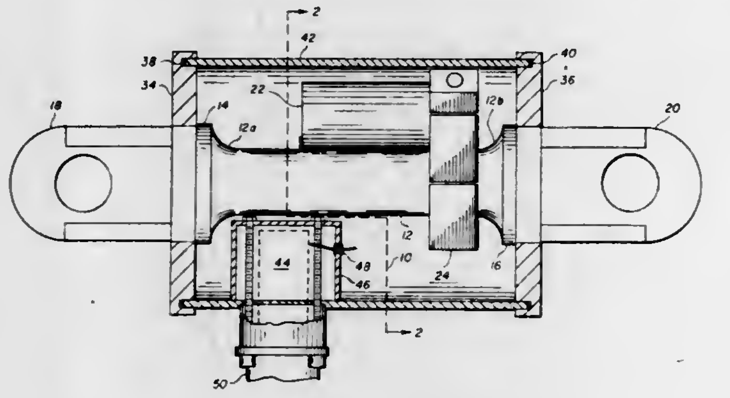
1. A dynamic speed control system for a direct current dynamometer including dynamometer means having a dynamometer field coil and generator means having a generator field coil, the dynamometer and generator means having armatures connected in series, and the dynamometer having an input/output shaft adapted for connection to an engine under test, comprising:

tachometer means for generating a signal having an amplitude related to the speed of the input/output shaft of the dynamometer; and,

means for controlling the current in the dynamometer and generator field coils responsively to the amplitude of said tachometer signal to maintain the rotational speed of the input/output shaft constant, said current controlling means including transistor means continuously variable in the degree of conduction and operably coupled to said tachometer signal for varying the current to the coils to thereby vary the operation of the dynamometer between motoring and braking modes in response to small changes in the speed of the input/output shaft, said transistor means including a first transistor means for controlling the current in the generator field coil, a second transistor means for controlling the current in the dynamometer field coil, and means for reducing the conduction of one of said transistor means and increasing the conduction of the other of said transistor means responsively to a change in said tachometer signal, the degree of conduction of each of said transistor means being independent of the degree of conduction of the other of said transistor means.

3,864,966
LOAD TRANSDUCER

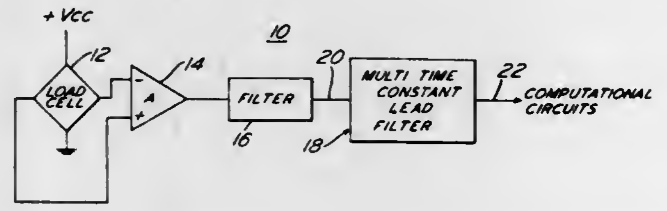
William K. Seitz, 5342 Windswept, Houston, Tex. 77027
Filed Mar. 14, 1973, Ser. No. 341,061
Int. Cl. G01l *1/22*
U.S. Cl. 73—141 A 13 Claims



1. A load transducer for measuring a stress-strain relationship by a change in the longitudinal dimension, comprising in combination:
- a load member coupled to a stress producing force resulting in a change in the longitudinal dimension of said member;
- a thermal compensation bar;
- means for attaching the thermal compensation bar to said load member adjacent one end thereof such that a free end of the thermal compensation bar is at a near midpoint location of the load member; and
- strain responsive means fastened to said load member and coupled to said thermal compensation bar proximal a surface of the free end of said compensation bar and generating an electrical output varying with the change in longitudinal dimension of said load member with respect to said compensation bar.

3,864,967
TIRE LOAD FORCE VARIATION TESTING SYSTEM

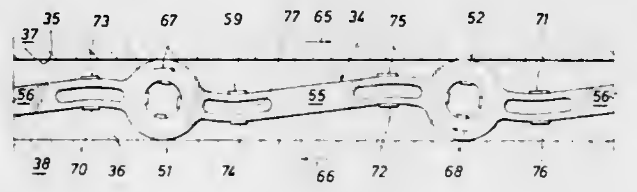
Ronald W. Krenzel, Eatontown, N.J., assignor to Electronic Associates Inc., West Long Branch, N.J.
Filed Aug. 20, 1973, Ser. No. 390,159
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 9 Claims



1. A tire load force variation system for measuring force variation of a tire as a function of rotation comprising:
- a. load cell means applied to said rotating tire for transducing a force to a voltage signal having a D.C. component and an effective A.C. voltage signal superimposed thereon;
- b. amplifier means connected in series to said load cell means for amplifying said voltage signal;
- c. filter means connected in series to said high gain amplifier means for eliminating noise from said amplified voltage signal; and
- d. lead filter means connected in series to said filter means for suppressing said D.C. component of said voltage signal said lead filter means including means for varying said filter time constant for compensating for drift of said D.C. component voltage signal during tire testing.

3,864,968
FORCE-MEASURING APPARATUS FOR USE IN A WELL BORE PIPE STRING

Ronald A. Anderson, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 359,829, May 14, 1973, abandoned. This application Nov. 19, 1973, Ser. No. 417,005
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 25 Claims



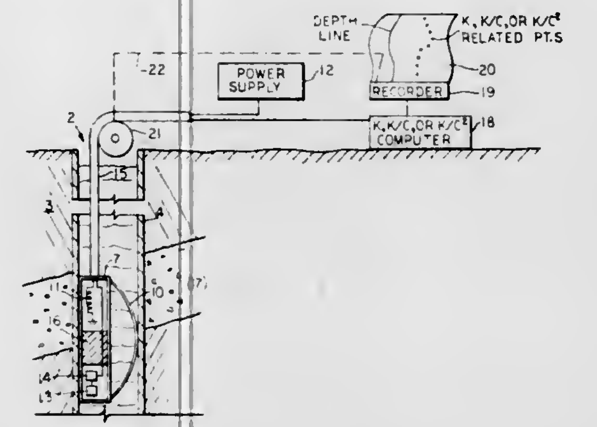
1. Apparatus adapted for sensing loads acting on a pipe string in a well bore and comprising:
- a load-bearing body adapted for coupling to a string of pipe;
- a deformable load-responsive member secured in a normal upright position between longitudinally-spaced portions of said load-bearing body and having an unrestrained intermediate portion adapted to deform in response to increases and decreases in axial loads imposed on said load-bearing body tending to move said spaced body portions longitudinally in relation to one another and to tilt in relation to its said normal position in response to torsional loads imposed on said load-bearing body tending to move said spaced body portions angularly in relation to one another;
- first transducer means coupled to said load-responsive member and having a measurable characteristic adapted to vary in response to deformation of said load-responsive member occurring upon relative longitudinal movement between said spaced body portions; and
- torque-responsive means including second transducer means coupled to said load-responsive member and having a measurable characteristic adapted to vary in response to tilting movements of said load-responsive member away from its said normal position occurring upon relative angular movement between said spaced body portions.

3,864,969
STATION MEASUREMENTS OF EARTH FORMATION THERMAL CONDUCTIVITY

Harry D. Smith, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Aug. 6, 1973, Ser. No. 386,239
Int. Cl. E21b *47/06*
U.S. Cl. 73—154 3 Claims

1. A method for thermally logging a well borehole to obtain indications of a quantity functionally related to the thermal conductivity of earth formations in the vicinity of the borehole, comprising the steps of:
- positioning a well logging sonde having a source of thermal energy and a longitudinally spaced therefrom temperature sensitive transducer in position adjacent a formation whose thermal properties are to be obtained so that said source of thermal energy defines the position of a measurement station;

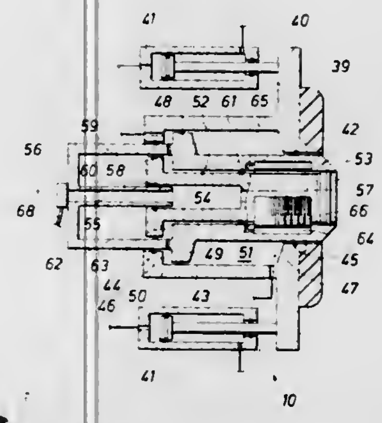
- activating said source of thermal energy for a predetermined length of time to impart a quantity of thermal energy into said formation sufficient to increase the temperature thereof at said measurement station to a value elevated above that of its ambient borehole condition;
- deactivating said source of thermal energy and moving said well logging sonde to position said temperature sensitive transducer at said measurement station;



- measuring the temperature of the earth formations at said measurement station at two points in time separated by an amount sufficient to allow a decrease in temperature of said earth formations; and
- combining said two time spaced temperature measurements according to a predetermined relationship to derive an indication of a quantity functionally related to the thermal conductivity of the earth formations at said measurement station.

3,864,970
METHODS AND APPARATUS FOR TESTING EARTH FORMATIONS COMPOSED OF PARTICLES OF VARIOUS SIZES

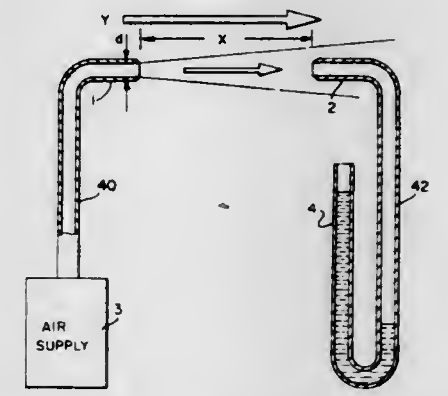
William T. Bell, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 18, 1973, Ser. No. 407,690
Int. Cl. E21b *49/04*
U.S. Cl. 73—155 34 Claims



1. A method for obtaining samples of connate fluids from earth formations traversed by a borehole and having mudcake lining the boreholes wall adjacent thereto and comprising the steps of:
- packing-off a portion of said borehole wall adjacent to earth formations therebeyond for isolating said wall portion and said earth formations from fluids in said borehole;
- inducting connate fluids from said formations through filtering means having paralleled filter passages with at least a first one of said filter passages being of an enlarged size sufficient to pass particles of mudcake and at least a second one of said filter passages being of a reduced size sufficient to retain loose formation materials for initially drawing mudcake removed from said isolated wall portion on through said first filter passage; and, thereafter,
- inducting additional connate fluids from said earth formations through said filtering means for depositing loosened formation particles in a permeable bridge over at least said first filter passage so as to at least reduce the continued flow of connate fluids therethrough and increase the continued flow of connate fluids through said second filter passage.

3,864,971
APPARATUS FOR MEASURING THE VELOCITY OF A FLUID STREAM RELATIVE TO THE APPARATUS

John W. Tanney, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Province of Ontario, Canada
Continuation-in-part of Ser. No. 221,226, Jan. 27, 1972, abandoned, which is a continuation-in-part of Ser. No. 835,084, June 20, 1969, abandoned. This application Jan. 28, 1974, Ser. No. 437,759
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R 7 Claims



1. Apparatus for measuring the velocity of a fluid stream relative to the apparatus, comprising:
- a. a fluid jet forming device having a fluid jet orifice,
- b. a pressurized fluid source, connected to the device to deliver a fluid thereto of known density and viscosity and cause a turbulent jet of fluid to issue from the orifice at a predetermined velocity along a portion of the flow path of the fluid stream,
- c. a receiver means including a receiver mouth facing the orifice, to be pressurized by the dynamic pressure of combined flows from the orifice and the fluid stream, within the area bounded by the receiver mouth,
- d. means mounting the receiver means and the device with a turbulent jet forming space extending between them a distance of at least five times the minimum distance across the orifice, and
- e. indicating means connected to the receiver means for indicating, in terms of the fluid pressure therein, the velocity of the fluid stream, and wherein,
- f. the geometry of the fluid jet orifice is derived from
  - $R = Vh_n K/\mu$ where, in consistent dimensions
  - R is the dimensionless Reynolds number and is in excess of 1,700,
  - V is the velocity of the fluid issuing from the orifice,
  - K is the density of the fluid issuing from the orifice,
  - μ is the viscosity of the fluid issuing from the orifice and, h_n is the hydraulic diameter obtained from
  - $h_n = 4A_n/P_n$ where, in consistent dimensions,
  - A_n is the cross-sectional area of the fluid jet orifice at the outlet, and
  - P_n is the distance around the perimeter of the fluid jet orifice at the outlet, and,
- g. when the device is to face downstream of the fluid stream it has an external geometry defined by its external perimeter enclosing a cross-sectional area less than A_{on} between the limits of a plane located at the outlet of the fluid jet orifice and at the plane parallel thereto located $2h_n$ therefrom, where h_n is the hydraulic diameter previously defined, and A_{on} is derived from

$A_{on} = \pi (2.3\, h_n + Y_n)^2/4$, where, in consistent dimensions,
Y_n is the distance between the plane at the outlet of the fluid jet orifice of the device and the plane at which A_{on} is to be defined, and

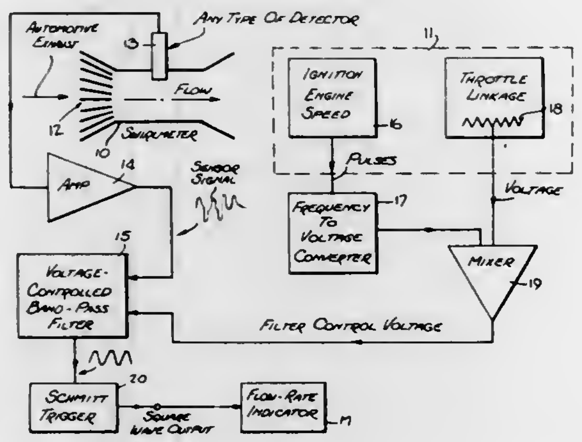
when the receiver means is to face downstream of the fluid stream it has an external geometry defined by its external perimeter enclosing a cross-sectional area less than A_{or} between the limits of a plane located at the inlet of the receiver mouth and a plane parallel thereto, by

$A_{or} = \pi\ (3h_r + Y_r)^2/4$, where, in consistent dimensions and within the limit of Y is less than $2h_r$,
Y_r is the distance from the plane at the receiver mouth to the plane at which A_{or} is to be defined,
h_r is the hydraulic diameter of the receiver at its inlet as defined by the relationship
$h_r = 4A_r/P_r$, where
A_r is the area enclosed by the receiver mouth at its inlet, and
P_r is the perimeter of the receiver mouth at its inlet.

3,864,972
SIGNAL RECOVERY SYSTEM FOR VORTEX TYPE FLOWMETER

Thomas H. Burgess, Horsham, and Peter J. Herzl, Morrisville, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Mar. 12, 1973, Ser. No. 340,455
Int. Cl. G01f *1/00*; G01p *5/00*
U.S. Cl. 73—194 B **8 Claims**



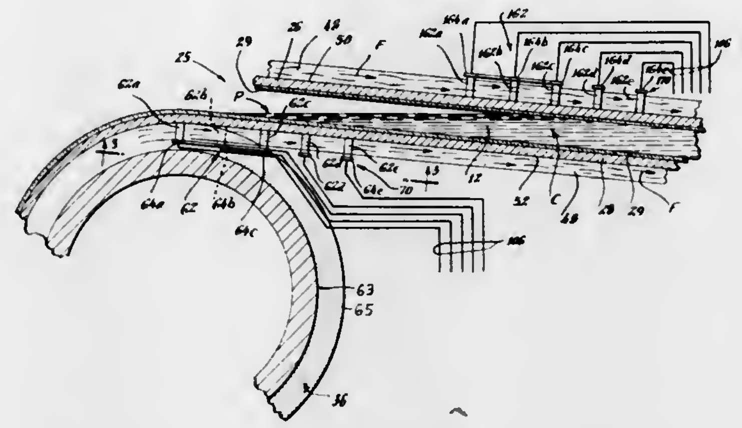
1. A signal recovery system for a vortex-type flowmeter in which the fluid to be measured is directed past a vortex producing element therein to induce fluidic variations whose fundamental frequency is a function of the flow rate, said fluidic variations as well as variations resulting from hydrodynamic noise being detected by a sensor in the form of a pressure or force transducer which yields an electrical signal that varies as a function of frequency; said system comprising:

A. A voltage-controlled band-pass filter coupled to the output of the sensor to transmit only those frequencies which lie within a narrow range whose center frequency is determined by a control voltage applied to the filter, and to attenuate all other frequencies;
B. Means to generate a control voltage having an amplitude related to the velocity of the fluid passing through the flow tube, said means including an amplifier responsive to the sensor signal to produce an output in which a linear relationship exists between frequency and amplitude and means to rectify said amplifier output to produce said control voltage;
C. Means to apply said control voltage to said filter to adjust the band-pass setting thereof so that the center frequency approximately corresponds to said fundamental frequency; and
D. Means coupled to the output of the filter and responsive to said fundamental frequency to indicate the flow rate.

3,864,973
METHOD AND APPARATUS FOR DETERMINING THE OPERATING CONDITIONS IN CONTINUOUS METAL CASTING MACHINES OF THE TYPE HAVING A REVOLVING ENDLESS CASTING BELT

Charles J. Petry, Winooski, Vt., assignor to Hazelett Strip-Casting Corporation, Winooski, Vt.

Filed Mar. 22, 1973, Ser. No. 343,8[illegible]4
Int. Cl. G01f *23/22*; B22c *19/04*; B22d [illegible]*1/10*
U.S. Cl. 73—295 **24 Claims**



1. The method of determining the molten metal pool position in the input region of a continuous metal casting machine of the type having at least one endless, flexible, revolving casting belt wi'' a casting surface which engages the molten metal to be cast and a reverse, cooled surface along which is directed a substantially continuous high velocity flow of liquid coolant, the casting surface being covered with a belt coating to insulate and protect the belt from the molten metal and to control the rate of cooling of the molten metal, said method comprising:

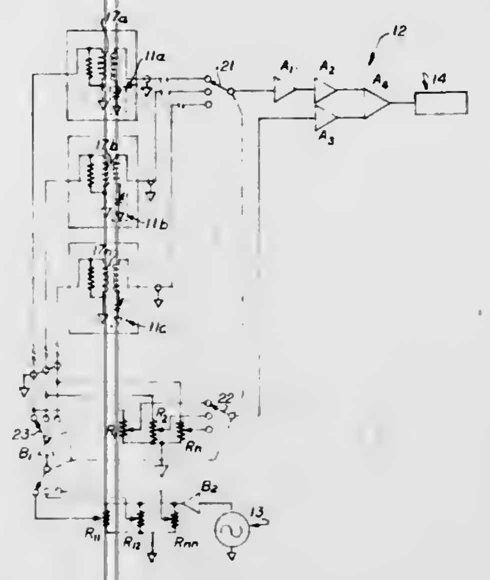
predetermining the desired range in operation of the position of the molten metal pool in the input region of the casting machine;
positioning a series of at least two heat sensing detectors in bearing contact with the moving reverse, cooled surface of the casting belt and in upstream-downstream spaced relation with respect to the direction of travel of the belt in respective positions to span the desired predetermined range in pool position;
arranging said detectors to present minimal interference to the continuous high velocity flow of liquid coolant directed along the reverse, cooled belt surface;
insulating said heat sensing detectors from the high velocity flow of coolant rushing by them; and
monitoring the responses of said detectors to changes in the temperature of the moving reverse cooled surface of the belt at the respective upstream-downstream positions of said detectors to determine the position of the molten metal pool.

3,864,974
CAPACITANCE PROBE AND SYSTEM FOR PRECISION MEASUREMENT OF LIQUID LEVEL

George P. Rauchwerger, 147 Cromart Ct., Sunnyvale, Calif. 94087

Continuation-in-part of Ser. No. 105,254, Jan. 11, 1971, Pat. No. 3,710,244. This application Nov. 27, 1972, Ser. No. 309,735
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 C **5 Claims**

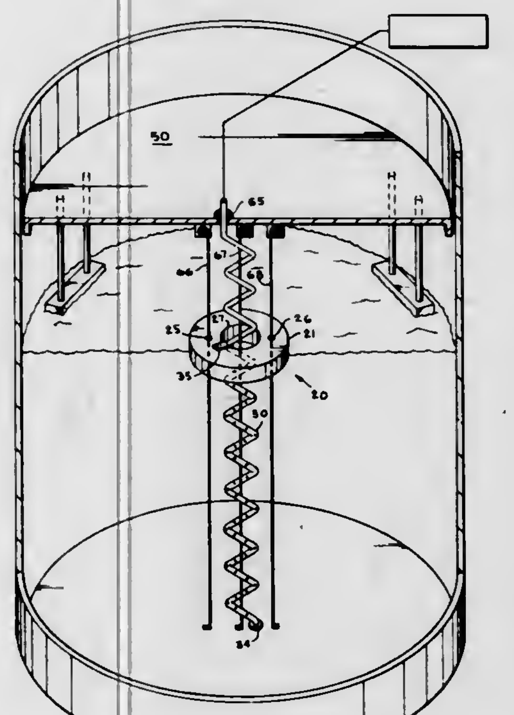
1. A liquid level measuring system for use in a container comprising an oscillator having one terminal at ground potential, a capacitance probe to be immersed in the liquid to be measured, said probe having a conductor, the lower end of said conductoor being adjacent the bottom of said container, said conductor sheathed by an insulator, the other conductor of said probe comprising the liquid in said container, a transformer having one coil in series with said oscillator and being at ground potential at the opposite end and a second coil in series with said probe at one end and with a measuring circuit at the other end, said measuring circuit being remote from said probe, said transformer and said probe being located in close proximity to each other and separated from sid measuring circuit by long wires, said measuring circuit comprising a charge amplifier having its input connected at one end to said second coil.



3,864,975
TEMPERATURE MEASURING APPARATUS

Redwood L. Springfield, 572 Trianon, Houston, Tex. 77019

Filed Apr. 16, 1973, Ser. No. 351,478
Int. Cl. G01k *1/14*
U.S. Cl. 73—341 **5 Claims**



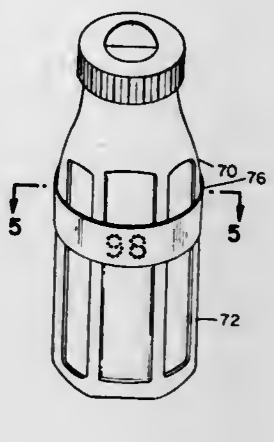
3. Temperature measuring apparatus including in combination:

fluid containing vessel having bottom, upright walls, and a floating roof which rises and falls as a function of the level of the fluid in said vessel.
coil, fixed to said bottom and to said floating roof, and adapted to extend outwardly therefrom;
said coil comprising a plurality of thermocouple-cables containing junctions, spirally wrapped around each other; and
constant force extensible spring means fixed to said bottom and to said roof.

3,864,976
REUSABLE BOTTLE THERMOMETER

Robert Parker, Danville, Calif., assignor to Robert Parker Research, Inc., Livermore, Calif.

Filed Oct. 31, 1973, Ser. No. 411,592
Int. Cl. G01k *11/12*
U.S. Cl. 73—356 **9 Claims**



1. As an article of manufacture, a digital thermometer comprising a laminate sandwich having:

a digital thermometer strip of a transparent base film, a dark mask painted on said base strip leaving transparent areas of alpha-numeric symbols, a plurality of liquid crystal compositions coated over said mask forming a substantially uniform layer, wherein each alpha-numeric designation is covered with a liquid crystal composition having a transition range associated with the alpha-numeric symbol, and a black film backing on said liquid crystal composition layer;
an inner film and an outer film of greater cross-sectional dimension than said thermometer strip, wherein each of said films are water impermeable and said outer film is substantially thicker than said inner film, with said inner and outer films heat bonded together to form an envelope containing said digital thermometer strip, whose edges extend substantially beyond the periphery of said thermometer strip; and
means affixed to said envelope for securing the inner film in good heat exchanging relationship to a surface.

3. An article of manufacture according to claim 2, wherein intermediate said thermometer strip and inner film is a thin metallic film.

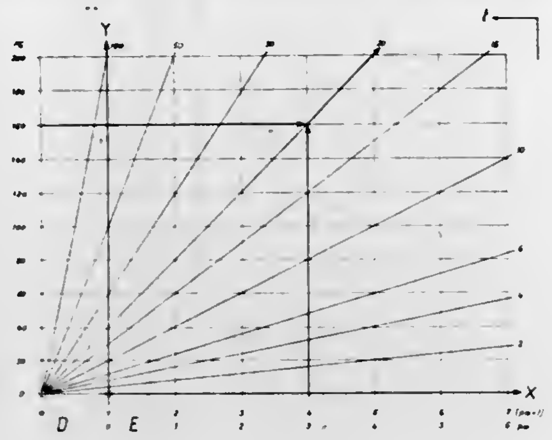
3,864,977
DIVING TIME MEASURING DEVICE

Karl Leemann, Wehntalerstrasse 142, CH-8057, Zurich, Switzerland

Filed May 14, 1973, Ser. No. 360,324
Claims priority, application Switzerland, May 16, 1972, 7276/72
Int. Cl. G01l *7/04*; G01f *23/14*
U.S. Cl. 73—389 **7 Claims**

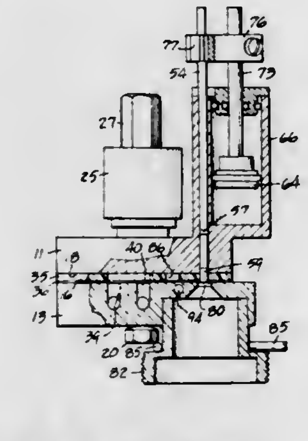
1. Diving time measuring device for indicating the still available diving time for a diver, with a specific initial gas supply at a specific water diving depth, characterized by a first pressure responsive means responsive to the difference in pressure between the gas supply and the water pressure, which first means converts the change in said pressure difference into a movement of a part of said first means, and that the said part is rigidly connected to a second pressure responsive means that is exposed to the water pressure only, which second means converts the pressure change in the water at different diving depths into a movement of a part of said second means, which part of the second means, due to the rigid connection, in response to a simultaneous change of said pressure difference and water pressure, executes a movement combined of both individual movements, the means being so arranged and connected with each other, that the directions of the individual movements caused by a change in the pressure

difference and water pressure are orthogonal to each other, whereby the position of the said part of said second means indicates the diving time t in accordance with the formula $t = V_G/V_A \cdot P_G/(P_W + 1)$, wherein is P_G the pressure difference between gas pressure and water pressure as sensed by said first means, P_W the water pressure as sensed by said second means, and V_G/V_A is a constant established by the initial gas supply volume V_C and the amount of gas V_A used by the diver per time unit.



3,864,978
AUTOMATIC ROTARY SAMPLE INJECTION VALVE

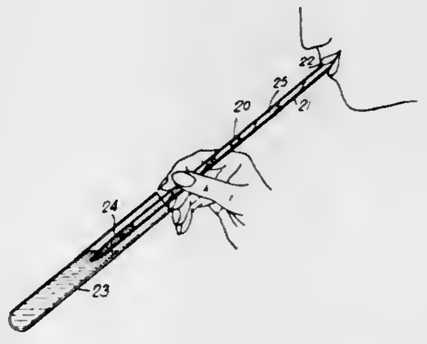
Thomas M. Stephens, Menlo Park, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.
Filed Feb. 19, 1974, Ser. No. 443,873
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 GC 6 Claims

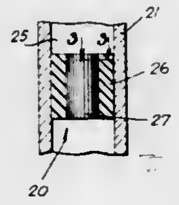


1. A sampling device comprising:
- a. a valve body formed of two sections, each of which is constructed and arranged to present a flat face parallel to a corresponding flat face of the other;
- b. a lamina-like seal means forming a liquid-tight seal interposed between said faces;
- c. means connected to said body assembly to selectively rotate said sections relative to one another from a first position to a second position through a preselected angle while maintaining said faces parallel;
- d. a liquid flow inlet and an outlet spaced therefrom, both of which are formed through one of said sections, said inlet and outlet being arranged in fluid-flow communication with said face of that section;
- e. passageway means connecting said inlet and outlet in fluid-flow communication with each other across said face of said first section;
- f. sample-taking piton means arranged in a cylindrical channel formed in the second of said sections in fluid-flow communication with said flow channel in said first section at said first position of said sections;
- g. means constructed and arranged to reciprocate said piston to withdraw a liquid sample of selected volume from said flow channel;
- h. an outlet port formed through said first section in fluid-flow communication with said face thereof at said second position for receiving a liquid sample released from said cylinder by said sample-taking piston at said second position of said sections.

3,864,979
BLOOD SEDIMENTATION TUBE BARRIER

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton Dickinson and Company, East Rutherford, N.J.
Filed Mar. 30, 1973, Ser. No. 346,423
Int. Cl. B01l *3/02*
U.S. Cl. 73—425.4 P 7 Claims



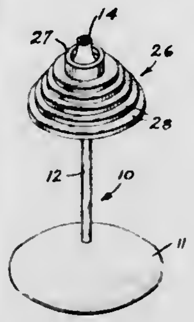


1. A liquid collection tube comprising; a hollow transparent tube open at the top and bottom, a barrier plug mounted in the tube intermediate the open ends thereof, the plug having a porous portion and being mounted in the tube at a predetermined location so that when the bottom open end is placed in liquid to be collected and suction is applied to the top open end, the porous portion of the plug will permit air to pass therethrough and draw liquid into the tube up to the bottom of the barrier plug and not through the porous portion, thereby automatically stopping the height of the liquid column entering the tube and preventing liquid from progressing above the barrier plug, the barrier plug being cylindrical in configuration with a non-porous portion forming an outer part of the plug and the porous portion forming a central core concentric with the non-porous portion of the plug whereby the non-porous portion engages the side walls of the tube, and the porous portion being formed of a plurality of vertical adjacent filaments and the non-porous portion being of a resilient material.

3,864,980
APPARATUS FOR BALANCING TIRE AND WHEEL ASSEMBLIES

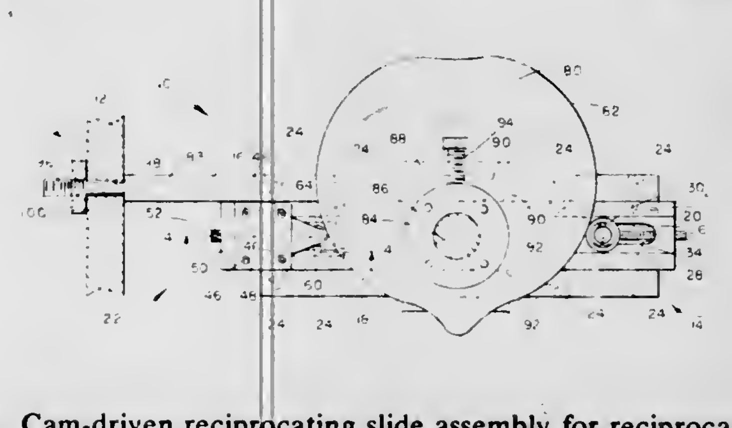
Cecil R. Barnes, 101 Elmhurst Dr., Lumberton, N.C. 28358
Continuation-in-part of Ser. No. 274,693, July 24, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 430,019
Int. Cl. G01m *1/04, 1/12*
U.S. Cl. 73—484 2 Claims

1. In a bubble balance mechanism for independently indicating areas of imbalance of an unmounted tire and a wheel having a central hub-fitting opening, the balance mechanism including a base with an upstanding post, a head movably balanced on said post about a generally vertical axis, said head having a frusto-conical portion for receiving and supporting said wheel adjacent to said central opeiing, a spirit level carried by said head, and support means resiliently mounted on said head and vertically movalbe relative thereto: the improvement comprising a balanced body having an upper portion fixed to said support means, said body including a plurality of concentric offset stepped rings extending downwardly and outwardly from said upper portion, each of said stepped rings being of a size to support substantially the entire bead of an unmounted tire, whereby the bead of an unmounted tire is placed on an appropriate ring so that the spirit level indicates the direction of imbalance of the tire, and thereafter the wheel is mounted on the frusto-conical portion of the head so that the spirit level indicates the direction of imbalance of the wheel.



3,864,981
PRETENSIONING APPARATUS FOR CAM-DRIVEN RECIPROCATING SLIDE ASSEMBLY

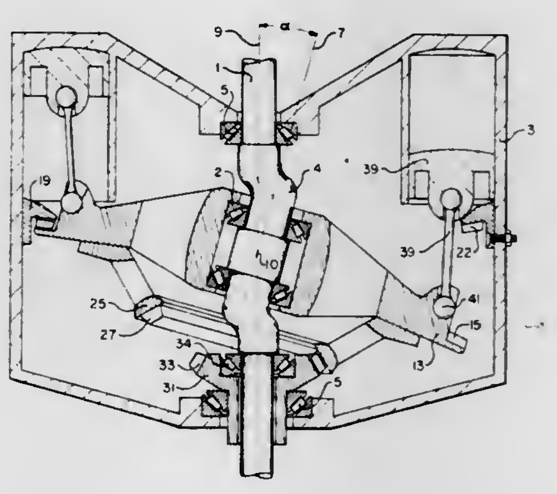
Kurt Schlegel, 1 Hastings Rd., Old Westbury, N.Y. 11568
Filed June 15, 1973, Ser. No. 370,295
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 24 Claims



1. Cam-driven reciprocating slide assembly for reciprocating a carriage of a machine, the slide assembly comprising a frame member mounted for free slidable movement along a predetermined linear direction, said frame member including means for connecting the latter to the reciprocable carriage of the machine; a pair of opposed contact rollers defining a space along said predetermined direction for receiving a rotary cam disc therebetween and for spanning opposed peripheral portions of the cam disc, whereby rotary movement of the cam disc with the periphery of the latter in contact with said rollers imparts reciprocatory motion to the slide assembly; a pair of mounting means provided on said frame member each supporting a roller and mounting a respective roller on said frame member, one of said rollers being resiliently mounted for limited movement relative to its associated mounting means along said predetermined direction; and stop means for limiting movement of said resiliently mounted roller in the direction of said other roller, said one roller normally being biassed to an initial position relative to its associated mounting means and normally being maintained in said initial position by said stop means, said cam-receiving space being variable by the yielding movement of said one resiliently mounted roller from said initial normal biassed position, whereby a cam disc disposed in operative relation between said rollers causes said one roller to resiliently yield in response to peripheral surface imperfections on the cam disc.

3,864,982
KINEMATIC MECHANISM FOR THE REVERSIBLE CONVERSION OF RECIPROCATING MOTION TO ROTARY MOTION

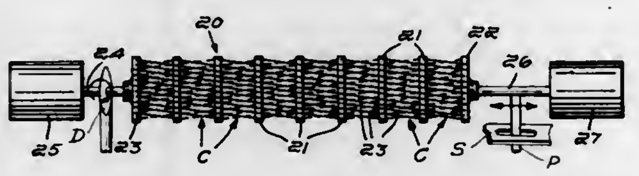
Giulio Martinozzi, Rome, Italy, assignor to Kinespherics, Inc., New York, N.Y.
Filed June 12, 1973, Ser. No. 369,053
Int. Cl. F16h *33/00*
U.S. Cl. 74—60 3 Claims



1. A kinematic mechanism for the reversible conversion of rotative motion into reciprocating motion comprising:
- a. a base frame,
- b. a shaft having an offset section,
- c. bearings means to permit the shaft to rotate freely about its cylindrical axis, said bearing means being attached to the frame,
- d. a first conical gear with bearing means for mounting said gear on the offset section of the shaft so that it may rotate freely about its axis, the gear being positioned on the offset section whereby its axis intersects the shaft axis at an angle α, said gear being positioned with its vitual vertex coinciding with the intersection of said gear and shaft axes, said gear having peripheral teeth and a vertex angle equal to 180 -αdegrees,
- e. a first conical ring gear having a vertex angle equal to 180 -αdegrees, a base circumference equal substantially to the base diameter of the first conical gear, and teeth with the same pitch as the teeth of the first conical gear, said ring gear being attached to the frame with its axis coinciding with the shaft axis and its virtual vertex coinciding with the intersection of the shaft and first conical gear axes, said ring gear opposing said first conical gear whereby the teeth of the ring gear mesh with the teeth of the first conical gear to constrain it to one degree of freedom when the shaft is rotated,
- f. a second conical ring gear with peripheral teeth and a vertex angle β, said gear being attached to one side of the first conical gear with its axis and virtual vertex coinciding with the axis and virtual vertex of the first conical gear,
- g. a second conical gear with peripheral teeth of the same pitch as the teeth of the second ring gear and bearing means for mounting the gear on the shaft so that it may rotate freely around the shaft said second conical gear having a vertex angle equal to β-α degrees and base diameter substantially equal to the base diameter of the second ring gear X Sin($\beta-\alpha$)/Sin β said second conical gear being positioned on the same side of the first conical gear as is the second ring gear and with its axis coinciding with the shaft axis, and its virtual vertex coinciding with the virtual vertex of the second ring gear, whereby the teeth of the second ring gear mesh with the teeth of the second conical gear and drive it as the shaft rotates.

3,864,983
ROTARY-TO-LINEAR AND LINEAR-TO-ROTARY MOTION CONVERTERS

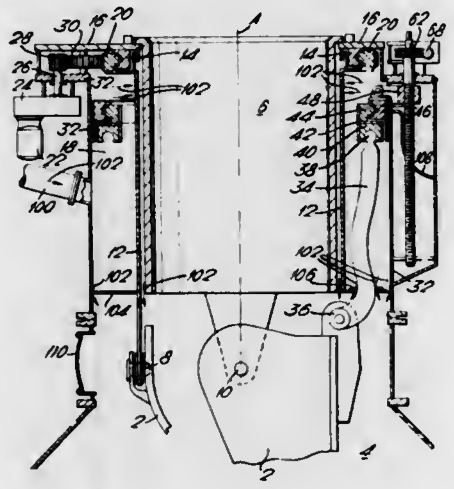
Stephen C. Jacobsen, 12 Burton St., Arlington, Mass. 02174
Continuation of Ser. No. 289,482, Sept. 15, 1972, abandoned. This application May 8, 1974, Ser. No. 468,215
Int. Cl. F16h *27/02*
U.S. Cl. 74—89 **17 Claims**



1. A rotary-to-linear or linear-to-rotary motion converter comprising at least one cell consisting of first and second separators, at least two linking members interconnecting the separators, first means connected to the first separator and operable to rotate it, and second means including a member connected to the second separator, said second means opposing rotation of the second separation by the first separator and the connecting member being movable towards the first separator when the first means is operated, said second means also operable to retract said connecting member and the second separator when the first means is inoperative, the first separator then rotating reversely, the linking members being connected to the separators at locations spaced equally from the axis of each separator thus to travel along a circular path if that separator turns, said locations being so spaced with respect to their respective paths that the axes of the separators remain in a substantially constant relationship as one separator turns in response to the turning of the other, said linking members being flexible, at least relative to said connections, and the length of the linking members being less than the square root of the product of the diameters of said paths to render said cell stable in use.

3,864,984
CONTROL DEVICE FOR A DISTRIBUTOR CHUTE IN A SHAFT FURNACE, PARTICULARLY A BLAST FURNACE

Edouard Legille, Luxembourg City, Luxembourg, assignor to S.A. Des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg
Filed Oct. 5, 1973, Ser. No. 403,900
Claims priority, application Luxembourg, Oct. 11, 1972, 66273
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **13 Claims**

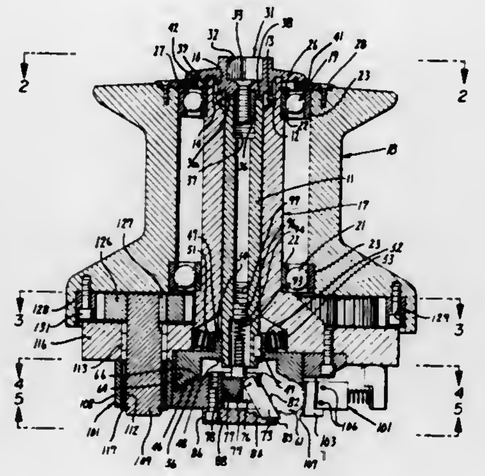


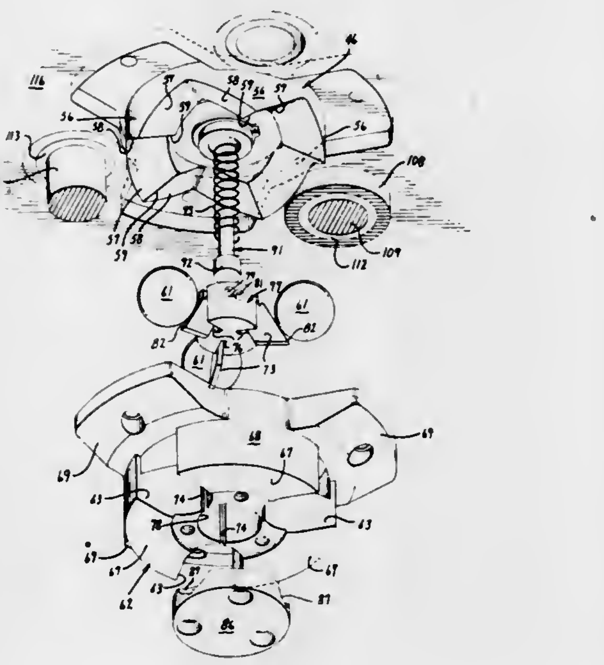
1. In a furnace, the furnace being provided with a material feed spout and a movable distribution chute arranged to receive material from the spout, an improved chute position control comprising;

- a rotary casing;
- means for causing rotation of said casing;
- means pivotally connecting the first end of the distribution chute to said casing;
- rod means having a first end coupled to the distribution chute;
- vertically movable angular drive means, said vertically movable drive means being fixed in position on the furnace and including at least a first vertically movable output member;
- means coupling said drive means output member to the second end of said rod means; and
- means for transmitting motion to said vertically movable drive means independently of and during rotation of said casing whereby vertical movement of said rod means to adjust the pitch angle of the chute may be accomplished independently of the rotary motion of the chute.

3,864,985
DRIVE TRANSMISSION

Walter W. Bradley, 1525 Hess Rd., Redwood City, Calif. 94003, and Charles S. Blair, Jr., 226 Stockbridge Ave, Atherton, Calif. 94025
Continuation-in-part of Ser. No. 229,880, Feb. 28, 1972, abandoned. This application Jan. 26, 1973, Ser. No. 326,577
Int. Cl. F16d *27/10*
U.S. Cl. 74—125.5 **15 Claims**



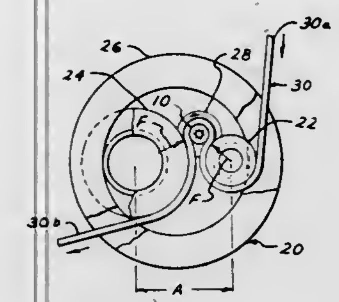


1. A drive transmission comprising:

- a housing;
- an elongated drive shaft extending longitudinally of said housing;
- means operatively connected to one end of said shaft for rotating said shaft about its longitudinal axis;
- translating means including a cam having at least a pair of spaced lobes operatively engaging the other end of said shaft and said cam being rotatable therewith whereby rotary motion of said shaft is translated into motion transverse to the axis of rotation of said shaft;
- at least a pair of spaced dogs each comprising an arm having one end mounted on said housing for rotation about an axis parallel to the axis of rotation of said shaft and extending in a direction transverse to the axis of rotation of said shaft to a free end;
- biasing means operatively engaging both said housing and said dogs for biasing said free ends of said arms of said dogs in a direction substantially inwardly of said housing and toward the axis of rotation of said shaft into engagement with said translating means; and
- means associated with said translating means for varying the amount of rotation thereby of each of said arms of said dogs about its axis of rotation.

3,864,986
AUTOMATIC BELT TIGHTENER

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Nov. 19, 1973, Ser. No. 416,730
Int. Cl. F16h *7/00, 7/12, 7/10*
U.S. Cl. 74—226 **9 Claims**



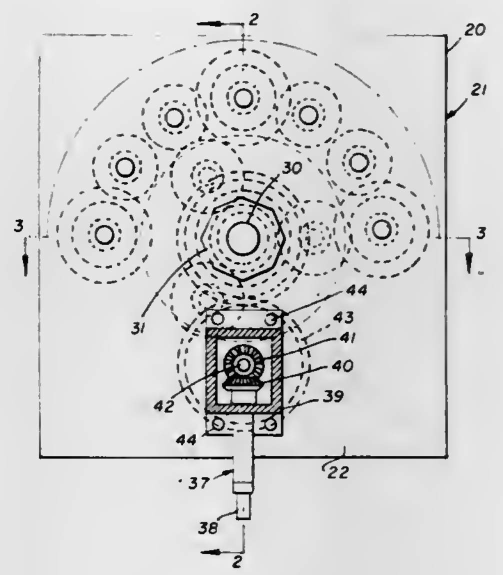
1. In a belt drive mechanism for transmitting torque between a driving rotatable member and a driven rotatable member through a drive belt, an automatic belt tightener comprising:

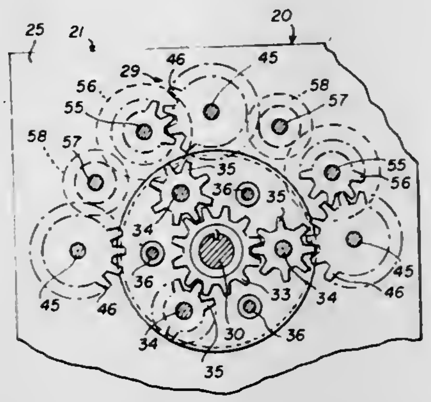
- a freely riding, roller assembly pivotable about the driving member and including two rollers having their longitudinal axes of rotation parallel and spaced a fixed maximum distance apart, the driving member having its longitudinal axis of rotation parallel to the rotational axes of the rollers and arranged in a wedge-like relationship therebetween; and
- the drive belt passing partially around a first of the rollers, between the first roller and the driving member and more than half-way around the circumference thereof, exiting between the driving member and a second of the rollers to pass partially therearound, such that as torque is applied to the driving member the respective rollers will automatically exert radial forces against the belt normal to the driving member effectively wedging the belt against the driving member for effecting driving engagement therebetween.

3,864,987
CHANGE SPEED GEARING

Guiseppe Vigneri, 102 Warwick St., Newark, N.J. 07105
Filed Oct. 11, 1973, Ser. No. 405,642
Int. Cl. F16h *3/34*
U.S. Cl. 74—354 **7 Claims**

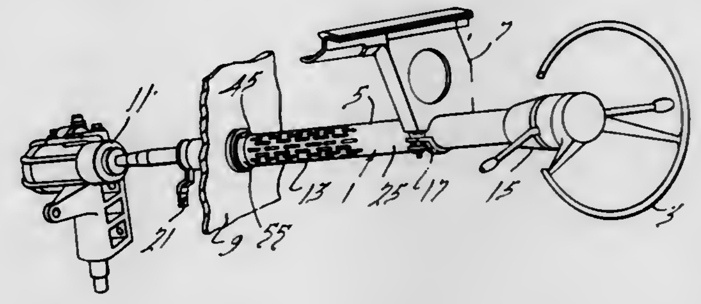
1. In a change speed gearing, a casing including spaced parallel wall members, divider plates interposed between said wall members, an input drive shaft mounted in said casing, a pair of spaced apart sleeves mounted on said drive shaft, a plurality of output shafts journaled in said casing, and a gear train including coacting shafts and gears for selectively operatively connecting said drive shaft to said output shafts, and means for selectively modifying the output-input speed of the respective drive and output shafts.





3,864,988
ENERGY ABSORBING STEERING COLUMN

Don Adams, III, Ferndale, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed May 14, 1973, Ser. No. 360,295
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **3 Claims**



1. An energy absorbing steering column comprising a steering wheel, a steering shaft connected to said wheel and adapted to extend through an opening in a floorboard of a vehicle, a tubular jacket surrounding said shaft between said floorboard and said steering column, and a die means inside the lower end of said tubular jacket, said die means being connected to said floorboard, said die means, when a force of predetermined magnitude is applied to the upper end of said column, causing said jacket to fold back upon itself, thereby absorbing energy, a plurality of fasteners connecting said die means to said jacket, said fasteners being adapted to shear when the force of the predetermined magnitude is applied to the upper end of the column, said jacket having a plurality of longitudinally extending rows of longitudinal slots, said rows being spaced apart from one another around the perimeter of

said jacket, each of said slots having a curved end portion, said slots in each of said rows being separated by relatively short webs, said jacket, between said rows of slots, having a plurality of relatively flat longitudinally extending sides, said webs being curved and joining said sides together.

3,864,989

FRONT SUSPENSION ASSEMBLIES FOR MOTOR VEHICLES

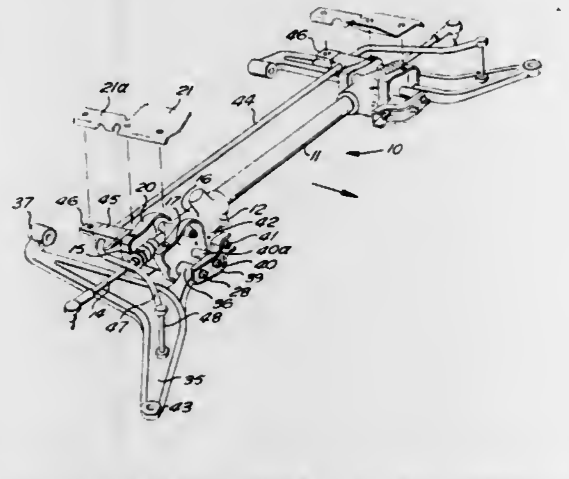
Clive Jones, Coventry, England, assignor to Chrysler United Kingdom Limited, London, England

Filed Sept. 4, 1973, Ser. No. 394,273

Claims priority, application Great Britain, Oct. 2, 1972, 45298/72; Mar. 28, 1973, 14891/73

Int. Cl. B62d ***1/20***

U.S. Cl. 74—498 **6 Claims**



1. A front suspension assembly for a motor vehicle comprising:

a. a rack and pinion steering mechanism having a rigid elongate housing having opposing ends and a rack mounted for sliding movement in the housing;

b. rigid mountings secured at both ends of the housing for rigidly securing the housing across a vehicle frame or body;

c. two wheel support arms each having a pair of axially aligned pivot mountings;

d. means to mount one of the pivot mountings of each of the two wheel support arms on the two rigid mountings for the rack housing respectively; and,

e. means to mount the other pivot mountings of the two wheel support arms on further parts of the vehicle frame or body.

3,864,990

GEAR TORQUE TRANSMISSION BOXES

Gerard H. Lacoste, St-Maur des Fosses, France, assignor to Herwaythorn S.A., Paris, France

Filed May 15, 1973, Ser. No. 360,480

Claims priority, application France, May 25, 1972, 72.18621

Int. Cl. F16h ***57/02***

U.S. Cl. 74—606 R **8 Claims**

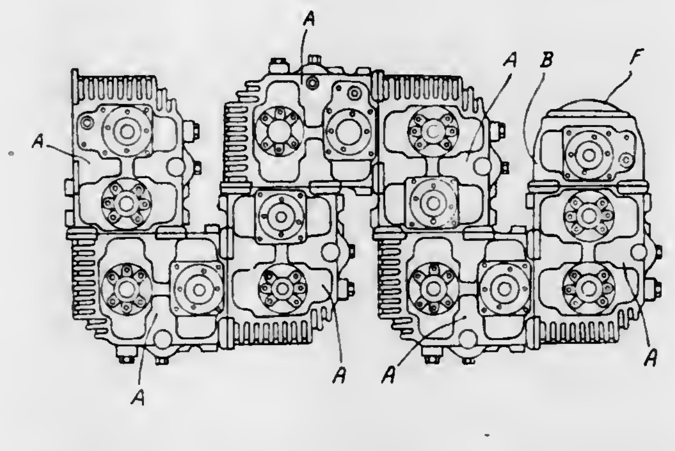
1. A set of parts for making up different gear torque transmission boxes, which set of parts comprises:

a principal part A comprising a casing containing two shafts supporting gear wheels and having an upper opening, with four identical side openings surrounding the four shaft ends,

a secondary part B comprising a casing containing a shaft supporting at least one gear wheel and having an upper opening and a lower opening which are identical with one another and identical with the upper opening of the principal part A, means at said upper and lower openings for attachment of part B to part A at said upper opening, also two side openings surrounding the two shaft ends, these side openings being identical with one another and identical with the four openings of the principal part A,

a part C constituting a shaft exit with dog, comprising a bearing, a section of shaft supported by the bearing having a first end projecting from the bearing and a coupling plate fixed on this end, a second internal end supporting a dog device, a means of operating the dog device which is accessible from the outside the bearing, said bearing having an opening and means allowing it to be fixed to any one of the six openings surrounding the shaft ends of the principal part A and the secondary part B,

a part D constituting a simple shaft exit, composed of a jacket having a first opening and a second opening opposite to it, a coupling plate projecting from an opening in the jacket and extending to the interior of the latter, means at the other opening in the jacket enabling it to be fixed to any one of the six openings surrounding the ends of the shafts of the principal part A and of the secondary part B,



a part E constituting a shaft exit with take-off for tachometer, similar to part D, and including an extended internal portion provided with a gear wheel and a further extended jacket having a side opening which is closed by a supporting bearing containing a shaft fitted at its inner end with a pinion meshing with the gear wheel,

a part F constituting a casing cover with means for fixing it to any one of the upper and lower openings of the parts A and B, and

a part G constituting a shaft end cover with means for fixing it to any one of the six side openings of the parts A and B.

3,864,991

FLUID PRESSURE CONTROL SYSTEM FOR A COMPOUND TRANSMISSION COMPRISING AN ADJUSTABLE HYDROSTATIC TRANSMISSION PART AND A SECONDARY MECHANICAL LOAD CHANGE-OVER TRANSMISSION

Siegfried Nembach, Neu-Ulm, Germany, assignor to Hydromatik GmbH, Ulm, Danube, Germany

Filed July 23, 1973, Ser. No. 382,044

Claims priority, application Germany, July 31, 1972, 2237595

Int. Cl. F16h ***47/04;*** **B60k**

U.S. Cl. 74—687 **3 Claims**

1. A control for a compound transmission of the kind comprising an adjustable hydrostatic transmission part and a secondary mechanical load changeover gear part, and in which the pump and/or the hydromotor of the hydrostatic transmission part is adjusted by a displacement volume adjusting member by means of a control oil pressure which is variable by the control, and the control clutches of the load changeover transmission part are actuated against spring forces by means of a shift control unit with shift oil pressure which can be turned on or off, and the control comprises an adjustable throttle point for adjusting the control oil pressure, said control comprising,

a shift control unit having a slide piston moveable within the shift control unit to control the flow of the shift oil to the control clutches of the mechanical load changeover gear part,

shift oil conduits for conducting oil from the shift control unit to the control clutches,

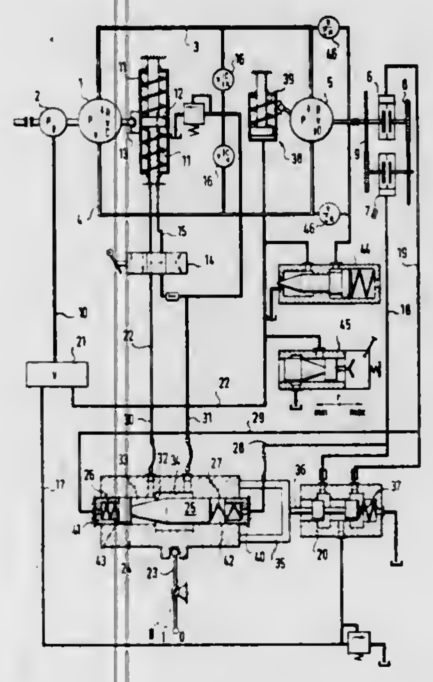
a throttle slide control unit having,

two fixed abutments,

first and second moveable members which are moveable relative to each other and in relation to the two fixed abutments and which are effective to form an adjustable throttle point between the two members.

the first moveable member delimiting two pressure chambers in coaction with the two fixed abutments,

each pressure chamber being connected with one of the shift oil conduits of the control clutches for the load change-over gear, and



wherein, when one of the pressure chambers is supplied with pressure, said first moveable member abuts against one of the fixed abutments to determine its starting position in the adjustable throttle point for subsequent adjustment of the control oil pressure which determines the displacement volume of the hydrostatic transmission part, and

wherein the second moveable member is adjustable from the outside and is coupled with the slide piston of the shift control unit for the control clutches so that adjustment of the second moveable member to displace the slide piston and produce a speed shift of the mechanical gear part simultaneously adjusts the throttle point to vary the displacement of the hydrostatic transmission part in reverse ratio to the transmission jump caused by the mechanical gear shift.

3,864,992

LIMITED SLIP DIFFERENTIAL HAVING SHAFT LOCKING AND CLUTCH ACTUATING MEANS

Richard H. Lovdahl, Dearborn Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1973, Ser. No. 365,545

Int. Cl. F16h ***1/44, 1/40***

U.S. Cl. 74—711 **2 Claims**

1. A differential drive mechanism comprising, in combination:

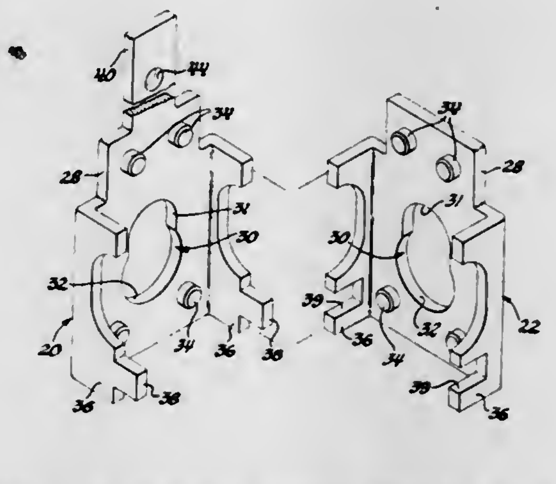
a rotatable housing having a plurality of openings therethrough;

a pair of oppositely extending rotatable shafts extending through a pair of said openings, each of said shafts having an inner end within said housing with a circumferential groove near said inner end;

a side gear axially movable on each of said shafts within said housing outward of said groove;

clutch means between each of said side gears and said housing actuable by outward movement of said side gears;

shaft locking and clutch actuating means comprising a pair of members between said side gears and spring means between said members biasing said members and side gears outward to actuate said clutch means, said members having aligned keyhole-like openings therethrough, said keyhole-like openings having larger portions adapted for insertion of said inner shaft ends therethrough with said members in a first position and smaller portions adapted for engagement of said circumferential grooves for retention of said shaft ends with said members in a second position, said members having mutually engaging arms with interlocking means to cause said members to move together between said first and second positions but allow biasing of said members away from one another by said spring means, one of said members having tab means projecting through another of said openings in said housing whereby said members can be moved between said first and second position; and means to lock said tab means on the outside of said housing to hold said members in said second position.

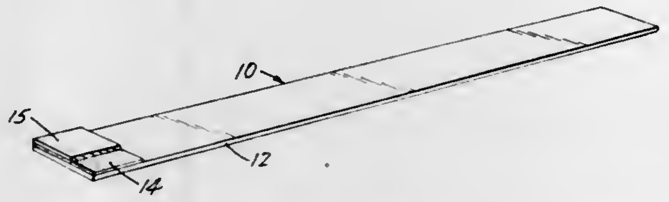


2. An axle shaft retention and clutch actuating device adapted for use in a limited slip differential drive mechanism having a rotatable housing with a plurality of openings therethrough, a pair of oppositely extending rotatable axle shafts extending through a pair of said openings, an axially movable side gear carried on each of said axle shafts within said rotatable housing for rotation with said axle shafts and clutch means between each of said side gears and said housing actuable by outward movement of said side gears, each of said axle shafts having a circumferential groove thereon between said side gears, said axle shaft retention and clutch actuation device comprising, in combination:

a pair of members for placement between said side gears and spring means between said members biasing said members and side gears outward to actuate said clutch means, said members having aligned keyhole-like openings therethrough, said keyhole-like openings having larger portions adapted for insertion of said axle shafts therethrough with said members in a first position and smaller portions adapted for engagement of said circumferential grooves for retention of said axle shafts with said members in a second position, said members having arms projecting toward each other, said members having interlocking means comprising at least one slot in an arm of one member and at least one tab in an arm of the other member, said tab adapted for insertion in said slot to cause said members to move together between said first and second positions but allow outward biasing of said members by said spring means, one of said members having another tab projecting through another of said openings in said housing whereby said members can be moved between said first and second position, said axle shaft retention and clutch actuating device further comprising means outside said housing for locking said tab to said housing with said members in said second position.

3,864,993
FILM RETRIEVER

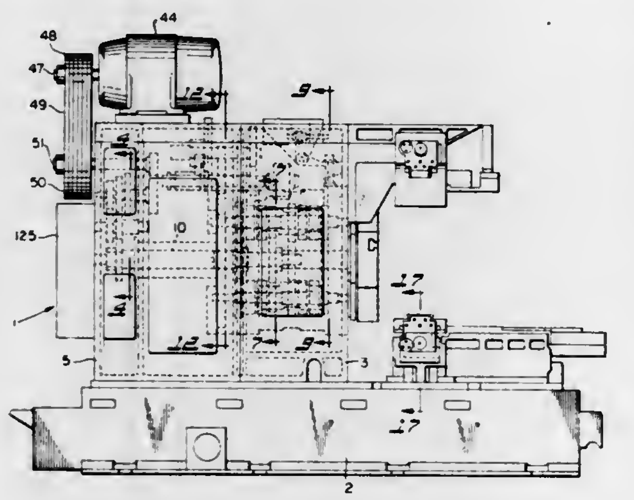
Gary L. Hovind, Menominie, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 4, 1974, Ser. No. 457,783
Int. Cl. B25b *27/00*
U.S. Cl. 81—3 R **4 Claims**



1. A film retriever suitable for retrieving a free end of a convolutely wound film from inside a cylindrical cassette via an exit opening in said cassette edge wall comprising:
a thin flexible strip of material being from about 0.0015 to 0.006 inch in thickness, said material being sufficiently flexible to conform to the internal wall of the cassette but being sufficiently rigid to allow the strip to be forced into the cassette; and
a thin layer of normally tacky pressure sensitive adhesive adjacent one end of said flexible strip, said layer being about 3 to 10 mils thick and having sufficient structural integrity to resist gumming and rolling when inserted into the cassette and being sufficiently adherent to pull the end of the film through the exit opening in said cassette.

3,864,994
MULTIPLE SPINDLE MACHINE WITH VARIABLE SPEED DRIVE

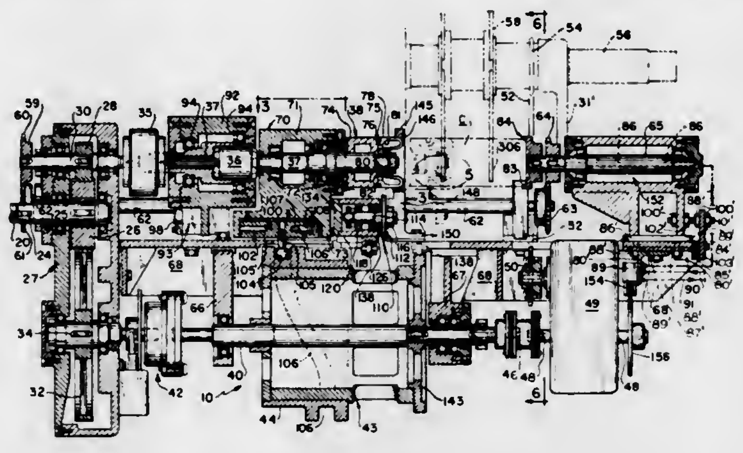
Philip Henry White, Claremont, N.H.
Filed Feb. 24, 1969, Ser. No. 801,497
Int. Cl. B23b *9/10*
U.S. Cl. 82—3 **14 Claims**



1. A multiple spindle machine comprising a spindle carrier, a plurality of spindle shafts rotatably mounted in said spindle carrier, means mounting said spindle carrier for indexing movement between a plurality of work stations, a main drive shaft, means for rotating said main drive shaft at a given speed, and drive means including a plurality of fluid operated clutch means associated with each of said spindle shafts and said main drive shaft for selectively independently driving said spindle shafts in one direction at any one of at least three different speeds during rotation of said main drive shafts at any given speed, and additional fluid operated clutch means associated with said spindle shafts and drive shaft for selectively independently driving said spindle shafts in the reverse direction.

3,864,995
CAN TRIMMER DEVICE

Cornelis Langewis, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Continuation-in-part of Ser. No. 326,159, Jan. 24, 1973, Pat. No. 3,802,363. This application Dec. 11, 1973, Ser. No. 423,716
Int. Cl. B23b *3/06*, *3/04*, *5/14*
U.S. Cl. 82—54 **25 Claims**

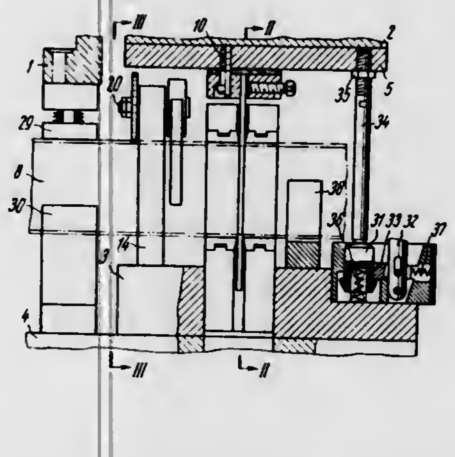


1. A device for trimming an open ended metal can and the like comprising the combination of a carriage, a rotatable outside cutter and a rotatable mandrel mounted on said carriage, said mandrel including an inside cutter and rigid anvil means provided with a can support surface, a rotatable tail stock holder and support spaced from but axially aligned with said mandrel, conveyor means for selectively supplying an open ended can to said mandrel and said tail stock holder and support, drive means synchronized with said conveyor means for selectively shifting said carriage relative to said conveyor means to effect an insertion of the anvil means along with the inside cutter a relatively small amount into an open ended can supplied to the trimming device by the conveyor means and to cause a displacement of the open ended can relative to said conveyor means and a bottoming of the can upon and against said tail stock holder and support, means for moving said outside cutter into cutting contact with a selected portion of the sidewall of the can and along a cutting plane located in offset relation to said inside cutter and the can support surface of the anvil means when the can is displaced from the conveyor means so as to produce a uniform nonspiral trimming and severing of the entire ragged open end of the can from the remainder of the can and biasing means for holding the outside cutter in the said cutting plane and relative to said selected portion of the can sidewall during the full trimming operation to effect said uniform and non-spiral trimming of the can sidewall.

3,864,996
DIE FOR CUTTING PIPES

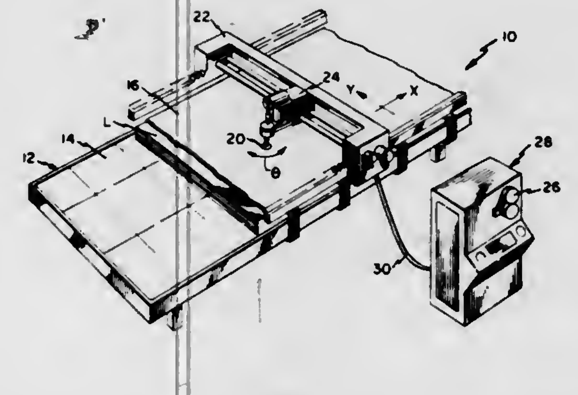
Anatoly Sergeevich Morgolenko; Gennady Dmitrievich Selivanov, both of ulitsa Chkalova, 15; Igor Grigorievich Fedosenko, 602 mikroraion, 51, kv. 206; Vadim Grigorievich Kononenko, ulitsa Chkalova, 15; Vladimir Vasilievich Filippov, ulitsa Darvina, 7, kv. 24, all of Kharkov; Leonid Georgievich Lushnikov, ulitsa Michurina, 17, kv. 17, Krasnoyarsk, and Zoya Alexandrovna Moiseeva-Smirnova, Moskovskoi oblasti, ulitsa Gagarina 38, kv. 26, Kaliningrad, all of U.S.S.R.
Filed Jan. 18, 1974, Ser. No. 434,564
Int. Cl. B23d *21/00*
U.S. Cl. 83—5 **2 Claims**

1. A die for cutting pipes comprising: an upper plate; a lower plate; two bed dies for clamping the pipe being cut which are mounted on said lower plate; a flat V-shaped cutter fixed to said upper plate and adapted to penetrate between said bed dies; means providing the preliminary formation of a groove on the pipe surface at the point of cutting by said cutter, said means being mounted on said lower plate and operatively connected to said upper plate; a disc cutter of said means providing the preliminary formation of the groove rotatable in a plane parallel with the plane of movement of said flat cutter, the toothed sector of said disc cutter being defined by radiuses (R and r) which differ from each other by an amount of the groove depth; the number of teeth of said disc cutter being determined based upon the condition of removal of minimum layer of material with one tooth; a recess made on said disc cutter, the surface of the recess being in equally spaced relation to the pipe surface for longitudinal displacement of the pipe to under said flat cutter.



3,864,997
SYSTEM AND METHOD FOR CUTTING PATTERN PIECES FROM SHEET MATERIAL

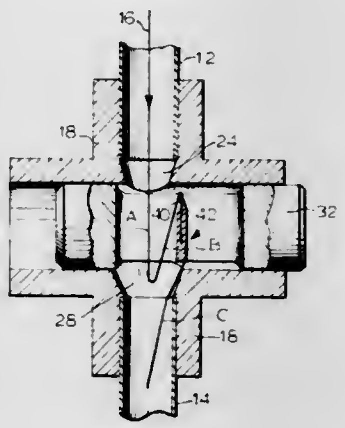
David R. Pearl, West Hartford, and Samuel Clifford Robison, Manchester, both of Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.
Division of Ser. No. 314,144, Dec. 11, 1972, Pat. No. 3,803,960. This application Feb. 6, 1974, Ser. No. 439,999
Int. Cl. D06h *7/00*; **B26d** *1/10*
U.S. Cl. 83—49 **5 Claims**



1. A method of cutting closely spaced pattern pieces from sheet material comprising the steps of: advancing a cutting tool in cutting engagement with the sheet material along one portion of a pattern piece contour in a given direction about the pattern piece until the cutting tool reaches a point closest to a previously cut contour of an adjacent piece; advancing the cutting tool in cutting engagement with the sheet material along another portion of the pattern piece contour toward said point in the opposite direction about the pattern piece until the cutting tool reaches said point; and reducing the rate of advancement of the cutting tool as the tool approaches said point in at least one of said directions.

3,864,998
METHOD FOR THE CUTTING OF A YARN TRAVELLING IN A TUBE BY MEANS OF A FLUID

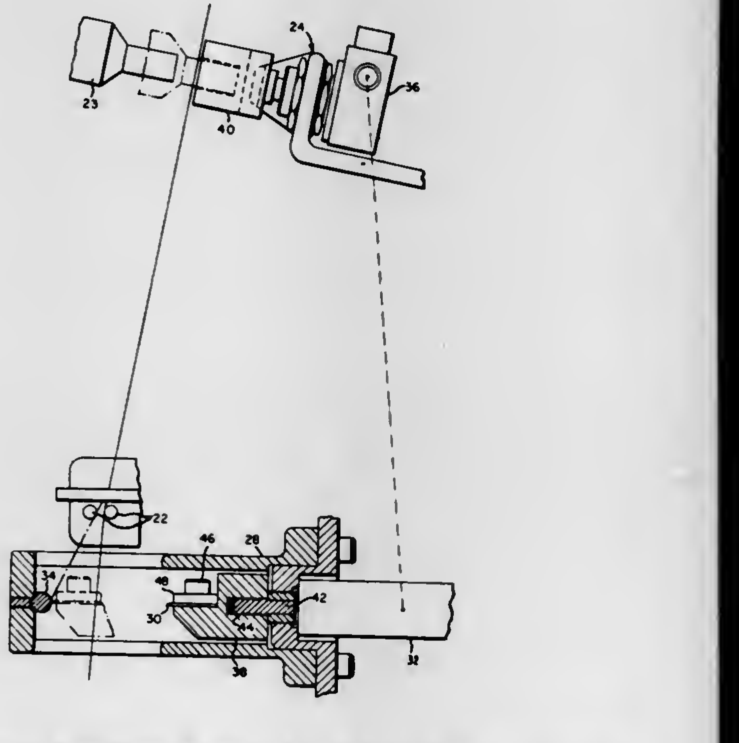
Jean-Claude Hautemont, Gif-sur-Yvette, and Rolland Sartori, Roanne, both of France, assignors to Rhone-Poulenc-Textile, Paris, France
Division of Ser. No. 375,068, June 29, 1973, abandoned. This application June 4, 1974, Ser. No. 476,276
Claims priority, application France, June 26, 1972, 72.23275; Apr. 9, 1973, 73.12986
Int. Cl. B26d *7/00*; **B65h** *51/16*
U.S. Cl. 83—53 **3 Claims**



1. A process for cutting yarn transported continuously at high speeds by fluid under pressure through a conduit comprising transporting the travelling yarn past movable cutting means located in the vicinity of the path of the yarn within said conduit, said cutting means having a cutting blade, and moving said cutting blade into contact with said travelling yarn whereby the yarn is deflected from its normal path and severed through the pressure it exerts upon said cutting blade created by the pulling force of the fluid under pressure.

3,864,999
DOFFING CUTTER WITH REMOTE PICKUP

John Frederick Charles, Camden, S.C., and Carl Joseph Markovchik, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 5, 1973, Ser. No. 367,342
Int. Cl. B26d *5/12*
U.S. Cl. 83—100 **2 Claims**



1. In a yarn handling system for forwarding a running threadline that includes a pneumatically operated portable yarn sucker gun having a yarn inlet end and a yarn cutting device adjacent said threadline, to cut the threadline and

cause the incoming cut end of the threadline to be picked up by the sucker gun, the improvement comprising: a remote actuator for indirectly initiating operation of said cutter located upstream from said cutter adjacent the threadline, said actuator having a slotted recess facing said threadline for receiving said yarn inlet end and through which the threadline passes during the cutting operation, said actuator being operative for actuation of said cutter when said inlet end engages said slotted recess.

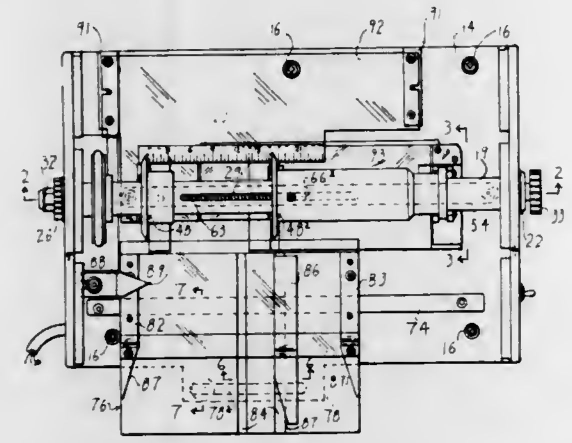
3,865,000
APPARATUS FOR SLITTING SHEET MATERIAL

Eugene T. Stafford, Birmingham, Ala., assignor to Dixie Type and Supply Co., Birmingham, Ala.

Filed Feb. 21, 1973, Ser. No. 334,282

Int. Cl. B26d *3/12*

U.S. Cl. 83—121 **1 Claim**



1. In apparatus for slitting sheet material comprising:

- a. separate plates each having an upper supporting surface and a depending edge portion extending to an elevation below said supporting surface with said depending edge portion of one said plate being spaced laterally from said depending edge portion of the other said plate,
- b. a hollow supporting shaft,
- c. at least two laterally spaced rotary slitters mounted for rotation with said hollow supporting shaft alongside the laterally spaced depending edge portions with each rotary slitter having an annular cutting edge at the periphery thereof defined by a beveled surface tapering toward and intersecting a flat surface which extends at right angles to said supporting surface with the included angle between said beveled surface and said flat surface being approximately 30°,
- d. each said rotary slitter being supported for rotation with said flat surface spaced from said depending edge a distance ranging from approximately 0.001 inch to 0.005 inch and with the lower portion of said cutting edge at an elevation ranging from approximately one sixty-fourth inch to one-sixteenth inch below said supporting surface,
- e. an inner externally threaded shaft mounted for rotation within said hollow supporting shaft and extending axially thereof,
- f. a sleeve-like member carrying one of said rotary slitters and mounted for sliding movement along said hollow supporting shaft,
- g. there being an elongated, axially extending slot through one side of said hollow supporting shaft,
- h. an inwardly projecting member carried by said sleeve-like member extending through said elongated slot between the threads on said inner shaft so that upon relative rotation of said inner shaft and said supporting shaft said sleeve-like member and the rotary slitter carried thereby is moved axially along said supporting shaft,
- i. means for imparting relative rotary movement between said inner shaft and said supporting shaft,
- j. means operatively connecting one of said plates to said sleeve-like member with a sliding rotary fit so that said one plate moves with said sleeve-like member and the rotary slitter carried thereby,
- k. guide means directing a sheet of material in a rectilinear direction parallel to said depending edges and said flat surfaces of said rotary slitters so that said sheet is fed and slit concomitantly by said rotary slitters,
- l. a stripper member mounted adjacent said rotary slitters at an elevation to direct said sheet of material therebeneath and away from said rotary slitters so that said sheet of material is separated continuously from said rotary slitters.

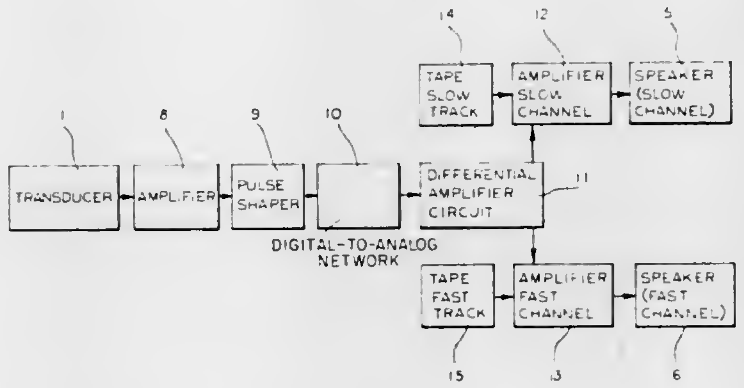
3,865,001
TEMPO ENHANCEMENT DEVICE

Robert L. Hershey, 1255 New Hampshire Ave., N.W., Washington, D.C. 20036

Continuation-in-part of Ser. No. 174,464, Aug. 24, 1971, abandoned. This application May 10, 1973, Ser. No. 358,956

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.03 **1 Claim**



1. In a device for changing the relative volumes of at least two sources of differently paced musical selections in response to the tempo of movement of a supporting structure caused by shifts of human body weight;

- a. an electromechanical transducer for sensing said structural movement and producing a variable voltage in response thereto whose peaks correspond to the excursions of the structure in response to said shifts in human body weight;
- b. an amplifier for amplifying said voltage;
- c. a pulse shaper to form pulses from said amplified voltage;
- d. a digital-to-analog network to produce from said pulses an analog voltage proportional to their period of repetition;
- e. a differential amplifier circuit to produce plural output voltages from said analog voltage proportional to the period of repetition;
- f. a multichannel amplifier, a stage of amplification in each of whose channels is biased by one of said output voltages, thus producing differing levels of amplification;
- g. at least two musical tracks having differing rhythm speeds, prerecorded on different channels of a recording medium, which are amplified to differing degrees by said multichannel amplifier; and
- h. at least two speakers to produce sound from said prerecorded musical tracks.

3,865,002
AUTOMATIC PERFORMANCE SYSTEM FOR ELECTRONIC INSTRUMENTS

Takehiro Shimizu, and Tutomu Fukui, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

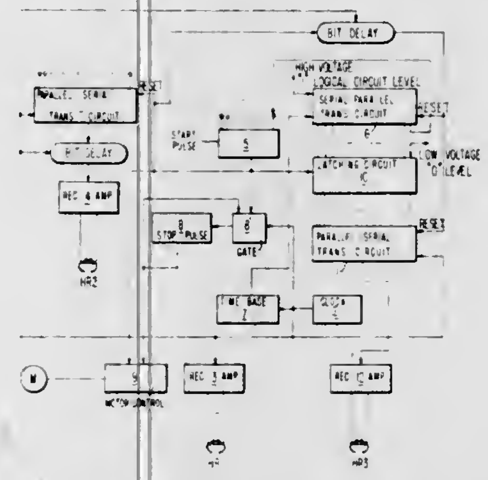
Filed Dec. 28, 1973, Ser. No. 429,419

Claims priority, application Japan, Dec. 29, 1972, 47-2646

Int. Cl. G10f *5/00*; G10g *3/04*

U.S. Cl. 84—115 **2 Claims**

1. An automatic performance system for electronic instruments comprising a source of clock pulses; parallel-serial translating circuit means for translating groups of parallel ON-OFF signals generated in parallel in accordance with keying patterns of an electronic instrument, into a train of serial pulse signals that may vary in every predetermined infinitesimal time unit corresponding to a clock pulse; a recording means including a recording head and a recording medium for intermittently driving said recording medium a predetermined distance relative to said recording head in response to a change in said keying pattern so that an output signal from the parallel serial translating circuit means is recorded in one block corresponding to said predetermined distance of a track of the recording medium and so that the time duration of the block is recorded as time count signals in the succeeding block of another track of the recording medium; means for controlling the intermittent movement of the recording medium in accordance with the time count signal; a reproducing head for reproducing the intermittently recorded output from said parallel-serial translating circuit means; a serial-parallel translating circuit means for translating the recorded train of serial pulse signals, read out through said reproducing head, into groups of parallel signals that vary in said infinitesimal time unit; and means for controlling the performance of the electronic instrument with the output from said serial-parallel translating circuit.



3,865,003
SNARE DRUM

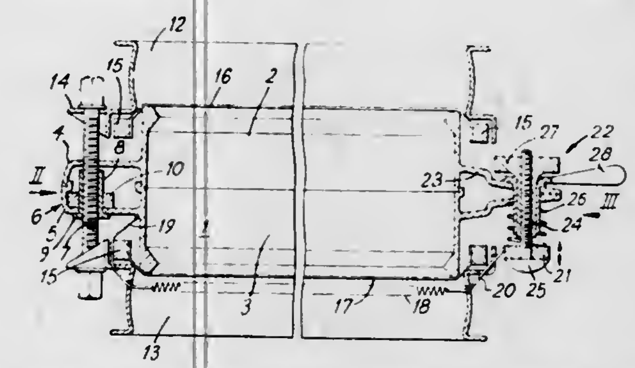
Clifford Anthony Della-Porta, Rothley, Leicestershire, England, assignor to The Premier Drum Co. Ltd., Leicester, England

Filed Nov. 13, 1973, Ser. No. 415,296

Claims priority, application Great Britain, Dec. 10, 1972, 55666

Int. Cl. G10d *13/02*

U.S. Cl. 84—411 **4 Claims**



1. In a drum comprising a cylindrical body shell, batter heads disposed over the ends of this shell, flesh hoops, at the ends of the shell engaging the margins of said heads, counter hoops disposed around said flesh hoops, snares anchored at one end to the shell and disposed over one of the heads, and a snare strainer unit mounted at the opposite side of the shell and connected to the other end of the snares, the improvement in which the body shell is composed of two abutting cylindrical half-shells each with a number of hollow half-lugs spaced around the periphery of the body and complementing and abutting the hollow half-lugs of the other half-shell and forming, in the assembled condition of the drum shell, a plurality of hollow lugs around the periphery of the shell, each of these half-shells, with its half-lugs, being made as an integral unit moulded in one piece, each hollow half-lug having a threaded female member located therein and circumferentially offset from the threaded female member of the complementary hollow half-lug of the other half-shell, a plurality of bolts arranged annularly around the exterior of the body shell and connecting the counter-hoop of one half-shell to the hollow half-lugs of the other half shell, each bolt passing through its associated counterhoop and into threaded engagement with the threaded female member in its associated half-lug of the other half-shell.

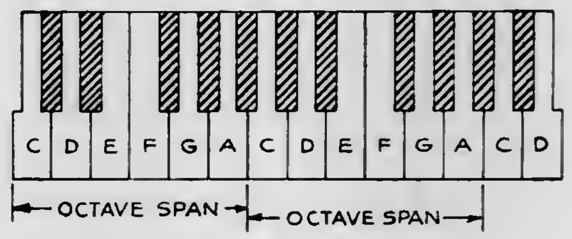
3,865,004
KEYBOARD TYPE MUSICAL INSTRUMENT

Donald K. Coles, 2505 Capitol Ave., Fort Wayne, Ind. 46806

Filed July 10, 1974, Ser. No. 486,973

Int. Cl. G10c *3/12*

U.S. Cl. 84—423 **6 Claims**



1. A musical instrument having a plurality of tone generators which produce a sequence of pitches proceeding from low to high in an approximately equitempered scale, with 12 semitones per octave,

- a keyboard having six lower digitals per octave span, not more than one upper digital disposed between two adjacent ones of said lower digitals,
- said lower digitals being consecutively numbered from left to right, starting with lower digital number one to the left of said keyboard, said lower digital number one controlling a predetermined lowest pitch generated by one of said tone generators, each of said lower digitals with a number N greater than six controlling a pitch one octave higher than the pitch controlled by that lower digital which has a number equal to N-6, wherein the improvement comprises:
- any six consecutive ones of said lower digitals play a six tone scale which is derived from the diatonic scale by the omission of one of its seven tones.

3,865,005
WIND MUSICAL INSTRUMENT

Robert Victor Carree, Mantes-la-Ville, France, assignor to Buffet Crampon, Paris, France

Filed Aug. 22, 1973, Ser. No. 390,351

Claims priority, application France, Sept. 15, 1972, 72.32707

Int. Cl. G10d *7/08*

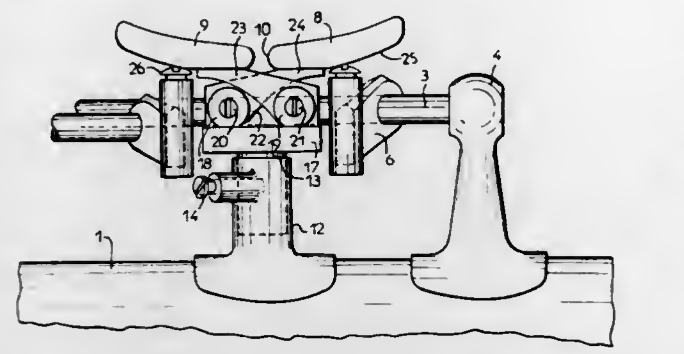
U.S. Cl. 84—380 **8 Claims**

1. On a woodwind musical instrument, a supporting structure for two keys positioned to be played by the same finger, comprising:

- an instrument body;
- means mounted on said body for supporting first and second shafts, said shafts being mounted parallel to each other with the plane defined by said shafts being parallel to the axis of said body;
- a first key connected to said first shaft by an arm, said first key being located above said second shaft;
- a second key connected to said second shaft by a second arm, said second key being located above said first shaft;

each of said keys having an edge facing the other key with both of said edges being positioned adjacent to one another and being located the same distance from said body;

first and second stops;



first and second levers mounted on said body for rotation about third and fourth shafts, said first lever having one end connected to said first stop and a second end underlying said first key and adapted to be actuated by depression of said first key; and said second lever having one end connected to said second stop and a second end underlying said second key and adapted to be actuated by depression of said second key.

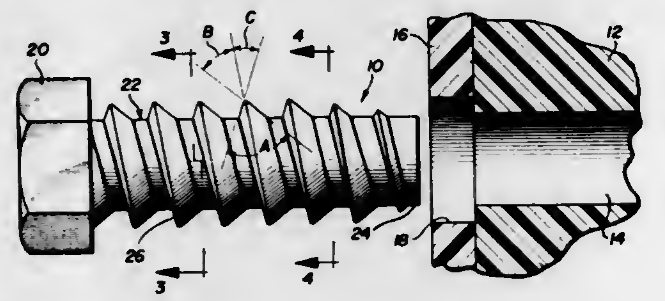
3,865,006
PUSH TYPE THREADED FASTENER AND METHOD OF USING SAME

Dwight F. Massoney, Rockford, Ill., assignor to Textron Inc., Rockford, Ill.

Filed Feb. 14, 1973, Ser. No. 332,280

Int. Cl. F16b *25/00*

U.S. Cl. 85—44 **2 Claims**



1. A push-type threaded fastener designed to be driven into an opening formed in pliable resilient material without rotation thereof, and when seated, rotated to provide a locking action which resists inadvertent rotation thereof, said fastener comprising in combination; a head portion to abut the material around the opening receiving the fastener, a threaded shank having a leading guide portion adjacent the work-entering end of said fastener and a trailing locking portion intermediate said guide portion and said head portion, said leading guide portion including a plurality of thread turns of a generally circular configuration with a crest diameter of said thread turns increasing in a direction away from said work-entering end; said trailing portion including a plurality of thread turns of a non-circular, multilobular configuration, said non-circular threads having a maximum crest height at the lobe portions thereof which is greater than the maximum crest height of said circular thread turns on said leading guide portions, both said circular and non-circular threads having a sloped front flank surface facing toward the leading end of said threaded shank to allow the pliable, resilient material easily to slide thereof as the fastener is driven into the opening formed in said material, and a sloped rear-flanked surface facing toward head portion, said front flank defining a flank angle from about 40° to 60°, with said rear flank defining a flank angle from about 20° to 0°, such that the included angle is approximately 60°, with said flank surfaces merging smoothly to define a crest apex over which said resilient material will flow and conform to the shape of said crest apex to be disposed on opposite sides thereof thereby providing means which resists pullout, wherein said fastener may be rotated a fractional part of a revolution to cause said lobular portion on the trailing non-circular thread to bite into the resilient material and afford a locking action which resists inadvertent rotation.

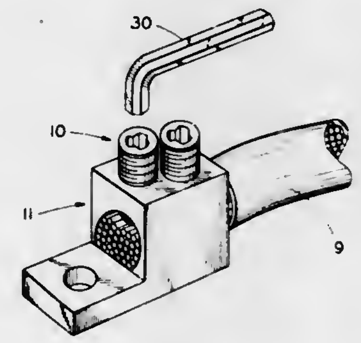
3,865,007
TORQUE DETERMINING ALLEN SCREW

Harris I. Stanback, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed July 30, 1973, Ser. No. 384,165

Int. Cl. F16b *31/02*

U.S. Cl. 85—61 **9 Claims**



1. A torque-determining socket head screw comprising an exteriorly threaded cylindrical body having a tool-receiving recess extending axially thereinto from one end face of the body, the recess having an outer basically cylindrical recess portion defining a cylindrical wall open to an adjacent coaxial inner recess portion having a plurality of angularly disposed flat sides, the inner recess portion having a transverse dimension smaller than the diameter of the outer recess and being designed to receive a standard size tool having angularly disposed sides so as to be complementary to the inner recess, and at least one frangible nub projecting radially inwardly from the cylindrical wall of the outer recess, the nub being engageable by the tool and shearable upon the application of a predetermined torque thereto by the tool thereby providing an indication that the screw when received in a threaded opening has been tightened to a predetermined torque value.

3,865,008
MANUFACTURE OF FUSE HEADS

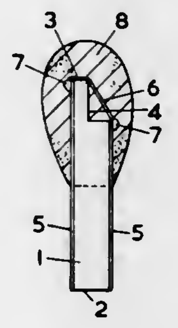
Arwyn Theophilus Thomas, 66 Gillmans Rd., Kent, and Raymond James Williams, 48 Langdale Gardens, Sussex, both of England

Division of Ser. No. 161,259, July 9, 1971, Pat. No. 3,763,783, which is a continuation-in-part of Ser. No. 110,730, Jan. 28, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,842

Claims priority, application Great Britain, Feb. 4, 1970, 5356/70

Int. Cl. C06c *1/00*

U.S. Cl. 86—1 R **12 Claims**



1. A process for the manufacture of fuse-heads comprising forming a suspension of a primary explosive composition in water containing a small amount of at least one organic hydrophilic polymer in a proportion about 1 to about 10 per cent by weight of the dry primary explosive composition, immersing a bridge wire in said suspension, removing the said bridge wire having a bead of said suspension adhering thereto, and allowing the fuseheads so produced to dry.

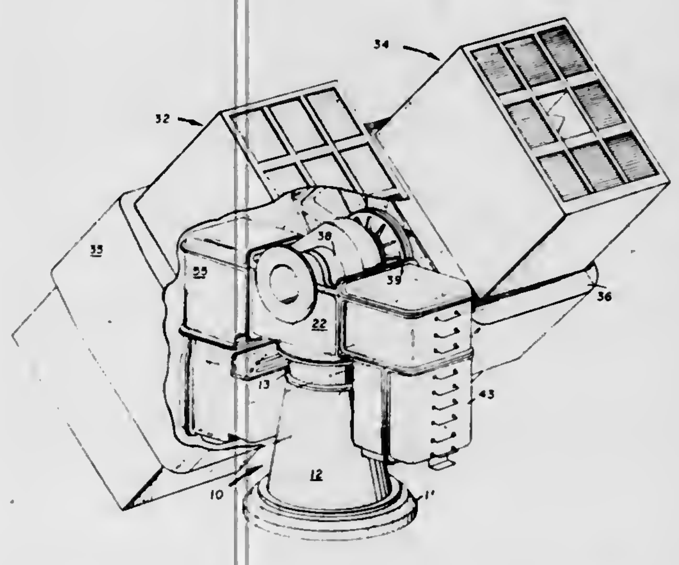
3,865,009
LAUNCHER MOUNT

Sverre Kongelbeck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 13, 1973, Ser. No. 396,908

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.815 **6 Claims**



1. Apparatus for launching projectiles, comprising:

a stationary central housing;

support means movably surmounting the central housing;

a shaft mounted on the support means, the longitudinal axis of the shaft being perpendicular to the longitudinal axis of the central housing;

mounting means disposed one each on each end of the shaft;

projectile holding means held by each of the mounting means;

first and second auxiliary housings fixed to the support means, one each on opposite sides thereof and disposed externally of the support means, a line joining the housings being perpendicular to the longitudinal axis of the shaft;

azimuth control means in the first housing for rotating the support means in a plane perpendicular to the longitudinal axis of the central housing; and,

elevation control means in the second housing for rotating the shaft to move the projectile holding means in a plane perpendicular to the longitudinal axis of the shaft.

3,865,010
MACHINE TOOL FEED AND STOP MECHANISM

Brian Hodgson, Rowlands Gill, England, assignor to Machine Tool Divisional Services Limited, Coventry, England

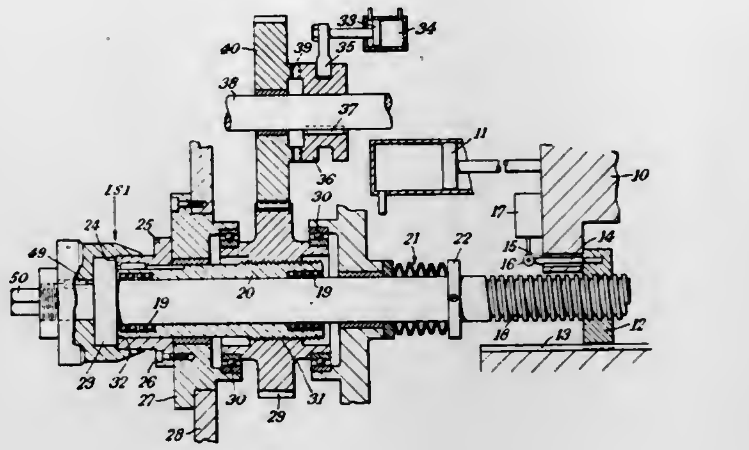
Filed Dec. 3, 1973, Ser. No. 421,234

Claims priority, application Great Britain, Dec. 4, 1972, 55805/72

Int. Cl. B23f *5/22;* **B23b** *21/00*

U.S. Cl. 90—4 **5 Claims**

1. In a machine tool, the combination of a slide, means for advancing the slide, a screw which is movable both axially and rotationally, a non-rotatable nut which is carried by the screw and acts as a dead stop to arrest advance of the slide, means urging the screw yieldably in the direction of advance of the slide into engagement with a first abutment, means for advancing said first abutment after contact of the slide with the nut to permit further advance of the slide, accompanied by advance of the nut and screw, at a speed governed by the speed of advance of said first abutment, and a second and



fixed abutment which coacts with the screw to prevent further advance of the screw and nut and therefore of the slide.

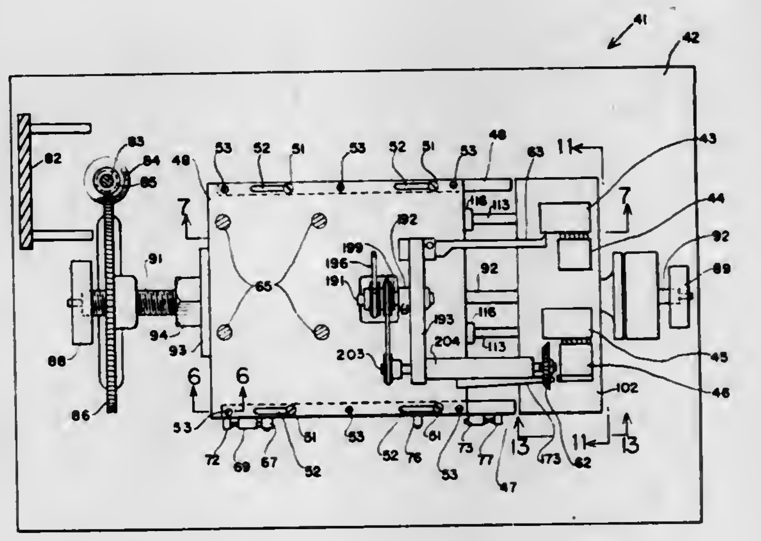
3,865,011
AUTOMATIC KEY DUPLICATING APPARATUS

George P. Patriquin, Gardner, Mass., assignor to Hudson Lock, Inc., Hudson, Mass.

Filed Sept. 5, 1973, Ser. No. 394,500

Int. Cl. B23c *1/16*

U.S. Cl. 90—13.05 **57 Claims**



33. In a key duplicating machine comprising:

sample vise means for receiving and retaining a sample key to be duplicated;

blank vise means for receiving and retaining a blank key;

clamp means for automatically closing and opening said sample vise means and said blank vise means upon the initiation and termination, respectively, of a cutting cycle;

positioning means for positioning the sample key when said sample vise means is open and for positioning the blank key when said blank vise means is open, said positioning means comprising a plurality of sample positioning fingers independently slidably mounted and projecting toward said sample vise means and engageable with the bitted pattern of said sample key and a plurality of blank positioning fingers independently slidably mounted and projecting toward said blank vise means and engageable with the edge of said blank key, said positioning means being automatically slidably removable from an active position where said positioning fingers engage said sample and blank keys to a passive position where said positioning fingers have been displaced from engagement with said keys when said vise means close.

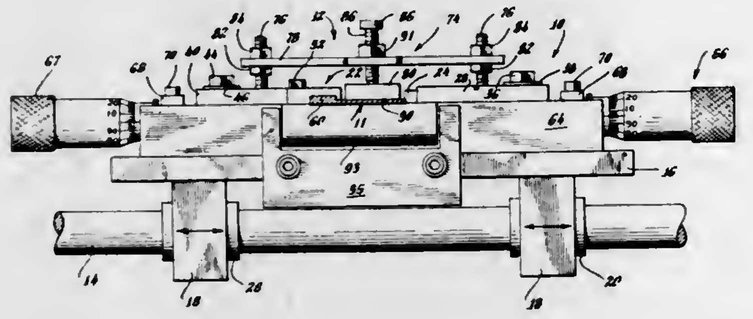
3,865,012
SKIVING APPARATUS WITH LATERALLY FLOATING SUPPORT PLATFORM FOR PRODUCING MULTI-GAUGE METAL STRIP OF UNIFORM WIDTH

Roger E. Laigle, Torrington, and Luis J. Lozano, Southington, both of Conn., assignors to The Anaconda Company, Anaconda, Mont.

Filed Feb. 16, 1973, Ser. No. 333,046

Int. Cl. B23d *1/26*

U.S. Cl. 90—24 F **10 Claims**



1. Skiving apparatus for skiving to uniform width the thin edge portion of a multi-gauge metal strip having a thick portion significantly thicker than the thin edge portion such that the thick portion defines a pair of shoulder surfaces on the strip facing in opposite directions, said skiving apparatus comprising:

a base;

a skiving tool mounted on the base for skiving the thin edge portion of the multi-gauge strip,

guide means mounted on the base including a lower guide positioned beneath the thick portion of the strip,

said guide means being located on said base with a predetermined spacing from said skiving tool,

said guide means including a retainer positioned above said thick portion of the strip and located over said lower guide, said retainer having a channel recess dimensioned to slidably engage upon the pair of opposite shoulder surfaces of said thick portion of the strip with a running clearance of the order of 0.0005 of an inch, said skiving tool being mounted laterally to one side of both said shoulder surfaces and

laterally floating support means for said base including fixed transverse guideway means enabling said base to move laterally relative to the direction of feed of said multi-gauge strip to track any lateral undulations of the strip without affecting the predetermined width of the skived thin portion of the metal strip as determined by the predetermined spacing between said guide means and said skiving tool,

whereby the tolerance of the width of the skived thin edge portion of the strip is regularly accurate to within plus or minus 0.0005 of an inch.

3,865,013
AUXILIARY TOOL CONTROL CIRCUIT

Joseph A. Mastaj, Holyoke, Mass., assignor to Worthington-CEI, Incorporated, Holyoke, Mass.

Filed Nov. 12, 1973, Ser. No. 414,817

Int. Cl. F15b *11/16*

U.S. Cl. 91—411 R **14 Claims**

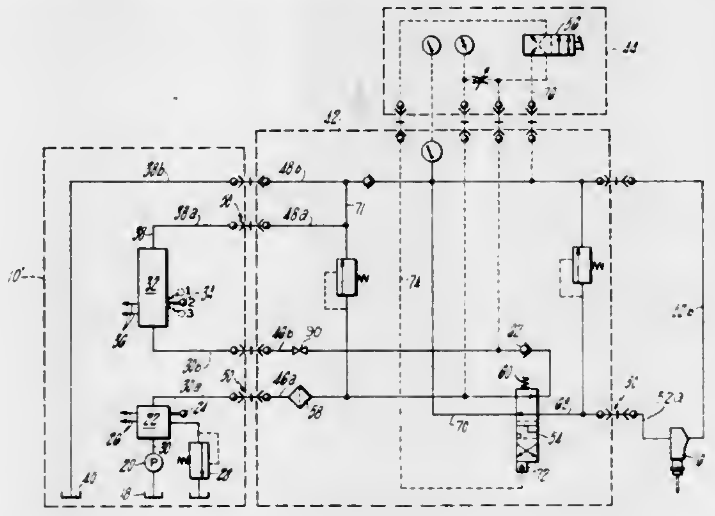
1. A control circuit for an auxiliary tool adapted to be operatively associated with control means for another tool having a source of operating fluid and means for delivering the operating fluid under pressure, the control circuit including: a first fluid conduit means for connecting fluid delivery means to the control means for the other tool, the pressure level in said first fluid conduit means being influenced by the operative state of the control means for the other tool;

pilot operated valve means in said first fluid conduit means;

second fluid conduit means from said pilot operated valve means to the inlet of an auxiliary tool to be powered;

third fluid conduit means for returning fluid from the discharge from an auxiliary tool to be powered to a reservoir;

said pilot operated valve means having a first position interconnecting the parts of said first fluid conduit means upstream and downstream of said pilot operated valve means and connecting said second fluid conduit means to said third fluid conduit means, and said pilot operated valve means having a second position connecting said first fluid conduit means to said second fluid conduit means to deliver operating fluid to the auxiliary tool;



selectively operable control means for arming said pilot valve means for switching from the first position thereof to the second position; and

means responsive to the pressure level of fluid in said first fluid conduit means downstream of said pilot valve means for delivering an operating signal to said pilot valve means and switching said pilot valve means between said first and second positions thereof in the armed state of said pilot valve means.

3,865,014
PRESSURE REGULATOR

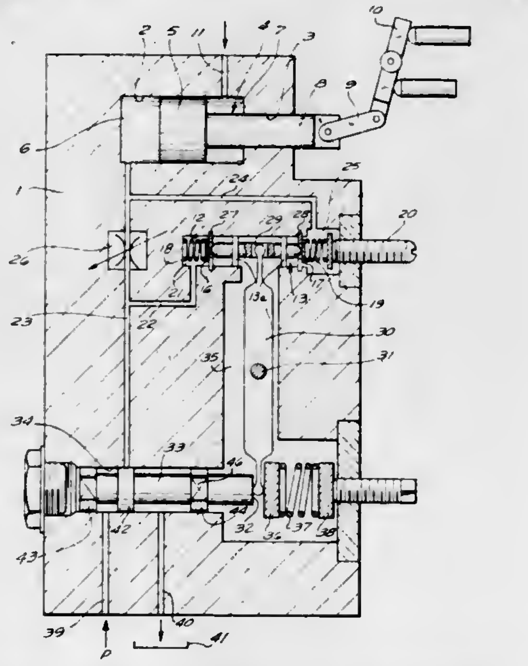
Hans-Jurgen van der Kolk, Sersheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 153,219, June 15, 1971, abandoned. This application Nov. 2, 1973, Ser. No. 412,439

Claims priority, application Germany, June 27, 1970, 2031850

Int. Cl. F15b *13/04, 15/17*

U.S. Cl. 91—417 **9 Claims**



1. A hydraulic pressure regulator for an adjustable hydraulic machine comprising, in combination, a cylinder, a differential piston axially movable in said cylinder and defining in the latter a pair of pressure chambers to opposite sides of said differential piston; a control element for the hydraulic machine; means connecting said control element with said differential piston for controlling the position of said control element depending on the position of said piston in said cylinder; means for constantly applying hydraulic fluid at a control pressure to one of said pressure chambers; a control passage connected to the other pressure chamber; a pilot piston valve having a neutral position for controlling, when moved from said neutral position, the supply of hydraulic fluid to said control passage and the discharge of hydraulic fluid from said control passage, in dependence on the direction of movement of said pilot piston valve from said neutral position so as to feed hydraulic fluid into said other pressure chamber or to discharge hydraulic fluid therefrom; passage means for directing fluid at said control pressure against said pilot piston valve for urging the latter in one direction; resilient control force means for urging said pilot piston valve in the other direction; a pressure regulating valve in said control passage; a compensating piston; means for causing any pressure difference across said pressure regulating valve to act on said compensating piston to move the latter in one direction or the other from a neutral position; and mechanical follow-up means in engagement with said pilot piston valve and said compensating piston for moving said pilot piston valve in response to movement of said compensating piston so as to assist the force of the hydraulic fluid or of said control force means acting on said pilot piston valve to return the latter to said neutral position, so as to avoid over-travel of said differential piston.

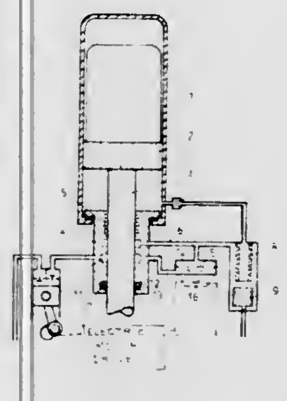
3,865,015
SEALING MEANS FOR THE PISTON ROD OF A STIRLING ENGINE

Sven Hakansson, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Continuation of Ser. No. 252,558, May 12, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,906

Int. Cl. F15b *21/04;* **F15j** *15/18;* **F01b** *31/10*

U.S. Cl. 92—78 **6 Claims**



1. A sealing device for a piston rod extending from a cylinder allowing restricted passage of leakage gas from the cylinder alongside said rod comprising in combination, an end wall member for said cylinder through which said piston rod extends, a space about said rod in said wall member receiving said leakage gas from said cylinder, a return conduit from said space to said cylinder, and a non-return valve in said conduit which allows gas to flow through said return conduit only in the direction towards said cylinder and including a further space comprising an annular channel in said wall member surrounding said rod at a position along the axis of said rod further away from said cylinder than the first said space, and means filling said further space with oil at a pressure greater than that in said first space to cause oil to flow toward said first space.

3,865,016
METHOD OF PRODUCING FILTER ROD SECTIONS OR THE LIKE

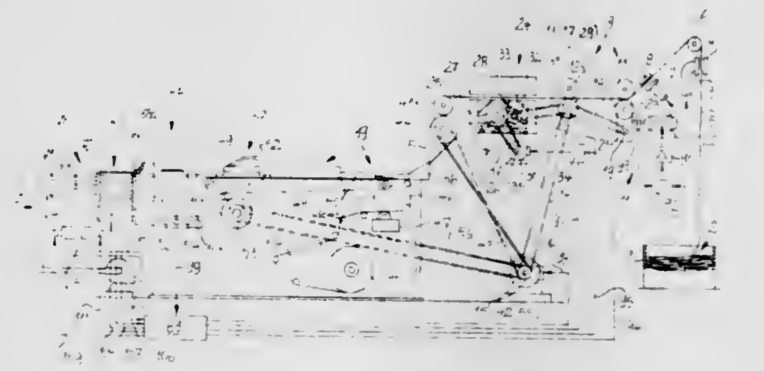
Heinz Greve, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Division of Ser. No. 131,167, April 5, 1971, Pat. No. 3,741,846. This application May 15, 1973, Ser. No. 360,598

Claims priority, application Germany, Apr. 11, 1970, 2017360

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **11 Claims**



1. A method of making filter elements or analogous rod-shaped articles which are composed of at least one main component and at least one secondary component, particularly a secondary component which influences the condition of the main component, comprising the steps of converting effective quantities of main and secondary components into a rod; subdividing the rod into a succession of rod-shaped articles wherein the quantity of the main component is measurable independently of the quantity of the secondary component and vice versa; conveying the rod-shaped articles along a predetermined path; carrying out repeated measurements of the quantity of at least one component in selected rod-shaped articles; and regulating the quantity of at least one component in said converting step in accordance with the results of said measurements.

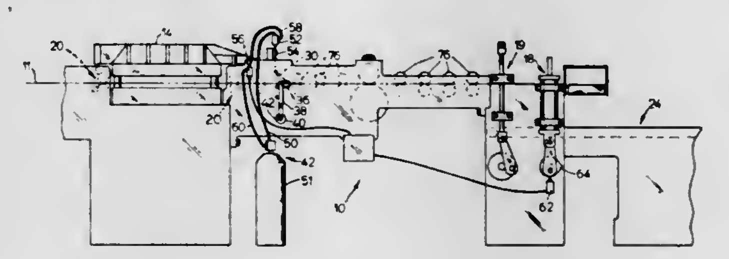
3,865,017
MACHINE FOR MAKING FILE FOLDERS

William J. Borski, Brookfield, Wis., assignor to Faustel Inc., Butler, Wis.

Filed Jan. 2, 1974, Ser. No. 430,235

Int. Cl. B31b *1/62, 41/60*

U.S. Cl. 93—1 E **9 Claims**



1. A machine for forming file folders having reinforced tabs, said machine comprising:

means for conveying blanks in succession along a longitudinal path,

a die positioned to cut and score said blanks,

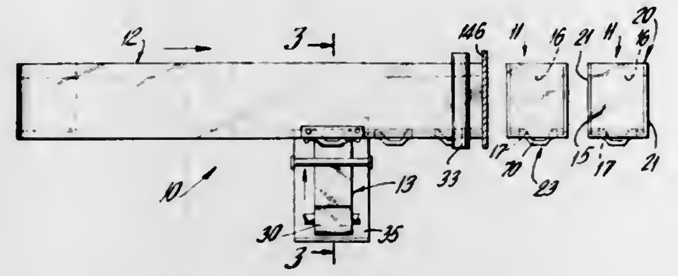
folding means in the path of travel of each of said blanks for folding the lead edge against the blank to form a double ply, said folding means including means for applying glue to the folded edge of said blank as said edge of said blank is being folded,

means for pressing said folded edge of said blank against the blank to form a double ply on the lead edge of said blank, and means for cutting the double ply to form a tab.

3,865,018
APPARATUS FOR MAKING PLASTIC BAGS WITH HANDLES

William Gaffney, Bronx, N.Y., assignor to Charlotte Mintz, New York, N.Y.

Filed Nov. 20, 1972, Ser. No. 308,293
Int. Cl. B31b *1/86*
U.S. Cl. 93—8 WA **3 Claims**



1. An apparatus to make bags comprising:

a. means to intermittently feed an elongated thermoplastic bag body sheet having superimposed upper and lower layers unconnected at one side and joined at the other side, and having superimposed edges at said one side;

b. means to intermittently feed elongated superimposed upper and lower imperforate thermoplastic handle sheets of uniform width between the upper and lower layers at said one side;

c. means to intermittently fuse leading ends of said upper and lower handle sheets to said upper and lower layers of said bag body sheet, respectively, while said bag body sheet and handle sheets are not being fed, said bag body sheet and said handle sheets being fed in the directions of their lengths, said directions of lengths being perpendicular to one another; and

d. means to intermittently cut entirely across said handle sheets on identical parallel lines having aligned, spaced outer portions adjacent said superimposed edges of said superimposed layers of said bag body sheet, converging portions extending from the inner ends of said outer portions outwardly beyond said superimposed edges and a central portion interconnecting said outer ends of said converging portions and in spaced relation to said superimposed edges of said bag body sheet to provide by successive spaced cuts handles for said bag and for each handle a hand hole defined by said central portion, said converging portions and said edge of said bag body sheet intermediate the converging portions, said handle having parallel inner and outer edges across the full length of said handle and having a similar width throughout when measured in a direction from said joined side of said bag body sheet to said unconnected side so that said handles are formed without waste, said means for intermittently feeding said bag body sheet and handle sheets including means to feed said bag body sheet and handle sheets only while said means to intermittently fuse said handle sheets to said bag body sheet is not being actuated and while said means to intermittently cut said handle sheets is not being actuated, said means for intermittently feeding said handle sheets advancing said handle sheets a distance equal to the width of said handles.

3,865,019
METHOD OF MAKING BAGS WITH FILM LINERS

Robert W. Bolling, Savannah, Ga., and Jerry H. Reeves, Bluffton, S.C., assignors to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 269,755, July 7, 1972. This application June 28, 1974, Ser. No. 484,109
Int. Cl. B31b *39/26*
U.S. Cl. 93—35 R **7 Claims**

1. The method of making a paper bag with a film liner comprising the steps of

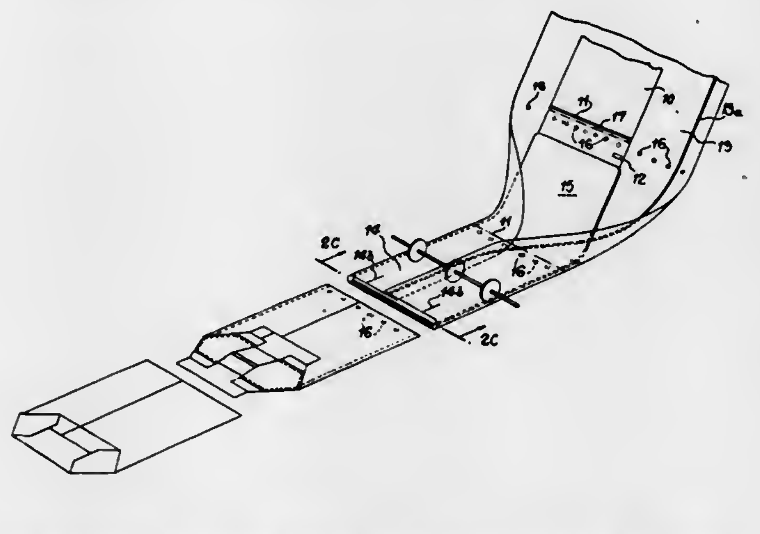
providing a flat film tube having sealed bands at spaced intervals which bands will serve as the bottom seals of the liners of the finished bags;

feeding said tube onto a paper web;

passing the combined web and film tube over a tube former which forms the paper web into a tube around the former and the film tube;

securing the outer edges of the paper tube together;

securing the film tube to the paper tube by spaced lines of adhesive each of which is ahead of, spaced from, and parallel to each sealed band of the film tube;



cutting the paper-film tubes transversely along a line parallel to and between the said line of adhesive and the adjacent sealed band into bag lengths, the ends of the tubes ahead of the cut to form the top of the finished bag and the ends of the tubes in back of the cut to form the bottom of the bag;

opening the bottom end of the paper tube length preparatory to forming a bottom closure for the paper tube;

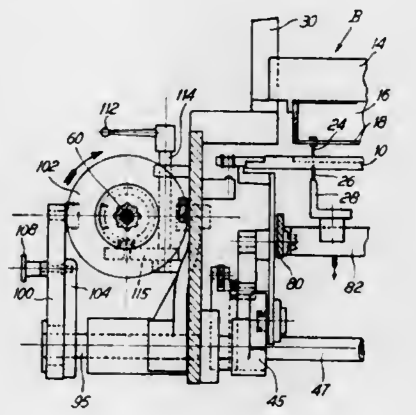
moving the film tube out of the way of the bottom end of the paper tube to permit formation of the bottom closure without inclusion of the film tube in such closure;

forming the bottom closure of the paper tube whereby the film tube will be completely free and unattached in the bottom area of the finished bag.

3,865,020
DEVICE TO SELECTIVELY CONTROL THE EXPELLERS OF AUTOMATIC MACHINES TO PUNCH CARDBOARD SHEETS OR THE LIKE

Giancarlo Erba, and Busto Arsizio, both of Varese, Italy, assignors to Officina Meccanica Erba & C. Soc. Acc. Semplice, Varese, Italy

Filed May 18, 1973, Ser. No. 361,464
Claims priority, application Italy, May 25, 1972, 24864/72
Int. Cl. B31b *1/74*
U.S. Cl. 93—36 A **10 Claims**



1. An apparatus for ejecting cut-out portions of a sheet, comprising:

ejector frame means having a plurality of first ejecting elements projecting therefrom;

table means disposed opposite said frame means and coacting therewith for permitting said ejecting members to remove the cut-out portions from said sheet, said table means including a first support device and a table fixed to said support device, said table being adaptable to have said sheet deposited thereon and also having a plurality of openings therein which cooperate with the first ejecting elements for permitting removal of said cut-out portions; a second support device movably mounted relative to said first support device and a plurality of second ejecting elements mounted on said second support device and disposed on the side of said table opposite said frame means, said second ejecting element being disposed directly opposite at least some of the first ejecting elements whereby the sheet when supported on said table is positionable therebetween;

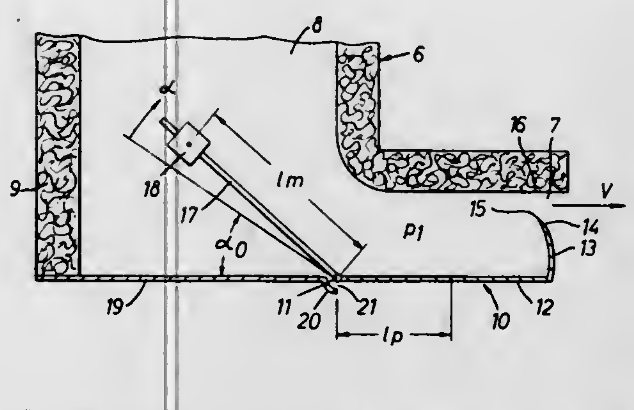
drive means for causing relative movement of said table means toward and away from said frame means so that said first ejecting elements remove said cut-out portions when said frame means and table means are moved relatively toward one another, said drive means including aligned driving and driven members and first linkage means drivingly connected between said driven member and one of said first support device and said frame means; said drive means further including first disengageable clutch means coacting between said driving and driven members for permitting said driven member to be drivingly coupled to said driving member only when said members are in a selected angular relationship with one another, thereby insuring the necessary synchronism of the various parts of the apparatus; and

said drive means still further including second linkage means drivingly connected between said driven member and said second support device for causing movement of said second ejecting elements toward and away from said first ejecting elements, said second linkage means including second disengageable clutch means for permitting deactivation of the second support device and the second ejecting elements independently of said first ejecting elements.

3,865,021
AIR INJECTING APPARATUS FOR AIR CONDITIONERS OR THE LIKE

Guido Amandus De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 2, 1973, Ser. No. 356,478
Claims priority, application Germany, May 5, 1972, 2222060
Int. Cl. F24f *13/10*
U.S. Cl. 98—40 C **8 Claims**

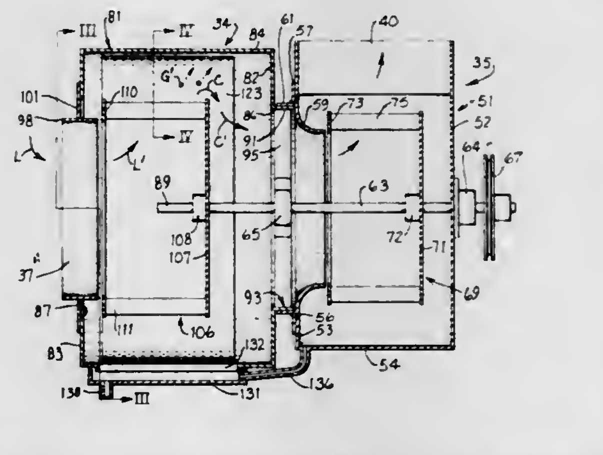


1. An air conditioning system air inlet assembly comprising an air flow duct, a damper forming a variable outlet orifice for said duct, said damper being mounted for pivotal movement relative to a horizontally extending axis, said damper being movable in an opening direction by pressurized upstream air in said duct, mechanical means biasing said damper in a closing direction, said mechanical means having an angular relationship with said damper to vary the size of said orifice in accordance with the pressure of said pressurized air to maintain a constant air velocity at said orifice, said duct extending horizontally, and said damper having a flat portion below and in generally parallel relation to a portion of said duct.

3,865,022
EXHAUST FUME TREATMENT APPARATUS

Willard K. Ahlrich, 15960 N. Lake Shipp Dr., Winterhaven, Fla.

Filed Mar. 7, 1973, Ser. No. 338,871
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 K **15 Claims**



1. Exhaust fume treatment apparatus for removing contaminant materials from a gas, comprising in combination:

a substantially cylindrical extractor housing having a peripheral wall and an inlet and an outlet in opposite end walls thereof;

suction blower means coupled to the outlet of said housing for drawing gas therethrough and having a rotatably driven shaft extending into said housing;

a slinger wheel on and rotatable by said shaft and located in said housing, said slinger wheel having an open face adjacent said inlet and having a plurality of circumferentially spaced gas contacting blades each angled so that the radially outer edge thereof trails the radially inner edge thereof during normal rotation of said shaft, the opposed downstream ends of said slinger wheel and housing being spaced by an open air passage unoccupied except by said shaft; and

a shield spaced closely radially inboard of the said peripheral wall of said housing by a dead air space and being spaced remotely radially outwardly of said slinger wheel by a reduced gas velocity zone, the radial extent of said reduced gas velocity zone being at least several times that of said dead air space, said shield at least partially circumferentially surrounding said slinger wheel, said shield being pierced by a plurality of holes for receiving contaminant masses thrown outwardly by said slinger wheel and admitting same to said dead space between said shield and said housing peripheral wall;

means for increasing axial uniformity of material build up on said blades comprising a radially extending air deflector disk fixed to said shaft axially within said slinger wheel, the periphery of said disk being spaced radially intermediate the shaft and inner slinger blade edges.

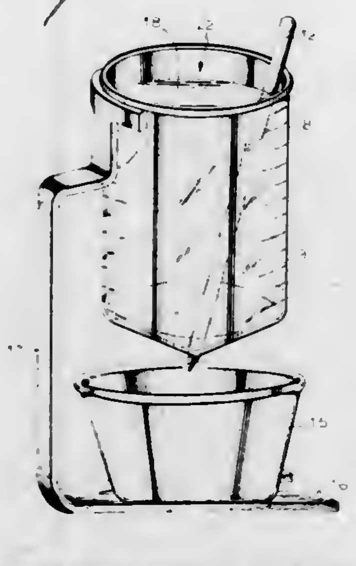
3,865,023
KITCHEN APPLIANCE FOR SKIMMING FAT

Harold W. Halvorsen, 600 16th St. 106, Silver Spring, Md.

Filed Apr. 18, 1973, Ser. No. 352,285
Int. Cl. A47j *43/28*
U.S. Cl. 99—495 **1 Claim**

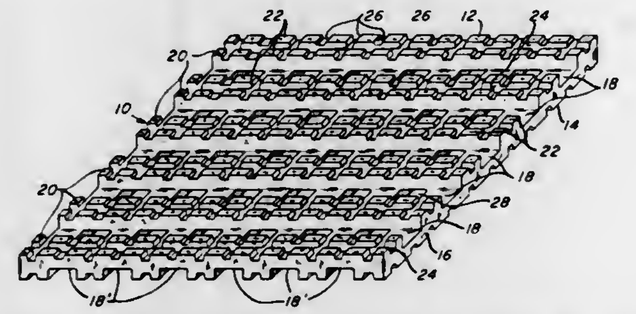
1. A cooking vessel for separating two ingredients comprising a dispensing vessel having a tapered bottom leading toward a centrally disposed aperture through which the contents may pass by force of gravity, a removable plug-like element

with a tapered end fitting partly into said aperture to seal the vessel bottom against leakage of the contents, the plug-like element having structure so that it may be manually manipulated to release only a distinguishable part of the ingredients of the vessel through said aperture, and means fixedly mounting said dispensing vessel in an uppermost position over a receptacle vessel so that the dispensing vessel is held still and is adapted to discharge its contents into the second vessel when said plug-like element is manipulated with a single hand.



3,865,024
FREEZER SPACER

Dennis M. Melnick, and Mark Kubick, both of Baden, Pa., assignors to Pallet Development Inc., Ambridge, Pa.
Filed Sept. 19, 1973, Ser. No. 398,650
Int. Cl. B65g ***1/14***
U.S. Cl. 99—645 **7 Claims**

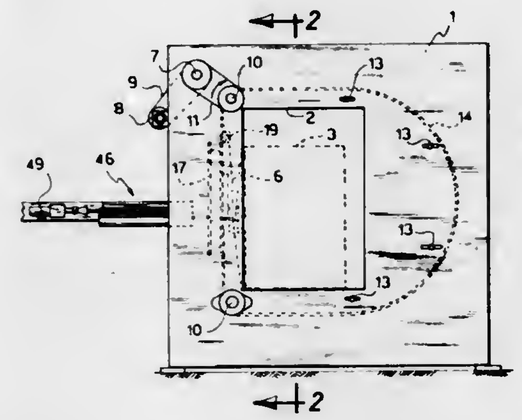


1. A freezer spacer formed of a resinlike material comprising: a first generally horizontally extending wall; a second generally horizontally extending wall vertically spaced from said first wall; a vertical wall extending substantially continuously between said first and second walls adjacent the outermost peripheries thereof; said first and second walls each including a plurality of spaced bearing portions and a plurality of spaced outwardly open continuously extending grooved passageway means intermediate said spaced bearing portions; a plurality of continuously walled vertical openings extending through said first and second walls; and the ratio of the horizontal areas of said grooved passageway means to the horizontal areas of said spaced portions being in the range from 2 to 3 through 3 to 1.

3,865,025
AUTOMATIC BUNDLE STRAPPING MACHINE

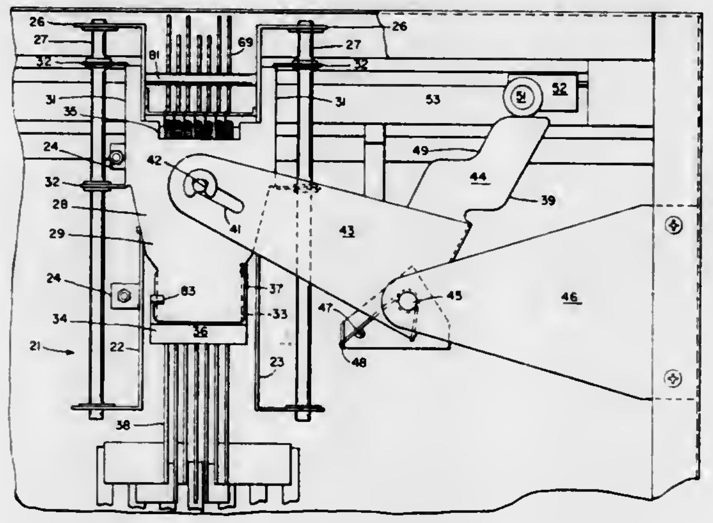
Pierre Gagnon, 5637 Wilderton St., and Pierre Laforest, 1943 Bruxelles St., both of Montreal, Quebec, Canada
Filed June 6, 1973, Ser. No. 367,590
Int. Cl. B65b ***13/34***
U.S. Cl. 100—26 **3 Claims**

1. A bundle tying machine comprising a looping assembly constructed and arranged to form a loop of tying element around a bundle and to form a portion of tying element overlapping the initial end of the latter, an attaching assembly arranged to attach said initial end to said overlapping portion of said tying element, an integrated cutting and clamping assembly consisting of a first and a second jaw pivotally connected one to the other, a cutting edge and a clamping member mounted onto one of said jaws and located side by side transversely of the latter and arranged to perform concerted clamping and cutting of the same tying element, said cutting and clamping assembly displaceably mounted for to and fro movement adjacent of and transversely of said initialed and overlapped portion of said tying element, a carriage on which said assembly is mounted for bodily movement therewith, an actuator connected to said carriage and arranged to produce said to and fro movement of said assembly, guide track means engaging said carriage and guiding the latter in said to and fro movement, said assembly movable from a clamping position holding fast said initial end to a cutting position for cutting said overlapping portion and holding the following end of the tying element.



3,865,026
IMPRINTER

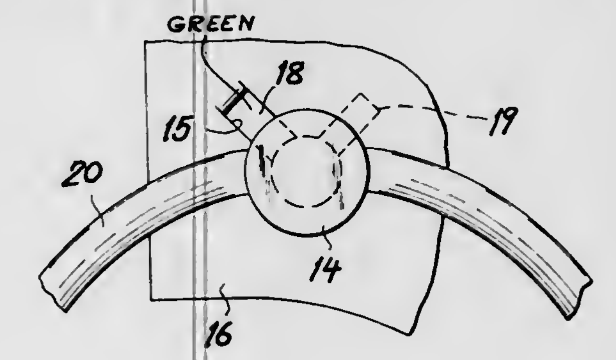
Mitchel A. Trout, Albany, Calif., assignor to Dymo Industries Inc., San Francisco, Calif.
Filed July 23, 1973, Ser. No. 382,080
Int. Cl. B41l ***47/56***
U.S. Cl. 101—45 **14 Claims**



1. A data recorder for printing indicia, including a housing, a printing bed secured to said housing and retaining a plurality of variable indicia, a platen carrier adapted to be moved over said printing bed, a plurality of selector arms slidably retained by said housing and variably positionable to vary the presentation of said variable indicia wheels, and a reset apparatus for returning said variable indicia wheels and said selector arms to a neutral position, said reset apparatus comprising;
slide means for reciprocally translating along said selector arms,
latch means, pivotally secured to said slide means, for engaging said selector arms and returning said selector arms to said neutral position,
crank means, secured to said slide means and operatively associated with said platen carrier, for translating said slide means, and
tooth means, formed on said selector arms, for engaging said latch means.

3,865,027
HAND GRENADE WITH SAFETY MECHANISM

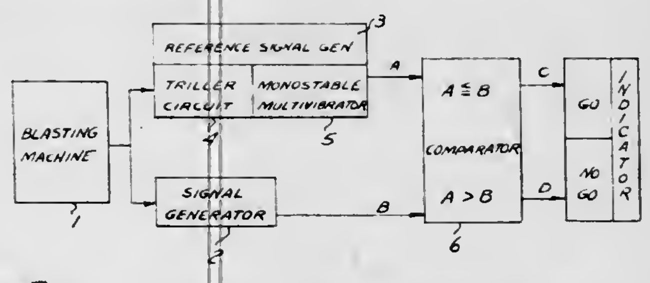
Richard C. Dubno, and Abraham M. Dubno, both of 9 Gaylord Dr., both of Brooklyn, N.Y.
Filed Jan. 28, 1974, Ser. No. 437,330
Int. Cl. F42b ***27/02***
U.S. Cl. 102—64 **6 Claims**



1. In a hand grenade having a casing receiving an explosive charge and mechanism actuated by a lever pivotally mounted on said casing for detonating said charge, the improvement which comprises in combination a cotter pin releasably receivable in said lever for retaining same against displacement until withdrawal of said pin, a ring swingably received in one end of said pin for withdrawal thereof, and means enabling axial withdrawal of said pin only upon a partial rotation thereof, said means including an outward projection on said pin adjacent said ring and a wall of said lever, said projector being engageable behind said wall.

3,865,028
ENERGY TESTER FOR TESTING BLASTING MACHINES THAT DETONATE ELECTRO-EXPLOSIVE DEVICES

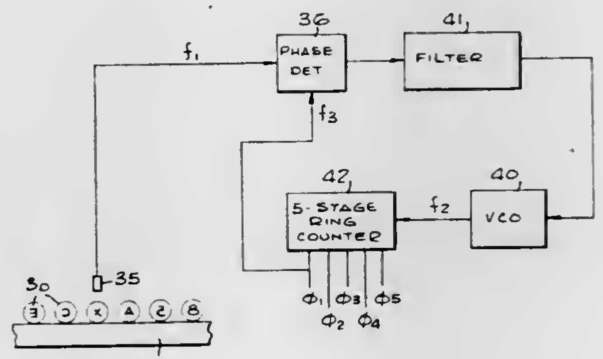
Kaushik H. Thakore, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Filed Dec. 26, 1972, Ser. No. 317,911
Int. Cl. 324 ***111;*** **G01r** ***21/00;*** **F23g** ***7/02***
U.S. Cl. 102—70.2 R **16 Claims**



1. Apparatus comprising a blasting machine of the type that discharges energy stored in a capacitor to initiate a plurality of electro-explosive devices, means for indicating when said energy discharged from said blasting machine is above a predetermined energy value, said means comprising:
circuit means including a series connected resistor and capacitor for receiving said energy discharged from said blasting machine and for producing a first signal which is related to the amount of energy discharged;
means for generating a reference signal which is related to a predetermined amount of energy;
means for comparing said reference signal to said first signal and generating a third signal when said amount of energy discharged from said blasting machine is not less than said predetermined amount of energy; and
means responsive to said third signal for indicating the presence of said third signal, whereby said indicating means indicates that the energy discharged from said blasting machine is above said predetermined amount.

3,865,029
TIMING SIGNAL GENERATING MEANS FOR A HIGH SPEED PRINTER

Dan R. Lytle, Granada Hills, Calif., assignor to Data Products Corp., Woodland Hills, Calif.
Filed Jan. 17, 1974, Ser. No. 434,260
Int. Cl. B41j ***7/08***
U.S. Cl. 101—93.14 **10 Claims**

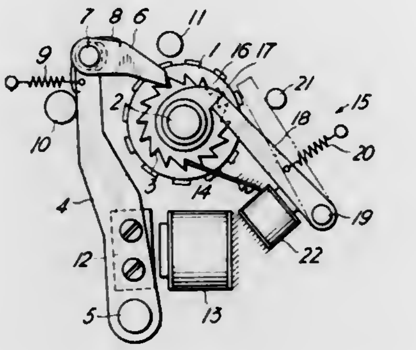


1. For use in a printer of the type having a plurality of printing hammers aligned along a printing line, movable character means for moving characters along said print line, the hammers being equally spaced at a hammer pitch definable as P_h, and the characters being substantially equally spaced at a character pitch definable as P_c, where $P_c/P_h = X/Y$, X and Y being integers with X being greater than Y, whereby as said characters are moved along said print line substantially every Yth character is aligned with every Xth hammer, a system for providing timing signals for said hammers, comprising:
first means including sensing means for sensing the movement of said characters and for providing pulses in response thereto;
a voltage controlled oscillator for providing output signals at a variable output frequency which is a function of the input to said oscillator;
an X-stage ring counter with X output lines coupled to said voltage controlled oscillator and clockable by the output signals thereof;
a phase detector for providing an output as a function of the phase relationships between the pulses from said first means and pulses on a selected output line of said ring counter; and
filter-integrating means coupled between said phase detector and said voltage controlled oscillator and having a selected time constant for integrating the output of said phase detector to control said voltage controlled oscillator to provide said output signals at a frequency definable as Z signals per second, where $Z = X \cdot S/P_c$ and S is equal to the speed of said characters in inches per second along said print line and P_c is in inches, as long as the average character pitch of characters sensed by said first means during a period related to said time constant is equal to P_c.

3,865,030

PRINTING MECHANISM AUTOMATICALLY POSITIONABLE IN THE SAME START POSITION

Yoshinori Chida, and Seiki Mizutani, both of Chiba, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan
Filed Aug. 18, 1972, Ser. No. 281,874
Claims priority, application Japan, Aug. 18, 1971, 46-62279
Int. Cl. B41j *23/32*
U.S. Cl. 101—93.22 **9 Claims**



1. A printing mechanism comprising: a rotatable print drum containing around the periphery thereof *n* circumferentially spaced-apart rows of print type; drive means responsive to a succession of pulse signals for angularly driving said print drum in an intermittent manner through a succession of angular increments each effected by one pulse signal, said drive means comprising a ratchet wheel, means connecting said ratchet wheel to said print drum to effect intermittent angular movement of said print drum in response to intermittent stepwise rotation of said ratchet wheel, and means including an electromagnet responsive to pulse signals applied thereto to electromagnetically effect intermittent stepwise rotation of said rathcet; positioning means responsive to position control signals and coacting with said drive means to effect positioning of said print drum in the same predetermined angular start position in response to each position control signal thereby ensuring that said print drum commences each rotational cycle of operation from the same start position, said positioning means comprising means for permitting intermittent angular movement of said ratchet wheel until said ratchet wheel positions said print drum in said predetermined angular start position and thereafter preventing further angular movement of said ratchet wheel despite further application of pulse signals to said electromagnet until a predetermined number of pulse signals have been applied to said electromagnet; and a control circuit having means responsive to a first command signal for developing a succession of pulse signals and applying same to said electromagnet while simultaneously developing a position control signal and applying same to said positioning means to effect intermittent angular movement of said print drum until same is positioned in said predetermined angular start position, and having means operable after movement of said print drum to said start position and in response to second command signals for developing, for each second command signal, a succession of n pulse signals and applying same to said electromagnet to effect intermittent angular movement of said print drum from said start position through *n* angular increments back to said start position thereby driving said print drum through one rotational cycle.

3,865,031

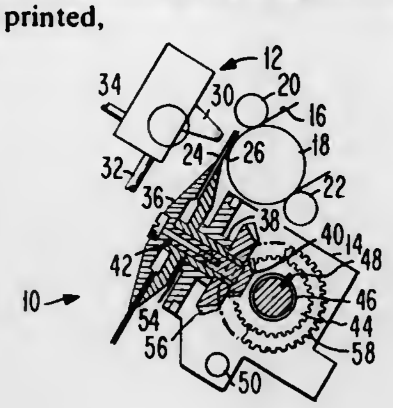
INK SPRAY PRINTER

Ta-Cheng Ku, Endwell, and Sherman H. M. Tsao, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 26, 1973, Ser. No. 335,863
Int. Cl. B41l *13/00*
U.S. Cl. 101—114 **1 Claim**

1. In character printing apparatus:

a nozzle having fluid ink supplied thereto under pressure to provide a spray of fluid ink directed at a document,

a stencil positioned between the nozzle and the document having a plurality of spaced apart character forming openings therein, said stencil being movably mounted so as to continuously move said openings between said nozzle and a position on said document where a character is to be printed,



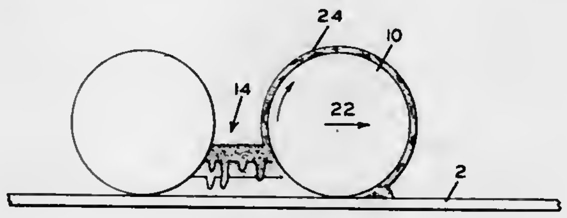
a shutter movably positioned between said stencil and said document and having a narrow slit therein, said shutter being positioned to continuously move said slit between said nozzle and said print position and relative to said character openings, and

drive means connected to said stencil and said shutter to move said stencil past said print position in one direction and said shutter past said print position in the opposite direction at different speeds.

3,865,032

SINGLE PASS MULTI-COLORED SCREEN PRINTING

Lawrence W. Phelan, Jr., Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Aug. 14, 1970, Ser. No. 63,840
Int. Cl. B41m *1/12*
U.S. Cl. 101—129 **1 Claim**



1. In a method of printing a multi-colored pattern on a substrate by the single pass of a silk screen printer, the steps of: depositing a plurality of colors of ink in the silk screen printer reservoir, placing the plurality of colors of ink in a distinct layer structure with one layer above another, slightly agitating the layers of ink to provide a marbleized blending of the layers of ink, then moving the ink from said reservoir to the screen of the printer by the use of a roll structure, said roll structure being positioned at the side of the reservoir and applying the ink onto a substrate to provide for the printing thereon of a pattern having a plurality of colors, with only a single pass of the substrate relative to the screen printer.

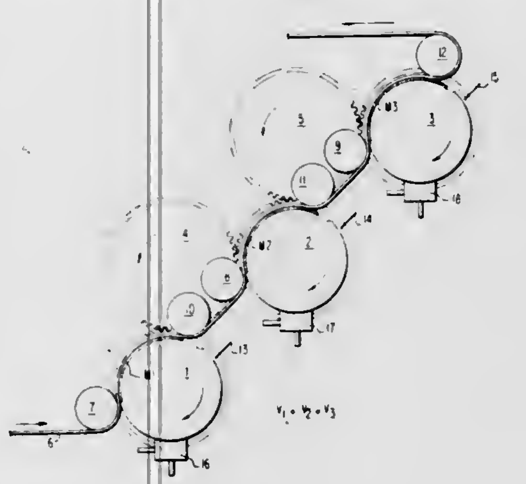
3,865,033

MULTI-COLOR DYE-TRANSFER APPARATUS

Seiichi Taguchi; Sigeru Tezuka; Takeshi Tomotsu, and Eiichi Mizuki, all of Asaki, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of Ser. No. 159,968, July 6, 1971. This application Oct. 24, 1973, Ser. No. 409,205
Claims priority, application Japan, July 6, 1970, 45-58883
Int. Cl. B41f *5/18*
U.S. Cl. 101—181 **2 Claims**

1. In an apparatus for transferring multiple color dye images in superimposed fashion, in sequence, on a tensioned moving

web, during which the web becomes water saturated and stretches longitudinally, said apparatus including: a plurality of rotatable drums, each drum supporting a matrix on its periphery, means for driving the drums at the same angular velocity, dye solution supplying devices operatively associated with said drums to supply a different color dye to respective drum matrices, and a plurality of press rollers disposed in contact with the web and pressing the web into peripheral contact with the drums for a prescribed duration, the improvement wherein: the diameters of successive drums increase in the direction of web movement in direct proportion to the longitudinal stretch of the web caused by water saturation during image transfer to compensate for web stretching and prevent slack from occurring within the web from drum to drum, and thereby maintain full web contact with the drums to improve registration of the superimposed color dye images transferred from the various matrices to the web during movement of said web through said apparatus.

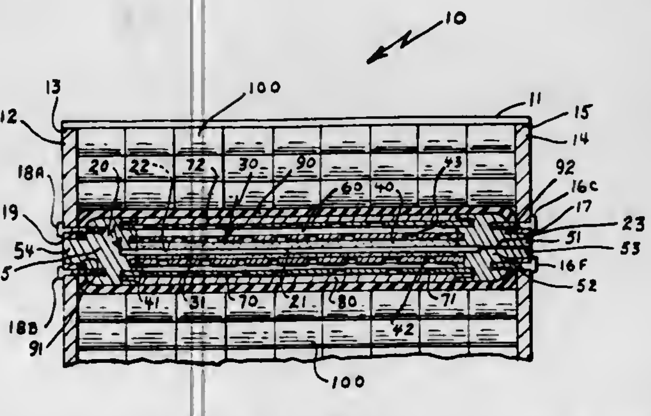


3,865,034
SUBMISSIBLE AIR-TO-SURFACE WARHEAD WITH PROPELLANT-DIAPHRAGM DEPLOYMENT MECHANISM

Thomas W. Boulter, Maitland, and Bernard Van Zyl, Altamonte Springs, both of Fla., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Dec. 20, 1971, Ser. No. 210,257
Int. Cl. F42b *25/16*

U.S. Cl. 102—7.2 **3 Claims**



1. A submissile warhead, adapted for use with a parent air-to-surface missile structure from which said warhead is launched onto a designated ground target, comprising:

- a. a housing which includes:
  - 1. a hollow open-ended cylindrical casing of frangible material;
  - 2. a first circular end plate connected to and closing one open end of said casing;
  - 3. a second circular end plate connected to and closing the other open end of said casing;
- b. a plurality of submissiles positioned within said housing, with each of said plurality of submissiles containing an explosive charge, and with the said plurality of submissiles circumferentially arranged, within said housing, in multiple radial layers;
- c. and, means, disposed within said housing, for ejecting said plurality of submissiles, simultaneously and at different velocities, from within said housing, with said means centrally located within said housing and radially surrounded by said plurality of submissiles, and wherein said means includes:
  - 1. a rubber diaphragm in the unexpanded shape of a hollow close-ended cylinder having an aperture at each end, with said rubber diaphragm disposed within and concentric with said casing of said housing, and with said rubber diaphragm constrained and retained at each end by suitable means which also closes the apertures of said rubber diaphragm;
  - 2. a soft aluminum alloy diaphragm in the unexpanded shape of a corrugated hollow open-ended cylinder, with said soft aluminum alloy diaphragm positioned internal of, concentric with, and abutting said rubber diaphragm, and with said soft aluminum alloy diaphragm disposed between and secured and closed at each end by suitable means;
  - 3. a steel structural tube with a plurality of ports in its wall, with said structural tube positioned internal of, concentric with, and abutting said soft aluminum alloy diaphragm, and with said structural tube disposed between and secured and closed at each end by suitable means;
  - 4. a steel propellant chamber tube with a plurality of ports in its wall, with said propellant chamber tube positioned internal of and concentric with said steel structural tube, and with said propellant fchamber tube disposed between and secured and closed at each end by suitable means;
  - 5. and, a propellant charge explosive train, for generating gas, disposed essentially within said propellant chamber tube, wherein said propellant charge explosive train includes:
    - aa. an igniter explosive charge;
    - bb. an initiator explosive charge radially surrounding said igniter explosive charge;
    - cc. and, a propellant explosive charge radially surrounding said initiator explosive charge;

whereby when said submissiles are ejected from said housing, they form a controlled, large, uniform ground impact distribution pattern on the target.

3,865,035
MULTI-USE MUNITION

William O. Munson, and Russell Reed, Jr., both of Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Jan. 16, 1969, Ser. No. 793,922
Int. Cl. F42b *13/14, 13/12;* **C06b** *15/00*

U.S. Cl. 102—66 **18 Claims**

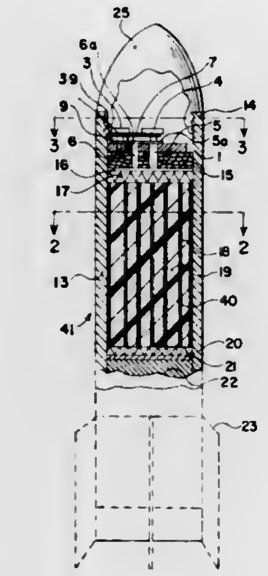
1. A munition which will explode when detonated and which when ignited will eject burning incendiary strands which will burn without exploding, comprising in combination:

a substantially cylindrical elongated munition casing having accessible opposite ends and having its inner wall extending between said ends;

frangible closure means for said casing disposed in one of said ends;

a munition loading disposed in said casing with one end thereof adjacent to said closure means, said munition loading comprising a multiplicity of ejectable elongated strands of high explosive-incendiary composition disposed within said casing with the long axes of said strands arranged parallel to said casing wall, and substantially filling said casing between said ends, each of said strands comprising an open-ended tube, said tube containing a cured high explosive-incendiary composition which will burn when ignited and explode when detonated;

gas generating means disposed adjacent to the other said end of said munition loading for ejecting said loading from said casing after ignition of the strands;



closure means for the casing disposed in said casing adjacent to said gas generating means; and

initiator means for igniting and exploding said loading, said initiator means being supported by said latter closure means.

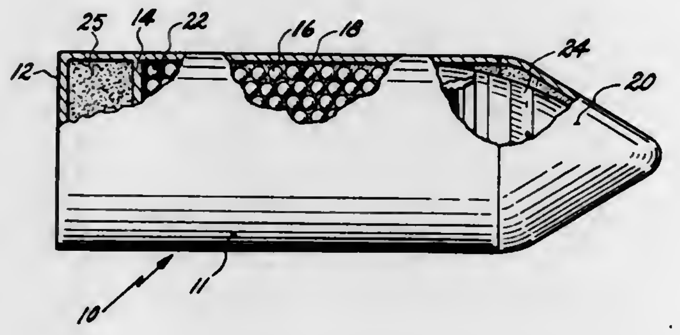
3,865,036
HIGH LETHALITY SHRAPNEL PROJECTILE

Dale M. Davis, Freeport, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1967, Ser. No. 690,714

Int. Cl. F42b *13/18*

U.S. Cl. 102—67 **4 Claims**



1. In a shrapnel having tubular sides, a solid base, a cavity containing projectiles and an ogival head, the improvement therein comprising a projectile having a first penetrating layer of dense material, a first attenuating layer of material less dense than said first penetrating layer of material having one surface therof fixedly secured by an adhesive to one surface of said first penetrating layer, a second penetrating layer of material at least as dense as said first penetrating layer having one surface thereof fixedly secured by an adhesive to the other surface of said first attenuating layer, a second attenuating layer of material less dense than said first penetrating layer having one surface thereof fixedly secured by an adhesive to the other surface of said second penetrating layer and a third penetrating layer of material at least as dense as said second penetrating layer having one surface thereof fixedly secured by an adhesive to the other surface of said second attenuating layer, whereby the penetrating layers of material pulverize in sequence upon striking a multiple plate target.

3,865,037
PYROTECHNICAL COMPOSITION STATIC RELAYS

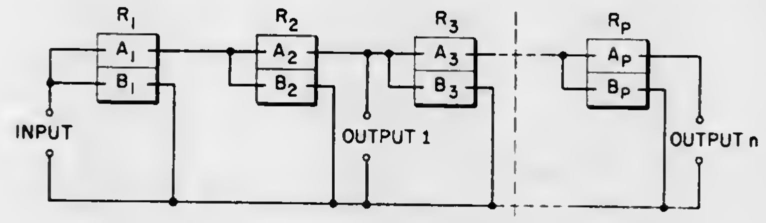
Jacques Claude Delgendre, Toulon; Alain Roger Kerreneur, Paris, and Georges Albert Berton, Toulon, all of France, assignors to Etat Francaise Delegation Ministerielle pour L'Armement, Paris, France

Filed May 26, 1972, Ser. No. 257,197

Claims priority, application France, May 26, 1971, 71.18979

Int. Cl. H01h *37/76*

U.S. Cl. 102—70.2 R **3 Claims**



1. A pulse counting circuit comprising a plurality of static electrical relays, each of said relays comprising

a first element having first and second spaced electrodes therein, said first element being initially insulating and becoming conductive upon exposure to heat;

a second element coupled to said first element, said second element having a pyrotechnical composition;

electrically excited means having third and fourth terminals for initiating the reaction of said second element to produce sufficient heat to cause said first element to become conductive, said first and second spaced electrodes being insulated from each other by said first element prior to initiating the reaction of said second element and being electrically connected after exposure of said first element to the heat generated by said second element;

means for coupling an input pulse across the third and fourth terminals of the electrical exciting means of a first of said plurality of relays and to the first electrode of the first element of said relay,

means coupling the second electrode of the second element of each of said relays to the first electrode and third terminal of a succeeding relay,

means coupling the fourth terminal of each succeeding relay to the fourth terminal of the preceding relay, and

means for obtaining an output voltage between the second electrode and fourth terminal of each of said plurality of relays.

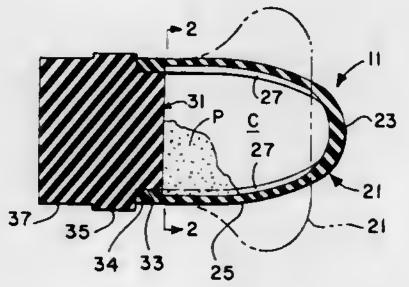
3,865,038
DETERRENT AMMUNITION PROJECTILE

Irwin R. Barr, 110 Martingale Rd., Lutherville, Md. 21093

Filed July 13, 1973, Ser. No. 378,855

Int. Cl. F42b *11/18, 31/00*

U.S. Cl. 102—92.7 **23 Claims**



1. Deterrent ammunition, comprising,

a projectile formed by a rupturable flexible side wall section with a cavity formed therein and having an annular bounding wall with annularly spaced plural longitudinally extending thinner weakened rupturable longitudinal wall zones which are substantially weaker than interconnecting relatively thicker structurally reinforcing side wall sections between said thinner weakened zones,

said side wall section being open at its rear end for securement to the forward end of a separate base section,

nose and base sections closing said cavity at its forward and rearward ends,

and a flowable dispersable material charge in said cavity for dispersal upon impact of said projectile with a target,

said base section being a separate body secured at its forward end to the open rear end of said rupturable flexible side wall section along an annular rupturable shouldered connection zone therewith,

said base section being relatively substantially more rigid as a body than said wall section and forming a forwardly moving piston acting against said charge and said side wall section upon impact of said nose with a target mass, to thereby enable rupture along one or more of the respective zones.

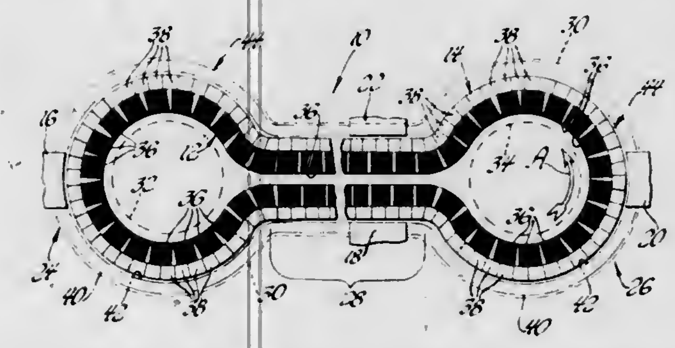
3,865,039
TRANSPORTATION SYSTEM

Walton W. Cushman, Fraser, Mich., assignor to Lon H. Romanski, Sterling Heights, Mich.

Filed Nov. 9, 1972, Ser. No. 304,903

Int. Cl. B61k *1/00*

U.S. Cl. 104—18 **62 Claims**



1. A transportation system, comprising a first closed loop transporter means effective for continuously moving in a first closed loop path, means defining at least a plurality of stationary station-like areas, second closed loop transfer means located as to be generally between at least certain of said station means and said transporter means, propelling means effective to cause said transporter means to continuously move at a substantially constant speed and to cause said transfer means to move in a second closed loop path, and additional controllable means for causing said transfer means to cyclically maintain a speed substantially equivalent to the speed of said transporter means for a first period of time then to cause said transfer means to controllably decelerate until said transfer means is substantially stationary with respect to at least certain of said station-like areas for a second period of time then to cause said transfer means to accelerate until said transfer means is again at a speed substantially equivalent to the speed of said transporter means.

3,865,040
MONORAIL TRANSPORTATION SYSTEM

George A. Steen, 702 College St., Cleveland, Miss. 38732

Filed May 23, 1973, Ser. No. 363,002

Int. Cl. B61k *1/00*

U.S. Cl. 104—18 **16 Claims**

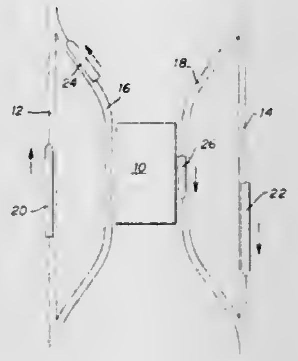
1. A transportation system comprising:

an elevated rail having an upper track surface and first and second opposed sides,

shuttle tracks branching from said first side of said rail to provide exits from and entries to said rail only from said first side,

a shuttle car having a propulsion system for propelling said car along said upper track surface and having an overhang housing with lower wheels which bear against said first side of said rail, said lower wheels causing said shuttle car to exit and enter said rail from said shuttle tracks,

a main car having a propulsion system for propelling said car along said upper track and having an overhang housing with lower wheels which bear against said second side of said rail, said lower wheels of said main car preventing said main car from entering said shuttle tracks, and



means for connecting said shuttle car and said main car for travel along said rail and for disconnecting said shuttle car from said main car for exit of said shuttle car on said shuttle tracks.

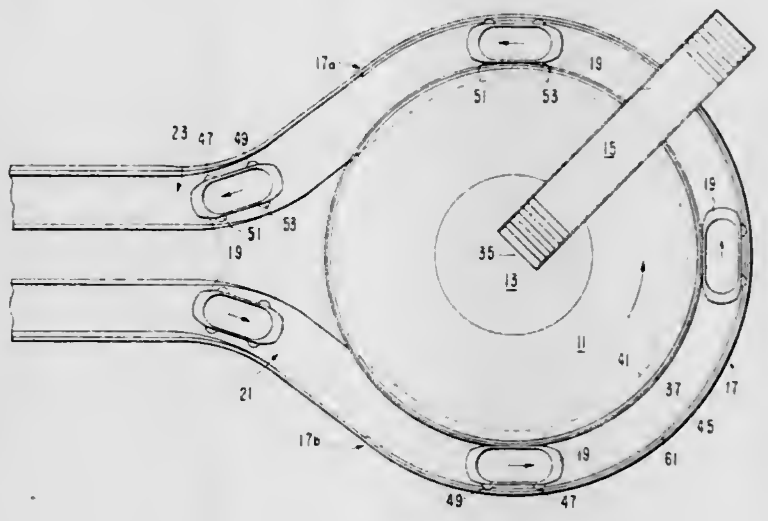
3,865,041
ROTARY PLATFORM VEHICLE PASSENGER LOADING SYSTEM

Karl W. Bacon, Mountain View, Calif., assignor to Arrow Development Co., Inc., Mountain View, Calif.

Filed Apr. 16, 1973, Ser. No. 351,509

Int. Cl. B61k *1/00*

U.S. Cl. 104—20 **17 Claims**



1. A passenger loading station for passenger carrying vehicles, comprising:

an annular passenger platform rotatable about a fixed axis and having a resilient compressible bumper attached thereto around its outside circumferential edge,

a fixed circular vehicle guide segment positioned around the outside of a portion of the platform circumference and guide portions leading toward and away from said circular guide segment, and

means for urging said vehicles against said platform bumper in a manner that the frictional engagement of the vehicle with the bumper prevents relative movement therebetween when a vehicle is in said circular guide segment.

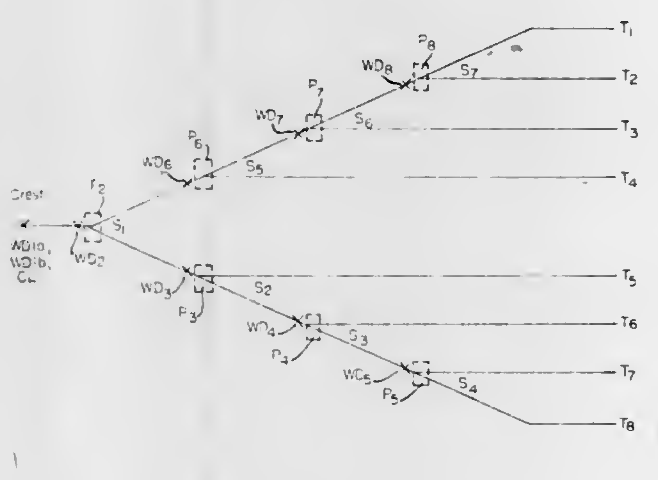
3,865,042
AUTOMATIC SWITCHING CONTROL SYSTEM FOR RAILWAY CLASSIFICATION YARDS

John J. DePaola, Penfield, and Charles W. Morse, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Apr. 4, 1973, Ser. No. 348,376

Int. Cl. B61l *7/08*

U.S. Cl. 104—26 B **16 Claims**



1. Apparatus for controlling the switches in a railway classification yard to route each cut of cars rolling down the crest to its proper destination including car sensing devices at the crest and at each switch, said apparatus comprising:

computer means responsive to said sensing devices and which has stored therein:

a. a sequential list of cars as they appear at the crest and an intended destination track for each of said cars,

b. the characteristics of the yard including a table which identifies, for each destination track, the switches included in the route from the crest to said destination track and the proper position for each of said switches to route a cut from said crest to said destination track,

c. said computer means further providing,

1. means for determining the number of cars in each cut,
2. means responsive, to each cut at said crest, to said table and said list to determine the position of the first switch in said classification yard,
3. means responsive to said last named means to correctly position said first switch to route said cut to its destination track unless the proper positioning of said switch would result in an unsafe condition,
4. means responsive, to the presence of a cut at any subsequent switch, to said table and said list to determine the position of the next succeeding switch in the yard for the cut to reach its required destination track,
5. means responsive to said last named means to correctly position said next succeeding switch unless the correct positioning of said next succeeding switch would result in an unsafe condition,
6. means to compare the position of each switch as each cut is adjacent thereto with the required position for said cut to reach its intended destination track,
7. means responsive to said last named means when indicating a lack of comparison and to said table to select a different destination track for said cut, and
8. means responsive to said last named means to modify said list for said cut by substituting said different destination track for said intended destination track.

3,865,043
DEVICE FOR DETECTING AND CONTROLLING THE SPACING BETWEEN TWO JUXTAPOSED BODIES

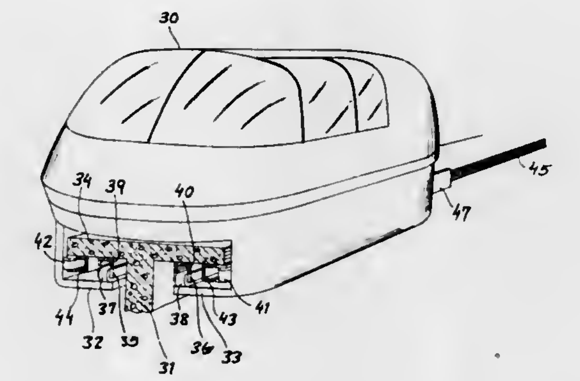
Peter Schwarzler, Furstenfeldbruck, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Oct. 4, 1972, Ser. No. 297,035

Claims priority, application Germany, Nov. 25, 1971, 2158387

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 MS **8 Claims**



1. The combination of a vehicle track, a vehicle displaceable along said track, and magnet means suspending said vehicle and guiding same along said track with a gap spacing therebetween, with a contactless device for detecting the spacing and controlling said magnet means, said device comprising:

- a first member extending along said track;
- a second member on said vehicle juxtaposed with said first member;
- a parallel resonant network on one of said members including a capacitor and a coil confronting an electrically conductive portion of the other member and having magnetic characteristics influenced by the proximity of said conductive portion, said capacitor being connected across said coil;
- a constant-frequency oscillator connected in circuit with said resonant network;
- output-circuit means connected to said resonant network and responsive to an electrical parameter thereof for producing an output in dependence upon the mutual spacing of said members;
- control means for operating said magnet means to maintain said gap spacing substantially constant; and
- an ohmic resistance in series with said oscillator and said parallel-resonant network, said output-circuit means including a voltage detector responsive to the voltage across said network, said output-circuit means being connected across said network between said resistance and the network.

3,865,044
GUIDE DEVICE FOR THE HAULAGE ATTACHMENTS OF A SKI-LIFT OR SIMILAR DEVICE

Guy Henri Bancel, 83 rue, Petit, 75019 Paris, France

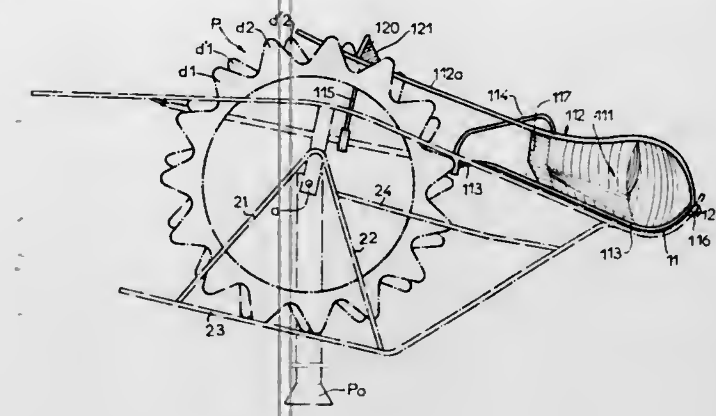
Filed May 31, 1973, Ser. No. 365,737

Claims priority, application France, June 2, 1972, 72.19951; Feb. 15, 1973, 73.05386

Int. Cl. B61b *7/10, 11/00*

U.S. Cl. 104—197 **10 Claims**

1. In an installation for hauling loads, a device for guiding supporting said loads on a cable over a guide pulley over which the cable passes, comprising means disposed along the path of the haulage cable, extending from upstream of the pulley, in the normal displacement direction of the cable, to beyond the rotation axis of said pulley, said means comprising at least two wire shape members which provide at least two support zones within which the haulage attachments are guided by at least one or the other of said wire shape members in order to be brought eventually with the auxiliary members connected thereto, and depending upon the orientation of the incoming hauling attachment so that said hauling attachment is cammed or guided away from said pulley and then guided back to its original orientation to a position enabling normal passage over the pulley when the cable to which said attachment is connected advances.



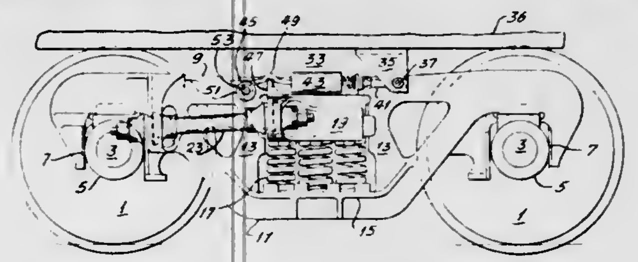
3,865,045
RAILWAY VEHICLE TRUCK WITH DEVICE FOR DAMPING OSCILLATIONS ABOUT SWIVEL AXIS

William Clifford Jones, Jr., Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Apr. 25, 1974, Ser. No. 464,113

Int. Cl. B61f *3/00*

U.S. Cl. 105—199 C **10 Claims**



1. In a railway vehicle, a swivel truck comprising wheeled axles spring supporting structure carried by said axles, springs supported on said spring supporting structure, spring supported structure carried on said springs, said spring supported structure having an upwardly facing friction central bearing part, vehicle body structure having a downwardly facing swivel central bearing part in mating pivotal load supporting engagement with said spring supported structure part, a snubbing device extending tangentially with respect to the truck swivel axis and having relatively movable ends, one of its ends being attached to said body structure and its other end portion being engaged with said spring supported structure when said body structure is loaded below a predetermined value, and means on said spring supporting structure engageable with said snubbing device for disengaging the latter from said spring supported structure when said load exceeds said predetermined value.

3,865,046
HOPPER DISCHARGE GATE SEALING STRUCTURE

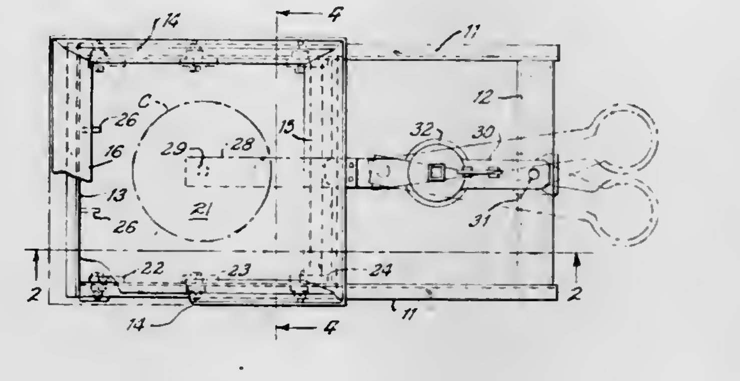
Oliver C. Fuller, Woodstock, Ill., assignor to Evans Products Company, Plymouth, Mich.

Filed Oct. 13, 1972, Ser. No. 297,493

Int. Cl. B61d *7/02, 7/20, 7/26*

U.S. Cl. 105—253 **7 Claims**

1. A hopper structure including a support frame, an outlet chute fixedly supported thereon and a gate therefor slidable along said frame, a gate-shifting mechanism comprising a pair of toggle links pivotally interconnected end to end with the outer end of one link pivoted to said frame and the outer end of the other link pivoted to said gate at a point in the central region of the gate and spaced inwardly from all the edges thereof a substantial distance, means for actuating the toggle joint applicable to the interconnection of said links, and a downwardly facing rim on said outlet chute, said gate being spaced vertically below said rim when in open and partly closed positions, upwardly facing elements mounted directly on said frame at points spaced longitudinally thereof and downwardly facing elements mounted directly on said gate at points similarly spaced longitudinally thereof, said downwardly and upwardly facing elements interengaging to lift the entire gate uniformly throughout its area as it approaches fully closed position for engagement with said rim when it reaches fully closed position, the opposing surfaces of the forward downwardly and upwardly facing elements being higher than those of the corresponding rear elements.



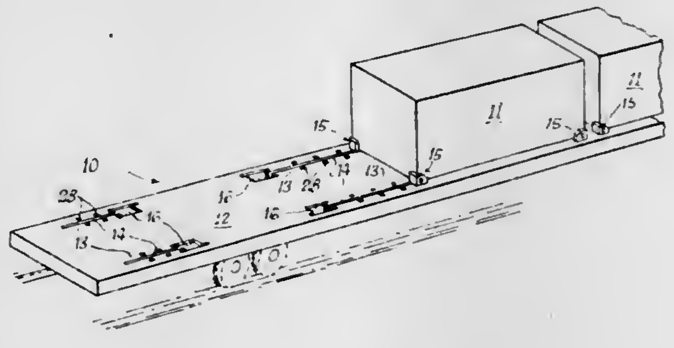
3,865,047
CONTAINER PEDESTAL RETAINING DEVICE

Emil J. Hlinsky, Oak Brook, and Marvin E. Anderson, Mundelein, both of Ill., assignors to MacLean-Fogg Lock Nut Company, Mundelein, Ill.

Filed May 31, 1974, Ser. No. 474,950

Int. Cl. B65j *1/22*

U.S. Cl. 105—366 D **14 Claims**



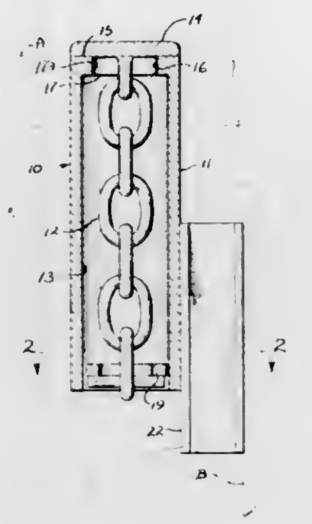
1. For use in a collapsible pedestal container support and securement system for container transportation above a vehicle deck, the system including a pedestal guide track comprising a continuation of the deck and having a slot and a pedestal stowage hole therein, and a container support pedestal mounted on, supported by and slidable along the guide track for movement between an upright container supporting position, and a collapsed position through the stowage hole wherein the pedestal is in generally flush relationship with the deck, the pedestal having a reaction member comprising a brace of width for movement through the slot, and a cross member connected to the brace and being wider than the slot; a pedestal retaining device comprising: means defining a closed retaining channel for the brace of the pedestal, and connecting means for securing said channel defining means to the track, said channel being narrower than the cross member in order to retain the brace within said channel.

3,865,048
TRUCK BED TIE-DOWN ANCHORING DEVICE

Eugene L. Wallace, 3700 Georgetown St., N.E., Canton, Ohio 44721

Filed May 1, 1974, Ser. No. 465,796
Int. Cl. B61d *45/00*

U.S. Cl. 105—484 **7 Claims**



1. An anchoring device for installation in a vehicle or like floor structure for anchoring attachment of a chain or like load-binder device thereto, comprising: a housing adapted for fixed attachment to a said floor structure and having a passage axially therethrough opening at an upper end of the housing; said housing having inwardly and outwardly presented stop seats with respect to said upper end thereof; and an elongated anchor element axially shiftably received in said passage and adapted to be freely passed through said upper end opening of the housing; and longitudinally spaced outer and inner portions of said element, with respect to said passage, having thereon spaced outer and inner stop members movable therewith for selective stop engagement with said outwardly and inwardly presented stop seats of said housing, respectively, in retracted and extended positions of the element with reference to said housing, the effective weight of said elongated element, in an axially vertically disposed condition of said housing, thereby tending to retract the elongated element into said passage to stop engagement of said outer stop member thereon with said inwardly presented stop seat of said housing, and said outer stop member being engageable as for manually drawing said link chain outwardly of said passage, toward anchoring stop engagement of said inner stop member of the same with said inwardly presented stop seat of said housing, for anchoring attachment of a thereby outwardly extended end portion of said element to a said load-binder device.

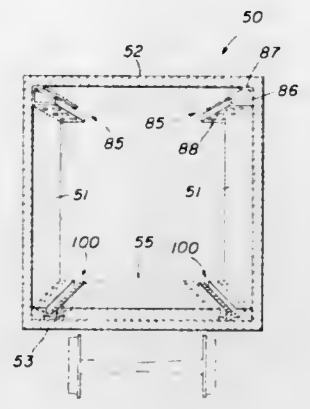
3,865,049
FLOOR LATCH STRIP FOR RAILWAY CARS

Donald Elmer Hassellof, Munster, Ind., and Cyril George Scherer, Olympic Fields, Ill., assignors to Stanray Corporation, Chicago, Ill.

Filed May 11, 1973, Ser. No. 359,718
Int. Cl. B61d *17/00*

U.S. Cl. 105—376 **6 Claims**

1. A floor latch strip for use in a freight-carrying vehicle equipped with a lading separator carrying downwardly projecting latch elements, said floor latch strip comprising, an elongated body formed of two bars each having an M-shaped transverse cross section, said bars being positioned longitudinally of the vehicle to form with the vehicle upper and lower longitudinally extending channels, with the bottom of said upper channel being defined by spaced apart horizontally extending portions of said bars and said lower channel being defined by spaced apart vertically extending portions of said bars, a keeper fixedly secured to said two bars and extending substantially the entire length thereof, the bottom of said keeper being secured to said lower channel and sealing said lower channel from said upper channel, said keeper having a plurality of locking slots therein for cooperating with the latch elements to latch the lading separators in place, the bottom of said slots lying in the same plane as the horizontally extending surfaces of said upper channel, whereby said upper channel is readily cleanable due to the alignment of said slots with said upper channel and said lower channel is prevented from being filled with debris due to the sealing thereof by said keeper.

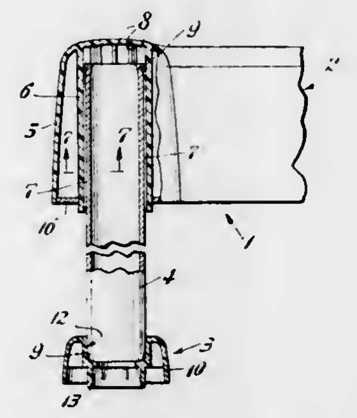


3,865,050
CONVERTIBLE LEG ASSEMBLY

Claudio Cecchetti, Milan, Italy, assignor to Arco Falc srl, Milan, Italy

Filed June 22, 1973, Ser. No. 372,860
Int. Cl. A47b *3/06*

U.S. Cl. 108—19 **7 Claims**



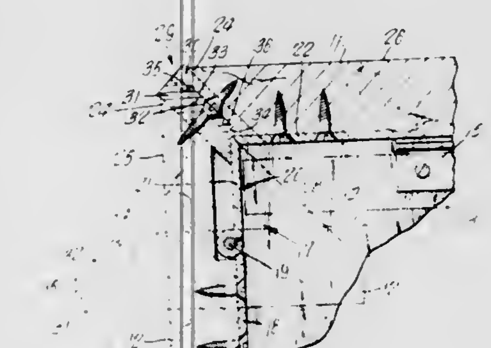
1. A convertible table having a table top adapted to be supported on a floor by means of legs and also adapted to be supported directly on another surface by means of base members in the absence of legs, comprising a table top, a plurality of sockets on the underside of said table top, each of which is adapted to receive one end of a leg in frictional engagement, and a plurality of base members each of which has a base surface and a top surface, the top surface comprising means adapted to frictionally engage the other end of the leg to provide a floor-engaging member having greater slip-resistance than the leg, and the base surface comprising means adapted for direct frictional engagement with the sockets in the underside of the table top, when the base member is inverted, to provide surface-engaging supports for the table top in the absence of the legs.

3,865,051
FOLDING ARTICLE OF FURNITURE

Anton Johl, and Winfried P. H. Malich, both of Montreal, Quebec, Canada, assignors to Louis Ethan Ltd., Montreal, Quebec, Canada

Filed Apr. 6, 1973, Ser. No. 348,690
Int. Cl. A47b *3/00*

U.S. Cl. 108—132 **6 Claims**



1. An interlocking corner joint for an article of furniture comprising a first and a second interlocking connector strip secured to an edge of a respective one of two members hinged together to form a joint, said connectors being elongated strip-like edge connectors secured respectively to an angulated joint edge of said members and extending beyond the outer planar surface of its associated member to provide a protective edge along the interconnected outer edges of said members, one of said connectors being provided with an elongated ridge receivable in interlocking relationship in an elongated cavity in said other connector, said members being hinged to provide arcuate displacement of said first and second connectors about a fulcrum located outside the center axis of said corner joint whereby said members can be collapsed one on top of the other and in predetermined spaced apart relationship.

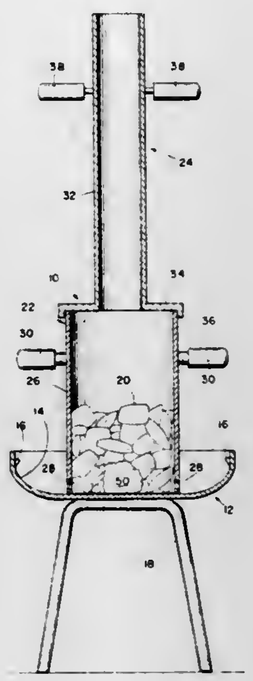
3,865,052
CHARCOAL STARTER DEVICE

Charles E. Streets, 508 N. 68th East Ave., Tulsa, Okla. 74136, and Robert S. Hembree, 1420 S. New Haven, Tulsa, Okla. 74112

Filed Oct. 15, 1973, Ser. No. 406,587
Int. Cl. F23b *3/00*

U.S. Cl. 110—1 F **6 Claims**

1. A charcoal starting device for igniting untreated charcoal briquettes and comprising a kindling container for receiving kindling material and untreated charcoal briquettes prior to kindling thereof, said container being adapted for removably setting directly on the grating or pan of a charcoaler and containing the briquettes in close relationship to each other, means for allowing outside air into the lower portion of said kindling container, an elongated flue member removably attachable to the upper portion of said kindling container for facilitating the creation of an air draft through the said charcoal starting device, means for removing the kindling container after the briquettes have ignited thereby depositing said lighted briquettes on the grating or pan for immediate use.

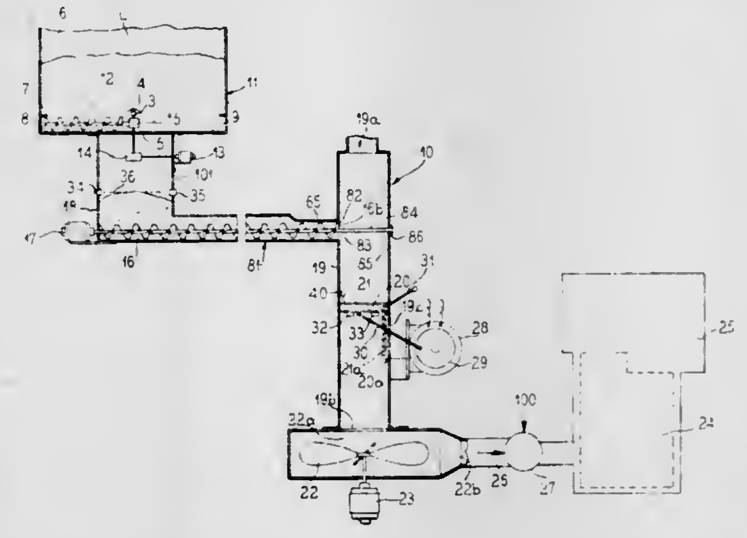


3,865,053
PARTICULATE WASTE PRODUCT FIRING SYSTEM

Bruce Alan Kolze, and Melvin W. Kolze, both of 10302 Don Pico Rd., Spring Valley, Calif. 92077

Filed Apr. 17, 1974, Ser. No. 461,725
Int. Cl. F23k *3/00*

U.S. Cl. 110—7 A **11 Claims**



1. A bottom unloading system for particulate material comprising:

a particulate material cylindrical storage container including a bottom wall with a central opening therein, a cylindrical side wall having an annular restraining means attached thereto and above said bottom wall and a deflector means axially aligned with and in working relationship to said central opening,

a radially free-sweeping, non-arching conveyor screw means extending along said bottom wall from said central opening to said side wall of the storage container,

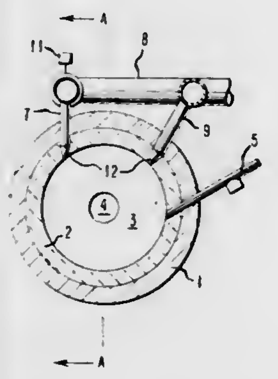
a wheel means attached to an outer end of said conveyor screw means adjacent to said side wall of the container in working relationship thereto for contacting said bottom wall and said restraining means, operable to maintain said conveying means at a substantially parallel distance above said bottom wall of the container and prevent said

conveyor screw means from ascending above said restraining means of said container,
an electromotive means connected to the conveyor screw means operable to rotate said conveying means about its longitudinal axis,
a sonic control means positioned below said central opening within a discharge area in operable relationship to a discharge from said storage container and communicating with said electromotive means to control the energy input thereto in response to a desired accumulation level of discharged particulate material,
whereby the sonic control means generates a signal to said electromotive drive means in response to the level of discharge from said container and the drive means rotates said conveying screw means about its longitudinal axis causing frictional engagement of said wheel means with said bottom wall, resulting in the radially free-sweeping movement of said conveying screw means about the bottom wall of said container and uniform unloading of said particulate material from said container at a rate sufficient to maintain a constant desired level of discharge below said container.

3,865,054
CYCLONIC INCINERATOR

Elmer S. Monroe, Jr., Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1973, Ser. No. 411,300
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **5 Claims**

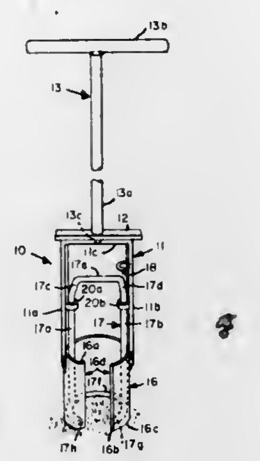


1. A cyclonic incinerator capable of burning chemical wastes comprising:
- a. a cylindrically shaped combustion chamber,
- b. feeding means for introducing waste to be burned into one area of said chamber, said area being near one end of the chamber,
- c. a first row of convergent nozzles parallel to the axis of the combustion chamber, said nozzles capable of directing air into said area of the chamber in a direction tangentially with respect to the circumference of the chamber,
- d. means for adjusting the rate of air flow from said first row of nozzles in relation to the amount of waste introduced into the chamber or the temperature within the chamber,
- e. a second row of convergent nozzles parallel to the axis of the combustion chamber and spaced apart from the first row, said nozzles being smaller in diameter than the nozzles in the first row and capable of directing a fixed amount of air tangentially into said area of the combustion chamber at such a velocity to maintain turbulence in said chamber, and
- f. in the opposite end of the chamber from said area wherein the waste and air are introduced, an exit means for exhausting the gases created by combustion in an axial direction, said exit being smaller in diameter than the chamber, being centered on the axial center line of the chamber, and forming an angle with the end of the chamber.

3,865,055
PLANT TRANSPLANTER

John W. Gilbaugh, 19396 Monte Vista Dr., Saratoga, Calif. 95070

Filed Apr. 26, 1973, Ser. No. 354,751
Int. Cl. A01c *11/00*
U.S. Cl. 111—4 **5 Claims**



1. A plant transplanter for extracting and transplanting a plant consisting of a sharpened cylindrical blade with a vertical side plant entry opening extending along a side portion of said cylindrical blade, a rectangular frame with bottom side members fixedly attached to the opposite top side portions of said cylindrical blade, a foot bar mounted fixedly on top of said rectangular frame for application of foot pressure for easy insertion of said cylindrical blade into the ground, a cross bar handle fixedly attached to said rectangular frame at the central portion of said foot bar to press and guide said cylindrical blade downwardly into the soil around said plant to be extracted and for use in rotation of said cylindrical blade to loosen said plant before lifting said cylindrical blade containing said plant from said ground, said rectangular frame is provided with guide eyes mounted on the inner side of the side members of said retangular frame to slidably receive and control the vertical alignment of a reciprocating plant ejector means provided with an ejector ring fixedly and horizontally connected to the lower ends of two side rod members with the upper extremities of said side rod members formed into a rectangular and horizontal configuration to provide a foot piece for applying pressure downwardly to eject said plant from said cylindrical blade, said ejector foot piece extends outwardly from said rectangular frame side members on the side opposite said plant entry opening which is centrally aligned between said side members of said rectangular frame in said side portion of said cylindrical blade to prevent obstruction of entry of said plant or damage thereto by said downwardly pressure and movement of said ejector foot piece, said ejector ring is received within said cylindrical blade with said ejector ring moving upwardly in said cylindrical blade as said cylindrical blade is inserted into said ground around said plant to be extracted from said ground, and said ejector ring moves downwardly within said cylindrical blade when said plant is ejected by application of pressure on said ejector assembly foot piece which moves said ejector side rod members received in said guide eyes slidably downward and forces said ejector ring to eject said extracted plant usually into a hole made by said transplanter.

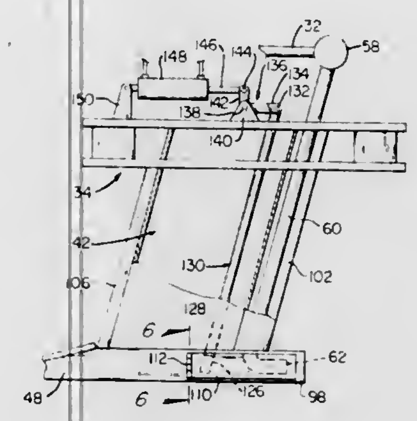
3,865,056
SEWAGE DISPOSAL SYSTEM AND APPARATUS

Jack De Wayne Danford, Watkins, Colo., assignor to Jack D. Danford and H. H. Champlin

Filed June 15, 1972, Ser. No. 263,183
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **11 Claims**

1. Sewage disposal apparatus comprising:

a main frame adapted to be positioned at a selected level above the surface of the ground;
at least one vertically elongate and laterally narrow shank secured to and depending from the frame and adapted to penetrate the ground to a selected depth;
a plow member secured to the lower end of the shank, including an axially elongate foot of substantially greater width than the shank to form a disposal tunnel beneath the surface of the ground;

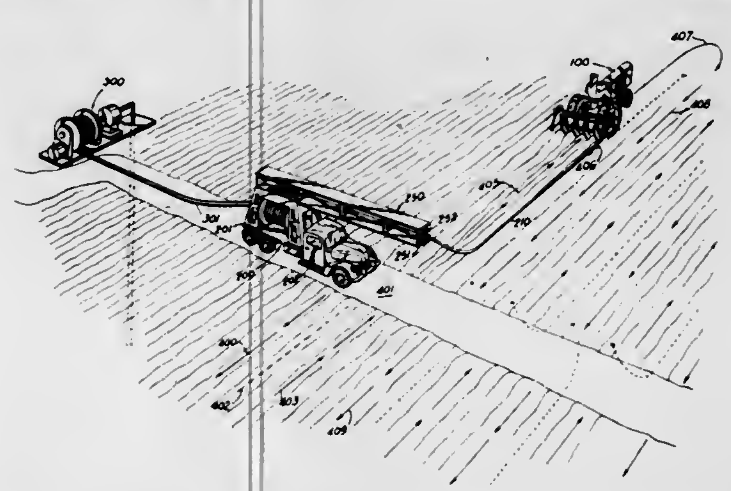


controllably adjustable power operated servo means to vary the cross sectional area of the foot during operation of the apparatus to vary the cross sectional area of the tunnel formed by the plow member;
the shank including means defining a downwardly extending sewage discharge flow path from the vicinity of the frame to the vicinity of the plow member; and
a dispensing port at the lower end of the flow path to discharge sewage into the tunnel, and a supply manifold at the upper end of the flow path.

3,865,057
APPARATUS FOR SUBSOIL IRRIGATION

Thomas J. Frazier, 2680 Ashford Rd., N.E., Atlanta, Ga. 30319

Continuation-in-part of Ser. No. 159,223, July 2, 1971, Pat. No. 3,753,409. This application Oct. 2, 1972, Ser. No. 294,220
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **12 Claims**

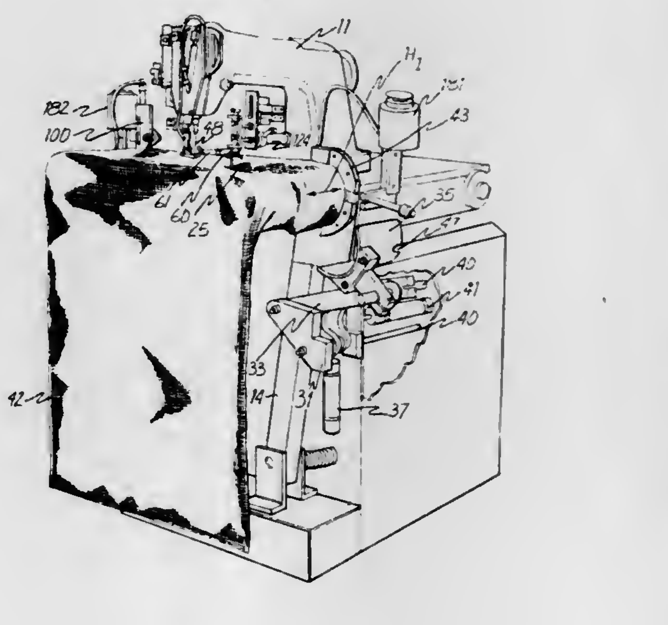


1. A fluid application apparatus adapted to be supported on a translatable vehicle for use in applying a fluid soil conditioning medium to the subsoil of a predetermined area comprising, in combination:
- a. frame support means adapted to be carried by translatable vehicle means;
- b. means carried by said frame support means for making openings in the soil of an area in which a subsoil application is to be made in response to a traversing operation of said vehicle and frame support means;
- c. means carried by said frame support means for applying fluid through said openings into the subsoil of said area; and
- d. fluid input conduit means carried on said frame support means, said input conduit means being operable for delivering fluid therethrough from a stationary fluid supply means, said fluid input conduit means including a horizontal portion, pivot means located midway between the sides of said frame support means mounting said horizontal portion for swinging movement through an angle of 180°, said horizontal portion being of a length approximately equal to one-half the width of said frame support means, so that the end of said horizontal portion opposite the pivot means may be swung from a position adjacent one side of the frame support means to a position adjacent the other side thereof, means connecting said horizontal portion at its pivoted end in flow communication to said means for making openings in the soil, and flexible conduit means connected to said end of the horizontal portion opposite the pivot means for establishing flow connection to a fluid supply source.

3,865,058
METHOD AND APPARATUS FOR FORMING AND JOINING HEMS, PARTICULARLY ON TUBULAR ARTICLES

Herman Rovin, Norwalk; Rudolf Kreidel, Shelton, both of Conn., and Lawrence J. Levine, Valley Stream, N.Y., assignors to Automatech Industries Inc., Bridgeport, Conn.

Filed May 30, 1973, Ser. No. 365,098
Int. Cl. D05b *23/00, 35/04, 81/00*
U.S. Cl. 112—63 **9 Claims**



1. The method of forming a continuous hem on a tubular article, which comprises
- a. applying the tubular article endwise over spaced sets of inner and outer forms,
- b. exerting outward pressure on at least the outer forms to place an open end of the tubular article under circumferential tension,
- c. engaging portions of the article adjacent the forms and advancing said portions toward said open end between the inner and outer forms, whereby to progressively withdraw the end margin of fabric from over said outer forms and fold it outward to form a hem fold between said inner and outer forms, and
- d. exerting outward pressure on at least the inner forms to maintain the folded hem under circumferential tension.

3,865,059

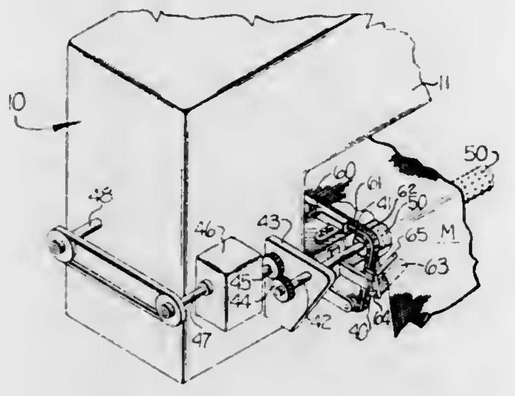
TUFTING MACHINE WITH POSITIVE POSITIONING MEANS FOR BACKING MATERIAL

Obie R. Jackson, Dalton, Ga., assignor to B & J Machinery Co., Inc., Dalton, Ga.

Filed Mar. 12, 1973, Ser. No. 339,778

Int. Cl. D05c *15/14*

U.S. Cl. 112—79 R **8 Claims**



1. A tufting machine for forming narrow gauge pile fabrics including an elongate backing material and yarns penetrating the backing material and forming rows of tufts extending longitudinally of the backing material, said machine comprising

a. a first row of spaced tufting needles mounted for reciprocation in a direction transverse to the backing material and arranged to carry yarns through the backing material to form spaced apart first rows of tufts therein,

b. a second row of spaced tufting needles mounted for reciprocation in a direction transverse to the backing material and arranged to carry yarns through the backing material, said second row of tufting needles being widely spaced from and off-set relative to the needles of said first row to form second rows of tufts in the spaces between the first rows of tufts.

c. pile forming means disposed beneath the backing material for forming pile from the yarns carried by said needles, and

d. positive positioning means for feeding the elongate backing material beneath said first and second rows of spaced tufting needles and for preventing both lateral shifting and longitudinal sagging of the elongate backing material as it moves from said first to said second row of tufting needles, said positive positioning means comprising

1. a pair of endless chains having upper reaches supported for movement transversely of and adjacent opposite ends of said rows of tufting needles,
2. gripping means carried by said chains for engaging the side edge portions of said backing material and for positively maintaining the lateral position of said backing material as it is moved from said first row to said second row of tufting needles by said chains,
3. a rotatable picker roll supported on a fixed axis extending transversely between said chains and parallel to said rows of tufting needles, and including outwardly extending pins adapted to engage the backing material as the same is drawn over said picker roll, and
4. drive means for imparting movement to said chains, and for imparting rotation to said picker roll which is coordinated to the speed of movement of said chains.

3,865,060

SPECIAL SUBMARINE DEVICES USING A NOVEL INTEGRATED LIFT, PROPULSION AND STEERING SYSTEM

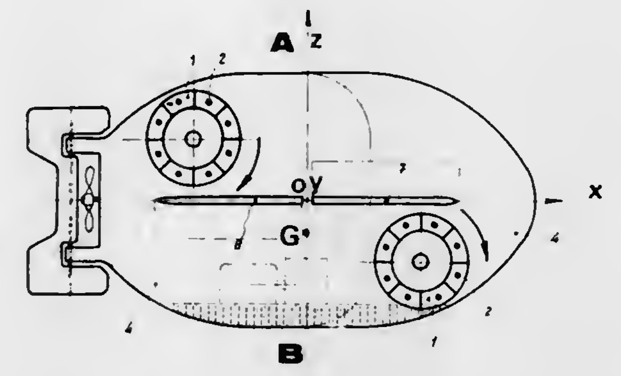
Paul Bastide, 108, rue de Rennes, 75006, Paris, France

Filed Apr. 26, 1973, Ser. No. 354,791

Claims priority, application France, Apr. 26, 1972, 72.14768

Int. Cl. B63g *8/08, 8/16*

U.S. Cl. 114—16 R **3 Claims**



1. A submarine device capable of perpendicular translation relative to its longitudinal axis inclusive of purely upward and downward movements using an integrated system of lift, propulsion and steering, said submarine device comprising a hull with a center of symmetry, said integrated system comprising four cycloidal propellers grouped in two pairs, one pair being forward on said hull and one pair aft on said hull, each cycloidal propeller having a horizontal axis of rotation and including a flat circular rim carrying at its periphery a circular array of identical horizontal blades each rotatable about a horizontal axis perpendicular to the said rim, means for rotating the blades about their axes including a joint connecting rod for each blade extending parallel to the plane of said rim, and a master control head coupled to said rods and capable of being staggered relative to the axis of rotation of said propeller, said two pairs of cycloidal propellers being symmetrically arranged relative to said center of symmetry of the hull, the two propellers of each pair being coaxial and symmetrical relative to the longitudinal vertical plane of symmetry of the hull, the directions of rotation of the propellers on each side of the hull being in the same directions, the two propellers on each side being longitudinally spaced from each other to minimize interaction of one with the other, the forward pair being lowered below the horizontal plane of symmetry, and aft pair being raised above said plane, horizontal fins extending longitudinally in the horizontal plane of symmetry at each side between the forward and rear propellers on such side, and means for folding said fins into vertical positions for purely vertical displacement of the device.

3,865,061

CATAMARAN RIGHTING APPARATUS AND METHOD

Howard F. Newman, 717 Malcolm Ave., Los Angeles, Calif. 90024

Filed Nov. 30, 1973, Ser. No. 420,643

Int. Cl. B63h *9/04*

U.S. Cl. 114—39 **14 Claims**

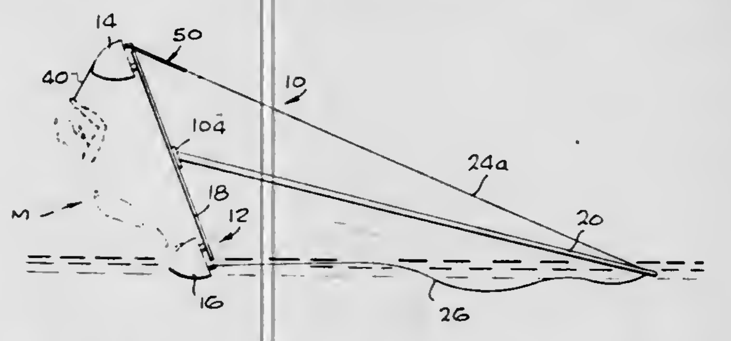
1. In a multihull boat having a lower boat portion with first and second outboard hulls, a mast with a lower end universally pivotally mounted on the lower boat portion and normally extending upwardly therefrom, and a plurality of cables extending from the upper end of the mast to the lower boat portion, including a stay cable extending towards a first end of the boat and a pair of shroud cables extending towards opposite sides of the boat and with directional components towards a second end of the boat opposite the first end, the improvement of apparatus for facilitating the righting of the boat when it capsizes on its side with one hull out of the water, comprising:

first and second holding means for releaseably attaching a point at the lower end of a respective shroud cable to the lower boat portion, to maintain the mast substantially upright for normal sailing;

first and second tensile means, each having a forward end attached to the lower end of a respective shroud cable and having a rearward end; and

first and second attach means for holding the rearwards ends of the respective tensile means to the lower boat portion at positions closer to the second end of the boat than said holding means, whereby when a holding means is released to allow the mast of a capsized boat to pivot away from the hull that is out of the water, the mast is constrained to pivot primarily athwarthships.

12. A method for righting a multihull boat which has capsized and which includes a mast buoyant at the top and free to pivot in any direction on the deck and normally maintained upright on the deck between first and second opposite hulls by cables extending downwardly from the upper portion of the mast to the hull and deck assembly, including a stay cable extending forwardly and a pair of shroud cables extending with an aft direction component and in opposite laterally directions, comprising:



releasing the lower end of the shroud, which lies out of the water, from the hull and deck assembly, and adding a length of a tensile member thereto which is fixed to the hull and deck assembly at a location aft of the position at which the lower end of said shroud was originally attached to the hull and deck assembly, whereby to allow the mast to tip away from the hull that is out of the water while preventing the mast from merely tipping forward, so that the hull that is furthest out of the water can move to a position where its weight does not prevent uprighting of the boat.

3,865,062

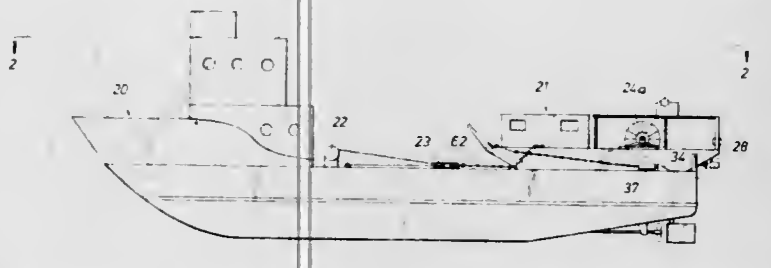
MARINE GEOPHYSICAL EXPLORATION SYSTEM

John J. Babb, Jackson, Miss., assignor to Seiscom Delta Inc., Houston, Tex.

Continuation of Ser. No. 87,831, Nov. 9, 1970, abandoned. This application July 17, 1972, Ser. No. 272,096

Int. Cl. B63b *35/00*

U.S. Cl. 114—43.5 **14 Claims**



8. A marine geophysical exploration system for exploring in deep and shallow water comprising:

a geophysical instrumentation and equipment vessel;

a support vessel having space for receiving said geophysical instrumentation and equipment vessel;

a plurality of rollers rotably mounted with said support vessel;

guide means mounted with said support vessel for guiding and supporting said geophysical instrumentation and equipment vessel, said guide means comprising a pair of guideways, one mounted on each side of said support vessel, said guideways comprising horizontal legs supporting said geophysical instrumentation and equipment vessel and vertical legs laterally guiding same; and wherein said rollers are mounted slightly higher than said horizontal legs of said guideways;

means for pulling said geophysical instrumentation and equipment vessel onto said rollers for unloading said geophysical instrumentation and equipment vessel; and

means for controlling the descent of said geophysical instrumentation and equipment vessel from said rollers into the water.

3,865,063

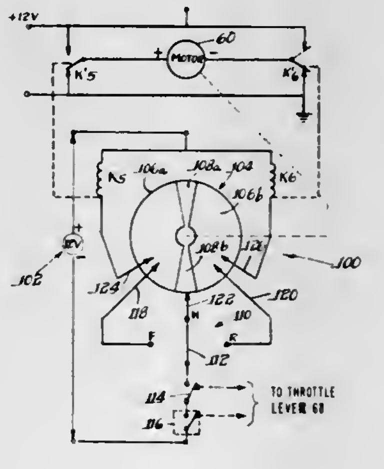
ELECTRICAL STEERING SYSTEM FOR BOATS

Calhoun Norton, Tequesta, Fla., assignor to Arens Controls, Inc., Evanston, Ill.

Division of Ser. No. 201,708, Nov. 24, 1971, abandoned, which is a division of Ser. No. 25,874, April 6, 1970, Pat. No. 3,651,779. This application Dec. 13, 1973, Ser. No. 424,290

Int. Cl. B63h *25/24*

U.S. Cl. 114—144 R **3 Claims**



1. In a control system for a boat having engine means, drive means and clutch means for selectively connecting the engine means to the drive means, the combination comprising: a clutch actuating motor connected to the clutch means for moving the same between engaged and disengaged positions when connecting and disconnecting the engine means and the drive means, three position switch means selectively actuated to forward, neutral, and reverse positions, rotational switch means having contacts coupled between said three position switch means and said clutch actuating motor to cooperate with said three position switch means for running said motor in one direction when said three position switch means is in the forward position and for running said motor in the opposite direction when said three position switch means is in the reverse position, and for running said motor in either said one direction or said opposite direction when said three position switch means is in the neutral position, drive means connected between said clutch actuating motor and said rotational switch means for rotating the same to a position where the contacts thereof are disconnected from said clutch actuating motor to stop the motor selectively at the forward, neutral, and reverse positions, and condition sensing means connected in circuit with said three position switch means to allow enabling of said clutch actuating motor only when a throttle lever associated with the engine means is in a position to have the engine means running at idle speed, said condition sensing means including time delay switch means to provide sufficient time after the throttle has been moved to the idle position to allow the engine speed to completely return to the idle speed.

3,865,064
ARRANGEMENT FOR ANCHORING A FLOATING BODY

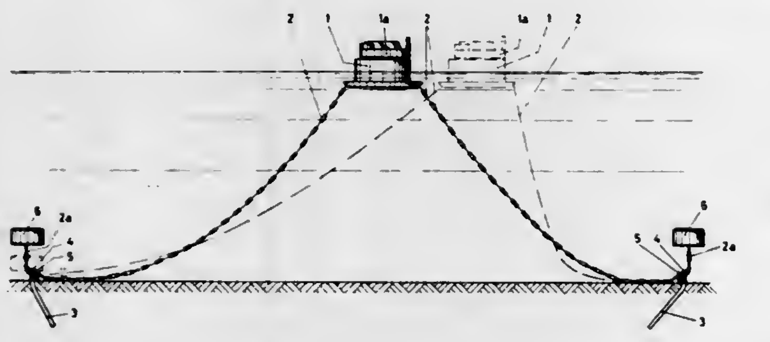
Willem Jan Van Heijst, Monte Carlo, Monaco, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed June 11, 1973, Ser. No. 368,889

Claims priority, application Netherlands, June 12, 1972, 7208003

Int. Cl. B63b *21/46*

U.S. Cl. 114—206 R **3 Claims**



1. An arrangement for anchoring a floating body, comprising a plurality of anchor chains secured to and extending below the floating body, a plurality of anchors on the sea bed, each anchor having a guide member through which a said anchor chain slidably extends, a permanently and completely submerged float on the end of each anchor chain remote from the floating body, each said chain having a stop thereon between the floating body and the anchor which stop is closer to the associated said float than to said floating body so as to maintain said float permanently and completely submerged and said stop cannot pass through said guide member, the distance between each stop and its associated said floating body being such that the floating body remains floating on the surface of the water when any said stop engages its associated said anchor, the length of said anchor chain between each said stop and said floating body being substantially greater than the vertical distance between any said anchor and said floating body.

3,865,065
ANCHOR BOOM

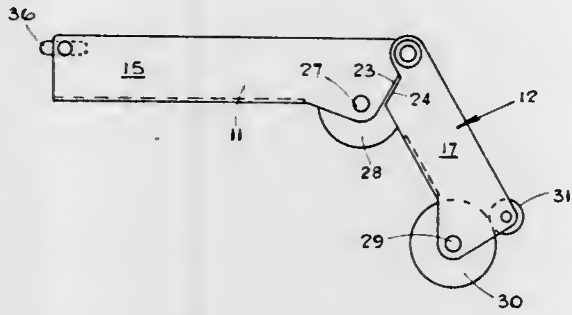
Roy James Dennis, Fulham, and Klemence Kielpikowski, West Beach, both of South Australia, Australia, assignors to Roy James Dennis, Fulham, South Australia, Australia

Filed Oct. 10, 1973, Ser. No. 405,037

Claims priority, application Australia, Oct. 11, 1972, 0786/72

Int. Cl. B63b *21/22*

U.S. Cl. 114—210 **6 Claims**



1. An anchor boom for the guiding of an anchor rope during raising and lowering of an anchor, and for positioning the anchor shank when the anchor is in its raised position, comprising a mounting bracket having a pair of spaced side walls, a transverse wall joining the mounting bracket side walls and defining therewith an anchor shank guide space, a roller support pin extending between the side walls near the forward end thereof and an inner guide roller journalled on the support pin for rotational movement,

a guide arm also having a pair of spaced side walls joined by a transverse wall, a further roller support pin extending between the guide arm side walls near the forward end thereof, an outer guide roller journalled on the further support pin for rotational movement, bridge means also extending between the guide arm side walls and spaced from the outer guide roller to define therebetween an anchor shank guide space, and

hinge means interconnecting the rear end of the guide arm to said forward end of the mounting bracket, so constructed and arranged that said anchor shank guide spaces are aligned when the anchor is in its raised position.

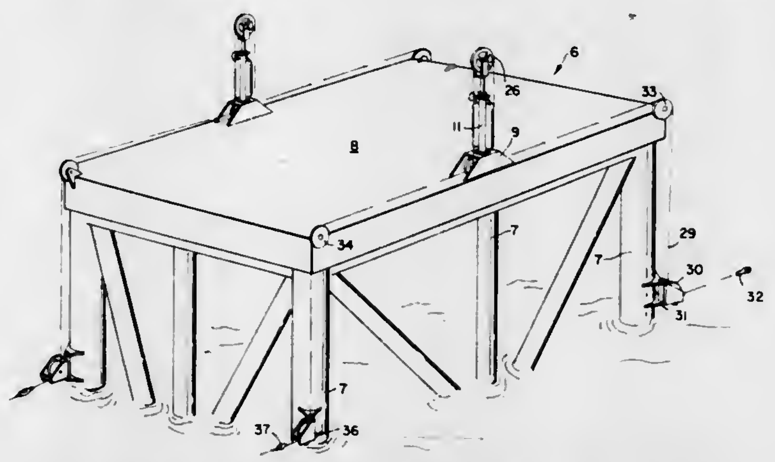
3,865,066
TENSION MOORING DEVICE

Robert Miles White, Moraga, and Howard John Bates, Danville, both of Calif., assignors to The Rucker Company, Oakland, Calif.

Filed Aug. 22, 1973, Ser. No. 390,387

Int. Cl. B63b *21/00*

U.S. Cl. 114—230 **1 Claim**



1. A tension mooring device for use in mooring vessels to a marine platform, comprising: an upstanding cylinder mounted on said platform, a piston vertically slidable in said cylinder and defining upper and lower variable volume chambers in said cylinder, an upstanding closed air-oil reservoir adjacent said cylinder, a conduit communicating the lower portion of said reservoir to the lower chamber in said cylinder, a body of oil in the lower portion of said reservoir and extending through said conduit into said lower chamber, a body of air confined in said reservoir above said body of oil, means adjacent said cylinder defining a closed pressure chamber of lesser volume than said reservoir, conduit means connecting the upper portion of said pressure chamber to the upper portion of said upper cylinder chamber, a piston rod secured to said piston and extending upwardly out of said cylinder, a sheave journalled on said piston rod outside said cylinder, and a cable reeved on said sheave and having means for securing the same to a vessel, said cable being directed from said sheave so that tension in said cable urges said piston downwardly in said cylinder.

3,865,067
PROPULSION AND STEERING SYSTEM FOR BOATS

Farley J. Archer, Los Angeles, Calif., assignor to Charles R. Archer, Los Angeles, Calif.; a part interest

Filed May 17, 1973, Ser. No. 361,201

Int. Cl. B63h *11/04*

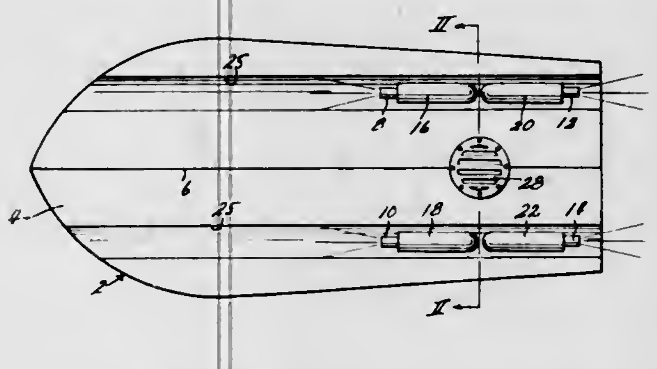
U.S. Cl. 115—12 R **5 Claims**

1. A boat propulsion and steering system comprising four jet nozzles carried by the boat hull beneath the water level and operable to direct water jets exteriorly of said hull, two of said nozzles being directed forwardly of the boat and two rearwardly, one forwardly and one rearwardly directed nozzles being disposed at each side of the midline of the boat, powered means operable to deliver water to all of said nozzles for ejection therefrom, the pair of nozzles at each side of the boat midline being supplied with water from a common conduit which is branched to supply water to the respective associated nozzles, and control means operable to deliver water to said nozzles in variable proportions, whereby to propel and steer said boat, said control means comprising:

a. a pair of diverter gates disposed movably in the respective common conduits and operable by movement thereof to direct proportionately more or less of the water flowing through said common conduit to either of the associated branch conduits,

b. a first diverter gate positioning means operable to position said diverter gates selectively to deliver proportionately more water to either forward nozzle and to the rear nozzle at the opposite side of the boat midline, and proportionately less water to the remaining two nozzles, whereby the boat is steered, and

c. a second diverter gate positioning means operable selectively to deliver proportionately more water either to the rearward nozzles or to the forward nozzles, whereby said boat is propelled respectively either forwardly or rearwardly, said second diverter gate positioning means comprising:



1. a manually movable control member movable in either direction from a neutral position,
2. means responsive to movement of said control member to move said diverter gates, whereby when said control member is in its neutral position said diverter gates are positioned to direct equal amounts of water in total to the forward and rearward nozzles, whereby when said control member is moved in one direction from neutral said diverter gates are positioned to direct proportionately more water to the branch conduits interconnected with the rear nozzles and the boat is propelled forwardly, and whereby when said control member is moved in the other direction from neutral said diverter gates are positioned to direct proportionately more water to the branch conduits interconnected with the forward nozzles, and the boat is propelled rearwardly,
3. resilient means biasing said control member to its neutral position,
4. detent means operable to secure said control member in either its forward or its rearward propulsion position, and
5. manually operable detent control means.

3,865,068
STERN DRIVE ENGINE MOUNT

William D. Haasl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 22, 1973, Ser. No. 325,398

Int. Cl. B63h *5/06*

U.S. Cl. 115—34 R **5 Claims**

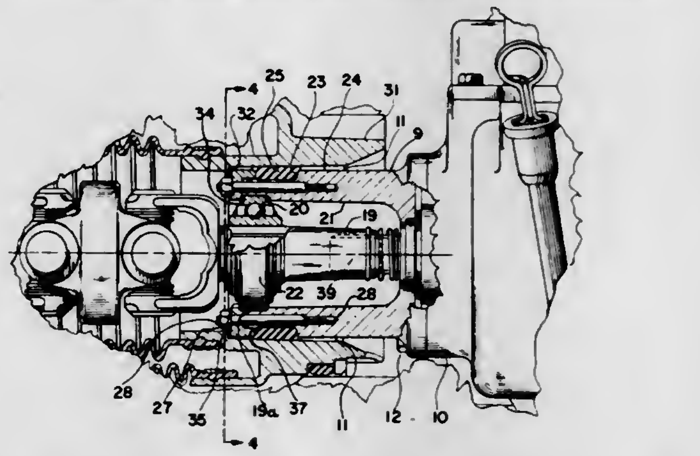
1. In an inboard-outboard marine drive system including an engine, drive shaft assembly, transom plate assembly and outdrive unit, an improved engine mounting arrangement comprising:

a cylindrical drive shaft housing attached to and extending aft of an engine and an aft engine mount assembly attached to and carried by said housing,

said cylindrical housing having an annular step,

said aft mount assembly including an annular elastomeric sealing and vibration absorbing element disposed around and upon said housing with one side abutting said step, and

means movably attached to said housing and abutting the other side of said annular elastomeric element for axially compressing said element against said step and thereby radially expanding said element into radial compression between said housing and said transom plate assembly,



said transom plate assembly including a transom plate having a cylindrical passage therein, said passage having an end opening to the engine side of said transom plate, said cylindrical passage being adapted to axially receive therein through said open end said entire aft mount assembly, so that said entire mount assembly may be thrust into said passage through said open end and secured at various selected positions within said cylindrical passage.

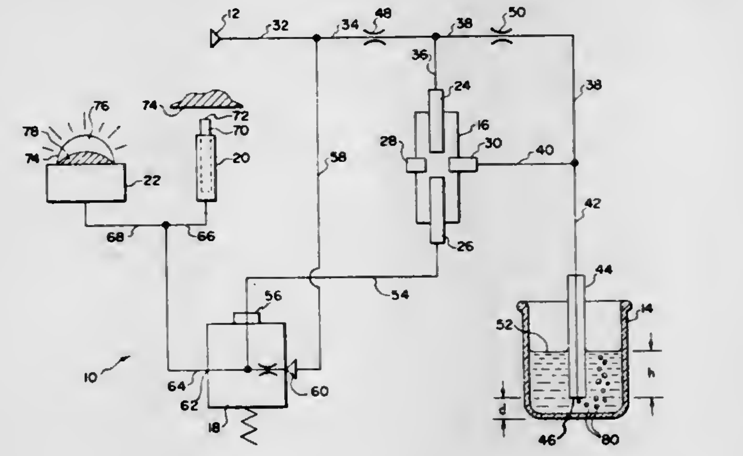
3,865,069
LIQUID LEVEL INDICATING SYSTEM

Guenter Ginsberg, Miami, Fla., assignor to Coulter Electronic, Inc., Hialeah, Fla.

Filed Apr. 9, 1973, Ser. No. 349,270

Int. Cl. G08b *7/04;* **G01f2** *13/16*

U.S. Cl. 116—4 **8 Claims**

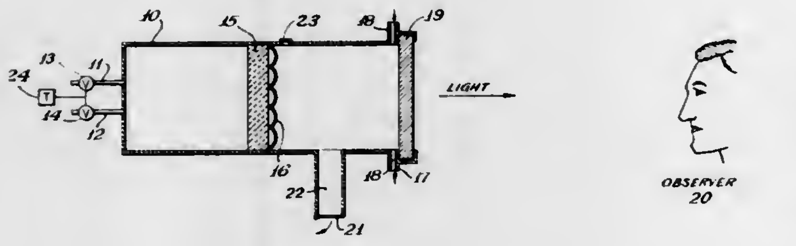


1. A fluidic liquid level indicating system with an audible alarm, said system being operable from a fluid pressure source and including a fluidic amplifier having an input, a control and an output, a first fluid line between the fluid pressure source and said input, first means for establishing a fluid resistance in said first fluid line to attenuate fluid flow from the fluid pressure source, a second fluid line from said input to the interior of a vessel containing a supply of liquid, said second fluid line having an end opening into the vessel at a predetermined distance above the bottom of the vessel, second means for establishing a fluid resistance in said second fluid line to attenuate fluid flow through said second fluid line, a third fluid line between said control and said second fluid line and connected to said second fluid line at a point between said second means for establishing a fluid resistance and said open end in the vessel, a pilot operated fluid switch having a pilot connection

to the output of said amplifier, said switch being connected between the fluid pressure source and a fluid operated piston and cylinder device having a piston with a striker at the end thereof, a stop adjacent said striker, said fluid resistances being such that when the liquid is at a predetermined height above the open end of said second fluid line, bubbles of fluid escape from said open end causing intermittent output signals at said output of said amplifier which intermittently operate said switch to intermittently apply pressure to said piston and cylinder device to cause intermittent striking of said striker against said stop which indicates that the level of liquid is close to the bottom of the vessel.

3,865,070
DEVICE AND METHOD FOR CONVERTING HEAT FROM FUEL INTO VISIBLE LIGHT WITH CHANGEABLE COLORS

Charles W. Solbrig, Idaho Falls, Idaho; Sanford A. Weil, Chicago, and Robert B. Rosenberg, Evergreen Park, both of Ill., assignors to American Gas Association, Inc., Arlington, Va.
Filed Oct. 19, 1970, Ser. No. 81,999
Int. Cl. G08g *1/095*
U.S. Cl. 116—63 R **8 Claims**

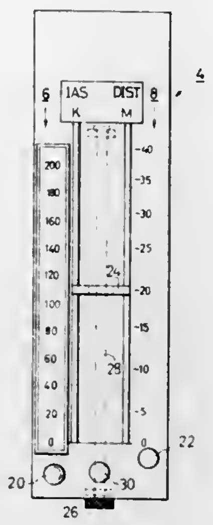


1. An apparatus for converting heat from the combustion of fuel into visible lights having predetermined and controllable colors comprising: an opaque housing having an opening at one end thereof for passage of light out of said housing, a plurality of radiators thermally excitable to emit visible colored lights disposed in said housing, said plurality of radiators including a first radiator comprising a ceria-thoria mantle and a second radiator comprising a colored transparent or translucent filter capable of withstanding high temperatures positioned in optically coupled relationship to said first radiator so that light emitted by said first radiator passes through said second radiator before emerging from the opening in said housing, and means for heating each of said radiators to predetermined temperature levels to produce colored lights visible at said opening, said heating means including natural gas inlet means and means for igniting said natural gas, and means for regulating the flow of natural gas into said apparatus.

3,865,071
AIRCRAFT TAKE OFF INDICATOR SYSTEMS

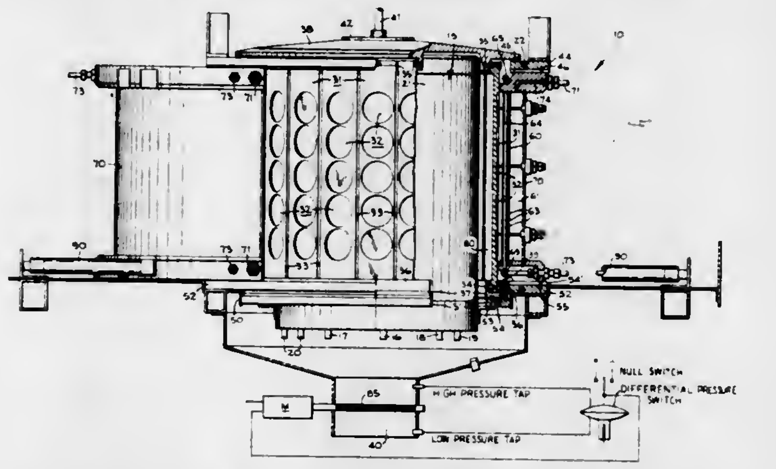
Jehuda Manor, Ramat Hasharon, Israel, assignor to Israel Aircraft Industries, Ltd., Lod Airport, Israel
Filed Aug. 23, 1973, Ser. No. 390,710
Claims priority, application Israel, Aug. 25, 1972, 40203
Int. Cl. G09f *9/00;* **G06f** *15/50*
U.S. Cl. 116—129 R **5 Claims**

1. An aircraft indicator system, comprising: a first measuring device measuring aircraft air speed and having a first scale displaying said measurement, a second measuring device measuring distance covered during take-off run and having a second scale displaying said measurement; said second scale being parallel to and laterally of said first scale; and a presettable marker disposed to bridge both of said scales and presettable so as to be aligned with a predetermined point on the second scale corresponding to the point-of-no-return of the aircraft upon take-off, and with a predetermined point on the first scale corresponding to the indicated air speed at that point to assure a safe take-off, whereby visual observation during take-off of the measurements displayed by the two scales with reference to said presettable marker provides a continuous indication of whether the minimum air speed for a safe take-off will be reached before the point-of-no-return.



3,865,072
APPARATUS FOR CHEMICALLY DEPOSITING EPITAXIAL LAYERS ON SEMICONDUCTOR SUBSTRATES

Earl L. Kirkman, Felton, Calif., assignor to HLS Industries, Sunnyvale, Calif.
Filed Oct. 18, 1973, Ser. No. 407,569
Int. Cl. C23c *13/12*
U.S. Cl. 118—4 **23 Claims**

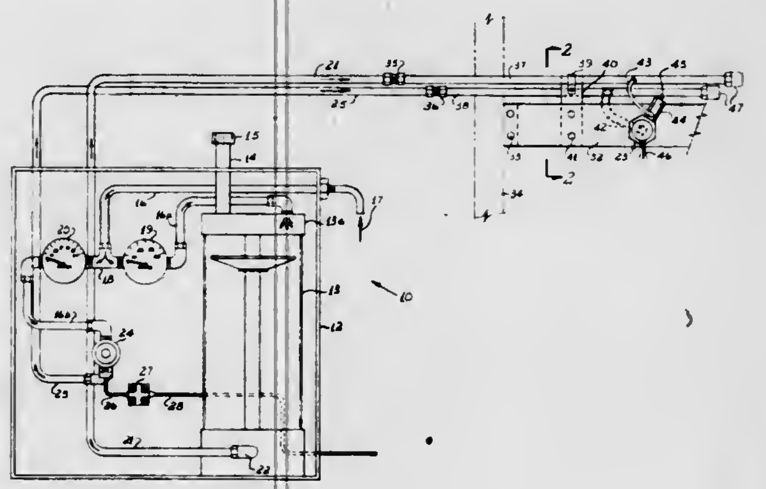


1. Apparatus for depositing an epitaxial layer on substrates by the chemical vapor deposition of reactant gases and carrier and diluent gases on the exposed surface of the substrates, comprising:

- a. an outer wall defining a chamber;
- b. a susceptor disposed within said chamber, said susceptor being arranged to support substrates;
- c. a porous wall in said chamber disposed in the path of travel of the carrier and diluent gases for mixing the carrier and diluent gases advancing toward said susceptor, said porous wall defining one wall of a reaction chamber and confronting said susceptor;
- d. means external to said reaction chamber for conducting carrier and diluent gases toward said porous wall;
- e. means for supplying reactant gases to said reaction chamber;
- f. conduits in said reaction chamber communicating with said reactant gas supply means and having orifices disposed adjacent the gas-exiting surface of said porous wall for discharging reactant gases to mix with the mixed carrier and diluent gases, said mixed carrier and diluent gases and said reactant gases mix after the mixed carrier and diluent gases advance from the gas-exiting surface of said porous wall to form a mixture of gases contacting the exposed surfaces of the substrates; and
- g. a heater for heating said susceptor for effecting an epitaxial deposition on the exposed surfaces of the substrates in response to said mixture of gases contacting the exposed surfaces of the substrates.

3,865,073
MATERIAL MARKING APPARATUS

Leonard G. Jahn, 1140 Ridge Rd., Green Bay, Wis. 54304
Filed Aug. 31, 1973, Ser. No. 393,609
Int. Cl. B05c *5/00, 11/00*
U.S. Cl. 118—8 **4 Claims**

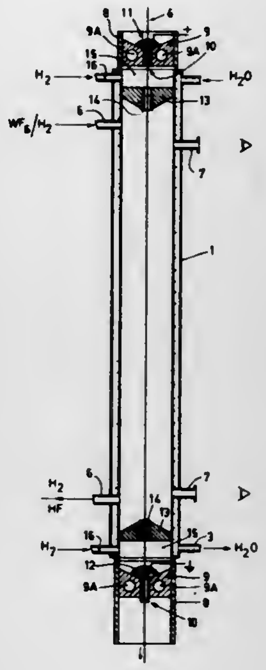


1. In a counter-actuated apparatus for marking materials at predetermined intervals, the combination of a reservoir for a marking liquid, a normally closed jet type liquid marking valve located at a marking station remote from said reservoir, liquid conduit means connecting said reservoir to said marking valve, a pneumatically operated actuator for opening said liquid marking valve, a normally closed solenoid air valve located adjacent said reservoir, material counter responsive means for momentarily opening said air valve at predetermined intervals, a compressed air supply connected to said reservoir for pressurizing the liquid therein and in said liquid conduit means, said air supply also being connected to said air valve, and air conduit means connecting said air valve to said pneumatically operated actuator for said marking valve whereby the latter may be momentarily opened as a function of opening of said air valve so that the marking valve may spray a marking jet of liquid on the material to be marked.

3,865,074
DEVICE FOR COATING A WIRE OF AN ELECTRICALLY CONDUCTING MATERIAL CONTINUOUSLY FROM THE GAS PHASE

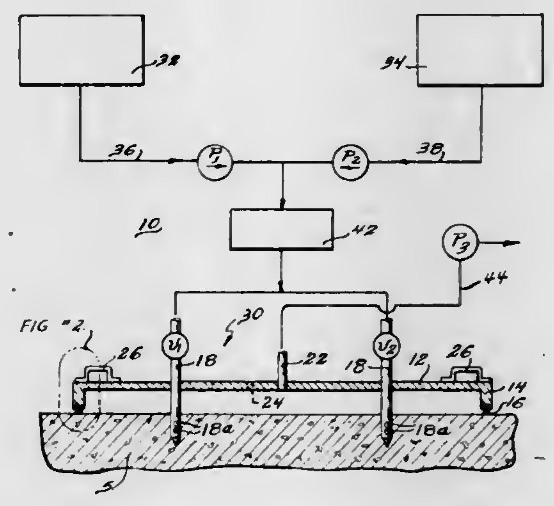
Gerardus Antonius Petrus Maria Cornelissen; Johannes Cornelis Norbertus Rijpers, and Gerardus Henricus Maria Siebers, all of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed Apr. 24, 1974, Ser. No. 463,737
Claims priority, application Netherlands, May 5, 1973, 7306306
Int. Cl. C23c *13/10*
U.S. Cl. 118—49.5 **3 Claims**

1. A device for coating a wire of an electrically conducting material continuously from a gas phase by contacting a gas providing the coating with an electrically heated wire part, which device comprises a tubular reaction chamber provided with at least one inlet and outlet for the gas providing the coating and with seals at both ends through which the wire is passed, the seals each comprising a wire filling of metal wire serving as an electrical contact with the wire to be coated, and transverse partitions at each end of said reaction chamber spaced from said seals defining chambers arranged in series with the reaction chamber, inlet means to introduce an inert gas into said latter chambers, said partitions each being provided with two apertures through which the wire to be coated is passed.



3,865,075
SLAB IMPREGNATION APPARATUS

James H. Klein, Mattituck; Anthony J. Romano, Kings Park; Lawrence E. Kukacka, Port Jefferson, and Joseph J. Fedelem, Blue Point, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Oct. 4, 1973, Ser. No. 403,586
Int. Cl. B05c *9/08*
U.S. Cl. 118—50 **7 Claims**

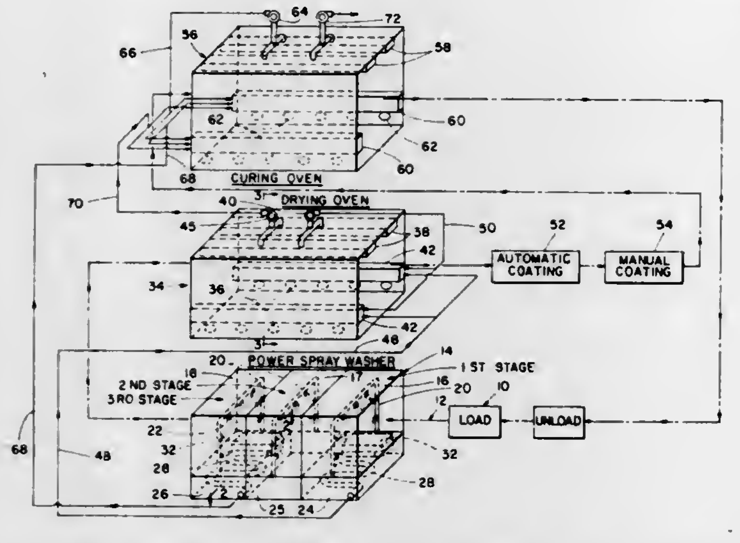


1. Apparatus for impregnating a slab of concrete with a liquid mixture comprising:

- a. impregnator means for contacting said slab of concrete and forming therewith a closed chamber;
- b. hollow injector probe means extending through said impregnator means and terminating within said slab of concrete, said probe means having openings at the end thereof terminating within said slab;
- c. means for maintaining a negative pressure within said closed chamber; and
- d. means for simultaneously supplying said liquid mixture to said probe means for delivering said mixture within said slab of concrete, said liquid mixture within said slab effectively displacing air being removed by said negative pressure maintaining means.

3,865,076
FINISHING LINE HEAT RECOVERY

Richard G. Wick, Downers Grove, and Henry J. Bennett, Palos Park, both of Ill., assignors to Burdett Manufacturing Company, Bridgeview, Ill.
Filed Aug. 27, 1973, Ser. No. 391,731
Int. Cl. B05c *11/00*
U.S. Cl. 118—66 **15 Claims**

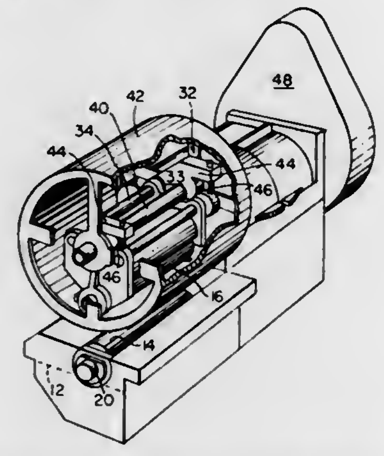


13. An article finishing line and coating system including a spray washing station for washing the articles with a heated liquid, a tank for containing the washing liquid having an immersion conduit means therein through which hot gases are conducted to heat the washing liquid, a coating station for coating the articles, a curing station for curing the coating on the articles, conveyor means for conveying the articles between said stations, and a drying station along said conveyor means between said spray washing station and said coating station, wherein the improvement comprises in combination therewith:

- conduit means conducting a first portion of the hot exhaust gases from said immersion conduit means directly to said curing station and a second portion of said hot exhaust gases from said immersion conduit means to said drying station and then to said curing station in parallel relationship to said first portion,
- first heat generating means in said curing station, and
- second heat generating means in said drying station, said hot exhaust gases supplementing the heat generated by said first and second heat generated means.

3,865,077
ADAPTOR TO ENABLE COATING MACHINE TO ACCOMMODATE SHOE SOLE OR THE LIKE OF IRREGULAR THICKNESS

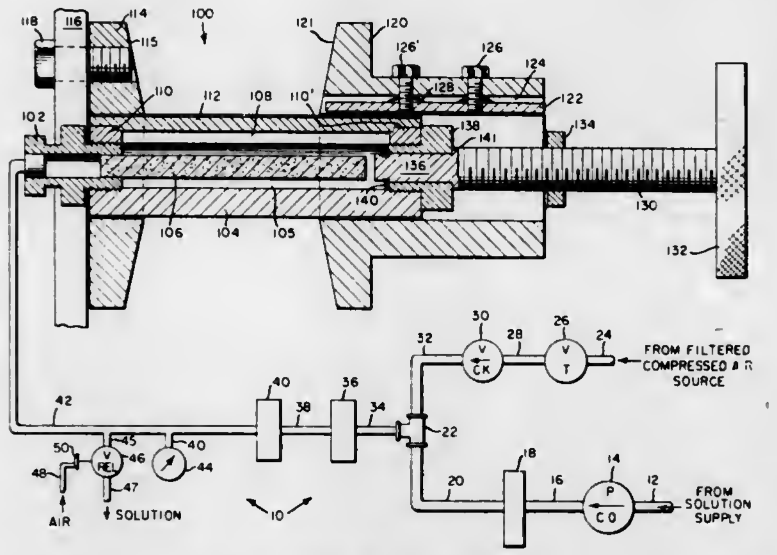
Alton R. Copithorne, Rowley, Mass., assignor to Boston Machine Works Co., Lynn, Mass.
Filed June 12, 1973, Ser. No. 369,217
Int. Cl. B05c *1/02*
U.S. Cl. 118—250 **10 Claims**



1. An attachment for a coating machine having a base, a bottom applicator roll partially immersed in a fluid cement, a feed roll and a base mount carrying said feed roll, said base mount being constrained for movement about an axis of said base mount toward and away from said applicator roll, said attachment comprising an auxiliary mount constrained for movement with respect to said base mount, a drum rotatably mounted on said auxiliary mount for disposal of the shell of said drum between said feed roll and said applicator roll, said feed roll resting longitudinally against the inside surface of said drum, and means for biasing the inner surface of said drum against said feed roll.

3,865,078
FOAM FINISH APPLICATOR

Jack Renato De Howitt; Imre Mirko Jonkoff, and Robert Ernest Stoveken, all of Camden, S.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed June 5, 1972, Ser. No. 259,664
Int. Cl. B05c *5/02*
U.S. Cl. 118—612 **3 Claims**



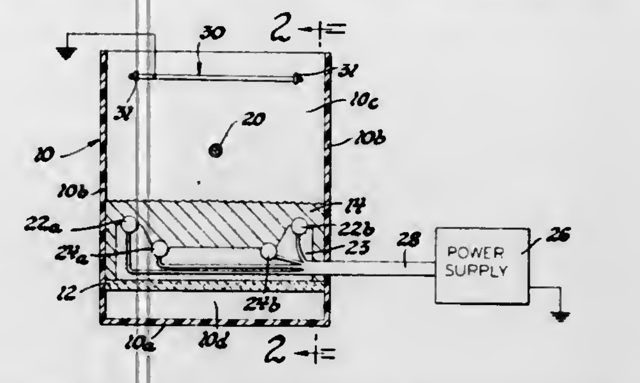
1. An apparatus for preparing and applying a foam solution from a pressurized gas and a liquid finish to a textile web moving in a path including means for moving the tow in said path, said apparatus comprising: an elongated housing positioned across said path, said housing having walls forming an inner chamber and having a longitudinal slot through one wall, said slot being in communication with said chamber and disposed toward said path; a distribution plate fitted in said slot, said plate having outer and inner surfaces connected by a plurality of holes, said outer surface being adjacent said path, said holes expanding to a larger diameter at said outer surface; a source of liquid finish; a source of pressurized gas; means for mixing said liquid finish and said gas; and a diffusion filter positioned in said chamber, said filter being supplied with a mixture of liquid finish and gas by said means for mixing.

3,865,079
ELECTROSTATIC FLUID BED POWDER COATING SYSTEM

Roger W. Kellams, Anderson, and Clarence H. Dyer, Warren, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1973, Ser. No. 391,578
Int. Cl. B05c *5/02*
U.S. Cl. 118—621 **4 Claims**

1. In an electrostatic fluid bed powder coating system having a powder fluidizing bed, a source of fluidizing gas therefor, and means for moving an elongated workpiece horizontally and axially across said bed above the surface of fluidized powder therein, charging apparatus comprising:

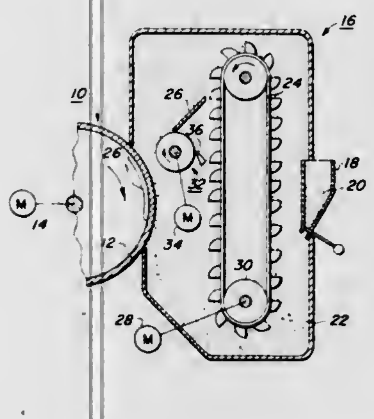
- a voltage source;
- a pair of elongated charging electrodes in said bed below the surface of the fluidized powder therein, said electrodes extending parallel to the axis of said workpiece and being located symmetrically on opposite sides of said axis and radially equidistant therefrom;
- means connecting said electrodes to said voltage source;
- a control electrode located above said workpiece and having portions directly above and extending parallel to and substantially coextensive with each of said charging electrodes, said portions being located the same radial distance from the axis of said workpiece as are said charging electrodes;



- means connecting said control electrode portions and said workpiece to a voltage different from that of the charging electrodes.

3,865,080
TONER PICKOFF APPARATUS

Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 17, 1973, Ser. No. 324,466
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **12 Claims**

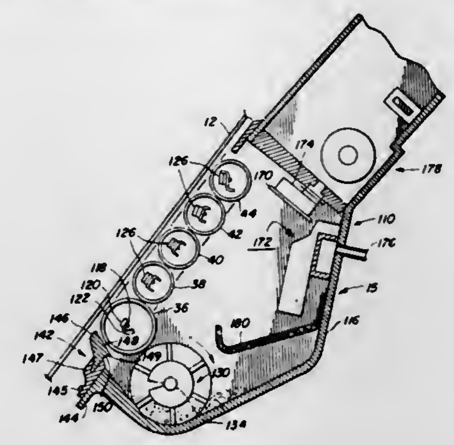


1. In an electrostatic copier having a photosensitive surface for carrying an electrostatic latent image, a development system for developing said latent image through the use of a developer having toner particles triboelectrically attracted to carrier particles; said development system comprising the combination of means for transporting said developer along a path leading to said photosensitive surface and means along said path and upstream of said photosensitive surface for electrostatically withdrawing from said developer improperly charged toner particles which would otherwise tend to be attracted to background areas of said image; said withdrawing means including segmented member having at least one pair of conductive segments electrically insulated from each other, and means for providing an electrical potential between said segments, thereby establishing a field for selectively attracting improperly charged toner particles from said developer.

3,865,081
MAGNETIC BRUSH DEVELOPING APPARATUS

Terrence D. Charland, Pittsford, and Stanley D. Klett, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 255,721, May 22, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,195
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **1 Claim**

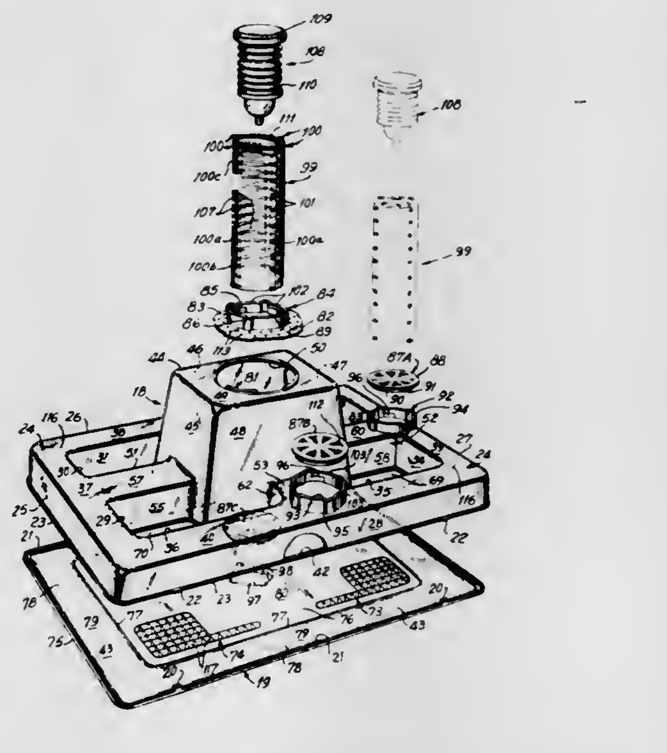
1. In a magnetic brush developing apparatus for applying developing materials to a photoconductive surface including electrostatic latent images in an electrostatic printing machine, having a housing defining a sump zone and wherein a cross-mixing baffle is provided to redistribute depleted developing material within said sump zone, the improvement comprising:



- a U-shaped screen member positioned below said cross-mixing baffle and extending the width of said housing.

3,865,082
SMALL ANIMAL PLAYGROUND

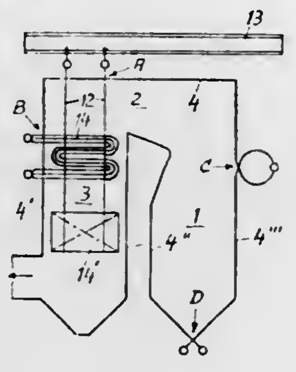
David D. Lovitz, Short Hills, N.J.; Ness Eastman, Rego Park, and William H. Davidson, Katonah, both of N.Y., assignors to The Hartz Mountain Corporation, Harrison, N.J.
Filed Nov. 19, 1973, Ser. No. 418,281
Int. Cl. A01k *1/00*
U.S. Cl. 119—17 **12 Claims**



1. A playground housing for small animal pets comprising a basic unit having a transparent main housing member and a base tray thereunder, said member comprising a chamber defined by a plurality of lateral walls and a roof, said chamber being open at the bottom, a main apertured portion in said roof, a peripheral tunnel defined by laterally opposite sides, a roof and a floor, and channel means communicating between said chamber and tunnel, said channel means being defined by laterally opposite walls and a top wall, the bottom portions of said channel means being open, said tray having a portion thereof underlying and constituting the floor of said chamber, the peripheral portions of said tray underlying and constituting the floor of said tunnel, a tower detachably connected to said apertured portion and when connected being in communication with said chamber, said tower having along the inner surface thereof ledge climbing means for the animal, and detachable closure means for said apertured portion.

3,865,083
TUBE FITTING

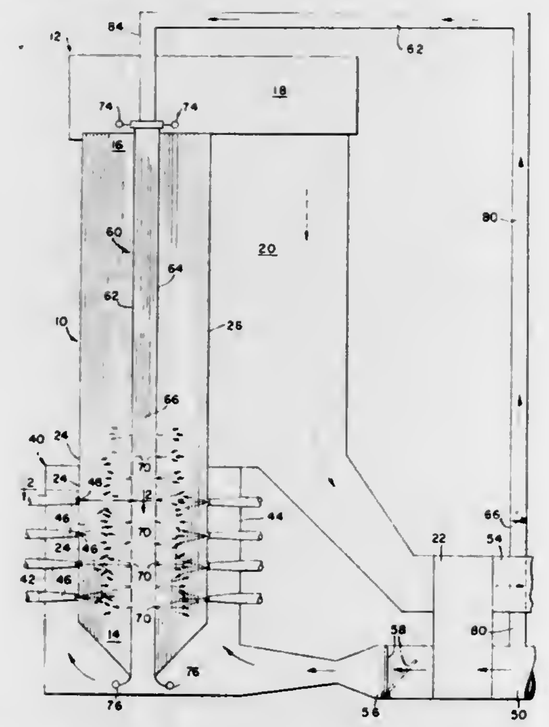
Heinz Kohn, Oberhausen, Germany, assignor to Babcock & Wilcox Limited, London, England
Filed Jan. 16, 1974, Ser. No. 433,927
Int. Cl. F22b *37/10*
U.S. Cl. 122—235 R **3 Claims**



1. A vapor generator including spaced fluid heating tubes, some of said tubes being interconnected by webs to form wall means defining a gas enclosure, wherein the improvement comprises at least one fitting of unitary construction seal weldably connected to said wall means and including a plurality of uniformly spaced coplanar first tubular segments, means sealing the spacing between adjacent first tubular segments, each of said first tubular segments being flow connected to a corresponding wall tube, at least one second tubular segment extending through the sealing means in cross flow relation and contiguous to said first tubular segments, said second segment being flow connected to one of said fluid heating tubes.

3,865,084
INNER FURNACE AIR CHAMBER

David C. De Poister, Morristown, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Jan. 7, 1974, Ser. No. 431,243
Int. Cl. F22b
U.S. Cl. 122—235 B **5 Claims**

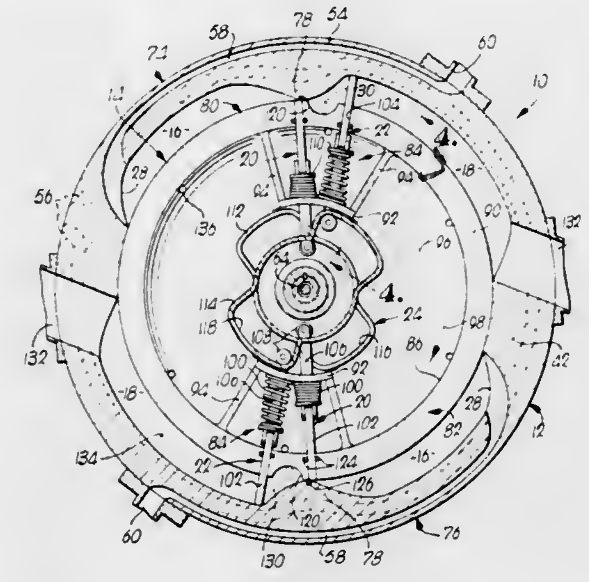


1. A furnace assembly comprising a housing formed by a plurality of interconnected walls, a plurality of burners associated with at least one of said walls, means for supplying an air-fuel mixture to said burners for combusting in said housing, an enclosure extending within said housing and formed by interconnected walls, a wall of said enclosure extending parallel to said one wall of said housing and having a plurality of openings respectively facing said burners, said latter enclosure wall being formed by a plurality of interconnected finned tubes, and means for supplying air to said enclosure for discharging through said openings and towards said burners for mixing and combusting with the unburnt fuel from said burners, and means for passing water through said tubes to cool said tubes and the air discharging through said openings.

4. A method of burning a fuel-air mixture in a furnace to produce a minimum amount of nitrogen oxides in the combustion gases leaving the furnace, which comprises the steps of introducing the fuel into the furnace through a burner port in a furnace wall, introducing a portion of the combustion air into said furnace through said burner port in mixing relationship with said fuel, regulating the amount of air supplied through said burner port to an amount which is less than the theoretical combustion air requirements for the corresponding fuel to delay the complete combustion of said fuel and thereby reduce the maximum flame temperature in the furnace and the formation of nitrogen oxides below the values which would occur if all of the air required for complete combustion were introduced with the fuel, discharging the remaining amount of air required to insure complete combustion of the fuel through openings extending through a wall of an enclosure disposed within said furnace, said remaining amount of air being directed towards said burner port and in a direction opposite the direction of discharge of said fuel and air so as to mix said remaining amount of air with the unburnt portion of said fuel to complete the combustion of said fuel, and cooling the wall of said enclosure through which said openings extend to cool said remaining amount of air.

3,865,085
ROTARY ENGINE

Joseph Stenberg, Rt. 1, Box 7B, Linn Creek, Mo. 65052
Filed June 8, 1973, Ser. No. 368,335
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.33 **1 Claim**



1. A rotary engine comprising:

a cylindrical, dished rotor having a central hub axially offset to one end thereof;

a housing enclosing said rotor and presenting a plurality of spaced-apart chambers arranged circumferentially about said rotor and adjacent the periphery thereof,

alternate ones of said chambers defining a compression chamber having a fuel inlet and a power chamber having an exhaust outlet, said rotor being mounted on a shaft journalled in said housing for rotation therein;

at least one pair of spaced, substantially radially reciprocable sliding valve mechanisms carried by said rotor and transversely disposed in a fore-and-aft relative relationship with respect to the direction of rotation of said rotor with a first one of said valve mechanisms defining a compression valve for cooperation with said compression chamber and a second one of said valve mechanisms defining a power valve for cooperation with said power chamber,

each valve mechanism including a paddle-like vane transversely disposed relative to said chambers, a rod having an outer end to which a said vane is affixed and spring means operably coupled with said rod for biasing the vane in an outward direction relative to the periphery of said rotor;

control means carried by said housing and operably coupled with said valve mechanisms for controlling the shifting movements of said vanes into and out of corresponding ones of said chambers in a predetermined sequence,

said control means including:

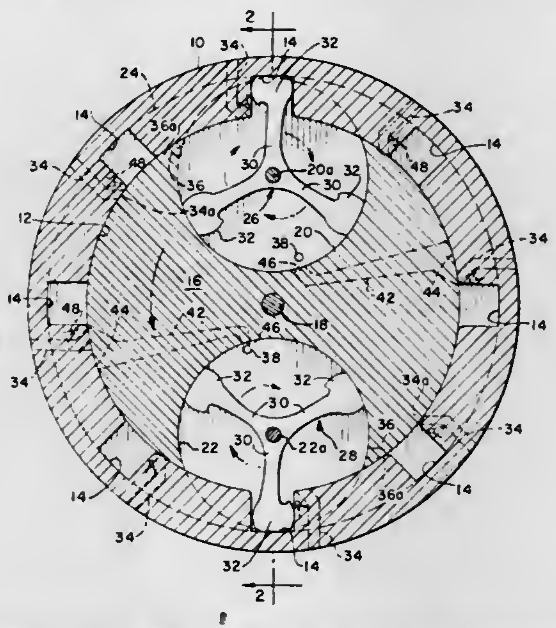
- a first stationary cam member supported by said housing interiorly thereof for controlling the reciprocable movement of said power valve and a second stationary cam member secured to and supported by said first cam member for controlling the reciprocable movement of said compression valve;
- a cam follower secured on each valve mechanism rod at an inner end thereof opposite a corresponding vane with said spring means being disposed between the vane and the cam follower,
- said cam members being perpendicularly positioned and axially aligned relative to the axis of rotation of the rotor and located within said housing in a disposition substantially centrally of the concavity presented by said dished rotor,
- each cam member presenting a flanged segment having a continuous inner surface facing the axis of rotation of said rotor and along which a corresponding cam follower travels in uninterrupted engagement therewith,
- said flanged segments being axially spaced apart in an opposed, oppositely facing relationship relative to each other with the valve mechanism rods passing between the opposed flanged segments during revolution of the rotor and reciprocating along respective paths of travel that are in a common plane normal to the axis of rotation and is substantially centrally disposed relative to the axial length of said rotor and the width of said vanes,
- each of said surfaces having a configuration arranged to permit radially reciprocable movement of its associated valve mechanism to shift the vane thereof into and out of its corresponding chamber according to a predetermined sequence and in response to the biasing action of its spring means as the rotor revolves; and

fuel supply means and fuel combustion means operably associated with respective ones of said chambers for cooperation with said valve mechanisms whereby a driving force is imparted to said rotor when combustion takes place.

3,865,086
ROTARY INTERNAL COMBUSTION ENGINE

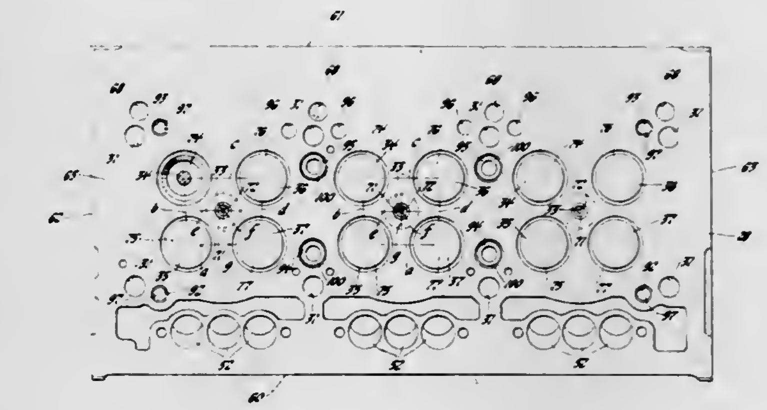
Choong-Gil Lee, Honolulu, Hawaii, assignor to Lee & Lee Research Laboratories, Honolulu, Hawaii
Filed Aug. 22, 1973, Ser. No. 390,406
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **8 Claims**

1. An internal combustion rotary engine, comprising a housing having a circular interior cavity with equally spaced recessed notches formed about the circumference thereof, a disc-shaped rotor disposed coaxially within said housing cavity for sealing rotation therein, said rotor having a pair of opposite radial recesses formed in the circumference thereof, each having a partial circular cross-section in a plane perpendicular to the axis of rotation of said rotor, a lever wheel being disposed for rotation within each said recess of said rotor about the geometrical axis of each said recess, said lever wheel having a plurality of equally spaced radial arms extending into sealing slidable contact with the sidewall of the corresponding rotor recess, the ends of respective ones of said radial arms being formed to engage successive ones of said notches, a plurality of rotatable combustion chambers being defined between adjacent ones of said radial arms, means for introducing a combustible mixture into the interior of each said rotor recess, ignition means mounted in said housing between each pair of adjacent notches for causing ignition of said combustible mixture in the reduced volume defined between the inside of said housing cavity and two adjacent radial arms whose ends are simultaneously engaging consecutive notches, whereby the force of combustion tends to pivot said lever wheel about the end of one of its radial arms engaging one of said notches to drive the geometrical axis of rotation of said lever wheel about the rotational axis of said rotor, and means for relieving the exhaust gases from the interior of said rotor recess.



3,865,087
DIESEL ENGINE AND CYLINDER HEAD THEREFOR

Tanas M. Sihon, Ypsilanti, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed June 5, 1974, Ser. No. 476,579
Int. Cl. F02b *75/02;* **F02d** *39/04*
U.S. Cl. 123—65 VC **3 Claims**



1. An internal combustion engine comprising

a cylinder block having a top wall and a plurality of longitudinally aligned closely spaced cylinders,

a cylinder head having lower and side walls, said cylinder head being mounted with said lower wall sealingly opposing the top wall of said block so as to close the ends of said cylinders,

a plurality of injectors, one for each cylinder location, carried in said head and centered in their respective cylinder axes, said injectors each having a body portion including a thickened outer part intermediate the outer valves of each cylinder location,

a plurality of exhaust passages extending laterally within said cylinder head, and opening through one of said side walls, said exhaust passages connecting at each cylinder location with four exhaust ports opening through said lower wall at locations spaced around the respective injector opening for said cylinder location, said exhaust passages being bifurcated with separate legs extending on opposite sides of said injector opening, one of said legs connecting with the two exhaust ports to the rear of said cylinder location and the ohter of said legs connecting with the two exhaust ports to the front of each cylinder location, one of the ports connecting with each leg comprising an inner port disposed at the end of its respective exhaust leg and the other of said ports comprising an outer port disposed closer to the side wall outlet of its exhaust passage than said inner port,

a plurality of exhaust valves reciprocably carried in said cylinder head and closing said exhaust ports, said valves being openable to permit exhaust flow from said cylinders to said exhaust passages,

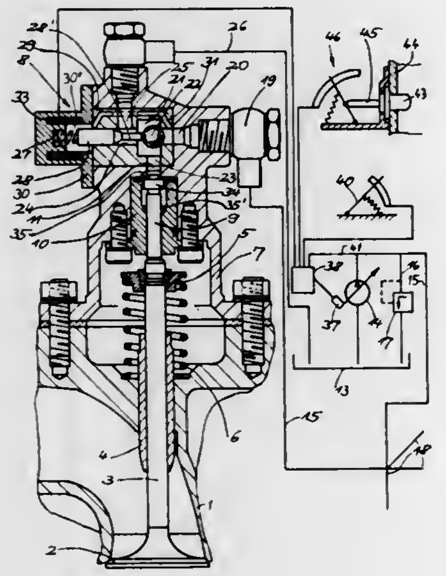
valve and injector actuating means including a plurality of rocker arms for each cylinder location,

means supporting said rocker arms, said support means being secured to said cylinder head and extending beside the locations of the inner valves of their respective cylinder locations,

said exhaust ports and their respective valves being arranged in trapezoidal fashion with the inner and outer valves being laterally equally spaced from the axis of said cylinder and injector tube but with the inner ports and valves being longitudinally spaced closer to the axis of said cylinder and injector tube than are the outer ports and valves whereby the inner valves avoid interference with said rocker arm support means and the outer valves avoid interference with said injector body thickened portion.

3,865,088
MEANS FOR HYDRAULICALLY CONTROLLING THE OPERATION OF INTAKE AND EXHAUST VALVES OF INTERNAL COMBUSTION ENGINES

Heinz Links, Gansheidistrasse, 76A, 7, Stuttgart, Germany
Filed Oct. 19, 1971, Ser. No. 190,525
Claims priority, application Germany, Oct. 19, 1970, 2051220
Int. Cl. F01l *9/02*
U.S. Cl. 123—90.12 **2 Claims**



1. In means for hydraulically controlling the operation of a tappet valve in a cylinder associated with an internal combustion engine, the improvement comprising

A. a slidably held work piston in engagement with said tappet valve, said work piston, during its reciprocation, causing similar displacement of said tappet valve,

B. means for delivering liquid under pressure to said work piston for causing reciprocation thereof, said last-named means including a liquid delivery pump,

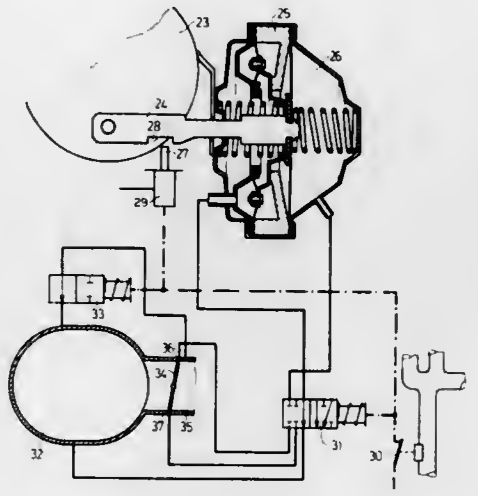
C. intermittently actuated solenoid valve means disposed in the path of said liquid between said pump and said work piston for intermittently admitting liquid under pressure to said work piston,

D. means for controlling the output of said pump to control the pressure of said liquid for controlling the stroke amplitude of said tappet valve and

E. engine temperature-responsive thermostatic control means applying signals to said means defined in (D) for varying the stroke amplitude of said tappet valve as a function of the engine temperature in the same sense as the change of the latter.

3,865,089
METHOD AND SYSTEM TO REDUCE POLLUTING EMISSION FROM INTERNAL COMBUSTION ENGINES

Dieter Eichler, Hochberg; Otto Glockler, Renningen, and Richard Bertsch, Asperg, all of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany
Filed June 29, 1972, Ser. No. 267,562
Claims priority, application Germany, Jan. 21, 1972, 2202786
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 R **19 Claims**



1. System to reduce polluting components from the exhaust of internal combustion engines during warm-up of the engine, in combination with an engine having an inlet manifold, a throttle, timing control means operable within a predetermined range for timing the ignition of the engine, within said range, with respect to piston position, and an exhaust system including an exhaust manifold, said pollution reducing system comprising

means (**25, 26, 51, 52**) continuously effective during engine operation to adjust the ignition timing of the ignition system within said range, comprising a spark advance vacuum chamber means (**25, 26**) to advance or delay ignition timing within said range with respect to dead-center position of the piston;

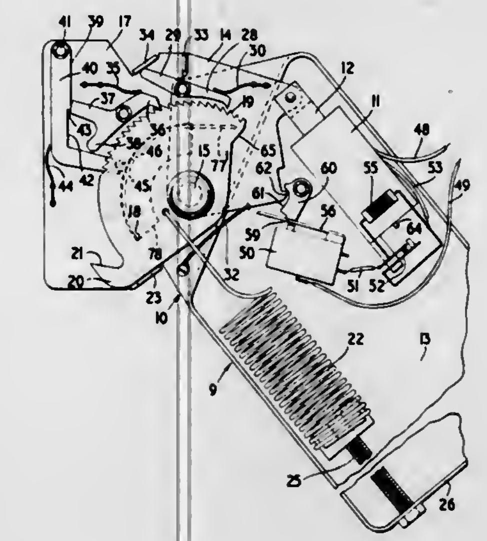
adjustment link means (**24**) connected to the ignition timing adjustment means;

means controlling additional retardation of ignition timing of the ignition system, to a delay value of such magnitude that combustion will persist during at least a portion of the exhaust stroke of the engine in addition to the adjustment of the ignition timing, within said range, due to said continuously effective ignition timing means, comprising a control valve (**31**) interconnecting the spark delay chamber (**25**) to the inlet manifold of the engine during warm-up time of the engine and before the engine has reached said predetermined temperature, said valve (**31**) connecting the delay chamber to a suction port (**37**) located in the vicinity of the throttle (**34**) in the inlet to the engine;

and means (**30**) responsive to temperature arising in the exhaust system of the engine during operation thereof, said temperature responsive means including means controlling the extent of travel of said link element to disable control by said additional ignition timing retardation means when said temperature responsive means senses that a predetermined temperature is exceeded.

3,865,090
CONTROL SYSTEMS ESPECIALLY FOR DIESEL ENGINE INSTALLATIONS

George Ernest Masters, Stourbridge; John Kenneth Bache, Wolverly, Near Kidderminster, and Ralph Rowland Absalom, Micklefield Green House, Sarratt, Rickmansworth, Hentfordshire, England, assignors to said Absalom, by said Masters and Bache
Filed June 20, 1972, Ser. No. 264,659
Int. Cl. F02b *77/08*
U.S. Cl. 123—139 AZ **13 Claims**



1. A control system of a compression-ignition or diesel engine installation which includes a fuel injection pump having a shut-off control mechanism, said control system comprising:

a. biasing means operatively connected to the shut-off control mechanism of the fuel injection pump to bias said pump to an inoperative off position,

b. an electro-mechanical actuator responsive to a supply of electrical current for automatically setting the fuel injection pump to an operative on or engine-running position,

c. said electro-mechanical actuator including drive means, a solenoid device, means to cause said solenoid device to be energized intermittently and to operate repetitively and continuously through successive operating cycles, and means adapted to advance the drive means stepwise and unidirectionally from an initial position to a terminal position when the solenoid device is energized,

d. said drive means being operatively connected to the fuel injection pump,

e. an electrical supply circuit means for providing a supply of electrical current to the solenoid device,

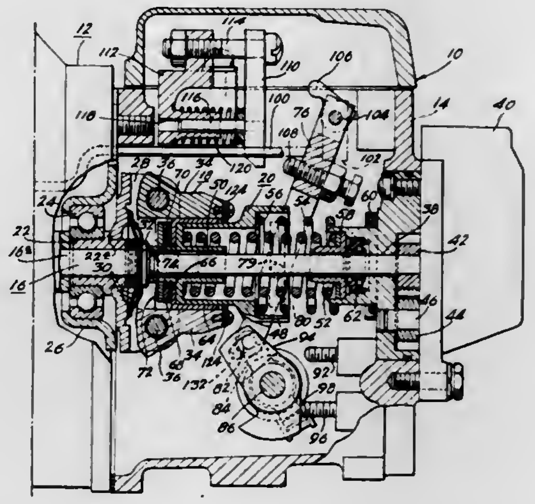
f. switch means for opening the supply circuit to stop the supply of electric current, and

g. means for causing the drive means to return the pump automatically from said on position to the inoperative off position by the biasing means when the electric current is stopped.

3,865,091
EXCESS FUEL STARTING DEVICE FOR DIESEL ENGINES

Norvan W. Bostwick, Longmeadow, and Ignace J. Daborowski, Springfield, both of Mass., assignors to Ambac Industries, Inc., Springfield, Mass.
Filed Feb. 19, 1974, Ser. No. 443,196
Int. Cl. F02m *59/42*
U.S. Cl. 123—139 ST **6 Claims**

1. In a diesel engine fuel injection pump governor having a governor shaft driven at a speed proportional to engine speed, a non-rotating sleeve slidably disposed on said shaft, a flyweight assembly mounted on said shaft for rotation therewith and having at least one flyweight rotatably mounted to swing radially outwardly in response to centrifugal forces during rotation of said shaft, said flyweight in the rest position being disposed in contiguous relation to said sleeve, means on said flyweight for moving said sleeve along said shaft in response to radial movement of said flyweight, spring means acting on said sleeve opposing sleeve movement by said flyweight, a fulcrum lever pivotally connected at a point remote from its ends to said sleeve, an engine fuel control rod, a first end of said fulcrum lever being connected to said engine fuel control rod, a full load stop plate adjacent said first fulcrum lever end, means on said fulcrum lever end for engaging said stop plate to limit the travel of said fulcrum lever end and control the full load fuel delivery position of said fuel control rod, a trunnion lever pivotally connected to the second end of said fulcrum lever, an operating lever shaft rotatably disposed adjacent said fulcrum lever, said trunnion lever being rotatably mounted on said operating lever shaft, spring means connecting said trunnion lever with said operating lever shaft to resiliently rotate said trunnion lever with said operating lever shaft in at least one direction, and an operating lever connected to said operating lever shaft, the improvement comprising spring means associated with said stop plate permitting movement of said stop plate to an excess fuel position under a predetermined force of said fulcrum lever thereagainst, means on said flyweight for locking said flyweight to said sleeve during cranking of the engine to prevent radial flyweight movement and axial sleeve movement, and means connecting said operating lever shaft directly with said fulcrum lever second end during engine cranking at full throttle setting to provide said predetermined force of said fulcrum lever against said full load stop, thereby establishing an excess fuel position of said stop and of said fuel control rod.



3,865,092
MAGNETO IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Peter Schmaldienst, Nurnberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed July 11, 1973, Ser. No. 378,195
Claims priority, application Germany, Aug. 7, 1972, 2238871
Int. Cl. F02p *1/17*
U.S. Cl. 123—148 E **6 Claims**

1. Magneto ignition system for internal combustion engines having a spark plug, comprising

a magneto generator (**10**) having a main winding (**14**);

an energy storage element (**16**) supplied by the generator; controlled switching means (**18**) having a control terminal (**18*a***) to permit application of stored energy in a storage element to the spark plug (**19**);

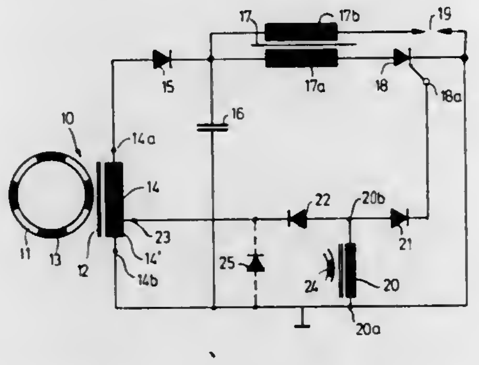
and a pulse source (**20**) having one terminal (**20*b***) connected to the control terminal (**18*b***) to trigger the controlled switch (**18**) into conduction and thus apply stored energy to the spark plug, wherein the improvement comprises an auxiliary winding (**14'**) on the magneto generator (**10**); and unsymmetrical conduction means (**21, 22**) connecting

a. the auxiliary winding (**14'**) of the magneto to the pulse source and

b. the pulse source (**20**) to the control terminal (**18***a*),

said unsymmetrical conduction means being logically connected to the auxiliary winding (**14'**) and to the pulse source (**20**) to become conductive only if both the pulse source and the auxiliary winding provide, simultaneously, an instantaneous output voltage of predetermined polarity; wherein

the auxiliary winding and the unsymmetrical conduction means form a reverse rotation inhibiting circuit comprising



a cross connection between one terminal (**14***b*) of the auxiliary winding and one terminal (**20***a*) of the pulse source (**20**);

a connecting diode connecting the other terminal of the auxiliary winding (**23**) and the other terminal (**20***b*) of the pulse source (**20**), said diode being poled in conductive direction to transfer generated voltage pulses in said auxiliary winding to the pulse source (**20**);

and a coupling diode (**21**) poled in conductive direction to connect the other terminal (**20***b*) of the pulse source with the control terminal (**18***a*) of the controlled switching means (**18**) to provide trigger pulses to the controlled switch only when the voltages from the pulse source and the auxiliary winding are of proper polarity to energize the controlled switching means.

3,865,093

MACHINE DRIVEN BY ROTARY PISTONS

Miguel Ferragut Rodriguez, Paseo Santa Maria de la Cabeza, Madrid, Spain

Filed Nov. 1, 1972, Ser. No. 302,922

Claims priority, application Spain, Nov. 4, 1971, 396667

Int. Cl. F02b *57/02*

U.S. Cl. 123—44 D **8 Claims**

1. A rotary machine for use as either a generator or a receiver of movement, said machine comprising:

A. a stator casing having therein at least one cylindrical inner surface;

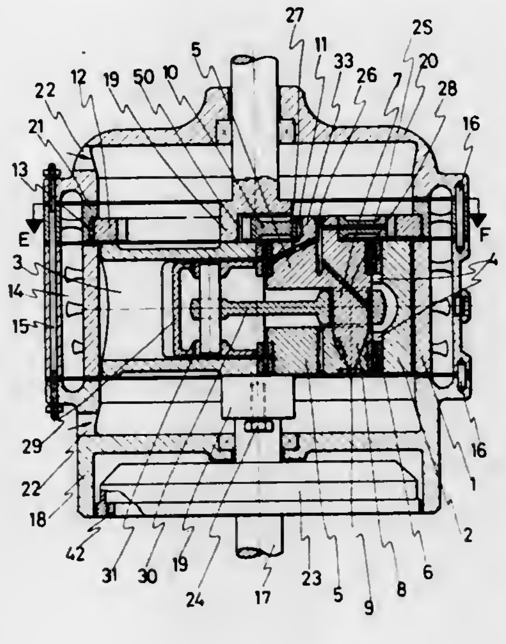
B. at least one rotor unit mounted within said casing adjacent a respective at least one inner surface thereof, each of said at least one rotor units comprising:

a cylindrical rotor body having an outer peripheral surface in contiguous contact with said respective inner surface of said stator casing, a single dead-end radial recess formed in said outer peripheral surface;

a piston-rod mechanism mounted to reciprocate within said recess;

a cylindrical opening extending transversely completely through said rotor body in communication with the inner end of said radial recess, said cylindrical opening having an axis parallel to but offset from the longitudinal axis of said rotor body;

a two-piece crankshaft having an outer diameter less than the diameter of said cylindrical opening and having the opposite ends thereof pivotally supported in said cylindrical opening about said axis thereof, said piston-rod mechanism being connected to an eccentric journal of said crankshaft, said eccentric journal being within said outer diameter of said crankshaft, said crankshaft at one end thereof having an extension;



a pinion rotatably supported on said extension; and

a ring gear rigidly fixed to said stator casing and meshing with said pinion; and

C. shaft means connected to the outermost of said at least one rotor unit at the rotor body thereof in alignment with said longitudinal axis thereof.

3,865,094

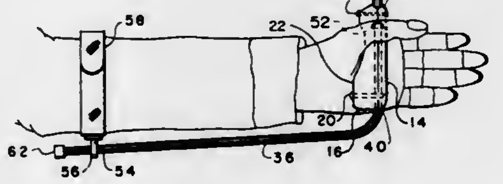
ARM BRACED AND STABILIZED SLINGSHOT

Robert Sweeney, 8230 S.W. 27 Ln., Miami, Fla. 33155

Filed June 11, 1973, Ser. No. 369,078

Int. Cl. F41b *7/00*

U.S. Cl. 124—20 R **5 Claims**



1. An arm braced and stabilized slingshot comprising a generally upright handle,

a fork extending from an upper end of said handle, said fork adapted for attachment of elastic bands,

a substantially L-shaped single rod having a shorter leg releasably engaged to said upright handle and a longer leg extending substantially horizontally therefrom,

arm engaging strap means for fastening around the arm of a user and having tab means for guiding said rod, said tab means extending downwardly from said strap means, said rod's longer leg slidably engaging said tab means, and

retaining means on said rod's longer leg for preventing accidental disengagement of said rod and said tab means.

3,865,095

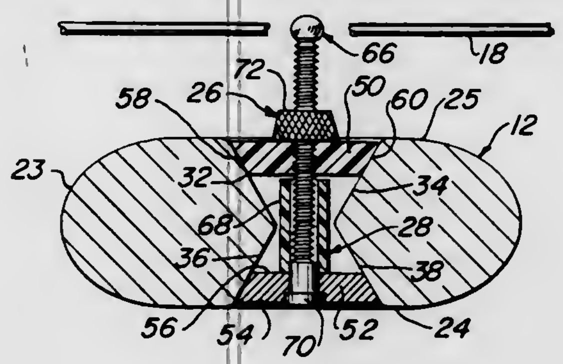
ARCHERY BOW WITH VERTICALLY ADJUSTABLE SIGHTING DEVICE

James C. Helmick, Grayling, Mich., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,166

Int. Cl. F41b *5/00*

U.S. Cl. 124—24 R **7 Claims**



1. An archery bow comprising a handle provided with a window area portion defined by relatively closely spaced longitudinally extending side surfaces of the handle and an arrow rest portion extending transversely thereacross,

an elongated sight mounting guideway integrally formed within the window area portion of the handle extending longitudinally of the handle and transversely to the arrow rest portion,

the guideway comprising a first pair of recessed inclined elongated guide surfaces on the handle defining a first elongated guide shoe slot opening toward one of said side surfaces of the handle and a second pair of oppositely facing recessed inclined elongated guide surfaces on the handle defining a second elongated guide shoe slot opening toward the other of said side surfaces of the handle, said guide surfaces intersecting centrally of said window area portion of the handle between the spaced side surfaces of the handle and defining an elongated connecting slot in the handle connecting the first and second elongated guide shoe slots,

a first guide shoe member slidably mounted in said first elongated guide shoe slot,

a second guide shoe member slidably mounted in said second elongated guide shoe slot,

adjustable connecting means extending axially between said first guide shoe member and said second guide shoe member through said connecting slot and supportively connecting said first and second shoe members so as to be longitudinally movable simultaneously as a unit along said guideway and adjustably connecting said first and second shoe members so as to be relatively movable transversely of said guideway to selectively frictionally retainingly engage and release said shoe members relative to said first and second pair of recessed inclined elongated guide surfaces to permit longitudinal adjustment, and

a sight member supported by and carried with said first and second shoe member.

3,865,096

ARCHERY BOW ARROW REST

Fernando Troncoso, Jr., 1851 South Orange Ave., Monterey Park, Calif. 91754

Filed Dec. 28, 1973, Ser. No. 429,358

Int. Cl. F41b *5/00*

U.S. Cl. 124—24 R **10 Claims**

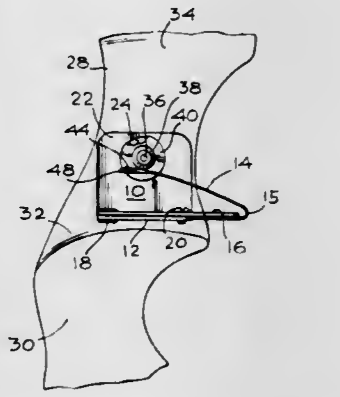
1. A combination comprising:

a. an archery bow having a bow handle portion, said bow handle portion having an arrow window defined by a generally horizontal bow shelf and a generally vertical sidewall; and

b. an improved arrow rest comprising, in combination,

i. a generally horizontal base support disposed over said shelf in said window,

ii. a resilient, vertically depressible, elongated, free-standing, forwardly projecting means rising above said base support and spaced generally parallel to said sidewall a substantial distance therefrom sufficient to permit the free passage of an arrow feather therebetween and for permitting, primarily, vertical displacement under the load of an arrow resting thereon.



iii. securing means releasably securing one end of said arm to said base support for adjustable positioning of said arm towards and away from said sidewall, and,

iv. attaching means for releasably attaching said arrow rest to said sidewall.

3,865,097

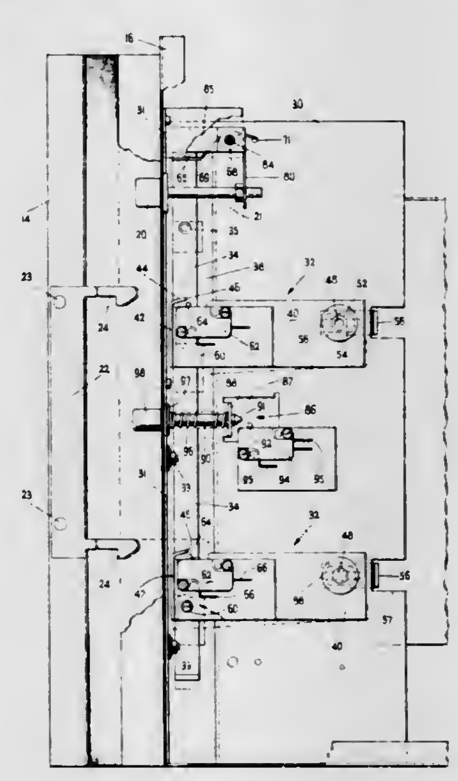
LATCH FOR MICROWAVE OVEN

Donald B. Robinson, Framingham, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.

Filed May 23, 1974, Ser. No. 472,544

Int. Cl. F23m *7/00*

U.S. Cl. 126—197 **10 Claims**



1. A latch assembly for securing a microwave oven door to the face of the microwave oven comprising:

means fastened to the cantilevered end of the oven door for securing the door to the oven face and including at least one latch,

said face having at least one aperture to receive the latch,

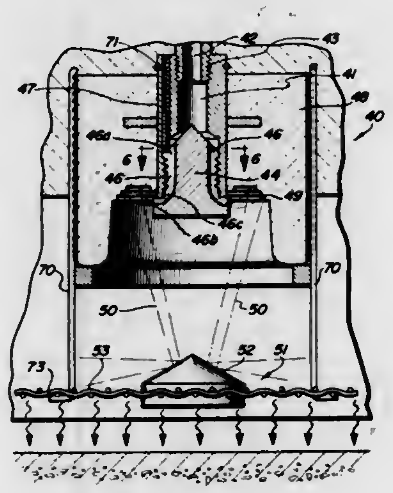
a latch receiving means including means defining an edge for engagement with the latch when the door is closed,

means for pivotally supporting said latch receiving means with said edge disposed intermediate the oven face and the pivot point,

- a sliding element arranged to move in a generally vertical direction,
- means freely securing said latch receiving means to said sliding element so that as said sliding element moves said latch receiving means is free to pivot about the pivot point,
- means for biasing the sliding element to a position wherein the latch and latch receiving edge are in engagement when the door is closed
- and means accessible from the front of the oven for actuating the sliding element to cause the latch to disengage from the latch receiving edge.

3,865,098
HEATER FOR ASPHALT CONCRETE ROADWAYS AND THE LIKE

Earl F. Cutler, Lawrence, Kans., assignor to Cutter Repaving Associates, Incorporated, Lawrence, Kans.
Filed June 13, 1973, Ser. No. 369,775
Int. Cl. F23c *5/00*
U.S. Cl. 126—271.2 A **10 Claims**

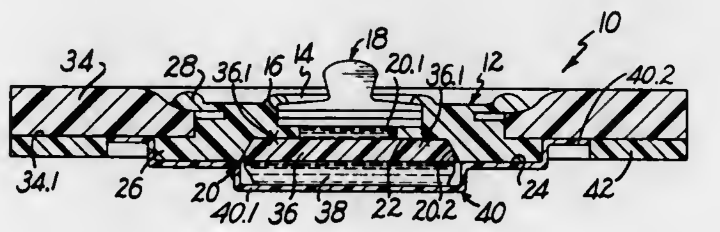


1. Equipment for heating the upper strata of asphalt concrete pavement, comprising in combination: a heating chamber having chamber-forming walls including a roof adapted to overlie an area of the pavement to be heated by radiant energy heat, said chamber-forming walls including downwardly extending peripheral side portions having lower edges thereof adapted to be closely spaced to the pavement, a plurality of radiant heating units positioned within said heating chamber substantially completely to provide a uniform area of radiant heat within said chamber for heating the pavement therebeneath, each of said radiant heating units including, a combustion chamber for connection to an air fuel supply to receive an air fuel mixture therein for burning of the air fuel mixture, nozzle means secured to said combustion chamber, said nozzle means having an axis which is aligned with said combustion chamber, a plurality of orifices extending through said nozzle means, each of said orifices having a first portion oriented substantially parallel to said axis of said nozzle and a second portion leading from said first portion and directed radially outwardly of said nozzle to change the direction of the products of combustion which pass through said nozzle, a deflector means positioned radially outwardly and axially downstream of said combustion chamber, said deflector means having a portion thereof adjacent said second portion of said orifices to receive the products of combustion therefrom and redirect said products of combustion to a predetermined location axially aligned but longitudinally displaced from said nozzle, and infrared radiant heating target means located substantially in coincidence with said predetermined location to receive the products of combustion from said deflector means and convert said products of combustion substantially entirely to infrared radiant heat energy, said target means comprising an imperforate target element displaced for direct impingement by said products of combustion, and a cross grid screen wire structure extending outwardly thereof.

6. A radiant heating unit comprising in combination, a combustion chamber including means for connection to an air fuel supply which delivers an air fuel mixture to the combustion chamber for burning therein, nozzle means secured to said combustion chamber, said nozzle means having an axis which is axially aligned with said combustion chamber, a plurality of orifices extending through said nozzle means, each of said orifices having a first portion oriented substantially parallel to said axis of said nozzle and a second portion leading from said first portions and directed radially outwardly of said nozzle to change the direction of the products of combustion which pass through said nozzle, a deflector means positioned radially outwardly and axially downstream of said combustion chamber, said deflector means having a portion thereof adjacent the second portion of said orifices to receive the products of combustion therefrom and redirect said products of combustion to a predetermined location axially aligned but longitudinally displaced from said nozzle, and infrared radiant energy target means located substantially in coincidence with said predetermined location to receive the products of combustion from said deflector means and convert said products of combustion substantially entirely to infrared radiant heat energy, said target means comprising an imperforate target element displaced for direct impingement by said products of combustion, and a cross grid screen wire structure extending outwardly thereof.

3,865,099
MEDICAL ELECTRODE AND METHOD OF MAKING

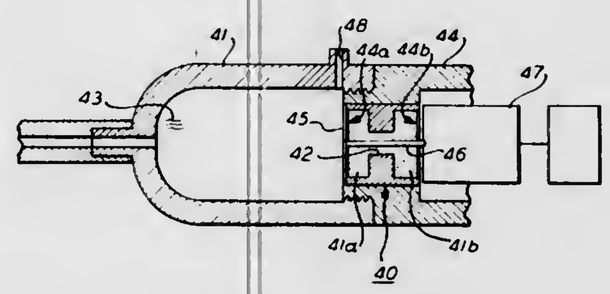
Robert H. Robichaud, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed May 18, 1973, Ser. No. 361,683
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E **8 Claims**



1. A medical electrode unit comprising a dielectric body having a cavity therein which is open at one end, said body having a step surface within said cavity forming a relatively small cavity portion spaced from said open cavity end and a relatively larger cavity portion adjacent said open cavity end, means secured to said body around said open cavity end for securing the electrode unit to a patient, a conductive electrode element disposed within said relatively smaller cavity portion spaced from said step surface, said electrode element having means extending away from said cavity out of said dielectric body for permitting electrical connection to be made to the electrode element, a resilient, dielectric foam pad having pores extending therethrough secured to said step surface of said body within said relatively larger cavity portion in spaced relation to said conductive electrode element and having a surface of said pad extending adjacent said open cavity end, electrolyte paste filling said relatively smaller cavity portion in wetting relation to said conductive electrode element, filling said pores of said foam pad, and forming a mound of said electrolyte paste on said pad outside said cavity, and a cover releasably secured against said dielectric body over said open cavity end, said cover having a surface engaging said electrolyte paste over substantially all of said open cavity end.

3,865,100
APPARATUS FOR MEASURING BLOOD PRESSURE

Hiroshi Kanai, Tokyo, and Yuji Kimura, Kawasaki, both of Japan, assignors to Hiroshi Kanai, Kanagawa and Yuji Kimura, Tokyo, both of, Japan
Filed Apr. 19, 1973, Ser. No. 352,828
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 D **5 Claims**



1. An apparatus for measuring blood pressure comprising, a catheter having an open distal end which is to be inserted into a blood vessel of a patient and a proximal end;

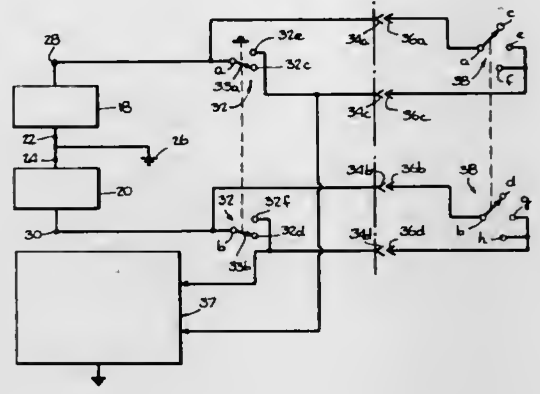
- a hollow housing to one end of which is connected said proximal end of the catheter;
- the internal diameter of a greater portion of said housing being substantially greater than that of the catheter;
- a substantially dumbbell-shaped damping member disposed in said hollow housing and having first and second cavities with first and second flexible diaphragms respectively and a tube connecting said first and second cavities, the internal diameter of said cavities being substantially equal to that of said hollow housing and the internal diameter of said tube being smaller than that of said cavities inside of said damping member, said damping member being filled with damping liquid having a viscosity greater than that of a physiological saline solution filled in said catheter and a space formed by an inner surface of said hollow housing and said first diaphragm of said first cavity;
- a pressure transducing means provided behind said second cavity of said damping member viewed from the catheter and responsive to blood pressure variations through a body of physiological saline solution filled in said catheter and said space in said housing and said damping member to produce an output representative of said blood pressure variations; and
- an indicator means connected to said pressure transducing device for indicating said blood pressure variations.

3,865,101
PORTABLE AND SEPARABLE HEART MONITOR AND HEART DEFIBRILLATOR APPARATUS

Lawrence Saper, Westwood; George Heller, Glen Rock, and David Hitchcoff, Westwood, all of N.J., assignors to Datascope Corp., Paramus, N.J.
Filed May 1, 1974, Ser. No. 465,897
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **7 Claims**

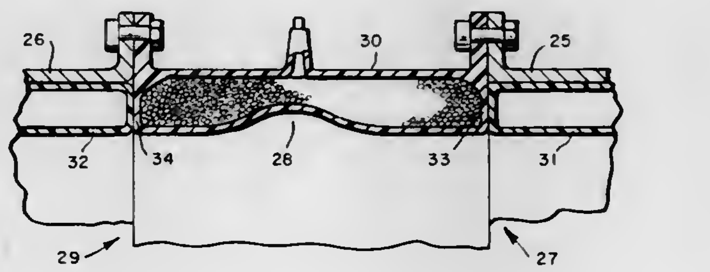
1. A portable unit including heart monitor and heart defibrillator portions which comprises:

- a. a removable heart-monitoring portion having a self-contained power supply, said monitoring portion capable of monitoring a patient's heart, while positioned in said unit or removed therefrom;
- b. first switch means for interrupting the flow of electric power between said power supply and electrical circuits within said monitor portion when said monitoring portion is positioned in said unit;
- c. second switch means within said defibrillator; and
- d. means for electrically connecting said power supply and said electrical circuits within said monitoring portion to said second switch means, said second switch means operable to connect said power supply to said electrical circuits.



3,865,102
EXTERNAL CARDIAC ASSIST APPARATUS

William C. Birtwell, North Scituate, R.I., and Robert L. Norton, Norfolk, Mass., assignors to Hemodyne, Inc., Norfolk, Mass.
Filed June 13, 1973, Ser. No. 369,447
Int. Cl. A61h *7/00*
U.S. Cl. 128—64 **29 Claims**



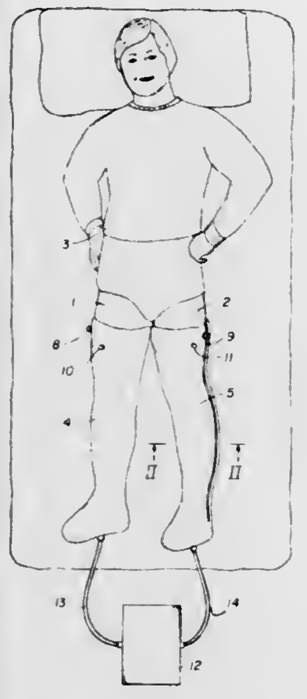
1. Apparatus for providing external assistance for the circulation of blood in a patient comprising

- housing means for enclosing a portion of said patient's body;
- means for cyclically applying pressure to said body portion within at least a portion of said housing means, said pressure applying means including
- pressure actuation means;
- a pressure medium positioned in said portion of said housing means between said pressure actuation means and said portion of the patient's body, said pressure medium being responsive to said pressure actuation means to apply pressure to said body portion;
- means for synchronizing the operation of said pressure actuation means to apply said pressure cyclically to produce alternating compression and decompression of said body portion in synchronism and in correct phase with said patient's heartbeat;
- at least a portion of said housing means comprising rigidizable means which is in a non-rigid state when applied to or placed on said patient and which is capable of substantially conforming to any of a plurality of different shapes of the portion of said patient's body to which it is applied when in said non-rigid state, said rigidizable means being further capable of assuming a rigid state and retaining said conformity when in said rigid state; and
- means for rigidizing said rigidizable means for operation of said apparatus.

3,865,103
BLOOD CIRCULATING DEVICE

Ralph Folman, Toronto, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 8, 1973, Ser. No. 414,155
Int. Cl. A61h *7/00*
U.S. Cl. 128—64 2 Claims



1. A blood circulating device for the limbs of a body, said device comprising

a pair of airtight sleeves each adapted to encase a corresponding limb of a body, each sleeve having an inner wall adjacent the limb and an outer wall spaced from the inner wall;

a pair of steady slow air release valves each in a corresponding one of the sleeves for slowly releasing air in the corresponding sleeve; and

a source of compressed air coupled to both sleeves at points spaced from the air release valves and means for pulsatingly supplying air to each sleeve between the inner and outer walls thereby encouraging blood circulation in the encased limbs, the air being slowly released from the sleeves via said valves.

3,865,104
CONNECTING DEVICE FOR PLASTIC ENCASED HYDROTHERAPY PLINTH

Donald L. Paulson, Rolling Meadows, and Anthony C. Mamo, Arlington Heights, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 2, 1973, Ser. No. 412,385
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 4 Claims

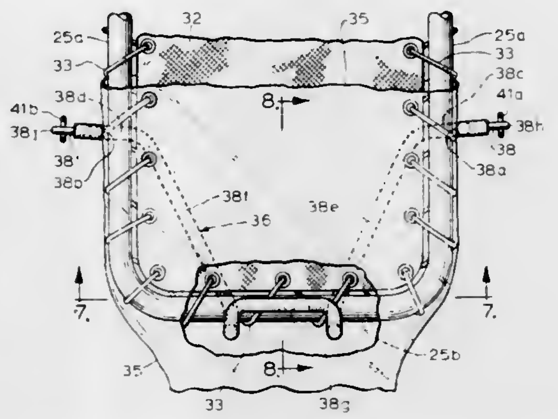
1. In a hydrotherapy treatment system wherein a patient is supported partially immersed in a water-filled whirlpool tank on an elongated plinth having a rectangular rigid metallic frame of tubular construction and formed by pairs of coplanar side rails and end rails, the plinth being encased in a disposable, flexible water-tight plastic sleeve to prevent patient cross-contamination, and wherein a pair of rigid suspension struts upwardly connect each end of the plastic encased plinth to an overhead hoist, a connecting device for interconnecting a predetermined end of the plastic encased plinth to its associated pair of suspension struts, comprising:

a continuous, uninterrupted, symmetrically shaped metallic rod which is bent to provide

a pair of parallel upright portions that are perpendicular to the plane defined by the frame and embrace the plastic encased plinth at support points along the side rails close to but inward from the plinth's predetermined end,

a pair of coplanar supporting portions each of which is adjacent and perpendicular to a respective one of said upright portions and each of which lies beneath and supports a respective one of the side rails at its support point,

a centrally-located upwardly extending hook-shaped portion, equidistant from said supporting portions,



which hooks over the end rail at the plinth's predetermined end to maintain said connecting device attached to the plastic encased plinth,

and a pair of eye-shaped portions at respective ends of said metallic rod and lying outboard from the side rails;

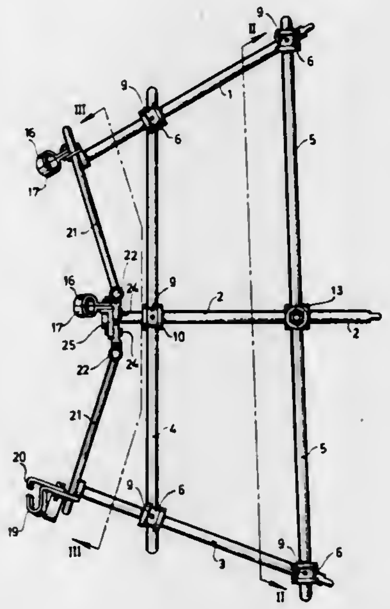
and a pair of coupling elements each of which intercouples a respective one of said eye-shaped portions to a respective one of the suspension struts.

3,865,105
DEVICE FOR EXERTING FORCES ON AND FIXING THE SPINAL COLUMN OF A HUMAN BODY

Freerk Lode, Groningen, Netherlands, assignor to Lode's Instrumenten N.V., Groningen, Netherlands

Filed May 9, 1974, Ser. No. 468,343

Claims priority, application Netherlands, May 16, 1973, 7306853
Int. Cl. A61f *5/37*
U.S. Cl. 128—69 6 Claims



1. A device for exerting forces on the spinal column of a human body, comprising a frame including

three or more fastening members which each can be fixedly secured to a vertebra of the spinal column,

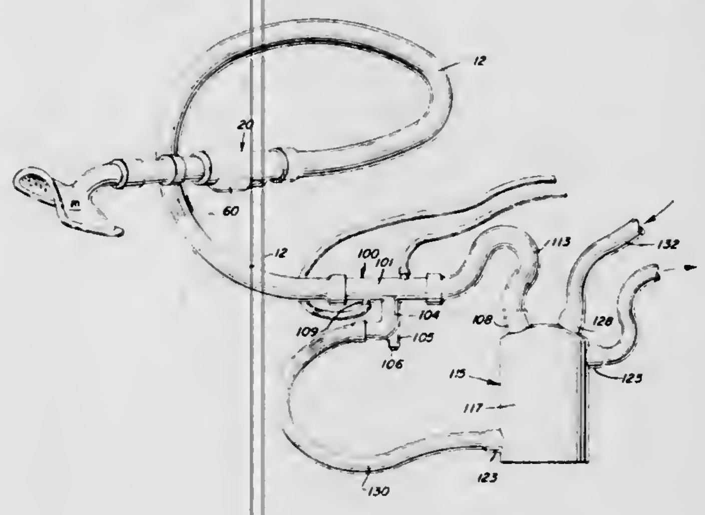
connecting means connecting the fastening means mutually in such a way that they can freely move with respect to each other, and

fixation means fixing the fastening members in such a way with respect to each other that each of the fastening members is prevented from moving in a plane perpendicular to the connecting line through the two other fastening members, and adjusting means connected to the frame, for exerting a force on one of the fastening members, the force being situated in a plane which is perpendicular to the connecting line of the two other fastening members and the force being equal to the sum of the forces exerted on the two other fastening members.

3,865,106
POSITIVE PRESSURE BREATHING CIRCUIT

Bernard P. Palush, 1607 E. Cedar Ln., Mount Prospect, Ill. 60056

Filed Mar. 18, 1974, Ser. No. 451,855
Int. Cl. A61m *17/00*
U.S. Cl. 128—145.8 34 Claims



1. A positive pressure breathing circuit for operation in conjunction with a positive pressure ventilator useful in connection with respiratory therapy, comprising in combination, a concentrically oriented inhalation/exhalation circuit having an inner inhalation tube and an outer exhalation tube, said outer exhalation tube being spaced from and concentrically oriented with respect to said inner inhalation tube positioned therein,

said inner inhalation tube having a patient receiving terminal at one end thereof and a gas source terminal at the opposed end thereof,

said outer exhalation tube having a patient receiving terminal at one end thereof and an exhaust end at the opposed end thereof,

inhalation unidirectional valve means associated with said inhalation tube for providing unidirectional gas flow through said inhalation tube,

exhalation unidirectional valve means associated with said exhalation tube for providing unidirectional gas flow through said exhalation tube,

inflatable occlusion means interposed between said inner inhalation tube and said outer exhalation tube adjacent said patient receiving terminal and in fluid communication with a source of pressurized fluid such that said inflatable occlusion means is alternatively inflatable during the inhalation phase and deflatable during the exhalation phase in response to fluid pressure from the source thereof,

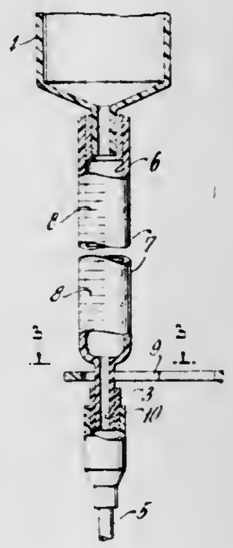
the gas flow in said inhalation tube being countercurrent with respect to the gas flow in said exhalation tube thereby to stabilize and maintain the temperature of the gas within said inner inhalation tube without any extraneous source of heat, while at the same time permitting inflation of said inflatable occlusion means during the inhalation cycle and thereby to resist any back pressure caused during the inhalation cycle as well as to avoid any cross-contamination of the gases in the inhalation tube with the gases in the exhalation tube,

whereby gas suitable for patient inhalation enters said circuit through said inner inhalation tube under positive pressure and through said inhalation unidirectional valve means to the patient during which time said inflatable occlusion means is fully inflated and interposed between said inner inhalation tube and said outer exhalation tube and prevents cross contamination of gases while resisting any back pressure existing in said circuit while exhaled gases flow through said exhalation unidirectional valve means in countercurrent relation with respect to the gas within said inner inhalation tube, said inflatable occlusion means being deflated during the exhalation cycle thereby to permit exhaled gases to exit from said circuit.

3,865,107
INFANT TUBE FEEDING ADAPTER

Raymond W. Barton, 7900 Peterbury Rd., Evansville, Ind. 47711

Filed Sept. 19, 1973, Ser. No. 398,709
Int. Cl. A61j *07/00*
U.S. Cl. 128—222 4 Claims

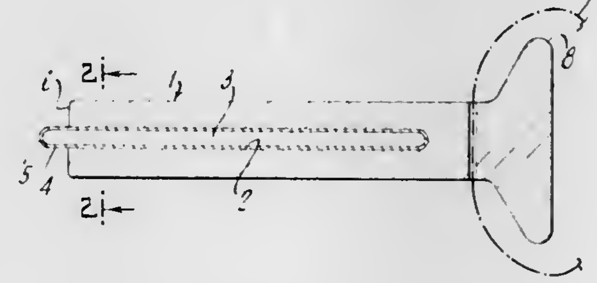


1. An infant tube feeding device, adapted for delivering fluid from a calibrated container to a gavage tube, comprising a translucent flexible connector, said connector having a reduced diameter proximate said gavage tube and being calibrated to permit delivery to said gavage tube of accurately measured, small quantities of said fluid; a flow clamp, said clamp positioned on said flexible connector proximate said gavage tube and having means for regulating fluid flow thereto; and a semi-rigid fitment, said fitment providing a connection for said flexible connector to said gavage tube.

3,865,108
EXPANDABLE DRUG DELIVERY DEVICE

William L. Hartop, Bernardsville, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

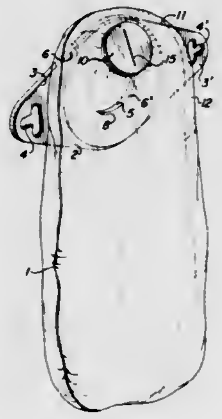
Continuation-in-part of Ser. No. 144,174, May 17, 1971, abandoned. This application July 9, 1973, Ser. No. 377,350
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 10 Claims



1. A device for the delivery of a medicament to a body cavity comprising a base, said base at least partially defining a medicament containing zone of restricted dimensions, said base being expandable and incorporating a material which expands sufficiently upon contact with body fluids to expand

said base, said material being selected from the group consisting of brown algae, polysaccharides derived from brown and red seaweeds, biosynthetic polysaccharides, natural gums, cellulose derivatives, synthetic resins derived from cellulose, polyacrylamide, polyvinylpyrrolidone, ethylene oxide polymers, and modified starches, and said medicament containing zone being disposed in pressure responsive relation to said expandable base such that upon insertion of the device into a body cavity pressure is exerted on the medicament containing zone as a result of resistance to expansion by the base within the body cavity which causes the base to compress the medicament containing zone resulting in the medicament contained therein being dispensed into the body cavity.

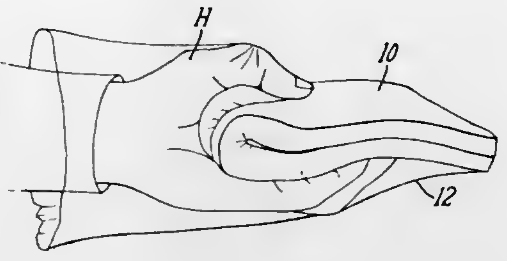
3,865,109
COLOSTOMY FECAL POUCH VENTING MEANS
Austin E. Elmore, and Ernest A. Uhlmann, both of 4533 N. Scottsdale Rd., Scottsdale, Ariz.
Filed Mar. 16, 1973, Ser. No. 341,857
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **9 Claims**



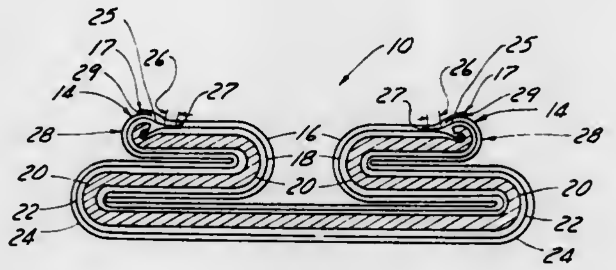
1. A colostomy attachment of a soft, resilient, moisture proof material with self venting means for gases trapped therein comprising:
a closed pouch for receiving fecal matter,
said pouch being provided with an opening thereinto of sufficient size for surrounding a stoma opening of a user, and
venting means for said pouch comprising a first flexible, substantially flat surfaced pad secured to one surface of said pouch, said first pad and said one surface of said pouch having a contiguous venting slot extending therethrough which opens when gases in said pouch distort the surfaces of said first pad and said pouch,
said venting means for said pouch further comprises a second slotted flexible, substantially flat surfaced pad, laminated to said first pad, said first and second pads and said one surface of said pouch having their slots in alignment forming a contiguous venting slot extending through said pouch.

3,865,110
DIAPER AND INTEGRAL EVERSION CONTAINER
Robert F. Traverse, 42 Dickens St., Dorchester, Mass. 02125
Filed Aug. 14, 1973, Ser. No. 388,210
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **1 Claim**

1. A damp resistant diaper ensemble in the configuration of a flat elongated rectangle, said ensemble having a means for manual eversion of a bag to enclose a used damp diaper comprising a diaper having on one half length, at least one adhesive means across the width thereof, a water resistant bag of sheet material of a size substantially coextensive of the diaper and having an opening in a first end portion and attached on the outside surface adjacent its second end portion to said diaper adhesive means, said outside surface of said bag adjacent its opening and the diaper second half being joined by an adhesive tack means to define a disengageable attachment means between the bag and diaper whereby said bag opening defines a hand insertion means so said diaper second half portion may be readily detached from the bag, folded over the remaining first portion to cover the soiled surfaces, and be enclosed in the bag by said manual eversion thereof.



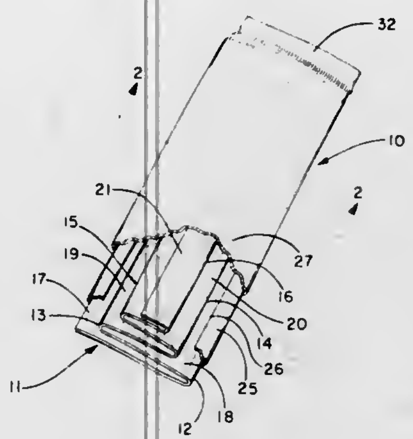
3,865,111
EASILY DISPOSABLE DIAPER WITH SEALING BEAD
William Victor Hayes Brooks, Toronto, Canada, assignor to Domtar Limited, Montreal, Canada
Filed Mar. 29, 1974, Ser. No. 455,996
Claims priority, application Canada, Apr. 9, 1973, 168,237
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



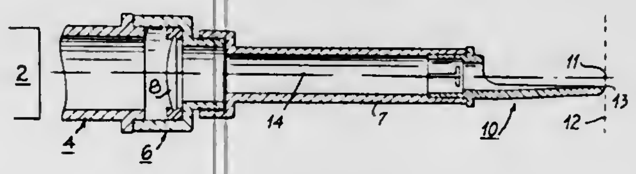
1. A diaper comprising a porous hydrophobic facing layer, an impervious backing layer, an absorbent pad sandwiched between said facing and said backing layers, said pad being substantially the same width as said backing layer, a means for providing a moisture seal comprising a pleat extending outwardly toward each side of said diaper and terminating in a folded edge portion at the lateral extremities of the pad formed by a portion of said pad and said backing sheet folded over into a reverse fold in an inward direction and providing a raised sealing bead along each side edge of the diaper.

3,865,112
SMALL SIZE SANITARY NAPKINS WITH IMPROVED ABSORPTION CAPABILITY
Robert J. Roeder, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 5, 1974, Ser. No. 448,400
Int. Cl. A61f *13/20, 13/18*
U.S. Cl. 128—290 R **5 Claims**

1. In a small size sanitary napkin comprising an elongate multilayered absorbent element enclosed in a fluid-pervious wrapper and having a fluid-impervious film disposed between the bottom of the element and the enclosing wrapper, the improvement wherein said multilayered element is comprised of a unitary stratified web, said stratified web being arranged in a multiplicity of layers, said layers being formed by longitudinally extending folds in said stratified web with said folds alternating from one side to the other in zig-zag sequence, the width of the lowermost of said layers defining the full width of said element with each succeeding layer disposed above said lowermost layer being narrower and having successively less surface area than the adjacent layer directly therebeneath, said stratified web comprising multiple plies of creped absorbent cellulose tissue in which the ridges and valleys of the crepe in the tissue plies run in the longitudinal direction of said element.



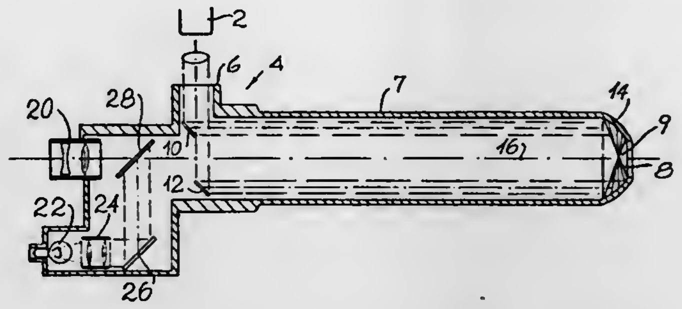
3,865,113
LASER DEVICE PARTICULARLY USEFUL AS SURGICAL SCALPEL
Uzi Sharon, Tel-Aviv, and Isaac Kaplan, Savyon, both of Israel, assignors to Laser Industries Ltd., Tel-Aviv, Israel
Filed Dec. 4, 1972, Ser. No. 311,776
Claims priority, application Israel, Oct. 17, 1972, 40602
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **28 Claims**



1. A laser beam manipulator device that indicates the point of focus of a focused laser beam comprising:
a tube connectable at one end to a manipulatable laser beam conduit through which the laser beam passes;
a beam targeting member carried by the tube at its opposite end;
said beam targeting member having a tip that is approximately the same distance along the longitudinal axis of the tube as the focal point of the laser beam; and
means for permitting the viewing of the area around the focal point while the laser beam manipulator device is being maneuvered by an operator.

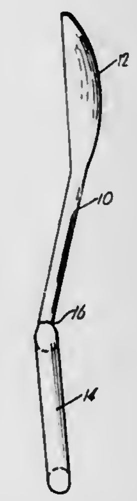
3,865,114
LASER DEVICE PARTICULARLY USEFUL AS A SURGICAL INSTRUMENT
Uzi Sharon, Tel-Aviv, Israel, assignor to Laser Industries, Ltd., Tel-Aviv, Israel
Filed Oct. 11, 1973, Ser. No. 405,498
Claims priority, application Israel, Oct. 11, 1972, 40544
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **10 Claims**

1. A laser beam manipulator device comprising:
an enclosure;
an opening in said enclosure defining therein a working area in which may be received an object to be treated;
means for receiving the laser beam within said enclosure and for conducting it to said opening; and
means for intercepting the laser beam adjacent the opening,



whereby the beam is prevented from emerging through the opening in the enclosure.

3,865,115
COMBINED FEEDING AND TEETHING DEVICE FOR INFANTS
Peter De Mieri, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Aug. 14, 1973, Ser. No. 388,129
Int. Cl. A61j *17/00*
U.S. Cl. 128—359 **1 Claim**



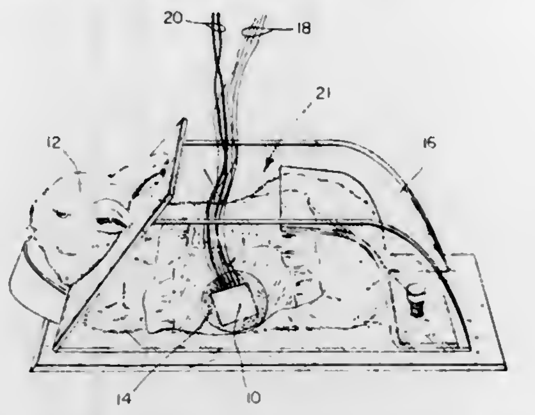
1. A device for use both in feeding an infant and assisting teething thereof, said device comprising:
an elongated handle formed of stainless steel with one thereof formed into a head of a spoon;
a teething ring formed of a firm yet yieldable non-metallic material which cannot cause injury to mouth, gum or teeth during teething, said ring being oriented in a plane essentially parallel to the plane containing the face of the spoon; and
a plastic to metal seal disposed between the other end of the handle and the ring to secure the ring to the other end of the handle, the seal being flush with the surfaces of handle and ring.

3,865,116
METHOD OF CONTROLLING TISSUE HYPOTHERMIA
Harold W. Brooks, R.D. 4, Danville, Pa. 17821
Filed Apr. 9, 1973, Ser. No. 349,442
Int. Cl. A61f *7/00*
U.S. Cl. 128—400 **4 Claims**

1. A method of cooling a pedicle flap or graft in situ comprising:
forming a thermal transmission medium having one surface of substantially the same size, shape and outline as the pedicle flap or graft to be cooled;
placing said one surface of said thermal transmission medium in substantial contact with the entirety of the pedicle flap or graft;

holding the cooling face of a thermoelectric device in contact with an exposed surface of the thermal transmission medium;

maintaining a temperature sensing device in position between the pedicle flap or graft and said one surface of said thermal transmission medium; and



thermostatically controlling the temperature of the cooling face of the thermoelectric device between the pedicle flap or graft and said thermal transmission medium so as to maintain the temperature of a substantial portion of the pedicle flap or graft at 15°-20° C.

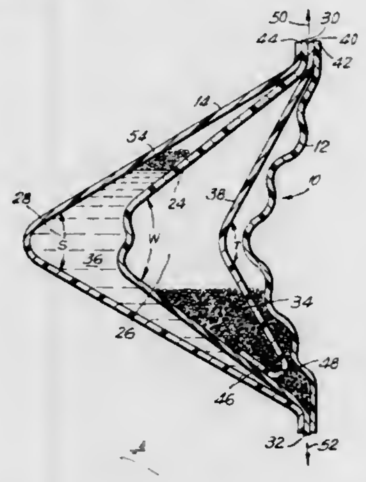
3,865,117
THERMAL COMPRESS AND METHOD AND APPARATUS FOR MAKING THE SAME

Thomas William Perry, III, Brick Town, N.J., assignor to Micro Bio-Medics Inc., Mamaroneck, N.Y.

Filed June 25, 1973, Ser. No. 373,436

Int. Cl. A61f *7/04*

U.S. Cl. 128—403 **18 Claims**



1. A thermal compress comprising an outer container defining an inner space, an inner wall within said container dividing said space into two separate compartments each bounded in part by said outer container, control means physically associated with said wall to provide, on the application of at least one manual force to the container, a passage through said wall at a localized and predictable position, and first and second means respectively located in said compartments and separated by said wall until the formation of said passage, said first and second means upon contacting one another, after the formation of said passage, performing a thermal function.

3,865,118
TRANSVENOUS COAXIAL CATHETER

Alan R. Bures, Irvine, Calif., assignor to The Regents of The University of California, Berkeley, Calif.

Filed Dec. 27, 1973, Ser. No. 428,966

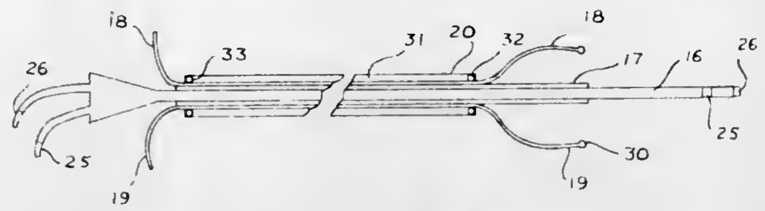
Int. Cl. A61n *1/04*

U.S. Cl. 128—404 **7 Claims**

7. An elongate pacing electrode catheter system capable of pacing both the atrium and the ventricle comprising:

an elongate flexible electrode extending the length of the catheter system for stimulating the ventricle, said electrode for stimulating the ventricle including a distal tip arranged to be moved into stimulating contact with the wall of a ventricle,

an elongate atrial electrode system, said atrial electrode system comprised of at least one energy conducting element mounted about a central portion of the ventricle



electrode rearward of the distal tip thereof, said elements including stimulation distal tip means,

there being means arranged to reciprocally move said atrial electrode system stimulating distal tip means from a first substantially coaxial position to an extended operative position.

3,865,119
HEARTBEAT ACTUATOR WITH CONTROLLED PULSE AMPLITUDE

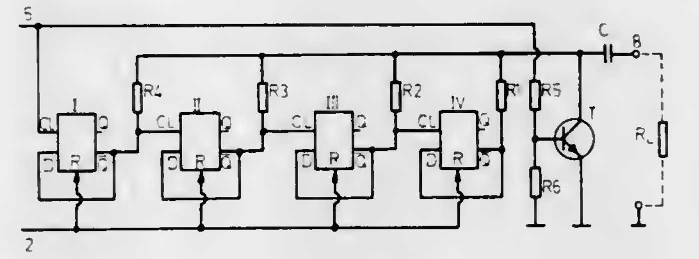
Bengt Svensson, Ronninge, and Gunnar Wallin, Sollentuna, both of Sweden, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Apr. 10, 1973, Ser. No. 349,809

Claims priority, application Germany, Apr. 11, 1972, 2217400

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **1 Claim**



1. A heartbeat actuator, particularly an implantable heartbeat actuator, comprising a condenser, a charging circuit connected with said condenser for controlling pulse amplitude, means producing stimulating impulses, said charging circuit including a digital counter actuated by the pulses and a plurality of resistances connected thereto, whereby the counter combines the resistances to control pulse amplitude, said resistances having values arranged according to a geometrical row, means combining said resistances with each other, and means connected with said condenser and said impulse-producing means for applying the generated impulses to the heart, the combined resistances being switched into said charging circuit by said counter so that the lowering of the amplitudes takes place in predetermined equal steps.

3,865,120
PROCESS FOR PRODUCING TOBACCO FOILS

Ernst-Rolf Detert, Lubbecke, Westphalia and Willi Buchholz, Lubbecke, both of Germany, assignors to Edward Gerlach G.m.b.H, Westphalia, Germany

Filed Nov. 4, 1971, Ser. No. 195,585

Claims priority, application Germany, Nov. 12, 1970, 2055672

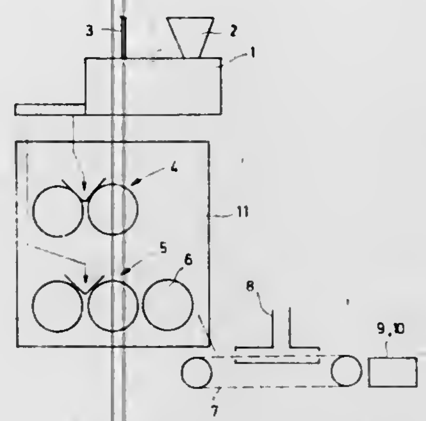
Int. Cl. A24b *03/14*

U.S. Cl. 131—140 C **7 Claims**

1. A process for the production of tobacco foils from tobacco, binders and solvents which comprises the steps of:

a. mixing tobacco particles in a size range of 0 to 10 mm with a solvent soluble, finely ground, cellulose derivative, in particle form selected from the group consisting of methyl cellulose, methylpropyl cellulose, acetyl cellulose and ethyl cellulose, and having a particle size of 0 to 0.2 mm to provide tobacco particles having cellulose particles loosely deposited therein but not completely covering the surface of the tobacco particles;

b. moistening the so mixed tobacco particles containing said loosely deposited cellulose particles with an organic solvent in an amount to insure superficial swelling of said cellulose and conversion of said cellulose into a jelly-like



state to provide a moist, solvent containing brittle tobacco granulate without wetting the tobacco mass and forming a pulp;

c. pressing the brittle solvent containing granulate into a tobacco foil; and

d. removing, by devolatilization, said organic solvent from said foil.

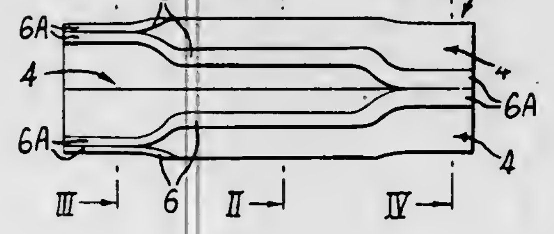
3,865,121
CIGARETTE FILTERS

Desmond Walter Molins, London, England; Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, and Clive Perkins, London, England, assignors to Molins Limited, London, England

Division of Ser. No. 195,177, Nov. 3, 1971, Pat. No. 3,735,672. This application Feb. 15, 1973, Ser. No. 332,830

Int. Cl. A24d *1/04;* **A24f** *7/04*

U.S. Cl. 131—261 B **6 Claims**



1. A cross-flow filter element comprising an elongated body constructed of a single web of filter material forming a tube having a plurality of spaced portions thereof folded towards a common location such that each of said inwardly folded portions contacts the adjacent inwardly folded portions at said common location forming an axially disposed core and each portion of said tubular filter material intermediate of said folded portions folded against itself forming a longitudinally extending laminated rib comprising contiguous parts of said intermediate portion; the plurality of longitudinally extending ribs extending radialy from said core and defining grooves therebetween; each rib having a central portion intermediate end portions at the opposite ends of the body, the free longitudinal edge of said central portion being spaced from and substantially parallel to the free edge of adjacent ribs and said two end portions being laterally displaced in opposite directions from the central portion with the adjacent end portions of adjacent ribs in sealing engagement in an alternating sequence, whereby alternate grooves between said ribs are closed at opposite ends of the body.

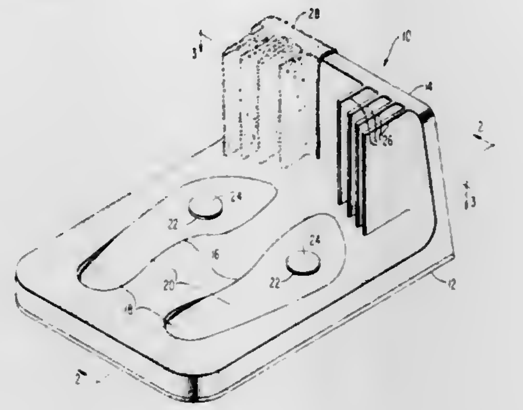
3,865,122
FOOT DRYING APPARATUS

Everett E. Dabbs, 2617 Velma Burns Ct., Tucker, Ga. 30084

Filed Jan. 24, 1974, Ser. No. 436,362

Int. Cl. A49d *29/00*

U.S. Cl. 132—73 **11 Claims**



1. A foot drying apparatus, comprising:

a base for receiving a person's feet thereon;

an upstanding wall connected to one end of said base, said wall having a plurality of upstanding, laterally spaced ribs which extend inwardly over said base and are adapted to receive a person's toes therebetween; and

a water absorbing cover removably received on said wall and extending over said ribs to effect drying of the areas between the toes positioned between siad ribs.

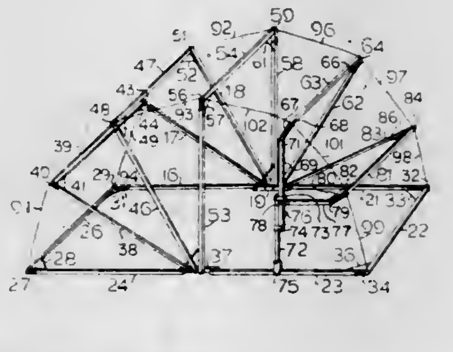
3,865,123
PORTABLE TENT

Lee H. Bracken, 2153 Fieger St., San Diego, Calif. 92105

Filed Dec. 3, 1973, Ser. No. 421,277

Int. Cl. A45f *1/16*

U.S. Cl. 135—4 R **5 Claims**



1. A portable tent comprising:

a frame having a plurality of structural units substantially equal in length;

a rectangular base consisting of six of said structural units having first and second short sides of one structural unit each and first and second long sides of two structural units each;

first, second, third and fourth hinge means coupling said long sides to said short sides;

fifth and sixth hinge means coupling the first and second structural units on said first and second long sides together, respectively;

a plurality of U-shaped structural units, each of said U-shaped structural units consisting of first, second and third structural units, all of said first, second and third structural units in said U-shaped structural units being hingedly attached to each other, the ends of said U-shaped structural units being hingedly coupled to said fifth and sixth hinge means, a central one of said plurality of U-shaped units being in perpendicular relationship with said rectangular base; and

another U-shaped unit having a structural unit with one end hingedly coupled to one of said first and second long side structural units in a central portion thereof, said structural unit being in parallel relationship with said central one of said plurality of U-shaped units for forming an entrance space.

3,865,124
FRICTION REDUCTION

Jacques R. Kohler, and Gerrit J. Van Amerongen, both of Amsterdam, Netherlands, assignors to Shell Oil Co., Houston, Tex.

Filed June 14, 1974, Ser. No. 479,400

Claims priority, application Great Britain, June 18, 1973, 28860/73

Int. Cl. F17d *1/16*

U.S. Cl. 137—13 **10 Claims**

1. A hydrocarbon composition having reduced frictional drag when flowing through pipelines or other conduits comprising a hydrocarbon and a minor proportion of a polymer or copolymer of cyclopentene.

3,865,125
GOVERNOR

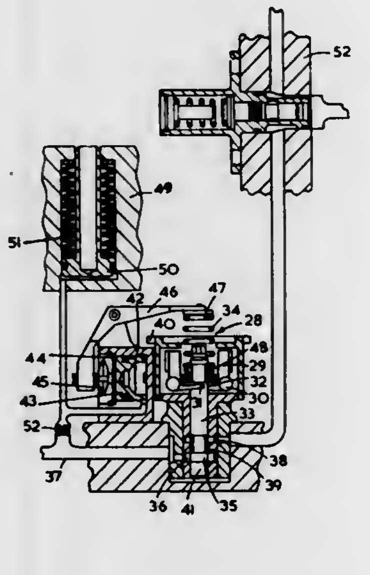
Keith Gomersal, and Brian Padgett, both of Yorkshire, England, assignors to Rotax Limited, Birmingham, England

Continuation of Ser. No. 275,882, July 27, 1972, abandoned. This application Apr. 4, 1974, Ser. No. 457,976

Claims priority, application Great Britain, July 27, 1971, 35324/71

Int. Cl. G05d *13/30*

U.S. Cl. 137—51 **1 Claim**



1. A governor comprising: a plurality of rotatable weights; a governor axis about which the weights are mounted for pivotal movement under the influence of centrifugal force; a piston valve connected to the weights, the piston valve being movable axially by said weights; resilient means, one end of which acts on one end of said piston valve to oppose axial movement thereof; a fluid inlet of the governor; a fluid outlet of the governor; said piston valve being interposed between said inlet and said outlet to define means for controlling fluid flow therethrough; a piston means and cylinder assembly, said cylinder having said outlet connected thereto, said piston means of said assembly being connected to act on the other end of said resilient means such that axial movement of said piston means results in a substantially uniform variation in the datum position of said one end of said resilient means; and a restrictor and a hydraulic accumulator connected in passage means between said governor outlet and said one end of said cylinder of said assembly.

3,865,126
LIQUID METERING APPARATUS

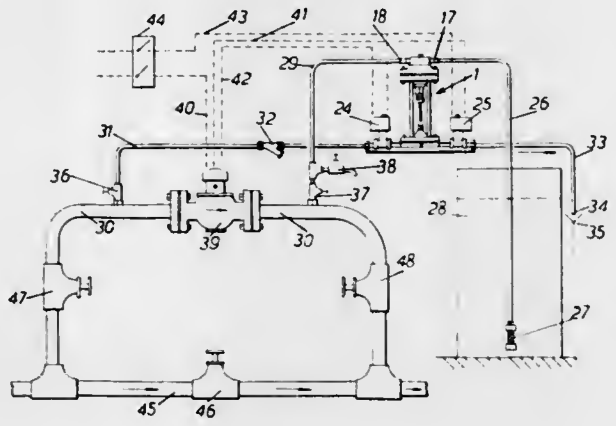
Thomas H. Baggaley, 34 Rothschild St., London S.E. 27, England

Filed Nov. 26, 1973, Ser. No. 418,985

Claims priority, application Great Britain, Dec. 7, 1972, 56433/72

Int. Cl. G05d *11/00*

U.S. Cl. 137—101.21 **5 Claims**



1. A system for supplying a liquid additive to a flow of liquid under pressure, such system comprising:

1. a pipe for carrying the flow of liquid under pressure;
2. a diaphragm pump including a first diaphragm having first and second faces, a pumping chamber bounded partly by said first face of said first diaphragm, a primary operating chamber bounded partly by said second face of said first diaphragm, a second diaphragm having first and second faces, a secondary operating chamber bounded partly by said first face of said second diaphragm, means for subjecting said second face of said second diaphragm to ambient pressure, and means connecting said first and said second diaphragms for movement thereof in unison;
3. means for communicating said pumping chamber with a supply of liquid additive, and first check valve means for preventing flow from said pumping chamber to said supply;
4. means communicating said pipe and said pumping chamber, and second a check valve means preventing flow from said pipe to said pumping chambers;
5. means communicating said first and said second operating chambers with said pipe, means for venting said first and said second operating chambers, solenoid valve means for controlling said pipe communicating means and said venting means of said first and second operating chambers, and a control device for operating said solenoid valve means cyclically whereby liquid under pressure is admitted from said pipe to said first and said second operating chambers when said venting means is closed and when said second face of said second diaphragm is subjected to ambient pressure, the force exerted on the said second diaphragm by said liquid under pressure in said second operating chamber combined with the force exerted on said first diaphragm by said liquid under pressure in said first operating chamber causing said diaphragms to move to pump additive in said pumping chamber into said pipe against the pressure of the liquid in said pipe, and means communicating said pipe to said first and said second operating chambers is then closed and said venting means opened to allow fresh additive to fill said pumping chamber;
6. and means for causing said diaphragms to move when said venting means opens whereby fresh additive is drawn into said pumping chamber.

3,865,127
PRESSURE CONTROL ARRANGEMENTS FOR AIR COMPRESSORS

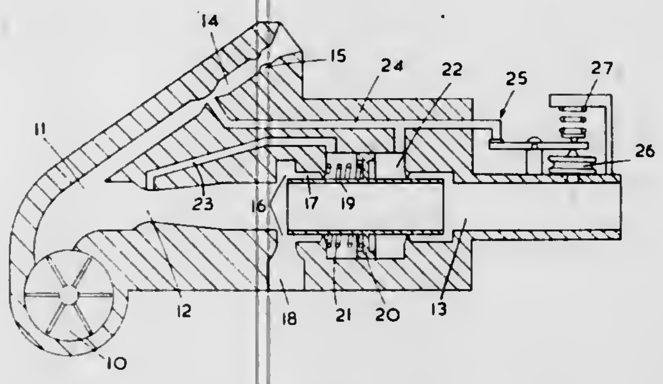
Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Jan. 29, 1973, Ser. No. 327,771

Claims priority, application Great Britain, Jan. 29, 1972, 4312/72

Int. Cl. G05d *11/00;* **F16k** *17/22*

U.S. Cl. 137—115 **8 Claims**



1. An apparatus for controlling the pressure of compressed air delivered from a compressor outlet to external apparatus, comprising in combustion first and second venturi means including inlets connected in parallel with an air compressor outlet; first passage means operatively connected to said first venturi means through which compressed air flows from said first venturi means to the external apparatus; second passage means operatively connected to said second venturi means for supplying a substantially constant source of low pressure control air;

dump valve means operatively connected in said first passage means downstream of said first venturi means for spilling air from the first passage means to the atmosphere, said dump valve means including pressure-responsive actuating means having operating portions respectively operatively connected to and subject to opposed pressures from first and second venturi throat means and disposed downstream of the first venturi means and movable in opposite directions for controlling the amount of air spilled to the atmosphere and delivered to the external apparatus being controlled, and pressure modifying means operatively connected to said first passage means downstream of said dump valve means and including an operating portion subject to pressure in said first passage means and including means operatively connected to said second passage means for reducing the control pressure in said second passage means in response to excessive pressure in said first passage means.

3,865,128
PRESSURE REGULATING AND SHUT-OFF VALVE

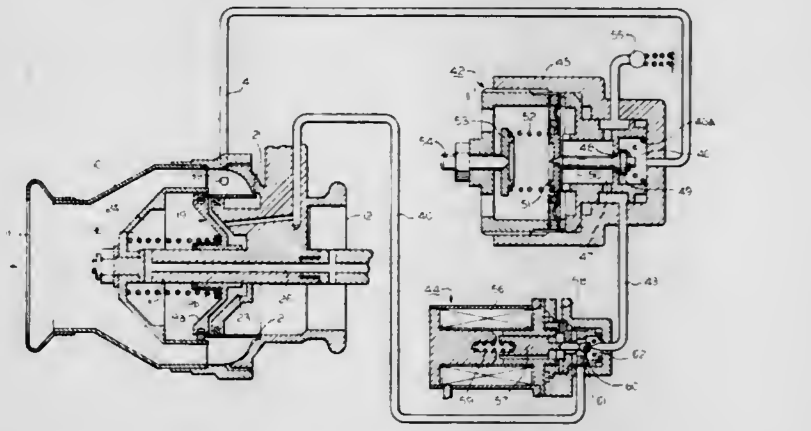
Vijay K. Zadoo, 1240 N. Wheeling Rd., Mt. Prospect, Ill. 60070

Continuation of Ser. No. 287,229, Sept. 8, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,597

Int. Cl. F16k *31/363, 31/42*

U.S. Cl. 137—220 **1 Claim**

1. An inline pressure regulating and shutoff valve comprising a tubular casing having an inlet and an outlet coaligned therewith, an axially extending rod supported within said casing, a first end wall on said rod adjacent the inlet and a second end wall on said rod adjacent the outlet, an annular valve seat at the outlet, a cylindrical skirt extending from the first end wall toward the valve seat defining an annular passageway with the casing and an annular opening with said valve seat, a piston slidable on said rod and in peripheral sealing engagement with said skirt, a valve sleeve extending from said piston and movable between open and closed positions with respect to said opening and valve seat, means sealing said second end wall with said valve sleeve, said sealing means including an annular groove in the periphery of the end wall, and a seal assembly in said groove having a contracting ring engaging the bottom of the groove sandwiched between a pair of expanding rings engaging said valve sleeve, said contracting and expanding rings being constructed to perform independent radial contracting and expanding functions due to their own natural bias, return spring means continually biasing said piston and sleeve towards closed position, said piston defining a first chamber with said first end wall and said skirt and a second chamber with said second end wall and said sleeve, means continually venting said first chamber to the pressure at the outlet, a pressure regulator having an inlet connected to the inlet pressure ahead of the valve seat and an outlet, and a control valve selectively connecting said second chamber to either the outlet of the pressure regulator or atmosphere, wherein the sleeve moves to closed position when the second chamber is connected to atmosphere and modulates its position to regulate flow through said opening in response to the inlet pressure when the second chamber is connected to the pressure regulator to maintain a constant outlet pressure.



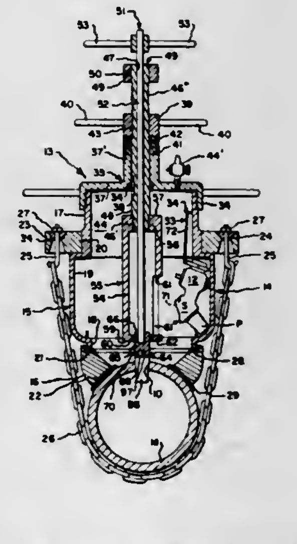
3,865,129
APPARATUS FOR MOVING A PLUG FITTING

Ralph L. Peterson, 27 Woodward Dr., West Seneca, N.Y. 14224

Division of Ser. No. 293,763, Oct. 2, 1972, Pat. No. 3,822,718. This application Mar. 4, 1974, Ser. No. 447,723

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—315 **7 Claims**



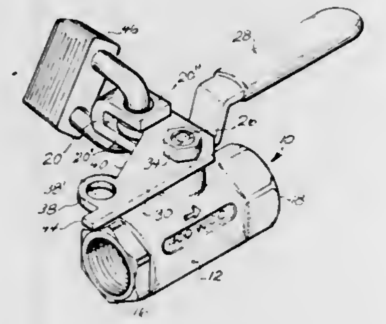
1. In apparatus for moving a plug fitting relative to a hole in a conduit, the combination comprising:

- a housing mountable on said conduit over a fitting arranged in and to be removed from said hole;
- support means movably mounted on said housing and including an inner portion arranged within said housing for movement toward and away from said fitting;
- interlock means carried by said inner portion and arranged for selective interlocking engagement with said fitting; and

force means operatively interposed between said housing and support means for withdrawing said fitting from said hole.

3,865,130
LOCK VALVE

Jerry D. Mullis, Monroe, N.C., assignor to Consolidated Brass Company, Matthews, N.C.
Filed Dec. 26, 1973, Ser. No. 428,076
Int. Cl. F16k *35/00*
U.S. Cl. 137—385 **3 Claims**

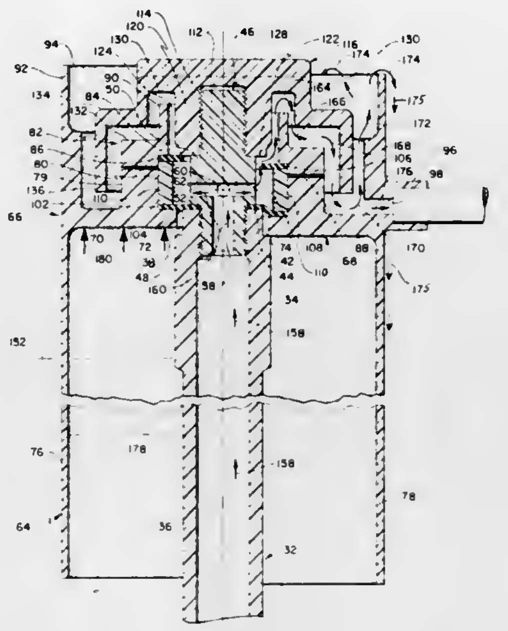


1. A flow-control valve including a valve casing having a U-shaped locking post extending therefrom to present-spaced leg portions having aligned openings formed therein, a valve member movable within said valve casing between selected first and second dispositions thereof, and a valve handle associated with said valve member for moving said valve member between said selected dispositions thereof, said valve handle including a locking plate portion formed with first and second locking projections each having an opening therein and a removal recess extending between said first and second projections, and said valve handle being mounted for selective shifting between a first position at which said valve member is at said first disposition thereof and one of said locking projections is disposed between said leg portions of said locking post with the opening in said one locking projection being aligned with said aligned openings in said locking post leg portions, a second position at which said valve member is at said second disposition thereof and the other of said locking projections is disposed between said leg portions of said locking post with the opening in said other locking projection being aligned with said aligned openings in said locking post leg portions, and a removal position, intermediate said first and second positions, at which said removal recess of said locking plate portion is disposed adjacent said locking post and beyond the extent of one of said leg portions thereof whereby said locking plate portion is clear of said U-shaped locking post to permit removal of said valve handle.

3,865,131
VALVE ASSEMBLY WITH RECIPROCAL FLOAT UNIT

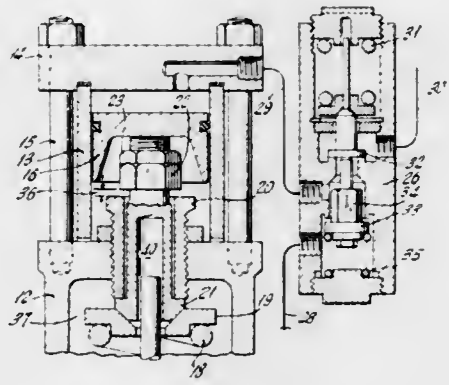
Edwin B. Jacobson, Wanamingo, Minn., assignor to Jacobson Valves, Inc., Wanamingo, Minn.
Filed Sept. 7, 1973, Ser. No. 395,075
Int. Cl. F16k *31/24*
U.S. Cl. 137—432 **18 Claims**

1. A valve assembly including vertical supply means having at least one outlet port and a downwardly facing shoulder at an elevation above said port, a float unit guided by said supply means forming a pressure chamber into which fluid flows which passes through said outlet port, a first flexible sealing member provided with a generally flat, annular configuration having its outer edge portion fastened to said float unit and its inner edge portion underlying said shoulder so that when said float unit moves sufficiently upwardly said inner edge portion engages said shoulder to prevent upward flow of fluid from said pressure chamber, a second flexible sealing member provided with a generally flat, annular configuration having its inner edge portion supported by said supply means at an elevation below said port and its outer edge supported by said float unit to prevent downward flow of fluid from said pressure chamber.



3,865,132
PILOT OPERATED RELIEF VALVE

Charles W. Wiegand, 18 Circuit Rd., New Rochelle, N.Y. 10805
Filed Aug. 17, 1973, Ser. No. 389,139
Int. Cl. F16k *17/02*
U.S. Cl. 137—492.5 **4 Claims**



1. In a valve assembly adapted to relieve excess pressure from a pressure vessel, the assembly comprises a pressure relief valve, a pressure responsive means and a pilot valve,

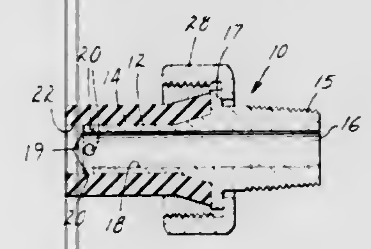
whereas said relief valve is held in a closed position by a compression spring adapted to release pressure when a predetermined pressure is reached,

whereas said pressure responsive means comprises a cylinder closed on one end and a piston slidable therein, the open end of said cylinder is mounted on the top of said relief valve so that said piston can operatively engage the top end of said compression spring when said cylinder is supplied pressure from said vessel through a conduit to activate said piston which by having a larger area than the seat area of said relief valve will urge said compression spring beyond its initial preset position thereby increasing the spring loading in said relief valve,

whereas said pilot valve being operable in response to pressure from said vessel and normally open to the flow of pressure from said vessel to said cylinder will activate said piston and at a predetermined pressure said pilot valve being positioned in said conduit will close the pressure to said cylinder and concurrently exhaust the pressure therein whereas said piston being deactivated will recede in said cylinder by the returning of said compression spring to its initial preset position wherein said relief valve will open at its initial set pressure.

3,865,133
SELF CLEANING CHECK VALVE

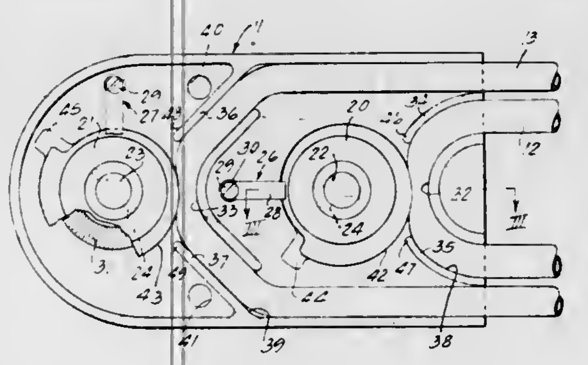
James W. Alford, South St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 31, 1973, Ser. No. 411,280
Int. Cl. F16k *15/14*
U.S. Cl. 137—512 **4 Claims**



1. A mixing chamber suitable for mixing a plurality of materials comprising:
- a housing having a mixing chamber with inlets and an outlet; and
- check valves securely mounted in said inlets, said valves comprising a valve stem projecting into said chamber and having a central bore terminating with a closed end wall, a discharge opening in said stem adjacent said end wall, an inlet end opposite said end wall and a flexible sleeve of elastomeric material covering said stem, one end of said sleeve covering said discharge opening and the other end of said sleeve, opposite said discharge opening, being firmly secured to said stem, said valves having axes which are in an angular relationship to each other whereby when material is pumped in said inlet end through said bore and out said discharge opening, said sleeve expands allowing material to flow into said mixing chamber where the materials impinge causing mixing and when no material is being pumped through said bore, said sleeve contracts covering said discharge opening and preventing material from said mixing chamber from entering said discharge opening.

3,865,134
SANITARY VALVE

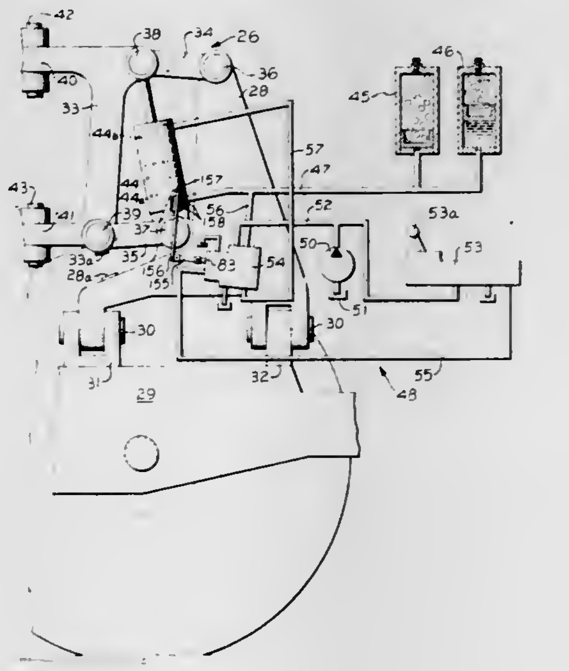
Donald E. Holcomb, Brooklyn Center, Minn., assignor to The Cornelius Company, Golden Valley, Minn.
Filed Apr. 23, 1973, Ser. No. 353,770
Int. Cl. F16k *7/06*
U.S. Cl. 137—594 **6 Claims**



1. A sanitary control valve assembly comprising:
- a. a housing having a pair of internal spaced reaction surfaces directed in the same direction;
- b. a pair of radially resilient tubes each arranged in a U-shape and respectively arranged about said reaction surfaces, the one U-shape being disposed about the other U-shape; and
- c. a pair of manually rotatable cams carried by said housing, and each having a camming surface respectively coactive with one of said reaction surface for individually collapsing said tubes by a selected amount.

3,865,135
HYDRAULIC CONTROL VALVE FOR FLUID SUSPENSION SYSTEM

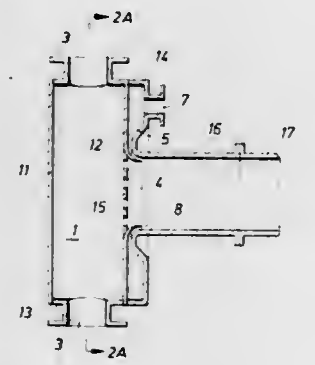
Orcenith D. McWilliams, Morris, and Roger A. Rice, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 286,025, Sept. 5, 1972, Pat. No. 3,797,140. This application Oct. 9, 1973, Ser. No. 404,309
Int. Cl. B60d *1/00*; F16k *11/00*
U.S. Cl. 137—596.14 **9 Claims**



1. A hydraulic control valve comprising;
- a valve body having an inlet port, first and second outlet ports and a return port;
- means forming a first passage in said body for communicating said inlet port with said first outlet port and said return port;
- a first valve element movably disposed in said valve body in said first passage for selectively and alternately communicating said inlet port with said first outlet port or said return port;
- means forming a second passage in the body interconnecting said first and second outlet ports;
- a second valve element movably disposed in said valve body in said second passage for selectively controlling communication between said first and second outlet ports;
- means forming a third passage in said body interconnecting said second outlet port and said return port; and
- a third valve element movably disposed in said valve body in said third passage for selectively controlling communication of said second outlet port with said return port and operative to provide such communication when communication between said outlet ports is blocked by said second valve element.

3,865,136
OIL/WATER PIPELINE INLET WITH OIL SUPPLY VIA A LARGE CHAMBER

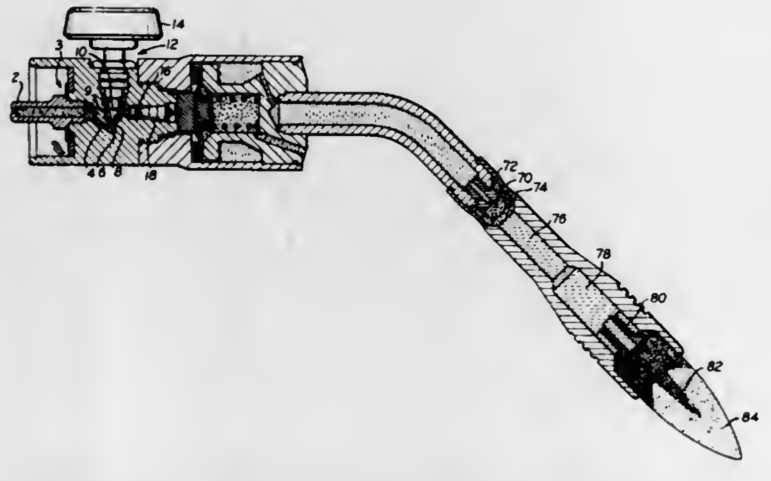
Eke Verschuur, 3 Badhuisweg, Amsterdam, Netherlands
Division of Ser. No. 217,486, Jan. 13, 1972, Pat. No. 3,822,721. This application Apr. 22, 1974, Ser. No. 463,007
Claims priority, application Netherlands, Apr. 29, 1971, 7105971
Int. Cl. F17d *1/16*
U.S. Cl. 137—604 **1 Claim**



1. Apparatus for transporting a viscous oil through a pipeline by the introduction of a surrounding annular layer of water about the oil without the occurrence of oil drop formation within the water layer, comprising, a first chamber bounded by two flat walls and a curved wall having two opposed oil inlets, one of the flat walls having a circular exit for the oil with a perforated plate located therein, a second chamber next to the first chamber which is bounded on one side by the flat wall in which there is the oil exit and on the other side another wall, the second chamber being provided with a water inlet and having an annular water outlet which surrounds the circular oil exit, and a cylindrical connecting piece attached to the water outlet of the second chamber and connected to the pipeline.

3,865,137
REGULATOR VALVE

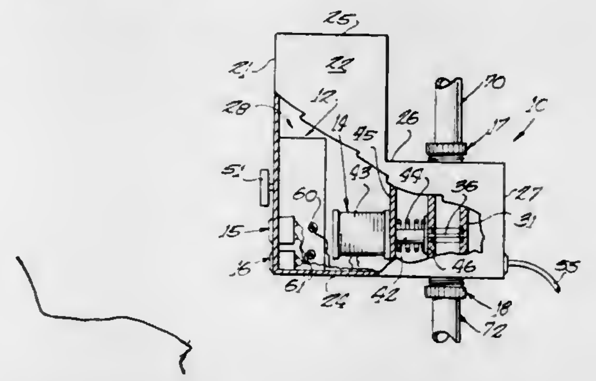
Milos Chvatal, Rochester, N.Y., assignor to Bernz-O-Matic Corporation, Rochester, N.Y.
Filed May 26, 1972, Ser. No. 257,363
Int. Cl. F16k *31/365*
U.S. Cl. 137—613 **11 Claims**



1. Gas regulator valve comprising elongated housing means containing a gas inlet, a gas passageway therethrough and a gas outlet, and in said passageway in axial alignment with the housing means, tire valve means and pressure regulating means, flow regulating means between the gas inlet and the tire valve means, said pressure regulating means including flexible diaphragm means secured to the walls of the housing and biased against the tire valve means by spring means contained in a bore located in said housing, said bore being axially aligned with said housing, said gas inlet, said gas outlet, and said tire valve means, said bore having an air inlet communicating with the atmosphere, said pressure regulating means and said housing defining a portion of the gas passageway which diverges from the axis of said bore upstream thereof, said housing defining the next portion of the gas passageway which communicates with the gas outlet and which is annularly positioned about said bore.

3,865,138
AUTOMATIC SPRINKLER CONTROL DEVICE

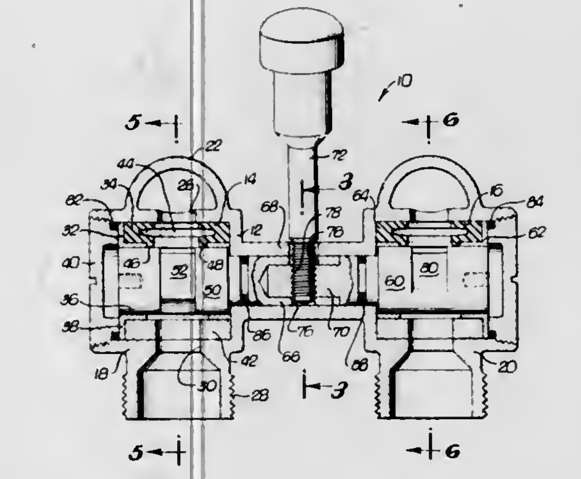
Wayne D. Jones, 16 Aurora Dr., Cheektowaga, N.Y. 14215
Filed May 15, 1974, Ser. No. 470,145
Int. Cl. A01g *27/00;* **F16r** *35/06*
U.S. Cl. 137—624.12 **5 Claims**



1. An automatic sprinkler control device intended for use with a conventional outdoor water faucet for controlling the flow of water therefrom to an apparatus being controlled thereby, the device comprising:
- a housing having a compartment defined interiorly thereof;
- an inlet port extending exteriorly of the housing;
- a outlet port extending exteriorly of the housing;
- a conduit disposed in said compartment and interconnecting said inlet port and said outlet port;
- a rigid tubular connector having one end adapted to be affixed to said inlet port and having the other end thereof adapted to be affixed to the outlet of a conventional outdoor mounted water faucet, said connector rigidly supporting said housing relative to said outdoor faucet;
- electrically operated solenoid control valve interposed in said conduit and operable between an open position to permit water to flow therethrough and a closed position blocking said conduit to prevent water flow therethrough;
- an electric motor operated timer mechanism mounted in said compartment and including an electric motor and a timer operated switch associated therewith, a shaft projecting from said timer mechanism to a position exteriorly of said housing and adapted for operation to set a time at which said switch will be moved to a closed position to energize said solenoid and when said switch will be moved to an open position to de-energize said solenoid;
- suitable electrical wiring means interconnecting said timer operated switch to said solenoid valve means;
- suitable electric wiring means adapted to connect said solenoid coil and said timer mechanism and said timer operated switch to a suitable source of electrical power, said means projecting exteriorly of said housing;
- a key operated electric kill switch mounted in said compartment and projecting exteriorly of said housing and adapted for operation from a normally closed position to an open position by insertion of an operating key through the projecting portion thereof, said kill switch electrically interposed in series relationship intermediate said timer mechanism switch and said solenoid coil to provide manual de-energization of said coil when said timer operated switch is in a closed energizing position; and
- a key operated selector switch mounted in said compartment and projecting exteriorly thereof and which is of a normally open switch construction and which is electrically interposed in series relationship with said solenoid coil means and operable between an inoperative open position and an operative closed position to energize said coil means, said selector switch being disposed in electrical parallel relationship with said series connected timer operated switch and key operated kill switch.

3,865,139
APPLIANCE SHUTOFF VALVE

Julius L. Tolnai, Los Angeles, Calif., assignor to Price Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Aug. 24, 1973, Ser. No. 391,238
Int. Cl. F16k *5/04*
U.S. Cl. 137—625.19 **2 Claims**

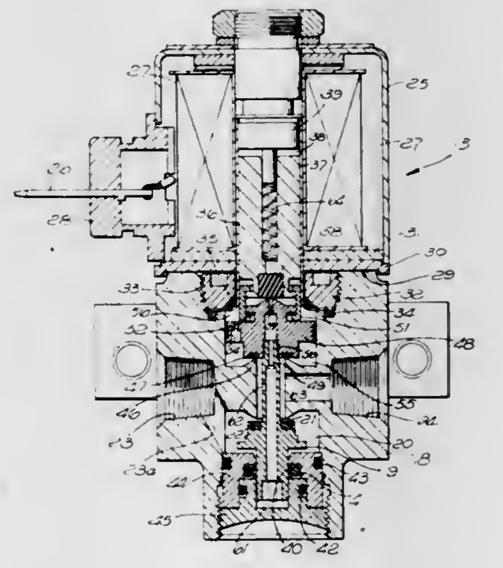


1. In a shutoff valve for an appliance utilizing hot and cold water hoses:
- a. a valve body having outwardly facing cups located in axial alignment, and a hollow connecting portion therebetween;
- b. means forming diametrically disposed inlet and outlet ports to each cup;
- c. a hollow cage in each cup;
- d. a sealing member mounted peripherally of each cage, each sealing member having an outer wall and an inner wall, forming a pressure chamber therebetween communicating with the corresponding inlet, said inner wall having a bead projecting into an opening of the cage to be exposed at the hollow interior of said cage;
- e. a pair of spools fitting the cages respectively, and having inner ends fitted to each other and to a handle projecting radially of the common axis of the spools, said spools having arcuately extending channels opposed to said beads, said spools also having surfaces beyond the ends of said channels for engagement by said beads for sealing of said chambers from said outlets;
- f. said channels of said spools being so arrayed relative to said beads that the angular position of said handle determines the flow characteristics of hot and cold water to said appliance.

3,865,140
SOLENOID-OPERATED, THREE-WAY FUEL VALVE WITH PRESSURE BALANCING

Roger Greenwood, Northridge, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Aug. 22, 1973, Ser. No. 390,484
Int. Cl. F15b *13/044*
U.S. Cl. 137—625.64 **9 Claims**

1. A three-way, normally closed fluid valve comprising:
- a valve body having first and second chambers therein and a communicating third chamber joining said first and second chambers;
- an inlet port including a duct for applying fluid under pressure to said first chamber;
- an outlet port for applying said fluid under pressure from said third chamber to a utilization device when said valve is in the open condition, said fluid having passed from said first chamber through said third chamber;
- first means including a piston mounted with axial sliding freedom within said first chamber, and a poppet assembly mounted with axial sliding freedom within said second chamber, said first means including a hollow stem having an axial bore, said stem extending axially through said third chamber to mechanically join said piston and said poppet assembly, said bore extending axially through said stem, said poppet and said piston;
- a fourth chamber at a second end of said poppet assembly opposite said stem forming a closed cylinder into which said poppet assembly second end may slide, said bore being open to said fourth chamber;
- second means operatively associated with said first means and including upper and lower valve orifices, said upper orifice being arranged to be positioned open and said lower orifice being arranged to be positioned closed when said first means is in an axially translated position corresponding to the open position of said three-way valve, said upper orifice being closed and said lower orifice being open when said first means is in an axially translated position corresponding to the closed position of said three-way valve;



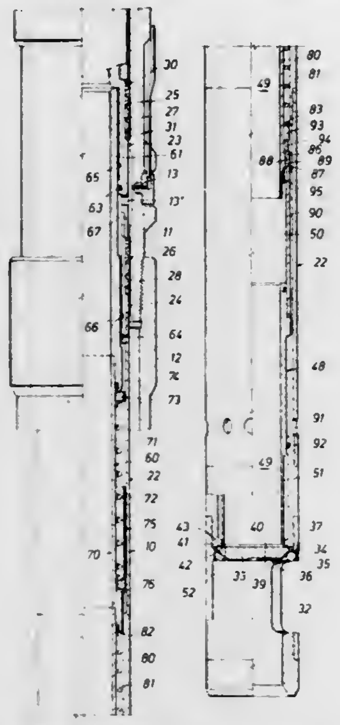
- third means comprising a bleed hole extending generally axially through said piston to permit fluid flow therethrough at a predetermined rate, thereby joining the portion of said first chamber on either side of said piston;
- fourth means for applying a generally axial mechanical force to a first end of said piston of said first means opposite said stem to operate said valve;
- fifth means comprising a third valving orifice at said first end of said first means, said fifth means being responsive to said fourth means for draining fluid pressure through said bore from the portion of said first chamber adjacent said piston first end to initiate opening of said three-way valve;
- a drain-back port and duct for draining said second chamber externally when said valve is in said closed position; and sixth means comprising an opening in the wall of said hollow stem within said third chamber, said hole permitting drainage of said bore and said fourth chamber into said third chamber and thereafter into said drain-back port when said three-way valve is in said closed condition.

3,865,141
SUBSURFACE SAFETY VALVE APPARATUS

David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed June 29, 1973, Ser. No. 374,859
Int. Cl. F16k *31/16*
U.S. Cl. 137—629 **19 Claims**

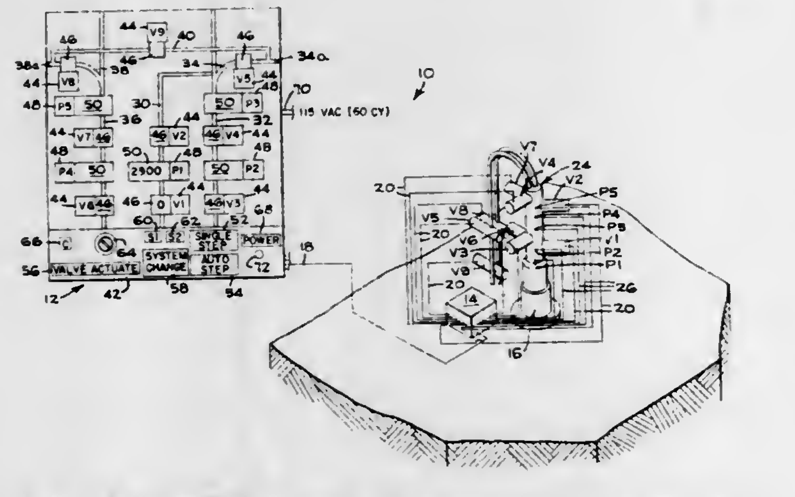
1. A safety valve apparatus comprising: a housing having a flow passage therethrough and valve means for opening and closing said flow passage; actuator means for moving said valve means from closed to open position; hydraulically operable means within said housing and movable relative to said actuator means and toward said valve means in response to

fluid pressure; fluid bypass passage means extending past said valve means and arranged when open to equalize pressures upstream and downstream of said valve means; equalizing valve means including coengageable means on said actuator means and said hydraulically operable means for opening said bypass passage in response to movement of said hydraulically operable means relative to said actuator means; and spring means reacting between said hydraulically operable means and actuator means and being energized by said relative movement to cause said actuator means to move said valve means from closed to open position under conditions of substantially equalized pressures.



3,865,142
ELECTRIC REMOTE CONTROL SYSTEM FOR UNDERWATER WELLS

Robert A. Begun, Los Gatos; Erik Thuse, Santa Clara, and Arthur L. McGee, both of San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.
Continuation of Ser. No. 38,656, May 19, 1970, abandoned. This application Mar. 8, 1973, Ser. No. 339,236
Int. Cl. F16k *31/44*
U.S. Cl. 137—635 **8 Claims**



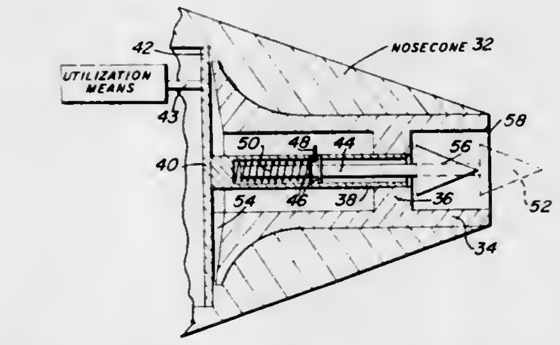
1. In a fluid well flow control apparatus having a system for remotely controlling the operation of electrically energized mechanisms wherein said mechanisms have a plurality of operational states, and for measuring and reading out the operational state of each of said mechanisms, said system including a control station connectable to a source of electrical power, electrical circuit means at said control station with display means having indicators for individually selectively indicating the operational state of said mechanisms, a switching station in the vicinity of the fluid well, first means including electric conductors for electrically interconnecting the control station and the switching station, and second means including electric conductors for individually electrically interconnecting the switching station with each of said electrically energized mechanisms, the improvement comprising:

a. said selective indication means having a corresponding selective response to each one of a plurality of differing predetermined voltages present in one of said electric conductors,
b. a plurality of resistors interconnected with said mechanisms for providing said differing predetermined voltages,
c. means for selectively interconnecting said resistors in response to control of said mechanisms to produce said predetermined voltages on said conductor, and wherein,
d. said plurality of resistors include first, second and third resistors, wherein said first and third resistors are selectively connected in parallel by said selective interconnecting means to provide a predetermined voltage indicating a first limit of operation of said mechanism, said second and third resistors are selectively connected in parallel by said selective interconnecting means to provide a differing predetermined voltage indicating a second limit of operation, and said third resistor alone provides a further differing predetermined voltage indicating a third state of operation when said first and second resistors are disconnected therefrom,

thereby to effect display at said control station of the particular operational state of the well control mechanisms with a minimum of conductors interconnecting said mechanisms and said control station.

3,865,143
FLUIDIC OSCILLATOR HAVING A STING MOUNTED IN A RESONANT CAVITY

Paul A. Curto, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Dec. 7, 1973, Ser. No. 423,044
Int. Cl. F15c *3/00;* **H02k** *35/00*
U.S. Cl. 137—826 **12 Claims**

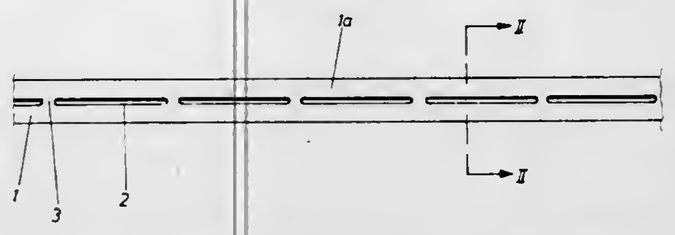


1. A fluidic oscillator comprising:
a housing having a passageway through which fluid passes; a resonant cavity formed in the housing and in communication with the passageway;
a diaphragm mounted in the cavity for responding to oscillating fluid pressure waves in the cavity;
a rod axially positioned in said passageway, said rod being wholly retracted within said passageway when said fluidic oscillator is inactive;
and means for extending one end of said rod outwardly beyond said housing, for triggering oscillating fluid pressure waves in said cavity, when said fluidic oscillator is active.

3,865,144
SPACER FOR DOUBLE WINDOWS

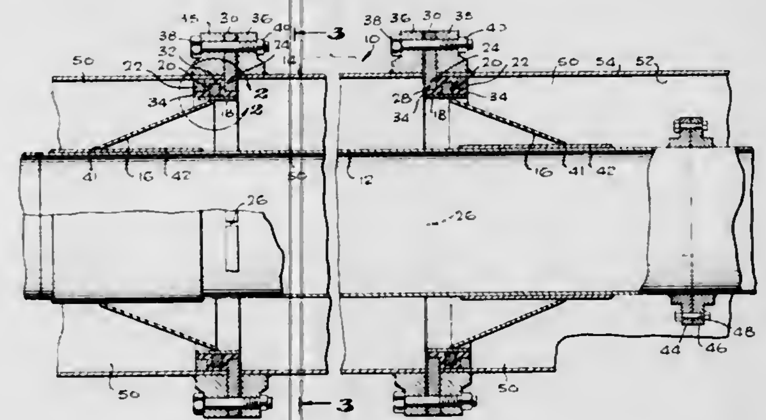
Josef Westhoff, Wickede, Germany, assignor to Standard Metallwerke GmbH, Werl, Germany
Filed Jan. 31, 1973, Ser. No. 328,229
Int. Cl. F16l *9/02*
U.S. Cl. 138—103 **2 Claims**

1. A device for use as a spacer between two air-tightly connected glass panes of a double window, comprising: a pipe-like hollow section adapted to be filled with a drying medium, to be mounted between the glass panes and serving as the distance spacer therefor; one surface of said hollow section comprising a substantially flat web having a plurality of slits formed therein which extend along an axis parallel to the longitudinal axis of said hollow section, and flap portions longitudinally oriented to said web, extending therefrom inwardly into the interior of said hollow section and having a longitudinal first cut free edge; wherein said web has a second cut free edge closely adjacent but opposite said first cut edge and complementary thereto; and said slits are defined and limited by said first and said second cut edges.



3,865,145
PIPELINE SYSTEM

Alexander R. McKay, and Daniel M. Masterson, both of Calgary, Alberta, Canada, assignors to Foundation Cryogenic Joint Venture, Vancouver, Canada
Filed May 10, 1973, Ser. No. 359,091
Int. Cl. F16l *9/18*
U.S. Cl. 138—113 **27 Claims**



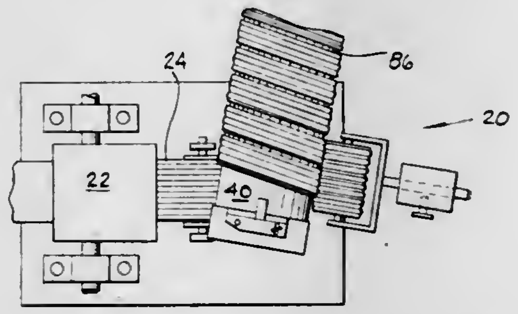
1. A pipeline system having reduced contraction when subjected to low temperatures, comprising a first inner pipe means, a second outer pipe means disposed concentrically about said inner pipe means, and providing an annular space between said inner pipe means and said outer pipe means, a plurality of stress means disposed in said annular space, each said stress means being connected at one end portion to said inner pipe means and at the other end portion to said outer pipe means, said stress means securing said inner pipe means to said outer pipe means, and arranged to transfer a compressive load from one of said pipe means to a tension load on said other pipe means, said stress means also formed to provide thermal resistance to the flow of heat from one of said pipe means to the other of said pipe means, and thermal insulation means selectively positioned at at least one of the connections of each of said stress means between said inner and outer pipe means.

3,865,146
HELICALLY WOUND TUBING AND METHOD OF FORMING THE SAME

Robert H. Meserole, Toledo, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.
Filed Mar. 22, 1974, Ser. No. 453,621
Int. Cl. F16l *9/16;* **B21c** *37/12*
U.S. Cl. 138—154 **6 Claims**

1. In a method of forming a tube comprising spirally winding a metal strip, overlapping lateral edges of adjacent convolutions of the strip and locking together the lateral edges to form a locking seam, the improvement comprising:
a. forming a longitudinally extending channel in a first lateral edge of the strip, said channel having an outer wall and an inner wall extending at substantially right angles to the plane of the strip, and said inner wall being a first corrugation;
b. forming a longitudinally extending second corrugation and a flange in a second lateral edge of the strip, said second corrugation extending at substantially right angles to the plane of the strip and said flange extending outward from said second corrugation and generally parallel to the plane of the strip;
c. convoluting the strip and overlapping the lateral edges of adjacent convolutions with the flange being received within the channel and the outer wall of said channel being received within said second corrugation;
d. folding over one of said corrugations toward the other of said corrugations and upon the flange; and
e. folding over the other of said corrugations upon said one of said corrugations.

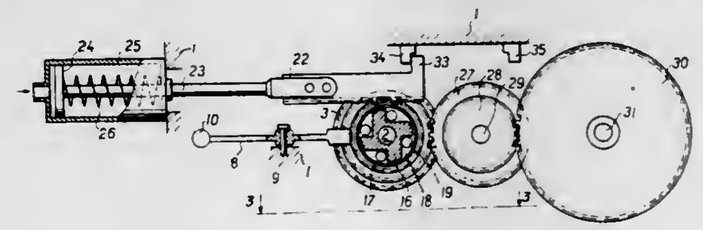
3. In a tube comprising a spirally wound metal strip wherein lateral edges of adjacent convolutions of the strip overlap and are locked together by a seam, the improvement in the seam comprising



a. a first lateral edge of the strip forming a first element of said seam, said first lateral edge comprising a first fold which terminates at the first lateral edge of said strip, a second fold, a third fold and a fourth fold, said third and fourth folds forming a corrugation which is connected to said first fold by said second fold,
b. a second lateral edge of the strip forming a second element of said seam, said second lateral edge comprising a fifth fold which extends from sixth and seventh folds that form a second corrugation, and
c. said first fold being received within said second corrugation folds, said second and said fifth folds being adjacent seam folds, one of said corrugations being folded over upon said fifth fold and the other of said corrugations being folded over upon the one corrugation with all of said folds extending substantially parallel with respect to each other.

3,865,147
MECHANISM FOR THE RETURN MOVEMENT OF HEALD SHAFTS OF A WEAVING LOOM

Jaroslav Lev, and Karel Kakac, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia
Filed Jan. 17, 1973, Ser. No. 324,531
Int. Cl. D03d *51/00;* **D03c** *5/00*
U.S. Cl. 139—1 E **3 Claims**

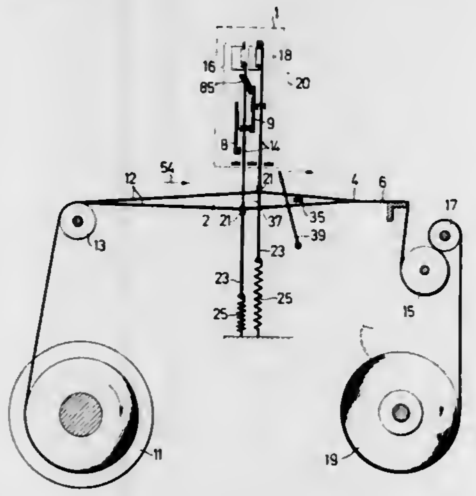


1. A mechanism for driving the heald shafts of a weaving loom in the rearward direction, which is the reverse of their weaving direction, in order to permit the removal of woven in weft-threads, the loom having heald shafts and means for driving the heald shafts in the forward weaving direction comprising a drive shaft rotatably supported on the frame of the weaving loom, said drive shaft freely slidably and rotatably

supporting a slidable gear and the means for driving the heald shafts, an over-running clutch having a driving and a driver part, and means for selectively connecting and disconnecting such driving and driver parts, second and third clutches for alternately coupling the gear with its supporting drive shaft and with the driving part of the over-running clutch, and means for selectively driving the driving part of the over running clutch in cycles in each of which the cam by which the heald shafts are turned is rotated in said rearward direction through an angle equalling the degree of turning of the cam of the heald shafts in the opposite direction in one cycle of the weaving operation of the loom.

3,865,148
JACQUARD MACHINE

Brenner Wolfgang; Feier Gunter, and Vinnemann Antonius, all of Stuttgart, Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed May 17, 1973, Ser. No. 361,034
Claims priority, application Switzerland, May 19, 1972, 7466/72
Int. Cl. D03c *3/00, 3/20*
U.S. Cl. 139—59 **10 Claims**

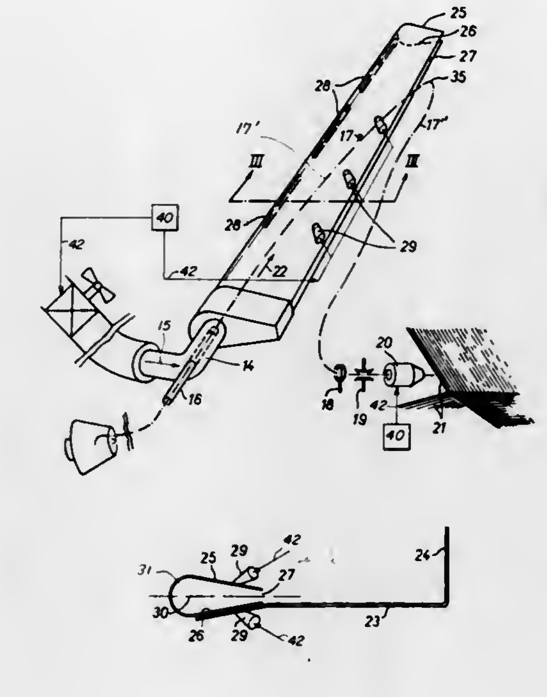


1. In a jacquard machine having a lifting hook, a pair of draw knives disposed to move in predetermined paths, and means for selectively displacing said lifting hook into and out of coupling engagement with a respective draw knife; said displacing means including a pivotally mounted lever disposed in the path of each said knife and connected to said hook, and a selector mechanism for selectively blocking displacing movement of said hook.

3,865,149
DEVICE FOR STORING A THREAD PORTION

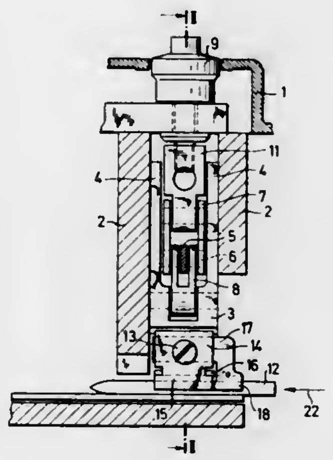
Rachid Keldany, Egg/Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., Ruti/Zurich, Switzerland
Filed June 4, 1973, Ser. No. 366,317
Claims priority, application Switzerland, June 16, 1972, 9081/72
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 R **7 Claims**

1. A device for the storage of a thread portion of varying length which is subjected to an air stream that retains said thread portion in the form of a loop between a first and a second predetermined location, the end of one of the leg portions of said loop being adjacent to the first predetermined location and the end of the other leg portion of the loop being adjacent to said second predetermined location, an air injector means for continuous delivery of a thread from said first predetermined location to form said loop and means for periodic draw-off of the thread portion from said loop after said loop is formed, said draw-off taking place at said second predetermined location, from which the thread is inserted into a shed of a loom with the aid of weft thread inserter means, there being provided two elongate plates for guiding and shaping the air stream forming said loop, which plates are disposed opposite each other at their broad sides and form an elongated interspace therebetween in the longitudinal direction of which blow-in of the air stream supplied by the injector means takes place and which elongated interspace is open to the outside, forming an open slot along its long side located on the side of said second predetermined location.



3,865,150
BRAKING DEVICE FOR A SHUTTLE IN A WEAVING MACHINE

Hans Demuth, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed June 4, 1973, Ser. No. 366,523
Claims priority, application Switzerland, June 20, 1972, 9241/72
Int. Cl. D03d *49/54*
U.S. Cl. 139—185 **6 Claims**



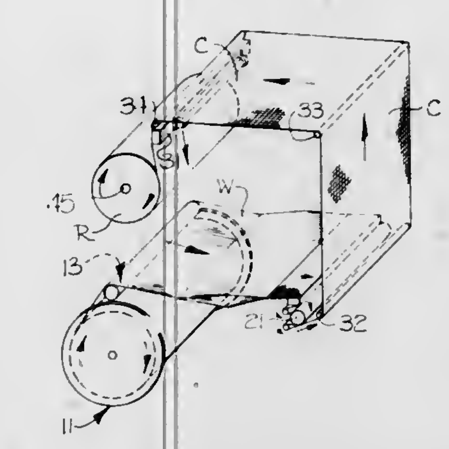
1. A braking device for braking a shuttle in a weaving machine comprising

a brake member for reciprocally moving relative to a shuttle path; and

a one-piece brake shoe mounted on said brake member, said brake shoe including a braking surface for pressing against a shuttle and guide jaws disposed on opposite sides of said braking surface for guiding a shuttle therebetween.

3,865,151
JUMBO CLOTH TAKE-UP AND INSPECTION APPARATUS FOR TEXTILE LOOM

Emory Donald Poole, Fort Mill, S.C., assignor to Spring Mills, Inc., Fort Mill, S.C.
Filed Mar. 18, 1974, Ser. No. 451,739
Int. Cl. D03d *49/20*
U.S. Cl. 139—304 **10 Claims**



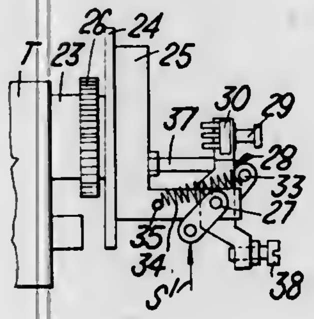
1. Jumbo cloth take-up and inspection apparatus for a textile loom having conventionally-mounted warp beam mechanisms at the rear of the loom and successively positioned weaving mechanisms terminating at generally the front of the loom and including drive means, said apparatus characterized by forming a larger-than-normal roll of woven cloth before doffing, providing on-the-loom cloth inspection, and maintaining the woven cloth generally above the conventional loom warp beam and weaving mechanisms to prevent the cloth from becoming dirty and improve quality, said apparatus comprising:

means for guiding the woven cloth from the front of the loom generally vertically upwardly to provide an inspection area for on-the-loom inspection of the woven cloth and then generally horizontally over the top of the loom toward the rear thereof; and

take-up roll means mounted generally above the warp beam mechanisms at the rear of the loom a sufficient distance to provide space for receiving the woven cloth from said guiding means and forming a larger-than-normal jumbo roll of woven cloth before doffing is necessary.

3,865,152
AUTOMATIC COILS WINDING TURRET MACHINE

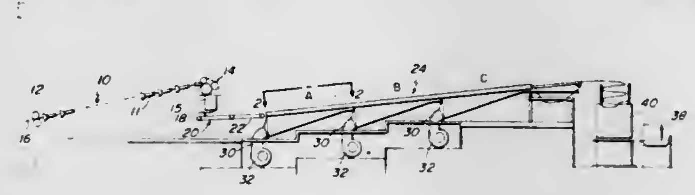
Giuseppe Camardella, Viale della Liberta, 118, 20031 Cesano Maderno, Italy
Filed May 3, 1973, Ser. No. 356,792
Int. Cl. B21f *3/04*
U.S. Cl. 140—1 **12 Claims**



1. In a coil winding machine having a step-by-step rotating turret, and support means spaced about the periphery of the turret for coils to be wound in a coil winding station with subsequent cutting of the wire in a wire cutting station; the improvement in which said support means comprise gripping means that act laterally on the periphery of each coil core and expose both ends of the coil core, and means mounting said gripping means for vertical swinging movement between a position in which the axis of the coil core is horizontal and a position in which the axis of the coil core is vertical.

3,865,153
METAL TREATMENT APPARATUS FOR STEEL ROD HAVING AN OSCILLATING PLATFORM BELOW THE LAYING HEAD

Vito J. Vitelli, Auburn, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Dec. 3, 1973, Ser. No. 421,158
Int. Cl. B21f *23/00*
U.S. Cl. 140—2 **8 Claims**



1. An apparatus for depositing a continuous series of rod rings upon a continuously moving conveyor at its input end in such a way as to form the rings into a flat overlapping non-concentric pattern on the conveyor including

a. means for providing a continuous length of rod,

b. means for shaping the rod into a continuous series of rings,

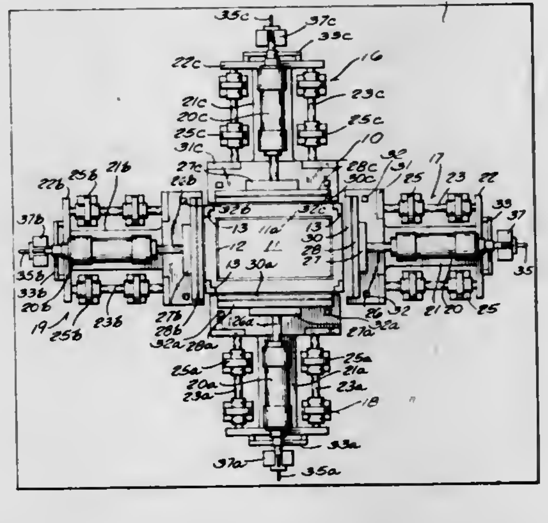
c. a platform having a discharge end for receiving the rings from the shaping means maintained such that the discharge end of the platform and the input end of the conveyor are in close and parallel relation,

d. means for oscillating the platform transversely to the conveyor as the rings are deposited on the platform to decrease the edge packing effect of the ring pattern, and

e. means for continuously transporting the rings from the platform to the conveyor.

3,865,154
SCREEN TENSIONING APPARATUS

Roger Douglas Cox, Milwaukee, and Walter Bernard Michaels, Brookfield, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Filed Nov. 26, 1973, Ser. No. 419,223
Int. Cl. B21f *33/02*
U.S. Cl. 140—109 **13 Claims**

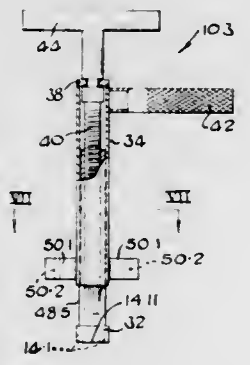


1. An apparatus for mounting a screening material in a frame member comprising supporting and driving means for at least one securing member, said supporting and driving means including means to support said securing member in one position and drive it to another position relative to said frame so as to engage said frame member, freely movable clamp means operatively associated with said supporting and driving means to hold said screening material across said

frame member and said securing member, and constant force tensioning means operatively associated with said clamp means to permit free movement of said clamp means in opposing directions and to hold said screening material under constant and uniform tension when said screening material is secured in said frame member.

3,865,155
WIRE TENSIONING AND TYING TOOL MEANS

Helmuth Spath, Pretoria, South Africa, assignor to Span-Fix (Proprietary) Limited, Pretoria, South Africa
Filed Sept. 14, 1973, Ser. No. 397,563
Claims priority, application South Africa, Sept. 26, 1972, 72/6597; Dec. 28, 1972, 72/9172
Int. Cl. B21f *9/02*
U.S. Cl. 140—123.5 **7 Claims**

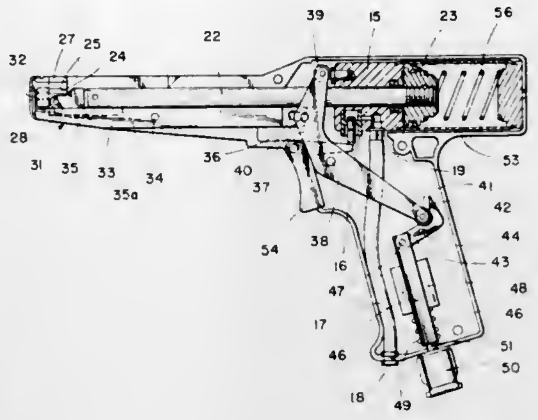


1. A handtool for tensioning and binding a wire which is looped around an article and which has tail end portions extending from a cross-over region, the handtool comprising:
a. a foot member having a flat transverse pressing face on its outer end for seating on the cross-over region of the wire, handle means for holding the foot member to twist it about an axis normal to its pressing face, and two spaced notches converging towards the pressing face and having pairs of laterally spaced abutment faces extending oppositely away from the pressing face to receive in abutment the sides of the tail end portions of the wire adjacent the cross-over region.
- b. holding means on opposite sides of the foot member for connection thereto of the tail end portions of the wire; and
- c. a mechanism associated with the foot member and the holding means for displacing the holding means forcibly relative to the foot member, and for thereby applying tension to the tail end portions of the wire; whereby, on seating of the pressing face on the cross-over region, after the wire is tightly drawn around the article and on maintaining the tension in the tail end portions the pressing face is urged onto the cross-over region, and on twisting of the foot member about said axis normal to the pressing face, the abutment faces twist the tail end portions into interengaging hook formations.

3,865,156
POWERED STRAP TENSIONING AND SEVERING TOOL

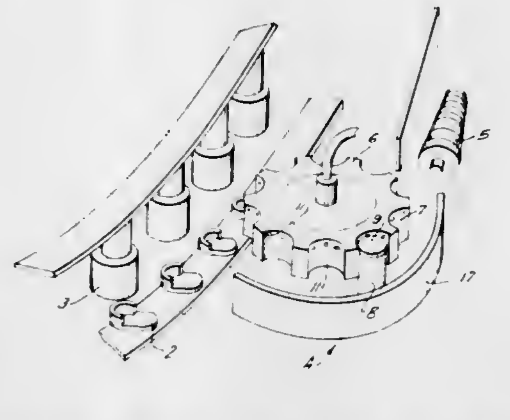
Roy A. Moody, Flossmoor, and Raymond F. Roberson, Plainfield, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Sept. 17, 1973, Ser. No. 398,912
Int. Cl. B21f *9/00*
U.S. Cl. 140—123.6 **20 Claims**

1. A power-operated tool for tensioning and cutting a strap or the like comprising a housing, movable strap gripping means for gripping a strap and tensioning said strap about a bundle of wires or the like, strap cutting means for cutting said strap, motor means for driving said strap gripping means, biasing means for restraining movement of said strap cutting means until a predetermined tension has been produced in said strap, means mounting said motor means in said housing for relative movement between said motor means in said housing for relative movement between said motor means and said housing, whereby movement of said motor means once the predetermined tension is reached in said strap actuates said strap cutting means.



3,865,157
FILLING OF CONTAINERS WITH LIQUIDS WHICH ARE DELETERIOUSLY INFLUENCED BY CONTACT WITH AIR

Uwe Knabe, DO-Hombruch; Werner Heckmann, Dortmund, and Friedrich Rademacher, Kamen-Sudkamen, all of Germany, assignors to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany
Filed Jan. 19, 1973, Ser. No. 325,011
Claims priority, application Germany, Jan. 22, 1972, 2203075
Int. Cl. B67c *3/10*
U.S. Cl. 141—7 **8 Claims**

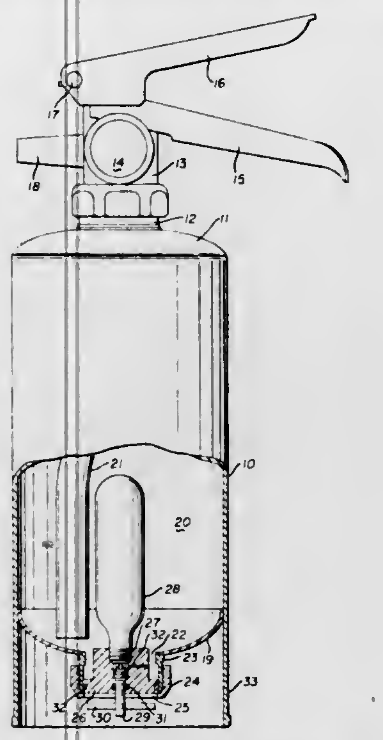


1. A method of filling containers with liquids which are deleteriously influenced by contact with air, comprising the steps of continuously moving a stream of containers towards a filling station; flushing the interior of each container while it is moving immediately upstream of the filling station with inert gas just prior to the arrival of the container at the filling station; presenting the just flushed advancing container at the filling station; and filling the container with liquid while it is located at said filling station.

3,865,158
REUSEABLE PRESSURIZED DISPENSER

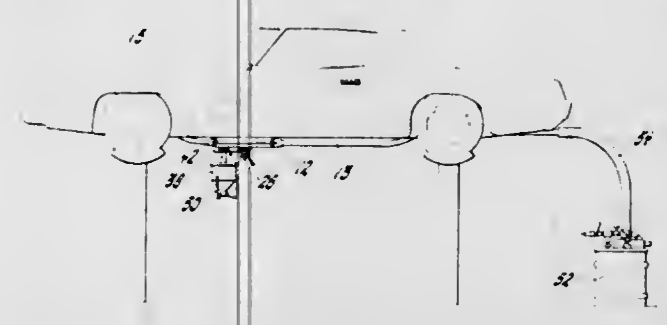
Robert B. Withrow, Arlington, Va., assignor to American La France Inc., Willoughby, Ohio
Filed Apr. 27, 1973, Ser. No. 355,186
Int. Cl. B65b *31/00*
U.S. Cl. 141—19 **3 Claims**

1. A reuseable pressurized dispenser comprising a pressure vessel having filling and discharge openings therein, a valve body incorporating a discharge nozzle and a control valve therefor secured in said discharge opening and a closure member removably positioned in said filling opening, said closure member having communicating axial and transverse bores therein, portions of said axial bores being threaded, a pointed rod disposed in said axial bore for movement therein, a threaded area on said rod engaged in one of said threaded portions of said axial bore, a replaceable gas cartridge, a threaded neck and seal on said gas cartridge engaged in one of said threaded portions of said bore and positioned adjacent said pointed rod so that axial movement of said pointed rod occuring when the same is rotated in one direction will puncture said seal to pressurize said dispenser and releaseable means on said pressure vessel normally holding said closure member in said filling opening, said means arranged to permit said closure member, the pointed rod and the replaceable gas cartridge engaged thereon to be placed into and removed from the pressure vessel as a unit.



3,865,159
CATALYTIC CONVERTER FILLING APPARATUS

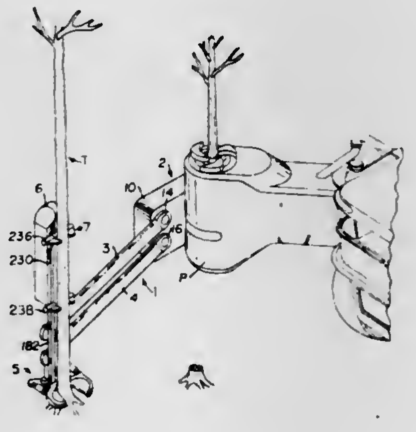
Albert H. Mayfield, Lennon, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 3, 1973, Ser. No. 420,969
Int. Cl. B65b *31/00, 1/26*
U.S. Cl. 141—67 **3 Claims**



1. An apparatus for filling a catalytic converter with a catalyst material while the converter is mounted in an automobile exhaust system comprising: a container to hold the catalyst material, said container adapted to be suspended beneath the converter mounted in the automobile exhaust system, an unobstructed fill pipe attached to said container and having an opening therein to permit the catalyst material to flow from said container through the opening and into said fill pipe, means to prevent the catalyst material from spilling out of said fill pipe after passing through the opening in the fill pipe, suspension means to hold said fill pipe and container beneath the converter and within a fill opening in the bottom of the converter while the converter is being filled, an aspirator adapted to be connected to the exhaust system to create a suction through the exhaust system, the fill pipe, and converter to carry the catalytic material from said container upwardly against the force of gravity through the fill pipe and into the converter with the aspirated air being drawn through said fill pipe without being drawn through the catalyst material in the container, and a vibrator adapted to be attached to said converter to vibrate the converter as it is being filled to assure the catalytic material is compacted and the converter completely filled.

3,865,160
SPLIT PHASE HEAD REACH SYSTEM FOR TREE HARVESTER

Bruce John McColl, Whitby, Ontario, Canada, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 227,181, Feb. 17, 1972,. This application Jan. 23, 1974, Ser. No. 435,917
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **8 Claims**



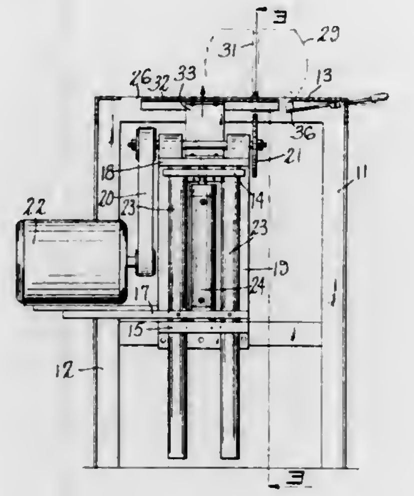
1. A head reach system for a tree harvesting machine comprising:
- a. a vertically oriented base assembly;
- b. means connecting said base assembly to said harvesting machine, said connecting means and said base assembly being swingable in a horizontal plane relative to said harvesting machine;
- c. a pair of arms each pivotally mounted at one of their ends on the base assembly, one above the other, and extending outwardly of said base assembly;
- d. tree severing means attached to the outer end of a first arm of said pair thereof;
- e. tree grasping and transfer means attached to the outer end of the second arm of said pair thereof, said second arm being movable independently of said first arm to move said tree grasping and transfer means from (i) a grasping position coaxial with said tree severing means and a tree being severed thereby, to (ii) a transfer position away from said tree severing means and out of coaxial relationship therewith to transfer said tree to a tree processing station and (iii) back to said grasping position;
  f. means for actuating said tree severing means and for moving said first arm through a limited arc with respect to said base assembly independently of said second arm; and
- g. means for actuating said grasping and transfer means and for moving the second arm through a limited arc with respect to the base assembly independently of said first arm between said grasping, said transfer and said grasping positions.

3,865,161
GROOVING MACHINE

Vito M. Vizziello, Hamden, Conn., and Charles A. Bouteiller, Great Barrington, Mass., assignors to New England Log Homes, Inc., New Haven, Conn.
Filed May 9, 1973, Ser. No. 358,680
Int. Cl. B27c *5/02*
U.S. Cl. 144—136 R **6 Claims**

1. In a woodworking machine for cutting a groove in a workpiece, the combination of:

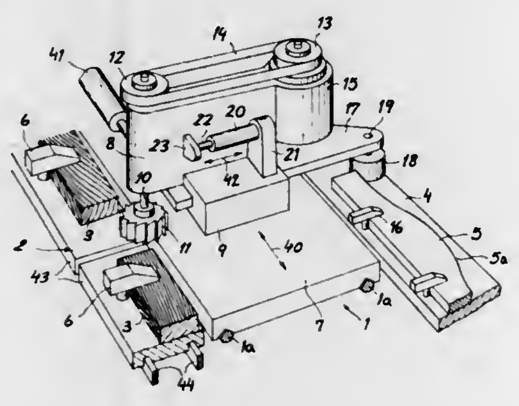
a frame having a worktable, said worktable having an opening therethrough;
a vertically movable first support member in said frame;
a saw assembly on said support member and vertically movable therewith, said assembly including a radial cutter head positioned for movement through said opening so as to cut a vertical groove in the face of workpiece on said worktable;



means positioned below said cutter head for actuating said cutter head;
elevator means for vertically moving said first support member with the saw assembly thereon; and
abutment means on said worktable for positioning said workpiece thereon;
a plate-like guard member connected to said first support member and positioned above said cutter head so as to precede said cutter head through said opening.

3,865,162
APPARATUS FOR SHAPING A WOODEN WORKPIECE ACCORDING TO A TEMPLATE CONFIGURATION

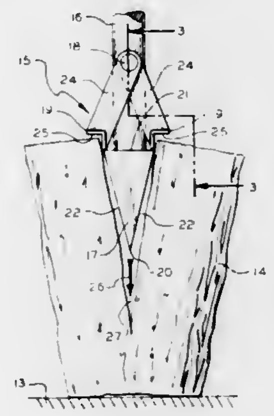
Erich Schmidt, Wien, Austria, assignor to Maschinenfabrik Zuckermann Komm. Ges., Wien, Austria
Filed Mar. 19, 1973, Ser. No. 342,803
Claims priority, application Austria, Mar. 19, 1972, 2294/72
Int. Cl. B27g *5/06*
U.S. Cl. 144—144 R **9 Claims**



1. An apparatus for reproducing the shape of a guide edge of a template in a wooden workpiece, said apparatus comprising:
a support;
a straight tool track on said support;
a carriage displaceable along said tool track;
means for displacing said carriage along said tool track;
a template table fixed on said support next to said tool track;
means for securing said template to said template table with said guide edge facing in one direction transverse to said track;
a straight workpiece track on said support parallel to said tool track;
a succession of workpiece tables displaceable along said workpiece track next to said tool track and past said template table;
means for securing respective wooden workpieces to said workpiece tables;
a slide on said carriage displaceable transverse to said track;
a roller on said slide engageable in the opposite direction transverse to said tracks with said edge of said template;
means on said carriage for urging said slide in said opposite direction for forcibly biasing said roller against said edge, said edge serving as a stop for said slide in said opposite direction;
a material-removing tool on said slide engageable with some of the workpieces adjacent said carriage; and
means on said carriage for rotating said tool on displacement of said carriage along said track for reproducing in said workpiece the shape of said edge whereby said tool exerts substantially no force upon the workpiece in said directions. in said workpiece the shape of said edge whereby said tool exerts substantially no force upon the workpiece in said directions.

3,865,163
SPLITTER HEAD WITH SPREADER ARMS

Charles M. Root, 104 Emerson Pl., Watertown, N.Y. 13601
Filed May 15, 1974, Ser. No. 470,058
Int. Cl. A47j *49/02;* **B27l** *7/00*
U.S. Cl. 144—193 A **3 Claims**



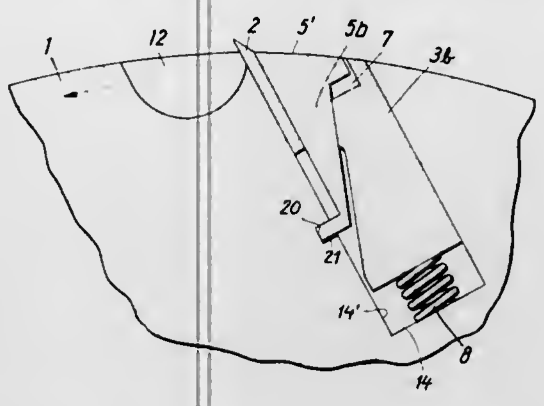
1. A splitter head for rapidly splitting a piece of wood, comprising: a metal wedge having opposite faces terminating in a splitting edge at one end and a blunt wedge end at the other end, a post secured to the wedge projecting from the blunt end away from the splitting edge, and two spreader arms each having one end pivotally secured to the post at a point spaced from the blunt end, the arms being biased to project toward the wedge blunt end on opposite sides of the post and having their other ends adapted to swing away from the post in a direction outward from the wedge opposite faces, each arm other end normally having a portion extending away from the adjacent wedge opposite face for engaging a portion of the wood being split on either side of a split made by the wedge edge for spreading togglewise and speeding the splitting of the wood as the wedge is driven into the wood.

3,865,164
CUTTER FOR WOOD COMMINUTING MACHINE

Hans Sybertz, Hargesheim, Germany, assignor to Hambak Maschinenfabrik KG, Sandweg (Planiger Str.), Germany
Filed Feb. 20, 1973, Ser. No. 333,691
Claims priority, application Germany, Feb. 24, 1972, 2208687
Int. Cl. B27g *13/00*
U.S. Cl. 144—230 **13 Claims**

1. A cutter for a wood-comminuting machine or the like, comprising:

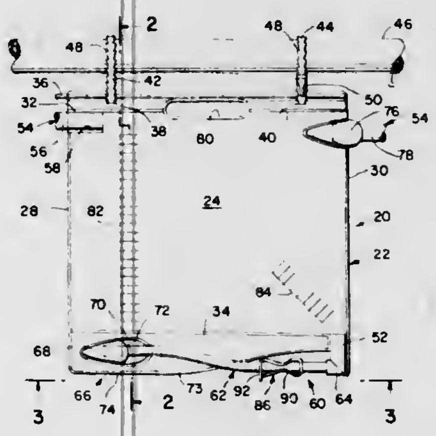
a rotatable generally cylindrical blade drum formed with an axially extending outwardly opening slot having a leading flank snd a trailing flank relative to the direction of rotation of said drum;
a flat blade received in and lying against said leading flank of said slot and having a cutting edge projecting from said slot;



a first wedge received between said trailing flank of said slot and said blade for retaining the latter against the leading flank, said first wedge having outwardly converging faces;
a second wedge having inwardly converging faces and received between said first wedge and said blade; and
form-locking means between said second wedge and said drum limiting outward displacement of said second wedge from said drum.

3,865,165
UNIVERSAL FACED BODY FLUID DRAINAGE BAG WITH UNIVERSAL DRAINAGE MEANS

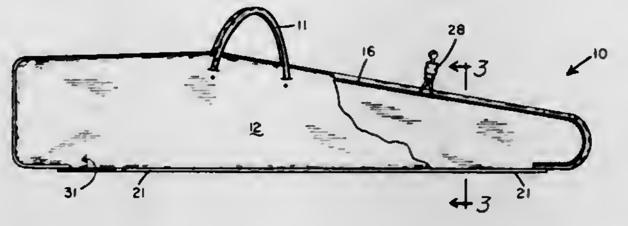
Daniel S. Glass, 145 W. 86th St., New York, N.Y. 10024
Filed Oct. 25, 1973, Ser. No. 409,709
Int. Cl. A61g *7/06*
U.S. Cl. 150—1 **9 Claims**



1. A universal body fluid drainage bag comprising a body portion including an envelope-like reservoir, said body portion comprising flexible sides, inlet means, drainage means, and drainage means securing means; in which each of said flexible sides forms a face comprising calibration means, and in which the drainage means comprises a liquid conduit including at least one flexible portion, said drainage means having a portion connected to a lower portion of the reservoir and at least one end portion for selective positioning with relation to said drainage means securing means so that the drainage means end portion may be removed from the drainage means securing means to extend selectively laterally beyond either of said sides for drainage, and in which the drainage means conduit is tubular in shape and the drainage means securing means is in the form of a pouch located below the reservoir for positioning an end of the drainage means tubing, and in which the drainage means securing pouch is located within lower portions of the sides of the body portion and there is a through opening transverse to said sides at an entrance to said pouch.

3,865,166
WEAPONS CASE

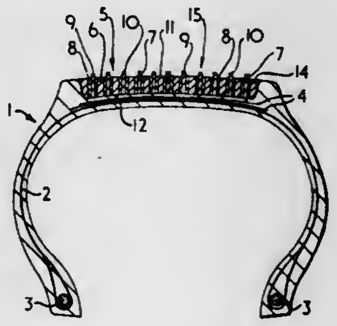
Eugene M. Pedro, White Bear Lake, Minn., assignor to Carl Pedro and Sons, Inc., St. Paul, Minn.
Continuation of Ser. No. 196,687, Nov. 8, 1971, abandoned. This application Aug. 9, 1973, Ser. No. 386,865
Int. Cl. A45c *11/00*
U.S. Cl. 150—52 R **6 Claims**



1. A protective elongated flexible sporting goods carrier for a sporting goods article having a shape conforming to the outline of an elongated article comprising: a first section made from a molded flexible plastic, said first section having a first edge; a second section made from a molded flexible plastic, said second section having a second edge, said first section and said second section substantially similar in shape and size so that each of said first and second sections encompasses about half of an article when said first section and said second section are closed together; a flexible hinge, said flexible hinge connecting a portion of said first edge and said second edge to thereby provide means for opening and closing said first section and said second section relative to one another so that when said article carrier is in an open position an elongated weapon can be placed on either said first section or said second section; a lining located on said first section and said second section to protect the article from abrasion from the molded flexible plastic and to cushion the article against shocks as it is carried; flexible fastening means connecting a first portion of said first edge of said first section to a first portion of the second edge of said second section, said fastening means coacting with said flexible hinge to provide an enclosure for holding an article in the article carrier, said article carrier having sufficient flexibility to flex or bend without receiving permanent damage; a first molded edge piece for covering a second portion of said first edge of said first section; a second molded edge piece for covering a second portion of said second edge of said second section, said first molded edge piece and said second molded edge piece located substantially coextensive with said flexible fastening member; and further means located on said article carrier to allow one to carry the article carrier in one's hand.

3,865,167
PNEUMATIC TIRES

Karl Gebert, Klein-Auheim, Germany, assignor to Dunlap Ltd., London, England
Filed May 3, 1973, Ser. No. 356,940
Claims priority, application Germany, May 3, 1972, 2221699
Int. Cl. B60c *11/16*
U.S. Cl. 152—212 **21 Claims**

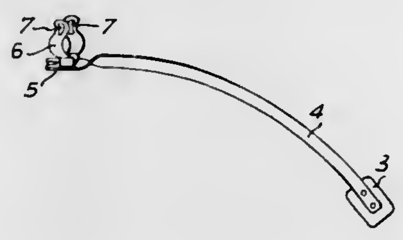


1. A pneumatic tire comprising at least one carcass ply of radially disposed cords, a breaker layer, two bead cores, two

sidewall portions and a tread portion, a plurality of anti-skid elements being embedded in the tread portion, the anti-skid elements each comprising at least one metal wire disposed substantially perpendicularly to the surface of the tread portion, and protruding radially outwardly of the tread surface, said at least one wire being sheathed in rubber, the rubber of the tread portion being softer than and having a greater elasticity than the sheathing rubber.

3,865,168
SNOW CHAINS AND APPARATUS FOR THEIR AUTOMATIC REMOTE FASTENING ON THE TIRE

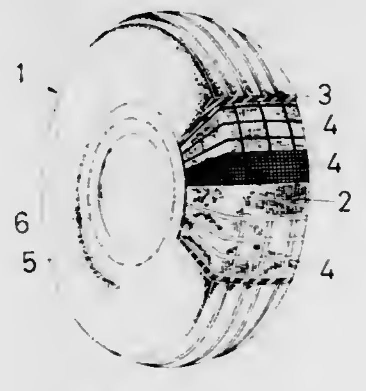
Alain Bourcier de Carbon de Previnquieres, 6, Boulevard Victor Hugo 06, Nice, France
Filed May 21, 1973, Ser. No. 362,168
Claims priority, application France, May 23, 1972, 72.19601; June 26, 1972, 72.24178; Aug. 23, 1972, 72.30708
Int. Cl. B60c *27/06*
U.S. Cl. 152—213 A **17 Claims**



1. Apparatus for automatic remote fastening of the hook and link of the longitudinal internal chain of a snow-chain, which comprises a pliable or flexible strap terminated by a hook fastening means, the thickness of which fastening means is less than the width of the opening in the link, and a rigid rod having no mechanical connection with the pliable or flexible strap and terminated by a means for holding the link, keeping the latter in a plane substantially perpendicular to the rod while leaving the opening in the link clear.

3,865,169
RADIATION TIRE

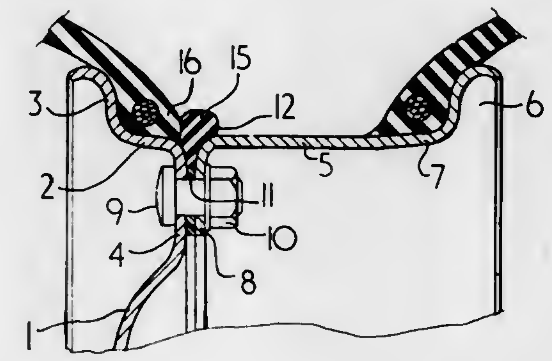
Yasuo Tsuruta, No. 22-2, 4-chome, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,532
Claims priority, application Japan, June 24, 1972, 47-63481
Int. Cl. B60c *19/06*
U.S. Cl. 152—330 C **3 Claims**



1. In a rotary wheel, an outer tire and an inner metallic rim surrounded and engaged by said tire, said tire having an outer rubber layer and an inner fiber layer engaging said outer layer, and said layers forming for said tire an outer circumferential wall and a pair of side walls extending, respectively, inwardly from opposed peripheral edges of said outer circumferential wall into engagement with said rim, and a single network of elongated thermally conductive members situated between said inner and outer layers of said outer tire wall, said network being made up of circumferentially extending thermally conductive members distributed between said side walls of said tire and transversely extending thermally conductive members intersecting and extending across said circumferentially extending members and distributed circumferentially along said circumferential wall, said transverse members each having extensions extending inwardly substantially radially along said side walls between said layers thereof into engagement with said rim so that heat generated in the tire will be carried away by said thermally conductive members and transmitted thereby to said rim to be dissipated by the latter to the outer atmosphere.

3,865,170
WHEELS AND PNEUMATIC TIRE AND WHEEL ASSEMBLIES

William E. Mitchell, Conventry, England, assignor to Dunlop Limited, London, England
Filed June 7, 1972, Ser. No. 260,462
Claims priority, application Great Britain, June 16, 1971, 28097/71
Int. Cl. B60b *23/10;* **B60c** *5/16, 19/00*
U.S. Cl. 152—386 **8 Claims**



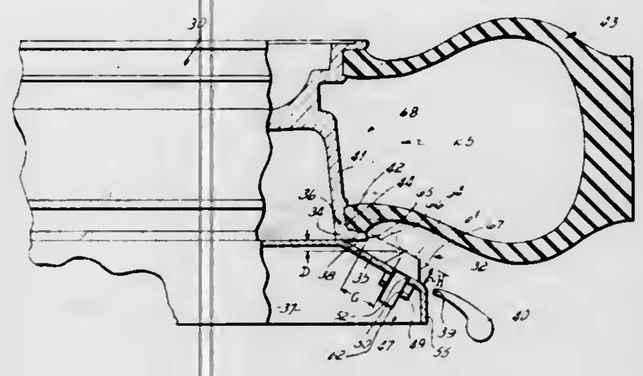
1. A rim for a tubeless pneumatic tire comprising a first rim part comprising a rim flange and associated bead seat and a radially inwardly extending attachment flange portion adjacent the toe of the bead seat, a second rim part having a bead retaining flange at one side and a radially inwardly extending attachment flange at the other side with a flat rim base portion positioned therebetween, means securing the rim parts along said attachment flanges, a resilient elastomeric sealing ring sandwiched therebetween so as to extend continuously around the joint between the rim parts, said resilient elastomeric sealing ring having a portion projecting radially outwardly for engagement with an adjacent tire bead so as to resist axially inward movement of the adjacent tire bead from the bead seat.

3,865,171
LOWER BEAD BREAKER ADAPTER

William G. Brosene, Jr., Cincinnati, Ohio, assignor to Magnum Automotive, Inc., Cincinnati, Ohio
Filed Sept. 24, 1973, Ser. No. 400,390
Int. Cl. B60c *25/00*
U.S. Cl. 157—1.24 **5 Claims**

1. A modified table structure for a tire changer machine, said table structure including

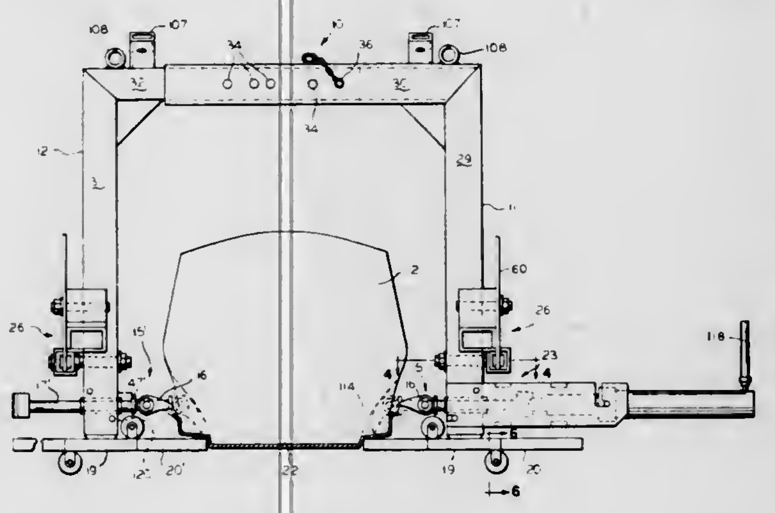
- structure defining a first hole in the machine's table, said hole being positioned in the operational path of a lower bead breaker's blade, and
- an adapter removably connected to the machine's table when a tire is to be demounted from that type wheel configuration where an undercut gap is established between the wheel rim's bottom edge and the table when the wheel has been locked in place onto said table, and said adapter including
- a head portion that extends upwardly off said table's surface when said adapter is connected to said table, said head portion being seated on said table to provide an intermediate tracking surface between the table's surface and the wheel's outer peripheral surface over which the lower bead breaker's blade can ride during operation thereof, thereby preventing the lower bead breaker's blade from becoming entrapped within the undercut gap prior to contacting the tire's lower bead area, and



- a post fixed to the underside of said head, said adapter being removably connected to the machine's table simply by dropping said post into said hole, thereby permitting said adapter to be easily and quickly connected to and disconnected from said table.

3,865,172
TIRE BEAD BREAKING APPARATUS

Charles Earl Branick, 1601 S. 9th St., Fargo, N. Dak. 58102
Filed Feb. 1, 1973, Ser. No. 328,643
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.26 **26 Claims**

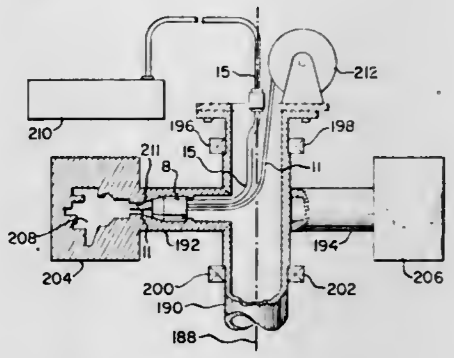


1. A device for breaking tire beads comprising:

- frame means having a pair of arm means for straddling a wheel rim,
- rim engaging means mounted on each of said arms each of said rim engaging means being movable in a direction generally parallel to the axis of said wheel rim,
- first means mounted on each of said arm means for movement in a direction generally parallel to said axis,
- bead breaking means mounted on one end of each of said first means and directed inwardly toward said tire, said first means being constructed and arranged to position said bead breaking means in contact with the tire bead adjacent said wheel rim,
- second means engageable with said first means for forcing said bead breaking means into high pressure engagement with said tire bead to move the same away from the wheel rim, said second means being operative to apply a bead breaking force to the other end of said first means, the application of a bead breaking force to said first means being operative to lock said rim engaging means in position.

3,865,173
THE ART OF CASTING METALS

Roderick Rohrberg, Torrance, Calif., assignor to North American Rockwell Corporation and Air Products and Chemicals, Inc., both of Allentown, Pa., part interest to each
Division of Ser. No. 830,565, May 8, 1969, Pat. No. 3,604,889, which is a continuation-in-part of Ser. No. 693,365, Dec. 16, 1967, abandoned. This application Apr. 29, 1970, Ser. No. 43,643
Int. Cl. B22d *27/02*
U.S. Cl. 164—46 **3 Claims**

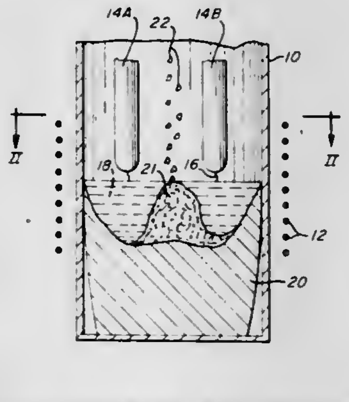


1. A method for precision casting molten metal using a die block with an opening to receive molten metal, said method comprising:

- positioning an elongated consumable metallic electrode adjacent said opening, said electrode being made of said metal,
- forming an electric arc between said electrode and said die block so that said electrode melts to produce said molten metal,
- directing a stream of ionizable gas towards said arc and said opening with sufficient force to penetrate said arc and to cause said molten metal to form a stream and enter said opening so that said molten metal solidifies within said die block, and
- feeding said electrode into the arc to maintain the arc until said die block is filled with metal.

3,865,174
METHOD FOR THE NONCONSUMABLE ELECTRODE MELTING OF REACTIVE METALS

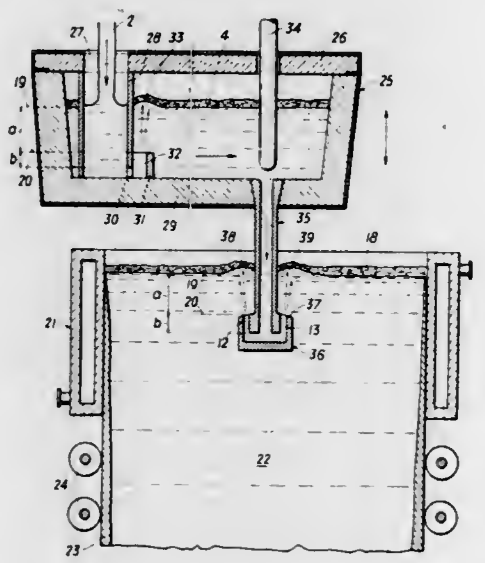
Russell C. Buehl, Beaver, Pa., assignor to Crucible Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 300,639, Oct. 25, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,915
Int. Cl. B22d *27/02*
U.S. Cl. 164—52 **6 Claims**



2. In the vacuum arc melting of reactive metals and alloys in a mold having a nonoxidizing atmosphere therein by the use of at least two nonconsumable electrodes each adapted to supply melting arcs offset from the longitudinal axis of the mold, the improvement comprising feeding metal or alloy particles for melting to substantially the center or longitudinal axis of the mold, regulating the feed rate and arc current to produce during melting within said mold an embryo casting having a first bottom, solidified portion with a top surface, a second partially solidified portion of a generally conical configuration extending axially with respect to said mold from the top surface of said first solidified portion, and a third liquid toroidal portion encircling axially said second partially solidified portion.

3,865,175
PROCESS FOR SEPARATING NON-METALLIC INCLUSIONS FROM HOT LIQUID METAL

Friedrich Listhuber; Thorwald Fastner; Ernst Bachner, and Otto Hoyer, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen-und Aktiengesellschaft, Linz, Austria
Filed Feb. 1, 1973, Ser. No. 328,613
Claims priority, application Austria, Feb. 3, 1972, 858/72
Int. Cl. B22d ***11/10***
U.S. Cl. 164—82 9 Claims

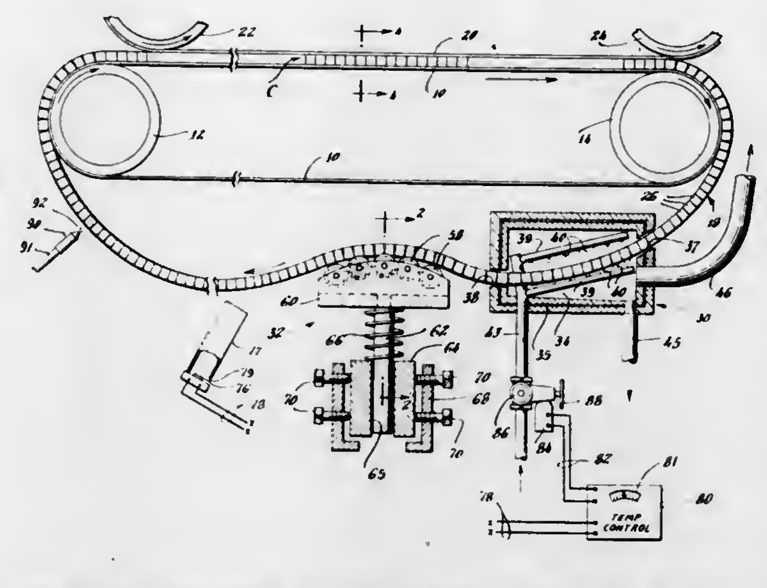


1. In a process for separating non-metallic inclusions from hot liquid metal in a continuous casting plant, in which the metal flows into a water-cooled mould containing a quantity of liquid metal having a surface covered with a layer of slag and in which a bar of metal is drawn out of the mould and further cooled, the improvement comprising deflecting the liquid metal, when it enters the mould, into at least one stream of metal, the stream originating at a predetermined distance of from 3 to 30 cm below the surface of the liquid metal in the mould and being directed in an upward direction to impinge against the layer of slag and form a wave in the layer of slag without previously contacting any lateral portion of a solidifying shell of the bar of metal, the speed of the stream of metal being adjusted to remain within a range of from 3.5 to 31 cm/sec when the predetermined distance is 3 cm and linearly increasing with distance to a range of from 17.5 to 45 cm/sec when the predetermined distance is 30 cm.

3,865,176
CASTING METHOD FOR TWIN-BELT CONTINUOUS METAL CASTING MACHINES

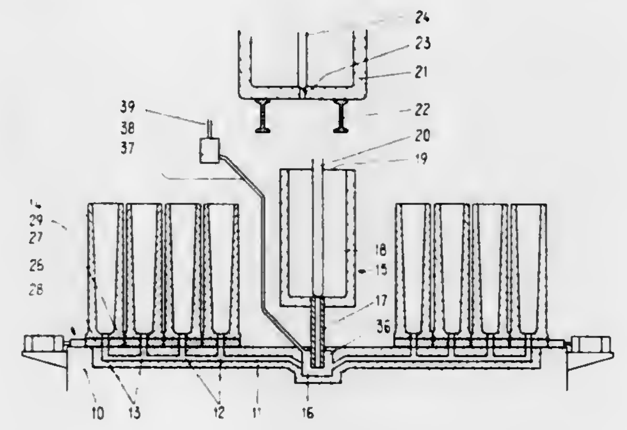
John Mary-Anthony Dompas, Olen, Belgium, and Robert William Hazelett, Winooski, Vt., assignors to Hazelett Strip Casting Corporation, Winooski, Vt.
Filed Sept. 28, 1973, Ser. No. 401,703
Int. Cl. B22d ***11/06***
U.S. Cl. 164—87 7 Claims

1. The improved method of casting molten metal in a twin-belt metal casting machine wherein two side dams each revolve in a loop passing along a casting zone from its input end between a pair of revolving casting belts to define a moving mold and wherein the loop of the travelling side dams returns from the output end to the input end of the casting zone along a path which is located away from the casting zone, said improved method comprising the steps of constructing a pair of endless side dams each having a multiplicity of metal damblocks strung in end-to-end relationship on a flexible metal strap loop, allowing every damblock on each strap to be free to slide relative to its strap, and as both of the side dams are travelling from the output end to the input end deflecting them to travel along a smoothly curved path section which is convex toward the interior of the side dam loop, said convex curved path section having sufficient convexity for forcing wedge-shaped spaces to occur between adjacent damblocks on said curved path section for tightly pressing the damblocks together in end-to-end abutting relationship along both sides of the casting zone, thereby ensuring that the molten metal is cast in the moving mold without burrs.



3,865,177
METHOD OF BOTTOM-CASTING INGOTS

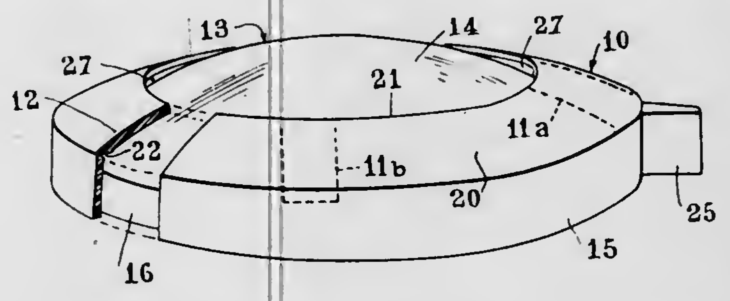
Kozma Ahacic, Fagersta, and Lars-Einar Ljungstromer, Torshalla, both of Sweden, assignors to Granges Engineering AB, Vasteras, Sweden
Filed June 7, 1972, Ser. No. 260,375
Int. Cl. B22d ***35/04***
U.S. Cl. 164—133 1 Claim



1. In a method of bottom-casting ingots, slabs and the like in molds located on a casting platform with mold gates in register with and communicating with outlet openings discharging in the casting platform, said casting platform including a chamber communicating through runners and distributing channels with a vertically extending teeming gate arrangement from which the molds are gravitationally filled with molten metal to the desired level, comprising the steps of: filling said molds with said molten metal to a desired level; concurrently introducing a quantity of a pressurized inert gas into said chamber above the molten metal conveyed therethrough so as to form an inert gas cushion above the molten metal in said chamber during casting thereof; closing said teeming gate arrangement; closing the gates of respective of said filled molds so as to isolate said distributing channels, said runners and said chamber from the surrounding atmosphere; and upon closing of said teeming and mold gates reducing the pressure of said inert gas above the molten metal in said chamber to effect a return flow of molten metal from said runners and distributing channels into said chamber for preventing the level of molten metal remaining in said chamber, runners and distributing channels from reaching a point above the level of the outlet openings prior to removing the filled molds and replacement thereof with empty molds.

3,865,178
APPARATUS FOR CASTING A HOLDING BLOCK ON AN OPHTHALMIC LENS

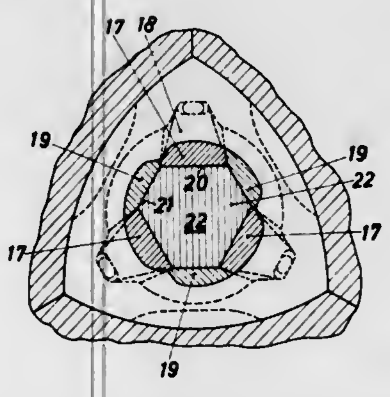
Serge Legendre, Epinay Sur Seine, France, assignor to Essilor International (Compagnie Generale d'Optique), Joinville Le Pont, France
Filed May 21, 1973, Ser. No. 361,971
Claims priority, application France, May 29, 1972, 72.19131
Int. Cl. B22d ***19/00***
U.S. Cl. 164—334 9 Claims



1. Mounting member for use in casting a holding block on an ophthalmic lens blank finished on one face only, and adapted for fitting to the blank through centering means, means for fixing the mounting member on said blank in the angular direction, and means for engaging the finished face of said blank, said mounting member having a substantially annular configuration with an annular portion adapted to engage the finished face of the blank, said centering means comprising a cylindrical skirt forming a downward extension of said annular portion and adapted to engage with a slightly clamping force the outer cylindrical edge of the blank, and said means for fixing the blank in the proper angular direction comprising a projection carried by said skirt and engageable in a matching notch formed in the edge of said blank.

3,865,179
PISTON FOR ROTARY PISTON MACHINES AND MEANS FOR ITS MANUFACTURE

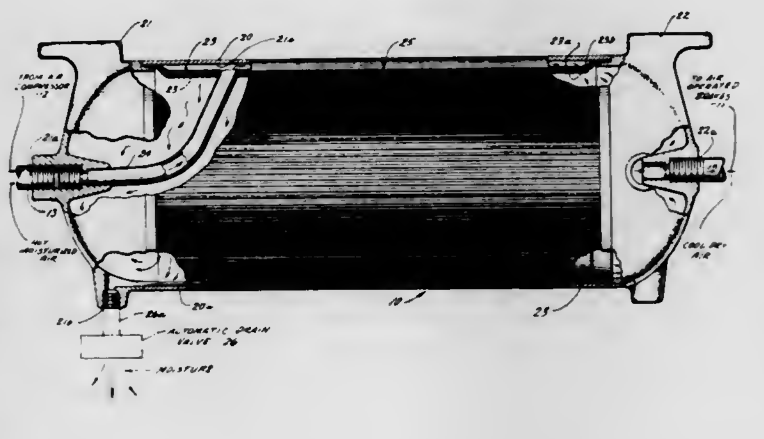
Johannes Steinwart, Bad Friedrichshall, and Max Ruf, Oberisesheim, both of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm; Audi NSU Auto Union Aktiengesellschaft, Wurttemberg; Wankel GMBH, Lindau and Wankel GMBH, Bodensee, all of, Germany
Division of Ser. No. 315,581, Dec. 15, 1972, Pat. No. 3,836,294. This application Oct. 29, 1973, Ser. No. 410,803
Int. Cl. B22d ***33/04***
U.S. Cl. 164—340 3 Claims



1. A tool for producing a three-apex piston by die-casting, including two cores capable of being withdrawn in opposite directions, of which the one core has a hub and a number of movable core portions equal to the number of apices in the piston, arranged around the hub for forming the three inlet passages and portions for forming the inner surface of the piston between the inlet passages and the other core has a hub and a similar number of core portions arranged around it for forming the outlet passages of the piston cavities and core portions for forming the inner surface of the piston between the outlet passages.

3,865,180
MOISTURE SEPARATING TANK

John D. McKenney, South Laguna, and Thomas R. Rumsey, Inglewood, both of Calif., assignors to Royal Industrial Inc., Pasadena, Calif.
Division of Ser. No. 188,291, Oct. 12, 1971, Pat. No. 3,774,679. This application June 4, 1973, Ser. No. 366,337
Int. Cl. F28f ***17/00***
U.S. Cl. 165—1 2 Claims



1. A method of separating moisture from a compressed airstream including the steps of providing a tank having a thin fluid conduit in cross-section selected relative to the pressure drop of the fluid through the tank to optimize heat transfer and constructed of the inner wall of the tank and a thermal insulator to cause a compressed airstream to be conveyed through the tank by means of such a fluid conduit as a fluid sheet, the tank wall being constructed of a thermal conductor, conveying a fluid laden compressed airstream to the tank to cause the airstream to flow through the tank by means of the fluid conduit from the top of the tank and then down around the tank at a velocity selected for producing a heat transfer to the outer surface of the tank without a substantial drop of pressure in the conveyed airstream to substantially cool the airstream and thereby separate the moisture from the compressed airstream, and

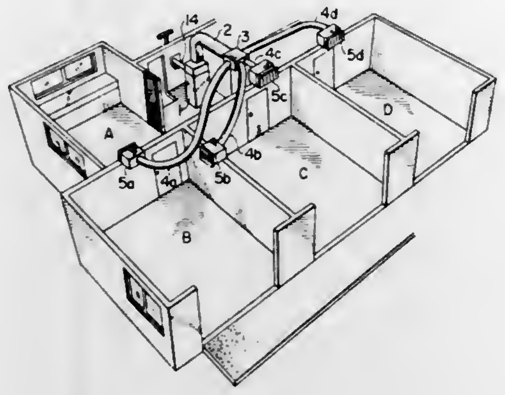
conveying the dry, compressed airstream out of the tank by means of the fluid conduit.

3,865,181
CENTRAL TEMPERATURE CONTROLLING APPARATUS HAVING SEPARATE PRESSURE AND TEMPERATURE CONTROL MEANS

Keijiro Mori, Nara-Ken; Masahiro Indo, Nara, and Taro Yamamoto, Uji, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 21, 1973, Ser. No. 334,355
Claims priority, application Japan, Feb. 14, 1973, 48-18812
Int. Cl. F24f ***3/00***
U.S. Cl. 165—22 8 Claims

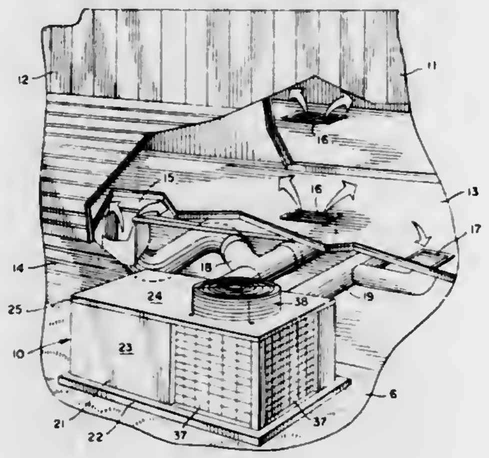
1. A central temperature controlling apparatus comprising:
a blower;
heat exchanger means for modifying the temperature of air supplied by said blower;
a plurality of branch ducts leading the air supplied by said blower to respectively associated individual rooms;
means for regulating the rate of supply of air to each of said individual rooms;
pressure control means to control the pressure of supply air from said blower in accordance with the pressure of said air in a common path upstream of said branch ducts; and

temperature control means to control the transfer of heat between the air supplied by said blower and said heat exchanger in accordance with the temperature of said air in said common path.



3,865,182
COMBINATION AIR CONDITIONER AND HEATER

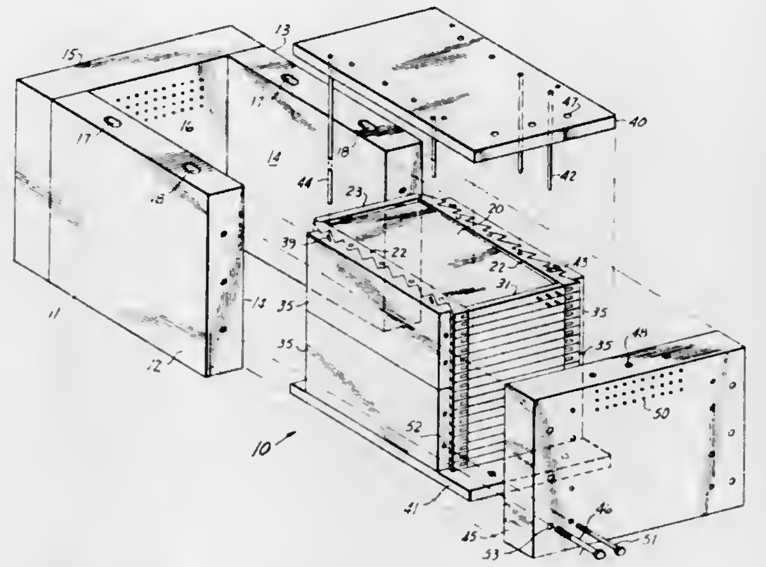
Armond L. Blossom, Wichita, Kans., assignor to The Coleman Company, Wichita, Kans.
Filed Aug. 30, 1973, Ser. No. 393,124
Int. Cl. F25b *29/00*
U.S. Cl. 165—27 1 Claim



1. In combination with a mobile home, an air conditioner unit mounted on the ground outside of and separate from said mobile home, said unit including a casing providing a weatherproof compartment having an air inlet and an air outlet, duct means secured to each of the air inlet and the air outlet and connected to said mobile home, an air blower mounted in said compartment, the air blower comprising a blower housing having an air inlet and an air outlet, an air guide surface for directing air from the inlet to the outlet, and a blower wheel rotatably mounted within the blower housing for forcing air over the air guide surface and through the air outlets of the blower housing and the casing, power means within the casing for rotating the blower wheel, and cooling means mounted within said compartment between the air inlet of the compartment and the air inlet of the air blower for cooling the air passing through the air inlet of the air blower, wherein the improvement comprises: electric heating elements secured to the blower housing adjacent the air guide surface for heating the air passing over the air guide surface, control means for selectively activating the heating means or the cooling means, said power means comprising a two-speed motor which is operable at a relatively high speed and a relatively low speed, said control means including means for operating said motor at the low speed when the heating means is activated.

3,865,183
COOLING SYSTEMS FOR ELECTRONIC MODULES

Maurice D. Roush, Chippewa Falls, Wis., assignor to Control Data Corporation, Minneapolis, Minn.
Filed Oct. 23, 1973, Ser. No. 408,887
Int. Cl. F28f *7/00*
U.S. Cl. 165—80 14 Claims

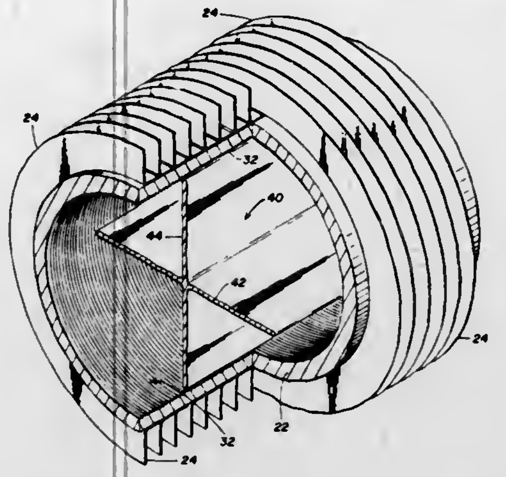


1. An electronic circuit module comprising:
a thermally conductive housing supporting a stack of a plurality of substantially planar circuit boards, said housing including side wall members defining internal surfaces; fluid conduit means disposed in said wall members for containing coolant;
thermally conductive spacer means including a first surface adapted to bear against a respective internal surface and a sawtooth edge portion having surface portions disposed at a predetermined angle to said first surface;
a thermally conductive edge member mounted to opposite side portions of each of said circuit boards each edge member having a sawtooth edge portion defining a nominal edge plane of said board, such nominal edge plane being disposed substantially parallel to said internal surface of the respective side wall member, the sawtooth edge portion of each edge member including first surface portions disposed at a predetermined angle to said nominal plane and second edge portions forming transitions between adjacent first edge portions; and
torque means engaging said conductive spacer means to move said conductive spacer means at said predetermined angle to the length of said nominal plane to wedge said conductive spacer means between said respective wall member and the respective conductive edge members of said stack of circuit boards.

3,865,184
HEAT PIPE AND METHOD AND APPARATUS FOR FABRICATING SAME

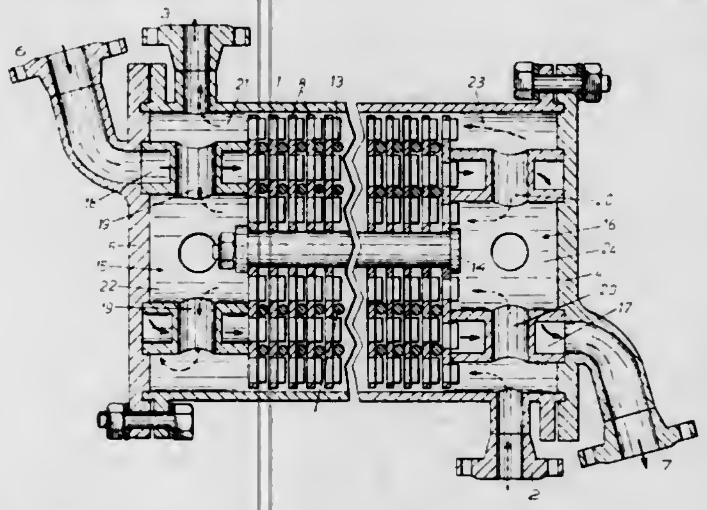
George M. Grover, Los Alamos, N. Mex., assignor to Q-Dot Corporation, Santa Fe, N. Mex.
Continuation of Ser. No. 113,571, Feb. 8, 1971, abandoned. This application Apr. 13, 1973, Ser. No. 350,799
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 20 Claims

1. The thermal transfer device comprising:
a generally straight, tubular sealed envelope having walls and at least two sections between which thermal energy is to be transferred,
a working fluid having a liquid phase and a vapor phase at the operating temperature of the device, the liquid phase standing in at least one section to a level less than the height of the portion of the envelope forming the section, and
a plurality of capillary grooves having openings narrower than other portions of said grooves formed in the walls of the envelope in at least said one section for transporting the liquid phase upwardly above the level of the liquid phase in said one section by capillary action.



3,865,185
HEAT EXCHANGER

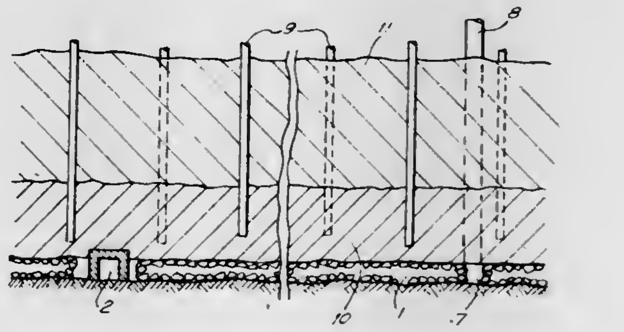
Karl Robert Ambjorn Ostbo, Storgatan 2, S-510 80, Tranemo, Sweden
Filed Sept. 7, 1972, Ser. No. 287,041
Claims priority, application Sweden, Sept. 8, 1971, 11370/71
Int. Cl. F28f *3/08*
U.S. Cl. 165—165 3 Claims



1. A heat exchanger comprising, in combination:
a plurality of parallel and axially aligned flat metal discs, each having an inner annular row of circumferentially spaced openings, an outer annular row of circumferentially spaced openings and at least one intermediate annular row of circumferentially spaced openings; said rows of openings being similarly arranged on each disc whereby adjacent annular rows of openings of each disc are separated by flat annular regions devoid of openings with such flat regions of adjacent discs being mutually opposed;
a set of concentrically arranged sealing rings disposed between and spacing apart each adjacent pair of said discs, said sealing rings of each set being of different diameters to seat upon the mutually opposed flat regions of the respective discs to interrupt communication between adjacent rows of openings thereof;
compression means for securing said discs and intervening sealing rings in a sandwiched stack whereby fluid tight passages of annular cross section are formed through corresponding rows of said openings from one end of the stack to the other;
first header means for directing one fluid through an alternate pair of said annular passages and having an inlet conduit at one end of said stack and an outlet conduit at the other end of the stack; and
second header means enclosed by said first header means for directing a second fluid through at least that annular passage intervening between said alternate pair thereof and having an inlet conduit at said other end of the stack passing through said first header means and an outlet conduit at said one end of the stack passing through said first header means whereby said second fluid flows countercurrently with respect to said one fluid with heat exchange therebetween being effected through said flat annular regions of the discs, said second header means comprising first and second annular members, said first annular member defining an annular channel discharging at said other end of the stack into said intervening annular passage and surrounding an inner space from which fluid is discharged from the innermost of said alternate passages and said first header means comprising a first end portion enclosing said first annular member to define therewith an annular outer space from which fluid is discharged from the outer of said alternate passages, said inner and outer spaces being in communication and said first annular member being connected to said inlet conduit of the second header means, said second annular member defining an annular chamber receiving fluid at said one end of the stack discharged from said intervening passage and surrounding a second inner space discharging fluid into said innermost of the alternate passages and said first header means comprising a second end portion enclosing said second annular member to define therewith an annular outer space discharging fluid into said outer of the alternate passages, said second inner and outer spaces being in communication and said second annular member being connected to said outlet conduit of the second header means.

3,865,186
METHOD OF AND SYSTEM FOR GASIFYING UNDERGROUND DEPOSITS OF COAL

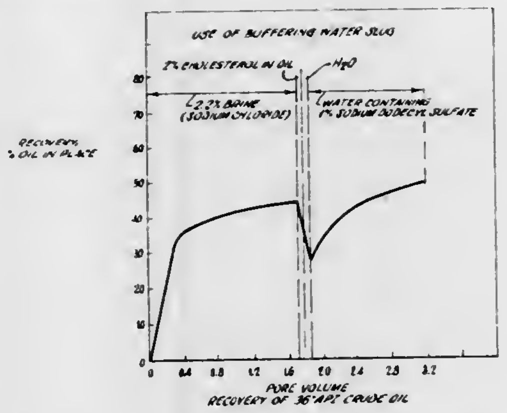
Hans Joachim Von Hippel, deceased, late of P.O. Oberstenweiler, Oberstenweiler, Germany (by Sophie Von Hippel, heir and legal representative), and Mila Von Hippel, heir and legal representative, Oberstenweiler, Germany
Filed July 17, 1972, Ser. No. 272,658
Claims priority, application Germany, July 16, 1971, 2135618
Int. Cl. E21b *43/24*
U.S. Cl. 166—256 8 Claims



1. A method of gasifying underground deposits of coal, comprising the steps of forming in an underground coal deposit a first conduit system including at least one channel which extends along a face of the deposit; forming in said coal deposit a second conduit system having a plurality of inlets which are located in said deposits inwardly spaced from said face by a substantial distance; combusting said coal deposit so that the fire front extends along said face and consumes said deposit in direction inwardly of said face, whereby the heat of combustion expels high-value gases from said coal deposit whereas said combustion results substantially only in the formation of lower-value combustion gases; withdrawing said high-value gases through said inlets which are inwardly spaced from said face; withdrawing said lower-value combustion gases through said channel which extends along said face and the fire front; and terminating the withdrawal of said high-value gases through respective ones of said inlets when the fire front reaches the same.

3,865,187
OIL RECOVERY PROCESS USING SURFACTANT MIXTURES

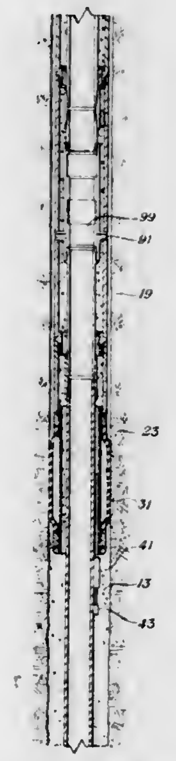
Joseph T. Carlin, and Richardo L. Cardenas, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Feb. 6, 1974, Ser. No. 440,095
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **18 Claims**

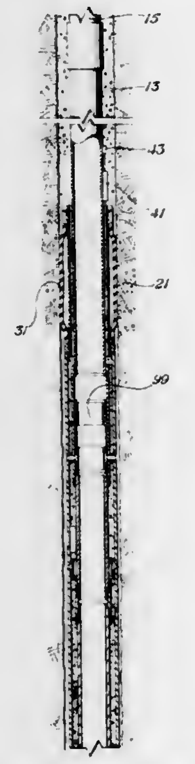


1. A method of recovering hydrocarbons from a subterranean hydrocarbon-bearing formation traversed by at least one injection well and one production well comprising the steps of:
a. injecting into said formation via said injection well a first slug of hydrocarbon solvent containing a mono-unsaturated secondary alcohol,
- b. injecting said formation a second slug of an aqueous medium containing a sulfate salt of a fatty alcohol, said sulfate salt having from 8–20 carbon atoms per molecule, and said aqueous slug also containing a water soluble alkali metal salt,
- c. injecting water or brine as a drive agent sufficient to drive said slugs and said hydrocarbons through said formation toward said production well,
- d. recovering said hydrocarbons from said production well.

3,865,188
METHOD AND APPARATUS FOR SELECTIVELY ISOLATING A ZONE OF SUBTERRANEAN FORMATION ADJACENT A WELL

Glenn O. Doggett, and Bobby Joe Hallmark, both of Fort Worth, Tex., assignors to Gearhart-Owen Industries Inc., Fort Worth, Tex.
Filed Feb. 27, 1974, Ser. No. 446,422
Int. Cl. E21b *33/14, 43/04, 33/124*
U.S. Cl. 166—285 **14 Claims**





1. In apparatus for driling and completing a well penetrating subterranean formations and having a conduit string therein, a selective isolation tool for isolating a zone, comprising a plurality of serially connected modules that include:
- a. a plurality of packer modules including at least top and bottom modules; each of said packer modules including an inflatable packer element that is expansible when subjected to fluid pressure therewithin outwardly into sealing contact with the wall of said well; said packer modules including respective outer tubular sections carrying said packer elements and concentrically disposed about respective sections of inner pipe so as to define an annular passageway therebetween; the respective sections of inner pipe being adapted to be connected into said conduit string;
- b. inflation valve and conduit means connected with said packer elements and in fluid communication with the interior of said inner pipe;
- c. at least one extension module disposed intermediate and connected with said packer modules; said at least one extension module including:
  - i. a section of inner pipe adapted to be connected sealingly and serially into said conduit string and having adequate structural strength to sustain the weight of conduit string therebelow in said well and sustain the torque of making a connection between modules;
  - ii. a section of outer pipe adapted to be connected sealingly and serially into an outer string of conduit and having adequate structural strength to sustain the weight of conduit string therebelow in said well and sustain the torque of making a connection between modules;
  - iii. a plurality of force transfer-spacer means connected respectively with said inner and outer pipes and maintaining them in fixed concentric and longitudinal relationship with adequate structural strength to sustain the weight of conduit string therebelow in said well and sustain the torque of making a connection between modules; said concentric relationship defining an annular passageway between said inner and outer pipes; and
  - iv. interconnection means for connecting respective modules to contiguous modules; said interconnection means including first and second mating joint halves, said first joint half being disposed at one end and adapted for inserting into a second joint half; said second joint half being disposed at the other end of said extension module and adapted for receiving said first joint half; said interconnection means including mating and sealing threaded sections on one of said sections of pipe and mating longitudinally slidable and sealing sections on the other of said sections of pipe such that said extension module can be connected to contiguous modules by stabbing and screwing only one set of said threaded sections together and effecting longitudinal sealing interconnection of both said inner and outer pipes;

whereby any predetermined length isolation tool can be made up and either said inner pipe can suspend from a travelling block of a rig and sustain the weight of said conduit string or said outer pipe can be set with slips on said rig and sustain the weight of said conduit string and torque necessary to make up said modules of said isolation tool at said well.

3,865,189
METHODS FOR SELECTIVE PLUGGING

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.
Division of Ser. No. 270,244, July 10, 1972, Pat. No. 3,811,508. This application Apr. 1, 1974, Ser. No. 456,783
Int. Cl. E21b *33/13*
U.S. Cl. 166—294 **4 Claims**

1. A method for selectively plugging water-rich strata of a subterranean formation containing strata which are water-rich and other strata which are oil-rich, said water-rich strate containing a significant amount of metal ions, and said strata having at least one borehole therein, comprising:
providing a dilute aqueous composition of a water-soluble, oil-insoluble metal soap of a high-molecular-weight acid; passing said composition into said borehole;
injecting said composition into said formation at a pressure sufficient to overcome the natural formation pressure;
reacting said soap with the metal ions in said water-rich strata to form as a reaction product, a second metal soap of said acid, said second metal soap being water-insoluble and oil-soluble, said reaction product being effective to greatly reduce the permeability of said water-rich strata, over a relatively long distance and over a relatively long period of time.

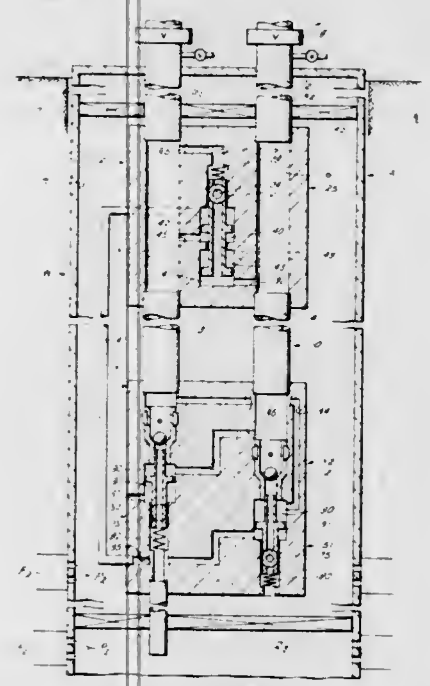
3,865,190
HYDRAULIC FRACTURING METHOD

Charles A. Christopher, Houston, and Joseph C. Allen, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed July 9, 1973, Ser. No. 377,865
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 **13 Claims**

1. In a method for increasing the productivity of a subterranean formation penetrated by a well wherein a fracturing fluid is forced down the well to the formation and increasing the pressure on the fracturing fluid in order to rupture the formation rock and thereby create a fracture the improvement which comprises
using as the fracturing fluid a thickened composition containing colloidal silica.

3,865,191
WELL APPARATUS AND METHOD OF OPERATING SAME FOR PERFORMING WELL OPERATIONS

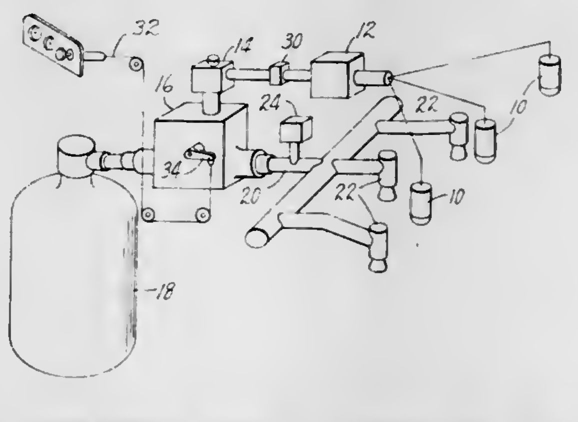
James D. Mott, Houston, Tex., assignor to Hydril Company, Houston, Tex.
Filed May 14, 1973, Ser. No. 360,120
Int. Cl. E21b *43/12*
U.S. Cl. 166—315 **43 Claims**



1. A method of operating a well apparatus having a plurality of flow conductor passages therethrough to establish a desired flow path between the flow conductor passages for performing well operations while protecting the well producing formation from fluid pressure conditions while performing the well operations, including the steps of:
- a. increasing the fluid pressure in a first flow conductor passage sensed by the well apparatus;
- b. establishing a circulation channel between the first flow conductor passage and a second flow conductor passage for communicating therebetween to provide a desired flow path for well fluids in response to the increased fluid pressure in the first flow conductor passage; and
- c. blocking flow through the second flow conductor at a desired location by operation of a plug means in response to the increased fluid pressure in the first flow conductor passage communicated to the plug means separate from the circulation channel while substantially simultaneously establishing the circulation channel wherein a desired circulation flow path for well operations is provided.

3,865,192
FIRE DETECTION AND EXTINGUISHING SYSTEM

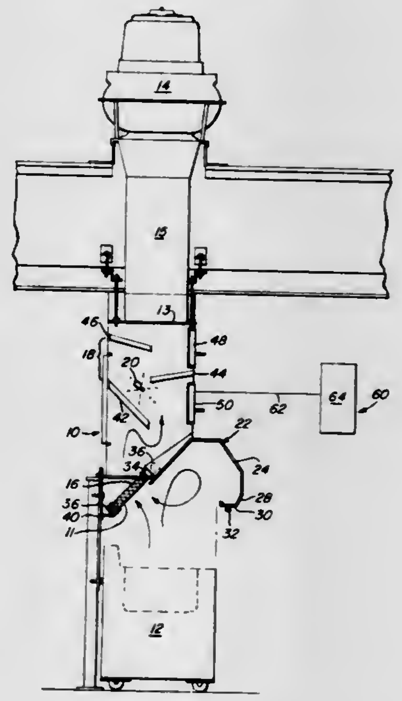
Matthew J. Dunphy, Braintree, Mass., assignor to Pyrotector, Incorporated, Hingham, Mass.
Filed July 19, 1973, Ser. No. 380,848
Int. Cl. A62c *37/06*
U.S. Cl. 169—61 **6 Claims**



1. A fire extinguishing system comprising fire detecting means which produces a signal on detecting a fire supply of extinguishment, extinguishant from said supply releasing means responsive to said signal to release extinguishant, and means detecting the released extinguishant to maintain the extinguishant releasing means in the extinguishant releasing condition.

3,865,193
AIR SCRUBBER APPARATUS WITH GREASE REMOVAL MEANS

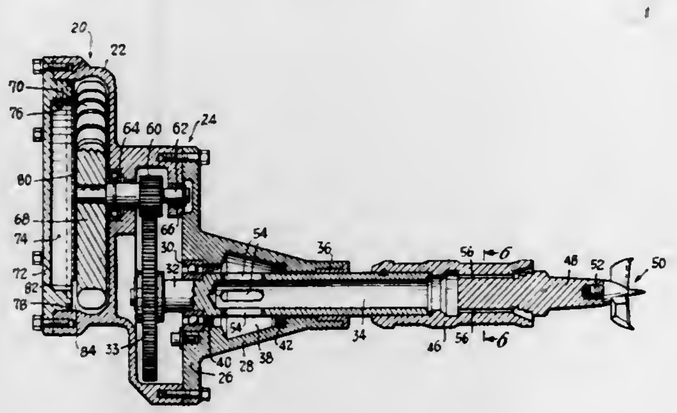
Trenton O. Hall, 16480 N.E. 30th Ave., Miami, Fla. 33160
Continuation-in-part of Ser. No. 195,170, Nov. 3, 1971, Pat. No. 3,770,061. This application Mar. 21, 1973, Ser. No. 343,495
Int. Cl. A62c *3/00*
U.S. Cl. 169—65 **12 Claims**



4. Apparatus as claimed in claim 1 wherein said disposal means comprises disposable containers connected to said drain means.

3,865,194
HYDRAULICALLY-OPERATED FIRE EXTINGUISHING DRILL

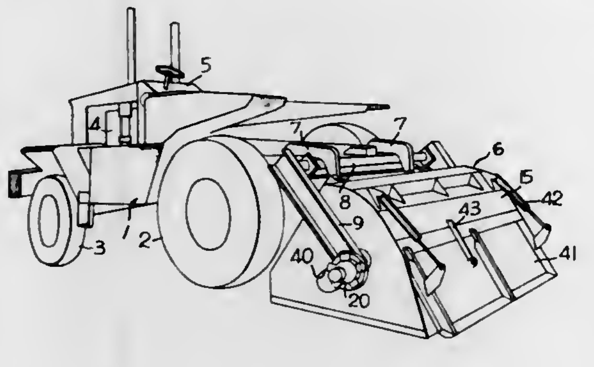
John F. Chatfield, Jr., 44 Adams Rd., Easton, Conn. 06612
Filed Nov. 1, 1973, Ser. No. 412,049
Int. Cl. A62c *31/02*
U.S. Cl. 169—70 **9 Claims**



1. A fire extinguishing device for buildings and the like, comprising in combination:
- a. a rotary drill comprising a shaft part and a cutting bit carried at the end of the shaft part,
- b. a housing part in which said shaft part is turnably mounted for rotation about its axis,
- c. means providing an inlet for liquid into said housing part,
- d. hydraulic impeller means powered by the liquid introduced into the housing part, for driving said shaft part,
- e. a collar located at the exterior of the housing part and carried by one of said parts, said collar extending closely adjacent said cutting bit,
- f. said collar and said housing part having passages for conducting liquid from the housing part through the collar and discharging the same adjacent said cutting bit, and
- g. manually engageable means carried by the housing at the exterior thereof, for enabling it to be grasped by the hands of a user and held in the manner of a power drill, said means including oppositely projecting handle structures on the housing.

3,865,195
SELF-PROPELLED SOIL STABILIZER MACHINE

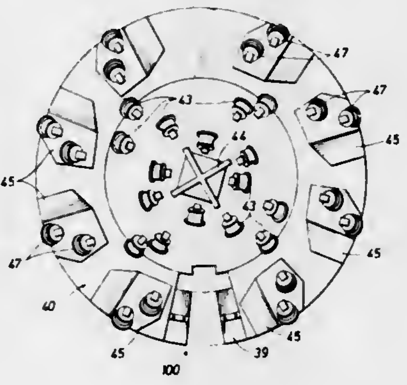
Albert W. Neslon, Springfield, Ohio, assignor to Koehring Company, Milwaukee, Wis.
Division of Ser. No. 269,228, July 5, 1972, Pat. No. 3,795,279. This application Sept. 18, 1973, Ser. No. 398,315
Int. Cl. A01b *67/00*
U.S. Cl. 172—3 **7 Claims**



1. A soil working machine having a chassis on which at least one traction wheel and an engine are mounted and to which a soil stabilizer unit comprising a horizontally disposed vertically movable rotor is connected, first and second hydraulic motor means connected to and operable for driving said traction wheel and said rotor, respectively, first and second hydraulic pumps conntected to and driven by said engine for supplying said first and second motor means, respectively, first and second manually operable adjustable means connected to said first and second hydraulic pumps, respectively, for independently controlling said first and second hydraulic pumps to determine the speed of said first and second motor means, respectively, said second manually operable adjusting means comprising speed range selector valve means connected to between said second hydraulic pump and said second motor means, and control means for sensing load conditions on said rotor and for effecting corresponding changes in the speed of said traction wheel, said control means being connected to said first and second hydraulic pumps and being responsive to pressure conditions in said second pump corresponding to loads imposed on said second motor means to effect flow changes in said first pump to control the speed of said first motor means, said control means effecting speed changes in said first motor means regardless of the adjustment of said first manually operable means which determines the speed of said first motor means.

3,865,196
TUNNELING MACHINE HAVING ACCESS PASSAGEWAY AND INVERT CLEANER

Douglas F. Winberg, Issaquah, Wash., assignor to Subsurface Machine and Manufacturing Inc., Durango, Colo.
Division of Ser. No. 234,509, March 14, 1972, Pat. No. 3,776,595. This application Oct. 11, 1973, Ser. No. 405,505
Int. Cl. E02f *5/18*
U.S. Cl. 172—802 **4 Claims**



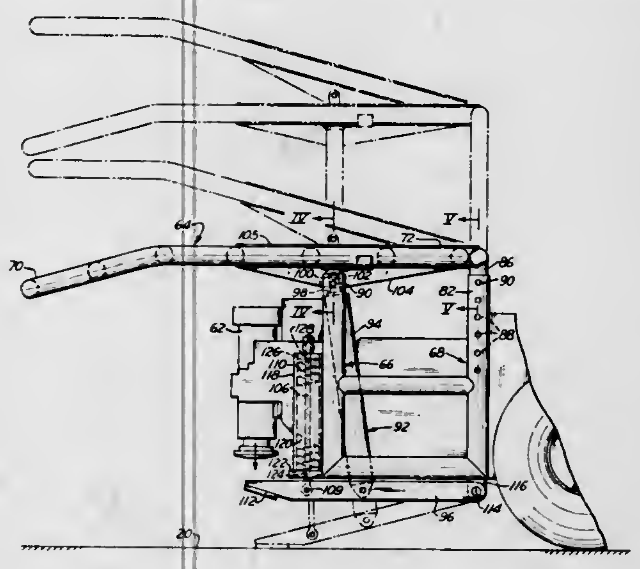
1. A scraping assembly for cleaning the invert of a cylindrical channel or excavation comprising:
- a. support means;
- b. blade assembly mounted on said support means;
- c. means connected to said support means for advancing said support means and blade assembly along said channel; and
- d. said blade assembly comprising a pair of carriage members attached to said support means and a pair of arcuate blade members mounted on said carriage members for arcuate movement, relative to a cross-section of said cylindrical channel, in opposite directions between a first position in which the ends of said blades are contiguous with each other and a second position in which said blade ends are separated from each other.

3,865,197
PROTECTIVE CANOPY FOR A PORTABLE DRILLING MACHINE

Thomas W. McCormick, Morgantown, W. Va., assignor to Mining Equipment Division, a division of FMC Corporation, Fairmount, W. Va.
Filed Jan. 29, 1974, Ser. No. 437,660
Int. Cl. E21c *11/02*
U.S. Cl. 173—23 **14 Claims**

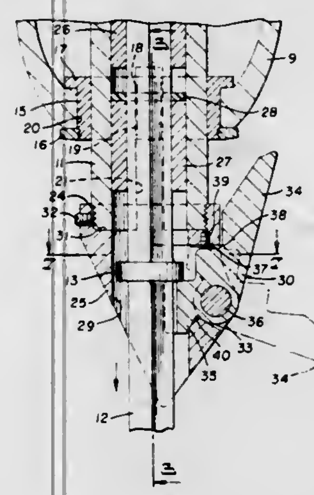
1. The combination of a drill boom and a protective canopy comprising,
- a wheeled body portion having a frame,
- drill means,

- said drill boom positioned forwardly of said wheeled body portion and operable to move said drill means in a vertical plane relative to said frame,
- said protective canopy secured to said frame and positioned adjacent said drill boom, said protective canopy having front end and rear end portions arranged for vertical movement relative to said frame and a metal covering positioned on the top surface of said protective canopy, vertical adjusting means for selectively moving said canopy in a vertical plane relative to said frame,
- extensible means for pivoting said canopy front end portion about said canopy rear end portion, and
- support means for retaining said extensible means fixed relative to said frame to thereby provide vertical movement of said canopy.



3,865,198
ADAPTER ASSEMBLY HAVING WEDGE HEAD WITH SADDLE FIT LATCH FOR IMPACT TOOL UNITS

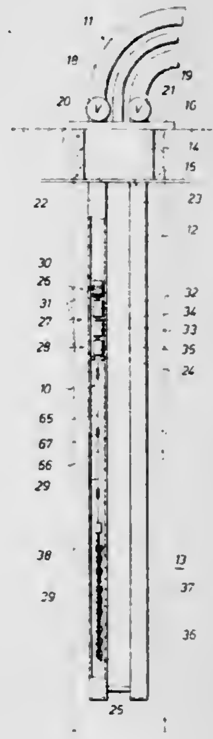
Vernon L. Price, 670 Hillcrest Dr., Reno, Nev. 89502
Filed Dec. 8, 1972, Ser. No. 313,464
Int. Cl. B25d *17/08*
U.S. Cl. 173—133 **5 Claims**



1. In combination with an impact tool including an impact motor, a support having a socket which opens outwardly and in which a tool bit is axially inwardly inserted, said bit having a shoulder formed thereon, and including:
- means for releasably retaining said bit in said socket an for receiving impacts from said impact motor means;
- said means comprising a hollow head mounted on said support and having a socket axially aligned with the socket in said support and through which the bit axially extends; said socket having a side opening that extends outwardly through the wall of the socket at a level above the lower end of the head;
- a releasable latch member pivoted in said opening by a pivot pin extending transversely thereof above the lower side of the opening;
- said latch member having a tool bit shoulder engaging portion inwardly of the pivot pin and an actuating portion outwardly of the pin;
- a saddle bearing portion at the lower side of the opening; and
- a complemental bearing surface on the latch member at its lower side for engaging said saddle bearing portion, said saddle bearing portion and said complemental bearing surface cooperating to transmit impact and vibrational forces therebetween whereby the forces on said pivot pin are reduced.

3,865,199
APPARATUS FOR PERFORATING SUB-SEA WELL BORES

Raymond W. Dermott, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Mar. 25, 1974, Ser. No. 454,495
Int. Cl. E21b *43/117*
U.S. Cl. 175—4.51 **19 Claims**

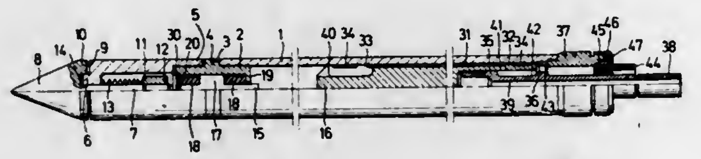


5. Perforating apparatus adapted for movement through multi-curved conduits between the surface and a selected position in a well bore and comprising:
- a plurality of elongated metal strips, each of said strips respectively having at least one enlarged opening in an intermediate portion thereof for cooperatively supporting a shaped explosive charge and a reduced opening centrally located in at least one terminal portion thereof and longitudinally spaced away from its transverse end by a predetermined distance which is less than half of its lateral width; and
- a plurality of biaxially-pivotal coupling means cooperatively arranged for tandemly intercoupling the overlapped terminal portions of each intercoupled set of said strips, each of said coupling means including a pivot member in said reduced openings for defining a first pivotal axis, said pivot member being sized sufficiently smaller than said reduced openings for allowing said transverse end of either of said overlapped terminal portions to roll on the opposing surface of the other of said overlapped terminal portions about a second pivotal axis extending generally at right angles to said first pivotal axis, and biasing means mounted between said pivot member and one of said overlapped terminal portions normally urging said opposing surfaces into slidable coengagement as said intercoupled strips pivot about said first

pivotal axis and cooperatively arranged for yielding to allow said opposing surfaces to diverge as said intercoupled strips pivot about said second pivotal axis.

3,865,200
BURROWING APPARATUS

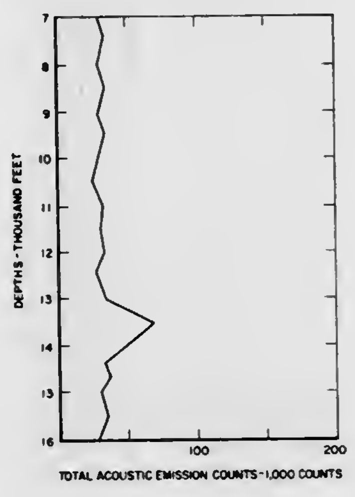
Paul Schmidt, Saalhausen, Germany, assignor to Tracto-Technik Paul Schmidt, Saalhausen, Germany
Filed Nov. 17, 1972, Ser. No. 307,573
Claims priority, application Germany, Nov. 18, 1971, 2157259
Int. Cl. E21b *11/02*
U.S. Cl. 175—19 **23 Claims**



1. Pneumatic burrowing apparatus particularly suitable for earth drilling comprising a tubular housing including a leading end adapted to act as the anterior of said apparatus during a burrowing operation, a percussion tip mounted in said housing at said leading end and including a rearwardly directed portion extending interiorly of said housing, said tip being arranged for axial movement relative to said housing, a percussion piston mounted for reciprocating motion within said housing and arranged to strike said percussion tip to impart a forwardly directed force thereto, pneumatic means including an energy source for imparting a striking force to said piston, spring means mounted between said percussion tip and said housing and arranged to be compressed therebetween upon relative movement of said tip forwardly of said housing, and a displacement cone mounted proximate said leading end for forward movement with said housing during a burrowing operation, said displacement cone being loosely slidable relative to said housing in a direction forwardly thereof.

3,865,201
ACOUSTIC EMISSION IN DRILLING WELLS

Elard L. Haden, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.
Filed Jan. 4, 1974, Ser. No. 430,863
Int. Cl. E21b *49/00*
U.S. Cl. 175—50 **5 Claims**



1. A method of drilling a well in a subterranean strata having zones of abnormal formation pressure comprising:

a. momentarily ceasing drilling operations,

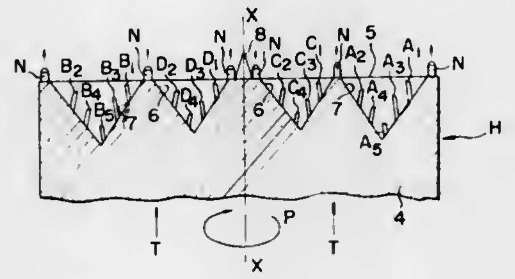
b. determining the acoustic emission characteristics of the formation rock in the vicinity of the drill bit,

c. adjusting the weight of the column of drilling fluid when such determination indicates that the drilling fluid pressure and formation pressure are out of balance, and

d. resuming drilling operations.

3,865,202
WATER JET DRILL BIT

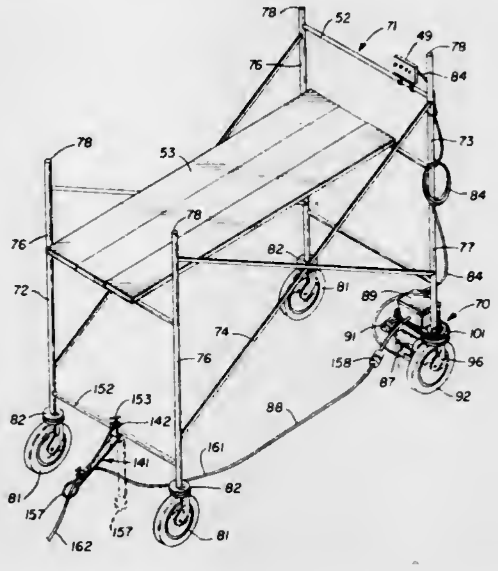
Hikoji Takahashi; Seisuke Misawa; Akinori Takahashi, and Hisashi Yoshimura, all of Tokyo, Japan, assignors to Nippon Kokuyu Tetsudo, Tokyo-to, Japan
Filed June 11, 1973, Ser. No. 368,999
Claims priority, application Japan, June 15, 1972, 47-59048
Int. Cl. E21b *9/35*
U.S. Cl. 175—393 **5 Claims**



1. An apparatus for excavating a rock comprising an excavating head adapted to rotate about an axis and having a forward face having at least one annular groove formed therein and having a center on said axis, means for rotating the head, means for advancing the head with the forward face thereof confronting the rock, nozzles for ejecting super-high-pressure water jets provided on the inner and outer peripheries of said groove, and a plurality of cutters disposed in said groove at radially different positions with an arrangement such that they are stepwisely retracted relative to the forward face of the head with respect to the advancing direction of the head toward the central part of the width of the groove.

3,865,203
SCAFFOLD DRIVE AND STEERING UNIT

James Hibma, Westminster, Colo., assignor to Anne Marie Hibma, Westminster, Colo.
Filed Mar. 8, 1973, Ser. No. 339,260
Int. Cl. B60k *7/00*
U.S. Cl. 180—2 **14 Claims**

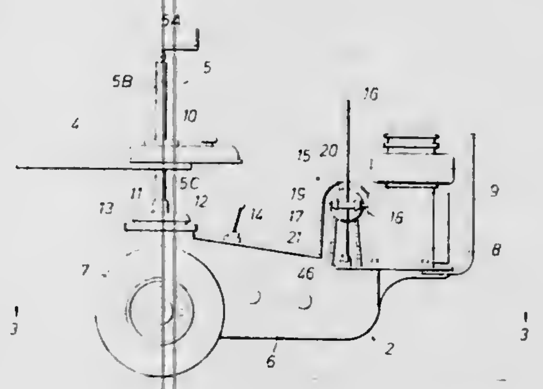


1. A drive and steering attachment for scaffolding type supports having upright standards that in scaffolding usage may be mateably engaged one above another when multistages are to be used and wherein each of said upright standards are further adapted to receive separate supporting wheel attachments when increased mobility is advantageous comprising a plurality of separable and separate wheel attachments for said support with a wheel attachment for each upright standard, wheels for each said attachment, frame components for each attachment, wheel axles on said frame components for the rotative support of said wheels, means for separately and selectively engaging each of said wheel attachments with the upright standards of said supports, means facilitating the rotative movement of a first one of said frame components with respect to the vertically disposed axis of its associated upright standard to provide a castor type mounting therefor, an anchor element in non-moving relationship with respect to said associated upright standard, motive drive means interconnecting said anchor element and said first frame component to provide a steerable castor wheel attachment whereby said first frame component and its associated wheel may be rotated to alternate radially directed positions with respect to the axis of its associated upright standard and said support, a mount adjacent said same first frame component and its wheel attachment, a motor drive unit on said mount and interconnected to the wheel of said first frame component and attachment to power rotative movement of said wheel about its axle, and power control apparatus interconnected to said motive drive means and said motor drive unit whereby an operator may conveniently steer and drive said support unit.

13. In wheel mounted mobile apparatus to be powered from a fixed electrical power outlet and, accordingly, utilizing a power cord, a power cord guide attachment for use on said mobile apparatus, comprising mounting means for securing said guide attachment to said mobile apparatus for movement therewith, a trailing arm for said guide attachment, a pivot on said mounting means for rotatably holding one end of said trailing arm, a fastener at a free end of said trailing arm for engaging said cord to the trailing arm, an elastic element for biasing said trailing arm to a first trailing position directed away from the wheels of said apparatus with movement away from said first position due to forces applied by said power cord resiliently deforming said elastic element whereby the cord is freed from entrapment by any wheels of said apparatus by the return forces of said elastic element that tend to return the free end of said trailing arm toward said first position and, accordingly, away from any cord entrapping wheel.

3,865,204
PRIME MOVER FOR TRAILERS AND THE LIKE

John E. Bueckner, Sr., Houston, Tex. 77002
Filed Apr. 5, 1973, Ser. No. 348,122
Int. Cl. B62d *51/06*
U.S. Cl. 180—12 **10 Claims**



1. A self-propelled prime mover for mobilizing a towable vehicle having a draw bar and the like, comprising

a rotatable axle means fixedly interconnecting two spaced-apart wheel members,

chassis means supported at one end on said axle means and having a portion engageable with said vehicle and located above and between said wheel members,

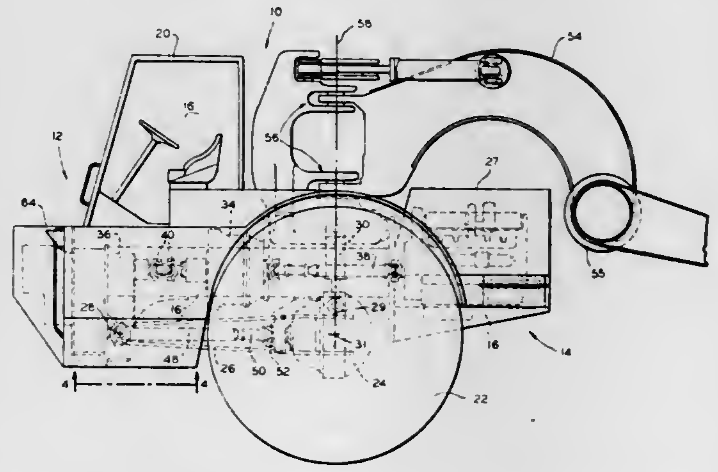
speed reduction means disposed in said chassis means and having a rotatable output drivably connected to said axle means and a rotatable input,

engine means mounted on the other end of said chassis means from said engageable portion and having a mono-directionally rotatable drive shaft, and

clutch means selectively interconnectable between said speed reduction means and said mono-directionally rotatable engine drive shaft for selectively and adjustably rotating said axle means bi-directionally at a selected velocity.

3,865,205
TWO WHEEL TRACTOR

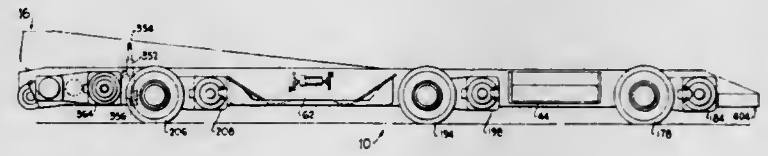
Allan R. Swanson, St. Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Continuation of Ser. No. 197,751, Nov. 11, 1971, abandoned. This application June 29, 1973, Ser. No. 375,225
Int. Cl. B62d *49/00*
U.S. Cl. 180—12 **8 Claims**



1. A two-wheeled tractor having a main frame, a drive axle extending transversely of the main frame, a subframe having a pair of suspension arms pivotally connected to the main frame and extending longitudinally beneath the main frame, said drive axle being rigidly supported on the ends of said arms, a pair of suspension cylinders mounted between the subframe and main frame above the centerline of the drive axle retarding oscillatory movement of the axle, an engine mounted on the main frame, a drive line extending from the engine, a transmission having an input shaft connected to the driveline and an output shaft below the main frame, a universal coupling on the output shaft, a second driveline connected to the universal coupling and extending in substantial horizontal alignment with the subframe and connected to the drive axle, the pivot axis of the arms of the subframe coinciding with the transverse axis of the universal coupling about which the drive axle oscillates.

3,865,206
ARTICULATED HAULAGE VEHICLE

Arthur B. Coval, Columbus, Ohio, assignor to FMC Corporation, Chicago, Ill.
Division of Ser. No. 347,645, April 4, 1973, Pat. No. 3,827,721. This application Apr. 16, 1974, Ser. No. 461,274
Int. Cl. B60k *17/30*
U.S. Cl. 180—24 **12 Claims**



1. An articulated haulage vehicle comprising,

a frame member having a front section and a rear section, each of said sections having a front portion and a rear portion,

universal means connecting said frame member front section to said frame member rear section to permit articulation in a plurality of different planes between said frame member front section and said frame member rear section,

a pair of steerable rear wheels mounted on opposite sides of said frame member rear section adjacent the rear portion of said frame member rear section,

a pair of intermediate wheels mounted on opposite sides of said frame member rear section adjacent the front end portion of said frame member front section,

a pair of steerable front wheels mounted on opposite sides of said frame member front section adjacent the front end portion of said frame member front section,

a body member having a floor portion with a pair of side walls extending upwardly therefrom and forming an elongated longitudinal compartment therebetween, said body member front portion having a front edge portion,

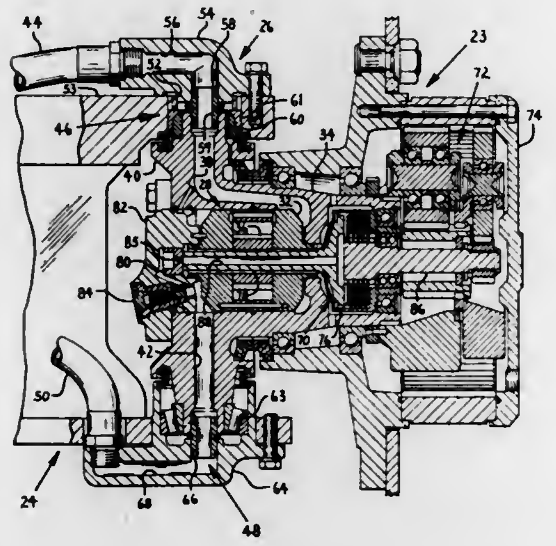
said body member mounted on said frame member rear section with said front edge portion spaced rearwardly from said frame rear section front end portion,

a boom member having a floor portion with a pair of spaced side walls extending upwardly therefrom and forming an elongated longitudinal compartment therebetween, said boom member floor portion having a rear edge portion, said boom member mounted on said frame member front section with said rear edge portion spaced forwardly from said frame front section rear end portion, and

flexible plate means connecting said boom member floor rear edge portion to said body member floor front edge portion to permit said boom member and said body member to articulate in a plurality of different planes and forming a continuous longitudinal haulage compartment.

3,865,207
HYDRAULIC FEED FOR WHEEL MOTORS

Delmar G. Schwab, and Dennis P. Graham, both of Milwaukie, Oreg., assignors to Hyster Company, Portland, Oreg.
Division of Ser. No. 136,741, April 23, 1971,. This application June 11, 1973, Ser. No. 368,841
Int. Cl. B60k *27/04, 17/30*
U.S. Cl. 180—44 F **4 Claims**



1. In a vehicle having a main frame, steerable wheel means connected by trunnion means to an axle means for pivoting movement about an axis of said trunnion means,

a hydraulic drive arrangement for said steerable wheel means comprising:

hydraulic motor means mounted within said wheel means for driving said wheel means,

hydraulic pump means on said frame remote from said motor means,

hydraulic fluid passage means interconnecting said pump and motor means,

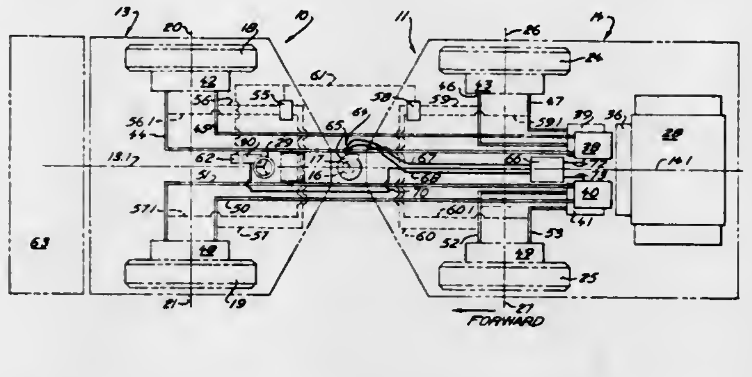
said fluid passage means including internal passageway means extending within said trunnion means into communication with said motor means, and conduit means extending from said pump means on said frame to said axle means,

coupling means on said axle means interconnecting said conduit means and said internal passageway means in a manner permitting pivoting movement of said trunnion means unrestricted by said conduit means,

said coupling means including a cap member stationarily mounted on said axle means, said cap member including internal passage means in communication with said conduit means, a rigid rotatable sleeve member interconnecting said cap member and said trunnion means, said rigid rotatable sleeve member extending within adjacent end portions of said internal trunnion passage means and said internal cap passage means, said rigid rotatable sleeve member permitting relative rotation between said cap member and said trunnion means and comprising an interconnecting fluid passage between said cap passage means and said trunnion passage means, and said rigid rotatable sleeve member including means providing a fluid seal between said rigid rotatable sleeve member and said cap member and between said rigid rotatable sleeve member and said trunnion means.

3,865,208
HYDRAULIC DRIVE APPARATUS FOR WHEELED VEHICLE

Richard Crawshay, North Vancouver, British Columbia, and John Helmut Hradil, Delta, British Columbia, both of Canada, assignors to Canadian Mine Services Ltd., Vancouver, British Columbia, Canada
Filed May 21, 1973, Ser. No. 362,200
Int. Cl. B60k *17/34;* **B62d** *11/04*
U.S. Cl. 180—6.48 **16 Claims**



1. A positive drive apparatus for a vehicle, the vehicle having: a body supported on a first pair of powered right hand and left hand wheels and a second pair of right hand and left hand wheels, the wheels being adapted to rotate about axes; an engine; means to effect steering of the vehicle by changing angular disposition in an essentially horizontal plane of the axes of the first pair of wheels relative to the axes of the second pair of wheels; for straight line motion the axes being essentially parallel, for turning the axes of the first pair of wheels are inclined to the axes of the second pair of wheels at an articulation angle; right hand and left hand variable delivery hydraulic fluid power means powered by the engine, each fluid power means being coupled to a respective hydraulic motor provided for each powered wheel, each hydraulic power means having a variable output hydraulic flow controlled by a volume flow control means, the flow control means having an input means; the vehicle having a vehicle speed control means having an input means and an output means, the input means being operable by an operator; the positive drive apparatus including:

a. a cam means having output means responsive to the articulation angle subtended by axes of the wheels, the cam means including:

i. right hand and left hand cams related to the right hand and left hand wheels respectively,

ii. right hand and left hand cam followers in engagement with the right hand and left hand cams respectively,

and the output means of the cam means includes:

iii. right hand and left hand cam outputs from right hand and left hand cam followers respectively, each output being dependent on disposition of the cam followers relative to the cam, which disposition is dependent on the articulation angle,

the drive apparatus also including:

b. coupling means operatively connecting the output means of the cam means and the output means of the vehicle speed control means to the input means of the hydraulic power means so as to selectively meter output flow from the hydraulic power means delivered to the powered wheels during a turn, the cam means compensating a demand to the hydraulic fluid power means,

the coupling means including:

iv. a speed input means connected to the output means of the vehicle speed control means, the speed input means receiving a demand for a particular vehicle speed from the operator, the demand resulting in right hand and left hand demand output components which activate the right hand and left hand output means respectively of the vehicle speed control means,

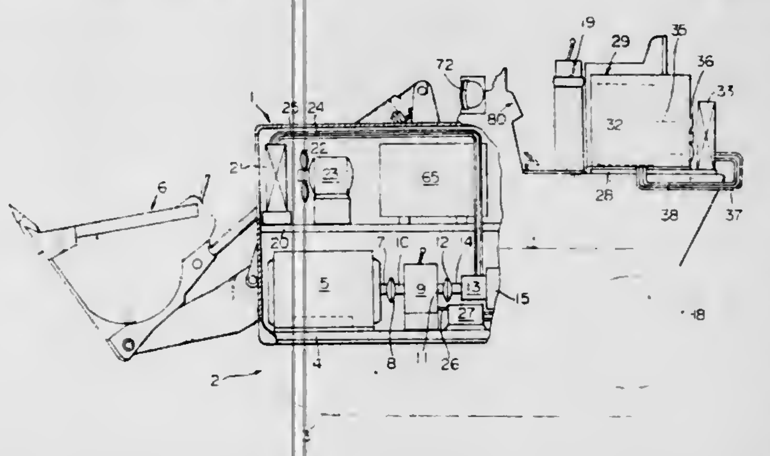
v. right hand and left hand articulation angle input means connected to the right hand and left hand cam output means, disposition of each articulation angle input means resulting in respective articulation angle components which are dependent on the articulation angle,

vi. a compensating means coupling the right hand and left hand output means of the vehicle speed control means with the right hand and left hand articulation angle input means respectively, thus combining both demand output components with respective articulation angle components to produce right hand and left hand output resultants; the compensating means having a right hand and left hand outputs responsive to the respective resultants, the output being connected to the input means of the right hand and left hand hydraulic power means, so that the demand resultant output of the wheel on the inside of the turn is compensated by the articulation angle input means by an amount proportional to the articulation angle,

so that the fluid flow supplied by the hydraulic power means to the wheel on the inside of the turn is less than that supplied to the outside wheel so that relative angular velocity between the inside and the outside wheels is proportional to the articulation angle causing the vehicle to turn with negligible wheel scrubbing.

3,865,209
ELECTRICALLY DRIVEN INDUSTRIAL VEHICLES

Toru Aihara, 2-1-11, Minamidai, Sagamihara-shi, and Kouichi Kimura, 1891, Zama Iriya, Zama-shi, both of Japan
Filed July 2, 1973, Ser. No. 375,797
Claims priority, application Japan, July 28, 1972, 47-88306
Int. Cl. B60l *15/06, 9/16*
U.S. Cl. 180—65 R **2 Claims**



1. In an alternating current electrically driven industrial vehicle compatible with both 50- and 60-cycle operations having a drive train and a vehicle transmission, an electric drive comprising:

an electrical induction motor having an output shaft mounted on said vehicle, said induction motor having at least two operable pole configurations;

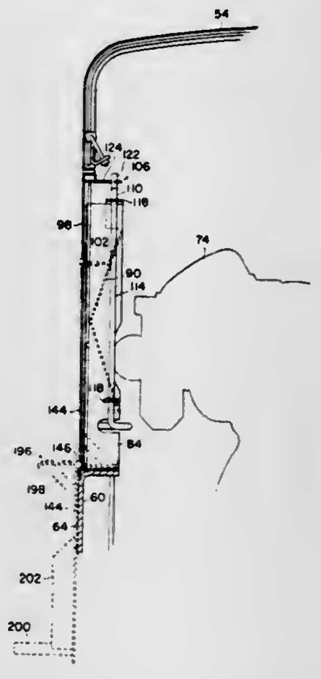
a secondary transmission operably disposed between said output shaft and the vehicle transmission operable to connect said induction motor to said vehicle transmission at differing gear ratios compatible with both 50- and 60-cycle operation of said induction motor whereby the input to said vehicle transmission will be the same at both 50- and 60-cycle operation of said induction motor;

switching means connected to said induction motor and operable to connect alternate pole configurations of said motor to an alternating power source; and

means connecting said switching means to an alternating electrical power source whereby the speed of the vehicle can be varied both by said vehicle transmission and by selection of at least two different pole configurations of said induction motor, thereby more efficiently adapting the vehicle capability to its working requirements.

3,865,210
ENGINE COMPARTMENT ACCESS DOOR LATCH SYSTEM

Cyril William Von Fummetti, and David Dennis, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.
Filed Apr. 19, 1974, Ser. No. 462,586
Int. Cl. B62d *25/10*
U.S. Cl. 180—69 R **8 Claims**

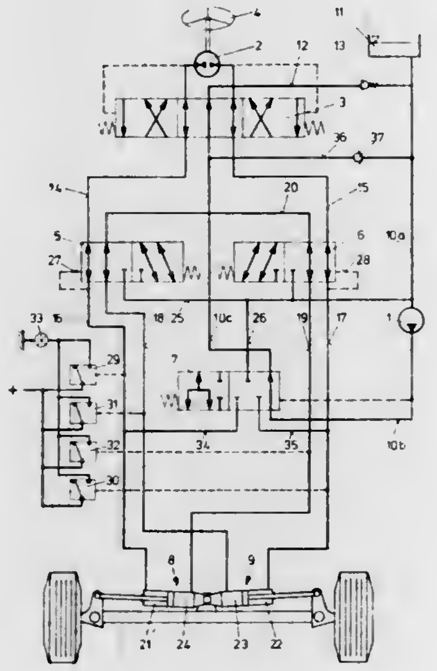


1. In an industrial vehicle of a type including a longitudinal frame supported on ground-engaging means, an engine located on the frame and located in an engine compartment bounded at its top by a hood, at one end by a grill housing and at its opposite sides by opposite, longitudinally extending, generally vertically disposed side shield structure, the improvement comprising: at least one of the side shield structures including separate first and second access doors located one adjacent the other between the frame and hood; door support means connected to the vehicle frame and disposed inside said compartment beside said doors; each of said doors being pivotally mounted on said support means for swingable movement between respective closed positions wherein the doors are generally vertically disposed and cooperate with the hood, frame and support means to block access to the compartment, and respective open positions displaced angularly from said operative positions, wherein access is permitted to the compartment for servicing the engine; manually operable first and second latch means connected to the support means and respectively operable for selective latching reception in first and second receptacle means respectively of said first and

second doors for retaining said doors in their closed positions; said first latch means including manually operable security lock means positioned exteriorly of the compartment and operative for preventing removal of said first latch means from said first receptacle means; and said second latch means being located so as to be entirely inside said compartment whereby said security lock means must be unlocked, said second latch must be unlatched and the first door swung to its open position in order to provide access to the second latch means for permitting the unlatching thereof and the opening of the second door.

3,865,211
STEERING SYSTEM WITH HYDRAULIC POWER ASSISTANCE

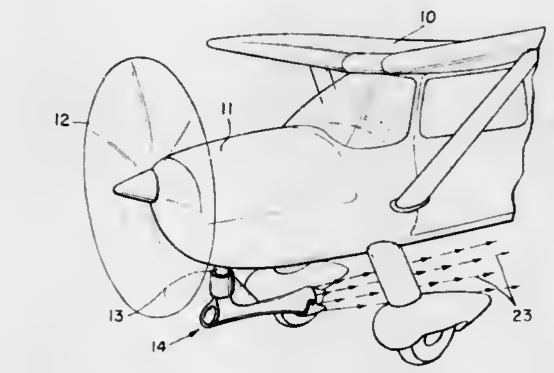
Karl-Heinz Liebert, Schwabisch Gmund, and Werner Tischer, Unterbobingen, both of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany
Filed Mar. 30, 1973, Ser. No. 346,456
Claims priority, application Germany, Mar. 25, 1972, 2214796
Int. Cl. B62d *5/08*
U.S. Cl. 180—79.2 R **10 Claims**



1. In a hydrostatic power assist steering system for an engine driven vehicle having dirigible wheels, a source of fluid under pressure **1** and **11**, fluid motor means **8** and **9** connected to said wheels for applying steering force thereto, at least two fluid circuits **16–17** and **18–19** connected to said fluid motor means independently of each other, a control valve **3** connected to said source of fluid under pressure, manually operable steering control means **2** and **4** connected to the control valve for selectively supplying pressurized fluid from the source to the fluid motor means through one of the fluid circuits **16–17**, pressure operated valves means **5** and **6** connected between said control valve and the circuits for normally conducting the pressurized fluid through said one of the fluid circuits, and valve actuating means **27** and **28** connected to the pressure operated valve means for connecting the control valve to the other of the fluid circuits **18–19** in response to depressurization of said one of the fluid circuits.

3,865,212
SURVEILLANCE AIRCRAFT MUFFLER

Hugh C. McDonald, 8200 Redlands, No. 308, Playa Del Rey, Calif. 90291
Filed Dec. 14, 1973, Ser. No. 424,674
Int. Cl. F01n *1/14*
U.S. Cl. 181—43 **3 Claims**



1. A surveillance aircraft muffler wherein the exhaust pipe for the aircraft engine extends downwardly behind the propeller when the aircraft is in level flight, said muffler comprising: an elongated tubular member extending horizontally,

a. one end of the tubular member having an horizontal partition defining on its upper side with the upper wall of the tubular member an exhaust passage which curves smoothly upwardly approximately 90° to terminate in a clamping collar means for affixing said exhaust passage to the downwardly directed end of said exhaust pipe,

b. the lower side of said partition defining with the lower wall of the tubular member an horizontal air scoop passage flaring outwardly to terminate in an air scoop opening below the level of said collar,

c. the central passage of said tubular member at the end of the partition being of reduced diameter, the central passage then increasing in diameter in a direction towards its other end to terminate in a flared outlet opening, the reduced diameter portion of said central passage including:

d. expandable means covering an inner wall portion thereof,

e. means for expanding said expandable means away from the wall portion to vary the effective cross sectional flow area for air and exhaust gases passing through the reduced diameter portion, whereby a venturi section is defined in said tubular member which is adjustable by said expandable means to provide a decreased air pressure at the end of the partition as a consequence of air flow into said air scoop opening so that exhaust gases and noise in said exhaust passage are sucked out of the engine exhaust pipe and directed rearwardly out said outlet opening, and,

f. a curved plate mounted on the lower portion of said outlet opening to define a lip which may be angularly adjusted to direct the outlet flow of gases upwardly at a desired angle with respect to the horizontal so that substantially no sound is directed downwardly towards the earth when said aircraft is in level flight.

3,865,213
CHAIN SAW OILING SYSTEM

John W. McDermott, Shreveport, La., assignor to Beaird-Poulan, Inc., Shreveport, La.
Filed Oct. 25, 1972, Ser. No. 300,564
Int. Cl. F16n *13/08;* **F01m** *1/04*
U.S. Cl. 123—196 CP **13 Claims**

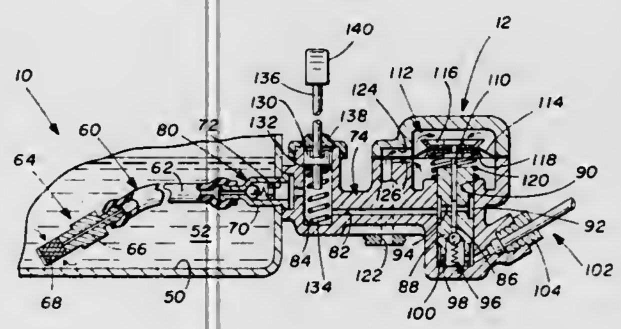
10. In a chain saw of the type including a saw chain and an internal combustion engine driving the chain and having a crankcase for induction and precompression of the fuel mixture, the improvement comprising:

a pump housing having first and second cylinders and an oil passageway formed through the pump housing between

the cylinders and in communication with an oil reservoir and the saw chain,

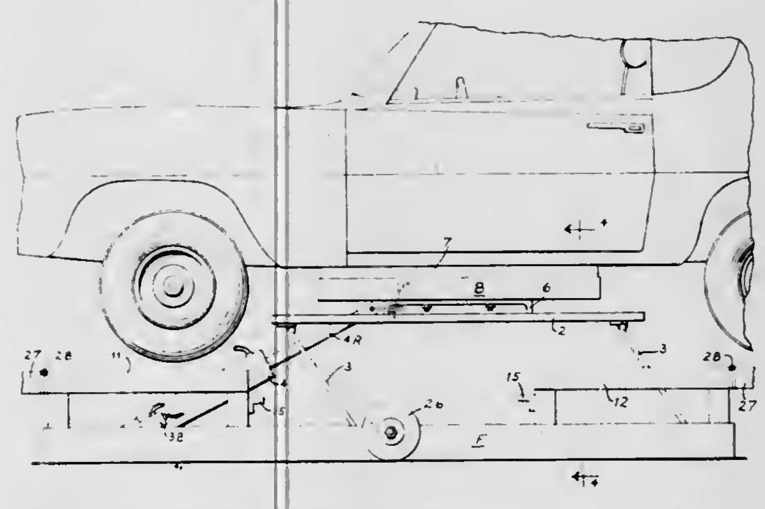
a first pump having a piston in the first cylinder mounted to reciprocate in the first cylinder in response to cyclical pressure pulses in the crankcase of the engine to continuously pump oil from the oil reservoir to the saw chain and thereby lubricate the chain, and

a second pump having a piston mounted for manual reciprocation in the second cylinder located between the oil reservoir and the first pump in flow communication with the oil passageway, said second pump being selectively actuated to pump oil through the oil passageway and the first cylinder for priming the first pump, for purging foreign matter out of the first pump, and for pumping additional oil to the chain whenever the oil from the first pump is insufficient to properly lubricate the chain.



3,865,214
LIFT MECHANISM FOR AUTOMOBILES

Hal J. Clark, 342 N. Greenwood, and Victor S. Wells, Box 542, both of Jackson, Wyo. 83001
Filed Jan. 24, 1973, Ser. No. 326,184
Int. Cl. B66f *7/06*
U.S. Cl. 187—8.72 **1 Claim**



1. In an automobile lift assembly:

a supporting rigid framework;

front and rear wheel-supporting ramp means fixed to said framework in a longitudinal orientation at the respective sides thereof and including upwardly-facing surfaces for receiving the respective wheels of a vehicle positioned on said framework, said front and rear wheel supporting ramp means being longitudinally spaced from one another;

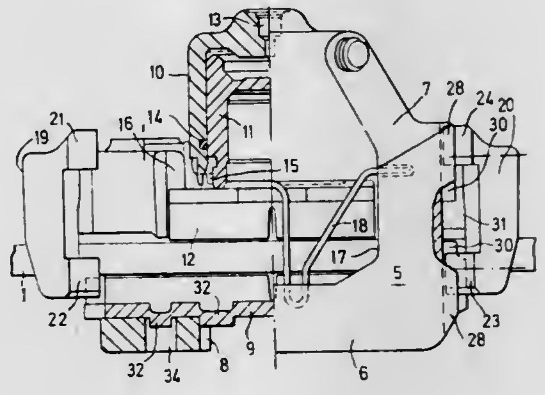
a parallelogram-type lift frame movably mounted to said framework within the longitudinal space between said front and rear wheel supporting ramp means, said lift frame including a pair of horizontal lift pads having upper surfaces longitudinally aligned respectively with said ramp means at each side of the framework, each lift pad spanning the longitudinal space between the front and rear ramp means longitudinally aligned therewith;

power-operated means operably connected between the framework and lift frame for selectively moving the lift frame between a lowered position wherein the upper surfaces of each lift pad serves as a bridge spanning the longitudinal space between the front and rear ramp means longitudinally aligned therewith and a raised or elevated position wherein the lift pads are located elevationally above said lowered position an amount sufficient to release the wheels of a vehicle positioned on said framework from contact with said ramp means by lifting engagement of the vehicle between the wheels;

and rigid bench means fixed to said framework beneath said lift frame and intersecting the path of movement of said lift frame for elevationally supporting said lift frame when at said lowered position.

3,865,215
SPOT-TYPE DISC BRAKE

Jochen Burgdorf, Offenbach, and Roberto Stoka, Frankfurt-/Main, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed June 17, 1974, Ser. No. 480,070
Claims priority, application Germany, Aug. 9, 1973, 2340241
Int. Cl. F16d *65/00*
U.S. Cl. 188—73.6 **9 Claims**



1. A spot-type disc brake comprising:

a rotating brake disc having an axis of rotation;

a non-rotating brake carrier protruding over said disc to receive brake torque;

a brake caliper embracing the edge of said disc;

a hydraulical actuating device carried by said caliper;

a pair of brake shoes, one of said shoes being disposed on one side of said disc adjacent said actuating device and actuated thereby and the other of said shoes being disposed on the other side of said disc actuated by said caliper;

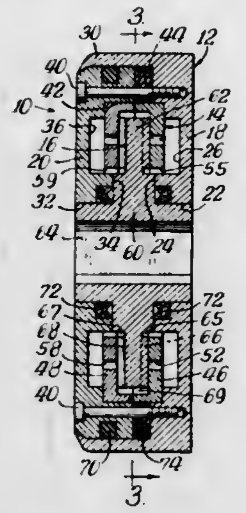
a sliding guide connecting said caliper to said carrier in a manner such that said caliper is movable relative to said carrier toward and from said disc, said sliding guide including guide portions which are separated from each other in a direction of the periphery of said disc, said guide portions having grooves in one of said caliper and said carrier and projections engaging said grooves carried by the other of said caliper and said carrier; and

an opening provided in one of said carrier and said caliper through which said one of said shoes can be dismounted without disassembling said caliper and said carrier;

the length of said guide portions being limited to such a value that, when said caliper is shifted into a hollow space formed by dismounting said one of said shoes, said guide portions disengage, thereby enabling a disassembly of said caliper and said carrier.

3,865,216
CONTINUOUS ROTARY DAMPER

Bogdan R. Gryglas, Woodridge, Ill., assignor to Efdyn Corporation, Chicago, Ill.
Filed Oct. 3, 1973, Ser. No. 402,980
Int. Cl. F16d *57/02*
U.S. Cl. 188—290 **7 Claims**

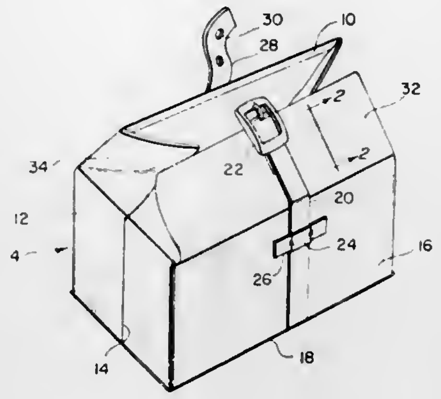


1. A continuous rotary damper comprising: an annular stationary housing unit having a generally U-shaped configuration in cross section, a pair of spaced central annular axial bearing surfaces, a pair of opposed axially inwardly facing annular radial bearing surfaces respesctively adjacent said axial bearing surfaces, a pair of opposed axially inwardly facing annular cavities radially outwardly of said bearing surfaces, and a radially inwardly facing annular recess radially outwardly of said annular cavities; an annular stator unit having a generally U-shaped configuration in cross section, a pair of opposed axially inwardly facing annular radial surfaces in parallel planes, seating engagement in said annular recess, and axial ports communicating with said annular cavities; a rotor unit having a hub portion journaled by said axial and radial bearing surfaces, a radial vane portion with annular radial sides in parallel planes located in close proximity to said radial surfaces of said stator unit, and two sets of radial slots of uniform cross section respectively formed in the opposite sides of said vane portion; the inner edges of said stator unit being spaced from the adjacent portions of said housing unit whereby to define passageway means placing the radially inner ends of said radial slots in communication with said pair of annular cavities; the outer edge of said radial vane being spaced from the adjacent portion of said stator unit whereby to define passageway means placing the radially outer ends of said radial slots in communication; and a fluid substantially filling the space within said housing unit and confined therein for retarding rotation of said rotor unit.

3,865,217
MEN'S TRAVEL KIT

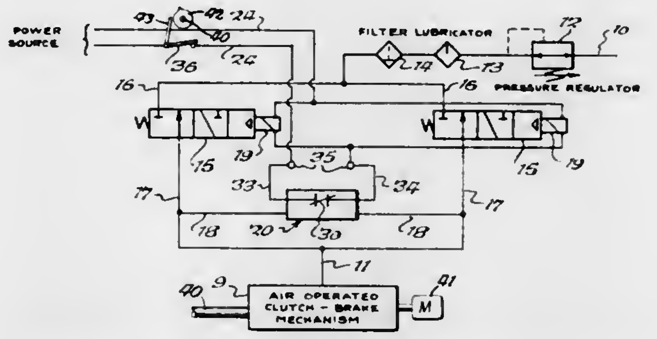
George Aronek, Los Angeles, Calif., assignor to American Vinyl Products, Los Angeles, Calif.
Filed June 13, 1973, Ser. No. 369,603
Int. Cl. A45c *3/00*
U.S. Cl. 190—48 **3 Claims**

1. A travel kit having a bottom wall member, a pair of opposite sidewall members, a pair of end wall members, a pair of opposite cover members hinged to the upper portions of the sidewall members, a pair of flexible gussets hinged to the upper portions of said end wall members and connected to the sides of said cover members; said sidewall members, end wall members, cover members and gussets formed of two layers of heat sealable vinyl; a cardboard reinforcement between the vinyl layers of said sidewall members, end wall members and cover members; said bottom wall member having a double layer of heat sealable vinyl with a cardboard reinforcement therebetween, four edges of the bottom wall member heat sealed to the bottom of said sidewall and end wall members; and a strap and buckle securing said cover members closed, having the ends heat sealed between said sidewall members and said bottom each sidewall having a pair of parallel horizontal slots in the outer vinyl layer of said sidewalls midway between the end walls, said strap threaded through slots to retain said strap.



3,865,218
DIFFERENTIAL FLOW PRESSURE SWITCH FOR DUAL VALVE CIRCUITS

Clarence O. Jones, Jr., Eggertsville, N.Y.
Continuation-in-part of Ser. No. 192,050, Oct. 26, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,894
Int. Cl. F15b *13/44*
U.S. Cl. 192—12 C **8 Claims**

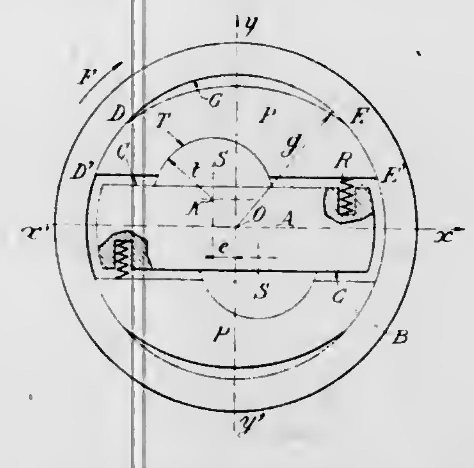


1. Control means for cyclic machines having air operated cycle initiating means and a source of operating air pressure therefor, a pair of valves connected in parallel between said source and said cycle initiating means, said valves being jointly operated to energize the cycle-initiating means, means operable at the end of a cycle for closing said valves to terminate the cycle of operation, and means effective upon failure of one of said valves to close for preventing the initiation of a subsequent cycle of operation, said means comprising a pressure passage connected at its opposite ends to the pressure output passages of said valves, a pressure responsive member in said passage including a magnetic element, and switch means controlled by said magnetic element and adapted to be reversed by movement of said pressure responsive member from its neutral position by unbalanced output pressure from said valves, said switch means upon such reversal rendering the machine inoperative to effect subsequent cycles.

3,865,219
ONE-WAY DRIVE ROTARY COUPLINGS, ESPECIALLY MECHANISMS OF THE FREE WHEEL TYPE

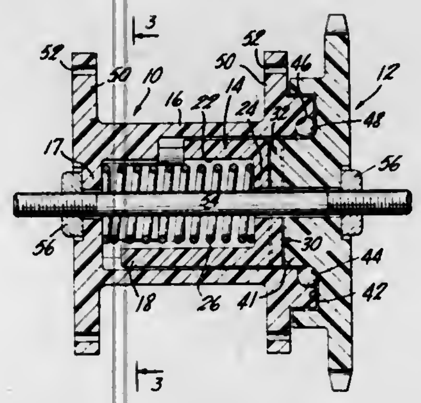
Michel Dossier, Orgeval, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Nueilly sur Seine, France
Filed Feb. 15, 1973, Ser. No. 332,557
Claims priority, application France, Feb. 23, 1972, 72.06159
Int. Cl. B60l *5/00*
U.S. Cl. 192—45.1 **29 Claims**

1. One-way drive rotary coupling of the free-wheel type comprising a central member and a sleeve member, one member turning relative to the other around the same axis, intermediate means of the wedge or shoe type arranged between said central and said sleeve member, so as to fix one member rigidly to the other in one of the directions of rotation, said intermediate means being constituted by at least one shoe slidable over a surface of revolution of the sleeve member coaxial to the coupling and a skid inserted in rotary manner between the shoe and the central member and having a flat surface slidable over a flat surface carried by one of these two elements, the axis of rotation of the skid being suitably displaced with respect to the axial plane normal to said flat surface, at least one spring being also provided to cooperate with the central member and the shoe, to tend to maintain contact between the sliding surfaces.



3,865,220
BICYCLE HUB

William A. Thompson, Jr., 131 Cranmoor Dr., Toms River, N.J. 08753
Filed May 30, 1972, Ser. No. 258,055
Int. Cl. F16d *41/00*
U.S. Cl. 192—46 **13 Claims**



1. A plastic bicycle hub, comprising:

a housing, formed entirely of plastic, having means for attachment of bicycle spokes;

a sprocket wheel, formed entirely of plastic, mounted at one end of said housing for rotation relative thereto;

one-way torque transmission means, formed entirely of plastic, disposed within said housing and interposed between said housing and said sprocket wheel for transmitting torque of significant magnitude from said sprocket wheel to said housing in only one direction, and allowing said sprocket wheel to rotate freely in the other direction with respect to said housing without transmission of torque of significant magnitude between said housing and said sprocket wheel,

said one-way torque transmission means including an insert member disposed within said housing and formed entirely of plastic;

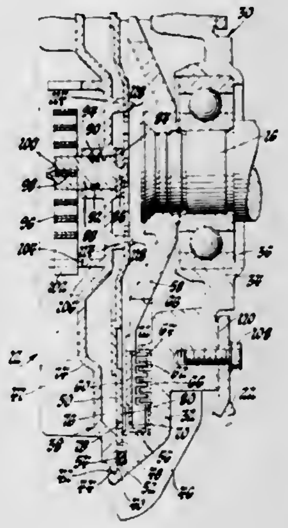
said insert member being axially shiftable with respect to said housing and said sprocket wheel, and including two-way torque transmitting means formed thereon for providing continuous two-way torque transmitting engagement with one of said housing and said sprocket wheel, whereby said insert member rotates continuously with said one of said housing and said sprocket wheel;

said insert member also including one-way torque transmitting means formed on one axial face of said insert member for transmitting torque in one direction to the other of said housing and said sprocket wheel, and for converting torque in the other direction to an axial force to shift said insert axially out of torque transmitting engagement with said other of said housing and said sprocket wheel; and

said hub further comprising biasing means for biasing said insert directly into torque transmitting engagement with the other of said housing and said sprocket wheel.

3,865,221
VISCOUS FLUID CLUTCH

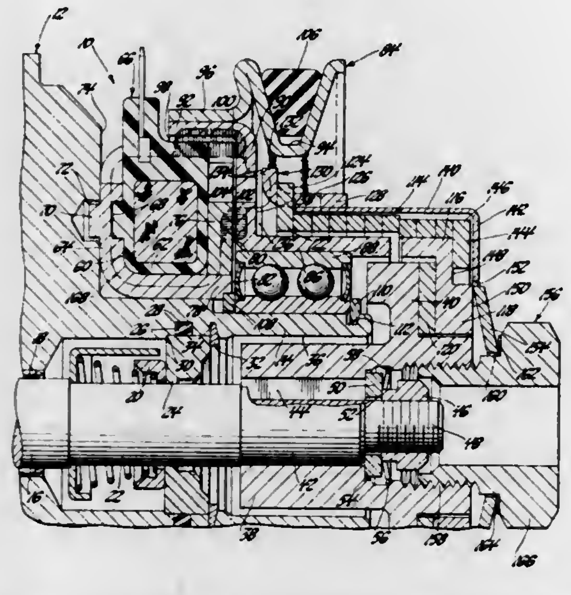
Donald J. Coty, Kettering, Ohio, assignor to General Motors Corp., Detroit, Mich.
Filed Jan. 9, 1974, Ser. No. 431,918
Int. Cl. F16d *35/00;* **B21d** *39/00*
U.S. Cl. 192—58 B **4 Claims**



1. A viscous fluid clutch comprising a housing rotatably mounted by bearings on a central shaft, said housing being formed of interconnected body and cover members and having first and second adjacent annular chambers formed therein, a pump plate serving as a divider wall between said first and second chambers, a plurality of closely adjacent notches formed around the inner peripheral edge of said pump plate forming a notched opening therein, a pair of oppositely disposed arcuate-shaped collar-portions formed on said cover member within said notched opening and deformed radially outwardly into mesh with adjacent notches of said notched opening at a predetermined circumferential relationship therewith, a clutch plate mounted on said central shaft in said second chamber, a predetermined shear space intermediate said clutch plate and the adjacent surface of said body member in said first chamber and operable with a fluid medium therein to provide a shear-type fluid drive between said housing and said clutch plate, said pump plate having an outlet opening formed in an outer radial portion thereof and an inlet opening formed at an inner radial portion thereof, pump means formed on said pump plate adjacent said outlet opening to pump said fluid medium from said first chamber through said outlet opening into said second chamber, and a temperature-responsive valve member operatively connected between said cover member and said inlet opening and in a predetermined circumferential relationship with said inlet opening corresponding to said predetermined circumferential relationship between said collar-portions and said notches for controlling the flow of said fluid medium from said second chamber through said inlet opening into said first chamber in response to changes in ambient temperature.

3,865,222
ELECTROMAGNETIC SPRING-WOUND CLUTCH

John R. Briar, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 8, 1973, Ser. No. 339,199
Int. Cl. F16d *27/10, 7/02*
U.S. Cl. 192—48.2 **3 Claims**



1. An electromagnetic spring-wound clutch comprising an input pulley assembly including a hub member, a pulley groove portion and a pole member interconnecting said hub member and said pulley groove portion, an output shaft, a hub member mounted on said output shaft, a radial flange formed on an intermediate portion of said output hub member, a friction ring mounted around said output hub member adjacent said radial flange, a driven member mounted around said output hub member adjacent said friction ring, a cylindrical collar formed on said driven member and extending toward said pulley hub member and being axially aligned with said pulley hub member for relative rotation about a common axis, means for frictionally confining said friction ring intermediate said driven member and said radial flange, a stationary coil housing, said pole member being located a predetermined air space apart from said coil housing, an electromagnetic coil mounted in said coil housing, a coil-wound spring mounted around said pulley hub member and said output hub member and having one end thereof secured to said output hub member, and an armature ring member mounted around the other end of said coil-wound spring and movable axially relative thereto, said armature ring member being located a predetermined air space apart from said pole member, said coil when energized drawing said armature ring member axially through said last-mentioned air space into frictional contact with said pole member without axially moving said other end of said coil-wound spring while causing said spring to grippingly engage said pulley hub member and said cylindrical collar to thereby drive said driven member, said friction ring, said output hub member, and said output shaft.

3,865,223
SAFETY LOCKED BOAT RAISING DEVICE

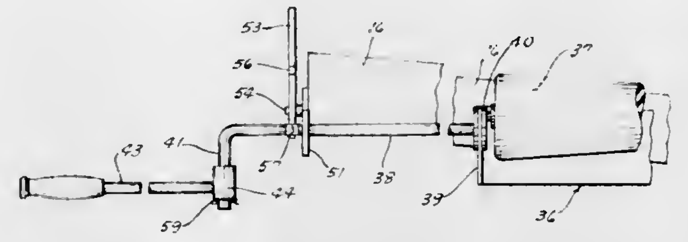
Byron L. Godbersen, 710 Circle Dr., Ida Grove, Iowa 51445
Filed Aug. 20, 1973, Ser. No. 389,480
Int. Cl. B60p *3/10*
U.S. Cl. 193—42 **1 Claim**

1. For use with a trailer for carrying a boat or the like, a safety locked boat raising device comprising:

a lift assembly adapted to be mounted at one end of the trailer and having a roller member and a shaft, said roller member being mounted offset relative to its longitudinal axis upon the end of said shaft, said shaft having a perpendicularly formed portion at the end opposite said roller, and said lift assembly being rotatable about its longitudinal axis whereby said roller is moved between a lower first position and a raised second position;

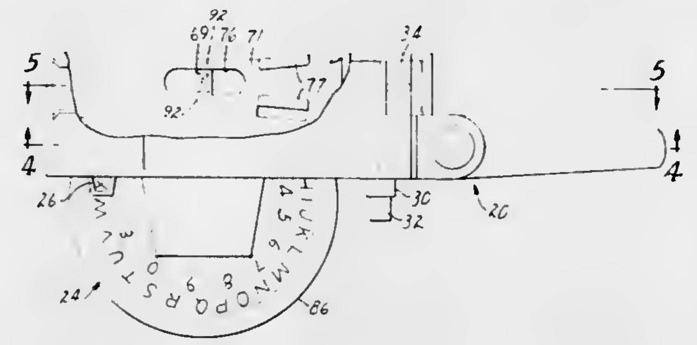
handle means movably attached to said formed portion whereby said assembly is rotatable about its longitudinal axis by operation of said handle means; and

keeper means pivotally attached at one end to the boat trailer and movable to engage said shaft with the other end whereby said assembly is held in locked position against rotation, said shaft including parallel flattened portions for receiving said keeper means, said portions being parallel to the plane containing said first and second positions of said roller, whereby said shaft is prevented from rotating and said roller is locked in said first or second position by engagement of said keeper means with said shaft, said keeper means including a projection which is engageable by said handle means when said keeper means has locked said roller in said lower first position, whereby said keeper means is locked in engagement with said shaft.



3,865,224
HAND-HELD MULTIPLE-DIE EMBOSSING TOOL

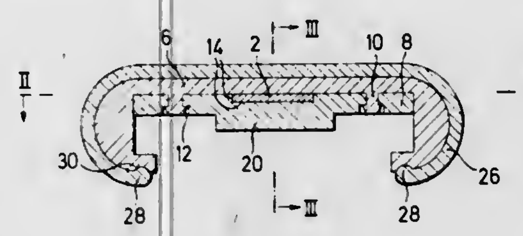
Michael C. Faust, and Thomas W. Seabold, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 12, 1973, Ser. No. 406,111
Int. Cl. B41j *1/30*
U.S. Cl. 197—6.7 **3 Claims**



1. A tool for embossing indicia in a wide elongated strip of embossable material, said tool including a body having embossing means at an embossing station, said embossing means comprising two sets of complementary male and female dies said sets being arranged in concentric circular arrays, said female dies being formed on a rotatable disc, said male dies each comprising an element having a plunger with radially spaced ends, each plunger being positioned opposite and mating with an associated female die and having shoulders disposed one adjacent each end of said plunger, said elements being individually mounted on flexible fingers, said embossing means being mounted for movement perpendicular to the direction of travel of said elongated strip so that any selected die of any concentric array of embossing dies may be centered over the elongated strip, feed means for advancing the elongated strip to the embossing station, and a guide plate for carrying said elongated strip between said male and female dies past said embossing station, said guide plate having an aperture to receive said plungers and narrower than the width of said element with said shoulders engaging the guide plate adjacent the edges of said aperture whereby when said dies are in the closed embossing position, the dies, guide plate and elongated strip are pressed firmly together securely holding the edges of the elongated strip.

3,865,225
HANDRAIL FOR ESCALATOR

Karl-Heinz Phal, Leuchtenberger Kirchweg 101, Dusseldorf-Nord, Germany
Filed Jan. 22, 1973, Ser. No. 325,280
Claims priority, application Germany, Jan. 24, 1972, 2203178
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 R **15 Claims**



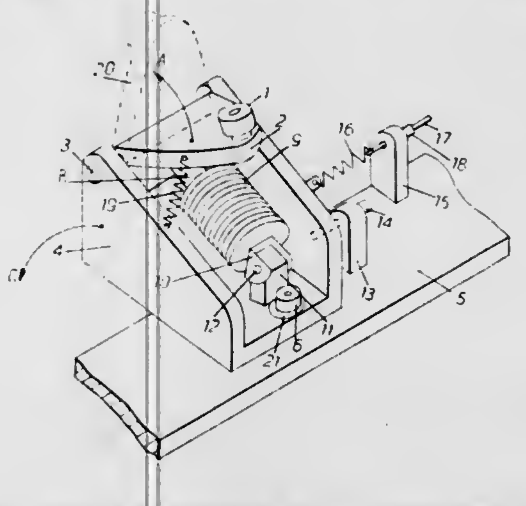
1. An endless-loop handrail for an escalator or the like, comprising:

a generally flat, elongated non-articulated member of high tensile strength material forming an endless through pull transmission means and having longitudinally spaced recesses; and

upper and lower sets of segments, encompassing and respectively contacting the opposite flat faces of said transmission means, and having dependent side portions laterally embracing the transmission means, each segment in one set being of material sufficiently resilient to be clamped laterally of said transmission means to a segment in the other set, and the segments in one said set having protrusions mating with said recesses in said transmission means for the transmission of driving force between said segments and said transmission means of the handrail.

3,865,226
SAFETY TIPPING MECHANISM FOR TIPPING TRAYS ON A CONTINUOUS CONVEYOR

Mario Scata, Monzo, Italy, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 8, 1973, Ser. No. 414,056
Claims priority, application Italy, Nov. 22, 1972, 31937/72
Int. Cl. B65g *47/46*
U.S. Cl. 198—38 **4 Claims**



1. The safety tipping mechanism for a continuous conveyor system of the type having moving tray assemblies comprising:

a base plate;

a support rotatably mounted on said base plate and attached to an upright extension thereon by means of a spring;

a moving lever pivotably mounted to said support;

bearing means attached to the top surface of said moving lever;

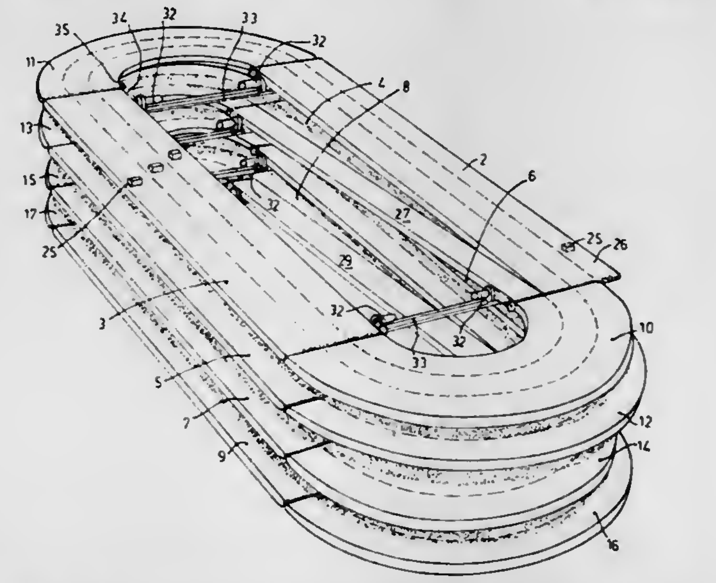
a first articulation pivotably attached to a bottom surface of said moving lever;

an electromagnet pivotably mounted to said support at one end, and having a slidable core coupled to said first articulation at the other end, said electromagnet is energized to force said moving lever to move from a non-tipping position to a tipping position; and

means for permitting rotation of said tipping mechanism during malfunctioning in order to prevent jamming of said tipping mechanism whereby a predirected force applied to said bearing means causes said support to rotate against the tension of said spring and said support is returned to its rest position when said predirected force is removed.

3,865,227
MULTI-FLOOR CONVEYOR AND STORAGE APPARATUS

Stephanus W. Kaak, Rijksstraatweg 273, Gaanderen, Netherlands
Continuation-in-part of Ser. No. 224,558, Feb. 8, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,981
Int. Cl. B65g *37/00*
U.S. Cl. 198—84 **5 Claims**



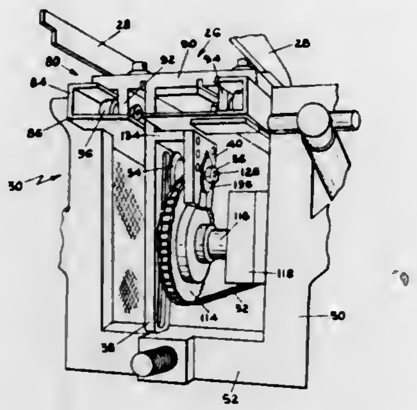
1. A multi-floor conveyor and storage apparatus for articles having a predetermined width, comprising on each floor level a plurality of communicating conveyors shifted laterally at a junction, all being associated, each having a drive means and the same velocity and arranged in a horizontal plane to form a conveying track for the articles, said communicating conveyors being disposed to convey articles in a laterally changing horizontal path, the conveyors having a width which is a multiple of the width of the articles, each conveyor having two ends abutting adjacent ends of the other conveyors, one of the conveyors having an article receiving end to which the articles are supplied, another one of the conveyors having an article discharge end where the articles are discharged to a vertically descending conveyor for transfer to a subsequent floor level, the one conveyor being displaced perpendicularly to the track in respect of the other conveyor by a distance substantially equal to the width of the articles.

3,865,228
MATERIAL HANDLING DEVICE

Donald L. Hufford, Charlevoix, Mich., assignor to Hufford Industries, Inc., Charlevoix, Mich.
Division of Ser. No. 185,052, Sept. 30, 1971, Pat. No. 3,741,374. This application Mar. 20, 1973, Ser. No. 343,123
Int. Cl. B65g *19/00*
U.S. Cl. 198—176 **4 Claims**

1. A pusher dog assembly mounted to an endless sprocket driven chain for advancing a carriage having a pusher dog holdback means extending to each side of the chain comprising a pair of plates connected to each side of said chain and extending outwardly beyond the chain, said plates including a plurality of arcuately spaced openings for mounting said plates to at least three consecutively linked chain links, said openings adapted to receive portions from each of said three consecutively linked chain links, said plates also including an additional opening spaced outwardly beyond the chain for receipt

of a pin spaced outwardly from each side of said chain and extending transversely to said plates, and a pusher dog mounted to each end of said pin for cooperative driving of said holdback means alongside said chain, whereby said pusher dog assembly prevents twisting of the chain imparted by the moment force on said assembly and chain by the side engagement with the holdback means.



3,865,229

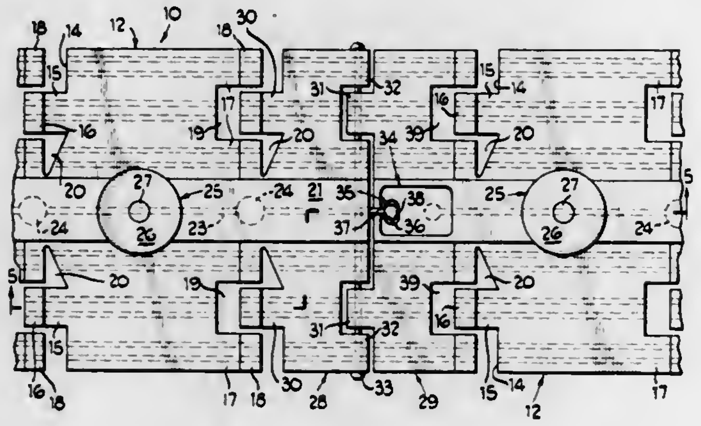
CONVEYOR BELT

Hugo W. Velander, Cary, Ill., assignor to Borg-Warner Corp., Chicago, Ill.

Filed May 29, 1973, Ser. No. 364,382

Int. Cl. B65g *15/36*

U.S. Cl. 198—193 **7 Claims**



1. An article-conveying plastic belt comprising:
a plurality of sections connected together;
each section having a plurality of articulated links;
a continuous central strip portion joining the links of each section in serial arrangement;
each link section having a pair of segments separated by said central strip portion;
each of said segments and said central strip portion having an article-supporting surface;
each segment having front and back lugs at the edges thereof;
the lugs of each segment interfitting with the lugs of the next adjacent segment; and
means including a metal cable in said continuous central strip portion drivingly connecting said sections.

3,865,230

TRANSFER FEEDER

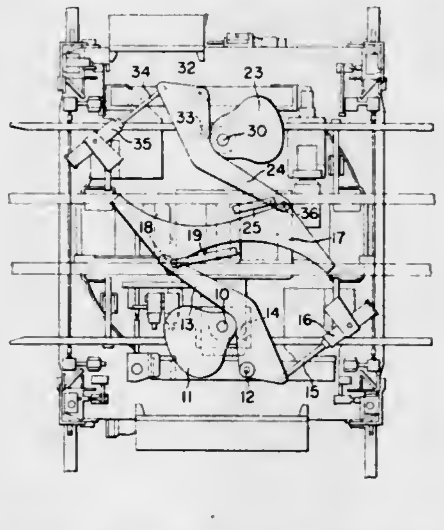
Kouiti Nakada, Ishikawa-ken, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-To, Japan

Filed July 9, 1973, Ser. No. 377,293

Int. Cl. B65g *25/04*

U.S. Cl. 198—218 **2 Claims**

1. The transfer feeder characterized in that a main shaft arranged perpendicularly to the transferring direction of a formed article and extending in a horizontal direction is rotated by a driving means, a driving shaft having a first bevel gear is continuously connected to both ends of the main shaft, a cam-fixing shaft is arranged perpendicularly and vertically to an axial line of the main shaft correspondingly to each driving shaft, a second bevel gear is fixed at the lower end of each cam-fixing shaft and engaged with each first bevel gear, a horizontal plate feeder cam is fixed at the upper end of each cam-fixing shaft, a guide plate is arranged between said horizontal plate feeder cams, a lever is provided swingably in the horizontal plane around a supporting shaft which is disposed correspondingly to each horizontal plate feeder cam, the free end of said lever being movable along the guide plate through a follower provided in each lever, an unloading carrier and a loading carrier are provided respectively so as to cause the advancing motion and the returning motion along a rail on the frame, a rod is respectively connected at its one end to the unloading carrier and the loading carrier and at its other end to each lever, a fork is respectively mounted on the unloading carrier and the loading carrier, a lifter cam is vertically fixed on the main shaft, a vertically swinging lever supported by a shaft is swung through a follower pivotted to said vertically swinging lever, a long lever is connected at its center portion in the lengthwise direction to the upper end of said vertically swinging lever, a short lever is connected respectively to both ends of the long lever, the base portion of said short lever is fixed to a mounting shaft, a sector gear is fixed to the mounting shaft, a vertical supporting pole having a rack portion is fixed at its upper end to the frame, said rack portion being engaged with said sector gear, whereby the unloading carrier and the loading carrier cause the rectangular cyclic motion in the vertical direction by rotating the main shaft and at the same time by the fork of the unloading carrier, formed articles are taken out from the preceding press and then by the fork of the loading carrier, said formed articles are transferred into the following press, and thus a large ratio of horizontal stroke is obtained for the height of the apparatus.



3,865,231

ROLLER BAND MECHANISM AND SUSPENSION SYSTEM FOR OSCILLATING CONVEYORS

Ralph Charles Ouska, Hinsdale, Ill., assignor to FMC Corp., San Jose, Calif.

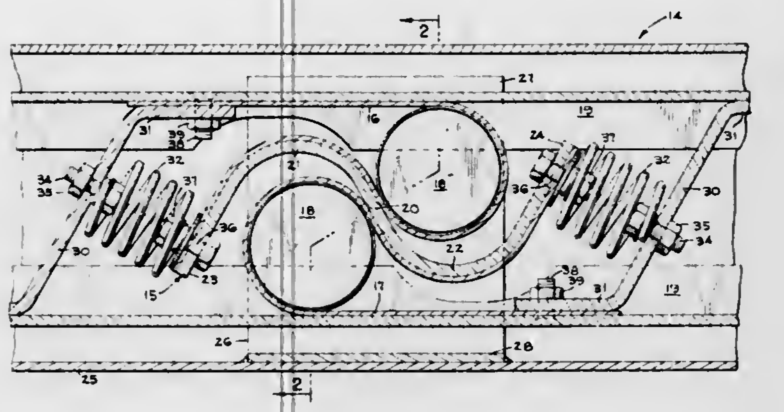
Filed Jan. 28, 1974, Ser. No. 437,457

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 CA **34 Claims**

1. A mechanism for vibrating a load comprising:
a. a stationary member;
b. a movable member to receive the load;
c. an inclined plane member connected to one of said stationary and movable members, said inclined plane member having two opposite inclined surfaces;
d. a first band connected between said stationary member and said inclined plane member, said first band defining a first loop on one surface of said inclined plane member;
e. a second band connected between said stationary member and said inclined plane member, said second band defining a second loop on the other surface of said inclined plane member;

f. a pair of rollers, each roller being retained within one of the loops in the bands, a portion of each band while wrapped around the roller, making contact with one of said members and with one of said opposite inclined surfaces to guide the movable member along an inclined path with respect to the stationary member; and
g. means to oscillate said movable member.



3,865,232

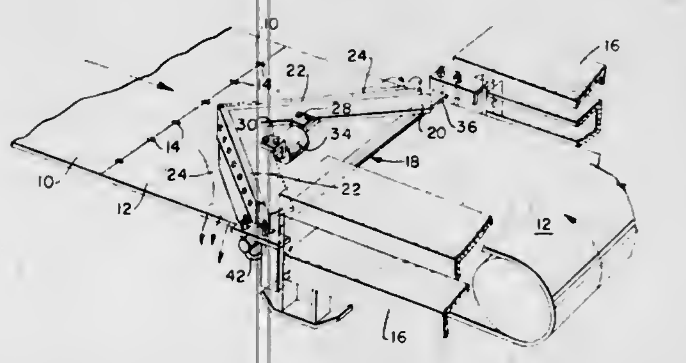
PLOW SCRAPER FOR CONVEYOR BELTS

William E. Koenig, Newark, and James T. Cunningham, Caldwell, both of N.J., assignors to Litton Systems, Inc., Passaic, N.J.

Filed Sept. 11, 1973, Ser. No. 396,291

Int. Cl. B65g *45/00*

U.S. Cl. 198—230 **10 Claims**



1. In combination, a conveyor belt, a supporting framework situated on opposite sides of the belt and extending parallel thereto, a scraper assembly secured to said framework at opposite sides of the belt and means for advancing the belt relative to the scraper assembly, said assembly comprising:
a. a V-shaped metal frame disposed with its apex extending along the longitudinal center line of the belt and with its sides extending from said apex rearwardly in the direction of belt travel and outwardly towards the sides of the belt;
b. means for mounting said frame for pivotal movement about an axis extending laterally across the belt;
c. resilent scraper blade means secured to said sides of said metal frame and extending therebelow so as to contact the belt surface and skim debris therefrom: and
d. roller means secured to said metal frame for pivoting said metal frame downwardly to urge said blade means into contact with the surface of the belt, said roller means extending below bottom edge of said frame but being normally out of contact with the belt surface such that as said scraper blade means wears due to its coaction with the belt surface and any debris that said roller will approach the belt surface and will contact the belt surface before said metal frame does to thus prevent said metal frame from damaging the belt surface.

3,865,233

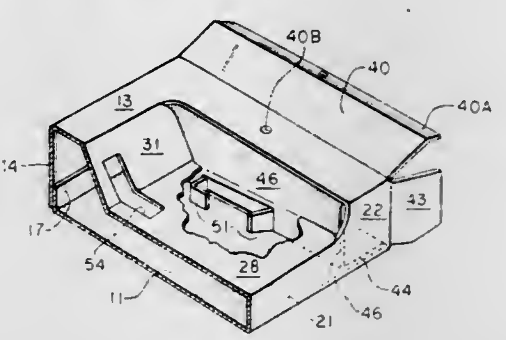
DISPLAY CARTON WITH PLATFORM SUPPORT

John R. Hamlin, Orange, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 24, 1974, Ser. No. 436,048

Int. Cl. B65d *5/50*

U.S. Cl. 206—45.19 **1 Claim**



1. A display carton formed from a cut and scored blank of paperboard or the like and comprising:
a. major and minor panels foldably connected to define a tube;
b. one of said minor panels having a width which is less than the width of the other minor panel for a substantial portion of its length and with its ends having a width equal to the other minor panel;
c. one of said major panels having cut lines extending transversely thereof and in alignment with cut lines defining said narrow portion and wider ends of said one minor panel;
d. a fold line in said one major panel connecting inner ends of said cut lines to define a narrow longitudinal panel along one side of said tube;
e. a second fold line in said one major panel spaced from said last named fold line to define a main sub-panel foldably connected to said narrow panel and spaced from said other major panel;
f. closure means for one end of said tube, said closure means extending from an end of said tube including inner and outer closure flaps foldably connected to said major panels;
g. said inner closure flap including foldably connected flap elements;
  i. one of said flap elements being folded into facing relationship to said other major panel;
  ii. a second of said flap elements being folded perpendicularly to said one flap element and standing between said major panels;
  iii. a third of said flap elements being folded into facing relationship with said one major panel;
h. said second flap element having at least one tab element extending from the plane of said second flap element and between said main subpanel and said other major panel to support said main subpanel.

3,865,234

DISPLAY AND CARRYING PACKAGE FOR FLAT, FLEXIBLE MERCHANDISE

Melvin E. Kester, Concord, N.C., assignor to Canon Mills Co., Kannapolis, N.C.

Filed Jan. 17, 1973, Ser. No. 324,415

Int. Cl. B65d *65/16, 77/24*

U.S. Cl. 206—45.33 **1 Claim**

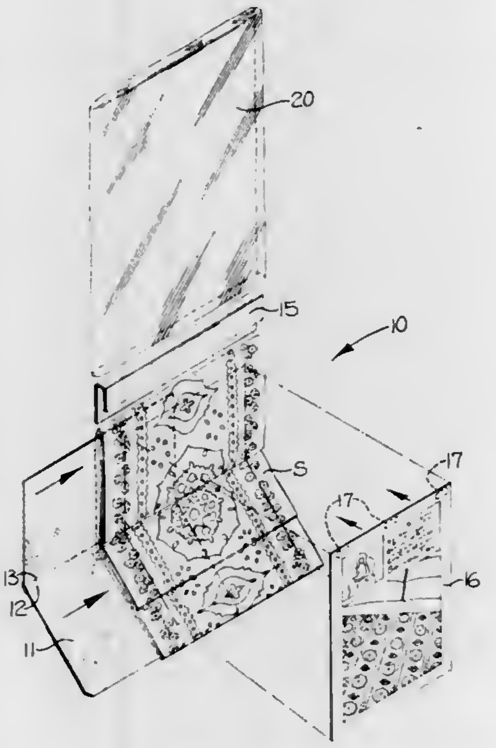
1. A display and carrying package for flat, flexible merchandise, such as bed sheets and the like, characterized by a fold-open construction which affords greater area for display of the merchandise and advertising material associated therewith while providing a conventional size package for shelf storage in the folded condition; said package comprising:
flat, flexible merchandise having fold-open dimensions greater than a conventionally desired, shelf size package;
a stiffener comprising a flat, stiff, sheet of material con-

forming generally with the fold-open dimensions of said merchandise and positioned and inserted within said merchandise in the fold-open position thereof to render said merchandise relatively stiff for easy handling, said stiffener including at least one fold line thereacross and generally centrally thereof for folding of said merchandise and said stiffener about said fold line to a folded position in which said merchandise has generally the conventionally desired, shelf size dimensions;

a closed, flexible, transparent bag disposed around and enclosing said merchandise with said stiffener means therein in the fold-open position thereof forming an enclosed transparent package for display of said merchandise in the fold-open position while folding with said package for shelf storage;

a fold-over sleeve placed around and covering one end of said merchandise; and

a flexible sheet of advertising material positioned on one side of said merchandise and secured at one end thereof to one end of said sleeve for a reciprocating action thereof when said package is folded open to maintain said sheet of advertising in the desired position and alignment.



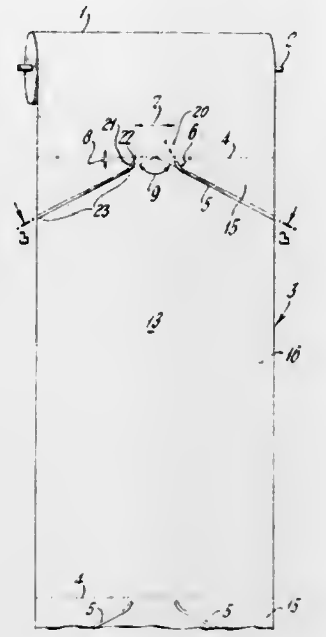
3,865,235
GARMENT-CONTAINING BAGS

Leonard P. Levy, Valley Stream; Joseph Anthony Kiesel, Kings Park, and Murray H. Honig, Franklin Square, all of N.Y., assignors to Service Poly-Pak, Inc., New York, N.Y.

Filed May 8, 1973, Ser. No. 358,585
Int. Cl. B65d *85/18*

U.S. Cl. 206—286 **5 Claims**

1. A garment-containing bag for use with a garment hanger comprising a continuous tubular sheet of flexible heat-sealable material which may be formed in a flat tubular shape having a front and a rear face terminating at a pair of longitudinal edges, said garment-containing bag including a first end and a second end formed by transverse perforations circumscribing said tubular sheet, and a pair of heat-sealed portions at said first end of said garment-containing bag so as to maintain said front and rear faces in flat adherent contact at said heat-sealed portions, said heat sealed portions including a main shoulder portion and a curved portion, said main shoulder portion including a first end and a second end, and said curved portion including a first end and a second end, said first end of said main shoulder portion joining said first face to said second face at one of said longitudinal edges, and said second end of said main shoulder portion joining said first face to said second face at said first end of said curved portion, said second end of said curved portion joining said first face to said second face at a point spaced from said first end of said garment-containing bag, said second ends of said curved portions of said heat-sealed portions spaced apart so as to provide a central interrupted portion for the insertion of said garment hanger therebetween, said second end of said curved portions further being displaced from a line extending from said second end of said main shoulder portion to a point dividing said central interrupted portion at said first end of said garment-containing bag.

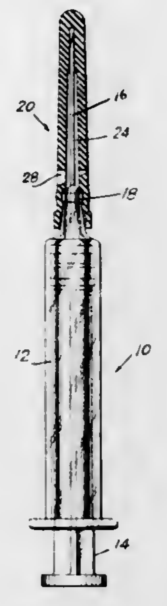


3,865,236
NEEDLE SHIELD

Alan Rycroft, Rutherford, N.J., assignor to Becton, Dickinson and Co., East Rutherford, N.J.

Filed Mar. 16, 1973, Ser. No. 342,154
Int. Cl. A61m *5/00*

U.S. Cl. 206—364 **7 Claims**



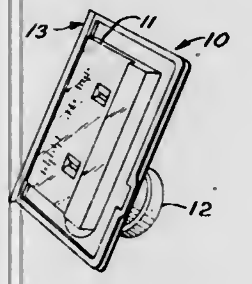
1. A needle shield comprising; a tubular member of self-sealing resilient rubber closed at one end and adapted to be positioned in surrounding relationship with respect to a needle so as to normally maintain the needle sealed from the atmosphere, and surfaces in the wall of the tubular member forming an aperture normally closed by the surrounding self-sealing resilient surfaces and the surfaces being adapted to be automatically separated to open the aperture when subjected to predetermined pressure thereby providing communication between the atmosphere and the interior of the member and permitting fluid to pass through the opening and to automatically return to the normally closed position when the predetermined pressure is relieved to reseal the enclosed needle from the atmosphere, the opening being in the form of a slit passing through one side wall of the tubular member intermediate the ends thereof, the needle being mounted to a supporting surface so as to form a needle assembly and the needle shield having its open end mounted on the supporting surface in sealing engagement therewith, the slit being spaced from the portion of the tubular member mounted on the supporting surface so as to form a one-piece combined needle shield and valve structure.

3,865,237
HOLDER CONSTRUCTION

Richard R. Isaacs, Chicago, Ill., assignor to Esquire, Inc., New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,587
Int. Cl. G09b *1/00*

U.S. Cl. 206—387 **18 Claims**



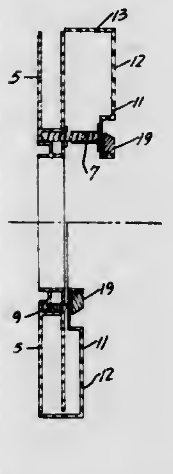
1. Structure for holding a sound tape container and a cylindrical filmstrip container in an integral assembly for combined storage comprising: wall mans defining a flat selectively closable enclosure for removably housing a sound tape container; and means integrally exteriorly of said wall means for removably securing a cylindrical filmstrip container thereto to project substantially outwardly from the closed enclosure.

3,865,238
TAPE PROTECTING COVER DEVICE

Donald M. Colaluca, Dallas, Tex., assignor to Raymond Lee Organization, New York, N.Y., a part interest

Filed Dec. 27, 1973, Ser. No. 428,801
Int. Cl. B65d *85/04, 85/66;* **B65h** *55/00*

U.S. Cl. 206—404 **3 Claims**



1. A protecting cover device for tape or film on a reel, said cover device comprising

a plurality of housings each comprising slidably mounted telescoping tube sections mounted at one end on the reel and extending in spaced relation substantially perpendicularly to the surface of the reel;

a plurality of springs each in a corresponding one of the housings;

a reel cover for covering the reel mounted on the other end of each of the plurality of housings; and

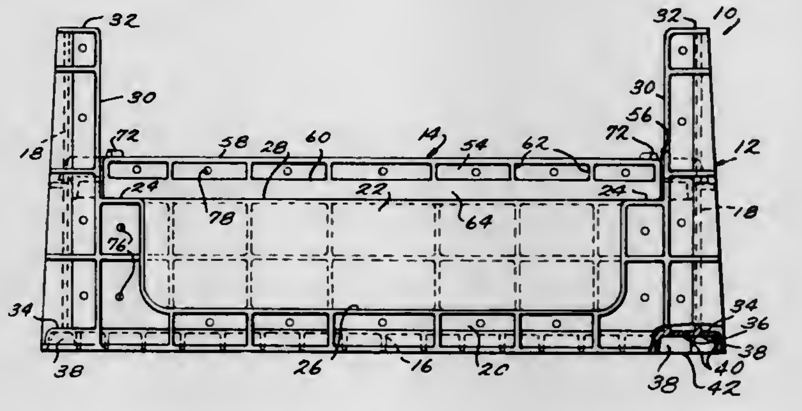
releasable locking means on the reel cover for releasably locking the springs in compressed condition to lock the cover on the reel whereby when the locking means is in released condition the springs urge the cover away from the reel to release the cover from the reel.

3,865,239
CONTAINER ASSEMBLY

Ralph H. Herolzer, Cincinnati, and Joseph Becknell, Hamilton, both of Ohio, assignors to Vanguard Industries, Inc., Cincinnati, Ohio

Filed May 8, 1973, Ser. No. 358,331
Int. Cl. B65d *21/00*

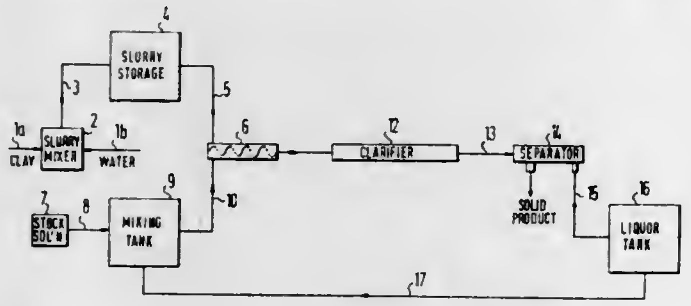
U.S. Cl. 206—507 **13 Claims**



1. A nestable and stackable container for meat and the like comprising a unitary container body molded of plastic material, said container body including a rectangular bottom wall, a pair of opposed end walls extending upwardly from opposite end of said bottom wall, a pair of opposed side walls of a horizontal extent greater than the horizontal extent of said end walls extending upwardly from said bottom wall between said end walls, each of said side walls including a central section of a horizontal extent greater than the horizontal extent of said end walls and a maximum vertical extent generally equal to one-half the vertical extent of said end walls and an end section of a vertical extent generally equal to the vertical extent of said end walls between each end of said central section and the adjacent end of the adjacent end wall, each end wall and the end sections integral therewith including complementary upper and lower stacking parts formed along the upper and lower extremities thereof, said side wall central sections having nesting surface means formed in the upper portions thereof for supporting a like container body disposed in a 90° horizontally rotated orientation in a nested position therein when said container body is empty to a depth permitting said container body to support another like container body in said stacked position thereon above the container body nested therein, the improvement in combination therewith which comprises each upper stacking part being of shallow U-shaped configuration in plan, each lower stacking part including a horizontally extending portion of complementary configuration in plan to the associated upper stacking part disposed in vertical alignment therewith and a pair of continuous elongated wall portions extending downwardly from said horizontally extending portion throughout the horizontal extent thereof, the wall portions of said lower stacking parts providing substantially continuous downwardly facing horizontal surfaces for engaging a horizontal support surface to support said container body thereon, the upper stacking parts providing substantially continuous upwardly facing horizontal surfaces for engaging the downwardly facing horizontal surfaces of the lower stacking parts of a like container body when the latter filled with a supply of meat of the order of 100 pounds is moved into supported relation thereon in a position of slight vertical misalignment so as to enable the like container to be slidingly supported for horizontal movement into an operatively stacked position of vertical alignment wherein the support of the like container is shifted to the horizontal portions of the lower stacking parts thereof and the wall portions thereof are disposed in substantially horizontally surrounding relation to the upper stacking parts of said container body to thereby prevent substantially horizontal movement of the like container body out of said operative stacked relation.

3,865,240
PURIFICATION OF BENTONITE

Paul Schick, Leutstettener Strasse 49, 8000 Munich 71, Germany
Continuation-in-part of Ser. No. 163,614, July 19, 1971, abandoned. This application July 2, 1973, Ser. No. 375,669
Claims priority, application Germany, July 21, 1970, 2036152
Int. Cl. B03d *3/00*
U.S. Cl. 209—5 **8 Claims**



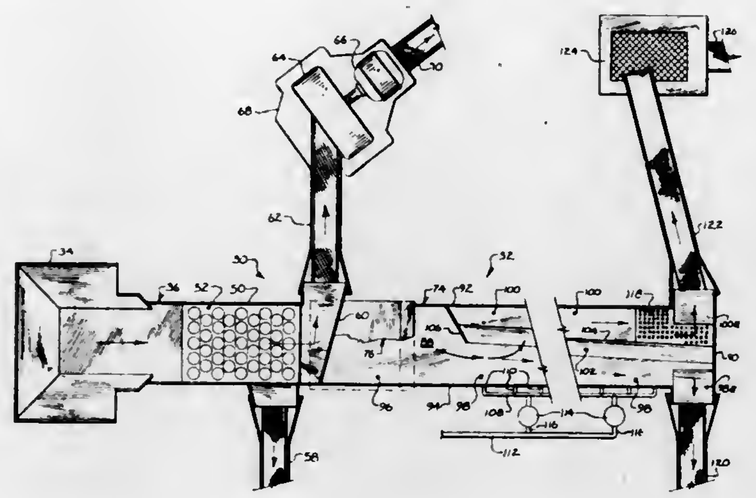
1. A method of purifying crude bentonite of accompanying impurities selected from the group consisting of quartz, feldspar, illite, and muscovite, which comprises:

- a. mixing one part of said crude bentonite in comminuted condition with about 1.5 to 2.0 parts of water sufficient to form a fluid slurry;
- b. introducing said slurry into a much larger amount of a dilute, aqueous solution of a sodium polymetaphosphate of the formula $(NaPO_3)_n$, n being an interger between 2 and 10, the amount of said sodium polymetaphosphate in said solution being at least 0.5% of the weight of said crude bentonite.
  - 1. said slurry being introduced into said solution with agitation sufficient to disperse said crude bentonite uniformly in said solution while avoiding a significant increase in the viscosity of the resulting mixture due to said agitation,
  - 2. the amount of said slurry being sufficient to make the solids content of said resulting mixture between 5% and 30%;
- c. permitting the resulting mixture to settle until at least a major portion of said impurities is precipitated, but not substantially longer than 15 minutes, while bentonite enriched with montmorillonite remains suspended in the supernatant liquid;
- d. separating the precipitated impurities from the supernatant liquid and the enriched bentonite suspended therein; and
- e. collecting the enriched bentonite from the supernatant liquid.

3,865,241
METHOD AND APPARATUS FOR SEPARATING WOOD BARK FROM GRAVEL

Gerald W. Crow, 11552 S.W. Lesser Rd., Portland, Oreg. 97219
Filed May 21, 1973, Ser. No. 362,376
Int. Cl. B07b *15/00*
U.S. Cl. 209—11 **13 Claims**

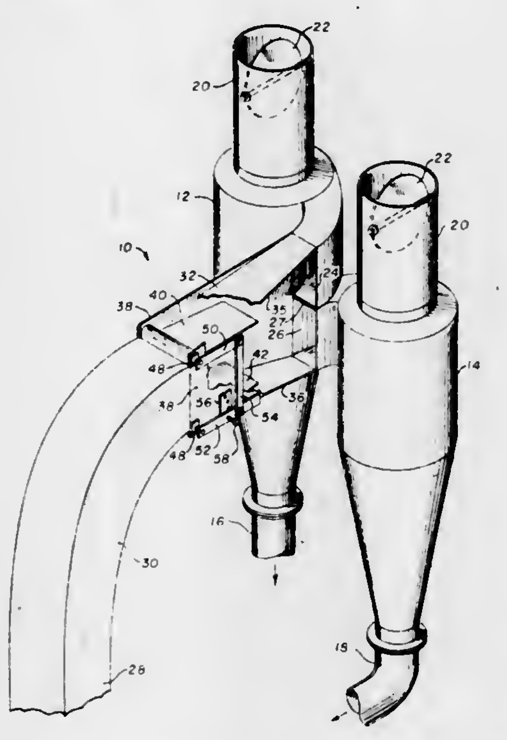
1. Apparatus for separating a mixture of dissimilar heavy and light weight materials comprising:
a vibratory conveyor,
said conveyor having an infeed end, an outfeed end, and a floor extending between said ends,
means for vibrating said conveyor in a manner to stratify said mixture to cause the light material to overlie the heavier material and to convey material deposited on said floor from said infeed end to said outfeed end,
said floor being subdivided lengthwise into a heavy material channel and a light material channel by an inclined rampway, said ramway extending at an inclination from said heavy material channel to a ridge separating said channels,



and means for creating a transverse air flow across said heavy material channel toward said inclined rampway to induce a lateral flow of light material from said heavy material channel up said rampway and across said ridge into said light material channel during the vibratory conveyance of said materials lengthwise of said conveyor.

3,865,242
UPSTREAM CLASSIFIER FOR A MULTI-SEPARATOR

Richard Leopold Musto, Homewood, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 15, 1972, Ser. No. 315,688
Int. Cl. B07b *7/086*
U.S. Cl. 209—143 **7 Claims**

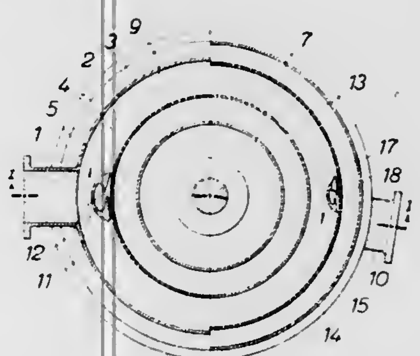


1. A method of separating a mixture of fine and coarse solids particles entrained in a fluid stream flowing through a duct for delivery to separate receptacles, comprising the steps of:

- a. concentrating the combined fine and coarse solids particles in one region of the stream as a continuous, moving sheet of material;
- b. directing said sheet of material toward one of said receptacles;
- c. diverting a portion of the fluid from said stream through said region and into the other of said receptacles and passing the remaining portion to said one receptacle while preventing a substantial reduction in the flow velocity of said flowing fluid whereby the fine solids particles are removed from said sheet of material and delivered to said other receptacle.

3,865,243
PRESSURE STRAINER DEVICE

Rauno Salminen, Valkeakoski, Finland, assignor to Yhtyneet Paperitehtaat Oy Jylhavaara, Valkeakoski, Finland
Filed Aug. 30, 1972, Ser. No. 284,867
Claims priority, application Finland, June 21, 1972, 1773/72
Int. Cl. B07b *1/00, 1/50*
U.S. Cl. 209—240 **4 Claims**

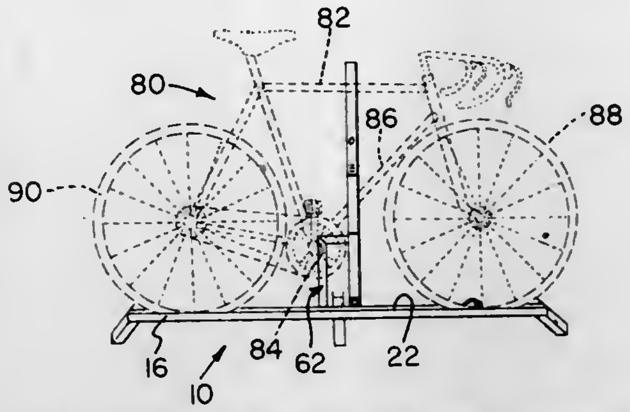


1. A pressure straining device for a pulp suspension comprising an inlet chamber for pulp to be strained, at least one straining cylinder bounding said inlet chamber and through which acceptable pulp is strained, at least one rotatable vane movable in said inlet chamber proximate the surface of said straining cylinder, said vane having a cavity extending therein, one end of which is closed, said cavity extending along the vane longitudinally and said vane having a slot leading into said cavity and facing said surface of the straining cylinder to admit unstrained pulp collected on said surface into said cavity, a collection chamber having means for isolating itself from said inlet chamber, said cavity of said vane communicating at the other end thereof with said collection chamber for introducing said unstrained pulp thereinto, a secondary straining cylinder concentric with said first screening cylinder, extending outwardly and below said first straining cylinder and forming a separating screen between said collection chamber and said inlet chamber to strain said pulp received from the cavity of said vane, acceptable pulp passing thru said secondary straining cylinder and moving upwardly to said inlet chamber for admixture with the pulp coming thereinto, and at least one secondary rotatable vane movable along the surface of said secondary straining cylinder to clean said surface of the secondary straining cylinder.

3,865,244
BICYCLE RACK

Ralph W. Galen, 131 Mt. Auburn, Cambridge, Mass. 02134, and John A. Vanderpoel, Crescent Rd., Concord, Mass. 01742
Filed Oct. 12, 1973, Ser. No. 406,016
Int. Cl. E05b *73/00;* A47f *7/04*
U.S. Cl. 211—5 **17 Claims**

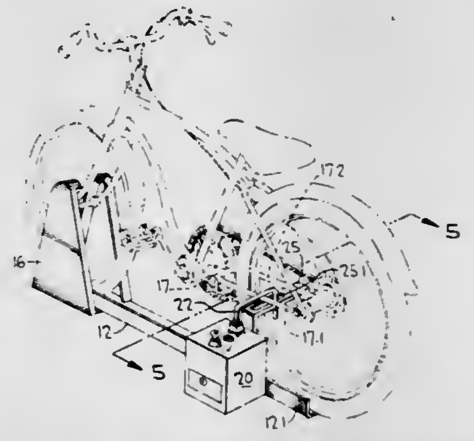
1. A device for supporting and holding a bicycle comprising:
channel means for receiving the front and rear wheels of a bicycle;
a support member fixed with respect to said channel means and extending at an angle thereto;
a slide member;
means mounting said slide member to said support member so that said slide member is slidable relative to said support member toward and away from said channel means; and
pivotally mounted clamp means for clamping a portion of the frame of said bicycle to said slide member and for



locking said slide member against movement relative to said support means.

3,865,245
BICYCLE RACK

Philip C. Lieb, and David A. Kesselman, both of Mill Valley, Calif., assignors to Rally Enterprises, Inc., Mill Valley, Calif.
Continuation-in-part of Ser. No. 230,848, March 1, 1972, abandoned. This application Aug. 28, 1972, Ser. No. 284,107
Int. Cl. B62h *3/00;* E05b *73/00*
U.S. Cl. 211—5 **10 Claims**



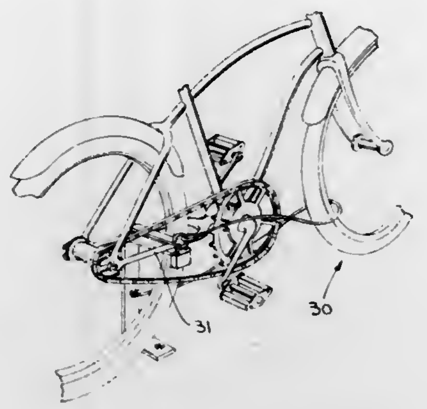
1. A bicycle rack for receiving and locking a bicycle in place and in an upright position comprising guide means constructed and arranged to receive at least the front wheel of a bicycle and having a vertical extension which extends above the hub of the front wheel of a bicycle when a bicycle is received in said rack, said guide means including means for securing said rack to support means, and lock means secured to said guide means at one side thereof substantially at or to the rear of the bicycle sprocket mechanism, said lock means including engaging means for removably receiving and retaining a structural member of a bicycle and means for locking said engaging means to said structural member, said rack being constructed and arranged to prevent removal or substantial movement of a bicycle when locked in place in said rack.

3,865,246
BICYCLE RACKS

Philip C. Lieb, and David A. Kesselman, both of Mill Valley, Calif., assignors to Rally Enterprises, Inc., Mill Valley, Calif.
Filed Feb. 20, 1973, Ser. No. 333,748
Int. Cl. E05b *73/00*
U.S. Cl. 211—5 **9 Claims**

1. A bicycle rack for receiving and locking bicycles in place and in an upright position comprising an upstanding member having means fixedly securing the same to base means, and horizontal members fixedly secured to and extending from a top portion of said upstanding member at one side thereof, said horizontal members being substantially parallel to each other and overlying each other in an upright direction, said horizontal members being vertically spaced apart a distance sufficient to receive a frame member of a bicycle therein, and

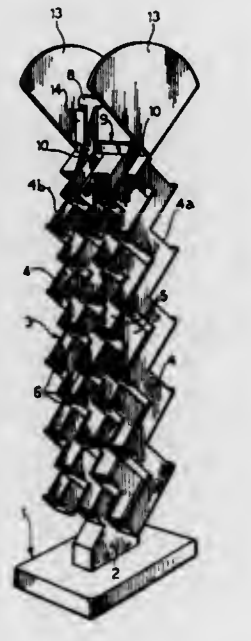
means for securing a padlock simultaneously to free ends of said horizontal members remote from said upstanding member, said horizontal members being of a length sufficient to span the width of a bicycle frame.



3,865,247

COLUMN-SHAPED DISPLAY DEVICE FOR PARALLELEPIPEDIC ARTICLES

Ettore Neglia, San Giorgio Canavese, Italy, assignor to P. Ferrero & C. S.p.A., Alba (Cumeo), Israel
Filed July 27, 1973, Ser. No. 383,211
Claims priority, application Italy, Dec. 22, 1972, 53879/72
Int. Cl. A47f *5/04, 7/03*
U.S. Cl. 211—72 1 Claim

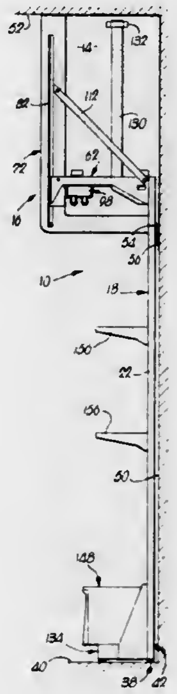


1. A display stand comprising a unitary body of plastic material including oppositely base portion and an upright stand portion, said stand portion comprising a plurality of substantially parallel zig-zag strips connected together by transverse partitions which lie substantially parallel to the edges of the strips so as to form two series of pockets, the openings in each series of pockets being directed toward a respective major face of the stand, a vertically disposed upper plate mounted on the top of said stand portion extending transversly of said strips, a pair of circular sector plates and interfitting connecting means for detachably mounting said sector plates on the respective lateral edges of said upper plate so that each sector plate is disposed coplanarly with a respective outer strip, said connecting means comprising a notch in the upper portion of each lateral edge of said upper plate, a pair of oppositedly directed projections extending perpendicular to said plate at the lower portion of each lateral edge of said upper plate and projection means on each of said sector plates being shaped to form a cavity and two lower notches engageable respectively with said notch and said pair of projections situated upon each of the two lateral edges of said upper plate.

3,865,248

WALL MOUNTED DISPLAY SYSTEM

Robert W. Donovan, Ridgefield, Conn.; Harvey L. Kolster, Grain Valley, Mo.; Herbert H. Broeker, and George W. Bailey, both of Overland Park, Kans., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.
Filed Nov. 12, 1973, Ser. No. 414,640
Int. Cl. A47f *5/08*
U.S. Cl. 211—90 17 Claims



1. In article display apparatus for an area having an upright wall surface extending upwardly from the floor thereof to an overhead ceiling, the improved combination comprising:

a pair of upright standards adapted to be located adjacent the wall surface in disposition to be supported by the floor;

at least one tie element adapted to be mounted on the wall surface intermediate the ends of the standards;

means for coupling the standards to the tie element for preventing swinging movement of the standards away from the wall surface;

means mounted on the standards for receiving articles to be displayed; and

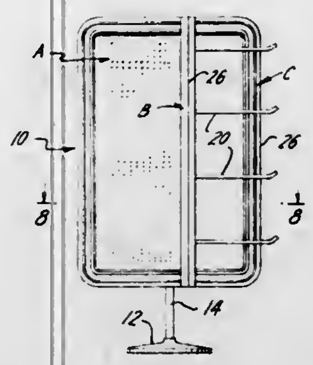
a soffit and valance assembly carried by the standards above the article receiving means and including support structure extending forwardly from each standard, upright valance means mounted on the support structure and extending upwardly therefrom toward said ceiling, and soffit defining means carried by the support structures in disposition extending rearwardly from the valance means to a location proximal to the standards.

3,865,249

MERCHANDISE DISPLAYS AND METHOD OF MANUFACTURE

Milton W. Herzog, Valley Stream, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.
Filed Dec. 29, 1972, Ser. No. 319,754
Int. Cl. A47f *5/02*
U.S. Cl. 211—163 13 Claims

1. A display panel comprising a sheet of thermoplastic material including an article-displaying wall having a pattern of sockets therein, said sockets being defined by respective relatively thick and strong lateral walls extending integrally and essentially erectly from a generally flat area of said sheet and having essentially transverse domes extending integrally from and carried by said lateral walls, there being a narrow transition from the lateral wall to the dome of each socket, said domes being much thinner and weaker than said lateral walls for enabling prongs of article-supporting brackets to be readily forced through said domes for mounting such brackets at selected locations on said wall which thus constitutes a bracket-supporting wall, the sockets that are free of article-bracket prongs remaining closed by their respective domes.

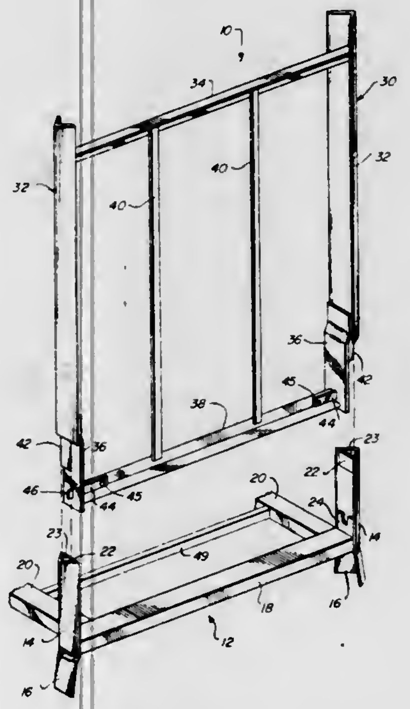


10. A display panel in accordance with claim 9, having a plurality of said bulges, wherein said member is of sheet-metal having plural holes therein providing edge portions of the member, and wherein at least certain of said integral hollow bulges project through said holes, the bulges being enlarged at the rear of the member to overhang the rear of the member snugly as aforesaid.

3,865,250

MODULAR STORAGE AND SHIPPING RACK

Richard S. Jay, Evanston, Ill., assignor to Jarke Corporation, Chicago, Ill.
Filed June 26, 1973, Ser. No. 373,883
Int. Cl. B65d *19/12*
U.S. Cl. 211—177 8 Claims



1. A modular storage and shipping rack for storing and shipping various articles of manufacture, comprising, in combination:

a rectangular base member,

said base member formed by a series of two pair of corner members, each of said corner members having an open side, one pair of said corner members being disposed such that the open sides of the corner members of said pair are in opposed relation with respect to the remaining pair of corner members,

a pair of end rails, each of said rails being fixedly secured to and extending between one pair of said corner members,

a pair of side rails, each of said side rails, fixedly secured to and extending between said opposed pairs of corner members,

each of said corner members being constructionally sized to provide mounting nests at the top and bottom ends thereof,

the top end of the open side of each of said corner members including restraining means mounted there across,

key means mounted across the open side of each of said corner members positioned below and spaced from said restraining means thereby to provide an open space there between, and with said key means and restraining means lying in the same vertical plane,

a pair of removable rectangular shaped end frames, each end frame consisting of a pair of opposed side frame members, having a top transverse member fixedly secured there between,

each side frame member having an extension plate mounted inwardly of said frame member adjacent the lower end thereof, and extending downwardly therefrom,

said extension plate positioned to rest in close vertically parallel orientation and substantially abuting relation with respect to said restraining means and key means,

a lower transverse member fixedly secured on and extending between opposed extension plates of opposed side frame members,

a plurality of article retaining upright members mounted on and extending between said top transverse member and said lower transverse member,

key mating means mounted on said lower transverse member extending transverse with respect to the plane established by said restraining means and key means and positioned to mate with said key means when said rectangular end frames are mounted on said rectangular base member,

and keeper means mounted on the lower end of each of said side frame members,

said keeper means being dimensionally sized to nest within said top end of said corner member and be held in position by said restraining means such that said keeper means nests entirely within said top end of said corner member permitting each of said side frame members and corresponding corner members to be in abuting relation, whereby said rectangular end frames may be removably mounted on said base member by nesting each of said keeper means within the top end of a corresponding corner member and held in position by said restraining means, while said key mating means is simultaneously mated with said key means to provide additional vertical stability and permit the lower end of each of said side frame members to abut against and form a joint with the top end of the corresponding corner member while said keeper means, restraining means, key means and key mating means are all positioned inwardly with respect to each of said corner members and side frame members.

3,865,251

SYSTEM AND METHOD FOR BALLOON YARDING AND OTHERWISE TRANSPORTING OBJECTS BETWEEN TWO LOCATIONS

Frederic E. Langford, Redmond, Wash., assignor to Formac International Inc., Seattle, Wash.
Filed Feb. 22, 1974, Ser. No. 444,909
Int. Cl. B66c *21/00*
U.S. Cl. 212—71 11 Claims

1. A system for transporting objects between two locations comprising:

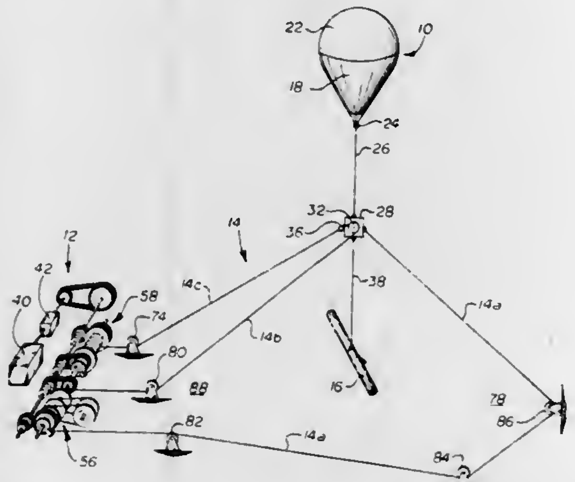
a prime mover;

a plurality of drive sheaves and means mounting said drive sheaves for rotation;

first drive means operatively associated with said prime mover for selectively and reversibly rotating said drive sheaves;

a drum and means mounting said drum for rotation;

second drive means operatively associated with said prime mover for selectively and reversibly rotating said drum;
- a carriage means having means thereon for suspending objects therefrom, said carriage means having a lighter-than-air balloon attached thereto to suspend said carriage means and said objects in the air; said carriage means having an idler sheave mounted for rotation thereon;
- an outhaul sheave spaced from said drive sheaves;
- cable means connected to said carriage means, said cable means extending from said carriage means and engaging said outhaul sheave, said cable means extending from said outhaul sheave to an engaging said drive sheaves, said cable means extending from said drive sheaves back to said carriage means and engaging said idler sheave, said cable means extending from said idler sheave to and being wrapped on said drum; and,
- stop means fixed to said cable means between said drum and said carriage means, said stop means for abutting said carriage means to limit the length of cable which can be payed out from said drum to and through said idler sheave on said carriage means.



7. In a method for transporting objects between two locations using a lighter-than-air balloon, said balloon being attached to a carriage having an idler sheave thereon, said carriage having one end of a cable attached thereto, said cable running through an outhaul sheave fixed in relation to the ground, through a plurality of drive sheaves through an inhaul sheave fixed in relation to the ground and spaced from said outhaul sheave, and through said idler sheave, said cable running from said idler sheave to a drum onto which the other end of said cable is wound, said drive sheaves and said drum each being independently, selectively and reversibly driven by a prime mover, the improvement comprising the steps of:
- raising said balloon at a location near said inhaul sheave by stopping said drive sheaves and by paying out cable from said drum through said idler sheave, and
- limiting the length of cable which can be payed out from said drum by affixing a stop member to said cable between said drum and said carriage which stop member abuts against said carriage when a predetermined amount of cable has been payed out from said drum.

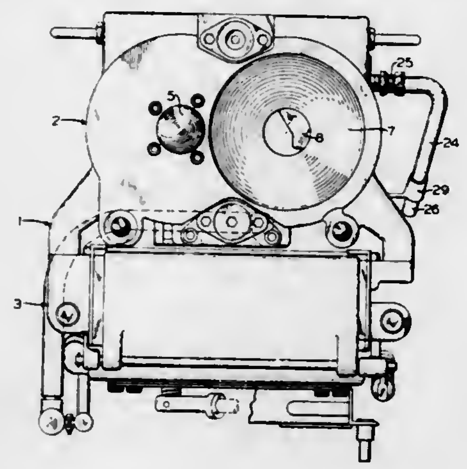
3,865,252
VISUAL COUPLING INDICATOR FOR AUTOMATIC RAILWAY CAR COUPLERS

Robert J. Bridigum, Pittsburgh, and Renaldo A. Nebiolo, Irwin, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 4, 1974, Ser. No. 457,818
Int. Cl. B61g *3/10*

U.S. Cl. 213—75 R **6 Claims**

1. A visual coupling indicator for use with a railway car coupler comprising a casing for a mating head disposed axially parallel to the axis of the car for mating with a counterpart mating head, said casing being of predetermined vertical dimension defined by upper and lower limits and having operably disposed therein a movable locking member biased to a locking position, in which a coupling pin of the counterpart mating head is engaged for locking the mating heads in a coupled relation, and being operable to an unlocking position in which the coupling pin of the counterpart mating head is disengaged for releasing the coupled relation, said visual coupling indicator comprising:
- a. a tubular member disposed externally of the casing with one end fixed to the side thereof adjacent to and in alignment with the line of movement of the locking member, said tubular member being curved such that the other end thereof extends beyond one of the upper and lower limits of the casing; and
- b. a flexible indicator member having one end connected to the locking member for movement therewith and extending therefrom through said tubular member, said flexible member being of such length as to be fully retracted within the tubular member when the locking member is in its said locking position, and to have the other end thereof extending exteriorly of said tubular member when the locking member is in its said unlocking position.

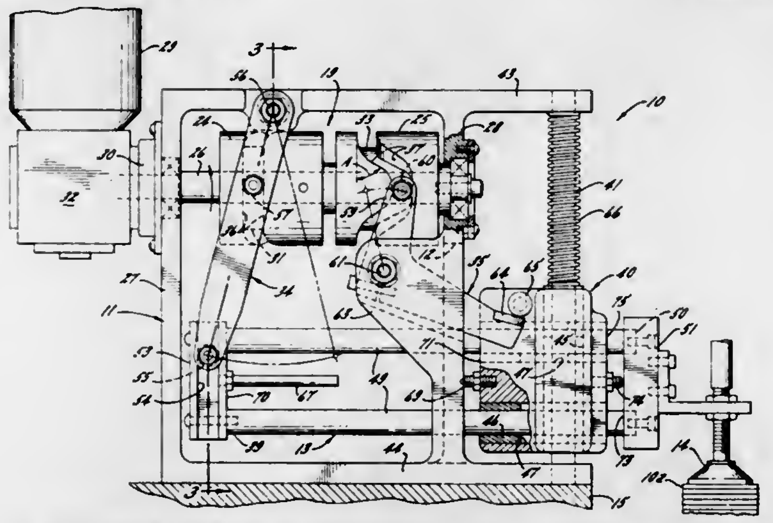


3,865,253
PARTS HANDLER

Francis L. Healy, C/O Automatic Tool Company P. O. Box 4293, Rockford, Ill. 61110

Filed July 12, 1973, Ser. No. 378,407
Int. Cl. F16h *25/12*

U.S. Cl. 214—1 BT **5 Claims**



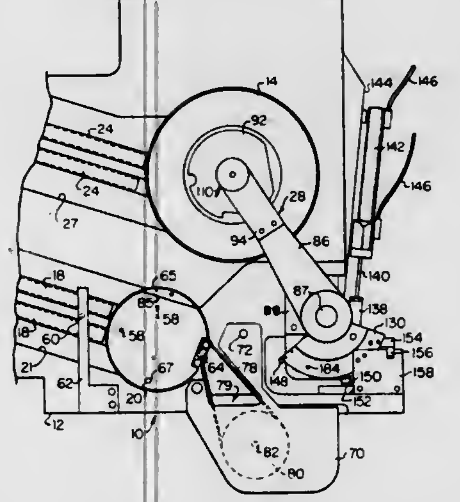
1. A parts handler adapted to pick up, transfer and place a part from a first position into a second position, said handler including a frame, a horizontal arm slidably mounted on said frame for movement both vertically and horizontally along a predetermined path, said arm having an inner end portion and also having an outer end portion which projects from one side of said frame, means on the outer end portion of said arm for picking up and holding said part for movement with said arm along said path from said first position to said second position and for releasing said part at said second position, and means for moving said arm along said path, said means including a guide block secured to said frame for vertical movement relative thereto, said arm being mounted on said block for vertical movement therewith while still being free to slide horizontally relative to said block, a lift cam rotatably mounted on said frame, a first lever member connected between said lift cam and said guide block to raise the latter on said frame, a stroke cam rotatably mounted on said frame, a second lever member connected between said stroke cam and the inner end of said arm to move the latter horizontally back and forth as the stroke cam is rotated, a common drive shaft journaled on said frame and carrying both of said cams, means for rotating said cams to move said arm along said path so as to pick up, transfer and place a part from said first position into said second position first and second pivotal connections securing said lever members to said frame, and first and second followers mounted on said lever members and positioned to engage said cams, said first member having one end spaced from said first connection a distance greater than the distance between said first connection and said first follower, said second member having one end spaced from said second connection a distance greater than the distance between said second connection and said second follower, the ends of said lever members engaging said slide block and the inner end of said arm, respectively, so that, as said cams are rotated, the vertical and horizontal distances said arm is moved are greater than the horizontal distances said first and second followers are moved by their respective cams.

3,865,254
PREALIGNMENT SYSTEM FOR AN OPTICAL ALIGNMENT AND EXPOSURE INSTRUMENT

Karl-Heinz Johannsmeier, Mountain View, Calif., assignor to Kasker Instruments Inc., Mountain View, Calif.

Filed May 21, 1973, Ser. No. 362,447
Int. Cl. B65g *47/24*

U.S. Cl. 214—1 BH **26 Claims**



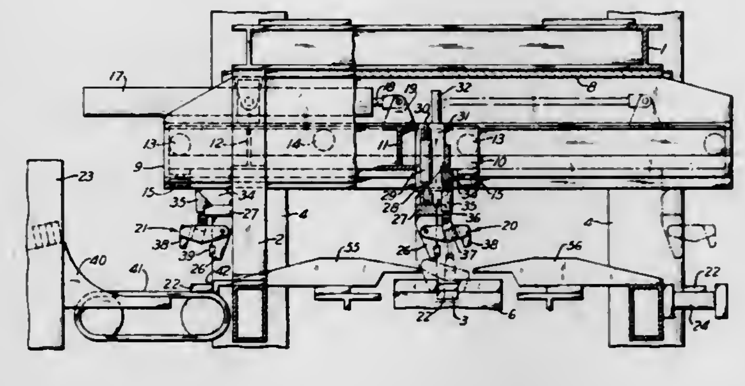
1. Apparatus for orienting a workpiece in a selected position, said apparatus comprising:
- holder means for holding the workpiece;
- drive means for engaging a rounded portion of a peripheral edge of the workpiece to rotate the workpiece in a first rotary direction towards the selected position and, when the workpiece reaches the selected position, for engaging a flat portion of the peripheral edge of the workpiece to maintain the workpiece in the selected position; and
- transfer means for transferring the workpiece in the selected position from the holder means to a work station.

3,865,255
BAR HANDLING APPARATUS

Richard P. Krause, 1503 Highland Ave., New Castle, Pa. 16101

Filed Sept. 6, 1973, Ser. No. 394,638
Int. Cl. B66c *1/62*

U.S. Cl. 214—1 BB **3 Claims**



1. Bar handling apparatus for transferring heating metal bars from a pickup station to rolling and discharge stations in succession, said stations being spaced apart uniformly, said apparatus comprising a pair of horizontally spaced grippers, one of said grippers being a leading gripper and the other a trialing gripper, means for moving the grippers forward together from a first position to a second position in which the trailing gripper takes the place formerly occupied by the leading gripper, means for lowering the grippers at the first position so that they may grip the central portion of an underlying bar at the pickup and rolling stations respectively, means for raising the grippers with the bars gripped thereby, laterally spaced skids disposed between the first and second positions for supporting the ends of a heated bar carried by said trailing gripper to said second position, said grippers also being movable downwardly at said second position, means for releasing the lowered grippers from the gripped bars at the second position to deposit bars at the rolling and discharge stations respectively, and means for returning the released grippers to said first position after they have been raised at the second position.

3,865,256
CASING AND DRILL PIPE HANDLING DEVICE

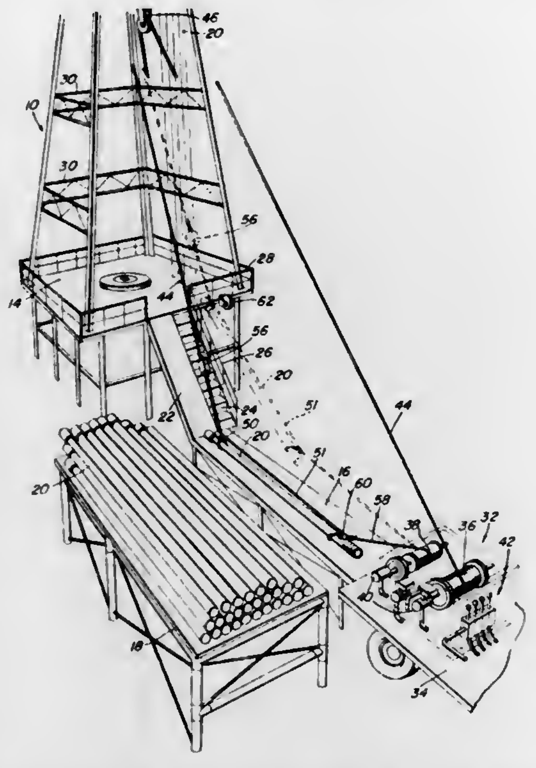
Richard B. Freeman, Sr., 1230 W. Main St., Hojma, La. 70360

Filed Nov. 8, 1973, Ser. No. 414,137
Int. Cl. E21b *19/02*

U.S. Cl. 214—2.5 **11 Claims**

1. A pipe or casing handling device for use in combination with an on-site well rig including a derrick provided with a rig floor, girths, a monkey board in elevated relation to the floor and a catwalk extending outwardly from the derrick alongside a pipe rack, said device comprising a drawworks including two independently operated winch drums, each of said winch drums including a cable thereon, the cable from one winch drum extending to an elevated position in the derrick, a cable block secured in elevated position in the derrick, adjacent the monkey board, receiving the cable thereover, the cable from the cable block then extending downwardly and provided with means on the terminal end thereof for releasable connection with one end of a section of pipe, the cable on the other winch drum being in the form of a tag line extending directly to and including a terminal end means detachably connected to the other end of the section of pipe whereby the section of pipe, by manipulating the winch drums, may be moved between a vertical position within the derrick and a horizontal position on the catwalk without the lower end of the pipe dragging along the surface of the catwalk or rig floor, said cable block being suspended from girths in the derrick by flexible cable means to enable the cable block to be positioned out of the way when not in use, the terminal end portion of the cable

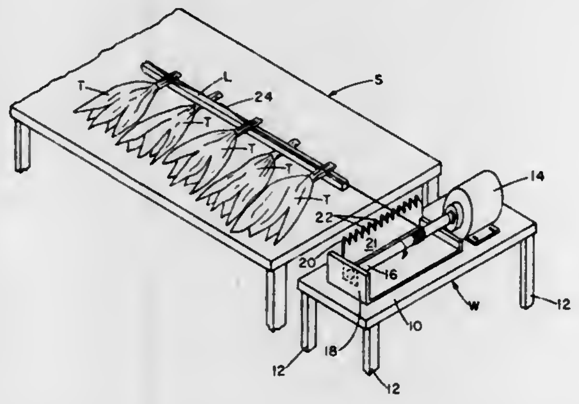
entrained over the cable block including a weight to assure that the terminal end portion of the cable will be moved to a lowered position for connection with the end of a section of pipe oriented on the catwalk.



3,865,257

METHOD AND APPARATUS FOR DESTRINGING TOBACCO

Douglas A. Slate, Route 4, Box 320, Kernersville, N.C. 27284
Filed Jan. 3, 1974, Ser. No. 430,471
Int. Cl. A24b *1/06*
U.S. Cl. 214—5.5 **4 Claims**



1. Apparatus for destringing tobacco laths of a type wherein tobacco leaves are gathered in several hands and attached together by means of a continuous cord, each hand being wrapped by a section of said cord, tied in a release knot with adjacent hands draped on opposite sides of said lath, and connected by a length of said cord draped across said lath, and whereby said release knot may be released when a force is exerted on said cord along a prescribed release path, the apparatus comprising a rotatable winding means positioned in said release path with the axis of rotation of said winding means lying generally perpendicular to said release path, and whereby the speed of rotation and surface friction of said winding means cooperate to entrain said cord on said winding means, exert said force along said prescribed path, and accumulate said cord as it is removed.

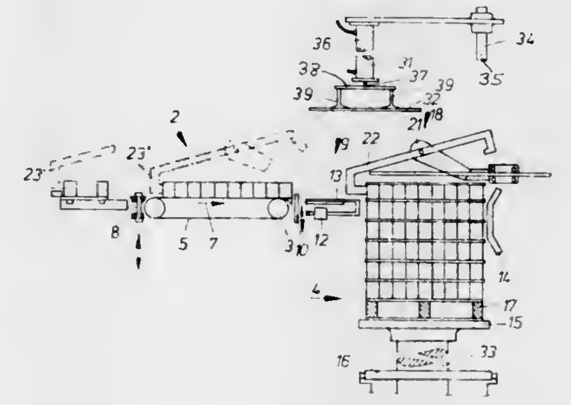
4. A method for destringing tobacco laths of a type wherein tobacco leaves are gathered in several hands and attached together by means of a continuous cord, each hand being wrapped by a section of said cord tied in a release knot with adjacent hands draped on opposite sides of said lath and connected by a length of said cord draped across said lath, and a knot in the cord at the end of the hands, and whereby said release knots may be released when a force is exerted on said cord along a prescribed release path, the method comprising the steps of:

- A. positioning the tobacco lath and leaves on a work surface with the tobacco lath extending along said prescribed release path;
- B. cutting the knot at one end of the several hands;
- C. manually exerting a force along said prescribed path to release a sufficient number of release knots to provide a length of cord; and
- D. dropping the length of cord onto a rotating shaft which releases the remainder of the release knots and pulls the cord completely from the lath.

3,865,258

CONVEYING AND STACKING SYSTEM FOR ARTICLES

Friedhelm Muller, Dortmund-Wickede, Germany, assignor to Holstein & Kappert Machinenfabrik Phonix GmbH, Dortmund, Germany
Filed Mar. 7, 1973, Ser. No. 338,971
Claims priority, application Germany, Mar. 11, 1972, 2211793
Int. Cl. B65g *57/10, 59/02*
U.S. Cl. 214—6 H **7 Claims**



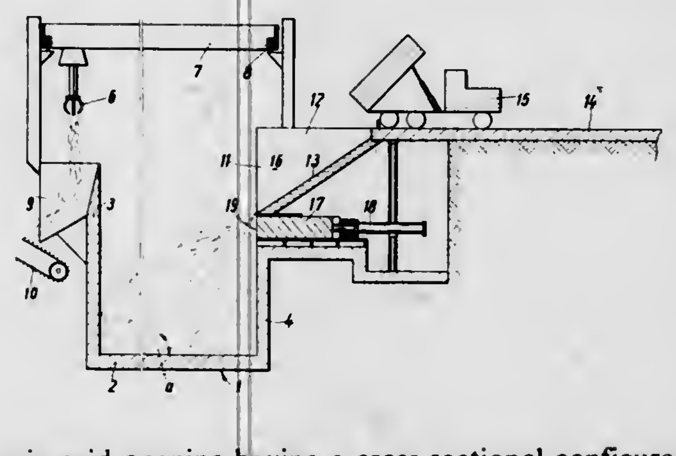
1. A conveying system, comprising first means for conveying articles in a path; second means laterally spaced from said path and operative for raising and lowering of articles to and from the level of said path; third means intermediate said first and second means for assembling batches of articles which are to be transferred to one of said first and second means; and fourth means for transferring articles said first, second and third means, said fourth means comprising an arm pivotable about a horizontal axis above said level and having spaced ends each provided with an engaging portion respectively adapted in dependence upon pivoting of said arm to move behind respective articles to be transferred at a side thereof which is opposite the direction of transfer, and moving means for moving said arm with reference to said first, second and third means so as to effect transfer of the engaged articlles.

3,865,259

SILO FOR BULK MATERIAL

Eberhard Stodt, Dusseldorf, Germany, assignor to Lindemann Maschinenfabrik GmbH, Dusseldorf, Germany
Filed Nov. 8, 1972, Ser. No. 304,635
Claims priority, application Germany, Oct. 23, 1972, 2246877
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 C **7 Claims**

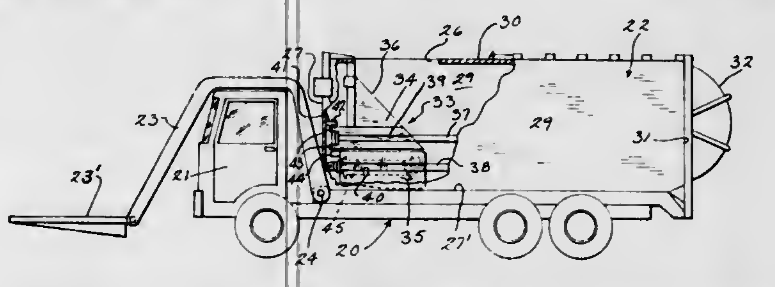
1. A silo for processing bulk material comprising, in combination, a chamber having a storage volume defined by a plurality of upstanding side walls and a bottom, said side walls being configured to define said chamber with a substantial height dimension extending upwardly from said bottom within which said bulk material may be deposited, a charging inlet located in one of said side walls at the upper end of said chamber for introducing therethrough bulk material into said chamber, said charging inlet being spaced upwardly a substantial distance from said bottom in order to define between said bottom and said inlet substantially the entire volume of said chamber within which bulk material is contained, a charging edge located in the plane of said one side wall defining the lowermost limits of said charging inlet and extending substantially horizontally across said one side wall, pusher means having a length dimension extending generally pependicularly to said one side wall and a cross sectional configuration lying in a plane extending generally parallel to said one side wall, said cross sectional configuration extending substantially uniformly throughout the major portion of the length of said pusher means, guideway means located immediately below said charging edge contiguously thereto and extending from an opening located in said one side wall in a direction perpendicularly thereto outwardly from said chamber, said guideway means in said opening having a cross sectional configuration conforming substantially with said cross sectional configuration of said pusher means and being structured to have said pusher means guided therein for longitudinal movement generally perpendicularly to said one side wall into and away from the upper portions of said chamber, said guideway means and said pusher means being configured to extend for only a short distance downwardly of said charging edge taken relative to the overall length of said one side wall, with said opening of said guideway means substantially enclosing said pusher means about its periphery throughout substantially the entire length of the stroke of said pusher means, whereby bulk material accumulating at the top of said chamber may be distributed therein by operation of said pusher means without creating undesired openings in the walls of said chamber through which bulk material might inadvertently escape.



3,865,260

REFUSE BODY WITH TWO-PART PACKER-EJECTOR PLATEN

John E. Wieschel, Hartland; Jerald G. Zanzig, Brookfield, and Thomas F. Petrykowski, Racine, all of Wis., assignors to The Heil Co., Milwaukee, Wis.
Filed Aug. 24, 1973, Ser. No. 391,193
Int. Cl. B60p *1/00*
U.S. Cl. 214—82 **10 Claims**

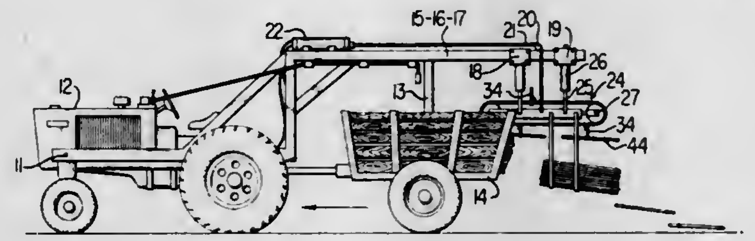


2. In a refuse vehicle having a cab and a body within which refuse is adapted to be compacted, said body having a front end wall adjacent the rear of the cab, having a rear opening, and having a door for releasably closing said rear opening, the improvement comprising a two-part packer ejector platen mounted for movement longitudinally in said body and having an upper part with a rearwardly-facing refuse-guiding portion for guiding refuse which is falling by gravity and having a lower packer part, means for releasably maintaining said upper part in fixed position adjacent said front wall of the body near the cab, there being a refuse-receiving opening adjacent the front of the body so positioned that refuse is deposited adjacent said packer ejector platen while it is in said front location with some of the deposited refuse being guided by the refuse-guiding portion of the upper platen part, said lower packer part, when in its front position, being located so that said guided refuse is guided into a position to be acted upon by said lower platen part, power-operated means for causing reciprocable packing movement of said lower packer part to compact said deposited refuse rearwardly in the body while the upper part remains in said fixed position adjacent the cab, and means for selectively causing conjoint ejecting movement of said two platen parts toward the rear while the rearwardly-facing end of the lower packer part is substantially below the rear of the upper platen part.

3,865,261

CANE PLANTER RAKE PLATE

Raynold Usie, P.O. Box 871, Houma, La. 70360
Filed Apr. 20, 1973, Ser. No. 352,951
Int. Cl. B60p *1/00*
U.S. Cl. 214—83.26 **1 Claim**

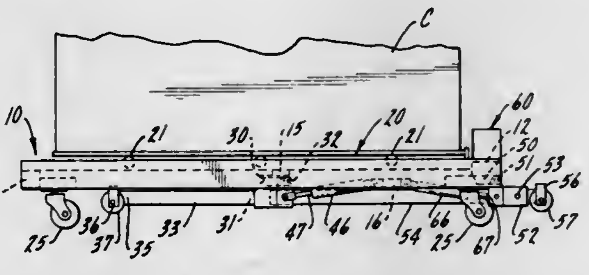


1. A sugar cane planter having a propelled vehicular frame for carrying a plurality of horizontally disposed sugar cane seed stalks for deposit horizontally rearwardly of the vehicle frame upon the ground, a planter comprising an endless conveyor positioned above said horizontally disposed cane stalks, a plurality of planter rake plates secured to the endless conveyor with the major length of the plates directed toward the cane stalks, and a plurality of wedge-like cane stalk engaging means having a plurality of V-notches transversely of the free end of the plate, positioned to grasp a cane stalk proximate its eye for moving the stalk rearwardly of the vehicle for deposit by free fall from said wedge-like engaging means from the conveyor to the ground.

3,865,262

MATERIAL HANDLING METHOD AND APPARATUS

Raymond E. Smith, Jr., 385 Greenwood Ave, Lake Forest, Ill. 60045
Filed Mar. 12, 1973, Ser. No. 340,343
Int. Cl. B60p *1/64*
U.S. Cl. 214—152 **5 Claims**



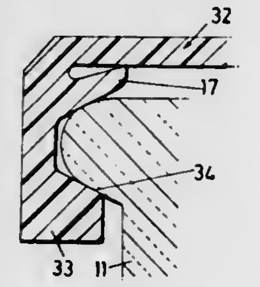
1. Apparatus for raising a body of material from a lower surface onto an upper surface or lowering a body of material from an upper surface onto a lower surface, comprising:

- a. normally horizontal sled means,
- b. said sled means having a front end supported on anti-friction means and a back end supported on anti-friction means,

c. deck means on said sled means for supporting a body of material,
d. means for fastening the body to said deck means,
e. leg means pivotally connected to said deck means underneath said deck means and having free end means horizontally displaced from any connection to said sled means,
f. said free end means having anti-friction means thereon,
g. said leg means comprising at least a front lift leg and a relatively longer back lift leg with the pivotal connection between said front lift leg and said sled means being disposed substantially mid-way between the front and back ends of said sled means, and
h. power means between said deck means and said leg means and effective upon actuation to pivot said leg means to raise or lower said deck means.

3,865,263
CLOSURE CAP

Ralph William Birch, Rustington, England, assignor to U.M.P. Plastics Ltd., Lancashire, England
Continuation-in-part of Ser. No. 140,353, May 5, 1971, Pat. No. 3,784,041. This application Oct. 10, 1973, Ser. No. 405,083
Int. Cl. B65d *41/04, 41/18*
U.S. Cl. 215—321 **6 Claims**



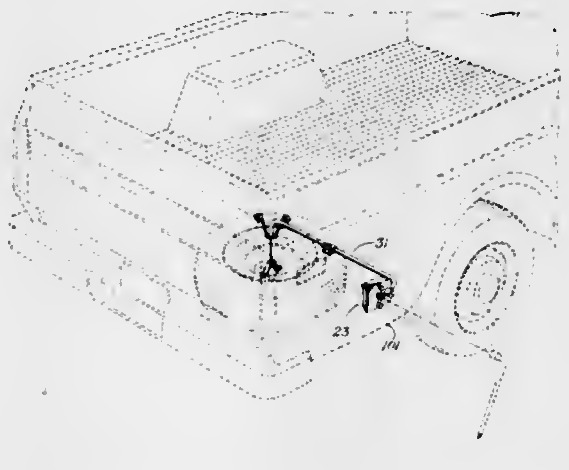
1. A closure cap adapted to seal the neck of a container, the closure cap being formed of a moulding of elastomeric material and having a top portion, an annular skirt which extends from the periphery of the top portion, an abutment portion of said skirt which is adapted firmly to engage said neck to releasably retain the closure cap thereon, and an annular resilient flange portion which extends from and radially inwardly of the skirt and which is spaced from the internal surface of the said top portion by an annular groove, the resilient flange portion having a surface, at least partly convexly curved, which is remote from the top portion and which, even when the resilient flange portion is undeformed, is radially inwardly inclined towards the top portion, the resilient flange portion, when the cap is fitted to the container, effecting a primary sealing engagement with a radially outer edge of the end portion of the neck and a secondary engagement with the top surface of the end portion of the neck, and the resilient flange portion being deflectable into engagement with the internal surface of the top portion to trap a pocket of air therebetween.

3,865,264
SPARE TIRE MOUNT

John P. Kuhns, Hurst, Tex., assignor to Caddie Industries, Inc., Fort Worth, Tex.
Filed Oct. 10, 1972, Ser. No. 296,029
Int. Cl. B62d *43/04*
U.S. Cl. 214—451 **8 Claims**

1. A device for mounting a spare tire to the underside of a motor vehicle, comprising:

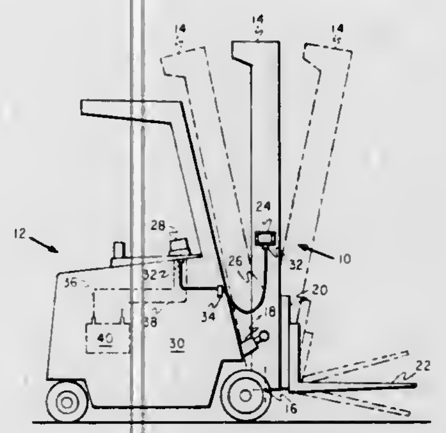
winch means including a rotatable means adapted to be attached to a motor vehicle,
a flexible cable having a first end attached to said rotatable means of said winch means and a second end adapted to be releasably coupled to a tire,
support means adapted to be attached to the underside of the motor vehicle for supporting said cable and the spare tire,
said rotatable means being operable upon rotations in a first direction to wind the cable to raise the spare tire upward to and elevated storage position,
said rotatable meand being capable of rotation in an opposite direction to allow the cable to unwind to lower the spare tire,
said rotatable means of said winch means being supported by a housing,
said housing having a face beyond which extend an end of said rotatable means and an end of said lock,
said housing being adapted to be attached to the inside surface of the side wall structure of the vehicle in a manner to locate the face of said housing close to said inside surface such thet access to said end of said rotatable means and to said end of said lock may be provided through opening means formed through the side wall structure, and
spacer means for spacing said face inward from the side wall structure of the vehicle to locate said end of said rotatable means and said end of said lock generally flush with said wall structure of said vehicle,



a ratchet wheel secured to said rotatable means for rotation therewith,
a pawl operatively associated with said ratchet wheel and normally positioned to allow rotation of said ratchet wheel and said rotatable means in said first direction but to prevent said ratchet wheel and said rotatable means for rotating in said opposite direction, and
a lock having a bolt operable by a key for moving said pawl to a position ineffective to hold said ratchet wheel against rotation in said opposite direction,
a load carrying conduit means extending from said housing to said support means,
said conduit means comprising at least two rigid conduit sections, one section having one end coupled to said housing and the other section having one end coupled to said support means,
said cable being located to extend through said two conduit sections from said housing to said support means,
said ends of said sections being coupled to said housing and to said support means in a manner to allow said housing and said support means to be turned to different positions relative to their associated sections, and
sleeve means for rigidly coupling together the other ends of said conduit sections at different positions relative to each other for adjustment purposes.

3,865,265
LIFT TRUCK SAFETY ACCESSORY

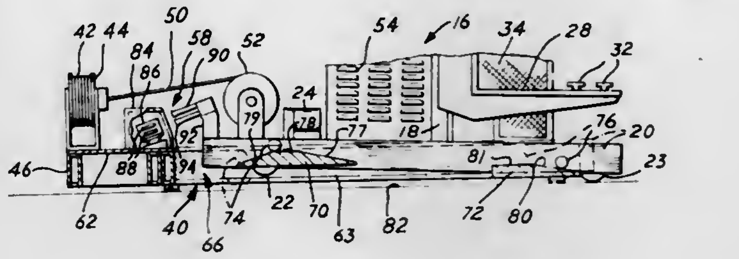
Ronald A. Brudi; Randall W. Matthewson, both of Longview, Wash., and Randall P. Wheeler, Rainier, Oreg., assignors to Brudi Equipment, Inc., Longview, Wash.
Filed Aug. 20, 1973, Ser. No. 389,696
Int. Cl. B66f *9/20*
U.S. Cl. 214—674 **18 Claims**



1. In a lift truck of the type having a load lifting mast tiltable about a tilting axis both forwardly and rearwardly from a vertical position, power means for movable tilting said mast, and a load carriage mounted for vertical reciprocation on said mast, a safety accessory comprising: a housing; gravity sensing tilt indicator means mounted within said housing for sensing the degree of tilt of said housing in a predetermined tilting plane, said tilt indicator means including electrically powered means for generating a variable signal corresponding to said degree of tilt of said housing, and also corresponding to the direction of tilt of said housing in either direction from a predetermined null position of said housing; mounting means adapted for rigidly mounting said housing to said lift truck mast in such a position that said predetermined tilting plane of said housing is perpendicular to said tilting axis of said mast; adjustment means associated with said housing for permitting said null position of said housing to be adjusted with respect to said mast to achieve correspondence between said predetermined null position of said housing and said vertical position of said mast; tilt display means adapted for mounting on the main body of said lift truck for receiving said signals generated by said tilt indicator means and providing visual indicia of both direction and degree of tilt of said housing in either direction from said predetermined null position in response to said signals; a flexible conduit coupled with said tilt indicator means and adapted to extend therefrom to said tilt display means, said conduit including signal transmission means for transmitting said signals generated by said tilt indicator means to said tilt display means and further including means for conducting electrical current from said lift truck to said tilt indicator means to generate said signals, said conduit having sufficient excess length to permit it to compensate for the tilting movement of said mast relative to said main body of said lift truck regardless of the tilting position of said mast; said gravity sensing tilt indicator means comprising an electrolytic transducer and an associated bridge circuit and said tilt display means comprising a direct current meter capable of sensing polarity and normally biased to a center position shunted across said bridge circuit, said accessory further comprising means for tapping the direct current electrical power source of said lift truck and converting said electrical power to alternating current having a positive and negative half-cycle for powering said electrolytic transducer and bridge circuit; and a rectification circuit interposed between said transducer and said meter for providing a direct current signal to said meter.

3,865,266
LOAD CARRIER TRANSFER

Paul E. Redelman, South Holland, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Feb. 28, 1973, Ser. No. 336,886
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 **7 Claims**

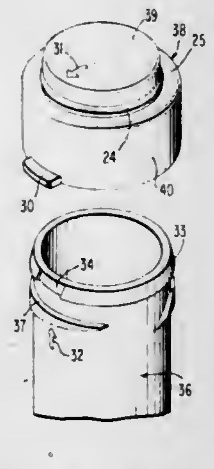


1. In a multivehicle arrangement including a first vehicle and a second vehicle adapted to transport the first vehicle, comprising

fixed inclined support means on one of said vehicles, and
movable support means on the other of said vehicles positioned to engage said fixed inclined support means as said first vehicle is being positioned on said second vehicle for transport by the latter, said fixed inclined support means including a pair of support ramps longitudinally spaced from each other, one of said support ramps including a pair of reversely inclined surfaces and the other of said support ramps including at least one inclined surface, and said movable support means including a pair of rollers spaced from each other by a distance such that as one of said rollers moves in a given direction on one of the inclined surfaces of said one of said ramps, the other of said rollers moves in a direction opposite said given direction on the inclined surface of the other of said support ramps to assist said other roller's movement in said opposite direction on said other of said ramps and assist in the elevation of one end of said first vehicle once the other end of said vehicle has been elevated.

3,865,267
CHILD-PROOF AND PHARMACIST-ASSISTING REVERSIBLE CLOSURE FOR CONTAINERS

Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415
Filed Dec. 20, 1973, Ser. No. 426,534
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—206 **17 Claims**

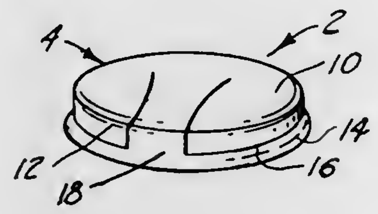


17. A reversible closure having two positions of use on a container comprising a first coupling part on said closure adapted to engage a container in one use position of the closure wherein the closure protects the interior of the container from contamination, the first coupling part separating from the container by application thereto of a simple force, and a second coupling part on the closure having positive interlocking engagement with the container in the second position of use of the closure on the container, the second coupling part

being releasable from the container only following a compound movement thereto relative to the container.

3,865,268
TEAR-OFF CAP CLOSURE

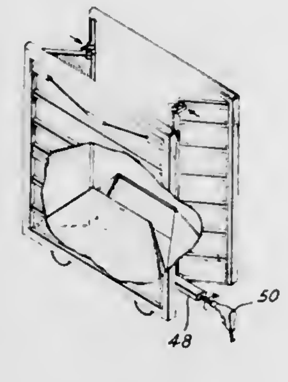
Jack A. Coop, 141 N. 24th St., New Castle, Ind. 47362
Filed Aug. 20, 1973, Ser. No. 390,095
Int. Cl. B65d *41/32, 41/10*
U.S. Cl. 215—253 6 Claims



1. A tear-off closure for a container comprising,
a cap body having a top and an integral, skirted cap wall depending from the periphery of the cap top for attachment to the container,
said cap wall terminating in a peripherally extending bead, a deformable bridge portion connects a minor portion of said bead with said cap,
a sever line extending generally around said cap wall from one side of said bridge portion to the opposite side of said bridge portion to enable severing of a major portion of said bead from said cap to form a pull-ring for pulling said cap from said container.

3,865,269
COLLAPSIBLE MATERIAL HANDLING AND STORAGE CONTAINER

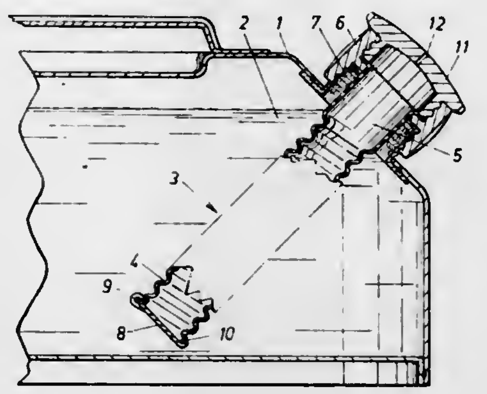
Kenneth L. Coleman, 1825 N. Lincoln Plaza, Apt. 105, Chicago, Ill. 60614
Filed Dec. 3, 1973, Ser. No. 421,238
Int. Cl. B65d *7/24*
U.S. Cl. 220—6 14 Claims



1. A collapsible container comprising, in combination,
two opposing, parallel, non-folding sidewalls,
two opposing, folding end-walls, each comprising a pair of adjacent panels joined by a vertically extending inwardly pivotable, central boundary,
hinge means for joining the outer vertical edges of each of said folding end-walls to the vertical edge of said non-folding sidewalls,
a floor structure adapted to be folded upwardly between said sidewalls when said container is collapsed, and
a two-way drive mechanism for urging the central boundaries of said opposing end-walls toward one another to collapse said container, and for applying a reverse force urging said central boundaries away from one another to erect said container.

3,865,270
DEVICE FOR COMPENSATING EXCESS PRESSURES IN CLOSED CONTAINERS

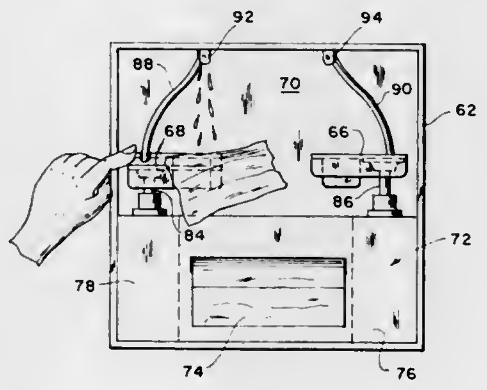
Bengt Olov Petersson, Korkarlens Gata 18, Hisings Backa, Sweden
Filed Mar. 8, 1973, Ser. No. 339,377
Int. Cl. B65d *25/00*
U.S. Cl. 220—85 B 2 Claims



1. In an improved device for compensating for pressures inside a closed container designed to hold volatile fluids, said device comprising an elongate hollow body adapted to project from the outside of said container into the container interior, means defining an opening communicating the interior of said hollow body with the atmosphere surrounding said container, said hollow body being flexible and so constructed, under the influence of an excess gas pressure generated inside said container, to be compressed so as to allow air present in said body to be evacuated through said opening, the inherent resiliency of said body being such as to allow said body to resume its original shape upon cessation of said excess gas pressure, the improvement comprising:
said hollow body being disposed in the filling and drainage aperture of said container and having the shape of a tube with a pleated or undulating wall; and
closure means being provided at the end of said hollow body which projects into the interior of the container to close said interior end.

3,865,271
DISPENSER AND LIQUID APPLICATOR FOR TOILET PAPER, PAPER TOWELS, AND THE LIKE

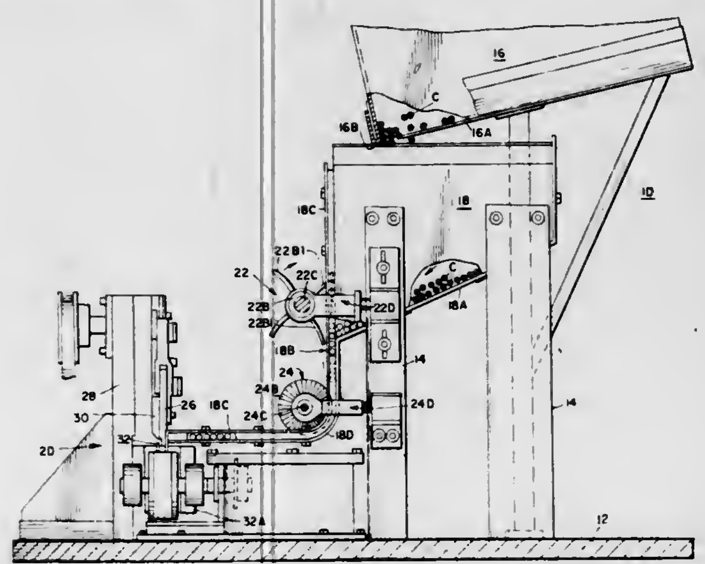
Max Gold, 3000 Bronx Park East, Bronx, N.Y. 10467
Continuation-in-part of Ser. No. 253,737, May 16, 1972, abandoned. This application July 26, 1973, Ser. No. 382,678
Int. Cl. A47k *10/44*
U.S. Cl. 221—96 5 Claims



1. A self-contained paper dispenser and flowable substance discharge device for selective application to said paper comprising: a cabinet provided with an interior access means, an expendable combination paper and flowable substance supply package, a valve and connected discharge conduit located inside of said cabinet, said valve being selectively attached to and removable from said flowable substance supply, a depressible manual operator in said cabinet, said conduit being positioned in said cabinet above and having a discharge end spaced from said manual operator whereby the user's hand grasping the paper may be inserted in said space between the discharge conduit end and said manual operator in order to depress said manual operator for opening the valve and permitting the flow of the flowable substance through said discharge conduit to said paper.

3,865,272
APPARATUS FOR TRANSFERRING CYLINDRICAL ARTICLES AND THE LIKE FROM A SUPPLY STATION TO A WORK STATION

Harvey A. Spies, Baltimore, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed Nov. 16, 1971, Ser. No. 199,270
Int. Cl. B65h *5/00*
U.S. Cl. 221—236 4 Claims

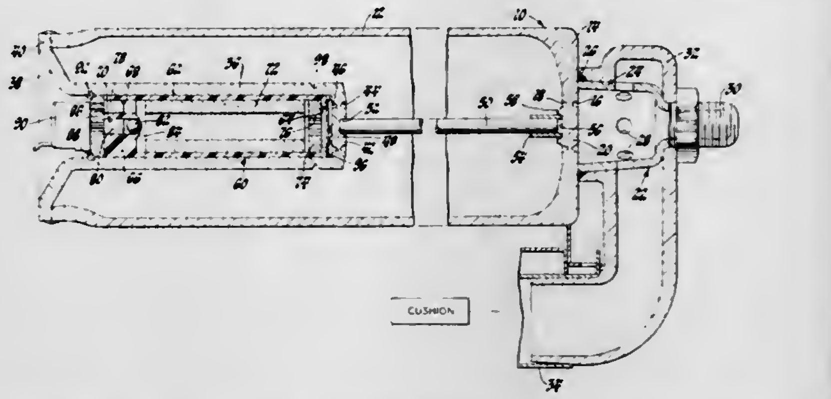


1. An apparatus for transferring elongated articles from a supply station to work station comprising:
a. guide means having an outlet end adjacent said work station and holding a plurality of said objects in tandem with the long dimension of the latter disposed transversely of the said guide means;
b. a reciprocating gate means mounted across said outlet end of said guide rails, adjacent said work station, for passing said articles to said work station in a first open position and for blocking the passage thereto in a second closed position;
c. flexible rotary brush means continuously energized and engaging one or more of said elongated articles in said guide means for continuously impelling said articles in side-by-side contiguous relationship toward said gate means with a substantially constant biasing force; and
d. means for selectively varying the rate of reciprocation of said gate means between said first and second positions to selectively control the number of said articles passed through said gate means from said guide means while said gate means is in said first position in each reciprocation of said gate means.

3,865,273
INFLATOR

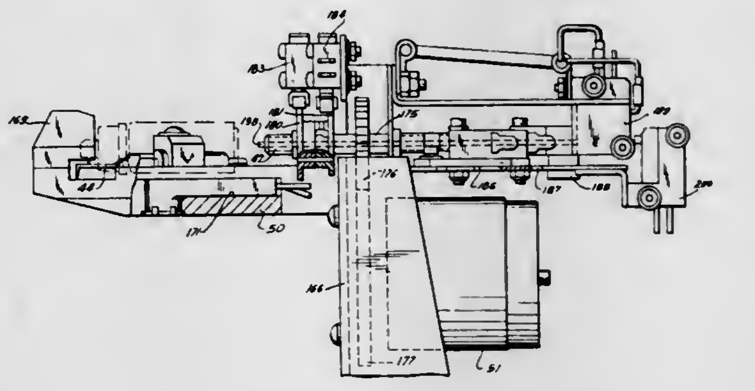
Philip B. Zeigler, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 25, 1973, Ser. No. 373,282
Int. Cl. F17c *7/00*
U.S. Cl. 222—5 1 Claim

1. The combination comprising, an inflator having a pressure fluid chamber and an annular combustion chamber opening at the outer end thereof to atmosphere, means sealing the inner end of the combustion chamber to the pressure fluid chamber, a cartridge assembly including an annular housing having inner and outer ends and containing a gas generating charge of propellant for inflating an occupant restraint cushion, igniter means mounted on the outer end of the cartridge assembly for initiating the charge of propellant, the housing, propellant charge and igniter means being inserted within the combustion chamber or withdrawn therefrom through the open outer end of the combustion chamber, the combustion chamber including a groove opening inwardly thereof adjacent the open outer end thereof, an annular split ring within the groove, and wedge means engaged between the split ring and the outer end of the cartridge assembly, and means coacting between the inner ends of the cartridge assembly and of the combustion chamber to bias the cartridge assembly outwardly of the combustion chamber and engage the wedge means with the split ring, the wedge means applying a wedging force on the split ring to wedge the split ring in the groove under the reaction forces of the cartridge assembly generated by initiation of the charge of propellant.



3,865,274
LIQUID DISPENSING APPARATUS

Joseph N. Genese, Paterson; Edward J. Rapoza; Charles F. Galanaugh, both of Butler; Harry M. Kennard, Chester; Roger A. Chevalaz, Rockaway, and John A. Smith, East Orange, all of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Division of Ser. No. 160,868, July 8, 1971, Pat. No. 3,785,533. This application Feb. 27, 1973, Ser. No. 336,280
Int. Cl. G01f *11/06*
U.S. Cl. 222—37 2 Claims

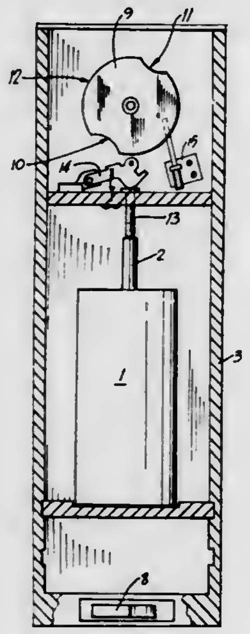


1. A liquid dispensing apparatus comprising:
a cartridge adapted to retain a quantity of liquid, said cartridge comprising a tubular barrel closed at one end by a nozzle and at the opposite end by a cylindrical piston, said cylindrical piston being positioned within the bore of said tubular barrel and having an external diameteradapted to sealingly engage the interior cylindrical surface of said bore,
a holding frame for mounting said cartridge with said nozzle directed downwardly, same frame further mounting an axially movable plunger having a forward end adapted to engage the outer wall of said cylindrical piston,
and means for axially advancing said plunger a predetermined distance whereby said piston is axially advanced into the bore of said tubular barrel and a predetermined quantity of said liquid is ejected through said nozzle,

means for initially advancing said plunger into engagement with the outer wall of said cylinder plug,
said initial advance means comprising a control rod disposed coaxially within said plunger,
said control rod being axially movable within said plunger and being normally disposed to extend a short distance beyond said forward end of said plunger,
switch means at the rear end of said plunger operatively connected to said control rod to detect rearward movement of said control rod in relation to said plunger, and said switch means acting to terminate said initial advance means when said control rod contacts the outside wall of said piston.

3,865,275
APPARATUS FOR OPERATING AN AEROSOL CAN

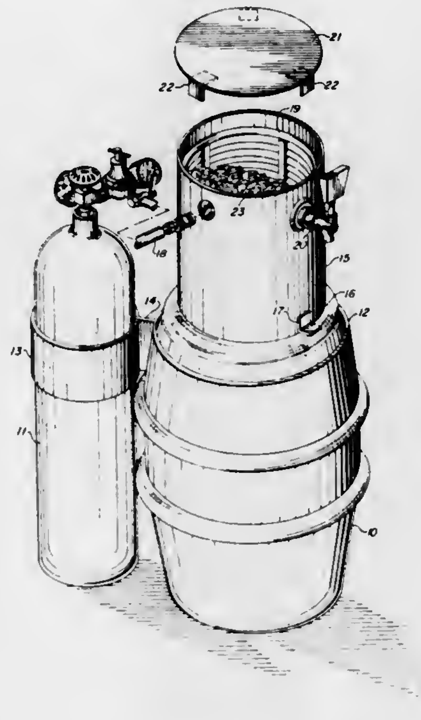
Anthony De Nunzio, Brentwood, N.Y., assignor to Raymond Lee Organization, Inc., New York, N.Y.
Filed July 30, 1973, Ser. No. 383,970
Int. Cl. B65d ***83/14***
U.S. Cl. 222—70 **1 Claim**



1. Apparatus for operating an aerosol can to spray its contents for predetermined periods of time, the aerosol can having a plunger extending therefrom which causes the can to spray its contents when depressed, said apparatus comprising
a housing supporting an aerosol can in an upright position;
an electric motor mounted in the heousing and having a shaft;
a source of electric power electrically connected to the motor for energizing the motor to rotate;
switch means interposed in the connection between the source of power and the motor for selectively controlling the energization of the motor;
a disc in the housing mounted on the motor shaft for rotation therewith and having more than one identation formed in the circumference thereof, the indentations being equiangularly spaced from each other, each indentation having the configuration of part of a circle;
a mechanical coupling movably mounted in the housing between the circumference of the disc and the plunger of the can, the mechanical coupling comprising a pin movably mounted in the housing for movement in axial directions in proximity with the plunger of the can and a spring-biased arm pivotally mounted in the housing between the circumference of the disc and the pin in a manner whereby when the indentation of the disc is adjacent the arm said arm moves into said indentation out of contact with the pin and when the remaining circumference of the disc is adjacent the arm it abuts said arm and moves said arm into contact with the pin and forces said pin against the plunger to depress said plunger to spray the contents of the can.

3,865,276
PORTABLE KEG TAPPER

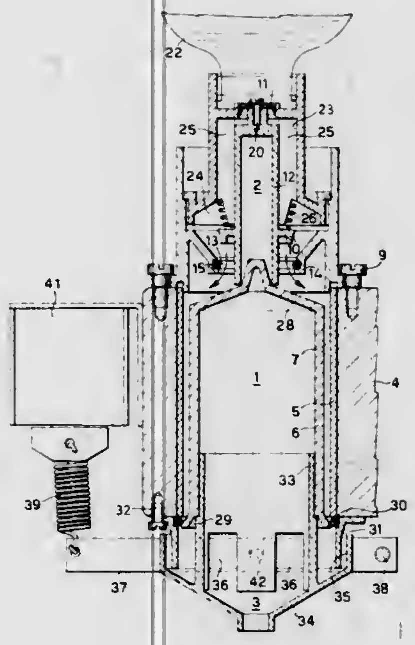
Hank A. Thompson, 3811 N. 21st Pl., Phoenix, Ariz. 85016
Filed Nov. 26, 1973, Ser. No. 418,952
Int. Cl. B67d ***5/62***
U.S. Cl. 222—146 C **1 Claim**



1. Portable apparatus for tapping a beer keg, said key including
a generally cylindrical side wall closed by a top and a bottom and having a recess formed in the upper end thereof, and
means defining a normally sealed tapping aperture in the top of the keg which is automatically opened when a tapping assembly is slidably sealingly inserted therethrough,
said tapping assembly including
an elongate rigid pipe dimensioned to extend from substantially the bottom of said keg upwardly through said tapping aperture and terminating at its upper end in means for releasably attaching a beer-delivery conduit thereto, and
a gas-delivery pipe formed around the upper portion of said tapping pipe to extend coaxially into the upper portion of said keg, the inside diameter of said gas-delivery pipe being larger than the outside diameter of said tapping pipe, the annular space between said pipes communicating with means for releasably connecting said gas-delivery pipe to a source of gas under pressure,
said apparatus comprising:
a. a portable ice-containing cooling chamber having the lower end thereof sized and shaped to be received within the recess in the upper end of said keg and having an aperture in the bottom thereof communicating with the tapping aperture in the top of said keg;
b. a beer-dispensing faucet carried by said cooling chamber; and
c. beer-delivery conduit means forming a cooling coil inside said ice-containing chamber, the inlet of said conduit means terminating in means for releasably coupling said coil to the upper end of said tapping pipe and the outlet thereof communicating with the inlet of said dispensing faucet.

3,865,277
BEVERAGE-DISPENSING MACHINE

Tito Rimini, Milan, Italy, assignor to Bras S.p.A., Rozzano (Milano), Italy
Filed Dec. 3, 1973, Ser. No. 420,855
Claims priority, application Italy, Dec. 5, 1972, 32516/72; Sept. 27, 1973, 29484/73
Int. Cl. B67d ***5/62***
U.S. Cl. 222—146 HE **11 Claims**

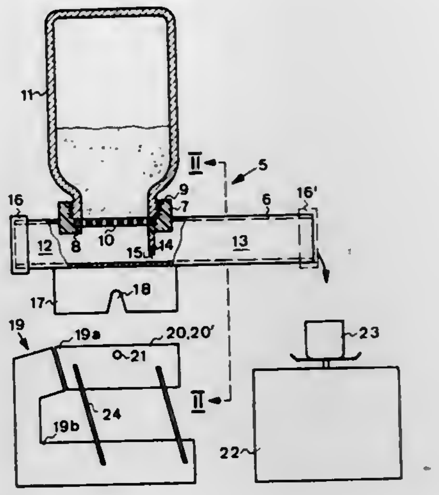


1. A hot beverage dispensing machine for delivering individual preselected dosage units of the beverage, characterized by comprising a reservoir in communication through a first port with a metering chamber which, in turn, communicates through a second port with a heating chamber equipped with a third dispensing port, a first, a second and a third valve means controlling said first, second and third port and being mechanically linked to be axially translated between a first and a second end position in which the first and the third ports are open while the second port is closed, respectively, and vice versa.

3,865,278
LABORATORY FEEDING DEVICE FOR PARTICULATE MATERIAL

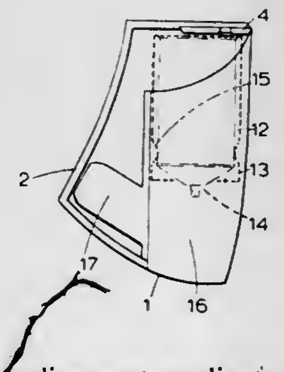
Fritz Gallati, Zurich, Switzerland, assignor to Mettler Instrumente AG, Greifensee-Zurich, Switzerland
Filed Aug. 15, 1973, Ser. No. 388,376
Claims priority, application Switzerland, Aug. 24, 1972, 12528/72
Int. Cl. B65g ***65/70***
U.S. Cl. 222—161 **9 Claims**

1. A feeding device comprising:
a. a tube having a first axis and formed with an axially open terminal opening and a radial opening axially remote from said terminal opening;
b. first coupling means for coupling a container to said tube in sealing engagement in a position in which said container communicates with the interior of said tube through said radial opening,
1. said first coupling means including an annular adapter having a second axis transverse to said first axis and formed with internal threads about said second axis,
2. said adapter being sealingly secured to said tube, and said second axis passing through said radial opening;
c. second coupling means for coupling said tube to a vibrator and for thereby vibrating said tube in the direction of said first axis, and a vibrator releasably attached to the tube by said second coupling means.



3,865,279
COVER FOR AEROSOL INHALATING DEVICE

Michael James, Welwyn Garden City, England, assignor to Allen & Hanburys Limited, London, England
Filed June 20, 1973, Ser. No. 371,941
Claims priority, application Great Britain, June 27, 1972, 29956/72
Int. Cl. A61m ***11/04***
U.S. Cl. 222—182 **3 Claims**



1. An aerosol medicament applicator comprising a hollow body open at the upper end thereof said hollow body having a chamber, said chamber having means to removably receive and retain an aerosol container, an applicator outlet spout leading out of a side of the body adjacent the lower end thereof and a cover member hingedly connected to the body at the upper end thereof, said cover having a first portion which, when the cover is closed, closes the open upper end of said hollow body and an integral second portion which encloses the outlet spout.

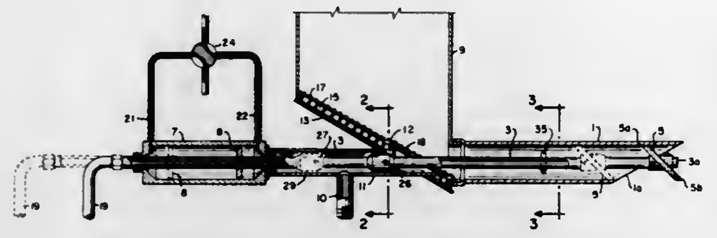
3,865,280
FILLING SPOUT ASSEMBLY FOR SOLID MATERIALS

Ely Knox Thomson, Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.
Filed Apr. 10, 1974, Ser. No. 459,771
Int. Cl. B67d ***5/54***
U.S. Cl. 222—193 **6 Claims**

1. A filling spout assembly comprising
a hopper leading to an opening for particulate solids;
the bottom of said hopper being equipped with a perforated solids support with an air space between said bottom and said support;
a conduit for supplying low-pressure air to said air space through an air passageway;
an open-ended tubular filling spout in communication with said opening;

an air evacuation tube concentrically and slideably mounted within said spout and passing through said opening;

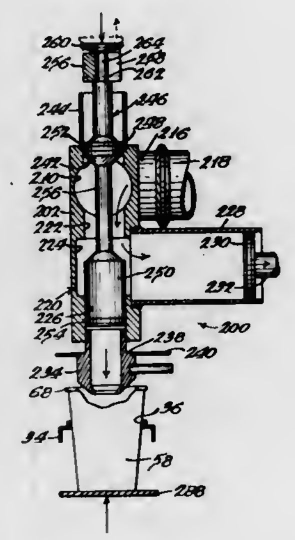
a valve mounted on said evacuation tube, the outer circular diameter of said valve slideably conforming to the inside diameter of said filling spout;



means for sliding said evacuation tube and valve from a first position in which said valve closes the end of said filling spout to a second position in which said valve opens the end of said spout and for sliding said tube and valve from said second position back to said first position.

3,865,281
APPARATUS FOR FILLING CONTAINERS

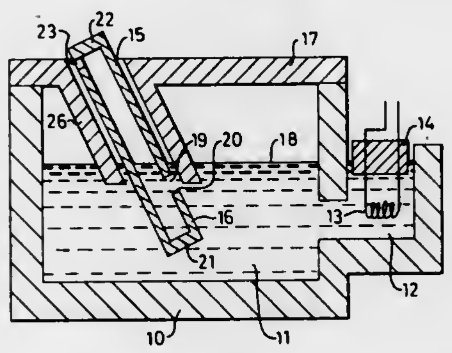
Carl Byrd, Chicago, and Martin Mueller, Glenview, both of Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 38,245, May 18, 1970, Pat. No. 3,659,744. This application Mar. 16, 1972, Ser. No. 235,438
Int. Cl. G01f *13/00*
U.S. Cl. 222—252 **16 Claims**



1. A container filling apparatus for transferring product from a product source to a container comprising: a valve body having a product inlet communicating with said product source; a valve chamber within said body; means establishing communication between said product inlet and said valve chamber; means defining a cylinder extending outwardly from said valve body in communication with said chamber; a piston reciprocally mounted in said cylinder; drive means for moving said piston within said cylinder; a product discharge nozzle positioned in an outlet end of said chamber; a control valve spool mounted for movement within said chamber between a first position and a second position, said spool including a plunger portion for forcing product from said inlet to said cylinder when said valve spool moves from said first to said second position, and said spool including a control portion movable from a position preventing product from flowing from said inlet to said cylinder in the first position of said valve spool while allowing product to flow from said cylinder outwardly of said chamber through said nozzle, said control portion being movable to a position allowing product to flow from said inlet into said cylinder in the second position of said valve spool while preventing product from flowing from said cylinder; and means for shifting said spool in timed relationship to the drive to said piston so that said piston moves away from said chamber in a product intake stroke when said valve spool is in said first position and said piston moves toward said chamber in a product discharge stroke when said valve spool is in said second position.

3,865,282
DEVICE FOR METERING MOLTEN METAL TO CONSUMER STATIONS

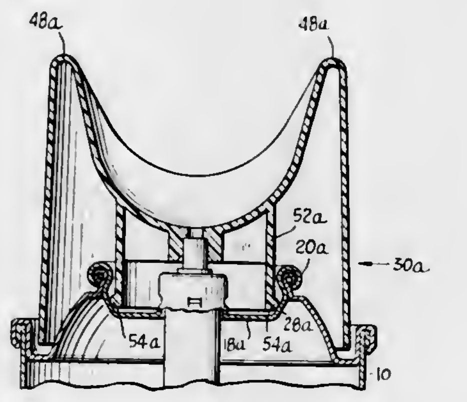
Sven Ivan Sieurin, Upplands Vasby, Sweden, assignor to Granges Essen Aktiebolag, Vasteras, Sweden
Filed May 31, 1973, Ser. No. 365,745
Claims priority, application Sweden, June 5, 1972, 7372/72
Int. Cl. B22d *37/00*
U.S. Cl. 222—356 **3 Claims**



1. A device for metering molten metal to casting machines comprising, in combination, a storage container with melt therein, a ladling device capable of being dipped into the melt in said storage container and movable between a ladle filling position in the melt and a ladle emptying position at a casting machine, said ladling device extending in an initial position with a close fit through an opening in a portion of the walls of said storage container, and at least one shield member extending into the melt for restricting the communication between said opening in the walls of said storage container and the surface level of the melt.

3,865,283
CONFINING HAND-HELD DISPENSER CAP

Thomas H. Hayes, Westport, Conn., assignor to VCA Corporation, Greenwich, Conn.
Continuation-in-part of Ser. No. 284,429, Aug. 28, 1972, Pat. No. 3,770,170. This application Nov. 1, 1973, Ser. No. 412,050
Int. Cl. B65d *41/18*
U.S. Cl. 222—402.11 **5 Claims**



1. A hand-held dispenser for a pressurized product, comprising in combination:

a. a container having a circular top rim,

b. a closure cup secured to the top rim of the container,

c. said cup having an upright wall with an annular recess providing an undercut surface, said wall further having an out-turned crimping bead adapted to be crimped over the rim of the container,

d. a valving member carried by said cup and reciprocative between predetermined end limits,

e. an actuator cap having means engageable with said valving member to operate the latter, said cap having a depending skirt insertable and movable in the upright wall of the cup,

f. said skirt having shoulder means adapted to be received in the annular recess of the cup wall, for enabling limited axial movement of said cap between advanced and retracted positions with respect to said cup,

g. said shoulder means normally retaining the cap against removal from the cup,

h. said container having a top wall provided with an annular groove at the outer edge,

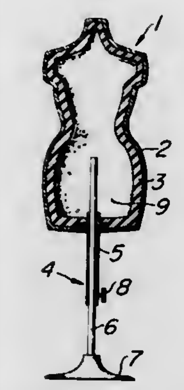
i. an additional depending skirt disposed outside and concentric with the first-mentioned skirt,

j. said additional skirt constituting the outer wall of the cap,

k. said additional skirt being receivable in said annular groove of the container top wall when the actuator cap is moved to its retracted position.

3,865,284
DRESS FORM OF CELLULAR DOUBLE LAYER OF THERMOPLASTIC MATERIALS

Ken Kazama, Kyoto; Kunio Ohno; Mamoru Umegae, both of Kawasaki, and Mineko Yonei, Takatsuki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed June 30, 1972, Ser. No. 267,932
Claims priority, application Japan, July 26, 1971, 46-55215
Int. Cl. A41h *5/00*
U.S. Cl. 223—68 **3 Claims**



1. A dress form comprising a layered wall having the external form of a human torso and having an outer cellular layer and integral thereto an inner cellular layer;

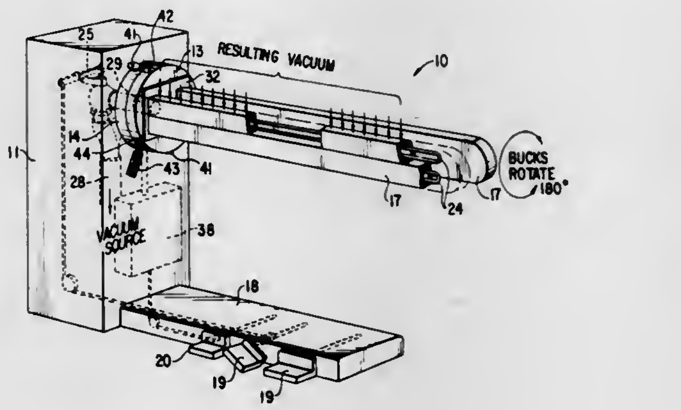
a. said outer cellular layer having an expansion ratio of from 2 to 20 and comprising a thermoplastic polymeric material having an elastic modulus of 500 to 10 kg/cm² and selected from the group consisting of ethylene-vinyl acetate copolymers, ethylene-acrylate copolymers, and ethylene-methacrylate copolymers; and

b. said inner layer comprising a thermoplastic polymeric material having a Young's modulus of 2,000 to 50,000 kg/cm².

3,865,285
SEAMBUSTER

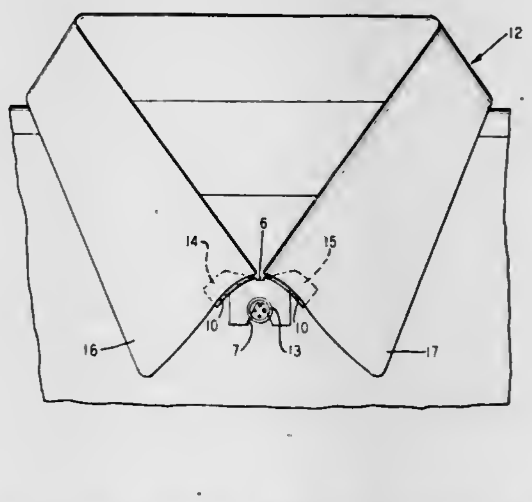
Leonard J. McCormack, Clearbrook, Va., and Wallace L. DeGrange, Jr., Martinsburg, W. Va., assignors to Reimers Electric Steam, Inc., Clearbrook, Va.
Filed July 8, 1974, Ser. No. 486,439
Int. Cl. D06c *15/00*
U.S. Cl. 223—73 **4 Claims**

1. A seambuster apparatus for pressing fabric materials, comprising: a hollow pedestal; a rotatable shaft mounted in said pedestal; means for rotating said shaft through an angle of 180°; a buck plate mounted for rotation on one end of said shaft exteriorly of said pedestal; a pair of elongated pressing bucks, one end of each buck being attached to said buck plate, each pressing buck being of generally rectangular cross-section with the top and bottom surface thereof being perforated, and being divided by a partition into an upper and lower compartment extending the length of said buck; four holes extending through the central portion of said buck plate, said holes being aligned with the ends of the four buck compartments; a pair of vacuum activator valves mounted in said pedestal, said valves being connected at their outlet ends to a common vacuum source and each valve being connected at its inlet end to a conduit which extends to a hole in a bearing plate mounted on the exterior of the pedestal, said bearing plate being aligned with the buck plate so that each of the two holes in the bearing plate is in alignment with a respective upper hole in the buck plate, with the result that fluid communication is provided between each upper buck compartment and a respective vacuum activator valve; means for operating each vacuum activator valve to draw a vacuum on the corresponding upper buck compartment; a heating element located in each of the four compartments and extending the length thereof; and means for operating each heating element.



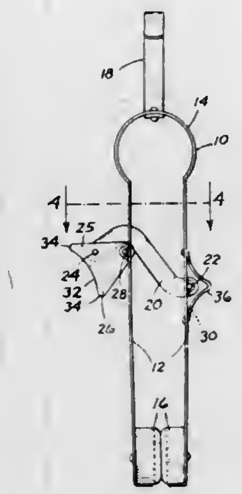
3,865,286
COLLAR STAY

Irving D. Tiss, 2 Archbridge Ln., Springfield, N.J. 07081
Filed Feb. 21, 1974, Ser. No. 444,379
Int. Cl. D06c *15/00*
U.S. Cl. 223—83 **2 Claims**



1. A collar stay in the form of a stiff yieldably flexible flat substantially H-shaped material having vertically oriented opposite side edges and horizontally oriented upper and lower edges, the upper and lower edges each having a V-shaped notch therein centrally between the opposite side edges of the material and located in a common theoretical vertical plane, the notch in the horizontally oriented upper edge having a depth substantially greater than the notch in the horizontally oriented lower edge, one flat surface of the material being coated with a pressure sensitive adhesive material, and a removable backing material covering the pressure sensitive adhesive material.

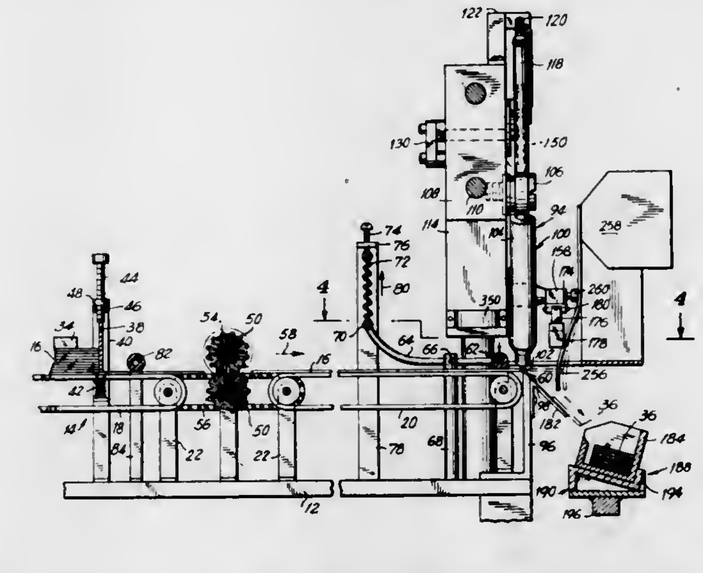
3,865,287
GARMENT HANGER
Eldon L. Peterson, 4631 E. B St., Tacoma, Wash. 98404
Filed Nov. 28, 1973, Ser. No. 419,639
Int. Cl. A47j *51/14*
U.S. Cl. 223—96 **2 Claims**



1. A garment hanger comprising:
- a. a U-shaped body member having a pair of arms and a springy connecting portion therefor normally urging the arms apart,
- b. jaw means on said arms arranged to receive a garment portion therebetween for clamping and holding the garment,
- c. a laterally extending link pivotally connected at one of its ends to one of said arms,
- d. an over-center latch member pivotally connected to the other of said arms and having a finger-engaging portion projecting laterally outward from said arm for finger engagement by an operator,
- e. means pivotally connecting the other end of said link to said latch member,
- f. said latch member being rotatable between a released position and an over-center locked position, the movement of said latch member to its released position driving said link and said one arm outwardly from the arm on which the latch member is supported to spread the arms apart to receive a garment between the jaws and the movement of said latch member to its over-center locked position pulling the link and said one arm toward the arm on which the latch member is supported to clamp the jaws together and hold a garment therebetween,
- g. and finger abutment means on the outside of the arm to which said link is pivotally connected facilitating anchoring one finger thereagainst upon engaging said latch member with another finger of the same hand, thus providing a clamping garment hanger which is operable between the released and locked positions of said latch member by one hand.

3,865,288
APPARATUS FOR MANUFACTURING SLIDE COVERS
Peter Hunsinger, Brooklyn, N.Y., and James C. White, Rutherford, N.J., assignors to Propper Manufacturing Company, Inc., Long Island, N.Y.
Division of Ser. No. 115,211, Feb. 16, 1971,. This application Oct. 27, 1972, Ser. No. 301,683
Int. Cl. B26f *3/00*
U.S. Cl. 225—96.5 **7 Claims**

1. In an apparatus for manufacturing slide covers, feeding means for successively feeding elongated blanks longitudinally through and beyond a predetermined cutting location cutting means located at said cutting location for cutting a slide cover from a blank which extends through and beyond said cutting location, and control means for responding automatically to movement of each blank through and beyond said cutting location and operatively connected to said feeding means and cutting means for automatically terminating the operation of said feeding means when a predetermined length of each blank extends beyond the cutting location and for then operating the cutting means to cut a slide cover of said predetermined length from each blank, and said control means then again starting the operation of said feeding means at the end of the operation of said cutting means so that said control means automatically carries out successive cylces during which each blank is first fed and then cut for automatically deriving slide covers of predetermined length from blanks successively fed by said feeding means, said cutting means including a scoring means for scoring a cutting line across a blank at said cutting location and a hammer means for tapping the blank beyond the cutting line scored therein by said scoring means to break a slide cover from the blank along said cutting line, said scoring means and hammer means both being situated over a blank with said cutting means further including an anvil edge extending along said cutting line beneath a blank with the latter extending beyond said anvil edge to be engaged by said hammer means, and a stationary inclined receiving surface extending downwardly from said anvil edge and spaced beneath the blank at the side thereof opposite from said hammer means so that when the latter breaks a slide cover from the blank, the slide cover will be received by said stationary receiving surface to slide down the latter.



3,865,289
FORWARD DRAW REVOLVER HOLSTER
Paul D. Boren, 9426 Portada Dr., Whittier, Calif. 90603
Filed Dec. 14, 1973, Ser. No. 425,175
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 B **3 Claims**

1. A forward draw holster comprising:

a two-ply body having a rear portion bent to curved form, the same being provided with an elongated opening closed on all sides to allow the trigger and trigger guard of a revolver disposed in the holster to extend rearwardly therethrough,

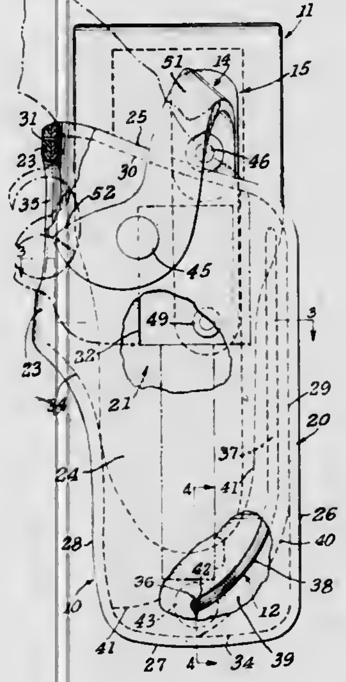
opposite wing-shaped portions of generally rectangular shape extending from the opposite sides of said rear portion and folded forwardly to form the opposite sides of the holster,

said wing-shaped portions extending downwardly from said rear portion to a length to accommodate the barrel and adjacent portions, and the muzzle, of a revolver disposed in the holster,

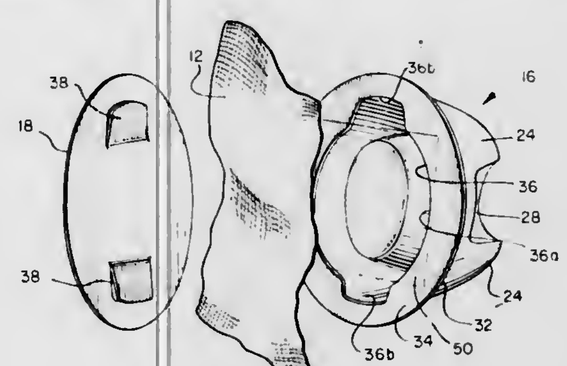
the upper edge of each of said holster sides sloping downwardly from the upper edge of the rear portion toward the respective forward edges of said sides,

the holster sides, adjacent to their front edges, being provided with pockets between the two plies of the body, said pockets being generally parallel to said front edges of the holster sides, for the upper parts of the height of said sides, and rearwardly curved, for the lower parts thereof, toward the rear edges of the holster sides and away from the forward edges of the holster sides, and

a spring for biasing said forward edges toward each other comprising two slightly converging arms residing in the parallel upper parts of the pockets, the lower ends of said spring arms being rearwardly curved and residing in the rearwardly curved portions of the mentioned pocket, and the lower portions of the rearwardly curved spring arm portion being connected by a rounded bight that extends through the inner plies of the holster sides and across the space, between said sides, that is below the end if the muzzle of a revolver disposed in the holster, the portion of the mentioned spring bight that extends across the space between the holster sides is provided with a non-metallic member that is interposed between the end of the revolver muzzle in said holster and adjacent portions of the spring bight to prevent abrasion-causing contact between the spring bight and the muzzle during movement of the revolver to a generally horizontal position with said muzzle protruding between the forward edges of the holster sides.

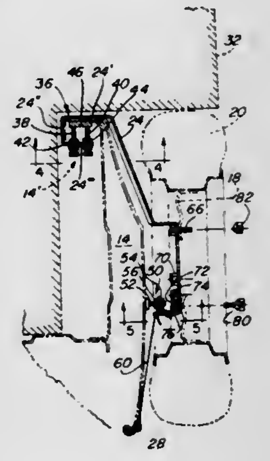


3,865,290
TENNIS BALL HOLDER
Charles A. Sperling, Wayland, Mass., assignor to Cross Newform Plastics Co., Inc., Worcester, Mass.
Filed Oct. 5, 1973, Ser. No. 404,030
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 D **5 Claims**



1. A ball holder comprising
- A. a hollow shell
  - 1. having a concave face arranged to resiliently receive and engage a ball,
  - 2. being formed with a plurality of hollow, resilient fingers distributed about and projecting out from the concave face of the shell, and
  - 3. being formed with at least two thin-walled webs stretching between at least three adjacent shell fingers, and having a generally flat rear wall,
- B. means defining a keyhole in the rear wall, and
- C. a flat plate arranged to be positioned flush against the rear wall, said plate constituting a key arranged to engage in the keyhole when the plate is placed flush against the rear wall so that the shell and plate can be locked together on opposite sides of a player's clothing to anchor the holder to the clothing.

3,865,291
SPARE TIRE HOLDER
Richard Wm. Tidwell, 4308 Mackey Ave., St. Louis Park, Minn. 55424
Filed Mar. 20, 1973, Ser. No. 343,168
Int. Cl. B62d *43/02*
U.S. Cl. 224—42.24 **4 Claims**



1. A spare tire holder for a pickup truck having a box portion including upstanding side walls which have an integral top wall, comprising

an elongated spine capable of bearing the weight of a truck wheel and tire, the maximum horizontal and vertical dimensions of said spine lying parallel to said side walls when said spine is mounted on said truck being less than the outside diameter of said truck wheel and tire;

adjustable wheel securing means for securing truck wheels of various dimensions to said spine;

clamping means positioned beneath the top wall for clamping the upper portion of said spine to the top wall of one of said side walls without altering said one of said side walls, the maximum horizontal dimension of said clamping means lying parallel to said side walls when said spine is mounted on said truck being less than the outside diameter of said truck wheel;

adjustable pad means for preventing the chafing of said one of said side walls by said spine and permitting selective orientation of said spine;

hook means for engaging the bottom of one of said side walls; and

tension means extending between said hook means and the lower portion of said spine for maintaining said pad means in contact with said one of said side walls.

3,865,292
BOOK STRAP
Gerard X. Foley, 44 Franklin Ave., New Rochelle, N.Y. 10805
Filed Feb. 4, 1974, Ser. No. 439,240
Int. Cl. B65d *63/16*
U.S. Cl. 224—55 **5 Claims**

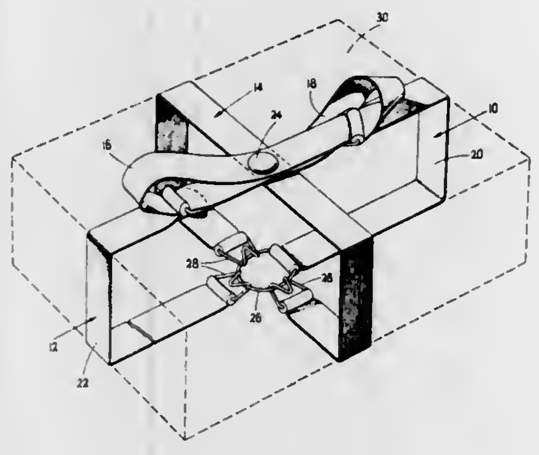
1. A device for carrying a package comprising:

a first strap, a second strap and a third strap, each of said straps being formed from an elastic material;

means securing said first, second and third straps to each other at a common location between the ends of each of said straps;

said first and second straps extending along substantially the same direction, said first strap having an end which extends outwardly from said common location beyond the adjacent end of said second strap, the opposite end of said second strap extending beyond the corresponding opposite end of said first strap;

a looped member secured to the shorter segment of said second strap and receiving the longer segment of said first strap therethrough;



the shorter end of said first strap having a looped member secured thereto and receiving the longer segment of said second strap therethrough;

said third strap extending substantially transverse to said first and second straps; and

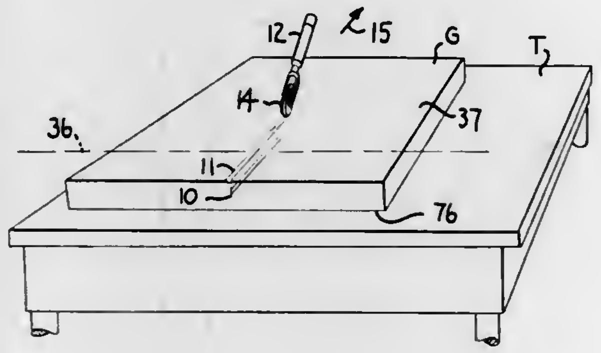
fastener means secured to the outermost end of each of said first and second straps and to each of the ends of the third strap to enable said straps to be wrapped about said package and to enable said fasteners to be secured together on the opposite side of said package.

3,865,293
SUBSURFACE CRACKS

Fred M. Ernsberger, Pittsburgh, and Charles M. Hollabaugh, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 10, 1972, Ser. No. 242,511
Int. Cl. B26f *3/00*

U.S. Cl. 225—2 **21 Claims**



1. A method of producing a cut edge on a piece of glass comprising the steps of:

applying a force to produce an indentation in a major surface of the glass and, concurrently, a subsurface discontinuity therebelow along an intended path of cut, at least a substantial portion of said discontinuity, along its length, being spaced from said major surface by a zone of glass, and

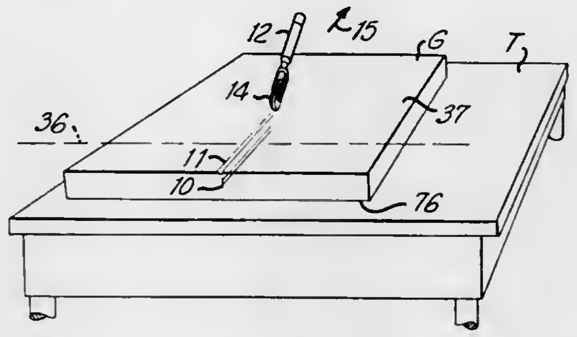
projecting said discontinuity deeper into the thickness of said glass after said discontinuity is produced.

3,865,294
SUBSURFACE CRACKS

Fred M. Ernsberger, Pittsburgh, and Charles M. Hollabaugh, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 242,511, April 10, 1972,. This application Dec. 6, 1973, Ser. No. 422,393
Int. Cl. B26f *3/00*

U.S. Cl. 225—2 **4 Claims**



1. A method of producing a subsurface discontinuity in a piece of glass comprising the steps of:

positioning a wheel that has a diameter of at least approximately 12 millimeters on a major surface of a piece of glass,

applying a force of at least approximately 80 kilograms to said wheel in a direction substantially perpendicular to said major surface, and

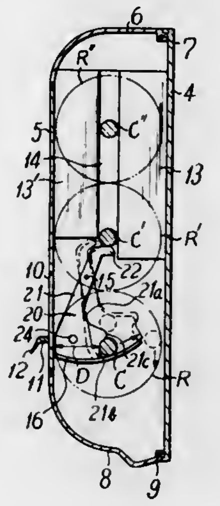
advancing said wheel along the intended path to create an indentation in said surface and, concurrently, a subsurface discontinuity therebelow in the glass.

3,865,295
TOILET PAPER ROLL HOLDING DEVICE

Tadasu Okamura, 261 Narashino-machi, 4 chome, Funabashi City, Japan

Filed Sept. 13, 1973, Ser. No. 396,749
Claims priority, application Japan, Dec. 29, 1972, 47-3587
Int. Cl. B65h *19/00*

U.S. Cl. 225—47 **4 Claims**



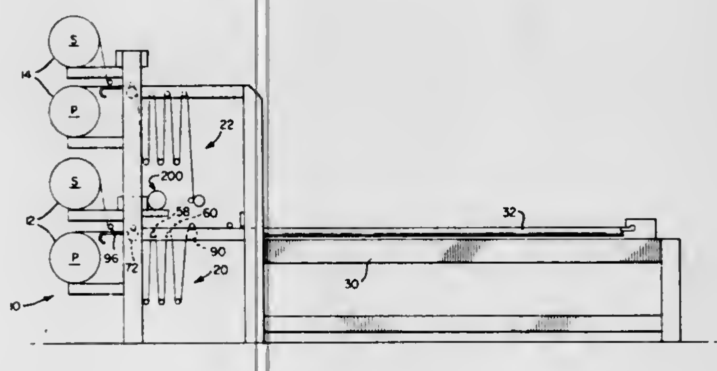
1. A toilet paper roll holding device comprising an elongated vertically extending housing opening at the top and bottom ends for receiving a plurality of toilet paper rolls one upon another and including a front wall provided with a paper dispensing window, a rear wall spaced from and parallel to said front wall and a pair of spaced and parallel side walls; a top cover pivoted to said open top end of the housing; a bottom cover pivoted to said open bottom end of the housing; and a paper shearing blade provided on said front wall adjacent to said dispensing window, a rockable paper roll receiving and core discharge member pivoted adjacent to the top end to said side walls and including a pair of opposite and spaced parallel upright arms integrally connected at their front edges by a transverse connection part, each of said upright arms bulging rearwardly and downwardly to position the center of gravity thereof at a point below the mid-point of the height to be urged forwardly by the weight of a paper roll in the dispensing position adjacent to said window and pivots backwardly as the paper roll is consumed and having a core engaging bent upper end for moving to engage and disengage from the underside of the lowest one of said paper roll cores, the rear edge provided with an upper larger arcuate recess and a lower smaller arcuate recess separated from said upper recess by an intermediate projection and the upwardly arcuated lower edge; a pair of upwardly arcuated guide tracks formed with the inner surfaces of said side walls in a position to slidably engage said arcuated lower edges of the arms so as to hold said paper roll in the dispensing position in cooperation with said lower smaller recesses in the rear edges of the arms and to slidably guide said rockable member and the core of said paper roll in the dispensing position as the paper roll is consumed and the rockable member pivots rearwardly accordingly to move the empty core to the discharge position; and operation means for said rockable member to positively pivot the rockable member and slide the member on said tracks rearwardly.

3,865,296
APPARATUS FOR COVERING A GLASS SHEET WITH PAPER

Robert F. Alverson, Kingsport, Tenn., assignor to ASG Industries, Inc., Kingsport, Tenn.

Filed Feb. 25, 1974, Ser. No. 445,072
Int. Cl. B65h *17/42*

U.S. Cl. 226—110 **9 Claims**



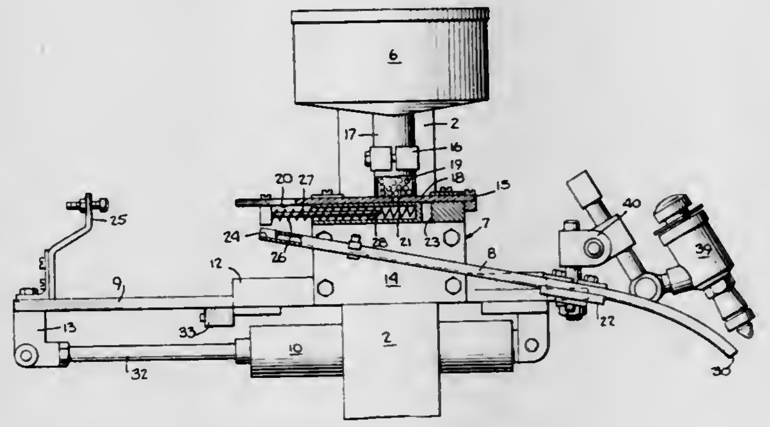
1. Apparatus for covering completely a sheet of plate glass which is adapted to be conveyed to and supported by a bed with sheet material comprising a frame, said frame supporting said bed at one end, feed means mounted by said frame at a position disposed therefrom, said feed means including a plurality of feed sections each having means adapted to support said sheet material in rolls of extended length, said feed section means being disposed across the width and at at least two elevations with respect to the plane of said bed, alternate feed section means being disposed at different elevations, carriage means mounted by said frame adjacent said bed, means on said carriage means for gripping a leading end of said sheet material, magazine means associated with each feed section for storing a continuous length of sheet material, means for indexing sheet material from selected rolls to said carriage means, and means for driving said carriage and selected lengths of sheet material across said bed as said selected magazine is resupplied with sheet material.

3,865,297
AUTOMATIC CHARGE FEEDER

Richard Stiefel, Weehawken, and Charles G. Krumm, Wyckoff, both of N.J., assignors to Kahle Engineering Co., Union City, N.J.

Filed Mar. 14, 1973, Ser. No. 341,316
Int. Cl. B23k *1/00, 5/00*

U.S. Cl. 228—11 **11 Claims**



1. An automatic charge feeder for feeding discrete charges onto an article in an article fastening system comprising the combination of:

a reservoir for the charges,

an elongated charge feed tube positioned below said reservoir having a charge receiving aperture at one end and a charge dispensing outlet at the other end,

a movable mounting for said tube,

drive means coupled to said mounting for moving said feed tube from a first position to a second extended feeding position with the charge receiving aperture at said reservoir and the dispensing aperture adjacent to an article and at a lower level than said charge receiving aperture,

means for directing a charge from the reservoir into the receiving aperture of the feed tube while the tube is at the extended position,

control means for said drive means, and

said control means comprising a sensor for detecting the arrival of an article at the charge feeder.

3,865,298
SOLDER LEVELING

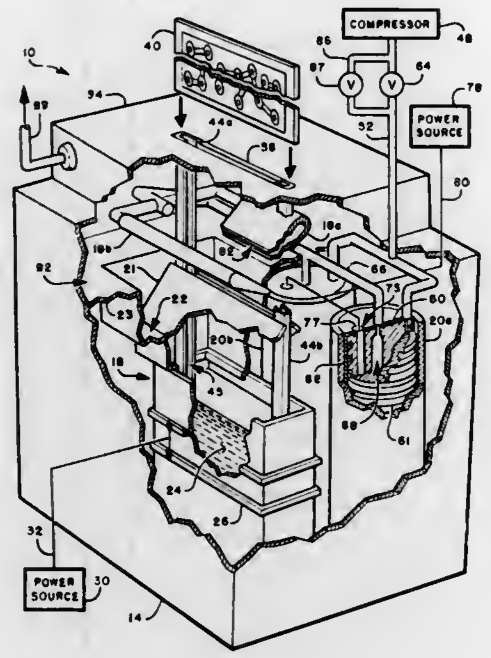
Travis A. Allen, and Robert T. Sylvester, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 14, 1973, Ser. No. 388,305
Int. Cl. B23k *1/08, 3/00*

U.S. Cl. 228—20 **8 Claims**

1. Apparatus for removing excess solder from a printed circuit board containing conductive areas and plated through-holes and the like, comprising a container for retaining heated solder, generally vertically disposed guide means for guiding said printed circuit board into and out of said heated solder, jet means above said container for impinging from opposite directions compressed and heated gas onto opposite surfaces of a said printed circuit board, and a deflector disposed inter-

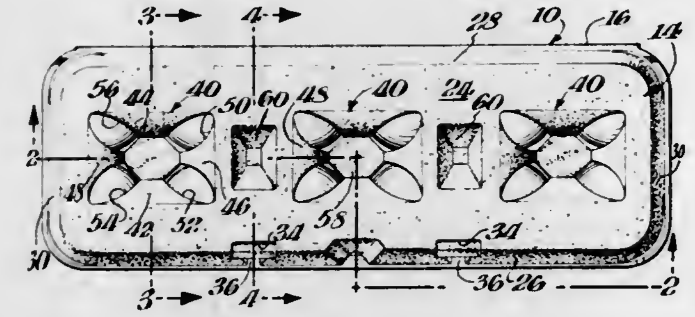
mediate said jet means and said container and inclined downwardly away from said guide means and overlying said con-



tainer for deflecting said gas away from said container and the surface of said heated solder therein.

3,865,299
EGG CARTON WITH FLEXIBLE WINDOW WELL

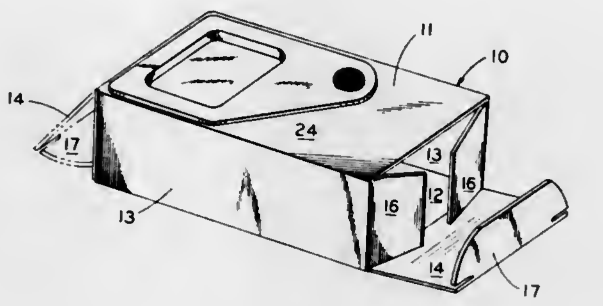
Kenneth L. Crabtree, Fairfield, Maine, assignor to Keyes Fibre Company, Waterville, Maine
Filed Feb. 12, 1974, Ser. No. 441,906
Int. Cl. B65s *1/00*
U.S. Cl. 229—2.5 10 Claims



1. An egg carton molded from flexible material comprising a bottom having two generally parallel rows of downwardly dished egg pockets and upwardly tapering posts interspersed between the egg pockets, a cover having a generally flat top and downwardly and outwardly flaring side walls adapted to overlie the bottom in the closed carton condition, means for securing the bottom and cover together in the closed carton condition, the cover further including at least one window well downweardly recessed from the flat top including four downwardly and inwardly flaring separator segments, the segments being spaced from each other to define four open egg viewing windows in the window well, the segments being arranged so that they are located in the closed carton condition between two eggs packaged in one row of egg pockets and two eggs packaged in the other row of egg pockets and so that the four windows each provide a view of a portion of one of the four eggs, and a web connecting the lower portions of the segments together between the four eggs at a level in the closed carton condition which avoids contact with any portion of the carton bottom to permit flexure of the window well whereby the separator segments and web can adjust to accommodate variations in the spacings between the four eggs.

3,865,300
CONTAINER

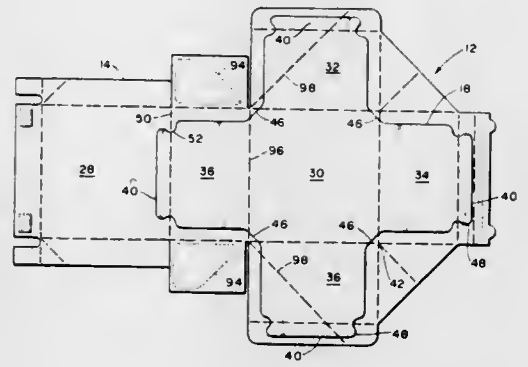
Jack E. Caveney, Chicago, and Franklin L. Randolph, Clarendon Hills, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Sept. 7, 1972, Ser. No. 287,195
Int. Cl. B65d *5/16, 43/18*
U.S. Cl. 229—7 R 4 Claims



1. A container comprising: a front wall, a rear wall and side walls; said front wall having a pair of spaced openings, one of said openings comprising a circular anchoring opening and the other of said openings comprising a substantially rectilinear access opening; and a closure strip having a pair of spaced undercut complemental bosses respectively removably engaged in said spaced openings, said closure strip lying within the boundary of said front wall and being pivotable about said anchoring opening, said rectilinear access opening being substantially rectangular and the corners of said rectangular opening farthest removed from said circular anchoring opening being rounded, the degree of undercut of the access boss of said closure strip being nonuniform.

3,865,301
PARTIALLY SHIELDED FOOD PACKAGE FOR DIELECTRIC HEATING

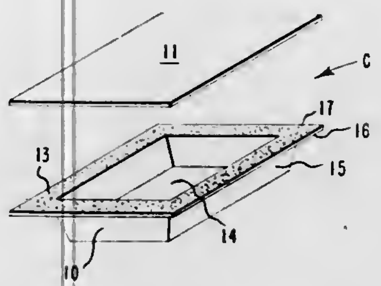
Robert G. Pothier, Amherst, N.H., and Thomas E. Ford, Arlington, Mass., assignors to Trans World Services, Inc., Melrose, Mass.
Filed Nov. 15, 1973, Ser. No. 415,962
Int. Cl. B65d *5/40, 5/56, 25/14*
U.S. Cl. 229—14 H 11 Claims



1. A food package comprising, in combination, a dielectric sheet and a conductive sheet thereon, said dielectric sheet having a plurality of panels and forming when set up a substantially closed container having a first wall and second and third walls contiguous with the first wall at fold lines intersecting at a corner point of the package, said conductive sheet having portions covering a region of each of said walls and having an edge substantially spaced from said corner point.

3,865,302
CONTAINER FOR COOKING FOOD THEREIN

William P. Kane, Bon Air, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 10, 1972, Ser. No. 305,250
Int. Cl. A47j *27/00;* **B65b** *7/28;* **B65d** *1/00, 5/64;* **B65b** *29/08*
U.S. Cl. 229—43 3 Claims



1. A container for cooking food including:

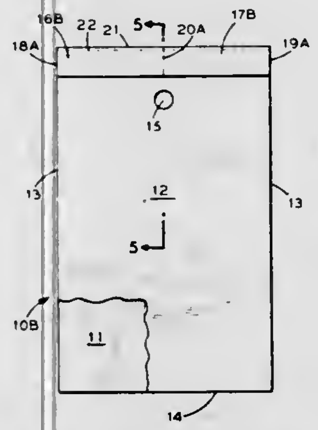
the combination of a dish-like tray of polyethylene terephthalate, the tray having a bottom part and a body part and an outwardly projecting peripheral flange having an upper surface on the upper extremity of the body part;

an adhesive of an ethylene copolymer and petroleum wax having a composition consisting essentially of (a) 30 percent to 40 percent by weight of petroleum wax and (b) 70 percent to 60 percent by weight of such ethylene copolymer, positioned only on the upper surface of the flange, the adhesive having a melt flow of less than 0.2 grams at 320°F. (160°C.) for 10 minutes and a surface free energy of less than 30 dynes; and

a substantially flat cover part of polyethylene terephthalate having lower surface parts adapted to be bonded to the flange by the adhesive, wherein said adhesive is free from flow at cooking temperatures up to about 400°F and said combination exhibits a bond strength greater than 100 grams/inch at 400°F and less than 500 grams/inch at room temperature when said cover part is bonded to said flange.

3,865,303
BAG AND CLOSURE

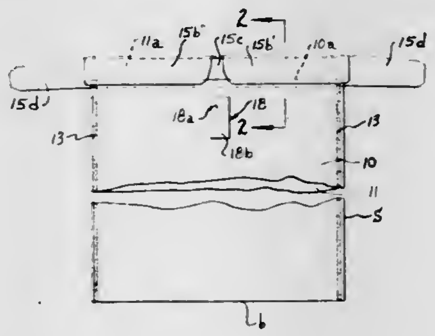
Meyer Korn, 1980 S. Ocean Dr., Hallandale, Fla. 33009
Filed Nov. 13, 1972, Ser. No. 305,736
Int. Cl. B65d *33/16*
U.S. Cl. 229—62 2 Claims



1. A bag comprising opposed plastic film panels, said panels being interconnected at their bottom and side edges, the unconnected top edges of said panels providing a mouth portion, each of said panels being formed with a single opening adjacent the mouth portion of said bag, said openings being in alignment with each other and being disposed intermediate the side edges of said panels, tieing means for the mouth portion of said bag, said tieing means comprising a strip, said strip comprising a pair of strip portions in end to end relation to each other, said strip being disposed adjacent one of said panels at the mouth portion of the bag, said strip being integral with said one panel, said strip overlying the outer surface of said one panel, a horizontal line of perforations defining the juncture of the top edge of said strip and said one panel, said strip being separable along a vertical line of perforations in said strip at a point intermediate the ends thereof to form said pair of strip portions, each having a free end, one free end of one strip portion being in opposed relation to one free end of the other strip portion, the said free ends of said strip portions being insertable through the aligned openings in said panels and drawn in a direction to constrict the mouth portion of the bag, the one free end of the one strip portion being tieable to the one free end of the other strip portion to provide a tied closure for the constricted mouth portion of the bag.

3,865,304
BAG CONSTRUCTION

Albert B. Mojonnier, Chicago, and Paul W. Lenke, Skokie, both of Ill., assignors to Albert Majonnier, Inc., Franklin Park, Ill.
Filed July 26, 1972, Ser. No. 275,229
Int. Cl. B65d *33/30*
U.S. Cl. 229—65 9 Claims



1. A reclosable bag construction comprising: front and rear walls of flexible sheet material connected at the side edges and at the bottom and open at the top, the rear wall being longer than the front wall to provide a top flap portion on said rear wall extending a selected height above the top edge of the front wall, and an elongated strap of ductile metal having a U-shaped cross section along at least a major portion of its length, said U-shaped strap having a front and rear flange portion respectively overlying the inner and outer faces of said top flap portion on the rear wall and clamping the top flap portion therebetween to attach the strap to the bag, said front flange portion extending downwardly from the upper edge of said top flap portion a distance slightly greater than said selected height of the top flap portion and overlying the outer face of said front wall along the upper edge thereof to releasably clamp said upper edge of the front wall to said rear wall and thereby releasably close the top of the bag whereby the front wall of the bag can be withdrawn from beneath the front flange portion of the strap to open the bag without releasing the front and rear flange portions of the strap from clamping engagement with the rear flap.

3,865,305
PROGRAMMABLE DISTANCE MEASURING INSTRUMENT

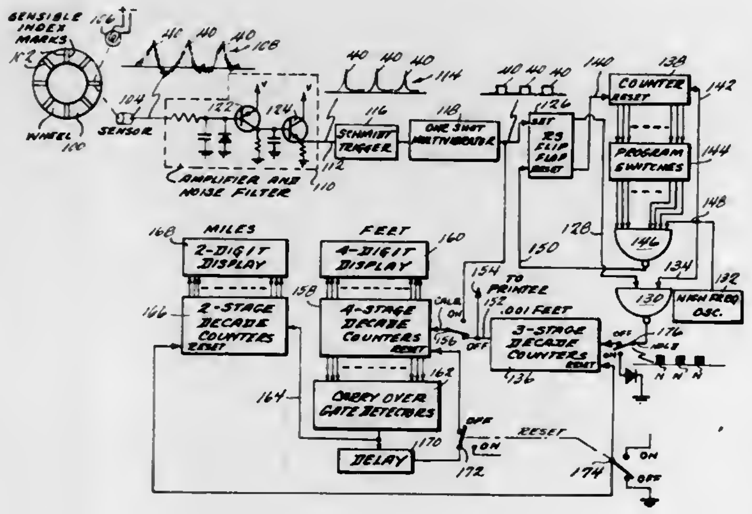
Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio
Continuation of Ser. No. 194,401, Nov. 1, 1971, abandoned. This application Dec. 27, 1973, Ser. No. 428,700
Int. Cl. H03k *21/36*
U.S. Cl. 235—92 DN 13 Claims

1. A variably programmable electronic distance measuring instrument for accumulating arbitrary distance increments in terms of any desired unit of distance measurement comprising:

a rotatable wheel having an unknown circumference dimension adapted for traversing distances, input means adapted to cooperate with said rotatable wheel for repetitively producing electrical distance pulses, each of said distance pulses representing an arbitrary unknown but relatively fixed increment of distance or length traversed by said wheel under constant measurement conditions such as wheel speed,

variably adjustable programmable control means connected to said input means for producing a variable preselectable number of electrical clock pulses in response to each occurrence of one of said distance pulses, said preselectable number being variably selectable to represent the magnitude of said increment of arbitrary unknown distance or length in accordance with any desired arbitrary basic unit of distance measurement, and

accumulator and display means connected to receive and accumulate said clock pulses from said programmable control means whereby digital data is provided and visibly displayed which data represents a total measured distance or length traversed by said wheel comprising a plurality of said arbitrary unknown increments which is directly displayed in terms of said desired basic unit of distance measurement,



said variably adjustable programmable control means comprising:

clock means for producing clock pulses at a repetition rate that is high compared to the maximum expected repetition rate of said distance pulses,

digital counter means connected to count said clock pulses,

variably adjustable program means for presetting digital data therein representing said variably preselectable number,

start/stop control means connected for enabling said digital counter means in response to each received distance pulse and for resetting and disabling said digital counter means in response to detected coincidence between the preset data in said program means and the instantaneous contents of said digital counter means, and

clock means connected to said clock means and to said start/stop control means for passing clock pulses therethrough only while said digital counter means is enabled thereby passing said preselectable number of clock pulses.

3,865,306
MEANS FOR CONTROLLING THE COURSE OF OPERATION OF AN AUXILIARY HEATING SYSTEM IN MOTOR VEHICLES OR SHIPS

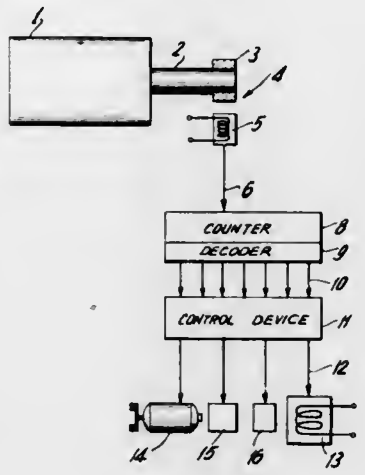
Fritz Reuter, and Horst Jung, both of Esslinger (Neckar), Germany, assignors to J. Eberspacher, Esslingen, Neckar, Germany

Filed July 14, 1972, Ser. No. 271,710

Claims priority, application Germany, Aug. 13, 1971, 2140621

Int. Cl. G05d *23/18*

U.S. Cl. 237—2 A **6 Claims**



1. In an auxiliary heating system, for supplementing or augmenting a main heating system, of a motor-driven vehicle, and including a main motor having a drive shaft, and of the type including, as components, a heat exchanger independent of the main system, a fuel pump, a heating air blower, an igniter for a fuel burner, and a safety switch, and further including a control device for its components: means for controlling the safety period, restarting delay, igniter operating time and safety switch of the auxiliary heating system, said means comprising, in combination, pulse generating means including a single pulse transmitter, constituted by a permanent magnet on said drive shaft and a stationary magnetic field responsive element operatively associated with said permanent magnet providing output pulses for controlling the operation of said auxiliary heating system; a pulse counter connected to said transmitter to receive and count such output pulses; a decoder connected to the output of said pulse counter to receive counted output pulses therefrom; and a pulse responsive control device, controlling the operation of said auxiliary heating system components, connected to said decoder to receive such output pulses therefrom; said pulse responsive control device having respective outputs connected to said heating air blower, said igniter, said safety switch and said fuel pump; said pulse-responsive control device providing control signals at each of its outputs only responsive to respective preselected numbers of counted pulses.

3,865,307
LOCKING RAILROAD SPIKE

Luke J. Schiro, 3266 Ashwood Way, Soquel, Calif. 95073

Filed Oct. 12, 1973, Ser. No. 405,808

Int. Cl. E01b *9/04, 9/12*

U.S. Cl. 238—366 **2 Claims**

1. A railroad spike intended for securing a railroad rail to a railroad tie or supporting surface or the like, the railroad spike comprising, in combination:

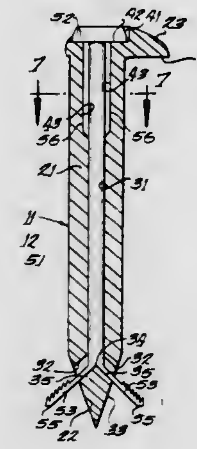
a spike comprising:

an elongated solid cylindrically shaped shank member having a top end, a bottom end, and cylindrical side walls;

a head member formed integrally with the top end of said shank member, said head member having an arcuately shaped top surface terminating at its perimeter in a flat horizontal bottom surface, said head member being

laterally offset relative to the longitudinal axis of the shank to define an annular shoulder portion completely about the top end of the shank with a portion of said head member projecting a greater distance laterally beyond one side wall of the shank than at the diametrically opposed end thereof, this distance of projection adapted to engage a foot portion of a railroad rail along a top surface thereof so said laterally projecting head member when the spike is used to secure a railroad rail to a railroad tie and the like;

an inverted conically shaped penetrating end formed integrally at the bottom end of said shank member and extending longitudinally downwardly therefrom and terminating in the penetrating pointed end disposed along the longitudinal axis of said shank member, the



base of said penetrating end formed integrally with the bottom end of said shank member;

a cylindrical bore extending longitudinally through said shank member concentric therewith extending from said head member to a point inwardly of said penetrating end and adjacent said base portion thereof;

a pair of diametrically opposed angular passageways each their innermost ends connected to the bottom end of the bore with their outermost ends projecting outwardly and downwardly from the bore and out of the conical side surfaces of the penetrating end in positions spaced intermediate the base and the point of the penetrating end, said passageways defining with said longitudinal axis of said shank member a plane bisecting said head member and lying parallel to the maximum projecting portion of said head member relative to said shank member, said passageways opening out of said conical side surfaces of said penetrating end at diametrically opposed points thereof;

a rectangularly elongated recess formed integrally in the top surface of said head member bisecting by said plane passing through said passageways, said recess lying parallel to said plane passing through said passageways and said bore, said recess extending diametrically along said head member parallel to the line of maximum projection of said head member from said shank member, said recess communicating with said top end of said bore which opens thereoutof;

a pair of diametrically opposed identically shaped and configured longitudinally extending slot like grooves disposed along diametric opposite side walls of said bore and extending therealong from said head member recess to a point inwardly of said shank member said grooves defining orienting grooves which lie in the plane defined by said passageways, said bore and said head member recess;

a wedge shaped projection defined at the common juncture point of said innermost ends of said passageways intersecting said bore, said projection having the apex portion thereof aligned with the longitudinal axis of said bore;

a locking pin comprising:

an elongated solid cylindrically shaped rod member having a top end, a bottom end, cylindrical side walls, and being of a diameter less than the diameter of said bore in said shank member;

a rectangular head portion formed integrally with said top end of said rod and being of a generally flat configuration of a size adapted to be received in an orienting manner in said head member rectangular recess upon said locking pin being axially inserted into said bore;

said bottom end of said rod being bifurcated by a slot extending longitudinally along the axis of the rod a short distance inwardly thereof with the bottom end of the rod being divided into a pair of substantially identical longitudinally extending members disposed in side-by-side relationship;

the plane of said slot bifurcating said bottom end being disposed normal to the plane of said head portion;

each of said bottom end members having a terminal end thereof;

a beveled tapered edge defined on the terminal end of each member and sloping inwardly and outwardly from the outer surface of each member to the bifurcating slot;

a pair of diametrically opposed longitudinally extending flange members formed integrally with the side walls of the rod extending from a position adjacent the rod head portion to a position inwardly of said rod;

said flange members defining orienting members which define a plane with said rod longitudinal axis, said plane extending normal to the plane defined by the bifurcating slot and said rod axis;

the plane of said orienting defining flange members extending parallel to the plane of said head portions;

each of said flange members being identical to each other with each having a substantially rectangular cross-sectional area of a size and configuration which is slightly less than the cross-sectional area of the orienting grooves of the shank member so that said flange members may be freely slidably received in said orienting shank member grooves upon said locking pin being inserted into said spike;

said locking pin when inserted into said shank member having said orienting flanges engaged in said orienting grooves with said head portion aligned with said head member recess and with said beveled ends of said bifurcated end members resting on opposite surfaces of said apex in said passageways so as to rest on opposite sides of said wedge shaped projection;

whereby driving the locking pin into said bore will effect the spreading apart of the pair of separate end members by action of said beveled edges against said bottom surfaces of said angular passageways on both sides of said wedge shaped projection such that the terminal ends of said locking pin project outwardly from said passageways in diametrically opposite directions parallel to the plane of said maximum projected head member to securely anchor the spike against forces tending to loosen or withdraw the same.

3,865,308
SPRAYER-MIXER

Orvie C. Pringle, 8630-220th, Edmonds, Wash. 98020, and John E. Beheyt, 10021-126, Kirkland, Wash. 98033

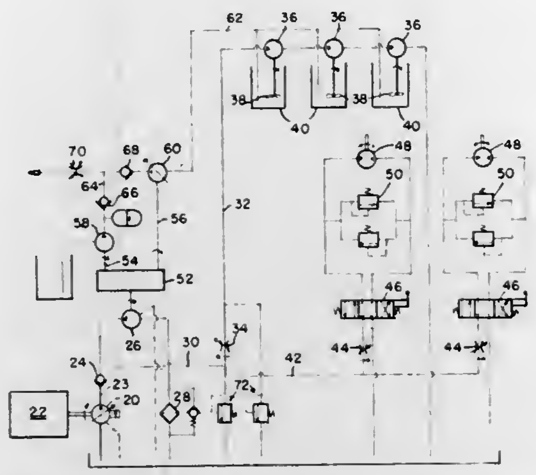
Filed Sept. 14, 1973, Ser. No. 397,216

Int. Cl. B05b *7/26*

U.S. Cl. 239—61 **3 Claims**

1. A fluid mixing and spraying system comprising a prime mover, a pressure compensated hydraulic pump driven by the prime mover, a hydraulic motor, means interconnecting said hydraulic pump and said hydraulic motor, a gear reducer interconnected to and driven by said hydraulic motor,

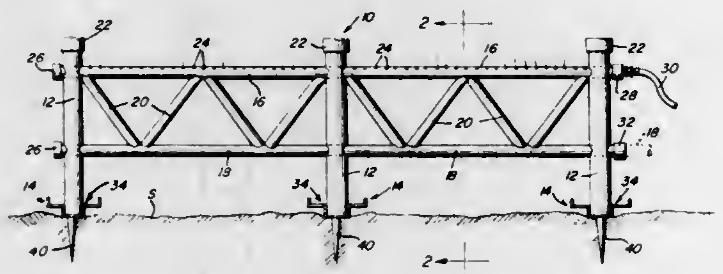
a water reservoir, a fixed displacement pump for pumping water from said water reservoir, a chemical solution reservoir, a variable displacement pump for pumping solution from the solution reservoir, means interconnecting said water pump to said gear reducer, means interconnecting said solution pump to said gear reducer, conduit means interconnecting said water pump and said solution



pump and a spray nozzle attached to said interconnecting conduit to control the discharge from the interconnected pumps whereby the closing of said nozzle terminates the operation of the entire system except for the driving of said pressure compensated hydraulic pump.

3,865,309
PORTABLE DECORATIVE PLASTIC SPRINKLING FENCE

Lloyd V. Greenhalgh, Rt. 1, St. Anthony, Idaho 83445
Filed Aug. 10, 1973, Ser. No. 387,250
Int. Cl. B05b *9/00*
U.S. Cl. 239—268 **1 Claim**



1. A sprinkling fence comprising at least one fence unit including, in combination:

a. a plurality of spaced upright posts provided with means for rotatable cradling a rail;

b. means for anchoring the post to a support surface, the means for anchoring including:

i. socket means arranged for receiving a post;

ii. engaging means connected to the socket means for securing same to a support surface; and

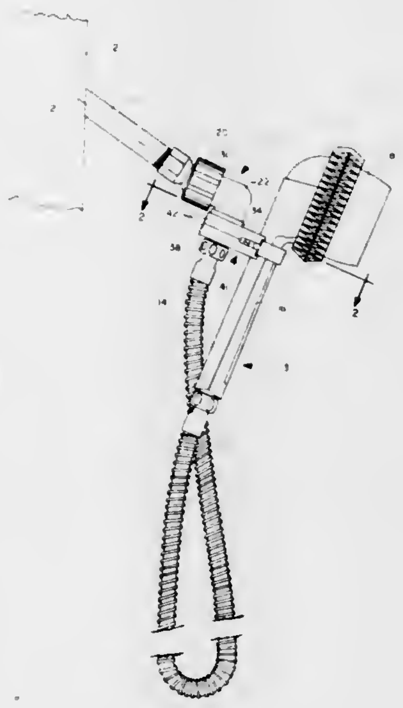
iii. pad means mounted on the socket means for facilitating anchoring, the socket means being a cup-shaped receptacle having a bottom wall and cylindrical side wall, the engaging means being a spiked-shaped element centilever mounted on a bottom wall of the receptacle and arranged tapering away therefrom, and the pad means being a pair of oppositely directed longitudinal members cantilever mounted on the side wall and arranged extending longitudinally therefrom, the members terminating in flanges;

c. a pair of spaced rails, one of which rails is rotatably cradled by the means for rotatable cradling, the latter means including holes in the posts for cradling of the one of the rails, similar holes also provided in the posts for cradling the other of the rails, the holes arranged with the rails extending perpendicularly and codirectionally from the post, the one of the rails being a fluid-conducting pipe having spaced ends, and braces connected to the other of the rails and arranged extending between the rails for bracing the one of the rails; and

d. means associated with the one of the rails for dispensing a fluid therefrom, the one of the rails being arranged farther from the means for anchoring than the other of the rails, and the means for dispensing including a plurality of orifices provided in the pipe, and the means for dispensing further including means arranged at the pipe ends for performing one of sealing, connecting a source of fluid, and connecting another rail pipe end to a respective pipe end.

3,865,310
BRACKET ASSEMBLY FOR HAND-HELD SHOWERHEAD

Christopher W. Elkins, and Donald W. Ruehmann, both of Fort Collins, Colo., assignors to Teledyne Industries, Inc. and Teledyne Aqua Tec Company, both of Fort Collins, Colo.
Filed Apr. 12, 1974, Ser. No. 460,303
Int. Cl. B05b *15/06;* **F16b** *2/00*
U.S. Cl. 239—283 **9 Claims**



1. For use in combination with a hand-held showerhead of the type having an elongate handle, a spray nozzle mounted upon one end of said handle, a flexible water-supply hose attached to the opposite end of said handle, and a stationary water supply pipe, a bracket assembly for coupling said unit to said supply pipe and for detachably supporting said handle upon said supply pipe comprising:

coupling means for connecting said supply pipe to said flexible hose;

support means including a pair of resiliently-flexible support legs mounted upon and projecting outwardly from said coupling means;

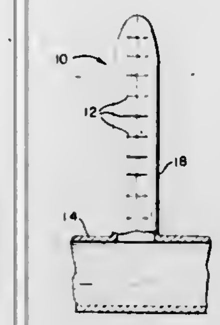
a pair of generally C-shaped clamping arms hingedly coupled at one end to each other for movement about a hinge axis to and from a generally O-shaped closed position;

pivot means mounting said arms respectively upon said legs for pivotal movement about respective pivot axes parallel to and equidistant from said hinge axis;

and said legs being capable of resiliently-resisted flexing movement from a normal rest position wherein the distance between said pivot axes is less than twice the distance from one of said pivot axes to said hinge axis to thereby resiliently retain said arms in either of a first over-center position wherein said arms are in said closed position and operable to grippingly support said handle upon said fitting and a second over-center position accommodating removal of said handle from said arms.

3,865,311
QUIET JET DISCHARGE NOZZLE

Vincent B. Paxhia, Tonawanda, and Franklin B. Bossler, Williamsville, both of N.Y., assignors to Textron, Inc., Providence, R.I.
Filed July 10, 1972, Ser. No. 270,180
Int. Cl. B05b *1/14*
U.S. Cl. 239—568 **7 Claims**

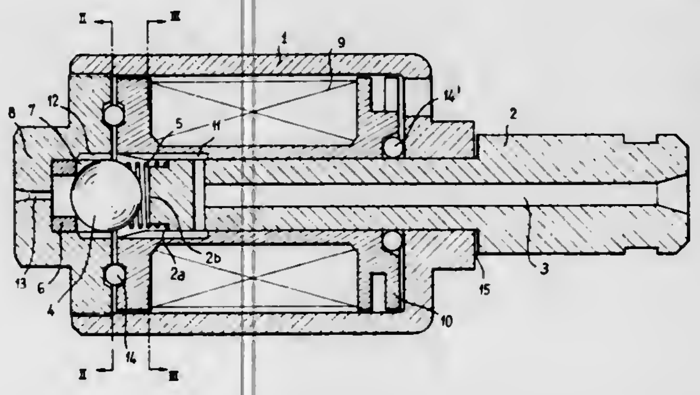


1. An inaudible thrust producing discharge nozzle device comprising an externally airfoil-shaped plenum having a trailing edge and air discharge orifice means extending through the wall portion of said trailing edge,

said orifice means including a row of separate orifices of thin slot-like section directing discharge of high speed air jet streams from said plenum rearwardly of said trailing edge and being relatively spaced apart so as to induce flows of air from the ambient atmosphere encasing each high speed discharge jet stream within a non-turbulent sheath of inaudible range vibrating air, thereby masking the audible range sound propogations of said jet streams until they are attenuated and reduced to inaudible levels.

3,865,312
ELECTROMAGNETICALLY OPERATED BALL-TYPE INJECTORS

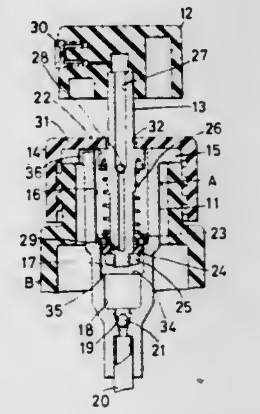
Claude Lombard, and Alain Dera, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Dec. 26, 1972, Ser. No. 318,637
Claims priority, application France, Jan. 6, 1972, 72.00327; Dec. 15, 1972, 72.044846
Int. Cl. B05b *1/30*
U.S. Cl. 239—585 **11 Claims**



1. An electro-magnetically operated injector for fluid injection, especially in internal combustion engines, comprising a protective casing, a core housed in the interior of said casing and having a fluid intake conduit, an excitation coil surrounding said core, a cover, a housing located between the cover and said core and in which is provided a ball for closing a fluid injector outlet located within said cover, said ball being acted upon by said excitation coil in opposition to an elastic system mounted at the front of said core, wherein sections of passage of a fluid upstream of and around said ball and a section of a seating on which the ball rests are several times greater than that of the fluid injector outlet, said passage sections comprising channels, so that the flow rate of the injector depends only little on the lifting of the ball off the seating, on the excitation current and on the restoring force of said elastic system, and wherein an extremity of said core comprises an external shoulder, against which is supported the elastic system acting on said ball, the extremity of said core being flat and perpendicular to the direction of movement of said ball, and the flow of fluid being ensured by the intake conduit and a plurality of grooves around said ball.

3,865,313
PRESSURE ACCUMULATIVE SPRAYER DEVICE

Hiroshi Kondo, 30-4 Hanazono-cho, Nagasaki, Japan
Filed Feb. 7, 1974, Ser. No. 440,538
Claims priority, application Japan, Mar. 26, 1973, 48-34909
Int. Cl. A62c *11/02;* **B05b** *9/04*
U.S. Cl. 239—333 **4 Claims**



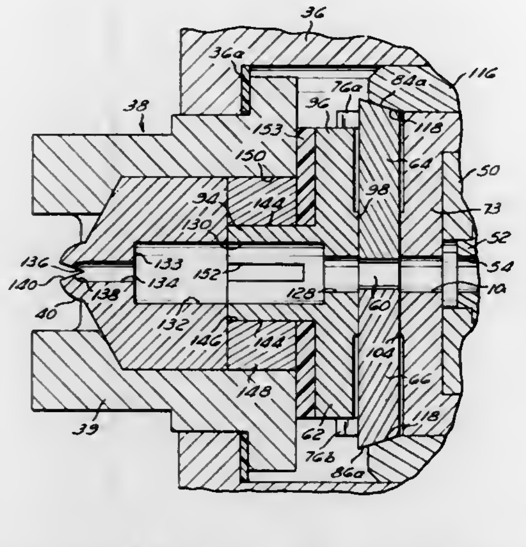
1. A pressure accumulative sprayer device comprising in combination a valve casing provided with a cylinder chamber and a compression chamber having a shoulder portion in the lower part thereof, said valve casing being so fabricated as to be airtightly mounted on a container; a cap engageable with the valve casing and the container; a plunger the lower end of which is inserted into the valve casing through the cap, the upper end of said plunger being provided with a spray button having a nozzle, the portion of said plunger inserted into the valve casing being provided with a spring receiving seat, and an orifice in a position below said spring receiving seat, and moreover a communication hole thereinside for connecting the nozzle and the orifice with each other; a piston so fitted as to be airtightly slidable between the outer periphery of the plunger and the inner periphery of the cylinder chamber of the valve casing; springs compressively provided between the piston and the spring receiving seat for urging said piston and the plunger; a check valve for checking a counter-current of the liquid within the valve casing but permitting said liquid to travel in one direction; a movable valve slidably fitted to the plunger so as to close the orifice, said valve opening the orifice by permitting the descent of the plunger beyond its lower limit even after its abutment on the shoulder portion of the compression chamber thereby enabling to obtain a spray when the orifice communicates with the interior of the valve casing.

3,865,314
ADJUSTABLE PATTERN SPRAY GUN

Gustave S. Levey, 6220 Reamer, Houston, Tex. 77036, and Edward Moser, Houston, Tex., assignors to said Levey, by said Moser
Filed Feb. 19, 1974, Ser. No. 443,480
Int. Cl. B05b *1/04*
U.S. Cl. 239—590.3 **40 Claims**

1. An airless paint spray gun comprising a body portion having a conduit adapted to be connected at its inlet end to a source of liquid paint under pressure and adapted to have a spray tip connected to the discharge end thereof, a pre-orifice assembly adjacent the discharge end of said conduit including relatively movable members defining therebetween a pre-

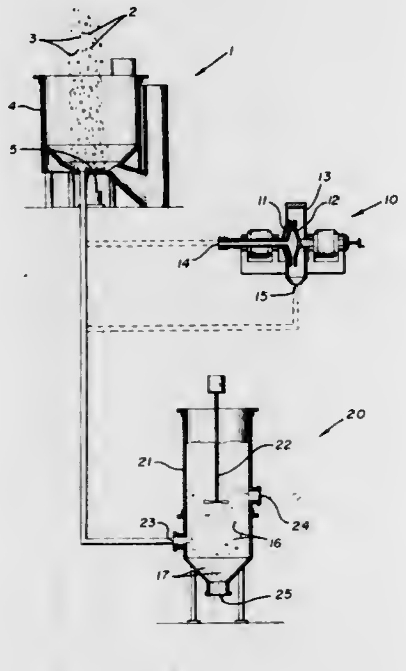
orifice opening, and manually operable means carried by said body portion operably connected to said relatively movable



members and movable to vary the area of said pre-orifice opening.

3,865,315
PROCESS FOR SEPARATING FIBROUS MATERIAL

James R. Roberts, Palatine, and Stephen G. Nason, Arlington Heights, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.
Filed Dec. 15, 1972, Ser. No. 315,399
Int. Cl. B02c *19/12*
U.S. Cl. 241—4 **3 Claims**



1. A process for separating mineral wool fibers from adhered mineral wool shot without substantially destroying the mineral wool fibrous character comprising:
- passing a suspension of mineral wool fibers having shot particles adhered thereto in water at a solids consistency of about **4–10** percent through an attrition means having attrition plates set at a distance of about 1/16 to about ¼ inch apart;
- passing said suspension to an agitation vessel and adding water to dilute the mineral wool and shot mixture to a consistency of about ¼ percent to about 2 percent by weight;
- gently stirring the diluted suspension at a speed of about 30–100 rpm for a time sufficient to free the fibers from the shot; and
- continuously decanting, while maintaining agitation, the fibers and a portion of the water from the shot and the remainder of the water.

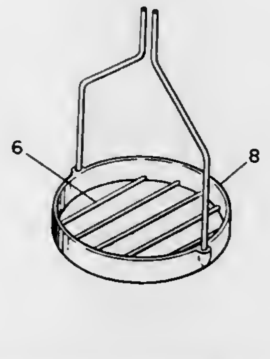
3,865,316
PROCESS FOR MILLING DYES WITH STAUROLITE SAND

Eugene Fredrick Hartstein, Pennsville, N.J., and Ross Edward Kendall, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 23, 1973, Ser. No. 408,582
Int. Cl. B02c *17/00*
U.S. Cl. 241—22 **3 Claims**

1. In a process for reducing the particle size of a water-dispersed dye comprising agitating the water-dispersed dye in the presence of a grinding medium, the improvement comprising employing, as the grinding medium, ferrous aluminum silicate sand in particle sizes between about 105 to 1,000 microns said ferrous aluminum silicate sand containing more than 50 percent by weight of staurolite having the empirical formula $Fe_2Al_9O_7(SiO_4)_4OH$, said staurolite having a specific gravity of about 3.7 and a Mohs scale hardness of about 7.

3,865,317
MINI-MASHER

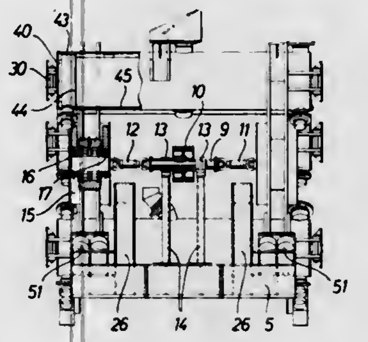
Alma Louise Brehm, 1040 E. Ellsworth Ave., Denver, Colo. 80223
Filed Mar. 19, 1973, Ser. No. 342,595
Int. Cl. A47j *43/10*
U.S. Cl. 241—169.2 **1 Claim**



1. A potato and vegetable mashing device comprising:
- a mashing head including a cylindrical ring-like member having a circular top edge, a circular bottom edge, and cylindrical side walls;
- a plurality of spaced apart parallelly disposed tine members each formed of an elongated circular rod with each extending between transversely opposite points disposed about a diametric axis of said cylindrical ring and affixed to said points interiorly of said ring, said tine members each having a line of contact disposed adjacent the plane defined by the bottom edge of said cylindrical ring member;
- a pair of diametrically spaced apart flange members formed integrally with said cylindrical ring and projecting outwardly of said exterior surface thereof, said flange members disposed along the diametric axis of said ring normal to the axis of each of said tine members;
- a socket defined in each flange member opening out of the top surface thereof and extending thereinto in a direction normal to the plane of said tine members;
- a pair of identical generally Z-shaped upright members, each upright associated with one of said sockets and having one end affixed in said associated socket, said uprights extending upwardly from said cylindrical ring to a position spaced thereabove, and then projecting over the area of said ring in a converging manner until disposed adjacent each other substantially bracketing the axis of said ring, from whence said uprights project upwardly therefrom in a direction parallel to said axis; and a handle member having side walls, a front end, and a back end, said front end having a pair of spaced apart sockets opening thereoutof and extending longitudinally thereinto, said sockets adapted to receive said terminal end portions of said uprights to affix said handle thereto.

3,865,318
ROCKING MILL

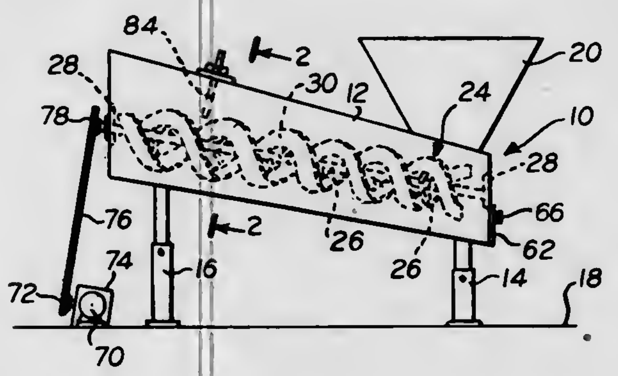
Hagen Gammerler, 8021 Icking, Icking, and Harald Bohm, 8021 Deining, Deining, both of Germany
Filed Apr. 19, 1973, Ser. No. 352,540
Claims priority, application Germany, Apr. 21, 1972, 221975
Int. Cl. B02c *17/14*, *17/24*
U.S. Cl. 241—170 **6 Claims**



1. In a rocking mill for grinding solid materials, comprising a bed frame, support plates upstanding from said bed frame, a plurality of grinding tubes containing grinding elements mounted by said support plates, mechanism for oscillating said tubes, and a driving unit for actuating said mechanism, the improvement wherein the driving unit includes a driven part comprising a shaft centrally supported within the area defined by the support plates, cardan half shafts at each end of the shaft, symmetrically disposed with respect to the shaft and drivingly coupled to said mechanism.

3,865,319
MULTIPLE HELICAL BLADE ROTARY GRINDER FOR LIGHT DENSITY MATERIAL

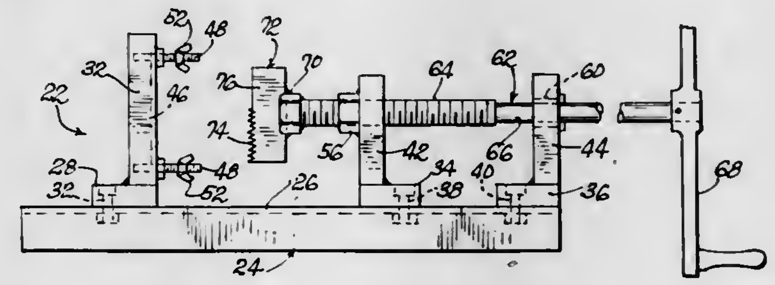
Rudolf Hoffman, Oceanside, Calif., assignor to The Rainville Company Inc., Middlesex, N.J.
Filed Apr. 25, 1972, Ser. No. 247,387
Int. Cl. B02c *18/14*
U.S. Cl. 241—188 R **4 Claims**



1. A rotary grinder including a housing into which is loaded material to be ground up, two relatively fixed shear blades secured to the inside of the housing, a cutter in the housing rotatable about an axis, the cutter having a plurality of helical blades spaced axially around the circumference of the cutter and with edges that move adjacent to the relatively fixed shear blades as the cutter rotates, the two relatively fixed shear blades being on opposite sides of the cutter and one being oriented to shear against a descending cutter blade and the other being oriented to shear against an ascending cutter blade, bearings on which the cutter rotates about said axis, which axis is parallel to the shearing edges of the fixed shear blades, and means for rotating the cutter, characterized by the housing having a bottom immediately below the cutter and sloping upward toward one end, the cutter sloping upward with the bottom and at substantially the same angle as the bottom, the means for rotating the cutter turning it in a direction to thrust the material to be cut in the direction of the higher end of the bottom of the housing, a partition spaced from the higher end of the cutter and extending from one side wall to the other and across the top of the cutter near the high end of the cutter and generally normal to the axis of rotation of the cutter for preventing the material to be cut from being thrust upward to the extreme end of the cutter, and space in the chamber above the cutter in which material thrown upward by the cutter blades can drop back by gravity toward the lower end of the cutter.

3,865,320
SOIL PULVERIZING DEVICE

Joseph E. Bowles, 6810 N. Hi-Wood Ct., Peoria, Ill. 61614
Filed Jan. 8, 1973, Ser. No. 321,692
Int. Cl. B02c *18/14*
U.S. Cl. 241—278 R **5 Claims**

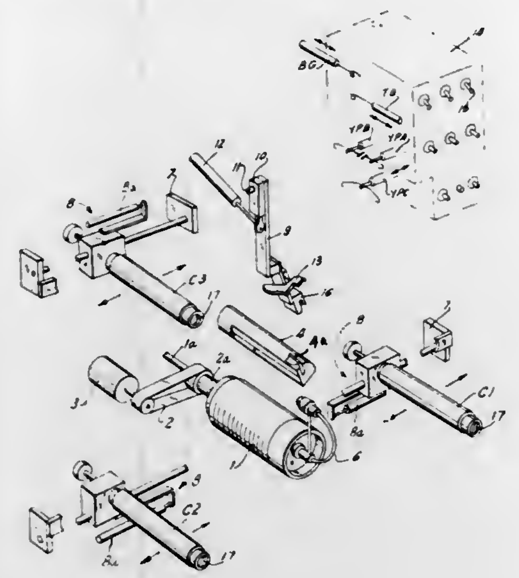


1. In a compaction testing system wherein a compacted soil specimen is obtained in a mold and then pulverized to a fine state, the improvement in a soil pulverizing device comprising:
a base for mounting said mold;
- means defined by the mold and complementary means defined by the base for securing the mold in position when the mold is mounted on the base;
- a pulverizing blade having a serrated edge portion for contact with said specimen wherein said portion extends for approximately half the length of the blade and wherein the remaining half of the blade edge is bent inwardly to provide both a scraper to remove the loosened soil from the sample face and as an auger whereby material engaged by said blade is driven outwardly of the mold;
- means for supporting said blade to accurately align the blade relative to a mold mounted on said base and to position the blade adjacent the mold; and
- means for driving said blade whereby the blade rotates relative to the mold, said means supporting the blade including means for simultaneously moving the blade inwardly of the mold for engaging the material therein as the blade rotates whereby the rotation and inward movement of the blade gradually pulverizes the compacted specimen to a fine state.

3,865,321
PNEUMATIC CONTROL SYSTEM FOR USE IN AUTOMATIC YARN TRANSFER SYSTEM

Harry B. Miller, Hopedale, Mass., assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany
Filed May 25, 1973, Ser. No. 364,073
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A **5 Claims**

1. In a winder for simultaneously winding at least one yarn or the like which has a drive roll, a plurality of rotatable chucks each movable into and out of driven engagement with said drive roll, a yarn aspirator rotatable to a plurality of positions including three positions in each of which its inlet is located adjacent one of said chucks, and a yarn transfer arrangement for transferring running yarn via said aspirator between respective ones of said chucks, a pneumatic control system including a plurality of pneumatic switches; pneumatic conduits connecting respective ones of said switches with said chucks, aspirator and yarn transfer arrangement; and a plurality of cams associated with respective ones of said switches for operating the same in programmed sequence so as to control



the operations of said chucks, aspirator and yarn transfer arrangement, respectively.

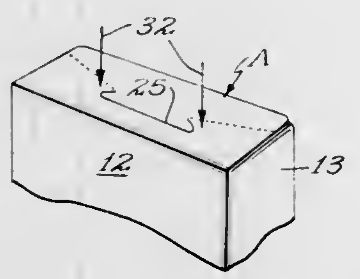
3,865,322
RECLOSABLE CARTON

Russell J. Hennessey, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed May 17, 1973, Ser. No. 361,173

Int. Cl. B65d *5/54*

U.S. Cl. 229—51 TC **5 Claims**



1. A carton closure for a rectangular carton having opposed parallel front and rear panels and opposed side panels, foldably connected in tubular relation,

a first closure flap hinged to the upper edge of one of said front and rear panels and folded into right angular relation thereto,

a second closure flap hinged to the other of said front and rear panels and folded to overlie said first closure flap,

said second closure flap including a locking tab receiving slit intermediate its side edges, and weakened lines of separation extending from the ends of said slot to the side edges of said second closure flap,

means securing the area of said second closure flap between said locking slot and said weakened lines of separation to the underlying area of said first closure flap,

said first closure flap being of a length substantially equal to the distance between said slit and the end extremity of said second closure flap,

said first closure flap including a locking tab in registry with said slit and extending beneath a portion of said second closure flap between said slit and the line of fold connecting said second closure flap to said one of said one of said front and rear panels, whereby

when said second closure flap is split along said weakened lines of separation and said carton opened, said carton may be reclosed by first folding down said second closure flap, and then folding down said first closure flap and inserting said locking tab beneath a portion of said second closure flap.

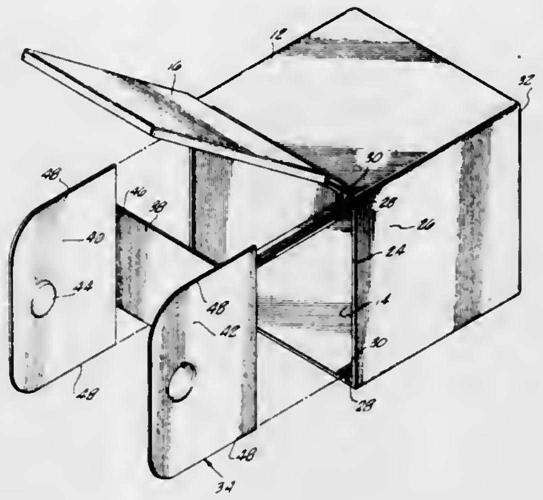
3,865,323
WATER TIGHT AND MOISTURE PROOF TOILET PAPER CONTAINER

David G. Stronge, 421 Montaloo Dr., Bakersfield, Calif. 93309, and Remey Ortiz, 2900 21st St., Bakersfield, Calif. 93301

Filed Sept. 27, 1973, Ser. No. 396,064

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.53 **5 Claims**



1. A water and moisture proof toilet paper container comprising an open faced housing, a lid member pivotally secured to said housing, means for securing said lid member over the open face of said housing, rib means disposed on the interior walls of said housing, said rib means defining a plurality of interior parallel channels, a toilet paper support member having a central portion and a pair of ear members, said ear members being disposed on opposite sides of said central portion and separated therefrom by a pair of folding seams, said ear members being adapted to be bent forwardly of said central portion along said folding seams to define a U-shaped support member adapted to fit about a roll of toilet paper, the extended edges of said ear member being slidably mounted within said parallel channels within said housing and means carried by said ear members for holding said roll of toilet paper.

3,865,324
FILM UNWINDING SYSTEM

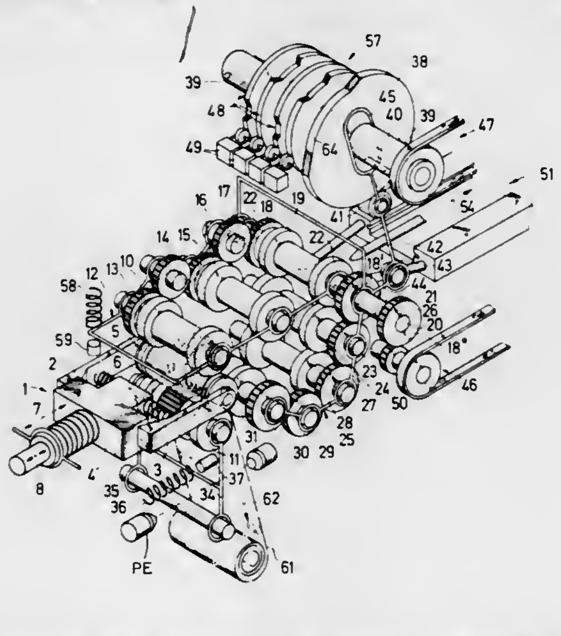
Erich Binder, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Sept. 12, 1973, Ser. No. 396,870

Claims priority, application Switzerland, Sept. 22, 1972, 13835/72

Int. Cl. B65h *17/00*

U.S. Cl. 242—67.1 R **9 Claims**



1. A system for unwinding a strip of photographic film material wound up into roll form on a film spool which comprises a holder for supporting the film spool with the film rolled up thereon for rotation, a drive roll engageable with the surface of the roll of film for rotating the latter in the sense of unwinding the film strip, and means for taking up the outer end of the film strip as it is unwound comprising a take-up roll drivable in the same sense of rotation as that of said film roll, and a rotatably mounted draw-off roll resiliently pressed against said take-up roll and establishing a nip therebetween into and through which the wound off outer end of the film strip is led and drawn off.

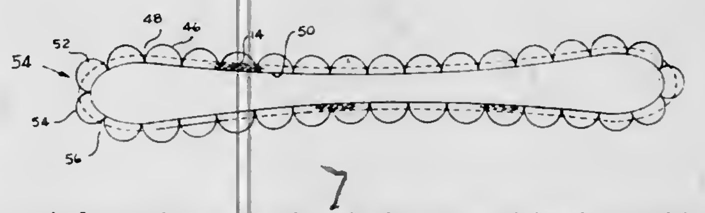
3,865,325
FLEXIBLE TAPE REEL

William P. Newcomer, Jr., Granada Hills, Calif., assignor to Dylaker Computer Systems, Inc., Van Nuys, Calif.

Filed July 2, 1971, Ser. No. 159,113

Int. Cl. B65h *75/00*

U.S. Cl. 242—68.5 **17 Claims**



1. An information recording device comprising in combination:

a flexible, resilient core capable of being folded and bent into a substantially flat position and returning to an expanded position on release of the folding force;

a flexible and foldable, upwardly extending side guide disposed inwardly from each edge of the core forming a central channel, said guide being formed of an upstanding band member including at least one discontinuity formed in the band; and

a length of flexible information recording tape having a width narrower than said core and substantially the width of said channel wound on said core within said channel.

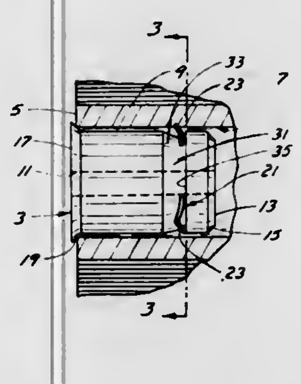
3,865,326
CORE PLUG

Andre Beaudoin, Dosquet, Quebec, Canada

Filed Oct. 9, 1973, Ser. No. 398,637

Int. Cl. B65h *17/02*

U.S. Cl. 242—68.6 **7 Claims**



1. A plug adapted to be inserted into a cylindrical bore defined by relatively soft material, the plug comprising a cylindrical body, and a plurality of elongate, spaced-apart, resilient holding members extending about the body intermediate the ends of the body, each member attached by its ends to the body, and having a point intermediate its ends projecting radially outwardly from the body, to co-operate with the soft material to hold the plug in the bore, the ends of each member lying in a plane which is substantially perpendicular to the longitudinal axis of the body and a shallow groove extending circumferentially about the body intermediate the ends of the body, the ends of the holding members being attached to the body at or adjacent the base of the groove.

3,865,327
FILM CARTRIDGE

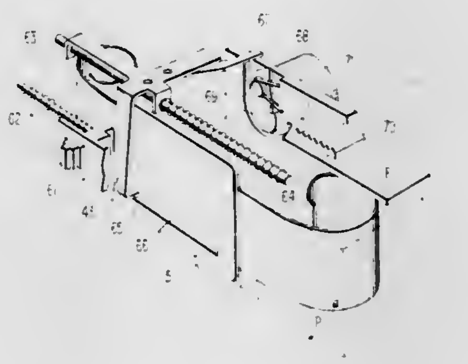
Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Oct. 24, 1973, Ser. No. 409,119

Claims priority, application Japan, Oct. 27, 1972, 47-107782

Int. Cl. G03b *1/04*

U.S. Cl. 242—71.2 **3 Claims**



1. In a film cartridge containing photographic film having perforations adjacent at least one edge for a photographic camera having a film advancement mechanism in which a movable claw engages the perforations in the film, said cartridge having a film feed-out chamber from which said photographic film is supplied, and a film receiving chamber into which the film supplied from said feed-out chamber is fed, the improvements comprising: an intermediate connection member connecting and extending between said chambers in front of the film, said intermediate connection member being provided with a groove through which an end of the claw engaging a perforation of the film moves and a separate aperature to allow light to pass therethrough and impinge on said photographic film, said groove and said aperture being located on the same side of said film.

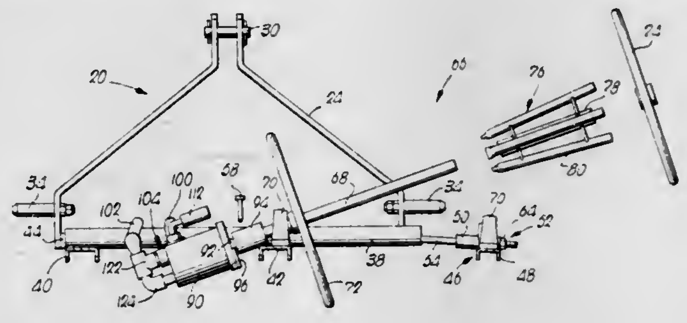
3,865,328
WIRE WINDER

Lynn E. Chrisp, Arnold, Nebr., assignor to Chrisp Manufacturing Company, Lincoln, Nebr.

Filed Mar. 30, 1973, Ser. No. 346,591

Int. Cl. B65h *75/18*

U.S. Cl. 242—71.9 **12 Claims**



1. A material winder comprising:

a frame;

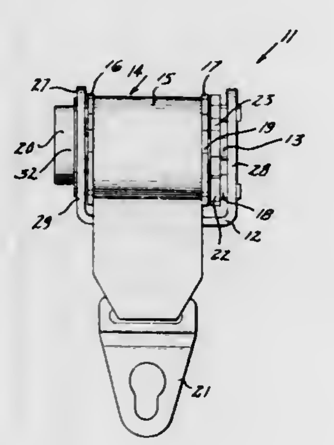
a winding reel having an axle defining the axis of rotation of the reel;

means mounting said reel on the frame for rotation about said axis and for swinging movement between a winding position and a loading position;

a prime mover supported by and operably coupled with said axle of the reel for driving the latter and for swinging therewith during movement between said positions; and a rigid torque member projecting in opposite directions from said prime mover for engagement with adjacent portions of the frame to preclude rotation of the prime mover when the latter is actuated.

3,865,329
INERTIAL LOCKING RETRACTOR

Wallace C. Higbee, Romeo; Howard A. Wilcox, Imlay City, and Jay W. Jensen, Romeo, all of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed June 1, 1972, Ser. No. 258,576
Int. Cl. A62b *35/00;* **B65h** *63/04*
U.S. Cl. 242—107.4 **9 Claims**

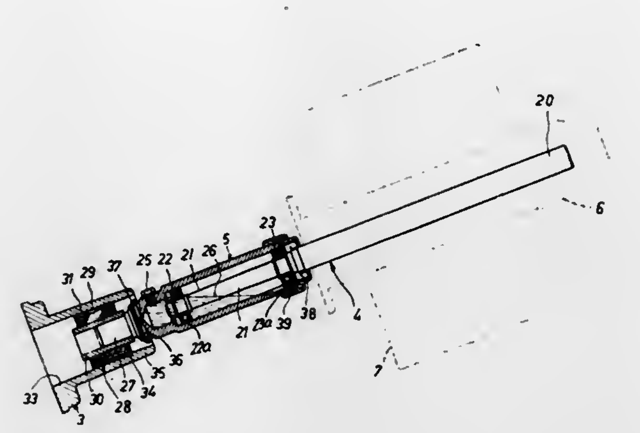


1. An inertial locking retractor comprising:
a frame;
a retractor spool rotatably supported on said frame and on which harness material is retractably stored and from which harness material is withdrawn, and at least one of the end flanges of said spool including ratchet teeth;
a match plate coaxially adjacent said spool and having ratchet tooth configuration substantially identical with said ratchet teeth on said spool and said match plate driven by said spool upon withdrawal of said harness in a normal position where said teeth on said match plate and on said spool are out-of-profile register, and on accelerated withdrawal of harness said teeth are moved to in-profile register; and
a pawl element operably and tiltably supported on said frame and biased toward contact with said ratchet teeth and lockably engaging said ratchet teeth when said teeth are in-profile register.

3,865,330
BOBBIN SPINDLE

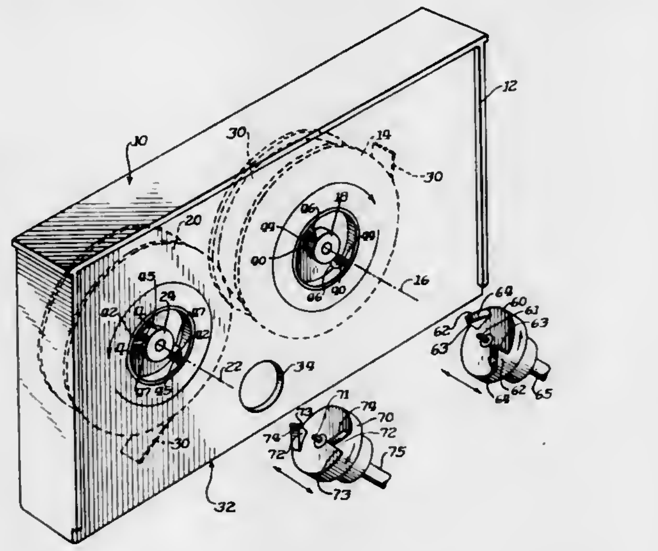
Dieter Widmer, Uster, Switzerland, assignor to Spindel-Motoren-und Maschinenfabrik A.G., Uster, Switzerland
Filed June 27, 1973, Ser. No. 373,850
Claims priority, application Switzerland, July 10, 1972, 10290/72
Int. Cl. B65h *49/02;* **D03j** *5/08*
U.S. Cl. 242—130 **9 Claims**

1. A spindle, especially an unwinding spindle for yarn, comprising a housing, a spindle shaft, bearings arranged in spaced relationship for supporting the spindle shaft in said housing, a carrier hub, a plug secured to said housing and extending away these from along the axis of the spindle shaft, and an elastically flexible support means for supporting the housing at said carrier hub so as to be movable through a limited bending angle, said elastically flexible support means comprising a bushing formed of elastically flexible material, and first and second rigid sleeve members engaging the bushing at the inside and outside thereof respectively, the bushing being fixedly supported at its inside by said plug and at its outside by the interior of the carrier hub.



3,865,331
DRIVE INTERFACE SYSTEM

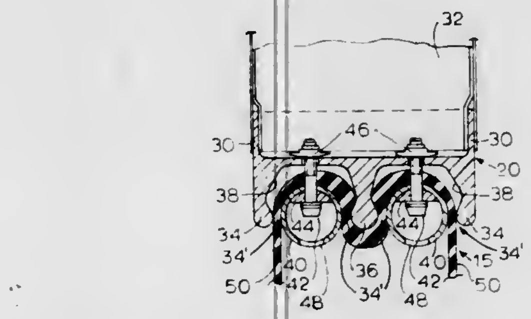
Raymond E. Clever, Chicago; Kenyon A. Hapke, Libertyville, and Thomas R. Wells, Des Plaines, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed June 28, 1973, Ser. No. 374,283
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **15 Claims**



1. A film driving system for selectively driving a supply of film between a pair of film reels comprising:
a film cassette including a pair of film reels each mounted for rotation about an axis of a reel hub;
drive interface means provided on each reel and accessible from the exterior of said cassette, said interface means comprising an abutment member extending axially from each hub and defining a drive shoulder and a camming shoulder extending in an axial external direction from the associated hub, with the drive shoulder and camming shoulder arranged to converge on each hub; and
an external driving system for engaging said drive interface means to selectively ~~rotate~~ said reels and thereby transport film between said reels, said system including rotatable driving heads adapted to engage said drive shoulders on said interface means to rotate said reels in a selected direction, means to shift said driving heads with respect to said reel hubs between a driving position in engagement with said drive shoulders and a retracted position disengaged from said drive shoulders and driving means for rotating each of said driving heads in a selected direction at a selected speed, whereby said drive interface means assures positive engagement between said drive heads and drive shoulders when said heads are shifted toward said driving position.

3,865,332
ATTACHMENT FOR AIR CUSHION CONFINING INFLATABLE TRUNK STRUCTURES TO AIR CUSHION SUPPORTED VEHICLES

Alan V. Coles, Williamsville, N.Y., assignor to Textron, Inc., Providence, R.I.
Filed Nov. 1, 1973, Ser. No. 411,704
Int. Cl. B64c *25/10*
U.S. Cl. 244—102 R **8 Claims**

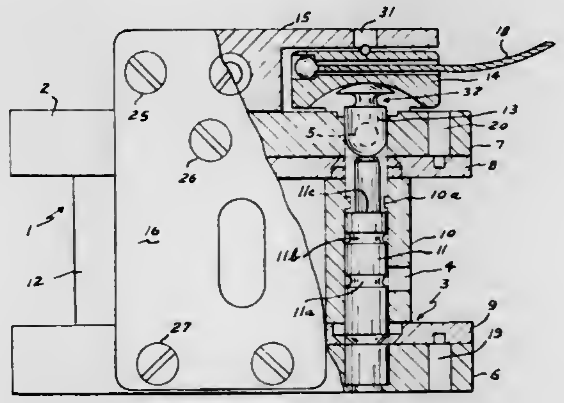


1. For use in a surface effect machine, a mechanism for attachment of a flexible/elastic sheet to hard structure of the machine to provide an air cushion type support seal means of the machine, said mechanism comprising in combination:
a cradle member of trough-like form having opposed ridge-like jaw portions, said cradle member being adapted to be attached to the machine and receive a fold of said sheet;
a clamp bar disposed within said fold and dimensioned and disposed to reside in an operative position within said cradle member diametrically between said jaw portions while leaving spacing therebetween and at each side thereof to define a pair of restricted gates through which opposite sides of said sheet pass from within said cradle member, said sheet being pinched between said clamp bar and jaw portions within said gates when said sheet is in an untensioned condition; and
a series of tie members connected to and extending from said cradle member into connections with said clamp bar at intervals along its length so as to maintain said clamp bar in said operative position relative to said cradle member, said tie members being swingable relative to said cradle member so as to permit said clamp bar to sway laterally relative to said jaw portions in response to tensioning of one side of said sheet passing through one of said gates so as to reduce the pinch effect between said clamp bar and one of said jaw portions on said one side of said sheet and to increase the pinch effect between said clamp bar and the other of said jaw portions on the other side of said sheet passing through the other of said gates.

3,865,333
QUICK RELEASE OPEN LINK

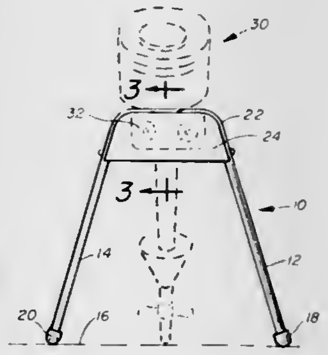
Lawrence E. Fielding, Dayton, and Patrick J. O'Brien, West Carrollton, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 5, 1973, Ser. No. 404,060
Int. Cl. B64d *17/38*
U.S. Cl. 244—151 B **6 Claims**

1. In a parachute extraction system for airdropping heavy equipment and other cargo loads, an open link-safety rigged to the cargo load to be extracted and comprising; a first, recovery parachute link and first link pin for attachment to the deployment line of a recovery parachute mountable to the top of the cargo load to be extracted; a second, extraction parachute link and second link pin to which one end of the extraction line of an extraction parachute may be attached disposed in nestled relation within the end of said first-named link remote from the said recovery prachute link pin; quick-release means normally providing the sole interconnection and attachment between said first and second links; an extraction link-mounted link-locking means initially disposed in a first, link-open position relative to said second, extraction link pin and selectively adjustable to a second, link-closed position; and mechanically-actuated, link-locking-operating means interconnected with, and automatically moving from a first, inoperative position to a second, operative position to thereby adjust the said link-locking means to the said second, link-closed postiion thereof upon a predetermined movement in an aft direction of the cargo being extracted to thus rigidly interconnect said first and second links and the respective recovery and extraction parachute line-attached link pins thereof to thereby deploy the recovery parachute; said link-locking-operating means remaining in its first, inoperative position when a malfunction has occurred prohibiting the said predetermined aft movment of said cargo; said extraction link-locking means comprising a relatively elongated, locking pin adjustably positioned in slidable relation within a longitudinally disposed passage of said second-named link pin; said mechanically-actuated link-locking-operating means comprising a static line attachment cable adapted to be interconnected with one end of a static line slidably attached at its other end to an anchor cable and automatically operative to adjust said locking pin to its econd, closed-link position when said static line is pulled taut on reaching a stop on the said anchor cable.



3,865,334
OUTBOARD MOTOR STAND

A. Logan Wait, Jr., 2702 E. 45 Pl., Tulsa, Okla. 74105
Filed Jan. 17, 1973, Ser. No. 324,320
Int. Cl. B63h *21/26, 5/12*
U.S. Cl. 248—4 **7 Claims**



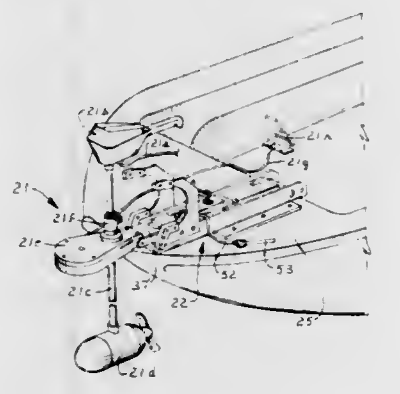
1. An outboard motor stand comprising:
A U-shaped frame, said frame having a bight portion canted at an angle to depending legs,
a wooden support block adjacent said bight portion of said frame to receive the hinged transom clamp of said outboard motor each of said legs comprising adjustable

telescopic tubes and means to releasably fix said tubes in a desired position, and

resilient tips at each end of each leg of said frame.

3,865,335
BOW BRACKET MOUNTING FOR AN ELECTRIC TROLLING MOTOR

William G. Roller, Purdy, Mo. 65734, and Emery L. West, Oklahoma City, Okla., assignors to said Roller, by said West
Filed Aug. 31, 1973, Ser. No. 393,324
Int. Cl. B63b *17/00;* **B63h** *21/26;* **F16m** *1/02*
U.S. Cl. 248—4 5 Claims



1. A bracket for mounting on a boat an outboard motor having an elongate shaft with a water submergible propeller unit on the lower end thereof, said bracket comprising:

a base attachable to said boat;

an upstanding propeller unit holding assembly mounted on said base and adapted to hold said propeller unit in an out-of-water storage position, said assembly including a pair of upstanding C-shaped members, one of which being disposed on each side of the elongate motor shaft, having a cushioningly padded exposed edge to protectively receive the propeller unit in the storage condition;

a pivot arm hingedly connected to said base;

a motor shaft retaining member mounted on said pivot arm for limited pivotal movement with respect thereto and adapted to adjustably hold the elongate shaft of said motor;

a releasable latch connected to said pivot arm and engageable with said retaining member for locking the position of the retaining member with respect to said pivot arm;

said bracket being positionable to an operating condition whereby said latch locks the retaining member to the pivot arm and said pivot arm carries the shaft of the motor in a substantially vertical orientation and being further positionable, upon release of said latch, to a storage condition whereby said pivot arm rotates from said operating condition to carry the shaft of the motor in a substantially horizontal orientation with said propeller unit securely held by said propeller unit holding assembly.

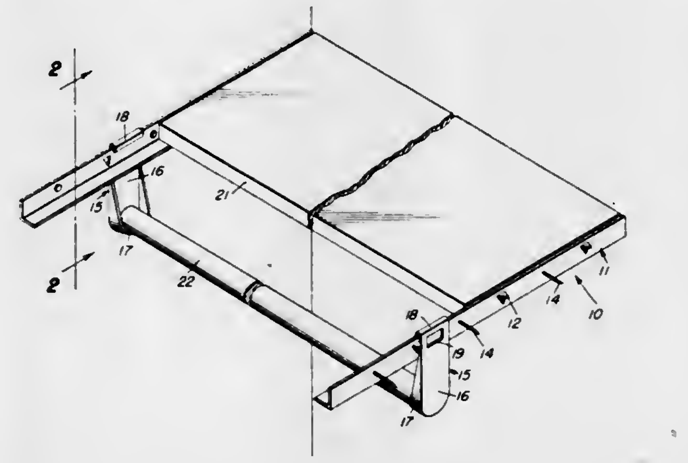
3,865,336
BRACKET AND SHELF SUPPORT ASSEMBLY

James H. Robertson, 11811 Cedar Ln., Kingsville, Md. 21087
Filed Mar. 30, 1973, Ser. No. 346,645
Int. Cl. A47b *57/00*
U.S. Cl. 248—235 3 Claims

1. In combination with a shelf and a rod support element, a combination shelf and rod supportive apparatus comprising: shelf supporting means attachable to spaced portions of a structure for receiving the edges of the shelf to support the shelf in a substantially horizontal position, the shelf supporting means comprising bars having L-shaped cross-sections;

means for attaching the shelf supporting means to the structure;

a bracket having a flat base portion terminating at its upper end in a U-shaped fold and having at its lower end an arcuate ledge for receiving one end of the rod support element therein, the ledge having side portions which taper outwardly from an intermediate section of the flat base portion of the bracket to a maximum at the lower edge of the bracket, the supportive apparatus comprising at least two of the brackets held in spaced relation from each other by the shelf supporting means, thereby to allow the rod support element to be positionable within the brackets after initial installation of the brackets between the spaced portions of the structure and the shelf means, that portion of the flat base lying between the fold and the ledge being held between the spaced portions of the structure to which the shelf supporting means are secured and the shelf supporting means itself, the U-shape fold engaging the upper portion of the shelf supporting means and thus being held thereon, the ledge on the brackets oppositely facing each other to support the rod support element therebetween, the brackets being held in position by the attachment of the shelf supporting means to the spaced portionis of the structure, the flat base portion of each bracket being disposed between the structure and the shelf supporting means and being formed with an opening; and



fastening means on the shelf supporting means and extending into engagement with the structure through the opening to limit relative movement of the bracket between the structure and the shelf supporting means, one each of the aforesaid bars of the shelf supporting means being attachable to the spaced portions of the structure, the horizontal legs of the bars receiving the shelf thereon and the vertical legs of the bars holding the brackets respectively against the spaced portions of the structure, the U-shaped fold on the brackets receiving a portion of the upper perimetric edge of the vertical leg of the bar, thereby to secure the brackets to the bars.

3,865,337
SHELVING ARRANGEMENT OR THE LIKE

Keivan Towfigh, Medford, and Douglas E. Ritchie, Chelmsford, both of Mass., assignors to Rangine Corporation, West Medford, Mass.
Continuation-in-part of Ser. No. 211,943, Dec. 27, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,852
Int. Cl. A47g *29/02*
U.S. Cl. 248—246 7 Claims

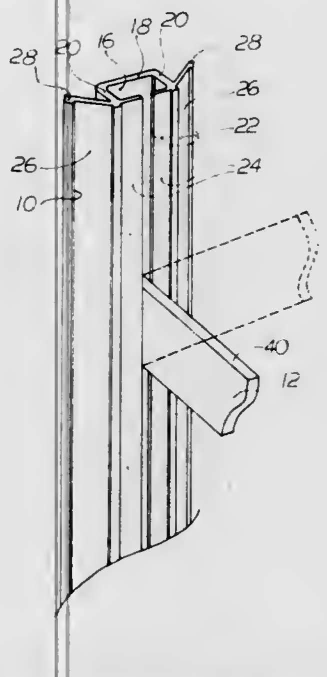
1. A supporting structure comprising:

an elongate standard defining a longitudinal channel having a rear wall, a pair of spaced side walls extending forwardly from said rear walls, said channel having a forwardly facing restricted opening formed along its length and at the forward region thereof, said restricted opening being defined by a pair of flanges extending inwardly toward each other from the forward edge of said side walls;

means enabling said standard to be secured in an upright position without presenting any obstruction to said channel;

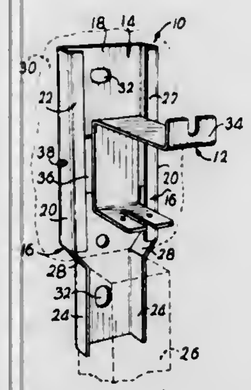
a bracket having an inner connective end and an upper supporting surface at least along a portion of its length, said inner end of said bracket being receivable within said restricted opening to enable the inner edge of said bracket to abut the rear wall of said channel at least when said bracket is connected to said standard and extends therefrom in a member-supporting configuration; and

a pin connected to and extending transversely through said bracket, said pin being spaced from that region of the inner edge of said bracket which abuts the rear wall of said channel in an amount greater than the distance between said rear wall to the rearwardly facing surface of said flanges such that when said bracket is in said member supporting configuration with the inner bracket edge abutting said rear wall of asid channel, the transversely extending ends of said pin will bear forwardly and will be wedged against the rearwardly facing surfaces of said flanges.



3,865,338
FLOATING METER MOUNT

Max L. Campbell, Topeka, Kans., assignor to Hydro-Flex Corporation, Inc., Topeka, Kans.
Filed Oct. 4, 1973, Ser. No. 403,537
Int. Cl. A47f *5/00*
U.S. Cl. 248—295 9 Claims



1. A floating mount for a ground-supported article requiring freedom from canting and angular heaving such as caused by seasonal variations in soil conditions, said mount comprising: a normally upright guide member adapted for attachment to a stable object adjacent said article and having an elongated, rectilinear track normally extending in a substantially vertical direction;

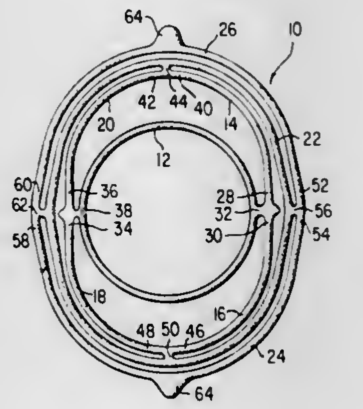
a follower element adapted for attachment to said article and reciprocable along said track only longitudinally thereof; and

means for releasably retaining said element in a preselected position along said track intermediate the opposed ends thereof only until attachment of the element to the article,

said element normally being freely reciprocable along a single rectilinear path of travel along said track in either an up or down vertical direction from said preselected position after said article is attached to said element and said retaining means are released whereby to permit vertical floating movement of said article relative to said member in response to changing soil conditions, but preclude deviant canting or heaving of the article during such vertical movement.

3,865,339
CONTAINER SUPPORT

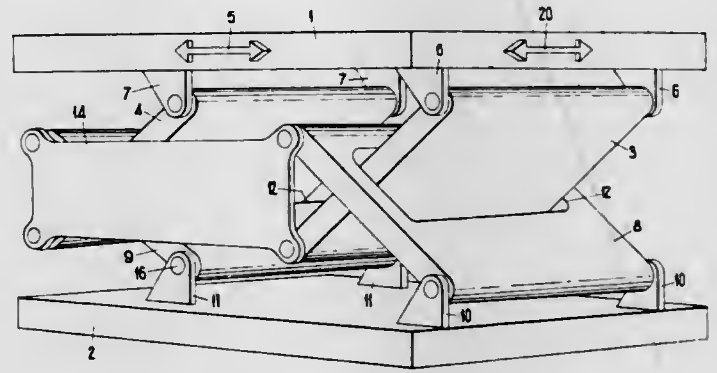
Raymond D. Von Alven, San Rafael, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.
Filed Apr. 23, 1973, Ser. No. 353,373
Int. Cl. A61b *19/00*
U.S. Cl. 248—318 16 Claims



12. The container support of claim 11 wherein said inner support means includes a cap member for engaging one end of said container.

3,865,340
SUPPORT APPARATUS

Stafford Malcolm Ellis, Maidstone, England, assignor to Elliott Brothers (London) Limited, Essex, England
Filed Oct. 2, 1973, Ser. No. 402,743
Claims priority, application Great Britain, Oct. 4, 1972, 45737/72
Int. Cl. F16m *13/00*
U.S. Cl. 248—399 7 Claims



1. An apparatus for supporting a first body on a second body so that relative movement between the two bodies is permitted in three mutually perpendicular directions only, comprising

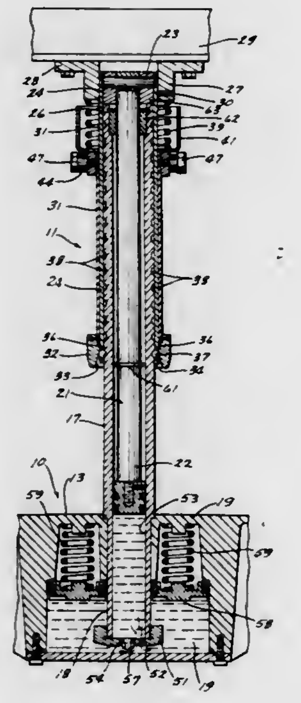
I. a first parallel motion linkage comprising

A. at least two substantially rigid parallel members each connected at one end with the first body so as to be pivotable about respective spaced apart axes,

II. a second parallel motion linkage comprising
  A. at least two substantially rigid parallel members each connected at one end with the second body so as to be pivotable about respective spaced apart axes,
III. all said axes being parallel to one another, and
IV. a third parallel motion linkage comprising
  A. a pair of substantially rigid parallel members each connected with the other ends of all the members of the first and second parallel motion linkages so that at each connection between a member of said third linkage and a member of said first or second linkage, relative pivotal movement is possible
    i. about one axis parallel to said first and second linkage axes and
    ii. about another axis perpendicular to said one axis and parallel to planes containing said first linkage axes and said second linkage axes respectively.

3,865,341
DENTAL STOOL FOR DENTIST AND DENTAL ASSISTANT

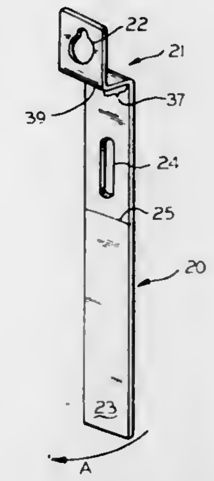
George A. Fortnam, Des Moines, and Ivan E. Sams, Indianola, both of Iowa, assignors to Den-Tal-Ez Mfg., Co., West Des Moines, Iowa
Filed Aug. 8, 1973, Ser. No. 386,602
Int. Cl. F16m *11/00*
U.S. Cl. 248—404 **5 Claims**



1. In a dental stool including a base assembly, and a seat structure:
a. means supporting the seat structure for adjustable vertical movement relative to said base assembly including an upright cylinder rigidly mounted on said base assembly centrally thereof,
b. an elongated piston for said cylinder movable to extended and retracted positions relative to the upper end of said cylinder,
c. means mounting said seat structure on the upper end of said piston for movement therewith,
d. means movable with and secured to said seat structure in a concentrically spaced relation about said piston having an inner peripheral surface in bearing engagement with the outer peripheral surface of said cylinder,
e. coacting means on said cylinder and on said movable means for releasably mechanically locking said movable means against movement longitudinally of said cylinder to hold said seat structure in a vertically adjusted position, and to rotatably support said movable means on said cylinder when the seat structure is in an adjusted position,
f. means for releasing and actuating said coacting locking means including a manually operated lever pivotally supported on said seat structure,
g. a source of fluid under pressure on said base assembly in fluid communication with said cylinder, and
h. means for controlling the rate of fluid flow to and from said cylinder to vary the rate of retraction of said piston relative to the rate of extension thereof so that when the coacting locking means is released the seat structure with a person seated thereon is movable downwardly at a slower rate than the upward rate of movement thereof without a person seated thereon.

3,865,342
SUPPORT FOR FRAME, PLAQUE, OR THE LIKE

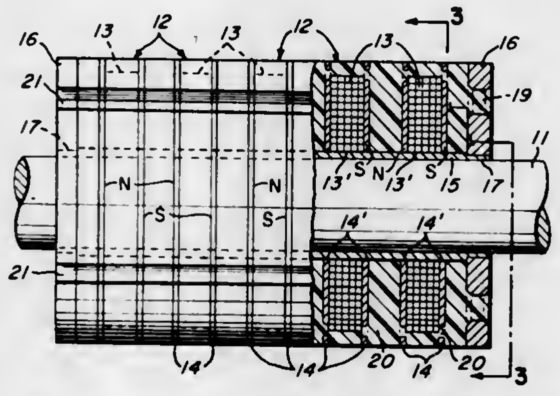
James C. Kanzelberger, Riverside, Ill., assignor to Contemporary, Inc., Manitowoc, Wis.
Filed July 2, 1973, Ser. No. 375,716
Int. Cl. A47g *1/17;* **A47b** *97/04*
U.S. Cl. 248—470 **10 Claims**



1. A frame or plaque support comprising a strap having a first end with a hole for hanger support, a second end opposite the first end which may be bent away from the frame or plaque to allow easel support thereof, and an opening intermediate the two ends for receiving a holding means which lockingly secures the strap to the frame or plaque, said strap being adapted to be rotated off-center in either a clockwise or counterclockwise direction and to be locked in the rotated off-center position by said holding means to compensate for any unbalance of said frame or plaque.

3,865,343
MOLD ASSEMBLY FOR MAKING A MAGNETIC BASE

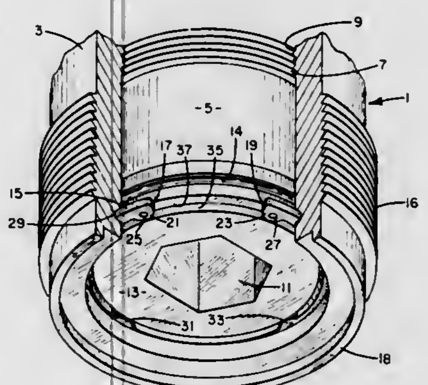
William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking System Company, Dayton, Ohio
Division of Ser. No. 87,673, Nov. 9, 1970,. This application Dec. 6, 1973, Ser. No. 422,400
Int. Cl. B22d *19/00*
U.S. Cl. 249—95 **11 Claims**



1. A mold assembly for making a cylindrical magnetic base having a cylindrical member and spaced apart magnetic circuit means disposed on the cyclindrical member, said mold assembly comprising: mold sections positioned to provide a mold cavity, a pair of end plates disposed at opposite ends of the mold sections for closing off the ends of the cavity, means provided at the inner surface of at least one of the mold sections for locating the magnetic circuit means at predetermined positions lengthwise of the mold cavity, wherein the locating means comprises spaced apart grooves in at least the one mold section for receiving the magnetic circuit means and holding them in spaced apart relationship while the mold is being filled, means for holding the end plates and mold sections together, the cylindrical member and the magnetic circuit means being disposed in the cavity, and means including a nozzle extending lengthwise of the mold cavity for introducing moldable material into the mold cavity around the cylindrical member and the magnetic circuit means.

3,865,344
RETAINING RING

Richmond S. Hayes, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 25, 1972, Ser. No. 301,699
Int. Cl. F16k *51/00*
U.S. Cl. 251—284 **2 Claims**

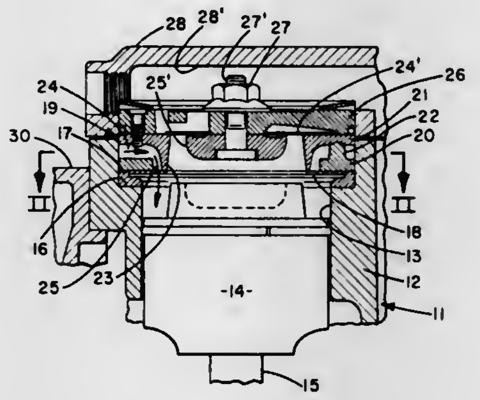


1. The combination comprising:
a valve body having a threaded cylindrical bore and a groove formed near one end of said bore;
a cylindrical valve stem having external threads in engagement with the threads of said cylindrical bore and a section of reduced diameter at one end of said stem defining a shoulder; and
a generally flat, flexible open retaining ring having inner and outer peripheral surfaces and at least three radial gripping fingers extending from the inner peripheral surface, the outer peripheral surface being disposed in said groove of the valve body and the gripping fingers being in opposing alignment with said shoulder, said gripping fingers engaging said shoulder and countering the exertion of torque on the second member when the first member is moved against the ring.

3,865,345
VALVE PLATE FOR RECIPROCATING COMPRESSOR

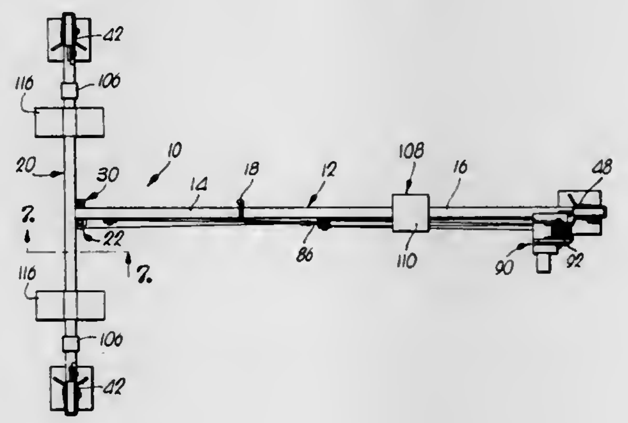
Tadek M. Kropiwnicki, Syracuse, N.Y., assignor to Carrier Corp., Syracuse, N.Y.
Filed June 4, 1973, Ser. No. 366,911
Int. Cl. F04b *39/10*
U.S. Cl. 251—367 **11 Claims**

1. A valve plate for use in a reciprocating gas compressor comprising:
a. a first member having a plurality of upstanding members extending normal to a first surface thereof; and
b. a second member having a first surface connected to the top of said upstanding members, said respective surfaces of said first and second members being maintained in spaced relationship to define therebetween a first radially extending flow path for said gas, said second member including a first portion integrally connected to said first surface, extending substantially normal thereto, and being in spaced relationship to an inboard edge of said first member to define therebetween a second longitudinally extending flow path for said gas, the direction of flow of said gas being changed by approximately 90° by contacting the surface defining the junction of said first portion of said second member and said first surface thereof, the gas passing from said first flow path into said second flow path.



3,865,346
PORTABLE VEHICLE LIFT

Gerrel L. Shirk, 723 E. 4th, Newton, Kans. 67114
Filed Nov. 30, 1973, Ser. No. 420,683
Int. Cl. B66f *7/02*
U.S. Cl. 254—89 R **13 Claims**

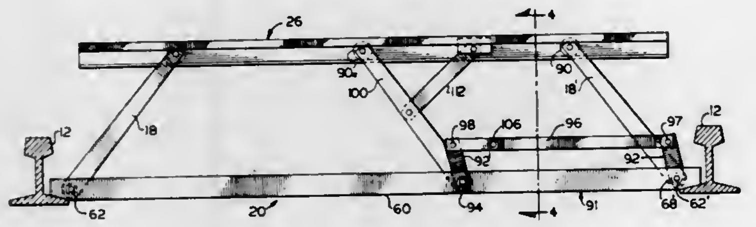


1. A portable vehicle lift including:
a T-shaped frame having a single longitudinal beam normally extending fore-and-aft of the vehicle being lifted and a crossbeam normally extending transversely of the supported vehicle,
said longitudinal beam being disposed midway between the opposite ends of said crossbeam and in perpendicular relationship therewith;
a stanchion at each of the three exposed ends of said beams respectively,
each stanchion supporting its corresponding beam end for vertical reciprocation;
power apparatus operably intercoupling said stanchions and the beams for raising and lowering the frame; and
a set of adjustable carriage units on said frame for engaging the underside of the vehicle during lifting of the latter,
a pair of said units being shiftable along said crossbeam on opposite sides of said longitudinal beam into any of a number of selected positions, and a third unit being shiftable along said longitudinal beam toward and away from said crossbeam into any one of a number of selected positions.

3,865,347
APPARATUS FOR UNLOADING BULK MATERIAL

Hugh H. Pase, Cheshire, Conn., assignor to Mimco Incorporated, Meriden, Conn.

Filed Nov. 17, 1972, Ser. No. 307,445
Int. Cl. B66f *3/00*
U.S. Cl. 254—124 **7 Claims**



1. In a lifting assembly having a fixed frame defining a plane, at least one pair of oppositely disposed lifting arms of equal length, each of said arms being pivotally mounted at one end to said fixed frame and having a free end, a movable platform supported on the free ends of said lifting arms and movable thereby from a position substantially within said plane to an elevated position above said plane, and a power cylinder operatively connected at one end to one of said lifting arms and at its other end to the opposite one of said lifting arms for pivoting said lifting arms in opposite directions upon actuation of said power cylinder,

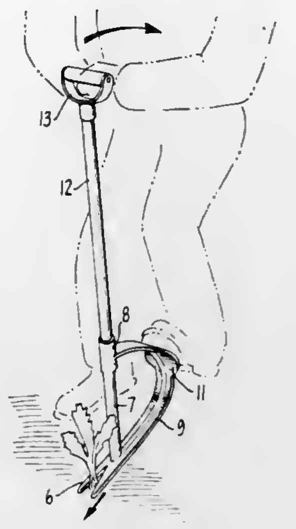
- leveling means for equalizing the pivotal movement of each of said lifting arms comprising in combination therewith, at least one leveling arm disposed parallel to one of said lifting arms and pivoted to said fixed frame, said leveling arm being equal in length to said one lifting arm and having a free end in sliding engagement with said movable platform,
- a first torque link rigidly connected to said one lifting arm at a fixed angle thereto for pivotal movement therewith, a second torque link rigidly connected to said leveling arm at a fixed angle thereto equal to said firstmentioned angle for pivotal movement with said leveling arm, and
- a tie-bar pivotally connected to said torque links parallel to said fixed frame, such that said tie-bar, torque links and fixed frame form a parallelogram,
- said angles between said torque links and their respective arms being such that when said lifting and leveling arms are disposed substantially within said plane of said fixed frame, said links extend outward of said plane.

3,865,348
WEED PULLER

Olive H. Close, 9375 Alta Loma Dr., Alta Loma, Calif. 91701

Filed Jan. 28, 1974, Ser. No. 437,362
Int. Cl. B66f *3/00*
U.S. Cl. 254—132 **1 Claim**

1. A weed puller, comprising: an elongate, substantially straight post portion; an arcuately curved portion having a first end joined to one end of the post portion and extending laterally therefrom and curving inwardly toward the post portion and extending substantially straight at its other end beyond the other end of the post portion and joined to said other end of the post portion at an angle relative to the axis of the post portion and having a notch in the end thereof for engagement with a weed; laterally enlarged foot pad means on the curved portion between the ends thereof to aid in positioning the notched end relative to a weed; and an elongated handle extending axially from said one end of the post portion whereby the notched end may be engaged with a weed and the



puller then rocked rearwardly upon the curved portion thereof to pull the weed.

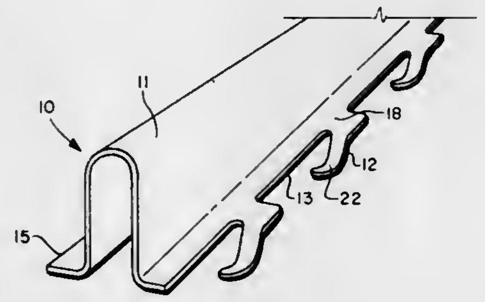
3,865,349
FENCE DROPPER

Gordon Francis Leiblich, Kimba, Australia

Filed May 21, 1973, Ser. No. 361,993

Claims priority, application Australia, May 23, 1972, 9049/72

Int. Cl. E04h *17/20*
U.S. Cl. 256—47 **4 Claims**



1. A fence dropper having a body portion arranged to extend rearwardly away from the plane of a fence when supported by the dropper, a flange extending along at least one edge of the body portion, a plurality of tongues spaced from one another and lying beyond the outer edge of said flange, each tongue having at its root a bridge portion joining it to but spacing it from said flange outer edge and extending forwardly of said plane from said root, each tongue being of identical size and shape, the recess formed between a said tongue and the edge from which it is spaced by said root and also between that said tongue and an adjacent said tongue has its size and shape identical to the tongue size and shape, said tongue further having a return portion which terminates rearwardly of said plane to thereby define with said body portion a wire retaining aperture extending across said plane of the fence.

3,865,350
LIQUID HOMOGENIZING DEVICE

Wilson A. Burtis, 5011 Harvard Ave., Westminster, Calif. 92683

Filed Jan. 14, 1974, Ser. No. 433,215
Int. Cl. B01f *5/08, 11/02*
U.S. Cl. 259—1 R **5 Claims**

1. A device for transforming a multi-phase liquid into a substantially homogeneous liquid that includes:

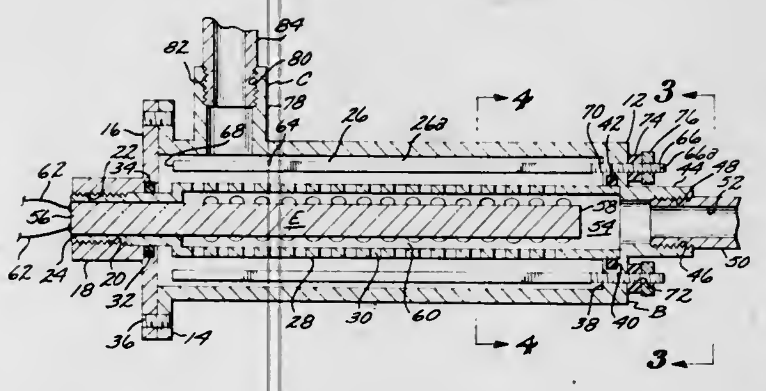
a. an elongate housing having first and second closed ends, said housing defining a confined space within the interior thereof;

b. an elongate ultrasonic wave generating assembly disposed at least partially in said confined space and supported in a substantially fixed position in said housing to extend from said first end to a position adjacent said second end, and said assembly when so supported having the portion thereof in said confined space free to vibrate;

c. first means for vibrating said assembly in an ultrasonic range;

d. a tubular shell in said confined space of greater internal transverse cross section than the transverse cross section of the portion of said assembly in said housing, said shell enveloping said portion of said assembly in said housing, and extending from said first end to said second end and in communication with a liquid inlet in the latter, and said shell having a plurality of longitudinally and circumferentially spaced apertures therein;

e. a plurality of elongate, circumferentially sapced reeds disposed in said confined space that have first and second



ends, said first ends of said reed secured to said second end of said housing, said reeds being substantially parallel to one another and located between said housing and said shell, and said reeds being of such length and formed from a material possessing resiliency to the extent that said reeds will resonate when said assembly is vibrated; and

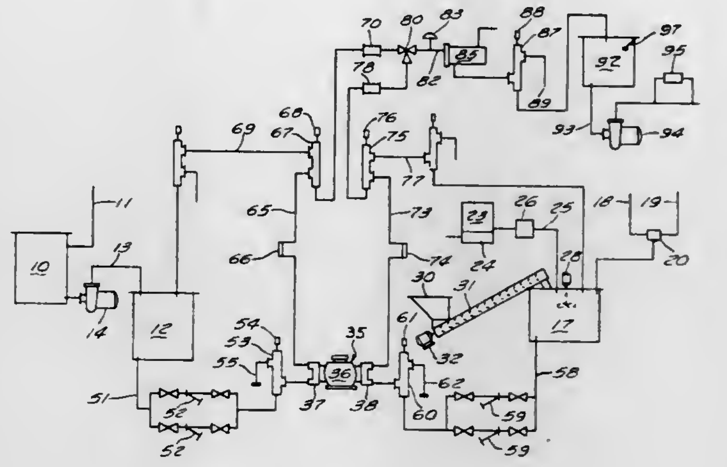
f. liquid outlet means in said shell adjacent said first end thereof, with said multi-phase liquid when discharged through said liquid inlet entering an annulus shaped space defined between said assembly and shell to be subjected to ultrasonic vibration by said assembly prior to flowing out of said shell as a plurality of streams through said apertures to be further subjected to ultrasonic vibration by said reeds as they resonate, and said liquid being transformed to a homogeneous state as a result of said vibrations of said assembly and reeds prior to flowing from said liquid outlet means.

3,865,351
PICKLE MANUFACTURING

Francis Glenn Connick, Downers Grove, Ill., assignor to Swift & Company, Chicago, Ill.

Division of Ser. No. 94,064, Dec. 1, 1970, Pat. No. 3,717,479. This application Dec. 8, 1972, Ser. No. 313,586
Int. Cl. G05d *11/02;* **B01f** *3/12*
U.S. Cl. 259—4 **9 Claims**

1. An improved apparatus for manufacturing a curing pickle solution, said apparatus comprising: a first brine storage tank; a second storage tank for liquid sugar or dextrose, said second storage tank having a heating means connected thereto; a mixing tank connected to receive liquid from said second storage tank and water from a supply thereof; delivery means positioned for adding additional ingredients into said mixing tank; metering means connected to said first brine storage tank and to said mixing tank, said metering means being operable to separately withdraw and regulate streams of liquid from each of said first brine storage and mixing tanks; and

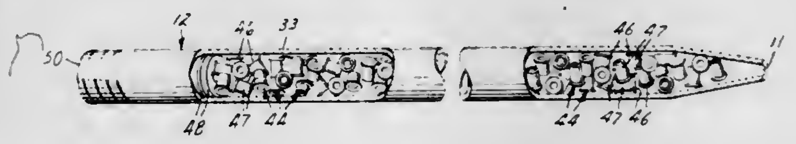


flow means connected to said metering means to combine said streams into a single flow.

3,865,352
STATIC MIXING DEVICE

Charles Edward Nelson, White Bear Lake, and Clifford L. Jewett, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Nov. 16, 1973, Ser. No. 416,604
Int. Cl. B01f *5/00*
U.S. Cl. 259—4 **4 Claims**



1. A static device for mixing a plurality of fluids comprising:

a hollow cylindrical tube having an inlet and an outlet; and

a plurality of shaped pieces filling said tube, said pieces comprising a circular disc having perpendicularly attached thereto at least one projection, the diameter of said disc being about 0.25 to 0.9 times the inner diameter of said tube and the length of said projection being about 0.25 to 0.75 times the inner diameter of said tube.

3,865,353
MIXER FOR HIGHLY VISCOUS FLUIDS

Edgar Fischer, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

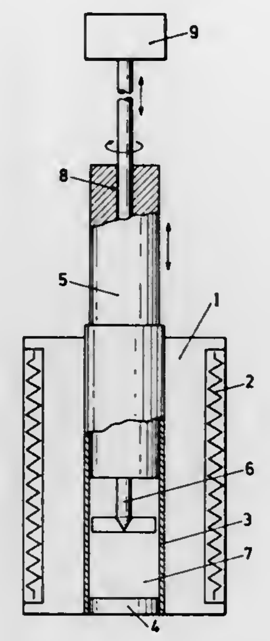
Filed Nov. 21, 1972, Ser. No. 308,422

Claims priority, application Germany, Nov. 23, 1971, 2158002

Int. Cl. B01f *7/22*
U.S. Cl. 259—118 **3 Claims**

1. A mixing device for highly viscous fluids comprising a hollow elongated tube having first and second open end portions and defining a mixing space therein, a stationary piston removably mounted in a fixed position closing said first open end portion of the tube and a movable piston slidably mounted in and closing the second open end portion of the tube for movement through said mixing space; said movable piston having an axial bore formed therethrough; and a stirrer having an elongated shaft extending through said bore into said mixing space and having a mixing member thereon in the mixing

space; whereby said movable piston is adapted to rest on the material to be mixed in said mixing space to maintain a relatively constant volume therein and prevent formation of gas spaces in the mixing space.

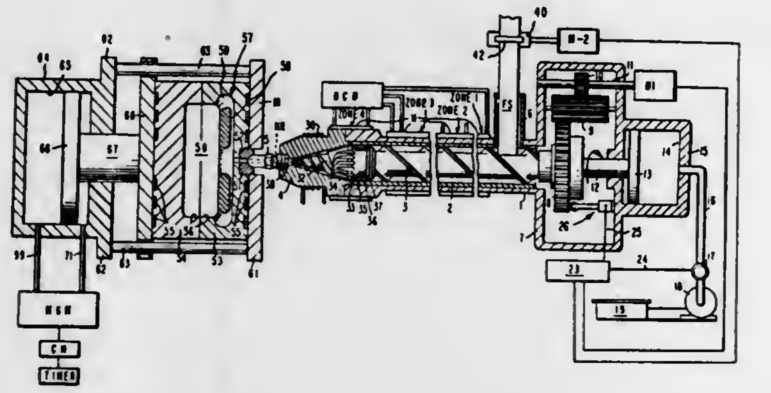


3,865,354
APPARATUS

John Samuel Burpulis; Robert David Souffie, both of Wilmington, Del.; John D. Counceller, Mt. Gillad, and Robert De Capite, Worthington Hills, both of Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 235,491, March 17, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,721
Int. Cl. A21c *1/106*

U.S. Cl. 259—191 **7 Claims**



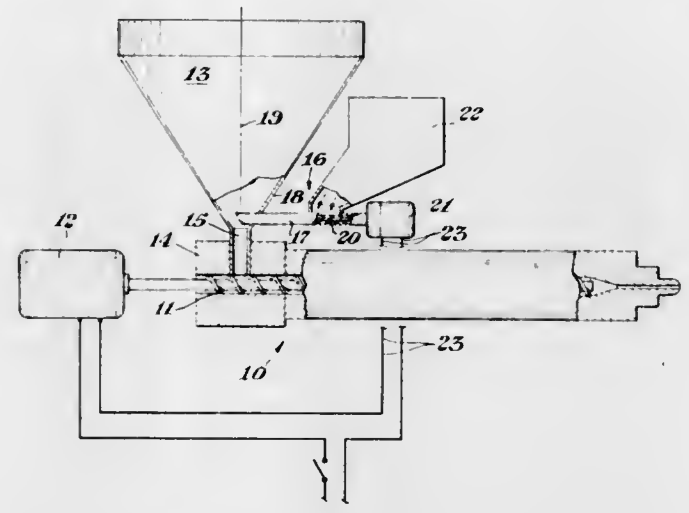
1. In a reciprocating screw injection molding apparatus that includes a reciprocable rotatable driven screw and an elongated housing surrounding the screw, said housing having an outlet adjacent one end and an inlet adjacent the other end of the screw, and wherein an elastomeric material is first fed through said inlet according to the demand of the screw, a feed mechanism for a flat strand material comprising: said inlet defining a feed passage transverse to the longitudinal axis of the housing, said passage being smoothly faired into the normal cross section of said housing in the direction of screw rotation; a material deflection member extending into said feed passage substantially the entire length thereof and less than the width thereof, said member engaging the upstream wall of said passage; a roll driven by a motor located directly above said inlet and engaging said flat strand to feed said strand into said inlet in a vertical path at a fixed velocity, said motor being coupled to a control means which actuates the motor in response to the screw rotation, and said strand having sufficient stiffness to lift itself from said roll when the demand is less than the feed velocity and to lower itself onto the roll when the demand catches up with the feed velocity.

3,865,355
MEANS FOR PUTTING ADDITIVE IN PLASTIC AND OTHER MATERIALS

Thomas J. Eau Claire, 4181 Richmark Ln., Bay City, Mich. 48706

Filed Apr. 23, 1973, Ser. No. 353,819
Int. Cl. B01f *7/08*

U.S. Cl. 259—192 **11 Claims**



1. A screw extruder for homogeneously mixing and extruding a thermoplastic material with an additive material including:
- a feed hopper for feeding thermoplastic material to the screw extruder;
- at least one auger feed tube for feeding additive material into the feed hopper;
- said at least one auger feed tube extending substantially horizontally through the lower part of the sidewall of the feed hopper above and adjacent to the screw of the extruder;
- the upper side of said at least one auger feed tube at its distal end extending beyond the lower side thereof and said lower side terminating along a line extending approximately horizontally along said lower side and substantially passing through the vertical axis of said feed hopper; the point of termination of said at least one auger feed tube being between a distance from said axis towards the in-feed sidewall equal to about one-seventh of the diameter of the feed passage in said hopper to a distance beyond said vertical axis equal and about one-tenth of said diameter in a direction away from said in-feed sidewall; said diameter being the diameter of the hopper section at the level of the auger feed tube.

3,865,356
HYDRAULIC SHOCK ABSORBER

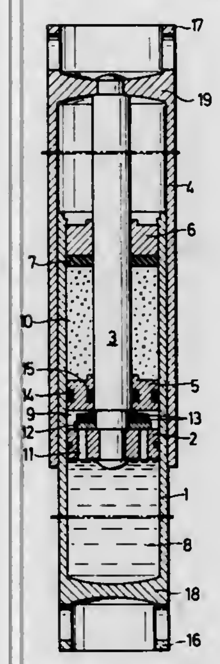
Felix Wossner, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed June 14, 1973, Ser. No. 370,043
Claims priority, application Germany, June 20, 1972, 2229945
Int. Cl. F16f *5/00*

U.S. Cl. 267—139 **11 Claims**

1. A shock absorber for use between a bumper and the frame of an automotive vehicle comprising:
- a. a cylinder having an axis and bounding a cavity therein;
- b. a piston axially movable in said cylinder and axially separating a first and a second compartment of said cavity;
- c. a piston rod fastened to said piston in said cavity and axially extending outward of said cylinder;
- d. fastening means for respectively fastening said cylinder and said piston rod to said bumper and to said frame respectively;
- e. a liquid substantially completely filling said compartments;

- f. normally closed throttling valve means responsive to movement of said piston rod in a direction inward of said cylinder under a predetermined axial force applied by said fastening means for opening a throttling passage between said compartments;
- g. partition means axially movable in said cylinder and separating one of said compartments from a chamber in said cavity;



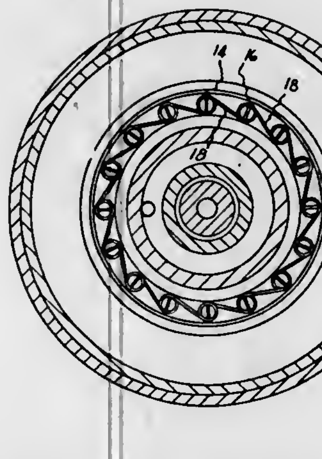
- h. a body of gas substantially filling said chamber under a pressure sufficient for biasing said piston rod outward of said cavity in at least one axial position of said piston rod with a force smaller than said predetermined force; and
- i. force transmitting means for transmitting to said cylinder an axial force applied to said piston rod in said inward direction and smaller than said predetermined force.

3,865,357
MULTIPLE SPRING ASSEMBLY

Frederick Charles Drummond, Fairfield, N.S.W., Australia, assignor to Borg-Warner (Australia) Limited, Fairfield, New South Wales, Australia

Filed Aug. 13, 1973, Ser. No. 388,297
Claims priority, application Australia, Aug. 17, 1972, 45674/72
Int. Cl. F16f *3/04*

U.S. Cl. 267—91 **3 Claims**



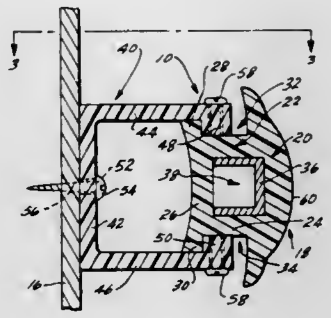
1. A spring device formed by a continuous strand to provide a series of helical coils interconnected by integral portions of the strand, each of said helical coils having a longitudinal axis and said coils being disposed such that said axis is generally perpendicular to the plane of said interconnecting strand portions, said device being in the shape of an annulus whereby said axis is generally perpendicular to the plane of said annulus.

3,865,358
DENT DEFLECTOR FOR MOBILE HOMES

Jeff A. Butters, 10355 Armenta St., Sun Valley, Calif. 91352

Filed Nov. 29, 1972, Ser. No. 310,258
Int. Cl. F16f *1/36*

U.S. Cl. 267—140 **6 Claims**



1. A device for protecting mobile homes and the like from impact damage comprising:
- an elongated guard rail member made from a deformable material for providing an impact-absorbing, elongated front section thereof and having an elongated reinforcing member to provide rigidity for the length of the deformable guard rail member,
- an elongated connecting member formed integrally with a base portion of the guard rail member and projecting rearwardly away from the impact-absorbing front portion thereof, the connecting member being continuous for a substantial portion of the length of the guard rail member,
- a plurality of generally U-shaped mounting members each including a base portion with a pair of spaced apart legs extending forwardly from the base portion, the legs of each mounting member including separate locking means for engaging the continuous connecting member of the guard rail in a releasable interlocking fit for attaching the mounting members to the connecting member in a spaced apart relation along the length of the guard rail, with each mounting member being releasably attached at locations on the connecting member independently of the locations of the other mounting members,
- the legs of each mounting member being elongated to, in normal use, hold the guard rail member spaced a substantial distance forward from the base portions of the several mounting members,
- fastening means cooperating with the base portion of each mounting member for securing the guard rail member to the mobile home, and
- separate fastener members extending through the legs of each mounting member to rigidly secure the legs to the connecting member.

3,865,359
VACUUM APPARATUS

Italo Caroli, Westmount, Quebec, Canada, assignor to DBM Industries Ltd.

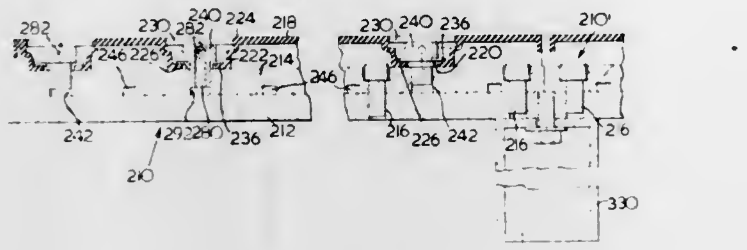
Continuation-in-part of Ser. Nos. 249,142, May 1, 1972, abandoned, and Ser. No. 286,661, Sept. 6, 1972, abandoned. This application Sept. 5, 1973, Ser. No. 394,526
Int. Cl. B25b *11/00*

U.S. Cl. 269—21 **7 Claims**

1. A planar vacuum apparatus for holding a workpiece thereon in a selected position comprising
- a base surface;
- a sheet of resiliently deformable material detachably secured to the base surface having a surface adapted to support said workpiece and being provided with an array of openings therein;
- the openings in the sheet each being defined by a bellow-like wall which, collectively, space said deformable sheet above the base surface, said bellow-like walls defining with said openings a plurality of bounded zones;

each bounded zone being connected to a source of subatmosphere pressure;

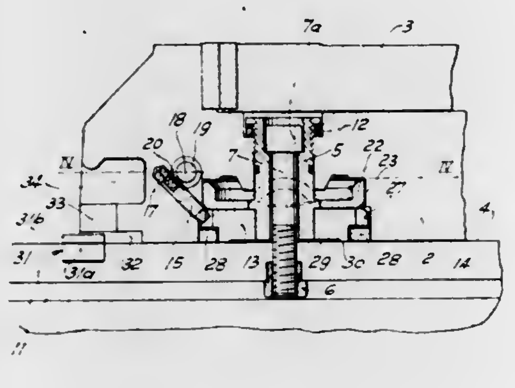
and a plurality of flow constricting means in the base surface and associated with each opening and bounded zone to limit flow therethrough to a controlled volume;



the volume passed by each opening having an accumulated total volume not exceeding the volumetric capacity of the source.

3,865,360
VISE

Erich Schweidler, Kempten, Germany, assignor to Saver-Allma GmbH, Allgaver Maschinenbau, Kempten, Germany
Filed Oct. 19, 1973, Ser. No. 407,866
Claims priority, application Germany, Oct. 25, 1972, 2252269
Int. Cl. B23q *3/06*
U.S. Cl. 269—100 8 Claims



1. A machine vise for mounting on a machine table having a plurality of grooves therein each having inwardly extending flanges adjacent the upper edge thereof, comprising:

a base plate having laterally projecting edge rail means;

vise means mounted on said base plate;

a hollow cylindrical bearing collar adapted to support said base plate for rotation with respect to said machine table to a selected angular position, said bearing collar having means defining an external thread thereon;

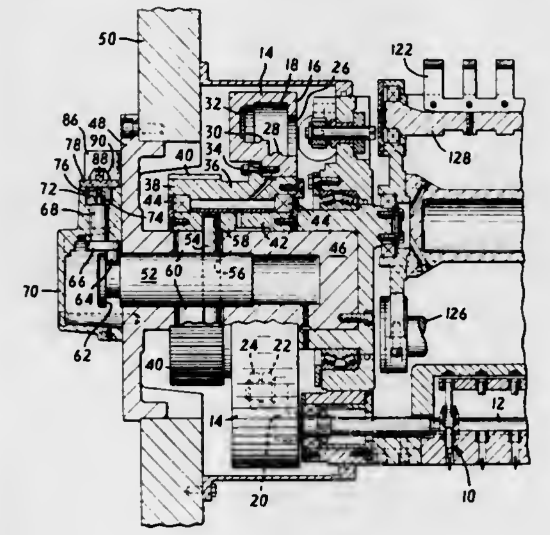
means defining an externally threaded holding screw received in the interior of said hollow cylindrical bearing collar and being freely accessible from above, and holding screw including holding block means threadedly engaged therewith, said holding block means being received in one of said grooves on said machine table to effect a securement of said bearing collar to said machine table, said holding block means including means for permitting a movement of said holding block means longitudinally of said groove when said holding screw is loosened and for preventing an upward movement out of said groove;

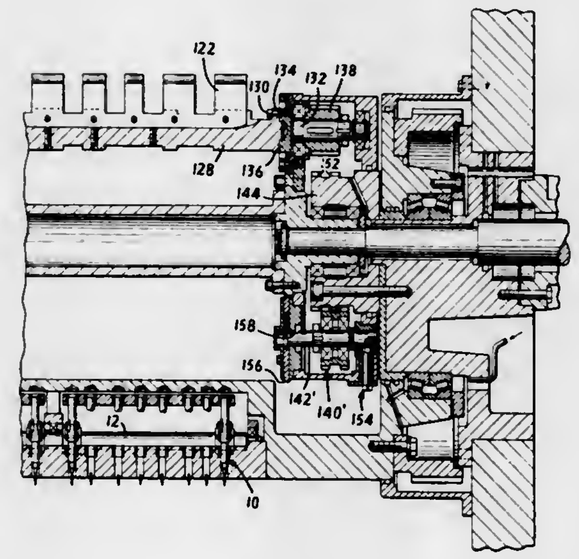
an internally threaded nut threadedly engaged with said external thread on said bearing collar, said nut engaging the upper surface of said base plate so that said base plate will be clamped between said base plate and said machine table; and

clamping means receivable in said grooves and including means for engaging said edge rail means so that said edge rail means of said base plate are clamped between said machine table and said edge rail engaging means.

3,865,361
FOLDER CYLINDER

Frank Neal, Lititz, Pa., assignor to John C. Motter Printing Press Co., York, Pa.
Filed Sept. 11, 1973, Ser. No. 396,248
Int. Cl. B65h *45/16*
U.S. Cl. 270—76 17 Claims

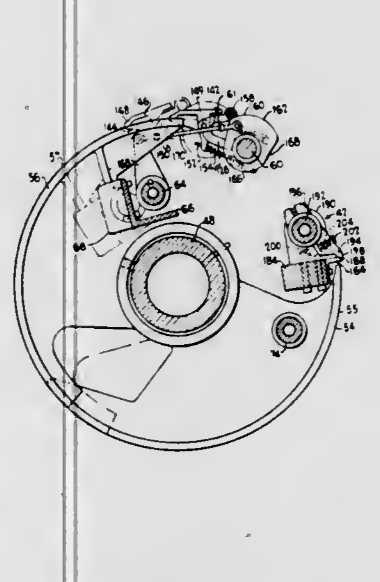




1. A rotatable folder cylinder comprising a rotatable shaft, a plurality of pin members coupled to the shaft and responsive to rotation thereof, a cam having at least two camming surfaces thereon, and a cam follower coupled to the shaft to effect the rotation thereof and adapted to travel on each of the camming surfaces, the cam and the shaft being adapted for relative axial movement selectively to transfer the cam follower between the camming surfaces, the two camming surfaces being disposed at discrete axial locations on the cam and being configured to effect operation of the plurality of pin members in the collect mode and in the straight mode, respectively.

3,865,362
SHEET TRANSFER CYLINDER

Dennis J. Luffy, Butler, and Robert L. Mosemiller, Pittsburgh, both of Pa., assignors to Miller Printing Machinery Co., Pittsburgh, Pa.
Filed Feb. 23, 1973, Ser. No. 335,072
Int. Cl. B65h *29/06*
U.S. Cl. 271—82 7 Claims



1. A sheet transfer cylinder comprising,

a cylinder shaft rotatably journaled in a frame,

a sheet front edge gripper shaft positioned in parallel spaced relation to said cylinder shaft and supported by said cylinder shaft for rotation therewith,

sheet front edge gripper means secured to said sheet front edge gripper shaft and arranged to engage the front edge of a sheet,

means to rotate said sheet front edge gripper shaft to open and close said front edge gripper means at preselected radial angular positions of said cylinder shaft,

a sheet tail edge gripper shaft positioned in parallel spaced relation to said cylinder shaft and said front edge gripper shaft,

means supporting said tail edge gripper shaft for rotation with said cylinder shaft,

sheet supporting means having a cylindrical sheet supporting surface,

tail edge gripper means secured to said tail edge gripper shaft and arranged to engage the tail edge of a sheet positioned on said sheet supporting surface,

means to open and close said tail edge gripper means at preselected radial angular positions of said cylinder shaft including a tail edge gripper means actuator shaft positioned in spaced parallel relation to said tail edge gripper shaft and a cam member rotatably positioned on said tail edge gripper shaft,

lever means connecting said actuator shaft and said cam member,

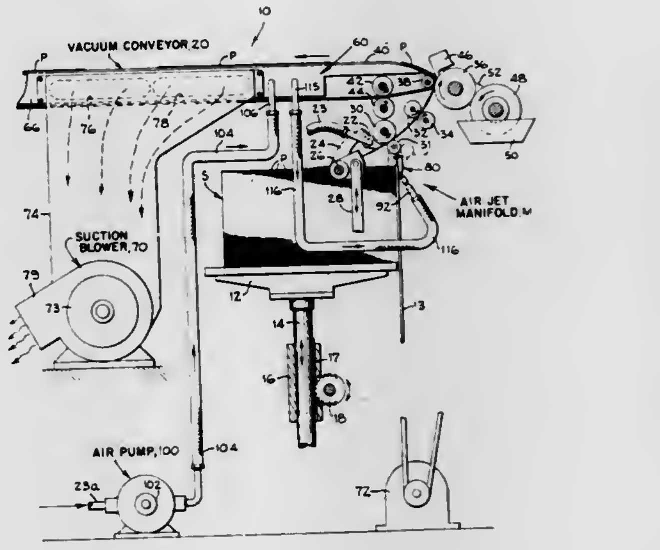
means to rotate said actuator shaft and said cam member relative to said gripper shaft to thereby open and close said tail edge gripper means, and

means to extend said tail edge gripper means radially outwardly relative to said cylinder shaft beyond the periphery of said sheet supporting surface at preselected angular positions of said cylinder shaft.

3,865,363
Patent Not Issued For This Number

3,865,364
ANTI-CURL SHEET FEEDING APPARATUS

Robert A. Sterner, Oakford, Pa., assignor to FMC Corp., San Jose, Calif.
Filed Oct. 4, 1973, Ser. No. 403,698
Int. Cl. B65h *3/48*
U.S. Cl. 271—105 7 Claims

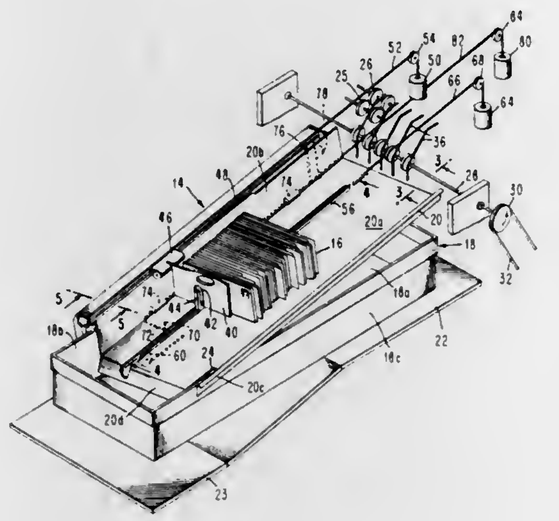


1. Apparatus for feeding the top sheet of a stack of sheets of paper to a sheet conveyor which conveyor includes a suction chamber having an apertured top, an apertured vacuum belt conveyor running along said top, a suction blower connected to said suction chamber, air pump means at said apparatus, an air line connecting said air pump means to an air jet manifold, said manifold being at the sheet delivery side of said stack and delivering jets of air for riffling the edges of the sheets and means for picking up and feeding the top sheet to said conveyor; the improvement wherein a portion of said air line connecting said air pump means to said manifold is disposed in the stream of air entering said suction blower for cooling the air pumped through the air line substantially down to ambient temperature, for preventing curl and warp of the top sheet of the stack by heat from said manifold air jets.

3,865,365
APPARATUS AND METHOD FOR UNLOADING MAIL STACKERS

William Warner Hardin, Stewartville; David Ernest Peterson, and Delbert Douglas Towne, both of Rochester, all of Minn., assignors to International Business Machines Corp., Armonk, N.Y.
Filed Aug. 17, 1973, Ser. No. 389,294
Int. Cl. B65h *31/06*
U.S. Cl. 271—214 6 Claims

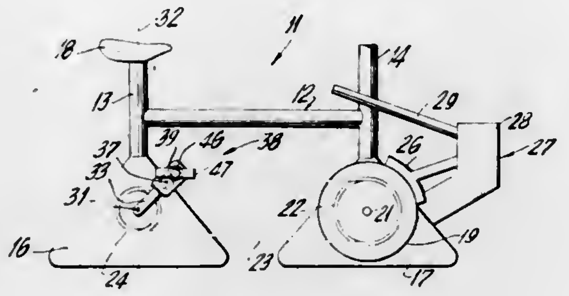
1. Mail stacking apparatus comprising a stacker trough which has a bottom, a forward end, and an upstanding side and into which envelopes may be moved one at a time and through which the envelopes may move as a stack toward said forward end of the trough as additional envelopes are moved into the trough; a backing member for supporting the forward end of a stack of envelopes as they move toward the forward end of the trough; guiding means carried by said trough side and mounting said backing member so that it may swing upwardly with respect to said trough bottom and so that it may move linearly of said trough side whereby the backing member may move with the forward end of a stack of envelopes in the trough and whereby the backing member may be swung out of engagement with the forward end of a stack of envelopes and may be moved backwardly to an intermediate place in the stack and may then be moved down into the stack; a second backing member for the forward end of a stack of envelopes which may support the envelope stack in lieu of said first named backing member; guiding means carried by said trough bottom holding said second backing member in upstanding relationship with respect to said trough bottom and guiding said second backing member in a movement longitudinally of said trough bottom; said two guiding means each extending for a major portion of the length of said trough and being so disposed whereby the longitudinal movement of said two backing members overlaps for a major portion of the length of the trough and said second backing member may move to the forward end of the trough; and means for applying a restraining force on each of said backing members tending to hold said backing members from movement toward said forward trough end whereby said second backing member may be utilized for holding a series of envelopes in said trough in a stack when said first named backing member is swung out of engagement with the forward end of the stack and moved to an intermediate place in the stack.

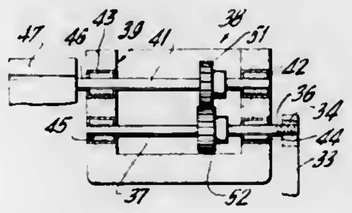


3,865,366
VARIABLE MOTION PEDAL ASSEMBLY FOR A FOOT-OWERED VEHICLE

Charles T. Stantial, Station Rd., Campbell Hall, N.Y. 10916
Filed Jan. 28, 1975, Ser. No. 437,153
Int. Cl. A63b *21/00*
U.S. Cl. 272—73 **11 Claims**

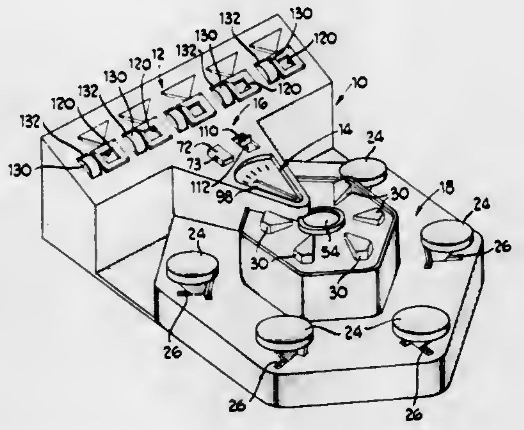
11. In an exercise bicycle, a motion-changing mechanism for connecting a pedal with a crank secured at one end to a rotatable main drive axle of the bicycle, which comprises:
- a housing;
- first and second shafts rotatably mounted in the housing in parallel spaced relation and having respective first ends projecting through the housing;
- means for securing the opposite end of the crank to the projecting first end of the first shaft;
- means for securing the pedal to the projecting first end of the second shaft;
- a first externally toothed gear coaxially secured to the first shaft within the housing;
- a second externally toothed gear coaxially secured to the second shaft within the housing; and
- means disposed in the housing for coupling the first and second gears in driving relation, whereby the pedal is movable in a complex curvilinear path having a prescribed plane of symmetry that is variable by rotating the second shaft about its own axis.





3,865,367
GAME APPARATUS

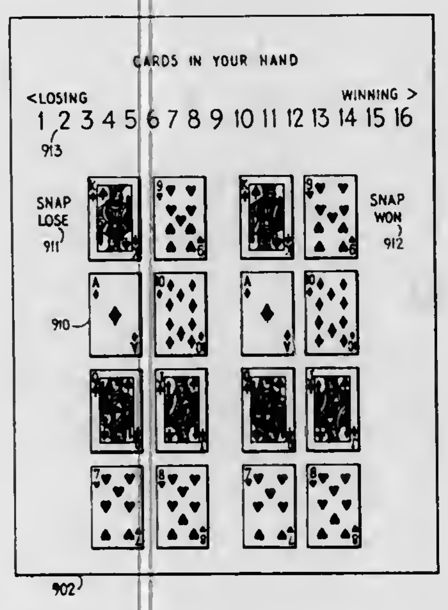
Jeffrey D. Breslow, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 8, 1973, Ser. No. 321,588
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 E **14 Claims**



9. For use with question and answer type games or the like, a self-contained game apparatus comprising, in combination: a base structure, means defining a plurality of individually actuatable answer devices mounted on said base structure at least one for each player of the game, means for determining which one of said actuatable answer devices was actuated first by a respective player during a play of the game including a common actuating member selectively engageable by all of said answer devices but only one answer device at a time for actuating purposes, indicating means mounted on said base structure for selective actuation by a questioning player of the game to indicate, for instance, whether the answer of said player first actuating his respective actuatable answer device is correct or not, a timer mounted on said base structure, with means for automatically indicating the end of a given time period of the timer, said selectively actuatable indicating means and said means for automatically indicating the end of said time period being a common means for rendering an audible signal, and means for selectively stopping said timer at any time during said time period.

3,865,368
GAMING MACHINES GAMES OF SKILL

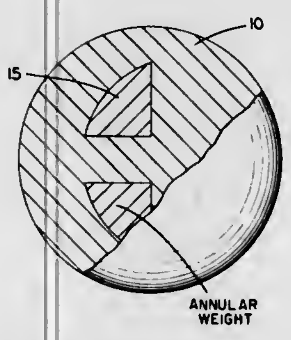
Robert Francis Needs Grazebrook, Farm Cottage, Colinswood Rd. Farnham Common, Slough, England
Filed Feb. 21, 1974, Ser. No. 444,490
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 E **8 Claims**



1. An amusement machine for simulating the playing of a game of snap, comprising means for simultaneously displaying at least one symbol selected from one series of symbols and at least one symbol selected from a second series of symbols;
- means operable by a player to indicate an observed concurrence or relationship between the symbols selected from said respective series of symbols;
- means in the machine for indicating when a concurrence has not been indicated before the occurrence of another event.

3,865,369
BOWLING BALL

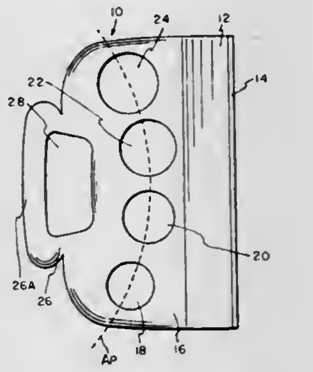
John L. Randolph, 1076 N. Jacoby Rd., Akron, Ohio 44321
Filed Dec. 20, 1973, Ser. No. 426,506
Int. Cl. A63b *37/10*
U.S. Cl. 273—63 E **9 Claims**



1. An integral solid bowling ball containing a top weight which more or less offsets the one-sided loss in weight resulting from drilling of finger holes in the neighborhood of an axis passing through the center of the ball and the center of mass of the weight, characterized in that the weight is spaced from the surface with the spacing greater along the axis than in a circumferential location near the midplane, that the weight is closely adjacent to and generally on the top side of the midplane, and that the weight has its mass so distributed that a substantial part of its mass is closer to the surface than to the center of the ball.

3,865,370
SURVIVAL HAND WEAPON

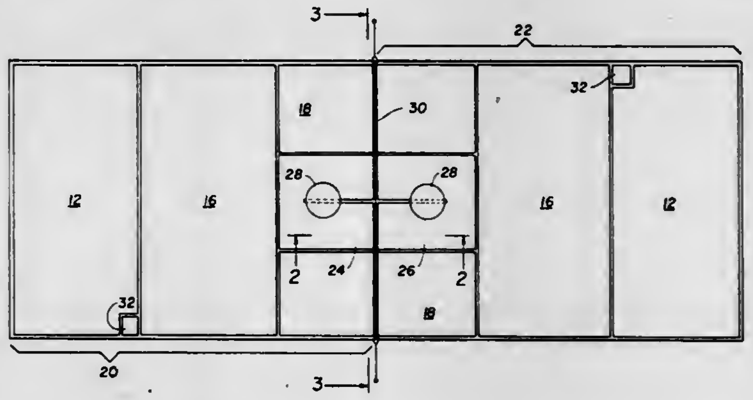
Dale R. Rogers, 2647 Flamingo Dr., Fayetteville, N.C. 28306
Filed Dec. 19, 1973, Ser. No. 426,258
Int. Cl. B26b *3/00;* **B25g** *1/00*
U.S. Cl. 273—84 **1 Claim**



1. A single piece survival hand weapon comprising: a stiff elongated blade portion having a sharp cutting edge beveled along an edge thereof; a finger receiving portion extending from the edge of said elongated blade opposite said cutting edge and having a plurality of side-by-side disposed integral finger openings formed therein including a little finger opening, a ring finger opening, a middle finger opening and a forefinger opening and wherein said ring and middle finger openings are spaced slightly forward of said little and forefinger openings whereby the respective centers of the finger openings lie in a general arcuate path which enables the hand weapon to be comfortably held; and a palm rest means extending from said finger receiving portion and being so configured and so sized so as to be engaged by the palm of the user's hand when said hand weapon is hand held for absorbing the shock of a particular blow and transferring the shock to the palm of the user's hand, said palm rest means comprising a single piece member extending from the little and forefinger openings and spaced rearwardly of said ring and middle finger openings so as to form a relatively large opening therebetween; and wherein said blade, finger receiving portion and palm rest means are integrally constructed and co-planar.

3,865,371
PLAYING FIELD WITH NET AND BASKET STRUCTURE

Harry P. Theriot, Rte. 1, Box 1-A, Franklin, La. 70538
Filed June 14, 1973, Ser. No. 369,944
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 H **1 Claim**



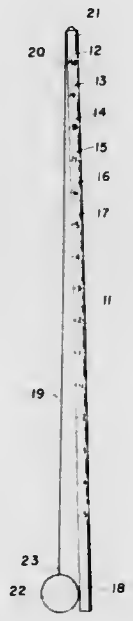
1. A game comprising:
- an elongated rectangular playing field transversely divided in half, each field half containing at least two adjacent transverse sections, the halves having abutting transverse sections;
- a vertical net secured to the field and extending transversely across the middle thereof at the juncture of said halves;

a smaller rectangular area centered on the abutting sections and divided in half by the net; and

first and second horizontal ball receiving baskets, each basket being disposed in a corresponding half of the area at an elevation slightly below the top of the net and above the bottom of the net.

3,865,372
GRADUATED STICK AND TETHERED BALL

Benjamin F. Moore, III, St. Simon Island, Ga., assignor to The Raymond Lee Organization Inc., New York, N.Y.
Filed Jan. 18, 1974, Ser. No. 434,496
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 A **3 Claims**



1. An action toy, comprising

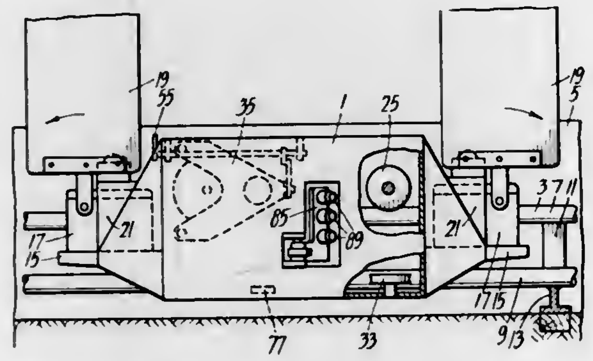
a stick having graduated indications thereon extending along its length and adapted to be manually held substantially vertically at one end;

elastic string-like means affixed at one end to the other end of the stick; and

a rubber ball affixed to the other end of the string-like means in a manner whereby the stick is swingable by a user over his head to move the ball around the stick and wrap the string-like means around the stick.

3,865,373
MOVING TARGET TROLLEY, MOVING TARGET, AND TARGET RANGE

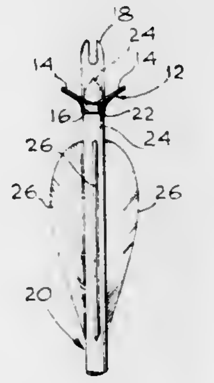
Lindsay Charles Knight, 677 Lyne, Albury, New South Wales, Australia
Filed Jan. 22, 1973, Ser. No. 325,560
Claims priority, application Australia, Jan. 25, 1972, 7751/72; Mar. 22, 1972, 8365/72
Int. Cl. F41j *9/00*
U.S. Cl. 273—105.2 **32 Claims**



1. A self propelling trolley for use in shooting ranges wherein the trolley is constructed and arranged to be movable backwards and forwards along a track, means carried by said trolley for propelling the same along said track, a target moving mechanism mounted on said trolley, a target mounted for movement on said target moving mechanism, means for actuating said target moving mechanism for moving said target from an operative shooting position wherein said target is exposed to an inoperative shooting position wherein said target is not exposed, said target being constructed and arranged on said target moving mechanism so that the width of the trolley and target across the direction of intended movement of the trolley when the target is in the inoperative shooting position is not substantially greater than the width of the trolley and target across the direction of intended movement of the trolley when the target is in the operative shooting position, and wherein the position of mounting the target on the trolley is such that when the target is in its inoperative position the height of the trolley and target is substantially the same as the height of only the trolley, and wherein in the operative position the height of the trolley and target is greater than the height of only the trolley.

3,865,374
ARROW LOCATING DEVICE

Fernando Troncoso, Jr., 1851 S. Orange Ave., Monterey Park, Calif. 91754
Filed Jan. 22, 1974, Ser. No. 435,516
Int. Cl. F41b *5/02*
U.S. Cl. 273—106.5 R **7 Claims**



1. An improved arrow locating device, said device comprising, in combination:

a. an archery arrow having
  i. an elongated tubular shaft;
  ii. a plurality of spaced flight vanes disposed adjacent the rear end of said shaft, and,
  iii. an arrow nock secured over said rear end; and,
b. a locater comprising a relatively thin, stretchable unitary flexible strip of extended surface area, said strip including a plurality of wings projecting outwardly from a central portion defining an aperture therein, said central portion being uninterrupted except for said aperture, the diameter of said aperature being less than the external diameter of said shaft

said shaft being disposed through said aperture rearward of said vanes, whereby said aperture is stretched, thereby releasably holding said strip in place with said wings sloping rearwardly from said aperture for essentially dragless arrow flight.

3,865,375
OUTDOOR GAME INCLUDING TUBULAR HOOP STRUCTURE AND PLURALITY OF BALLS

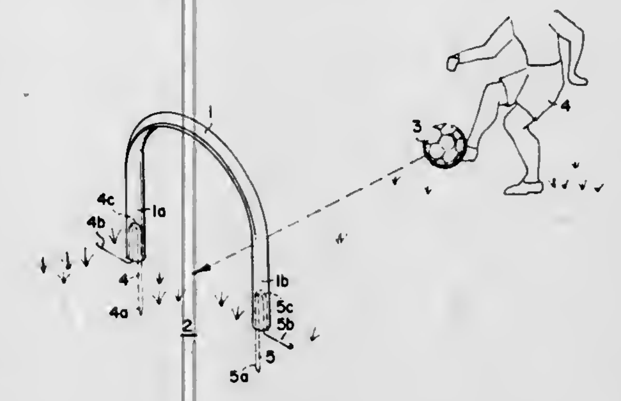
Clarence E. Cosgrove, Palatine, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Nov. 29, 1973, Ser. No. 419,919
Int. Cl. A63b *67/00, 63/02*
U.S. Cl. 273—118 R **1 Claim**

1. An outdoor game, comprising

a plurality of hoops supported substantially upright in spaced relation to each other in a desired pattern in the ground, each of the hoops being a substantially rigid tube;

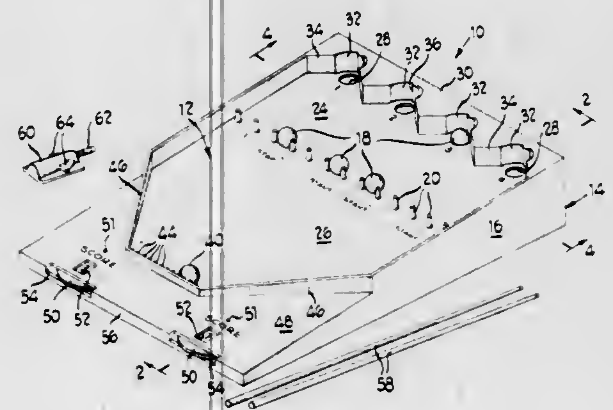
a plurality of balls each adapted to be kicked along the ground by a corresponding one of the players, each of the balls being a color different from the others; and

a plurality of peg-type members adapted to be partially driven into the ground and to extend from the ground, each hoop being supported by the extending portions of a corresponding pair of the peg-type members, each of the peg-type members being a wire bent over on itself to a substantially T-shape with a head and with a stem extending at substantially right angles from substantially the center of the head, with substantially half the head adapted to extend into the ground and the other half formed of wire is that portion of the wire containing the bend whereby the bent over on itself adapted to extend from the ground and the stem adapted to rest on the ground, an end of the hoop removably fitting over said other half of the head of the T-shaped member.



3,865,376
GAME APPARATUS

Marvin I. Glass, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Sept. 17, 1973, Ser. No. 398,159
Int. Cl. A63f *7/00, 7/10*
U.S. Cl. 273—125 A **11 Claims**



1. A game apparatus comprising:

a frame;

means defining a playing surface having peripheral confining means substantially thereabout;

a plurality of upstanding spaced pegs disposed on and extending substantially across said playing surface and dividing the playing surface into separate first and second playing areas;

target means disposed in said first playing area;

at least one reboundable playing piece supported for movement over the playing surface in said first playing area for movement toward said target means, said playing piece being of a size and shape so as to be exposed to striking from said second playing area through the spaces between said pegs but not of sufficiently large size to pass through said spaces; and

a cue piece for movement over the playing surface in said second area toward said pegs to strike a reboundable playing piece when disposed at a space between said pegs to propel the reboundable playing piece toward the target means in said first playing area.

10. A game apparatus comprising:

a frame;

means defining a playing surface on said frame;

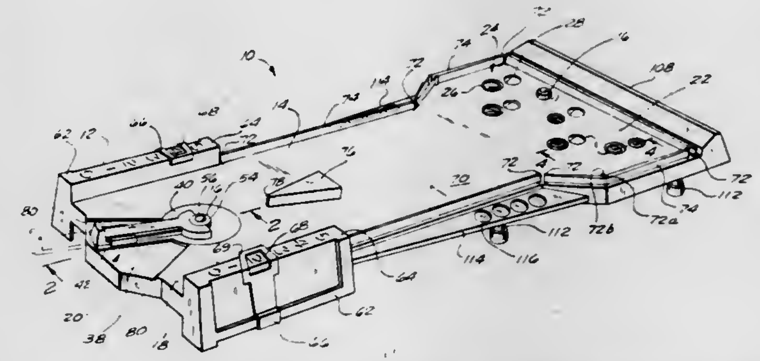
means defining a plurality of target receptacles on said playing surface;

a plurality of playing pieces rollingly supported on the playing surface for movement into said receptacles; and

means for automatically ejecting said playing pieces from said receptacles automatically in response to a predetermined number of said receptacles less than the total number thereof being occupied by playing pieces.

3,865,377
SHUFFLEBOARD TYPE GAME

Julius Cooper, New Hyde Park, and Tormod K. Reinertsen, East Northport, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,859
Int. Cl. A63b *67/14*
U.S. Cl. 273—126 R **22 Claims**



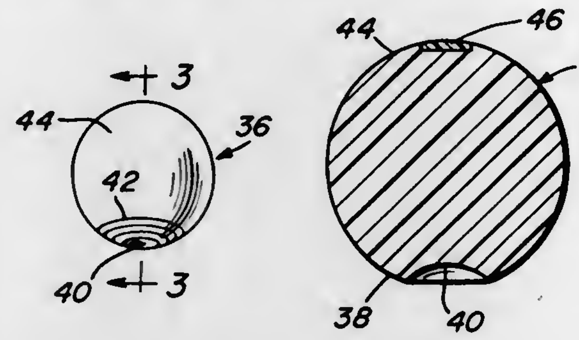
1. A game comprising a relatively flat playing surface having first and second end portions and a plurality of apertures formed in said second end portion, said apertures being arrayed in associated pairs; a plurality of projectiles adapted to move along said playing surface and enter said apertures, and independent scoring means, respectively associated with each of said pairs of apertures, for supporting a projectile in one of the apertures of an associated pair of apertures and for ejecting a projectile supported in said one aperture when another projectile is placed in the other aperture of the pair, said independent scoring means each including an independent lever pivotally mounted below the playing surface adjacent an associated pair of apertures, said lever having first and second end portions respectively associated with the apertures in its associated pair of apertures, and said first end portion of said lever being adapted to displace a projectile supported in its associated aperture when another projectile is placed in the other aperture of its associated pair.

3,865,378
BOWL FOR TABLE TYPE GAME

William B. McPhail, and Hazel M. McPhail, both of 301 Sea Breeze Dr., Port Richey, Fla. 33568
Division of Ser. No. 75,831, Sept. 28, 1970, Pat. No. 3,741,543. This application Mar. 30, 1973, Ser. No. 347,321
Int. Cl. A63b *71/00*
U.S. Cl. 273—128 A **1 Claim**

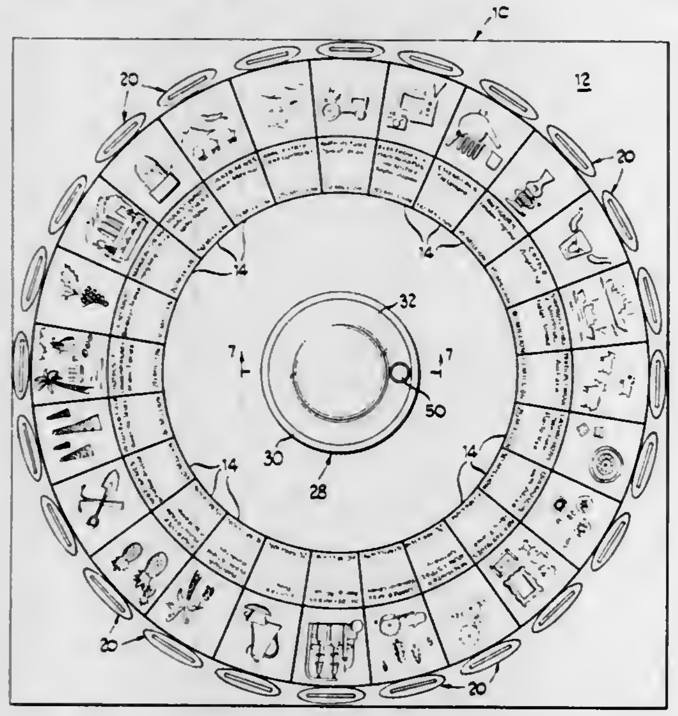
1. For use when playing bowls atop a carpet-covered table provided with target ball in resemblance of a cue-ball, a bowl which is solid and primarily spheroidal but slightly ovoid in shape and appearance and provided on one peripheral surface with a finger seating depression, and a flattened surface ar-

ranged diamterically opposite the depression, said depression being concave, symmetrical about a center point, and of a size and shape to provide a bowl curling seat for the user's thumb or the tip of the index finger and depending on whether the user desires the delivered bowl to swerve and curl leftward or rightward, said flattened surface cooperating with the depression to provide a rest for the thumb or finger tip in delivering the bowl, said flattened surface being provided with an identification marker disk of a predetermined color embedded therein.



3,865,379
BOARD GAME APPARATUS

Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 16, 1973, Ser. No. 333,210
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 A **11 Claims**

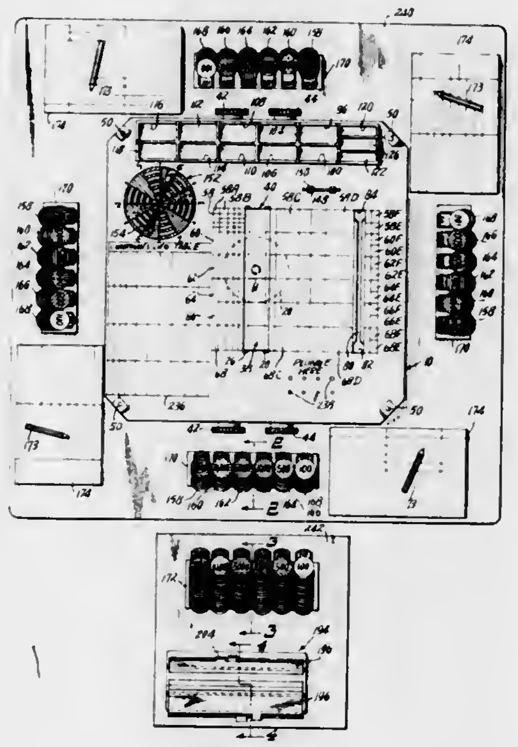


11. In a board game, including a plurality of playing pieces at least one for each player of the game, a game board having a playing surface upon which said playing pieces are supportable, a plurality of stations defined on said playing surface providing a path of travel for said playing pieces at least some of said stations including "investment" stations having indicia representative of at least one investment, a chance device for determining the number of stations a particular playing piece shall advance on the playing surface, and simulated money which may be acquired during the play of the game providing means to acquire a particular investment the object of the game being to acquire the greatest amount of wealth in the form of money or investments, the improvement comprising: a set of chance cards, each chance card having indicia thereon representative of an advantage one player may exercise over another player or a hazard that a player must suffer, said hazard indicia bearing cards having a signal actuating opening formed therein; and

- a housing including
- a vertical chamber for receiving a plurality of horizontally stacked chance cards
- a slot in the chamber at the same height as the lowermost card through which a card may pass
- a card dispenser having a depressible plunger and a horizontally movable card pusher operably connected to the plunger and being in contact with the lowermost card opposite said slot, whereby the lowermost card is pushed out through the slot by the card pusher in response to the depression of said plunger, and
- signal producing means including electrical sound means and upper and lower electrical contacts, the upper contact being mounted under the lowermost card, the lower contact being mounted below the upper contact and normally bearing against the lowermost card, said bearing causing said contacts to be normally spaced apart, whereby the contacts meet whenever a card having an opening therein is drawn through the slot causing the sound means to emit sound.

3,865,380
STOCK MARKET GAME

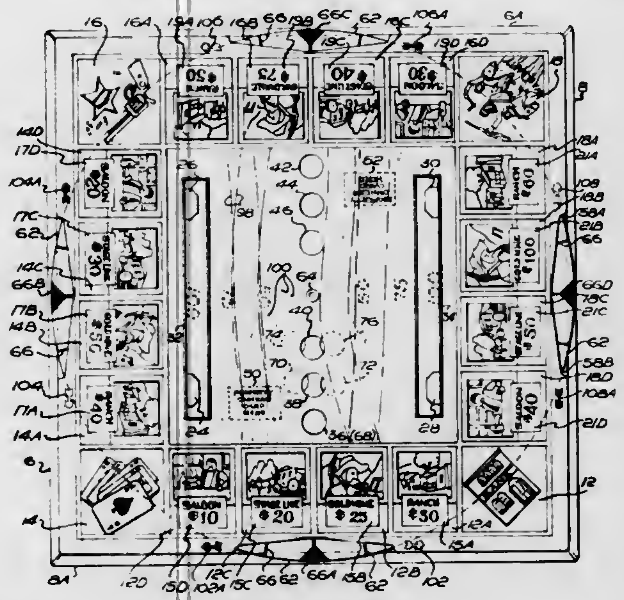
Robert L. Thomas, 2190 Olympic Cir., Reno, Nev. 89502
Filed Mar. 13, 1973, Ser. No. 340,816
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AF **37 Claims**



1. A stock market game having a game board provided with a playing surface; a plurality of play-pieces, including tabs having thereon indicia representing different stocks that may constitute the subject of a trade; a ticker tape viewable at the plane of said playing surface bearing current prices of said stocks; a transaction record sheet for each trader having columns thereon headed STOCK, PRICE and OPERATING CAPITAL, respectively, with a column under the latter headed BALANCE and upon which record sheet a trader enters each of his transactions for the purchase and sale of stock and calculates his current operating capital; and wherein stock represented by a given one of said tabs can be traded only based on the monetary value of such current operating capital, with subsequent profits or losses being added or subtracted in said BALANCE column, when liquidation is made, to determine the trader's new balance of operating capital available for the next trade.

3,865,381
BOARD GAME APPARATUS

Geoffrey Hayes, "Thatches," Broadwalk, Prestbury, England
Filed May 1, 1973, Ser. No. 356,101
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AD **1 Claim**

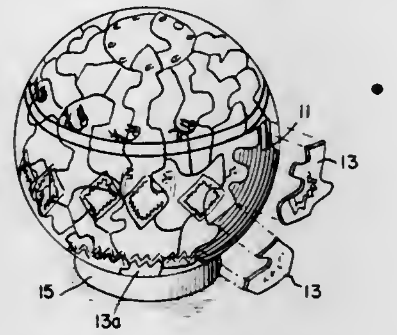


1. A board game apparatus comprising
1. a board having an outer path enclosing a challenge area, the outer path being divided into a plurality of playing positions, the path within each playing position being subdivided into a plurality of "property" areas, the board having a plurality of apertures therethrough in the challenge area,
2. a plurality of playing pieces, each piece having its base configured to fit within the apertures in the challenge area of the board,
3. a disk disposed beneath the board and mounted for rotation relative to the board, the periphery of the disk being exposed at each playing position whereby the disk can be turned in either direction by the player, the periphery of the disk bearing markings for indicating units of rotation of the disk, the disk having a plurality of apertures disposed to come into register with the apertures in the board's challenge area when the disk is rotated sufficiently, the disk bearing starting position indicia situated to be brought into registry with at least one of the apertures in the challenge area, the disk being adapted to support a playing piece having its base situated in an aperture in the challenge area except when an aperture in the disk is brought into substantial registry therewith,
4. a die for determining by chance the direction of rotation of the disk, the die having half of its faces color coded to indicate one direction of disk rotation and having the other faces color coded to indicate the counter direction of disk rotation,
5. the board having colored indicia thereon at each playing position that indicates the direction of rotation corresponding to the color coding of the die,
6. and means for determining by chance the number of units of rotation of the disk to be made by a player.

3,865,382
METHOD OF MAKING A THREE-DIMENSIONAL SHEET PUZZLE

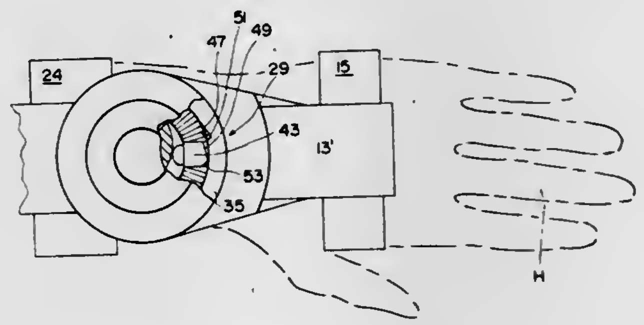
Rolf Myller, 1165 Fifth Ave., New York, N.Y. 10029
Division of Ser. No. 365,207, May 30, 1973,. This application May 8, 1974, Ser. No. 467,923
Int. Cl. A63f *9/12*
U.S. Cl. 273—157 R **3 Claims**

1. A method of making a three-dimensional sheet puzzle comprising providing a three-dimensional form having a surface curved in two dimensions, forming a cover on said surface conforming to the curvature thereof, cutting said cover into pieces sufficiently small so that the pieces can be flattened without appreciable distortion, flattening said pieces, and reproducing the flattened pieces in sheet material which flattens without strain, and depicting on said reproduced pieces a puzzle design which is comprised when said reproduced pieces are fitted together on said base.



3,865,383
TRAINING DEVICE FOR GOLFERS

Cecil W. Clay, and Alvie L. Clay, both of Memphis, Tenn., assignors to Clay & Clay Enterprises, Inc., Memphis, Tenn.
Filed June 5, 1974, Ser. No. 476,700
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 B **16 Claims**



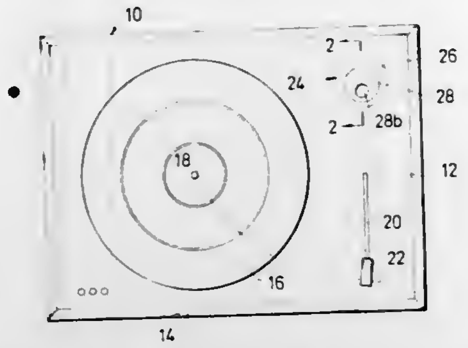
1. A wrist bend restraining device for golfers, said device comprisisng a hand engaging element including means for fixing said hand element to the back of the golfer's hand, a forearm engaging element having a distal portion overlapping a proximal portion of said hand element and including means for fixing said forearm element to the golfer's forearm, and connecting means for pivotally connecting the distal and proximal portions one to the other for pivotal movement of said hand element about an axis disposed substantially perpendicular with the back of the golfer's hand, said connecting means including lock means for normally preventing pivotal movement of said hand element from an intermediate position toward a first position, and release means for releasing said lock means to allow said hand element to pivotally move toward said first position as the golf club head enters the ball impact zone, said release means being actuated at least in part by angular momentum generated during the downswing of the club.

3,865,384
DISC RECORD PLAYER

Kohji Yoshida, Shimoarai 1141-29, Tokorozawa, Japan
Filed Mar. 25, 1974, Ser. No. 454,757
Claims priority, application Japan, Mar. 26, 1973, 48-36521
Int. Cl. G11b *3/10*
U.S. Cl. 274—23 R **7 Claims**

1. A disc record player having a support shaft supporting a tone arm, comprising a tone arm mounting board and a hole position adjusting mechanism mounted on said tone arm mounting board; said hole position adjusting mechanism including a first disc rotatably and frictionally supported by said mounting board, said first disc having an eccentric hole in

which second disc is mounted, said second disc being provided with an eccentric hole for mounting the support shaft of



the tone arm and said second disc being rotatably and frictionally supported by said first disc.

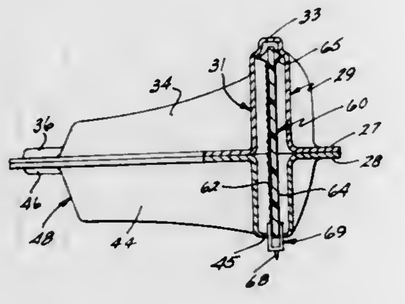
3,865,385
SOUND REPRODUCTION APPARATUS WITH IMPROVED ACCOUSTICAL TRANSMISSION MEANS

Stephen A. Platt, Grand Haven, Mich., assignor to Steven A. Platt, Grand Haven, Mich. and Vernon B. Platt, both of Grand Haven, Mich.

Filed Sept. 20, 1973, Ser. No. 399,122

Int. Cl. G11b *3/02*

U.S. Cl. 274—25 **10 Claims**



1. In a sound reproduction apparatus for reproducing audio information recorded as perturbations formed in a groove of a disc recordings, improved pick-up means therefor comprising:

- a generally planar member formed of expanded polymeric material with integral surface skins on opposite surfaces thereof and having peripheral edge portions;
- a pick-up stylus coupled to one of said edge portions of said generally planar member;
- support means comprising a pick-up arm adapted to position said generally planar member with said stylus in operative engagement with a recording, said pick-up arm including a recess at one end for receiving a second edge portion of said generally planar member; and
- means for bonding said second edge portion of said generally planar member in said pick-up arm recess, opposite said one edge portion to which said pick-up stylus is coupled, and for bonding adjacent portions of said surface skins on opposite sides of said generally planar member to said pick-up arm.

3,865,386
OIL SEALING DEVICE

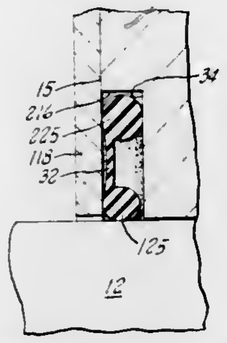
Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Apr. 20, 1973, Ser. No. 353,077

Int. Cl. F16j *15/00*

U.S. Cl. 277—187 **1 Claim**

1. In a hydraulic device including a body with a bore that opens to an outer side of the body through a counterbore, a plate secured to said side of the body to partially close the mouth of said counterbore and having an aperture coaxial with the bore, and a cylindrical valve spool slideable axially in the bore with one end projecting through the counterbore and said aperture to the exterior of the body at said side thereof, said aperture being of such diameter that it encircles said spool, the improvement which comprises: a sealing device of resilient material having an inside diameter smaller than the outside diameter of said spool and an outside diameter smaller than the diameter of said counterbore, said sealing device being disposed in said counterbore and having a radially inner ring shaped member movable in sealing engagement at an inner surface with the exterior of the spool, said inner ring shaped member abuttable against said plate and a radially outer ring shaped seal member which encircles the spool and is clamped between said plate and a surface in said counterbore in radially outward relation to the inner ring shaped member while said inner member is not clamped; said outer seal member being integrally connected by a web which is axially offset in respect to said inner and outer members to the inner member as a fluid tight joint that extends circumferentially entirely around the inner member whereby said inner member can slide axially relative to said spool and against said plate.



3,865,387
HIGH PRESSURE SEAL

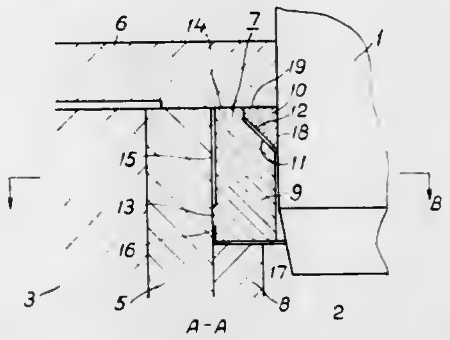
Hans Larker, and Jan Nilsson, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 19, 1974, Ser. No. 462,401

Claims priority, application Sweden, May 7, 1973, 73063505

Int. Cl. F16j *15/56*

U.S. Cl. 277—190 **7 Claims**



1. In a high pressure press having a seal holder, a high pressure seal to effect sealing between the wall of a high pressure cylinder and an axially movable plunger projecting into the high pressure cylinder, comprising first and second sealing rings of metal, the first ring having an outer surface making contact with the cylindrical wall and an end surface making contact with the seal holder, and the second ring having a cylindrical surface making contact with the plunger and a surface making contact with the seal holder, the first sealing ring which makes contact with the cylindrical wall being prestressed and having a normal diameter which is more than 0.1 per cent greater than the inner diameter of the high pressure cylinder at atmospheric pressure in said high pressure cylinder before prestressing, thereby making contact with the cylindrical wall with a force dependent on the prestressing.

6. High pressure seal according to claim 1, in which the first sealing ring has an inclined surface turned towards the center line of the ring, and the second sealing ring has an inclined surface turned towards the inclined surface of the first sealing ring with substantially the same angle of inclination.

3,865,388
SAFETY BINDING FOR RELEASABLY SECURING A BOOT TO A SKI

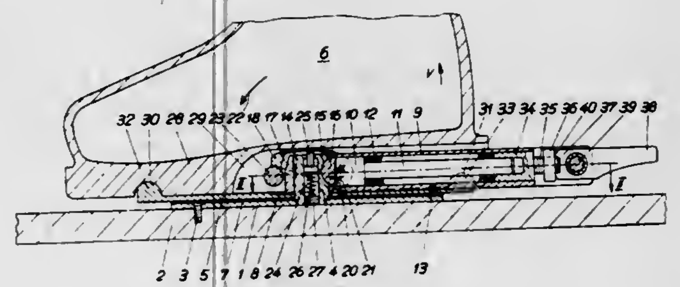
Gaston Haldemann, Stansstad, Switzerland, assignor to Haldemann S.A., Pilatusstrasse, Switzerland

Filed June 12, 1973, Ser. No. 369,350

Claims priority, application Switzerland, July 7, 1972, 10261/72

Int. Cl. A63c *9/081*

U.S. Cl. 280—11.35 D **7 Claims**



1. A safety binding assembly for releasably securing a boot to a ski, comprising:

- a. a base plate (1) integral with a ski,
- b. a vertical axle post (4) upstanding from the base plate and having a transverse groove (15),
- c. a rotating plate (5) pivoted about the axle and having front and rear catches (32, 33) thereon,
- d. a boot (6) having two transverse grooves (30, 31) in its sole (28) adapted to engage the front and rear catches, and a transverse pin (23) mounted in a recess (29) in the sole,
- e. a transverse axle (16) partially lodged in the transverse groove of the vertical axle and having a surface (20),
- f. a lever (18) integral with the transverse axle for engaging the transverse pin and urging it toward the rotating plate,
- g. a housing (9) integral with the rotating plate,
- h. a sliding piston (10) mounted in the housing and having a front surface (21) bearing against the surface of the transverse axle and forming an acute angel (α) therewith, and
- i. a spring (12) mounted in the housing for urging the piston against the transverse axle and the lever against the transverse pin, the transverse pin and the lever being capable of manual disengagement from each other to detach the boot from the ski, and automatic disengagement in the event of an accident.

3,865,389
SAFETY BINDING FOR SKIS

Marc Delery, Lyon, France, assignor to S.A. Francois Salomon & Fils, Annecy (Haute-Savoie), France

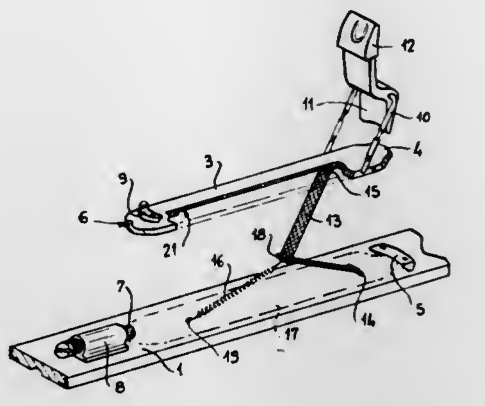
Filed Apr. 5, 1973, Ser. No. 348,236

Claims priority, application France, Apr. 12, 1972, 72-13502

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 N **11 Claims**

1. A safety binding for a ski comprising: a plate adapted to be mounted between the ski and a skier's boot; first securing elements for detachably securing said plate to said boot; second securing elements for detachably securing said plate to said ski, said second securing elements adapted to yield, beyond a predetermined threshold, to release said plate in response to loads applied in the form of torsion in the plane of the ski and in a verticle plane; at least one flexible connection having one end secured to the ski and the other end secured to said plate; resilient means having one end attached to said flexible connection transversely thereof and at an intermediate point between the ends thereof, said resilient means having a sufficient length to allow said plate to fully separate from said ski and being adapted to apply to said connection a restoring force forming at said intermediate point a fold, said restoring force tending to bring the folded parts of said connection back into a plane parallel to that of said ski.



3,865,390
SKI BINDING

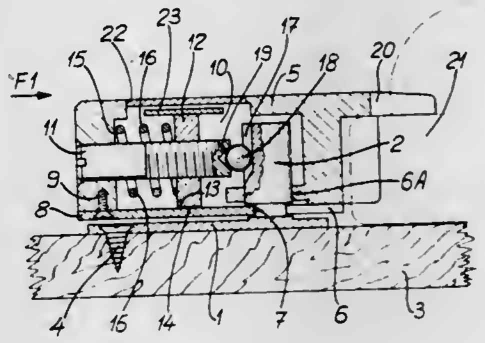
Michel Pradillon, Cluses, France, assignor to Mitchell S.A., Thyez, France

Filed May 2, 1974, Ser. No. 466,504

Claims priority, application France, May 11, 1973, 73.17222

Int. Cl. A63c *9/08*

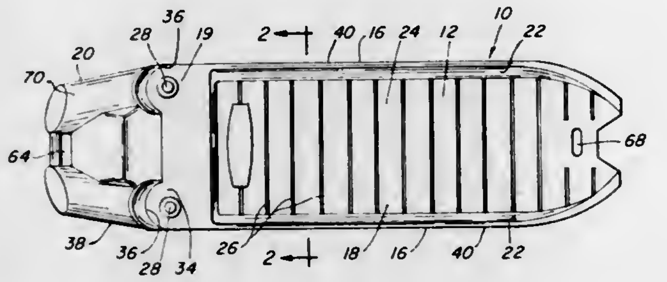
U.S. Cl. 280—11.35 T **9 Claims**



1. A ski safety binding comprising energy storage means for releasably holding the binding in a closed position, means for adjusting said energy storage means to adjust the force holding the binding in the closed position, and means for displaying the adjustment of said energy storage means, said display means including first and second members movable relative to one another along a given direction, means for moving said members between a plurality of discrete relative positions as a function of the setting of said adjustment means, the first member covering the second member and being provided with a plurality of discrete openings, and the second member having a plurality of discrete marks which are selectively visible through said openings in different relative positions of said members to provide indications representing the settings of said adjustment means, said openings including at least one row of a plurality of like openings aligned along said given direction and said marks including at least one row of a plurality of marks aligned along said given direction with said row of openings, adjacent openings in said row being spaced apart by at least the length of an opening along said given direction multiplied by the number of discrete relative positions of said members each corresponding to an indication.

3,865,391
SLED

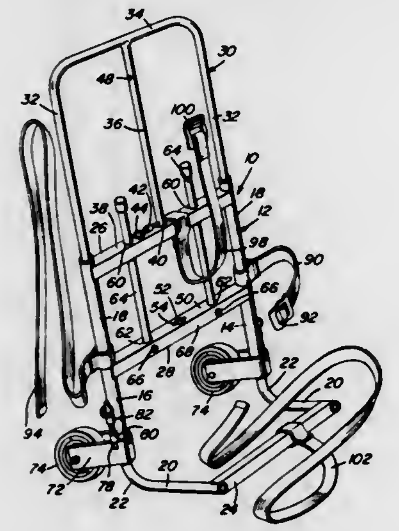
Dennis M. Melnick, and Mark Kubick, both of Baden, Pa., assignors to Pallet Development Inc., Ambridge, Pa.
Filed Dec. 7, 1972, Ser. No. 313,194
Int. Cl. B62b *13/06*
U.S. Cl. 280—18 **16 Claims**



1. An elongated recreational gravity type sled formed of resinlike material comprising: a surface engaging lower wall; a passenger carrying upper wall overlying said lower wall and spaced therefrom; a peripheral wall extending around the peripheries of said upper and lower wall to support said peripheries; said peripheral wall being integrally formed with said upper and lower walls and being substantially the only support therebetween to form a unitary and substantially hollow sled; said upper wall including at least the major longitudinal extent thereof formed as a generally planar seating surface to receive passengers thereon; and said upper wall additionally includes a plow portion formed with and extending forwardly of said major longitudinal extent of said upper wall, said plow portion including a rear upwardly projecting wall section and a forward plow section which extends forwardly from said wall section and slopes downwardly and inwardly therefrom.

3,865,392
COLLAPSIBLE LUGGAGE HANDCART

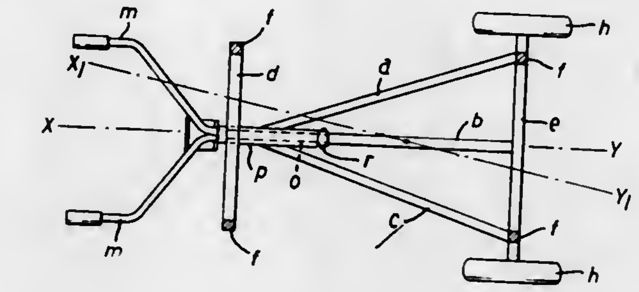
James W. Hartway, 6805 Boysenberry Way, Colorado Springs, Colo. 80918
Filed May 17, 1973, Ser. No. 361,276
Int. Cl. B62b *1/04*
U.S. Cl. 280—35 **10 Claims**



1. A handcart comprising a generally L-shaped frame including opposite side transversely registered L-shaped side frame members each having generally right angularly disposed tubular short and long legs, first transverse brace means extending between and secured to the free end portions of said short legs and second transverse brace means extending between and secured to the free end portions of said long legs, and a generally U-shaped handle including a pair of parallel legs interconnected at one pair of corresponding ends by means of a bight portion, the free ends of said parallel legs being telescopingly engaged in the free ends of said long legs for extension and retraction of said handle relative to said L-shaped frame, a pair of support arms pivotally secured at corresponding base ends to said long legs adjacent but spaced from said short legs for swinging of said support arms in planes disposed generally normal to said long legs between retracted positions with the free ends of said arms projecting toward each other and extended positions with the free ends of said arms projecting away from the free ends of said short legs, support wheels journaled from the free ends of said arms for rotation about axes transverse to said arms and long legs, said handle and frame including coacting readily releasable latch means for releasably latching said handle in said extended and retracted positions.

3,865,393
ROAD ADJUSTED WHEELBARROW CHASSIS

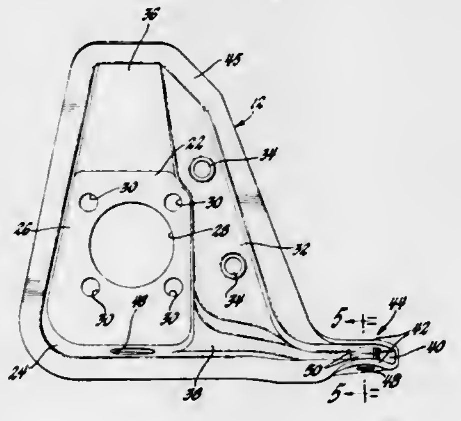
Rudi Helmut Braune, Griffin Mill, Thrupp, Stroud, Gloucestershire, Great Britain (GL5 2AZ)
Filed May 3, 1973, Ser. No. 356,999
Int. Cl. B62b *1/04*
U.S. Cl. 280—47.26 **6 Claims**



1. A wheelbarrow having a chassis on which a pair of road wheels are mounted for independent rotation about a common axis transverse to the chassis, bearing means rigidly mounted in said chassis and defining a substantially horizontal axis of rotation in a vertical plane of symmetry of said chassis, and a pair of load-bearing and guiding handlebars rigidly connected together and capable of swivelling motion in common about said axis with respect to said chassis so that the left and right handlebars can assume oppositely asymmetrical positions with respect to the chassis when steering to the one and the other side of straight line travel.

3,865,394
SHEET METAL STEERING KNUCKLE WITH INTEGRAL STEERING ARM

Elliot J. Epner, Huron; Oscar G. Kitchin, and Peter M. Sampatacos, both of Port Clinton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed June 11, 1973, Ser. No. 368,708
Int. Cl. B62d *7/18*
U.S. Cl. 280—96.1 **3 Claims**



1. A steering knuckle having an integral steering arm comprising

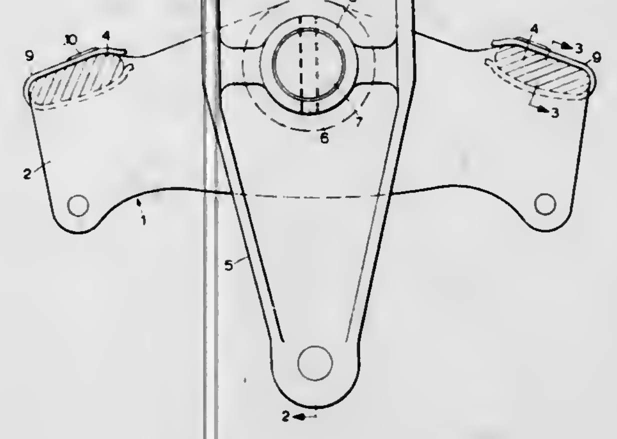
a unitary sheet metal, generally cup-shaped member having a bottom wall with a flat portion adapted for mounting a wheel spindle thereon, a stepped portion having a flat shelf spaced from and substantially parallel to said flat portion adapted for mounting a disc brake caliper thereon, and a side wall having a pair of coaxial holes for connecting said steering knuckle to a pair of control arms for pivotal movement about a steer axis,

said side wall further having substantially flat, parallel, closely spaced end portions connected by a bight continuous with said bottom wall forming a steering arm for pivoting the steering knuckle about the steer axis, and

said side wall being continuous and having a continuous outturned flange between said end portions and connected to said bottom wall along substantially the entire periphery of the bottom wall.

3,865,395
SUSPENSION UNITS FOR MULTIPLE-AXLE VEHICLES

Robert Valentine Mathers, Chester, and Frederick Thompson, Marford, near Wrexham, both of England, assignors to Rubery Owen-Rockwell Limited, Staffordshire, England
Filed Aug. 6, 1973, Ser. No. 385,881
Claims priority, application Great Britain, Aug. 12, 1972, 37695/72
Int. Cl. B62d *21/00*
U.S. Cl. 280—104.5 B **3 Claims**

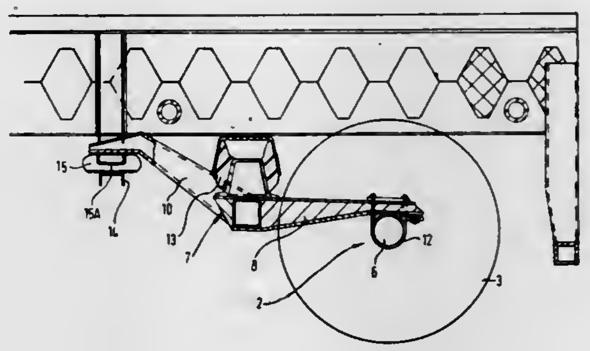


1. A suspension unit for multiple-axle vehicles incorporating leaf springs in which the adjacent ends of the springs for adjacent axles are received in opposite ends of an equalizer beam mounted on the frame of the vehicle for angular movement about an axis parallel to the axles, and the equalizer beam incorporates at opposite ends integral bearer pads provided with renewable wearing members for engagement by the springs, wherein said wearing members comprise clips formed of spring steel and adapted to be snapped on to the bearer pads.

3,865,396
VEHICLE SUSPENSIONS

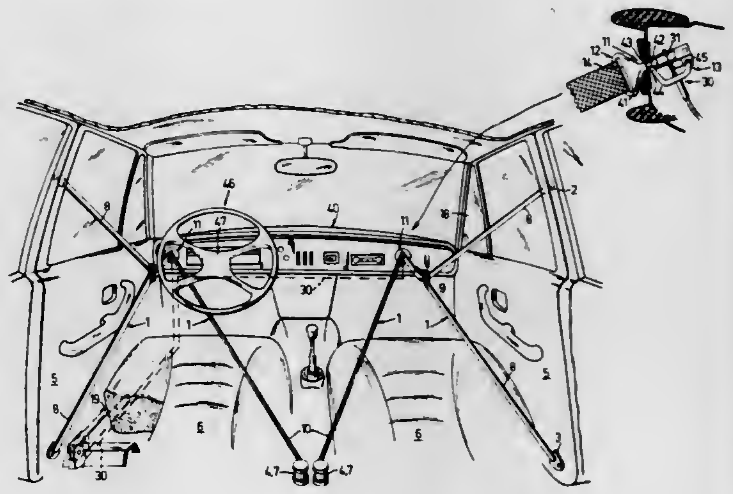
Gregory John Bates, Whetstone, England, assignor to Dunlop Limited, London, England
Filed Sept. 17, 1973, Ser. No. 397,726
Claims priority, application Great Britain, Sept. 20, 1972, 43527/72; May 17, 1973, 23483/73
Int. Cl. B60g *11/62*
U.S. Cl. 280—124 R **12 Claims**

1. A vehicle suspension for mounting a vehicle body upon a wheel carried in a bearing housing comprising a rigid lever, a main spring and a secondary spring of lower rate than the main spring and having a fixed deflection limit after which the secondary spring becomes effectively solid wherein the main spring, the bearing housing and the secondary spring are attached to the lever at spaced-apart intervals along its length so that wheel suspension movement results primarily in secondary spring deflection until the fixed deflection limit is reached whereupon further wheel suspension movements pivots the lever about the secondary spring and the main spring provides the suspension and vehicle support.



3,865,397
VEHICLE SAFETY BELT SYSTEMS

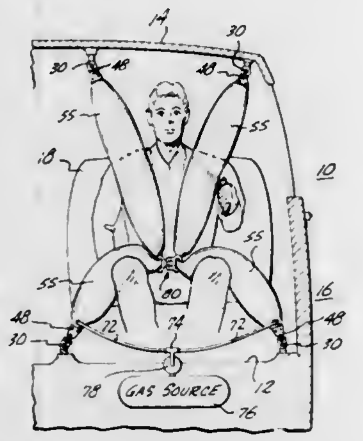
Stig Tore Lennart Pilhall, Trollhattan; Pehr Harald Benedictus Schalin, Vastra Frolunda; Nils Ivar Bohlin, Askim,all of Sweden, and Rolf Hermann Forsberg, Lillestrom, Norway, assignors to A B Volvo, Goteborg, Sweden
Filed Oct. 25, 1972, Ser. No. 300,676
Claims priority, application Sweden, Oct. 27, 1971, 13639/71
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **4 Claims**



1. A vehicle having a door and an adjacent seat and at least one self-adjusting sefety belt, means attaching said belt to at least one attachment point on the door adjacent said seat served by said belt, means attaching said belt to a further attachment point on the opposite side of said seat, at least one of said belt attachment means including a latchable belt-collecting device applying a tension force to said belt, means for detachably holding said belt extended away from and in front of said seat, and means connecting said belt-holding means with at least one conventional vehicle component to detach said belt from said belt-holding means in response to activation of said vehicle component to release said belt for collection in said belt-collecting device, said vehicle having a handbrake, said belt-holding means being actuated by movement of the vehicle handbrake from its applied position to its released position, said applied position of said handbrake corresponding to a latching position of said holding means, said released position of said handbrake corresponding to a detached position of said holding means.

3,865,398
EXPANDABLE CRASH-RESTRAINING MEANS

Toni Woll, 12912 N.E. 30th, Bellevue, Wash. 98004
Filed Feb. 5, 1973, Ser. No. 329,602
Int. Cl. B06r *21/10*
U.S. Cl. 280—150 AB **5 Claims**



1. Vehicular occupant-passenger apparatus inflatable by the flow of pressurized gas from a gas source as triggered by sensor means responding to a predetermined rate of deceleration of the vehicle, or to pitch and roll forces applied to such vehicle, comprising:

an end-anchored, occupant-restraining strap-like element at each side of a seat in a vehicle to be disposed in front of the body of an occupant seated in a vehicle;

each said element being anchored at one end to the floor adjacent said seat and at the other end to the overhead above the occupant;

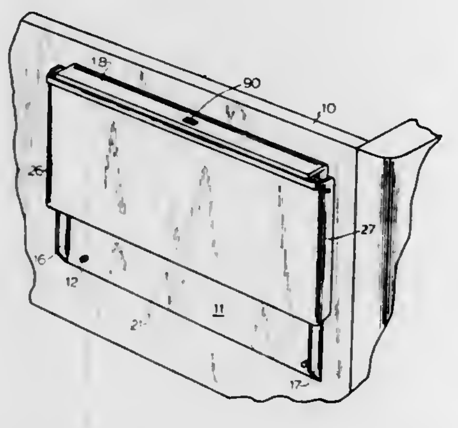
buckle means intermediate the ends of said elements to be engaged in front of the body of an occupant to form said occupant-restraining elements into X-shape relative the front of the occupant's body;

at least one end-anchor of each of said elements including locking means longitudinally adjustable in respect to the vehicle permitting selective variance of the tightness of said elements upon the occupant's body; and

each said element being an elongated inflatable tubular member in communication with said gas source, said inflatable tubular member being normally deflated, collapsed and longitudinally folded upon itself.

3,865,399
AUXILIARY FOLDABLE STEP STRUCTURE

Lee V. Way, Rt. 3, Box 333C, Wilmington, N.C. 28401
Filed Oct. 23, 1973, Ser. No. 408,497
Int. Cl. B60w *3/02*
U.S. Cl. 280—166 **4 Claims**



1. An auxiliary foldable step for a vehicle having a tailgate movable from a vertical traveling position to a horizontal loading position comprising, in combination:

a. a rectangular base plate adapted to be rigidly secured to the outer surface of a tailgate with the respective top and bottom long edges thereof disposed generally parallel, said base plate having secured thereto a pair of stiff arm stops;

b. a rectangular riser plate having its top long edge positioned immediately adjacent and pivotally secured to the top long edge of said base plate for pivoting on a first lengthwise extending axis;

c. a rectangular step plate having its rearward long edge positioned adjacent and pivotally secured to the bottom long edge of said riser plate for pivoting on a second lengthwise extending axis;

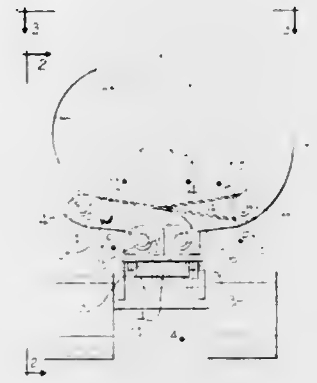
d. a first double pair of links, each pair having a common central pivotal connection, one of the links in each pair having a first end pivotal connection to and proximate a respective outer corner of said step plate and the other of the links in each pair having a second end pivotal connection proximate a respective top corner of said base plate for pivoting on said first axis;

e. a second double pair of links, each second pair having a common central pivotal connection, one link of each such second pair having first end pivotal connections to said riser plate and step plate for pivoting on said second axis and the other link of each said second pair having a second end pivotal connection on an end of said base plate and intermediate the width thereof for pivoting on a third axis; and

f. a pair of stiff arms having respective ends secured for pivoting around the respective central pivot connections of each said second pair of links and swingable to a locked position to engage said stops on said base plate and to lock said second and first pairs of links into a fixed operative position to secure said step.

3,865,400
CARRIER BUNK APPARATUS

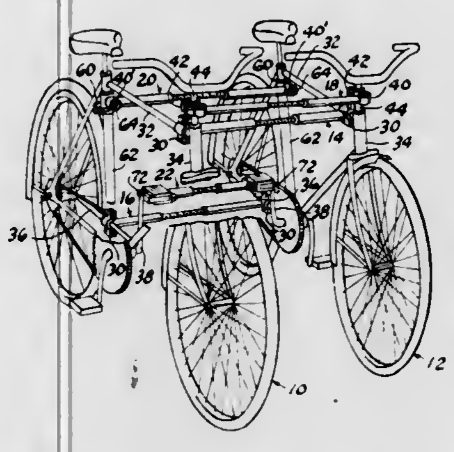
Norman Allen Johnson, 5325 Tenth Ave., South Delta, British Columbia, Canada
Filed Jan. 25, 1974, Ser. No. 436,652
Int. Cl. B60p *7/12*
U.S. Cl. 280—179 R **14 Claims**



1. A carrier bunk apparatus comprising a pair of jaws each having upper and lower end portions, transverse base means having pivot means at each end, said lower end portions of said pair of jaws crossing in overlapping relation and operatively mounted on said pivot means, cam contour means operatively mounted on one of said lower end portions and cam follower means operatively mounted on the other of said lower end portions, reeving means operatively mounted on each of said pair of jaws intermediate said upper and lower end portions, a flexible tension member operatively entrained in said reeving means, whereby tensioning and loosening of said flexible tension member respectively closes and opens said carrier bunk apparatus.

3,865,401
DUAL BICYCLE COUPLING KIT

Walter D. Kingsly, 806 Lawn Ridge S.E., Huron, S. Dak. 57350
Filed May 16, 1974, Ser. No. 470,693
Int. Cl. B62k *13/06*
U.S. Cl. 280—209 **4 Claims**



1. Apparatus for coupling two bicycles, each having a frame including a seat tube, pedals and a handlebar stem for simultaneous operation in spaced side-by-side relation, comprising:

at least one rigid longitudinally adjustable frame connector having clamp means at its respective ends adapted to extend between and be connected with a normally horizontal portion of the respective bicycle frame;

a seat tube bracket adapted to be connected with the seat tube of each bicycle,

said seat tube brackets each having a forwardly projecting normally horizontally disposed rod portion;

a rigid longitudinally adjustable seat tube connector having a sleeve bearing transversely connected with its respective ends for surrounding the respective said horizontal rod portion;

steering connector means adapted to interconnect the handlebar stems of said bicycles for simultaneously angular displacement of the front wheels whereby said bicycles are constrained to turn in unison; and,

a longitudinally adjustable pedal connector having a U-shaped member connected with its respective ends adapted to receive a pedal of each said bicycle when the pedals are disposed in aligned opposition for maintaining the angular rotation of the bicycle wheels constant with respect to each other whereby said bicycles are restrained from advancing or receding relative to each other.

3,865,402
BICYCLE

Darwin Zenser, El Monte, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.
Filed Aug. 13, 1973, Ser. No. 387,669
Int. Cl. B62m *3/00*
U.S. Cl. 280—276 **4 Claims**

1. A bicycle comprising:

a frame having a tubular primarily vertical front member for receiving a handlebar shaft, a tubular primarily vertical rear member for receiving a seat shaft, an elongated lower member for coupling the front member to the bottom of the rear member, a multiple connection member at the intersection of the lower and rear members, and a pair of elongated shock mount members joined to the vertical rear member and extending rearwardly therefrom;

a pair of wheels with tires along their rims, including a front wheel at the front of the frame and a rear wheel at the rear of the frame;

a pedal assembly rotatably mounted on the multiple connection member;

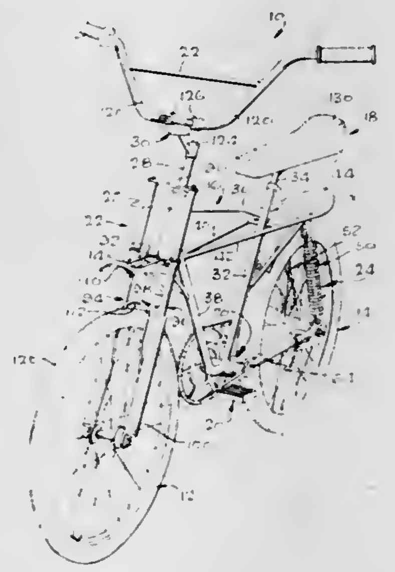
a swing arm having a front end pivotally mounted on the multiple connection member and having a bifurcated rear end with arms on either side of the rear wheel and coupled to the rear wheel;

a pair of rear shock absorbers, each including two telescoping tubes and a spring urging the tubes apart, one tube of each shock absorber having an upper end mounted on a mount member and the other tube having a lower end coupled to the swing arm;

the distance between the pivot axis at the front of the swing arm and the upper end of the rear shock absorbers being equal to the distance between said front swing arm pivot axis and the lower end of the rear shock absorbers;

a handlebar assembly having a shaft extending into the tubular front member to pivot thereon;

upper and lower shock absorber brackets, the upper bracket lying at the top of the tubular front member and the lower bracket lying at the bottom of the tubular front member, each bracket being fixed to the handlebar assembly to pivot therewith;



a pair of forward shock absorbers, each including two telescoping tubes and a spring urging the tubes apart, one tube of each front shock absorber having an upper end fixed to the two shock absorber brackets to fix the position and orientation of the tube, and the other of each front shock aobsorber coupled to the front wheel; and

a pair of front fender members, including a short lower fender member extending in a loop closely around the tire of the front wheel and fixed to the lower tubes of the front shock absorber, and an upper fender member normally lying at least a few inches above the lower fender member and fixed with respect to the upper tubes, so that the upper fender member moves toward and away from the lower fender member when the front wheel passes over a bump in the road.

2. An assembly for a bicycle that includes front and rear wheels, and that also includes a frame with a front tubular part that extends downwardly and forwardly towards the front wheel to form a steering shaft bearing, comprising:

upper and lower brackets for mounting respectively above and below the front tubular part of the frame;

a pair of telescoping shock absorbers each having upper and lower shock members that telescope into one another, each upper shock member attached to both the upper and lower brackets;

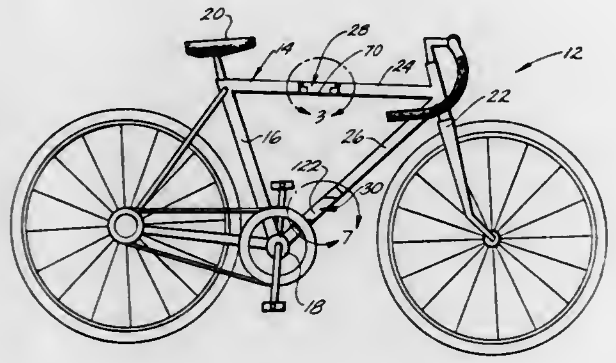
a lower fender member connecting together the upper ends of the lower shock members;

an upper fender located between the lower bracket and the lower fender member, and coupled to the lower bracket to move up and down with it, the upper fender located above the top of the lower fender member by a distance greater than the widest tire that can be received between the lower shock members under the lower fender member; and

means at the lower ends of the lower shock members for mounting the lower shock members on the front wheel of the bicycle.

3,865,403
FOLDABLE BICYCLE AND KIT FOR MAKING SAME

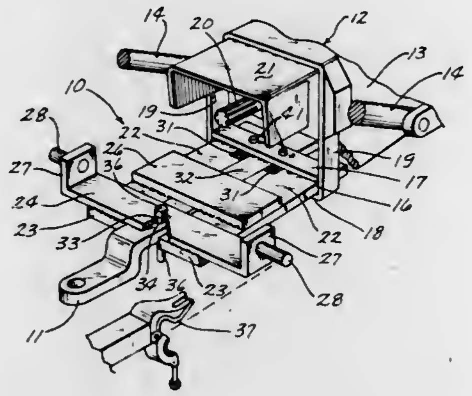
Gary T. Majerus, Box 85, Sierra Madre, Calif. 91024
Filed June 14, 1973, Ser. No. 369,856
Int. Cl. B62k *3/04*
U.S. Cl. 280—287 **13 Claims**



12. Apparatus according to claim 11 in which the fasteners are countersunk to avoid protruding parts.

3,865,404
MOUNTING UNIT FOR A TRACTOR PULLED MOWER

Dale R. Schwartz, R.R. 2, Hendrick, Iowa 52563
Filed May 17, 1974, Ser. No. 471,001
Int. Cl. B60d *1/14*
U.S. Cl. 280—415 A **4 Claims**



1. A mounting unit for a tractor pulled mower wherein the tractor is equipped with a horizontally swingable drawbar and a support therefor that has a rearwardly facing guideway of a rectangular shape defined by a pair of vertically spaced side walls interconnected by end walls and wherein the rear section of the draw bar projects rearwardly from said guideway in resting engagement on the lower one of said side walls, said mounting unit comprising:

a. a frame assembly including a pair of longitudinally extended horizontal side plate members spaced transversely a distance apart to receive said drawbar rear section therebetween;

b. a transverse connecting member secured to the rear upper surfaces of said plate members, said connecting member having upright end walls spaced outwardly from adjacent plate members,

c. a pivot means on each end wall releasably connected with the mower, said pivot means having a common axis extended transversely of said frame assembly,

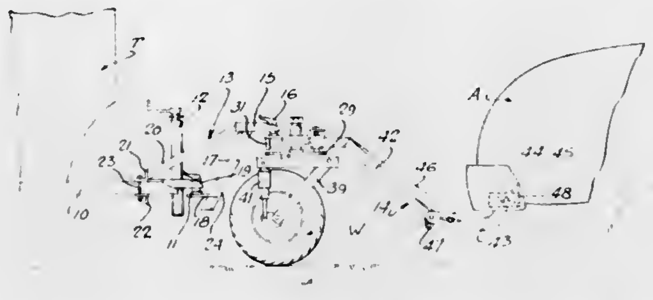
d. said plate members, when the drawbar is positioned therebetween, having the front end sections thereof receivable within said guideway,

e. means for holding said drawbar against horizontal swinging movement relative to said frame assembly, and

f. means for locking said drawbar against vertical movement relative to said frame assembly.

3,865,405
TRAILER DOLLY

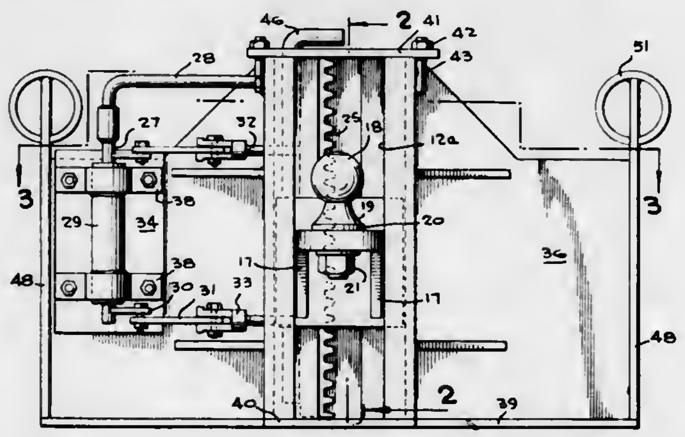
Stanley W. Mitchell, 1820 Huron Church Rd., and Edward N. Spenchuk, 1006 Brock St., both of Windsor, Ontario, Canada
Filed Oct. 17, 1973, Ser. No. 407,198
Int. Cl. B60d *1/14*
U.S. Cl. 280—476 R **10 Claims**



1. A trailer dolly comprising a central frame member; a towing ball mounted on said frame member for receiving a trailer draft tongue universal coupling; a road engaging wheel assembly swivelly connected via a vertical axis beneath said frame member, said wheel assembly including a bridge member having a pair of spaced longitudinal members supporting thereon a flat plate member having fixed thereto an upwardly extending swivel axle for engaging said frame member, a pair of inclined fork members pivotally connected at their upper ends to a pivotal spacer member joining the forward ends of said spaced longitudinal bridge members, a pair of shock absorbers mounted substantially vertically between the rearward ends of said spaced longitudinal bridge members and the lower ends of said fork members and a road engaging wheel journaled in the lower ends of said fork members; and rigid hitch members extending forwardly and outwardly from said central frame member and having at their forward ends connector means for connecting to the frame of a towing vehicle by means of horizontal pivots.

3,865,406
QUICK CHANGE HITCH FOR TRAILER OR MOBILE HOMES

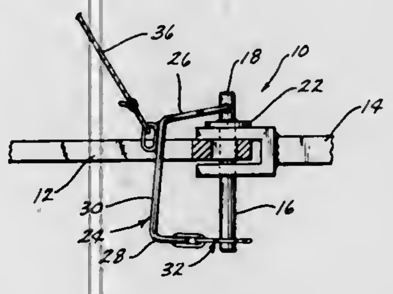
Lawrence D. Dutton, Meridian, Miss., assignor to Truck Specialist Inc., Meridian, Miss.
Filed May 31, 1974, Ser. No. 475,256
Int. Cl. B60p *3/06*
U.S. Cl. 280—490 R **10 Claims**



1. A trailer hitch comprising a hitch ball assembly including a hitch ball assembled to a guide member having opposite rectilinear vertical guide rail formations and a laterally facing vertically elongated rack gear formation, a channel means defining a vertical guide channel for accommodating vertical sliding movement of said guide rail formations and said rack gear formation including means defining guide grooves for receiving said rail formations, a gear plate in the rail guide channel movable transversely in said channel into and out of engagement with the rack gear formation, and a means for locking the movable gear plate in engagement with the rack gear formation when the hitch ball assembly has been positioned at the desired height.

3,865,407
HITCH PIN

James G. Klassen, Rt. No. 1, Lindsay, Nebr. 68644
Filed Aug. 2, 1973, Ser. No. 385,107
Int. Cl. B60d *1/02*
U.S. Cl. 280—515 **1 Claim**



1. A hitch pin comprising,

an elongated pin element having a head portion adjacent one end thereof and a transverse bore formed therein adjacent the other end thereof,

a rigid substantially C-shaped actuator element pivotally connected at one end to said pin element adjacent said one end thereof,

a spring retainer clip means pivotally connected to the other end of said C-shaped actuator element and comprising a shank portion adapted to extend through said bore, said clip means also comprising an arcuate portion which yieldably engages said pin element adjacent said bore,

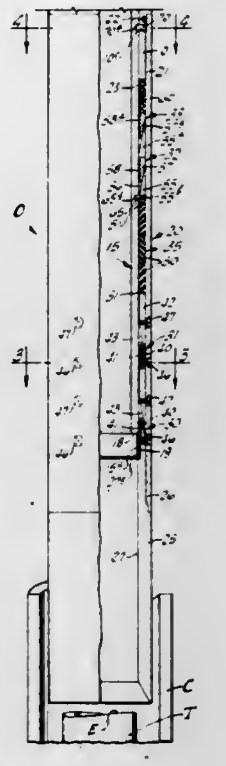
an elongated flexible member connected at one end to said C-shaped actuator element whereby longitudinal movement of said flexible member in one direction will pivotally move said actuator element to cause said clip means to be detached from said pin element,

said actuator element being of said rigid construction to permit said shank portion of said clip means to be inserted into said bore by applying pivotal pressure on said actuator element towards said pin element.

3,865,408
POSITIVE LOCKING SEALING CONNECTOR FOR WELL PIPE

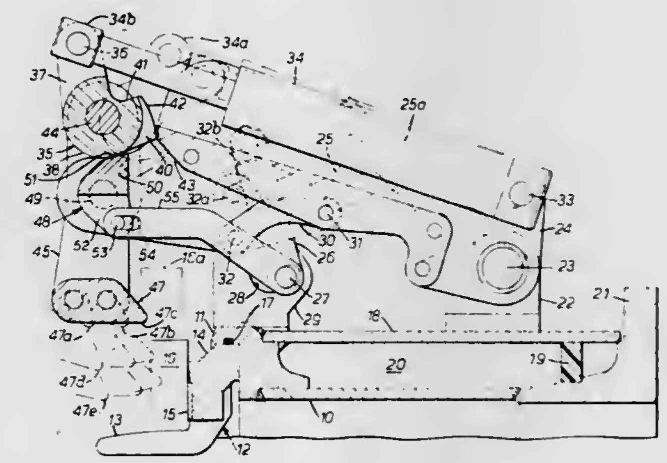
Carter R. Young, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Nov. 1, 1972, Ser. No. 302,659
Int. Cl. F16l *35/00*
U.S. Cl. 285—3 **7 Claims**

1. A sealing connector for well pipes comprising: an elongate tubular housing having means at one end thereof for connection to a first pipe and having a bore for receiving the end of a second pipe movable longitudinally into said bore; an annular sealing assembly disposed in the bore of said housing; a plurality of sets of gripping members in the bore of the housing, at least one set at each of the longitudinally opposite ends of said sealing assembly, the gripping members being disposed to lockingly engage said second pipe when extending through said sealing assembly and gripping members to hold the sealing assembly compressed therebetween in sealing engagement with said second pipe and said housing and to positively lock said housing on said second pipe; a guide sleeve movable longitudinally in the housing with respect to the sealing assembly and gripping members for guiding the end of said second pipe past said gripping members and sealing assembly in the bore of the housing and having thimble means thereon telescoping over the end of said second pipe to cover and guide said end through the locking members and sealing assembly without damaging the same to position the second pipe within the gripping members and sealing assembly for engagement by the gripping members and sealing assembly.



3,865,409
PIPE COUPLINGS

Arthur Loftus Paddington, Shinfnal, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England
Filed Feb. 20, 1973, Ser. No. 333,737
Claims priority, application Great Britain, Mar. 7, 1972, 10507/72; Aug. 24, 1972, 39480/72
Int. Cl. F16l *23/00*
U.S. Cl. 285—18 **18 Claims**



1. A clamping assembly for a pipe coupling arranged so as to be movable both axially and radially of said pipe coupling for releasably engaging and clamping a flange of a pipe member to said pipe coupling, said clamping assembly including:

a clamping arm;

means mounting said clamping arm for both axial and radial movement with respect to said pipe coupling;

fluid actuated ram means controlling the movement of said clamping arm such that extension and retraction, respectively, of said ram means moves said clamping arm into and out of a clamping position;

locking cam means mounted for movement in response to said movement of said clamping arm so as to mechanically lock said clamping arm when in said clamping position in the event of failure of said fluid actuated ram means; and

means for initially directly transmitting said extension movement of said ram means to said clamping arm, resulting in a relatively large movement of said clamping arm toward said clamping position, and thereafter transmitting continued extension movement of said ram means to said clamping arm through said locking cam means, resulting in a relatively small final movement of said clamping arm into said clamping position and increase of pressure thereto.

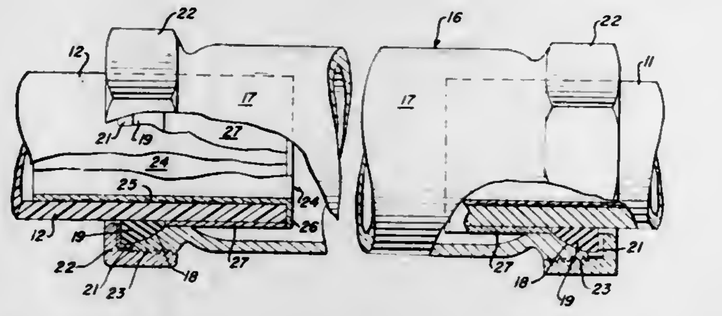
3,865,410
COMPRESSION JOINT OR COUPLING FOR PIPES

Keith A. Chen, Milwaukee, Wis., assignor to Norton-McMurray Manufacturing Company, Geneva, Ill.

Filed Sept. 29, 1972, Ser. No. 293,340

Int. Cl. F16l *21/00*

U.S. Cl. 285—31 **12 Claims**



1. A compression-type coupling for joining two or more spaced-apart pipes and, lengths of pipe, each having an internal wall surface defined by the inside diameter of said pipe and having an external wall surface defined by the outside diameter of said pipe, at least one of said lengths of pipe being formed of plastic material, said coupling comprising a tubular coupling member having an inner diameter surrounding lengths of pipe positioned within said coupling in telescoping relationship therewith,

each end of said tubular coupling member having gasket sealing means cooperating with reinforcing and sealing attachments on an end of each telescoping pipe, to provide a fluid-tight connection comprising,

an annular gasket engaging surface on each end of said coupling,

a deformable sealing gasket positioned on the telescoping portion of joined pipe and frictionally engageing said pipe and providing a fluid-tight seal between said gasket engaging surface of the coupling and a portion of the external wall surface of the telescoping portion of associated pipe,

a tubular retainer overlying the telescoping portion of associated pipe, and being sufficiently large to be slipped axially over the outer diameter of the pipe, and said retainer having an abutting portion for longitudinal force-transferring abutting engagement with the sealing gasket as an axially directed force tends to pull and separate pipe from the tubular coupling member,

a tubular stiffener partially inserted within an associated pipe to frictionally engage the internal wall surface of the pipe and sandwich the encapsulated pipe between the tubular stiffener and the tubular retainer in a reinforcing relationship increasing the strength of that pipe above that of the plastic pipe alone, said stiffener being provided at one end with an outwardly extending flange having an outer diameter larger than the outer diameter of the operatively associated pipe but smaller than the inner diameter of the associated end of said tubular coupling member, thus permitting the tubular coupling member to be completely and freely slipped over at least one of the reinforced pipes to facilitate joining closely spaced lengths of pipe, and

adjustable means urging said gasket into sealing relationship between said gasket engaging surface of the tubular coupling member and a portion of the external wall surface of associated pipe, said gasket being positioned radially outwardly of a portion of the tubular stiffener and urging the associated underlying pipe into frictional engagement with the tubular stiffener.

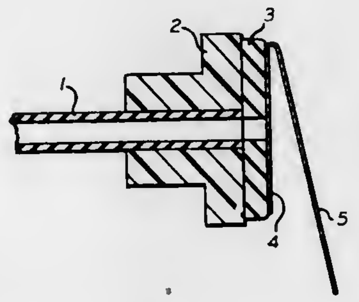
3,865,411
STERILE CONNECTOR FOR CONDUITS

Arthur W. Rowe, Stamford, Conn., and Edward T. Marshall, Short Hills, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 29, 1973, Ser No. 346,087

Int. Cl. F16l *17/00*

U.S. Cl. 285—363 **5 Claims**



1. A sterile connector for the end of a conduit which connector comprises a resilient, deformable gasket disposed about the terminal end of a conduit, a continuous, removable, yieldable, flexible strip material, a portion of which is removably adhered to said gasket and overlies the end of said conduit, said strip material having a free end, said strip material being in a generally U-shaped configuration; whereby a force applied to the free end thereof withdraws the entire strip material to expose the end of said conduit.

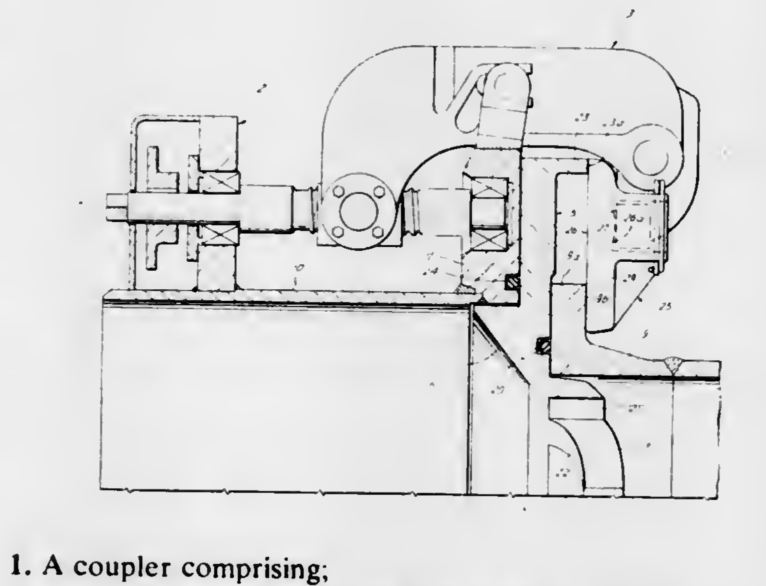
3,865,412
COUPLER

Albert A. Ashton, Dallas, Tex., assignor to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Jan. 11, 1973, Ser. No. 322,776

Int. Cl. F16l *19/02*

U.S. Cl. 285—364 **4 Claims**



1. A coupler comprising;

first and second conduits each having flanged ends;

coupler means carried by the first conduit and having a plurality of jaws movable in two directions in a single plane for selectively clamping the first and second conduits together;

a flange adapter positioned between and in engagment with the two conduit flanges;

said adapter having an external flange of greater radial dimension than that of the second conduit flange and spaced therefrom to provide an annular space between the adapter's external flange and the second conduit flange;

said adapter having a flowway for conducting fluids between the two conduits;

means for sealing between the flange adapter and each of the first and second conduits;

jaw adapters carried by the jaws and in engagement with the external flange of the flange adapter and with the flange of the second conduit thereby overlying said annular space;

said jaws engaging and applying force to each jaw adapter at a point between the points of engagement of the jaw, adapter with the flange adapter and the second conduit flange.

3,865,413
PIPE JOINT

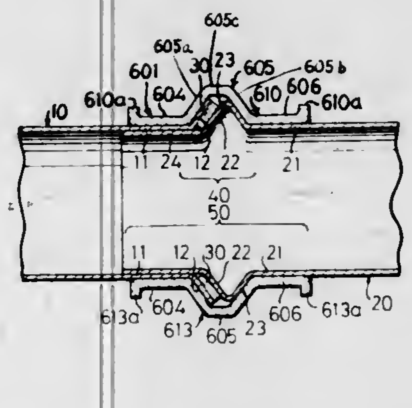
Shim-Ichiro Mizusawa, Okazaki, and Tsutomu Hishiki, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken and Sango Co., Ltd., Nagoya-shi, Aichi-ken, both of, Japan

Filed June 26, 1973, Ser. No. 373,749

Claims priority, application Japan, Sept. 8, 1972, 44-90174

Int. Cl. F16l *17/00*

U.S. Cl. 285—367 **15 Claims**



1. A pipe joint comprising:

a first tube, a first flange at one end of said first tube,

a second tube, an annular projection on said second tube adjacent one end thereof, one portion of said annular projection being a second flange,

a packing interposed between said first and second flanges,

a joint body, said joint body having a coupling portion at each end thereof and a raised projecting portion between said coupling portions, one of said coupling portions abutting and extending over a substantial portion of the annular periphery of a portion of said first tube adjacent said one end thereof, and the other coupling portion abutting and extending over a substantial portion of the annular periphery of a portion of said second tube adjacent said annular projection, said raised projecting portion abutting and extending over a substantial portion of said first flange and the portion of said annular projection other than said second flange, and

clamping means for clamping said joint body to said first and second tubes.

3,865,414
THUMB PIECE LOCK SPINDLE ACTUATOR

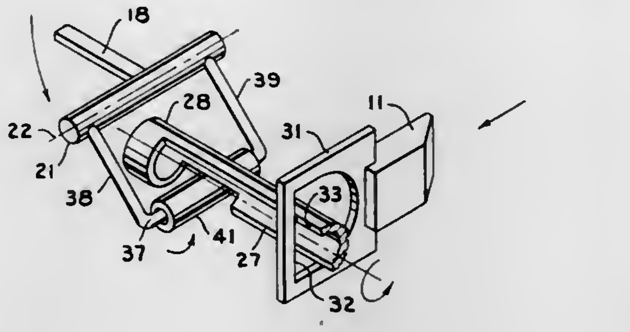
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed Sept. 7, 1973, Ser. No. 395,275

Int. Cl. E05c *1/14*

U.S. Cl. 292—336.3 **4 Claims**

1. A thumb piece lock spindle actuator comprising a frame, a tubular spindle rotatable about a primary axis relative to said frame, means on said tubular spindle forming an engaging face including an exposed portion of the wall of said tubular spindle extending parallel to and radially spaced from said primary axis, a thumb piece, means for mounting said thumb piece on said frame for rotation about a secondary axis perpendicular to said primary axis, and contact means on said thumb piece



spaced from said secondary axis and adapted directly to abut said engaging face.

3,865,415
SAFETY SYSTEMS

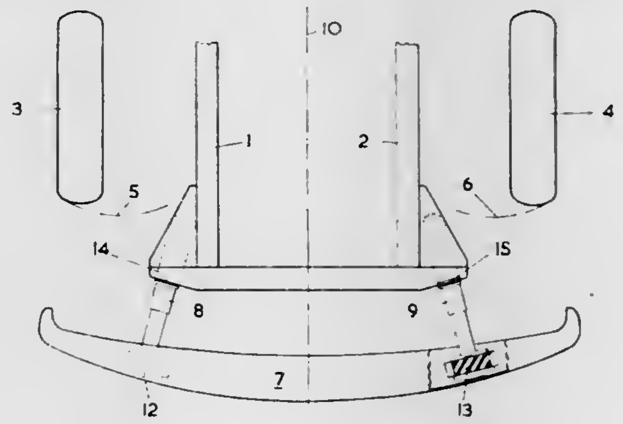
Karel Saxl, Sutton Coldfield, and George Hall, Birmingham, both of England, assignors to Imperial Metal Industries (KYNOCH) Limited, Warwickshire, England

Filed Oct. 26, 1973, Ser. No. 410,093

Claims priority, application Great Britain, Nov. 17, 1972, 53185/72

Int. Cl. B60r *19/06*

U.S. Cl. 293—86 **15 Claims**



1. An energy absorbing system for a motor vehicle having a bumper, the system including two energy absorbing devices interconnecting, in a straight line, spaced attachment points on the vehicle and spaced attachment points on the bumper, the points on the bumper being a greater distance apart than the points on the vehicle so that the devices are angles apart from one another in a direction away from the vehicle, the connections between the vehicle and the devices being rigid, and the connections between the bumper and the devices being such that the bumper ends of the devices can move towards one another in a line transverse to the center line of the vehicle on movement of the bumper towards the vehicle.

3,865,416
SHOCK ABSORBING BUMPER

Joseph L. Burg, 490 Martin Ln., Beverly Hills, Calif. 90210

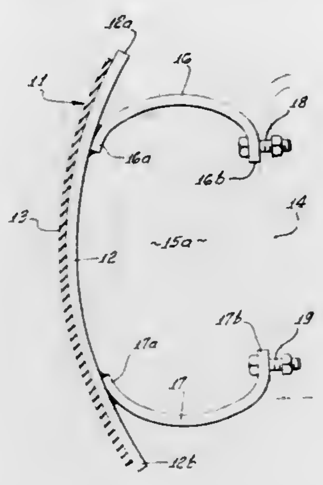
Continuation of Ser. No. 173,934, Aug. 23, 1971, abandoned. This application June 4, 1973, Ser. No. 366,704

Int. Cl. B60r *19/06*

U.S. Cl. 293—87 **2 Claims**

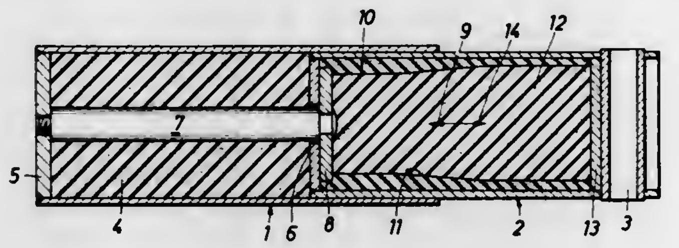
2. A bumper assembly for a vehicle including a frame and comprising a bumper having compound curvature and mounted to said frame by horizontally spaced support assemblies each comprising first and second vertically separated, arcuate support members bowed in opposite vertical directions, the front ends of said members being fixedly attached to said bumper inwardly of the respective top and bottom edges thereof, the rear ends of said members being fixedly attached

to said frame, said compound curvature causing said bumper to flatten upon impact, bowed deflection of said members further absorbing the shock of said impact, the curvature of said bumper conforming to a portion of a spherical surface.



3,865,417
IMPACT ABSORBER FOR BUMPERS

Johann Zwickl, Ingolstadt, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed June 12, 1973, Ser. No. 368,433
Int. Cl. B60r *19/06;* **F16f** *3/08*
U.S. Cl. 293—88 **12 Claims**



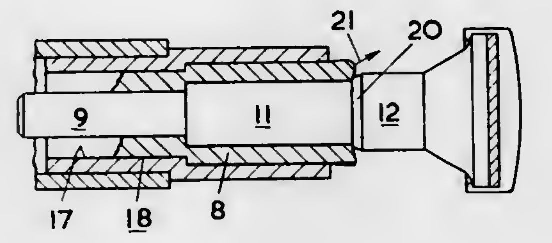
1. An impact absorber for a vehicle bumper comprising, in combination:
- a. first energy absorbing means including a first elastomer and having two ends, said first energy absorbing means being arranged in said impact absorber to dissipate energy caused by deformation of said first elastomer upon relative movement of said two ends; and
- b. second energy absorbing means arranged in said impact absorber to dissipate energy caused by friction upon relative movement of said two ends, said second energy absorbing means including:
  - 1. a pressure plate connected to one of said ends of said first energy absorbing means; and
  - 2. a friction layer, comprising a second elastomer of greater density than said first elastomer, connected to the other of said ends and arranged to frictionally coact with said pressure plate upon relative movement of said two ends,

whereby, upon impact, said impact absorber dissipates energy through a combination of deformation and friction.

3,865,418
SAFETY DEVICES

Karel Saxl, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynoch) Ltd., Birmingham, Warwickshire, England
Filed July 3, 1973, Ser. No. 376,203
Int. Cl. B60r *19/02*
U.S. Cl. 293—89 **11 Claims**

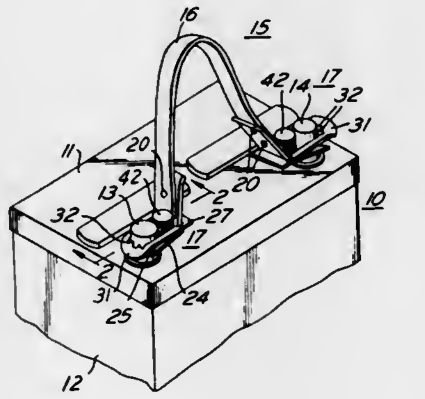
1. An energy absorbing device for a vehicle, said device including
- a. a container,
- b. an extrudable slug located at least partially within said container,
- c. a ram for back extruding said slug,
- d. a conical head portion of said ram for spreading the extrudate of said extrudable slug, and



- e. a breaker knife edge operatively associated with said ram for splitting said extrudate, whereby movement of said ram relative to said slug results in back extrusion of said slug.

3,865,419
UNIVERSAL BATTERY LIFTER

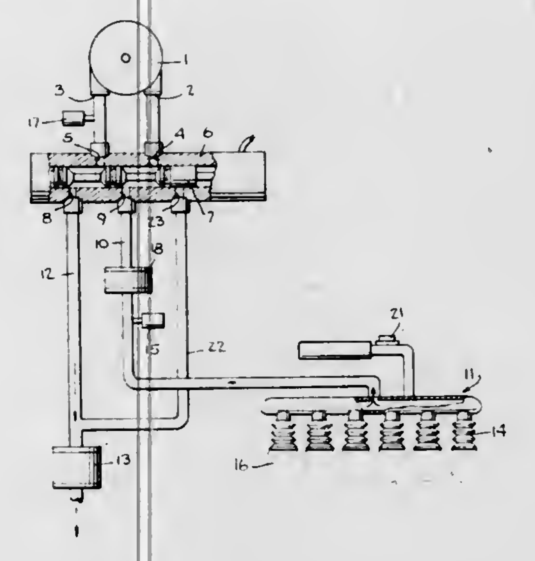
Bernard P. Bowers, Ontelaunee Twp., Berks County, and Delight E. Breidegam, Jr., Kutztown, both of Pa., assignors to East Penn Mfg. Co., Inc., Lyon Station, Pa.
Filed Nov. 30, 1973, Ser. No. 420,368
Int. Cl. B66c *1/12*
U.S. Cl. 294—63 B **2 Claims**



1. A battery lifter comprising
- a strap member having end members for selective battery terminal engagement with upright post terminals or with internally threaded side wall carried terminals,
- said end members including a first jaw member fixedly secured to an end of said strap member and a second jaw member pivotally mounted on said first jaw member for post terminal engagement on opposite sides of a post terminal,
- one of said jaw members having a central opening for post terminal accommodation bounded at one end by terminal post gripping portions for engagement at one side with the post terminal,
- the other of said jaw members having a terminal end portion for engagement at the opposite side of the post terminal and a central portion,
- said other of said jaw members having a screw rotatably carried thereby at said central portion with a threaded shank for internally threaded battery terminal engagement,
- said screw having an enlarged head for manual engagement extending through said central opening for access.

3,865,420
VACUUM CONTROL SYSTEM

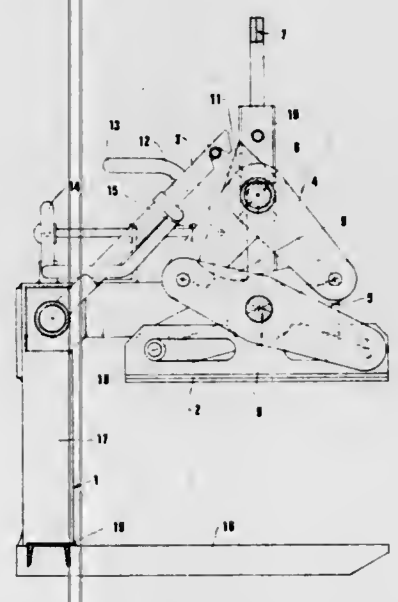
William H. Warren, 40 Prospect St., North Brookfield, Mass. 01535
Filed Apr. 12, 1973, Ser. No. 350,325
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **7 Claims**



1. An improved vacuum control system comprising the combination of:
- an air pump having an air inlet and an air outlet;
- a valve having means for coupling the pump inlet to a first conduit and the pump outlet to a second conduit in a first valve position and for coupling the pump outlet to said first conduit and the pump inlet to a third conduit in the second valve position;
- said first conduit being coupled to a vacuum tool outwardly of said valve; and
- means at said tool for controlling the operation of the valve between its first and second positions.

3,865,421
APPARATUS FOR LIFTING AND TRANSPORTING GOODS BY MEANS OF A HOIST

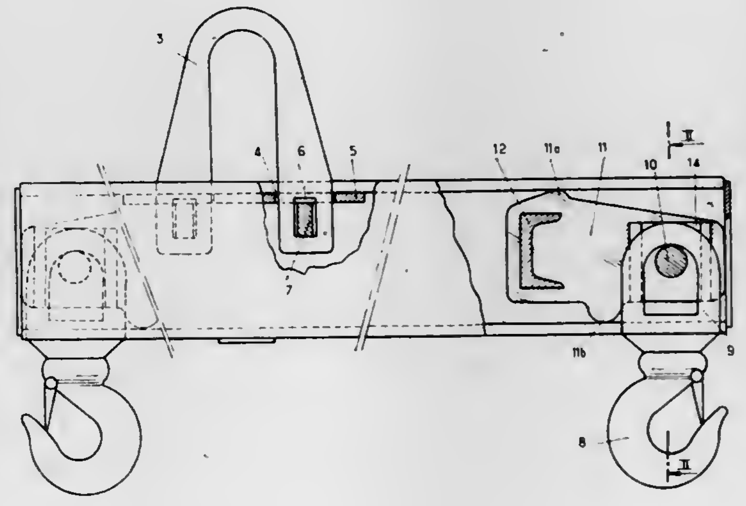
Hermann Pfeifer, Burkhartstrasse 4 - 894, Memmingen/Allgau, Germany
Filed Aug. 3, 1973, Ser. No. 385,556
Claims priority, application Germany, Aug. 4, 1972, 7228907
Int. Cl. B66c *1/22*
U.S. Cl. 294—67 AB **3 Claims**



1. A lifting clamp for use with a lifting hoist whereby lifting forces cause positive clamping of goods being lifted and transported, comprising:
- a frame including a lower portion for engaging beneath goods and an upper support portion above said lower portion;
- a scissors linkage assembly including a first pair of levers intermediately on a pivot axis fixed on said upper support portion;
- a clamp member overlying said lower portion and including spaced slot portions extending along said clamp member and portions of the first pair of levers whereby pivotal movement of the levers toward each other above the pivot axis causes the clamp member to move downwardly in a rectilinear path toward said lower support portion and movement of the levers in an opposite direction raises the clamp member,
- said scissors linkage including a second pair of levers pivotally connected at lower portions to respective upper ends of said first pair of levers,
- said second pair of levers being pivotally connected to common pivot shaft mounted on said frame, said frame including guide means operatively connected to said common shaft for retaining the shaft in a rectilinear path of movement relative to the clamp member whereby upward movement of the shaft member causes downward movement of the clamp member and downward movement of the shaft member causes downward upward movement of the clamp member;
- a lifting eye member pivoted on said common shaft for movement therewith whereby lifting forces applied to the lifting eye member causes downward movement of the clamp member and downward movement of the eye member causes upward movement of the clamp member; and
- releasable latch means on said frame operatively associated with said lifting eye member including means for engaging and retaining the eye member in an inclined position and the common pivot shaft in a downward position while causing the clamp member to be raised whereby during empty transport of the lifting clamp, the lifting clamp is in an "open" condition for immediate engagement with goods.

3,865,422
LIFTING DEVICES

Jean-Francois Archer, 10, Ave. Georges-Clemenceau, 78670, Villene-sur-Seine, France
Filed May 8, 1974, Ser. No. 468,295
Claims priority, application France, May 10, 1973, 73.17431
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 R **5 Claims**



1. In a lifting device
- a lifting beam, said beam comprising two sectioned members, each said member having
- an upper flange,

a lower flange, and

a web, the two members being arranged with their webs in spaced parallel relation, and

at least two self-locking carriages movable along the beam between the webs of said members, each carriage including

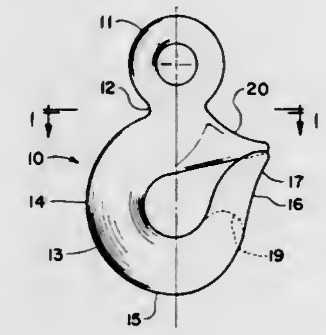
means defining a cavity open to the outside,

shaft means engaged in said cavity, and

lug means bearing against the upper and lower flanges of the members.

3,865,423
SAFETY HOOK

Lloyd D. Ross, 1908 Hood Cir., Carrollton, Tex. 75006
Filed Aug. 13, 1973, Ser. No. 388,337
Int. Cl. B66c *1/34*
U.S. Cl. 294—82 R **6 Claims**



1. A safety hook for detachably engaging a loop-like lifting member such as a cable loop, shackle, link, or ring, comprising:

a lifting means portion adapted for attachment to lifting means;

an integral depending bight portion, said bight portion comprising:

a bight having a closed side, a bottom, and an open side for receiving a loop-like lifting member into the bight;

the open side of said bight having a pair of upwardly and outwardly diverging legs terminating above the bottom of said bight, and a saddle between said legs;

and a nose portion extending from the closed side of said bight, across and above the bottom thereof to a point between said legs and above said saddle.

3,865,424
HYDRAULICALLY OPERABLE TONGS FOR CHARGING A WORKPIECE TO BE FORGED

Fridolin Jabkowski, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria
Filed Mar. 13, 1973, Ser. No. 340,714
Claims priority, application Austria, Apr. 6, 1972, 2946/72
Int. Cl. B23q *3/06*
U.S. Cl. 294—88 **10 Claims**

1. Hydraulically operable tongs for charging a workpiece to be forged, which comprise

a jaw carrier,

a horizontal pivot to which said jaw carrier is pivoted,

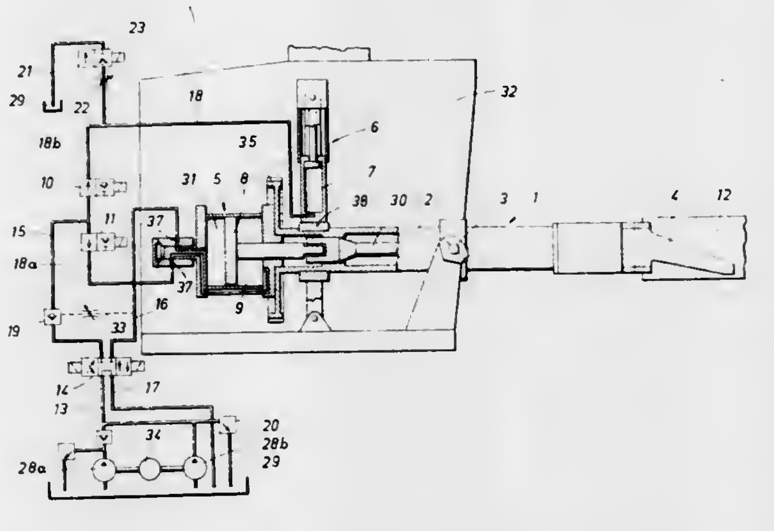
jaws mounted on said jaw carrier and adapted to be closed to grip a workpiece and adapted to be opened to release said workpiece,

a double-acting hydraulic jaw-moving actuator which is connected to said jaws and comprises a cylinder and a jaw-moving piston which is movable in said cylinder and defines therein a jaw-closing pressure chamber for applying pressure to said piston in a jaw-closing sense, and a jaw-opening pressure chamber for applying pressure to said piston in a jaw-opening sense,

controlled pressure-applying means for applying a predetermined pressure to said piston through said jaw-closing pressure chamber,

a hydraulic tilting actuator which is connected to said jaw carrier and comprises a tilting cylinder and a tilting piston which is movable in said tilting cylinder and defines therein a tilting pressure chamber for applying a pressure in excess of said predetermined pressure to said tilting piston so as to control the angular position of said jaw carrier,

a pressure transfer conduit which connects said tilting pressure chamber to said jaw-closing pressure chamber,

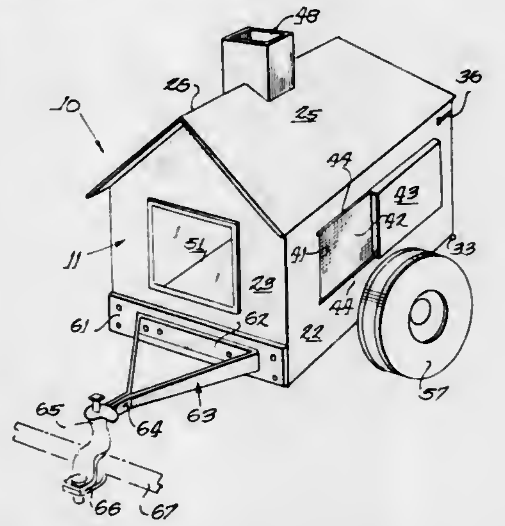


shut-off valve means incorporated in said transfer conduit, and

means for applying a pressure which depends on the weight of said workpiece and which exceeds said predetermined pressure through said transfer conduit and said jaw-closing pressure chamber to said jaw-moving piston whereby said jaws grip the workpiece while said shut-off valve means are open.

3,865,425
PET TRAILER

Marie M. French, 14521 Southwest 65th Ave., Miami, Fla. 33158
Filed Dec. 4, 1973, Ser. No. 421,590
Int. Cl. B60r *27/00*
U.S. Cl. 296—24 C **1 Claim**



1. A trailer intended to be towed behind vehicles, such as automobiles and the like, and adapted for the transportation of pets in safety and convenience from point to point, comprising in combination:

a body member in the general shape and configuration of a house including a substantially flat rectangular horizontally extending bottom surface, a pair of opposed transversely spaced apart vertically extending side wall members, a vertically extending front end wall member, a vertically extending back end wall member spaced longitudinally from the front end wall member and extending parallel thereto, and a peaked roof member mounted to the top edges of said wall members;

a compartment defined interiorly of the wall members and bottom surface and roof member;

a smooth non-porous waterproof lining member disposed interiorly of the surfaces defining the compartment in juxtaposition with said surfaces;

an opening in the back end wall member of a size and configuration to permit ease of ingress and egress of a pet to the compartment;

a door pivotally mounted on the back end wall along the bottom edge thereof and movable between a first position closing the back end wall opening and a second position defining an inclined ramp extending outwardly and downwardly from the back end wall forming a runway for the pet to gain access to the compartment;

latch means associated with the door for detachably securing the door in the closed position;

a ventilating opening extending through the roof member communicating the compartment with the surrounding atmosphere;

a hollow chimney shaped rectangular member having one end mounted to the roof member about the ventilating opening formed therein with the opposite end projecting upwardly therefrom and defining a passageway therebetween in communication with said ventilating opening to permit air flow into and out of the compartment;

a rectangularly shaped elongated window like opening disposed in one of the side wall members and extending horizontally therethrough between the opposite end edges thereof;

a rectangularly shaped screen forming mesh overlying the side wall opening with the perimeters of the mesh fixedly mounted to the perimeters of the opening to prevent a pet from passing therethrough while permitting free ventilation of the compartment; a pair of vertically spaced apart horizontally extending track members disposed on opposite top and bottom edges of the side wall opening and extending therealong;

a cover member associated with the side wall opening and selectively movable between the limits of a first position fully closing and covering the side wall opening and a second position fully opening the side wall opening;

the cover member being of an elongated rectangular shape of a size greater than the size of the rectangular opening and having opposed horizontally extending side edges and opposed vertically extending end edges, the side edges adapted to be slidingly engaged in the respective track members for axial sliding movement therealong, the cover member selectively adjustable to overlap various areas of the opening to provide a selectable degree of ventilation to the compartment;

a transparent window like member disposed in the front end wall providing visibility of the compartment from exterior of the body member;

a pair of receptacles adapted for containing food and water for a pet with each consisting of an open topped box-like container having a bottom surface and depending surrounding side wall surfaces with each disposed in the compartment, each of the bottom surfaces having at least one aperture extending therethrough;

a plurality of fastening means each extending through an associated aperture and engaging the body member bottom surface to secure the associated receptacle in a fixed position on the bottom surface of the compartment;

a substantially flat divider member adapted to be vertically removably inserted into the compartment extending between the side wall members thereof to separate the compartment into two tandemly disposed chambers, each of the chambers having disposed therein one of the receptacles adapted for containing food and water therein;

a pair of brackets transversely spaced apart and extending downwardly from the body member bottom surface;

an axle assembly mounted to said brackets with the ends of the axle assembly extending transversely outwardly of the planes defined by the respective side wall members;

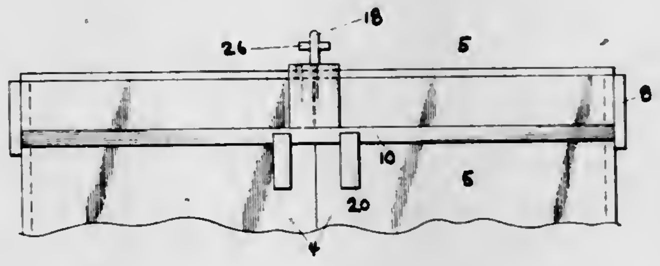
a pair of wheels with each wheel mounted on opposite ends of the axle assembly to provide a rolling support for the body member;

a first rectangularly shaped member extending transversely of the front end wall adjacent the bottom surface thereof and mounted thereto;

a triangularly shaped member having one leg thereof extending transversely of the first member centrally thereof and fastened thereto, the apex of the triangular member projecting outwardly furthest from the front end wall; and a socket affixed to the apex adapted to be detachably hitched to a towing bracket secured to a towing vehicle, such as an automobile and the like.

3,865,426
ARRANGEMENT FOR SECURING SWINGING DOORS OF VEHICLES

Damon Barnhart, Rte. Seven West Hills Two, Frederick, Md. 21701
Filed June 18, 1973, Ser. No. 370,752
Int. Cl. B62d *25/00*
U.S. Cl. 296—50 **3 Claims**



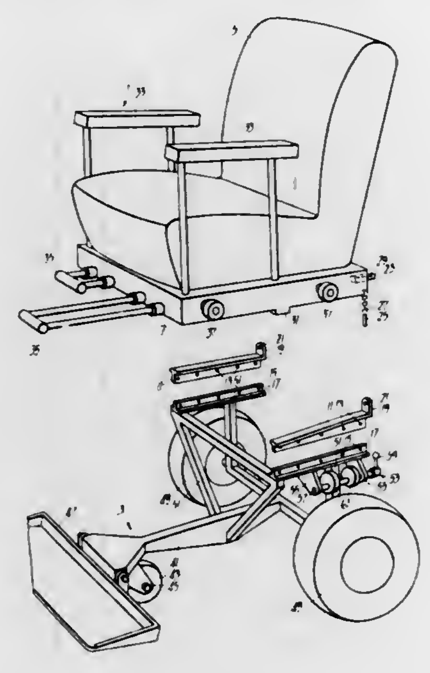
1. In combination with a vehicle having a top and having doors at one end thereof hinged about vertical axes, a bar extending horizontally across the center of the doors, means mounting the bar for swinging movement between a lower position in which it engages on the outside of the doors to hold them closed and a raised position in which it is out of the path of the doors, a part secured to and extending upwardly from the bar and engageable on the top of the vehicle when the bar is in its lowered position, and means engageable with such part for securing it on the top so as to prevent raising of the bar.

3,865,427
INVALIDS AIDS

Harold Edward Delany, 9 Millard St., Wangaratta, Victoria, Australia
Filed May 16, 1973, Ser. No. 360,976
Int. Cl. B60n *1/10*
U.S. Cl. 296—68 **12 Claims**

1. An invalid's aid comprising a seat frame, in which an invalid can be supported, and normally fastened to a wheeled carriage by detachable fastening means to form an invalid's chair, a support engaging member on said seat frame detachably engaged with a support carried on the inner surface of the door of an automobile, the arrangement being such that with the automobile door in an open position said seat frame is engageable with the support thereon and upon detachment of the seat frame from the carriage the said frame is secured to the support and upon closing of the door is movable with the

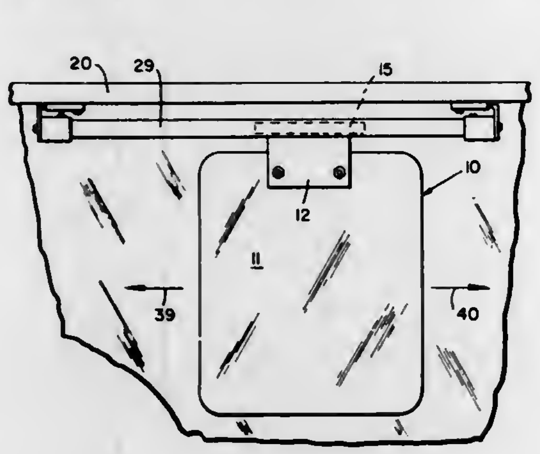
door to be positioned within the automobile, and upon opening of the door is movable partially outside of the vehicle so



that the seat frame and invalid thereon may be carried in the automobile and transferred back to the wheeled carriage.

3,865,428
WINDOW SHADE FOR A VEHICLE OR THE LIKE

Carroll W. Chester, 1932 E. 76th Pl., Los Angeles, Calif. 90001
Continuation-in-part of Ser. No. 305,872, Nov. 13, 1972, abandoned. This application Dec. 19, 1973, Ser. No. 426,221
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 G **10 Claims**



1. A shade structure for the window of a vehicle or the like comprising:

a. a first sheet of shade material capable of blocking at least a portion of the light rays impinging thereon, said first sheet having flat opposed major surfaces of smaller area then said window;

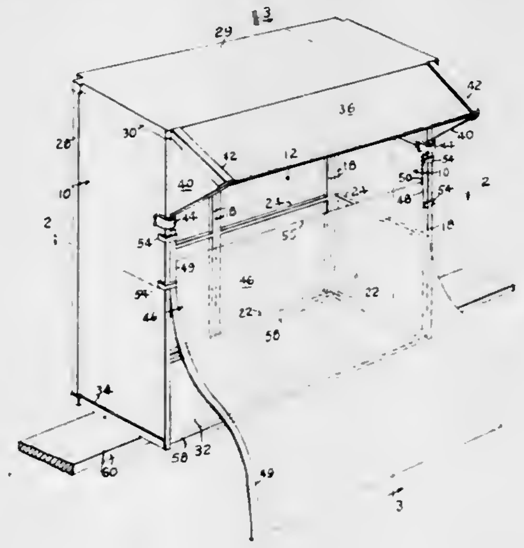
b. a second sheet of resilient material, said second resilient sheet having flat opposed major surfaces of smaller area than the area of said major surfaces of said first sheet, a portion of said second sheet overlying a portion of said first sheet and being fixed to said first sheet with one of said major surfaces of said first sheet in contact with one of said major surfaces of said second sheet;

c. means mounting said first and second sheets with the major surfaces thereof adjacent the inside surfaces of said window and generally parallel thereto; said means including a hollow tubular member having an axially extending slot in the wall thereof dimensioned to receive a portion of said second sheet therein with a small tolerance, and a plug member slidably received in said tubular member with a portion of said plug member overlying a portion of said second sheet within said tubular member, said second sheet being fixed to said plug member and said tubular member being fixed at its ends to said vehicle,

said first and second sheets being thin enough to be flexed in a direction transverse of the major surfaces thereof by contact of the human hand at a point on one of the major surfaces of said first sheet and thick enough not to flex in a direction parallel to the major surfaces thereof by forces applied to the edge thereof sufficient to slide said plug within said tubular member.

3,865,429
PORTABLE COLLAPSIBLE SHELTER

Joseph K. Barker, Rte. 2, Abingdon, Va. 24210
Filed May 18, 1973, Ser. No. 361,540
Int. Cl. A47c *7/66*
U.S. Cl. 297—184 **10 Claims**



1. A temporary portable shelter comprising relatively rigid self-sustaining end walls and a back wall extending therebetween, means movably connecting each end wall to the adjacent end of said back wall, a flexible sheet extending over the tops of and sealed to said end and back walls, a flexible sheet similarly connected to the lower extremities of said end and back walls, and means engaging the top and bottom portions of said end walls and forcing them away from each other to stretch said flexible sheets.

3,865,430
THEATER CHAIR AUTOMATICALLY MOVABLE BY REMOTE CONTROL

Antonio Tanus, Jose T. Cuellar No. 12, Col. Obrera, D.F., Mexico City, Mexico
Filed Apr. 24, 1973, Ser. No. 354,065
Int. Cl. A47c *1/12;* **A63j** *5/00;* **A63g** *31/16*
U.S. Cl. 297—217 **5 Claims**

1. A theater chair movable by remote control, comprising a supporting structure, a chassis with a backrest and two armrests integral therewith and installed on the supporting structure, a seat connected to the chassis so as to be rotatable with respect thereto, and vibrational means within said seat, the supporting structure comprising, at each side of the chassis:

a rigid frame;

first bearing means fixed to the frame;

a first pair of threaded spindles supported vertically by said first bearing means;

a first drive motor supported by said rigid frame and connected through first gearing means to rotate said first pair of spindles;

a first pair of sleeves threadedly engaged on said first pair of spindles respectively;

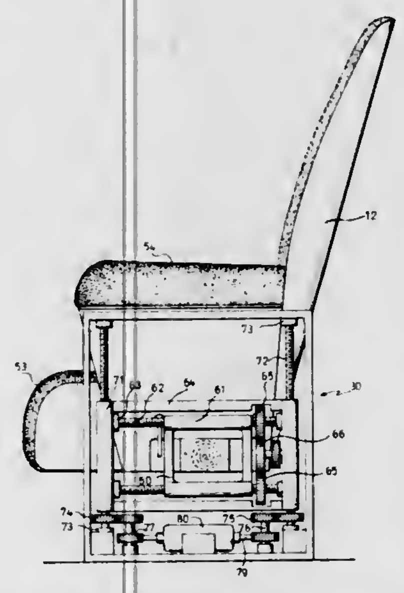
a first plate which connects the first pair of sleeves together;

second bearing means fixed to the first plate, a second pair of threaded spindles supported horizontally by said second bearing means;

a second drive motor carried by said first plate and connected through second gearing means to rotate said second pair of spindles;

a second pair of sleeves threadedly engaged on said second pair of spindles respectively; and

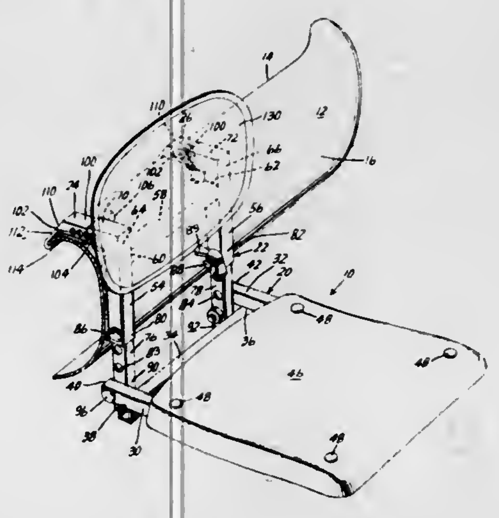
a second plate which connects the second pair of sleeves together,



the second plate at one side of said chassis being connected to said one side of said chassis through at least one ball and socket universal joint and the second plate at the other side of said chassis being connected to said other side of said chassis by way of at least one other ball and socket universal joint so that the two sides of the chassis may be raised or lowered independently of one another by independently actuating the first drive motors and the two sides of the chassis may be moved forwards or backwards independently of one another by independently actuating the second drive motors.

3,865,431
VEHICLE BUMPER SEAT

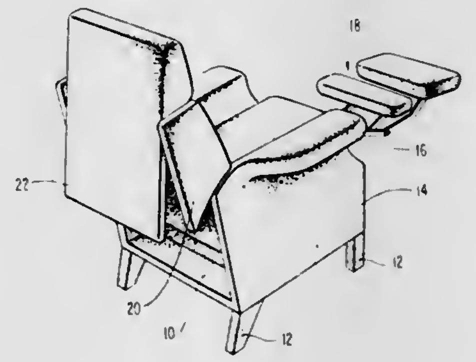
Victor Zakhi, 124 South Hadley Rd., Fort Wayne, Ind. 46804
Filed Oct. 25, 1973, Ser. No. 409,654
Int. Cl. A47c *15/00*
U.S. Cl. 297—217 **3 Claims**



1. A seat assembly for removable attachment to a portion of a vehicle comprising: a seat frame having forward and rear ends and having a seat panel secured thereto, a supporting frame having lower and upper ends and having a back rest panel secured thereto, first means for connecting said forward end of said seat frame to said supporting frame adjacent said lower end thereof, a pair of hook elements respectively having forward and rear ends, and second means for adjustably connecting said rear ends of said hook elements to said upper end of said supporting frame with said hook elements extending forwardly from said supporting frame and being selectively adjustable with respect thereto between extended and retracted positions, said distal ends of said hook elements having hook portions thereon adapted to engage said vehicle portion thereby to support said assembly thereon with said supporting frame depending from said hook elements and said seat frame extending rearwardly from said supporting frame, said seat frame comprising a pair of spaced, paralled members having forward and rear ends and a lateral member connecting said parallel members and spaced from said forward ends thereof, said first connecting means pivotally connecting said forward ends of said parallel members to points on said supporting frame spaced from said lower end thereof thereby permitting upward pivotal movement of said seat frame and seat panel between lower and storage positions, said lateral member engaging said lower end of said supporting frame in said lower position thereby limiting downward pivotal movement of said seat frame and supporting the same in said lower position thereof.

3,865,432
RECLINING CHAIR

Walter Clark Rogers, Jr., High Point, and Morton Snitzer, Greensboro, both of N.C., assignors to Royal Development Company, Inc., High Point, N.C.
Filed May 29, 1973, Ser. No. 364,462
Int. Cl. A47b *1/02;* **A47c** *1/02*
U.S. Cl. 297—316 **15 Claims**

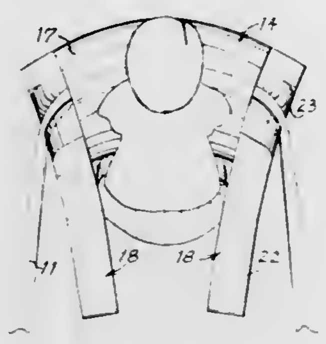


1. In a reclining chair having a stationary frame, a seat mounted on the frame for movement relative to the frame between normal and reclining positions, and a backrest pivotally connected to the seat to be movable with the seat between normal and reclining positions and to be movable relative to the seat between a partially reclined position and a fully reclined position; linkage means for supporting said seat and backrest for movement relative to the frame between said normal and reclining positions thereof, the linkage means including a balance link extending below said seat, first pivot means pivotally mounting said balance link intermediate its ends to said frame for permitting said balance link to move relative to said frame, a front mounting link pivotally interconnecting front portions of said balance link and said seat, a second, rear mounting link pivotally interconnecting the backrest and a rear end portion of said balance link, said first pivot means being located intermediate the connections of said front and rear mounting links to said balance link, and restraining means preventing pivoting movement of said balance link relative to said frame when the chair moves from a normal to said partially reclined position but permitting pivotal movement of said balance link about said first pivot means relative to said frame under actuation by said rear mounting link when the backrest is moved to a further reclined position beyond said partially reclined position, said linkage means including a third, rear mounting link pivotally connected to said backrest and pivotally connected to said frame forwardly of said second rear mounting link, the pivotal connection between said third mounting link and said backrest acting as a fulcrum for said back rest when moving beyond said partially reclined position to a further reclined position, said first pivot means

being located forwardly of the pivotal connection of the third mounting link to the frame.

3,865,433
ENERGY ABSORBING RESTRAINT FOR PASSENGERS

David F. Stafford, 3504 N. Dale, Spokane, Wash. 99206
Continuation-in-part of Ser. No. 122,946, March 10, 1971, abandoned. This application Apr. 4, 1973, Ser. No. 347,774
Int. Cl. B60r *21/02*
U.S. Cl. 297—390 **10 Claims**

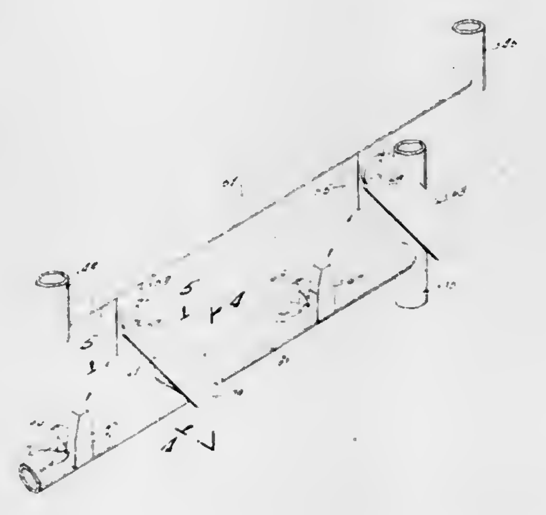


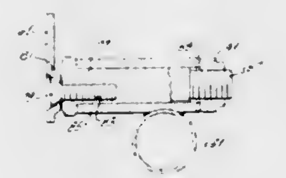
1. A vehicle occupant restraint for restraining movement of a vehicle occupant seated on a vehicle seat assembly having a substantially horizontal seat and an upright seat back in conjunction with a flexible seat belt extending forward along both sides of the seated occupant and transversely across in front of the occupant, comprising:
side panels adapted to straddle the occupant, said side panels adapted to rest on the horizontal vehicle seat with exterior side surfaces adapted to engage the seat belt as the seat belt extends forward;
a substantially straight bending beam section extending between the side panels and adapted to extend across the lap of the seated vehicle occupant with the ends of the beam connected with the side panels;
said bending beam section having a forward substantially straight longitudinal surface, said longitudinal surface adapted to support the seat belt in normally rectangular configuration in conjunction with the surfaces of the side panels;
said bending beam member having a rear surface adapted to oppose the occupant and adapted to be forcibly contacted by the occupant during sudden forward deceleration of the vehicle associated with a vehicle crash;
said bending beam section being formed entirely of self-supporting material free of internal or external rigid reinforcement elements and being of sufficient tensile strength to enable the bending beam section to progressively significantly bend outwardly into an arcuate displacement configuration between the side panels and against the seat belt, placing the forward surface of said beam in longitudinal tension and the rear surface of said beam in longitudinal compression and thereby progressively absorbing the kinetic energy of the occupant as the bending beam is being deflectively bent into the arcuate configuration without forcibly rebounding the occupant against the upright back seat.

3,865,434
ROTATING WHEELCHAIR ARM

Fenton F. Sully, Encino, Calif., assignor to Everest & Jennings, Inc., Los Angeles, Calif.
Filed July 20, 1973, Ser. No. 381,512
Int. Cl. A47c *7/54*
U.S. Cl. 297—417 **7 Claims**

1. A wheelchair, comprising:
a wheelchair frame;
an armrest, said armrest including a first interconnecting anchor member, said first interconnecting member being a hollow square tuube depending from and rigidly attached to said armrest;
a pair of links, each pivotally mounted at one end to said frame and at the opposite end to said armrest to provide arcuate movement of said armrest relative said frame between a first and a second position; and
a second interconnecting member, said second interconnecting member comprising an upstanding dog which is rectangular in cross section and rigidly attached to said wheelchair frame, said second interconnecting member having a trapezoidal upper extremity, said first and second interconnecting members positioned to engage with one another when said armrest is in said first position.





2. A wheelchair, comprising:
a wheelchair frame;
an armrest, said armrest including a first interconnecting anchor member;
a pair of links, each pivotally mounted at one end to said frame and at the opposite end to said armrest to provide arcuate movement of said armrest relative said frame between a first and a second position;
a second interconnecting member, attached to said wheelchair frame, said first and second interconnecting members positioned to engage with one another when said armrest is in said first position; and
means for adjusting the center of rotation of each of said pair of links relative said wheelchair frame.

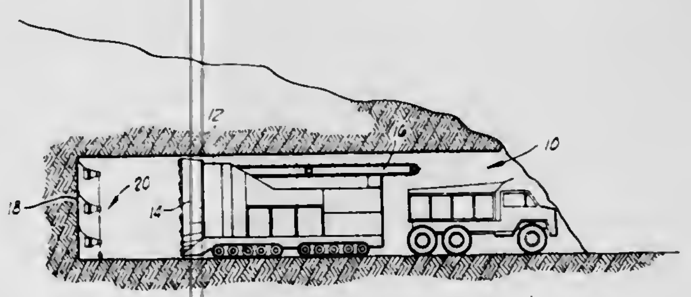
3,865,435
STIMULATION OF RECOVERY FROM UNDERGROUND DEPOSITS

Sarvajit S. Sareen, 24 Concord Ave., Cambridge, Mass. 02138; Lucien Girard, III, Prescott Rd., Boxboro, Mass. 01719, and Robert A. Hard, Still River, Mass. 01467
Filed Dec. 6, 1973, Ser. No. 422,233
Int. Cl. E21c *41/06*
U.S. Cl. 299—5 **5 Claims**

1. In a hydrometallurgical operation for the in-situ underground mining of a low grade copper-containing formation by the use of a copper leaching solution for extracting copper values from said formation, the improvement which comprises the step of prior to contacting said copper-containing formation with said leaching solution, the formation is contacted with an aqueous hydrogen peroxide solution containing a stabilizing agent therefor and whereby said agent reacts with the copper-containing formation to form a precipitate and the resultant substantially unstabilized hydrogen peroxide decomposes to form a gaseous medium which causes additional fracturing of the formation whereby greater leaching efficiency and copper loading is achieved with the subsequent copper leaching step.

3,865,436
METHOD OF BORING THROUGH HARD ROCK FORMATIONS

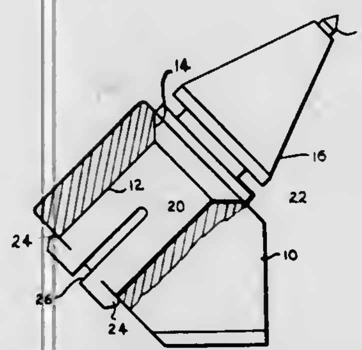
Vernon R. Dorrough, Grapevine, and Claude H. Brown, Arlington, both of Tex., assignors to Jet Research Center, Inc., Arlington, Tex.
Filed Dec. 6, 1973, Ser. No. 422,445
Int. Cl. E21c *37/00*
U.S. Cl. 299—13 **11 Claims**



1. A method of excavating rock comprising the steps of:
a. placing at least two shaped charges on the face of the rock to be excavated so that the spacing between the center lines of said charges is greater than the diameter of said charges by a factor greater than 7 and so that upon detonation the energy from said charges is directed inwardly from the face of said rock whereby a portion of said rock is softened but not substantially fragmented;
b. detonating said charges; and
c. mechanically removing the portion of said rock softened by the detonation of said charges.

3,865,437
ROTARY MINING TOOL RETAINING STRUCTURE

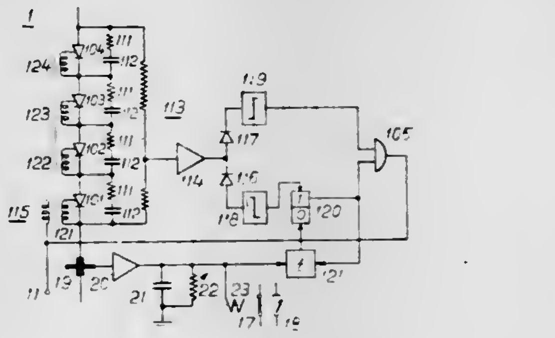
Melvin A. Crosby, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Aug. 16, 1973, Ser. No. 388,725
Int. Cl. E21c *35/18*
U.S. Cl. 299—86 **11 Claims**



1. An excavating tool comprising coaxial forward and rearward portions and adapted for assembly with a support member, said forward portion tapering inwardly to a point at the front end and said rearward portion being substantially circular in cross section at each axial point therealong and adapted for being closely but freely rotatably received in a bore in the support member with the forward portion of the tool protruding axially from the forward end of the bore and with the rearward portion of the tool protruding at the rearward end from the rear end of the bore, an element of abutment means on said tool adapted for engagement with an element of abutment means on the support member to sustain working thrusts imposed on said tool in the rearward direction, said rearward portion of the tool comprising at least one radially resilient region integral therewith near the rearward end of said rearward portion, and at least one projection on the radially outer side of said radially resilient region protruding radially therefrom and adapted for engagement with the support member rearwardly of the rear end of the bore in the support member for releasably and freely rotatably retaining the tool in assembled relation with the support member, said tool being drivable into and out of the bore in the axial direction.

3,865,438
PROTECTION MEANS AGAINST AUTO-IGNITION FOR THE RECTIFIERS OF A STATIC CONVERTER

Carl Ingvar Boksjo, and Karl Erik Olsson, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Feb. 2, 1970, Ser. No. 7,843
Claims priority, application Sweden, Feb. 14, 1969, 2025/69
Int. Cl. H02m *1/18*
U.S. Cl. 321—13 **5 Claims**



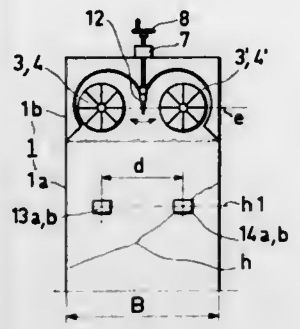
1. Static converter having thyristor-rectifiers, each rectifier of the converter being provided with a protection means against auto-ignition comprising a means sensing the polarity of the voltage over the rectifier, an And-gate, said sensing means including means to emit a first signal to said And-gate when the voltage after a commutation becomes negative and a second signal when the voltage after a commutation becomes positive, means connecting the And-gate to the ignition system of said rectifier to supply both signals thereto, the connecting means for the first signal including a delay device which delays the signal a certain predetermined time corresponding to the longest recovery time for said thyristors of the rectifier so that if the second signal is emitted during this time an ignition signal is allowed to pass the And-gate.

3,865,439
APPARATUS FOR DEPOSITING FIBER FLOCK IN A CHUTE

Robert Moser, Winterthur, and Paul Staheli, Wilen near Wil, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Dec. 29, 1972, Ser. No. 319,869
Claims priority, application Switzerland, Jan. 4, 1972, 61/72
Int. Cl. B65g *53/40*
U.S. Cl. 302—59 **15 Claims**

1. Apparatus for separating opened fiber flocks from a fiber-flock-laden transporting air stream into a stationary depositing chute connected to a stationary pneumatic transporting duct, said chute having an entrance at one end and means for draining air therefrom below said entrance and retaining a fiber flock column therein characterized in having an adjustable deflecting means for deflecting the fiber-flock-laden transporting air stream in a direction across the width of said chute, said deflecting means being located between a portion of said chute connected to said duct and a flock deposit position in said chute, and at least two sensing means in said chute for sensing the height of a flock column in said chute, said sensing means being disposed at the same height

relative to said chute and in spaced relation to each other, each said sensing means being connected to said deflecting means to individually activate said deflecting means in response to the detection of a portion of the flock column at said height.



3,865,440
A HYDRAULIC BRAKING SYSTEM WITH A PLURALITY OF BOOSTER CONTROL VALVES CONNECTED IN SERIES

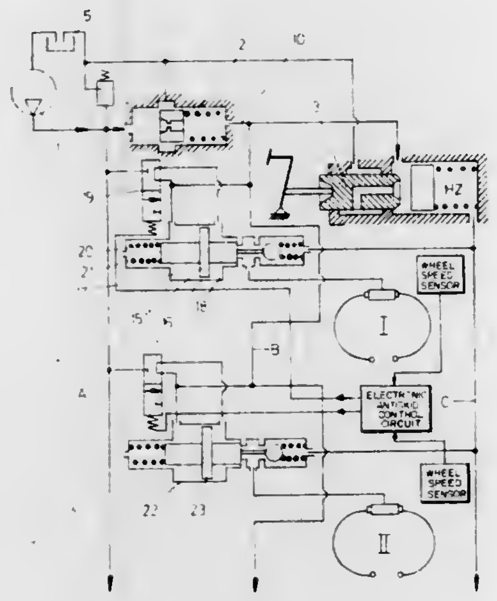
Fritz Ostwald, Buchschlag, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed June 11, 1973, Ser. No. 369,019

Claims priority, application Germany, July 28, 1972, 2237030

Int. Cl. B60t *8/06, 13/12*

U.S. Cl. 303—21 F **9 Claims**



1. a hydraulic boosting system comprising:
- a hydraulic pump having an input and an output;
- a hydraulic medium reservoir having an input and an output directly connected to said input of said pump;
- *n* hydraulic boosting control valves each having an input and an output, said output of one of said control valves being directly connected to said input of an adjacent one of said control valves to connect said control valves in series with each other, where *n* is an integer including one, said output of a last of said control valves being directly connected to said input of said reservoir to place said reservoir in series with said control valves and said input of said pump;
- a by-pass flow governor having an input directly connected to said output of said pump and a control-valve-side output directly connected to said input of a first of said control valves to place said pump and said governor in series with said control valves and said reservoir; and
- at least one hydraulic control device for an antiskid system directly connected to said input and said output of said governor to place said control device in parallel with said governor.

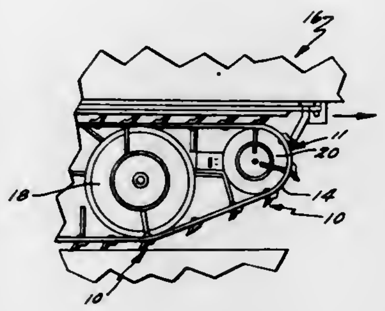
3,865,441
PENETRATING STUD FOR SNOWMOBILES

James D. Jolliffe, 2411 Maple Valley, Grand Rapids, Mich. 49508

Filed Sept. 28, 1973, Ser. No. 401,867

Int. Cl. B62d *55/24*

U.S. Cl. 305—54 **14 Claims**



6. A traction device for an endless track-propelled vehicle comprising:
- a stud having an elongated, generally rectangular body, said body having a generally flat planar mounting surface and a depending rectangular peripheral wall having rear, side and front portions, the rear portion of said wall being downwardly and rearwardly inclined, and having a pair of spaced downwardly projecting, surface-penetrating spurs, said rear portion of said wall extending substantially below said forward portion thereof.

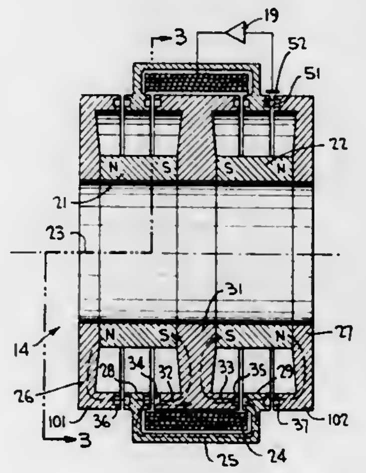
3,865,442
MAGNETIC BEARING

Philip A. Studer, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 22, 1970, Ser. No. 100,637

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **24 Claims**



1. A magnetic bearing comprising a low reluctance magnetic circuit having first and second air gaps in a magnetic series path, first magnet means coupled to said circuit for producing oppositely directed magnetic fluxes in the air gaps, and second magnet means coupled to said circuit via a low reluctance path excluding the first magnet means for producing similarly directed magnetic fluxes in the air gaps.

3,865,443
RESILIENT SIDE BEARINGS

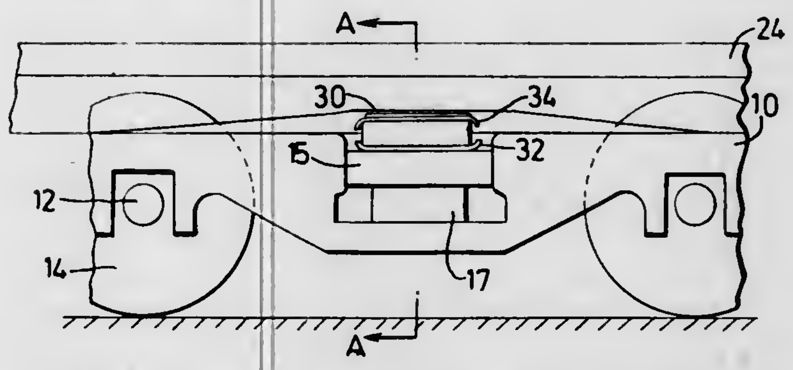
Raymond Frederick James, Bradford-on-Avon, England, assignor to Avon Rubber Co., Limited, Melksham, Wiltshire, England

Continuation-in-part of Ser. No. 198,237, Nov. 12, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 394,272

Claims priority, application Great Britain, Nov. 13, 1970, 54124/70; Canada, Nov. 12, 1971, 127475

Int. Cl. B61f *5/14;* **F16c** *17/04;* **F16f** *13/02*

U.S. Cl. 308—138 **8 Claims**



1. A railway vehicle resilient bearer for positioning between a vehicle body and a bogie to frictionally engage one of them, the bearer having two opposed plates, and a resiliently compressible thick-walled, open-ended hollow tube of elastomeric material between the plates with its axis parallel to the plates, respective ones of the two said plates being secured against repsective ones of opposite faces of the tube to extend generally parallel to each other, whereby upon the plates moving towards each other the tube is compressed in its radial direction against the resilience of the elastomeric material of the tube, and restraint upon the plates moving parallel to each other is provided by the elastomeric material of the tube.

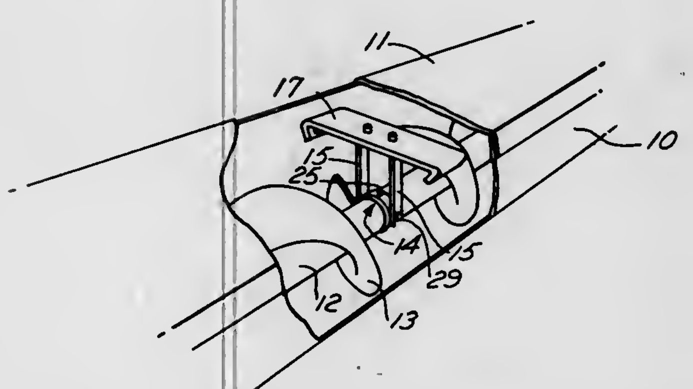
3,865,444
SCREW CONVEYOR HANGER BEARING

Gilbert V. Lavoie, 311 Elm St., Raynham, Mass. 02767

Filed June 27, 1973, Ser. No. 373,976

Int. Cl. F16c *1/24*

U.S. Cl. 308—187.1 **3 Claims**



1. In an internally mounted screw conveyor shaft hanger bearing assembly, the combination with a tubular screw conveyor shaft of a coupling shaft means, said coupling shaft means having a stepped section of two diameters, an antifriction bearing received about the lesser of the two diameters, a hanger housing extending about the bearing and forming an outer race therefor, said housing having an extension portion slidingly received on the greater of the diameter of said shaft coupling means, said housing extension having a reduced annular portion, the tubular conveyor screw shaft slidingly received about the reduced annular portion, means securing together said tubular shaft and said coupling shaft for rotation and means affixed to the central portion of the housing to support the housing in position, whereby a labyrinth is formed from the bearing to the outside of the conveyor shaft.

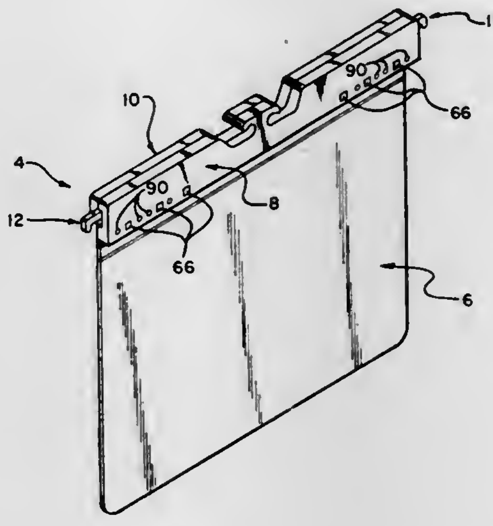
3,865,445
HANGING BINDER

Carl J. Dean, Southbridge, and David M. Wright, Shrewsbury, both of Mass., assignors to Barry Wright Corp., Watertown, Mass.

Filed Feb. 26, 1973, Ser. No. 335,718

Int. Cl. A47b *63/00*

U.S. Cl. 312—184 **1 Claim**



1. A rail mountable filing device comprising an elongate suspension unit formed of two elongate mutually-confronting members, one of said elongate members comprising a plurality of integral studs and the other of said elongate members comprising a plurality of cavities, said studs being disposed in said cavities and secured to said other elongate member whereby said elongate members are joined to one another, at least one of said elongate members having along its upper side and intermediate its ends at least one mounting means for mounting said device to at least one supporting rail, and a pair of suspension elements mounted to said suspension unit at the opposite ends thereof, each of said suspension elements having a hooked end portion, said suspension elements being disposed in channels defined at least in part by one of said elongate members, said suspension elements being slidable in said channels between (1) a first extended position in which said hooked ends extend beyond the ends of said elongate members in position to interlock said device to and between a pair of spaced supports, and (2) a second retracted position in which said hooked ends are retracted substantially fully within said pair of spaced supports, and detent means for releasably locking said suspension elements in either of said first and second positions, said detent means comprising a pair of spaced first and second openings in one of said elongate members adjacent each end thereof, a resilient detent section formed integral with each of said suspension elements, and a projection on each detent section, said detent sections being disposed so that said projections will enter and provide a detent action with said first and second openings when said suspension elements are moved to said first and second positions respectively.

3,865,446
STORAGE MEANS WITH SHIFTABLE UNITS

Pasquale Patrick John Mastronardi, Northfield, N.J., assignor to Estey Corp., Red Bank, N.J.

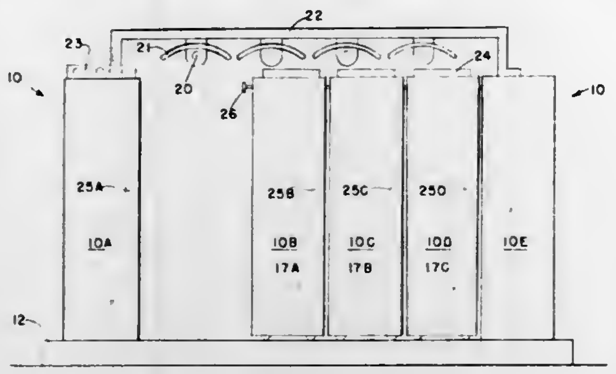
Filed Dec. 4, 1972, Ser. No. 311,660

Int. Cl. B60m *1/34;* **A47b** *53/00*

U.S. Cl. 312—201 **8 Claims**

1. In a shiftable storage means including a plurality of movable stacks, supporting means for each of said stacks, including a reversible electric motor and two relay means for each of said stacks for controlling the direction of the motors and stacks, and a plurality of safety switches secured to the sides of each movable stack for cutting off the current to the motors when the stacks move too close to each other; the improvement which comprises: a normally open pair of relay contacts

mounted on one of said relay means for completing a bypass circuit around a safety switch on an adjacent stack for permitting both stacks to be moved in unison in a desired direction to open a space between stacks.



3,865,447

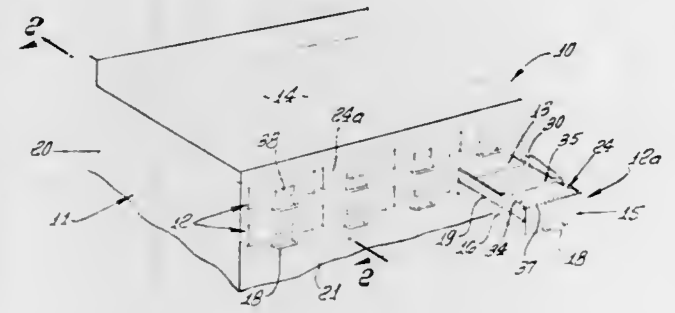
PRESCRIPTION FORM FILING SYSTEM

Richard J. Patterson, 2170 Century Park East, Los Angeles, Calif. 90067

Filed Feb. 20, 1973, Ser. No. 334,139

Int. Cl. A47b *81/00;* **B42f** *21/00*

U.S. Cl. 312—234.2 **1 Claim**



1. In prescription form filing, and data entry equipment, the combination comprising

a. a cabinet including a pull-out drawer carried for longitudinally forwardly outward movement relative to the cabinet to expose multiple prescription forms filed in the drawer, the drawer having a front vertical panel,

b. a writing shelf carried by the drawer to have a generally horizontal position in which the entirety of the shelf overlies the upper front interior portion of the drawer, the shelf upper side receiving a prescription form having multiple prescription entry zones and multiple auxiliary zones,

c. hinge means on the drawer supporting the shelf for swinging movement through above 270° between extended horizontal writing position as defined, and retracted vertical position in which the reverse side of the shelf is forwardly exposed at the front side of the drawer front panel and the lower edge of the shelf is above the level of the drawer underside, the entirety of the shelf in said retracted position extending closely adjacent and parallel to said drawer front panel,

d. a grid carried by the shelf upper side for movement in overlying relation to the prescription form received on the shelf, the grid having cutaways corresponding to said zones characterized in that said grid movement sequentially exposes, for viewing, corresponding pairs of said zones, each pair including one prescription entry zone and one of said auxiliary zones, the grid cancealed between the shelf and drawer front panel when the shelf is retracted, said cutaway to successively overlie and expose said prescription entry zones, and multiple laterally and longitudinally offset cut-aways arranged to successively overlie and expose said auxiliary zones adapted to receive entry of prescription price data, in response to advancement of the grid relative to the prescription,

e. guide means on the shelf for guiding grid forward and rearward movement relative to the shelf and for retaining the prescription form thereon,

f. and a label carrier on said reverse side of the shelf.

3,865,448

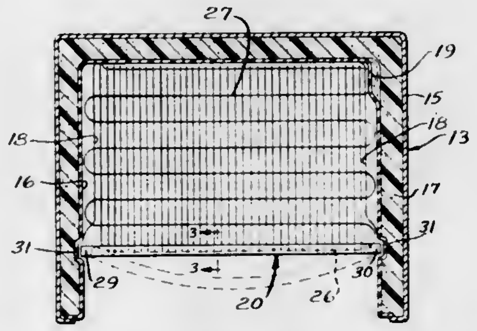
SHELF RETAINER

Sylvester A. Winterheimer, Evansville, Ind., assignor to Whirlpool Corp., Benton Harbor, Mich.

Filed Oct. 9, 1973, Ser. No. 404,191

Int. Cl. F25d *11/00;* **A47h** *1/14*

U.S. Cl. 312—311 **12 Claims**



1. In a refrigerator having an outer cabinet, a shelf having side edges and a front edge, a liner within said cabinet including side walls having support means for supporting the side edges of the shelf within said liner, and retainer means for retaining said shelf on said support means, said retainer means comprising: means on said liner defining first retaining means adjacent said front edge of said shelf; and a deformable member embracing the front edge of said shelf, said deformable member having an upper portion overlying said front edge of the shelf, and opposite ends defining second retaining means cooperating with said first retaining means to prevent movement of said shelf front edge upwardly and forwardly from said support means.

3,865,449

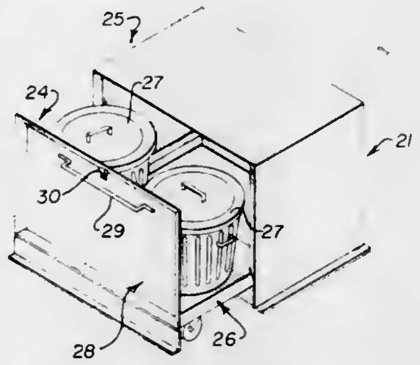
GARBAGE ENCLOSURE

Sadler C. McCaslin, and Wilbur J. Smith, both of Phoenix, Ariz.

Filed Mar. 2, 1972, Ser. No. 231,098

Int. Cl. A47b *97/00*

U.S. Cl. 312—352 **1 Claim**



1. A garbage enclosure comprising:

a. A generally box-like enclosure having an opening in one wall thereof and being otherwise closed;

b. A movable cart including:

  1. A generally horizontal base member constructed and arranged for carrying at least one garbage container; and
  2. A generally vertical rear member constructed and arranged to close said opening when said movable cart is moved into said generally box-like enclosure.

c. Said garbage enclosure including a locking device constructed and arranged to maintain said rear vertical member in said opening;

d. Said generally box-like enclosure including a first bug barrier adjacent its bottom, said first bug barrier comprising an angle attachment extending from about a 45° angle to about a 60° angle downward from the horizontal;

e. Said movable cart including a second bug barrier around the circumference from said generally horizontal base member, said second bug barrier comprising an angle attachment extending from about a 45° angle to about a 60° angle downward from the horizontal;

f. Said movable cart including wheels; and

g. The border of said generally vertical rear member and the border of said opening being constructed and arranged to provide a seal when said generally vertical rear member is moved into said opening, said borders comprising matched angle attachments.

3,865,450

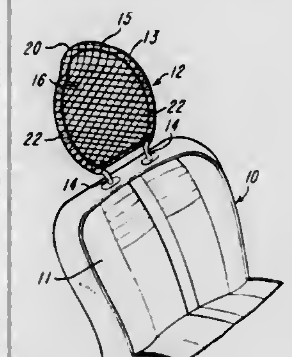
SAFETY HEAD REST FOR AUTOMOBILE SEATS AND THE LIKE

Matthias Bruenig, 23 Parchimerstrasse, Hamburg, Germany

Filed Apr. 19, 1973, Ser. No. 352,547

Int. Cl. A47c *1/10, 7/12*

U.S. Cl. 297—397 **7 Claims**



1. An improved safety head rest unit for an automobile seat, comprising a substantially rigid frame having a pair of spaced leg portions each terminating with a lower portion adapted to be attached to the upper portion of the automobile seat, a net member mounted on said frame and including a front wall portion and a rear wall portion positioned in parallel spaced relation by said leg portions of said frame, at least said front wall portion and said rear wall portion of said net member being formed of a relatively coarse flexible netting material having sufficiently large openings to provide for a clear view through said wall portions, said leg portions of said frame having substantial thickness to provide for substantial spacing between said front and rear wall portions of said net member, and means operatively associated with said frame to maintain said front and rear wall portions of said net member in tension to effect rearward deforming of said front wall portion in response to an impact by a person's head until said front wall portion engages said rear wall portion and then combined rearward deforming of both said front and rear wall portions to assure a gradual increase in the resistance to rearward movement of the person's head.

3,865,451

SUSPENSION DEVICE FOR WORKPIECES TO BE TREATED IN AN ELECTRICAL GLOW DISCHARGE

Horst Rordorf, Weiningen, Switzerland, assignor to Elektrophysikalische Anstalt Bernhard Berhaus, Vaduz, Liechtenstein

Filed Aug. 8, 1973, Ser. No. 386,507

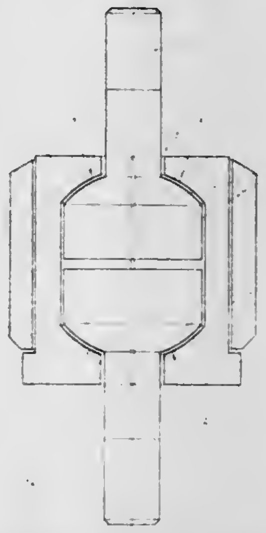
Claims priority, application Switzerland, Aug. 25, 1972, 12594/72

Int. Cl. H01r *39/64*

U.S. Cl. 339—8 R **3 Claims**

1. In a glow discharge device including a metal discharge container, a power source and an insulated current lead-in from one pole of said source into said container, a suspension device arranged within said container adapted to suspend workpieces to be treated by the glow discharge, the suspension device comprising:

an upper and a lower bolt disposed vertically in substantial axial alignment, the upper end of the upper bolt being conductively connected to said current lead-in, the lower end of the upper bolt having an enlarged head of which the upper portion is shaped with a convex surface; the upper end of said lower bolt being formed with an enlarged head adjacent but below said head of the upper bolt and having the lower portion shaped with a convex surface, the lower end of said lower bolt having means thereon for supporting workpieces;



a metallic housing electrically connecting said both bolts, said housing enclosing both said heads and providing play between the housing walls and the heads and between the heads, axially opposite ends of the housing having openings for the shafts of said bolts, the inner housing surfaces surrounding said openings being concave and providing surfaces slidably engaging said convex surface portions of said heads, so that the lower bolt carrying said workpieces is pendulous relative to the upper bolt and capable of swinging into a vertical position.

3,865,452

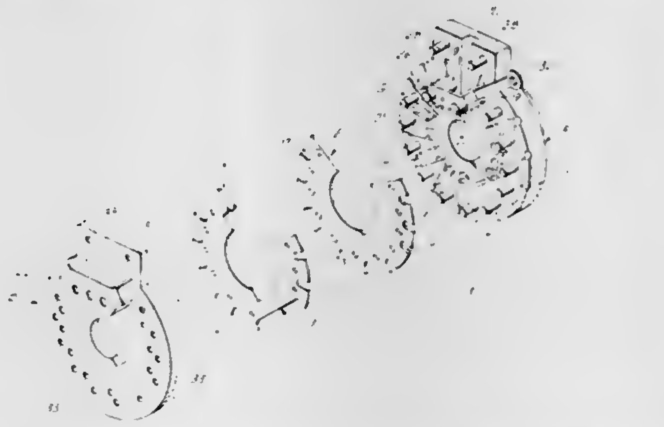
SPARK GAP PROTECTION IN CATHODE RAY TUBE SOCKETS

Robert B. Pittman, River Edge, N.J., assignor to Industrial Electronic Hardware Corp., New York, N.Y.

Filed Aug. 1, 1973, Ser. No. 384,701

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 T **23 Claims**



1. A tube socket for use with a tube having a first pin normally operating in a first potential range and a second pin normally operating in a second potential range, said socket comprising a support, first and second terminals mounted on said support and adapted to conductively receive said first and second pins respectively, first and second grounding means on said support, said first mounting means being spaced from said first terminal to form a gap therebetween and said second grounding means being spaced from said second terminal to form a gap therebetween, means for independently electrically connecting each of said grounding means to ground,

whereby a spark can independently bridge said gap between the respective means and the terminal associated therewith without affecting the order terminal.

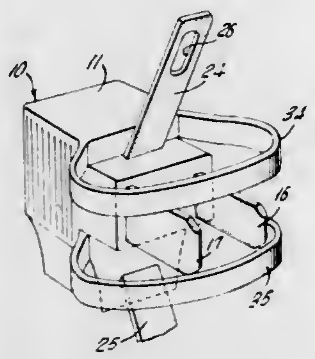
3,865,453
SAFETY ADAPTER FOR THREE-WIRE GROUNDING PLUG

Juan M. Lopez, New York, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Oct. 5, 1973, Ser. No. 403,914

Int. Cl. H01r *3/06, 13/50*

U.S. Cl. 339—14 R **4 Claims**



1. In an adapter for converting a two-wire parallel outlet to a three-wire ground outlet, said adapter having a body of insulating material with two parallel contact blades extending from a lower face thereof and spaced female contacts including a grounding contact on an upper face thereof, the improvement which comprises:

- a. a pair of ground straps connected to a ground contact in an adapter body;
- b. said ground straps having outer ends extending beyond the adapter body adjacent a lower face thereof and on opposite sides thereof;
- c. each of said ground straps having an outer end containing an opening for receiving a grounding screw; and
- d. collapsible guard means extending downwardly from the adapter body on opposite sides of parallel male blades of the adapter and positioned for engagement with an opposing face of a receptacle prior to engagement of said male blades with female contacts of a receptacle;
- e. said guard means comprising members collapsible to a flattened condition upon entry of the male blades into said female contacts.

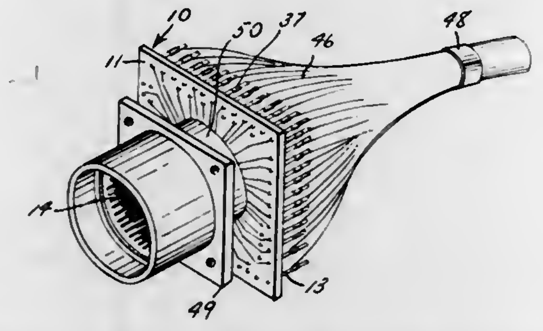
3,865,454
ADAPTER FOR HIGH DENSITY CONNECTORS

Marvin Blinder, Union, N.J., assignor to Loral Corp., New York, N.Y.

Filed July 18, 1973, Ser. No. 380,506

Int. Cl. H05k *1/04*

U.S. Cl. 339—17 C **3 Claims**



1. Means for interconnecting high density circuitry comprising in combination: a high density connector including a housing having pin contact retention means defining a plurality of closely spaced socket openings disposed in mutually parallel relation within said housing, and an adapter comprising a printed circuit board element having first and second planar surfaces, and having a generally centrally disposed area of size and configuration corresponding to said pattern of closely spaced openings in said connector, said area having a corresponding plurality of openings therethrough, a plurality of elongated pin contacts, each having one end thereof fixed within one of said plurality of openings, and extending outwardly substantially perpendicular to one of said planar surfaces; said circuit board element having a second generally peripherally disposed area having a second corresponding plurality of openings, and a plurality of lug connectors, each having one end fixed within said second plurality of openings; and a plurality of printed circuits, each interconnecting one pin contact with a corresponding lug connector to establish electrical communication therewith, said pin contacts being engaged within said high density connector, and a plurality of conductors attached to said lug connectors.

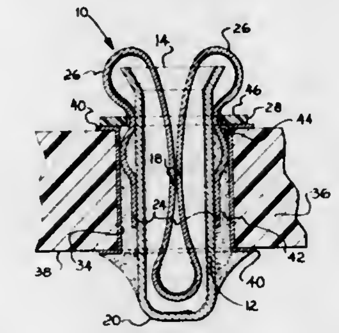
3,865,455
CIRCUIT BOARD SOCKET

Quentin Berg, deceased, late of Cumberland County, Pa. (by Frances H. Berg, executrix), and New Cumberland, Pa., assignors to E. I. Dupont de Nemours & Co., Wilmington, Del.

Filed Dec. 6, 1973, Ser. No. 422,436

Int. Cl. H01r *9/12, 11/00;* **H05k** *1/02*

U.S. Cl. 339—17 C **8 Claims**



6. A contact system comprising a support having a socket-receiving hole formed therein, a socket inserted in the hole in the support including an elongate hollow body having an open end located outwardly of the support, contact means within the body for forming an electrical connection with a lead inserted into the body through the open end, the exterior surface of the body located within the hole being spaced from the hole to form a solder flow path, solder in said path forming an electrical connection between the body and contact means on the support, and a collar closely fitted around the end of the body projecting from the hole and engaging the support so that the collar closes the solder flow path between the body and the hole.

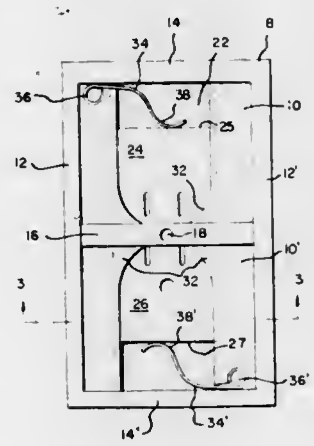
3,865,456
COVER PLATE FOR ELECTRICAL OUTLET

Frank Peter Dola, Port Richey, Fla., assignor to AMP Inc., Harrisburg, Pa.

Filed Aug. 2, 1973, Ser. No. 385,121

Int. Cl. H01r *13/54*

U.S. Cl. 339—40 **3 Claims**



3. Cover plate means for a dual electrical receptacle unit, said unit having first and second electrical receptacles, each of said receptacles having two plug blade openings and having a grounding pin opening, said plug blade openings and grounding pin opening being adapted to receive the blades and the grounding pin respectively of an electrical plug, said blade openings and pin opening of each of said receptacles forming an isosoles triangle, and the two receptacles of the unit being located with the pin opening of the first receptacle adjacent to the blade openings of the other receptacle; said cover plate means comprising:

- a flat plate member having first and second windows therein and having an integral bar extending between said windows,
- first and second shutters in said plate member, said shutters being slidable towards and away from each other, spring means biasing said shutters towards and against said bar, said first shutter having two shutter blade openings therein which are spaced from said bar, said shutter blade openings in said first shutter comprising a pair of parallel slots which extend
- parallel to the direction of sliding movement of said first shutter whereby,
  - upon moving said first shutter away from said bar, said shutter blade openings of said first shutter are brought into alignment with said blade openings of said first receptacle and said first shutter moves beyond said pin opening of said first receptacle thereby to permit insertion of a plug into said first receptacle,
- said second shutter having a pair of blade openings therein which are immediately adjacent to said bar and having a pin opening therein which is relatively remote from said bar, said blade openings in said second shutter comprising a pair of parallel slots which extend parallel to the direction of sliding movement of said shutter and which extend to the edge of said shutter which is against said integral bar whereby,
- upon moving said second shutter away from said bar, said blade openings of said second shutter are brought into alignment with said blade opening of said second receptacle and said pin opening is brought into alignment with said pin opening of said second receptacle thereby to permit insertion of a plug into said second receptacles.

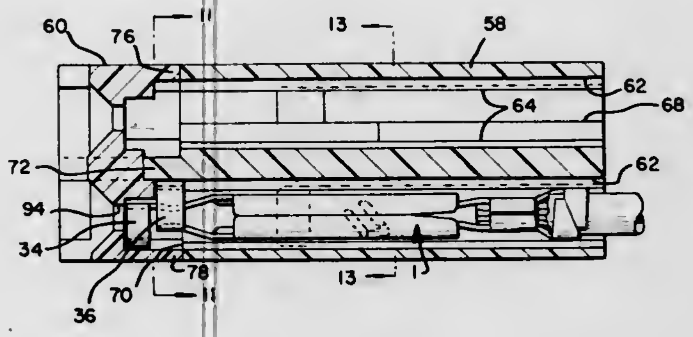
3,865,457
LOW INSERTION FORCE RECEPTACLE AND CAMMED HOUSING

Clyde Thomas Carter, Shermansdale, Pa., assignor to AMP Inc., Harrisburg, Pa.

Filed June 4, 1973, Ser. No. 367,072

Int. Cl. H01r *13/62*

U.S. Cl. 339—74 R **7 Claims**



1. A zero insertion force connector having at least one gripping electrical terminal mounted within a housing of dielectrical material, the improvement comprising: said housing having a cover portion provided with an aperture corresponding to said terminal position in said housing, said terminal having a pair of contact fingers projecting into the aperture of said cover, said cover being mounted on said housing for translation to a first position biasing said terminal fingers to open positions defining a receptacle throat area adjacent said aperture of said cover, said cover portion being biased to a second position allowing said terminal fingers to deflect resiliently toward each other into closed positions narrowing said receptacle throat area, said fingers having channel configurations which are in alignment with each other to define said receptacle throat area and which are biased past each other to define said narrowed throat area.

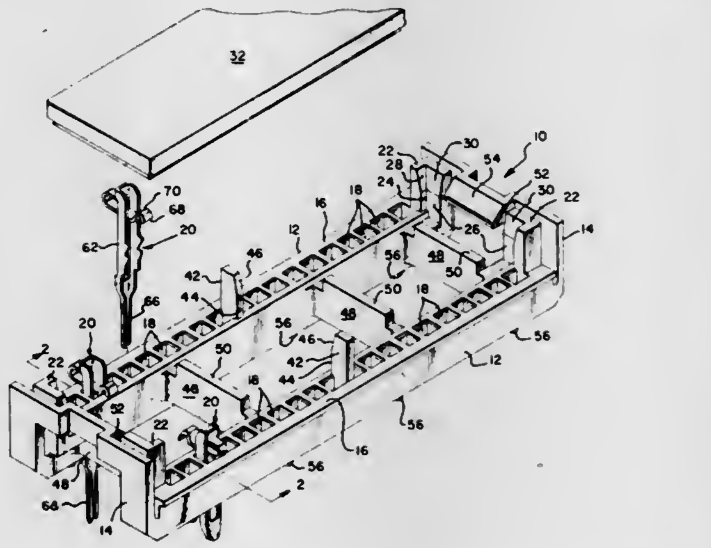
3,865,458
CIRCUIT PANEL CONNECTOR

William Vito Pauza, and Edward Michael Poltonavage, both of Palmyra, Pa., assignors to AMP Inc., Harrisburg, Pa.

Division of Ser. No. 158,778, July 1, 1971, Pat. No. 3,754,203. This application June 20, 1973, Ser. No. 371,806

Int. Cl. H01r *13/54*

U.S. Cl. 339—91 R **4 Claims**

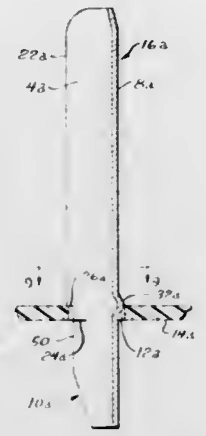


3. An electrical connector for connecting external circuitry to terminal pads located on one face of a thin rectangular substrate, said terminal pads being arranged in two parallel rows which extend along marginal opposed side portions of said substrate, said connector comprising:

- an open rectangular housing frame having parallel spaced-apart side rails and end rails extending between, and connecting, the ends of said side rails, said side rails being spaced apart by a distance which is substantially equal to, and slightly greater than, the width of said substrate as measured between said side pads,
- a plurality of electrical contact terminals mounted in, and extending through, said side rails, said terminals being spaced apart in each of said side rails by distances corresponding to the spacing between said terminal pads, said terminals having first end portions extending beyond one face of said frame, said first end portions defining a substrate receiving zone,
- each of said terminals having on said first end portion a resilient cantilever arm extending inwardly of said frame and into said substrate receiving zone for engagement with one of said terminal pads,
- each of said terminals having connecting means extending beyond the other face thereof for forming electrical connections with said external circuitry,
- substrate holding means on said end rails for engagement with end portions of said substrate to hold said substrate in said zone with said terminal pads in engagement with said cantilever arms, and
- locating means on said side rails for locating said substrate in said substrate receiving zone with said pads in contact with said cantilever arms, said locating means being engageable with edges portions of said substrate whereby,
- upon placement of said substrate in said zone and engagement of said holding means with said substrate, said terminal pads will be connected to said contact terminals and to said external circuitry by means of said connecting means.

3,865,459
ELECTRICAL TERMINAL

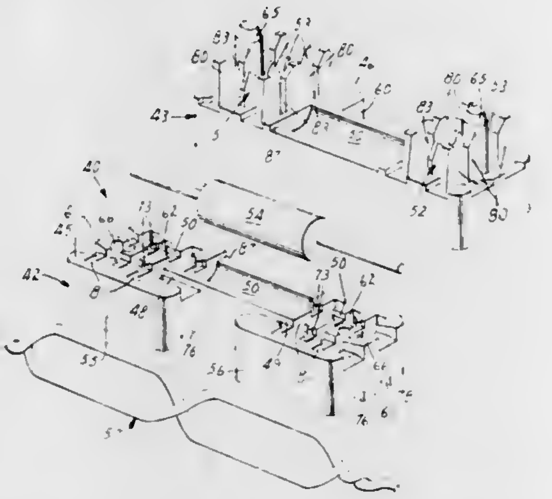
Terence L. Mills, Hook End near Brentwood, England, assignor to Molex Inc., Lisle, Ill.
Filed Aug. 8, 1973, Ser. No. 385,404
Int. Cl. H01r *9/06*
U.S. Cl. 339—95 R **10 Claims**



1. An electrical terminal comprising a one-piece elongated sheet metal body that defines a U-shaped channel with spaced apart legs that are joined by a bight, said channel-body having an entrance portion for insertion into an aperture in a printed circuit board and a trailing portion for connection to an electrical component, said entrance portion comprising shoulder means on said legs, and a slit formed in each of said legs at locations spaced from the corresponding shoulder means, said slit extending generally parallel to said shoulder means, the leg sections below said slit being flared outwardly with respect to the leg sections upon which said shoulder means are formed, to define edge portions, such that upon engagement of said entrance portion in said aperture, said leg sections will yield during passage through said aperture, but will snap into locking position upon passage therethrough, with said edge portions engaging one surface of said printed circuit board while said shoulder means is engaged with the other, opposed surface of said board.

3,865,460
COMPONENT CONNECTOR

Thomas M. Cherney, and John O. Knudson, both of Minneapolis, Minn., assignors to Minnesota Mining and Mfg. Co., Saint Paul, Minn.
Filed Apr. 30, 1973, Ser. No. 355,456
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 **7 Claims**

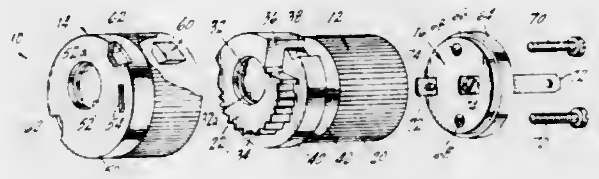


1. In a connector of the type comprising first and second body portions each having opposite end surfaces, opposite side surfaces, a mating surface, and an outer surface opposite said mating surface; and means for positioning and retaining the body portion in a closed position with said mating surfaces in contact, said first body portion having two channels in its mating surface each adapted to receive a wire, and said body portions having depressions in said mating surfaces defining, when said body portions are in their closed position, a cavity adapted to receive an electrical component having a contact wire extending from each of its ends, said connector further comprising two resilient contact members each mounted in said second body portion and having fingers defining spaced wire receiving slots therebetween, one contact element having fingers extending across one of said channels and one end of said cavity and the other contact element having fingers extending across the other of said channels and the other end of said cavity when said body portions are in said closed position so that said contact elements will electrically connect a component in said cavity to wires in said channels; the improvement, wherein:

the first body portion has two spaced projections defining one side surface and has an opening between said projections along said one side surface between said mating surface and said outer surface, one end of the component receiving cavity is adjacent one of said projections and the other end of the component receiving cavity is adjacent the other of said projections, and one of said channels extends across one of said projections from one of said end surfaces to said opening and the other of said channels extends across the other of said projections from the other of said end surfaces to said opening.

3,865,461
HEAVY DUTY ELECTRICAL CONNECTOR AND STRAIN RELIEF THEREFOR

Melvin Ludwig, Great Neck, N.Y., assignor to Eagle Electric Mgf. Co. Inc., Long Island City, N.Y.
Filed Oct. 10, 1973, Ser. No. 405,027
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R **9 Claims**

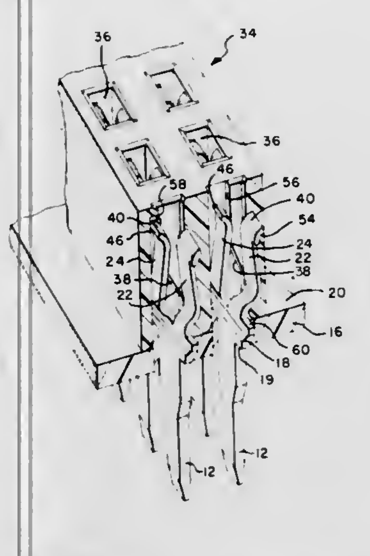


9. A heavy duty electrical connector adapted to be secured to an end of an insulated electrical cable having conductive cores, said connector comprising:

a. a body section including a transverse wall having an eccentrically disposed through opening for passing the cable therethrough;
b. a cap section telescopically associated with said body section, said cap section including a transverse wall having an eccentrically disposed through opening for passing the cable therethrough, said openings being of the same radius of eccentricity, said opening in said cap section initially being in substantial alignment with said opening in said body section, said cap section being angularly rotatable relative to said body section in a first direction to progressively shift said openings out of alignment thereby to distort and clamp the insulation of the cable between opposed edges of said openings;
c. means limiting the angular rotation of said cap section to said first direction so as to lock said cap in cable clamping position, said limiting and locking means comprising a ratchet and a cooperating pawl,
d. contacts carried by said body section, said contacts including means for electrically and mechanically coupling the conductive cores of the cable thereto; and
e. manually operable means for selectively disabling the limiting and locking means.

3,865,462
PRELOADED CONTACT AND LATCHABLE HOUSING ASSEMBLY

Robert Franklin Cobaugh, Elizabethtown, and James Ray Coller, Mechanicsburg, both of Pa., assignors to AMP Inc., Harrisburg, Pa.
Filed Mar. 7, 1973, Ser. No. 338,803
Int. Cl. H01r *13/50, 13/12*
U.S. Cl. 339—176 M **5 Claims**



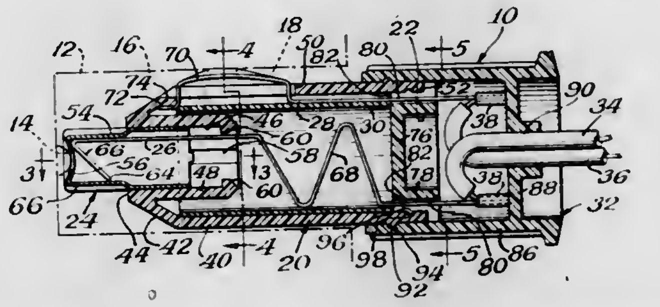
1. A connector comprising:

a terminal having a post portion integral with a bifurcated section defining a pair of resilient leaf spring contacts pivotable by resilient cantilever deflection in mutually exclusive planes of pivotable motion, said leaf spring contacts having laterally opposed contact making surfaces which together define a receptacle having a given width,
a housing having interior sidewalls defining an opening receiving said leaf spring contacts,
first opposing sidewalls of said opening spaced apart by a distance slightly greater than said given width and having respective undercut and respectively oppositely inclined sidewall portions camming corresponding leaf spring contacts resiliently in cantilever deflection and in opposite directions within said mutually exclusive planes of pivotable motion,
said leaf spring contacts having means in engagement with said undercut sidewall portions for maintaining said leaf spring contacts in oppositely deflected positions to define a receptacle extending therebetween,
second opposing sidewalls of said opening being initially in spaced relationship from said leaf spring contacts,
said leaf spring contacts being further resiliently pivotable by resilient cantilever deflection in said opposite directions to enlarge said receptacle for receipt of a male terminal therein, and
said leaf spring contacts being engageable against said second opposite sidewalls of said opening to limit said resilient cantilever deflection in said opposite directions.

3,865,463
ELECTRICAL ADAPTER PLUG

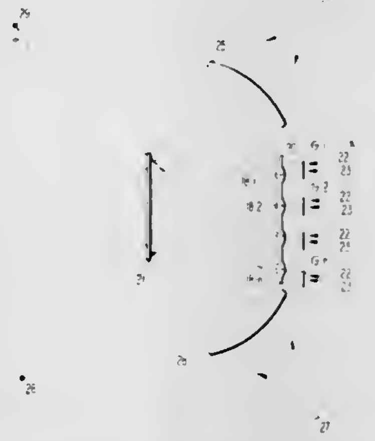
Albert G. Busch, Carefree, Ariz., assignor to A. G. Busch & Co. Inc., Chicago, Ill.
Filed Nov. 12, 1973, Ser. No. 414,734
Int. Cl. H01r *33/30*
U.S. Cl. 339—176 R **10 Claims**

1. An electrical connector for connecting electrical power leads to an electrical power source in cigarette lighter receptacles, said connector comprising, in combination, a unitary, substantially cylindrical housing having an outer periphery, sized and shaped for insertion into said receptacle, an axial bore at one end of said housing and an opening at the other opening of said housing, a peripheral opening in a side of said housing, a first contact member slidably carried in said axial bore and projecting axially outwardly beyond said housing for making electrical contact with a first source of electrical power in said receptacle, a closure member for said opening on said other end of said housing and defining a first enclosed chamber within said housing, cooperating interconnecting means unitary with and on both said housing and on said closure member for defining the sole means for interconnecting said closure member to said housing, a pair of spaced channel means defined between said housing and said closure member for providing communication between said chamber and the exterior of said housing, a first electrical conducting member positioned within said chamber and, at one end thereof, being in electrical conducting and biasing relationship with said first contact member, and at the other end thereof, projecting outwardly from said chamber through one of said channel means, and a second electrical conducting member positioned within said chamber and defining a second portion extending laterally outwardly beyond the periphery of said housing and through said peripheral opening in said housing, said second electrical conducting member providing electrical contact with a second power source in said receptacle, the rear portion of said second electrical conducting member projecting outwardly from said chamber and through the other of said spaced channel means.



3,865,464
FOCUSED-IMAGE HOLOGRAM MEMORY

Tadashi Kasahara, and Yoshiaki Kimura, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan
Filed Apr. 10, 1972, Ser. No. 242,538
Claims priority, application Japan, Apr. 10, 1971, 46-22089
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **5 Claims**



1. A method of recording and reproducing images wherein a plurality of different, unrelated images are recorded in superposition as a hologram comprising the steps of:

a. providing a plurality of different, unrelated microimages and a corresponding plurality of optical lenses which are disposed spatially adjacent each other within apertures in a mask;
b. illuminating said images with a coherent light beam to focus real images in superposition through said optical lenses onto a photosensitive recording material disposed at the image forming position of said optical lenses, each image being recorded on the same area of the recording medium;

c. illuminating, simultaneously with the above illuminating step, the photosensitive recording material with a reference light beam having a coherent relationship with said light beam and focused at a point at a finite distance from the side of said recording material opposite to the side on which the images are focused, thereby recording superposed image holograms on said recording material;
d. reproducing the recorded images by illuminating said photosensitive recording material with a slightly extended source of incoherent light positioned at said point; and
e. positioning a mask containing an observation aperture so that the aperture is located in a selected position corresponding to a selected one of said plurality of lenses to permit observation of a corresponding selected one of the reproduced images.

3,865,465

COMPENSATION SYSTEM FOR A POLYGONAL MIRROR SCANNING SYSTEM

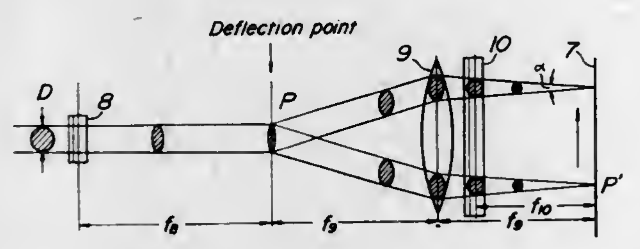
Sizuo Tatuoka; Teiichi Taneda, both of Kawasaki, and Meiki Aiko, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,629

Claims priority, application Japan, Mar. 29, 1972, 47-31303

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **1 Claim**



1. A compensation system for a light beam scanning system including a light source emitting a light beam, a polygonal mirror which rotates around its rotating axis so as to deflect an incident light beam emitted from the light source to scan a display screen along a scanning direction reflecting said light beam by said polygonal mirror and by focussing the reflected light beam by means of a converging lens having focal length f_9 on said display screen, the improvement comprising
a first cylindrical lens means having focal length f_8 inserted in the incident light beam path between the light source and the polygonal mirror so as to focus the incident light beam in one azimuth direction to form a beam having an elliptical cross section whose major axis defines a line on the polygonal mirror extending in a direction which is perpendicular to said rotating axis,
a second cylindrical lens means having focal length f_{10} inserted in the reflected light beam path between the converging lens and the display screen so as to focus the reflected light beam in one azimuth direction to form a scan line on the display screen in a direction coincident with the scanning direction of the light beam,
said second cylindrical lens means being arranged so as to converge the output light beam from said coverging lens in a direction perpendicular to the scanning direction of said light beam in such a way that the light beam has a circular cross section section between said second cylindrical lens and said display screen, and
the ratio (f_8/f_9) of the focal length (f_8) of said first cylindrical lens means to the focal length (f_9) of the converging lens is equal to that (f_9/f_{10}) of the focal length (f_9) of said converging lens to the focal length (f_{10}) of said second cylindrical lens means, whereby the light beam is incident to the same position on the display screen even if the reflecting surface of the pologonal mirror and its rotating axis show imbalances.

3,865,466

OPTICAL GUIDES

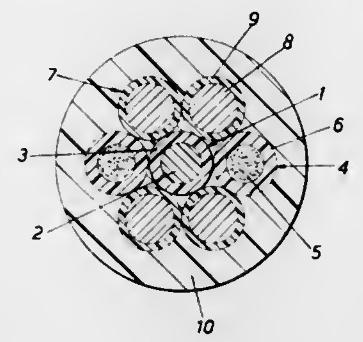
Raymond Jeffrey Slaughter, 22 Ingleby Way, Chislehurst, England

Filed Nov. 8, 1973, Ser. No. 413,890

Claims priority, application Great Britain, Nov. 10, 1972, 52096/72

Int. Cl. C03c *15/00*

U.S. Cl. 350—96 B **18 Claims**



3. An optical cable comprising an elongate central core consisting of at least one non-optical reinforcing member, a plurality of optical bundles each comprising a group of fibres including at least one optical fibre, said optical bundles being arranged together in at least one stranded layer about the core and, surrounding the stranded body so formed, an outer protective sheath, the or each reinforcing member being of such a material and of such a cross-sectional area having regard to the material or materials and cross-sectional area of the bundles that the reinforcing member or members at least substantially reduces or reduce the strain that would otherwise be imparted to each bundle when the cable is stressed in such a way as to tend to subject each or any optical fibre of the bundle to a tensile force.

3,865,467

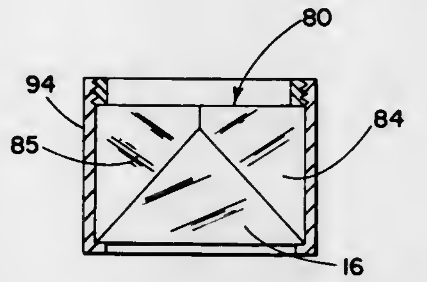
RETROREFLECTING BEAM SPLITTER AND APPARATUS FOR MEASURING GRAVITY GRADIENTS EMBODYING THE SAME

Peter C. Von Thuna, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 7, 1970, Ser. No. 62,070

Int. Cl. G02b *5/12*

U.S. Cl. 350—102 **9 Claims**



1. A retroreflecting beam splitting optical device comprising a solid corner cube having three surfaces which are partially reflecting and partially transmitting and three optical elements formed of a material having the same index of refraction as the material from which said corner cube is made, one of said elements being affixed to essentially the entire area of each of said three surfaces, said optical elements being shaped to define in combination with said corner cube a geometrical configuration having a flat surface parallel to the flat surface forming the base of said corner cube.

3,865,468

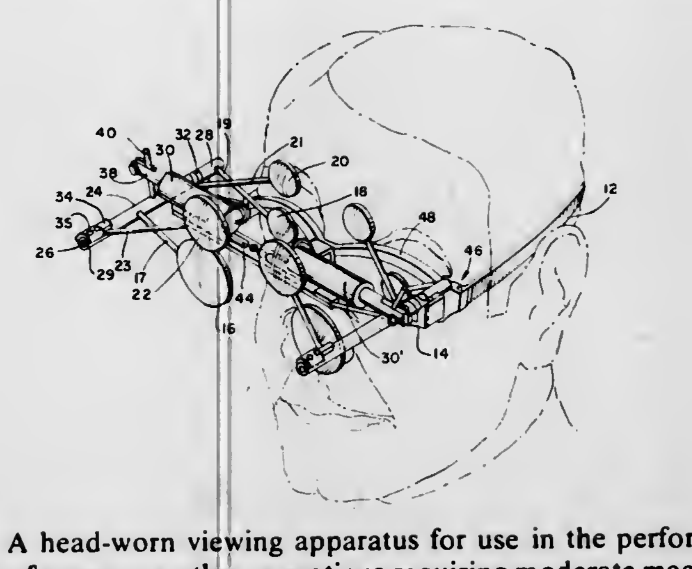
HEAD-WORN TELESCOPIC VIEWING APPARATUS

Harry F. Holcomb, 6800 N. Eastern Ave., Oklahoma City, Okla. 73111

Filed Mar. 1, 1973, Ser. No. 337,086

Int. Cl. G02b *25/00*, *7/08*, *15/12*

U.S. Cl. 350—146 **8 Claims**



1. A head-worn viewing apparatus for use in the performance of surgery or other operations requiring moderate magnification and allowing freedom of a user's hands for various tasks of the operation comprising in combination a group of eye lens elements and a group of field lens elements mounted on a frame to be worn on the head of the user wherein said group of eye lens elements includes at least two lenses, one of which is normally fixed in a viewing position and a second of which is supported on a rotatable arm, said group of field lens elements includes at least two lenses which circumferentially spaced from each other and are each supported on a rotatable arm whereby at least one of said field lens elements is selectively adjustable to a viewing position to form a relatively low power telescope with said eye lens element fixed in viewing position and others of said eye and field lens elements are selectively adjustable to said viewing position to form a relatively higher power telescope with said eye lens element fixed in viewing position, power means actuatable to automatically adjust said lens elements into said viewing position, and a foot control member for actuating said power means, and each of said rotatable arms are fixedly secured to a common rotatable member so that upon actuation of said power means by said foot control member each of said rotatable arms and the lens element supported thereon is simultaneously rotated.

3,865,469

LIQUID CRYSTAL DISPLAY DEVICE

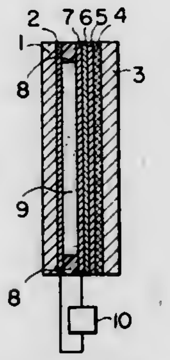
Komei Asai, Hirakata; Masakazu Fukai, Nishinomiya, and Akio Moriyama, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 3, 1974, Ser. No. 430,508

Claims priority, application Japan, Jan. 18, 1973, 48-8789

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **4 Claims**



1. A liquid crystal display device comprising;
a pair of spaced glass substrates,
liquid crystal including pleochromatic dye interposed between said glass substrates,
a transparent thin film electrode disposed on an inner surface of one of said glass substrates,
a dyed metal oxide thin film layer disposed on an inner surface of the other of said glass substrate,
a transparent thin film electrode disposed on said metal oxide thin film layer, and
means for externally applying voltage across said transparent thin film electrodes.

3,865,470

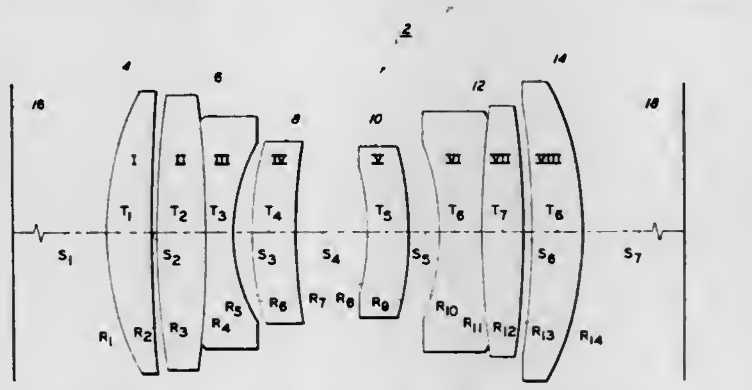
VARIABLE MAGNIFICATION LENS SYSTEM

George L. McCrobie, Upland, and Roscoe J. Donnel, Glendale, both of Calif., assignors to Xerox Corp., Stamford, Conn.

Filed Sept. 4, 1973, Ser. No. 393,844

Int. Cl. G02b *15/18*

U.S. Cl. 350—184 **3 Claims**



1. A variable magnification lens for use between fixed conjugates and including the following components in optical alignment:
a first positive convex-concave meniscus lens I;
a second positive double convex lens element II;
a third negative double concave lens element III;
said second and third elements forming a doublet,
a fourth positive convex-concave meniscus lens IV;
a fifth positive concave-convex meniscus lens V;
a sixth negative double concave lens element VI;
a seventh positive double convex lens element VII;
said sixth and seventh elements forming a doublet,
an eighth positive concave-convex meniscus lens VIII,
said second and third elements and said fourth and fifth lenses being fixed relative to each other as a unit,
said first and eighth lenses and said sixth and seventh elements being movable relative to said unit,
the entire variable magnification lens being movable between fixed conjugates.

3,865,471

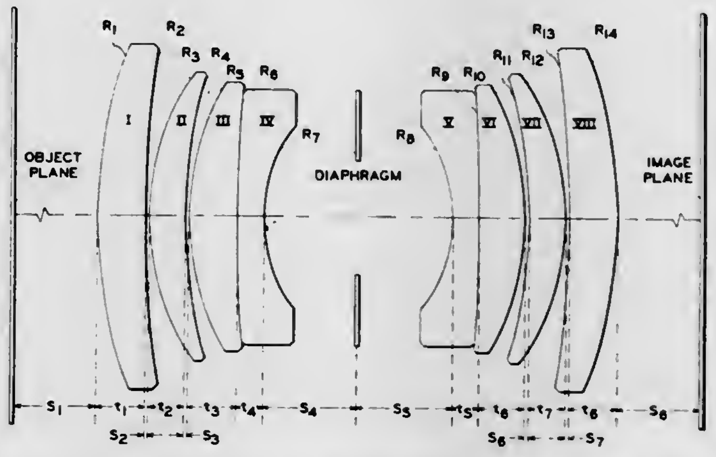
LENS SYSTEM FOR PHOTOELECTROPHORETIC COPYING MACHINE

George L. McCrobie, Upland, Calif., assignor to Xerox Corp., Stamford, Conn.

Filed Jan. 2, 1974, Ser. No. 430,269

Int. Cl. G02b *9/62*, *13/24*

U.S. Cl. 350—215 **1 Claim**



1. A symmetrical type copying lens system having an aperture of substantially $f/3.2$ magnifying the object format by 1:1

magnification, said lens system being corrected for spherical abberation and chromatic abberation including secondary color, lateral and longitudinal chromatism, coma, astigmatism, distortion and field curvature, comprising:

a. a front compound component including lens element I of positive power, lens element II of positive power, lens element III of positive power, and lens element IV of negative power between the object plane and diaphragm; b. a back compound component including lens elements V, VI, VII, and VIII the same general configuration as lenses IV, III, II and I respectively, arranged in a complementary manner in the rear portion of the lens system in order to achieve a symmetrical lens system;

c. constructional data relating to said lens system having comprehensive values as given in the chart hereinbelow wherein S_1 designates the air space between the object plane and lens element I, S_2 designates the air space between lens elements I and II, S_3 designates the air space between lens elements II and III, S_4 designates the air space between lens element IV and the diaphragm opening, S_5 designates the air space between the diaphragm opening and lens element V, S_6 designates the air space between lens elements Vi and VII, S_7 designates the air space between lens elements VII and VIII, S_8 is the air

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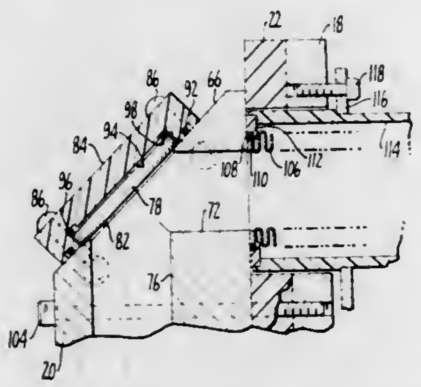
3,865,472
MIRROR MOUNT FOR A LASER

James Lee Hobart, and Wayne S. Mefferd, both of Palo Alto, Calif.

Division of Ser. No. 778,072, Nov. 22, 1968. This application Apr. 24, 1972, Ser. No. 247,202

Int. Cl. G02b *5/08*

U.S. Cl. 350—310 **1 Claim**



1. A mirror mount for mounting a laser mirror on a body in communication with a gas laser medium which comprises:

A. a body having a flat mirror support face thereon and a bore extending through said body from said face,

B. a laser mirror engaging said mirror support face and covering said bore,

C. a mounting plate on the opposite side of said mirror from said body and mounted on said body with said mounting plate having a central area adjacent to said mirror, a peripheral seal between said body and said plate outside the periphery of said mirror,

D. a resilient O-ring compressed between said mirror and said plate between said central area of said plate and said peripheral seal with said O-ring resiliently holding said mirror against said mirror support face, and

E. a through passageway extending past said O-ring from said central area for preventing air pressure differentials across said mirror.

3,865,473
SPECTACLE ATTACHMENT

Carolyn G. Roberts, 2275 E. Bay Dr., Apt. 102, Clearwater, Fla. 33516

Filed Aug. 28, 1973, Ser. No. 392,272

Int. Cl. G02c *5/16*

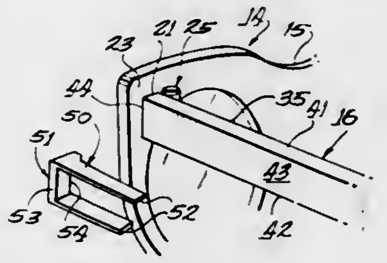
U.S. Cl. 351—113 **2 Claims**

1. A spectacle attachment intended to be attached to conventional spectacles having a lens holding frame and a pair of temples each connected at their butt ends to an associated temporal end portion of the frame by a temple hinge, the hinged butt end of each temple disposed in close juxtaposition with the adjacent interior temporal end portion of the frame when the temples are in head engaging position extending substantially normal to the plane of the frame, each temple having a hinged end, an outer end, top and bottom edges, and interior and exterior surfaces, the spectacle attachment comprising:

a body member having a U-shape configuration and manufactured of a resilient transparent silicone rubber material, the body member including a base member with a pair of integrally formed parallelly disposed outwardly depending spaced apart leg members;

said base member being in the form of a wedge extending transverse to the leg members and tapering from a maximum thickness adapted to be positioned on the end of the butt hinged end of the temple furthest from the temple hinge and nearest the exterior surface of the temple, the wedge tapering to a minimum thickness adapted to be positioned on the butt hinged end of the associated temple adjacent the temple hinge;

said leg members each being of an identical size and configuration being in the form of flat elongated rectangular configurations each having one edge joined integrally with a peripheral side edge of the base member with each leg projecting outwardly therefrom in the same direction, the leg members spaced apart the approximate height of the associated temple and adapted to be longitudinally aligned with and secured to the hinged butt end of the temple with the interior surface of each of the leg members disposed in juxtaposition with the top and bottom edges respectively of the associated temple and with the interior surface of the base member disposed adjacent the end of the hinged butt end of the temple;



said leg members and said base member each adapted to be trimmed by the use of a knife, scissors and the like to custom fit the body member to the spectacle temple in an aesthetically pleasing manner providing a refined appearance thereto;

said base member being of a thickness adapted to be inserted intermediate the hinged butt end of each temple and the adjacent interior temporal portion of the frame to be compressingly engaged therebetween when the temples are moved into the head engaging position with the resilient material of the base member thus exerting an outwardly directed force against the temple hinged butt end in a manner urgingly biasing the temple rotatedly inwardly about the temple hinge against the head of the wearer;

a layer of pressure sensitive adhesive means disposed on each of the opposed interior confronting surfaces of each of the leg members and adapted to adhesively secure the leg members to the top and bottom edges respectively of the associated hinged butt end of the temple on which the body member is mounted, the body member once secured to the temple being movable therewith in a manner not interfering with the operation of the spectacles while yet being positioned for use each time the temples are opened from the frame in position to be placed about the head of the wearer; and

whereby the spectacle attachment requires no alteration of the frame or temples when affixed thereto and operable therewith.

3,865,474
SYSTEM FOR SYNCHRONIZING MOTION PICTURE APPARATUS WITH TAPE RECORDER

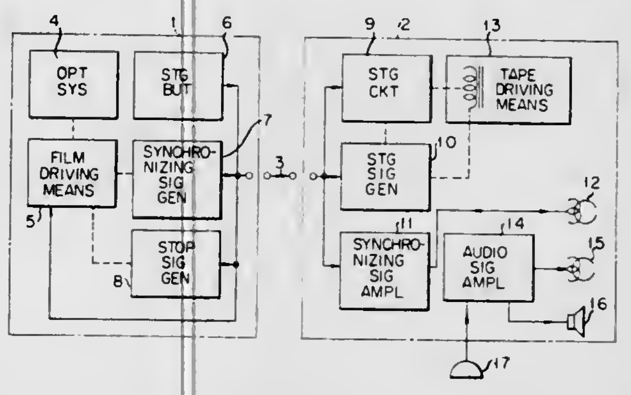
Chihiro Aoki, Aichi, and Hiromichi Sakai, Ichinomiya, both of Japan, assignors to Elmo Co. Ltd., Nagoya, Aichi Prefecture, Japan

Filed Sept. 19, 1973, Ser. No. 398,781

Claims priority, application Japan, Sept. 25, 1972, 47-95200

Int. Cl. B03b *31/04*

U.S. Cl. 352—22 **11 Claims**



1. A system for synchronizing a motion picture apparatus including a motor, which transports a length of motion picture film and attains a steady-state speed substantially instantaneously after the current supply thereto, with a tape recorder including a motor, which transports a length of magnetic tape and takes a relatively long time as compared with that taken by the motor of the motion picture apparatus to attain a steady-state speed, said system comprising: circuit means for starting the motor of the tape recorder in response to starting operation of the motion picture apparatus; means for driving the magnetic tape after the starting of the tape recorder motor with the delay of a time at least necessary for the tape recorder motor to attain the steady-state speed; means for generating a starting signal to start the motor of the motion picture apparatus to thereby commence the transportation of the motion picture film substantially at the same time point as the transportation of the magnetic tape; and means for generating a stop signal, when the operation of the motion picture apparatus is released, to stop the motions of the motors.

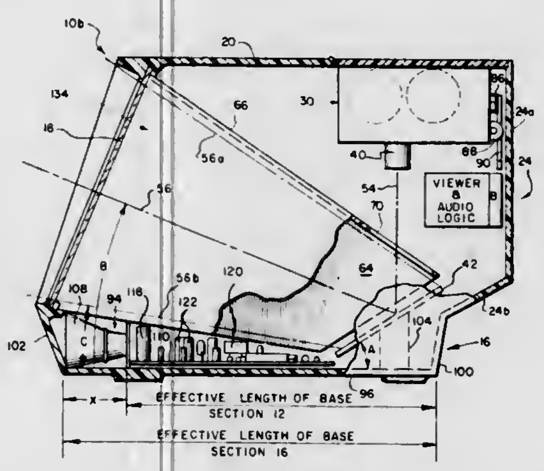
3,865,475
MOTION PICTURE VIEWER WITH SOUND SYSTEM

Herbert L. Hardy, 37 Normandy Dr., Sudbury, Mass. 01776; Joseph E. Murray, Jr., 27 Alpine St., Malden, Mass. 02148, and William R. Wray, 47 Bellaire Rd., Roslindale, Mass. 02131

Filed June 28, 1973, Ser. No. 374,640

Int. Cl. G03b *31/02*

U.S. Cl. 352—34 **2 Claims**



1. A motion picture viewer system that is convertible from an image projection mode of operation to an image projection and sound reproduction mode of operation, said viewer system comprising:

a main housing section formed in part by a rear projection screen and including an open bottom;

projection means in said main housing section for projecting image-bearing light towards said open bottom of said main housing section;

a first hollow base section locatable in closing relation with said open bottom when said viewer is operable in the image projection mode of operation, said first base section having a given length between leading and trailing ends thereof and being dimensioned so that said rear projection screen extends forwardly of said leading end of said base section by a predetermined distance, said first base section further including first means for mounting reflecting means in a predetermined spacial relationship with said projection means and said rear projection screen for reflecting the image-bearing light onto the rear of said rear projection screen;

a second hollow base section loctable in closing relation with said open bottom of said main housing in place of said first base section when said viewer is operable in the image projection and sound reproduction mode of operation, said second base section being longer between leading and trailing ends thereof than the given length of said first base section such that the distance between said rear projection screen and said leading end of said second base section is smaller than the predetermined distance between said rear projection screen and said leading end of said first base section, said second base section including second means for mounting reflecting means in the same predetermined spacial relationship with said projection means and said rear projection screen as when said first base section is located in operative closing relation with said open bottom of said main housing section; and

a portion of a sound system including a loud speaker mounted in said second base section, said loud speaker being positioned adjacent said leading end of said second base section and occupying a space in said second base section attributable to the greater length of said second base section as compared to said first base section.

3,865,476
CINEMATOGRAPHIC APPARATUS

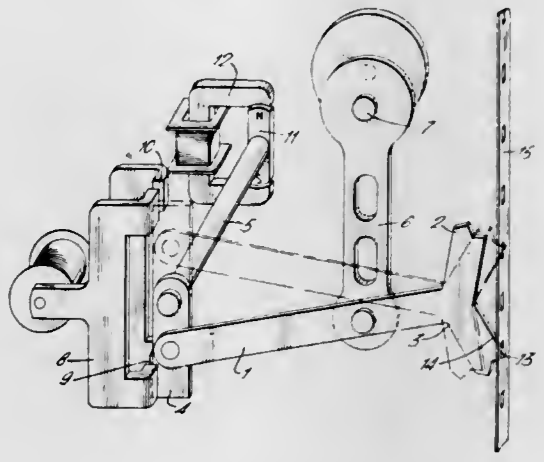
Jean Thevenaz, Grandson, and Claude Kreienbuhl, Yverdon, both of Switzerland, assignors to Bolex International SA, Saint-Croix, Switzerland

Filed Dec. 26, 1973, Ser. No. 428,104

Claims priority, application Switzerland, Jan. 4, 1973, 186/73

Int. Cl. G03b *1/22*

U.S. Cl. 352—191 **6 Claims**

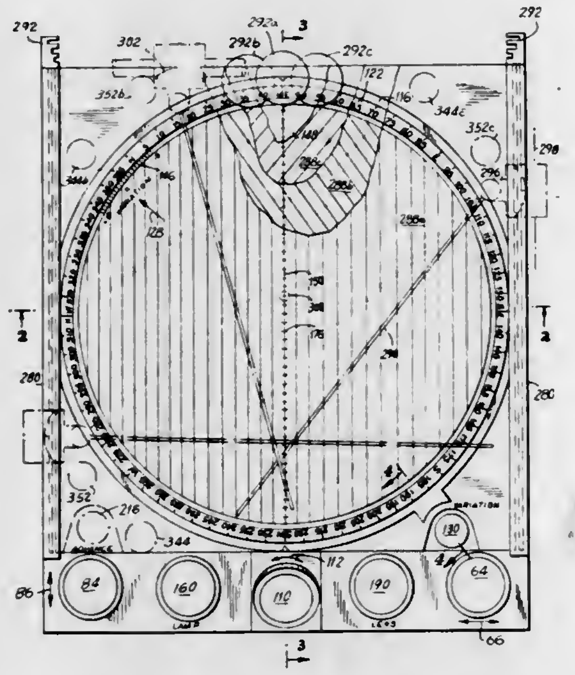


1. Intermittent film driving mechanism for a motion picture apparatus coupled to a shutter device for creating open and closed phases for film therein, said mechanism comprising a claw device of the sliding claw type, an eccentric cam means for driving said claw device and being rotatable at a constant

rate in the same direction and a control means for preventing the claw device from operatively engaging the film perforations, said claw device comprising two symmetric oppositely facing claws, rigidly fixed together, which engage the film perforations respectively during forward and backward transportation of said film, the ratio of closed phases and complete revolutions of the eccentric cam means is 4 to 3 and in which the control means comprises an electromagnet for preventing said claws from engaging the film at least during said open phases.

3,865,477
NAVIGATION DEVICE

Fred C. Gast, 15 Cerro Verde Dr., Ocean Springs, Miss. 39564
Filed Feb. 12, 1971, Ser. No. 115,019
Int. Cl. G03b *21/00, 21/26*
U.S. Cl. 353—11 40 Claims



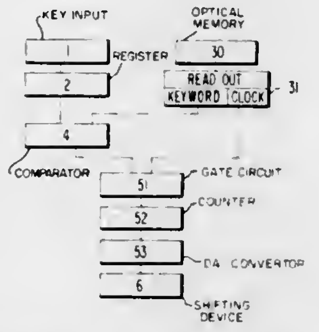
1. Navigational device comprising, in combination, a housing supporting a projection screen, means mounted with said housing for supporting a miniature navigational chart, means for projecting an enlarged image of at least a portion of said chart on said screen and a plurality of line of position indicators each of which has a single linear element to define only a single line of position, means for independently manually rotating said line of position indicators relative to said screen for setting to a desired bearing or heading and means for independently manually translating said line of position indicators relative to said screen while maintaining the set bearing thereof for indicating relative bearing sights.

3,865,478
MICROFILM PROJECTING SYSTEM

Shingo Ooue; Hiroyuki Ueda; Masakazu Hashiue; Makoto Murako-shi; Toshitaka Suwama, and Masaru Noguchi, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 4, 1971, Ser. No. 195,761
Claims priority, application Japan, Nov. 4, 1970, 45-96479
Int. Cl. G03b *23/12*
U.S. Cl. 353—26 3 Claims

1. A microfilm projecting system of the type having imaging means for projecting an image of selected frames of a microfilm loaded into said system, said system comprising:

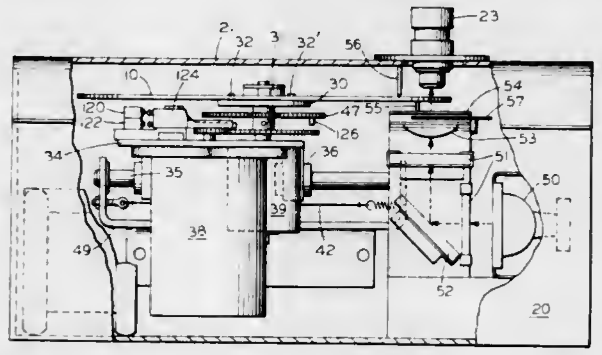
a. a register for temporarily storing information therein,
b. a key input means for entering into said register information representing a keyword designating the information content of a frame of said microfilm,
c. an optical disc memory having indicia thereon representing frame addresses and frame keywords designating respectively the address of a frame of said microfilm and the information on a frame of said microfilm, said indicia being positioned on said disc so that a keyword and frame address applicable to a single frame appear on the same radial part of said disc but at different distances from said disc center on said radial part, said indicia designating frame address consisting of optically readable clock signalling marks positioned circumferentially on said disc, the number of said clock signalling marks from a given position on the circumference of said disc to any other position on the circumference on said disc being the said designation of said frame address of the microfilm frame whose information is designated by the keyword at said other position in the circumference on said disc,



d. optical means for reading out sequentially the indicia on said optical disc memory including said indicia representing keywords and said clock signalling marks and for converting said read-out indicia into signals representing read-out keywords and clock signals, respectively,
e. circuit means connected to said register and to said read-out means for counting the said clock signals until said signals representing read-out keywords match the keyword information in said register, said accumulated count representing a frame address, and
f. a shifting device means responsive to said frame address accumulated by said circuit means for relatively shifting said microfilm and said imaging means to result in the projection of a frame of said microfilm corresponding to said last mentioned frame number.

3,865,479
RANDOM ACCESS PROJECTOR AND MULTI-FRAME CARTRIDGE THEREFORE

George L. Frye, Jr., and Herman B. Gibson, Jr., both of Orlando, Fla., assignors to Educational Computer Corporation, Strafford, Pa.
Filed July 23, 1973, Ser. No. 381,774
Int. Cl. G03b *23/10*
U.S. Cl. 353—110 18 Claims

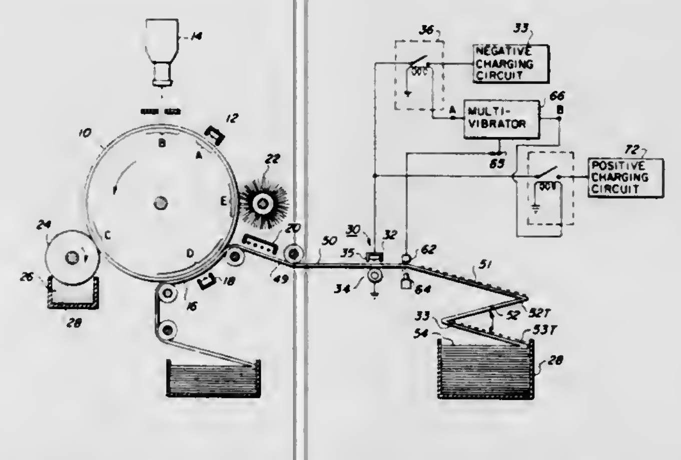


1. A projector comprising:

stationary projection lens means, said lens means having an optical axis;
means for generating a light beam, said light beam generating means being displaced from said lens means and providing a light beam aligned with the optical axis of said lens means;
a transparency storage medium, said storage medium including a plurality of transparencies arranged in a frame pattern which defines a spiral;
movable table means for removably supporting said transparency storage medium in a plane generally transverse to said lens means optical axis, said storage medium extending from said table means into the space between said lens means and light beam generating means;
motor means, said motor means including a motor having a rotatable output shaft;
a platform;
means mounting said platform for movement in a direction transverse to said lens means optical axis;
means mounting said motor means from said platform;
rotational drive means coupling said motor means motor output shaft to said table means for causing rotation of said table means;
linear drive means coupling said motor means motor output shaft to said platform mounting means whereby rotation of said shaft is translated to linear motion of said platform and rotational and translational motion may be simultaneously imparted to said table means to present said storage medium frames seriatim on said optical axis; and control means for said motor means, said control means being responsive to input signals commensurate with the location in the pattern of a desired transparency to cause the motor to operate so as to position the storage medium with the desired trasparency on the lens means optical axis.

3,865,480
ELECTROSTATIC CONTROL OF FAN FOLD PAPER STACKING

Melvin E. Swanberg, Madre, Calif., assignor to Xerox Corp., Stamford, Conn.
Filed Dec. 20, 1973, Ser. No. 426,991
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R 14 Claims



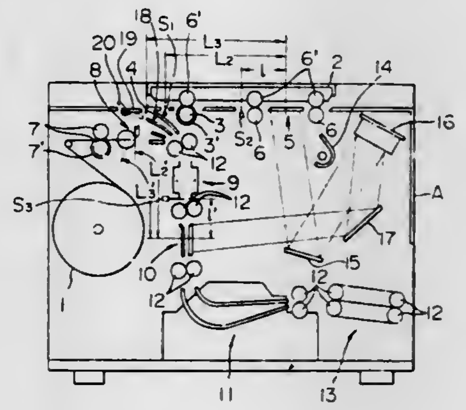
4. In an apparatus for processing a fan fold paper stack in which at least a portion of the paper stack comes in contact with a printing member and is then stacked in a stacking bin, the improvement comprising:

means, disposed between said printing member and said bin, for charging selected sheets of said portion of said fan fold paper stack.

3,865,481
COPYING MACHINE EQUIPPED WITH SYNCHRONOUS EXPOSING MECHANISM

Takaji Washio, and Tatsuo Aizawa, both of Osaka, Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan
Filed June 12, 1973, Ser. No. 369,177
Int. Cl. G03g *15/00*
U.S. Cl. 355—13 10 Claims

1. A copying machine comprising a passageway for transferring an original, an original exposing section located alongside the transferring passageway for exposing the original, a mechanism for transferring the original at a predetermined speed through said original exposing section, a first original detecting member provided near the upstream end of said original transferring passageway, a second original detecting member provided upstream of said original exposing section and a transferring roller for synchronization provided between said first and second original detecting members; and a passageway for transferring a roll of sensitive paper, a sensitive paper exposing section located alongside the transferring passageway for exposing the sensitive paper, a mechanism for transferring the sensitive paper through the transferring passageway at the same speed as that of transferring the original, a sensitive paper detecting member provided upstream of said sensitive paper exposing section, a feed mechanism provided at an upstream end of said sensitive paper transferring passageway for delivering a roll of the sensitive paper, and a cutting mechanism for cutting the roll of the sensitive paper delievered by said feed mechanism, the distance between the center of said original exposing section and said first original detecting member being equal to that between the center of



said sensitive paper exposing section and the position at which to cut the sensitive paper roll, the distance between the center of said original exposing section and second original detecting member being equal to that between the center of said sensitive paper exposing section and said sensitive paper detecting member, said sensitive paer feed mechanism beginning to feed the sensitive paper when the forward end of the original has reached said second original detecting member and ceasing to supply it when the rear end of the original has passed said first original detecting member, said paper cutting mechanism cutting the sensitive paper when the rear end of the original has passed the first original detecting member and said synchronization transferring roller ceasing to rotate when the forward end of the original has reached said second original detecting member and resuming its rotation when the forward end of the sensitive paper has reached said sensitive paper detecting member.

3,865,482
ELECTROSTATOGRAPHIC COPYING MACHINE

Dennis M. Bendall, Coleford; William R. Harris, Tutshill, near Chepstow; Peter Summers, Coleford; Raymond S. Pyart, Churchdown; Jeffrey Kew, Upton Saint Leonards; Michael C. D. Sherborne, Marlborough; Alistair J. Caldwell, Drybrook; Peter M. Thorp, Lydbrook, and John A. Jones, Coleford, all of England, assignors to Rank Xerox Ltd., London, England
Filed June 19, 1973, Ser. No. 371,654
Claims priority, application Great Britain, June 23, 1972, 29653
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 3 Claims

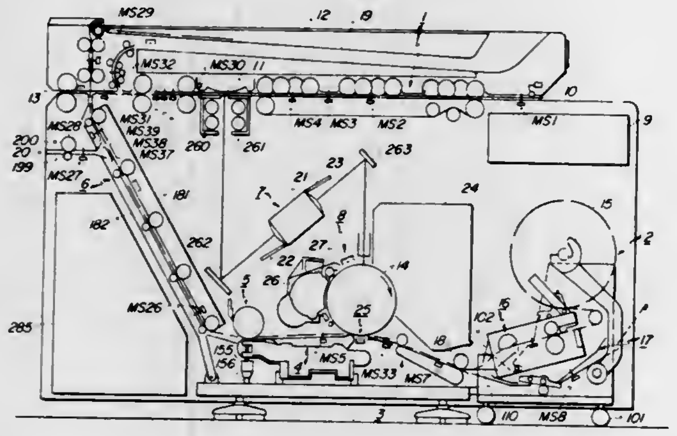
1. An electrophotographic reproducing machine comprising

an electrophotographic member mounted for movement past copying processing stations including charging means for applying a charge to the surface thereof,
a document handler means for feeding a document to be copied past an exposure slit at a predetermined speed, said document handler means including means for reversing the document and re-feeding it past the slit repeatedly to produce a plurality of copies,

an optical system comprising means for illuminating the document as it is fed past said exposure slit, and for forming an image of the document at the slit on said electrophotographic surface, said optical system incorporating a lens and mirror means causing an electrostatic latent image of the document to be formed on said surface in a selected one of a plurality of predetermined image sizes,

a copy material feeder means for feeding copy material towards said electrophotographic surface including means to cut a sheet of material from a roll of the copy material with a length proportional to the length of said document to be copied, and alternative means for feeding pre-cut sheets of copy material, and registration with the leading edge of the image in said surface,

means for developing the electrostatic latent image on the said electrophotographic surface,



means for transferring the developed image to said copy material sheet,

means for cleaning said surface,

means for fixing the developed image on the copy sheets,

means for delivering the copy sheets bearing the fixed image to the front or rear of the machine,

said document handler means includes means defining a front and rear document path and means for delivering said document along one of said paths to the front or rear of the machine at the option of a machine operator,

said means for delivering said copy sheets includes means defining a front and rear copy path and means for transporting said copy sheets to the front or to the rear of the machine, and said document path to the rear of the machine intersecting the copy sheet path to the front of the machine, and

circuit means to prevent the document from being delivered to the rear if the copy sheets are delivered to the front.

3,865,483
ALIGNMENT ILLUMINATION SYSTEM

Walter J. Wojcik, Poughkeepsie, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

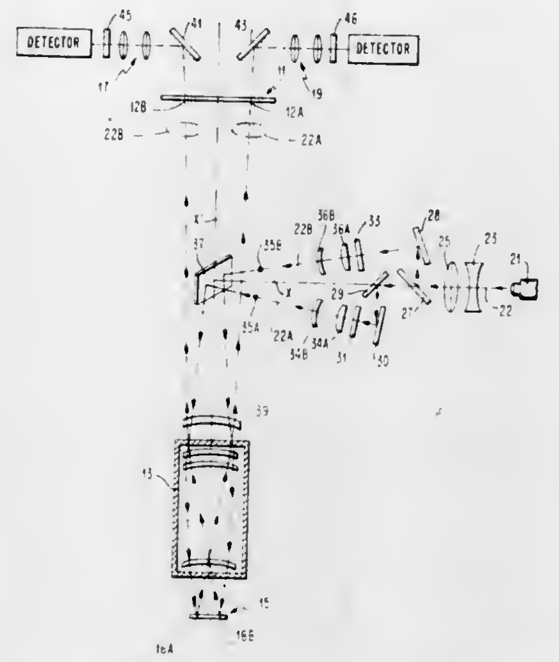
Filed Mar. 21, 1974, Ser. No. 453,235
Int. Cl. G01b *11/26;* **G03b** *27/52, 27/70*
U.S. Cl. 355—43 **9 Claims**

1. An optical illumination system for an optical alignment apparatus comprising:

means to form two channels of polarized light having different directions of polarization,

means to make the cross section of said channels elliptical; means to direct each of said channels to different areas of a first object which is to be aligned with a second object; lens means located in the path of said channels to image said areas of said first object in the plane of corresponding areas on said second object; and

optical pickup means arranged to view each channel, each pickup means including a polarizer which passes only the

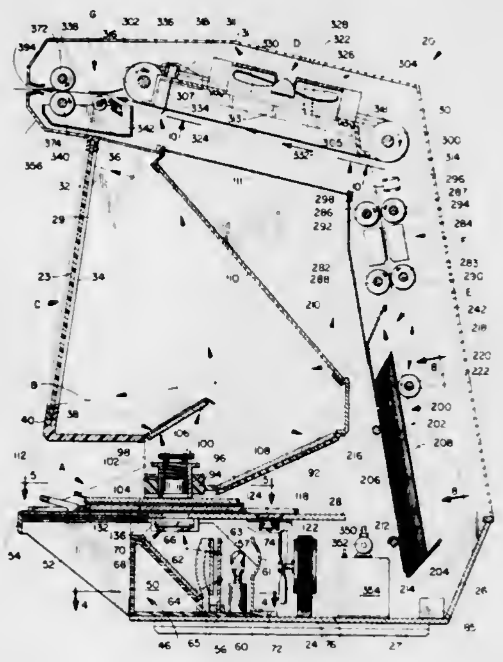


light which is properly polarized for its respective channel.

3,865,484
VIEWER-COPIER APPARATUS

Stanley W. Heldenbrand, 6271 Shadybrook Ln., Apt. 296; David L. Johnson, 6022 Village Glenn Dr., Apt. 4129, both of Dallas, Tex. 75206, and Neil H. Mote, 418 Lookout Dr., Richardson, Tex. 75080

Division of Ser. No. 166,953, July 28, 1971,. This application Sept. 28, 1973, Ser. No. 401,818
Int. Cl. G03b *13/28*
U.S. Cl. 355—45 **6 Claims**



1. An apparatus for viewing information and for selectively producing copies of said information on optically sensitive record medium, said apparatus comprising:

a hollow housing,

a transparent viewing screen means mounted with said housing,

means for selectively positioning said optically sensitive record medium at an exposure station in said housing,

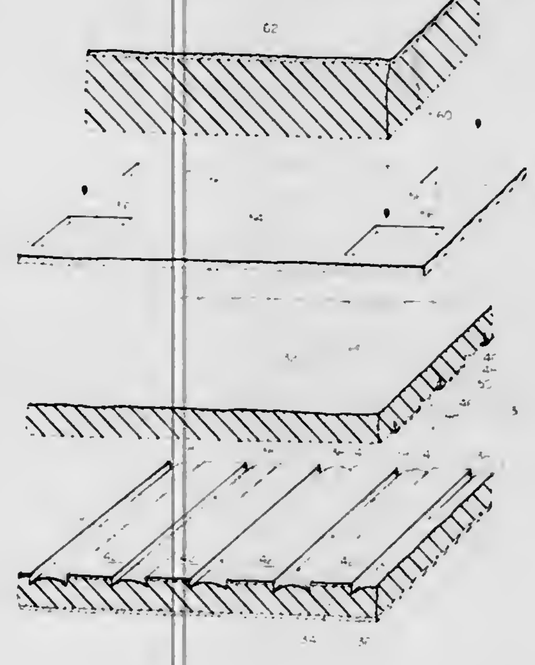
optical means within said housing for producing and enlarging an image and for projecting said image on said screen means so that the information represented by said image can be viewed from the exterior of said housing and simultaneously directing said image to said exposure station to expose said optically sensitive record medium, and

filter means within said housing for preventing ambient light entering said housing through said viewing screen means from reaching said record medium at said exposure station, said filter means comprising a first means intercepting the light energy corresponding to said ambient light and the light energy corresponding to said image for maximizing the degree of polarization of said ambient light energy while minimizing the degree of polarization of said image light energy, and a second means for preventing said so polarized ambient light energy from reaching said record medium and for allowing said so polarized image light energy to reach said record medium at said exposure station, thereby to filter out said ambient light.

3,865,485
CYLINDRICAL LENS BONDED MICROFICHE

George J. Yevick, Leonia, N.J., assignor to Personal Communications Inc., Stamford, Conn.

Filed July 10, 1973, Ser. No. 377,929
Int. Cl. G03b *27/62*
U.S. Cl. 355—46 **13 Claims**



1. A composite microfiche formed of two laminar halves, each half defined by a generally flat substrate having parallel, spaced channels on one face thereof, each channel having a curved surface throughout its length to define a channel lens, the inter-channel surface on said one face being opaque, the two said halves placed with their channeled faces facing each other and with the channel lenses of one half crossing the channel lenses of the other half to define a projection lens at each crossing, one of said laminar halves carrying a photographic emulsion over a surface thereof.

3,865,486
AREA MEASURING DEVICE

William B. Miles, Barrington, Ill., and John S. Copeland, Embourg, Belgium, assignors to Addressograph Multigraph Corp., Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,961
Int. Cl. G03b *27/32*
U.S. Cl. 355—64 **27 Claims**

27. A device for reproducing an original document on a sheet of copy paper comprising

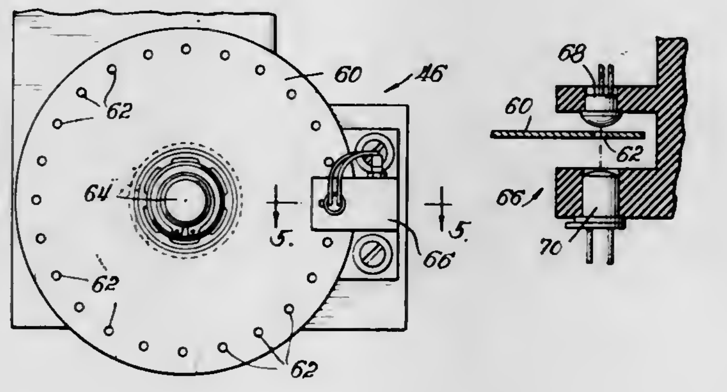
means for feeding said original document through said device along a path of travel,

means for illuminating said original document to form a latent image of said original document on said sheet,

means for developing said latent image to form a visual image of said original document on said sheet, and

means for determining the area of said original document, said area determining means comprising

means disposed across said path of travel of said original document for detecting a first dimension of said original document and for simultaneously providing a plurality of output signals, the number of said output signals being indicative of said first dimension, and a pulse source providing a predetermined number of clock pulses for a predetermined increment of linear



travel of said original document along said path of travel,

means for sampling and accumulating said output signals from said detecting means, said sampling and accumulating means being responsive to said clock pulses and said accumulated output signals for providing an indication of the total area of said original document, and means for inhibiting the generation of said area indicative signal until a plurality of clock pulses numerically equal to said number of said plurality of sensors have been provided by said source subsequent to the detection of said original document by at least one of said sensors.

3,865,487
OPTICAL VELOCITY METER PICK-UP HEAD

Nils Ingvar Andermo, Enbyberg, Sweden, assignor to Hasler AG., Bern, Switzerland

Filed Apr. 3, 1973, Ser. No. 347,428
Claims priority, application Switzerland, Apr. 6, 1972, 4944/72
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **7 Claims**

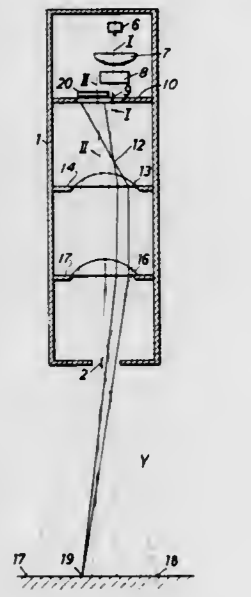
1. In a pick-up head disposed on a rail vehicle for optical measurement of the velocity of the vehicle in relation to a stationary surface (3) adjacent to it and along which the vehicle moves (5), having

means (6, 7, 8, 13, 16, 6′, 7′, 8′, 13′, 16′) for illuminating a portion of said stationary surface (3);

two photoelectric converters (20, 20′) spaced apart in the direction (5) of movement of the vehicle;

two slit diaphragms (11, 11′) arranged in a common plane (10) parallel to said stationary surface (3) each in front of one of said photoelectric converters (20, 20′) and extending perpendicularly to the direction (**5**) of movement of the vehicle;

optical means (**13, 16, 13′, 16′**) for projecting an image of said stationary surface (**3**) onto the plane (**10**) of said slit diaphragms (**11, 11′**) so that each of said photoelectric converters (**20, 20′**) receives light from one of two elongated surface increments (**4, 4′**) forming parts of said illuminated portion of said stationary surface (**3**) and spaced apart in and extending perpendicularly to the direction (**5**) of movement of the vehicle and fixed in relation to the pick-up head, whereby signals delivered by said photoelectric converters (**20,20′**) are utilized for determining the velocity of the vehicle by correlation;

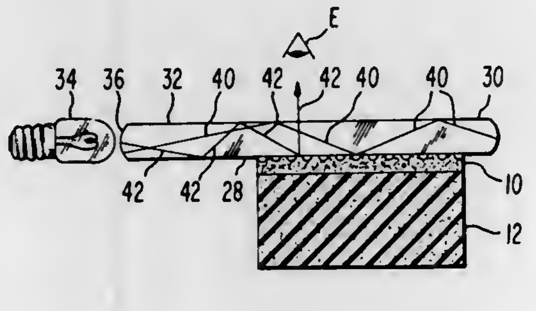


the improvement comprising

said optical means (**13, 13′, 16, 16′**) containing means (**13, 13′**) for spreading the image of any point of the surface increments into a line in the plane (**10**) of said slit diaphragms (**11, 11′**) and in the direction of the slits (**11, 11′, 11″**) thereof so that the photoelectric converters (**20,20′**) receive less light from the ends and more light from the middle of said surface increments.

3,865,488
FINGERPRINT DISPLAY SYSTEM UTILIZING A STORED FINGERPRINT

Eddy Humberto Del Rio, Palm Beach, Fla., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 30, 1973, Ser. No. 420,667
Int. Cl. G06k *9/08*
U.S. Cl. 356—71 **9 Claims**



3. Apparatus for visually displaying a fingerprint comprising, in combination:

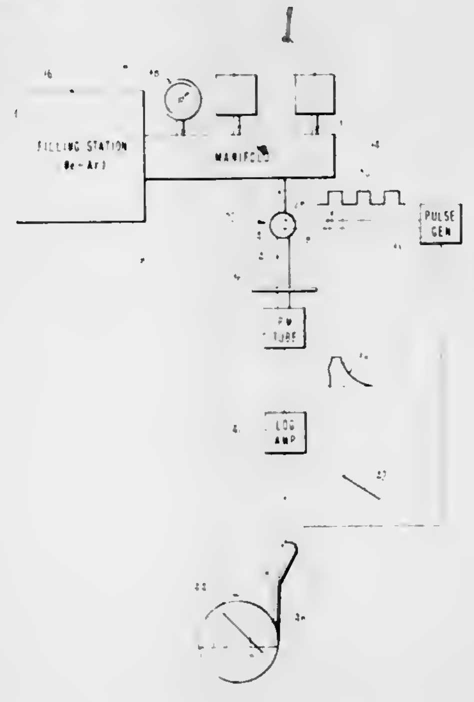
a member of transparent material structured so that diffuse light energy applied to said member is normally, substantially totally reflected internally between surfaces of said member;

means having erasably stored on a surface thereof the raised ridge pattern of said fingerprint to be displayed placable with the raised ridges of said pattern in contact with one of said surfaces of said member; the presence of said ridges in contact with said one surface causing said light energy to be reflected externally of said member at points on a second surface of said member determined according to the location of said ridges on said one surface; and

means for applying said diffuse light energy to said member.

3,865,489
ON-LINE DETECTION AND MEASUREMENT OF CONTAMINATING GASES DURING FILLING OF GAS DISPLAY PANELS

Melvin Klein, Mount Kisco, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Jan. 8, 1974, Ser. No. 431,812
Int. Cl. G01j *3/00*
U.S. Cl. 356—85 **15 Claims**



1. A method of detecting the presence of a contaminating gas in a Penning mixture of a first gas and a second gas, the first gas having a higher ionization potential than said second gas and also having a metastable state with a potential higher than the ionization potential of said second gas, comprising the steps of:

a. exciting a sample of the mixture to cause a pulsed discharge therein;

b. removing the excitation; and

c. then detecting the time rate of decay of the radiation intensity of the second gas as an indication of the presence of a contaminating gas, said time rate of decay being faster than that for an uncontaminated Penning mixture of said first and second gases.

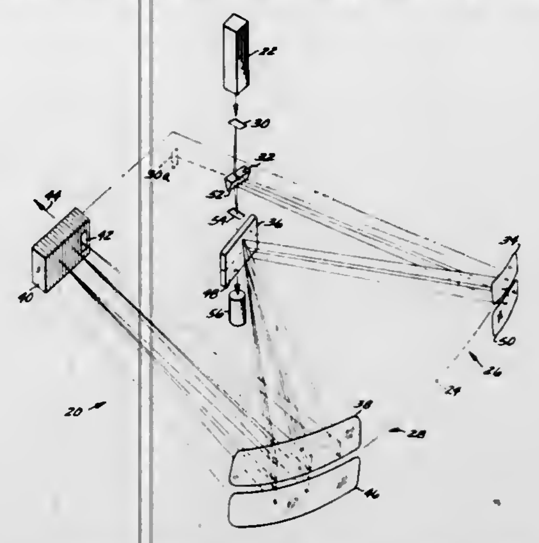
3,865,490
FILTER SPECTROGRAPH

Jack J. Grossman, Manhattan Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Aug. 29, 1973, Ser. No. 392,644
Int. Cl. G01j *3/18, 3/40*
U.S. Cl. 356—76 **11 Claims**

1. A filter spectrograph unit comprising:

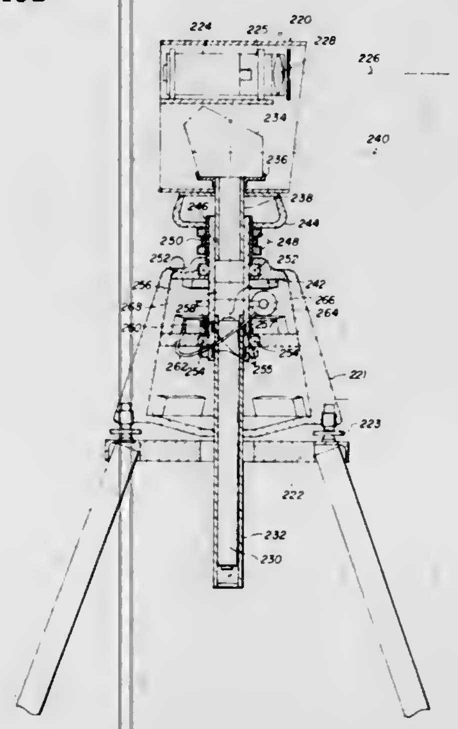
a rejection filter including means for producing a first spectrum from input light entering an entrance aperture of said rejection filter, means for rejecting at least one selected spectral line of said first spectrum, and means for reforming the remaining spectral lines of said first spectrum into output light containing all of the original spectral information, less said at least one rejected spectral line, at an exit aperture of said rejection filter; and

a dispersing spectrograph including means for producing a second spectrum from input light entering an input aperture of said dispersing spectrograph, said second spectrum being formed at an output aperture of said dispersing spectrograph, and said dispersing spectrograph being coupled to said rejection filter whereby said output light of said rejection filter from said exit aperture thereof is directed into said input aperture of said dispersing spectrograph.



3,865,491
SURVEYING INSTRUMENT TRACKING SYSTEM

William M. Hogan, North Little Rock, Ark., assignor to Blount & George, Inc., Jacksonville, Ark.
Continuation-in-part of Ser. No. 181,839, Sept. 20, 1971,. This application Feb. 4, 1974, Ser. No. 439,585
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **11 Claims**



1. An automatic elevation surveying system wherein a laser beam is aligned with a movable target comprising:

a support pedestal having a vertically disposed member attached thereto,

a laser beam source positioned within said member to project the laser beam in a vertical direction parallel to the axis of said member,

a pivotal housing mounted on said support pedestal,

prism means mounted in said housing with an input face of said prism means normal to the laser beam, whereby rotation of said prism means generates laser beams in a plane perpendicular to the original laser beam,

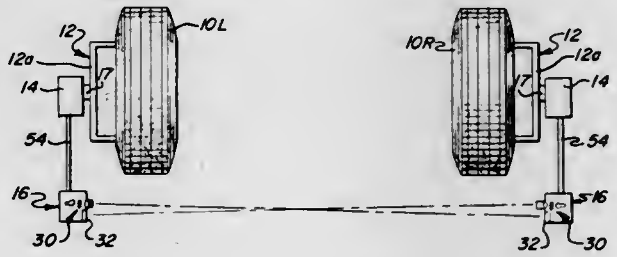
a beacon attached to the movable target and operable to emit electromagnetic signals,

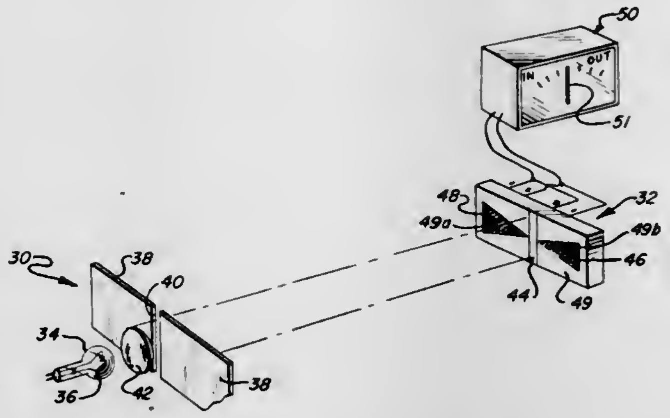
electromagnetic signal detector means mounted to said housing,

motor means for rotating said housing and responsive to the output of said detector means for pivoting said housing toward said beacon such that said laser beam is aligned with said movable target and such that said laser beam continually impinges said movable target permitting determination of a predetermined elevation at said movable target in response to the location of the impingement of said laser beam on said target.

3,865,492
APPARATUS FOR USE IN ALIGNING WHEELS

Louis L. Butler, Baton Rouge, La., assignor to Bear Manufacturing Corp., Rock Island, Ill.
Continuation of Ser. No. 234,814, March 15, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,228
Int. Cl. G01b *11/00*
U.S. Cl. 356—155 **20 Claims**





1. Apparatus for use in aligning vehicle wheels comprising means for projecting a directional beam of light, means for attaching said projecting means to a first wheel for projecting said directional beam with the longitudinal axis of said beam in predetermined angular relationship to a line generally parallel to the axis of rotation of said first wheel, said line lying in a generally vertical plane through the axis of rotation of said first wheel, and photosensitive means positioned to intercept said beam when such axis of rotation is within a range predetermined positions, and means responsive to said photosensitive means for indicating the position of said axis of rotation relative to a predetermined reference position.

3,865,493
APPARATUS FOR DIRECT ELECTRONIC MEASUREMENT OF IMAGES

Roger Roy Adams Morton, Penfield, N.Y., assignor to Bausch & Lamb Incorporated, Rochester, N.Y.
Division of Ser. No. 224.710. Feb. 9. 1972. abandoned. which is a continuation of Ser. No. 878.679. Nov. 21. 1969. abandoned. This application Aug. 14, 1973, Ser. No. 388,315
Int. Cl. G01b *11/28*
U.S. Cl. 356—158 **5 Claims**

1. Apparatus for generating a signal as a function of area or area dependent parameters of each particle in a particulate population sample, comprising:

an electron scanning tube having a gun end and a face end with an electron gun assembly positioned therewithin at the gun end thereof, a target also disposed within said tube adjacent the face end thereof and focusing and accelerating grids disposed between the gun assembly and the target, said electron gun assembly arranged to direct an electron beam towards said target, said target including,

a transparent conductive layer,

a photoconductive layer, and

a transparent insulating layer sandwiched between said conductive and said photoconductive layers, said resulting sandwich target oriented within said tube so that said photoconductive layer faces said electron gun assembly;

particulate population sample retaining means disposed outside of said tube before the face end thereof in general alignment with the sandwich target;

a lens positioned between said sample retaining means and said tube so that a focused image of each particle of said particulate population sample is presented on said sandwich target;

conducting means electrically contacting said photoconductive layer to provide for uniform charge of said photoconductive layer;

a control amplifier connected to said electron gun assembly to control the voltage potential of said electron beam with respect to said sandwich target;

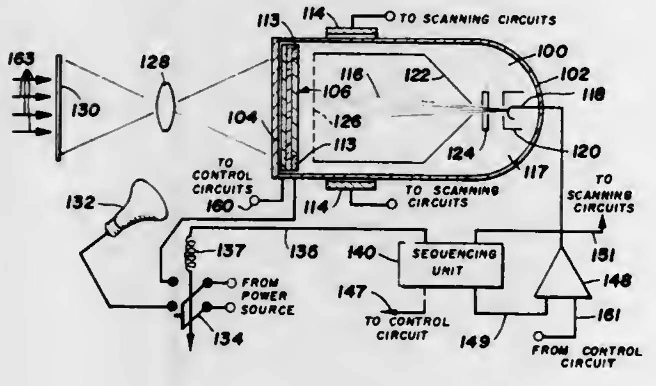
scanning means for causing said beam to traverse said photoconductive layer in a controlled manner according to a predetermined pattern to intersect each image of each particle of said particulate population sample focused on said sandwich target; and

a control circuit connected to said scanning means, said control amplifier and said conductive layer and responsive to current flow in said conductive layer for

disenabling said scanning means to cause said electron beam to pause whenever said electron beam intersects a particle image focused on said target for discharging of the photoconductive area coincident with the focused image of the particle and current flow from said conductive layer, occurring as a function of the discharging of the photoconductive area, exceeds a predetermined value, for the period during which said threshold current value is exceeded,

changing the voltage output of said amplifier so that the voltage potential difference between said electron beam and said sandwich target at each intersected image is reduced to a predetermined value, and

generating a measuring signal proportional to current flow in said conductive layer as a function of said period during which said beam is caused to pause at each intersected image of each particle of the particulate population sample, said measuring signal being a function of area or area dependent parameters of each particle of the particulate population sample.



3,865,494
ABSORPTION PHOTOMETER

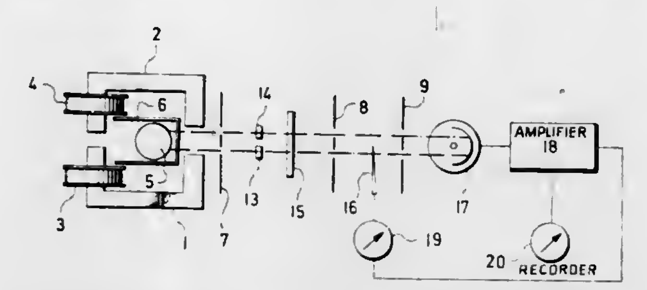
Miroslav Pavlicek, and Miroslav Rosenbaum, both of Praha, Czechoslovakia, assignors to Ustav pro vyzkum rud, Praha, Czechoslovakia

Filed May 15, 1973, Ser. No. 360,543

Claims priority, application Czechoslovakia, May 16, 1972, 3300-72

Int. Cl. G01n *21/24*

U.S. Cl. 356—201 **6 Claims**



1. A photometer comprising an electrical discharge tube as a radiation source, magnetic means provided in close proximity to the discharge part of the discharge tube, creating a magnetic flux coaxial with the radiating flux from the discharge tube, and causing a modulation of the radiating flux, a plurality of screens aligned with slots which select two substantially parallel radiating beams from the radiating flux, a measuring cell in the track of each of both radiating beams, one of said cells being adapted to receive a compound to be investigated, and a detector of radiation receiving the radiation of both radiation beams.

3,865,495
CUVETTE FOR A MICROSPECTROPHOTOMETER

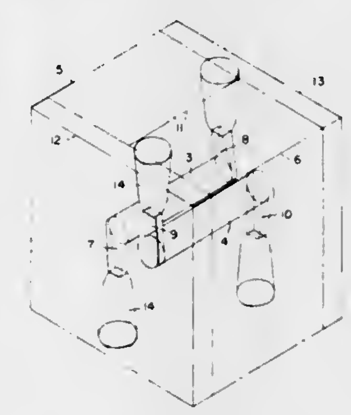
Manuel C. Sanz; Georges Revillet, both of Geneva, Switzerland, and Edgar G. Johnson, Jr., Huntsville, Ala., assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed May 24, 1973, Ser. No. 363,444

Claims priority, application Canada, Feb. 23, 1973, 164480

Int. Cl. G01n *1/10*

U.S. Cl. 356—246 **2 Claims**



1. A cuvette of throughflow type having a main body formed of two blocks, an opaque septum positioned in a plane between the two blocks and adhered thereto, and two end plates each having an inside face adhered on a respective one of the opposite ends of the body thereby leaving an exposed face on each end plate, a pair of parallel longitudinal cylindrical passages extending through the main body, one of the passages extending through each of the blocks, the passages terminating in planes that are parallel to each other and extend perpendicularly to the length of the passages, the inside faces of the end plates closing the ends of the passages to provide end walls of the passages which lie in planes that are perpendicular to the passages, the exposed faces of the end plates, at least in those portions adjacent the end walls, lying in planes parallel to those of the end walls, the end plates being transparent throughout their thickness at least in those portions in alignment with the ends of the passages, a plurality of transverse channels, each thereof communicating with one of the respective ends of the passages, and a plurality of sockets communicating with the channels for receiving the ends of conduits to supply and/or discharge a liquid through the channels of the passages.

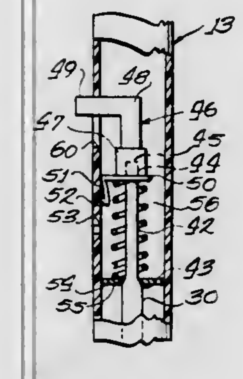
3,865,496
COMBINATION PEN AND PENCIL WRITING DEVICE

Geoffrey Robbins, 2869 Dirheim Ave., Cincinnati, Ohio 45211

Filed Jan. 7, 1974, Ser. No. 431,331

Int. Cl. B43k *27/10, 24/12*

U.S. Cl. 401—17 **3 Claims**



1. A combination pen and pencil writing device comprising an elongated cylindrically shaped casing comprised of a housing member being of hollow dome shape at one end and having an axial opening of reduced diameter at said one end and being open at said other end and removably receiving on said other end a tubular cap member of substantially the same diameter as said housing member, means removably assembling said tubular cap member in end-to-end coaxial relation with respect to said other end of said housing member, a pair of elongated writing units disposed in said casing and extending axially therealong, one of said writing units being a ball point pen with the other of said writing units being a mechanical pencil, said writing units being mounted in said casing for axial movement along the axis of said casing with each of said writing units being separately movable between a writing position wherein the writing end of said unit projects through said reduced diameter opening of said housing member and to a retracted position wherein said writing end of said writing unit is disposed inwardly of said casing, spring means biasing each writing unit to its retracted position in said casing, a combined pushing member and locking means mounted on each of said writing units and operable to effect the axial reciprocal movement of each individual writing unit axially of said casing between their respective writing positions wherein said locking means retains said writing unit against retraction by said spring means, and said retracted position wherein said locking means permits said spring means to retract said writing unit into a position inwardly of said casing, said combined pushing member and locking means each comprises a pushing member comprised of a collar having a top surface and a bottom surface, a recess in said bottom surface adapted to tightly engage therein the adjacent end of said associated writing unit, an L-shaped operating arm having its base portion aligned with said collar member and projecting outwardly of the top surface thereof and having its leg portion projecting radially to the axis of the collar, an axially elongated slot provided in a side wall of said cap portion and adapted to receive said leg portion in a manner projecting therethrough for axial guidance thereof between a retracted and writing position of said writing unit, an annular flange formed integrally with the bottom surface of said collar and projecting radially outwardly therefrom, an axially extending arm formed integrally with a peripheral edge of said flange and extending downwardly therefrom in position adapted to be placed adjacent to an interior surface of said cap portion, said arm being manufactured of resilient material, and said arm terminating in a radially outwardly directed wedge portion, said cap portion provided with a recess adapted to be engaged by said wedge portion when said writing unit is in the operative writing position projecting outwardly of said casing.

3,865,497
PRESS FIT JOINTS FOR MOUNTING BY MEANS OF A PRESSURE MEDIUM

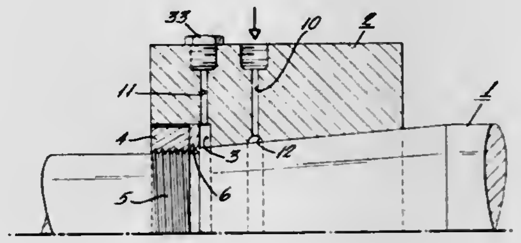
Axel Erland Bratt, Molndal; Oscar Evert Ingemar Holst, Goteborg, and James Gusten Ragnar Petre, Molndal, all of Sweden, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Feb. 28, 1972, Ser. No. 230,008

Claims priority, application Sweden, Mar. 3, 1971, 2685/71

Int. Cl. F16d *1/02*

U.S. Cl. 403—15 **5 Claims**



1. Press fit joint comprising inner and outer members having co-acting complementary tapered press fit surfaces, an annular piston means secured to one of said members and slidable relative to the other of said members, means defining an annular recess in said other member, said piston means being axially slidable in said recess and defining with it an annular enclosed chamber for a pressure medium, means defining a first channel in said outer member terminating in a circumferential groove communicating with said tapered surfaces and spaced axially from said annular chamber, means defining a second channel communicating with said annular chamber and plug means for selectively closing said second channel to the atmosphere, said first channel adapted to be connected to pressure medium whereby the pressure medium flows between the tapered surfaces and gradually fills the enclosed annular chamber when said second channel is closed to the atmosphere thereby to effect axial displacement of said inner and outer members relative to one another during mounting of the joint, said second channel being open to the atmosphere during dismounting of the joint to prevent pressure build-up in said annular chamber.

3,865,498
SLIP JOINT FOR STEEL POLES OR THE LIKE

Koichiro Okuto, Nishnomiya, and Toshio Kai, Tokyo, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka City, Japan

Filed Nov. 30, 1972, Ser. No. 310,786

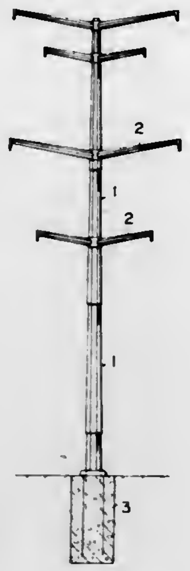
Claims priority application Japan, Jan. 30, 1971, 46-96670

Int. Cl. E04h *12/08*

U.S. Cl. 403—292 **3 Claims**

1. In a slip joint located at the overlapping ends of telescoping tubes tapering between a larger end to a smaller end thereof and forming a pole when telescoped together, reinforcing means provided at said overlapping ends, said reinforcing means comprising at least one reinforcing flange secured to substantially the entire inner surface of the inner one of said tube ends and lying wholly within the overlap of said

ends, and said flange lying in a plane perpendicular to the longitudinal axis of said tubes, whereby the overlapping length



at said ends is reduced and the strength of the pole including the joint is substantially uniform throughout.

3,865,499
MEANS FOR SECURING A CIRCULAR PART IN THE FORM OF A DISC IN THE INTERIOR OF A CYLINDRICAL PART

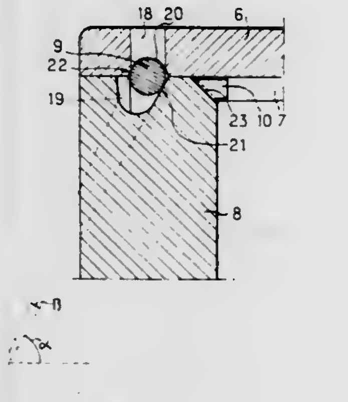
Jacques E. Flichy, Versailles, France, assignor to Ateliers Metallurgiques de Saint-Urban, Paris, France

Filed Mar. 5, 1973, Ser. No. 338,411

Claims priority, application France, Apr. 5, 1972, 72.11948

Int. Cl. F16d *1/06*

U.S. Cl. 403—326 **4 Claims**



1. In combination, a cylindrical part having a tubular portion, a circular disc-shaped part positioned within said tubular portion and being subjected to an axial force thereon in a selected axial direction, and securing means for fixedly but releasably connecting said circular part to said cylindrical part, and securing means including an annular groove formed in the periphery of said circular part and a resilient keeper ring adapted to be fully positioned within said groove, said securing means also including an annular channel formed in the interior wall of said tubular portion with said keeper ring being resiliently expandable to extend into said annular channel for fixedly connecting said cylindrical and circular parts, comprising the improvement wherein said annular groove has a first side surface on the rearward side thereof as viewed in said selected direction which is inclined at an angle of less than 90° relative to the axis of said cylindrical part and extends at a slope which projects radially inwardly toward said axis and axially in said selected direction, and said annular channel having a second side surface thereon which is on the front side thereof as viewed in said selected direction and which is inclined at an angle of less than 90° relative to said axis, said second surface also being sloped radially inwardly toward said axis and axially in said selected direction, said first and second surfaces engaging said keeper ring on substantially diametrically opposite sides thereof and converging toward one another as they project towards said axis, whereby said keeper ring is tightly held within said annular channel to prevent separation of said parts when an axial force is imposed on said circular part in said selected axial direction and one of said parts having access opening means formed therein and communicating with said annular channnel for permitting said keeper ring to be displaced into said groove after said parts are assembled.

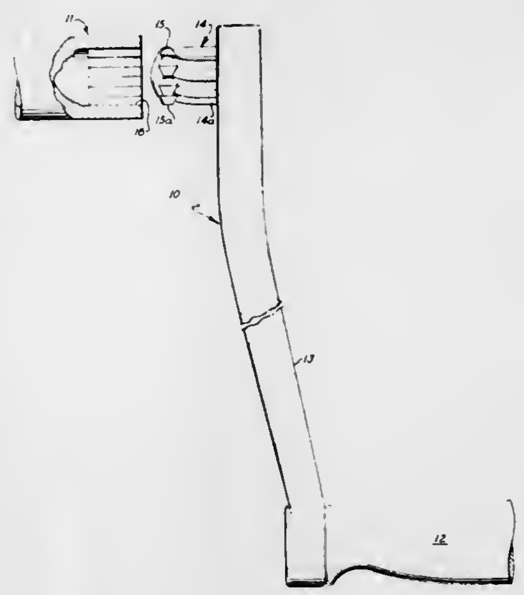
3,865,500
LOCKING HANDLE

E. Strohm Newell, 2350 6th Ave., San Diego, Calif. 92101

Filed July 9, 1973, Ser. No. 377,694

Int. Cl. F16d *1/10*

U.S. Cl. 403—359 **21 Claims**



1. A locking handle for turning a hub portion comprising:

a. a shaft locking member engageable with the hub portion and including a lower portion and a fixed upper portion,

b. said lower portion being movable with respect to the fixed upper portion,

c. at least one spline member disposed on the upper portion and the lower portion,

d. said upper portion and said lower portion each including a mating surface having an inclined surface portion, and

e. biasing means having a biasing force which urges the mating surfaces of the upper and lower portions together to cause the spline members on the upper and lower portions to be out of alignment with respect to each other when the handle is not engaged with the hub portion,

f. the spline member of the lower portion being effective to transmit said biasing force to the hub portion.

3,865,501
METHOD AND DEVICE FOR SOIL COMPACTING

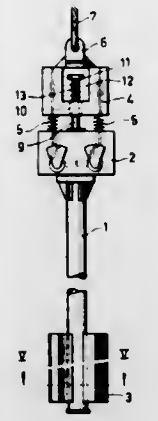
Joris Kniep, Dubbeldam, Netherlands, assignor to Internationaal Technische Handelsonderneming en Adviesbureau "ITHA" N.V., Dubbeldam, Netherlands

Filed July 9, 1973, Ser. No. 377,587

Int. Cl. E01c *19/34*

U.S. Cl. 404—133 **20 Claims**

15. A device for compacting the soil comprising: a tube having a source of vibrations rigidly secured to one extremity of said tube, said source being capable of generating longitudinally directed vibrations in said tube of at least two frequencies; a number of radial plates being rigidly connected near the opposite extremity of said tube, the dimensions of said plates being such that these plates are mainly reasonantly tuned to one of said two frequencies of said vibration source; means co-operating with said vibration source for changing the frequency of said vibration source to one of said two frequencies to cause said plates to vibrate substantially at their resonant frequency and apply the energy output to effect soil compacting; a ballast-weight, and means for selectively applying said ballast-weight to said source of vibrations to increase the energy output of said radial plates.



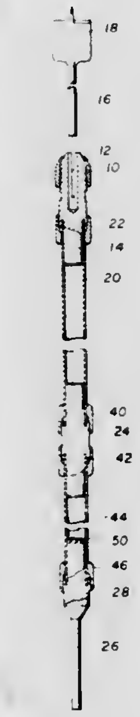
3,865,502
TOOL EXTENSION

Fred H. Hamann, Minneapolis, Minn., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 19, 1973, Ser. No. 407,975

Int. Cl. B23b *51/00*

U.S. Cl. 408—226 **1 Claim**



1. An extension for use with a driving unit having a chuck comprising:

a tool having a shank; a tool holder secured to the shank and having a second shank; first and second axially aligned elongated hollow tubes; each of said tubes having one end joined detachably together; a third shank having a portion adapted to be held in the chuck of the driving unit; said tool holder and said third shank having axially extending portions received within the other ends of said tubes; said tool holder and said third shank also having threaded means coaxial with said extending portions and extending therealong and overlying a portion of each of said other ends of said tubes; sleeve means having an internally tapering threaded portion; said sleeve means being received on the threaded means of said tool holder and said third shank to cooperate therewith to provide adjustable frictional engagement between said other ends of said tubes and said tool holder and said third shank, and thereby prevent undesirable rotation therebetween and provide a readily detachable connection.

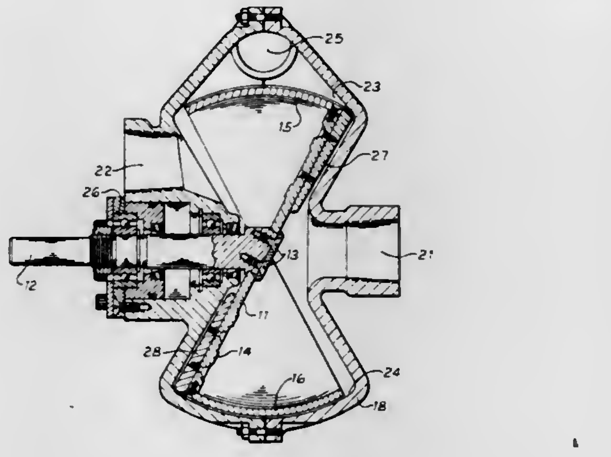
3,865,503
WOBBLE PLATE PUMP

Walter S. Gearhart, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 15, 1973, Ser. No. 406,767

Int. Cl. F01d *23/00*

U.S. Cl. 415—70 **4 Claims**



1. A wobble plate pump for transporting viscous liquids comprising,

- a stationary housing having at least one inlet and at least one outlet,
- a rotatable shaft extending axially into said stationary housing,
- an impeller disc having front and rear parallel surfaces, said impeller disc being attached to said shaft with said surfaces being in planes inclined to the axis of said shaft, and first and second spherically shaped shrouds attached to said impeller disc for providing static and dynamic balance to said shaft and impeller disc.

3,865,504
AXIAL COMPRESSOR

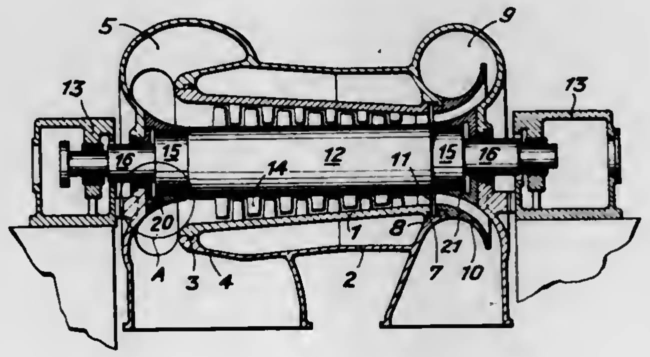
Hans Benz, Winterthur, Switzerland, assignor to Brown Boveri-Sulzer Turbomachinery Ltd., Zurich, Switzerland

Filed Aug. 23, 1973, Ser. No. 390,896

Claims priority, application Switzerland, Sept. 8, 1972, 13194/72

Int. Cl. F04d *29/08*

U.S. Cl. 415—113 **8 Claims**



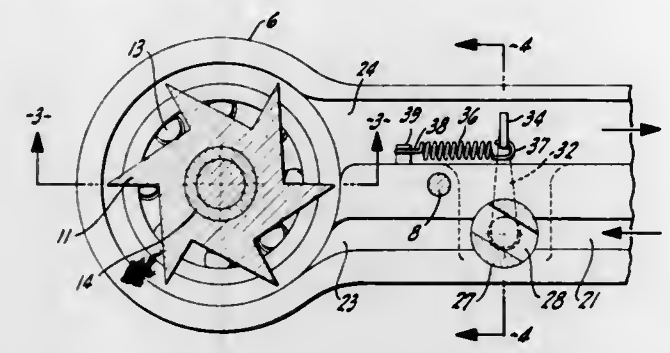
1. In an axial compressor

- a casing,
- a stator blade support radially centered within said casing; a bladed rotor rotatably mounted within said casing and stator blade support;
- a structural part at least radially adjustably mounted on said casing between said casing and said rotor; and
- a labyrinth seal between said structural part and said rotor and means to center said structural part radially with respect to said rotor.

3,865,505
SPEED GOVERNOR FOR A DENTAL HANDPIECE

Lloyd P. Flatland, 1150 Alcoa Building, Kentfield, Calif. 94111

Filed Aug. 6, 1973, Ser. No. 386,174
Int. Cl. F01b *25/02*
U.S. Cl. 415—149 3 Claims

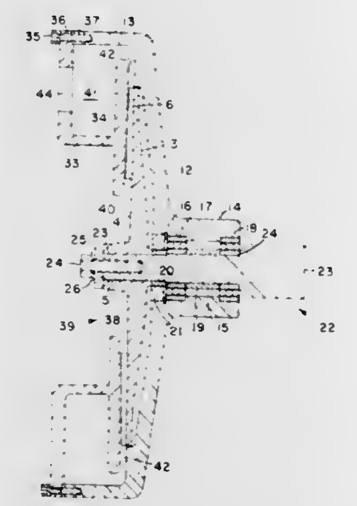


1. A speed governor for a dental handpiece comprising a head housing including an inlet duct and a discharge duct, an air turbine wheel mounted to rotate in said head housing, a handle extending from said head housing, means for supplying air through said handle and said inlet duct to the inlet side of said turbine wheel, means for releasing directly to the atmosphere air from said head housing in the vicinity of said turbine wheel, means for releasing air through said discharge duct and said handle from the discharge side of said turbine wheel, a valve in said inlet duct, means movable in position in response to released air flowing out through said discharge duct, and means in said head housing for connecting said movable means to control said valve.

3,865,506
CENTRIFUGAL COMPRESSOR

C. Richard Gerlach, San Antonio, Tex., assignor to Micro-Gen Equipment Corporation, San Antonio, Tex.

Filed July 9, 1973, Ser. No. 377,567
Int. Cl. F04d *7/02*
U.S. Cl. 415—213 R 5 Claims

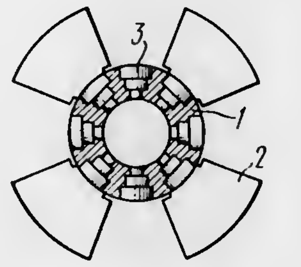


1. A centrifugal air compressor comprising a housing enclosing an impeller, an air inlet in said housing to the air inlet zone of said impeller, said impeller having a plurality of circumferentially arranged air foil vanes extending outwardly from said air inlet zone at an angle to the impeller radius and opposite the direction of rotation, said air foil vanes gradually increase in circumferentially width from the inlet tip to beyond their mid length and then decrease in circumferentially width to the discharge tip, said air foil vanes have a free flat upper surface adjacent the housing, adjacent air foil vanes define an air flow channel therebetween, said channel gradually increasing in width from near the air intake end to the air discharge end, said width increasing linearly as a function of the channel length, said air inlet zone of said impeller being at the center portion thereof and said air foil vanes are substantially tangent to the outer circumference of said air inlet zone, the length of alternate air foil vanes is less than the adjacent air foil vane to define an air inlet pocket at the inlet to each pair of adjacent air flow channels.

3,865,507
METHOD OF CONTROLLING THE EFFICIENCY OF BLADE HYDROMACHINES WITH CONSIDERABLE HEAD VARIATIONS

Jury Abramovich Lesokhin, ulitsa Lensoveta, 32, kv. 75, and Anatoly Grigorievich Ivlev, Okhtinsky prospekt, 6/2, kv. 67, both of Leningrad, U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,791
Claims priority, application U.S.S.R., Jan. 12, 1972, 1736683
Int. Cl. F01d *17/00*
U.S. Cl. 416—1 5 Claims

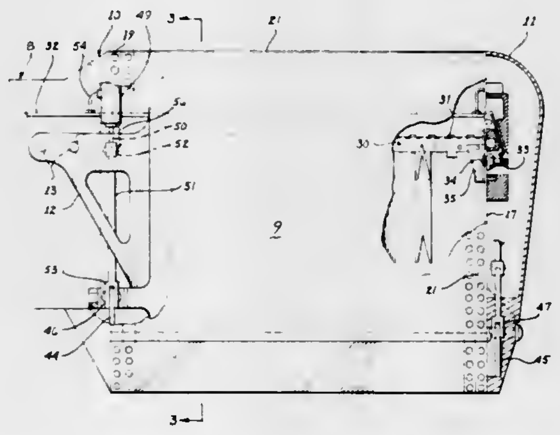


1. A method of controlling the efficiency of a blade hydro machine having considerable water head variations at a hydro station, comprising: arranging on a runner whose parameters correspond to the maximum water head only some of the blades during its operation with a minimum head: arranging said blades symmetrically about the axis of said hydro machine; and increasing the number of the said blades as the head rises, said blades being also arranged symmetrically about the axis of said hydro machine.

3,865,508
RAMJET POWERED ROTOR BLADE

Bruno A. Nagler, Scottsdale, Ariz., assignor to Nagler Aircraft Corporation, Phoenix, Ariz.

Filed Oct. 19, 1972, Ser. No. 299,074
Int. Cl. B64c *27/18*
U.S. Cl. 416—22 11 Claims



1. A ramjet disposed at the extremity of a rotor blade, said ramjet including fuel nozzles, an igniter, flame arrestors, and a combustion chamber, said ramjet comprising in combination:

a first rectangular slot disposed at the leading edge of the rotor blade, said first slot defining the intake port for said ramjet;

a second rectangular slot disposed at a point rearward of and in lateral alignment with said first slot in said rotor blade, said second slot defining the exhaust port for said ramjet;

an airfoil shaped envelope, including upper and lower skins, extending from said first slot to said second slot, said envelope enclosing the fuel nozzles, igniters and flame arrestors for said ramjet, said envelope being essentially devoid of any protrusions to disrupt the lift generating capability of the extremity of said rotor blade and defining a space of rectangular vertical cross-section;

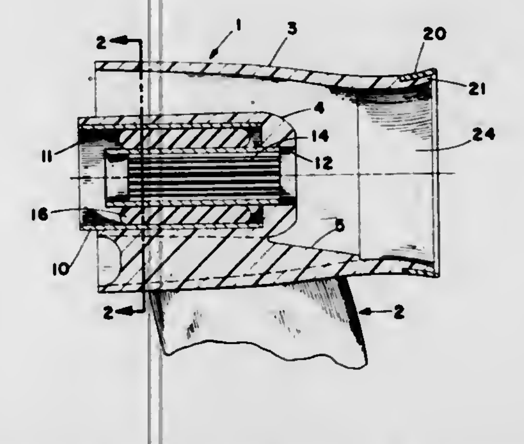
a positionable vane pivotable with respect to said envelope in proximity to said exhaust port to open and close said exhaust port; and

means for selectively pivoting said vane downwardly to a first position to increase the lift generating capability of the extremity of the rotor blade while simultaneously opening said exhaust port and pivoting said vane upwardly to a second position in alignment with the airfoil shape of said envelope to reduce the drag of the extremity of the rotor blade while simultaneously closing said exhaust port; whereby, said vane is positioned in said first position to increase the lift of the rotor blade while said ramjet is developing thrust and said vane is positioned in said second position to reduce the drag of the extremity of the rotor blade while said ramjet is not developing thrust.

3,865,509
PROPELLER CONSTRUCTION

Michael E. Frazzell, Neenah, and Richard H. Snyder, Oshkosh, both of Wis., assignors to Brunswick Corp., Skokie, Ill.

Filed Aug. 2, 1973, Ser. No. 385,170
Int. Cl. B63h *1/28*
U.S. Cl. 416—93 11 Claims



1. A through-the-hub exhaust type marine propeller comprising a hub and blades integrally molded of nylon reinforced by greater than thirty percent by weight of fiberglass, said hub including an outer cylindrical housing, an inner hub portion and a plurality of webs supporting said inner portion within said housing.

3,865,510
MARINE PROPELLER

Takao Yoshino, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

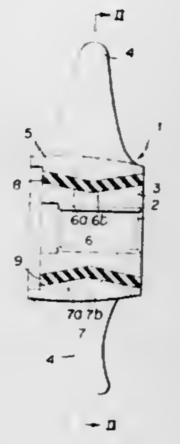
Filed Nov. 21, 1973, Ser. No. 418,023
Claims priority, application Japan, Nov. 29, 1972, 47-118888
Int. Cl. B63h *1/14*
U.S. Cl. 416—134 6 Claims

1. A marine propeller comprising

a. an inner cylinder having an engaging hole in the center thereof for engaging a drive shaft, the outer surface of said inner cylinder having a circumferential trough formed therein;

b. a hollow outer cylinder having a plurality of blades projecting from the outer periphery thereof, the inner surface of said outer cylinder having a circumferential crest formed thereon, said crest corresponding to said trough, said inner and outer cylinders being aligned coaxially and spaced apart such that a gap is formed between said inner and outer cylinders and there is no direct contact between said inner and outer cylinders along the coaxially aligned surfaces; and

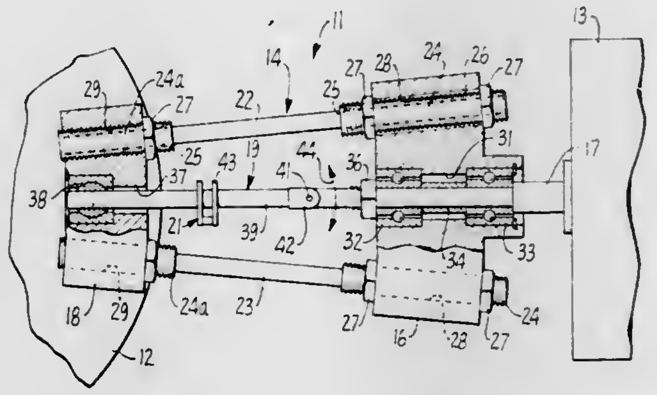
c. resilient means disposed in said gap, said resilient means contacting said inner and outer cylinders along the total length of said gap, said resilient means absorbing the shock generated by said propellers and operably engaging said crest and trough to prevent the separation of said inner and outer cylinders.



3,865,511
ROTOR BLADE AND HUB ATTACHMENT AND CONTROL

Gerald L. Breuner, 50 Melody Ln., Orinda, Calif. 94563

Filed Feb. 8, 1974, Ser. No. 440,852
Int. Cl. B64c *27/38*
U.S. Cl. 416—141 9 Claims



1. In a rotating wing aircraft having rotor blades carried about a central rotor hub an improved attachment and control means for said blades and hub comprising,

a. a pair of cable means attached to said hub and extending radially outward from the hub toward the inner end of a blade,

b. a first fixture means secured to the outer ends of the pair of cable means,

c. a blade spar rotatably journaled in said first fixture means and extending radially therefrom to support the inner end of the blade,

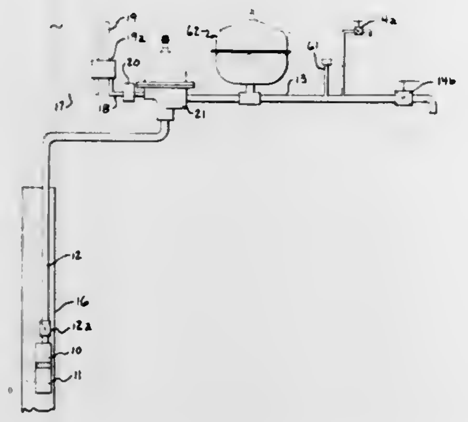
d. a second fixture means attached to the central rotor hub for supporting and carrying the inner end of the pair of cable means,

e. a pitch control means coupled to said rotatable spar, and

f. means for rotating the pitch control means to selectively change the pitch of the blade.

3,865,512
CONTROL APPARATUS FOR A WATER SUPPLY SYSTEM

Elmer M. Deters, Muscatine, Iowa, assignor to Weil-McLain Co., Inc., Dallas, Tex.
Filed Nov. 19, 1973, Ser. No. 416,957
Int. Cl. F04b *49/00*
U.S. Cl. 417—26 **5 Claims**



1. A control apparatus for a water system of the type having a motor operated pump for pumping water through a delivery line to one or more valved outlets, said control apparatus being adapted to control starting and stopping of the pump motor and to maintain the pressure on the water supplied to the delivery line in a narrow regulated pressure range as the flow from the delivery line varies over a wide flow range between a low bypass rate and full pump delivery rate at said regulated pressure range, said control apparatus comprising,

a. a valve body having an annular inwardly facing valve seat, an inlet chamber at one side of the seat adapted for connection to a pump and an outlet chamber at the other side of the seat adapted for connection to a delivery line of a water system,

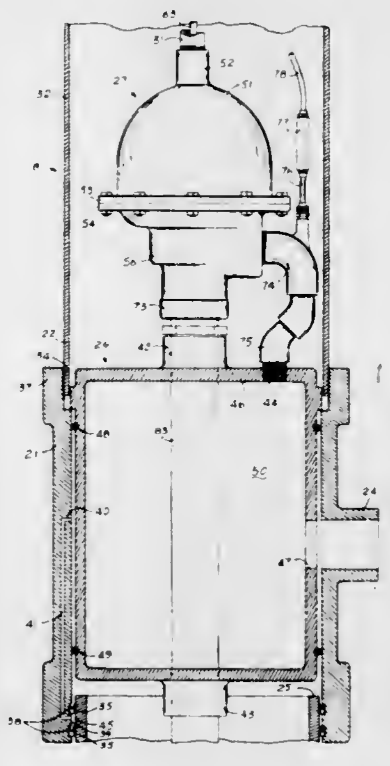
b. pressure operated motor control switch means responsive to the pressure at said outlet chamber for engergizing the pump motor when the pressure at the outlet chamber reaches a preset lower switch operating pressure below said regulated pressure range and for deenergizing the pump motor when the pressure at the outlet chamber reaches a preset upper switch operating pressure above said regulated pressure range,

c. a diaphragm peripherally attached to said valve body at said outlet chamber side of the seat and having one side exposed to the fluid pressure at said outlet chamber, a valve member attached to said diaphragm at the outlet chamber side of the seat and extending through said seat into the inlet chamber, valve biasing means yieldably urging said diaphragm toward said seat and against the force of the fluid pressure acting on said one side of the diaphragm to move the valve member to a first axial position when the pressure in the outlet chamber is below said regulated pressure range, said diaphragm being operative in response to the pressure in said outlet chamber to move said valve member from said first axial position to a second axial position when the pressure in the outlet chamber increases to the upper limit of said regulated pressure range and to move said valve member to a third axial position when the pressure in the outlet chamber increases to a value above said regulated pressure range and below said upper switch operating pressure.

d. said valve member having a reduced diameter stem portion and an enlarged flow regulating portion and a flow limiting portion at different axial locations therealong such that the stem portion is located at the seat in said first axial position of the valve member, said flow regulating portion is located at the seat in said second axial position of the valve member, and said flow limiting portion is located at the seat in said third axial position of the valve member, said stem portion having a cross-sectional area that is small as compared to the seat to allow relatively unrestricted flow therethrough; said flow regulating portion having a cross-sectional area to substantially span the seat and restrict flow therethrough to said low bypass rate, and said flow limiting portion having a cross-sectional area intermediate that of the stem portion and the flow regulating portion to increase flow through the seat above said low bypass rate when the pressure in the outlet chamber rises above said regulated pressure range and more rapidly build up pressure at the outlet chamber side of the valve seat to said upper switch operating pressure.

3,865,513
PITLESS WATER SYSTEM

Thomas B. Clark, 2338 Elm St., Davenport, Iowa 52803
Filed Oct. 19, 1973, Ser. No. 407,924
Int. Cl. F04b *49/00*
U.S. Cl. 417—38 **5 Claims**



1. An apparatus for transmitting fluid such as water from a pump in a well casing upwardly through the drop pipe of the pump to a demand outlet comprising:

shell means including a hollow shell open at the top and bottom and of sufficient length such that a lower portion thereof would be below the frost line of a given geographical area and the upper portion thereof would be above the ground level for accessibility to the interior thereof, said hollow shell having a diameter no greater than the diameter of the well casing;

casting means including a casting threadably connected at the upper end thereof to the lower end of said shell and the upper end of the well casing, said casting having an outlet formed therein for fluid connection to the demand outlet;

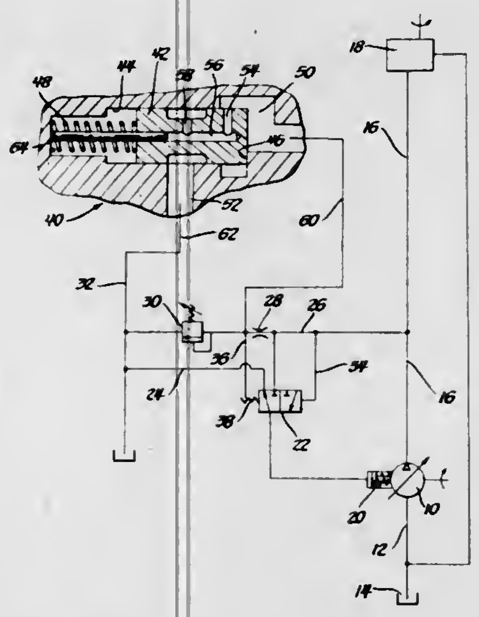
spool means including a spool unit having an enclosed water chamber, said spool unit located within and adjacent to the inside wall of said casting, said spool unit having sealing members between said spool unit and said casting to prevent fluid flow therebetween, said spool unit having aligned openings formed in the top and the bottom thereof to receive the drop pipe therethrough, and said spool unit having an outlet registered with and fluid connected to said casting means outlet and further having an inlet formed in the top wall) thereof;

valve means for delivering water under constant pressure at any given flow, said valve means having a valve inlet and a valve outlet, said valve inlet fluid connected in a sealed manner to the drop pipe near to the top of said spool unit, said valve outlet fluid connected to said inlet of said spool unit; and

pressure responsive means for operating the pump in response to a predetermined demand of the water from said valve means located at the upper end of said shell and fluid connected to and intermediate of said valve outlet and said inlet of said spool unit and to the pump.

3,865,514
POWER TRANSMISSION

Kurt R. Lonnemo, Troy, Mich., assignor to Sperry Rand Corp., Troy, Mich.
Filed July 25, 1973, Ser. No. 382,427
Int. Cl. F04b *49/00*
U.S. Cl. 417—212 **5 Claims**

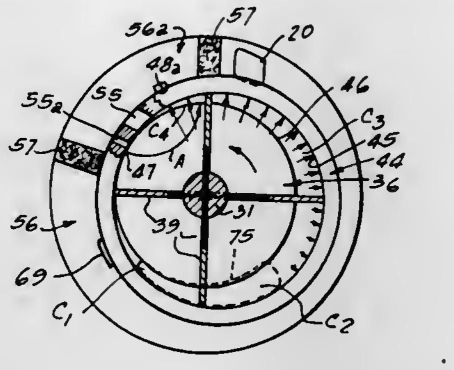


1. In a control system for a pressure compensated variable displacement hydraulic pump of the type having a spring biased, displacement reducing, servo motor operated by a three-way pilot valve connected to the pump outlet and to exhaust and having a control circuit including a restrictor and a relief valve in series between the pump outlet and the exhaust to carry a continuous bleed flow with the pilot valve responsive to the pressure drop through the restrictor, that improvement which includes a two-way start-up valve in parallel with the relief valve and biased to open position when not subjected to inlet pressure, the position of the start-up valve controlling the pressure on the downstream side of the restrictor, which in turn positions the three-way pilot valve and hydraulic damping means for restricting the rate of closing of the start-up valve when subjected to inlet pressure.

3,865,515
SELF ADJUSTING TANGENCY-CLEARANCE COMPRESSOR WITH LIQUID PURGE CAPABILITY

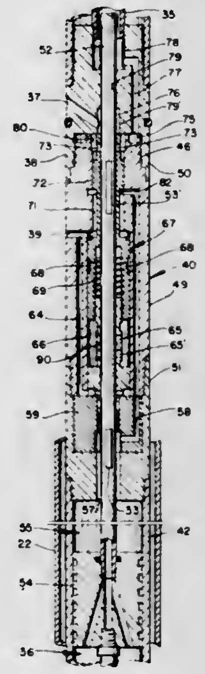
Clifford H. Allen, Chesterland, Ohio, assignor to TRW Inc., Cleveland, Ohio
Filed Dec. 5, 1973, Ser. No. 421,988
Int. Cl. F01c *19/00, 21/04;* **F04b** *49/00*
U.S. Cl. 417—283 **26 Claims**

1. In a tangency seal fluid pressure device of the type having a housing with a fluid inlet and outlet, a rotor rotatably mounted in the housing and means projecting from the rotor acting on fluid between the inlet and outlet, the improvement of a free swinging member in said housing eccentrically enveloping said rotor, guiding said means projecting from the rotor and pressed against the rotor along a line of tangency between the member and rotor by pressures between the rotor and member, said inlet and outlet communicating with the interior of the member on opposite sides of the tangency line.



3,865,516
FLUID ACTUATED DOWN-HOLE PUMP

George K. Roeder, Box 4335, Odessa, Tex. 79760
Filed Aug. 3, 1973, Ser. No. 385,459
Int. Cl. F04b *17/00*
U.S. Cl. 417—403 **6 Claims**



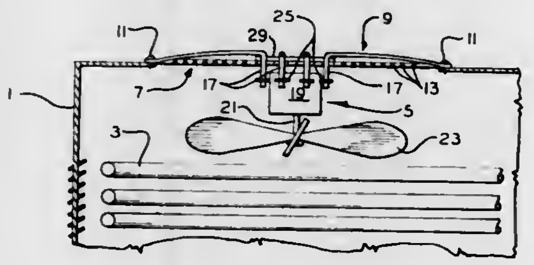
1. A fluid actuated pump assembly having a valve assembly, a power fluid chamber, an engine, and a production pump, a formation fluid inlet flow means and a produced fluid flow means flow attached to said pump; means by which a source of power fluid can be flow connected to the power fluid chamber of the valve assembly; and a spent power fluid outlet; the improvement comprising:

said engine having a piston reciprocatingly received within an engine cylinder, said piston dividing said engine cylinder into an upper cylinder chamber and a lower cylinder chamber; a valve control rod having an axial flow passageway formed therethrough, said control rod being connected to said piston and extending through the valve assembly for controlling the action of the valve assembly which in turn controls the fluid flow path to said engine; a seal tube supported by said valve assembly and spaced from said control rod, said control rod being received within said seal tube; seal means reciprocatingly receiving said control rod therethrough for preventing power fluid flow from the power fluid chamber, along the exterior surface of the rod, and into said seal tube; a connecting rod connected between said piston and the production pump for actuating the production pump;

means forming a first flow passageway from the valve assembly to said upper cylinder chamber, means forming a second flow passageway from the valve assembly to the interior of said seal tube, and into the interior of said

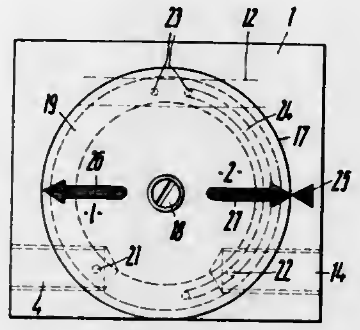
hollow valve control rod, through said piston, and into said lower cylinder chamber; means forming an exhaust flow passageway through which spent power fluid from the engine can flow;
said valve assembly includes a control sleeve axially aligned with and reciprocatingly receiving said control rod therethrough;
a valve element concentrically arranged respective to said control rod and said control sleeve and movable from a first to a second position, a marginal length of said control sleeve being received within a marginal length of said valve element;
spaced shoulders on said valve element forming a traveling annulus for flow connecting said exhaust passageway to said second passageway when said valve element is in the first position, and for flow connecting said exhaust passageway to said first passageway when said valve element is in the second position;
a spiral groove formed on a marginal longitudinal interior surface of said valve element which slidably contacts said marginal exterior surface of said control sleeve to provide for a bleed passageway through which power fluid can flow;
so that said valve assembly connects said first flow passageway to said exhaust flow passageway for conducting spent power fluid away from said upper chamber; and to conduct power fluid flow to said second flow passageway in order to cause said piston to reciprocate in a first direction; and, said valve assembly connects said first flow passageway to conduct power fluid flow to said upper chamber and to conduct spent power fluid flow away from said second flow passageway in order to cause said piston to reciprocate in a second direction.

3,865,517
REFRIGERATION CONDENSER UNIT
Walter H. Simmons, Marietta, N.Y., and Saleh H. Almilli, Waco, Tex., assignors to Carrier Corp., Syracuse, N.Y.
Filed May 29, 1973, Ser. No. 364,566
Int. Cl. F25b *39/04*
U.S. Cl. 417–424 **1 Claim**



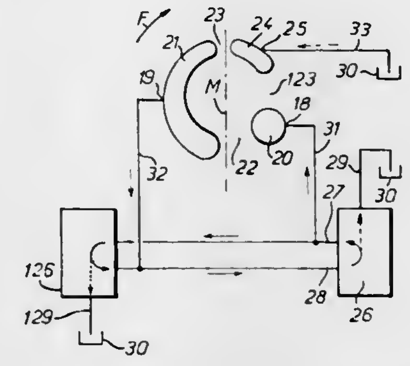
1. A refrigeration condenser unit comprising:
a housing having a horizontal, top wall;
an opening in the horizontal, top wall for passing air between the housing and the ambient surroundings;
an independent grille mounted on the housing over the opening, said grille including a plurality of motor support members extending through the opening and a protective motor cover extending partially across the opening;
a fan disposed in the housing for moving air through the opening; and
a motor for rotating the fan, said motor being attached to the motor support members under the protective cover and having a rotatable shaft, the fan being attached to and rotatable by the shaft.

3,865,518
FUEL-OIL PUMP FOR ONE AND TWO LINE OPERATION
Kyrre G. Sjotun, Kongsberg, Norway, assignor to Danfoss A/S, Nordborg, Denmark
Filed Feb. 26, 1971, Ser. No. 119,144
Claims priority, application Germany, Feb. 24, 1970, 2008510
Int. Cl. F04b *23/00, 39/00*
U.S. Cl. 417—440 **3 Claims**



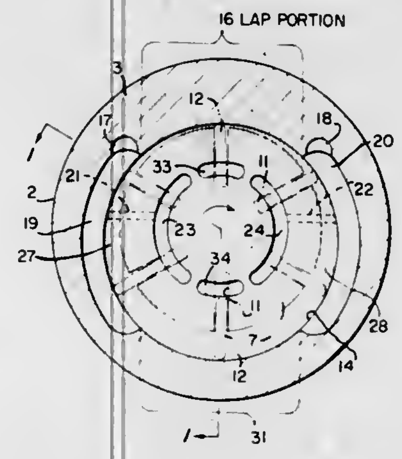
1. A fuel oil pump for single and double line operation comprising a casing, said casing defining a return passage, said casing defining intake and discharge passages, said casing having a planar external surface, first port means in said surface having fluid communication with said return passage, second and third port means in said surface having respective fluid communication with said intake and discharge passages, valve means cooperable with said port means, said valve means having a first position providing fluid communication between said first and second port means and a second position providing fluid communication between said first and third port means.

3,865,519
HYDROSTATIC UNIT AND ITS APPLICATIONS
Pierre Andre Georges Lepelletier, Chatou, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France
Filed Aug. 1, 1972, Ser. No. 277,113
Claims priority, application France, Aug. 11, 1971, 71.29305
Int. Cl. F01c *1/02*
U.S. Cl. 418—61 **8 Claims**



1. In the combination of a force feeder unit having a fluid conduit to supply liquid to said unit and a fluid conduit to remove liquid from said unit and a reservoir and means for supplying from said reservoir to said unit a quantity of liquid additional to the liquid from said one conduit, said unit comprising a fixed body having orifices connected with said conduits; the improvement comprising mobile means mounted in said fixed body and defining in said fixed body a series of chambers of variable volume adapted to transfer said liquid along a cyclic path having a first region in which said chambers increase in volume, and a second region in which said chambers decrease in volume, and distribution means disposed in said fixed body between said orifices on the one hand and said chambers on the other hand, said distribution means comprising means defining a first passage through which one of said orifices communicates with said first region, and means defining a second passage through which another of said orifices communicates with said second region, said fixed body having a third orifice connected with said supplying means from said reservoir, said distribution means comprising means defining a third passage through which said third orifice communicates with at least said first region in which said chambers increase in volume.

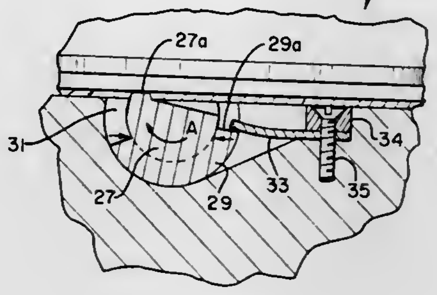
3,865,520
ROTARY MOTOR WITH FLUID PRESSURE BIASED VANE
Leo Kramer, Skillman, N.J., and Harold E. Harris, Jr., Athens, Pa., assignors to Ingersoll-Rand Company, New York, N.Y.
Continuation of Ser. No. 178,623, Sept. 8, 1971, abandoned.
This application June 1, 1973, Ser. No. 366,177
Int. Cl. F01c *21/00;* **F03c** *3/00*
U.S. Cl. 418—82 **5 Claims**



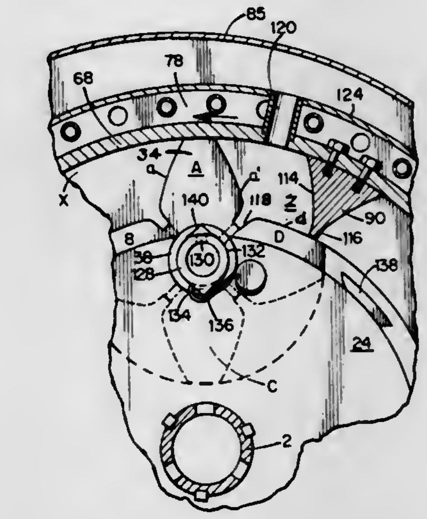
1. A sliding vane fluid motor comprising:
a cylinder including an opposed pair of spaced end walls;
a rotor mounted to rotate in said cylinder between said end walls about an axis eccentric to the axis of said cylinder and having a series of vane slots extending longitudinally and outwardly toward the cylinder;
a vane sliding in each of said vane slots for engaging the cylinder as the rotor rotates;
a pair of angularly spaced kidney ports in one of the cylinder end walls located in spaced angular relationship about the axis of the rotor and communicating with the ends of the vane slots as the rotor rotates to supply fluid to and exhaust fluid from the vane slots; and
at least one closed pocket provided in each of said end walls in opposed relationship and angularly located about the rotor axis between and spaced from both of said ports, said pocket being effective to trap a volume of fluid under pressure for urging the vanes outwardly as the vane slots travel past said pocket.

3,865,521
SEAL ASSEMBLY FOR ROTARY ENGINES
Lewis E. Upchurch, 31 Reservoir Ave., Revere, Mass. 02151
Filed July 30, 1973, Ser. No. 383,675
Int. Cl. F01c *19/02;* **F03c** *3/00*
U.S. Cl. 418—121 **8 Claims**

1. A seal assembly, for sealing a first engine member to a second engine member while permitting relative sliding between the members, comprising: a groove and a recess communicating with said groove in said first member; a strip of seal material disposed in said groove, said groove and said strip having the cross-sectional shape of a segment of a cylinder and having common axes, said strip having a collar disposed in said recess and limiting axial travel of the strip, and said strip being rotatable about its axis in said groove and having a sealing face disposed to one side of its axis and engaging said second member; and a spring secured to said first member and bearing on said collar on the other side of the strip axis and urging said face into engagement with said second member.

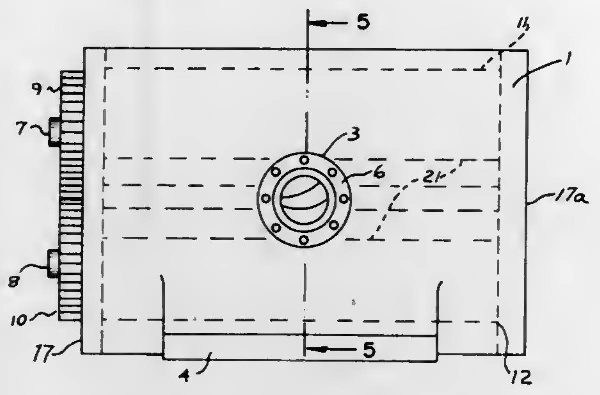


3,865,522
ROTARY STEAM ENGINE
Anthony Nardi, Burlington, Mass., assignor to Clean Energy, Inc., Newton Highlands, Mass.
Filed Aug. 30, 1973, Ser. No. 392,948
Int. Cl. F01c *1/00*
U.S. Cl. 418—161 **6 Claims**



1. In a rotary steam engine having a stationary discontinuous cylindrical inner wall and rotating outer and side walls to form a curved cylinder, a piston attached to the rotating walls and a four bladed rotatable element associated with the inner wall, one of said blades extending across and blocking said cylinder, means for causing rotation of said rotatable element through 90° whereby said piston may pass thereby, said means comprising curved faces on the blades of said rotatable elements of the same radius as said inner walls, curved faces on said piston having a radius greater than the radius of said inner wall, the inner end of said piston comprising a gear tooth, cooperating gear tooth faces at the root areas between adjacent blades of said rotating element, and an exhaust port through said outer wall located in advance of its related piston a distance such that when said exhaust port has moved beyond said blocking blade, said piston will have started its travel over the curved face of the next adjacent blade and a sealed chamber between said piston and blocking blade will be created, said curved faces of said piston and blocking blade arranged to engage initially along a line toward the outer end of said blocking blade to cause rotation of said element with the line of engagement between said piston and blocking blade moving inwardly as rotation of said blocking blade continues, said gear tooth and gear tooth faces then coming into operative engagement to continue the rotation of said element through said 90°.

3,865,523
CONTINUOUS FLOW ROTARY PUMP
Samuel J. Baehr, La Prairie, Ill. 62346
Filed Mar. 16, 1973, Ser. No. 342,071
Int. Cl. F01c *1/16*
U.S. Cl. 418—201 **11 Claims**



1. In a positive displacement rotary pump of the type designed for inducing continuous transfer of fluid material comprising, a pump casing having side and end walls, said casing having a pair of communicating and parallel cavities formed therein, said casing having an intake port and an outlet port provided upon its approximate opposite sides and opening into said cavities at the location of their communication within said casing, said casing being formed having channels provided upon its interior cavity surfaces, one of said channels being in communication with the intake port, and the other of said channel being in communication with the outlet port, said channels being elongated and arranged substantially in parallel with the length of said cavities, a pair of parallelly arranged and intermeshing rotor means, one of each rotor means disposed for close tolerance rotation within each of said cavities, said rotor means intermeshing at the vicinity of the communication between said casing cavities, each rotor means having a shaft extending axially from each of its ends, said shafts being bearing mounted within the end walls of said casing, one of said rotor means including a series of helical ribs formed upon its surface, the other of said rotor means including a series of helical flutes formed upon its surface, said rotor ribs and flutes being intermeshed, a plurality of said ribs and flutes being simultaneously in communication with either the elongated intake port and outlet port channels for providing pulse-free displacement of fluid materials and the continuous discharge of multiple quantities of said fluid material along the length of said rotor means, and at least one of said intermeshed ribs and flutes always being simultaneously in communication with both the intake and outlet channels during operation of said rotary pump.

3,865,524
ROTARY HYDRAULIC MOTOR
Tommy E. Stauth, Dodge City, Kans.
Continuation of Ser. No. 247,700, April 26, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,534
Int. Cl. F01c *1/18*
U.S. Cl. 418—206 **2 Claims**

1. A rotary motor comprising:

a housing having a central body portion and opposite first and second side portions;

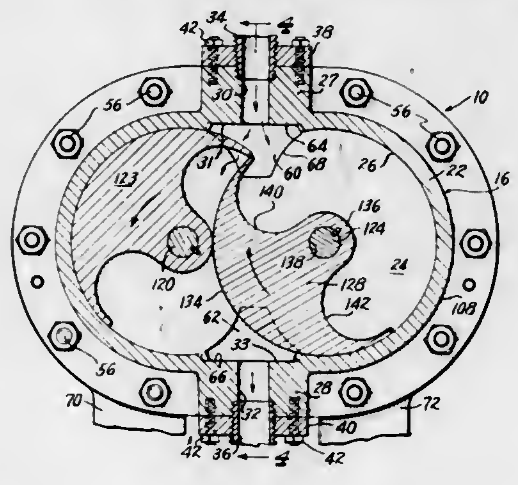
the central body portion being elongated and having a main rotor chamber formed therein defined by a rotor wall;

the central body portion having fluid inlet and outlet passages therein in diametrically opposed locations, said rotor wall having indentations therein about said inlet and outlet passages and extending axially between said first and second side portions;

a pair of axles, including an output axle and a timing axle, extending transversely across the main rotor chamber and journaled in bearing means formed in the first and second side portions;

a gear on each of said axles exterior of the second side portion, said gears being in mesh with one another;

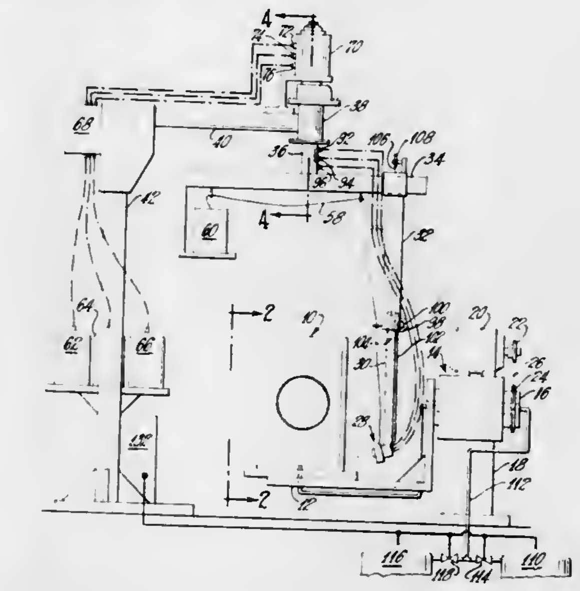
a rotor on each axle, said rotors each being substantially semi-cylindrical in form and having a convex outer face contacting the wall of the rotor chamber during rotation, the rotors each including a central projecting hub with a transverse bore therein, and a pair of concave inner faces on each side of the hubs, the axles extending through said bores and the rotors being fixedly secured thereto and rotate in opposite directions such that the tip ends of respective rotors make sealing contact with each other



during rotation as do respective convex outer faces and central projecting hubs; and

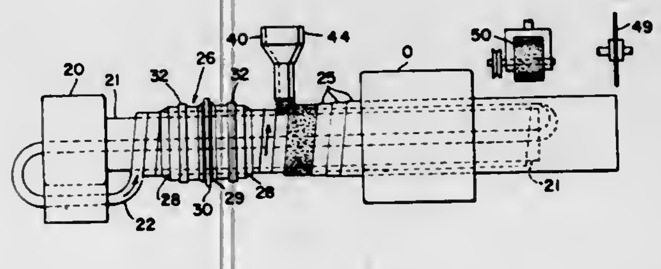
well means comprising truncated triangular chambers formed in the side portions coincident in location with the indentations of the rotor wall, said truncated triangular chambers having their bases corresponding in dimension to said rotor wall indentations and wherein each of the said triangular truncated chambers terminates at a distance inwardly of the rotor wall just beyond the point where the tip ends of respective rotors make sealing contact with each other.

3,865,525
APPARATUS FOR COATING THREE DIMENSIONAL OBJECTS
John William Dunn, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corp., Toledo, Ohio
Filed June 26, 1972, Ser. No. 266,191
Int. Cl. B05c *5/00, 7/02;* **B29c** *13/00*
U.S. Cl. 425—60 **14 Claims**



1. Apparatus for coating three dimensional surfaces of objects comprising: turret means constructed and arranged to provide a support for an object to be coated and for rotation of the centerline of the support in a plane passing through the longitudinal axis of an object to be coated thereon, a rotatable member positioned to one side of said support and supported for rotation about an axis generally lying in said plane, an extensible member supported on said rotatable member for reciprocation generally parallel to said axis over the corresponding axial dimension of the object, material deposition means on said extensible member for coating the object, first drive means for rotating said rotatable member, second drive means for rotating said turret means, third drive means for reciprocating said extensible member by a distance corresponding to said axial dimension, and control means constructed and arranged to actuate said first drive means for 360° of rotation of said rotatable member while also actuating said third drive means to reciprocate said deposition means over one circumferentially extending area of the object, said control means thereafter actuating said second drive means to index said turret means to bring another area of the object in line with said axis, and said control means thereafter reactuating said first and third drive means to cause said deposition means to reciprocate over said other area of the object.

3,865,526
APPARATUS FOR MANUFACTURING PIPES
Frede Hilmar Drostholm, Vedbaek, Denmark, and Leonard S. Meyer, Columbia, S.C., assignors to Frede Hilmar Drostholm, Vedback, Denmark, by said Leonard Meyer
Division of Ser. No. 237,120, March 22, 1972, Pat. No. 3,784,667. This application June 18, 1973, Ser. No. 370,795
Int. Cl. B29d *23/08*
U.S. Cl. 425—140 **10 Claims**



1. Apparatus for use in making fiber reinforced resin pipe lengths having bell and spigot ends, comprising a mandrel having an axially movable surface, a bell forming mold element removably mounted on the moving mandrel surface to be advanced axially therewith, means for applying at least one layer of liquid fiber reinforced thermosetting resin material on the moving mandrel surface and on the mold element, and means for heating the applied thermosetting resin material to effect solidification thereof during axial advancement of the layer of fiber reinforced resin material and of the mold element.

3,865,527
TIRE CONDITIONING AND TRUING APPARATUS
C. Bernie McGehee, 2212 Robin Hood, Albany, Ga. 31705; J. Samuel Rees, Rt. 1, Box 4, Preston, Ga. 31824, Luther J. Johnson, Jr., P.O. Box 56, Preston, Ga. 31824
Filed Aug. 25, 1972, Ser. No. 283,808
Int. Cl. B29h *3/00, 21/00*
U.S. Cl. 425—11 **7 Claims**

1. Tire conditioning apparatus comprising:

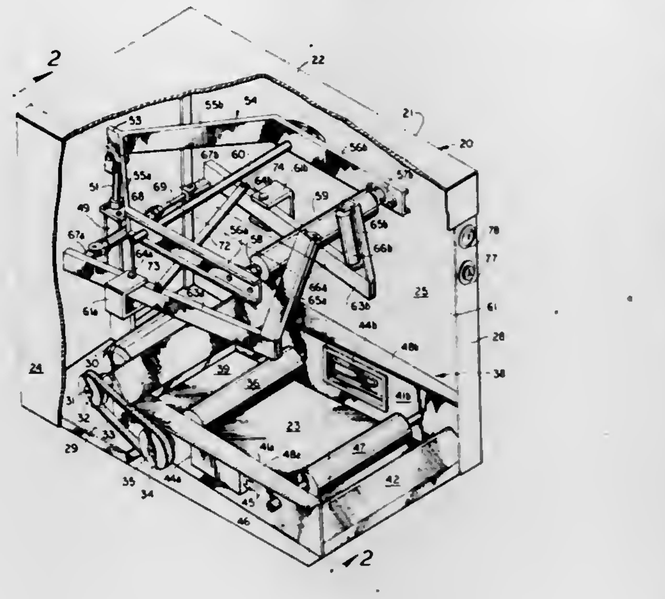
housing means defining an interior region dimensioned to receive a tire to be conditioned;

rotatable support roller means mounted in said housing means to rotatably support a tire received in said interior region;

motive means operably disposed in said housing means to impart rotation to a tire disposed on said support roller means;

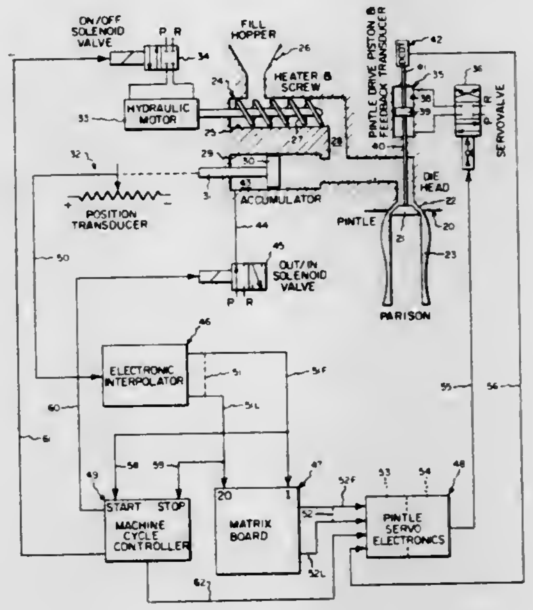
pressure roller means disposed in said housing means to selectively apply force tending to resiliently deform a tire disposed on said support roller means; and

heater means positioned in said housing means to apply heat



directly to each of the sidewalls of a tire disposed on said support roller means.

3,865,528
EXTRUSION APPARATUS HAVING ELECTRONIC INTERPOLATOR
Louis G. Roess, Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.
Filed Nov. 1, 1973, Ser. No. 411,830
Int. Cl. B29d *23/04*
U.S. Cl. 425—145 **19 Claims**



1. In cyclically operated extrusion apparatus including a die head and pintle movable relative to each other to provide a variable orifice, servocontroller means responsive to an electrical command signal for effecting relative movement between said die head and pintle and means for forcing extrudable material through said orifice to form a parison the wall thickness of which is determined by the size of said orifice, wherein the improvement comprises means providing said command signal including means providing a continuously variable electrical signal related to the parison forming sequence of each cycle of operation, electronic interpolator means to provide a plurality of interpolator output electrical signals responsive to different portions of the total range of said variable signal, programmable means for selecting portions of said interpolator output signals to provide programmed output signals and means for summing said programmed output signals to provide said command signal.

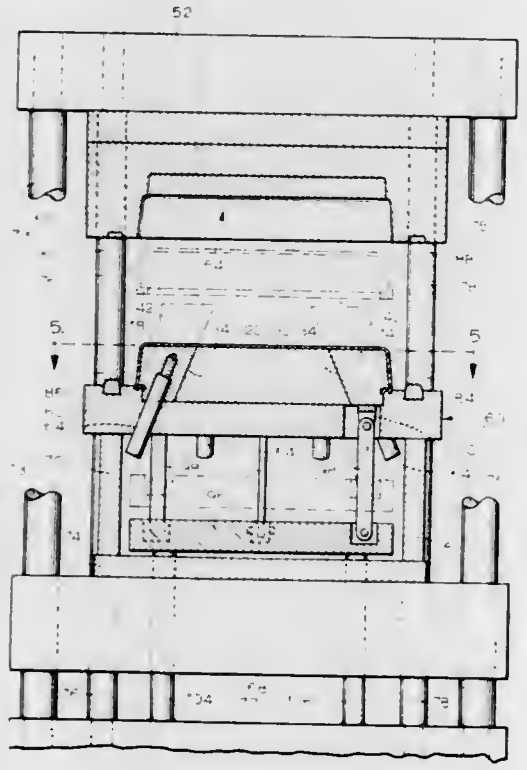
3,865,529
MOLDING APPARATUS

Francesco Guzzo, Melrose Park, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Dec. 5, 1973, Ser. No. 421,779

Int. Cl. B29c *1/00;* B29f *1/00*

U.S. Cl. 425—249 6 Claims



1. An injection mold for manufacture of a plastic article having a bottom wall and a plurality of side wall portions forming a generally hollow polygonal enclosure with an inwardly extending flange portion adjacent an open top of said article thereby to constrict said top opening, said mold comprising:

first mold means having a mold defining surface corresponding to the exterior surface dimensions of at least a portion of said article; and

second mold means having a mold defining surface corresponding to the interior surface dimensions of said article and comprising a generally frusto-pyramidal central member having a plurality of side wall portions of a predetermined slope and corresponding in number to said plurality of article side walls and having a plurality of corner wall portions located intermediate respective pairs of said central member side wall portions with said corner wall portions having a lesser slope than said side wall portions and further including side wall segments slidably movable along respective ones of each of said side wall portions, and corner wall segments slidably movable along respective ones of said corner wall portions, said side and corner wall segments each being movable from respective mold defining positions in which said segments cooperate with said central member to form said mold defining surface of said second mold means and a collapsed position in which said side and corner wall segments are displaced relative to said central member so that said second mold means is suffficiently reduced in size to permit it to be withdrawn from the constricted top opening of said plastic article.

3,865,530
PRESSURE CONTROL DURING BLOW-MOULDING

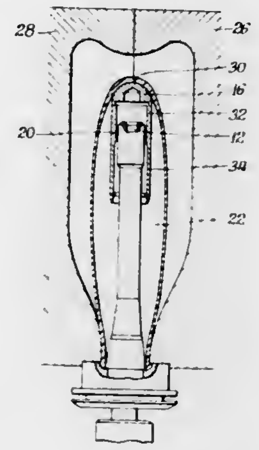
Jesselallee, 21 e, 2 Hamburg 73, 21 E, and Karl-Heinrich Seifert, Hauke-Haien-Weg 15, 2 Hamburg, 73, 15, Germany

Filed July 26, 1972, Ser. No. 275,141

Claims priority, application Germany, Aug. 18, 1971, 2141429

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B 4 Claims



1. A blow mould apparatus comprising:

a blow mould;

a mandrel for receiving an open-ended parison, said mandrel having a longitudinal axis and being formed with an outside surface;

means in said mandrel defining a longitudinally extending passage therethrough for passing a pressurized medium, said mandrel passage terminating in a discharge orifice at the end thereof;

an elongated cup member slidably disposed over the discharge end of said mandrel, said cup member being arranged for slidable axial movement along the axis of said mandrel and relative thereof in response to the pressure of a pressurized medium discharged from the mandrel against the closed end of said cup member to substantially elongate the parison in said mould;

said outside surface of said mandrel and the internal surface of said cup member being spaced from each other to define an orifice means which is variable as said cup member is moved relative to said mandrel along the longitudinal axis of said mandrel in response to the pressure of the pressurized medium so that discharge occurs and the orifice moves along the length of said cup member to variably throttle the pressurized medium discharged from said mandrel.

3,865,531
BLOW MOLDS FOR MAKING CONTAINERS HAVING RECESSED BOTTOMS

Lawrence A. Moore, Rockford, Ill., and Donald R. Welty, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 16, 1973, Ser. No. 342,042

Int. Cl. B29d *23/03*

U.S. Cl. 425—387 B 11 Claims

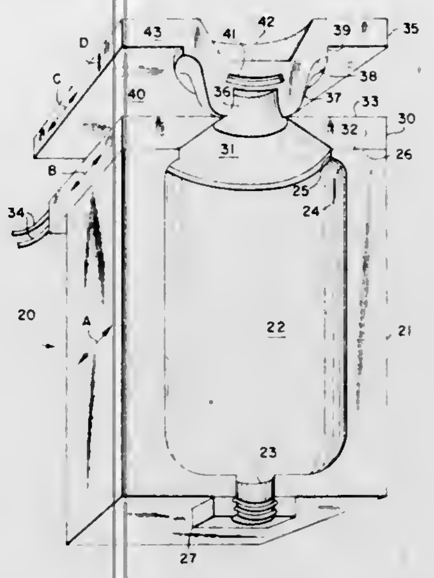
1. A blow molding apparatus for forming a container having an inwardly recessed end, comprising:

a blow mold having a cavity tubular in shape with an inwardly concave end,

means for expanding a parison within such cavity into said shape thereof having a tubular portion and an outwardly convex end,

means for establishing a temperature differential between the convex end and the tubular portion of the blown article to maintain the convex end heated and soft while the tubular portion is maintained sufficiently cooled to have at least some degree of rigidity,

and means for moving at least a part of the said inwardly concave end of the blow mold into the tubular portion thereof during the existence of the temperature differential to move the outwardly convex end of the blown article into the tubular portion thereof to reverse the curvature of said end to form an essentially outwardly concave end on the blown article.



3,865,532
APPARATUS FOR EXPANDING THERMOPLASTIC FOOD IN A VACUUM

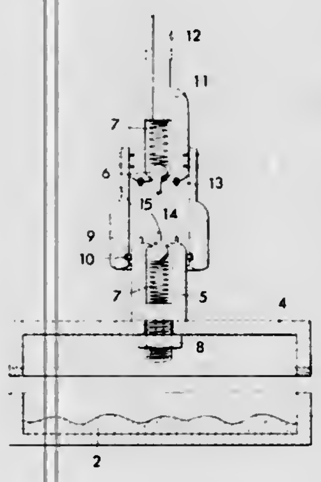
Sankichi Sakuma, Fujishiro, Japan, assignor to Takasago & Perfumery Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 125,492, March 18, 1971, abandoned. This application Mar. 22, 1973, Ser. No. 344,047

Claims priority, application Japan, Mar. 31, 1970, 45-30140

Int. Cl. A23g *1/22*

U.S. Cl. 425—405 R 1 Claim



1. Apparatus for expanding thermoplastic food in a vacuum comprising:

a thermoplastic food mold,

a cover therefor,

said cover having a first sealing ring at the periphery thereof,

a first hollow cylindrical cylinder which passes through said cover and communicates with said thermoplastic food mold,

said first hollow cylindrical cylinder having a first cavity,

a first spring and a first sphere disposed within said first cavity so as to bias said first sphere to close a first opening in said first cavity,

said first sphere having a first projection thereon which extends beyond said first cavity when said first sphere is biased to close said first opening,

a second hollow cylindrical cylinder which is adapted for connection to a vacuum source,

said second hollow cylindrical cylinder having a second cavity,

a second spring and a second sphere disposed within said second cavity so as to bias said second sphere to close a second opening in said second cavity,

said second sphere having a second projection thereon which extends beyond said second cavity when said second sphere is biased to close said second opening,

a guide ring,

means rigidly connecting said guide ring to said second hollow cylindrical cylinder,

a second sealing ring for slidably connecting said guide ring to said first hollow cylindrical cylinder,

whereby movement of said guide ring with respect to said first hollow cylindrical cylinder causes said first projection of said first sphere to push against said second projection of said second sphere causing compression of said first and second springs and opening of said first and second cavities to permit the connection of a vacuum source to said thermoplastic food mold.

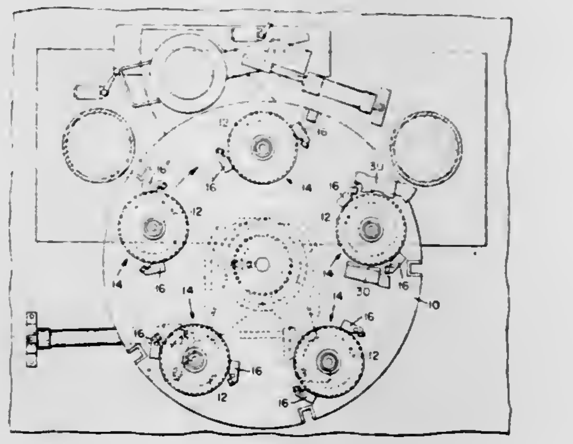
3,865,533
MEANS FOR SECURING AND REMOVING MOLDS FROM COMPACTING APPARATUS

Thomas A. Deprez, and Frank M. Whalley, both of Rochester, N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed May 15, 1974, Ser. No. 469,979

Int. Cl. B30b *5/02, 11/00*

U.S. Cl. 425—405 H 10 Claims



1. In powder compacting apparatus of the type which includes a supporting means having a plurality of openings formed therethrough for receiving and supporting a plurality of mold assemblies which contain compacted parts after they have been formed from a powder material, the improvement in means for securing and removing said mold assemblies from said supporting means, comprising:

latching means mounted on said supporting means for securing said mold assemblies in their respective positions relative to said openings formed in the supporting means, said latching means being releasable from securing positions relative to said mold assemblies so that the mold assembly can be lifted and removed from the supporting means when the latching means are released.

3,865,534
DEVICE FOR CLAMPING A MOLD FRAME USED FOR CENTRIFUGAL COMPACTION OF CONCRETE

Takemitsu Mori, Tokyo, Japan, assignor to Nippon Concrete Industries Co. Ltd., Tokyo, Japan

Division of Ser. No. 258,355, May 31, 1972, abandoned. This application Dec. 11, 1973, Ser. No. 423,769

Claims priority, application Japan, Jan. 26, 1972, 47-10449

Int. Cl. B28b *21/80;* B22d *13/10*

U.S. Cl. 425—451.7 4 Claims

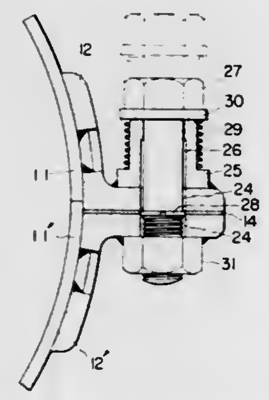
1. In a device for clamping a mold frame used for the centrifugal compaction of concrete which is characterized by angle-shaped flanges having one arm thereof fixedly secured

to respective ones of a pair of long shell steel plates of semicircular section which are positioned together to form a cylindrical frame, said angle-shaped flanges having concentric bolt penetrating holes formed in the other arms thereof, the improvement comprising:

a bolt for insertion through said concentric holes from one side of the other arm of one of said flanges;

a nut for positioning on the opposite side of the other arm of the other of said flanges for internally receiving said bolt in threaded engagement therewith;

means for retaining said nut in abutting relation with said opposite side of said other arm of said other of said flanges and for preventing accidental removal thereof;



a retaining metal fitting guide means concentrically connected about the hole in said one of said flanges and having an elongated opening therethrough for permitting passage of the threaded portion of said bolt, said opening having a lower staged portion of greater diameter than the upper portion thereby forming an internal shoulder within said retaining metal fitting guide means; and

a stopper ring secured to the outer periphery of said bolt within the staged portion of said opening of said retaining metal fitting guide means and being slidable therewithin, the diameter of said stopper ring being greater than the diameter of the threaded portion of said bolt, such that said stopper ring engages said shoulder within said retaining metal fitting guide means for preventing removal of said bolt from said retaining metal fitting guide means upon threadedly disengaging said bolt and said nut.

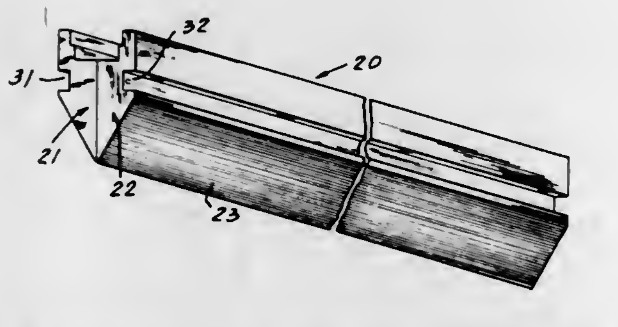
3,865,535
TWO PIECE DIE ASSEMBLY FOR EXTRUDING MICROFILAMENTS

Roy A. Langdon, and Wilfried R. Gerschon, both of Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed June 4, 1973, Ser. No. 366,557

Int. Cl. B29f *3/04*

U.S. Cl. 425—464 **8 Claims**



1. A die adapted for the simultaneous extrusion of a plurality of longitudinally aligned filaments, said die comprising:

A. a pair of mating sections, each section being formed of metal, said sections defining together in an assembled configuration a longitudinally elongated assembly,

B. said assembly defining exteriorly a pair of opposed, tapered die faces, one on each of said halves, said faces mating to define an angular edge portion,

C. said assembly further defining therewithin a centrally disposed, longitudinally elongated chamber rearwardly opening, forwardly laterally tapered in said assembly, a portion of said chamber being in each of said sections,

D. said assembly still further defining therewithin a plurality of longitudinally spaced, generally vertically extending channels, each channel extending between said chamber and said edge portion, each channel having an average cross sectional area along its length ranging from about 6.4×10^{-5} to 4.8×10^{-4} square inches, and

E. a peripheral layer of bonding material between said sections bonding together said section in said assembled configuration located in opposed, abutting side regions therebetween and in abutting edge regions therebetween vertically between said channel and said forward edge portion and between said channels.

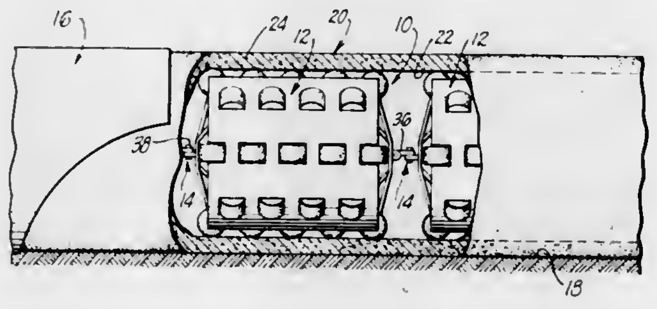
3,865,536
TRAVELING INTERNAL CONDUIT SUPPORT

B. Neil Johnson, 10811 Newcombe Ave., Whittier, Calif. 90605, and Robert A. Midthun, 1404 Tustin, Santa Ana, Calif. 92700

Continuation of Ser. No. 248,649, April 28, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 462,085

Int. Cl. B28b *17/00, 21/00*

U.S. Cl. 425—472 **12 Claims**



1. A traveling internal support for a conduit comprising:

at least one carriage having a longitudinal axis and movable in a direction of said axis through the interior passage of said conduit, said carriage including a frame conduit wall engaging rollers rotatable on fixed axes transverse to said carriage axis and spaced about the full circumference of said carriage in a manner such that rollers are located at the bottom, sides, and top of said carriage for engaging and rolling along the floor, sides and top of the conduit wall to internally support the wall as the carriage travels through said conduit passage, and said rollers having peripheral conduit wall engaging surfaces of substantial width compared to the roller radius.

3,865,537
MOISTURE INDICATOR FOR PHOTOFLASH LAMP

Howard S. Painter, Linden, and Donald E. Armstrong, Williamsport, all of Pa., assignors to GTE Sylvania Incorporated, Montoursville, Pa.

Filed Mar. 6, 1974, Ser. No. 448,647

Int. Cl. F23d *5/12*

U.S. Cl. 431—13 **16 Claims**

1. A photoflash lamp comprising:

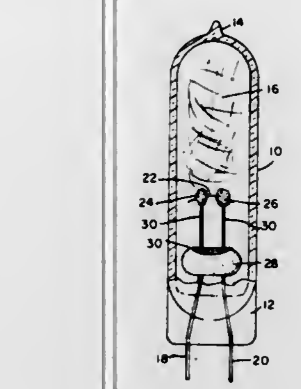
an hermetically sealed, light-transmitting envelope;

a quantity of filamentary combustible material located within said envelope;

a combustion-supporting gas in said envelope;

ignition means attached to said envelope and disposed in operative relationship to said combustible material; and

a moisture indicator comprising a quantity of dried paste disposed in said envelope to indicate by a change in coloration the presence of air therein, said dried paste comprising a mixture of cobaltous cobalticyanide, a colloidal magnesium silicate, and between about 0.5 percent to about 2 percent by weight of a water soluble organic polymer of the hydrogen bonding type.



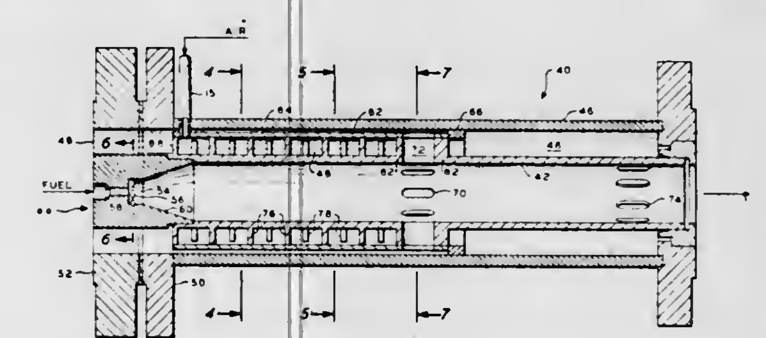
3,865,538
COMBUSTOR AND COMBUSTION APPARATUS

Harold T. Quigg, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 238,318, March 27, 1972, Pat. No. 3,826,078, which is a continuation-in-part of Ser. No. 208,245, Dec. 15, 1971, abandoned. This application Apr. 11, 1974, Ser. No. 459,956

Int. Cl. F23d *11/44*

U.S. Cl. 431—215 **13 Claims**



1. An apparatus for producing and utilizing heat energy, comprising, in combination:

an air supply conduit;

a combustion means for burning a fuel to produce hot combustion gases containing heat energy, said combustion means comprising a primary combustion region, a secondary combustion region located downstream from said primary combustion region, and a quench or dilution region located downstream from said secondary combustion region;

a fuel inlet means for introducing a fuel into said primary combustion region;

a primary air conduit means connected to said air supply conduit and said combustion means at said primary combustion region for introducing a stream of air compressing primary air into said primary combustion region;

a secondary air conduit means connected to said air supply conduit and said combustion means at said secondary combustion region for introducing a stream of air comprising secondary air into said secondary combustion region;

a heat exchange means;

a quench air conduit means connected to said air supply conduit, said heat exchange means, and said combustion means at said secondary combustion region and said quench region for delivering a stream of air from said air supply conduit, through said heat exchange means, and introducing heated air into at least one of said secondary combustion region and said quench or dilution region of said combustion means;

a heat energy utilization means for utilizing a portion of said heat energy;

an effluent conduit means for passing hot combustion gases from said combustion means to said heat energy utilization means, and

an exhaust conduit means connecting said heat energy utilization means and said heat exchange means for passing exhaust hot combustion gases from said heat energy utilization means and into heat exchange with the air from said quench air conduit means and thereby utilize an additional portion of said heat energy.

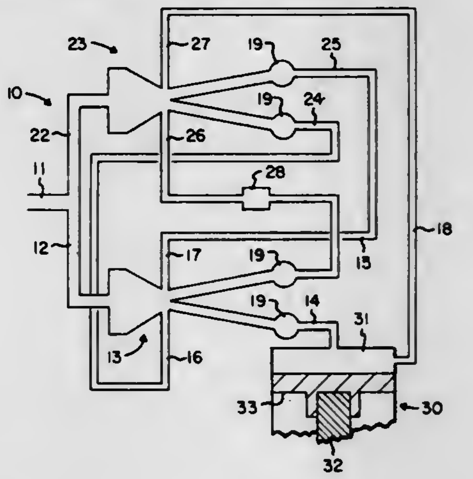
3,865,539
PIEZOELECTRIC VOLTAGE GENERATOR

Harland L. Burge, Jr., Tarzana, and Richard J. Salvinski, Hacienda Heights, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 4, 1973, Ser. No. 393,874

Int. Cl. F23q *3/00;* **F02p** *3/12*

U.S. Cl. 431—255 **4 Claims**



1. A combustion system of the type having a reactant injector, a source of a reactant at a high pressure, means for supplying the reactant to the injector and a spark ignition device in communication with the combustion zone, and comprising:

a housing;

a piston moveably mounted within said housing, said housing, and one end surface of said piston defining a first chamber therebetween;

a piezoelectric device mounted within said housing and positioned in engageable relationship with the other end surface of said piston for producing an electrical potential when subjected to mechanical stresses induced therein upon movement of said piston toward said device, said device including electrode terminals coupled to the combustion system ignition device; and

a fluidic oscillator coupled to said chamber and to the reactant source, the one surface area off said piston being greater than the area of engagement of the other surface with said piezoelectric device by a factor of at least ten whereby reactant, when supplied under pressure to said oscillator, is periodically introduced into and relieved from said chamber for actuating periodic movement of said piston and producing an alternating voltage across said terminals and to the ignition device.

3,865,540
PURGING SYSTEM AND METHOD FOR A PROCESS PRODUCING GLASS FIBER BLANKETS

Romain Eugene Loeffler, Defiance, Ohio, assignor to Johns Manville Corporation, Greenwood Village, Colo.

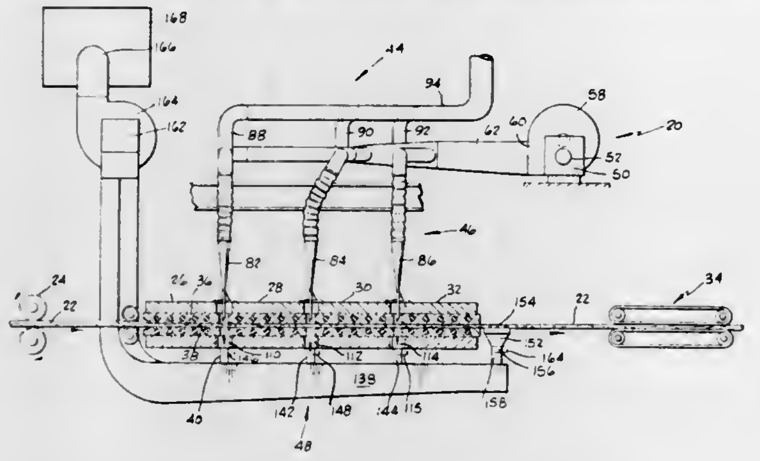
Filed Apr. 27, 1973, Ser. No. 355,356

Int. Cl. C03c *25/02*

U.S. Cl. 432—2 **13 Claims**

3. In a method of curing and controlling the thickness of a binder impregnated fiber glass blanket by passing the blanket through a series of spaced-apart separate curing assemblies which progressively cure the blanket improvement comprising:

purging gaseous pollutants produced in the curing process by preventing the escape of gases from the blanket intermediate the curing assemblies to the surroundings and by drawing off said gases from the blanket as it passes intermediate said curing assemblies, removing the pollutants from the gases, and discharging the gases after the pollutants have been removed, said purging including supplying air to one major surface of the blanket and drawing the air supplied through the blanket at a rate substantially equal to the supply rate as the blanket passes intermediate the curing assemblies.

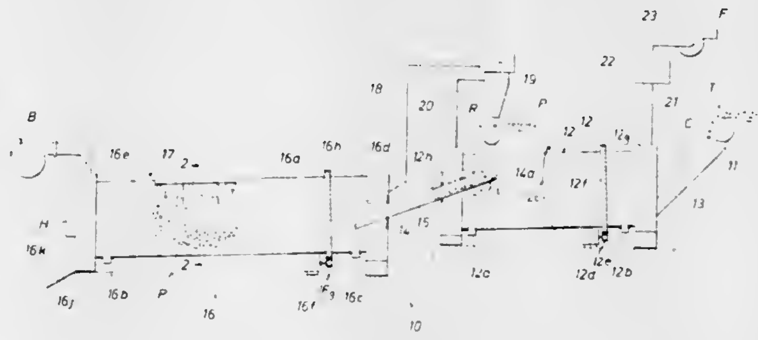


3,865,541
METHOD FOR PROCESSING COLEMANITE ORE

David Wilson, Houston, Tex., and Blair T. Burwell, Denver, Colo., assignors to Tenneco Oil Company, Houston, Tex.
Continuation of Ser. No. 183,846, Sept. 27, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,318
Int. Cl. F27b *7/14*
U.S. Cl. 432—13 **1 Claim**

1. A method of processing ore containing a combination of decrepitatable colemanite and nondecrepitatable gangue whereby the colemanite and gangue are separated from each other comprising the steps of:

a. flowing a heated gas stream linearly upwardly through a treating area along a path which is inclined with respect to the horizontal whereby the gas travels from a lower point to a higher point;
b. introducing said ore into said treating area at said higher point;
c. repeatedly lifting and then dropping said ore while moving said ore through said gas countercurrent along a path substantially non-parallel to the direction of flow of said gas until the colemanite in the ore is gradually heated to a temperature equal to or above the point of decrepitation and below the point of fusing or agglomeration of the colemanite whereby the colemanite decrepitates and separates from the gangue;
d. moving the decrepitated colemanite with said gas stream in the direction of gas flow;
e. separating the gas-moved colemanite from the gas; and
f. removing the gangue from the treating area at said lower point.



3,865,542
HAIR DYEING COMPOSITIONS CONTAINING POLYHYDROXYLATED POLYETHER NONIONIC SURFACTANTS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Montjay-la-Tour, both of France, assignors to L'Oreal, Paris, France
Continuation-in-part of Ser. No. 846,929, Aug. 1, 1969, Pat. No. 3,666,671, which is a continuation-in-part of Ser. No. 780,300, Nov. 29, 1968, Pat. No. 3,578,719, which is a continuation-in-part of Ser. No. 544,095, April 21, 1966, abandoned. This application Oct. 4, 1971, Ser. No. 186,524
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 **7 Claims**

1. A composition for dyeing hair comprising an aqueous solution of a hair dye in amounts sufficient to color said hair and a compound having the formula

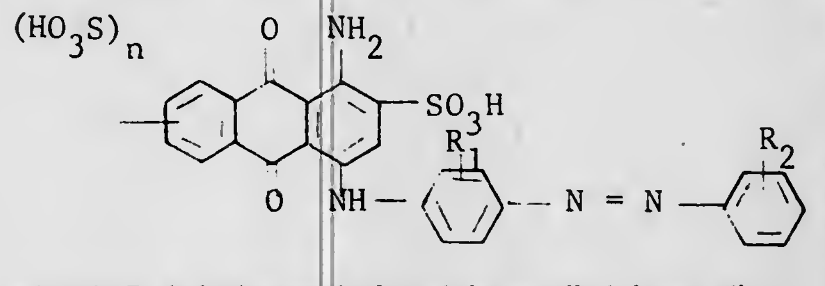
$$R_1O—[C_2H_3O(CH_2OH)]_n H$$

wherein the repeating group is linear, *n* has a statistical average value greater than 1 and equal to or less than 10, R_1 is selected from the group consisting of lipophilic alkyl, alkenyl and alkylaryl, having from 8 to 30 carbon atoms, said compound being present in amounts ranging from 1–60 percent by weight of said composition and said composition having a pH ranging from about 3–9.

3,865,543
PROCESS FOR DYEING OR PRINTING POLYAMIDE OR POLYURETHANE FIBRES WITH ANTHRAQUINONE-AZO DYESTUFFS

Ludwig Schlafer, Sulzbach/Taunus, and Karl-Heinz Krell, Kelkheim/Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 18282, March 10, 1970,. This application Feb. 29, 1972, Ser. No. 230,473
Claims priority, application Germany, Mar. 20, 1969, 1914192
Int. Cl. C09b *1/00;* **D06p** *1/20, 1/24, 3/24*
U.S. Cl. 8—39 **3 Claims**

1. A process for coloration of synthetic polyamide fibers or polyurethane fibers which consists essentially of (a) dyeing said fibers in a dyebath at a temperature of about 60°C. to about 130°C. or (b) printing said fibers with a printing paste and thereafter steaming the printed fibers with steam at a pressure of about atmospheric to about 1 atmosphere gauge, said dyebath and printing paste having a pH between about 1 and about 8 and containing a water-soluble green to olive-green anthraquinone dyestuff of the formula



wherein R_1 is hydrogen, hydroxyl, lower alkyl, lower alkoxy, phenoxy, amino, acetylamino, benzoylamino, benzenesulfonylamino, chlorine or bromine, R_2 is hydrogen, lower alkyl, lower alkoxy, chlorine, bromine, carboxyl or sulfonic acid, and *n* is 0 or 1.

3,865,544
DYEING WITH FOAM CONTROL COMPOSITION OF SILICA, POLYOXYPROPYLENES AND POLYDIMETHYLSILOXANE

Joseph W. Keil, Midland, Mich., assignor to Dow Chemical Corporation, Midland, Mich.
Division of Ser. No. 253,617, May 15, 1972;. This application Sept. 17, 1973, Ser. No. 398,294
Int. Cl. D06p *1/80*
U.S. Cl. 8—93 **3 Claims**

1. In a textile dyeing process which includes the addition of a foam control agent to the system to control the foaming, the improvement comprising using a composition which consists essentially of

1. 70 to 98.9 percent by weight of a base oil selected from the group consisting of polyoxypropylene polymers and polyoxypropylene-polyoxyethylene copolymers having molecular weights in the range of 500 to 6,000, and siloxane glycol
2. 1 to 20 percent by weight of a foam control agent which consists essentially of 88 to 95 parts by weight of a liquid polydimethylsiloxane having a viscosity of at least 20 centistokes at 25°C., 5 to 10 parts by weight of silica, and 0 to 2 parts by weight of a siloxane resin consisting essentially of SiO_2 units and $(CH_3)_3SiO_{1/2}$ units the ratio of the SiO_2 units to the $(CH_3)_3SiO_{1/2}$ units being in the range of 1:0.4 to 1:1.2, and
3. 0.1 to 10 percent by weight of a dispersing agent which maintains (2) dispersed in (1) and which is a siloxane copolymer selected from the group consisting of
   i. copolymers consisting essentially of SiO_2 units, $_{(CH3)}{}_3SiO_{1/2}$ units and $Q(CH_3)_2SiO_{1/2}$ units wherein Q is a polyoxypropylene polymer or a polyoxypropylene-polyoxyethylene copolymer radical having a molecular weight in the range of 500 to 6,000, Q being attached to the silicon atom via a silicon-carbon bond, the ratio of the SiO_2 units to the total $(CH_3)_3SiO_{1/2}$ and $Q(CH_3)_2SiO_{1/2}$ units being in the range of 1:0.4 to 1:1.2, and
   ii. copolymers which are the reaction products derived from heating a mixture of a siloxane copolymer consisting essentially of SiO_2 units and $(CH_3)_3SiO_{1/2}$ units in which the ratio of the SiO_2 units to the $(CH_3)_3SiO_{1/2}$ units is in the range of 1:0.4 to 1:1.2, and a hydroxylated polyoxypropylene polymer or a hydroxylated polyoxypropylene-polyoxyethylene copolymer having molecular weights in the range of 500 to 6,000

as the foam control agent.

3,865,545
DURABLE PRESS METHOD

John H. Forg, and George L. Payet, both of Cincinnati, Ohio, assignors to McGraw-Edison Company, Elgin, Ill.
Division of Ser. No. 179781, Sept. 13, 1971, Pat. No. 3,738,019. This application Dec. 12, 1972, Ser. No. 314,382
Int. Cl. D06m *1/00*
U.S. Cl. 8—116 R **6 Claims**

1. In a method of treating cellulose-containing material to impart a durable press thereto: the steps of introducing moisture free of polymer-forming precondensates into said material by subjecting said material to steam and raising the temperature of the environment due to the steam, subjecting the material to formaldehyde and sulphur-dioxide vapor agents and to steam in an environment of a temperature higher than that of the material, subjecting the material to circulating air to remove moisture and said agents therefrom, and then heating the material to a temperature of the order of 250° F.

3,865,546

DEPILATORY COMPOSITION AND METHOD OF USE

John C. Zemlin, Reading, and Katherine A. Bowler, Acton, both of Mass., assignors to Collaborative Research, Inc., Waltham, Mass.

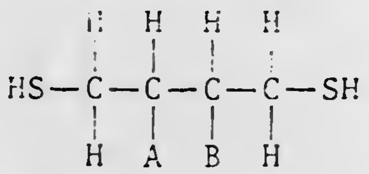
Continuation of Ser. No. 83,246, Oct. 22, 1970, abandoned, which is a continuation-in-part of Ser. No. 834,894, June 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 533,236, March 10, 1966, Pat. No. 3,459,198. This application Sept. 22, 1972, Ser. No. 291,305The portion of the term of this patent subsequent to Aug. 5, 1986, has been disclaimed.

Int. Cl. A61k *7/14*

U.S. Cl. 8—161 **13 Claims**

1. A method of removing hair from the skin of the body comprising,

applying to the hair at the skin an aqueous solution of a compound having the formula



$$HS-\underset{H}{\overset{H}{C}}-\underset{A}{\overset{H}{C}}-\underset{B}{\overset{H}{C}}-\underset{H}{\overset{H}{C}}-SH$$

wherein A is selected from the group consisting of hydrogen and a water soluble polar group,

B is a water soluble polar group, said solution having said compound present in a concentration of from 0.1 to 1.0M with a pH of from 7 to 13,

permitting said solution to react with said hair for a period of up to 30 minutes until a depilatory action is carried out,

and removing said solution from said skin along with reaction products and hair.

3,865,547

PREVENTING CORROSION DURING THE PIPELINE TRANSPORTATION OF COAL SLURRIES

Paul E. Titus, and Joseph S. Di Gregorio, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed July 28, 1971, Ser. No. 166,851

Int. Cl. C23f *11/08;* **B65g** *53/00*

U.S. Cl. 21—2.5 R **3 Claims**

1. In a method for rendering a coal-water slurry noncorrosive to a pipeline by admixture therewith of a hexavalent chromate corrosion inhibitor, the improvement comprising maintaining the coal-water slurry non-corrosive during pipeline transportation thereof by addition thereto of a minor amount of less than 1000 ppm of an inhibitor saving additive selected from the group consisting of gelatin and a reaction product of an alkyl phenol and an alkylene oxide.

3,865,548

ANALYTICAL APPARATUS AND PROCESS

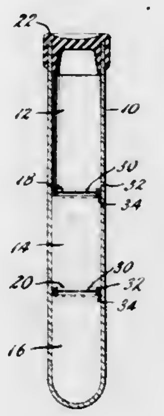
Jacques Padawer, Hastings-on-Hudson, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Continuation-in-part of Ser. No. 262,183, June 13, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 338,358

Int. Cl. G01n *1/10, 31/00, 33/16*

U.S. Cl. 23—230 R **17 Claims**

8. A method of carrying out chemical testing comprising introducing a fluid sample to be tested into a chamber, said sample being in contact with a first porous barrier and a second porous barrier, permitting at least some constituents of said sample to pass through said first barrier and contact a first fluid reagent, at least some of said constituents passing through said second barrier to contact a second fluid reagent whereby the light transmission characteristics of at least one of said reagents are altered.



3,865,549

AUTO-ANALYTICAL APPARATUS AND ANALYTICAL METHODS

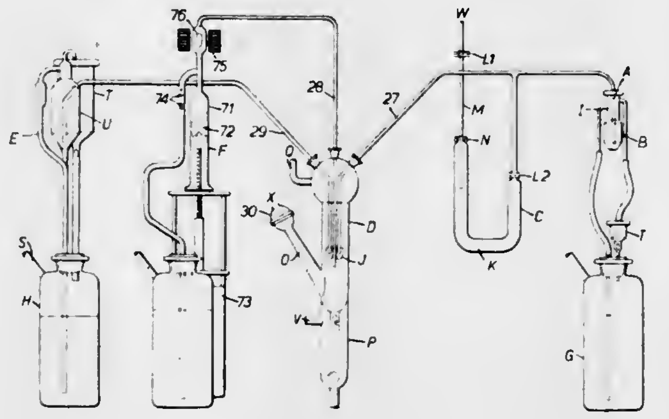
Clifford Riley, Burgess Hill, England, assignor to The Wellcome Foundation Limited, London, England

Filed Oct. 2, 1972, Ser. No. 293,889

Claims priority, application Great Britain, Oct. 7, 1971, 46639/71

Int. Cl. G01n *31/00, 31/14, 31/16*

U.S. Cl. 23—230 R **25 Claims**



20. A method of analysis of a liquid sample comprising the steps of drawing a predetermined quantity of the sample into one end of connecting tubing by a change of fluid pressure under control of a pressure controlled sample measuring device interconnected to an intermediate portion of the connecting tubing, moving the predetermined quantity of the sample into a reaction chamber to which the other end of the connecting tubing is applied by a further change of fluid pressure in the reaction chamber and the connecting tubing under control of a pressure control mechanism, supplying reagent to the reaction chamber and carrying out an analytical reaction on the predetermined quantity of sample in the reaction chamber.

3,865,550

SEMI-CONDUCTING GAS SENSITIVE DEVICES

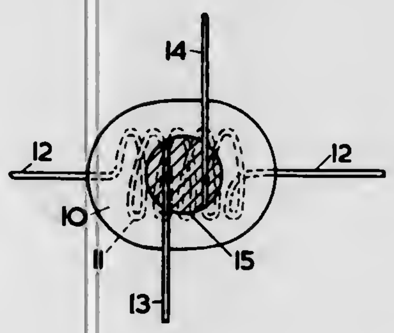
Barry Bott, Dinnington; Jack Graham Firth, Chapeltown, near Sheffield; Alan Jones, Sheffield, and Thomas Alwyn Jones, Dronfield, near Sheffield, all of England, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 174,910, Aug. 25, 1971, abandoned. This application Oct. 25, 1973, Ser. No. 409,453

Claims priority, application Great Britain, Mar. 30, 1973, 15577/73; Aug. 26, 1970, 41061/70

Int. Cl. G01n *27/00, 31/00;* **H01c** *7/00*

U.S. Cl. 23—232 E **35 Claims**



1. A gas-sensitive device comprising a semi-conducting element having a surface which can be exposed to an atmosphere containing the gas to which the device is sensitive and two electrodes separately in contact with the semi-conducting element whereby an electric current can be passed between the electrodes which is dependent upon the conductivity of the element, the element consisting essentially of a semiconducting oxide of a first metal having in solid solution within its lattice system at least one further metal which constitutes an activator promoting in the system at least one metallic ionic species which reacts more strongly within a given temperature range to the presence of the gas to be detected than the predominant metallic ionic species of the unactivated semiconducting oxide, said at least one further metal being present in an activating amount, with the result that the conductivity of the element is highly dependent within the given temperature range on the concentration of the gas to be detected in the atmosphere.

3,865,551

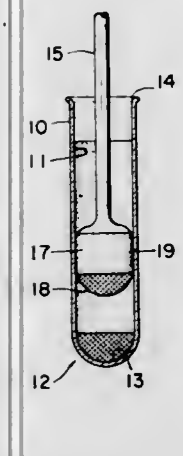
LABORATORY ANALYSIS INSTRUMENT

Yoshiko Saiki, and Atsushi Saiki, both of 30-3, 5-chome Chuo, Ota-ku, Tokyo, Japan

Filed Nov. 17, 1972, Ser. No. 307,534

Int. Cl. B01l *11/00;* **B02c** *19/08;* **C12k** *1/10*

U.S. Cl. 23—259 **4 Claims**



1. A laboratory analysis instrument comprising, in combination, a tube having a closed bottom and a coarse grinding surface on the inner bottom area thereof, a fine grinding surface at the inner circumferential wall surface extending substantially to the open mouth of said tube, and a finely frosted surface on the inner circumferential wall surface in the upper mouth area of said tube; a grinding rod provided at its lower end with an enlarged diametral portion snugly insertible into said tube for grinding a sample placed into said tube, said enlarged portion having a coarse grinding surface at the bottom area of said portion and having a fine grinding surface at the circumferential wall surface of said portion; and a stopper having a frosted circumferential surface for tightly fitting into and closing the mouth of said tube to prevent thereby leakage of a sample dissolved by a solvent in said tube when shaken in a centrifuge after grinding of said sample.

3,865,552

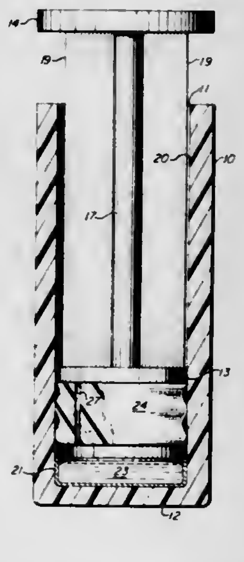
TEST TUBE

Judith Marston, Scottsdale, Ariz., assignor to Blood Services, Scottsdale, Ariz.

Filed May 7, 1973, Ser. No. 357,883

Int. Cl. B01l *3/14;* **G01n** *1/10, 33/16*

U.S. Cl. 23—259 **1 Claim**



1. A test-tube assembly specially adapted for transporting a small quantity of a liquid while maintaining said liquid in continuous contact with a reagent coated on the inner surface of the bottom of said test tube, said assembly comprising:

a. an elongate, hollow test tube, closed on the bottom end;

b. a quantity of said reagent disposed as a coating on the inner surface of the bottom of said test tube;

c. a piston member shaped and dimensioned to be slidably received downwardly in and transversely across said test tube, sealingly peripherally engaging the inner wall of said test tube;

d. an operating handle member extending upwardly from said piston for inserting said piston member downwardly into said test tube to a point spaced above the bottom thereof at a distance to maintain said liquid in continuous contact with said reagent; and

e. means defining a pressure-relief aperture in said piston member, said aperture sized to be sensitive to the viscosity coefficient differential between said liquid and air whereby air may pass therethrough, but no liquid under transporting conditions.

3,865,553

APPARATUS FOR CONTINUOUSLY PREPARING PERCHLORMETHYL MERCAPTAN

Jan Masat; Rudolf Dohnalek, and Jiri Chvejka, all of Prague, Czechoslovakia, assignors to Spolana, narodni podnik, Neratovice, Czechoslovakia

Division of Ser. No. 196,948, Nov. 9, 1971, abandoned. This application Oct. 30, 1972, Ser. No. 302,118

Claims priority, application Czechoslovakia, Oct. 14, 1970, 7699-70

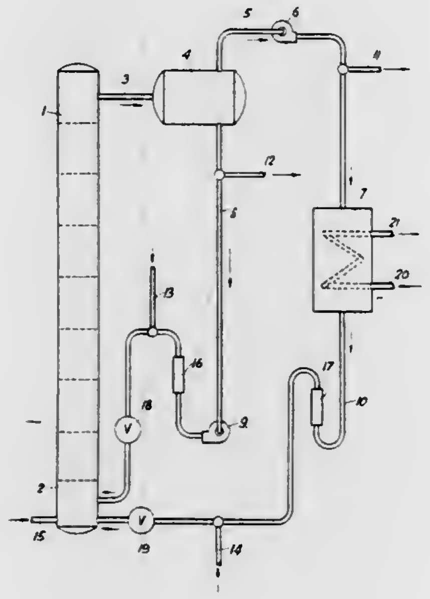
Int. Cl. B01d *17/02;* **C01b** *17/45;* **C07c** *149/16*

U.S. Cl. 23—260 **2 Claims**

1. An apparatus for continuously preparing perchloromethyl mercaptan, comprising in combination,

a. a reactor having a top and a bottom end portion and provided with a chlorine supply inlet and with at least one perforated partition for mixing the components of the reaction mixture, the apertures through the partition having a total area varying between 2 and 40 percent of the overall cross-section of the reactor;

- b. a cooler provided with an inlet and an outlet for supplying and withdrawing a cooling medium, respectively;
- c. inlet means for introducing carbon disulphide and water; and
- d. a separator for separating the aqueous and organic layers, said separator having a top and a bottom end portion as well as an inlet, the separator being directly connected via the inlet means to the top of the reactor, pipelines extending from the top and bottom of the separator, both pipelines having a pump, the pipeline from the top being divided into a product outlet line and a discharge line which passes through the cooler to the reactor bottom, and the pipeline from the separator bottom being divided into a product outlet line and a discharge line which leads to the reactor bottom, the water supply inlet discharging into the pipeline of the inorganic layer, and the carbon disulphide supply inlet discharging into the pipeline of the organic layer.



3,865,554
PRESSURE-AND TEMPERATURE-CONTROLLED APPARATUS FOR LARGE-SCALE PRODUCTION OF CRYSTALS BY THE CZOCHRALSKI TECHNIQUE

Joseph F. Wenckus, Needham; Roger A. Castonguay, Salem; Bernard C. Hanfly, Chestnut Hill, and Francis J. Mallahan, Woburn, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

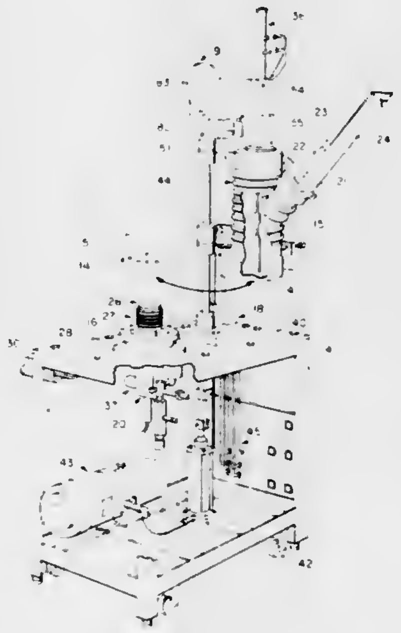
Filed Sept. 23, 1971, Ser. No. 183,169

Int. Cl. B01j *17/18*

U.S. Cl. 23—273 SP **12 Claims**

1. A pressure- and temperature-controlled apparatus adapted for growing crystals by the Czochralski technique, comprising in combination

- a. pressure-tight furnace means providing an enclosure defining therein a working volume the atmosphere of which may be varied with respect to temperature and to pressure from a vacuum to at least 100 atmospheres, said furnace means being formed of a main cylindrical furnace housing of essentially constant diameter throughout having a top section and bottom flange means and a furnace base member having the same inside diameter as said main furnace housing and being sealable with said main furnace housing through mating flange means to limit said atmosphere essentially to said volume;
- b. furnace sealing means engageable with said mating flange means and comprising two semicircular, internally grooved members and bolt means adapted to lock said grooved members in engaged position around said mating flange means;
- c. crystal-pulling rod means extending from external of said main furnace housing into said volume and movable therein in both rotational and translational modes;
- d. crystal-pulling rod bearing and sealing assembly means located in said top section of said main furnace housing and providing the sole sealing means between said crystal-pulling rod means and said pressure-tight furnace means;
- e. rotational and translation crystal-pulling rod driving means located external of said pressure-tight furnace means and rigidly mounted on said main furnace housing, said translational driving means including means to selectively drive said rods in a slow crystal-growing mode or in a rapid-positioning mode;



- f. main furnace housing support and lifting means to which said main furnace housing is affixed, said support and lifting means being adapted to raise said main furnace housing, said crystal-pulling rod means and said crystal-pulling rod driving means as a single rigid assembly off said furnace base member and to permit said single rigid assembly to be swung around when it reaches a predetermined height;
- g. crucible-support rod means extending from external of said furnace base member into said volume above said furnace base member and movable therein in both rotational and translational modes;
- h. crucible-support rod bearing and sealing assembly means located in said furnace base member and providing the sole sealing means between said crucible-support rod means and said pressure-tight furnace means;
- i. rotational and translational crucible-support rod driving means located external of said pressure-tight furnace;
- j. rod-locating means associated with said translational driving means of said crystal-pulling rod means adapted continuously to indicate at a location remote from said furnace means the precise position of said crystal-pulling rod means within said volume;
- k. crucible holding means supported on said crucible-support rod means and positioned above the upper level of said base means;
- l. heating means adapted to heat the contents of a crucible held within said crucible holding means; and
- m. viewing port means providing for visual observation of said working volume.

3,865,555
REACTOR FOR CATALYTIC GAS PHASE OXIDATION

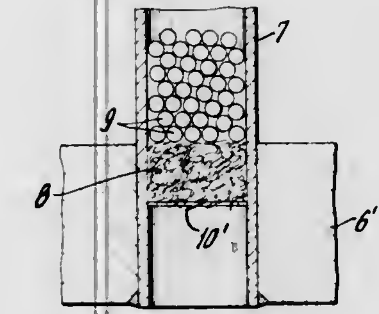
Gunter Elebracht, and Gunter Siekmann, both of Brackwede, Germany, assignors to Rheinstahl AG, Essen, Germany

Filed June 7, 1973, Ser. No. 367,784

Claims priority, application Germany, June 28, 1972, 2231557

Int. Cl. B01j *9/04*

U.S. Cl. 23—288 R **6 Claims**



5. A contact tube for a catalyst reactor comprising a tubular member adapted to be seated in a tube sheet at each end and having catalyst particles arranged therein, said tubular member having an interior wall with an annular groove adjacent at least one end, and holding means arranged adjacent said at least one end of said tubular member for retaining particles therein and including a wire gauze skein disposed across said tubes adjacent to and exteriorly of said groove, and a clamping ring arranged at the exterior end of said gauze in said groove and projecting into the interior of said tube for retaining the gauze in position.

3,865,556
CERMET COMPOSITION CONTAINING CBC MO AND AN ADDITIONAL CARBIDE

Robert W. Harrison, Portland, Conn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 29, 1961, Ser. No. 113,565

Int. Cl. C22c *29/00, 31/04*

U.S. Cl. 29—182.7 **1 Claim**

1. A hard dense high-temperature material compatible with lithium consisting of CbC and Mo to which has been added up to 15 w/o of a refractory metal carbide selected from the group consisting of WC, TiC, and ZrC.

3,865,557
AUIN$_2$ AS A CRYOGENIC THERMOMETER OR REFRIGERANT

Klaus Andres; Ernest Bucher, both of Berkeley Heights, and Jack Harry Wernick, Madison, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1973, Ser. No. 414,149

Int. Cl. B32b *15/00;* **C22c** *31/00*

U.S. Cl. 29—194 **4 Claims**

1. A device for use at temperatures below 0.1°K comprising a mass of $AuIn_2$, wherein the $AuIn_2$ contains less than a total of 2 molar parts per million of matter possessing a net electronic magnetic moment, and wherein the $AuIn_2$ contains less than 100 parts per million by volume of superconductor matter as a second phase and wherein the total content of matter, other than $AuIn_2$, is no greater than 1 percent.

3,865,558
WINDOW

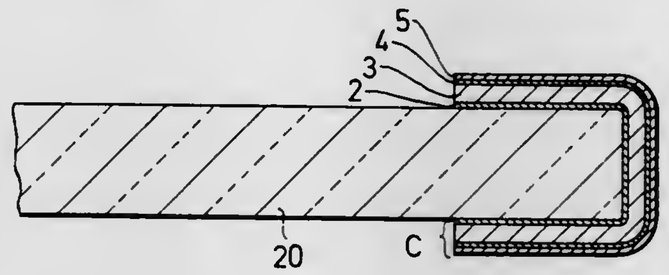
Mario Roth, Aachen-Laurensberg; Hans Peter Siemonsen, Aachen; Siegfried Kuiff, Merkstein, and Heinz Moebs, Herzogenrath, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed May 29, 1973, Ser. No. 364,311

Claims priority, application France, June 1, 1972, 72.19666

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 **9 Claims**



1. A window comprising a sheet of glass, a layer of silver enamel of generally strip shape baked onto a part of the surface of the sheet, a bright copper layer overlying the enamel layer, a bright nickel layer overlying the copper layer, and a bright chromium layer overlying the nickel layer.

3,865,559
COMPOSITE THERMOSTAT METAL

Jacob L. Ornstein, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 30, 1974, Ser. No. 438,129

Int. Cl. B32b *15/18*

U.S. Cl. 29—195.5 **3 Claims**

1. A composite thermostat metal comprising a first outer layer of a metal of relatively high coefficient of thermal expansion having a nominal composition, by weight, of from about 71 to 76 percent manganese, from about 9 to 19 percent copper, and from about 9 to 17 percent nickel, an opposite outer layer of a metal of relatively low coefficient of thermal expansion having a nominal composition, by weight, of from about 35.5 to 36.5 percent nickel and from about 63.5 to 64.5 percent iron, and an intermediate layer of a metal having a nominal composition, by weight, of about 61.5 percent iron, about 22.0 percent chromium, about 5.75 percent aluminum, and about 0.5 percent cobalt, said intermediate metal layer being sandwiched between and metallurgically bonded to said first and opposite outer metal layers.

3,865,560
PROCESS FOR MANUFACTURING DECORATIVE PRODUCTS OF ALUMINUM AND ALLOYS OF ALUMINUM

Leon Sabetay, Issoire, France, assignor to Cegedur GP, Paris, France

Filed Apr. 13, 1970, Ser. No. 28,061

Claims priority, application France, Apr. 16, 1969, 69.11760

Int. Cl. B23p *3/00;* **C23b** *9/02*

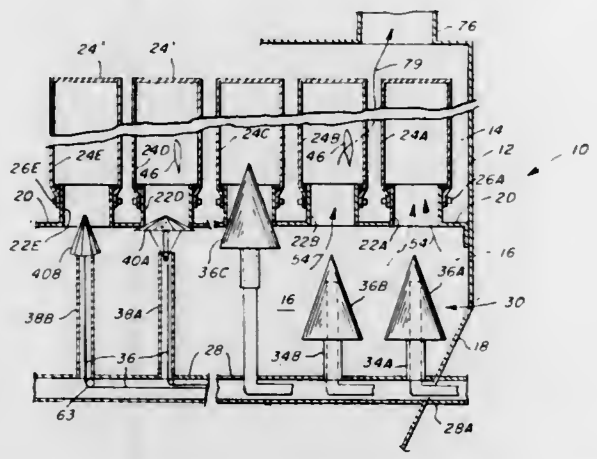
U.S. Cl. 29—197.5 **16 Claims**

1. A process for manufacturing composite sheets including a face sheet of aluminum or an alloy of aluminum having on the surface local chemical heterogeneities capable of causing variation in tint in response to anodization comprising positioning a relatively thin composite sheet having local surface heterogeneities of a composition corresponding to the tints desired for the final anodized oxide layer to cover the entire surface of a relatively thick support plate consisting of a metal having the mechanical and/or physical properties desired for the final product, the ratio between the thickness of the support and the composite sheet being at least equal to 5, rolling the composite sheet and support for reduction in combined

thickness by an amount at least equal to 1/15 of the initial thickness.

3,865,561
SELECTIVE PLUGGING OF FILTER ELEMENTS

Jack S. Osborn, 4041 S. Richmond, Tulsa, Okla. 74135
Continuation-in-part of Ser. No. 139,723, May 3, 1971, Pat. No. 3,712,114. This application May 18, 1972, Ser. No. 254,383
Int. Cl. B01d *46/00*
U.S. Cl. 55—18 **11 Claims**



1. In a self-contained closed apparatus having a single inlet for particulate laden air and a single outlet conduit for effluent for particulate free air, in which more than two particulate-matter collecting porous filter elements are positioned in a single outlet air chamber, and in which each of said elements is connected to and sealed over a separate opening in a tube sheet, said tube sheet separating an inlet air chamber from said outlet air chamber said particulate-matter-laden inlet air passing from an outlet conduit into said inlet air chamber, through said openings in said tube sheet, into said porous filter elements, through the porous walls of said elements and into said outlet chamber, said outlet chamber discharging through said outlet conduit, the method of testing the condition of any one of said elements comprising: selecting a first of the series of openings,

selectively closing off the first of said openings;

determining by measuring the concentration of particulate in the effluent whether there has been an appreciable increase in the particulate-matter-laden character of the effluent flowing through said outlet conduit;

if there has not been an appreciable increase in said character, reopening said first opening and in order selecting a second opening of the series and closing said second opening; and

determining by measuring the concentration of particles in the effluent whether there has been an appreciable increase in the particulate-matter-laden character of the effluent flowing through said outlet conduit.

3,865,562
CHROMATOGRAPHIC SEPARATING APPARATUS AND METHOD

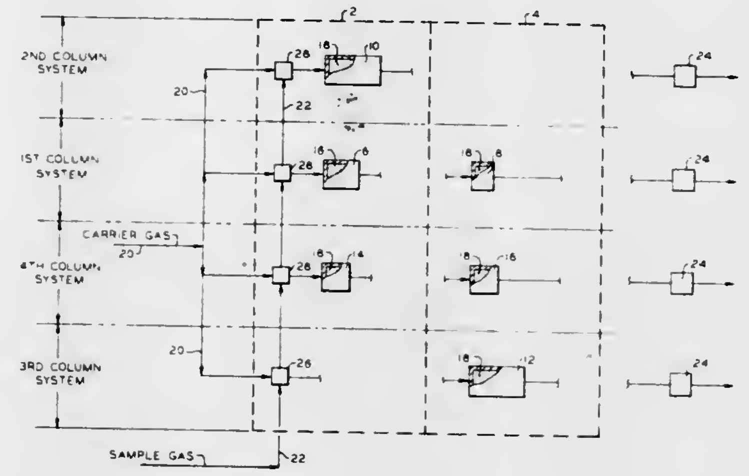
Buell O. Ayers, and Raymond D. McCoy, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed May 18, 1972, Ser. No. 254,742
Int. Cl. B01d *15/08*
U.S. Cl. 55—67 **10 Claims**

1. A method for chromatographically separating preselected components from sample fluid having a multiplicity of components, comprising:

passing a portion of said sample fluid into a first chromatographic column having a first length and having a separating material therein maintained at a first temperature (T_1);

separating in said first column a first group of components comprising a preselected component from the remainder of said portion of said sample fluid;

passing the thus separated first group of components from said first chromatographic column into a second chromatographic column having a second length and a separating material therein maintained at a second temperature (T_2), said separating material in said second column being the same as said separating material in said first column, said temperature T_1 being of a value in centigrade units of at least two times the value of temperature T_2 and the first and second column lengths being adapted to discharge the preselected, separated component from the second column in an order equivalent to that order of discharge obtained by passing a like sample through a single chromatographic column having the same separating material maintained at a preselected temperature intermediate to the temperatures of the first and second columns;



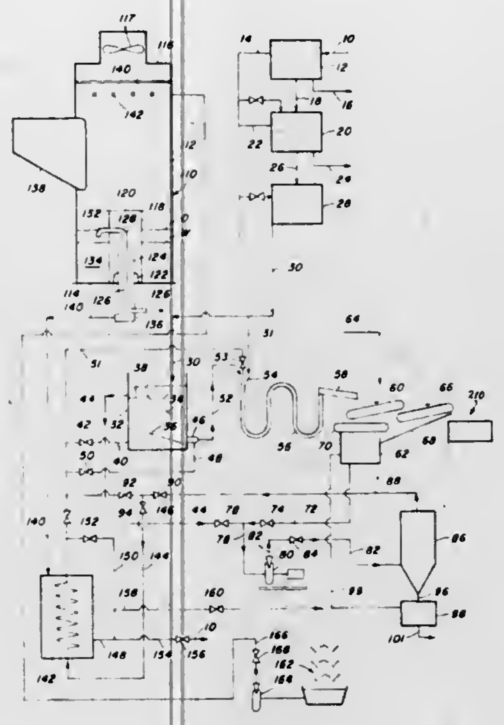
separating in said second column at least the preselected component from the remainder of said first group of components; and

discharging the thus separated, preselected component from the second chromatographic column.

3,865,563
APPARATUS FOR WASHING PARTICULATE COMESTIBLE MATERIALS

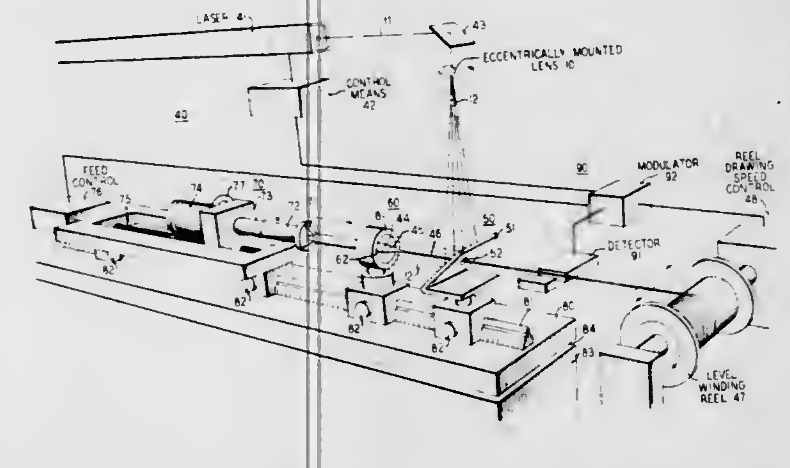
Edward S. Wright, Pittsburgh, Pa., and John W. Angstadt, Williamsville, N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.
Division of Ser. No. 156,765, June 25, 1971, Pat. No. 3,736,182. This application Mar. 21, 1973, Ser. No. 343,231
Int. Cl. B01d *53/34*
U.S. Cl. 55—257 **1 Claim**

1. A condenser-separator which comprises:
a. a vessel;
b. an inlet means for introducing a gaseous mixture including water vapor and entrained oil;
c. spray means disposed within said vessel above said inlet means;
d. screen means disposed above said spray means for removing entrained oil;
e. a first conduit means disposed within and affixed to the base of said vessel thereby forming a collection and separation zone with the inner wall of said vessel for collecting a water phase and oil phase and for separating such phases, said conduit means enclosed at the top and having portal means at the base thereof;
f. a second conduit means disposed within said first conduit and affixed to the base of said vessel, said second conduit having a height lower than the height of said first conduit means thereby forming a water overflow means and;
g. a third conduit means positioned within said collection and separation zone, having an inlet disposed at a height whereby said inlet is within said oil phase.



3,865,564
FABRICATION OF GLASS FIBERS FROM PREFORM BY LASERS

Raymond Edward Jaeger, Basking Ridge, and Walter Logan, Franklin, Somerset County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 9, 1973, Ser. No. 377,339
Int. Cl. C03b *23/04, 37/02*
U.S. Cl. 65—2 **13 Claims**



1. A method for drawing a glass fiber from a preform comprising the steps of:

forming a hot zone,

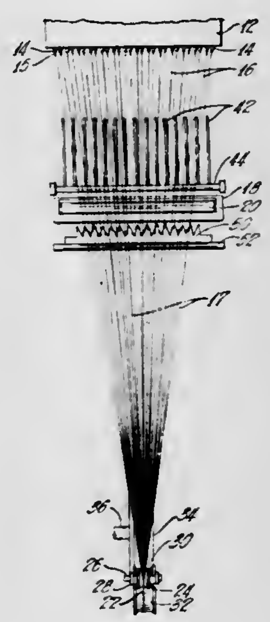
exposing at least a portion of the preform to the hot zone to raise its temperature to at least the softening point,

drawing a glass fiber from the softened portion of the preform,

the method characterized in that the hot zone is produced by means of a laser beam and the laser beam is introduced into the region of the hot zone with an approximately annular cross section and in a direction that is approximately colinear with the direction along which the fiber is being drawn.

3,865,565
METHOD AND APPARATUS FOR GATHERING FILAMENTS INTO STRANDS

Harry E. Spence, Pittsburgh, Pa., and Charles B. Warden, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 10,081, Feb. 16, 1970, abandoned, which is a continuation of Ser. No. 642.849. June 1. 1967. This application Dec. 21. 1970. Ser. No. 100.524
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **11 Claims**



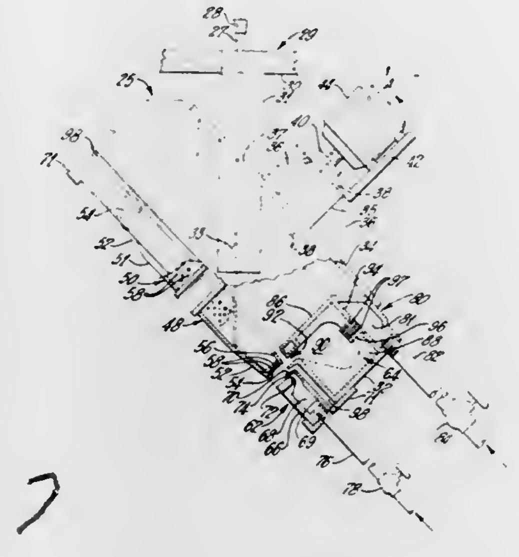
9. A method for drawing filaments from a molten glass source, gathering the filaments in a plurality of strands and forming a mat from the strands which comprises downwardly drawing streams of molten glass from an elongated multiple orifice bushing into attenuated filaments descending in downwardly converging fan formation, projecting parallel spaced fingers into the fan of filaments to separate them into strand groups, depositing size on the filaments in the strand groups, introducing members between the strand groups after the size has been deposited thereon to maintain them in separate relation in the fan formation, at the apex of the fan formation of filaments compacting the strand groups of filaments into strands, and depositing the compacted strands on a collecting surface to form a mat.

3,865,566
METHOD AND APPARATUS FOR PRODUCING AND COLLECTING FIBERS

Dale Kleist, Saint Louisville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 236,623, March 21, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,592
Int. Cl. C03b *37/04*
U.S. Cl. 65—6 **14 Claims**

1. The method of forming and collecting fibers of heat-softened fiber-forming material including rotating a spinner having an orificed peripheral wall region and an imperforate floor region about an axis disposed at an acute angle with respect to a horizontal plane, feeding heat-softened material from a supply onto the imperforate floor region of the rotating spinner, projecting streams of the material from the orificed wall region of the spinner under the influence of centrifugal forces of rotation of the spinner, attenuating the streams to fibers whereby the attenuated fibers in column formation move downwardly away from the spinner and generally paral-

lel with the axis of the spinner, engaging fibers of the moving column by jets of gas to deflect the fibers in directions generally parallel with and downstream of a moving fiber-collecting surface, and collecting the fibers on the moving surface.



3,865,567

METHOD OF SEALING A METAL ARTICLE TO A GLASS OR CERAMIC ARTICLE IN A VACUUM-TIGHT MANNER

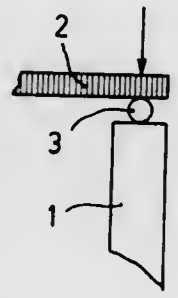
Johannes Theodorus Klomp; Adrianus Johannes Cornelis Van De Ven, both of Emmasingle, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, Inc., New York, N.Y.

Filed July 12, 1973, Ser. No. 378,591

Claims priority, application Netherlands, July 20, 1972, 10011

Int. Cl. C03c *27/04*

U.S. Cl. 65—43 **5 Claims**



1. A method of sealing articles in a vacuum-tight manner wherein at least the surfaces to be sealed consist of at least one of glass, ceramic, and metal, comprising the steps of:

a. providing between said surfaces a sealing body having a substantially circular cross-section and comprising a metal of the group consisting essentially of aluminum, aluminum alloy, lead, and lead alloy;
b. heating at least said surfaces and sealing body to an elevated sealing temperature that is below the softening point of said glass, the softening point of said ceramic material, and
c. pressing said articles together at said sealing temperature and at a pressure and loading rate that provides plastic deformation of said sealing body, and a joint thereof to the surfaces to be sealed prior to the re-formation of oxide films on the deformed surface portions of said sealing body.

3,865,568

METHOD FOR FABRICATING A NATURAL FERTILIZER

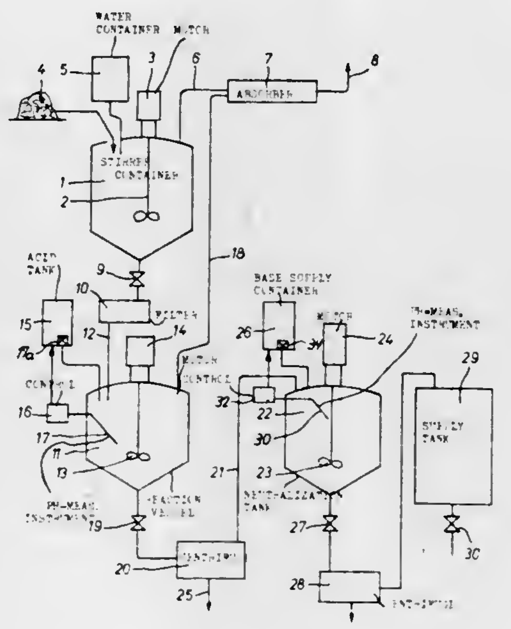
Beat Kratzer, Hauptstrasse 91, Diessenhofen, Switzerland

Filed Sept. 19, 1973, Ser. No. 398,803

Claims priority, application Austria, Sept. 26, 1972, 8286/72

Int. Cl. C05f *3/00*

U.S. Cl. 71—21 **25 Claims**



1. A method for the production of a natural fertilizer comprising the steps of:

1. treating a mixture of animal secretions with a mineral acid until attaining a pH-value in the range of 0.1 to 2 and maintaining such pH-value substantially constant;
2. agitating the mixture obtained by step (1) for a period in the order of to 60 hours in order to decompose said mixture;
3. separating the thus obtained liquid phase from undissolved solids;
4. regulating the pH of the liquid freed of solids obtained during step (3) above by the addition of a basic substance so as to attain a value of at least 5.

3,865,569

PRESERVATION OF CUT BLOOMS

Edwin V. Parups, and Allan P. Chan, both of Ottawa, Ontario, Canada, assignors to Canadian Patent and Development Limited, Ottawa, Ontario, Canada

Filed Mar. 22, 1973, Ser. No. 343,916

Int. Cl. A01n *3/02*

U.S. Cl. 71—68 **10 Claims**

1. A composition for preserving cut plant stems and floral blooms comprising:

a. sucrose, in up to about 500 parts;
b. isoascorbic or ascorbic acid or their soluble salts in from about 0.8 to 2 parts; and
c. 8-hydroxyquinoline, or its soluble salts in from about 0.4 to 1 part, all by wt.

3,865,570

PLANT GROWTH STUNTING PROCESS

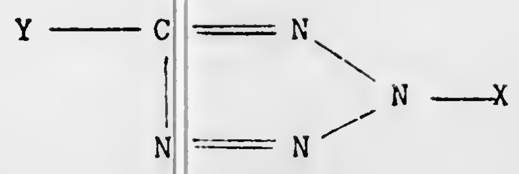
Edwin Francis George, Eversley; William Duncan Riddell, Windsor, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 13, 1973, Ser. No. 332,221

Int. Cl. A01n *5/00, 9/22*

U.S. Cl. 71—76 **7 Claims**

1. A method of stunting the growth of plants, which comprises applying to the locus thereof in an amount sufficient to stunt the growth thereof a compound of the formula:



wherein Y is phenyl or substituted phenyl wherein the substituent is selected from the group consisting of C_1 to C_4 alkyl, halogen, cyano and nitro; and X is hydrogen, hydroxyalkyl or carboxyalkyl of 2–5 carbons, $CO.OCH_3$, $CO.OC_2H_5$, $CO.OC_6H_5$ and $CO.O.CH_2C_6H_4Cl$.

3,865,571

METHOD FOR SELECTIVE HERBICIDAL TREATMENT OF CEREAL AND CARROT CULTURES

Max Schuler, Arlesheim, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 882,293, Dec. 4, 1969, abandoned, which is a continuation-in-part of Ser. No. 743,589, July 10, 1968, abandoned, which is a continuation of Ser. Nos. 583,108, Sept. 29, 1966, abandoned, and Ser. No. 583,109, Sept. 29, 1966, abandoned. This application July 27, 1972, Ser. No. 275,506

Int. Cl. A01h *9/20*

U.S. Cl. 71—120 **11 Claims**

1. A method of selectively combatting weeds in a wheat locus to be protected from weeds comprising applying to the wheat locus the compound N-(3-chloro-4-methoxyphenyl)-N′,N′-dimethylurea in an amount of from 2 to 10 kilograms per hectare of said wheat locus.

8. A method of selectively combatting weeds in a carrot locus to be protected from weeds comprising applying to the carrot locus the compound N-(3-chloro-4-methoxyphenyl)-N′,N′-dimethylurea in an amount of from 2 to 10 kilograms per hectare of said carrot locus.

3,865,572

MECHANICAL ALLOYING AND INTERDISPERSION COLD BONDING AGENTS THEREFOR

Gordon Lloyd Fisher, Mahwah, N.J., and Calvin Robert Cupp, Suffern, N.Y., assignors to The International Nickel Company, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,323

Int. Cl. B22f *9/00*

U.S. Cl. 75—0.5 R **5 Claims**

1. In the process of producing mechanically alloyed composite product powder particles, the improvement which comprises conducting the mechanical alloying operation in the presence of an inorganic interdispersion cold bonding agent (ICBCA) formed of a halide, the halide being in contact with the powder particles to be mechanically alloyed and being present in an amount effective to provide the necessary control balance during the course of the operation with the upper limit being about 3% by weight of the powder charge, the control balance being such that an intimate interdispersion of constituent powders is achieved without either the formation of an appreciable amount of detrimentally large composite particles or the deleterious adherence of powders to the milling elements or mill interior surfaces and without incurring serious impairment of the mechanical properties of the composition to be produced.

3,865,573

MOLYBDENUM AND FERROMOLYBDENUM PRODUCTION

Norbert F. Neumann, Rye, N.Y., and Peter B. Crimes, Sudbury, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed May 23, 1973, Ser. No. 363,284

Int. Cl. C22b *1/14, 49/00*

U.S. Cl. 75—3 **12 Claims**

1. The process of making a molybdenum briquette containing individually distinct particles of metallic molybdenum capable of penetrating steel slags comprising the steps of

a. charging molybdenum oxides to a reduction furnace,
b. reducing with a gaseous reducing agent in a first stage at a temperature from about 550° to less than 650°C substantially all the molybdenum trioxide in said molybdenum oxides to molybdenum dioxide,
c. reducing with a gaseous reducing agent in a second stage at a temperature between about 800° and 900°C substantially all the molybdenum dioxide to metallic molybdenum,
d. crushing the metallic molybdenum, and dioxide.
e. briquetting said crushed metallic molybdenum to a density greater than about 3.5 while retaining individually distinct particles of metallic molybdenum.

3,865,574

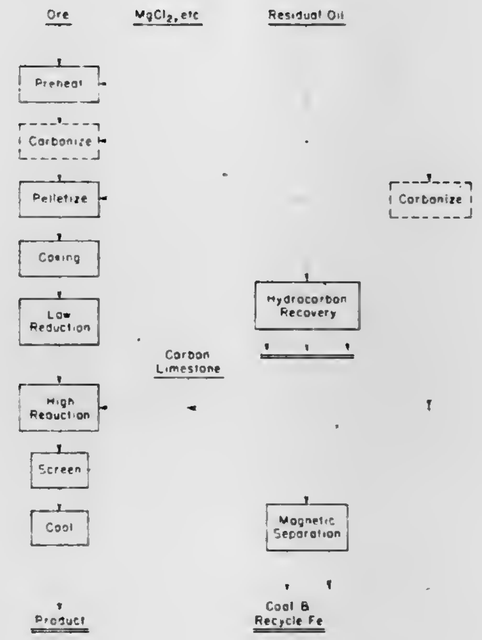
PROCESS FOR THE PRODUCTION OF LOW-SULFUR PREREDUCED IRON PELLETS

Raymond H. Long, Morristown, N.J., and William V. Bauer, New York, N.Y., assignors to The Lummus Company, Bloomfield, N.J.

Filed July 20, 1972, Ser. No. 273,522

Int. Cl. C21b *1/28*

U.S. Cl. 75—4 **34 Claims**



1. A process for producing pre-reduced iron oxide pellets of low-sulfur content from ore and a sulfur-bearing fluid carbonaceous material comprising:

- pelletizing said ore and a minor proportion of a sulfur-scavenging compound by spraying said carbonaceous material thereon while agitating same, said carbonaceous material being heated to a flowable temperature and maintaining the temperature in the pelletizing mixture below the cracking temperature and said carbonaceous material;
- coking the pellets thus formed, the coked pellets containing sufficient carbon to effect about 25 to 70 percent reduction of said ore;
- heating the coked pellets to raise the temperature of the pellets to a final reduction temperature in the range of 1,900° to 2,100°F, during said heating the temperature of

the pellets being raised from 1,500°F to said final temperature in less than about 1 hour; and
retaining said pellets at said final temperature for from ½ to 2 hours.

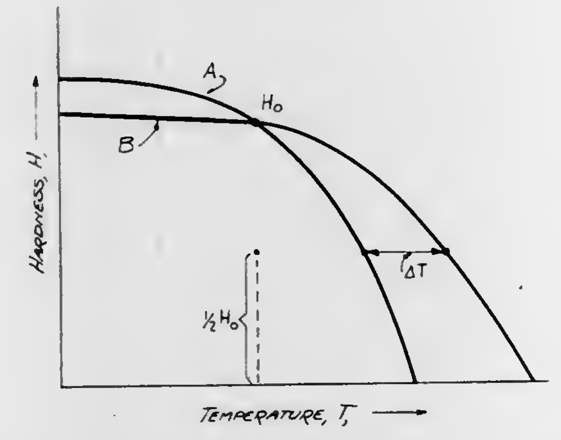
3,865,575
THERMOPLASTIC PREALLOYED POWDER

Timothy Earl Volin, Tuxedo; John Stanwood Benjamin, Suffern; Jay Michael Larson, Warwick, and Robert Lacock Cairns, Suffern, all of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,077

Int. Cl. B22f *9/00*

U.S. Cl. 75—.5 R **4 Claims**



1. New and improved superalloy prealloy powder, said powder containing up to 60% chromium, up to 30% cobalt, up to 8% titanium, up to 30% molybdenum, up to 25% tungsten, up to 10% columbium, up to 10% tantalum, up to 7% zirconium, up to 0.5% boron, up to 5% hafnium, up to 6% copper, up to 5% manganese, up to 70% iron, up to 4% silicon, and the balance essentially nickel, and being further characterized in that it is in the strain energy induced condition with a Thermoplastic Physical Characteristic of at least TPC—1.

3,865,576
METHOD OF MELTING SOLID CHARGES IN OPEN HEARTH FURNACE

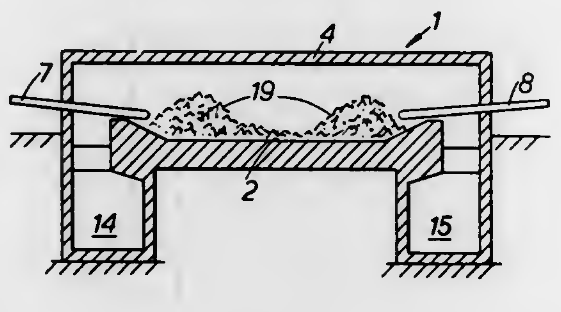
James Albert Latham, Bilston, England, assignor to British Steel Corporation, London, England

Filed Dec. 27, 1973, Ser. No. 428,653

Claims priority, application Great Britain, Jan. 11, 1973, 1566/73

Int. Cl. C21c *5/04*

U.S. Cl. 75—43 **12 Claims**



1. A method of steelmaking in an open hearth furnace having a downtake channel and an uptake channel at opposite ends of the furnace proper and burners at both said ends wherein regenerative melting and refining is conducted comprising the steps of introducing
solid charges into the furnace at both ends adjacent the burners and, following completion of charging and before conducting the regenerative melting/refining cycle,
simultaneously firing the burners at both ends whereby the charges at both ends of the furnace are at least partially melted, and exhausting the gaseous products of combustion through both said downtake and the uptake channels during such simultaneous firing.

3,865,577
BODY FOR DEOXIDIZING MOLTEN STEEL BY SUBMERSION THEREIN

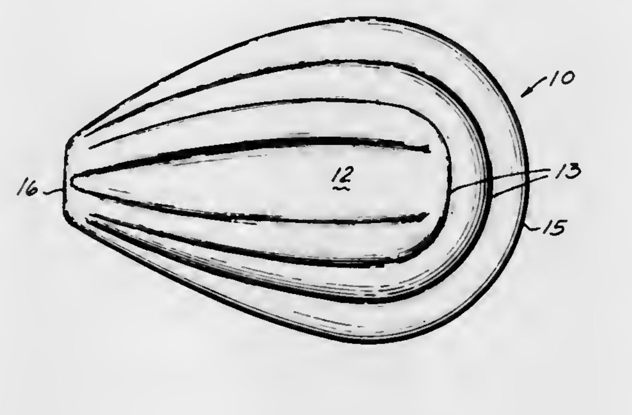
Hans Joachim Gottschol, Gevelsberg, and Karl Josef Gottschol, Herdecke, both of Germany, assignors to Metallurgische Forschungsanstalt, Vaduz, Liechtenstein

Filed Dec. 18, 1972, Ser. No. 316,431

Claims priority, application Germany, Dec. 20, 1971, 7147854[U]

Int. Cl. C21c *7/00;* **B22f** *5/00*

U.S. Cl. 75—58 **6 Claims**



1. A body for use in deoxidizing molten steel by submersion of the body into the molten steel, said body consisting of a metal for deoxidizing molten steel and said body being solid with a surface configuration of at least one substantially flat surface being disposed on one side of the body and the surface of the body adjacent the flat surface sloping inwardly from the edge of the flat surface, said flat surface having a shape of a cross section of a teardrop which cross section extends substantially parallel to the major axis of the teardrop.

3,865,578
COMPOSITION FOR TREATING STEELS

Masaru Takashima, Wakabayashi, Japan, assignor to Aikoh Co., Ltd., Tokyoto, Japan

Filed Jan. 16, 1973, Ser. No. 324,244

Claims priority, application Japan, Jan. 25, 1972, 47-9220

Int. Cl. C21c *7/02;* **C22b** *9/10;* **B23r** *35/34*

U.S. Cl. 75—58 **3 Claims**

1. A composition for treating molten steel consisting essentially of 3–40 wt. % of lithium fluoride, 15–50 wt. % of sodium fluoride, 30–70 wt. % of calcium fluoride and 1–3 wt. % of K_2TiF_6, and having a melting point between 600° and 1,100°C.

3,865,579
METHOD AND APPARATUS FOR THE PRODUCTION OF STEEL

Olin E. Williams, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

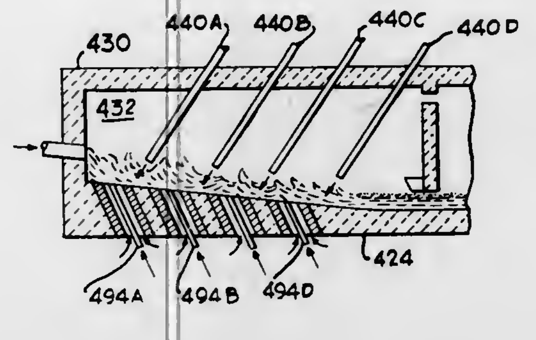
Continuation-in-part of Ser. No. 00,679, Jan. 5, 1970, abandoned. This application May 1, 1972, Ser. No. 249,318

Int. Cl. C21c *5/30*

U.S. Cl. 75—60 **11 Claims**

1. A method for the continuous production of steel comprising,
introducing molten metal into a trough-like furnace,
said furnace having an inclined base portion for the gravity flow of molten metal downwardly thereover,
contacting said molten metal flowing by gravity in said furnace with at least one stream of oxygen whereby said molten metal is at least partially refined and a slag is formed on the upper surface of said flowing molten metal,

opposing the gravity flow of said molten metal in said furnace with said stream of oxygen,



withdrawing said slag from said furnace, and
withdrawing said refined molten metal from said furnace.

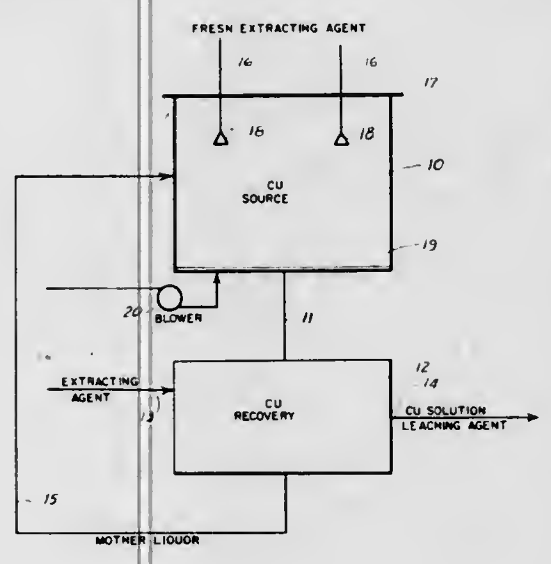
3,865,580
COPPER RECOVERY PROCESS

Theodore W. Hummel, 187 Maplewood Ave., Rochester, N.Y. 14613, and Paul C. Schroy, 336 Yarmouth, Rochester, N.Y. 14610

Continuation of Ser. No. 210,435, Dec. 21, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,386

Int. Cl. C01g *3/00, 3/14;* **C22b** *15/10*

U.S. Cl. 423—32 **11 Claims**



1. The method of extracting copper metal from natural sources carrying elemental copper or from copper scrap which comprises the steps of

1. contacting the copper-bearing material with a solution in water of
   a. ammonium carbonate in concentration range 10–50 with ammonia in range up to saturation, and
   b. 1 – 25 per cent of a water soluble iron compound comprising iron chelated with a mixture of from 50 to 90 parts of an aliphatic polyhydroxy mono-carboxylic acid,
   c. from 5 to 25 parts of a hydroxy-alklamine polycarboxylate and
   d. from 5 to 25 parts of a polyamine polycarboxylate in which all amine hydrogens have been replaced by carboxyl-containing aliphatic radicals which retains in solution both ferrous and ferric form in the ammonia plus ammonium carbonate solution, said ammonium carbonate solution being held at a pH in excess of about 7,
2. while maintaining said copper-bearing material in contact with the aqueous solution of ammonium carbonate and iron chelate,
3. contacting said solution with air, or oxygen, to induce aeration of the copper solution interface
4. returning any drain-off of said solution containing chelating agent and ammonium carbonate together with solubilized copper from said copper-bearing material for further extraction and solution of copper in the ammoniated ammonium carbonate solution,
5. thereby to develop a solution of copper approaching saturation as a limit,
6. and ultimately passing the copper in solution to a copper recovery stage.

3,865,581
HEAT RESISTANT ALLOY HAVING EXCELLENT HOT WORKABILITIES

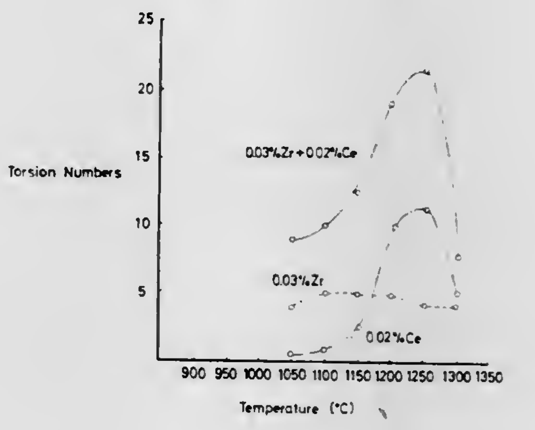
Shozo Sekino; Mizuo Sakakihara, and Shoji Murota, all of Fukuoka-ken, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,459

Claims priority, application Japan, Jan. 27, 1972, 47-9479

Int. Cl. C22c *19/00, 28/00*

U.S. Cl. 75—122 **3 Claims**



1. A heat resistant alloy having hot workability consisting essentially of 0.01 to 0.5% of C, 0.01 to 2.0% of Si, 0.01 to 3.0% of Mn, 22 to 80% of Ni and 10 to 40% of Cr as basic components together with one or both of 0.0005 to 0.20% of B, and 0.001 to 6.0% of Zr and further one or more of 0.001 to 0.5% of Ce, 0.001 to 0.2% of Mg and 0.001 to 1.0% of Be, with the balance being iron and unavoidable impurities.

3,865,582
ALLOY ADDITIVE

Nathan Lewis Church, Mentor, Ohio, and John Joseph DeBarbadillo, II., Warwick, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed July 6, 1973, Ser. No. 377,140

Int. Cl. C22c *35/00*

U.S. Cl. 75—122 **5 Claims**

1. A composition of matter particularly adapted for use as an additon agent to ferrous molten baths and consisting of by weight from about 3 to 5.5 percent magnesium, about 19 to 24 percent nickel, about 15 to 28 percent silicon and the balance essentially iron, said composition being characterized by relatively low reactivity and low smoke emission as a consequence of having been introduced into a molten ferrous body, excellent magnesium recovery not only in respect of the ferrous base product produced but also in terms of recovery as a result of the preparation of the composition per se, and also good crushability such that excessive fines are avoided.

3,865,583

METHOD OF ADDING MANGANESE TO ALUMINUM

James D. Kline, Bay Village, Ohio; William C. T. Yeh, West Chester, and Ulysses A. Preston, Paoli, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Division of Ser. No. 161,876, July 12, 1971, Pat. No. 3,793,007. This application May 4, 1973, Ser. No. 357,351

Int. Cl. C22c *1/02*

U.S. Cl. 75—138 **8 Claims**

1. In a method for the direct addition of manganese metal to molten aluminum to form a manganese-containing aluminum alloy, the improvement which comprises adding the manganese metal in finely particulate form in intimate admixture with a a nonhygroscopic metal salt flux which forms a molten phase at the temperature of the molten aluminum to which said manganese-flux mixture is added; said manganese metal being substantially all minus 14 mesh and said flux being present in an amount of from about 3 to about 10 percent by weight of the manganese-flux mixture.

3,865,584

ARTICLES FOR ADDING MANGANESE TO ALUMINUM

James D. Kline, Bay Village, Ohio; William C. T. Yeh, West Chester, and Ulysses A. Preston, Paoli, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Division of Ser. No. 161,876, July 12, 1971, Pat. No. 3,793,007. This application May 4, 1973, Ser. No. 357,256

Int. Cl. B32b *5/16*

U.S. Cl. 29—191.2 **2 Claims**

1. An article comprising a container consumable in a bath of molten aluminum containing a predetermined quantity of a composition consisting essentially of about 90 to 97 percent of finely particulate manganese metal and about 3 to 10 percent of a nonhygroscopic metal salt flux, based on the weight of the total composition, substantially all of said manganese metal being minus 14 mesh and said flux forming a molten phase at the temperature of molten aluminum to which said composition is added.

3,865,585

COBALT CHROMIUM BASED ALLOY

Leo Rademacher, Witten-Heven, Germany, assignor to Edelstahlwerk Witten Aktiengesellschaft, Witten, Germany

Filed May 22, 1973, Ser. No. 362,867

Claims priority, application Germany, May 26, 1972, 2225577

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **10 Claims**

1. An alloy consisting essentially of from 26 percent to 31 percent chromium, from 4 percent to 6.5 percent molybdenum, up to 2 percent silicon, up to 6 percent manganese, up to 1 percent iron, up to 0.5 percent boron, up to 0.5 percent carbon, from 0.15 percent to 0.5 percent nitrogen, with the balance being cobalt and impurities, the sum of said carbon content and said nitrogen content not exceeding 0.7 percent.

3,865,586

METHOD OF PRODUCING REFRACTORY COMPOUND CONTAINING METAL ARTICLES BY HIGH ENERGY MILLING THE INDIVIDUAL POWDERS TOGETHER AND CONSOLIDATING THEM

Timothy Earl Volin, Tuxedo, and John Stanwood Benjamin, Suffern, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,358

Int. Cl. B22f *1/00*

U.S. Cl. 75—203 **6 Claims**

1. A process for producing a hard refractory body having at least one refractory compound dispersed throughout a metal matrix, the refractory compound(s) constituting at least about 40% by volume of the refractory body, which comprises forming a powder charge containing (i) a plurality of powder particles containing at least one hard refractory compound forming metal, (ii) powder particles of at least one constituent capable of combining with the refractory forming metal(s) to form the desired refractory compound(s), the said constituent being present in at least a stoichiometric relation to the refractory metal, and (iii) powder particles of at least one matrix binder metal, subjecting the powder charge to dry, intensive, high energy milling for a period sufficient to form composite particles in which the constituents of the refractory compound(s) and the matrix metal are intimately united and interdispersed, and thereafter consolidating the composite particles and sintering at an elevated temperature to produce the desired hard refractory body.

3,865,587

ELECTROPHOGRAPHIC BICHARGEABLE MATERIALS AND PROCESS

Robert Joseph Noe, Mortsel, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed July 19, 1972, Ser. No. 273,056

Claims priority, application Great Britain, July 20, 1971, 34046/71

Int. Cl. G03g *5/08, 13/22*

U.S. Cl. 96—1 PC **2 Claims**

1. An electrophotographic process for producing selectively positive or negative copies of a given original comprising the steps of: uniformly corona charging a bi-chargeable photoconductive recording material comprising a photoconductive recording layer comprising an electrically insulating binder and dispersed therein a mixture of photoconductive zinc oxide particles and positively chargeable particles of the group consisting of barium sulphate, silica, and polyethylene, the ratio by weight in said layer of the photoconductive zinc oxide particles with respect to said positively chargeable particles ranging from 10:90 to less than 50:50, the recording layer containing the dispersed mixture of particles in a proportion with respect to the binder material of from 50 to 97% by weight, the zinc oxide particles having a grain size in the range of 0.1 to 15 micron and the positively chargeable particles a grain size in the range of 10^{-2} to 50 microns,

said uniform charge having one polarity for positive copy and the opposite polarity for a negative copy,

exposing said layer to a light image of said original to dissipate said charges in the exposed areas while leaving the charges retained in the non-image areas, and

developing the exposed sheets by contacting the same with toner particles charged with the same polarity for both positive and negative copies.

3,865,588

PLANOGRAPHIC PLATE WITH A POLYMERIZABLE ORGANOPOLYSILOXANE COMPOUND

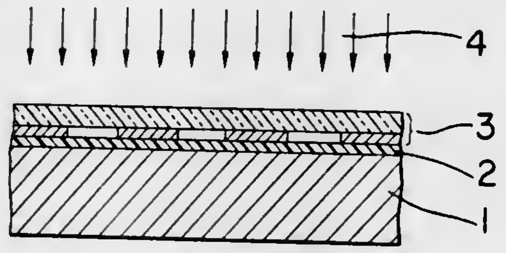
Michihiro Ohto, Tokyo; Atsumi Noshiro, Yokohama; Tetsuya Mayuzumi, and Toji Fujino, both of Annaka, all of Japan, assignors to Dai Nippon Printing Co., Ltd. and Shinetsu Chemical Co., both of Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 226,951

Claims priority, application Japan, Feb. 20, 1971, 46-7737; Mar. 5, 1971, 46-11338; Sept. 1, 1971, 46-67212; Sept. 10, 1971, 46-70177

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **17 Claims**

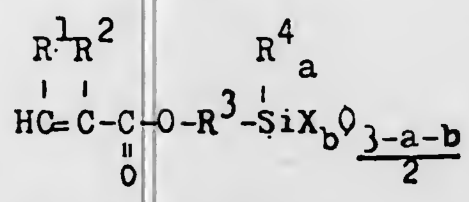


1. A planographic printing plate comprising a base plate having ink-receptive and ink-repellent areas thereon, said ink-repellent area being constituted of a polymerized and cured layer which is produced by the steps of

a. providing on the surface of said base plate a dried layer of a polymerizable and curable composition comprising

A. an organopolysiloxane selected from the group of

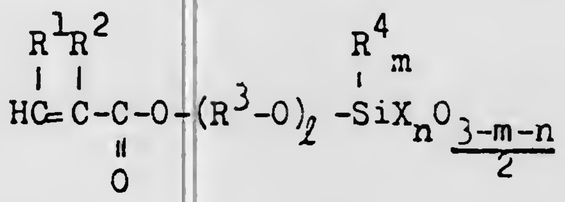
1. organopolysiloxane having at least one polymerizable siloxane unit represented by the formula



$$HC=\overset{R^1}{\underset{}{C}}\text{-}\overset{R^2}{C}\text{-}\underset{\overset{\|}{O}}{C}\text{-}O\text{-}R^3\text{-}\overset{R^4{}_a}{Si}X_bO_{\frac{3-a-b}{2}}$$

where R^1 is hydrogen, phenyl or halogen-substituted phenyl, R^2 is hydrogen or methyl, R^3 is an unsubstituted or halogen-substituted divalent hydrocarbon, having from 1 to 10 carbon atoms, R^4 is an unsubstituted or halogen-substituted monovalent hydrocarbon, having from 1 to 10 carbon atoms, X is hydroxy or alkoxy having from 1 to 4 carbon atoms, *a* is 0 or 1, and *b* is 0, 1 or 2, with the proviso that $(a+b)=0$, 1 or 2, and

2. organopolysiloxane having at least one polymerizable siloxane unit represented by the formula



$$HC=\overset{R^1}{C}\text{-}\overset{R^2}{\underset{\overset{\|}{O}}{C}}\text{-}O\text{-}(R^3\text{-}O)_l\text{-}\overset{R^4{}_m}{Si}X_nO_{\frac{3-m-n}{2}}$$

wherein R^1, R^2, R^3, R^4 and X are as defined above, l is 0 or 1 and *m* and *n* are 0, 1 or 2 with the proviso that $(m+n)=0$, 1 or 2,

B. a photosensitizer, and

C. a solvent,

b. pressing a positive pattern onto the composition layer thus provided,

c. subjecting the treated base plate to an imagewise exposure to actinic radiation from above said positive pattern, to polymerize and cure said composition layer in the exposed areas,

d. subjecting the treated base plate to a development treatment to remove the unexposed areas to expose the surface of said base plate, and

e. then fixing the images.

3,865,589

PHOTOHARDENABLE LAYER WITH INTEGRAL SUPPORT OF FABRIC OR MESH

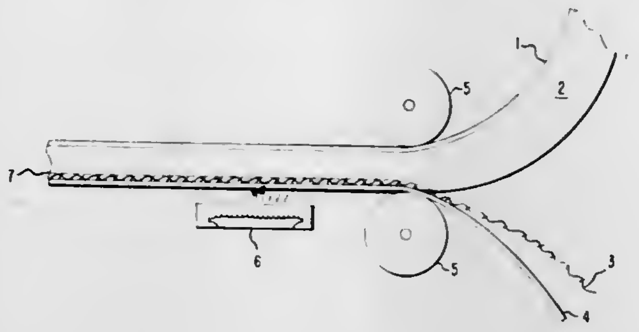
John Thomas Freeman, Freehold; Robert Bernard Heiart, Middletown, and Ernst Leberzammer, New Brunswick, all of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 11, 1973, Ser. No. 322,902

Int. Cl. G03c *5/00, 1/86, 1/68*

U.S. Cl. 96—35.1 **9 Claims**

1. In a photosensitive element comprising a solid layer of photopolymerizable material comprised of (a) an organic polymer binding agent, (b) an ethylenically unsaturated compound capable of forming a high polymer by photoinitiated polymerization, and (c) an addition polymerization initiator activatable by actinic light, the improvement comprising a polymerized stratum of said layer located on one side of said layer containing a fabric or mesh reinforcing material.



3,865,590

GRAVURE PRINTING PLATES

David Lionel Cohen, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 29, 1973, Ser. No. 364,636

Claims priority, application Great Britain, June 30, 1972, 30768/72

Int. Cl. G03f *5/00, 7/24*

U.S. Cl. 96—38 **3 Claims**

1. In a process for the manufacture of Gravure printing plates which comprises:

a. producing a hardened cell pattern in a surface of a layer of a composition comprising a resin material which is hardenable on exposure to electro-magnetic radiation, (hardening radiation), and a silver halide in which, as a result of exposure to electro-magnetic radiation insufficient to cause appreciable hardening of the resin, an image can be produced which is resistant to the transmission of hardening radiation,

b. producing in that surface of the layer an image in material which is resistant to the transmission of hardening radiation,

c. exposing the layer to hardening radiation, preferably through its other surface, and

d. removing from the first surface of the layer from within the hardened cell walls relatively less hardened resin, the improvement which comprises submitting the resin material after exposure to electro-magnetic radiation in step (a) to an oxidative treatment prior to step (c) whereby the effect of fogging of the image is ameliorated.

3,865,591

GENERAL PURPOSE DEVELOPER

Jerome Katz, Rochester, N.Y., assignor to Delaware Photographic Products, Inc., Buffalo, N.Y.

Filed May 10, 1973, Ser. No. 358,936

Int. Cl. G03c *5/30*

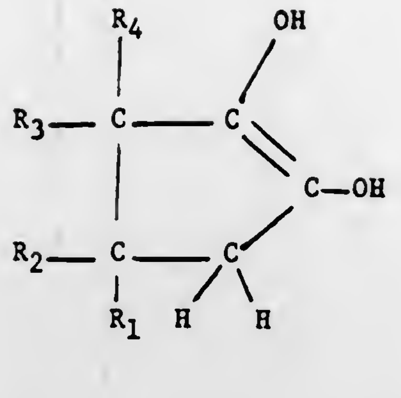
U.S. Cl. 96—66.3 **27 Claims**

1. A silver halide photographic developing composition having a pH in the range 8 – 9.5 comprising the following ingredients in the weight proportion ranges indicated per liter of composition:

3-pyrazolidone developer........................ 0.8 to 3 grams

dihydroxybenzene developer selected from the group consisting of hydroquinone, resorcinol and pyrocatechol... 0 to 14 grams

enediol developer selected from the group consisting of ascorbic acid, d-araboascorbic acid, reductic acid, 2-oxytetronic acid, 4-aryl-2-oxytetronic acid, 4-aryl-2-oxytetronimide, isoascorbic acid and enediols having the chemical structure represented by the formula



wherein

R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen and the radical $—CH_2R_5$, R_5 is selected from hydrogen and a monovalent radical selected from the group consisting of amino, cyano, halo, hydroxyl, carboxyl, sulfonyl, alkyl, cycloalkyl, aryl of the benzene or naphthalene series and alkaryl of the benzene or naphthalene series, at least one of said R_1, R_2, R_3 and R_4 being the radical $—CH_2R_5$ .... 2 to 19 grams

inorganic sulfite preservative .... 20 to 75 grams

silver halide solvent selected from sodium and potassium thiocyanate...................................... ¼ to 2½ grams

graininess reducer selected from the alkali metal chlorides .... 4 to 30 grams

restrainer .... ¼ to 2 grams

buffering agent....................................... 2 to 40 grams.

3,865,592

IMAGE-RECEIVING ELEMENT FOR USE IN PHOTOGRAPHIC SILVER SALT DIFFUSION TRANSFER PROCESS

Kinji Ohkubo, and Kazunobu Kato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 16, 1971, Ser. No. 181,209

Claims priority, application Japan, Sept. 28, 1970, 45-84537

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 R **9 Claims**

1. A method for producing an image-receiving element suitable for use in a silver diffusion transfer photographic process comprising:
providing an aqueous dispersion of silicon dioxide having an acidic to neutral pH;
adding to said aqueous dispersion an alkali agent to adjust the pH to not less than 8.0;
thereafter reacting in said aqueous dispersion of silicon dioxide a water-soluble heavy metal salt with either or both a water-soluble metal sulfide and a water-soluble metal selenide to form a precipitate of a water-insoluble metal sulfide and/or selenide; applying the resulting reaction liquor onto a support; and drying.

3,865,593

PHOTOGRAPHIC FILM UNIT FOR A PHOTOGRAPHIC DIFFUSION TRANSFER COLOR PROCESS CONTAINING COUPLER-DEVELOPERS

Yoshinobu Yoshida, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed July 2, 1973, Ser. No. 376,062

Claims priority, application Japan, July 5, 1972, 47-67244

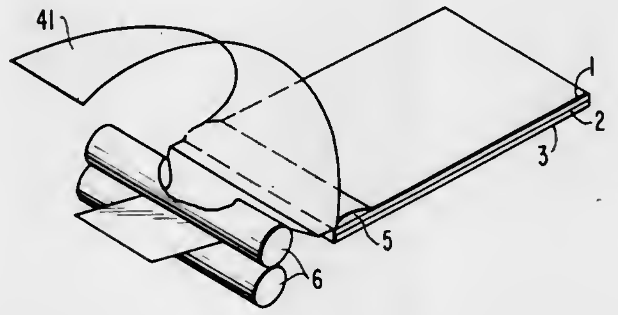
Int. Cl. G03c *1/40, 7/00, 5/54*

U.S. Cl. 96—77 **49 Claims**

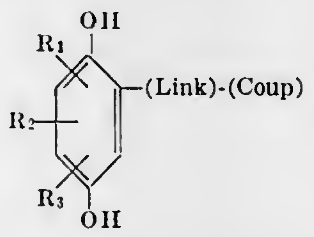
1. A photographic film unit for diffusion transfer color process which is adapted to be processed by passing the unit between a pair of juxtaposed pressure-applying members and which comprises the combination, in sequence, of

1. an image-receiving element having formed on a transparent support a mordant layer,
2. a photosensitive element having at least one photosensitive silver halide emulsion layer,
3. a water impermeable sheet, and
4. at least one of
   a. a rupturable container capable of releasing, upon rupturing, its contents between said image-receiving element (1) and said photosensitive element (2) and
   b. a rupturable container capable of releasing, upon rupturing, its content between said photosensitive element (2) and said water impermeable sheet (3), said photosensitive element (2) containing a substantially colorless and diffusible compound which develops silver halide and which is capable of forming a dye by reaction with the oxidation product of an aromatic primary amino compound, at least one of said rupturable containers retaining an alkaline processing solution,

A. said film unit containing an aromatic primary amino compound and an oxidizing agent together or separately in one or more members of said image-receiving element (1), said photosensitive element (2), said water impermeable sheet (3) or at least one of said rupturable containers (a) and (b), and



B. said film unit containing a shading agent in
   i. at least one of a layer disposed between the photosensitive silver halide emulsion layer of the photosensitive element (2) most adjacent to the image-receiving element and the mordant layer of the image-receiving element and said rupturable container (a) or
   ii. at least one of said impermeable sheet (3) or said rupturable container (b) wherein said substantially colorless and diffusible compound is represented by the general formula



wherein (Coup) stands for a coupler group, (Link) stands for a group connecting (Coup) and the hydroquinone nucleus, and R_1, R_2, and R_3 each stands for a hydrogen atom, a hydroxy group, a halogen atom, an alkoxyl group or an alkyl group.

3,865,594

LIGHT SENSITIVE PHOTOGRAPHIC MATERIAL

Walter Gauss; Siegfried Petersen, both of Cologne; Erwin Ranz, Leverkusen; Wolfgang Himmelmann, Opladen, and Harald von Rintelen, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 4, 1973, Ser. No. 366,288

Claims priority, application Germany, June 9, 1972, 2228110

Int. Cl. G03c *1/70, 1/72*

U.S. Cl. 96—84 R **11 Claims**

1. A light-sensitive photographic material containing a supported of self-supported light-sensitive layer which contains a light-sensitive 2-(1,2,4-triazolyl-(1))-1,4-naphthoquinone being substituted with a saturated or olefinically unsaturated aliphatic group attached to an ether oxygen atom in the 3-position of the naphthoquinone system.

3,865,595

LITHOGRAPHIC PRINTING PLATES

Leonard James Watkinson, Leeds, England, assignor to Howson-Algraphy Limited, London, England

Filed Nov. 9, 1972, Ser. No. 304,978

Int. Cl. G03c *1/78*

U.S. Cl. 96—87 R **6 Claims**

1. A sheet material suitable for the production of a bimetallic lithographic printing plate, which sheet material comprises
a. a base metal layer formed of alunimum or aluminum alloy.
b. a bimetallic layer, one metal of the bimetallic layer being an ink-receptive metal and the other metal of the bimetallic layer being a water-receptive metal, and
   c. an anodic layer on the base metal layer to form an electrically insulating barrier layer between the base metal layer and the bimetallic layer

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3,865,596

DIRECT-POSITIVE REDUCTION AND GOLD FOGGED AMMONIAC SILVER HALIDE EMULSION

Tetsuo Furuya, Ashigara; Yoshio Ibe, and Hideo Kanisawa, both of Odawara, all of Japan, assignors to Koniskinoku Photo Industry Co., Ltd., Tokyo, Japan

Filed June 11, 1973, Ser. No. 368,868

Claims priority, application Japan, June 17, 1972, 47-60043

Int. Cl. G03c *1/28*

U.S. Cl. 96—108 **6 Claims**

1. A direct positive silver halide photosensitive material comprising an ammoniac silver halide photosensitive emulsion and(a) at least one compound selected from soluble rhodium salts and soluble iridium salts, said compound having been incorporated into said emulsion in an amount of 0.001 to 10 millimoles per mole of the silver halide before or at physical ripening, (b) a reducing agent in an amount of 0.001 to 100 millimoles per mole of the silver halide, (c) a gold compound in an amount of 0.0001 to 0.1 millimoles per mole of the silver halide, (d) at least 105 mol percent, based on said gold compound, of at least one compound selected from thiosulfates, thiocyanates, prussic acid salts, and (e) an optical sensitizing dye, said reducing agent and said gold compound being present in sufficient amounts to cause fogging of said silver halide.

3,865,597

ADDITIVES TO NEGATIVE PHOTORESISTS WHICH INCREASE THE SENSITIVITY THEREOF

Barret Broyde, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 344,790, March 26, 1973, Pat. No. 3,808,155, which is a continuation-in-part of Ser. No. 137,032, April 23, 1971, abandoned, which is a continuation of Ser. No. 764,866, Oct. 3, 1968, abandoned. This application Feb. 4, 1974, Ser. No. 439,660

Int. Cl. G03c *1/68, 1/70*

U.S. Cl. 96—115 R **6 Claims**

1. An electron sensitive photoresist composition comprising a partially cyclized cis-polyisoprene resist and a compound selected from the group consisting of benzil and benzophenone, said resist and said compound being dissolved in a solvent system employed with said resist, the concentration of said compound in the photoresist-solvent system being an amount ranging from **0.1** to **5%.**

3,865,598

PHOTOGRAPHIC SILVER HALIDE EMULSIONS

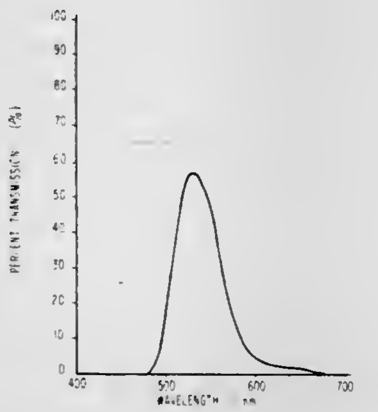
Keisuke Shiba; Masanao Hinata; Hiroyuki Amano, and Hiroshi Hara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 10, 1971, Ser. No. 197,398

Claims priority, application Japan, Nov. 11, 1970, 45-99336

Int. Cl. G03c *1/08, 1/40, 1/28, 1/30*

U.S. Cl. 96—125 **12 Claims**



1. In a photographic silver halide emulsion green-sensitized by at least one J-band sensitization type trimethine cyanine dye, wherein at least one of the nitrogen containing heterocyclic nuclei of said dye has, on the nitrogen atom thereof, a —RCOOH group wherein R is an alkylene group, or a sulfoalkyl group, the improvement wherein said J-band sensitization type dye is present in a binder dispersion of silver clorobromide containing a water soluble iodide in a molar ratio of 0.005–0.10, based upon silver chloride which is a component of said silver chlorobromide.

3,865,599

ALUMINUM OXIDE FIBERS AND THEIR PRODUCTION

Manfred Mansmann, and Ludwig Schmidt, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 18, 1972, Ser. No. 316,311

Claims priority, application Germany, Dec. 22, 1971, 2163678

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **11 Claims**

1. A process for the production of aluminum oxide fiber which comprises forming a solution containing a neutral or basic aluminum salt of a monobasic lower carboxylic acid, a hydrolyzed silicic acid ester or organoalkoxysilane and about 0.1 to 2 percent by weight of polyethylene oxide having a degree of polymerization of at least about 100,000 said solu-

tion having an aluminum content calculated as Al_2O_3 of about 8 to 18 percent by weight and an SiO_2 content of about 1 to 20 percent by weight on total oxides in said solution, dry spinning said solution to form a filamentary structure, and heat treating said structure at a temperature up to about 1,800°C.

3,865,600
SOIL CONSOLIDATION

Leonard Louis Pearson, Slough, and Anthony Cecil Plaisted, Chalfont St. Peter, both of England, assignors to Fosroc AG, Zug, Switzerland

Filed Feb. 26, 1973, Ser. No. 335,971

Claims priority, application Great Britain, Mar. 8, 1972, 10846/72; Mar. 17, 1972, 12682/72

Int. Cl. C04b *19/04*

U.S. Cl. 106—84 **20 Claims**

1. A method of consolidating soil to create waterimpermeable underground barriers, said method comprising applying to the soil an aqueous solution consisting essentially of an alkali metal silicate and a water-miscible gelling agent therefor, the gelling agent having a saponification value of 503 to 580 mg. KOH/g and being a tripartite blend of the mono-, di and triacetate acid esters of glycerol, the monoacid ester being in a substantial amount to impart water miscibility to the other two esters, the di-acid ester and the tri-acid ester being present to hydrolyze the silicate, so that the tripartite blend gels substantially all the silicate to form in the soil within a reasonably short period of time, a water-impervious gel.

3,865,601
ADDITIVE FOR IMPROVING HYDRAULIC CEMENT COMPOSITIONS

Frank G. Serafin, Peabody; Robert W. Previte, Lawrence, and Robert F. Stierli, Lexington, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 5, 1973, Ser. No. 403,963

Int. Cl. C04b *7/56*

U.S. Cl. 106—95 **7 Claims**

1. The method of preparing a water-repellant, set-retarded hydraulic cement composition, said method comprising the steps of preparing an oil-in-water emulsion containing water and a solids portion comprised of a major proportion of a water-insoluble, water-repelling acid component selected from the group consisting of fatty acids, rosin acids and mixtures thereof, from about 3 to about 30 percent by weight of a set-retarding component for said cement and at least about 0.5 percent by weight of an emulsifier formed by reacting said acid component with a base capable of forming a salt thereof, which salt will maintain a stable emulsion, and thereafter adding said emulsion to said cement in an amount ranging between about 0.001 to about 0.3 percent by weight of solids of said emulsion based on said cement.

3,865,602
PROCESS FOR THE MANUFACTURE OF CEMENT CLINKER AND SULPHUR DIOXIDE

Heinrich Stich; Walter Binder; Josef Hutter, and Helmut Marecek, all of Linz/Donau, Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Donau, Austria

Filed Oct. 16, 1972, Ser. No. 297,708

Claims priority, application Austria, Oct. 14, 1971, 8869/71

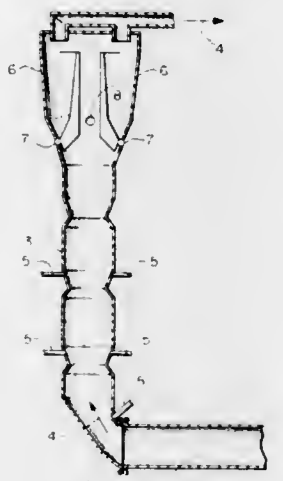
Int. Cl. C04b *7/04*

U.S. Cl. 106—103 **1 Claim**

1. In a process for the manufacture of cement clinker and sulphur dioxide from calcium sulphate by the gypsum-sulphuric acid process including a calcination step in a rotary furnace and a preheating step for the crude furnace powder, prior to its introduction into the rotary furnace, in a suspension gas zone, the suspension gas zone of the preheating step being followed by a calcination zone of the calcination step, said preheating step being carried out by flue gases issuing from said furnace, the improvement comprising:

introducing into said suspension gas zone as tertiary air a portion of the air required for said gypsum-sulphuric acid process in an amount to provide an oxygen content of 0.1 to 0.5 percent by volume in the flue gases leaving said suspension gas zone, said step of introducing comprising: passing into said suspension gas zone, as a first partial tertiary air stream, air which intrudes into a transition area between said suspension gas zone and said calcination zone at a point where the temperature of said flue gases is at least 870°C; and

introducing into said suspension gas zone the remainder of said amount of said tertiary air in at least one second partial tertiary air stream at at least one point where the temperature of said flue gases is maximally 800°C.



3,865,603
MODIFIED STARCH-EXTENDED GELATIN COMPOSITIONS

Chester D. Szymanski, Martinsville, and Gerald J. Helmstetter, Somerville, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,395

Int. Cl. A61k *9/04;* **C08b** *25/02;* **C08h** *7/00*

U.S. Cl. 106—130 **4 Claims**

1. An extended gelatin composition comprising 40 to 97 percent of gelatin and 3 to 60 percent, by weight, of a modified starch selected from the group consisting of:

a. fluidity starches chemically modified with monoreactive moieties having a degree of substitution at least 0.008, and

b. thermally modified starches chemically modified with monoreactive moieties to a degree of substitution of at least 0.008;

said modified starches selected from the group consisting of the succinates, alkenyl succinates, diethylaminoethyl ethers, phthalates, sulfonates, carboxymethylated and chlorinated derivatives, and being chosen so that an aqueous solution containing 30 percent, by weight, total solids comprising the chosen proportions of said modified starch and gelatin, held at a temperature of 137°F. (58°C.) for 16 hours exhibits no phase separation.

4. A pharmaceutical capsule shell having a wall consisting essentially of an extended gelatin composition comprising an equilibrium amount but no more than 25 percent, by weight, of water, the remainder of said composition comprising 40 to 97 percent, by weight, of gelatin, and 3 to 60 percent, by weight, of a modified starch selected from the group consisting of:

a. fluidity starches chemically modified with monoreactive moieties having a degree of substitution of at least 0.008, and

b. thermally modified starches chemically modified with monoreactive moieties to a degree of substitution of at least 0.008;

said modified starches selected from the group consisting of the succinates, alkenyl succinates, diethylaminoethyl ethers, phthalates, sulfonates, carboxymethylated and chlorinated derivatives, and being chosen so that an aqueous solution containing 30 percent, by weight, total solids comprising the chosen proportions of said modified starch and gelatin, held at a temperature of 137°F. (58°C.) for 16 hours exhibits no phase separation.

3,865,604
FLAME-RETARDANT REGENERATED CELLULOSE

Manfred Riedel, Binzen, Germany, and Rainer Wolf, Allschwil Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Apr. 2, 1973, Ser. No. 346,722

Claims priority, application Switzerland, Apr. 6, 1972, 5028/72

Int. Cl. C08b *21/20, 27/52*

U.S. Cl. 106—168 **20 Claims**

1. In a process for the production of regenerated cellulose of reduced flammability, the improvement of precipitating the cellulose from a solution of cellulose, containing a reaction product of

a. at least one compound of formula I,

$$(NPCl_2)_n \qquad \text{I}$$

in which n signifies at least 3,

b. at least one compound of formula II, and

$$HO—R—OH \qquad \text{II}$$

in which R signifies a radical selected from alkylene, cycloalkylene, cycloalkyl-alkylene, alkenylene and alkynylene, which radical contains up to 12 carbon atoms and is unsubstituted or substituted

i. by 1 to 4 substituents selected from fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, methoxyethyl, ethoxyethyl, and mono-, di- or tri- fluoro-, chloro- or bromoalkyl of 1 to 4 carbon atoms,

ii. by 1 or 2 alkoxy or alkenyloxy radicals of 1 to 4 carbon atoms, or

iii. by 1 phenyl radical.

3,865,605
READILY DISPERSIBLE PIGMENTS

Ernst Spietschka, Oberauroff, and Manfred Urban, Delkenheim, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

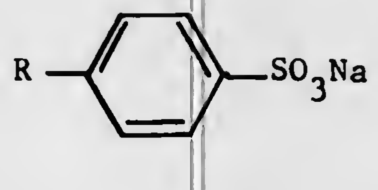
Filed Oct. 19, 1972, Ser. No. 299,132

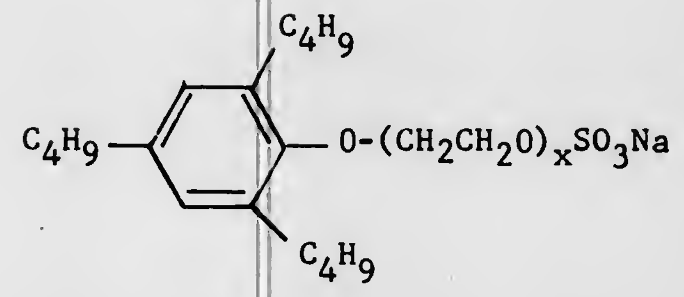
Claims priority, application Germany, Oct. 21, 1971, 2152485

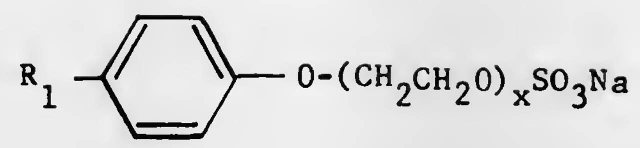
Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **5 Claims**

1. A readily dispersible quinacridone pigment composition consisting essentially of finely divided quinacridone pigment containing 1 to 10 percent by weight, based on dry weight of pigment of at least one of a surface-active agent of the formulae







wherein R is alkyl with 10 to 14 carbon atoms, R_1 is alkyl with 9 to 12 carbon atoms and *x* is an integer of from 3 to 8.

3,865,606
PROCESS FOR THE CONTINUOUS PRODUCTION OF AQUEOUS PARAFFIN EMULSIONS

Wilhelm Neier, Homberg/Niederrhein; Hans-Jurgen Lindstadt, Rheinkamp-Repelen, and Werner Webers, Orsov, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Jan. 8, 1973, Ser. No. 322,049

Claims priority, application Germany, Jan. 11, 1972, 2201127

Int. Cl. C08h *9/08*

U.S. Cl. 106—271 **13 Claims**

1. Process for continuously producing an aqueous paraffin emulsion product comprising:

1. preparing a first feed mixture by mixing together water, paraffin wax, and ionic emulsifier; mixing together a recycle stream of primary emulsion from step (2) with said first feed mixture in the weight ratio of recycle primary emulsion to said first feed mixture in the range of about 1 to 200 to produce a process stream;
2. passing the process stream from (1) under conditions of turbulent flow through a first heat exchange zone at a temperature in the range of about 90° to 120°C. to produce said primary emulsion stream;
3. preparing a second feed mixture by mixing together a portion of said primary emulsion stream from (2) and a nonionic emulsifier; mixing together a recycle stream of secondary emulsion from step (4) with said second feed mixture in the weight ratio of recycle secondary emulsion stream to said second feed mixture in the range of about 1 to 200 to produce a process stream;
4. passing the process stream from (3) under conditions of turbulent flow through a second heat exchange zone at a temperature in the range of about 80° to 95°C. to produce said secondary emulsion stream whose stability is greater than that of said primary emulsion stream; and
5. separating as the product stream the uncycled portion of said secondary emulsion stream;

3,865,607
DEVELOPMENT OF IMAGE COPIES PROVIDED BY DIFFERENTIAL ABSORPTION OF LIQUIDS

Abram Games, London, England, assignor to Imagic Limited, London, England

Filed Jan. 9, 1973, Ser. No. 322,179

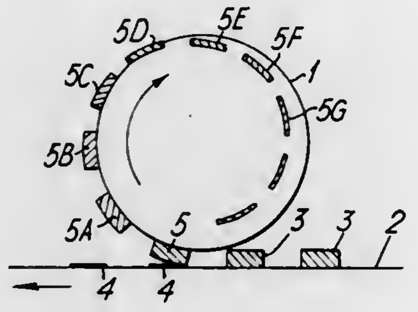
Claims priority, application Great Britain, Jan. 11, 1972, 1291/72

Int. Cl. B44d *5/04;* **B41m** *5/00*

U.S. Cl. 117—1.7 **6 Claims**

1. In a method of producing a copy of an original design carried by a surface which is such that the absorbency to a range of liquids differs either between the image and non-image areas or between contiguous image areas, or both, which comprises the steps of providing a layer of liquid from said range on said surface to form a liquid pattern on said surface corresponding to the less absorbent areas of the original design as a result of the differential absorption, contacting the liquid pattern on said surface with a transfer roller to transfer liquid in said pattern from said surface to the transfer

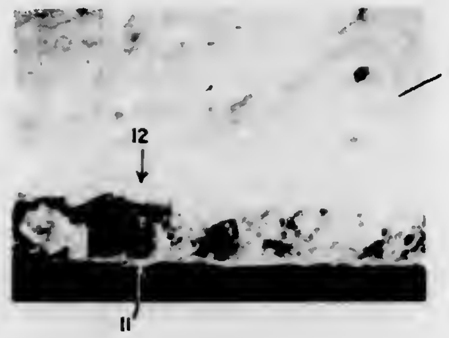
roller surface, transferring the liquid pattern from said transfer roller surface to a copy surface, and developing said liquid pattern, the improvement wherein said step of developing comprises contacting said liquid pattern with a dry developing agent carried by the surface of a developer roller which has the property of rapidly absorbing surface moisture after wetting by the liquid pattern to bring about the development, and then retaining this liquid, so that by the time the developer roller has made one revolution, an area of its surface which has been wetted with the liquid of said liquid pattern is dry again and ready for being re-wetted for further development either of a subsequent portion of the same liquid pattern or of a different liquid pattern.



3,865,608
METHOD OF COATING A DIE CAVITY SURFACE AND THE COATED SURFACE

Alexander S. Borbely, and Jon A. Bereman, both of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Feb. 2, 1973, Ser. No. 328,924
Int. Cl. B22c *9/12*
U.S. Cl. 117—5.3 **20 Claims**



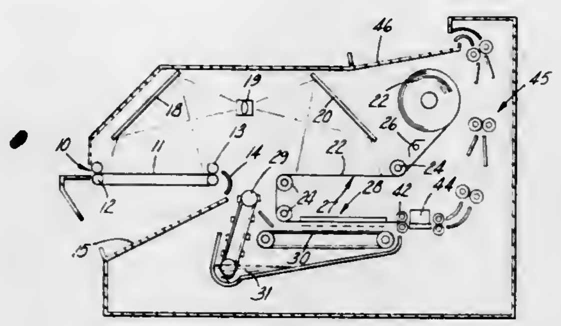
1. An article having a surface adapted to shape metal containing materials, the surface coated with a substantially continuous thin film capable of causing modification of properties of the surface of the article related to shaping of metal containing materials, the film including an oxide of a refractory metal and carbon selected from the group consisting of amorphous and crystalline allotropic forms.

10. A method of coating a surface of an article adapted to shape metal containing material, the method comprising the steps of applying to the surface a composition including carbon selected from the group consisting of amorphous and crystalline allotropic forms suspended in liquid and an oxide or acid of refractory metal dissolved in a hydroxide, and removing liquid from the applied composition to form a substantially continuous thin film including an oxide of refractory metal and carbon selected from the group consisting of amorphous and crystalline allotropic forms over the surface, the film capable of causing modification of properties of the surface of the article related to shaping of metal containing material.

3,865,609
METHOD FOR TONING A LATENT IMAGE

Curt Robert Raschke, Warrensville Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Jan. 30, 1974, Ser. No. 437,949
Int. Cl. G03g *13/08, 15/08*
U.S. Cl. 117—17.5 **3 Claims**



1. The method of producing a cloud of charged toner particles, and developing an electrostatic image from the cloud, comprising the steps of:

a. establishing a base electrode in a configuration to support a quantity of pulverized particles

b. establishing a screen electrode superposed with said base electrode

c. imposing a high voltage of opposite polarity between said base and screen electrode

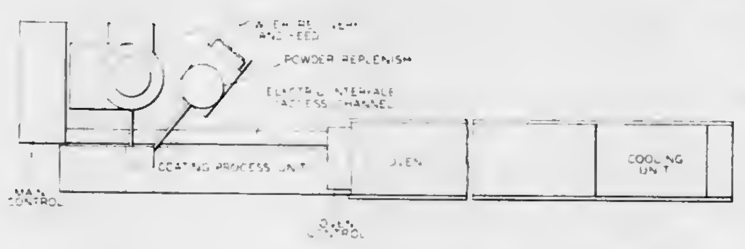
d. providing a supply of pulverized semi-conducting toner particles upon said base electrode, whereby the surface particles of said supply take on the polarity of said base and are thereby attracted to said screen of opposite polarity, some being neutralized by said screen to return to said supply, and others passing through said screen to circulate as a cloud above the screen; and

e. moving a carrier having an electrostatic image into superposed registration over said screen with said image immersed in said cloud to thereby attract toner to the carrier in a pattern according to the image.

3,865,610
COATING METHOD WITH PRECURE AND APPARATUS THEREFOR

William C. Goodridge, West Haven; Donald J. Gillette, Guilford; William P. English, Bridgeport, and G. Mark Minckler, Guilford, all of Conn., assignors to Electrostatic Equipment Corporation, New Haven, Conn.

Filed May 24, 1972, Ser. No. 256,499
Int. Cl. B44d *1/094, 1/095;* **B05b** *5/02*
U.S. Cl. 117—17 **12 Claims**



1. A method for the production of a unified, adherent coating of heat-fusible material upon only a portion of a workpiece having proximate first and second zones in heat-conductive contact with one another, comprising the steps of:

a. producing a cloud of electrostatically charged solid particles of heat-fusible resinous material;

b. exposing said workpiece to said charged particles with said workpiece charged effectively opposite thereto to cause a layer of said particles to deposit upon said first and second zones thereof;

c. heating said first zone of said workpiece to a relatively high temperature above ambient while simultaneously cooling said second zone thereof to cause at least partial fusion and coherence of said particles on said first zone while maintaining said second zone at a relatively low temperature substantially below said relatively high temperature to substantially prevent fusion and coherence of particles on said second zone to thereby facilitate removal therefrom;

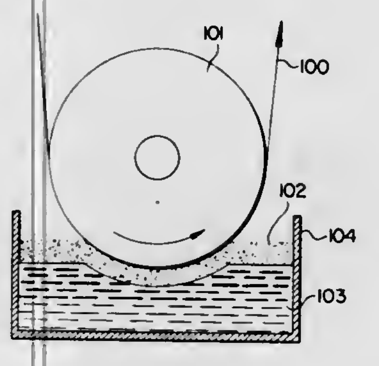
d. thereafter removing from said second zone any of said particles of resinous material remaining thereon,

said simultaneous heating and cooling step producing a relatively steep temperature gradient between said first and second zones, so that the margins of said layer of particles on said first zone are relatively sharply defined.

3,865,611
METHOD FOR ELECTROSTATIC IMAGE DEVELOPMENT EMPLOYING TONER AND CARRIER SUPPORTED BY A CONDUCTIVE LIQUID ELECTRODE SURFACE

Masamichi Sato, and Osamu Fukushima, both of Osaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1972, Ser. No. 305,017
Int. Cl. G03g *13/08, 13/10, 15/08, 15/10*
U.S. Cl. 117—17.5 **8 Claims**



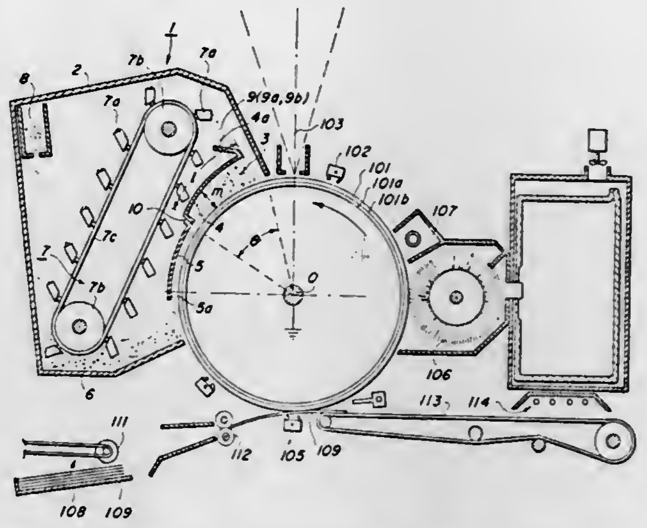
1. In the process of developing an electrostatic latent image by contacting the surface of a latent image carrier with a developer therefor, locating a body of conductive liquid functioning as a liquid development electrode closely adjacent said surface, and interposing the developer between said surface and said electrode; the improvement wherein said developer contains two components, one component being toner particles and the other component being carrier particles for said toner particles, said carrier particles being formed of a material that is not wetted by said conductive liquid and having a density less than that of said conductive liquid, whereby said developer is floated on the surface of said conductive liquid.

3,865,612
XEROGRAPHIC DEVELOPMENT METHOD

Seiji Jo, Tokyo, and Katsuo Makino, Dawara, both of Japan, assignors to Rank Xerox Ltd., London, England

Division of Ser. No. 133,656, April 13, 1971, Pat. No. 3,741,156. This application Mar. 12, 1973, Ser. No. 340,495
Int. Cl. G03g *13/08*
U.S. Cl. 117—17.5 **5 Claims**

1. A method for developing a latent image on a movable photosensitive surface; said method comprising the steps of forming a developer pool substantially filling a first space between a conductive wall and said photosensitive surface, contacting the photosensitive surface with developer in said pool to develop said latent image, allowing excessive developer to flow from said first space into another narrower space between an electrode and said photosensitive surface, moving said photosensitive surface in the direction of developer flow at a rate which is faster than the flow of said developer through said first space, allowing said excessive developer to freely fall through said other space into a developer sump, and transporting developer from the sump to said first space.

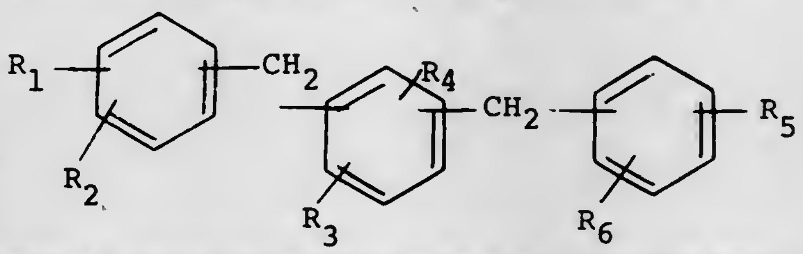


3,865,613
PRESSURE-SENSITIVE COPYING SYSTEMS

John Edward Ross, Stoke Poges; David James Marshall, Widmer End, High Wycombe, and Brian Samuel Chapman, Prestwood, all of England, assignors to Wiggins Teape Research & Development Limited, London, England

Filed Sept. 11, 1972, Ser. No. 287,714
Claims priority, application Great Britain, Sept. 23, 1971, 44474/71; Jan. 20, 1972, 2785/72
Int. Cl. B41m *5/16*
U.S. Cl. 117—36.8 **5 Claims**

1. A sheet for use in a pressure-sensitive copying system, comprising a base sheet carrying a coating of the microcapsules, each microcapsule containing an organic, initially colourless, colour-former, dissolved in a solvent which includes a mixture of dibenzylbenzenes of the general formula



where R_1 to R_6 are selected from the group comprising hydrogen, alkyl groups containing less than 5 carbon atoms or alkaryl groups containing 7 or 8 carbon atoms.

3,865,614
METHOD FOR COATING URANIUM IMPREGNATED GRAPHITE WITH ZIRCONIUM CARBIDE

Ray S. Newbury, Livermore, and Geoffrey R. Tully, Jr., Alamo, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 2, 1959, Ser. No. 803,810
Int. Cl. B44d *5/12*
U.S. Cl. 117—46 CA **3 Claims**

1. In a process for producing a tenacious zirconium carbide coating on graphite impregnated with uranium comprising the steps of impregnating a piece of porous graphite with uranyl nitrate dihydrate dissolved in tertiary butyl alcohol, enveloping said graphite piece in clean tertiary butyl alcohol solvent to dissolve said uranyl nitrate dihydrate impregnant from the surface of said graphite into a liquid, enveloping said graphite piece in liquid nitrogen to freeze said impregnated solution, evaporating said frozen solvent therefrom, whereby said uranyl nitrate dihydrate is deposited within said graphite pores, converting said uranium to the carbide by the application of heat, outgassing said graphite, applying a coating of finely divided zirconium suspended in liquid containing a carbona-

ceous binder onto said graphite surface, evaporating said liquid and converting said zirconium to the carbide by the application of heat whereby a zirconium carbide coating is obtained.

3,865,615

NON-THROMBOGENIC PLASTICS

Donald G. Manly, Allentown, Pa., assignor to Air Product and Chemicals Inc., Wayne, Pa.

Filed May 7, 1973, Ser. No. 357,634

Int. Cl. B44d *1/092, 1/44;* B32b *27/06*

U.S. Cl. 117—47 A 15 Claims

1. Non-thrombogenic plastic comprising a fluorinated polymeric plastic from the group consisting of polyolefins and polyesters having chemically bound directly thereto through amido linkages a plasminokinase.

10. The method of imparting antithrombogenic properties to the surface of a plastic material from the group consisting of polyolefins and polyesters which comprises fluorinating such plastic material under conditions to form associated carboxylic moieties therein and chemically binding thereto through such carboxylic moieties a plasminogen activator selected from the group consisting of urokinase and streptokinase.

14. The method which comprises subjecting polyethylene to a gaseous mixture containing oxygen and fluorine, said oxygen being present in a volume ratio of 0.5/1 to 20/1 to fluorine in said gaseous mixture; further reacting the obtained oxyfluorinated polyethylene with an aqueous solution of urokinase followed by fixing the thus bonded urokinase by further reaction with hexamethylene diamine.

3,865,616

ELECTRICAL STEEL SHEET PROVIDED WITH COATING DERIVED FROM A CARBOHYDRATE AND A METHYLOL RESIN

Carl-Artur Akerblom, Surahammar, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 13, 1972, Ser. No. 305,682

Claims priority, application Sweden, Nov. 22, 1971, 14889/71

Int. Cl. C08b *25/00;* C08h *15/02*

U.S. Cl. 117—132 BF 11 Claims

1. An electrical steel sheet provided with a coating derived from a varnish comprising a binder and a solvent, in which the binder consists essentially of a mixture or a partially reacted mixture of a resinous product containing methylol groups and a carbohydrate material consisting essentially of a carbohydrate with a carbon chain having at the most 12 carbon atoms, said resinous product consisting essentially of at least one product selected from the group consisting of phenolic resins, melamine resins and urea resins and having the capacity to dissolve in an organic solvent consisting of a mixture of equal parts by weight of acetone and ethanol to form a solution containing 50 per cent by weight of the resinous product, which solution is capable of being diluted with at least as much water as the quantity of organic solvent without producing precipitation of the resin, in which of the total weight of the carbohydrate and the resinous product containing methylol groups, the weight of the carbohydrate is 30–70 per cent and the weight of the resinous product 70–30 per cent.

3,865,617

METHOD OF COATING BY REDOX POLYMERIZATION

Syozo Shimizu; Hiroshi Shinohara; Toshihito Kondou, and Norimasa Yamada, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed July 17, 1972, Ser. No. 272,400

Claims priority, application Japan, Aug. 11, 1971, 46-60801

Int. Cl. B44d *1/06;* B32b *15/08*

U.S. Cl. 117—132 C 9 Claims

1. Method of coating a metal object by redox polymerization, which comprises the steps of dissolving 1–50% by weight of said solution of at least one water insoluble vinyl or divinyl monomer in an aqueous solution containing 0.5–95% of a hydrophilic organic solvent for said monomer; adjusting the pH value of the resulting solution to 0.5–5.5 by introducing an acid which is a metal ion releasing agent for the metal in said metal object to be coated; adding at least one polymerization catalyst selected from the group consisting of peroxides, perchlorates, chlorates and persulfates to said solution, to produce a film-forming solution having a temperature between −20°C. and 60°C. and forming a polymerized film of vinyl polymer on said metal object while immersing said object in said film-forming solution.

3,865,618

INCREASING FLAME RETARDANCE OF CELLULOSE TEXTILE WITH 1,3,7-TRIAZA-5-PHOSPHABICYCLO(3.3.1)NONANE-3,7-ICARBONITRILE

Donald J. Daigle, New Orleans; Armand B. Pepperman, Jr., and Floyd L. Normand, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,584

Int. Cl. C09j *5/18*

U.S. Cl. 117—136 1 Claim

1. A process for imparting to a cellulosic textile the quality of flame retardancy, comprising:

a. impregnating the cellulosic textile with an aqueous solution containing about 15% by weight of a phosphine compound selected from the group consisting of 1,3,7-triaza-5-phosphabicyclo [3.3.1] nonane-3,7-dicarbonitrile, 1,3,7-triaza-5-phosphabicyclo [3.3.1] nonane-3,7-dicarbonitrile-5-oxide, and 3,7-dicyano-5-methyl-1,3,7-triaza-5-phosphabicyclo [3.3.1] nonane iodide to a weight pickup of about 80%, and

b. drying the wet impregnated textile for about 5 minutes at about 80°C to obtain a treated fabric with about 12% weight gain.

3,865,619

ANTI-FOGGING HYDROPHILIC RESIN COATINGS

Horst Pennewiss, Darmstadt-Neu-Kranichstein; Hermann Plainer, and Waldemar Schleier, both of Darmstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Dec. 11, 1972, Ser. No. 313,813

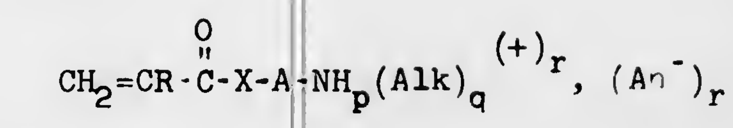
Claims priority, application Germany, Dec. 11, 1971, 2161645

Int. Cl. B44d *1/09*

U.S. Cl. 117—138.8 7 Claims

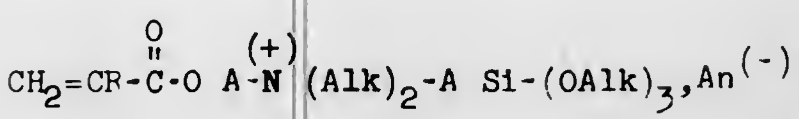
1. The method of forming an anti-fogging coating on an optical surface which comprises applying a solution of a hydrophilic film-forming resin in an aliphatic alcohol having from 1 – 4 carbon atoms to said surface to form a coating thereon and drying and hardening said coating at temperatures up to 160°C., wherein said hydrophilic resin comprises

a. 12 – 30 percent of an ethylenically unsaturated polymerizable carboxylic acid having from 3 to 5 carbon atoms, or an alkali metal or ammonium salt thereof, or of a compound of the formulas



$$CH_2{=}CR{\cdot}\overset{O}{\overset{\|}{C}}{-}X{-}A{-}NH_p(Alk)_q{}^{(+)}{}_r,\ (An^-)_r$$

or



$$CH_2{=}CR{-}\overset{O}{\overset{\|}{C}}{\cdot}O\ A{-}\overset{(+)}{N}(Alk)_2{-}A\ Si{-}(OAlk)_3, An^{(-)}$$

wherein R is hydrogen or methyl, X is oxygen or —NH, A is alkylene having 2 to 4 carbon atoms, Alk is alkyl having 1 to 18 carbon atoms, An^- is one equivalent of an anion, $p=0$, 1, or 2, $r=0$ or 1, and $q=2+r-p$,

b. 40 – 88 percent of an acrylic acid ester or methacrylic acid ester of an aliphatic monoalcohol having from 1 – 4 carbon atoms or of a mixture of such alcohols, wherein a polymer or copolymer formed from the ester or ester mixture has a $T_{\lambda\,max}$-value between 30°C. and 80°C., and

c. 0 – 50 percent of a cross linking agent selected from the group consisting of (1) methylol compounds and methylol ethers of acrylamide or of methacrylamide; (2) mixtures of the compounds (1) above with an hydroxyalkyl ester of acrylic acid or methacrylic acid having from 2 – 6 carbon atoms in the hydroxy alkyl portion thereof, or with acrylamide or methacrylamide and (3) hydroxyalkyl esters as in (2) above in combination with an etherified amine-formaldehyde resin, including the step of neutralizing salt-forming groups, if they are present in component (a), with alkali metal hydroxides or ammonia if the salt-forming groups are carboxyl groups or with an acid if the salt-forming groups are tertiary or quaternary amino groups in an aminoalkyl ester component of the hydrophilic polymer, said resin, in the form of a layer from 30 to 50 microns thick swelling in water at 20°C. within three minutes to a volume 20 percent to 300 percent greater than its original volume.

3,865,620

NONWOVEN FABRICS BONDED WITH THERMOSETTING VINYL ESTER EMULSION COPOLYMERS

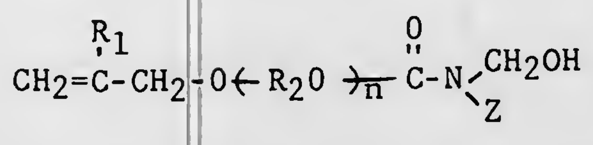
Martin K. Lindemann, Greenville, S.C., assignor to Chas. S. Tanner Co., Greenville, S.C.

Division of Ser. No. 340,535, March 12, 1973, , which is a continuation-in-part of Ser. No. 142,406, May 11, 1971, abandoned. This application Jan. 4, 1974, Ser. No. 430,985

Int. Cl. C08g *37/32;* D04h *1/64;* D06n *3/00*

U.S. Cl. 117—140 A 5 Claims

1. A nonwoven fabric having the fibers thereof bonded together with an aqueous emulsion consisting essentially of an aqueous medium having colloidally suspended therein an emulsion copolymer consisting essentially of at least 85% of vinyl ester with a saturated monocarboxylic acid containing up to 18 carbon atoms, and from 0.5–15% of monomers providing thermosetting characteristics and consisting essentially of an N-methylol allyl carbamate having the formula:



$$CH_2{=}\overset{R_1}{\overset{|}{C}}{-}CH_2{-}O\left(R_2O\right)_n\overset{O}{\overset{\|}{C}}{-}N{\begin{smallmatrix}CH_2OH\\ Z\end{smallmatrix}}$$

in which R_1 is hydrogen or methyl, R_2 is an alkylidene group containing from 2–4 carbon atoms, and *n* is an integer from 0–10, and Z is selected from hydrogen and $—CH_2OH$.

3,865,621

TREATMENT OF FIBROUS MATERIALS

Bryan Dobinson, and Kenneth Winterbottom, both of Cambridge, England, assignors to Ciba-Geigy AG, Basle, Switzerland

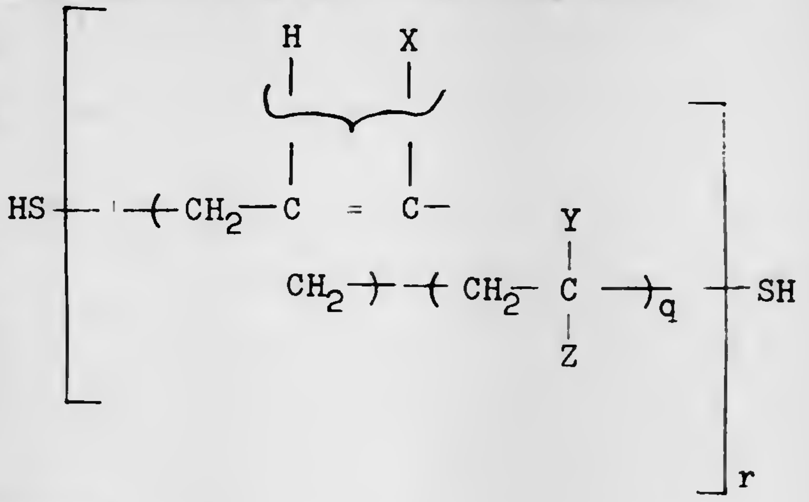
Filed Sept. 20, 1973, Ser. No. 399,205

Claims priority, application Great Britain, Aug. 15, 1969, 40866/69; July 3, 1970, 32460/70

Int. Cl. C08h *19/02;* D06m *3/02*

U.S. Cl. 117—141 8 Claims

1. A process for rendering fibrous keratinous textile material shrink-resistant which comprises (1) applying to the material from a liquid medium about 0.5 to 15% by weight of the textile material of a polythiol of the average formula



wherein

each X and Y independently represents a substituent selected from the group consisting of hydrogen atoms and methyl groups,

Z represents a radical selected from the group consisting of —CN, —COOH, $—CONH_2$, —COOR, $—C_6H_5$, and —O-COR, where R is an alkyl group of one to eight carbon atom,

q represents zero or has a value of at most 1, and

r is an integer such that the average number molecular weight of the polythiol is at least 500 and at most 50,000, and (2) curing the polythiol at a temperature up to 180°C in the presence of a catalyst which is selected from the group consisting of bases, siccatives, oxidative curing agents, sulfur, mercaptobenzothiazoles, dithiocarbamates, thiuram sulfides, thioureas, organic disulfides containing not more than two sulfur atoms, alkyl xanthogen disulfides, and alkyl xanthates.

3,865,622

CARBOXYLATED ACRYLONITRILE-BUTADIENE LATEX FABRIC COATING

Edgar A. Blair, Princeton, N.J., assignor to Princeton Polymer Laboratories, Incorporated, Plainsboro, N.J.

Continuation-in-part of Ser. No. 100,791, Dec. 22, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,658

Int. Cl. B44d *1/09*

U.S. Cl. 117—161 UT 5 Claims

1. A fabric resembling leather coated on at least one surface thereof with an aqueous coating composition having a 15 to 50 weight percent of total solids, the solids comprising a mixture, in parts by weight, of carboxylated butadiene-acrylonitrile latex solids containing 25–45 parts of acrylonitrile, having a molecular weight in the range of about 1,200 to 2,000 and from 25–45 of acrylic or methacrylic acid, balance butadiene, about 37 parts, butadiene-acrylonitrile-styrene terpolymer solids, about 220 parts, curing agent, about 1 part, thickening agent, about 3 parts and pigment, about 5 parts.

3,865,623

FULLY ADDITIVE PROCESS FOR MANUFACTURING PRINTED CIRCUIT BOARDS

Herbert J. Allen, Jr., Buffalo; Ronald Earl Todd, Fair Grove, both of Mo., and Jerry Wayne Wegman, Sr., Tampa, Fla., assignors to Litton Systems Inc., Springfield, Mo., by said Allen and Todd

Filed Feb. 2, 1973, Ser. No. 328,913
Int. Cl. B44d *1/18;* **H05k ; B32b** *15/00*
U.S. Cl. 117—212 2 Claims

1. A fully additive process for manufacturing circuit boards having printed electrical conductors upon the top and bottom sides thereof and electrically conductive through-hole connections therebetween from a conventional board material of the group consisting of glass-epoxy, and paper-epoxy, and paper phenolic laminates, having a buttercoat, comprising the steps of:

forming a plurality of passages between the top and bottom surfaces of said board in a predetermined pattern;
immersing said circuit board in an organic solvent for rendering the finish on the buttercoat receptive to an etchant acid;
rinsing said board in water for removing said organic solvent;
immersing said board in an acid bath for chemically etching the surfaces thereof and the passages therethrough;
rinsing said board in water;
immersing said board in a caustic solution for neutralizing any traces of acid remaining on said board;
rinsing said board in an acid solution for neutralizing any traces of caustic solution remaining on said board and giving said board an acidic character;
immersing said board in an acidic tin-palladium catalyst solution for catalyzing the surfaces of said board;
rinsing said board in water to remove excess catalyst;
immersing said board in a catalyst accelerator solution whereby metal palladium ions are freed from the catalytic tin-palladium solution for subsequent attraction to copper metal;
rinsing said board in water;
drying said board;
applying a material to the top and bottom surfaces of said board in the negative facsimile of the conductor pattern to be placed upon the top and bottom surfaces of said board, said covering material comprising a heat-settable electrically insulative material which in its set state rigidly adheres to the surfaces of said board and withstands without effect immersion in an electroless copper plating solution for periods of approximately 5 hours;
heating said board for setting said thermosetting material; and
immersing said board in an electroless copper plating solution for approximately 5 hours to deposit copper on the portions of the substrate uncovered by said thermosetting material, whereby electrically conductive paths of copper are formed on the surfaces of the substrate and on the walls of the passages formed through the substrate without the necessity of etching away plated materials or stripping away masking materials.

3,865,624

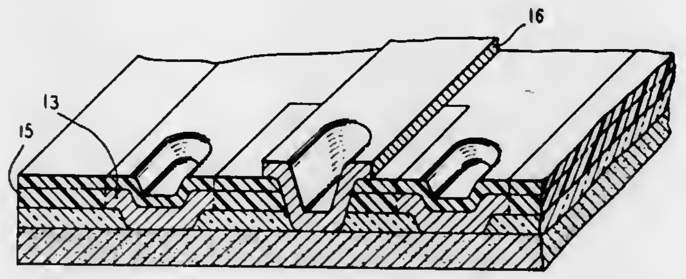
INTERCONNECTION OF ELECTRICAL DEVICES

Peter Van Dyke Wilde, Bernardsville, N.J., assignor to Bell Telephone Laboratories Inc., Murray Hill, N.J.

Filed June 29, 1970, Ser. No. 50,779
Int. Cl. H01l *7/00*
U.S. Cl. 117—212 6 Claims

1. A method for forming a crossover interconnection pattern for a silicon integrated circuit device comprising the steps of

depositing a layer of a conductive material which can be selectively converted to an insulator over an insulator-coated monocrystalline semiconductive wafer, the layer making connection to the wafer at selected regions,
providing an insulating mask over the layer, to protect a region of the layer corresponding to a desired first conductive pattern,
exposing the masked wafer to an oxidizing atmosphere to convert the unprotected region of the layer to an oxide and to form the first conductive pattern imbedded in such oxide,
depositing a conductive layer over the still masked and imbedded conductive pattern, and
forming from said last-mentioned layer a second conductive pattern electrically isolated from the first conductive pattern and making connection to the wafer, with part of the second conductive pattern crossing over part of the first conductive pattern.

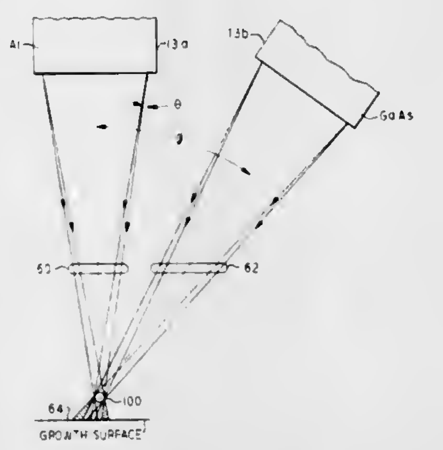


3,865,625

MOLECULAR BEAM EPITAXY SHADOWING TECHNIQUE FOR FABRICATING DIELECTRIC OPTICAL WAVEGUIDES

Alfred Yi Cho, New Providence, and Franz Karl Reinhart, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 13, 1972, Ser. No. 297,239
Int. Cl. B44d *1/18;* **C23c** *13/04*
U.S. Cl. 117—212 19 Claims



1. A molecular beam epitaxy method of fabricating on a growth surface an epitaxial layer comprising a compound of the form $A_xB_{1-x}C$, $0 \leq x \leq 1$, where A is a first Group III(a) element, B is a second Group III(a) element and C is a Group V(*a*) element, said layer having a preselected zone and laterally contiguous zones which have different refractive indexes from, and each of which are substantially lattice matched to, said preselected zone, said method comprising the steps of;

a. reducing the background pressure to a subatmospheric pressure;
b. preheating the growth surface to a temperature in the range of about 450° to 650° Centigrade;
c. directing at least two molecular beams at said surface so that said beams form an angle with one another and overlap on said surface, one of said beams comprising molecules of said first Group III(*a*) element and other beams comprising molecules of said second Group III(*a*) element and said Group V(*a*) element; and
d. placing an obstruction in the path of said beams so that molecules in one of said beams are prevented from striking said preselected zone of said surface and so that molecules in another beam are permitted to strike said zone.

3,865,626

POLYESTER FILM OF HIGH STRENGTH AND LOW ELECTRICAL SURFACE RESISTANCE

Horst Diener, Frankfort-Hoechst; Helga Lenhart, Wiesbaden, and Walter Seifried, Wiesbaden-Biebrich, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt-am-Main, Germany

Continuation of Ser. No. 102,511, Dec. 29, 1970, abandoned, which is a continuation of Ser. No. 757,108, Sept. 3, 1968, abandoned. This application Sept. 18, 1973, Ser. No. 398,423
Int. Cl. C09c *1/44;* **D02g** *3/00*
U.S. Cl. 117—226 4 Claims

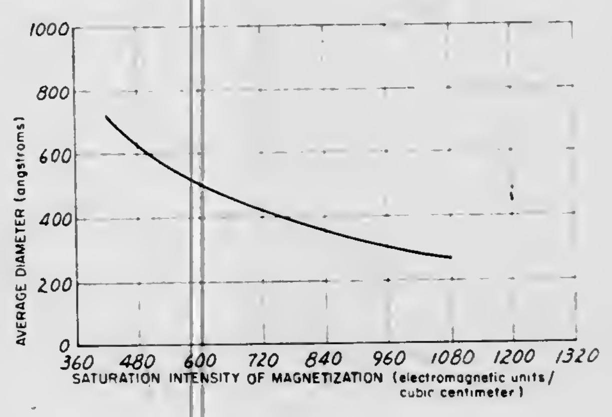
1. A stretched polyester film of high strength having on at least one surface thereof a binder-free, firmly adhering layer of carbon black.

3,865,627

MAGNETIC RECORDING MEDIUM INCORPORATING FINE ACICULAR IRON-BASED PARTICLES

John S. Roden, White Bear Lake; Kent A. Kirkevold, Woodbury; Gary L. Tritle, Roseville, and Gene A. Sjerven, Saint Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 22, 1972, Ser. No. 255,262
Int. Cl. H01f *10/02*
U.S. Cl. 117—240 8 Claims



1. Magnetic recording medium exhibiting an improved signal/noise ratio comprising a magnetizable layer carried on a nonmagnetizable support, the magnetizable layer comprising a nonmagnetizable organic polymeric binder material and, uniformly thoroughly and compatibly dispersed in the binder material, fine acicular ferromagnetic particles that (1) comprise at least about 75 weight-percent metal, at least a majority by weight of the metal being iron and any other metal ingredient that comprises at least 10 weight-percent of the metal being selected from cobalt, nickel, and chromium, (2) exhibit a saturation magnetic moment of at least 75 electromagnetic units/gram, and (3) exhibit an average diameter and a saturation intensity of magnetization about equal to or less than the coordinate values for a point on the curve of FIG. 1; sufficient ferromagnetic particles being included so that the recording medium exhibits a remanent flux density greater than 1,500 gauss.

3,865,628

REMOVAL OF POLYMER RESIDUE FROM SURFACES OF PROCESSING EQUIPMENT

Joseph W. Callahan, Sulfur, La., and Charles A. Landry, Richmond, Va., assignors to Cesco, Inc., Houston, Tex.

Filed Feb. 26, 1973, Ser. No. 335,678
Int. Cl. C23g *1/14*
U.S. Cl. 134—2 9 Claims

1. A method for removing deposited polymer residue from equipment used in the manufacture of terephthalate polyester resins which consists essentially of:

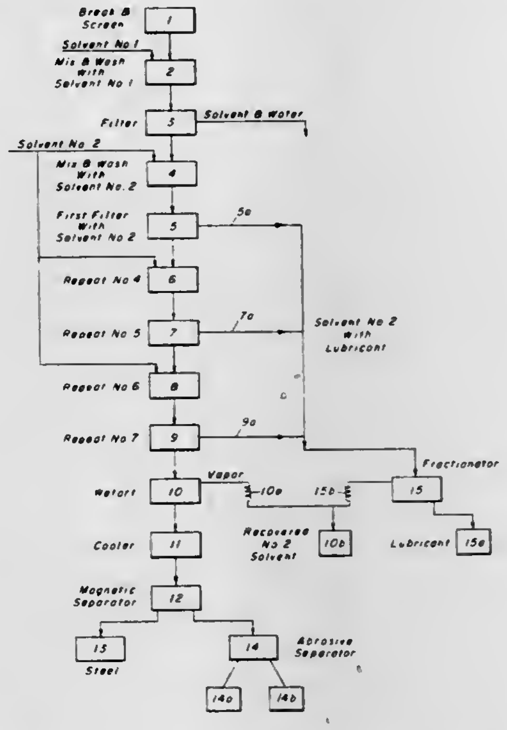
a. contacting said polymer residue with an aqueous solution containing at least about 35% by weight potassium hydroxide, up to about 7.0% by weight of a chelating agent, and up to about 1.5% by weight of a surfactant stable in said potassium hydroxide solution at the temperature used; said aqueous solution contacting said residue at a temperature of at least about 180° F; and
b. flushing the equipment with water at a temperature of at least about 160° F.

3,865,629

RECLAMATION OF COMPONENTS FROM GRINDING SWARF

Joseph Daniel Dankoff, P.O. Box 79, R. D. No. 5, and David Kent Snyder, 1167 Ridgeview Dr., both of Latrobe, Pa. 15650

Filed Nov. 7, 1972, Ser. No. 304,385
Int. Cl. B08b *3/10;* **B03b** *7/00;* **B03c** *1/00*
U.S. Cl. 134—19 6 Claims



1. In the method of recovering for reuse the steel component of grinding swarf produced where a coolant lubricant is used in the grinding process, the steps which comprise initially extracting water including the water phase of any contained coolant-lubricant compound contained in the swarf with a first solvent, and separating at least most of the solution of first solvent with the extracted water so produced thereby providing a mixture of substantially water-free steel and abrasive particles with lubricant, then in the following order mixing and washing the particles freed of the water content with a second solvent for lubricant to remove at least all but a trace of lubricant therefrom and separating the bulk of the second solvent with dissolved lubricant from the particles, heating the particles in a closed environment to vaporize any residuum of the second solvent and lubricant on the particles and removing the vapors so produced from said environment and cooling the particles, and magnetically separating the steel particles from the abrasive particles at some stage in the foregoing procedure following the removal of water, whereby the procedure following the removal of water applies to all particles until mag-

netic separation is effected and thereafter to only the steel particles.

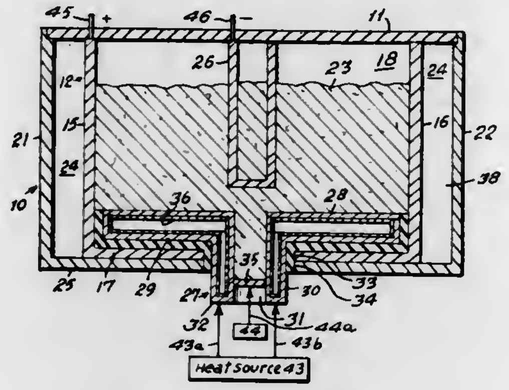
3,865,630
ELECTROCHEMICAL CELL HAVING HEAT PIPE MEANS FOR INCREASING ION MOBILITY IN THE ELECTROLYTE

Eberhart Reimers, 7700 Random Run La., No. 201, Falls Church, Va. 22042

Continuation-in-part of Ser. No. 106,212, Jan. 13, 1971, abandoned. This application Nov. 20, 1972, Ser. No. 307,895

Int. Cl. H01m *29/01, 31/02*

U.S. Cl. 136—86 A **6 Claims**



1. An improved molten salt type electrochemical cell wherein the ion mobility of the electrolyte thereof is greatly increased, comprising in combination:

an electrochemical cell housing having top, bottom, and side members;

a first electrode consisting of a fuel gas permeable cup shaped member having the bottom portion thereof affixed to the interior surface of said bottom member of said housing and its wall portion extending to and affixed in sealed relationship to said top member of said housing and adapted to provide a fuel gas chamber which encompasses the wall portion of said cup shaped member;

a molten salt electrolyte contained within said fuel gas permeable cup shaped member, said electrolyte having a significant temperature responsive ion mobility characteristic and a predetermined operational temperature range;

a consumable second electrode comprising a porous fiber-metal wick structure adapted for molten salt electrolyte capillary action and disposed within said electrolyte, said second electrode being electrically isolated from said first electrode;

an electrochemically reactive fuel gas in said fuel gas chamber, said fuel gas compatible with said molten salt electrolyte and with said first and said second electrodes; and

heat transfer means spaced from said bottom portion of said fuel gas permeable cup shaped member and in contact with said electrolyte in said cup shaped member wherein said heat transfer means is a heat pipe having a selected vapor cycle, said heat pipe consisting of a closed evacuated chamber having inside wall surfaces lined with a capillary structure saturated with a volatile fluid, wherein said evacuated chamber defines an evaporator section at one end thereof and a condenser section at the other end thereof, said evaporator section end thereof is adapted for thermal energization by an external heat source, and said condenser section thereof is disposed in direct heat conductive relation with said electrolyte which is heated by said heat transfer means, said heat pipe of said heat transfer means having a selected internal pressure condition and said volatile fluid having a vaporization temperature within said operational temperature range of said molten salt electrolyte at said selected internal pressure.

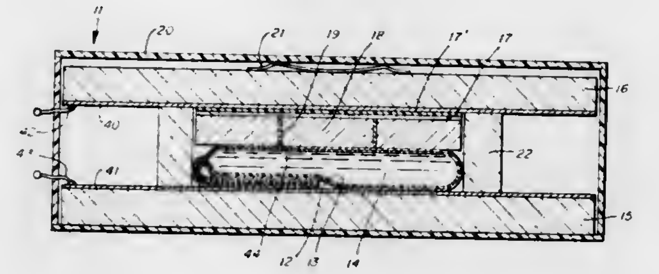
3,865,631
RESERVE BATTERIES

William Clayman, Norwalk, Conn., assignor to Charles S. Naiman, Brookline, Mass.

Filed Dec. 26, 1973, Ser. No. 428,340

Int. Cl. H01m *21/00*

U.S. Cl. 136—114 **10 Claims**



1. A reserve battery construction comprising,

a pouch formed of a first thin outer layer of a metallic electrode material and a second thin inner layer of a sealable plastic,

said pouch enclosing an electrolyte, means for piercing said pouch through said metal and plastic layers to release said electrolyte and activate said battery,

a second electrode,

and a porous separator between said metal layer and said second electrode whereby activation of said piercing means activates said reserve battery.

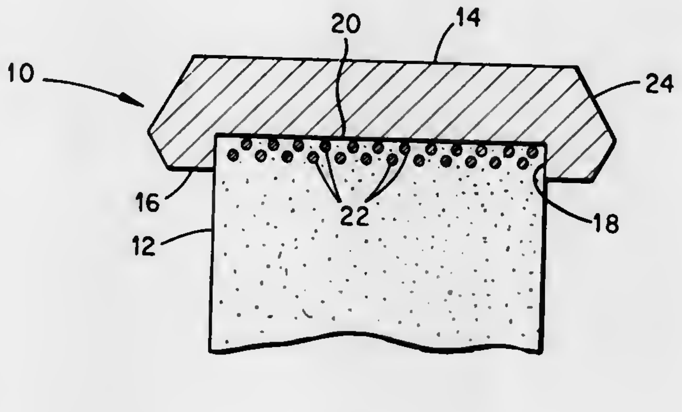
3,865,632
TERMINAL FOR THERMOELECTRIC ELEMENT

Norbert E. Elsner, La Jolla; Louis W. Perry, Jr., Rancho Santa Fe; Michael R. Emken, Encinitas, and Elmer J. Steeger, Solana Beach, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 23, 1973, Ser. No. 353,253

Int. Cl. H01v *1/12*

U.S. Cl. 136—237 **3 Claims**



1. In a thermoelectric element, the combination of:

a thermally and electrically conductive cap, said cap being generally in the form of a relatively massive disc having a conductor-engaging surface at its rim, generally parallel front and back faces, and having a relatively shallow open recess extending inwardly from and across said front face, said recess having a bottom extending generally parallel to said front face;

a plurality of layers of thermally and electrically conductive woven wire mesh screen in said recess, extending thereacross and spot welded to the bottom thereof;

and a body of thermoelectric material pressed into said recess, embedding said layers of screen and in contact with the bottom of said recess.

3,865,633
METHODS OF MANUFACTURING SEMICONDUCTOR BODIES

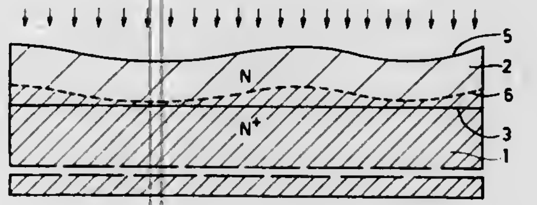
John Martin Shannon, and John Anthony Kerr, both of Salfords, near Redhill, England, assignors to U.S. Philips Corp., Briarcliff Manor, N.Y.

Filed Jan. 17, 1973, Ser. No. 324,357

Claims priority, application Great Britain, Jan. 31, 1972, 4513/72

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **7 Claims**



1. A method of manufacturing an epitaxial semiconductor wafer comprising epitaxially growing on the surface of an impurity-doped portion of a semiconductor substrate an epitaxial layer of substantially uniform doping whose doping level is lower than that of the substrate portion, said epitaxial growth possibly resulting in an epitaxial layer of varjable thickness with the result that the layer surface is nonuniformly spaced from the boundary between the different doping levels in the substrate portion and layer, thereafter subjecting the whole wafer to bombardment with a beam of energetic particles which are incident at or adjacent the surface of the layer and are directed towards the boundary between the layer and the substrate, the bombardment being effected under conditions to cause internal damage of the crystal structure in the epitaxial layer adjacent the boundary over a controlled distance which extends between the vicinity of the boundary and a substantially constant depth from all parts of the surface of the layer, and maintaining the semiconductor body at a suitable elevated temperature during said bombardment to produce an enhanced out-diffusion of substrate impurities into the layer until the boundary between the layer material and the underlying more highly doped region containing out-diffused substrate impurity is relocated at positions in the layer which are at a substantially constant depth from all parts of the layer surface.

3,865,634
HEAT RESISTANT ALLOY FOR CARBURIZATION RESISTANCE

Donald L. Bagnoli, Oak Ridge, and Anthony R. Ciuffreda, Colonia, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 13, 1973, Ser. No. 387,946

Int. Cl. C23c *13/00*

U.S. Cl. 148—6.35 **3 Claims**

1. The method of forming a protective scale of manganese and chromium oxide on the surface of alloy consisting essentially of manganese, chromium, iron and nickel comprising:

1. adjusting the nickel content of the alloy to the range of 36 to 38% and the manganese content of the alloy from 1.2 to 2.0%;
2. forming the alloy into a metal surface; and
3. thereafter, treating the metal surface with steam at elevated temperatures for a time sufficient to oxidize manganese and chromium present in the alloy and form a protective scale of manganese and chromium oxide.

3,865,635
METHOD OF MAKING TUBES AND SIMILAR PRODUCTS OF A ZIRCONIUM ALLOY

Ake Sixten Boris Hofvenstam, Jarbo; Erik Thomas Andersson, and Olof Krister Kallstrom, both of Sandviken, all of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Sept. 4, 1973, Ser. No. 393,816

Claims priority, application Sweden, Sept. 5, 1972, 11435/72

Int. Cl. C22c *15/00;* **C22f** *1/18*

U.S. Cl. 148—11.5 F **4 Claims**

1. In a method of making tubes and other products with improved creep strength from a zirconium alloy containing, in Wt. percent, 1.2 – 1.7 Sn, 0.07 – 0.24 Fe, 0.05 – 0.15 Cr, 0 – 0.08 Ni, 0.09 – 0.16 O, said material having β-phase respectively α-phase structure at high respectively low temperatures, the tube or corresponding product being plastically worked to final dimension by means of hot and cold working, in which the cold working includes several steps with intermediate recrystallization annealings, the improved procedure which consists in heating the material, before the last cold working step, to the β-range and then cooling it to room temperature.

3,865,636
METHOD OF PROCESSING STEEL MATERIAL HAVING HIGH AUSTENITIC GRAIN-COARSENING TEMPERATURE

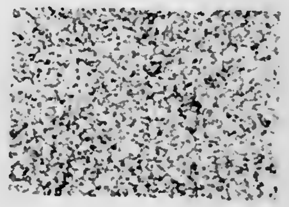
Akira Suzuki, Kobe; Shushi Kinoshita, and Takeshi Ueda, both of Akashi, all of Japan, assignors to Kobe Steel, Limited, Japan

Continuation-in-part of Ser. No. 134,332, April 15, 1971, Pat. No. 3,788,903. This application July 18, 1973, Ser. No. 380,460

Claims priority, application Japan, Apr. 15, 1970, 45-32078

Int. Cl. C21d *7/02, 7/14*

U.S. Cl. 148—12 R **8 Claims**



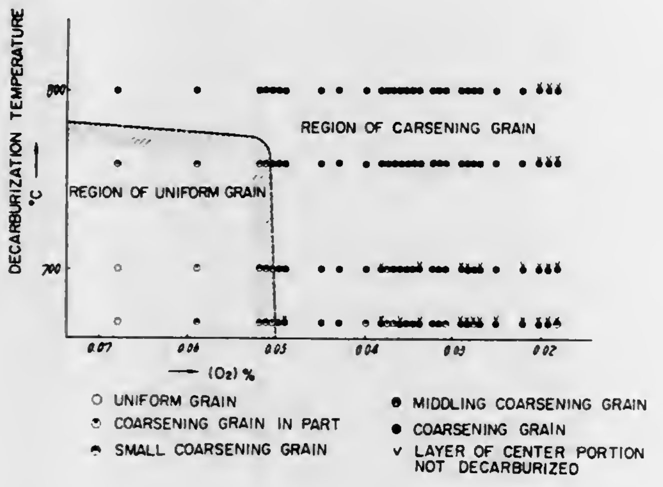
1. A method of processing steel material which is characterized by an abnormal grain growth curve of austenitic grain after cold working and which has a high grain coarsening temperature which comprises:

heating said cold worked steel material to a temperature of between the ferrite recrystallization temperature and the A_1 transformation temperature for a period of at least 5 minutes so as to effect recrystallization of the ferritic structure which had become deformed during cold working, and thereby raising the austenitic grain coarsening temperature,

further heating said steel material to a temperature within the austenitic region of from the A_1 transformation temperature to the austenitic grain coarsening temperature to effect austenitizing to form a non-mixed grain structure.

3,865,637
PROCESS OF MAKING COLD REDUCED STEEL

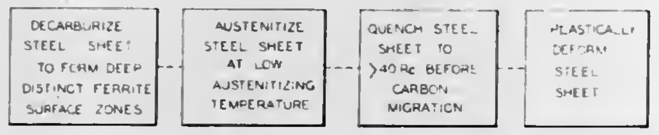
Kazuo Matusdo; Takayoshi Shimomura, and Kooichi Oosawa, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha Chiyoda-ku, Tokyo, Japan
Filed Jan. 25, 1971, Ser. No. 109,446
Claims priority, application Japan, Feb. 2, 1970, 45-8451
Int. Cl. C21d ***9/48***
U.S. Cl. 148—12.1 **4 Claims**



1. An improved process of making cold reduced steel consisting in producing low carbon rimmed steel of 0.03 to 0.06% C and 0.05 to 0.10% 0, decarburizing said steel at less than 780°C, cold-reducing said steel, finally annealing said cold-reduced steel at less than A_3 point to more than recrystallization temperature and then temper-rolling said steel.

3,865,638
PLASTICALLY DEFORMED HARDENED STEEL PARTS AND METHOD OF FORMING SAME

David B. Ballantyne, Southfield; Edward R. Mantel, Warren, and George H. Robinson, Rochester, all of Mich., assignors to General Motors Corp., Detroit, Mich.
Filed Nov. 23, 1973, Ser. No. 418,249
Int. Cl. C21d ***3/04, 9/46***
U.S. Cl. 148—12.1 **6 Claims**


DECARBURIZE STEEL SHEET TO FORM DEEP DISTINCT FERRITE SURFACE ZONES
AUSTENITIZE STEEL SHEET AT LOW AUSTENITIZING TEMPERATURE
QUENCH STEEL SHEET TO >40 Rc BEFORE CARBON MIGRATION
PLASTICALLY DEFORM STEEL SHEET

1. A method of making plastically deformed metal parts from through hardened steel sheet stock comprising the steps of:

decarburizing both major surfaces of a through hardening steel sheet about 0.01 inch – 0.08 inch in thickness to produce a sharply defined zone of ferrite on each of said sheet major surfaces, with an abrupt change in carbon concentration to an undecarburized central core of through hardening steel therebetween,

continuing said decarburization until said ferrite zones expand in thickness to about 5 percent – 20 percent of the thickness of said sheet, while maintaining at least the outer 90 percent of the outer thickness of said zones at a carbon concentration below about 0.01 percent by weight,

austenitizing said sheet without inducing migration of carbon from said central core into said decarburized zones that significantly alters said abrupt change in carbon concentration,

rapidly cooling said austenitized decarburized sheet to through harden said central core to a hardness of at least about 40 Rc before migration of carbon from said central core into said decarburized zones can significantly alter said abrupt change in carbon content between said ferrite zones and said central core, and

plastically deforming said sheet into a desired shape.

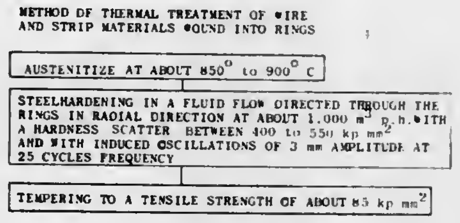
3,865,639
METHOD OF MANUFACTURE IMPROVING THE BEHAVIOUR OF WELDED HEAT-RESISTANT STEEL PARTS

Jean Bellot, Pompey; Michel Hugo, Custines; Jacques Thuillier, Pont de L'Arche, and Roger Hubert, Rouen, all of France, assignors to Societe Des Acieries Du Manoir-Pompey, Neuilly S/Seine, France
Filed Feb. 8, 1973, Ser. No. 330,635
Claims priority, application France, Dec. 15, 1972, 72.44814
Int. Cl. B32b ***15/18;*** **C21d** ***9/50***
U.S. Cl. 148—127 **8 Claims**

1. Method of manufacturing a welded assembly the welded parts of which withstand working temperatures ranging from about 900°C. to 1050°C, said parts being of at least one high alloy-austenitic steel alloyed with chromium, nickel and/or cobalt and containing less than 60 percent by weight iron and up to 0.5 percent by weight carbon with small concentrations of additional elements such as manganese and silicon, wherein said parts are submitted to welding, said welding resulting in the formation of at least a weld seam comprising a solidification front corresponding to a physical and chemical discontinuity in said seam, said welded seam being also of said high alloy austenitic steel, and then causing the said solidification front to become chemically homogeneous, causing the carbides of said welded seam to be in the precipitated state at a maximum extent and according to a fine uniform distribution, and causing the resistance to creep rupture and the tensile strength of said weld seam to increase to values at least approximately equal to those of the welded parts all by submitting at least said seam and the adjacent areas of the welded parts to a homogenization heat treatment at a temperature between about 110°C to 1200°C during a period of time of from several minutes to several hours, thereafter subjecting at least said seam and said adjacent areas to a cooling down to about 800°C. with a temperature decrease speed of about 100°C/hr and then to an air cooling down to room temperature.

3,865,640
METHOD FOR THERMAL TREATMENT OF RINGS CONSISTING OF WIRE OR STRIP MATERIAL

Hans Eberhard Mobius, Michael - Tritz- Str.4, 6622 Wadgassen; Jakob Kubini, Danziger Str. 66, and Sorayapour Soraya, Nordring 75, both of 662 Volklingen, all of Germany
Filed Nov. 27, 1972, Ser. No. 309,748
Claims priority, application Germany, Nov. 25, 1971, 2158459
Int. Cl. C21d ***1/04***
U.S. Cl. 148—12.9 **6 Claims**


METHOD OF THERMAL TREATMENT OF WIRE AND STRIP MATERIALS WOUND INTO RINGS
AUSTENITIZE AT ABOUT 850° to 900° C
STEELHARDENING IN A FLUID FLOW DIRECTED THROUGH THE RINGS IN RADIAL DIRECTION AT ABOUT 1.000 m³ p.h. WITH A HARDNESS SCATTER BETWEEN 400 to 550 kp mm² AND WITH INDUCED OSCILLATIONS OF 3 mm AMPLITUDE AT 25 CYCLES FREQUENCY
TEMPERING TO A TENSILE STRENGTH OF ABOUT 85 kp mm²

1. Method of uniform thermal treatment of a plurality of rings of wire or strip material including heavy rings and in bunches weighing up to 1.000 kgs or more comprising the steps of exposing the rings to a fluid medium, and inducing in the article to be treated directional oscillations of natural frequencies of said rings to vary the locations of the adjacent rings and provide openings between them, while they are subjected to a heat-exchange fluid medium to circulate through the said openings.

3,865,641
COMPOSITIONS FOR USE IN SOLDERING STAINLESS STEELS

Lester Aronberg, Chicago, Ill., assignor to Lake Chemical Company, Chicago, Ill.
Filed Jan. 14, 1972, Ser. No. 217,832
Int. Cl. B23k ***35/24***
U.S. Cl. 148—23 **15 Claims**

1. A soldering composition for use in soldering stainless steels consisting essentially of an intimate mixture of from about 95 to about 98 percent, by weight, of a solder in particulate form for use in soldering stainless steels and from about 5 to about 2 percent, by weight, of an inhibiting agent effective to inhibit the action of a phosphorous-containing acid used in soldering stainless steels.

3,865,642
WATER BASED QUENCHING COMPOSITION AND METHOD

Robert W. Foreman, Bloomfield Hills, Mich., assignor to Park Chemical Co., Detroit, Mich.
Continuation-in-part of Ser. No. 156,037, June 23, 1971, abandoned. This application May 2, 1973, Ser. No. 356,625
Int. Cl. B23k ***35/24***
U.S. Cl. 148—28 **3 Claims**

1. A water based quenching composition consisting essentially of in weight percent:

a. about 0.02 to 2.7 percent water soluble polyvinyl alcohol resin,

b. about 0.01 to 1.8 percent solid water soluble polyoxyalkylene compound having a molecular weight from about 1,000 to less than 95,000,

c. at least about 0.01 up to about 5 percent coupling agent for preventing separation between components (a) and (b), said coupling agent having a molecular weight of less than 900 and being different than components (a) and (b) and being selected from at least one material of the group consisting of ethylene glycol, ethyl butyl cellosolve, diethylene glycol ethyl ether, carbitol, propylene glycol, and dipropylene glycol,

and the balance water,

said composition having a percent total non-volatile solids of less than 5 percent by weight of the composition.

3,865,643
DEEP DRAWING SHEET STEEL

John W. Bales, Jr., North Huntingdon Twsp., and Michael A. Orehoski, Duquesne, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Division of Ser. No. 285,401, Aug. 31, 1972, Pat. No. 3,754,591, which is a continuation-in-part of Ser. No. 118,498, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 49,189, June 23, 1970, abandoned. This application Apr. 19, 1973, Ser. No. 352,785
Int. Cl. C22c ***29/00***
U.S. Cl. 148—36 **1 Claim**

1. A deep drawing cold rolled sheet steel produced from a rim stabilized steel ingot formed by a process consisting of teeming a rimming-type steel into an ingot mold, interrupting the teeming when said mold is from about 80 to 95 percent full for a time period sufficient to allow from ½ to 15 minutes of rimming action in the ingot mold, thereafter recommence teeming the rimming-type steel into the ingot mold, and after teeming is recommenced following the rimming action, adding about ¼ to 5 pounds of molten aluminum per ton of steel to the ingot mold at a rate sufficient to permit addition of all aluminum prior to completion of the recommenced teeming step, said cold rolled sheet steel characterized by an absence of porosity and exceptional press performance characteristics typically exhibiting less than 10 percent breakage when 20-gage sheet is deep-reverse-drawn to a depth of 7 inches on a 5-inch diameter cup.

3,865,644
HIGH STRENGTH, CORROSION RESISTANT, AUSTENITE-FERRITE STAINLESS STEEL

Lars Ivar Hellner; Hans Elof Johansson, both of Karlskoga, and Lars-Ake Norstrom, Hagfors, all of Sweden, assignors to AB Bofors, Bofors, Sweden
Filed Apr. 9, 1973, Ser. No. 349,359
Claims priority, application Sweden, Apr. 24, 1972, 5353/72
Int. Cl. C22c ***39/14, 39/26***
U.S. Cl. 148—37 **6 Claims**

1. A corrosion-resistant, austenite-ferritic steel which contains 10% to 35% by volume of austenite, said steel being adapted to attain an increase in strength by age-hardening, while retaining good ductility and notch-impact resistance as well as excellent resistance to intercrystalline corrosion, said steel consisting essentially of the following composition by weight:

C, a maximum of 0.15%
Si, a maximum of 2%
Mn, a maximum of 5%
Cr, from 20% to 30%
Ni, from 4% to 9%
Mo, from 1% to 3%
Nb, from 0.1% to 2.5%
Ti, a maximum of 1.5%
Al, from 0.1% to 2%, and
N, a maximum of 0.15%,

the remainder of said composition constituting iron and impurities, the atomic percentage of Nb plus the atomic percentage of Ti in said steel composition being equal to or greater than the atomic percentage of C plus the atomic percentage of N.

3,865,645
COLD-ROLLED STEEL SHEET FOR PRESS-FORMING

Nobuyuki Takahashi; Kenitiro Suemune; Shuji Nagata, and Tatumi Tomozoe, all of Kitakyushu, Japan, assignors to Nippon Steel Corp., Tokyo, Japan
Filed Dec. 27, 1972, Ser. No. 319,017
Claims priority, application Japan, Dec. 27, 1971, 46-10537
Int. Cl. C22c ***41/02;*** **C21d** ***9/48***
U.S. Cl. 148—142 **5 Claims**

1. A process for preparing a cold-rolled steel sheet for a press forming, which process comprises heating a cold-rolled steel sheet consisting essentially of

less than 0.08 wt. percent carbon
0.05 to 0.4 wt. percent manganese
0.015 to 0.10 wt. percent silicon
0.003 to 0.015 wt. percent nitrogen
0.01 to 0.10 wt. percent acid-soluble aluminum the

remainder being iron and unavoidable impurities, to a temperature in a range from 680° to 900°C and holding the same at this temperature for less than 10 minutes, subsequently cooling the steel sheet from the said temperature with a cooling rate of 5 to 54°C/sec. to the temperature of an overaging treatment, then subjecting the steel sheet to said overaging treatment, in which the steel sheet is held at a temperature of 300 to 500°C for less than 10 minutes and thereafter subjecting the steel sheet to a continuous annealing treatment, in which the steel sheet is quenched to room temperature.

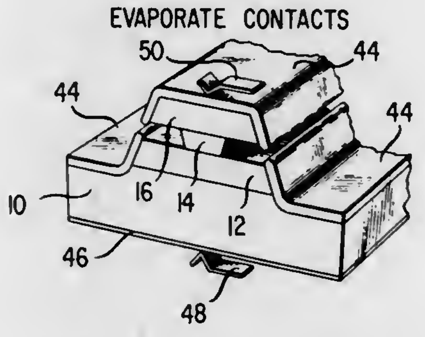
3,865,646
DIELECTRIC OPTICAL WAVEGUIDES AND TECHNIQUE FOR FABRICATING SAME

Ralph Andre Logan, Morristown; Bertram Schwartz, Westfield; Joseph Charles Tracy, Jr., Bernardsville, and William Wiegmann, Middlesex, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 291,937, Sept. 25, 1972, Pat. No. 3,833,435. This application Dec. 26, 1973, Ser. No. 427,915

Int. Cl. H01l *7/38, 7/36*

U.S. Cl. 148—171 9 Claims



1. A method of fabricating a dielectric waveguide comprising the steps of:

a. epitaxially growing a GaAs-AlGaAs heterostructure in which light is to be guided;

b. forming a native oxide layer on a major surface of said heterostructure,

c. removing from said major surface selected portions of said oxide layer thereby forming from the remaining portions of said oxide layer a mask having a predetermined shape;

d. forming a mesa from said heterostructure by bringing same into contact with a bromine methanol solution containing approximately 0.05 to 0.1 percent bromine by volume, thereby etching away at a relatively slow rate those portions of said heterostructure not covered by said mask, said solution being effective to form optically flat surfaces on opposite side walls of said mesa; and

e. bringing a solution of AlGaAs into contact with the top surface and side walls of said mesa and growing thereon by liquid phase epitaxy an AlGaAs layer, said mask formed from said native oxide layer serving to protect the surface thereunder from being dissolved in said solution.

3,865,647
METHOD FOR PRECIPITATION OF SEMICONDUCTOR MATERIAL

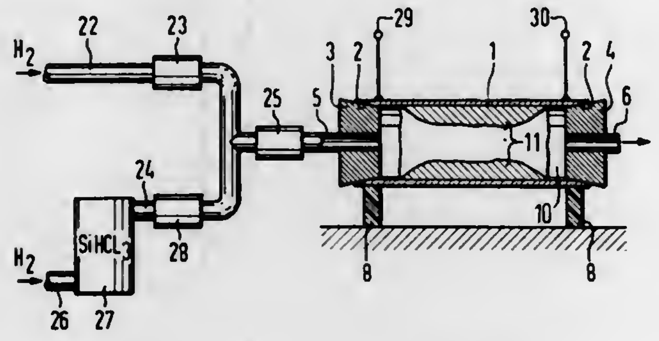
Konrad Reuschel, Vaterstetten, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation-in-part of Ser. No. 167,137, July 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 108,725, Jan. 22, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,259

Claims priority, application Germany, Sept. 30, 1970, 2048155

Int. Cl. H01l *7/36*

U.S. Cl. 148—175 11 Claims



1. A method of producing highly pure semiconductor material through the reaction of a gaseous compound having the same semiconductor material as a carrier body in the form of a semiconductor tube and a reduction gas, including the steps of: heating said carrier body to a temperature sufficient to cause precipitation of said semiconductor material; introducing said gaseous compound and said reduction gas into said tube, said tube being sealed against the outside atmosphere and functioning as a carrier body; and precipitating said semiconductor material on the interior of said tube by the continued application of heat until at least a portion of said tube is caused to melt together with the precipitated semiconductor material.

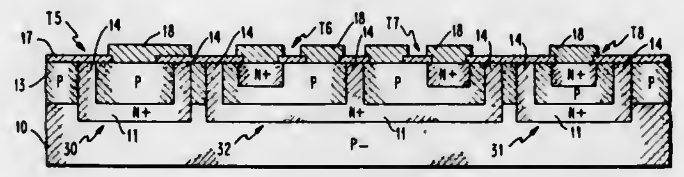
3,865,648
METHOD OF MAKING A COMMON EMITTER TRANSISTOR INTEGRATED CIRCUIT STRUCTURE

Paul P. Castrucci, Poughkeepsie; Edward G. Grochowski, Wappingers Falls; William D. North, Poughkeepsie, and Thomas L. Palfi, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 216,312, Jan. 7, 1972, Pat. No. 3,801,836, which is a division of Ser. No. 842,195, July 16, 1969, Pat. No. 3,648,130. This application Dec. 10, 1973, Ser. No. 425,754

Int. Cl. H01l *7/36, 29/72;* **B01j** *17/00*

U.S. Cl. 148—175 2 Claims



1. A method of forming a planar integrated circuit semiconductor common emitter transistor structure comprising:

forming by selective diffusion through one surface of a substrate of one type conductivity, a plurality of regions of opposite type conductivity in said substrate extending inwardly from said surface;

forming by epitaxial deposition on said surface a layer of semiconductor material of said one type conductivity, thereby burying the regions of opposite type conductivity;

forming by selective diffusion through the outer surface of the epitaxial layer at least one circumscribing region of said opposite type conductivity in the epitaxial layer extending from the outer surface to contact each of said buried regions, each of said circumscribing regions and said low resistivity buried regions enclosing at least one discrete portion of said one type conductivity layer, and at least one of said combinations of circumscribing regions and buried regions so enclosing a plurality of discrete portions, the enclosed portions forming the base regions of a transistor, and the circumscribing region together with the buried region forming the emitter of the transistor; and

forming by selective diffusion through the outer surface of the epitaxial layer, a region of said opposite type conductivity fully enclosed within each of said base regions extending from said outer surface into said base regions, said fully enclosed region being the collector of said transistor.

3,865,649
FABRICATION OF MOS DEVICES AND COMPLEMENTARY BIPOLAR TRANSISTOR DEVICES IN A MONOLITHIC SUBSTRATE

James D. Beasom, Indian Harbour Beach, Fla., assignor to Harris-Intertype Corp., Cleveland, Ohio

Filed Oct. 16, 1972, Ser. No. 297,700

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 20 Claims

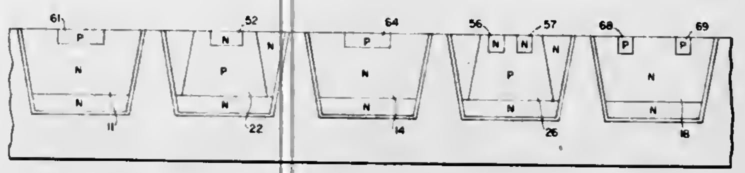
1. A process for the simultaneous fabrication of NPN, PNP, and MOS devices in isolated P and N type regions comprising in sequence:

diffusing to form in P type isolated regions bases of PNP's and sources and drains of N channel MOS's,

diffusing to form in N type isolated regions bases of NPN's;

diffusing to form in P type isolated regions collector contacts of PNP's and body contacts of N channel MOS's, and to form emitters in said bases of PNP's; and

diffusing to form collector contact of NPN's, source and drain contacts of N channel MOS's, base contacts of PNP's and emitters of NPN's.



3,865,650
METHOD FOR MANUFACTURING A MOS INTEGRATED CIRCUIT

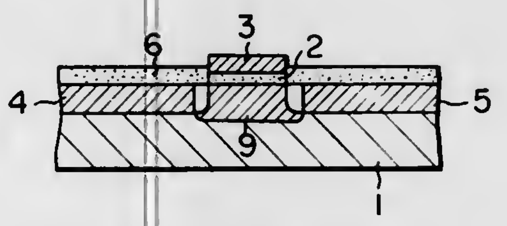
Shigeru Arita, Ibaragi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 12, 1973, Ser. No. 340,254

Claims priority, application Japan, Mar. 10, 1972, 47-24912

Int. Cl. H01l *7/44;* **B01j** *17/00;* **H01l** *11/00*

U.S. Cl. 148—187 4 Claims



1. A method for manufacturing a MOS integrated circuit comprising the steps of:

forming at least one selected diffusion region on a silicon substrate by a dopant of a conductivity type opposite to that of said silicon substrate;

forming a double layer comprising a gate oxide layer and a gate electrode layer on said silicon substrate;

removing said double layer excluding a strip portion thereof, which serves as a gate region, in such a way that the width of strip portion remaining on said silicon substrate is equal to or smaller than the width of said diffusion region; and

diffusing a dopant into said silicon substrate by using said gate strip section as a mask, thereby forming a plurality of drain and source regions, each thereof being of a conductivity type opposite to that of said silicon substrate, on both sides of said gate strip portion; whereby at least one pair of said drain and source regions is electrically interconnected by means of said diffusion region.

3,865,651
METHOD OF MANUFACTURING SERIES GATE TYPE MATRIX CIRCUITS

Shigeru Arita, Ibaragi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

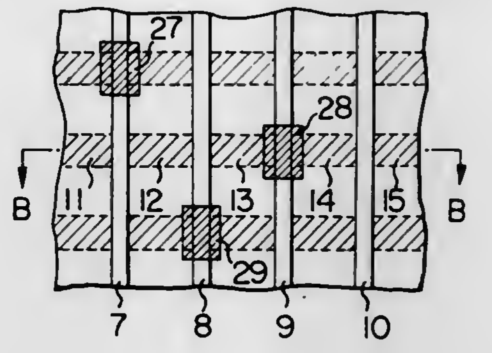
Filed Mar. 12, 1973, Ser. No. 340,255

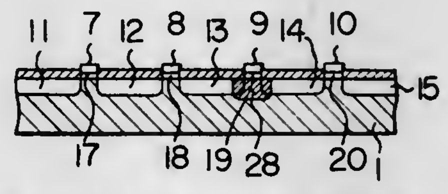
Claims priority, application Japan, Mar. 14, 1972, 47-26256

Int. Cl. H01l *7/44, 27/10;* **B01j** *17/00*

U.S. Cl. 148—187 3 Claims

1. A method of manufacturing a series gate type matrix circuit comprising the steps of: forming at least one preliminary diffused region in a silicon substrate of one semiconductivity type, said preliminary diffused region being of the other semiconductivity type opposite to that of said silicon substrate; forming a gate oxide layer and a gate electrode layer on said silicon substrate and etching to leave a plurality of strip gate portions, at least one of said strip gate portions having a portion thereof placed on said preliminary diffused region in such a way that the width of said gate portion is equal to or smaller than the width of said diffused region; and forming on both sides of each of said strip gate portions a plurality of diffused regions which act as a drain and source region of a MOS transistor whereby the drain and source regions of selected ones of the MOS field-effect transistors are short-circuited by said preliminary diffused region to thereby form a matrix circuit.





3,865,652
METHOD OF FORMING SELF-ALIGNED FIELD EFFECT TRANSISTOR AND CHARGE-COUPLED DEVICE

Benjamin Agusta, Burlington; Joseph J. Chang, Shelburne, and Madhukar L. Joshi, Essex Junction, all of Vt., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 257,504, May 30, 1972, abandoned. This application Oct. 5, 1973, Ser. No. 403,745

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 8 Claims

7. The method of claim 6 wherein said layer of semiconductor material is rendered conductive while it is being deposited.

3,865,653
LOGIC CIRCUIT HAVING A SWITCHING TRANSISTOR AND A LOAD TRANSISTOR, IN PARTICULAR FOR A SEMICONDUCTOR STORAGE ELEMENT

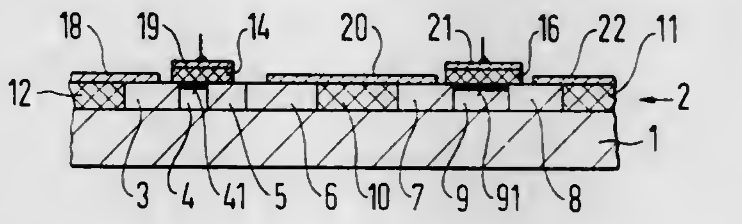
Karl Goser, Lorenzonistrasse 66, 8000 Munich, Germany

Division of Ser. No. 295,583, Oct. 6, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 430,097

Claims priority, application Germany, Oct. 12, 1971, 2150794

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 2 Claims



1. A method for producing a logic circuit including a switching transistor and a load transistor in complementary channel thin layer technique connected to said switching transistor, comprising the steps of: masking a semiconductor layer of a first conductivity type which overlies a high ohmic substrate to expose zones for diffusion, diffusing an opposite conductivity material through said openings into the diffusion zones and under the edges of the openings to produce doped zones of the switching and of the load transistors, masking again by covering some of the openings and providing an additional opening

to define a further zone of the switching transistor, diffusing material of the first conductivity type through said opening and contemporaneously limiting advancement of the diffusion in one of the previously diffused zones so that a portion of the previously diffused zone remains, removing the masking, and applying electrical contacts to the diffused zones.

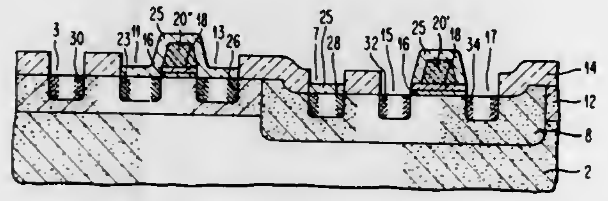
3,865,654
COMPLEMENTARY FIELD EFFECT TRANSISTOR HAVING P DOPED SILICON GATES AND PROCESS FOR MAKING THE SAME

Chi Shih Chang, Wappingers Falls, and Teh-Sen Jen, Fishkill, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 302,962, Nov. 1, 1972, Pat. No. 3,821,781. This application Feb. 11, 1974, Ser. No. 441,073

Int. Cl. H01l *7/44*

U.S. Cl. 148—187 **9 Claims**



7. A method as in claim 5 wherein the formation of said N type source and drain regions comprise the steps of:

covering said gate electrodes and said P type source and drain regions with a thick insulation layer;

dip-etching the masking layer over the source and drain regions of the N channel device, thereby removing the masking layer over said N channel device;

diffusing an N type impurity into said N channel source and drain regions, and the gate electrodes remaining substantially intact as a diffusion mask.

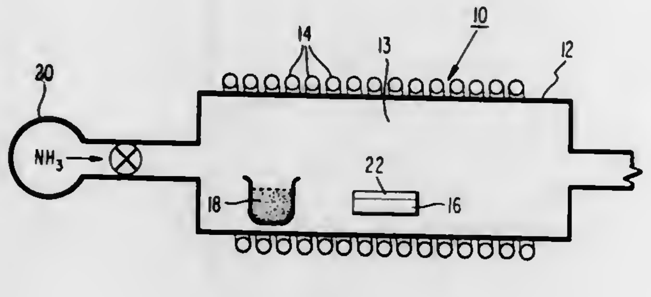
3,865,655
METHOD FOR DIFFUSING IMPURITIES INTO NITRIDE SEMICONDUCTOR CRYSTALS

Jacques Isaac Pankove, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 24, 1973, Ser. No. 399,822

Int. Cl. H01l *7/44*

U.S. Cl. 148—189 **4 Claims**



1. A method of diffusing a dopant into a nitride body comprising the steps of:

contacting the nitride body with the dopant in an ammonia atmosphere while heating said body.

3,865,656
PLASTICIZED NITROCELLULOSE PROPELLANT COMPOSITION CONTAINING ALUMINUM HYDRIDE AND NITRONIUM PERCHLORATE

James P. Flynn; George A. Lane, and John J. Plomer, all of Midland, Mich., assignors to Adamas Carbide Corporation, Kenilworth, N.J.

Filed June 16, 1965, Ser. No. 465,252

Int. Cl. C06d *5/06*

U.S. Cl. 149—7 **4 Claims**

1. A solid double-base propellant composition comprising on a weight basis;

a. from about 5 to about 40 percent of a crystalline substantially non-solvated aluminum hydride,

b. from about 21 to about 33 percent nitronium perchlorate, and

c. from about 30 to about 60 percent of a plasticized nitrocellulose binder.

3,865,657
A SOLID COMPOSITE PROPELLANT CONTAINING FLUOROAMINO POLYMERS

James P. Flynn, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 28, 1965, Ser. No. 460,619

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.3 **5 Claims**

1. A solid propellant composition comprising on a weight basis;

a. from about 3 to about 18 percent of a particulated solid fuel,

b. from about 1 to about 44 per cent of a particulated solid oxidizer,

c. up to about 54 per cent of a copolymer of perfluoroguanidine and formaldehyde, and

d. from about 20 to about 40 per cent of a difluoramino containing organic ester.

3,865,658
PROPELLANT COMPOSITION CONTAINING NITROCELLULOSE AND A COPOLYMER OF PERFLUOROGUANIDINE AND FORMALDEHYDE

James P. Flynn, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 28, 1965, Ser. No. 460,620

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.3 **5 Claims**

1. A solid double base propellant composition comprising on a weight basis;

a. from about 3 to about 18 per cent of a particulated solid fuel,

b. from about 1 to about 44 per cent of a particulated solid oxidizer,

c. from about 15 to about 54 per cent of a copolymer of perfluoroguanidine and formaldehyde,

d. from about 10 to about 18 per cent nitrocellulose, and

e. from about 10 to about 30 per cent of a difluoramino containing organic ester.

3,865,659
NITROCELLULOSE PROPELLANT COMPOSITION CONTAINING METAL AND TRIAMINOGUANIDINIUM HYDRAZINIUM DIAZIDE

James P. Flynn; George A. Lane, and John J. Plomer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 16, 1965, Ser. No. 465,253

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.4 **5 Claims**

1. A solid double base propellant composition comprising on a weight basis

a. from about 2 to about 23 percent of a particulated solid fuel member selected from the group consisting of aluminum, beryllium, boron and mixtures thereof,

b. from about 14 to about 35 percent of a particulated solid oxidizer selected from the group consisting of ammonium perchlorate, ammonium nitrate, hydrazine nitroformate, nitronium perchlorate, cyclotrimethylenetrinitramine, cyclotetramethylenetetranitramine and mixtures thereof, c. from about 12 to about 35 percent triaminoguanidinium hydrazinium diazide, and

d. from about 30 to about 50 percent of a plasticized nitrocellulose binder.

3,865,660
NON-TOXIC, NON-CORROSIVE, ODORLESS GAS GENERATING COMPOSITION

Norman H. Lundstrom, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Mar. 12, 1973, Ser. No. 340,422

Int. Cl. B60r *21/10;* **C06d** *5/06*

U.S. Cl. 149—35 **11 Claims**

1. A gas generating composition which upon combustion yields non-toxic, odorless gases, and substantially non-corrosive, and odorless solid decomposition products; said composition consisting essentially of:

a. from 2.8 to 3.2 moles of an alkali metal azide selected from the group consisting of sodium azide, lithium azide, and potassium azide; and

b. from 0.8 to 1.2 moles of anhydrous chromic chloride.

3,865,661
PROCESS FOR MANUFACTURING A POROUS THERMOPLASTIC RESIN ARTICLE REINFORCED BY A GLASS MATT

Akio Hata, Shinnanyo, and Hiroshi Saeki, Hikari, both of Japan, assignors to Tokuyama Sekisui Kogyo Kabushiki Kaisha, Kita-ku, Osaka-shi, Japan

Filed Mar. 12, 1973, Ser. No. 340,264

Claims priority, application Japan, Mar. 10, 1972, 47-25020

Int. Cl. B29c *25/00*

U.S. Cl. 156—79 **10 Claims**

1. A process for manufacturing a porous thermoplastic resin article reinforced by glass fibres which comprises using one or more matts of glass fibres, which have a bulk density of 0.4 g/cm^3 or less when compressed under the pressure of 10 g/cm^2, and also a bulk density of 0.6 g/cm^3 or less when compressed under the pressure of 1000 g/cm^2, and further which have an inherent property that the matts restore elastically to more than 50 percent volume of the original volume when said pressures are removed, admixing 5–70 weight parts of said matts with 95–30 weight parts of thermoplatic resin to form resin distributed matts, then heating and pressing the resin distributed matts above a temperature at which the resin is at least fused to obtain an article in which both the fibres and resin are combined into a bonded mass, thereafter maintaining the article at a temperature higher than the flowing temperature of the resin to form pores in said article by means of the restoring force of the pressed glass fibres, and finally cooling said article.

3,865,662
METHOD FOR SEALING SHELL-LIKE THERMOPLASTIC OBJECTS

Leon Segal, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,774

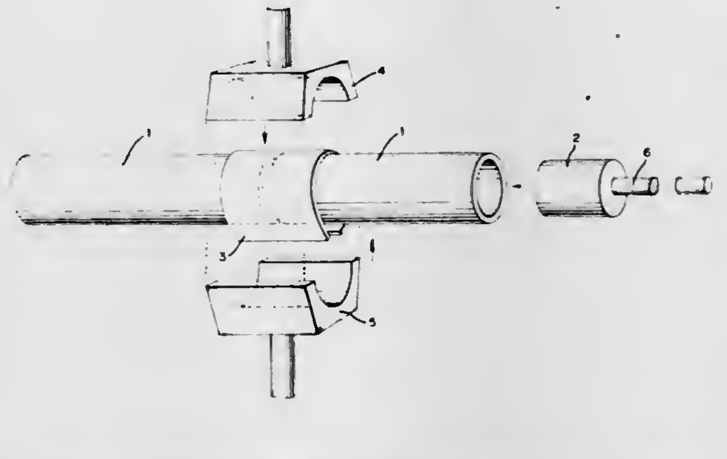
Int. Cl. B32b *35/00*

U.S. Cl. 156—94 **18 Claims**

1. A method for rapidly joining or repairing shell-like thermoplastic objects comprising the steps of:

a. supporting the area on one side of the object to be treated;

b. applying a preheated reinforced thermoplastic charge in the form of a sheet, swatch, bulk charge or pellets, said charge containing at least 5 percent fibrous reinforcement to the other side of the area to be treated; and



c. exerting a stamping pressure to the preheated charge to effect a seal.

3,865,663
PATTERNED RUBBER ARTICLE AND A PROCESS FOR MAKING THE SAME

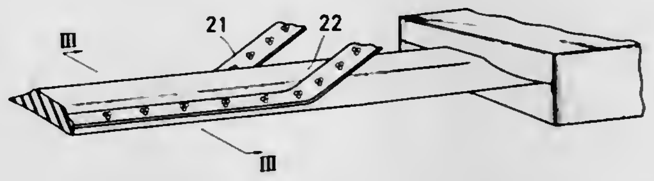
Takeshi Oka, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 132,287, April 8, 1971, abandoned. This application May 21, 1973, Ser. No. 362,079

Claims priority, application Japan, Apr. 11, 1970, 45-30523; Apr. 11, 1970, 45-30501; Apr. 11, 1970, 45-30524

Int. Cl. B29h *21/02*

U.S. Cl. 156—116 **1 Claim**



1. A process for manufacturing a tire having colored marks on the side wall portions thereof comprising

a. applying the colored marks as rubber paint on one side of a substantially transparent film of a thickness not exceeding 1.0 mm and made of unvulcanized synthetic rubber, unvulcanized natural rubber or a combination thereof,

b. directly contacting the thus marked side of the transparent film with the surface of the side wall portions of a tread rubber strip extruded by a tire tread extruder,

c. forming a semiprocessed tire by using said tread rubber strip with said transparent film having said colored marks directly contacted thereon and

d. vulcanizing the assembly in a vulcanizing mold to form the tire.

3,865,664
LAMINATED FOIL CANDY WRAPPER AND METHOD OF PREPARING

Robert G. Neumann, Bellbrook, Ohio, assignor to The Specialty Papers Co., Dayton, Ohio

Filed May 31, 1973, Ser. No. 365,452

Int. Cl. B31c *13/00*

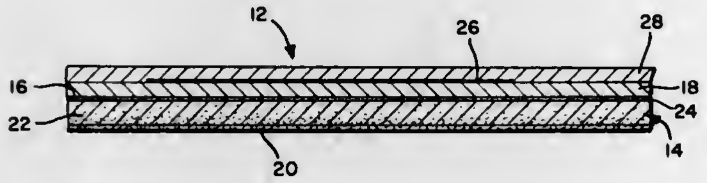
U.S. Cl. 156—192 **8 Claims**

1. A method of preparing a laminated foil wrapper comprising the steps of:

coating and impregnating a continuous paper web with a fortified wax blend,

said coating and impregnating operations resulting in a wax impreganted paper web one surface of which is waxy and the other surface of which is relatively free of wax, then

bringing a thin metal foil lamina having an adhesive coated underside into contact with the wax free side of said coated and impregnated paper web in order to form a laminate,



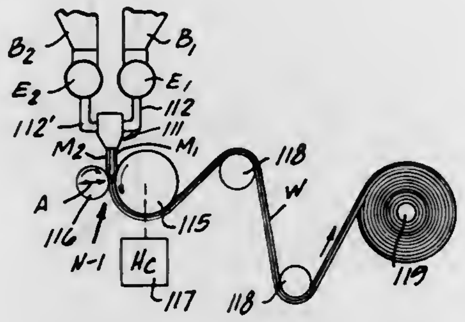
dampening said laminate with an aqueous plasticizing solution by passing said laminate through an atmosphere laden with said solution,

winding said dampened laminate into a roll and wrapping said roll in a moisture impervious material, and

allowing said wrapped roll to age for at least 8 hours until a moisture equilibrium is established throughout the laminate.

3,865,665
METHOD OF PRODUCING MULTI-LAYER FLAT FILM

George J. Marion, 691 E. Boot Rd., Chester, Pa.
Continuation of Ser. No. 223,435, Feb. 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 861,047, Sept. 25, 1969, abandoned, and a continuation-in-part of Ser. No. 223,436, Feb. 4, 1972, Pat. No. 3,797,987. This application Dec. 10, 1973, Ser. No. 423,470
Int. Cl. B29f *3/00*
U.S. Cl. 156—244 **12 Claims**



2. A method of coating a multi-layer flat film onto a substrate comprising;

co-extruding at least two thermo-extrudable materials in the form of flat non-solidified sheets in spaced-apart relatively closely adjacent overlapping position to each other, each of said sheets having its respective side edges offset from adjacent sheet side edges;

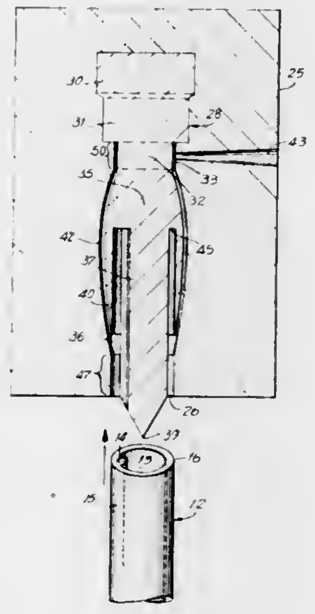
feeding a substrate for continguous contact with one of said nonsolidified sheets;

substantially simultaneously bonding adjacent face surfaces of such non-solidified sheets with one another and bonding one of the other face surfaces of one of said sheets with an adjacent face surface of said substrate; and

cooling the bonded sheets to form a solidified multi-layer flat film coating on the substrate.

3,865,666
METHOD OF MAKING A CATHETER

Suryakant R. Shoney, Cranston, R.I., assignor to International Paper Company, New York, N.Y.
Filed May 8, 1973, Ser. No. 358,309
Int. Cl. B29c *11/00;* **B29d** *23/02*
U.S. Cl. 156—245 **13 Claims**



1. The process of manufacturing a retention catheter which comprises:

a. providing an elastomeric catheter shaft having a drainage lumen extending longitudinally thereof and an inflation lumen extending longitudinally for at least a major portion thereof and communicating with the exterior of said shaft through an aperture adjacent the distal end of said shaft;

b. molding a balloon sleeve and simultaneously bonding said balloon sleeve to said shaft adjacent the distal end thereof and on one side of said aperture;

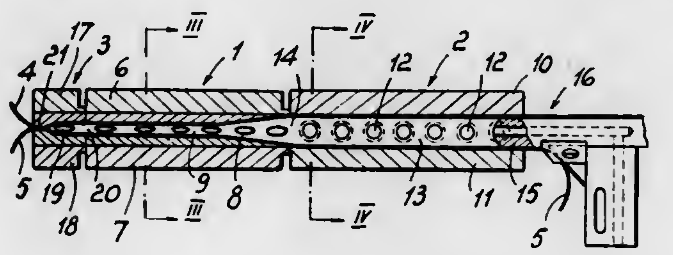
c. insert molding a tip to the distal end of said shaft;

d. providing at least one drainage eye communicating with said drainage lumen; and;

e. bonding the exposed end of said balloon sleeve to said catheter on the other side of said aperture.

3,865,667
METHOD FOR THE PRODUCTION OF SHEATH CONTAINERS

Ottavio Ferrari, Via A. Lincoln 1/A, Carpi, Italy
Filed Oct. 25, 1972, Ser. No. 300,562
Claims priority, application Italy, Oct. 25, 1971, 30263; 30264
Int. Cl. B29c *3/00*
U.S. Cl. 156—285 **7 Claims**



1. A method for continually producing sheath containers from thermoplastic material in form of continuous films, comprising the steps of intermittently feeding two superimposed films of thermoplastic material to a molding equipment including at least a thermowelding mold and a forming mold, thermowelding said films to define a plurality of non-welded zones extending substantially transversely to said films and a non-welded central zone extending longitudinally with respect to said films and communicating with each of said transverse zones, and forming said sheath containers by subjecting the outer surface of said non-welded zones within said forming mold to a reduced pressure while maintaining said central longitudinal zone at a point upstream of said forming mold at a temperature less than the thermowelding temperature of said films for temporarily closing said central longitudinal zone at said point during forming of sheath containers.

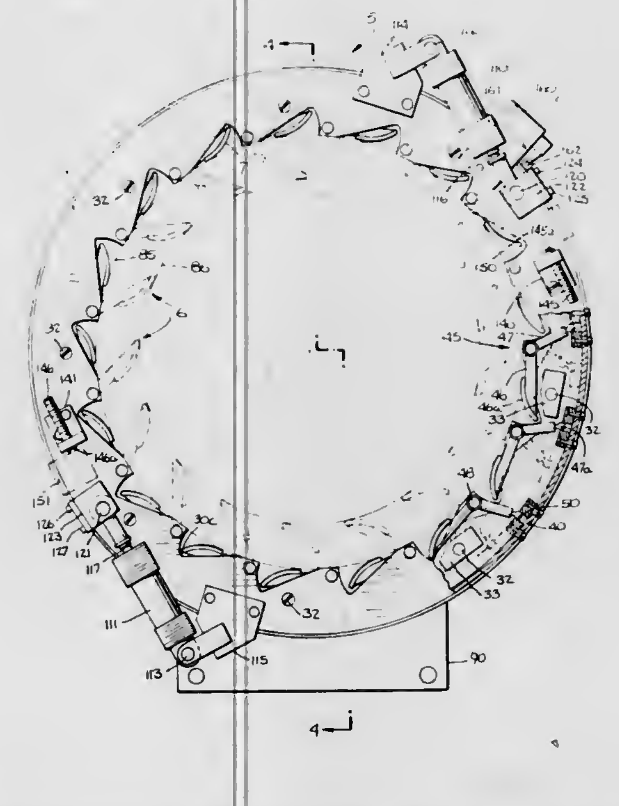
3,865,668
METHOD OF MANUFACTURING PHOTO ALBUM PAGES

Sheldon Holson, Norwalk, Conn., assignor to The Holson Company, Wilton, Conn.
Filed Feb. 20, 1973, Ser. No. 334,116
Int. Cl. B32b *7/14*
U.S. Cl. 156—291 **3 Claims**

1. The method of manufacturing a photo album page having a paper base lamina and a clear synthetic resinous overlay extending over the surface of said base lamina, comprising the steps of: providing a base lamina of paper stock, the surface of which has substantial moisture aborptive capacity; applying an evaporable vehicle latex-based adhesive pressure sensitive to at least one surface of said base lamina in disconnected substantially circular areas such that the applied adhesive areas are substantially surrounded by uncoated surface areas of the base lamina; while said applied adhesive is still in a relatively uncured state, applying said overlay to said adhesive-coated base lamina under pressure; allowing said base lamina and attached overlay to remain relatively undisturbed at room temperature for a period of time sufficient to allow the evaporable vehicle phase of the adhesive coating to first be at least partially absorbed by said coated surface of said base lamina, and subsequently evaporated past the free edges of said overlay, prior to use.

3,865,669
EXPANSIBLE AND CONTRACTIBLE TRANSFER RING

Charles E. Todd, Detroit, Mich., assignor to Uniroyal Inc., New York, N.Y.
Filed Jan. 8, 1973, Ser. No. 321,740
Int. Cl. B29h *17/02*
U.S. Cl. 156—394 **13 Claims**



1. An expansible and contractible transfer ring for conveying a breaker-tread assembly from a building drum in a tire building machine to a tire carcass mounted on a tire shaping mechanism spaced apart from said drum, said transfer ring comprising;

a support means;

slip ring means having a central axis of rotation mounted on said support means for relative rotation therebetween;

a plurality of slip ring mounting blocks;

a plurality of slide means, individually coupling respective ones of said mounting blocks to said slip ring means in a circumferentially spaced sequence about the radially inward surface thereof, for individually selecting the circumferential spacing between each of said blocks;

a plurality of levers, each having first and second legs, disposed in a circumferentially spaced sequence about said central axis;

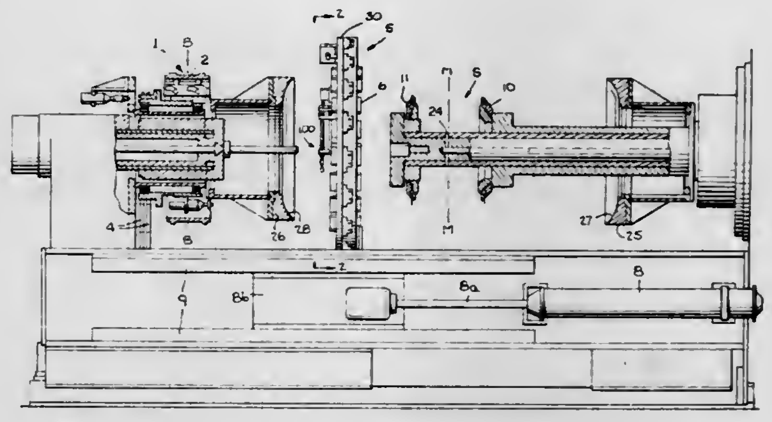
the first leg of each of said levers coupled to one of said slip ring mounting blocks and the junction of said firt and second legs pivotally connected to said support means;

the second leg of each of said levers being constrained to generally radially inward and outward movements relative to said central axis in response to corresponding relative rotational movements between said slip ring means and said support means, the limits of the radially inward and outward movement of each one of said second legs relative to that of each of the other second legs being determined by the relative spacing between the mounting block coupled to the respective one first leg and the other mounting blocks, said second leg of each of said levers having an inwardly directed surface for engagement with the outer surface of a tread constituting a part of a breaker-tread assembly; and

drive means interconnected between said support means and said slip ring means for effecting said relative rotation between said slip ring means and said support means.

3,865,670
BREAKER-TREAD ASSEMBLY TRANSFER RING SIZE CHANGING MECHANISM

William Charles Habert, Fraser, Mich., assignor to Uniroyal Inc., New York, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,354
Int. Cl. B29h *17/10, 17/36*
U.S. Cl. 156—394 **14 Claims**



1. An expansible and contractible transfer ring for conveying a breaker-tread assembly from a building drum in a tire building machine to a tire carcass mounted on a tire shaping mechanism spaced apart from said drum, said transfer ring comprising:

support means;

annular cam means mounted on said support means for relative rotation therebetween;

a plurality of arcuate ring segments coupled to said cam means and slidably mounted on said support means in a circular arrangement having a central axis,

each of said segments being constrained to radially inward and outward movements relative to said central axis in response to corresponding relative rotational movements between said cam means and said support means and having respective radially inwardly directed surfaces for engagement with the outer surface of a tread constituting a part of a breaker-tread assembly;

drive means interconnected between said support means and said cam means for effecting said relative rotation between said cam means and said support means; and

adjustable control means coupled between said support means and said cam means for adjustably limiting the extent of said relative rotation and of the resultant radial movements of said segments.

3,865,671

LABELING DEVICE FOR UPRIGHT STANDING OBJECTS

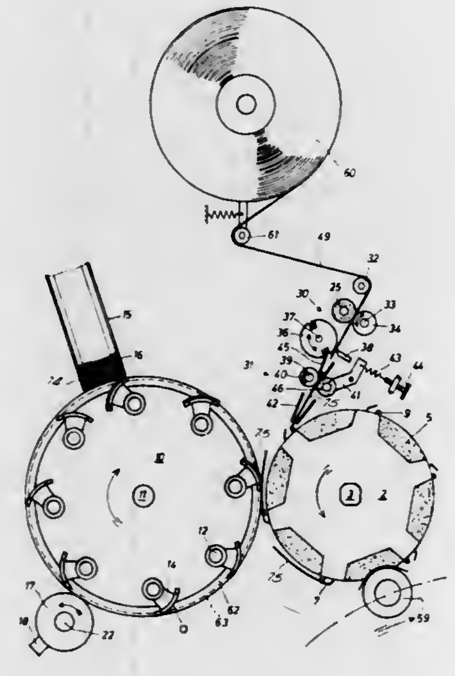
Hermann Kronsder, Berliner Str. 10, Neutraubling, Germany

Filed Aug. 30, 1972, Ser. No. 284,838

Claims priority, application France, Sept. 10, 1971, 7132742

Int. Cl. B65c *3/08*

U.S. Cl. 156—488 **11 Claims**



1. A labeling machine for containers, bottles, glasses or the like comprising a label turret for applying body and shoulder labels to said containers, said label turret having first and second turret portions with means on said turret portions for gripping labels and applying the labels to a container, means for feeding sheet labels from a stack to one of said first and second turret portions, and cutting and feeding means for cutting labels from a pre-printed label tape and feeding the cut labels to the other of said first and second label turret portions, a glue transfer rotor having separate glue surfaces respectively for sheet labels and for tape cut labels, and a glue applicator roller positioned at the circumference of said glue transfer rotor to apply glue to said separate surfaces for withdrawal of the labels from the stack and applying glue to the tape cut labels carried by said turret.

3,865,672

PROCESS FOR THE REMOVAL OF VOLATILES FROM POLYMER SOLUTIONS

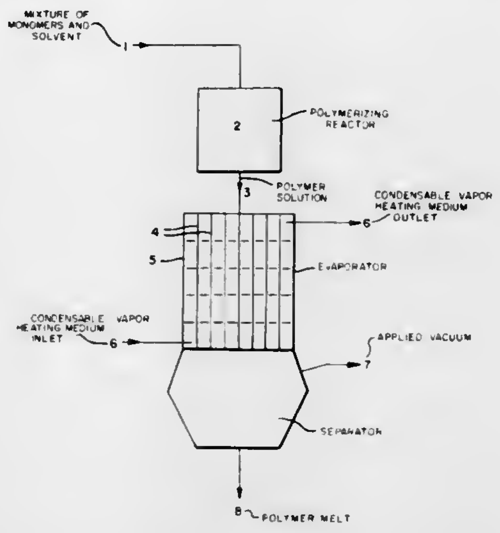
Lothar Metzinger. Bad Duerkheim; Alfred Gottschalk. Wachenheim; Klaus Schoettle, Ludwigshafen, and Josef Schwaab, Maikammer, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Leedwigshafen/Rhine, Germany

Filed July 26, 1972, Ser. No. 275,360

Int. Cl. B01d *1/00;* **F26b** *7/00*

U.S. Cl. 159—47 R **6 Claims**

1. A continuous single-stage process for removing volatiles from a polymer solution obtained by solution polymerization of a monomer mixture containing from 10 to 80 percent by weight of acrylonitrile or methacrylonitrile, said solution having a solids content of from 30 to 90 percent by weight, which comprises continuously conducting said solution at a temperature of from 100° to 180°C in indirect countercurrent heat exchange relationship to a fluid heating medium to progressively increase the temperature of the solution to from 200° to 350°C, maintaining a temperature gradient in said heating medium with its temperature decreasing at least 40°C from the outlet for said solution to the inlet therefor, and continuously applying a vacuum of from 10 to 100 millimeters of mercury to the heated product to reduce the content of volatiles therein to a maximum of 2 percent by weight.


MIXTURE OF MONOMERS AND SOLVENT
1
2
POLYMERIZING REACTOR
3
POLYMER SOLUTION
CONDENSABLE VAPOR HEATING MEDIUM OUTLET
6
4
5
EVAPORATOR
CONDENSABLE VAPOR HEATING MEDIUM INLET
6
APPLIED VACUUM
7
SEPARATOR
8
POLYMER MELT

3,865,673

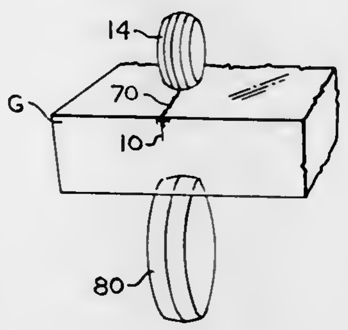
METHOD OF PSEUDOSUBSURFACE SCORING AND CUTTING GLASS SHEETS AND SHEET CUT THEREBY

Robert P. DeTorre, Pittsburgh, Pa., assignor to Moline Limited, London, England

Continuation-in-part of Ser. No. 242,510, April 10, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,649

Int. Cl. C03b *33/00*

U.S. Cl. 161—1 **34 Claims**



1. In a method of cutting a refractory material selected from the group consisting of glasses, ceramics and glass-ceramics wherein a scoring force is applied to a scoring tool on a surface of said material, relative movement is imparted between said tool and said material to form a score in said material along an intended path of cut and, thereafter, force is applied to said material to sever it along said score and intended path of cut, the improvement comprising:

applying said scoring force to a rotary scoring tool having a continuous cutting edge with an effective cutting angle of from about 150° to less than 180° in an amount and at a rate of relative movement between said tool and said material sufficient to produce a pseudosubsurface score in said material extending a substantial distance into said material and substantially perpendicular to and along said path, a substantial portion of said score along the length of its tip being spaced from the adjacent surface of the material by a microscopic zone of damaged but substantially spall- and wing-free material,

and

projecting said score deeper into the thickness of said material after said score is produced.

3,865,674

POROUS POLYETHYLENE SHEET

Irl N. Duling, West Chester, and John C. Merges, Jr., Glen Mills, both of Pa., assignors to Sun Research and Development Co., Marcus Hook, Pa.

Continuation-in-part of Ser. No. 157,771, June 28, 1971, abandoned, which is a division of Ser. No. 885,355, Dec. 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 754,884, July 18, 1968, abandoned. This application Oct. 16, 1972, Ser. No. 298,035

Int. Cl. B29d *27/08;* **B32b** *3/26, 27/32*

U.S. Cl. 161—6 **2 Claims**

1. An opaque porous sheet

consisting essentially of polyethylene having a molecular weight in excess of 500,000;

having a thickness less than about 100 mils;

said sheet when pressed receiving a permanent impression and the area receiving the impression becomes translucent.

3,865,675

INSULATOR PAD FOR UPHOLSTERED FURNITURE

Harmon W. Arnold, Carthage, Mo., assignor to Flex-O-Lators. Inc., Carthage, Mo.

Filed May 4, 1973, Ser. No. 357,249

Int. Cl. A47c *23/26*

U.S. Cl. 5—354 **3 Claims**

1. An insulator pad for upholstered furniture comprising a planar fabric sheet including:

a. a pair of generally parallel side strands each consisting of a hollow tube of flexible plastic material, and

b. a series of generally parallel, spaced apart resilient spring wires extending transversely between and knotted at their respectively opposite ends about said strands, said side strand material being of such hardness and density that if said strand were solid, it would prevent appreciable indentation thereof by said cross wires, the hollow interiors of said side strands permitting localized collapse of the walls thereof within the knots of said wires, said knots therefore appreciably indenting the exterior surfaces of said side strands.

3,865,676

ARTIFICIAL TREE CONSTRUCTION

George E. Bogart; Robert T. Gallagher, and Lawrence V. Lolli, all of Philadelphia, Pa., assignors to Marathon Manufacturing Company, Philadelphia, Pa.

Filed May 14, 1973, Ser. No. 359,735

Int. Cl. A47g *33/06*

U.S. Cl. 161—24 **8 Claims**

1. An artificial tree construction comprising a post, an upper support outstanding about said post from an upper region thereof, a lower support outstanding about said post from a lower region thereof, a plurality of elongate limb carriers arranged about said post extending obliquely between said upper and lower supports, a plurality of limbs projecting from each of said carriers, and an upper enlargement on each carrier, said upper support being formed with a larger opening for upward passage therethrough of each upper enlargement, and a smaller opening communicating with each larger opening for lateral movement of the associated carrier into the smaller opening and retention thereby against passage of the respective upper enlargement.

3,865,677

REINFORCEMENT OF ELASTOMERIC PRODUCTS

Alfred Marzocchi, Cumberland, R.I., and Robert R. McAuslan, Seekonk, Mass., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 144,169, May 17, 1971, Pat. No. 3,741,837. This application Dec. 4, 1972, Ser. No. 312,151

Int. Cl. B32b *5/12*

U.S. Cl. 161—55 **4 Claims**

1. An essentially continuous sheet composed of a vulcanizable elastomeric material, said sheet being subdividable into smaller units of preselected dimension and adapted to be combined with other like pieces of preselected dimension to form, in aggregate, a vulcanizable preform for vulcanizing into a desired molded configuration, said sheet comprising:

a plurality of unitized layers of vulcanizable elastomeric material in generally face-to-face registration making up the thickness of said sheet material,

one of said layers of vulcanizable elastomeric material including embedded interiorly therein an array of separate lengths of chopped glass cords arranged in generally mutually parallel relationship and

another one of said layers of vulcanizable elastomeric material including embedded interiorly therein an array of separate lengths of chopped glass cords in generally mutually parallel relationship, said latter array of chopped lengths being angularly disposed to the array of chopped lengths in the first-mentioned layer.

3,865,678

SUEDE-LIKE RAISED WOVEN FABRIC AND PROCESS FOR THE PREPARATION THEREOF

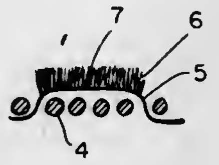
Miyoshi Okamoto, Osaka-fu; Shusuke Yoshida, Otsu; Tadashi Imai, Otsu; Tatsuo Watanabe, Otsu, and Shinzo Nishikaku, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,962

Claims priority, application Japan, Mar. 7, 1972, 47-22766; Apr. 25, 1972

Int. Cl. B29d *27/00;* **D04h** *1/64*

U.S. Cl. 161—67 **50 Claims**



1. A suede-like raised woven fabric which comprises raised fibers covering the surface of said fabric and an elastic polymer impregnated throughout said fabric, wherein said fabric is woven and comprises warp and weft yarns, the weft of said fabric being a yarn consisting of a bundle of extra fine fibers, the mono-filament denier of which is 0.0001–0.4 denier, the warps of said fabric are yarns having a coil-like crimp capacity, the total denier of said warp yarn being 50–300 denier,

and said raised fibers consisting mainly of said extra fine fibers which constitute said weft of said fabric.

3,865,679

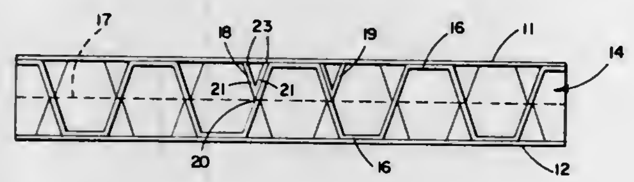
SANDWICH PANEL HAVING CELLULAR CORE STRUCTURE WITH REINFORCING ELEMENTS

Jesse R. Hale, 25913 Stanford St., Hemet, Calif. 92343

Filed July 9, 1973, Ser. No. 377,827

Int. Cl. B32b *3/12, 3/26;* **E04b** *2/28*

U.S. Cl. 161—68 **11 Claims**



1. In a sandwich panel formed from a cellular core structure sandwiched between a pair of face sheets, said core structure having nodes which project in opposite directions from a midplane with the apices of said nodes abutting against said face sheets, the improvement comprising:

first reinforcing bar means running along the sides of a first row of said nodes, said bar means being bonded to the sides of the nodes of said core, the ends of said bar means being bonded to a surface of one of said face sheets, and second reinforcing bar means running along the sides of a second row of said nodes, said second reinforcing bar means being bonded to the sides of nodes of said core, the ends of said bar means being bonded to said surface of said one of said face sheets.

3,865,680

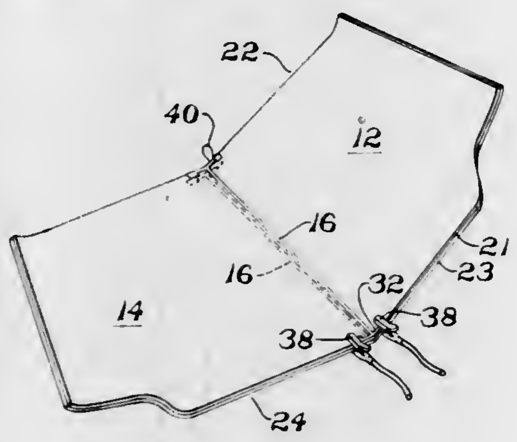
AUTOMOBILE WINDSHIELD AND ITS METHOD OF FABRICATION

Thomas J. Reese, Sarver, and Harry S. Koontz, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1972, Ser. No. 239,033

Int. Cl. C03b *23/02*

U.S. Cl. 161—125 **29 Claims**



1. An article comprising a glass sheet having a glass sheet portion adapted to be sharply bent extending from edge to edge across a dimension of said glass sheet, a layer of electroconductive material on a surface of said sheet arranged in an electroconductive pattern comprising an elongated electroconductive portion having a given electroconductivity per unit length bonded to said glass sheet portion to be sharply bent and approximately coextensive in length therewith, and an edge portion of electroconductive material bonded to said glass sheet and extending from each end portion of said elongated electroconductive portion along an edge portion of said glass sheet, said electroconductive edge portion including a less conductive edge portion whose electroconductivity per unit length is approximately equal to that of the first named elongated electroconductive portion contacting an end portion of said first named elongated electroconductive portion and a more conductive electroconductive edge portion, whose electroconductivity per unit length is greater than that of said elongated electroconductive portion, remote from said elongated electroconductive portion, said pattern being so constructed and arranged that when electroconductive energy is applied to said electroconductive pattern to heat said electroconductive material, the temperature gradient along the edge portions of the glass in the vicinity of the end portions of said first named elongated electroconductive portion is not so steep as to cause the glass to break from thermal stress.

3,865,681

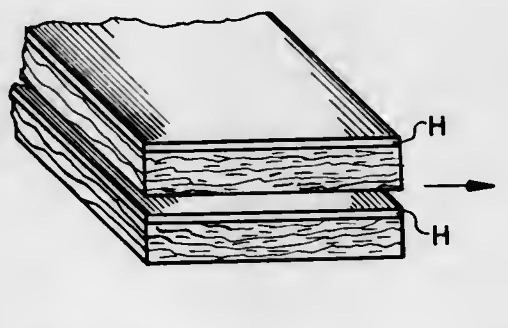
METHOD OF PREPARING LUMBER HAVING PROPERTIES OF CLEAR GRADE LUMBER FROM COMMON GRADE LUMBER

Louis S. Beebe, Rt. No. 2 Foxfire Rd., Kernersville, N.C. 27284

Filed Oct. 12, 1972, Ser. No. 296,798

Int. Cl. B32b *31/20, 21/04, 7/02*

U.S. Cl. 156—264 **4 Claims**



1. A process for preparing improved lumber products from common grade lumber to meet the requirements of clear grade lumber which comprises cutting a common grade lumber piece having a thickness of about 1½ inches along a plane substantially equi-distant between its two faces to form two lumber pieces, planing each of said two lumber pieces to a thickness of ⅝ inch and adhesively laminating ⅛ inch hardboard to the face of each of said pieces to form lumber products having a thickness of substantially ¾ inch.

3,865,682

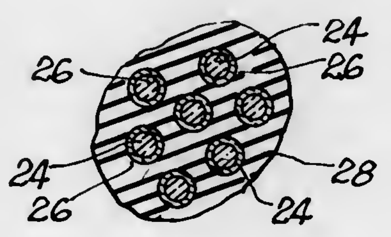
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

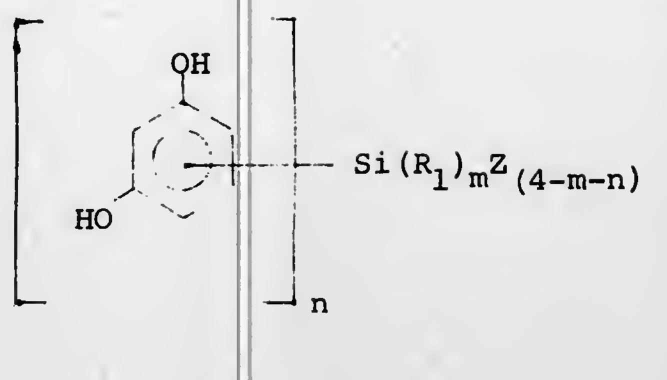
Filed May 4, 1972, Ser. No. 250,303

Int. Cl. B32b *5/02;* **C03c** *25/00;* **C08k** *1/14*

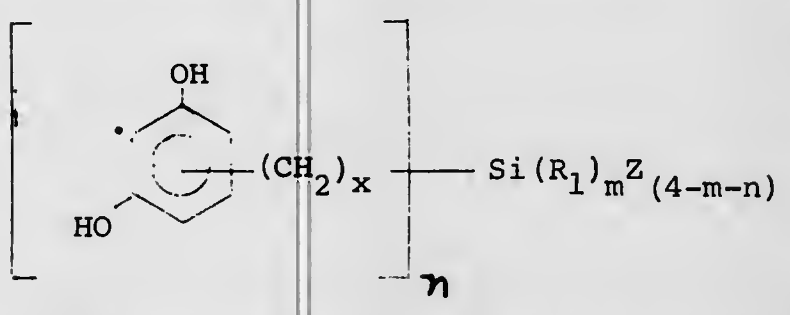
U.S. Cl. 161—170 **23 Claims**



18. In a glass fiber-reinforced elastomeric product in which an elastomeric material constitutes a continuous phase in which bundles of glass fibers are distributed, the improvement in the bonding relationship between the glass fibers and the elastomeric material comprising a thin size coating on the individual glass fibers and an impregnant in the bundle, the impregnant comprising a blend of an elastomer and a resin prepared by reacting resorcinol and a lower aliphatic aldehyde in the presence of a primary or secondary aliphatic amine and an organo silicon compound selected from the group consisting of a resorcinolato silicon compound of the formula



and a resorcinolato silicon compound of the formula



wherein Z is a readily hydrolyzable group, R is an organic group other than resorcinol, *n* is an integer from 1 to 3, *m* is 0 or an integer from 1 to 2, and *x* is an integer from 1 to 4.

3,865,683

COVERED ASBESTOS-CEMENT PRODUCTS

Karl Schnee, Dornigheim; Dieter Tichy, and Friedrich Engelhardt, both of Frankfurt, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt (Main), Germany

Filed Sept. 12, 1972, Ser. No. 288,276

Claims priority, application Germany, Sept. 15, 1971, 2146101

Int. Cl. B32b *13/12;* **C08g** *37/20*

U.S. Cl. 161—205 **3 Claims**

1. A unitary product comprising an asbestos-cement base having at least one surface thereof laminated to a resin impregnated covering material with a heat and pressure cured adhesive agent, said adhesive agent comprising an aqueous solution of a mixture of a reactive polymer and an impregnating resin in a weight ratio, based on the solid contents of said adhesive agent, of 25:75 to 75:25, the resin impregnant of said covering material and the impregnating resin of said adhesive agent being at least one member selected from the group consisting of melamine-formaldehyde, urea-formaldehyde, phenol-formaldehyde, thiourea-formaldehyde resins and mixtures thereof, and said reactive polymer comprising a copolymer of

A. 20–80 percent by weight of at least one member of the group consisting of esters of acrylic and methacrylic acids with 1 to 8 carbon atom containing alkanols,
B. 0–50 percent by weight of at least one member of the group consisting of acrylonitrile, styrene, vinyl toluene, vinyl chloride and vinyl acetate,
C. 0.5–30 percent by weight of at least one olefinically unsaturated monomer selected from the group consisting of acrylamide, methacrylamide, N-methylolacrylamide, N-methylolmethacrylamide, alkyl ethers of said methylol compounds having 1 to 8 carbon atoms in the etherifying alkyl moiety, oxyethyl and oxypropyl esters of acrylic and methacrylic acid, oxyethylated semi-esters of maleic and fumaric acid, glycidylmethacrylate, allylglycidyl ether and diacetone acrylamide, and
D. 5–45 percent by weight of at least one hydrophilic monomer selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, maleic acid, fumaric acid, their alkali metal, ammonium and amine salts, dimethylaminomethacrylic acid ethyl ester, N-(-phenethyl)-2-aminoacrylic acid ethyl ester, N-(-phenethyl)-2-aminomethacrylic acid ethyl ester, N-(propionitrile)-2-aminoacrylic acid ethyl ester, N-(propionitrile)-2-aminomethacrylic acid ethyl ester, and diethylaminoethanolvinyl ether.

3,865,684

COMPOSITION FOR RECLAIMING PULP FROM WASTE PAPERS

C. Roy Gleason, Chicago, and Gordon A. Thomas, Wilmette, both of Ill., assignors to World-Wide Paper Reclamation, Inc., Chicago, Ill.

Division of Ser. No. 172,600, Aug. 17, 1971, Pat. No. 3,766,001. This application May 25, 1973, Ser. No. 364,110The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.

Int. Cl. D21c *5/02*

U.S. Cl. 162—8 **6 Claims**

1. The composition for the recovery of pulp from waste papers by a process which includes the step of cooking the waste paper in an aqueous solution in which the composition is present in the dissolved state and in which the solids of the composition consist essentially of

a. an alkali metal hydroxide
b. an alkali metal carbonate
c. an alkali metal or ammonium bicarbonate
d. an alkali metal borate

and present in the ratio of 100–200 20 percent parts by weight of alkali metal hydroxide, 150–250 20 percent parts by weight alkali metal carbonate, 48 20 percent parts by weight of the bicarbonate and 56 20 percent parts by weight of the borate.

3,865,685

MULTIPLE STEP BLEACHING OF CELLULOSE WITH A PER COMPOUND AND CHLORIDE DIOXIDE

Gerhard Hebbel, Traisa; Horst Kruger, Darmstadt; Werner Traser, Darmstadt-Arheilgen, and Herbert Pfand, Wolfgang, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Apr. 16, 1973, Ser. No. 351,784

Claims priority, application Germany, Apr. 21, 1972, 2219504

Int. Cl. D21c *9/14, 9/16*

U.S. Cl. 162—78 **14 Claims**

1. A plural step process in the absence of superatmospheric pressure for a chlorine-poor complete bleaching of cellulose in an aqueous medium wherein the main bleaching agent is a per compound and using as the only bleaching agents chlorine dioxide and a per compound wherein the bleaching of the cellulose consists of bleaching in a first bleaching step in water with a per compound, then in a second bleaching step in water with chlorine doxide, and then in a third bleaching step again in water with a per compound, said process having alternating per compound and chlorine dioxide steps, beginning and finishing with per compound steps, the chlorine dioxide being employed in an amount to provide not over 1 weight percent of chlorine based on the oven dried weight of the cellulose employed.

3,865,686

METHOD OF IMPROVING THE RETENTION OF FILLER AND FIBER FINES IN PAPERMAKING PROCESSES BY USING AN ACRYLAMIDE TERPOLYMER

Myron J. Jursich, Chicago, and Gail T. Randich, Palos Heights, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation of Ser. No. 398,418, Sept. 22, 1964, abandoned, which is a continuation-in-part of Ser. No. 205,495, June 27, 1962, abandoned. This application June 11, 1969, Ser. No. 870,161The portion of the term of this patent subsequent to June 14, 1983, has been disclaimed.

Int. Cl. D21h *3/40*

U.S. Cl. 162—168 **5 Claims**

1. A method of improving the retention of filler and fiber fines in the processing of paper which comprises the step of adding to an aqueous paper pulp suspension at least a retention improving dosage of an organic water-soluble terpolymer formed as the reaction product of 85.0–95.0 parts by weight of acrylamide, 0.3–2.0 parts by weight of maleic anhydride and 3-15 parts by weight of methacrylic acid.

3,865,687

VISCOSITY PERTURBATION DAMPER CONNECTED WITH DISTRIBUTION HEADER OF PAPERMAKING MACHINE HEADBOX

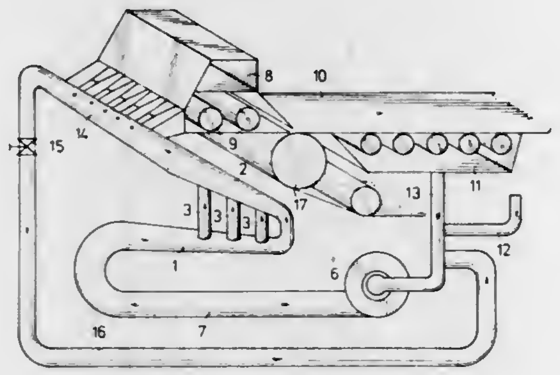
Matti Rajala, Tampere, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed Aug. 9, 1973, Ser. No. 387,133

Claims priority, application Finland, Aug. 15, 1972, 2260/72

Int. Cl. D21f *1/06*

U.S. Cl. 162—343 **4 Claims**



1. In a paper machine having a headbox and a branch pipe of the short circulation link leading to the headbox, means for damping fast viscosity perturbances occurring in the pulp stock flow conducted into the headbox by the multiple delay principle, said means comprising

a. a lengthy pulp stock input conduit located in connection with said branch pipe,

b. a lengthy pulp stock return conduit, running at least in its initial portion parallel with said input conduit and arranged to conduct the pulp stock into the headbox,

c. a plurality of parallel intermediate pipes spaced at a distance from each other, by which said input conduit and said return conduit are mutually connected, so that the directions of flow of the pulp stock are opposite in the parts of the input conduit and return conduit connected by said intermediate pipes, and so that the partial flows of the intermediate pipes are collected in the return conduit to form one single pulp stock flow before their conduction into the headbox.

3,865,688

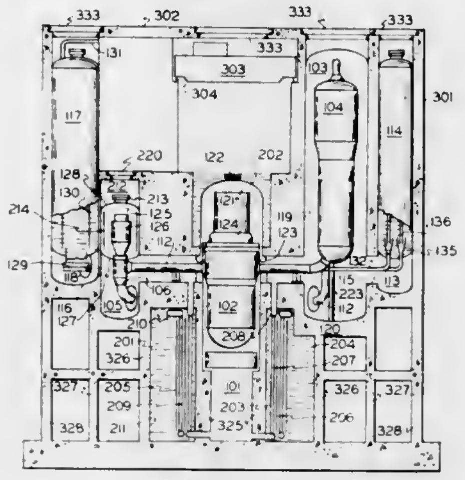
PASSIVE CONTAINMENT SYSTEM

Frank W. Kleimola, 5008 Rimers Dr., Jackson, Mich. 49201

Continuation-in-part of Ser. No. 61,063, Aug. 5, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,726

Int. Cl. G21c *9/00*

U.S. Cl. 176—37 **22 Claims**



1. A safeguard system for a nuclear reactor power plant having a reactor assembly with a reactor core including fuel therein, at least one steam generator, said steam generator having a first operative connection to said reactor assembly for the flow of a high-temperature high-pressure reactor coolant therethrough, said reactor coolant having a first pressure the magnitude of which is substantially constant during conditions of normal operation, and a containment structure sealingly enclosing at least said reactor and said steam generator, said safeguard system comprising at least one reservoir of cooling liquid disposed generally internally of said containment structure, said cooling liquid being pressurized to a second predetermined pressure the magnitude of which during conditions of normal operation is less than the magnitude of said first pressure thereby defining a first predetermined pressure differential, first conduit means for communicating between said cooling liquid and said reactor assembly, and second conduit means for communicating between said steam generator and said cooling liquid, said first conduit means being effective to supply a flow of said cooling liquid to said reactor assembly whenever there is an accidential loss of said reactor coolant causing a reduction in the magnitude of said first pressure sufficient to attain a second predetermined pressure differential as between said cooling liquid and said reactor coolant within said reactor assembly, said second predetermined pressure differential having a magnitude less than said first predetermined pressure differential, said flow of said cooling liquid being directed to said reactor core to thereby replenish said accidental loss of said reactor coolant, said second conduit means being effective when a third predetermined pressure differential is attained between said cooling liquid and the steam within said steam generator for supplying comparatively high pressure steam to said cooling liquid to thereby provide a pumping force to said cooling liquid to completely fill that portion of the reactor assembly containing the fuel of said reactor core.

3,865,689

METHOD OF PRODUCING CARCINOEMBRYONIC ANTIGENS

David Milton Goldenberg, Lexington, Ky., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 9, 1972, Ser. No. 305,197

Int. Cl. C12k *9/00*

U.S. Cl. 195—1.7 **3 Claims**

1. A method for propagating, in vitro, cells which produce carcinoembryonic antigen comprising incubating transplanted carcinoembryonic antigen producing tumor cells in a nutrient medium containing glucose, salt solutions, vitamins, amino

acids, phenol-red, antibiotics, calf serum and sodium bicarbonate and which supports the growth and propagation of said carcinoembryonic antigen producing tumor cells at a pH of from about 6.8 to 7.4 at a temperature of about 35° to 38°C. and isolating the carcinoembryonic antigen.

3,865,690

FERMENTATIVE PRODUCTION OF L-LEUCINE

Shinji Okumura, Tokyo; Fumihiro Yoshinaga, Kanagawa-ken; Koji Kubota, Tokyo, and Hirotaka Kamijo, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 82,488, Oct. 20, 1970, abandoned. This application Dec. 20, 1972, Ser. No. 316,712

Claims priority, application Japan, Nov. 6, 1969, 44-88906

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 R **7 Claims**

1. A method of producing L-leucine by fermentation which comprises:

a. culturing a microorganism of the genera Brevibacterium or Corynebacterium on a nutrient medium under aerobic conditions,

  1. said microorganism being capable of producing extracellular L-leucine in said medium,
  2. said medium containing sources of assimilable carbon and nitrogen and minor organic and inorganic nutrients necessary to the growth of said microorganism,
  3. said microorganism being cultured on said nutrient medium until L-leucine accumulates in said medium,
  4. said microorganism being resistant to a leucine antagonist, and

b. recovering accumulated L-leucine from said medium.

3,865,691

SINGLE-CELL PROTEIN MATERIALS FROM ETHANOL

John A. Ridgway, Jr., La Porte, Ind.; Terry A. Lappin, Naperville; Benny Moses Benjamin, Skokie, both of Ill.; Joseph B. Corns, Munster, Ind., and Cavit Akin, Naperville, Ill., assignors to Standard Oil Co., Chicago, Ill.

Continuation-in-part of Ser. No. 85,334, Oct. 30, 1970, abandoned. This application Apr. 30, 1973, Ser. No. 355,346

Int. Cl. C12c *11/14, 11/18;* **A23l** *1/28*

U.S. Cl. 195—49 **14 Claims**

1. An improved process for the continuous production of food-quality yeasts by aerobic growth of said yeasts in a fermentation zone on an aqueous ethanolic substrate in the presence of ammonia, an oxygen-containing gas stream, and an excess of essential macronutrient elements consisting essentially of phosphorus, potassium, magnesium, calcium and sodium and micro-nutrient elements consisting essentially of iron, manganese, zinc, molybdenum, iodine and copper, comprising the steps of:

a. maintaining the fermentation zone at a temperature within the range from 80° to 100°F., to promote multiplication of the yeast cells by feeding on the components supplied in the aerated fermentation liquor comprising the combined aqueous ammoniacal ethanolic substrate and essential nutrient elements;

b. continuously introducing a dispersed oxygencontaining gas stream, under superatmospheric pressure, into the combined aqueous solution to maintain an oxygen concentration in said aqueous solution within the range from 0.1 to 0.3 ppm;

c. continuously replenishing the ethanol content of the fermentation liquor to maintain said ethanol content within the range from about 50 to about 3,000 ppm by the addition of an aqueous ethanol solution;

d. continuously replenishing the supply of essential macronutrient elements to maintain a substantially constant concentration thereof in the fermentation liquor by the addition of an aqueous solution comprising compounds of the required macro-nutrient elements;

e. separately replenishing the supply of micro-nutrient elements, including iron, by continuous addition of an aqueous solution comprising compounds thereof directly into the fermentation zone to maintain a substantially constant concentration thereof in the fermentation liquor;

f. separately replenishing the supply of ammonia by continuous addition thereof in an amount required to maintain the pH of the fermentation liquor in the range from 3.5 to 5.5;

g. continuously withdrawing from the fermentation zone a suspension of yeast cells in a portion of the fermentation liquor; and

h. continuously withdrawing from the fermentation zone through a pressure-responsive valve an oxygen-depleted effluent gas stream.

3,865,692

METHOD FOR MAKING HIGHLY POTENT PLASMINOGEN

William Homer Holleman, Libertyville, and William Wolcott Andres, Lindenhurst, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jan. 11, 1974, Ser. No. 432,789

Int. Cl. A61k *19/00;* **C07g** *7/02*

U.S. Cl. 195—66 B **9 Claims**

1. The process of purifying plasminogen consisting essentially in preparing a solution of 0.5 – 50 mg./ml. of a plasminogen free of hepatitis agent in water buffered to a pH of 5 – 10 and containing 0.01 – 2 molar concentration of a solubility enhancer, precipitating the impurities associated with said plasminogen by adding to said solution ammonium sulfate to a molar concentration of between 0.1 and y removing the formed precipitate, and precipitating the substantially pure plasminogen by adjusting the molar concentration of ammonium sulfate of the solution so obtained to a molar concentration of between x and 4.0 wherein $x - y$ represents a molarity difference of at least 0.2 and y is between 0.6 and 1.2.

3,865,693

PROCESS FOR THE PRODUCTION OF ANTIBIOTIC SUBSTANCE CEPHEMIMYCIN

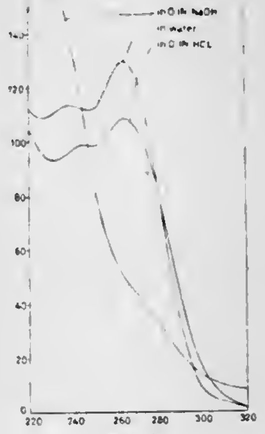
Mamoru Arai; Yashuhiro Itoh; Masaki Nakahara; Hisashi Kayamori, and Shinichi Sugawara, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Aug. 16, 1973, Ser. No. 389,009

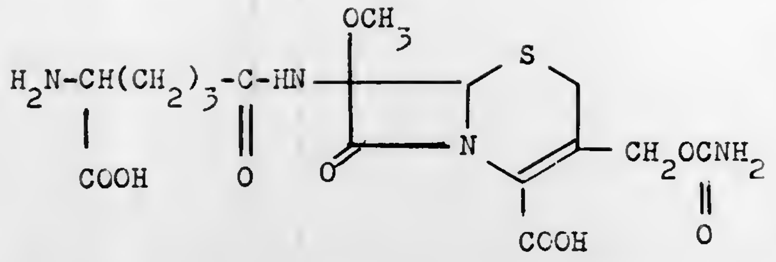
Claims priority, application Japan, Aug. 31, 1972, 47-87339

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **5 Claims**



1. A process for producing an antibiotic substance cephemimycin



which comprises cultivating *Streptomyces jumonjinensis* strain No. 3008 (NRRL 5741) in a nutrient medium and recovering the antibiotic substance from the cultured broth.

3,865,694

FERMENTATIVE PREPARATION OF L-2-AMINO-4(2-AMINOETHOXY)-BUTANOIC ACID

Julius Berger; David Pruess, both of Passaic, and James Parnell Scannell, North Caldwell, all of N.J., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Jan. 2, 1974, Ser. No. 430,335

Int. Cl. C12d *13/00*

U.S. Cl. 195—80 R **2 Claims**

1. A process for preparing L-2-amino-4-(2-aminoethoxy)-butanoic acid which comprises cultivating *Streptomyces sp.* X-11085 NRRL 5331 in an aqueous nutrient medium containing assimilable sources of carbohydrates, nitrogen and inorganic salts under submerged aerobic conditions, and then recovering L-2-amino-4-(2-aminoethoxy)-butanoic acid from the aqueous medium.

3,865,695

CULTURE OF MYCELIUM

Pierre Massier, Ris-Orangis, France, assignor to La Societe Civile Agricole de Mycelium du Centre Quest (S.C.A.M-.Y.C.O.), Benoit-la-Foret, France

Continuation of Ser. No. 134,829, June 25, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 459,189

Int. Cl. C12b *1/00*

U.S. Cl. 195—81 **3 Claims**

1. A process for cultivating fungus mycelium comprising the steps of:

a. sterilizing a fungus mycelium culture medium;

b. introducing the sterilized fungus mycelium medium into a perforated transparent plastic bag together with fungus mycelium seed, said bag having perforations in an amount such that the perforation area is in a ratio to the total bag area of 1:100 to 1:300;

c. enclosing the perforated transparent plastic bag containing the fungus mycelium medium and seed in a paraffined-paper bag allowing free exchange of air between the interior and the exterior of said plastic bag while leaving a space therein containing an atmosphere compatible with fungus mycelium cultivation which will permit growth of the fungus mycelium within the plastic bag;

d. enclosing the paraffined-paper bag and the contents thereof in a strong outer bag, the bags having their mouths sealed by pleating together; and

e. storing said bags at a temperature between 17° and 26°C for a period sufficient to cause fungus mycelium proliferation in said medium, and thereafter storing said bags without opening the same at a cold location.

3,865,696

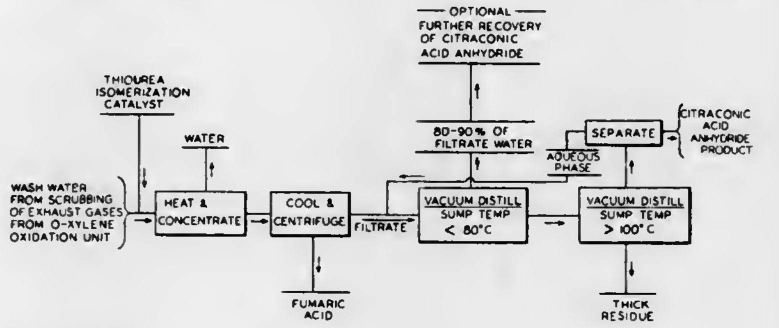
RECOVERY OF CITRACONIC ACID ANHYDRIDE BY ISOMERIZATION AND VACUUM DISTILLATION

Gunther Ibing, Gladbeck, and Herbert Haferkorn, Buttrap, both of Germany, assignors to Veba-Chemie Aktiengesellschaft, Wanne Eickel, Germany

Continuation of Ser. No. 842,180, July 16, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,731

Int. Cl. B01d *3/36;* **C07c** *57/02*

U.S. Cl. 203—29 **4 Claims**


OPTIONAL
FURTHER RECOVERY OF CITRACONIC ACID ANHYDRIDE
THIOUREA ISOMERIZATION CATALYST
WATER
80-90% OF FILTRATE WATER
SEPARATE
CITRACONIC ACID ANHYDRIDE PRODUCT
AQUEOUS PHASE
WASH WATER FROM SCRUBBING OF EXHAUST GASES FROM O-XYLENE OXIDATION UNIT
HEAT & CONCENTRATE
COOL & CENTRIFUGE
FILTRATE
VACUUM DISTILL SUMP TEMP < 80°C
VACUUM DISTILL SUMP TEMP > 100°C
FUMARIC ACID
THICK RESIDUE

1. Process for recovering citraconic acid anhydride from an aqueous solution containing a mixture of citraconic and maleic acids consisting essentially of:

a. isomerizing maleic acid in said solution to sparingly soluble fumaric acid and removing solid fumaric acid from the solution;

b. removing water from the solution from (a) by vacuum distilling at a sump temperature of less than 80°C leaving a concentrated solution;

c. removing a mixture of water and citraconic acid anhydride from the concentrated solution (b) by vacuum distilling at a sump temperature substantially greater than 80°C; and

d. recovering citraconic acid anhydride from the mixture from (c).

3,865,697

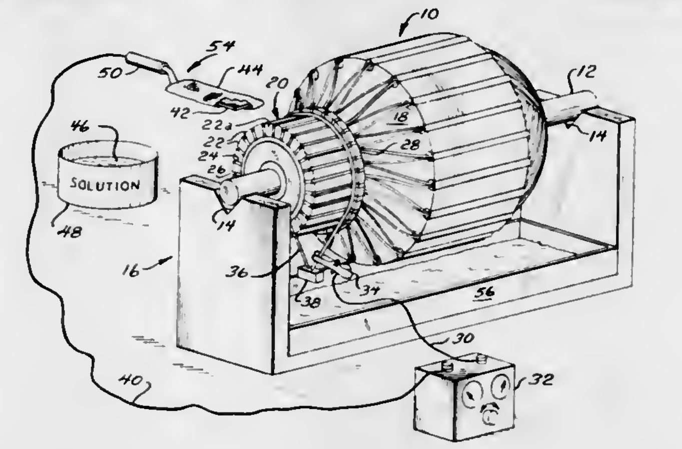
PLATINUM PLATING PROCESS

Robert Suggs, 1661 Milwaukee Ave., Chicago, Ill. 60647

Filed May 25, 1973, Ser. No. 363,834

Int. Cl. C23b *5/48, 5/24;* **B23p** *1/02*

U.S. Cl. 204—15 **5 Claims**



1. A method of platinum finishing the insulation-separated commutator segments of an assembled armature which method may be conducted at room temperature, and utilizes a plating solution formed at room temperature by dissolving decomposable alkali metal acid salt and chloroplatinic acid in water, said method comprising the steps of successively shorting groups of the commutator segments of the armature to the negative side of a low voltage supply, wetting an anode connected to the positive side of said voltage supply with the plating solution and wiping the shorted commutator segments with the wet anode until a film of platinum builds up over the surface of the shorted commutator segments, the chloroplatinic acid being sufficiently diluted in the aqueous plating solution that platinum build up on the shorted segments proceeds only slowly and platinum on the insulation between the commutator segments remains sparse, the proportion of decomposable alkali metal acid salt in the plating solution being sufficiently larger than the proportion of chloroplatinic acid therein to maintain an alkalinity level in the solution to hold the chloroplatinic acid in suspension with minimal production of platinous oxide, and the decomposed acid salt of the dried residue of the plating solution which remains on the insulation between the platinum plated segments upon evaporation of the water intermixing with and isolating the platinum content of said residue so as to avoid shorting of the platinum plated commutator segments across the insulation therebetween.

3,865,698

PROCESS FOR INTERMITTENT ELECTROPLATING STRIPS

Leo N. Kosowsky, Sharon; Curtis N. Lovejoy, Walpole, both of Mass., and John G. Cunniff, Foster, R.I., assignors to Auric Corporation, Newark, N.J.

Division of Ser. No. 217,508, Jan. 13, 1972, Pat. No. 3,788,963. This application Sept. 24, 1973, Ser. No. 400,153

Int. Cl. C23h *5/48, 5/58*

U.S. Cl. 204—15 **2 Claims**

1. A process for carrying out precise electroplating of selected repeating patterns on a strip of metal by intermittently passing equal sequential lengths of the strip through an electroplating cell and to means for winding the electroplated strips onto a spool, said process comprising the steps of

1. advancing a segment of said strip towards a winding apparatus
2. clamping said strip in fixed position between the intermittent movements thereof, said clamping being between said winding apparatus and said electroplating cell,
3. winding the electroplated strip during said clamping action, thereby mechanically isolating and winding movement from the portion of said strip on the electroplating cell-side of said clamping action.

3,865,699

ELECTRODEPOSITION ON NON-CONDUCTIVE SURFACES

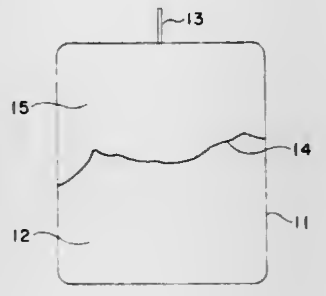
Daniel Luch, Warwick, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,410

Int. Cl. C23b *5/60;* **B44c** *1/18*

U.S. Cl. 204—20 **29 Claims**

1. A process for metallizing comprising (1) introducing an essentially solid surface in contact with a metallic conductor into an electroplating bath from which a metal from the Group VIII of the periodic table and alloys thereof can be plated; (2) said essentially solid surface comprising an intimate mixture of an organic polymer reactive with sulfur, a carbon black and a substance from the group of sulfur and sulfur donors and having a volume resistivity of less than about 1,000 ohm-centimeters and (3) applying a potential to said surface through said metallic conductor to cause metal from said group to deposit upon said surface in an essentially uniform manner from the locus of said metallic conductor.



3,865,700

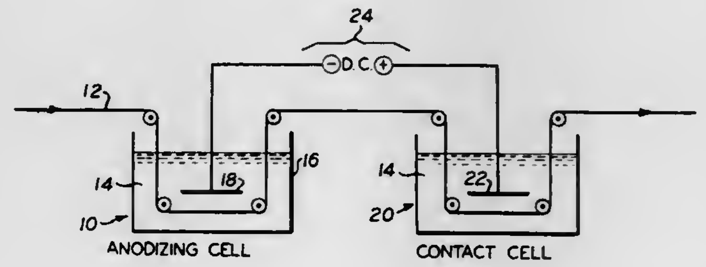
PROCESS AND APPARATUS FOR CONTINUOUSLY ANODIZING ALUMINUM

Howard A. Fromson, Rogues Ridge Rd., Weston, Conn. 06880

Filed May 18, 1973, Ser. No. 361,720

Int. Cl. C23b *5/58:* **B01k** *3/00*

U.S. Cl. 204—28 **10 Claims**



1. In a process for continuously electrolytically anodizing aluminum, the improvement which comprises introducing anodizing direct current into said aluminum in a cathodic contact cell having therein an anode connected to said source of direct current, said aluminum having an anodized oxide coating formed thereon before entering said cell through the action of the direct current introduced in the contact cell itself.

3,865,701

METHOD FOR CONTINUOUS HIGH SPEED ELECTROPLATING OF STRIP, WIRE AND THE LIKE

John P. Borgmann, Naugatuck, Conn., assignor to American Chemical & Refining Company Inc., Waterbury, Conn.

Filed Mar. 6, 1973, Ser. No. 338,580

Int. Cl. C23b *5/58, 5/68, 5/50*

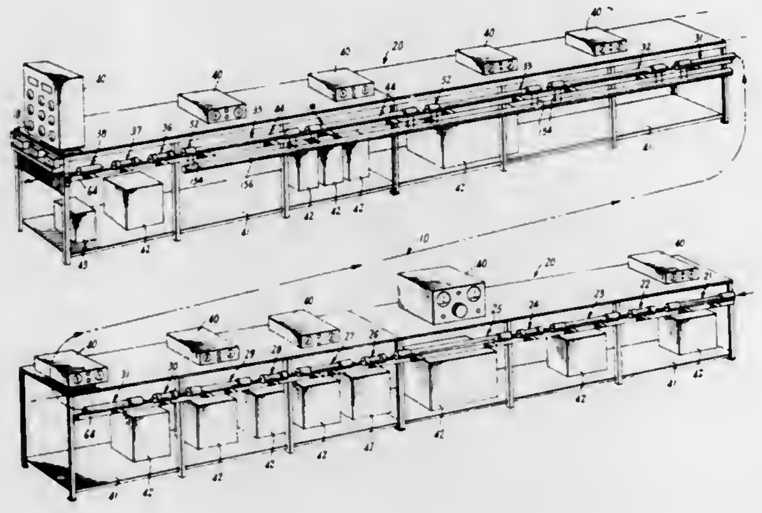
U.S. Cl. 204—28 **5 Claims**

1. In a method for the high deposition speed continuous electroplating of a workpiece with noble metal, the steps comprising

providing along a rectilinear travel path of a moving workpiece at least one electroplating chamber with an entrance and exit for said workpiece at opposite ends thereof and an anode disposed therebetween substantially parallel to said travel path; an electrical contact assembly externally of said electroplating chamber to apply an electrical potential between said workpiece and said anode in said electroplating chamber; a rinsing station providing a rinsing chamber; and a drying station providing a plenum chamber about a drying chamber with apertures spaced about and along said path;

passing through said electroplating chamber a noble metal electroplating solution containing electrolyte and ions of the metal to be electrodeposited at a high velocity to maintain a turbulent condition therewithin; advancing a substantially continuous workpiece with a metallic surface along said travel path in contact with said electrical contact assembly, through said electroplating chamber, through said rinsing chamber, and through said drying chamber;

applying a voltage potential across said workpiece in said electrical contact assembly and said anode in said electroplating chamber to cause said metal of said solution to plate upon said workpiece in said electroplating chamber, said workpiece being immersed in said electroplating solution in said electroplating chamber;



passing a rinsing medium through said rinsing chamber to effect immersion of said strip in said medium to remove residual electroplating solution from the surface of said workpiece;

controlling fluid escape from the ends of at least said electroplating chamber and minimizing air interface with the noble metal electroplating solution in said electroplating chamber; and

introducing into said plenum chamber of said drying station a gas at a lineal velocity sufficient to provide high flow through the apertures into said drying chamber and directly onto substantially the entire surface of the workpiece passing therethrough to remove moisture therefrom.

3,865,702

GALVANIC NICKEL BATH FOR DEPOSITING SILK-DULL NICKEL COATS

Waldemar Immel, Solingen, and Wennemar Strauss, Erkrath-Unterbach, both of Germany, assignors to Dr. W. Kampschulte & Cie, Solingen, Germany

Filed Feb. 21, 1973, Ser. No. 334,298

Int. Cl. C23b *5/08, 5/46*

U.S. Cl. 204—49 **3 Claims**

1. A galvanic aqueous, acidic bath for precipitating silk-dull nickel coats, containing active phosphoric esters in concentration of 20–80 mg/1, which are prepared by reacting the adduct of 30 mol propylene oxide and 30 mol ethylene oxide on propylene glycol with P_2O_5 at a mol ration of 2.5:1.

3,865,703

ELECTROWINNING WITH AN ANODE HAVING A MULTICOMPONENT COATING

Barry A. Schenker, Mayfield Heights; James M. Kolb, Mentor, and Charles R. Franks, North Madison, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 19, 1973, Ser. No. 352,417

Int. Cl. C22d *1/00;* **B01k** *3/06*

U.S. Cl. 204—105 R **6 Claims**

1. In a process for the electrowinning of metals from aqueous acidic solutions thereof, the improvement that consists essentially of passing an electrolyzing current between a cathode and an opposed oxygen evolving anode, said anode comprising an electrically conductive supporting substrate bearing on at least a portion of the surface thereof a coating consisting essentially of from 1.0 to 10 percent antimony oxide, as Sb_2O_3, on a weight basis, from 30 to 90 percent SnO_2, from 1.0 to 50 percent of at least one platinum group metal oxide, and from 15 to 25 percent of a valve metal oxide selected from the group consisting of titanium and tantalum oxides, with the proviso that the mole ratio of tin to antimony oxides is between 95:5 and 85:15.

3,865,704

ELECTROLYTIC ETCH APPARATUS AND METHOD

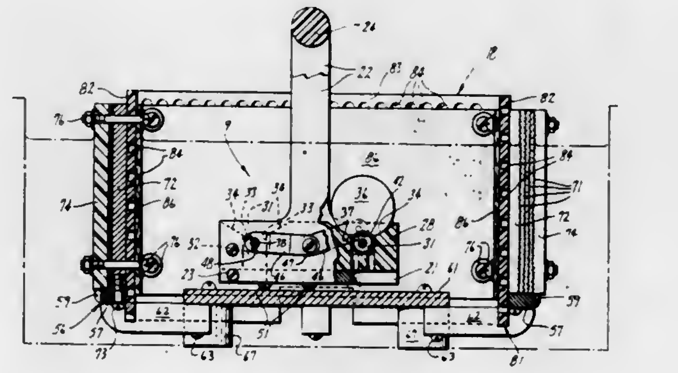
Benjamin H. Reed, and Rexford E. Black, both of Sunnyvale, Calif.

Division of Ser. No. 54,491, July 13, 1970, Pat. No. 3,703,458.

This application July 31, 1972, Ser. No. 276,570

Int. Cl. C23b *3/04*

U.S. Cl. 204—129.2 **6 Claims**



1. In a method for removing exposed aluminum forming a part of a continuous film disposed on an article formed of silicon, placing the articles in a phosphoric acid solution which selectively chemically etchs the aluminum with respect to silicon, passing current in a forward bias through the article to cause the exposed aluminum to be removed electrolytically, sensing the current flow, and terminating the application of current in said forward bias to the article at a time when a drop-off of at least about one third in the current flow occurs due to discontinuities appearing in the aluminum which is to be removed, and chemically removing the remaining aluminum.

3,865,705

PROCESS FOR MODIFYING THE SURFACE CHARACTERISTICS OF CARBON SUBSTRATES AND COMPOSITE ARTICLES PRODUCED FROM THE TREATED SUBSTRATES

Jean-Philippe Rieux, Decines, and Jean Lehureau, Lyon, both of France, assignors to Rhone-Progil, Paris, France

Filed Apr. 12, 1973, Ser. No. 350,521

Claims priority, application France, Apr. 21, 1972, 72.14950

Int. Cl. C01d *7/34*

U.S. Cl. 204—130 **10 Claims**

1. A process for producing a reinforced composite article comprising at least one carbon reinforcing element contiguous

to and firmly bonded to a matrix of resin binder material, which process comprises:

a. pre-treating the surface of said carbon reinforcing element to improve its bonding properties in said carbon-resin binder matrix, which pre-treatment comprises (1) subjecting the surface of said carbon reinforcing element, as the anode, to electrolysis in an aqueous electrolyte whereby said surface is oxidized to form powdered carbon thereon without substantial degradation thereof and (2) thereafter subjecting the oxidized surface, as a cathode, to electrolysis in an aqueous electrolyte whereby the powdered carbon formed on said surface by the oxidation in (1) is removed;

b. contacting said pre-treated reinforcing element with said resin binder material; and

c. forming said composite into the desired shape.

3,865,706

CONCENTRATION AND COATING PROCESSES

Brian Alfred Cooke, Knotty Green, England, assignor to Imperial Chemical Industries Limited, London, England

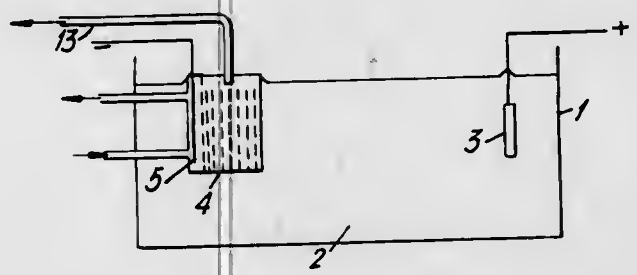
Continuation of Ser. No. 163,378, July 16, 1971, abandoned.

This application Dec. 17, 1973, Ser. No. 425,289

Claims priority, application Great Britain, July 22, 1970, 35516/70

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **8 Claims**



1. A process of concentrating an electrolytic coating bath which contains a main liquid coating composition comprising ionized coating material, counterion and an aqueous medium and concurrently coating a conductive article by electrodeposition, wherein an electric current is passed through the composition between the article and a counter electrode in order to deposit coating material on the article and at least a portion of the main composition is introduced into a chamber defined at least in part by two opposed barriers of material substantially impermeable to ionized coating material but permeable to counterion, said chamber being so situated in the bath that the electrodes are external to said chamber but the electric current passes through the barriers and across the chamber, the components of the introduced composition which accumulate in the region of the barrier surfaces being separated and removed from the chamber and a composition enriched in ionized coating material being returned to the main composition.

3,865,707

COMBUSTIBLE MIXTURE ANALYZER

Donald A. Sayles, 1337 Beechwood Blvd., Pittsburgh, Pa.

Filed Dec. 27, 1972, Ser. No. 318,889

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **5 Claims**

1. A combustion mixture analyzer comprising,

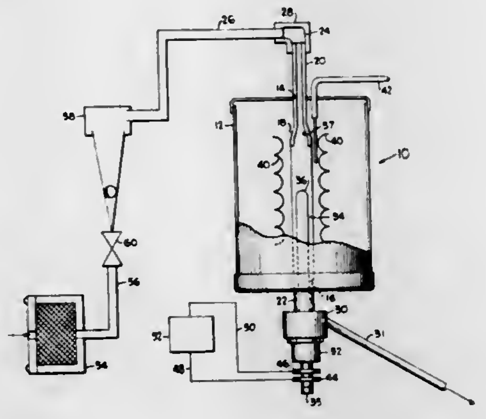
an electrochemical cell having a closed end tube of solid electrolyte mounted in a tubular housing, a pair of electrodes secured to said electrochemical cell, one electrode secured to the inner surface and one electrode secured to the outer surface of said closed end tube,

said tubular housing having a chamber therein for analyzing separately the quantities of a fuel and oxygen admixed to form a combustible mixture, said electrochemical cell positioned axially in said chamber,

said electrochemical cell arranged within said chamber to extend from one chamber end portion to an intermediate position within said chamber,

said chamber having a reduced diameter end portion spaced from said electrochemical cell and extending through the said tubular housing,

conduit means having an inlet and outlet opening for supplying a continuous flow of the combustible mixture to said chamber,



flame arresting means located at the inlet to said conduit means for preventing explosions of the combustible mixture supplied to said conduit means,

metering means in said conduit means for measuring the volumetric rate of flow of the combustible mixture passing through said conduit means,

heating means for heating said electrochemical cell to a preselected temperature, and

means for controlling said heating means.

3,865,708

APPARATUS FOR MEASURING IONIC CONCENTRATION

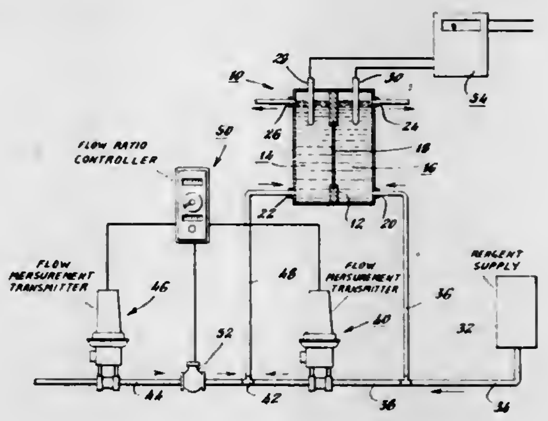
Truman S. Light, Lexington, and Kenneth S. Fletcher, III, Norfolk, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 887,092, Dec. 22, 1969, abandoned.

This application Jan. 26, 1973, Ser. No. 327,215

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M **7 Claims**



1. Apparatus for making on-stream measurements of the ionic concentration of a sample fluid by analyzing cell structure including an ion-selective membrane system which is non-responsive to the particular ion to be measured in said fluid sample, said cell structure being formed to provide two fluid regions each coupled to a corresponding element of said membrane system, and means connected to said fluid regions to sense electrical potential therebetween;

said apparatus comprising:

first means for furnishing a flow of said sample fluid;

second means for providing a supply of reagent containing an ion to which said membrane system is sensitive and which when mixed with said sample fluid reacts therewith to reduce the concentration of said reagent ion in correspondence to the concentration of said particular ion;

mixing means coupled to said first and second means to receive said flow of sample fluid and a corresponding flow of said reagent and to develop a mixture thereof in a specific controllable proportion;

third means connecting said mixing means to said cell structure to supply said mixture to one of said fluid regions; and

fourth means connected to said cell structure to supply a flow of said reagent to the other of said fluid regions, whereby to develop an electrical potential between said two fluid regions indicative of the concentration of said particular ion in said sample fluid.

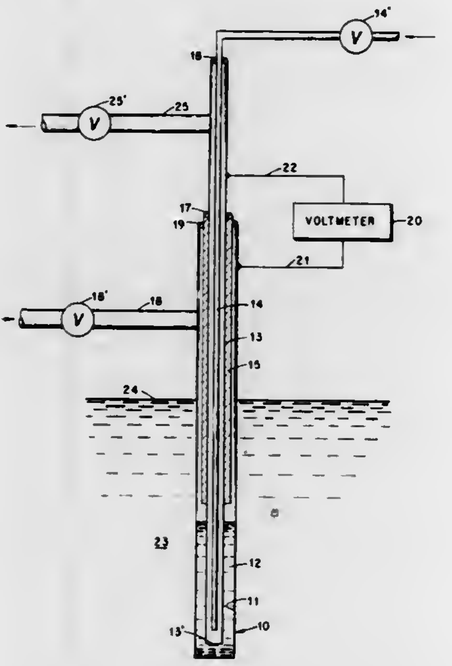
3,865,709
CARBON ACTIVITY METER

Prodyot Roy, 12980 Foothill Ln., San Jose, Calif. 95070, and Jan L. Krankota, 201 Herlong Ave., San Jose, Calif. 95123

Filed Nov. 2, 1973, Ser. No. 412,396

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 R **2 Claims**



1. A meter for measuring carbon activity in liquid sodium comprising: means defining a first electrode and containing a molten electrolyte therein selected from the group consisting of (1) a mixture of Na_2CO_3, K_2CO_3 and Li_2CO_3 and (2) $CaCl_2 + CaC_2$, said first electrode means comprising a cup shaped member constructed of nickel and containing said electrolyte in the lower portion thereof, said first electrode means having a thin film of gold covering at least the inner surface thereof in contact with said electrolyte for preventing corrosion of said nickel by said electrolyte, means defining a second electrode positioned at least partially within said first electrode means and including a closed end portion surrounded by said electrolyte, said second electrode means comprising a tubular shaped member constructed of nickel and positioned within said cup shaped member in spaced relation therewith, said second electrode means having a thin film of gold covering at least the outer surface thereof in contact with said electrolyte for preventing corrosion of said nickel by said electrolyte, electrical insulator means composed of material selected from the group consisting of quartz and magnesia positioned intermediate said first and second electrode means, means connected to said first electrode means for controllably supplying a cover gas above said electrolyte, seal means positioned to prevent cover gas leakage between said first and second electrode means, means for controllably supplying a reference gas interior of and adjacent to said closed end portion of said second electrode means including a capillary tube means extending into said second electrode means and terminating at one end thereof in spaced relation with respect to said closed end portion of said second electrode means, said capillary tube means having the other end thereof connected to a valved conduit means for controllably supplying reference gas thereto, seal means positioned to prevent leakage of said reference gas from said second electrode means, means connected to said second electrode means in spaced relation with respect to said closed end portion thereof for controllably discharging said reference gas therefrom, and means electrically connected to said first and second electrode means for measuring the electrochemical potential therebetween.

3,865,710
PURIFICATION CONTROL UNIT

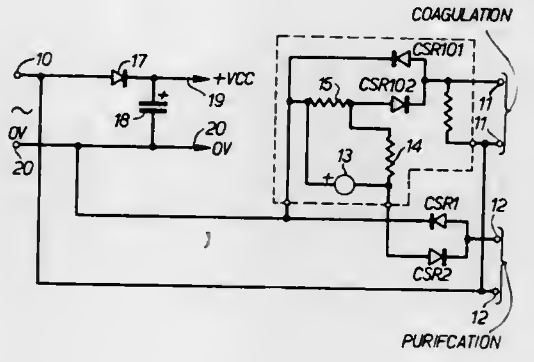
Richard John Phipps, Newbury, England, assignor to Camper & Nicholsons (Holdings) Limited, Gosport, England

Filed Feb. 26, 1973, Ser. No. 335,952

Claims priority, application Great Britain, Mar. 7, 1972, 10464/72; July 19, 1972, 33666/72

Int. Cl. B01k *3/00;* **H02j** *3/14*

U.S. Cl. 204—228 **9 Claims**



1. A water purification control circuit having a pair of supply terminals, first and second pairs of unidirectional output terminals, a network including controlled rectifiers and interconnecting said supply and output terminals for supplying to said first and second pairs of output terminals purification and coagulation currents respectively, a multivibrator circuit connected with said network, and circuit means controlling the operation of the multivibrator circuit, the arrangement being such that a change in state of the multivibrator circuit changes the conducting state of the controlled rectifiers to reverse the polarity of both pairs of the output terminals.

3,865,711
APPARATUS FOR REMOVAL OF DISSOLVED OR SUSPENDED SOLIDS IN WASTE WATER

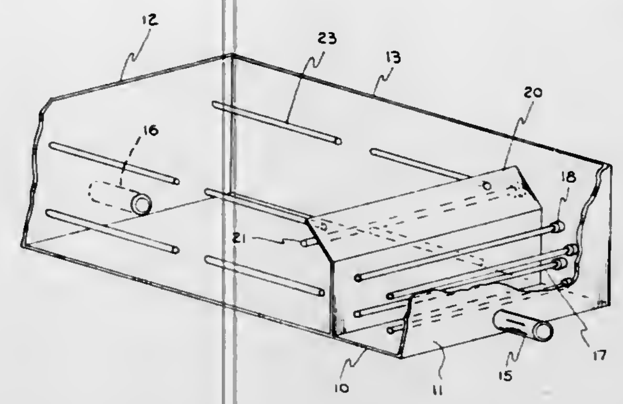
Harry T. Anderson, Clarendon Hills, Ill., assignor to Swift & Company, Chicago, Ill.

Division of Ser. No. 191,008, Oct. 20, 1971, Pat. No. 3,816,274. This application Nov. 23, 1973, Ser. No. 418,429

Int. Cl. B03c *5/02;* **B01k** *3/00*

U.S. Cl. 204—275 **5 Claims**

1. An apparatus for treating water-oil emulsion systems comprising a container having an entry conduit and an exit conduit and having a baffle across the width of the container and positioned nearer the inlet end than the discharge end thereby dividing said container into an inlet zone and a discharge zone, the lower section of said baffle being substantially parallel to the inlet end of the container and the upper section of said baffle being inclined toward the discharge end of said container, cylindrical anodes in the inlet zone spaced transverse to the longitudinal axis of the container, and cylindrical anodes in the discharge zone spaced parallel to the longitudinal axis of the container at about nearly equal distance apart in the discharge zone.



3,865,712
ELECTRODE ARRANGEMENT FOR AN ELECTROPHORETICAL SEPARATION PERFORMED IN A GEL PLATE

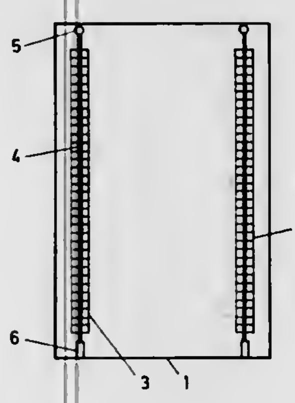
Hilary E. W. Davies, Stockholm, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Apr. 11, 1974, Ser. No. 460,038

Claims priority, application Sweden, Apr. 13, 1972, 73053332/72

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **4 Claims**



1. Electrode arrangement for an electrophoretical separation performed in a gel plate, characterized in that it comprises a mainly rectangular plate, parallel to said gel plate, which plate on its side facing the gel plate exhibits two parallel rows of toothed elevations and two electrodes, extending one along each row, said electrodes, consisting of threads of an inert, conducting material, and wherein each electrode is pressed against the gel or against a strip, consisting of a porous material and impregnated by buffer solution and which is lying on the gel, by the toothed elevations.

3,865,713
CARBONACEOUS REAGENT FOR CARBONACEOUS BINDER USED IN THE MANUFACTURE OF FIRED CARBON ARTICLES AND CARBON-BONDED REFRACTORIES

Yoshio Kawai; Kiro Asano, and Kiyoshi Yamaki, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

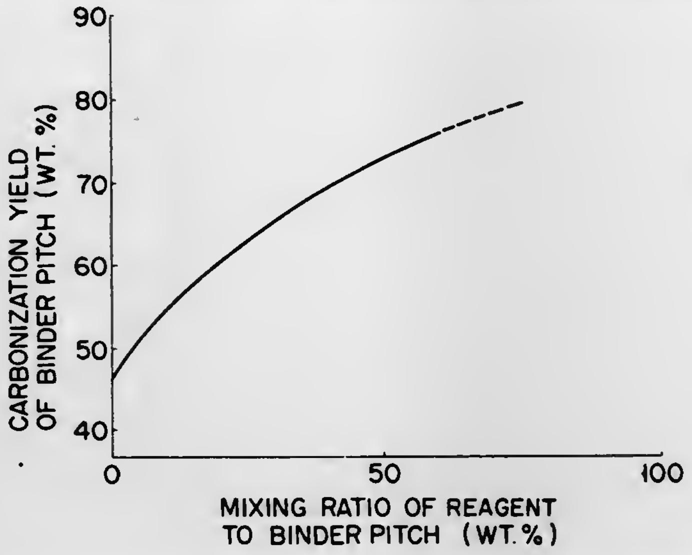
Filed June 7, 1973, Ser. No. 367,449

Claims priority, application Japan, June 12, 1972, 47-57655

Int. Cl. C10c *3/04*

U.S. Cl. 208—6 **11 Claims**

1. A method for preparing a carbonaceous reagent for a carbonaceous binder used in the manufacture of fired carbon articles and carbon-bonded refractories in order to increase the carbonization yield of said binder, which comprises oxidizing a carbonaceous raw material at a temperature of from 15°C. to 400°C. with an oxidizing agent to provide an atomic ratio of oxygen to carbon therein of from 0.05 to 0.30.



3,865,714
METHOD FOR REDUCING THE SULFUR CONTENT OF A PETROLEUM FRACTION

Paul F. Warner, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 7, 1971, Ser. No. 150,815

Int. Cl. C10g *29/20*

U.S. Cl. 208—238 **6 Claims**

1. A method for reducing the sulfur content of a volume of petroleum fraction having a distillation end point below about 600°F and containing mercaptans, comprising:

contacting the liquid petroleum fraction with one of a polymer of a conjugated diene, a copolymer of a conjugated diene, a copolymer of a conjugated diene with vinyl aromatic compounds for forming a resultant mixture, said polymer having at least about 30 double bonds per molecule;

subjecting said resultant mixture to one of an organic peroxide, hydrogen peroxide, hydroperoxide or azonitrile; and separating the petroleum fraction from the polymer.

3,865,715
METHOD FOR THE REFINING OF GASOLINES TO HIGH-OCTANE FUEL

Nikolai Sergeevich Nametkin, Leninsky prospekt 13, kv. 11; Sergei Pavlovich Gubin, B.Pochtovaya ulitsa, 40, kv. 5; Vladimir Dmitrievich Tjurin, Leninsky prospekt, 67, kv. 33; Viktor Viktorovich Fedorov, 3 Samotechny pereulok, 24, kv. 88; Valery Zeilikovich Usachev, ulitsa Zarechnaya, 11, korpus 1, kv. 4, all of Moscow; Mikhail Semenovich Matveev, ulitsa Shkolnaya 3, kv. 12, Gorkovskaya oblast; Leonid Ivanovich Larionov, ulitsa Minina 15-A, kv. 8, Gorky; Alexandr Solomonovich Eliner, ulitsa Shvernika, 9, korpus 4, kv. 34, and Ruslan Yakolevich Barashkov, Bebozhny pereulok, 19, korpus 17, kv. 4, both of Moscow, all of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,383

Claims priority, application U.S.S.R., Dec. 30, 1971, 1728801

Int. Cl. C10g *29/00*

U.S. Cl. 208—243 **4 Claims**

1. A method of refining gasoline to obtain high-octane fuels comprising mixing the gasoline stock with complex compounds of lower-valency transition metals selected from the group consisting of iron, nickel, molybdenum and manganese, said complex compounds selected from the group consisting of the carbonyls of said metals, the complex compounds of the salts of said metals with triphenylphosphine ligands, and the complex compounds of the salts of said metals with lithium aluminum hydride, followed by heating the resulting mixture in the 80° to 100°C temperature range and distilling off the target product.

3,865,716
PROCESS FOR THE SELECTIVE HYDROGENATION OF OLEFINS
John Sosnowski, Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.
Filed Sept. 13, 1973, Ser. No. 397,001
Int. Cl. C10g *23/06*
U.S. Cl. 208—255 10 Claims

1. A process for selectively hydrogenating olefins in a hydrocarbon stream containing both olefins and aromatic compounds, which comprises contacting the hydrocarbon stream with hydrogen under hydrogenation conditions in the presence of a catalyst comprising a mixture of (1) an inorganic non-crystalline base component, (2) a crystalline aluminosilicate component comprising from 10 to 70 wt.% of the total catalyst and having a silica/alumina mole ratio of at least 2.5 and an alkali metal content of less than about 2.0 wt.% (as alkali oxide), based on the total aluminosilicate component, and (3) a transitional metal hydrogenation component.

3,865,717
SIZE SEPARATION OF POLYDISPERSE SUSPENSIONS BY HYDRODYNAMIC CHROMATOGRAPHY
Hamish Small, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 859,331, Sept. 19, 1969, abandoned. This application Dec. 8, 1972, Ser. No. 313,506
Int. Cl. B03b *3/00*
U.S. Cl. 209—1 6 Claims

1. A process for the separation of first particles of a polydisperse suspension of first particles in a liquid dispersing medium by size, by passing the suspension through a porous body formed of a plurality of second particles, said second particles being impermeable with respect to said first particles, the body having generally uniform porosity, the porous body having a liquid flow path of sufficient size to permit passage of the first particles therethrough, the method comprising

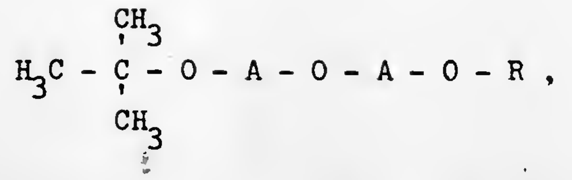
adding a suspension of first particles in a liquid dispersing medium to the porous body, the porous body being generally inert to the dispersing medium, the particles being generally non-adherent to the porous body when in the dispersing medium,

eluting the porous body with the dispersing medium to cause the first particles to pass through voids between the second particles forming the porous body, and subsequently

collecting an effluent stream of dispersing medium and first particles from the porous body wherein larger first particles of the dispersion are initially removed from the porous body and successively smaller first particles are subsequently removed therefrom, with the further limitation that the apparent velocity of the first particles through the porous body is equal to or greater than the apparent velocity of the fluid suspending medium through the porous body.

3,865,718
FROTHERS FOR THE FLOTATION OF SULFIDIC ORES
Elmer C. Tveter, deceased, late of Walnut Creek, Calif. (by Cora Belvin Judd Tveter, executrix); Guy H. Harris, Concord, Calif., and Lowell B. Lindy, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Dec. 7, 1972, Ser. No. 313,155
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 6 Claims

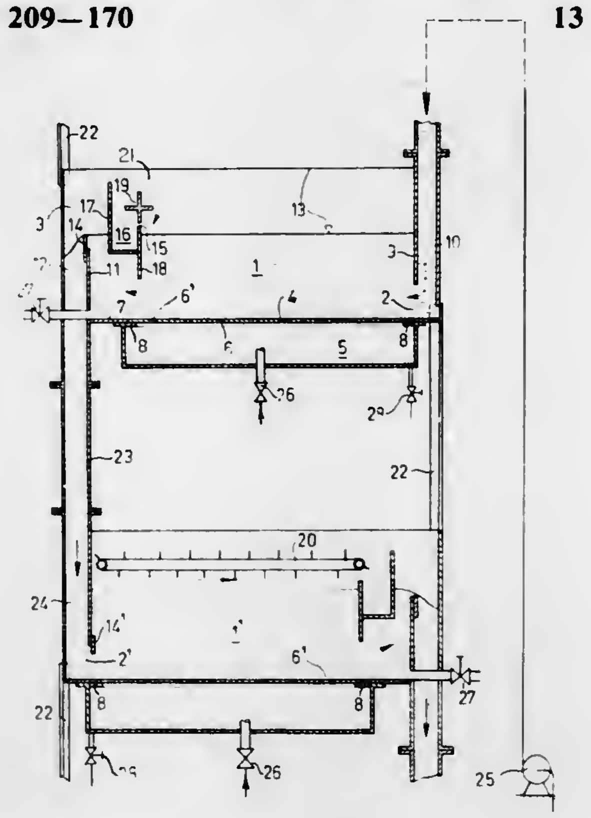
1. The method which comprises subjecting an aqueous pulp of a sulfidic ore of one or more of the metals lead, zinc, copper, molybdenum, nickel, cobalt, antimony, silver, mercury, gold, cadmium and arsenic to froth flotation in the presence of a collector and one or more organic frothing agents corresponding to the formula



$$H_3C-C(CH_3)_2-O-A-O-A-O-R\ ,$$

wherein each A is an alkylene group having 2 or 3 carbon atoms, and R is methyl, ethyl, n-propyl, i-propyl, i-butyl or t-butyl.

3,865,719
FLOTATION DEVICE FOR A FIBROUS SUSPENSION
Herbert Holik, Ravensburg, and Karl Mueller, Ringgenweiler, both of Germany, assignors to Escher Wyss G.m.b.H., Ravensburg, Germany
Filed Dec. 4, 1972, Ser. No. 311,484
Claims priority, application Germany, Dec. 9, 1971, 2161015
U.S. Cl. 209—170 13 Claims

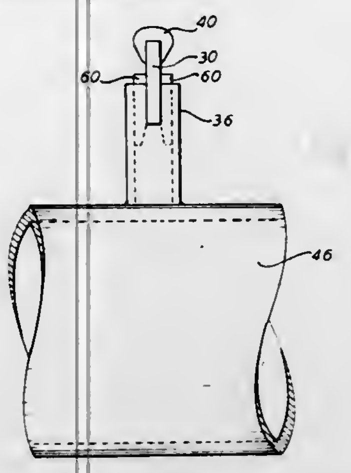


1. A flotation device for purifying a suspension of fibrous material and especially for deinking a paper stock suspension, the device comprising a container for said suspension; suspension inlet and outlet apertures at opposite sides of the container and connected, respectively, with inlet and outlet ducts; means for the gas treatment of said suspension inlcuding a gas distributor arranged in the lower portion of the container and having a stationary wall which is provided with gas throughflow apertures and forms a boundary wall for said suspension, the gas throughflow apertures, in plan view, being arranged at least over a portion of the base area of the container and being so sized and distributed that the intensity of the gas treatment effected decreases in the direction from the inlet to the outlet side of the container; and means for discharging from the surface of the suspension foam produced by the gas treatment.

3,865,720
RELEASABLE CONNECTION FOR INTERSECTING MEMBERS
Albert Wilson, Columbia, S.C., assignor to Litton Systems, Inc., Passaic, N.J.
Filed June 15, 1972, Ser. No. 263,299
Int. Cl. B07b *1/46*
U.S. Cl. 209—405 9 Claims

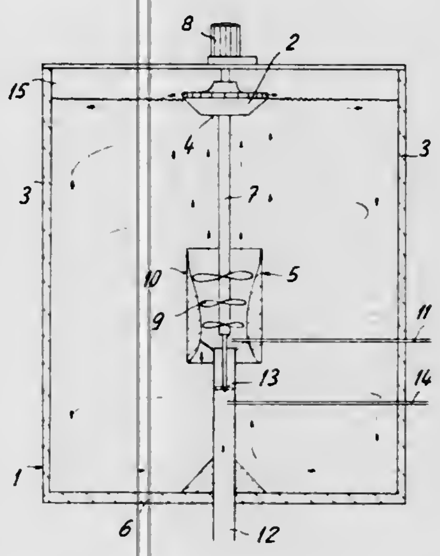
1. Bulk material processing equipment: comprising
a. deck means for receiving bulk material;
b. a plurality of support members forming a support means for said deck means and extending in a predetermined direction;

c. a plurality of cross-members each extending beneath and across said support members;



d. a plurality of vertical posts carried by each of said cross-members, in spaced relationship thereon, for coaction with and to support said support members; and
e. wedge means releasably connecting said cross-members and said support members together.

3,865,721
METHOD FOR INTRODUCTION AND CIRCULATION OF OXYGEN OR OXYGENOUS GAS IN A LIQUID WHICH IS TO BE CLARIFIED, AND APPARATUS FOR CARRYING OUT THE METHOD
Joseph Richard Kaelin, Villa Seeburg, CH-6374 Buochs, Switzerland
Filed Sept. 1, 1972, Ser. No. 285,918
Claims priority, application Switzerland, Sept. 2, 1971, 12925/71
Int. Cl. C02c *1/10;* **B01f** *3/04*
U.S. Cl. 210—7 18 Claims

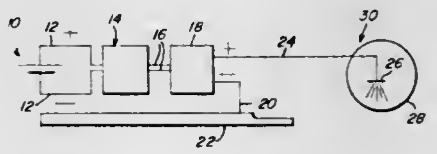


1. A method of introducing and circulating a mixture of gases containing oxygen in a liquid present in an activating basin of a clarifying plant, comprising the steps of:

utilizing a surface acrator formed as a rotor for generating a circulatory, radially outwardly flow of the liquid within the surface region of said liquid toward the sidewalls of said basin, and a downward flow of said liquid along said sidewalls of said basin which commences within said surface region of said liquid and continues downwardly; and

utilizing a liquid impeller device disposed non-contiguously below said surface aerator for generating an additional and complementary flow and circulation upwardly within, and along and from the bottom portion of, said basin toward the suction aperture of said surface aerator, whereby a high velocity cyclical flow of said liquid outwardly along said surface of said liquid, downwardly along said sidewalls of said basin, radially inwardly along the bottom portion of said basin, and upwardly toward said surface of said liquid, as well as a spiral motion intermediate said surface and bottom regions and within the vicinity of said sidewalls along the vertical extent thereof, is generated.

3,865,722
CORONA DISCHARGE TREATMENT OF AN OIL SLICK
Patrick C. Stoddard, 7734 Leonard Dr., Falls Church, Va. 22043
Filed Oct. 25, 1972, Ser. No. 300,520
Int. Cl. C02b *9/02*
U.S. Cl. 210—42 7 Claims

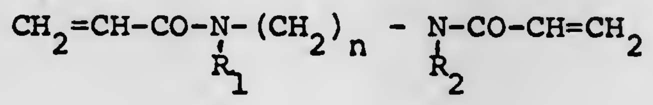


1. A process for removing a non-emulsified, immiscible liquid hydrocarbon floating on the surface of a body of water in a thin, substantially continuous layer comprising positioning a corona generating electrical lead above said liquid hydrocarbon, applying sufficient electrical energy to said lead to generate a corona and subject said liquid hydrocarbon to the action of said corona, continuing the application of said electrical energy until said liquid hydrocarbon becomes electrically charged and increases in surface tension, and then removing said liquid hydrocarbon from said surface.

3,865,723
METHOD TO FORM STABLE COMPLEXES OF POLYANIONS OCCURRING IN BIOLOGICAL LIQUIDS
Maria Antonietta Marchisio; Paolo Ferruti; Tito Longo, and Ferdinando Danusso, all of Milan, Italy, assignors to Zambon, Bresso and Milan, Italy
Filed Mar. 21, 1973, Ser. No. 343,358
Claims priority, application Italy, Mar. 21, 1972, 22152/72
Int. Cl. A61k *17/18*
U.S. Cl. 210—54 10 Claims

1. A method of treating blood to firmly complex, neturalize and thereby eliminate heparin occurring therein, comprising adjusting the blood to a pH between 3 and 10, contacting said pH adjusted blood for a tme ranging from about 1 to 600 seconds with a polymer comprising monomeric units derived from:

A. the group consisting of bis-acryl-piperazines and aliphatic bis acryl amides of the formula

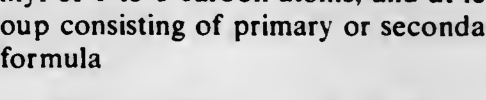


$$CH_2{=}CH{-}CO{-}N(R_1){-}(CH_2)_n-N(R_2){-}CO{-}CH{=}CH_2$$

wherein

$n = 1$ to 6 and R_1, R_2 being the same or different, are either H or alkyl of 1 to 6 carbon atoms; and at least

B. the group consisting of primary or secondary di-amines of the formula



$$NH(R_1)-(CH_2)_n-N(R_2)-R_3,$$

wherein

$n = 1$ to 6 and R_1, R_2 and R_3 are selected from the group consisting of H and alkyl with 1–6 carbon atoms, provided that only one of them is hydrogen and when $R_1 = CH_3$, R_2 is different from CH_3;

with possible further monomeric units derived from:

C. the group consisting of piperazine mono- and dicarboxylic acids and aliphatic amino-acids of the formula $H_2N\text{-}CH_2—(R)_n—COOH$, where *n* may be 0 or 1 and R is a linear or branched aliphatic radical containing 1 to 6 carbon atoms;

D. the group consisting of allyl-amine and aliphatic, saturated amino compounds containing from 2 to 12 carbon atoms and two primary amine groups; or

E. the group consisting of vinyl-pyrrolidone, N-acrylylmorpholine and acryl-amide.

3,865,724
SLIME CONTROL COMPOSITIONS AND THEIR USE

Bernard F. Shema, Glenside; Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 15, 1973, Ser. No. 370,485

U.S. Cl. 210—62 **8 Claims**

3. A method for controlling the growth of the microorganism *Aerobacter aerogenes* in an aqueous system which comprises adding to said system an effective amount for the purpose of a composition comprised of 2-2-dibromo-3-nitrilopropionamide and Bis-1,4-bromoacetoxy-2-butene, wherein the weight ratio of the amide to the butene ranges from about 5:95 to about 95:5 respectively.

3,865,725
METHOD FOR SEPARATING PARTICLES FROM A LIQUID

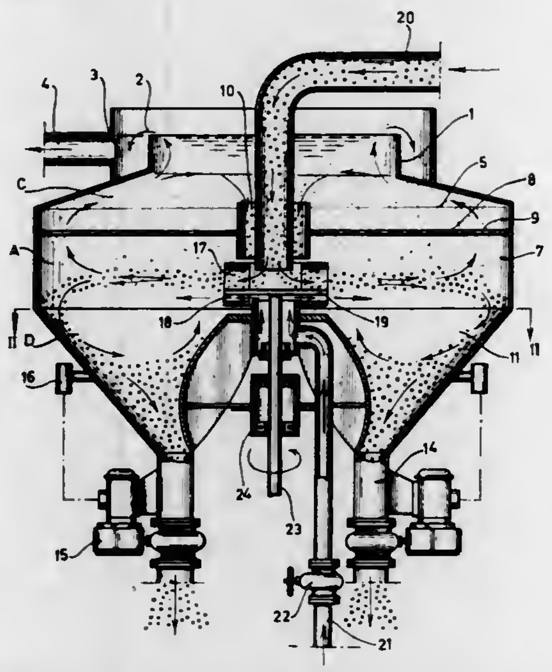
Elie Condolios, Grenoble, France, and Uilke Van Essen, Gorinchem, Netherlands, assignors to N.V. Technische Maatschappij Bergmann, Berkel en Roodenrijs, Netherlands and Societe Grenobloise D'Etudes et D'Applications Hydrauliques, Grenoble-Gare, France

Continuation of Ser. No. 217,106, Jan. 12, 1972. This application May 3, 1974, Ser. No. 466,800

Claims priority, application France, Jan. 14, 1971, 71.01869

Int. Cl. B01d ***21/26***

U.S. Cl. 210—73 **3 Claims**



1. A method for separating particles from a mixture of liquid and particles wherein the particles comprise a lighter fraction and a heavier fraction, by introducing the mixture of liquid and particles centrally into a cylindrical horizontally disposed basin and producing a free substantially unobstructed horizontal flow from the center of the basin, said flow mixture of liquid and particles being caused to flow out from the center of the basin in a radial direction while imparting a relatively minor component of velocity in tangential direction to the radially outward flowing mixture to subject the flowing mixture to centrifugal force such that a whirling horizontal field of the mixture is created, the tangential component being relatively minor with respect to the radial velocity component, the mixture after traversing the horizontal whirling field being forced along a conical surface towards the center of the basin to permit heavier particles to move in a downward direction in the basin, the heavier fraction particles being discharged in the bottom of the basin, at least a part of said radially horizontal outward flow being deflected in an upward direction through approximately 180° from the central introduction of the mixture and around a screening area, and wherein a portion of the flow passing by the screening area is radially inwardly returned to an area in the center of the basin which is situated above the inlet for the mixture, a part of the radially inward flow constituting a ring of a vertically descending mixture, the lighter portion of this radially inward flow following an upward course together with the lighter fraction particles moving in the direction of an overflow edge.

3,865,726
BLOOD UREA REMOVAL DEVICE

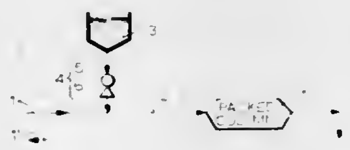
Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto; Tadashi Sato, Takatsuki, and Takao Mori, Suita, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Oct. 5, 1973, Ser. No. 403,980

Claims priority, application Japan, Oct. 6, 1972, 47-101005

Int. Cl. B01d ***31/00***

U.S. Cl. 210—152 **4 Claims**



1. A blood urea removal device which consists essentially of a fluid passage having an inlet at one end and an outlet at the other end, a column packed with an enzyme preparation in the passage, and a means for feeding a fumarate-containing solution connected to said fluid passage upstream of said column, the enzyme preparation being microcapsules containing urease in a membrane or gel lattice of semi-premeable high polymeric substance and microcapsules containing aspartase in a membrane or gel lattice of semi-permeable high polymeric substance.

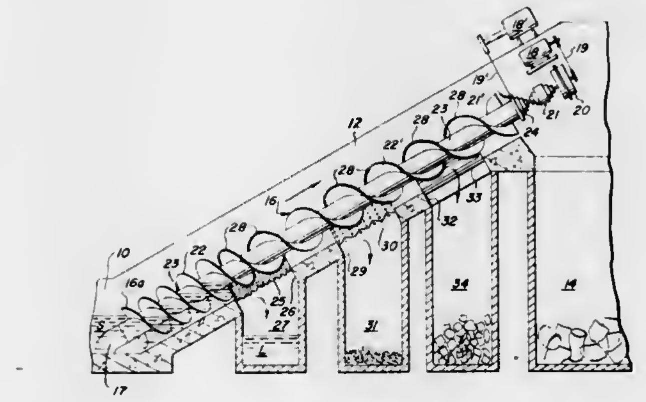
3,865,727
PUMPING APPARATUS WITH SEPARATING MECHANISM

Fred W. Broling, Barrington; Jeffrey A. Baker, Northbrook, and Edward J. Matras, Palatine, all of Ill., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 14, 1973, Ser. No. 341,032

Int. Cl. B01d ***23/20***

U.S. Cl. 210—162 **2 Claims**



1. Apparatus for progressively separating the solid components and liquid component from debris laden flow comprising: a sump to receive said flow, an inclined trough to direct said flow during separation, said trough communicating with said sump at one end and having a discharge outlet at the opposite end, said trough having a plurality of axially spaced ports, screen means located in said ports to permit said components to be separated from said flow, said screen means being of progressively larger porosity at increased spacings from said sump, screw pump means for conveying said flow through said trough from the sump to the opposite end whereby said flow is conveyed over said screen means, said screw pump means having a first flight portion between said sump and a first adjacent port, and a second flight portion adjacent said discharge outlet, said second flight portion having a pitch that is greater than said first flight portion, said liquid component being separated from said flow by the first screen means while progressively larger solid components are separated from said flow at subsequent screens means, and any solid components not separated by said screen means are discharged through said discharge outlet, said screw pump including a pair of axially aligned tubes with the respective flight portions on the respective tubes and in which said tubes are rotated at different speeds.

3,865,728
ALGICIDAL SURFACE

Eugene A. Abbott, Freeland; Alan J. Isquith, Midland, and Patrick A. Walters, Freeland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 198,452, Nov. 12, 1971, abandoned, Division of Ser. No. 226,288, Feb. 14, 1972, Pat. No. 3,817,739. This application Feb. 25, 1974, Ser. No. 445,512

Int. Cl. E04h ***3/20;*** **B01d** ***39/00***

U.S. Cl. 210—169 **4 Claims**

1. A filter for an aquarium consisting essentially of a fibrous material having bonded thereto a coating consisting essentially of an algicidal amount of an organosilicon compound of the unit formula $Y^{-}R''N^{+}(Me_{3-a})[R'SiR_nO_{3-n/2}]_a$ in which

Y is chlorine or bromine,

R'' is the methyl radical or an aliphatic hydrocarbon radical of 11 to 22 carbon atoms,

R' is a divalent hydrocarbon radical of one to 10 carbon atoms,

R is a monovalent hydrocarbon radical of one to 6 carbon atoms or the $CF_3CH_2CH_2$— radical,

n is an integer from 0 to 2, and

a is an integer from 1 to 2.

3,865,729
PUMP FOR LIQUIDS, ESPECIALLY CIRCULATING PUMP FOR AQUARIUMS

Ulrich Baensch, Herrenteich, 452 Melle, Germany

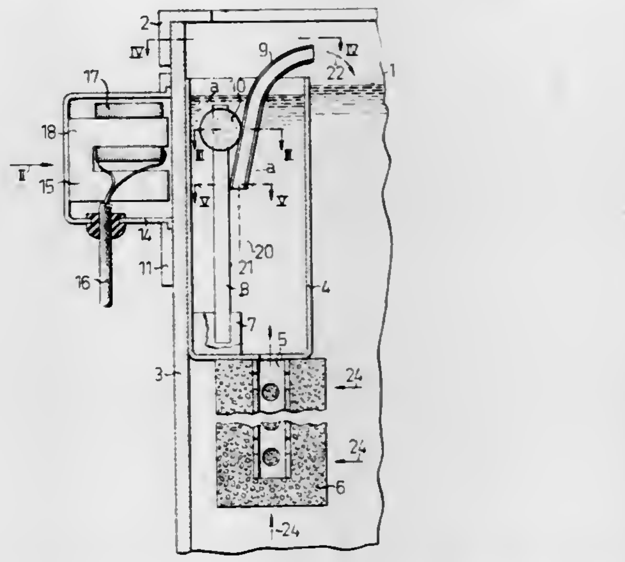
Filed July 25, 1973, Ser. No. 382,477

Claims priority, application Germany, July 26, 1972, 2236521

Int. Cl. E04h ***3/20;*** **F04b** ***17/04***

U.S. Cl. 210—169 **17 Claims**

1. In a pump, especially for liquids, a container having a bottom wall and side walls and open at the top, a pipe disposed in a generally vertical plane and having an inlet end at the bottom extending into the container from above and a laterally offset outlet end at the top which is directed outwardly over the upper edge of the container, said container being adapted to receive liquid in an amount sufficient to immerse at least the lower end of said pipe, a spring in the container connected to the pipe and resiliently supporting the pipe for oscillatory movement in a substantially horizontal direction in the container, magnetic armature means connected to the pipe, and an electromagnet in about the same horizontal plane as said armature and engageable by a pulsating electric current to cause said armature and pipe to oscillate and thereby pump liquid from within the container out over the upper edge of the container.



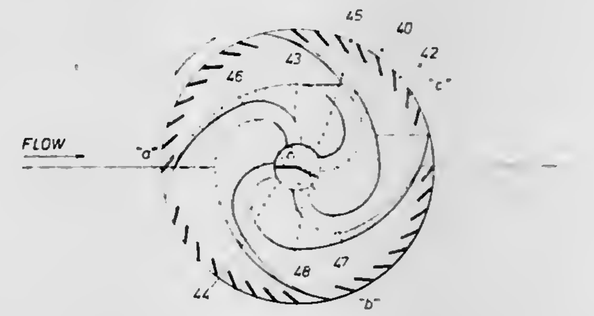
3,865,730
OIL SPILL CLEANUP

Ray R. Ayers, and Dean P. Hemphill, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 289,043, Sept. 14, 1972,. This application Dec. 17, 1973, Ser. No. 425,579

Int. Cl. E02b ***15/04***

U.S. Cl. 210—242 **3 Claims**



1. An apparatus for removing oil from the surface of water comprising a rotatable drum immersed in the water up to about its axis of rotation, compartments arranged around the periphery of the drum for admitting oil and water to an axial chamber in the drum, said compartments comprising spiraling funnels diminishing in cross-sectional area from the periphery of the drum to the axial chamber, said axial chamber being divided into upper and lower rooms, the lower room providing an exit for a water-rich effluent, and the upper room providing an exit for an oil-rich effluent.

3,865,731
FILTER SKIMMING DEVICE

Lamont J. Seitz, Huntington Beach, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

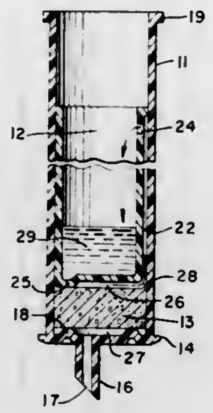
Filed Dec. 21, 1973, Ser. No. 427,198

Int. Cl. B01d ***33/00***

U.S. Cl. 210—359 **3 Claims**

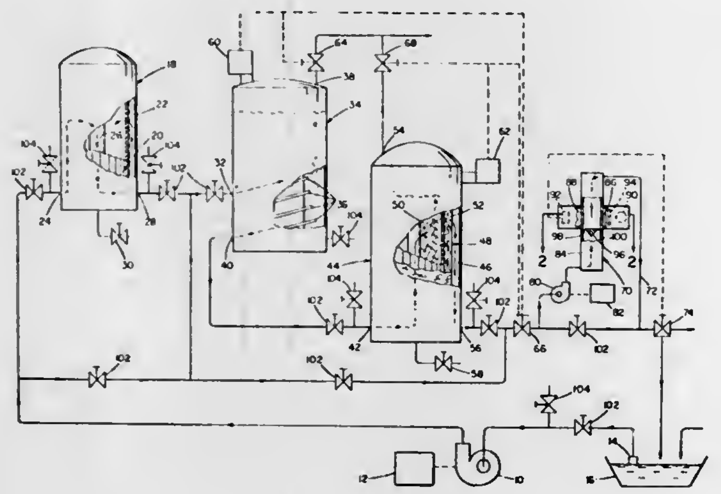
1. A filter skimming device comprising an elongated plunger assembly, said assembly comprising an elongated outer plunger tube, an elongated tubular insert and a cylindrical filter element disposed therebetween, said plunger tube having a peripheral rim adapted for slidable sealing engagement of the inner walls of a test tube, a downwardly extending small bore probe and a projection on its inner bottom upon which said filter element is seated, said tubular insert being shorter in length than said plunger tube, being adapted to be inserted in snug relationship therewith and having a channel in its outer wall extending substantially throughout its entire

length whereby a tubelike capillary space is formed between the outer wall of said tubular insert and the inner wall of said plunger tube, said tubular insert further having a projection on its outer bottom adapted for seating on said filter element, said channel terminating at a wall near the top and communicating with the interior of said tubular insert by a small bore opening transverse to said channel.



3,865,732
EMULSION BREAKER

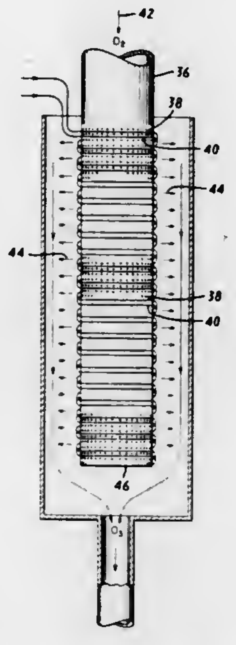
Ralph D. Terhune, and James C. Duke, both of Tulsa, Okla., assignors to Fram Corporation, East Providence, R.I.
Filed Nov. 27, 1972, Ser. No. 309,794
Int. Cl. B01d *25/06*
U.S. Cl. 210—315 **1 Claim**



1. An emulsion breaker for removing trace amounts of hydrocarbon from water, comprising
- a housing having an inlet and an outlet,
- a first, radially inner annular element in said housing, having an inlet side communicating with said inlet, and an outlet side,
- a second, radially outer annular element in said housing, having an inlet side communicating with said outlet side of said first element, and an outlet side directly communicating with said outlet of said housing,
- each of said elements having water resistant, preferentially hydrocarbon wettable polyester fibers,
- said first element having natural fibers resin impregnated for water resistance and mixed with said polyester fibers in a ratio such as to provide a tight, sheetlike pleated medium of lower micron rating than that of said second element said micron rating of said first element being between 1 and 25, for coalescing hydrocarbon in said water into droplets,
- said second element having the form of a fibrous batt for removing from said hydrocarbon droplets any water bubbles surrounding them.

3,865,733
APPARATUS FOR THE PRODUCTION OF OZONE

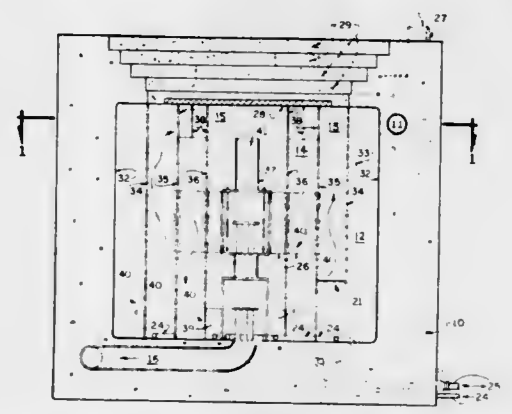
Leland Thomas Taylor, 701 Madison St., N.E., Albuquerque, N. Mex. 87110
Filed Jan. 30, 1974, Ser. No. 437,729
Int. Cl. C01b *13/12*
U.S. Cl. 250—532 **10 Claims**



1. Apparatus for the conversion of oxygen to ozone comprising:
- a. at least two mutually interwoven abutting wire electrodes;
  - b. each of said at least two electrodes comprising an electrically conductive core and an insulating cover, said insulating cover being substantially inert to ozone;
- c. means for charging each of said two electrodes to establish a corona discharge area between said electrodes;
- d. the insulating cover being of sufficient thickness to protect the core from attack by ozone but being thin enough to permit establishment of a field of sufficient strength to ionize oxygen at the rate of charge supplied; and
- e. means for directing oxygen at the corona discharge area between said electrodes;
- f. whereby ozone is formed in the corona discharge area of the two electrodes.

3,865,734
IRRADIATOR APPARATUS

David D. Woodbridge, Eau Gallie, Fla., assignor to McMillin Investments, Inc., Vero Beach, Fla.
Filed Oct. 24, 1972, Ser. No. 300,202
Int. Cl. G01n *21/26*
U.S. Cl. 250—432 **6 Claims**



1. Apparatus for treating polluted fluids comprising in combination:
- a. a casing including a plurality of inputs and outputs therefrom;
- b. core means located in said casing defined a flowpath for liquid therethrough from at least one input to at least one output;

- c. said core means having a central overflow pipe and a plurality of chambers each chamber being operatively connected to at least one other chamber for the feeding of liquid from one to the other and out the overflow pipe;
- d. radiation sources located in said core means for irradiating liquids passing therethrough;
- e. gas feed means operatively connected to said core means for feeding a gas into said core means through liquid passing through said core means;
- f. bleed means located to allow accumulated gases in said core means to escape therefrom; and
- g. baffle means located in spaced relationship to at least one gas feed means through said liquid in said core means, whereby liquid passing through said apparatus is irradiated during chemical treatment.

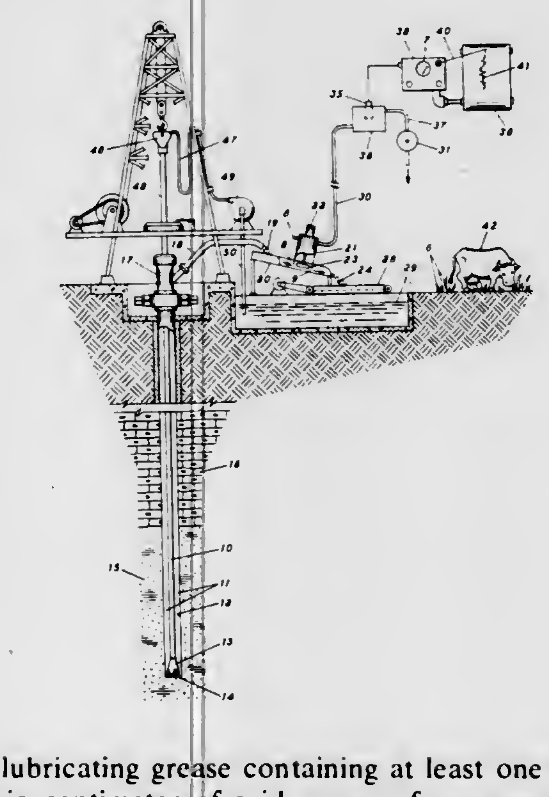
3,865,735
OVERBASED BRANCHED CHAIN ALIPHATIC SULFONATE WATERFLOOD ADDITIVES

Charles R. Clark; M. Duane Gregory, both of Ponca City, Okla.; Delmar D. Krehbiel, Lubbock, Tex.; Claud D. Butler, and Carl D. Kennedy, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Jan. 19, 1973, Ser. No. 324,909
Int. Cl. C09k *3/00*
U.S. Cl. 252—8.55 D **4 Claims**

1. An anionic waterflood additive comprising a sulfonate derived from a non-linear alkene having about 7 to about 18 carbon atoms plus an overbasing amount of base component; wherein the ratio: weight of excess base component/weight of sulfonate is about 0.03 to about 2.0; the base component being an alkali metal hydroxide, ammonium hydroxide, or an alkali metal carbonate.

3,865,736
RADIOACTIVE GREASE CONTAINING KRYPTON 85

Bernard A. Fries, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 281,869, Aug. 18, 1972, which is a continuation-in-part of Ser. No. 55,635, July 17, 1970, abandoned. This application Aug. 9, 1973, Ser. No. 386,930
Int. Cl. C10m *5/28, 7/52*
U.S. Cl. 252—11 **5 Claims**



1. A lubricating grease containing at least one microcurie per cubic centimeter of said grease of gaseous krypton 85 dispersed therein.

3,865,737
PROCESS FOR PREPARING HIGHLY-BASIC, MAGNESIUM-CONTAINING DISPERSION

Paul Clifford Kemp, Wilmington, Del., assignor to Continental Oil Co., Ponca City, Okla.
Continuation-in-part of Ser. No. 245,635, April 19, 1972, abandoned. This application July 2, 1973, Ser. No. 374,210
Int. Cl. C10m *1/40*
U.S. Cl. 252—33.4 **19 Claims**

1. A process for preparing a fluid, highly-basic, magnesium-containing dispersion wherein the process comprises:
- a. forming an admixture of:
  - i. about 75 to about 125 parts of oil soluble dispersing agent selected from the group consisting of oil soluble sulfonic acids, mixtures of oil soluble sulfonic acids and aliphatic hydrocarbon monocarboxylic acids and the metal salts thereof,
  - ii. about 20 to about 90 parts magnesium oxide,
  - iii. about 100 to about 500 parts volatile aliphatic hydrocarbon solvent having a boiling point below about 150°C,
  - iv. about 2 to about 30 parts of an alcohol selected from the group consisting of C_1 to C_6 aliphatic alcohols and alkoxy ethanols containing 3 to 7 carbon atoms,
  - v. about 30 to about 50 parts water, and
  - vi. ammonia or an ammonium compound in an amount sufficient to provide about 0.6 to about 9 parts ammonia,
- b. treating the admixture of step (a) with at least one mole of carbon dioxide per mole of overbasing magnesium present,
- c. adding to the carbonated admixture about 100 to about 300 parts of a nonvolatile diluent oil having a boiling point above 160°C, and
- d. removing the volatile materials,

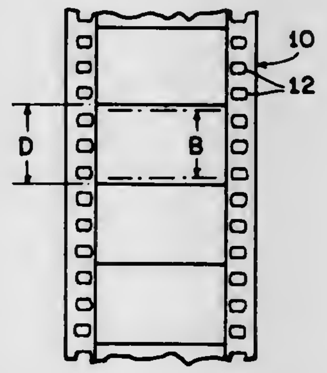
said process being characterized further in that:
- a. the magnesium oxide has the following properties:

Bulk Density, less than lbs/cu.ft.	16
Pore volume, cc/g., above	0.75
Iodine No., below	100, and

- b. the amount of alcohol in step (a) (iv) is in the range of about 0.1 to about 4.0 moles per mole of dispersing agent.

3,865,738
METHOD OF MAKING MOTION PICTURES

Miklos Lente, 79 Laurentide Dr., Toronto, Ontario, Canada
Filed Jan. 21, 1974, Ser. No. 434,868
Int. Cl. G03b *19/18*
U.S. Cl. 352—44 **6 Claims**



1. A method of making a wide screen picture on 35mm film having a plurality of edge perforations at longitudinally spaced intervals along the length of the film having a standard perforation pitch length comprising the steps of:
- a. photographing a scene on an original film to provide photographic images having a frame length in the direction of the longitudinal extent of the film no greater than three perforation pitch lengths;

b. repeatedly thereafter advancing said original film a distance equal to three perforation pitch lengths and photographing a plurality of successive scenes to provide successive photographic images each having a frame length no greater than three perforation pitch lengths;

c. processing and finishing said original film to provide a finished original suitable for printing; and

d. subsequently preparing print films having edge perforations having the same standard pitch length by printing successive original film frame images onto said print film by successively advancing the original film in a series of lengths measuring three perforation pitch lengths and successively advancing the print film in a series of lengths measuring four pitch lengths.

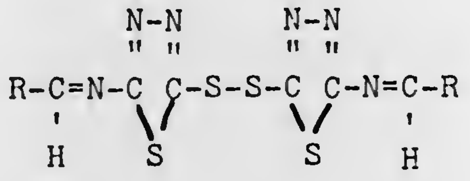
3,865,739
THIADIAZOLE DERIVATIVE, MIXTURE AND COMPOSITIONS THEREOF

James O. Waldbillig, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

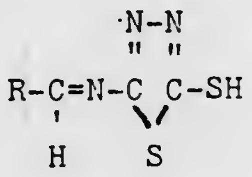
Filed Feb. 25, 1974, Ser. No. 445,385
Int. Cl. C10m *1/38*

U.S. Cl. 252—47 **5 Claims**

1. A composition comprising a major amount of a hydrocarbon oil of lubricating viscosity and between about 0.01 and 50 wt. % of a thiadiazole derivative mixture containing as a principal product an alkylidenimino thiadiazole characterized by the formula:



where R is alkyl of from 2 to 30 carbons, said thiadiazole derivative mixture prepared by the process comprising first contacting 2-amino-5-mercapto-1,3,4-thiadiazole with an alkanal of the formula RCHO where R is alkyl of from 2 to 30 carbons at a temperature of between about 20° and 250°C. utilizing a mole ratio of 2-amino-5-mercapto-1,3,4-thiadiazole to alkanal of between about 10:1 and 1:2 to form an intermediate thiadiazole product characterized by the formula:



and second contacting said thiadiazole intermediate with dimethyl sulfoxide at a temperature of between about 20° and 150°C. utilizing a mole ratio of said intermediate to said dimethyl sulfoxide of between about 3:1 and 1:50 to form said thiadiazole derivative mixture.

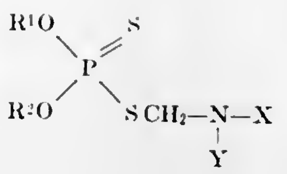
3,865,740
MULTIFUNCTIONAL LUBRICATING OIL ADDITIVE

Alfred Goldschmidt, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 255,605, May 22, 1972, abandoned. This application Feb. 14, 1973, Ser. No. 332,864
Int. Cl. C10m *1/48*

U.S. Cl. 252—46.7 **5 Claims**

5. A lubricating oil composition containing an oil of lubricating viscosity and from 0.1 to 10 percent by weight of a lubricating oil additive of the general formula



wherein R^1 and R^2 are alkyl, aryl, alkaryl or aralkyl groups of from about one to 20 carbon atoms, and X and Y are radicals, one of which may be hydrogen, but at least one of which is a hydrocarbyl-substituted succinimide of a hydrocarbyl polyamine, and wherein said hydrocarbyl substituent contains at least 40 carbon atoms.

3,865,741
PROCESS FOR PRODUCING MAGNETIC TAPE COATING

Frederic J. Sischka, Santa Clara, Calif., assignor to Memorex Corp., Santa Clara, Calif.

Filed Nov. 7, 1973, Ser. No. 413,615
Int. Cl. H01j *11/113*

U.S. Cl. 252—62.54 **1 Claim**

1. In a process for producing a magnetic tape coating composition magnetic iron oxide particles dispersed in a resin mixture comprising a major proportion of a vinylidene chloride-acrylonitrile copolymer containing in excess of 50% by weight of vinylidene chloride and a minor proportion of a polyurethane resin the improvement which comprises milling a slurry of magnetic iron oxide having an appreciable content of ferrous iron in a solution of polyurethane resin for a time sufficient to produce a dispersion of magnetic iron oxide in the solution, which dispersion is substantially free of magnetic iron oxide agglomerates and then intimately mixing the dispersion with a solution of the vinylidene chloride-acrylonitrile polymer.

3,865,742
RESISTOR COMPOSITIONS

Bernard Greenstein, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 6, 1971, Ser. No. 140,988
Int. Cl. H01b *3/02;* **H01h** *85/24;* **H01c** *17/00*

U.S. Cl. 252—63.5 **26 Claims**

1. A resistor composition comprising a particulate zinc free, boron free, lead, barium silicate glass binder having a firing temperature of about 725°–775° C and a positive TCR, said glass binder being admixed with a substantially homogeneous finely divided, substantially chloride or cyanide salt-free powder comprised of at least one resistive metal selected from the group consisting of palladium, rhodium, iridium, ruthenium, indium and mixtures thereof, at least two stabilizer metals selected from the group consisting of silver, gold and platinum, and about 0.02–0.5 weight percent, related to the weight of the metal powder, of particulate MnO_2 to reduce the TCR of said resistor composition.

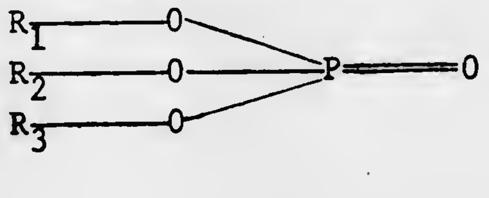
3,865,743
FUNCTIONAL FLUIDS

Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed May 1, 1972, Ser. No. 249,412
Int. Cl. C09k *3/00*

U.S. Cl. 252—78 **24 Claims**

1. A functional fluid composition consisting essentially of a base stock, said base stock consisting essentially of (1) a phosphate ester having the general formula:



where R_1, R_2 and R_3 are each a member selected from the group consisting of aryl, alkaryl, alkyl of from about 3 to about 10 carbon atoms, and alkoxyalkyl having from about 3 to about 8 carbon atoms, and (2) a polyalkylene glycol material having terminal groups selected from the class consisting of free hydroxyl and ether groups, said ether groups being oxyalkyl groups wherein the alkyl radicals contain from 1 to about 8 carbon atoms, said alkylene groups being selected from the class consisting of ethylene and propylene radicals, and mixtures thereof, said polyalkylene glycol material having a molecular weight ranging from about 500 to about 2,000, said phosphate ester being present in an amount ranging from about 15 to about 90%, and said glycol material being present in an amount ranging from about 10 to about 85%; by weight of said composition; and a small amount of organic iodo compound sufficient to enhance the autoignition temperature of said base stock, said iodo compound being selected from the group consisting of aryl and alkaryl mono, di and triodides, said aryl and alkaryl radicals containing from about 6 to about 15 carbon atoms.

3,865,744
METHOD OF PRODUCING COPPER AND COMPOSITION THEREFOR

Alan James Parker; Winfield Earle Waghorne; Dion Ewing Giles; John Howard Sharp; Robert Alexander, and David Michael Muir, all of c/o The Research School of Chemistry, The Australian University, Canberra A.C.T., Australia (2600)

Filed Mar. 22, 1972, Ser. No. 237,061

Claims priority, application Australia, Apr. 2, 1971, 4500/71; Apr. 2, 1971, 4501/71; Apr. 2, 1971, 4502/71; Apr. 28, 1971, 4735/71; June 4, 1971, 5110/71; Sept. 14, 1971, 6281/71; Sept. 24, 1971, 6411/71; Oct. 20, 1971, 6718/71; Oct. 26, 1971, 6798/71; Dec. 14, 1971, 7383/71; Jan. 26, 1972, 7776/72

Int. Cl. C22b *15/00, 15/08, 15/12*

U.S. Cl. 252—188.3 R **25 Claims**

1. A composition of matter comprising at least 15% by volume water, an acid selected from the group consisting of sulphuric, sulphurous and nitric acid, at least 4% by volume of an organic nitrile selected from the group consisting of acetonitrile, acrylonitrile, 2-hydroxycyanoethane and mixture thereof and a copper salt of the corresponding acid.

3,865,745
PROCESS FOR THE PREPARATION OF METAL CARBIDE AND METAL OXIDE MICROSPHERES

Jacob Block, Rockville; Richard J. Herbst, Ellicott City, and Leonard V. Triggiani, Rockville, all of Md., assignors to W. P. Grace & Co., New York, N.Y.

Division of Ser. No. 106,879, Jan. 15, 1971, abandoned. This application Sept. 1, 1972, Ser. No. 285,942
Int. Cl. C01g *43/00*

U.S. Cl. 252—301.1 R **8 Claims**

1. A process for preparing metal carbide microspheres having a carbon to metal ratio of about 1:1 to 15 to 1 which comprises:

a. exchanging anion exchange resin spheres or sulfur free cation exchange resin spheres with a solution of a soluble salt of a metal selected from the group consisting of the actinides, the rare earths and elements of group I*b*, II*b*, III*b*, IV*b*, V*b*, VI*b* and VII*b* of the periodic table,

b. washing to remove excess solution and drying,

c. heating the exchanged resin spheres at a temperature of 500° to 1100°C. in an atmosphere of steam, carbon dioxide or oxygen for a period of time sufficient to reduce the carbon to metal ratio to about 3:1 to 17:1,

d. heating to a temperature of 1200°C to 1400°C. in argon for 3 to 6 hours to effect carbothermal reduction,

e. sintering at a temperature of 1000° to 3000°C. for about 0.5 to 28 hours in hydrogen, an inert gas or under vacuum, and

f. recovering the metal carbide microspheres product.

3,865,746
UO_2-BeO FUEL PROCESS

Jack A. Rubin, Encino, and Peter D. Johnson, Chatsworth, both of Calif., assignors to The United States of America as represented by the U.S. Atomic Energy Commission, Washington, D.C.

Filed July 16, 1959, Ser. No. 827,661
Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 W **4 Claims**

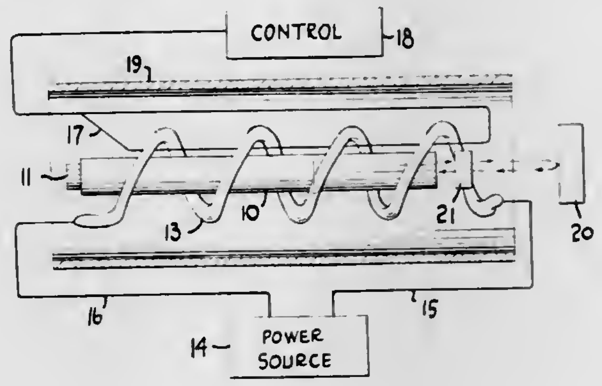
1. A method of forming a UO_2-BeO ceramic body which comprises melting together uranium nitrate and beryllium nitrate to a temperature of approximately 50°–100°C, heating the resulting melt until a homogeneous mixture of beryllium oxide and uranium oxide is obtained, hot-pressing the resulting composition at approximate conditions of 1,200°–2,000°C, at a pressure of 1,000 to 6,000 psi for one-half to six hours.

3,865,747
Q-SWITCHING DEVICE FOR GLASS LASERS

Charles B. Greenberg, Turtle Creek, Pa., assignor to PPG-Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 673,614, Oct. 9, 1967, abandoned. This application Aug. 21, 1970, Ser. No. 65,894
Int. Cl. H01s *3/00;* **C09k** *1/30, 1/10*

U.S. Cl. 252—301.1 L **4 Claims**



1. A process for producing a self Q-switching device adapted for use in a laser comprising:

a. melting
   - i. a mixture consisting essentially of glass batch materials which are substantially iron-free, and which when melted and cooled form a glass which is suitable for laser applications,
   - ii. a uranium salt, and
   - iii. cerium dioxide, and

b. cooling said melt to form a solid glass, said uranium salt being present in said solid glass in an amount sufficient to provide a uranium salt being present in said solid glass in an amount sufficient to provide a uranium content, expressed as UO_2^{+2}, of 0.01 percent to 15 percent by weight, based on the weight of said solid glass and said cerium dioxide being present in an amount sufficient to convert at least 91 percent of said uranium to a UO_2^{+2} valence state.

3,865,748
CINNAMYL PHENOL ANTIMICROBIAL AGENTS

Leonard Jurd, Berkeley; A. Douglas King, Jr., Martinez, and William L. Stanley, Richmond, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 74,485, Sept. 22, 1970, Pat. No. 3,745,222. This application Apr. 17, 1973, Ser. No. 351,932
Int. Cl. A01n *9/26;* **B01j** *1/18*

U.S. Cl. 252—404 **1 Claim**

1. A composition of matter comprising

a. a major proportion of a substance normally subject to microbial spoilage, and

b. a minor proportion, sufficient to inhibit microbial growth, of 2-cinnamyl-5-methoxyquinol.

3,865,749

BUTADIENE POLYMERIZATION CATALYST

Erik G. M. Tornqvist, Scotch Plains, and Charles Cozewith, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 30, 1973, Ser. No. 392,966The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.

Int. Cl. B01j *11/84*

U.S. Cl. 252—429 B **12 Claims**

1. A hydrocarbon-soluble catalyst system for the polymerization of conjugated diolefins to produce a polymer having from 50 to about 90% trans-1,4 addition units, consisting essentially of:

a. Ti(halide)$_4$—M$_n$I$_m$ wherein the halide may be I, Cl, or Br; M is aluminum or tetravalent tin; *n* is 0 or 1; m is the valence of M and when n is 0, *m* is 2; and when the halide is I, M$_n$I$_m$ is omitted;

b. an aluminum alkyl having the formula AlR_2X_{3-a} wherein R is an alkyl having 1 to 12 carbon atoms, X is Cl, Br or I, *a* is a number 2 to 3, and the molar ratio of the aluminum alkyl to Ti(halide)$_4$—M$_n$I$_m$ being in the range from 20:1 to 1:1;

c. a Lewis base selected from the group consisting of tetrahydrothiophene, tetrahydrothiopyran, tetrahydrofuran, tetrahydropyran, 2-methyl tetrahydrothiophene and 2,5-dimethyl tetrahydrofuran, the mole ratio of Lewis base to Ti(halide)$_4$ being in the range of from 1:1 to 500:1.

3,865,750

TITANIUM CARBIDE CATALYSTS, AND THE CATALYST COMPOSITIONS

Howard F. Rase, Austin, and Larry A. Maddox, Corpus Christi, both of Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 27, 1971, Ser. No. 212,376

Int. Cl. B01j *11/82*

U.S. Cl. 252—443 **13 Claims**

1. A catalyst comprising a composite of from about 0.1 to about 50 weight percent of a hydrogenation-dehydrogenation component consisting of a metal or an oxide or sulfide of a metal, or mixtures thereof, selected from the group consisting of nickel, molybdenum, iron, cobalt, rhodium, palladium, tungsten, rhenium and platinum and titanium carbide characterized as a stable phase solid of stoichiometry ranging from about $TiC_{0.52}$ to $TiC_{0.99}$.

3,865,751

CATALYST FOR CONVERSION OF OLEFINS

Robert L. Banks, and Joseph R. Kenton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 6,045, Jan. 26, 1970, Pat. No. 3,660,506, which is a continuation of Ser. No. 678,499, Oct. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 627,668, April 3, 1967, abandoned. This application Dec. 6, 1971, Ser. No. 205,350

Int. Cl. B01j *11/32, 11/42*

U.S. Cl. 252—457 **4 Claims**

1. A composition active for converting an olefin to obtain the product of the olefin reaction which, as defined herein, can be visualized as comprising the reaction between two first pairs of carbon atoms, the two carbon atoms of each first pair being connected by an olefinic double bond, to form two new pairs from the carbon atoms of said first pairs, the two carbon atoms of each of said new pairs being connected by an olefinic double bond comprising magnesium oxide admixed with a separate disproportionation catalyst selected from the group consisting of

silica gel or thoria promoted by an oxide or a compound convertible to the oxide by calcination of tungsten or molybdenum;

said magnesium oxide being present in an amount in the range of 0.1 to 20 parts by weight per part by weight of said disproportionation catalyst.

3,865,752

CATALYST ACTIVATION PROCESS AND PRODUCT THEREOF

Joseph Peter Remeika, Warren Township, Somerset County; Rudolf Johannes H. Voorhoeve, Summit, both of N.J., and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 18, 1972, Ser. No. 316,255

Int. Cl. B01j *11/06*

U.S. Cl. 252—462 **5 Claims**

1. Activation procedure for increasing the catalytic activity of an unused catalyst containing an active ingredient which consists essentially of at least one composition within the atom formula $RE_{1-x}M_xM'O_3$, in which the amount of any of the three indicated cations may be reduced by up to about 15 atom percent to accommodate vacancy structures, in which RE is at least one element selected from the group consisting of La, Pr, and Nd, in which M is at least one element selected from the group consisting of Pb, Ca, Sr, and Ba, in which M′ is at least one element selected from the group consisting of Mn and Cr, and in which *x* is from 0.05 to 0.7, characterized in that such active ingredient is intimately contacted by a fluid within the pH range of from 0.5 to 6.0 for a time and at a temperature sufficient to remove at least 1% of the active ingredient.

3,865,753

PROCESS FOR THE PREPARATION OF A NICKEL MAGNESIUM ALUMINUM CATALYST

Franz Josef Broecker, Ludwigshafen; Knut Kaempfer, Frankenthal; Laslo Marosi, Speyer; Matthias Schwarzmann, Limburgerhof, and Bruno Triebskorn, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft Ludwigshafen/Rhine, Germany

Filed June 25, 1973, Ser. No. 373,012

Claims priority, application Germany, June 27, 1972, 2231367

Int. Cl. B01j *11/22*

U.S. Cl. 252—466 J **2 Claims**

1. A catalyst in the production of which the compound $Ni_5MgAl_2(OH)_{16}.CO_3.4H_2O$ is prepared as the catalyst precursor from aqueous solution, dried within the temperature range from 80° to 180° C, calcined within the range from 350° to 550° C and then reduced in a stream of hydrogen, the rise in temperature between the drying stage and the calcination stage being carried out with a gradient within the range from 1.66° C per minute to 3.33° C per minute.

3,865,754

CRYSTALLIZATION SEED-CONTAINING DETERGENT COMPOSITION

Russell Norris, and Charles R. Woodiwiss, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Oct. 27, 1972, Ser. No. 301,384

Int. Cl. C11d *3/065*

U.S. Cl. 252—532 **13 Claims**

1. Detergent compositions capable of rapidly reducing the free polyvalent metal ion content of an aqueous solution when added thereto, said compositions consisting essentially of:

a. from 0.1% to about 10% by weight of alkali metal aluminates having an alkali metal$_2$O/Al$_2$O$_3$ mole ratio of from about 2:1 to 1:2;

b. from about 10% to about 80% by weight of a material capable of forming, at a pH of 6 or above, a water-insoluble reaction product with free polyvalent metal ions, said water-insoluble reaction product having a solubility in water of less than 1.4×10^{-2} weight percent at 25° C.;

c. from about 5% to about 50% by weight of a water-soluble organic detergent selected from the group consisting of anionic, nonionic, ampholytic and zwitterionic detergents and mixtures thereof; and

d. from about 5% to about 35% by weight of a crystallization seed capable of providing growth sites in aqueous silution for the reaction products of (a) and (b), said crystallization seed having a particle size of from 0.01 micron to 5.0 microns.

3,865,755

DETERGENT COMPOSITION

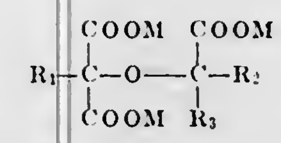
Kent P. Lannert, Freeburg, Ill., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 253,357, May 15, 1972, , which is a continuation-in-part of Ser. Nos. 158,577, June 30, 1971, , and Ser. No. 158,540, June 30, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 396,928

Int. Cl. C11d *1/12*

U.S. Cl. 252—558 **12 Claims**

1. A detergent composition comprising at least 8 percent by weight of a surfactant selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic and amphoteric surfactants and from 1 percent to 75 percent by weight of a detergency builder compound having the formula



$$R_1-\underset{COOM}{\overset{COOM}{C}}-O-\underset{R_3}{\overset{COOM}{C}}-R_2$$

wherein M is selected from the group consisting of alkali metals and ammonium and R_1 and R_2 are each selected from the group consisting of hydrogen, methyl and ethyl and R_3 is selected from the group consisting of hydrogen, methyl, ethyl and COOM.

3,865,756

CLEANING COMPOSITION

Timothy J. C. Smith, Lansdale, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Aug. 14, 1972, Ser. No. 280,094

Int. Cl. C11d *3/16;* **Clld** *3/18;* **C11d** *3/075*

U.S. Cl. 252—529 **20 Claims**

1. A cleaning composition consisting essentially of:

A. about 55 to about 90 wt. % of an organic cleaning solvent selected from the class consisting of low molecular weight alcohols, mineral spirits, halogenated hydrocarbons and high boiling ethers;

B. about 1 to about 5 wt. % of a powdered gelling agent having abrasive properties, said gelling agent being colloidal silica having a particle size within the range of about 0.005 to about 0.05 micron;

C. about 1 to about 10 wt. % of a wetting agent selected from the class consisting of non-ionic, anionic, cationic and amphoteric surfactants;

D. about 1 to about 15 wt. % of an alkaline cleaning agent selected from the class consisting of alkanolamines, caustic soda, soda ash and water soluble metal silicates and phosphates;

E. 0 to about 20 wt. % of a powdered abrasive having a larger particle size than said powdered gelling agent.

3,865,757

SELF-EXTINGUISHING RESINOUS FOAMS

Robert C. Wade, Ipswich, Mass., assignor to Resitron Corporation, Beverly, Mass.

Filed Mar. 26, 1973, Ser. No. 345,018

Int. Cl. C08g *22/44, 22/16, 41/04*

U.S. Cl. 260—2.5 AR **5 Claims**

1. A self extinguishing resinous foam containing at least about 1.5% by weight of phosphorus and consisting essentially of the polymerization product of a reaction mixture containing (a) a furan compound selected from the group consisting of furfuryl alcohol and furfuryl alcohol resins, (b) from about 12 to about 125 parts by weight per 100 parts by weight of the furan compound of an isocyanate compound selected from the group consisting of hexamethylene diisocyanate, phenylene diisocyanate, tolylene diisocyanate (TDI), 4,4′-diphenylmethane diisocyanate (MDI), xylylene diisocyanate, naphthalene diisocyanates, triphenylmethane triisocyanate, polymethyl polyphenyl polyisocyanates obtained by phosgenation of aniline-formaldehyde and (c) from about 15 to about 40 parts by weight per 100 parts by weight of the furan compound of a phosphorous-containing inorganic acid selected from the group consisting of orthophosphoric acid, metaphosphoric acid, pyrophosphoric acid, polyphosphoric acids, orthophosphorous acid, hypophosphorous acid and complexes thereof with an alcohol compound selected from the group consisting of a poly(oxypropylene) adduct of trimethylolpropane, a propylene oxide adduct of pentaerythritol, diethyl N,N-bis(2-hydroxyethyl)amine methyl phosphonate, sorbitol and propylene glycol.

3,865,758

POLYURETHANE FOAM FILTER MATERIAL CONTAINING ADSORBENT AND METHOD OF PRODUCTION THEREOF

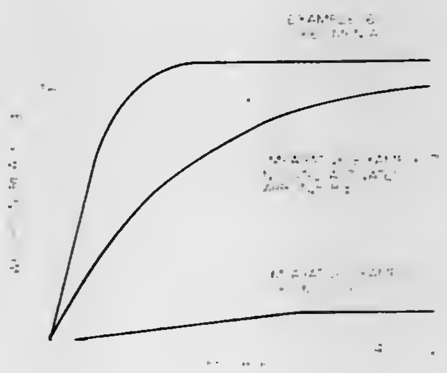
Norio Yoshida; Yoshihiko Imanaka, both of Osaka, and Kiyoji Katayama, Tokyo, all of Japan, assignors to Teijin Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 288,390, Sept. 12, 1972, abandoned. This application Dec. 27, 1973, Ser. No. 428,627

Claims priority, application Japan, Sept. 13, 1971, 46-71548

Int. Cl. C08g *22/44, 51/08*

U.S. Cl. 260—2.5 AK **2 Claims**



1. In a method of producing a polyurethane foam filter material containing activated carbon which comprises reacting a polyurethane foam-forming composition comprising a isocyanate and a polyester or a polyether in the presence of particles of activated carbon, a small amount of water, and a catalyst;

the improvement comprising (a) carrying out the reaction in the presence of pre-coated particles of the activated carbon coated with a solid film of a film-forming polymeric material selected from the group consisting of starch, gelatin, sodium alginate, tragacanth gum, locust bean gum, methyl cellulose, ethyl cellulose, carboxymethyl cellulose, hydroxyethyl cellulose, cellulose acetate, polyalkylene oxides, polystyrene, polyvinyl alcohol, polyvinyl methyl ether and polyalkylacrylates, which coating does not dissolve the polyurethane foam and can be removed after formation of the polyurethane foam by application of solvent, wherein the amount of the polymeric material is in the range of 1 to 10 % by weight of said adsorbent, and the amount of the adsorbent particles is at least 2 % by weight based on the weight of the polyurethane formed, and (b) removing the coated film-forming polymeric material from the formed polyurethane by the application of solvent which dissolves the polymeric material and does not substantially dissolve the polyurethane foam.

3,865,759
ROOM TEMPERATURE VULCANIZING SILICONE COMPOSITIONS

Robert A. Smith, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

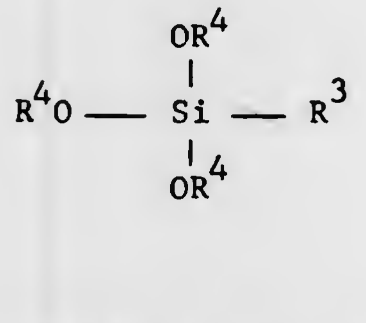
Filed Jan. 10, 1974, Ser. No. 432,409

Int. Cl. C08g *53/10*

U.S. Cl. 260—2.5 B **13 Claims**

1. An injectable catalyzed composition curable to a low density, high compressive strength foam, said composition comprising:

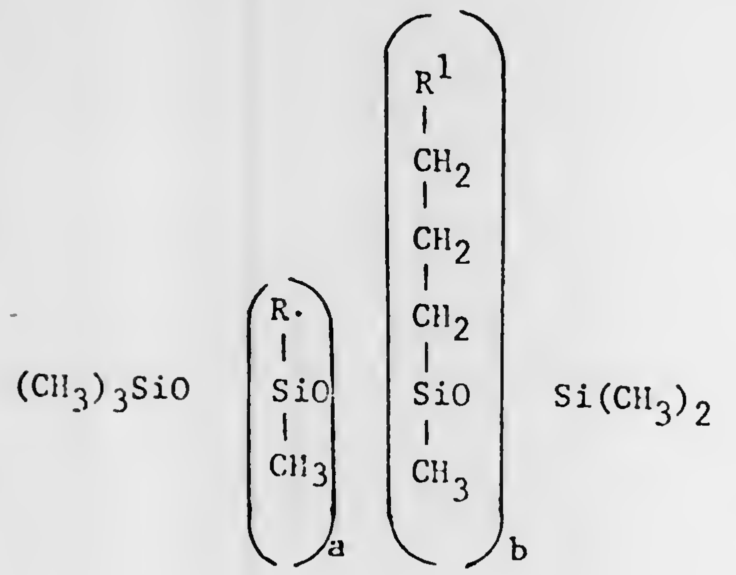
1. a low density filler comprising hollow microspheres;
2. a linear fluid organopolysiloxane containing terminal silicon-bonded hydroxy groups, convertible to a cured solid state, alone, or in admixture with a linear, fluid organopolysiloxane having a 1:1 ratio of terminal silicon-bonded triorganosilyloxy to terminal silicon-bonded hydroxy groups, convertible to a cured solid state;
3. an alkyl silicate selected from (a) a monomeric organosilicate corresponding to the general formula:



$$R^4O - \overset{\displaystyle OR^4}{\underset{\displaystyle OR^4}{Si}} - R^3$$

wherein R^4 is alkyl, haloalkyl, aryl, haloaryl, alkenyl, cycloalkyl or cyanoalkyl, and R^3 is the same as R^4 or alkoxy or aryloxy or (b) a liquid partial hydrolysis product of the aforementioned organosilicate monomeric compounds; and

4. a catalyst composition comprising:
   - i. a stannous carboxylate of a branched chain alkyl carboxylic acid having from about 8 to about 12 carbon atoms in the alkyl chain; and as a stabilizing carrier therefor,
   - ii. a fluid organopolysiloxane composition having an average formula:



$$(CH_3)_3SiO\left(\begin{array}{c}R\cdot\\|\\SiO\\|\\CH_3\end{array}\right)_a\left(\begin{array}{c}R^1\\|\\CH_2\\|\\CH_2\\|\\CH_2\\|\\SiO\\|\\CH_3\end{array}\right)_b Si(CH_3)_2$$

where R is a higher alkyl radical, R^1 is selected from the class consisting of monovalent and divalent hindered t-butyl-substituted hydroxyaryl radicals, the sum of *a* plus *b* is from 5 to 40, inclusive, and the ratio of *b* over the sum of *a* plus *b* is from 0.005 to 0.1, inclusive.

3,865,760
FLAME RETARDANT MATERIALS

Frank Pitts, Kersal, and Michael Hilton Clubley, Bolton, both of England, assignors to Magnesium Elektron Limited, Swinton, Manchester, England

Filed July 30, 1973, Ser. No. 383,544

Claims priority, application Great Britain, Aug. 7, 1972, 36726/72

Int. Cl. C08c *17/08*

U.S. Cl. 260—2.5 AJ **10 Claims**

1. A composition consisting essentially of rubber and a flame-retarding agent comprising an inorganic compound containing calcium and borate radicals in an amount sufficient to impart significant flame retardency to said composition.

3,865,761
FLAME RETARDANT POLYURETHANE FOAM

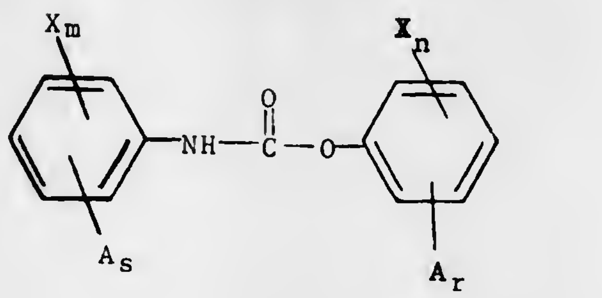
Wilhelm J. Schnabel, Branford, Conn., assignor to Olin Corp., New Haven, Conn.

Filed Aug. 10, 1973, Ser. No. 387,537

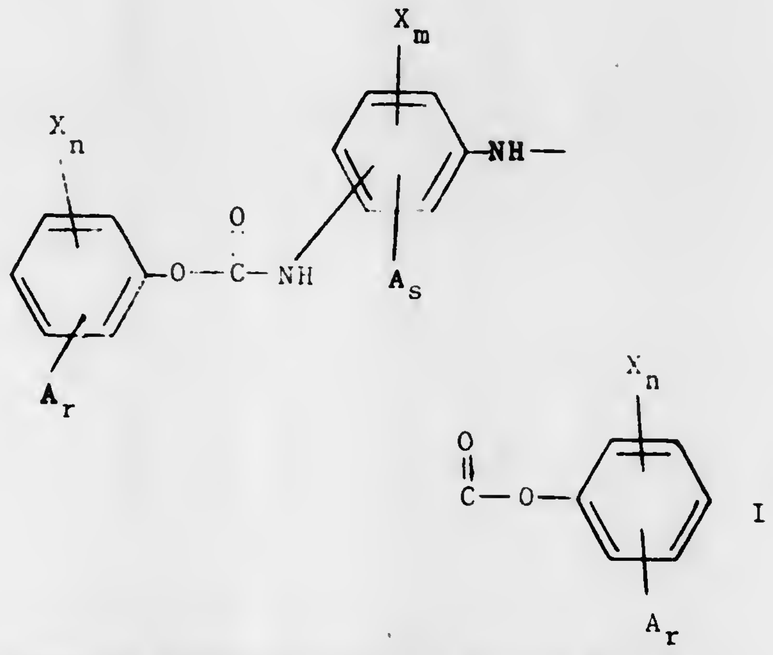
Int. Cl. C08g *22/44, 51/60*

U.S. Cl. 260—2.5 AJ **13 Claims**

1. A process for preparing a flexible polyurethane foam from a reaction mixture which comprises a polyol, an organic polyisocyanate, a foaming agent, a reaction catalyst and a flame retarding amount of a halogenated aromatic carbamate represented by formula I or formula II as follows:



I



II

wherein, as applied to each of said formulas I and II;

each A is independently an alkyl group of 1–12 carbon atoms,
r is an integer from 0 to 3,
s is an integer from 0 to 3,
each X is independently a halogen selected from chlorine and bromine,
m is an integer of 0–5 as applied to said formula I and 0–4 as applied to said formula II, and
n is an integer from 0 to 5,
with the proviso that the sum of $m + n$ is at least 1.

3,865,762
FLEXIBLE POLYURETHANE FOAMS PREPARED BY THE USING A MIXTURE OF POLYETHER-POLYOLS AND MIXTURE OF POLYISOCYANATES

Gerard Repiquet, Martigues, and Jean Claude Crouzet, Avignon, both of France, assignors to Naphtachimie, Paris, France

Continuation of Ser. No. 139,226, April 30, 1971, abandoned. This application Oct. 29, 1973, Ser. No. 410,689

Claims priority, application France, Apr. 15, 1970, 70.13615

Int. Cl. C08g *22/46*

U.S. Cl. 260—2.5 AP **15 Claims**

1. Flexible polyurethane foams having a density less than 50 g/l prepared by casting in a mold in which the foam is cross-linked at ambient temperature without the necessity of thermal curing a foaming mixture comprising (1) at least one polyether-polyol having an equivalent molecular weight within the range of 1000 to 2000 and an average functionality within the range of 2.5 to 6, prepared by condensing a polyol first with an alkylene oxide containing at least 3 carbon atoms and then with ethylene oxide, with the ethylene oxide constituting from 10 to 30% by weight of the oxides condensed with the polyol; (2) 2 to 30% by weight, based on the weight of (1), of a polyether-polyol having an equivalent molecular weight within the range of 75 to 1000 and an average functionality from 2 to 3, prepared by condensation of ethylene oxide or a mixture of ethylene oxide with at least one other alkylene oxide in which at least 25% by weight of the mixture is ethylene oxide with a material selected from the group consisting of water, a glycol and a triol; (3) at least one organic polyisocyanate containing 2 to 4 benzene nuclei with each nucleus containing at least one isocyanate grouping; (4) 10 to 80% by weight, based on the weight of (3), of a tolylene diisocyanate; and (5) a blowing agent; and removing the molded foam, with the ratio of the total NCO groups of (3) and (4) to the total of the hydroxyl groups of (1) and (2) being within the range of 0.6 to 1.5.

3,865,763
SCORCH RETARDERS FOR HALAOGENATED BUTYL

George Feniak, Wyoming, Ontario, Canada, assignor to Polysar Limited, Sarnia, Ontario, Canada

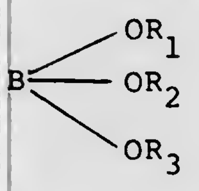
Filed Aug. 20, 1973, Ser. No. 389,518

Claims priority, application Canada, Sept. 28, 1972, 152817

Int. Cl. C08c *9/08*

U.S. Cl. 260—5 **11 Claims**

1. The method of retarding scorch in a vulcanizable composition containing a halogenated butyl rubber selected from the group consisting of brominated butyl rubber and chlorinated butyl rubber characterized in that said vulcanizable composition is admixed with an amount sufficient to retard scorch of a compound of boron having at least one atom of oxygen chemically bonded to boron and selected from boric oxide, boric acid and a boron compound of the general formula



$$B\begin{array}{l}-OR_1\\-OR_2\\-OR_3\end{array}$$

wherein R_1, R_2 and R_3 are hydrocarbyl radicals having 1 to 12 carbon atoms.

3,865,764
RESIN BINDER COMPOSITIONS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, both of N.J., assignors to Johnson and Johnson, New Brunswick, N.J.

Division of Ser. No. 176,306, Aug. 30, 1971, Pat. No. 3,821,146, which is a continuation-in-part of Ser. No. 109,026, Jan. 22, 1971, Pat. No. 3,706,595. This application Dec. 12, 1973, Ser. No. 424,123

Int. Cl. C08f *45/00;* **C08g** *51/00*

U.S. Cl. 260—17 R **2 Claims**

1. A colloidal synthetic resin binder composition for bonding a fibrous web of overlapping, intersecting fibers which comprises: a stable, colloidal aqueous dispersion having an alkaline pH comprising: (1) from about 0.1% to about 60% by weight on a solids basis of a colloidal synthetic resin; (2) from about 0.05% by weight to about 7% by weight, based on the weight of said colloidal synthetic resin of a sodium salt of carboxymethylcellulose as a water-soluble, polymeric carboxylic synthetic resin thickener; and (3) from about 0.01% by weight to about 5% by weight, based on the weight of said colloidal synthetic resin of a metal ammine complex coordination compound, having the formula $Me\ (NH_3)_xY$ wherein Me is a metal, *x* is a whole number from 2 to 8, and Y is an anion, said metal being selected from the group consisting of chromium, nickel, zinc, and copper.

3,865,765
RESIN BINDER COMPOSITIONS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, both of N.J., assignors to Johnson and Johnson, New Brunswick, N.J.

Division of Ser. No. 176,306, Aug. 30, 1971, Pat. No. 3,821,146, which is a continuation-in-part of Ser. No. 109,026, Jan. 22, 1971, Pat. No. 3,706,595. This application Dec. 12, 1973, Ser. No. 424,022

Int. Cl. C08f *45/00;* **C08g** *51/00*

U.S. Cl. 260—17.4 ST **2 Claims**

1. A colloidal synthetic resin binder composition for bonding a fibrous web of overlapping, intersecting fibers which comprises: a stable, colloidal aqueous dispersion having an alkaline pH comprising: (1) from about 0.1% to about 60% by weight on a solids basis of a colloidal synthetic resin; (2) from about 0.05% by weight to about 7% by weight, based on the weight of said colloidal synthetic resin of a sodium salt of an alginate polymer as a water-soluble, polymeric carboxylic synthetic resin thickener; and (3) from about 0.01% by weight to about 5% by weight, based on the weight of said colloidal synthetic resin of a metal ammine complex coordination compound, having the formula $Me\ (NH_3)_x\ Y$ wherein Me is a metal, *x* is a whole number from 2 to 8, and Y is an anion, said metal being selected from the group consisting of chromium, nickel, zinc, and copper.

3,865,766
PROCESS FOR BODYING ORGANOPOLYSILOXANES

Duane F. Merrill, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 14, 1973, Ser. No. 424,774

Int. Cl. C08g *51/72*

U.S. Cl. 260—18 S **26 Claims**

1. A process for effecting the controlled condensation of silanol radicals in a silanol-containing organopolysiloxane, which comprises

1. heating at a temperature between 50°C. and 250°C., a mixture comprising said silanol-containing organopolysiloxane, diatomaceous earth in an amount of from 0.75 to 20% by weight of said silanol-containing organopolysiloxane and a metal soap catalyst in an amount of from 0.0005 to 0.002%, calculated as metal, by weight of said silanol-containing organopolysiloxane; and
2. recovering an organopolysiloxane from the resulting mixture of (1), having a viscosity higher than said silanol-

containing organopolysiloxane which has an average ratio of from 1 to 1.8 organo radicals per silicon atom, selected from the group consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals.

3,865,767
POLYMER COMPOSITION DEGRADABLE UNDER THE INFLUENCE OF ULTRAVIOLET LIGHT AND/OR SUNLIGHT

Anders Boberg, Jonkoping, Sweden, assignor to Akerlung & Rausing, Lund, Sweden

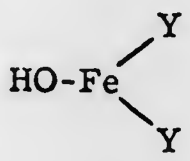
Filed Sept. 13, 1972, Ser. No. 288,604

Claims priority, application Sweden, Sept. 14, 1971, 11625/71

Int. Cl. C08f *21/04*

U.S. Cl. 260—23 H **5 Claims**

1. A polymer composition having an enhanced susceptibility to degradation under ultraviolet light and/or sunlight comprising an -olefin polymer and an amount within the range from about 0.01 to about 2 percent by weight of an iron compound capable of enhancing the susceptibility of the polymer to degradation under ultraviolet light and/or sunlight and having the general formula



[HO-Fe-Y]

in which Y is an anion of an aliphatic monocarboxylic acid having from about 6 to about 25 carbon atoms.

3,865,768
AQUEOUS FIBER GLASS SIZING COMPOSITION

John Gilbert Mohr, Maumee, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed June 25, 1973, Ser. No. 373,329

Int. Cl. C08f *45/50;* **C03c** *25/02*

U.S. Cl. 260—23 AR **10 Claims**

1. A glass fiber sizing composition having a degree of lubricity appropriate to formation of roving and compatible with polyester mixes, which consists of: 0.5 to 15.0 weight percent of a poly(vinyl acetate) latex film former having a solids content of about 50-60 percent, a particle size in the range of about 0.25 to 0.35 micron and a pH in the range of 4.5 to 5.0; 0.01 to 0.6 weight percent of a polyester compatible silane; 0.01 to 1.0 weight percent of at least one alkyl amide reaction product of a C_5 to C_{20} alkyl carboxylic acid and an ethylene amine; 0.05 to 0.5 weight percent of a nonionic surfactant derived from hydrogenated fatty acid containing oil; and the balance comprising deionized water; said glass fiber size composition having a pH in aqueous solution in the range of from 4 to 6.

3,865,769
AQUEOUS PAPER SIZE COMPOSITION CONTAINING HYDROCARBON RESIN AND FORTIFIED ROSIN

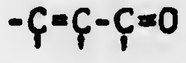
Robert W. Davison, 616 Northside Dr., North Hills, Del. 19809

Continuation of Ser. No. 117,812, Feb. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 811,188, March 27, 1969, Pat. No. 3,565,755, which is a continuation-in-part of Ser. No. 522,361, Jan. 24, 1966, abandoned. This application Feb. 15, 1973, Ser. No. 332,866

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 R **20 Claims**

1. An essentially stable aqueous suspension of finely divided particles adapted for use as a paper size composition, the particles of the suspension being a blend consisting essentially of (A) from about 10 percent to about 65 percent of a noncrystalline thermoplastic synthetic nonadducted hydrocarbon resin having a ring and ball softening point of from about 45 C. to about 150 C., a molecular weight of from about 350 to about 2,000, and an acid number of less than about 1, and (B) from about 90 percent to about 35 percent of rosin-base material selected from the group consisting of fortified rosin and unfortified rosin-fortified rosin mixture, the fortified rosin being adduct reaction product of rosin and an acidic compound containing the



$$-\underset{|}{C}=\underset{|}{C}-\underset{|}{C}=O$$

group, said suspension containing a relatively small amount of saponified rosin-base material which functions as dispersing agent for the dispersion, the amount thereof being equivalent to about .015 to about 0.5 milliequivalents of saponified carboxyl per gram of total solids of the suspension, the total solids of the aqueous suspension consisting essentially of the saponified rosin-base material and the finely divided particles, the total solids being from about 5 percent to 60 percent, by weight of the aqueous suspension, and the amount of adducted acidic compound being from about 2 percent to about 12 percent of the total solids weight.

3,865,770
WATER-DISPERSIBLE PRESSURE-SENSITIVE ADHESIVE, TAPE MADE THEREWITH, AND NOVEL TACKIFIERS THEREFOR

Frederick D. Blake, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 1, 1972, Ser. No. 311,118

Int. Cl. C09j *3/14, 3/26*

U.S. Cl. 260—27 R **14 Claims**

1. Normally tacky and pressure-sensitive water-dispersible adhesive comprising:

a. a copolymer of monomers consisting essentially of
  1. about 90–20 parts by weight monomeric acrylic acid ester of non-tertiary alkyl alcohol the molecules of which have 1 to 4 carbon atoms; and
  2. about 10–80 parts by weight vinyl carboxylic acid monomer copolymerizable with said acrylic acid ester, at least a number of the carboxyl groups in said acid monomers sufficient to constitute about 3–22% the weight of said copolymer, having been neutralized by reaction with a secondary or tertiary alkanolamine containing at least 4 carbon atoms; and

b. 0–400 parts by weight, sufficient to render said adhesive water-dispersible and to impart thereto a rolling ball tack value of no more than 20 inches, of at least one water-dispersible tack-promoting material selected from the class consisting of the oily plasticizing water-soluble polyoxyethylene compounds and the tackifying reaction products of acid rosins and alkanolamines.

3,865,771
CORROSION RESISTANT AND FLEXIBLE AQUEOUS COATINGS

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Nov. 27, 1972, Ser. No. 309,654

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **17 Claims**

1. An aqueous thermosetting coating composition comprising water having stably dispersed therein with the aid of a base, an hydroxy functional acidic resin having an acid value of from about 12 to about 150 and which is an adduct of a copolymer of at least 60 percent of styrene or vinyl toluene and at least 15 percent by weight of alpha, beta-monoethylenic unsaturated carboxylic acid with a stoichiometric deficiency of long straight chain olefin monoepoxide containing at least 12 carbon atoms, there being at least 15 percent by weight of said monoepoxide based on the copolymer, there being further dispersed in said water from 5–40 percent, based on the total weight of resin, of a heat-hardening formaldehyde condensate selected from the group consisting of aminoplast resins and water-dispersible phenolic resins.

3,865,772
POLYMERIZATION PROCESS

Ramchandra K. Hulyalkar, Oakland, N.J., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed Dec. 5, 1973, Ser. No. 422,115

Int. Cl. C08f *1/00;* **C08f** *15/02;* **C08f** *15/40*

U.S. Cl. 260—29.7 H **10 Claims**

1. A process for the production of a copolymer from at least one hydrophobic monomer and at least one hydrophilic monomer which comprises:

a. charging all of the hydrophilic monomer selected from at least one ethylenically unsaturated monocarboxylic or polycarboxylic acid and at least a portion of the hydrophobic monomer selected from alpha-olefins, water insoluble vinyl monomers, conjugated dienes or mixtures thereof such that the weight ratio of hydrophobic to hydrophilic monomer is at least above 1:1;

b. reacting under bulk polymerization conditions said monomers to produce a reaction mixture containing a prepolymer amounting to between about 5 and about 25 percent by weight based on the total monomers charged to the process;

c. converting the reaction mixture to an emulsion;

d. further polymerizing the reaction mixture in the presence of a water soluble catalyst under emulsion polymerization conditions to convert at least 60 percent by weight of the total monomers charged to the process;

the amount of hydrophobic monomer charged to the process ranging from above about 50 to about 99 percent by weight of the total monomers.

3,865,773
AQUEOUS DISPERSION OF (1) ORGANOPOLYSILOXANE AND (2) ALLYL ALCOHOL—ACRYLAMIDE COPOLYMER AS PAPER COATING

Jean Dumoulin, Villerubanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed July 6, 1973, Ser. No. 377,040

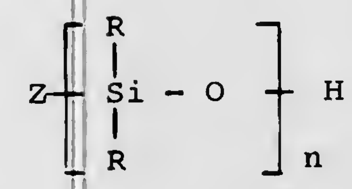
Claims priority, application France, July 5, 1972, 72.24701

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR **4 Claims**

1. An aqueous dispersion, consisting essentially of, per 100 parts of water, 1 to 5 parts by weight or a water soluble film forming copolymer of 5 to 40 mol percent allyl alcohol and 60 to 95 mol percent acrylamide and 2 to 10 parts by weight of an organopolysiloxane which is a mixture consisting essentially of

a. 60 to 98 percent by weight of an organopolysiloxane of the formula:



$$Z\left[\begin{array}{c}R\\|\\Si-O\\|\\R\end{array}\right]_n H$$

in which the symbols R independently represent an alkyl radical with 1 to 4 carbon atoms or a phenyl radical, the symbol Z represents a hydroxyl group or an —R group and *n* is an integer of 10 – 100.000,

b. 2 to 40 percent by weight of a organopolysiloxane selected from the group consisting of:
  i. an organohydrogenopolysiloxane of the formula (a) $(R)_sH_tSiO_{(4-s-t)/2}$ 1 −0.75 −*value of* s+

in which R is as defined in (A) above, the average value of s is 1– 1.5, the average value of t is 0,75– 1.25 and the average valueof the sum *s't* is 2–2.25,
  ii. an organopolysiloxane resin consisting essentially of repeating units of the formula $(R)_2SiO$ and $RSiO_{3/2}$ in which R is as defined in (a) above, the respective proportions of the said units being such that the number of —R groups bonded to a silicon atom is 1.05 – 1.4, and
  iii. a polyalkyl silicate, and

c. a curing agent for the siloxane or silicate present in an amount of 0.05 to 10 percent of the weight of polysiloxane (a).

3,865,774
PORCELAIN-LIKE COMPOSITION

Laurence A. Malone, 2111 Jefferson Davis Hwy., Apt. 220S, Arlington, Va. 22202

Filed Apr. 9, 1974, Ser. No. 459,387

Int. Cl. C08f *45/04*

U.S. Cl. 260—29.6 S **9 Claims**

1. A composition capable of hardening into a hard, porcelainlike material and comprising:

a first component comprising from 5.5 to 8 percent by weight of calcium oxide; from 45–75 percent by weight of potassium silicate; from 5.5 to 11 percent by weight of sodium oxide; from 12 to 21 percent by weight of alumina; and from 1 to 40 percent by weight of zinc oxide, the percentages by weight being based on the total amount of said first component; and

a second component in an amount of from 30 to 70 percent by volume, based on the total volume of the first and second components, and comprising from 30 to 50 percent by weight of polyvinyl acetate resin; from 8 to 15 percent by weight of polyvinyl alcohol resin; from 30 to 50 percent by weight of water; from 2 to 10 percent by weight of an alkanolamine having an alkyl group of up to 5 carbon atoms, and from 2 to 10 percent by weight of a plasticizer for polyvinyl acetate resin;

the solid ingredients of said composition being in the form of particles at least 50 percent by weight of which are less than 10 mesh, U.S. sieve size.

3,865,775
RESIN BINDER COMPOSITIONS

Arthur H. Drelich, Plainfield, and Bobby R. Bowman, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 176,306, Aug. 30, 1971, Pat. No. 3,821,146, which is a continuation-in-part of Ser. No. 109,026, Jan. 22, 1971, Pat. No. 3,706,595. This application Dec. 12, 1973, Ser. No. 424,139

Int. Cl. C08d *9/08;* **C08f** *45/00*

U.S. Cl. 260—29.7 M **4 Claims**

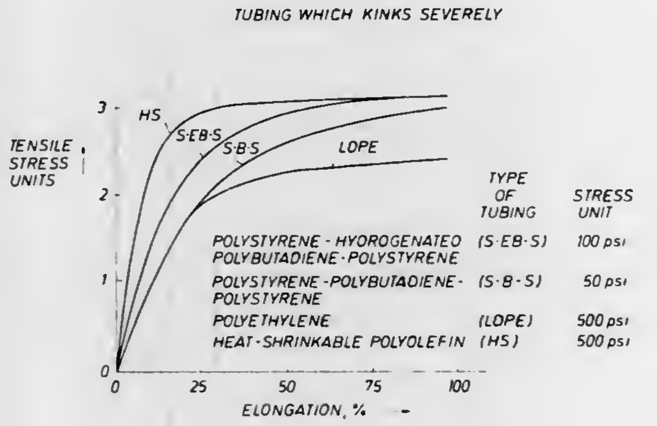
1. A colloidal synthetic resin binder composition for bonding a fibrous web of overlapping, intersecting fibers which comprises: a stable, colloidal aqueous dispersion having an alkaline pH comprising: (1) from about 0.1% to about 60% by weight on a solids basis of a terpolymer of butadiene, styrene, and an a,b-unsaturated carboxylic acid as a colloidal synthetic resin; (2) from about 0.05% by weight to about 7% by weight, based on the weight of said colloidal synthetic resin of a water-soluble, polymeric carboxylic synthetic resin thickener; and (3) from about 0.01% by weight to about 5% by weight, based on the weight of said colloidal synthetic resin of a metal ammine complex coordination compound, having the formula $Me(NH_3)_x Y$ wherein Me is a metal, *x* is a whole number from 2 to 8, and Y is an anion, said metal bieng selected from the group consisting of chromium, nickel, zinc, and copper.

3,865,776

KINK-RESISTANT POLYMERIC TUBING

William P. Gergen, Garden Grove, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 11, 1974, Ser. No. 441,722
Int. Cl. C08c *11/22*; **C08f** *15/04*
U.S. Cl. 260—33.6 AQ **4 Claims**



1. A composition comprising:
a. 50–100 parts by weight of a block copolymer having at least two monoalkenylarene polymer blocks and at least one substantially completely hydrogenated conjugated diene polymer block, said copolymer comprising 31–35 wt. percent by weight monoalkenylarene polymer block content, each of said monoalkenylarene blocks having an average molecular weight between about 20,000 and 35,000;
b. 5–50 parts by weight of a block copolymer having at least two monoalkenylarene polymer blocks and at least one substantially completely hydrogenated conjugated diene polymer block, said copolymer comprising **26-31** wt.% monoalkenylarene polymer block content, each of said monoalkenylarene blocks having an average molecular weight between about 8,000 and 15,000;
c. 75–250 parts by weight of a mineral white oil;
d. 25–50 parts by weight of a polypropylene having a melt flow between about 8 and 14 dg/min.; and
e. 10–35 parts by weight of a resin, said resin being compatible with either the monoalkenylarene polymer blocks or the diene polymer block, and having a softening point higher than 100°C of exhibiting crystallinity.

3,865,777

CURING OF POLYEPOXIDE BASED FOUNDRY CORES WITH A CURING AGENT CONTAINING A LIQUID HYDROCARBON AND A BORON TRIFLUORIDE COMPLEX

Clifford V. Wittenwyler, Cherry Hill, N.J., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 336,860, Feb. 28, 1973, abandoned. This application Feb. 25, 1974, Ser. No. 445,187
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **23 Claims**

1. A process for preparing foundry cores which comprises
a. blending about 90 to 99 parts by weight of foundry sand with from about 1 to 10 parts by weight of a liquid polyepoxide binder;
b. mixing sand blend of (a) with a curing amount of a curing agent consisting essentially of
about 5 to 50 percent by weight of an organic boron trifluoride complex blended with
about 50 to 95 percent by weight of a high boiling, substantially aromatic, liquid hydrocarbon and with
optionally up to about 20 percent by weight of a polyoxyethylene surfactant;
c. packing the mixture of (b) into suitable molds; and
d. allowing the mixture to cure at ambient temperatures.

3,865,778

HEAT VULCANIZABLE SILICONE RUBBER COMPOSITIONS RESISTANT TO OIL DEGRADATION

George Christie, Loudonville, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Feb. 7, 1974, Ser. No. 440,377
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **20 Claims**

1. A heat vulcanizable silicone rubber composition being resistant to degradation by hydrocarbon oils and having a specific gravity in the cured state of 1.20 to 1.70 comprising
a. 100 parts of organopolysiloxane polymer and blends of organopolysiloxane polymers having a viscosity of 1,000,000 to 200,000,000 centipoise at 25°C of the formula,
$(R)_a\,SiO_{4-a/2}$
b. from 0.1 to 10 parts of a curing catalyst selected from the class consisting of organic peroxides and high energy electron radiation,
c. from 25 to 60 parts of a silica filler selected from the class consisting of fumed silica and precipitated silica and mixtures thereof;
d. from 5 to 80 parts of an inert organic filler selected from the class consisting of titanium, iron oxide, aluminum oxide, diatomaceous earth, calcium carbonate, ground silica, quartz, diatomaceous silica, aluminum silicate, zinc oxide, zirconium silicate, barium sulphate, zinc sulfide, aluminum silicate, finely divided silica having surface-bonded alkoxy groups and mixtures thereof;
e. from 0.1 to 15 parts of an ingredient selected from the class consisting of MgO and mixtures of MgO of various particle sizes, where R is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, a varies from 1.95 to 2.01, inclusive.

3,865,779

PROCESS FOR PREPARING REINFORCING ADDITIVES TO BE APPLIED TO INORGANIC CEMENTS

Seigo Oya, Kyoto; Hiroo Noro, Akashi, and Kisaburo Suzuki, Kyoto, all of Japan, assignors to Hiromichi Murata, Kobeshi, Hyogo-ken, Japan

Continuation-in-part of Ser. No. 11,322, Feb. 13, 1970, abandoned. This application May 5, 1972, Ser. No. 250,821
Int. Cl. C08f *45/04, 45/16*
U.S. Cl. 260—42.44 **3 Claims**

1. An organic cement reinforcing additive in fiber form consisting essentially of:
a polyvinylchloride matrix having uniformly dispersed therein:
a. 30 to 60 parts by weight per 100 parts by weight of said polyvinylchloride and one or more inorganic powdered materials stable at 300°C, having a particle size of 5 to 50 microns
and
b. 0.1 to 3.0 parts by weight per 100 parts by weight of said polyvinylchloride of a hydrophylic surfactant;
said fiber having a thickness of 50 to 300 denier and a length of 5 to 100 mm,
the particles of said inorganic powdered material protruding through the surface of said fiber.

3,865,780

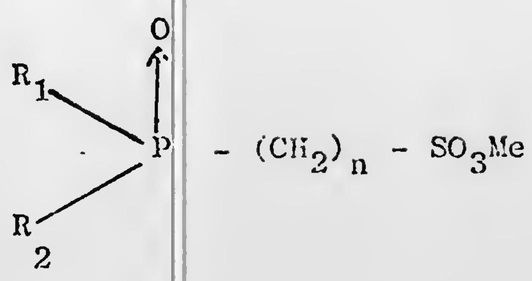
FLAME RESISTANT THERMOPLASTIC POLYESTERS

Walter Herwig, Neuenhain, Taunus, and Werner Racky, Wiesbaden, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Aug. 1, 1973, Ser. No. 384,426
Claims priority, application Germany, Aug. 3, 1972, 2238222
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.7 PS **4 Claims**

1. A flame resistant molding composition based on linear saturated polyesters wherein the polyester mass contains an alkali metal salt of a dialkyl-phosphinyl-alkanesulfonic acid of

the formula



where R_1 and R_2 each are alkyl groups having from 1 to 4 carbon atoms, *n* represents integers of from 1 to 12 and Me is an alkali metal atom.

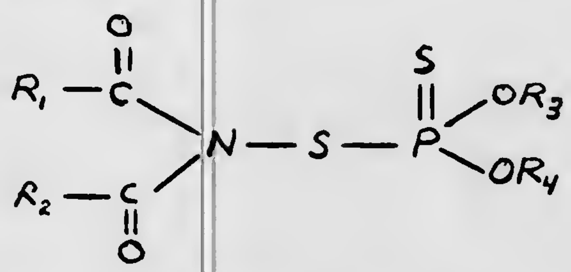
3,865,781

N-(DIHYDROCARBYLPHOSPHORODITHIO)IMIDES AS PREMATURE VULCANIZATION INHIBITORS

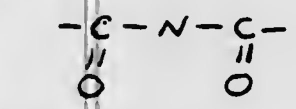
Delmar F. Lohr, Jr., and Edward L. Kay, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 31, 1973, Ser. No. 393,517
Int. Cl. C08d *11/04*
U.S. Cl. 260—45.8 N **8 Claims**

1. A method of inhibiting premature vulcanization in rubber compounds comprising applying to rubber compounds selected from the class consisting of polybutadiene, polystryenebutadiene, polyisoprene, nitrile rubbers, and polychloroprene an inhibitor



wherein R_1 and R_2 are aliphatic, cyclic or aromatic hydrocarbon groups or mixtures thereof containing from 1 to about 16 carbon atoms, said R_1 and R_2 are interconnected and taken together with said



$$-\underset{\displaystyle O}{\overset{}{\underset{\|}{C}}}-N-\underset{\displaystyle O}{\underset{\|}{C}}-$$

group to form an imide group,
and wherein R_3 and R_4 are aliphatic, cyclic, or aromatic hydrocarbon groups or mixtures thereof containing from 1 to about 16 carbon atoms, and
said inhibitor ranging from about 0.05% to about 5.0% by weight of said rubber compound.

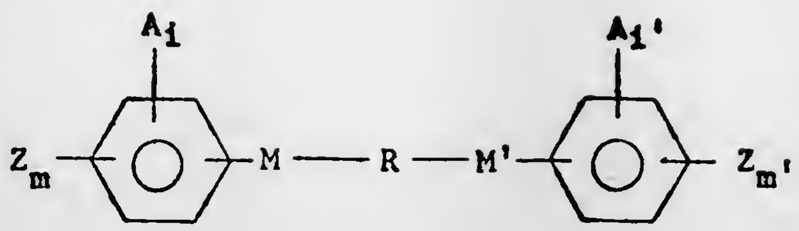
3,865,782

POLYACRYLATE PLASTIC COMPOSITIONS CONTAINING FLAME RETARDANTS

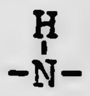
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

Continuation-in-part of Ser. No. 260,240, June 6, 1972, abandoned. This application Feb. 8, 1973, Ser. No. 330,774. The portion of the term of this patent subsequent to July 16, 1991, has been disclaimed.
Int. Cl. C08f *45/60*
U.S. Cl. 260—45.9 R **29 Claims**

1. A plastic composition containing polyacrylate having incorporated therein a flame retardant which is a halogenated aryl compound having the formula:



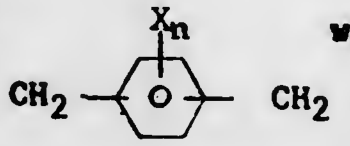
wherein i′is selected from the group consisting of bromine or chlorine; *m* and *m′* are integers having a value of 1–5; *i* and ′ are integers having a value of 0–2; M and M′ are each independent and are selected from the group consisting of oxygen, nitrogen or sulfur with the proviso that M and M′ cannot concurrently be oxygen in both cases and where M and/or M′ is nitrogen, the formula is



$$-\overset{\displaystyle H}{\overset{|}{N}}-$$

; A is selected from the group consisting of chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo- benzyl; and R is selected from the group consisting of
a. alkylene group having from one to six carbon atoms
b. $CH_2—CH(OH)—CH_2$
c. $CH_2—CH(CH_2OH)—CH_2$.
d. $(CH_2)_w—O—(CH_2)_w$
where $w = 1–6$

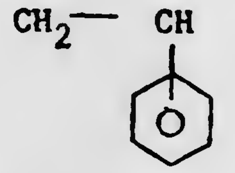
(e)



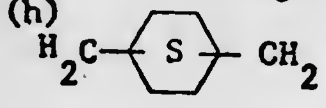
where X = H, Cl, Br
n = 4

f. $CH_2—C(O)—CH_2$

(g)



(h)



where S = saturated ring

3,865,783

FLAME-RETARDANT POLYESTER

Raymond J. Clutter, Asheville, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Continuation-in-part of Ser. No. 254,557, May 18, 1972, abandoned. This application Dec. 7, 1972, Ser. No. 313,051
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.9 NP **8 Claims**

1. Flame retarded linear polyester containing from about 1 to about 20 weight percent of a thermally and chemically stable cyclophosphazene derivative selected from the group consisting of cyclotri- and cyclotetraphosphazene, having, respectively, 6 or 8 substituents thereon selected from the group consisting of phenyl and phenoxy as flame retardant, said cyclophosphazene thermal and chemical stability being maintained at temperatures up to about 300° C.

3,865,784
STABILIZED ORGANOSILICON POLYMERS
Robert Schwenn Neale, Ossining, and Arthur Noah Pines, Katonah, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 5, 1973, Ser. No. 422,090

Int. Cl. C08g *51/56*

U.S. Cl. 260—45.75 R **28 Claims**

1. A process for preparing a stabilized iron-containing diorganopolysiloxane compound which comprises heating a mixture consisting essentially of (1) a diorganopolysiloxane fluid consisting essentially of siloxy units selected from the group consisting of dimethylsiloxy, diphenylsiloxy, methylphenylsiloxy, methylhydroxysiloxy, methylvinylsiloxy, trimethylsiloxy and dimethylhydroxysiloxy units and (2) an iron carbonyl compound in an amount sufficient to provide from 20 parts by weight of iron to 10,000 parts by weight of iron in the stabilized iron-containing diorganopolysiloxane product based on a million parts of weight of said diorganopolysiloxane fluid and wherein said carbonyl is selected from the group consisting of $Fe(CO)_5$, $Fe_2(CO)_9$, $Fe_3(CO)_{12}$ and mixtures thereof, at a temperature of 120°C. to 350° C. in the presence of oxygen.

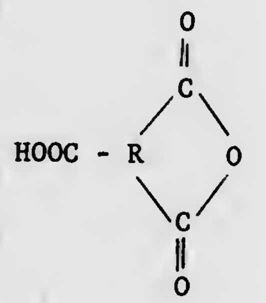
3,865,785
POLYESTERAMIDEIMIDES
Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,990

Int. Cl. C08g *20/30*

U.S. Cl. 260—75 N **3 Claims**

1. The reaction product of (1) the reaction product of tricarboxylic acid material having the formula



where R is a trivalent radical; material selected from aliphatic dicarboxylic acid and dicarboxylic acid anhydride and polyamine having the formula

$$X-R'-(NH_2)_n$$

where R′ is a diorgano radical and n is at least 2 and (2) glycol having the formula

$$OH-(R'')_m-OH$$

where *m* ranges from about 2 to 12 and R″ is alkylene wherein the ratio of tricarboxylic acid material to material selected from aliphatic dicarboxylic acid and dicarboxylic acid anhydride ranges from about 1:3 to 9:1, the ratio of equivalents of tricarboxylic acid material to polyamine ranges from about 1:4 to 9:10, and the equivalent ratio of polyamine to glycol ranges from about 99:1 to 4:1.

3,865,786
MANGANOUS ORGANO PHOSPHONATE UV LIGHT ABSORBERS FOR POLYAMIDES
Helmut Mueller, Binningen; Paul Mosher, Basel, and Helmut Linhart, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

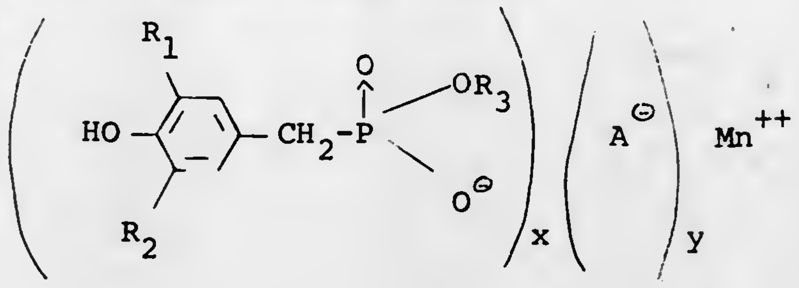
Division of Ser. No. 188,996, Oct. 13, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 312,998

Claims priority, application Switzerland, Oct. 20, 1970, 15422/70

Int. Cl. C08g *51/62*

U.S. Cl. 260—45.75 R **6 Claims**

1. A synthetic polyamide composition stabilized against light deterioration with 1.0 to 500 parts per million of manganese relative to the polyamide, said manganese being in the form of a compound having the formula



in which R_1 and R_2 independently of one another is alkyl with 1 to 8 carbon atoms, and R_1 and R_2 together contain not more than 12 carbon atoms, A is the anion of an aliphatic carboxylic acid with 1 to 18 carbon atoms or of an aromatic carboxylic acid with 7 to 11 carbon atoms or is the chloride, bromide or iodide anion, *x* is 1 or 2, *y* is 0 or 1, with $x + y$ being 2, and R_3 is alkyl with 1 to 18 carbon atoms.

3,865,787
RESIN STABILIZER SYSTEMS OF ORGANOTIN SULFUR-CONTAINING COMPOUNDS AND ALKALI METAL BISULFITE ADDITION PRODUCTS
Jerome H. Ludwig, Shaker Heights, and Dale J. Dieckmann, Euclid, both of Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.

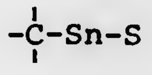
Filed Apr. 23, 1973, Ser. No. 353,911

Int. Cl. C08f *51/62*

U.S. Cl. 260—45.75 S **16 Claims**

1. A resin stabilizer composition which consists essentially of,

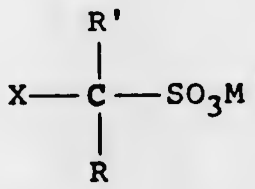
an organotin sulfur-containing compound having a



$$-\overset{|}{\underset{|}{C}}-Sn-S$$

group, and

an alkali metal bisulfite addition product characterized by the formula



$$X-\overset{R'}{\underset{R}{C}}-SO_3M$$

where M is an alkali metal and R or R′ is selected from the class consisting of hydrogen, hydrocarbyl and substituted hydrocarbyl and X is selected from the class consisting of hydrogen and hydroxyl,

said organotin and addition product components in relative amounts which together provide a synergistic stabilizing effectiveness upon said resin.

3,865,788
ORGANOPOLYSILOXANE ELASTOMERS EXHIBITING HIGH ELONGATION
Norman G. Gaylord, New Providence, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 20, 1973, Ser. No. 389,849

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **5 Claims**

1. A process for preparing heat curable silicone elastomer compositions which after complete curing exhibit excellent toughness and high elongation comprising admixing with an organopolysiloxane gum the organic portion of which is essentially hydrocarbon and 0.05 to 3 percent by weight of the organosiloxane units of which contain olefinic unsaturation from about 0.1 part to about 4 parts by weight of t-butyl-β-hydroxy ethyl peroxide per 100 parts by weight of said organopolysiloxane gum.

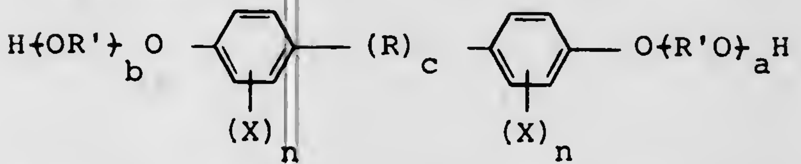
3,865,789
DIELECTRIC POLYESTER RESINS FROM A BLEND OF ETHOXYLATED BIS PHENOLS
John R. Wyhof, Newark, Del., assignor to ICI America Inc., Wilmington, Del.

Filed May 21, 1973, Ser. No. 362,540

Int. Cl. C08g *17/10*

U.S. Cl. 260—47 C **14 Claims**

1. A dielectric resin comprising the reaction product of
- a. a dicarboxylic acid or an anhydride thereof, provided that at least 80 mol percent of said acid or anhydride is an alpha unsaturated dicarboxylic acid, an anhydride thereof, an aromatic dicarboxylic acid or an anhydride thereof, and
- b. a polyol blend comprising a first polyol having the following formula:

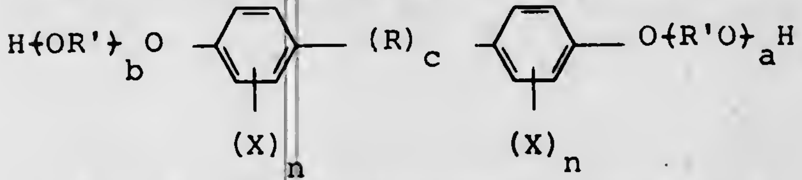


wherein
- R is an alkylidene group containing from one to four carbon atoms, a cycloalkylidene group containing five or six carbon atoms, oxygen, sulfur, or a radical having one of the following formulas:

$$C = O, \quad S = O, \quad \text{or } O = S = O$$

- *c* is 0 or 1;
- X is halogen or an alkyl radical containing from one to three carbon atoms;
- *n* is an integer equal to from 0 to 4;
- R′ is an alkylene group containing from two to four carbon atoms or the radical $CH_2CH\theta$; and
- *a* and *b* are integers each of which is equal to at least 1 and the sum of which is equal to about 2, provided that the sum must be equal to at least 2.0

and a second polyol having the following general formula:



wherein R, *c*, X, R′, and *n* are as defined above and *a* and *b* are integers each of which is equal to at least 1 and the sum of which is equal to from about 4 to about 16,

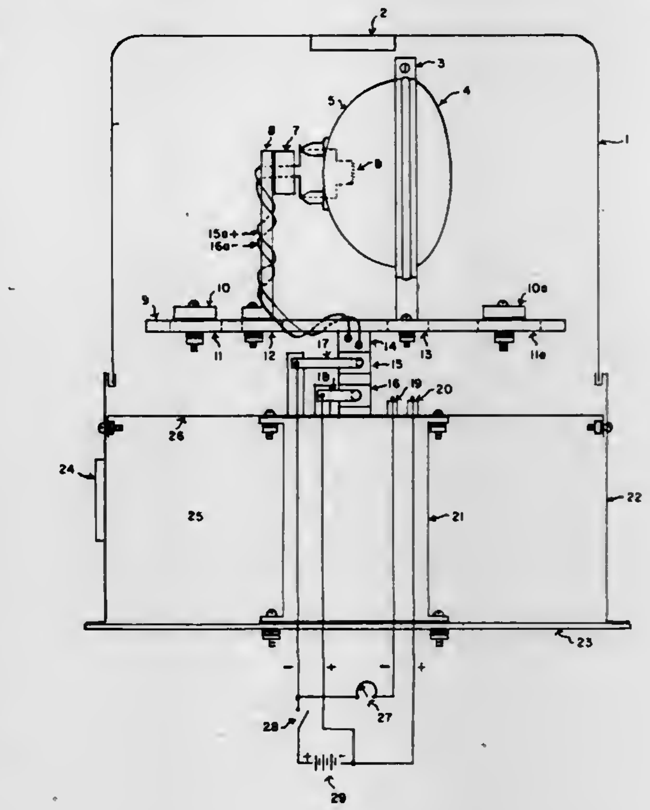
wherein the amount of acid or anhydride employed is sufficient to introduce from about 0.8 to about 1.2 carboxyl groups per hydroxyl group in the polyol blend.

3,865,790
PERSISTENCE OF VISION, SUBLIMINAL SPOT LIGHT
Harold P. Du Shane, 1774 Greenwood Ave., Trenton, N.J. 08609

Filed Nov. 24, 1972, Ser. No. 309,600

Int. Cl. F21m *7/00, 13/00*

U.S. Cl. 240—49 **5 Claims**



1. A self-contained spot light assembly comprising:
- a. a housing having a transparent top section;
- b. an electric lamp having a filament mounted within the transparent top section of said housing;
- c. reflector means rotatably mounted about an axis centered through the filament in said lamp within the transparent top section of said housing for concentrating a beam of light emitted by said lamp into a strong narrow beam and projecting the beam through the transparent top section of said housing;
- d. means mounted within said housing and secured to said reflector means for continuously rotating said reflector means at speeds of at least about 600 rpm to project a concentrated beam of light a full 360° through the transparent top section of said housing;
- e. means within the transparent top section for adjusting said reflector means with respect to said rotating means for rotation about the axis centered through said lamp filament;
- f. means within the transparent top section for adjusting the balance of said rotatably mounted reflector means with respect to said rotating means about the axis of rotation;
- g. electric power source means within said housing for said lamp and said reflector rotating means; and
- h. means mounted in said housing for varying the speed of rotation of said reflector rotating means.

3,865,791
CERTAIN ENAMINE COMPOUNDS AND METHODS FOR MAKING AND USING THE SAME
Bernd Brinkmann, Werne, Muensterfort, and Eugen Griebsch, Steinstrasse 22, Unna, both of Germany

Filed Apr. 3, 1972, Ser. No. 240,762

Claims priority, application Germany, Apr. 6, 1971, 2116882

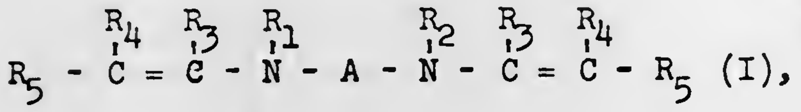
Int. Cl. C08g *22/00, 22/08*

U.S. Cl. 260—77.5 CH **4 Claims**

1. A stable mixture which forms a polyurea polymer in the presence of water, said mixture comprising

A. at least one polyisocyanate; and

B. a moisture-sensitive compound hydrolyzing in the presence of water to form an amine reactable with said polyisocyanate, said compound being
1. a compound containing at least one enamine group and at least one ketimine or aldimine group;
2. a prepolymeric reaction product of a polyisocyanate and an enamine having at least one hydroxy ar amino group; or
3. a dienamine of the formula

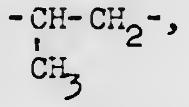


$$R_5 - \overset{R_4}{C} = \overset{R_3}{C} - \overset{R_1}{N} - A - \overset{R_2}{N} - \overset{R_3}{C} = \overset{R_4}{C} - R_5 \quad (I),$$

wherein A is
- aa. a divalent linear or branched aliphatic hydrocarbon group having 4 – 36 carbon atoms;
- ab. a divalent polyether chain of the formula

$$—B — O—_nB— ,$$

wherein B is $—CH_2CH_2—$,



$$-\underset{CH_3}{CH}-CH_2-,$$

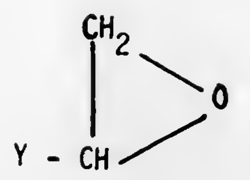
$—(CH_2)_4—$, a divalent cycloaliphatic or aromatic hydrocarbon group, or such a group having at least one alkyl substituent, said group having a total of up to 12 carbon atoms, and wherein n is an integer from 1 to about 1000;
- ac. a divalent cyclopentyl or cyclohexyl group, or such a group having at least one alkyl substituent, said group having a total of up to 12 carbon atoms; or
- ad. a divalent aromatic hydrocarbon group, or such a group having at least one alkyl substituent, said group having a total of up to 12 carbon atoms;
- ae. a divalent group as defined in (aa) – (ad) wherein one or more hydrogen atoms is replaced by hydroxy; and wherein R_1 and R_2, taken alone, are each
- ba. a univalent linear or branched aliphatic group, or an unsubstituted or alkyl substituted cycloaliphatic or aromatic group, said group having 1 to 12 carbon atoms; or
- bb. a divalent ethylene group forming a closed heterocyclic ring with group A;
- bc. a cyanoethyl group; and wherein R_1 and R_2, taken together, are
- bd. a divalent ethylene group or such a group substituted with an hydroxy group or at least one alkyl group, in which case A is an ethylene group or such a group substituted with at least one alkyl group;

and wherein
- ca. R_3 is hydrogen and R_4 and R_5, which may be the same or different, are hydrogen, methyl, or ethyl; or
- cb. R_5 is hydrogen and R_3 and R_4 together are a divalent trimethylene or tetramethylene group, or such a group having at least one alkyl substituent, said group having a total of up to eight carbon atoms.

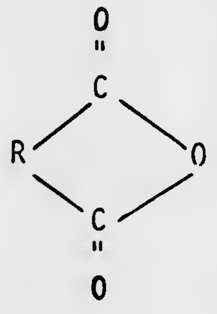
3,865,792
COPOLYMERS AND TERPOLYMERS AND POLYAMIDE-POLYESTERS

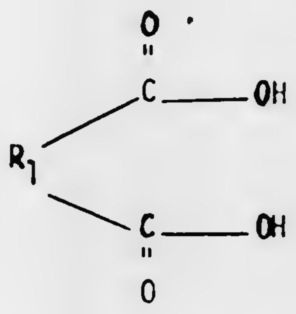
Sung Ki Lee, Niagara Falls, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.
Division of Ser. No. 90,817, Nov. 18, 1970, abandoned. This application Dec. 27, 1972, Ser. No. 319,077
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 R **6 Claims**

1. A polyester polyamide produced in a process, wherein the reaction medium is a non-polar solvent, by reacting (1) an aziridine monomer, (2) an organic oxide of the formula:



where Y is hydrogen or a monovalent, saturated or unsaturated, alkylene, aromatic, bicyclic or heterocyclic group of 1 to 18 carbon atoms, and (3) an organic (a) anhydride, or (b) dicarboxylic acid of the formula:

(a) 

(b) 

wherein R is a saturated or unsaturated, aromatic, aliphatic, alicyclic, or bicyclic divalent group having 2–18 carbon atoms; if aromatic or alicyclic, 6–18 carbon atoms; if aliphatic, 2–18 carbon atoms; if bicyclic, 7–18 carbon atoms; where R_1 is alpha, beta-ethylenically unsaturated aromatic, aliphatic, alicyclic or bicyclic divalent groups of 2–20 carbon atoms; if aromatic or alicyclic, 6–18 carbon atoms; if aliphatic, 2–18 carbon atoms; and if bicyclic, 12–18 carbon atoms.

3,865,793
POLYHYDROXY COMPOSITIONS

Herman A. Bruson, Woodbridge, Conn., and Henry Gould, Englishtown, N.J., assignors to Milchem Incorporated, Houston, Tex.
Filed Mar. 9, 1973, Ser. No. 339,604
Int. Cl. C08f *15/36, 27/04*
U.S. Cl. 260—78.5 R **5 Claims**

1. A 1-to-1 mole ratio hydrolyzed copolymer of (a) a member selected from the class consisting of mono-allyl maleate and mono-allyl fumarate and (b) a member selected from the class consisting of maleic anhydride, fumaric acid and maleic acid.

3,865,794
ARYLENE SULFIDE POLYMERS

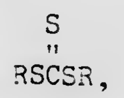
Lacey E. Scoggins, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 19, 1973, Ser. No. 416,780
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 **14 Claims**

1. A method of producing a polymer which comprises:
- a. forming a composition by contacting at least one polyhalo-substituted aromatic compound, wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one thiosulfate selected from the group consisting of lithium thiosulfate, sodium thiosulfate, potassium thiosulfate, rubidium thiosulfate, cesium thiosulfate, magnesium thiosulfate, calcium thiosulfate, strontium thiosulfate and barium thiosulfate, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, and barium and the carbonates of sodium, potassium, rubidium and cesium and at least one organic amide; and,
- b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,865,795
ARYLENE SULFIDE POLYMERS

Charles W. Moberly, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 19, 1973, Ser. No. 416,824
Int. Cl. C08g *23/00*
U.S. Cl. 260—79.1 **14 Claims**

1. A method of producing a polymer which comprises:
- a. forming a composition by contacting at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one base selected from the hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium, and cesium, at least one organic amide and at least one trithiocarbonate having the formula



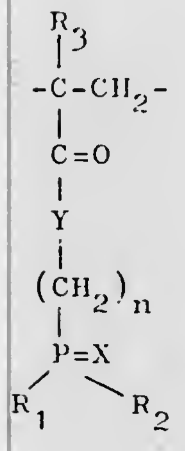
$$RS\overset{S}{C}SR,$$

wherein each R is an alkali metal or a monovalent hydrocarbyl radical selected from alkyl, cycloalkyl, and aryl and combinations of said radicals, the number of carbon atoms in said hydrocarbyl radical being within the range of 1 to about 12; and,
- b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,865,796
PHOSPHORUS-CONTAINING POLYMERS

Erwin Schmidt, Kelkheim/Taunus, and Claus Beermann, Neu-Isenburg, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt (Main), Germany
Continuation-in-part of Ser. No. 192,561, Oct. 26, 1971, abandoned. This application Nov. 7, 1973, Ser. No. 413,496
Claims priority, application Germany, Oct. 27, 1970, 2052568
Int. Cl. C08f *3/84*
U.S. Cl. 260—80 PS **9 Claims**

1. A phosphorus-containing solid polymer comprising recurring units of the formula



in which R_1 and R_2 are alkyl groups having from 1 to 3 carbon atoms, R_3 is a hydrogen atom or the methyl group, X is oxygen or sulfur, Y is oxygen or a group of the formula —NR—, in which R is a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms and n is 1 to 3.

3,865,797
PROCESS FOR THE PRODUCTION OF PETROLEUM RESINS OF VARYING SOFTENING POINTS

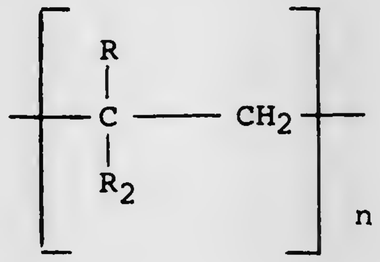
David Richard Joy, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Sept. 24, 1973, Ser. No. 400,301
Claims priority, application Great Britain, Oct. 2, 1972, 45333/72
Int. Cl. C08f *15/42*
U.S. Cl. 260—82 **8 Claims**

1. A process for the production of petroleum resins of varying softening points in which the residue remaining after the removal of butadiene from a C_4 fraction and which consists of iso-butene, butene-1, cis- and trans-butene-2 and butanes is added to a C_5 stream boiling in the range 10° to 80° C which is derived from a thermally or steam cracked naphtha or gas oil and the resulting mixture polymerized by means of a Friedel Crafts catalyst, the amount of said residue added being chosen to achieve lowering the softening point in the resin.

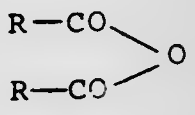
3,865,798
PHOTOACTIVE POLYMERS; INDUCED EXOCYCLIC QUARTET CONCEPT

Richard W. Radler, Jr., Penfield; Richard P. Millonzi, Marion, and John A. Bergfjord, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 346,393, March 30, 1973, , which is a continuation-in-part of Ser. No. 192,898, Oct. 27, 1971, abandoned. This application Dec. 12, 1973, Ser. No. 424,137
Int. Cl. C08f *7/02, 7/12*
U.S. Cl. 260—88.3 R **4 Claims**

1. A process for obtaining transparent organic polymeric matrix material having requisite electrical and physical properties for rapid xerographic recycling the repeat unit of said matrix material comprising electronically active organic monomeric units represented by the formula



wherein R is defined as an alkyl group of 1–15 carbon atoms or an aryl group;
R_2 is an aryl group of at least two fused rings, a nitrogen-containing heterocyclic, an oxygen-containing heterocyclic or a sulfurcontaining heterocyclic; and
n is a positive number ranging from about 5–5,000; comprising
contacting a polycyclic compound corresponding to the R_2 group with at least an equimolar amount of an acid anhydride of the formula



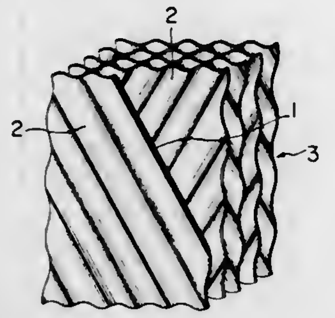
in the presence of zinc chloride and a reaction solvent to obtain the corresponding acyl derivative;

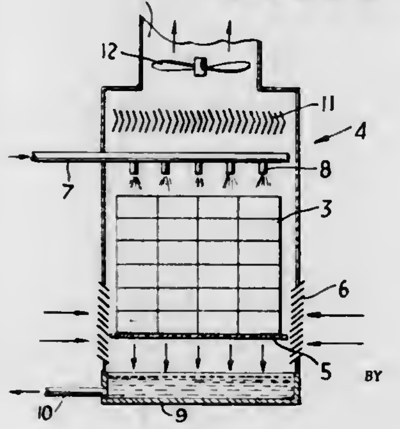
converting the acyl derivative to the vinyl intermediate;
contacting with triphenylmethylphosphonium bromide and an organo metallic base; and thereafter
polymerizing the resulting intermediate in an amount of not less than about 60 percent by weight of the monomeric reactants in the presence of a catalytic amount of a Lewis Acid at a temperature of about −75°C to 0°C to obtain the desired product.

3,865,799
SINTERED PLATE OF POLYVINYL CHLORIDE RESIN AND METHOD OF MAKING THE SAME

Kotaro Katagiri, Tokyo, and Yoshio Nakamura, Saitama-ken; both of Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Continuation of Ser. No. 63,148, Aug. 12, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,353
Claims priority, application Japan, Aug. 26, 1969, 44-67483
Int. Cl. C08f *1/88, 3/30*
U.S. Cl. 260—92.8 A **3 Claims**





1. A sintered porous plate for use as packing in a cooling tower, said plate being formed of polyvinyl chloride homopolymer resin having a tensile strength of at least 0.7 kg/mm², and containing a mixture of 100 parts by weight of polyvinyl chloride resin, at least 90% by weight of which has a particle size of from 10 to 150μ, and from 0.1 to 10 parts by weight of one or more surface active agents.

3,865,800
MANUFACTURE OF POLYMERS OF CYCLOOLEFINS BY RING-OPENING POLYMERIZATION OF CYCLOOLEFINS

Hans-Martin Weitz, 17 Wildstrasse, 6710 Frankenthal, and Helmut Schwarz, 17 Grasse Casse, 6700 Ludwigshafen, both of Germany

Filed Jan. 4, 1973, Ser. No. 320,846
Int. Cl. C08f *5/00*
U.S. Cl. 260—93.1 **3 Claims**

1. In a process for the manufacture of polymers of cyclopentene by ring-opening polymerization of cyclopentene using a catalyst system, wherein the catalyst system used is one consisting of

1. the transition metal salt WCl_6,
2. the organometallic compound $Pb(C_2H_5)_4$ and
3. a suspension of $AlCl_3$, and wherein per mole of catalyst component (1), there are present from 0.1 to 100 moles of catalyst component (2) and from 0.1 to 250 moles of catalyst component (3), the improvement which comprises: mixing a suspension of $AlCl_3$ with $Pb(C_2H_5)_4$ and thereafter adding WCl_6 followed by the addition of cyclopentene.

3,865,801
STABILIZATION OF URINARY ERYTHROPOIETIN USING SODIUM P-AMINOSALICYLATE AND EXTRACTING INTO PHENOL

Shyozo Chiba, Tokyo, Japan; Charles K. H. Kung, Country Club Hills, and Eugene Goldwasser, Chicago, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 15, 1973, Ser. No. 370,520
Int. Cl. C07g *15/00*
U.S. Cl. 260—112 R **5 Claims**

1. A method of separating erythropoietin activity from portease activity and sialidase activity comprising:

a. preparing a feed solution of crude urinary erythropoietin in phosphate-buffered-saline;
b. adding sodium p-aminosalicylate to the feed solution;
c. extracting the erythropoietion into phenol;
d. dialyzing the separated phenol fraction against a phosphate-buffered-saline solution; and
e. recovering erythropoietin from the dialyzed fraction, whereby the erythropoietic activity is separated from the protease activity and the sialidase activity and the biological activity of erythropoietin is stabilized.

3,865,802
PROCESS FOR OBTAINING FULL-FAT OILSEED-PROTEIN BEVERAGES USING WATER AND INITIAL ACID PH

Gus C. Mustakas, Peoria, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 278,845, Aug. 8, 1972, Pat. No. 3,809,771. This application June 20, 1973, Ser. No. 371,643
Int. Cl. A23j *1/14*
U.S. Cl. 260—123.5 **2 Claims**

1. A method of producing full-fat oilseed-protein beverages comprising the following steps:

a. suspending full-fat oilseed flour in from 8 to 10 times its own weight of water, which has been adjusted to a temperature of from about 150° to 212° F. and a pH of from about 3.5 to about 4.5, for a time sufficient to inactivate lipoxygenase enzyme present in the full-fat oilseed flour;
b. cooling the suspension to and holding at a temperature of from about 50° to 75° F. for a time sufficient to precipitate lipid-protein present in the full-fat oilseed flour;
c. separating the precipitated lipid-protein from the resulting liquid whey;
d. resuspending the precipitated lipid-protein in water at a pH of about 9, the amount of said water equaling from about 7 to 10 times the weight of the oilseed flour of step (a);
e. heating the suspension of step (d) at from about 205° to 212° F. for from about 1 to 5 minutes;
f. cooling the suspension of step (e) to about 70° to 75° F. and adjusting the pH to about 7;
g. extracting the fat contained in the neutralized suspension of step (f) with a suitable solvent; and
h. removing the water from the defatted suspension of step (g).

3,865,803
MODIFIED LIGNIN SURFACTANTS

Sten I. Falkehag, Mt. Pleasant, S.C., assignor to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 256,779, May 25, 1972, Pat. No. 3,763,139. This application Sept. 27, 1973, Ser. No. 401,530
Int. Cl. C07g *1/00*
U.S. Cl. 260—124 A **5 Claims**

1. Lignin adducts comprising the reaction product of lignin and from about 1 to 20 moles per 1000 grams of said lignin of an agent of the formula

$$X(CH_2)_nY$$

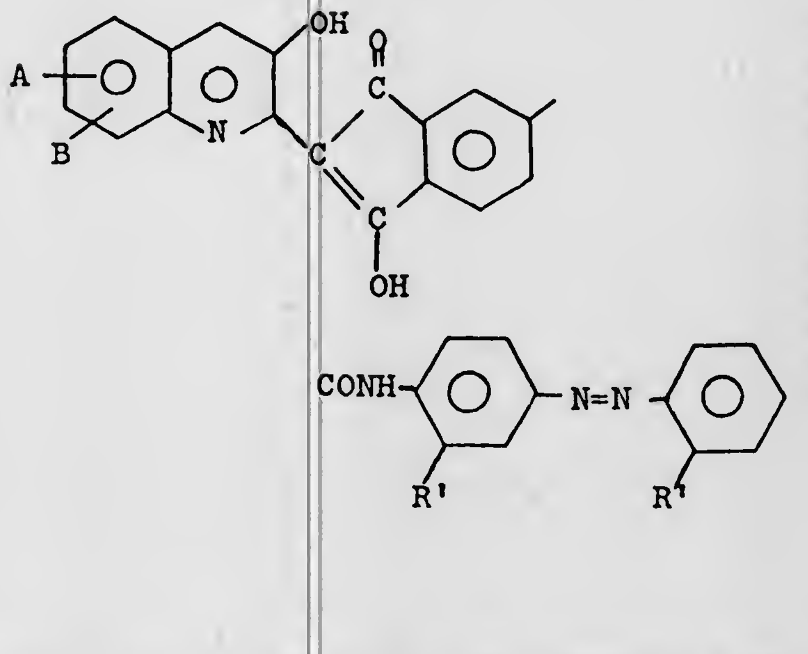
wherein X is a halogen, a halohydrin group, an activated double bond or an epoxide group, Y is a sulfonate, phosphonate, hydroxyl, sulfide or an amine of the types $N\ R_1\ R_2$ or $N\ R_1\ R_2\ R_3$ wherein R is hydrogen or an alkyl group having up to 18 carbon atoms, and *n* is an integer from 1 to 5, to give lignin adducts having blocked acidic hydroxyl groups.

3,865,804
YELLOW 3′-HYDROXYQUINOPHTHALONE-5-(P-PHENYLAZO)CARBOXANILIDE DYE

John Blackwell, Kenneth Sq., Pa., and Richard A. Fendglis, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 94,524, Dec. 2, 1970, Pat. No. 3,770,746. This application Apr. 16, 1973, Ser. No. 351,625
Int. Cl. C07d *33/46;* **C09b** *43/12*
U.S. Cl. 260—155 **1 Claim**

1. Yellow water insoluble quinophthaloneazo dye having the formula



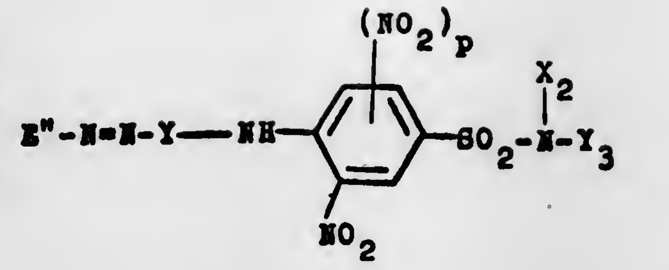
wherein A and B are the same or different and are selected from H, C_{1-4} alkyl (but not adjacent t-butyl), Cl and Br or A and B are adjacent and together are —C=C—C=C— and R′ is H or C_{1-4} alkyl.

3,865,805
AZO COMPOUNDS HAVING A 2-NITRO-4-PHENYLSULFAMOYLDIPHENYL AMINE NUCLEUS

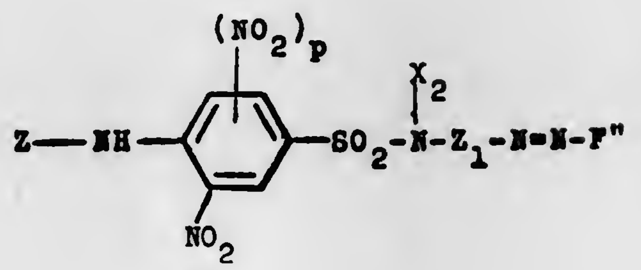
Ruedi Altermatt, Hauptstrasse 65, Tecknau, Basel-Land, Switzerland

Continuation of Ser. No. 851,444, Aug. 19, 1969, abandoned. This application Dec. 2, 1971, Ser. No. 204,382
Claims priority, application Switzerland, Aug. 30, 1968, 13051/68; Dec. 19, 1968, 18944//68; Dec. 19, 1968, 18943/68
Int. Cl. C09b *43/00, 43/12*
U.S. Cl. 260—205 **15 Claims**

1. A compound of the formula



or



wherein
E″ is phenyl, substituted phenyl having 1 or 2 substituents, naphthyl or methylsulfonylnaphthyl,
wherein each substituent of substituted phenyl is independently chloro, bromo, lower alkyl, lower alkoxy, trifluoromethyl, nitro, cyano, thiocyano, phenoxy, formyl, acetyl, benzoyl, lower alkylsulfonyl, lower hydroxyalkylsulfonyl, benzylsulfonyl, sulfamoyl, lower alkylsulfamoyl, cyanoethylsulfamoyl, hydroxyethylsulfamoyl, dilower alkylsulfamoyl, N,N-di(cyanoethyl)sulfamoyl, N,N,-di(hydroxyethyl)sulfamoyl, phenylsulfamoyl, formamido, lower alkanoylamino, chloropropionamido, benzamido, lower alkylsulfonylamino, lower alkoxycarbonyl, benzyloxycarbonyl, lower alkoxycarbonylamino, carbamoyl, lower alkylcarbamoyl, dilower alkylcarbamoyl or phenylcarbamoyl,
F″ is phenyl, substituted phenyl having 1 or 2 substituents, naphthyl or methylsulfonylnaphthyl, wherein each substituent of substituted phenyl is independently chloro, bromo, lower alkyl, lower alkoxy, phenoxy, trifluoromethyl, thiocyano, cyano, nitro, hydroxy, formyl, acetyl, benzoyl, lower alkylsulfonyl, hydroxyethylsulfonyl, benzylsulfonyl, sulfamoyl, lower alkylsulfamoyl, cyanoethylsulfamoyl, hydroxyethylsulfamoyl, dilower alkylsulfamoyl, N,N-di(cyanoethyl)-sulfamoyl, N,N-di(hydroxyethyl)sulfamoyl, phenylsulfamoyl, lower alkylamino, cyanoethylamino, dilower alkylamino, N,N-di(cyanoethyl)amino, N-ethyl-N-cyanoethylamino, N,N-di(hydroxyethyl)-amino, formamido, lower alkanoylamino, chloropropionamido, benzamido, methylsulfonylamino, lower alkoxycarbonyl, benzyloxycarbonyl, lower alkoxycarbonylamino, carbamoyl, lower alkylcarbamoyl, dilower alkylcarbamoyl or phenylcarbamoyl,
X_2 is hydrogen, lower alkyl or monosubstituted lower alkyl, wherein the substituent of monosubstituted lower alkyl is chloro, bromo, hydroxy, cyano, lower alkanoyloxy, benzoyloxy, lower alkoxycarbonyloxy, lower alkoxycarbonyl, carbamoyl, benzyloxycarbonyloxy, lower alkoxy, phenoxy, phenyl, methylcarbamoyloxy or phenylcarbamoyloxy,
Y is phenylene or substituted phenylene having 1 or 2 substituents, wherein each substituent of substituted phenylene is independently chloro, bromo, lower alkyl, lower alkoxy, formamido, lower alkanoylamino, benzamido, lower alkoxycarbonylamino, benzyloxycarbonylamino or chloropropionamido,
Y_3 is phenyl or substituted phenyl having 1 or 2 substituents,

wherein each substituent of substituted phenyl is independently chloro, bromo, lower alkyl, lower alkoxy, phenoxy, hydroxy, cyano, nitro, thiocyano, hydroxyethoxy, lower alkanoyloxyethoxy, formamido, lower alkanoylamino, benzamido, lower alkylsulfonyl, benzylsulfonyl, phenylsulfonyl, sulfamoyl, lower alkylsulfamoyl, dilower alkylsulfamoyl, acetyl, benzoyl, carbamoyl, lower alkylcarbamoyl, dilower alkylcarbamoyl or methoxypropylcarbamoyl,

Z is phenyl or substituted phenyl having 1 or 2 substituents, wherein each substituent of substituted phenyl is independently chloro, bromo, lower alkyl, lower alkoxy, formamido, lower alkanoylamino, benzamido, lower alkoxycarbonylamino, benzyloxycarbonylamino or chloropropionamido,

Z_1 is phenylene or monosubstituted phenylene, wherein the substituent of mono-substituted phenylene is chloro, bromo, lower alkyl, lower alkoxy, phenoxy, hydroxy, cyano, nitro, thiocyano, hydroxyethoxy, lower alkanoyloxyethoxy, formamido, lower alkanoylamino, benzamido, lower alkylsulfonyl, benzylsulfonyl, phenylsulfonyl, sulfamoyl, lower alkylsulfamoyl, acetyl, benzoyl, carbamoyl, lower alkylcarbamoyl or methoxypropylcarbamoyl, and

p is 0 or 1.

3,865,806

LOW VISCOSITY, LOW EQUIVALENT WEIGHT POLYETHER POLYOLS AND A METHOD FOR THEIR PREPARATION

Louis Robert Knodel, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 102,234, Dec. 28, 1970, abandoned. This application Jan. 28, 1972, Ser. No. 221,783

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R **13 Claims**

1. A low viscosity polyether polyol having a hydroxyl functionality in the range of from about 4 to about 8, an active hydrogen equivalent weight of from about 80 to about 220 which is the reaction product of

A. A hydroxyl-containing initiator compound having from about 4 to about 8 hydroxyl groups per molecule or a mixture of an initiator compound having 3 hydroxyl groups per molecule and a solid initiator compound having from about 4 to about 8 hydroxyl groups with

B. A mixture of alkylene oxides comprising from about 1 to about 50 percent by weight of ethylene oxide and from about 50 to about 99 percent by weight of a vicinal alkylene oxide having from about 3 to about 4 carbon atoms.

3,865,807

AROMATIC DEXTRAN DERIVATIVES

Saran A. Narang, and Joseph J. Michniewicz, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Dec. 3, 1971, Ser. No. 204,764

Int. Cl. C08b *19/08*

U.S. Cl. 260—209 D **11 Claims**

1. Dextran molecules which are cross-linked through glyceryl diether groups, and have attached (a) groups containing hydrocarbon aromatic rings selected from the class consisting of benzyl, diphenylmethyl, triphenylmethyl, benzoyl, naphthoyl and anisoyl and (b) cationic groups selected from the class consisting of triethylaminoethyl, diethylaminoethyl and diethyl-2-hydroxypropyl-ammonium cationic groups, groups (a) and cationic groups (b) being attached to the dextran molecules by ether linkages.

3,865,808

RECOVERY OF NITROCELLULOSE FROM THE FILTRATE OBTAINED AFTER THE NITRATION OF CELLULOSE

Francois Ange Pollozec, Bergerac, France, assignor to Societe Nationale des Poudres et Explosifs, Paris, France

Filed July 9, 1973, Ser. No. 377,737

Claims priority, application France, July 18, 1972, 72.25862

Int. Cl. C08b *5/00, 21/02*

U.S. Cl. 260—223 **5 Claims**

1. A process for the recovery of nitrocellulose from the filtrate obtained by filtering nitrocellulose from an aqueous reaction medium in which it has been formed by the nitration of cellulose, said filtrate containing from 0.5 to 4 g/litre of nitrocellulose, which process comprises the steps of:

i. flocculating nitrocellulose in said filtrate by treating the latter with a cationic polyacrylamide as flocculant, and

ii. filtering said flocculated nitrocellulose from the treated filtrate on a filter having a filter layer which is pre-coated with flocculated nitrocellulose of thickness sufficient to allow a flow of about 3 m/h.

3,865,809

O-(N-METHYLTHIOCARBAMOYL)-HEXAMETHYLENIMINE-2-OXIME

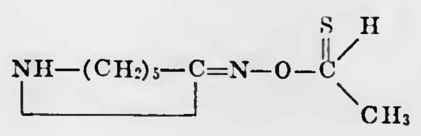
Marvin Theodore Tetenbaum, Convent, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 207,959, Dec. 14, 1971, Pat. No. 3,780,178. This application July 30, 1973, Ser. No. 383,864

Int. Cl. C07d *27/04, 29/34, 41/04*

U.S. Cl. 260—239 BF **1 Claim**

1. A compound of the formula



$$\underbrace{NH-(CH_2)_5-C}=N-O-\overset{S}{\overset{\|}{C}}(H)CH_3$$

3,865,810

AZIRIDINE DERIVATIVES

Haakon Haugen, Beacon, and James G. Dadura, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 143,185, May 13, 1971, Pat. No. 3,753,907. This application Sept. 14, 1972, Ser. No. 289,219

Int. Cl. C07d *23/06*

U.S. Cl. 260—239 E **12 Claims**

1. A method of preparing an aziridine derivative comprising:

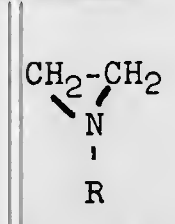
a. first contacting a polyalkene of an average molecular weight between about 500 and 5,000 derived from an alkene of from 2 to 5 carbons with P_2S_5 in the presence of between about 0.1 and 5 wt. percent sulfur at a temperature between about 100° and 320°C., P_2S_5 comprising between about 5 and 40 wt. percent of the reaction mixture to form a polyalkene-P_2S_5 first reaction product,

b. second contacting the said polyalkene-P_2S_5 first reaction product with steam at a temperature between about 100° and 260°C., utilizing at least about a mole ratio excess of steam in respect to said polyalkene-P_2S_5 first reaction product to form a steam hydrolyzed polyalkene-P_2S_5 second reaction product,

c. third removing inorganic phosphorus acid from the steam hydrolyzed polyalkene-P_2S_5 second reaction product to form an inorganic phosphorus acid free, steam hydrolyzed polyalkene-P_2S_5 third product,

d. fourth contacting said inorganic phosphorus acid free, steam hydrolyzed polyalkene-P_2S_5 third product with ethylene oxide in a mole ratio of reaction product to ethylene oxide of between about 1 and 4 at a temperature between about 60 and 150°C. under a pressure of between about 10 and 500 psig to form monoethoxylated inorganic phosphorus free, steam hydrolyzed polyalkene-P_2S_5 fourth reaction product,

e. contacting said fourth reaction product with an aziridine characterized by the formula:



where R is hydrogen or ω-aminoalkyl of from 1 to 5 carbons at a temperature between about 25° and 130°C., utilizing a mole ratio of said fourth reaction product to aziridine of between about 3:1 and 1:2 to form said aziridine derivative.

7. An aziridine derivative in accordance with claim 1.

3,865,811

1,4-BENZODIAZEPINE DERIVATIVES

Kanji Meguro, and Yutaka Kuwada, both of Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

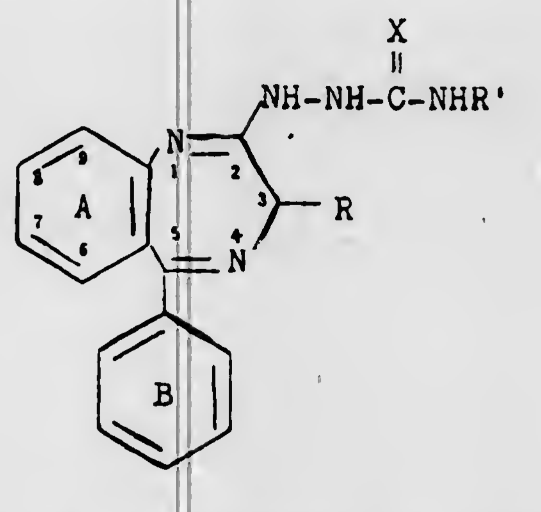
Division of Ser. No. 90,422, Nov. 17, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,411

Claims priority, application Japan, Nov. 18, 1969, 44-92366

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **7 Claims**

1. A member selected from the group consisting of a compound of the formula



wherein rings A and B independently are unsubstituted or substituted by a member selected from the group consisting of halogen, nitro, trifluoromethyl, alkyl and alkoxy, R is hydrogen or lower alkyl, X is oxygen or sulfur and R′ is a member selected from the group consisting of alkyl of 1–8 carbon atoms, cycloalkyl of 3–8 carbon atoms, phenyl, naphthyl and phenyl lower alkyl,

a 4N-oxide thereof and a pharmaceutically acceptable salt thereof.

3,865,812

3-ACYLHYDRAZONOMETHYL RIFAMYCINS

Renato Cricchio, Varese, and Giancarlo Lancini, Pavia, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

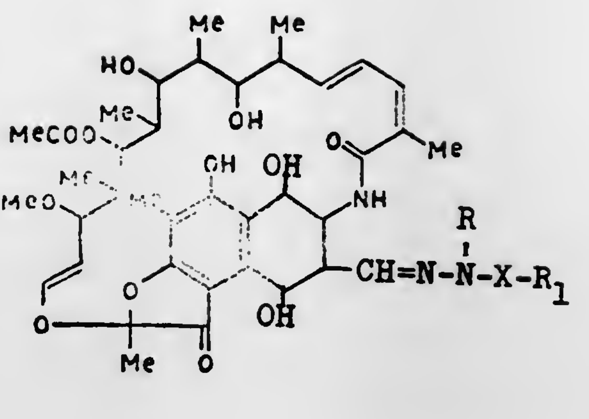
Filed Mar. 16, 1973, Ser. No. 342,047

Claims priority, application Italy, Mar. 27, 1972, 22421-A/72

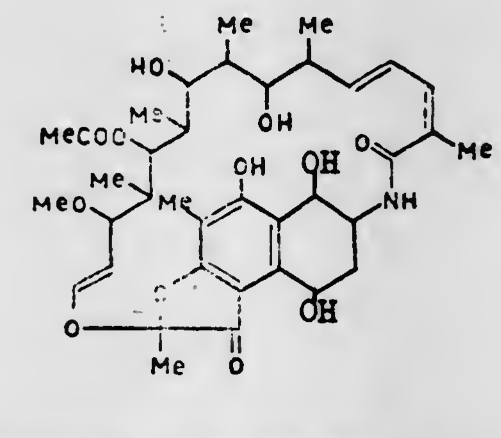
Int. Cl. C07d *87/54*

U.S. Cl. 260—239.3 P **1 Claim**

1. A rifamycin designated by the formula



and 25-desacetyl and 16, 17; 18, 19; 28, 29-hexahydro derivatives thereof, wherein Me represents methyl group; X represents a —CO—, —CS—, —C(:NH)— or an —SO_2— group; R represents hydrogen; R_1 represents 1 to 20 carbon atom alkyl, cyclopropyl, 1 to 20 carbon atom alkoxy, phenyl, naphthyl, substituted phenyl or substituted naphthyl wherein substituents are selected from 1 to 6 carbon lower alkyl, 3 to 6 carbon lower alkenyl, 3 to 10 carbon cycloalkyl, phenyl, amino, 1 to 6 carbon lower alkanoylamino, hydroxyamino, mono- and di-lower alkylamino, cyano, halo, nitro, 1 to 6 carbon lower alkoxy, methylenedioxy, sulfo, carboxy, carbamyl and sulfonamido; a 2 to 6 carbon alkyl group substituted with phenyl, substituted phenyl, naphthyl, or substituted naphthyl, as defined above; —NR_2R_3 wherein R_2 and R_3 independently designate hydrogen, C_1–C_6 lower alkyl, C_3–C_6 lower alkenyl, nitro, anilino, phenyl, o-tolyl, m-chlorophenyl or 3-fluoro-4-methylphenyl; —CO—NH—N=CH—A or —(R_4)—CO—NH—N=CH—A wherein R_4 is methylene, ethylene, cyclohexylene, or phenylene and A represents the rifamycin SV group:



or the corresponding 25-desacetyl and 16, 17; 18, 19; 28, 29-hexahydro derivative thereof; and where R and R_1 taken together with the adjacent —N—X-group designate 1,2,3,4-tetrahydro-3-oxo-2-isoquinolinyl or its 1-oxo isomer, 1-oxo-2-isoindolyl or 1,3-dioxo-2-isoindolinyl.

3,865,813

THIOUREA-ACYLATED POLYAMINE REACTION PRODUCT

William C. Gergel, Mayfield Heights, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 696,159, Jan. 8, 1968, abandoned. This application Sept. 2, 1970, Ser. No. 69,160

Int. Cl. C01m *1/38*

U.S. Cl. 260—239.3 R **1 Claim**

1. The process comprising reacting (A) a polyisobutenyl-substituted succinic acid acylated ethylene polyamine mixture characterized by an equivalent ratio of acid to polyamine of about 1:1 to 1:1.5, wherein the polyisobutenyl substituent has an average molecular weight of about 800–1,100, and (B) thiourea, the total amount of thiourea employed in the reaction mixture being such that the ratio of equivalents of thiourea to acylated ethylene polyamine is about 1–2:1–1.5.

3,865,814

PROCESS FOR PREPARING N-SUBSTITUTED LACTAMS

Heinz Lussi; Clau Berther, both of Chur/Gr, and Josef Studinka, Zurich, all of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

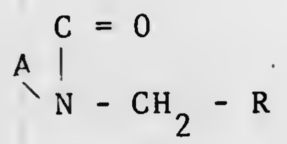
Filed July 25, 1973, Ser. No. 382,461

Claims priority, application Switzerland, July 28, 1972, 11327/72

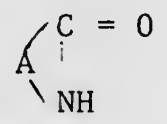
Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 R **15 Claims**

1. A process for the preparation of N-substituted lactams of the formula



wherein A is a substituted or unsubstituted aliphatic hydrocarbon chain having 3 to 11 carbon atoms, said substituents comprising one or more alkyl groups each having 1 to 4 carbon atoms; and R is hydrogen or a hydrocarbon radical having 1 to 17 carbon atoms, comprising reacting at least one starting lactam of the formula



with an organic halogen compound of the formula

$X-CH_2-R$

wherein X is chlorine, bromine or iodine, in the presence of an alkali metal hydroxide, in solid form or in aqueous solution containing at least 50% of said hydroxide, at a reaction temperature of from 20°C to 120°C.

12. A process according to claim 1 wherein said starting lactam is caprolactam.

3,865,815

7-HYDROXYAMINO-1,4-BENZODIAZEPINES

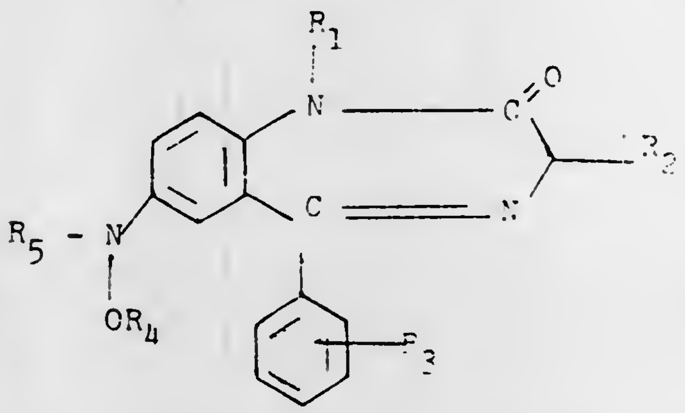
Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 29, 1973, Ser. No. 420,118

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **13 Claims**

1. A compound of the formula



wherein R_1 signifies lower alkyl, hydroxylower alkyl, cycloalkyl-lower alkyl wherein the cycloalkyl group has 3 to 7 carbon atoms, lower alkoxy-lower alkyl or di-lower alkylaminolower alkyl; R_2 signifies hydrogen or lower alkyl; R_3 signifies hydrogen or halogen; R_4 signifies hydrogen or lower alkyl; R_5 signifies hydrogen or the group $-COR_6$, wherein R_6 is lower alkyl or halo-lower alkyl,

and the pharmaceutically acceptable acid addition salts thereof.

3,865,816

3-(3',4'-DICHLORO-6'-ALKYL-PHENYL)-DELTA, 2-PYRAZOLINE DERIVATIVES

Helmut Mengler, Frankfurt/Main, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

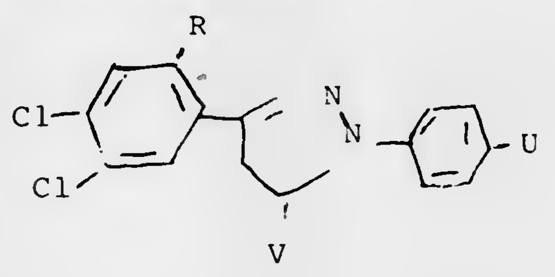
Filed Sept. 7, 1972, Ser. No. 287,075

Claims priority, application Germany, Sept. 9, 1971, 2145019

Int. Cl. C07d *49/00*

U.S. Cl. 260—239.9 **8 Claims**

1. A compound of the formula



wherein:

R is lower alkyl;

V is hydrogen, lower alkyl, hydroxy-lower alkyl, halo-lower alkyl, phenyl, halophenyl, lower alkyl-phenyl, lower alkoxy-phenyl or sulfophenyl; and

U is $-SO_2-N\ Y_1\ Y_2$ wherein Y_1 and Y_2 each is hydrogen, lower alkyl, di(lower alkyl)-amino-lower alkylene, tri(-lower alkyl)-ammonium-lower alkylene, morpholino-lower alkylene, piperidino-lower alkylene, lower alkyl morpholinium-lower alkylene, or lower alkyl-piperidinium-lower alkylene.

3,865,817

OXONOL DYES AND PROCESS FOR PREPARING OXONOL DYES

Teruo Kobayashi; Kazuo Inoue, and Hiroshi Sawaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

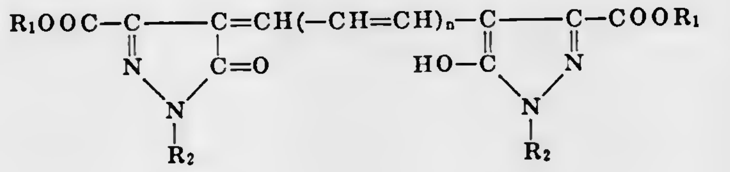
Filed May 1, 1973, Ser. No. 356,226

Claims priority, application Japan, May 2, 1972, 46-43868

Int. Cl. C09b *23/04*

U.S. Cl. 260—240.2 **11 Claims**

1. An oxonol dye selected from the dyes of the formula



wherein R_1 represents a C_1–C_{18} alkyl group, a phenyl group or a naphthyl group, R_2 represents a C_1–C_6 alkyl group having a sulfonic acid group or carboxyl group, n is 0, 1 or 2, and the methine chain may be substituted by an alkyl group, a phenyl group or a naphthyl group.

3,865,818

SUBSTITUTED BENZOXAZINES

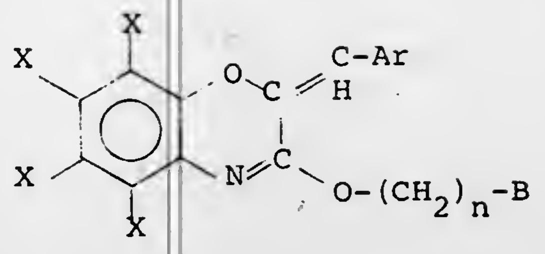
John Krapcho, Somerset, and Chester F. Turk, Elizabeth, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 24, 1973, Ser. No. 409,101

Int. Cl. C07d *87/50*

U.S. Cl. 260—240 F **13 Claims**

1. A compound of the formula



where X is selected from the group consisting of hydrogen, halogen, amino, nitro, hydroxy, trifluoromethyl, lower alkyl, and lower alkoxy; *n* is an integer from 2 to 5; Ar is selected from the group consisting of phenyl, X-substituted phenyl wherein X is as defined previously, pryridyl, thienyl, and furyl; and B is selected from the group consisting (lower alkyl-)amino, di(lower alkyl)-amino, pyrrolidino, piperidino, morpholino, 4-lower alkyl piperazino, and 4-(X-substituted phenyl)piperazino wherein X is as defined previously and N-oxides and pharmaceutically acceptable acid addition and quaternary salts thereof.

3,865,819

SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

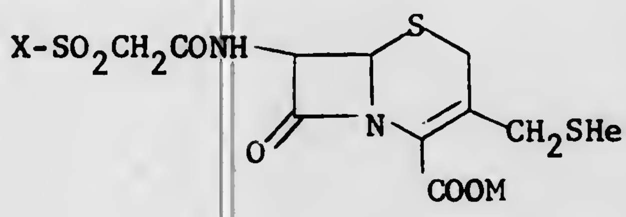
Robert M. DeMarinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed May 3, 1972, Ser. No. 249,858

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **11 Claims**

1. A compound of the structure:



where:

X is lower alkyl of C_1–C_6;

Het is a 5 or 6 membered heterocyclic ring containing one to four atoms selected from the group consisting of N, O, and S, unsubstituted or substituted with from one to two groups selected from the group consisting of lower alkyl, cycloalkyl or alkenyl, each having one to four carbon atoms; lower alkoxy or alkoxyalkyl, each alkyl or alkoxy having one to four carbon atoms; hydroxy; CF_3; NHR; NR_2; SR or halogen;

R is hydrogen or lower alkyl (C_1–C_4); and

M is hydrogen, alkali metal cation, or nontoxic ammonium cation.

3,865,820

ACYLAMINO-CEPHALOSPORANIC ACIDS

Manfred Schorr, Frankfurt am Main, and Elmar Schrinner, Wiesbaden, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

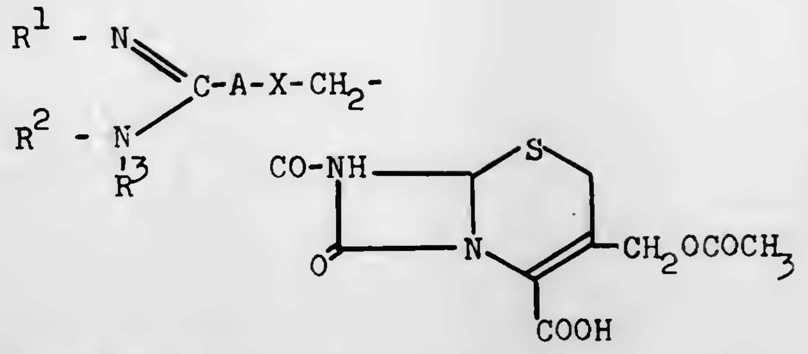
Filed Apr. 14, 1972, Ser. No. 244,287

Claims priority, application Germany, Apr. 17, 1971, 2118635

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

1. An acylaminocephalosporanic acid of the formula



and the physiologically tolerable salts thereof, wherein R^1 and R^2, taken alone, are hydrogen or alkyl having 1 to 5 carbon atoms or, taken together, are alkylene having 2 to 4 carbon atoms which may be substituted by alkyl having 1 to 4 carbon atoms which may contain an oxygen atom or by alkyl substituents having 1 to 4 carbon atoms closed to a ring which may be interrupted by an oxygen atom; R^3 is hydrogen or alkyl having 1 to 5 carbon atoms; A is phenylene or thienyl which may be substituted by alkyl having 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, or halogen; and X is an oxygen atom or a single bond.

3,865,821

PROCESS FOR THE PREPARATION OF DIHYDROMETOXAZINONE DERIVATIVES AND PRODUCTS SO OBTAINED

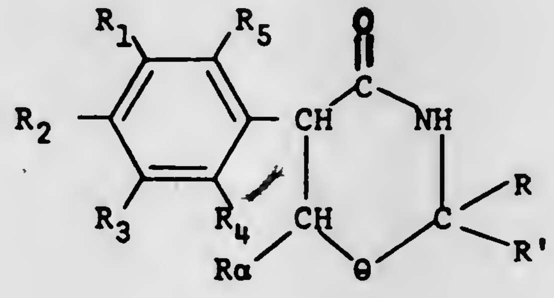
Paul Cordier, Strasbourg; Louis Jung, Strasbourg Cronenbourg, and Raymond Hug, Eckbolshein, all of France

Filed Aug. 23, 1972, Ser. No. 282,903

Int. Cl. C07d *87/08*

U.S. Cl. 260—244 R **7 Claims**

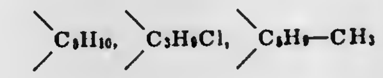
6. A derivative of 2,3,5,6-tetrahydrometoxazinone of the formula:



in which R_1 is selected from the group consisting of H, CH_3, OCH_3, SCH_3 and OH; R_2 is selected from the group consisting of H, CH_3, OCH_3, SCH_3, Cl, F and OH; R_3 is selected from the group consisting of H, OCH_3, SCH_3, and OH; R_4 is selected from the group consisting of H, Cl, OH, OCH_3 and SCH_3; R_5 is selected from the group consisting of H, Cl, OH, OCH_3 and SCH_3; Rα is selected from the group consisting of $COOCH_3$, $COOC_2H_5$, $COOC_3H_7$, $COOC_4H_9$, COON*a*, COOK, $COONH_4$, $CONH-NH_2$; R and R′ are selected together from the group consisting of

$R=-H, -CH_3; -CH_2Cl, -C_2H_5, -C_3H_7, -C_4H_9$

$R'=-CH_3, -C_2H_5, -C_6H_5, -C_6H_4(OCH_3)p, -C_6H_4(Cl)p, -C_6H_4(SCH_3)p$



3,865,822
1,1-DIHALO-1-(METHYLSULFONYL)METHANESULFONAMIDES

Christian T. Goralski, and Thomas C. Klingler, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 10, 1973, Ser. No. 322,434

Int. Cl. C07d *87/48, 29/34;* **C07c** *143/74*

U.S. Cl. 260—247.1 R **9 Claims**

1. A compound represented by the formula $CH_3SO_2CX_2SO_2NR_1R_2$ wherein X represents chloro or bromo and R_1 and R_2 independently represent hydrogen or 1 to 16 carbon atom alkyl, and together with the nitrogen atom represent a pyrrolidinyl, piperidinyl or morpholinyl heterocycle.

3,865,823
(2-NITRO-1-IMIDAZOLYL)-CARBAMATES

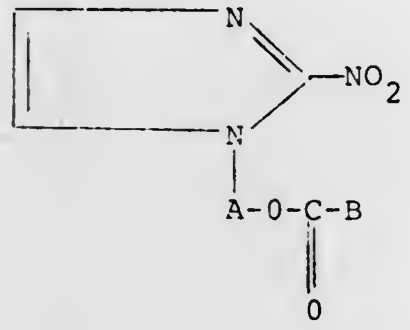
Alden Gamaliel Beaman, East Princeton, Mass., and William Paul Tautz, New York, N.Y., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 312,406, Dec. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 280,632, Aug. 14, 1972, Pat. No. 3,803,165. This application Nov. 29, 1973, Ser. No. 420,241

Int. Cl. C07d *49/36*

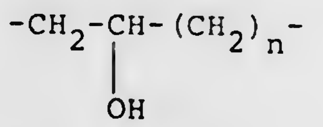
U.S. Cl. 260—247.2 B **47 Claims**

1. A (2-nitro-1-imidazolyl) carbamate represented by the formula



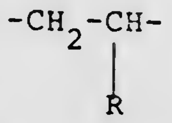
wherein

A represents a member of the group consisting of a polymethylene chain having from 2 to 6 carbon atoms;



$$-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-(CH_2)_n-$$

wherein *n* is an integer of 1 to 4; and

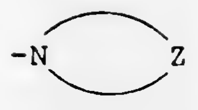


$$-CH_2-\underset{\displaystyle R}{\underset{|}{CH}}-$$

wherein

R is selected from the group consisting of lower alkyl, halo-lower alkyl, halo-lower alkoxy-lower alkyl, lower alkoxy-lower alkyl;

and B represents a member selected from the group consisting of: (1) an amino radical selected from the group consisting of amino, mono-lower alkyl amino, di-lower alkyl amino, hydroxy lower alkyl amino, cycloalkylamino, aralkylamino, arylamino; and (2) a 5- or 6- membered nitrogen containing heterocycle represented by



wherein

Z represents lower alkylene, azalower alkylene, N-lower alkyl-aza-lower alkylene or oza-lower alkylene;

and pharmaceutically acceptable acid addition salts thereof.

3,865,824
2-ARYL-7-SUBSTITUTED PYRAZOLO [1.5A] 1,3,5-TRIAZINES

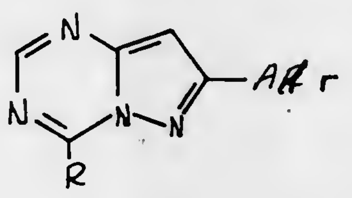
Joze Kobe, Costa Mesa; Darrell E. O'Brien, Mission Viejo, and Roland K. Robins, Santa Ana, all of Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.

Filed Mar. 7, 1972, Ser. No. 232,632

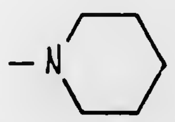
Int. Cl. C07d *57/34*

U.S. Cl. 260—248 NS **11 Claims**

1. A compound of the structure



wherein R is selected from the group consisting of SH; NH_2; OH; $NH-NH_2$; N=N=N; SR_1, OR_1, NHR_1 and $N(R_1)_2$ where R_1 is C_1-C_6 alkyl; and



; and wherein Ar is phenyl or phenyl substituted with halogen, C_1 to C_6 alkyl or methoxy.

3,865,825
PYRIMIDINYLPHRAZOLONE DERIVATIVE AND PROCESS OF PREPARING THE SAME

Tadamasa Hirayama, and Kiyoshi Nakagawa, both of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed July 31, 1972, Ser. No. 276,469

Claims priority, application Japan, July 31, 1971, 46-57675; Aug. 5, 1971, 46-59216

Int. Cl. C07d *51/38*

U.S. Cl. 260—256.4 C **1 Claim**

1. 1-(4-methyl-6-hydroxy-2-pyrimidinyl)-3-methyl-pyrazoline-5-one.

3,865,826
CERTAIN DERIVATIVES OF PYRAZINYLMALONATES AND PYRAZINEACETIC ACIDS

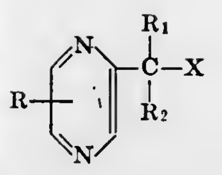
Norman Schwartz, Philadelphia, and Richard J. Mohrbacher, Fort Washington, both of Pa., assignors to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

Division of Ser. No. 774,486, Nov. 8, 1968, Pat. No. 3,761,477. This application Nov. 17, 1972, Ser. No. 307,685

Int. Cl. C07d *87/40, 51/76*

U.S. Cl. 260—247.5 D **2 Claims**

1. A member selected from the group consisting of a compound of formula:



wherein R is a member selected from the group consisting of phenyl, chlorophenyl, dichlorophenyl, fluorophenyl, trifluoromethylphenyl, loweralkoxyphenyl, diloweralkoxyphenyl, loweralkylphenyl, diloweralkylphenyl, cyclohexyl and cyclopentyl; R_1 is a member selected from the group consisting of hydrogen and loweralkyl; R_2 is a member selected from the group consisting of hydrogen, loweralkyl, and X is morpholinocarbonyl.

3,865,827
PROCESS FOR PRODUCING QUANAZOLINONE DERIVATIVES

Michihiro Yamamoto, Toyonaka; Kikuo Ishizumi, Ikeda; Kazuo Mori, Kobe; Masao Koshiba; Shigeho Inaba, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumimato Chemical Company, Limited, Osaka, Japan

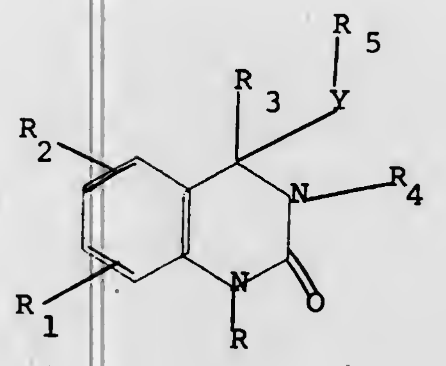
Filed Dec. 13, 1971, Ser. No. 207,541

Claims priority, application Japan, Dec. 28, 1970, 45-129980

Int. Cl. C07d *51/48*

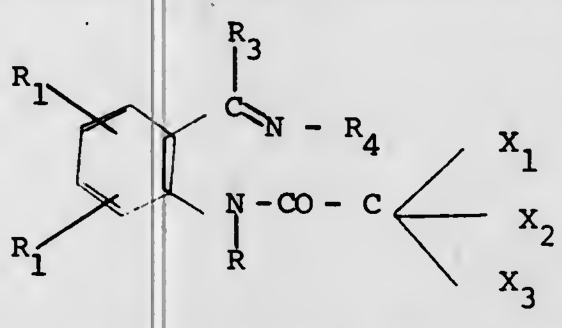
U.S. Cl. 260—251 QA **5 Claims**

1. A process for producing quinazolinone derivatives represented by the formula,



(I)

wherein R is hydrogen; R_1 and R_2 are independently hydrogen or halogen; R_3 is phenyl, R_4 is C_{1-4} alkyl, C_{3-5} alkenyl, benzyl, phenyl, C_{1-4} alkylphenyl, C_{1-4} alkoxyphenyl or piperidino-C_{1-4} alkyl; R_5 is hydrogen or C_{1-4} alkyl; and Y is oxygen, which comprises the step of reacting a compound of the formula,



(IV)

wherein X_1, X_2 and X_3 are the same or different halogen atoms and R, R_1, R_2, R_3 and R_4 are as defined above, with a compound of the formula,

$$R_5 - YH \qquad (V)$$

wherein R and Y are as defined above in a solvent selected from the group consisting of methanol, ethanol, isopropanol, tert-butanol, Cellosolve, diethylene glycol, methylene chloride, chloroform, carbon tetrachloride, ether, tetrahydrofuran, acetone, benzene, toluene, xylene, pyridine, dimethyl sulfoxide and dimethylformamide.

3,865,828
PYRIDINE DERIVATIVES HAVING ANTIDEPRESSANT ACTIVITY

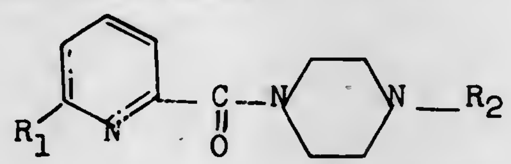
Jeno Korosi; Gabriella Szabo Nee Czibula; Lay Nee Konya, Aranka; Lujza Erdelyl Nee Petocz; Bolya Balla Nee Kosoczky, and Eniko Kiszelly, all of Budapest, Hungary, assignors to EGYT Gyogyszervegyeszeti Gyar, Budapest, Hungary

Continuation-in-part of Ser. No. 236,953, March 22, 1972, abandoned. This application Nov. 1, 1972, Ser. No. 302,891

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C **3 Claims**

1. A pyridine derivative selected from the group consisting of a compound of the formula



(I)

wherein R_1 is a member selected from the group consisting of hydrogen and methyl and R_2 is a member selected from the group consisting of hydrogen, methyl, hydroxy ethyl and benzyl, and a therapeutically acceptable acid addition salt thereof.

3,865,829
PROCESS FOR THE MANUFACTURE OF THE PURE ISOMERS OF NAPHTHOYLENE-BIS-BENZIMIDAZOLES

Dieter Wagner, Coventry, R.I., assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 16, 1969, Ser. No. 833,763

Int. Cl. C07d *39/00*

U.S. Cl. 260—282 **10 Claims**

1. A process for the preparation of pure cis- and trans-isomers of naphthoylene-bis-benzimidazole in a single reaction medium which comprises reacting naphthalene-1,4,5,8-tetracarboxylic acid or the anhydride thereof with 1,2-diaminobenzene or 1,2-diaminobenzene substituted by up to two members selected from the group consisting of chlorine, lower alkyl and lower alkoxy in a low-boiling alcohol at a temperature between about 120°C. and 180°C. at elevated pressure to form a reaction mixture of cis- and trans- isomers of said benzimidazole, adding to said reaction mixture an alkali metal hydroxide to form an insoluble alkali metal addition compound of the trans- isomer and a soluble alkali metal addition compound of the cis- isomer, separating said insoluble alkali metal addition compound from the reaction mixture, hydrolyzing each of said alkali metal addition compounds to form the respective benzimidazole isomers, and recoving each of said isomers.

3,865,830

THIOPHOSPHAMIDE DERIVATIVES OF ISOQUINOLINE ALKALOIDS, METHOD OF PRODUCING AND APPLICATION THEREOF

Nikolai Mikhailovich Turkevich, ulitsa Khasanskaya, 8, kv. 7; Maria Stepanovna Ollevskaya, ulitsa Mironjuka, 44; Julia Maximovna Pashkevich, ulitsa Vishenskogo, II, kv. 5; Anatoly Ivanovich Potopalsky, prospekt Lenina, 35, kv. 5, and Vasily Mikhailovich Novitsky, ulitsa Verkhovinskaya, 7, kv. I, all of Lvov, U.S.S.R.

Division of Ser. No. 45,266, June 10, 1970, abandoned. This application June 20, 1972, Ser. No. 264,482

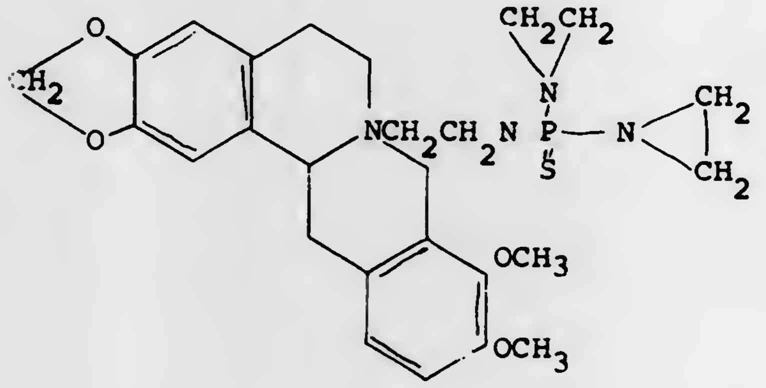
Claims priority, application U.S.S.R., June 16, 1969, 1330542

Int. Cl. C07d *39/00*

U.S. Cl. 260—283 P **3 Claims**

1. A method 9, wherein triethylenethiophosphoramide is reacted with berberine in dioxane at the boiling point of the latter, with a subsequent isolation of the formed di-[ethyleneimido]-N-berberinolethylamide of thiophosphoric acid.

3. A compound of the structure:



3,865,831

1,1′,4,4′-TETRAHYDRO-4,4′-DIOXO(6,6′BIQUINOLINE)-,2′-DICARBOXYLATES

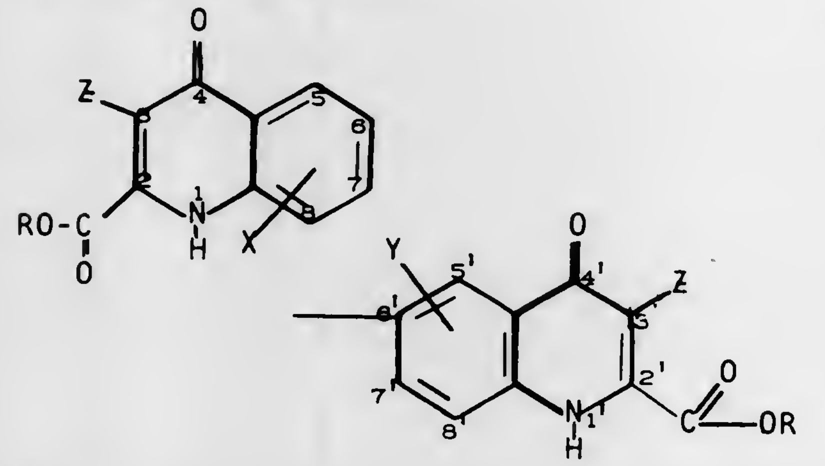
Charles M. Hall, and Herbert G. Johnson, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 9, 1972, Ser. No. 261,524

Int. Cl. C07d *33/46*

U.S. Cl. 260—286 R **6 Claims**

1. A compound of the formula

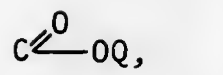


wherein

R is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive, phenyl, alkali metal or a pharmaceutically acceptable amine salt;

Z is selected from the group consisting of hydrogen, alkyl from one to three carbon atoms, inclusive, and phenyl;

X and Y are the same or different monosubstituents, and when X and Y are the same monosubstituent, it is selected from the group consisting of hydrogen, halogen, alkyl from one to three carbon atoms, inclusive, alkoxy from one to three carbons inclulsive, phenyl, nitro, trifluoromethyl, cyano and



$$\overset{O}{\overset{\|}{C}}\!-\!OQ,$$

where Q is selected from the group consisting of hydrogen alkyl from one to three carbon atoms, inclusive; phenyl, an alkali metal and a pharmaceutically acceptable amine salt, with the proviso that where R is hydrogen, alkali metal or an amine salt, then Q must be the same as R; with the further provision that when

a. X is at the 5 position, Y is at the 5′ or 7′ position,
b. X is at the 7 position, Y is at the 5′ or 7′ position
c. X is at the 8 position, Y is at the 8′ position

and when X and Y are different, one monosubstituent must be hydrogen and the other monosubstituent is selected from the above group and can be located anywhere on the ring.

3,865,832

SUBSTITUTED, 6,7 ETHYLENEDIOXY 4 HYDROXY 3 NON OXO CARBONYLIC QUINOLINES

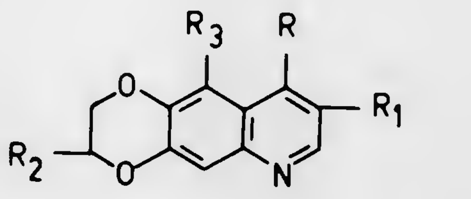
Theodorus Antonius Cornelis Boschman, and Jacob Gerard Korsloot, both of van Houteniaan, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,692

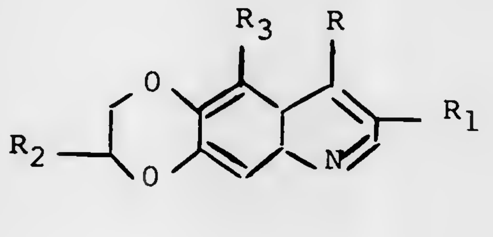
Claims priority, application Netherlands, Feb. 9, 1972, 7201675; Nov. 14, 1972, 7215366

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **35 Claims**



1. A compound selected from the group consisting of quinolines of the formula



wherein R is hydroxy, R_3 is a substituent selected from the group consisting of hydrogen, halogen, trifluromethyl and nitro, R_1 is a substituent selected from the group consisting of alkoxycarbonyl, alkoxyalkoxycarbonyl, and carboxyl and R_2 is a substituent selected from the group consisting of alkoxyalkyl, alkoxyalkoxyalkyl, alkenylalkoxy, cycloalkylalkoxy and cycloalkenylalkoxy each of up to 6 carbon atoms and hydroxy alkyl of up to 4 carbon atoms, alkali metal salts thereof, tautomers thereof and acid addition salts thereof formed with pharmaceutically acceptable acids with the proviso that the number of carbons in the substituents defined by R_1 is at most four

when R_3 is a substituent other than halogen or trifluoromethyl and is six when R_3 is halogen or trifluromethyl.

3,865,833

1,3-DIETHERS OF 2-AZAESTRATRIENES AND INTERMEDIATES

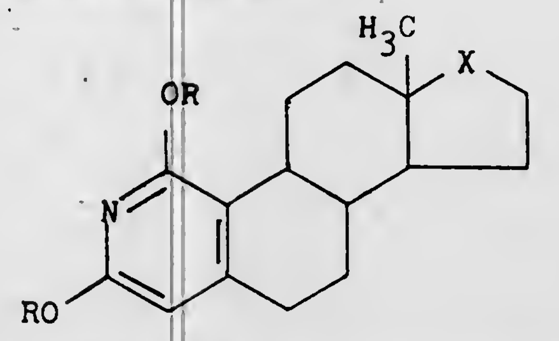
Robert J. Chorvat, Arlington Heights, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 333,792

Int. Cl. C07d *101/00*

U.S. Cl. 260—289 AZ **4 Claims**

1. A compound of the formula



wherein X represents carbonyl, β-hydroxymethylene, β-(lower alkanoyl)oxymethylene, α-(lower alkyl)-β-hydroxy=methylene, α-(lower alkynyl)-β-hydroxymethylene or α-propadienyl-β-hydroxymethylene and R denotes lower alkyl, lower cycloalkyl having 5–7 carbon atoms or tri-(lower alkyl)silyl.

3,865,834

2′-[HYDROXYALKOXY]-6,7-BENZOMORPHANS

Hans-Werner Schubert; Otto Behner, and Friedrich Hoffmeister, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

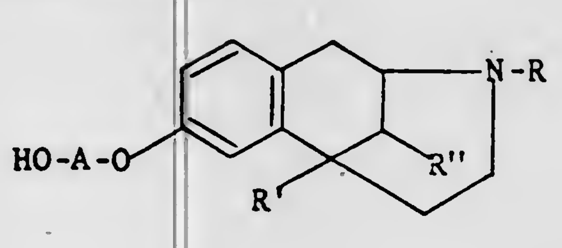
Continuation-in-part of Ser. No. 37,332, May 14, 1970, abandoned. This application Jan. 5, 1973, Ser. No. 321,278

Claims priority, application Germany, May 17, 1969, 1925297

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **5 Claims**

1. A compound of the formula:



wherein

R is cyclopropylmethyl or cyclobutylmethyl;

R′ and R″ are the same or different, and are straight or branched chain hydrocarbons of 1 to 5 carbon atoms; and

A is straight or branched chain alkylene or alkylidene of 1 to 10 carbon atoms or alkenylene of 2 to 10 carbon atoms, unsubstituted or substituted by phenyl or phenyl substituted by lower alkyl, lower alkoxy, halogen, nitro or carbonylamino;

or a pharmaceutically acceptable non-toxic salt thereof.

3,865,835

QUINONE DERIVATIVES AND COMPOSITIONS CONTAINING THE SAME

Hideo Kano, Ibaraki; Masaru Ogata, Kobe, and Hisajiro Yukinaga, Kusatsu, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

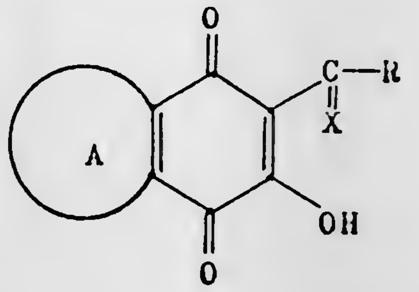
Division of Ser. No. 220,708, Jan. 25, 1972,. This application Nov. 29, 1973, Ser. No. 419,971

Claims priority, application Japan, Feb. 9, 1971, 46-5389; Feb. 9, 1971, 46-5390; Feb. 9, 1971, 46-5393; Mar. 31, 1971, 46-19410

Int. Cl. C07d *33/46, 39/00*

U.S. Cl. 260—296 R **3 Claims**

1. A compound of the formula:



wherein R is, pyridyl; X is a member selected from the group consisting of imino and lower alkylimino, A is a condensed aromatic ring selected from the group consisting of benzene and pyridine, and where A and R can be substituted by one to three substituents selected from the group consisting of lower alkyl, lower alkoxy, hydroxy and halogen.

3,865,836

BICYCLIC IMIDAZOLES

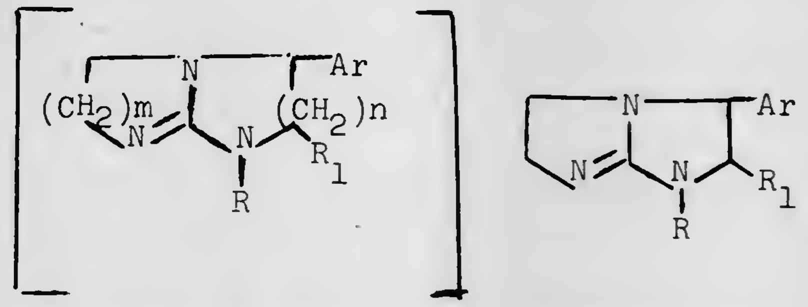
Josephus Ludovicus Hubertus Van Gelder; Alfons Herman Margaretha Raeymaekers, both of Beerse; Roevens Leopold Frans Corneel, Rijkevorsel, and Willy Joannes Van Laerhoven, Ravels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Dec. 8, 1972, Ser. No. 313,285

Int. Cl. C07d *49/30, 51/16, 57/12*

U.S. Cl. 260—309.6 **16 Claims**

1. A member selected from the group of compounds having the formula:



and the therapeutically active acid addition salts therof, wherein:

R is a member selected from the group consisting of hydrogen and benzyl;

R_1 is a member selected from the group consisting of hydrogen and loweralkyl; and

Ar is a member selected from the group consisting of phenyl, loweralkylphenyl, halophenyl and di-halophenyl.

3,865,837
PROCESS FOR PREPARING FISCHER'S BASE
James J. Krutak, Sr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

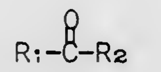
Continuation-in-part of Ser. No. 186,400, Oct. 4, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,293

Int. Cl. C07d *27/36, 27/38*

U.S. Cl. 260—326.11 R **5 Claims**

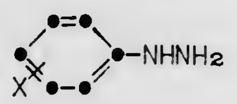
1. A method of preparing Fischer's base which comprises the steps of:

mixing one to 10 parts by weight of a polyphosphate ester prepared from P_4O_{10} and an alcohol having one to five carbon atoms with one part by weight of substantially equimolar quantities of a composition having the general formula:



$$R_1-\overset{O}{\overset{\|}{C}}-R_2$$

and a composition having the general formula:



heating said mixture to a temperature of between 160° C. and 200° C. at atmospheric pressure to render a homogeneous solution which includes Fischer's base,

wherein R_1 is an alkyl radical containing from one to four carbon atoms; R_2 is H or an alkyl radical containing from one to four carbon atoms; and X is H, 2- or 4-alkyl, alkoxy or alkylthio having from one to 18 carbon atoms, or 2- or 4-F, Br, Cl NO_2, $CO_2CH_2CH_3$, CN, SO_2R wherein R is alkyl or aryl having one to 12 carbon atoms, SO_2CF_3, SO_2CHF_2, CF_3 or SO_2NH_2.

3,865,838
(5-INDOLYLOXY)-ACETIC ACID COMPOUNDS AND THERAPEUTIC COMPOSITIONS
Alfred Popelak, Rimbach; Kurt Stach, Mannheim-Waldhof; Max Thiel, Mannheim; Wolfgang Schaumann, Heidelberg, and Harald Stork, Mannheim-Feudenheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

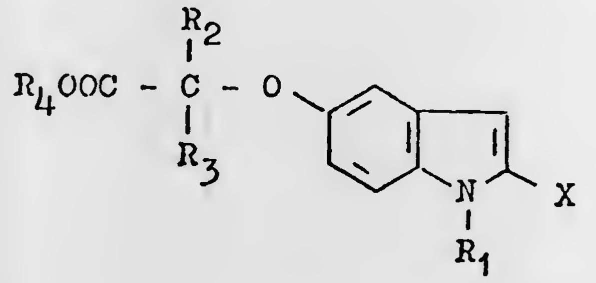
Filed July 11, 1973, Ser. No. 378,356

Claims priority, application Germany, July 29, 1972, 2237361

Int. Cl. C07d *27/00, 27/56*

U.S. Cl. 260—326.13 R **11 Claims**

1. New (5-indolyloxy)-acetic acid compounds of the formula



wherein:

R_1, R_2, R_3 and R_4 are individually selected from hydrogen or lower alkyl;

X is hydrogen, carboxyl, or alkoxy carbonyl;

and the pharmacologically acceptable salts thereof.

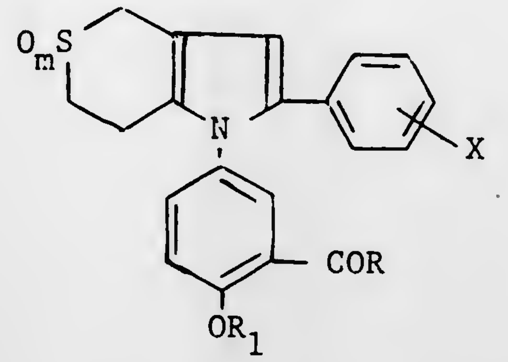
3,865,839
THIOPYRANOPYRROLYLSALICYCLIC ACIDS AND DERIVATIVES THEREOF
Richard C. Allen, Somerville, N.J., and Chandler R. Taylor, Jr., Mechanicsville, Va., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Mar. 1, 1973, Ser. No. 336,920

Int. Cl. C07d *27/54*

U.S. Cl. 260—326.28 **13 Claims**

1. A compound of the formula



in which X is hydrogen, hydroxy, halogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, phenyl, nitro, amino, trifluoromethyl or cyano, R is hydroxy, alkoxy of 1 to 6 carbon atoms or amino, R_1 is hydrogen, alkyl of 1 to 6 carbon atoms or alkanoyl of 1 to 6 carbon atoms, and m is 0, 1 or 2.

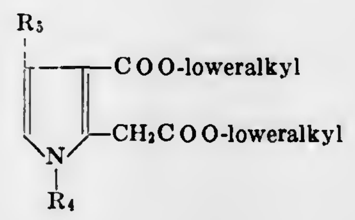
3,865,840
PROCESS OF PREPARING 1,4-DILOWERALKYL-3-LOWERALKOXY-CARBONYL-2-CETATES
John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Division of Ser. No. 5,958, Jan. 26, 1970, Pat. No. 3,752,826, which is a continuation-in-part of Ser. No. 741,348, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 656,074, July 26, 1967, abandoned. This application Feb. 16, 1973, Ser. No. 338,461

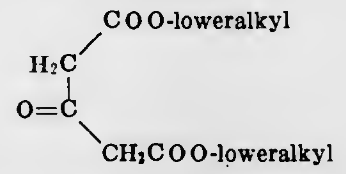
Int. Cl. C07d *27/26*

U.S. Cl. 260—326.46 **5 Claims**

1. The process of making a loweralkyl 1,4-diloweralkyl-3-loweralkoxycarbonyl-pyrrole-2-acetate of the formula:



which comprises reacting at just below 60°C a mixture of a loweralkylamine of the formula: $R_4—NH_2$ and a di-loweralkyl acetone dicarboxylate of the formula:



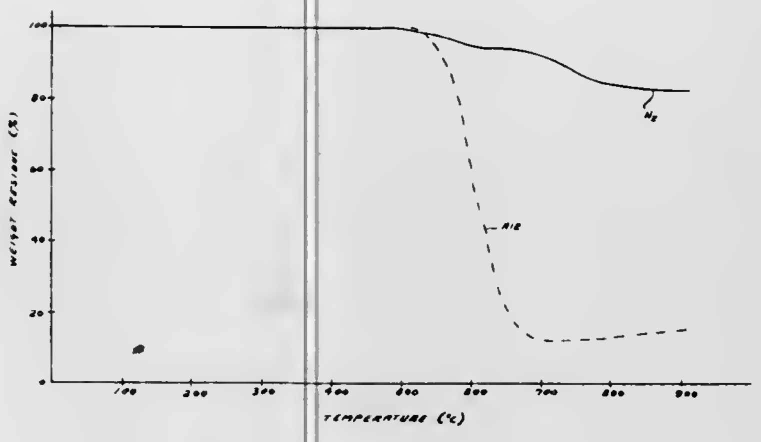
with a chloromethyl loweralkyl ketone of the formula: $Cl—CH_2—CO—R_5$, wherein the foregoing formulas said R_4 and said R_5 represent lower alkyl.

3,865,841
BENZOTHIOPHENEDIOXIDEISOQUINOLINE POLYMERS
Albert J. Sicree, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

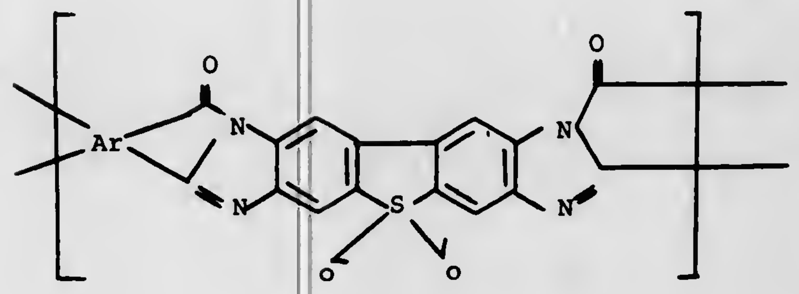
Filed June 18, 1973, Ser. No. 371,089

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 TF **6 Claims**



1. A thermally stable film or fiber-forming polymer consisting essentially of recurring units having the following formula:



wherein Ar is a tetravalent aromatic radical.

3,865,842
BETA-[BENZO(B) THIENYL-3]-ALPHA-ALLYL-PROPIONIC ACID ESTERS
Max Fernand Robba, Paris, and Denise Jeanne Claude Duval, Yvelines, both of France, assignors to Innothera, Val de Marne, France

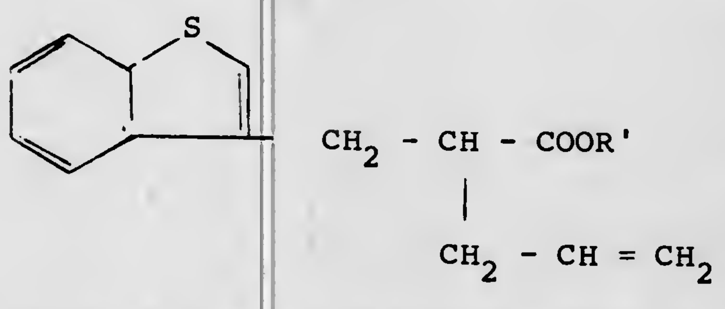
Filed June 7, 1971, Ser. No. 150,747

Claims priority, application France, June 12, 1970, 70.21679

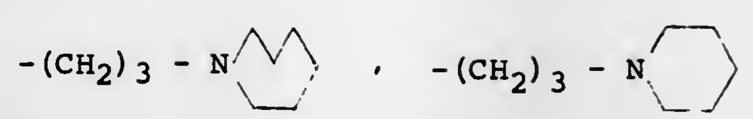
Int. Cl. C07d *63/18*

U.S. Cl. 260—330.5 **4 Claims**

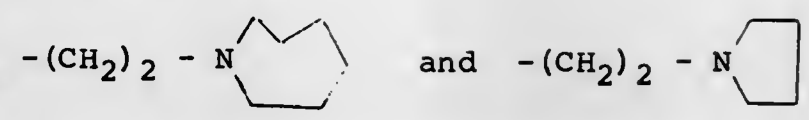
1. A compound of the formula



wherein R′ is selected from the group consisting of $—(CH_2)_3—N(C_2H_5)_2$, $—(CH_2)_2—N(C_2H_5)_2$,



$—(CH_2)_3—N(CH_3)_2$,



or pharmaceutically acceptable acid addition salts thereof.

3,865,843
4-OXO-4H-BENZO [4.5]CYCLOHEPTA[1,2-B]THIOPHENE DERIVATIVES
Jean-Michel Bastian, Therwil, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

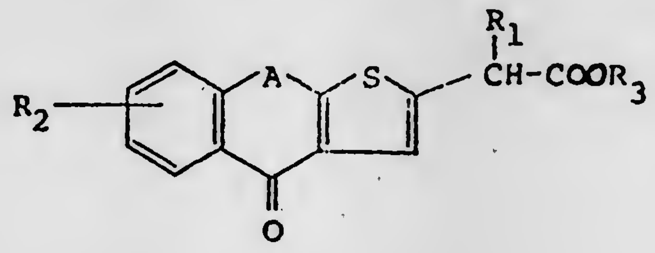
Filed Apr. 2, 1973, Ser. No. 347,061

Claims priority, application Switzerland, Apr. 7, 1972, 5133/72

Int. Cl. C07d *63/18;* **A61k** *27/00*

U.S. Cl. 260—332.2 A **29 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or lower alkyl,

R_2 is hydrogen, fluorine, chlorine, bromine, lower alkyl or lower alkoxy,

R_3 is hydrogen or lower alkyl, and

A is ethylene or vinylene, or, when R_3 is hydrogen a pharmaceutically acceptable salt thereof.

3,865,844
N-(THIENYLALKYL)-FLUOROALKANESULFONADMIES
Joseph Kenneth Harrington, Edina, and Robert D. Trepka, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 150,789, June 7, 1971, Pat. No. 3,766,193, which is a continuation-in-part of Ser. No. 795,050, Jan. 29, 1969, Pat. No. 3,629,332. This application July 12, 1973, Ser. No. 378,622

Int. Cl. C07d *63/12*

U.S. Cl. 260—332.5 **4 Claims**

1. A compound of the formula

$$R_fSO_2NH—R—Ar$$

wherein R_f is a fluoroalkyl group of one or two carbon atoms, R is an alkylene radical containing one or two carbon atoms and Ar is thienyl, or a horticulturally acceptable salt thereof.

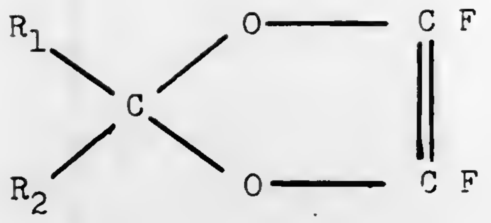
3,865,845
FLUORINATED DIOXOLES
Paul Raphael Resnick, 2206 Fairfield Pl., Wilmington, Del. 19805

Continuation-in-part of Ser. No. 118,559, Feb. 24, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,498

Int. Cl. C07d *13/08*

U.S. Cl. 260—340.9 **4 Claims**

1. A fluorinated dioxole of the general formula



wherein R_1 and R_2 are the same or different both consisting of one to three carbon atoms which are perhalosubstituted and containing at least one fluorine atom whereby the perhalosubstituents consist of chlorine or fluorine atoms.

3,865,846

CONTINUOUS PRODUCTION OF DIKETENE

Gerhard Schulz; Guenther Matthias, Ludwigshafen; Werner Kasper, Frankenthal, and Erich Haarer, Bad Duerkheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft Ludwigshafen/Rhine, Germany

Filed Jan. 13, 1971, Ser. No. 106,244

Int. Cl. C07d *3/00*

U.S. Cl. 260—343.9 8 Claims

1. A process for the continuous manufacture of diketene by dimerization of ketene in diketene as a solvent wherein dimerization is carried out in a first stage at a temperature of not more than 40°C and with an initial concentration of more than 3 percent by weight of ketene with reference to diketene in the dimerization mixture, then in a second stage at a temperature of from 40° to 55°C with a concentration of from 3 to 1.2 percent by weight of ketene and in a third stage at a temperature of more than 55°C with a concentration of less than 1.2 percent by weight of ketene with reference to diketene in the dimerization mixture, and the recycle diketene has a content of at least 0.5 percent by weight of ketene with reference to diketene.

3,865,847

ETHYL FLUORO-(2-DIBENZOFURANYL)-ACETATE

Bruno Cavalleri, Milan; Elvio Bellasio, Albate, both of Italy; Emilio Testa, Ticino, Switzerland, and Giulio Maffii, Milan, Italy, assignors to Lepetit S.p.A.Gruppo per la Ricerca Scientifica e la Produzione Chemica Farmaceutica, Milan, Italy

Division of Ser. No. 750,009, Aug. 5, 1968, Pat. No. 3,699,151. This application Aug. 28, 1972, Ser. No. 284,090

Claims priority, application Great Britain, Aug. 14, 1967, 37197/67

Int. Cl. C07d *5/44*

U.S. Cl. 260—346.2 M 1 Claim

1. The compound ethyl fluoro-(2-dibenzofuranyl)-acetate.

3,865,848

METHYLENATION REAGENT

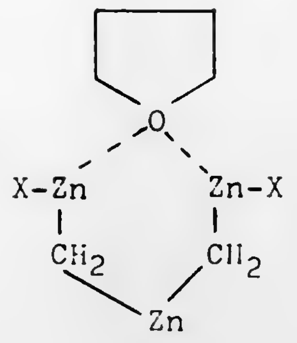
Leonard N. Nysted, Highland Park, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 865,991, Oct. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 675,778, Oct. 17, 1967, abandoned. This application Feb. 5, 1973, Ser. No. 329,404

Int. Cl. C07d *5/02*

U.S. Cl. 260—346.1 M 3 Claims

1. A compound of the formula



wherein X is a chloro or bormo radical.

3,865,849

A PROCESS FOR OBTAINING HIGH-PURITY MALEIC ANHYDRIDE FROM CRUDE MALEIC ANHYDRIDE

Otto Ludwig Garkisch, Neuenhain; Gunther Ibing, Gladbeck; Gunther Kammholz, Gelsenkirchen-Buer; Hermann Schirrmacher, Gladbeck, and Kurt Lohbeck, Bottrop, all of Germany, assignors to Verba-Chemie AG, Gelsenkirchen-Buer and Metallgesellschaft AG, Frankfurt am Main, both of, Germany, part interest to each

Filed Dec. 13, 1971, Ser. No. 207,025

Claims priority, application Germany, Dec. 12, 1970, 2061335

Int. Cl. C07c *57/14*

U.S. Cl. 260—346.8 M 5 Claims

1. A maleic anhydride purification method, comprising the steps of:

a. deriving a crude maleic anhydride containing maleic acid as an impurity along with other organic impurities from the catalytic oxidation of benzene or C_4 hydrocarbons,

b. heating said mixture to thermally decompose said maleic acid to maleic anhydride and water, while distilling off a forerun consisting of water and low-boiling point organic compounds, thereby producing a raw maleic anhydride and refluxing the maleic anhydride to form a residual mixture in two stages in cascade and at a pressure between 100 mm Hg and atmospheric pressure; and

c. thereafter and at a later time than step (b) continuously distilling maleic anhydride from said residual mixture and producing a sump product containing principally maleic acid and fumaric acid at a pressure between 60 and 200 mm Hg, the pressure in the cascade stage being higher than that in step (c).

3,865,850

2-HYDROXY-3,3-DIMETHYL-4-OXOTETRAHYDROFURAN PRODUCTION

Franz Merger, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhein, Germany

Division of Ser. No. 107,592, Jan. 18, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,379

Claims priority, application Germany, Jan. 28, 1970, 2003600

Int. Cl. C07d *5/04*

U.S. Cl. 260—347.8 6 Claims

1. A process for production of 2-hydroxy-3,3-dimethyl-4-oxotetrahydrofuran which consists essentially of reacting isobutyraldehyde and glyoxal at a molar ratio of 1:1 to 4:1, respectively, at 10°–150°C. in the presence of 0.02 to 0.1 mol equivalents of a tertiary amine per mol of isobutyraldehyde and in the presence of 35–60% by weight of water with reference to the glyoxal to obtain as reaction products a mixture of 2,2-dimethyl-3-hydroxysuccinaldehyde and 2-hydroxy-3,3-dimethyl-4-oxotetrahydrofuran, and separating the latter compound from the reaction mixture.

3,865,851

MANUFACTURE OF ANTHRAQUINONE COMPOUNDS

Kenneth Dunkerley, and Ronald Wynford Kenyon, both of Blackley, England, assignors to Imperial Chemical Industries Limited, London, England

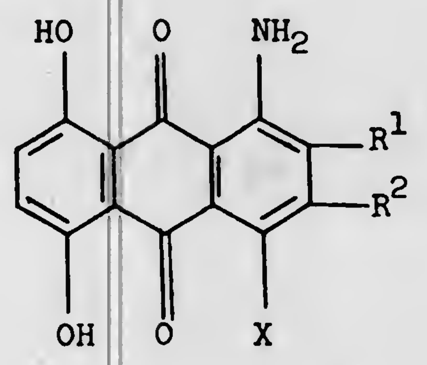
Filed Sept. 1, 1972, Ser. No. 285,625

Claims priority, application Great Britain, Sept. 27, 1971, 44881/71

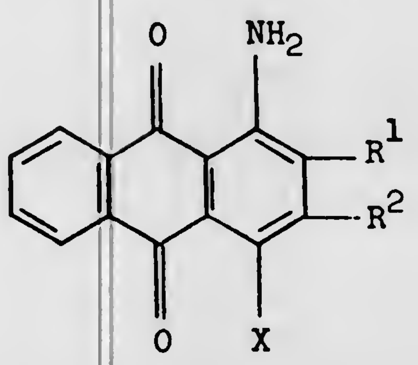
Int. Cl. C07c *97/14*

U.S. Cl. 260—280 1 Claim

1. Process for the manufacture of an anthraquinone compound of the formula



wherein X is a hydroxy or amino group, and R and R are independently selected from hydrogen, chlorine and bromine, which comprises subjecting a di(boro-loweralkylcarbonyloxy) complex of a compound of the formula



to the action of an oxidizing agent selected from potassium persulfate, manganese dioxide and lead dioxide in oleum at a temperature between 10 C and 30 C and thereafter hydrolyzing off the boro-lower alkylcarbonyloxy groups by pouring the reaction mixture into a mixture of ice and water.

3,865,852

NOVEL PRODUCTS

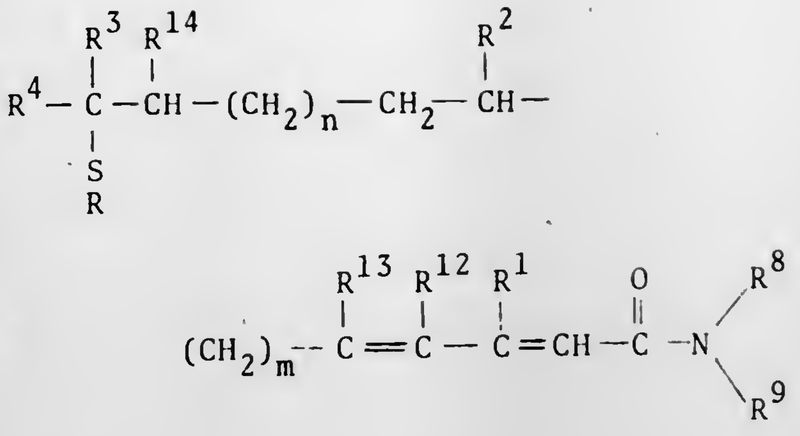
Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 256,605, May 24, 1972, which is a continuation-in-part cf Ser. No. 201,189, Nov. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 191,812, Oct. 22, 1971, abandoned. This application Oct. 9, 1973, Ser. No. 404,632

Int. Cl. C08h *9/02, 3/00*

U.S. Cl. 260—402.5 6 Claims

1. A compound selected from those of the following formula:



$$R^4-\underset{\underset{R}{|}}{\underset{S}{\underset{|}{\overset{\overset{R^3}{|}}{C}}}}-\overset{\overset{R^{14}}{|}}{CH}-(CH_2)_n-CH_2-\overset{\overset{R^2}{|}}{CH}-$$

$$(CH_2)_m-\overset{\overset{R^{13}}{|}}{C}=\overset{\overset{R^{12}}{|}}{C}-\overset{\overset{R^1}{|}}{C}=CH-\overset{\overset{O}{\|}}{C}-N\begin{matrix}R^8\\R^9\end{matrix}$$

wherein,

each of *m* and *n* is 0 or the positive integer 1,, 2, or 3;
R is hydrogen, lower alkyl, cycloalkyl, aralkyl or aryl;
each of R and R is lower alkyl;
each of R , R , R and R is hydrogen or lower alkyl;
R is alkyl; and
each of R and R is hydrogen, alkyl, alkenyl, or cycloalkyl.

3,865,853

HYDROGENATION OF FATTY ACIDS AND THEIR TRIGLYCERIDES USING A PD(II) CATALYST IN AN ION-EXCHANGE RESIN

Adrien George Hinze, Dordrecht, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 24, 1973, Ser. No. 326,316

Claims priority, application Great Britain, Jan. 25, 1972, 3426/72

Int. Cl. C11c *3/12;* **B01j** *11/16;* **C08f** *27/06*

U.S. Cl. 260—409 1 Claim

1. A process for hydrogenating polyunsaturated fatty acids and their triglyceride esters at about 0 C to about 100 C using about 1 to about 5 atms. hydrogen in the presence of a polar solvent and a supported heavy-metal catalyst in which the heavy-metal is Pd(II), the catalyst-support is an ion-exchange resin consisting essentially of a polystyrene matrix cross-linked with divinyl benzene and at least 2.0 meq/g active sites readily accessible to large molecules and the Pd(II) has been introduced into the salt-form of the resin when the resin is a cationexchange and into the hydroxyl or neutral form when the resin is an anion-exchange resin.

3,865,854

PROCESS OF PREPARATION OF ALKYL TRIDECATRIENOATES AND INTERMEDIATES

Daniel Hainaut, Villemomble; Edmond Toromanoff, Paris, and Jean-Pierre Demoute, Montreuil-Sous-Bois, all of France, assignors to Roussel-Uclaf, Paris, France

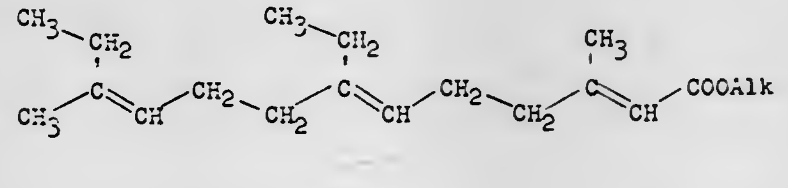
Filed Sept. 5, 1972, Ser. No. 286,439

Claims priority, application France, Sept. 7, 1971, 71.32261

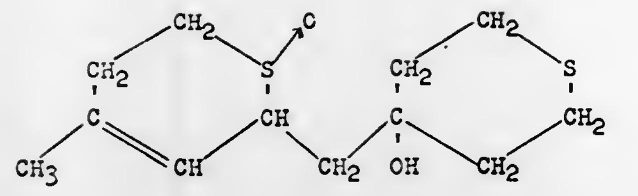
Int. Cl. C07c *67/00, 65/08*

U.S. Cl. 260—410.9 R 12 Claims

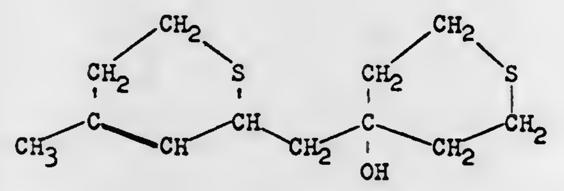
1. A process for the production of alkyl tridecatrienoates having the formula



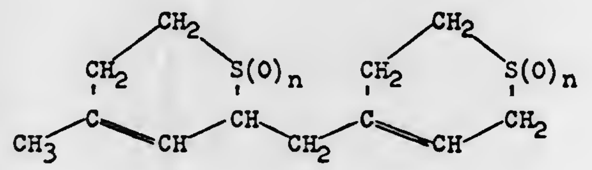
wherein Alk represents alkyl having 1 to 5 carbon atoms which consists of the steps of (1) condensing the S-oxide of 4-methyl-5,6-dihydro-2H-thiapyran with 1-oxa-6-thiaspiro/2,5/octane in the presence of a strong base, (2) reducing the resulting S-oxide of 2(4 -hydroxy-3 ,4 ,5 ,6 -tetrahydrothiapyranyl-4 -methyl)-4-methyl-5,6-dihydro-2H-thiapyran having the formula



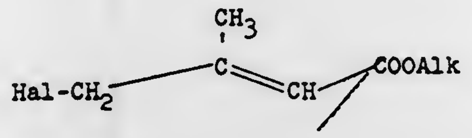
by the action of a sulfoxide reducing agent, (3) dehydrating the resulting 2-(4′-hydroxy-3′,4′,5′,6′-tetrahydrothiapyranyl-4′-methyl)-4-methyl-5,6-dihydro-2H-thiapyran having the formula



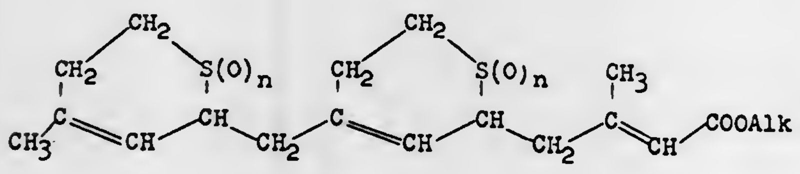
by the action of a dehydrating agent to form a dithiapyranic compound having the formula



wherein *n* is 0 (4) and reacting the same with a butenoate having the formula



wherein Alk represents alkyl having 1 to 5 carbon atoms and Hal represents a halogen selected from the group consisting of chlorine and bromine, in the presence of a strong base, (5) subjecting the resulting di-thiapyranic ester compound having the formula



wherein alk and n have the above-assigned values, to the action of a desulfurizing agent and (6) recovering said alkyl tridecatrienoates.

3,865,855
PROCESS FOR CATALYTICALLY CONVERTING FATTY ACIDS

Carl B. Linn, and Fred Balocchi, both of Shawnee Mission, Kans., assignors to C. J. Patterson Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 191,546, Oct. 21, 1971, abandoned. This application Nov. 5, 1973, Ser. No. 413,005

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **12 Claims**

1. In a process for converting a fatty acid charge to straight and branched chain monocarboxylic fatty acid homologs of the charge with a Friedel-Crafts catalyst, the improvement, comprising:

reacting the fatty acid charge in the presence of a catalytic amount of the Friedel-Crafts catalyst at a temperature of from about 45° to 110°C for a contact time sufficient to produce said straight and branched chain monocarboxylic fatty acid homologs; and

recovering said fatty acid homologs from said reaction mixture.

3,865,856
PROCESS FOR THE PREPARATION OF CARBOXYLIC ACIDS FROM VICINAL DIOLS

Manfred Dohr, Dusseldorf-Holthausen; Ulrich Zeidler, Dusseldorf-Benrath, and Herbert Lepper, Cologne-Mulheim, all of Germany, assignors to Henkel & Cie. GmbH, Dusseldorf, Germany

Filed July 26, 1971, Ser. No. 166,309

Claims priority, application Germany, Aug. 1, 1970, 2038296

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **6 Claims**

1. A process for the preparation of carboxylic acids of at least 5 carbon atoms, which consists essentially of continuously passing an oxygen-containing stream of gas into contact with a solution of vicinal diols of at least 6 carbon atoms in an organic solvent whose boiling point lies at least 30°C above the operating temperature selected from the group consisting of paraffin hydrocarbons of at least 5 carbon atoms and alkanoic acids of at least 5 carbon atoms, with the quantitative ratio of vicinal diol to solvent being from 1:1 to 1:20, at a temperature between 40°C and 200°C whereby the intermediately formed aldehyde is retained in said solution, in the presence of a catalyst consisting of the cobalt salt of a carboxylic acid having at least two carbon atoms, which catalyst salt is soluble in said reaction mixture, continuously removing water of reaction and low-boiling oxidation products from the reaction mixture with said stream of gas, and recovering said carboxylic acids of at least 5 carbon atoms.

3,865,857
TRI-SUBSTITUTED ALUMINUM SALTS OR DI-SUBSTITUTED ALUMINUM SALTS OF CARBOXYL GROUP-CONTAINING, PHARMACEUTICALLY EFFECTIVE COMPOUNDS, AND PROCESS FOR PREPARATION THEREOF

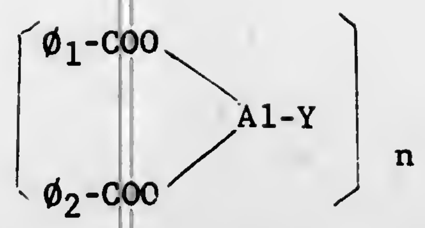
Yasushi Suzuki, Yokohama, and Toshihisa Itaya, Kawasaki-shi, both of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1972, Ser. No. 236,347

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 R **15 Claims**

1. A process for the preparation of aluminum salts of carboxyl group-containing, pharmaceutically effective compounds expressed by the formula:



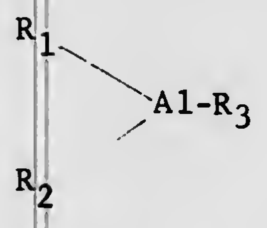
wherein Y represents a hydroxyl group or a group -OOC-ϕ_3; ϕ_2 and ϕ_3, which may be the same or different, represent carboxyl group-free residues of a carboxyl groupcontaining, pharmaceutically effective compound; and *n* is a number of 1 or more,

which comprises reacting at least one carboxyl group-containing, pharmaceutically effective compound expressed by the following formula:

ϕ-COOH

wherein ϕ represents a carboxyl group-free residue of a carboxyl group-containing, pharmaceutically effective compound, selected from at least one of the groups consisting of alkenyl, alicyclic hydrocarbon, fused alicyclic hydrocarbon, and aromatic hydrocarbon moieties,

with an organic aluminum compound expressed by the formula:



wherein R_1 and R_2, which may be the same or different, represent an aliphatic, alicyclic or aromatic hydrocarbon residue having up to 10 carbon atoms, and R_3 represents a hydrocarbon residue as defined with respect to R_1 and R_2, which may be the same as, or different from, R_1 and R_2, or a hydrocarbyloxy group of the formula OR_4 in which R_4 is an aliphatic, alicyclic or aromatic hydrocarbon residue having up to 10 carbon atoms, in an atmosphere of an inert gas and under anhydrous conditions, and, when the reaction product is a di-substituted aluminum salt of said carboxyl group-containing, pharmaceutically effective compound, hydrolyzing the same;

with the proviso that, where a low polymer is obtained, the aluminum salt monomers are polymerized through coordination bonds.

3,865,858
HYDROSILYLATION EMPLOYING DICARBONYLDICHLOROPLATINUM AS A CATALYST

Andreas Ossko; Heinz Goller, both of Cologne; Joachim Herzig, Leichlingen; Werner Buchner, Opladen-Luetzenkirchen, and Armand deMontigny, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 2, 1973, Ser. No. 402,665

Claims priority, application Germany, Oct. 19, 1972, 2251297

Int. Cl. C07g *7/08*

U.S. Cl. 260—448.2 E **3 Claims**

1. In the production of an organosilicon compound by addition of a silicon compound selected from the group consisting of a hydrogenosilane and a hydrogenosiloxane to an olefinically unsaturated organic compound in the presence of a catalytically active platinum compound, the improvement which comprises employing dicarbonyldichloroplatinum as the platinum compound.

3,865,859
ORGANO-SILICON COMPOUNDS

John Beckett Plumb, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1972, Ser. No. 283,288

Claims priority, application Great Britain, Aug. 31, 1971, 40534/71

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **8 Claims**

1. Organosilicon compounds of the general formula

$$(R_aSi)_xO_{x(r-a)}\ [(C_nH_{2n}O)_yH]\ _zA_{x(4-a)-z/2\ (rap.}$$

where *R* is an alkyl, aryl and alkenyl group; A is the group $[(C_nH_{2n}O)_{y-1}C_nH_{2n}]$ or (C_5H_{10}) where n is an integer from 2 to 4 and y is an integer from 1 to 5; *a* is 0 or 1; *x* is an integer from 1 to 10; and *z* is an integer which when a is 1 is not greater than *x* + 2 and when a is 0 is not greater than 2*x* + 2.

3,865,860
SUBSTITUTED SULFONYLGLYCOLIC ACID ANILIDES

Wolfgang Rohr, Mannheim, and Adolf Fischer, Mutterstadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

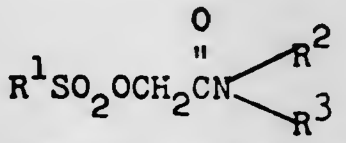
Filed Nov. 29, 1972, Ser. No. 310,640

Claims priority, application Germany, Dec. 6, 1971, 2160380

Int. Cl. C07c *143/24, 143/38*

U.S. Cl. 260—456 A **6 Claims**

1. A N-substituted sulfonylglycolic acid anilide of the formula



$$R^1SO_2OCH_2\overset{O}{\overset{\|}{C}}N{<}^{R^2}_{R^3}$$

where R^1 denotes alkyl, cycloalkyl, haloalkyl alkenyl or haloalkenyl, R^2 denotes phenyl which may be substituted by alkyl, and R^3 denotes alkynyl.

3,865,861
SULPHATION OF SECONDARY ALCOHOLS

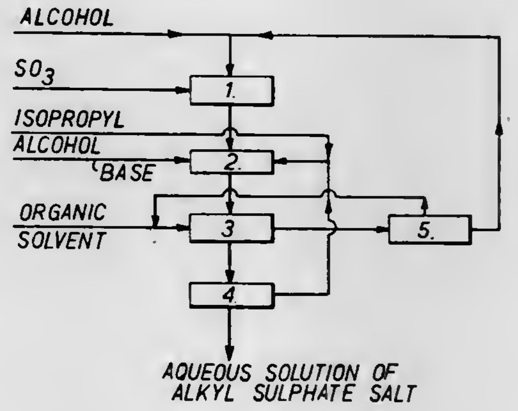
Austen E. Sowerby, Distington, England, assignor to Albright & Wilson Ltd., Birmingham, England

Filed Apr. 16, 1968, Ser. No. 721,670

Claims priority, application Great Britain, Apr. 25, 1967, 19025/67

Int. Cl. C07c *141/04*

U.S. Cl. 260—459 **17 Claims**



1. A process for the production of monoalkyl sulphate salts from secondary alkanols having from 8 to 26 carbon atoms by reaction with free sulphur trioxide comprising (1) adding to the secondary alkanol free sulphur trioxide in an amount sufficient to react with from 20 to 80 percent of the secondary alkanol present, the reaction being carried out at a temperature not greater than 50°C, (2) neutralising the reaction mixture so formed with an aqueous solution of a base selected from the group consisting of aqueous solutions of alkalis, and amines, which is inert to the unreacted alkanol; (3) separating the unreacted alkanol from the salt of the alkyl sulphate formed by contacting said unreacted alkanol and said salt of

the said alkyl sulphate formed with a solvent which is immiscible with water and which will dissolve said unreacted alkanol and will not dissolve said salt of the alkyl sulphate; and (4) recycling the unreacted alkanol separated in stage (3) of the process to stage (1).

3,865,862

PROCESS FOR PREPARING MONOFORMYLDIAMINOMALEONITRILE

Yozo Ohtsuka, Kanagawa, Japan, assignor to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 5, 1973, Ser. No. 413,063

Claims priority, application Japan, Nov. 7, 1972, 47-110772

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.4 **2 Claims**

1. In a process for preparing monoformyldiaminomaleonitrile comprising reacting diaminomaleonitrile with formic acid, the improvement which comprises heating diaminomaleonitrile and formic acid in an amount of 1 to 4 moles of formic acid per 1 mole of said nitrile in a non-polar aprotic solvent having a solubility of formic acid of less than 10 percent by weight at room temperature at a temperature of from 0° to 100°C under substantially anhydrous conditions for a period of 5 minutes to 1 hour.

3,865,863

2-(BENZOYL)-3-DIMETHYLAMINOACRYLONITRILES

George Francis Field, West Caldwell, and Joachim Ulrich Schneider, West Paterson, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 22, 1972, Ser. No. 265,117

Int. Cl. C07c *121/78*

U.S. Cl. 260—465 E **12 Claims**

1. 2-(2-methoxybenzoyl)-3-dimethylaminoacrylonitrile.
2. 2-(2-chlorobenzoyl)-3-dimethylaminoacrylonitrile.

3,865,864

PROCESS FOR PRODUCING CYANOALKADIENES

Hitoshi Nakajima, Ageo, and Hiroji Nishimaru, Tokyo, both of Japan, assignors to Asaki Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 11, 1971, Ser. No. 152,450

Claims priority, application Japan, June 16, 1970, 45-51509

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.3 **8 Claims**

1. A process for the selective introduction of a single cyano group at a terminal unsaturated carbon atom of a diolefin selected from the group consisting of 1,3-butadiene, isoprene and 1,3-pentadiene, whereby there is produced a 1-monocyanoalkadiene which comprises treating said diolefin in the vapor phase at a temperature of from 100° to 600°C with 0.02 to 1.5 mols hydrogen cyanide per mol of said diolefin and 0.5 to 5.0 mols oxygen per mol hydrogen cyanide in the presence of a palladium catalyst selected from the group consisting of palladium metal, palladium oxide, palladium hydroxide, palladium sulfate, palladium nitrate, palladium cyanide, palladium chloride palladium bromide, palladium iodide, palladium acetate, palladium chloroacetate, potassium chloropalladate and cesium chloropalladate.

3,865,865

SELECTIVE REMOVAL OF 2-PENTENENITRILE AND 2-ETHYL-2-BUTENENITRILE FROM 3-PENTENENITRILE

Michael T. Musser, Wilmington, Del., and Andrew Streitwieser, Jr., Berkeley, Calif., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 332,580, Feb. 15, 1973, abandoned. This application Feb. 1, 1974, Ser. No. 438,941

Int. Cl. C07c *121/30*

U.S. Cl. 260—465.9 **12 Claims**

1. A process for the recovery of 3-pentenenitrile substantially free of 2-pentenenitrile and 2-methyl-2-butenenitrile by the selective removal of 2-pentenenitrile and 2-methyl-2-butenenitrile from a mixture of alkenyl nitriles comprising 2-pentenenitrile and 2-methyl-2-butenenitrile and 3-pentenenitrile and 4-pentenenitrile which comprises contacting the mixture of nitriles with an aqueous solution of a treating agent consisting essentially of a compound selected from the group consisting of an alkali metal sulfite, an alkali metal bisulfite, ammonium sulfite, ammonium bisulfite and mixtures thereof, the sulfite and bisulfite total concentration being about 0.1 to about 5 molar for a period of from about 1 minute to 24 hours, the solution having a pH in the range of 3 to 11, at a temperature in the range of 20°C. to 200°C. to produce an aqueous phase containing an adduct selected from the group consisting of a water-soluble bisulfite adduct of 2-pentenenitrile, a water-soluble bisulfite adduct of 2-methyl-2-butenenitrile and mixtures thereof and an organic phase comprising 3-pentenenitrile; separating the aqueous phase from the organic phase and recovering 3-pentenenitrile substantially free of 2-pentenenitrile and 2-methyl-2-butenenitrile from the organic phase.

3,865,866

CARBAMIC ACID ESTERS

Toshiaki Ozaki; Katsuzo Kamoshita, both of Toyonaka; Katsutoshi Tanaka, Takarazuka; Sigeo Yamamoto, Toyonaka; Tadashi Ooishi; Shinji Nakai, both of Takarazuka, and Keiichiro Akiba, Ikeda, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

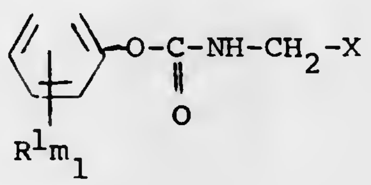
Filed Jan. 25, 1971, Ser. No. 109,622

Claims priority, application Japan, Jan. 30, 1970, 45-8618; Feb. 20, 1970, 45-15120; Mar. 19, 1970, 45-23730; Mar. 24, 1970, 45-25119; Apr. 13, 1970, 45-31694; Apr. 13, 1970, 45-31695

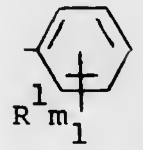
Int. Cl. C07c *79/46, 101/00*

U.S. Cl. 260—471 C **5 Claims**

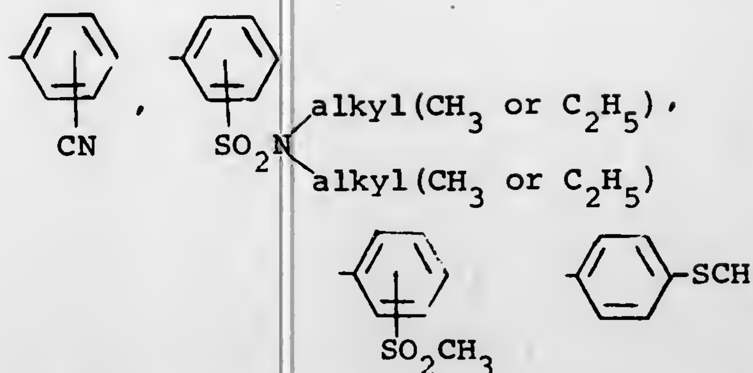
1. A carbamic acid ester having the formula,



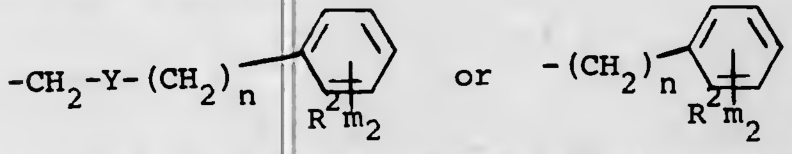
wherein



is selected from the group consisting of



2-cyano-4-chlorophenyl and 2-methoxy-4-cyanophenyl and X is a group of the formula,



wherein Y is an oxygen or sulfur atom; R^2 is a hydrogen, chlorine, methyl or methoxy; m_2 is an integer of 1 or 2; and n is 0 or 1.

3,865,867

META-BIFUNCTIONAL BENZENES

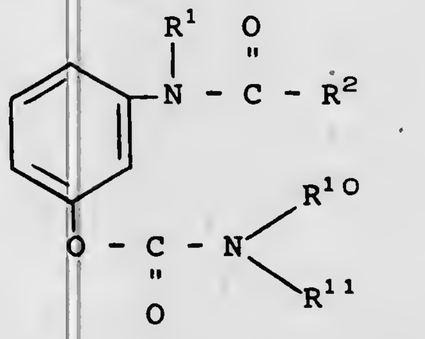
John F. Olin, Ballwin, and Philip C. Hamm, Glendale, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 647,202, June 19, 1967, abandoned. This application May 26, 1970, Ser. No. 40,742

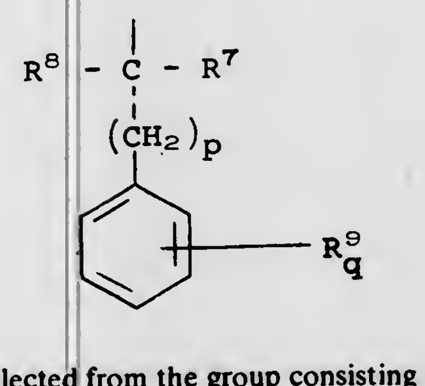
Int. Cl. C07c *125/06*

U.S. Cl. 260—472 **12 Claims**

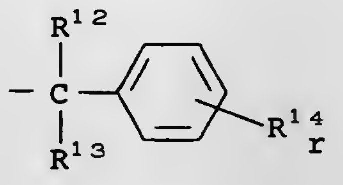
1. A compound of the formula



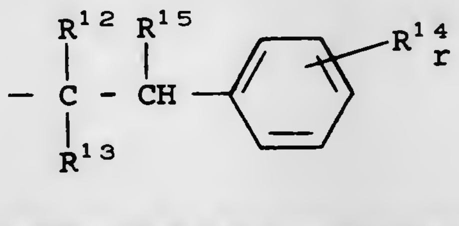
wherein R^1 is selected from the group consisting of hydrogen and alklyl having a maximum of 6 carbon atoms; R^2 is selected from the group consisting of hydrogen, alkyl having a maximum of 12 carbon atoms, alkenyl having a maximum of 8 carbon atoms, alkynyl having a maximum of 6 carbon atoms and haloalkyl having a maximum of 6 carbon atoms and a maximum of 3 halogen atoms, cycloalkyl and alkylcycloalkyl having 3 to 7 ring carbon atoms and a maximum of 4 chain carbon atoms; phenyl and substituted phenyl having a maximum of 2 substituents, said substituent being selected from the group consisting of halogen, alklyl having a maximum of 4 carbon atoms and aralkyl of the formula



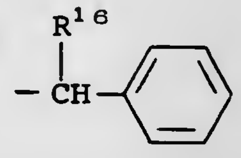
wherein R^7 is selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms, alkenyl having a maximum of 3 carbon atoms and haloalkyl having a maximum of 4 carbon atoms and a maximum of 3 halogen atoms, R^8 is selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms; R^9 is independently selected from the group consisting of alkyl having a maximum of 4 carbon atoms, alkoxy having a maximum of 2 carbon atoms and halogen; p is one of the integers zero to one; and q is one of the integers zero to two; and R^{10} is selected from the group consisting of



wherein R^{12} and R^{13} are each independently selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms, alkenyl having a maximum of 3 carbon atoms, chloroalkyl having a maximum of 3 carbon atoms and a maximum of 3 halogen atoms, chloroalkenyl having a maximum of 3 carbon atoms and 3 halogen atoms, provided that only one of R^{12} and R^{13} can be alkenyl or chloroalkenyl; R^{14} is selected from the group consisting of halogen, alkyl having a maximum of 4 carbon atoms, nitro, alkoxy having a maximum of 3 carbon atoms, and r is one of the integers zero to two; the group



wherein R^{15} is selected from the group consisting of alkyl and alkenyl each having a maximum of 4 carbon atoms, provided that R^{15} is other than alkenyl where either R^{12} or R^{13} is alkenyl or chloroalkenyl, and R^{12}, R^{13}, R^{14} and r are as previously defined; and the group



wherein R^{16} is selected from the group consisting of phenyl and naphthyl; R^{11} is selected from the group consisting of hydrogen, alkyl having a maximum of 6 carbon atoms, alkenyl having a maximum of 4 carbon atoms and chloroalkyl having a maximum of 3 carbon atoms and a maximum of 3 halogen atoms, chloroalkenyl having a maximum of 4 carbon atoms and a maximum of 3 halogen atoms.

3,865,868

PRODUCTION OF UNSATURATED ESTERS

Jack Lewis, Cambridge, England, assignor to Imperial Chemical Industries Limited, London, England

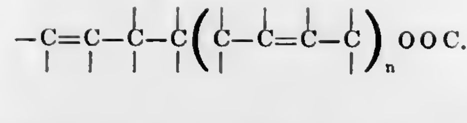
Filed Feb. 26, 1973, Ser. No. 336,046

Claims priority, application Great Britain, Mar. 13, 1972, 11591/72

Int. Cl. C07c *69/44, 69/78, 69/80*

U.S. Cl. 260—475 N **8 Claims**

1. A process for the production of unsaturated esters containing one or more groups



$$-C{=}C-C-C\left(C-C{=}C-C\right)_n OOC.$$

in which *n* is 1 which comprises reacting an acyclic conjugated diolefine selected from the group consisting of butadiene, isoprene and piperylene with a carboxylic acid selected from the group consisting of aliphatic and aromatic mono- and di-carboxylic acids in the presence of ethylene and a platinum or iridium compound, said compound being a halide, a lower alkanoate of an acid containing up to 6 carbon atoms or an organocomplex, the amount of said compound in the reaction solution being from 10^{-7} to 1.0 molar.

3,865,869

WATER-SOLUBLE DIELECTRIC RESINS

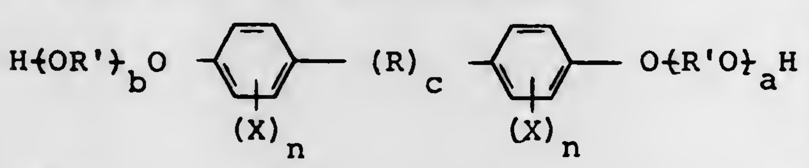
Erich Kuehn, Wilmington, and John R. Wyhof, Newark, both of Del., assignors to ICI America Inc., Wilmington, Del.

Filed May 21, 1973, Ser. No. 362,539

Int. Cl. C08g *17/10*

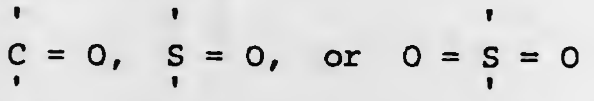
U.S. Cl. 260—47 C 15 Claims

1. A dielectric resin comprising an amine salt of a polyester resin, said resin comprising the reaction product of a dicarboxylic acid or an anhydride thereof provided that at least 80 mol percent of said acid or anhydride is an alpha unsaturated dicarboxylic acid, an anhydride thereof an aromatic dicarboxylic acid or an anhydride thereof, and a polyol blend comprising a first polyol having the following formula:



wherein

R is an alkylidene group containing from one to four carbon atoms, a cycloalkylidene group containing five or six carbon atoms, oxygen, sulfur, or a radical having one of the following formulas:



$$>C=O,\quad >S=O,\quad \text{or}\quad O=\underset{|}{\overset{|}{S}}=O$$

c is 0 or 1;

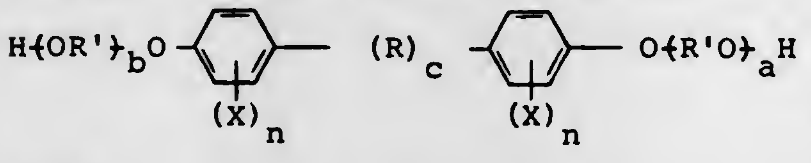
X is halogen or an alkyl radical containing from one to three carbon atoms;

n is an integer equal to from 0 to 4;

R′ is an alkylene group containing from two to four carbon atoms or the radical CH_2CHO; and

a and *b* are integers each of which is equal to at least 1 and the sum of which is equal to about 2, provided that the sum must be equal to at least 2.0

and a second polyol having the following general formula:



wherein

R, *c*, X, R′, and *n* are as defined above and *a* and *b* are integers each of which is equal to at least 1 and the sum of which is equal to from about 9 to about 16,

wherein the amount of acid or anhydride employed is sufficient to introduce from about 0.8 to about 1.2 carboxyl groups per hydroxyl group in the polyol blend and the amine has a boiling point of less than about 100°C.

3,865,870

OXIDATION OF METHYLATED BENZENES

Donald C. Cronauer, Gibsonia, Pa., and Larry G. Baumgard, Belpre, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 14, 1973, Ser. No. 341,010

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R 6 Claims

1. A method for the preparation of aryl carboxylic acids by the catalytic oxidation of methylated benzenes comprising contacting a mixture of water and a methylated benzene in a weight ratio of from 3:1 to 30:1 respectively, and an oxygen-containing gas with a noble metal catalyst selected from the group silver, palladium, ruthenium, platinum, rhodium, iridium, and osmium, at an elevated temperature under a pressure sufficient to maintain said mixture in the liquid phase.

3,865,871

PROCESS FOR PRODUCING AROMATIC TETRACARBOXYLIC ACIDS AND ANHYDRIDES THEREOF

Toshio Horie; Kazuaki Yoshida; Hisako Hori, and Yoshihisa Katsuyama, all of Yokohama, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1971, Ser. No. 121,529

Claims priority, application Japan, Mar. 13, 1970, 45-21317; Mar. 14, 1970, 45-21630; Apr. 4, 1970, 45-28931; Oct. 26, 1970, 45-94086; Nov. 5, 0170, 45-97377; Dec. 10, 1970, 45-109752

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R 24 Claims

1. A process for producing a high-purity aromatic tetracarboxylic acid or the anhydride thereof, which comprises oxidizing a raw material of a tetraalkylbenzene or a derivative thereof selected from the group consisting of those wherein the alkyl groups contain chlorine or oxygen or are partly oxidized to the aldehyde, ketone or acid, by means of molecular oxygen or a gas containing molecular oxygen in a medium of a monocarboxylic acid having 2 to 8 carbon atoms per molecule and in the presence of a catalyst containing 10 to 15 parts by weight of bromine and 3 to 10 parts by weight of one or more heavy metals selected from the group consisting of Co, Mn, Ce, Ni, Cr, V, Mo and W per 100 parts by weight of the tetraalkylbenzene, and purifying the resultant oxidation product by treating the product with an aqueous solution of a strong acid.

3,865,872

PROCESS FOR THE MANUFACTURE OF SORBIC ACID

Hans Ferholz, Fischbach/Taunus; Hans-Joachim Schmidt, Falkenstein/Taunus, and Friedrich Wunder, Florsheim/-Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt Main, Germany

Filed Jan. 24, 1973, Ser. No. 326,385

Claims priority, application Germany, Jan. 27, 1972, 2203712; Apr. 12, 1972, 2217529

Int. Cl. C07c *51/00*

U.S. Cl. 260—526 N 11 Claims

1. A process for the manufacture of sorbic acid from ketene and crotonic aldehyde by splitting a polyester formed therefrom, which comprises splitting the polyester at a temperature in the range of 20°–120°C. in the presence of an acid macroreticulated exchange resin having an average pore diameter of at least 200 A and a water content of less than 20 percent by weight.

3,865,873

PROCESS FOR PREPARING ACRYLIC ACID AND OR METHACRYLIC ACID FROM ACROLEIN OR METHACROLEIN

Yoshio Oda; Keiichi Uchida, and Takeshi Morimoto, all of Yokohama, Japan, assignors to Asahi Glass Co., Inc., Tokyo, Japan

Filed Oct. 20, 1972, Ser. No. 299,383

Claims priority, application Japan, Oct. 22, 1971, 46-83343; Dec. 16, 1971, 46-101456; Mar. 7, 1972, 47-22756; Mar. 7, 1972, 47-22757

Int. Cl. C07c *57/04*

U.S. Cl. 260—530 N 7 Claims

1. A process for preparing acrylic acid or methacrylic acid which comprises reacting acrolein or methacrolein with molecular oxygen in vapor phase at a temperature of from 250° to 450°C, in the presence of a catalyst consisting essentially of (a) molybdenum, (b) phosphorus, (c) at least one element selected from the group consisting of niobium, tantalum and titanium, and (d) oxygen.

3. A process for preparing acrylic acid or methacrylic acid which comprises reacting acrolein or methacrolein with molecular oxygen in vapor phase at a temperature of from about 250° to about 450°C, in the presence of a catalyst consisting essentially of (a) molybdenum (b) phosphorus, (c) at least one element selected from the group consisting of niobium, tantalum and titanium, (d) oxygen and (e) a member selected from the group consisting of tin, magnesium, tungsten, tin and magnesium, tin and tungsten, iron and tungsten, and magnesium and nickel.

3,865,874

ALIPHATIC 2-4 DIENSIC ACIDS

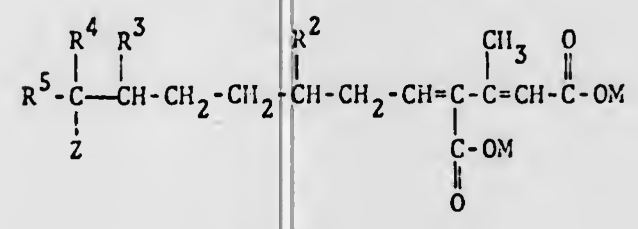
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 340,509, March 12, 1973, , and a continuation-in-part of Ser. No. 278,328, Aug. 7, 1972, Pat. No. 3,773,793. This application Dec. 6, 1973, Ser. No. 421,433

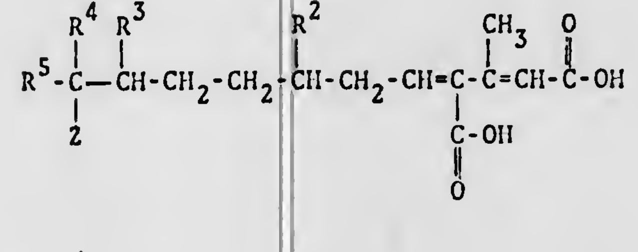
Int. Cl. C07c *59/18*

U.S. Cl. 260—535 P 7 Claims

1. A compound selected from the following formulas



$$R^5\text{-}C(R^4)(Z)\text{—}CH(R^3)\text{-}CH_2\text{-}CH_2\text{-}CH(R^2)\text{-}CH_2\text{-}CH{=}C(C(=O)\text{-}OM)\text{-}C(CH_3){=}CH\text{-}C(=O)\text{-}OM \qquad \text{(III)}$$



$$R^5\text{-}C(R^4)(Z)\text{—}CH(R^3)\text{-}CH_2\text{-}CH_2\text{-}CH(R^2)\text{-}CH_2\text{-}CH{=}C(C(=O)\text{-}OH)\text{-}C(CH_3){=}CH\text{-}C(=O)\text{-}OH \qquad \text{(IV)}$$

wherein,

M is potassium or sodium;

each of R^2, R^4 and R^5 is methyl or ethyl;

R^3 is hydrogen or methyl; and

Z is hydrogen, hydroxy or lower alkoxy.

3,865,875

METHOD OF PURIFYING SECONDARY AMMONIUM N,N-DISUBSTITUTED THIOLCARBAMATES

Colin John Hearsey, Surbiton/Surrey, and Brahm Dev Mehta, London, both of England, assignors to Quimco GmbH, Zuerich, Switzerland

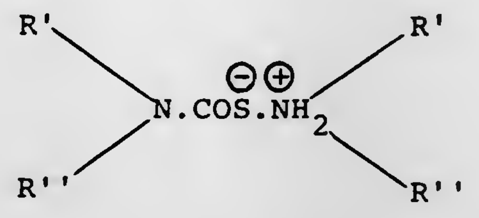
Filed Dec. 6, 1972, Ser. No. 312,750

Claims priority, application Great Britain, Dec. 6, 1971, 56580/71

Int. Cl. C07d *31/48*

U.S. Cl. 260—553 R 4 Claims

1. A method of purifying secondary ammonium N,N-disubstituted thiolcarbamates of the general formula:



in which R′ and R″, which may be the same or different, are alkyl radicals having 1 to 4 carbon atoms or alkenyl radicals having 3 or 4 carbon atoms wherein a solution of a secondary ammonium N,N-disubstituted thiolcarbamate of the above-given general formula in a solvent therefor, which solution also contains impurities, is heated to distill the said thiolcarbamate and solvent from the impurities to give a distillate containing the desired thiolcarbamate in the solvent and free from the said impurities.

3,865,876

SYNTHESIS OF 3,3′-DIAMINOBENZIDINE FROM 3,3′-DICHLOROBENZIDINE

Edward C. Chenevey, North Plainfield; Melvin L. Druin, West Orange, both of N.J., and Kenneth Oringer, Westport, Conn., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 21, 1969, Ser. No. 868,200

Int. Cl. C07c *85/02*

U.S. Cl. 260—581 9 Claims

1. A process for the synthesis of 3,3′-diaminobenzidene from 3,3′-dichlorobenzidine consisting essentially of reacting 3,3′-dichlorobenzidine with NH_3 in the presence of water and a catalyst consisting essentially of cuprous chloride.

3,865,877

PROCESS FOR THE DISPROPORTIONATION OF DIALLYLAMINES

Hans-Jurgen Arpe, Fischbach, Taunus, and Hansjorg Hey, Langenhain, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt Main, Germany

Filed Apr. 26, 1973, Ser. No. 354,850

Claims priority, application Germany, Apr. 29, 1972, 2221253

Int. Cl. C07c *85/00*

U.S. Cl. 260—583 H 4 Claims

1. A process for the disproportion of the diallylamines of the formula I

$$(R^1H\ C{=}CR^2{-}CH_2)_2NH \qquad \text{(I)}$$

where R^1 and R_2 each are hydrogen, lower alkyl or alkenyl having up to 5 carbon atoms to the corresponding mono- and triallylamines of the formulae II and III

$$R^1HC{=}CR^2{-}CH_2NH_2 \qquad \text{(II)}$$

$$(R^1HC{=}CR^2{-}CH_2)_3N \qquad \text{(III)}$$

where R^1 and R^2 are as defined above, which comprises reacting the diallylamines in the presence of from 0.1 to 5 mole percent of said diallylamines of a catalyst system containing (1) a compound or a complex of palladium and (2) triphenyl phosphine or tributyl phosphine, the molar ratio of phosphorus to palladium in said catalyst system being from 2:1 to 1000:1.

3,865,878

UNSATURATED SULPHONES

Pierre Chabardes, Lyon; Marc Julia, Paris, and Albert Menet, La Mulatiere, all of France, assignors to Rhone-Poulenc S.A, Paris, France

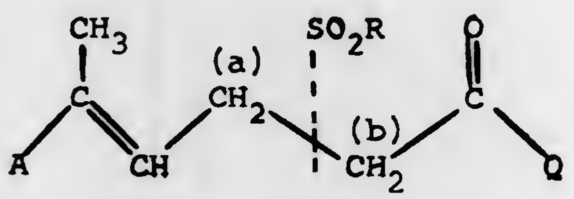
Filed Feb. 1, 1973, Ser. No. 328,597

Claims priority, application France, Feb. 4, 1972, 72.03806; Apr. 10, 1972, 72.12480

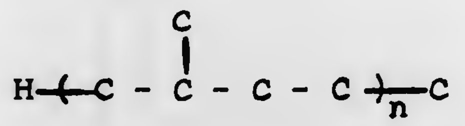
Int. Cl. C07c *49/76, 47/82*

U.S. Cl. 260—590 **14 Claims**

1. A sulphone of the formula:



in which the sulphonyl group replaces a hydrogen atom on carbon atom (a) or (b), R is an alkylaryl or aryl hydrocarbon radical, Q is an alkyl, alkenyl, or aromatic hydrocarbon radical, and A represents (a) a hydrocarbon radical having a carbon skeleton of formula:



$$H\!-\!\left(C-\overset{\displaystyle C}{\overset{|}{C}}-C-C\right)_{n}\!-\!C$$

wherein *n* is 1 to 8, each C_5 unit containing 0–2 ethylenic double bonds, the remaining valencies being satisfied by hydrogen atoms or two adjacent C_5 units are joined to form a structure containing a ring of 6 ring carbon atoms, (b) a methyl radical which is unsubstituted or substituted by halogen or a sulphide or sulphone group, or (c) a primary alcohol group $—CH_2OH$ or alkyl ether thereof with 2 to 7 carbon atoms.

3,865,879

PROCESS FOR THE PREPARATION OF PERI-INDENONES

Kurt Eiglmeier, Rosdert, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Main, Germany

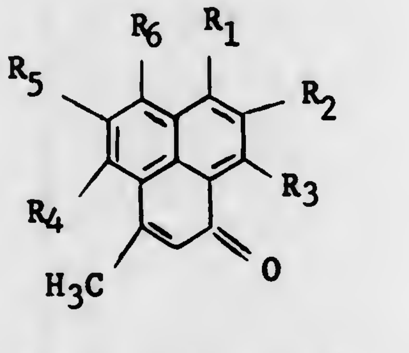
Filed Feb. 26, 1973, Ser. No. 336,006

Claims priority, application Germany, Mar. 1, 1972, 2209692; Dec. 22, 1972, 2262857; Dec. 22, 1972, 2262858

Int. Cl. C07c *49/76, 49/80, 49/82*

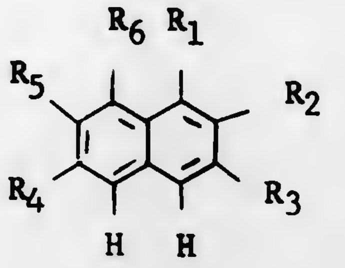
U.S. Cl. 260—590 **12 Claims**

1. Process for the preparation of carbocyclic indenones of the formula (1)



(1)

where R_1 through R_6 each are hydrogen, fluorine, chlorine, nitro, trifluoromethyl, alkyl or alkoxy, said alkyl and alkoxy radicals having from 1 to 4 carbon atoms, two adjacent radicals R_1 through R_6 may together form a single or multiple carbocyclic aromatic ring, two or more radicals R_1 through R_6 may together form a carbocyclic aromatic system, and the radicals R_1 and R_6 may together form $—CH_2—CH_2—$, which comprises reacting carbocyclic aromatic compounds having a free peri-group and corresponding to the formula (2)



(2)

where R_1 through R_6 are as defined above, with acetoacetyl fluoride in at least 90 % hydrofluoric acid at temperatures of from −10° to +120°C.

3,865,880

DECOLORIZATION OF KETONES

Joseph R. Quelly, Berkeley Heights, and Thomas P. McNamara, Atlantic Highlands, both of N.J., assignors to Exxon Research and Engineering Company, Lenelen, N.J.

Filed Sept. 9, 1971, Ser. No. 179,187

Int. Cl. C07c *49/06, 49/10*

U.S. Cl. 260—593 P **8 Claims**

1. A method for decolorizing off-color ketone streams containing alkanones having from 3–12 carbon atoms and containing color causing impurities comprising diketone color bodies, which method comprises passing said streams through a bed comprising in admixture as alkali metal borohydride and a filter material selected from the group consisting of attapulgus clay, crushed firebrick, diatomaceous earth and mixtures thereof wherein the amount of alkali metal borohydride is in the range of from about 1–20 percent by weight based on the amount of filter material present in admixture and at a temperature in the range of from 15°–30°C and a feed rate of from about 300–500 lbs./hr. based on the amount of alkali metal borohydride employed, said feed rate providing a contact time of from 1–30 minutes for said streams with said bed, and thereafter recovering a substantially water-white ketone containing stream.

3,865,881

PREPARATION OF KETONES

Charles H. McMullen, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 22, 1972, Ser. No. 236,997

Int. Cl. C07c *49/06*

U.S. Cl. 260—593 R **7 Claims**

1. A process for producing ketones which comprises reacting (i) in the liquid phase: (ii) an alpha-olefin of the formula $R^1CH{=}CH_2$ wherein R^1 represents hydrogen or alkyl of 1 to 18 carbon atoms, with an alkanal of from 2 to 8 carbon atoms; (iii) in the presence of an initiating amount of an organic hydroperoxide which is characterized by the unit —O—O—H, said unit being monovalently bonded to an aliphatic carbon atom of a hydrocarbyl group free of ethylenic and acetylenic unsaturation, said hydrocarbyl group having from 4 to 12 carbon atoms; and (iv) a catalytically effective quantity of a metal-containing compound, the metal moiety of which is selected from the group consisting of cobalt, manganese, chromium and iron, wherein the metal moiety of said metal containing compound is capable of readily undergoing a one electron redox cycle between a relatively stable plus two (+2) oxidation state and a relatively stable plus three (+3) oxidation state; (v) at an elevated temperature of from about 45°C to about 125°C; and (vi) for a period of time sufficient to produce said ketones.

3,865,882

PROCESS FOR PREPARING GLYOXAL

Shigeki Horlle; Chiyuki Fujii, both of Kanagawa Pref., and Yoshio Kosai, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1970, Ser. No. 35,944

Claims priority, application Japan, May 9, 1969, 44-35308

Int. Cl. C07c *47/12*

U.S. Cl. 260—601 R **24 Claims**

1. A process for preparing glyoxal which comprises in the presence of water reacting chloroacetaldehyde with a dialkyl sulfoxide, each of said alkyl groups, which may be the same or different, of said dialkyl sulfoxide having less than 5 carbon atoms, at a temperature of at least 20°C.

3,865,883

1,2,3,4,9,12-HEXAHYDROPHENANTHRENES

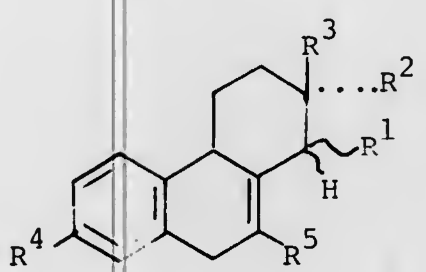
John A. Edwards, Los Altos, and John H. Fried, Palo Alto, both of Calif., assignors to Syntex Corporation, Apartado, Panama, Panama

Division of Ser. No. 883,582, Dec. 9, 1969, Pat. No. 3,681,427. This application Mar. 17, 1972, Ser. No. 235,808

Int. Cl. C07c *171/07*

U.S. Cl. 260—613 R **8 Claims**

1. A compound selected from the group of compounds represented by the following formula:



wherein

- R^1 is methyl or ethyl;
- R^2 is hydroxymethyl or the hydrolyzable hydrocarbon carboxylic acid esters thereof wherein the carboxylic acid moiety has from 2 to 14 carbon atoms;
- R^3 is methyl or ethyl;
- R^4 is lower alkyloxy wherein the alkyl moiety has from 1 to 6 carbon atoms, hydroxy, the hydrolyzable hydrocarbon carboxylic acid esters of said hydroxy group wherein the carboxylic acid moiety has from 2 to 14 carbon atoms, tetrahydropyran-2′-yloxy, tetrahydrofuran-2′-yloxy, 4′-methoxytetrahydropyran-2′-yloxy, or cyclopentyloxy; and
- R^5 is hydrogen or methyl.

3,865,884

PREPARATION OF ORCINOL

Robert G. Agusto; Francis A. Taylor, and Hartwell L. Briggs, all of Chicago, Ill., assignors to Canadian Thermo Images, Ltd., Vancouver, British Columbia, Canada

Filed May 11, 1970, Ser. No. 36,419

Int. Cl. C07c *37/06*

U.S. Cl. 260—621 H **9 Claims**

1. A process for preparing 3,5-dihydroxytoluene which comprises: condensing an alkyl crotonate with an alkyl acetoacetate, said alkyl groups containing from 1–12 carbon atoms, in the presence of a strong base selected from the group consisting of sodium hydride, sodium methylate and sodium ethylate to form the salt of a carboalkoxymethyldihydroresorcinol; refluxing said salt with an aqueous alkali metal hydroxide solution, recovering the hydrolysis product, heating said hydrolysis product in the presence of acid, cooling to form a precipitate, recovering said precipitate which is methyldihydroresorcinol; and subsequently dehydrogenating said methyldihydroresorcinol to form orcinol.

3,865,885

CATALYTIC CHLOROFLUORINATION OF ISOPROPYL FLUORIDE TO 1,1,2-TRICHLOROTRIFLUOROPROPENE-1

John MacMillan Bruce, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 10, 1973, Ser. No. 387,477

Int. Cl. C07c *17/06, 17/34, 21/18*

U.S. Cl. 260—653.3 **5 Claims**

1. In a catalyzed reaction at a temperature of between 300°C. and 500°C. of isopropyl fluoride with hydrogen fluoride and chlorine to form 1,1,2-trichlorotrifluoropropene-1, the improvement comprising employing a catalyst combination of a divalent cobalt compound and activated amorphous carbon.

3,865,886

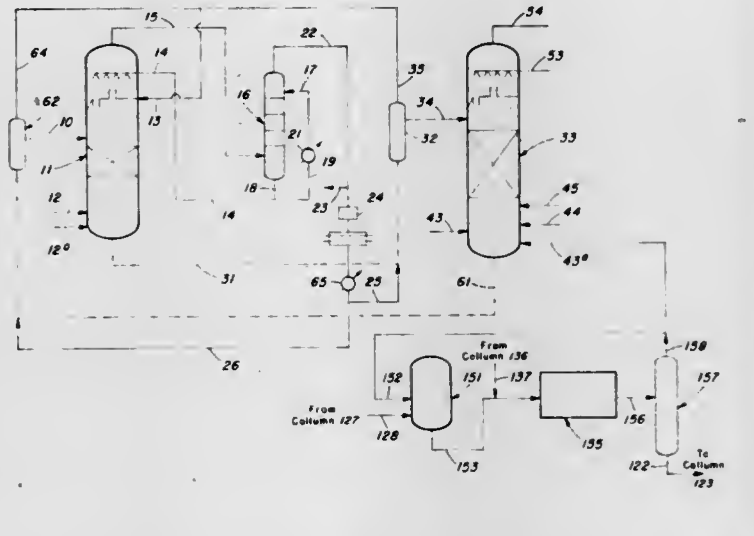
PRODUCTION OF ALLYL CHLORIDE

Harvey D. Schindler, Paterson; Morgan C. Sze, Upper Montclair, and Herbert Riegel, Maplewood, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed June 20, 1973, Ser. No. 371,615

Int. Cl. C07c *21/04*

U.S. Cl. 260—654 R **18 Claims**



1. A process for producing allyl chloride, comprising:

a. contacting in a first reaction zone propane and a member selected from the group consisting of chlorine, hydrogen chloride and mixtures thereof with a molten mixture comprising the higher and lower valent chlorides of a multivalent metal and the oxychloride of the metal to produce a first effluent comprising allyl chloride, isomers of allyl chloride, and dichloropropane;
b. recovering dichloropropane and isomers of allyl chloride from the first effluent;
c. introducing isomers of allyl chloride recovered from the first effluent into a second reaction zone wherein the isomers are hydrochlorinated to dichloropropane by contact with hydrogen chloride;
d. dehydrochlorinating in a third reaction zone dichloropropane produced in the second reaction zone and dichloropropane recovered from the first effluent to produce a second effluent comprising allyl chloride, hydrogen chloride and isomers of allyl chloride;
e. recovering hydrogen chloride and isomers of allyl chloride from the second effluent;
f. recycling hydrogen chloride recovered from the second effluent to at least one of the first and second reaction zones;
g. recovering allyl chloride from the first and second effluents as product; and
h. recycling isomers of allyl chloride recovered from the second effluent to step (c).

3,865,887

PROCESS FOR REMOVING LOWER ALKYL CHLORIDES FROM VINYL CHLORIDE MONOMERS

Ronnie D. Gordon, Richardson, Tex., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 21, 1972, Ser. No. 265,073

Int. Cl. C07c *21/02*

U.S. Cl. 260—656 R **7 Claims**

1. A process for purifying crude vinyl chloride containing lower alkyl chloride derived from pyrolysis of 1,2-dichloroethane which comprises removing said lower alkyl chloride by passing said crude vinyl chloride at elevated temperatures in the range of about 75°C to about 300°C through a bed of a purification agent selected from the group consisting of metal oxides supported on alumina wherein the metal is a Group IVB, VB, VIB, VIIB or VIII metal; bismuth oxide supported on alumina; copper sulfate supported on alumina; cobalt chloride supported on alumina; thorium oxide supported on alumina; magnesium oxide; and alumina.

3,865,888

PROCESS FOR PRODUCING CYCLOALKENES

Susumu Akutagawa, Tokyo; Hidenori Kumobayashi, Kanagawa, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed June 24, 1974, Ser. No. 482,696

Claims priority, application Japan, Aug. 2, 1973, 48-87013

Int. Cl. C07c *13/00*

U.S. Cl. 260—666 A **9 Claims**

1. A process for producing cyclopolyenes $(1,5, \ldots 4n+5)$ having $12 + 4n$ carbon atoms where n is an integer of from 1 to 7 comprising polymerizing cyclododecatriene (1,5,9) in the presence of a rhenium catalyst on an alumina carrier or an alumina-boria carrier.

3,865,889

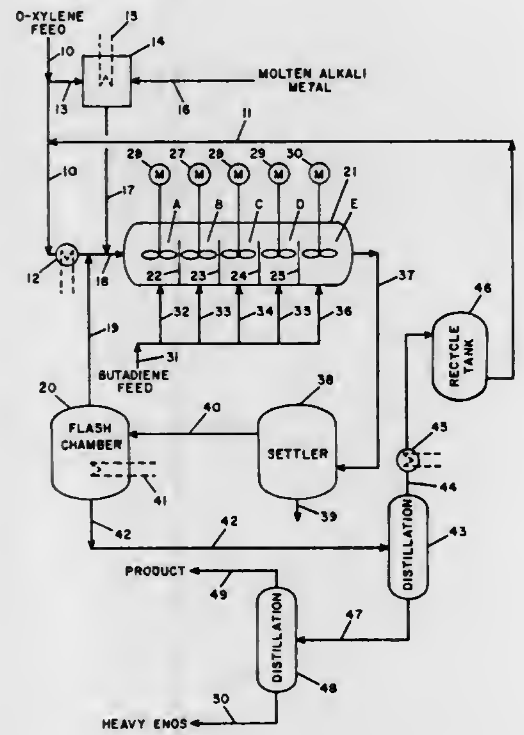
PROCESS FOR ALKENYLATION OF ALKYLBENZENES

Richard E. Mitchell, Boothwyn, Pa., assignor to Sun Ventures Inc., St. Davids, Pa. and Teijin Limited, Tokyo, Japan

Filed Oct. 31, 1973, Ser. No. 411,563

Int. Cl. C07c *3/52*

U.S. Cl. 260—668 B **8 Claims**



1. In a process in which an alkadiene is reacted with excess alkylbenzene including recycle alkylbenzene hereinafter specified to form a reaction mass containing the mono-adduct alkadiene-alkylbenzene addition product, the reaction mass is fractionated in a distillation column to separate a relatively pure mono-adduct and alkylbenzene, the latter being employed as said recycle, the improvement which comprises:

a. introducing the reaction mass to a flash chamber to separate a portion of the alkylbenzene therein;
b. fractionating the remaining reaction mass in said distillation column to separate relatively pure monoadduct and additional alkylbenzene;
c. and employing alkylbenzene separated in both the flash chamber and the distillation column as said recycle.

3,865,890

PROCESS FOR SEPARATING A MATERIAL FROM A MIXTURE OF MIXTURE WHICH COMPRISES EMPLOYING A SOLID WATER-INSOLUBLE, HYDROPHILIC, SEMI PERMEABLE MEMBRANE

Edward F. Steigelmann, and Robert D. Hughes, both of, Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 335,012, Feb. 23, 1973. This application May 30, 1973, Ser. No. 365,203

Int. Cl. B01d *53/23;* **C07c** *11/00*

U.S. Cl. 55—16 **8 Claims**

1. In a method for separating a material from a mixture which comprises contacting said mixture containing said material with a first side of an essentially solid, water-insoluble, hydrophilic, semi-permeable membrane having therein aqueous liquid barrier having ions which combine with said material to form a water-soluble complex, the partial pressure of said material on a second side of said semi-permeable membrane being sufficiently less than the partial pressure of said material in said mixture to provide separated material on said second side of said semi-permeable membrane, and removing said separated material from the vicinity of said second side of said semi-permeable membrane, said separted material having a transfer rate across said liquid barrier that is greater than at least one other component of said mixture, the improvement which comprises employing as said semi-permeable membrane a semi-permeable grafted copolymer film consisting essentially of nylon having grafted thereto a polymer of an alpha-olefinic, hydrophilic, polymerizable monomer.

3,865,891

METHOD OF DEHYDROGENATION, DEHYDROCYCLIZATION AND HYDRODEALKYLATION

Viktor Sergeevich Smirnov, Kutuzovsky prospekt, 26, kv. 555; Vladimir Mikhailovich Gryaznov, Leninskie Gory, MGU, Zona L, kv. 110; Valentina Ivanovna Lebedeva, Leninsky prospekt, 48a, kv. 29; Alexandr Petrovich Mischenko, Khersonskaya ulitsa, 7, korpus 4, kv. 115; Victoria Petrovna Polyakova, ulitsa Trofimova, 15, kv. 201, and Evgeny Mikhailovich Savitsky, ulitsa Dm. Ulyanova, DNR-3, kv. 13, all of Moscow, U.S.S.R.

Division of Ser. No. 23,037, March 26, 1970, abandoned. This application July 12, 1972, Ser. No. 271,186

Int. Cl. C07c *11/12*

U.S. Cl. 260—680 R **13 Claims**

1. A method for the selective preparation of dienes which comprises the passing of a vaporized hydrocarbon feedstock at a temperature of 300° to 650°C over a catalyst consisting of palladium alloyed with at least one member of the group consisting of rhenium, tungsten, and a combination of tungsten and ruthenium, the content of palladium in said alloy ranging from 60 to 99 weight percent, said feed-stock being a C_2—C_{20} olefin which is thereby subjected to dehydrogenation.

3,865,892

HOMOGENEOUS DISPROPORTIONATION-DIMERIZATION OF OLEFINS

Ernest A. Zuech, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 849,181, Aug. 11, 1969, abandoned. This application Apr. 17, 1972, Ser. No. 244,855

Int. Cl. C07c *3/10, 3/62*

U.S. Cl. 260—683 D **10 Claims**

1. A method of converting acyclic monoolefins having from 3–12 carbon atoms per molecule to higher molecular weight olefins which comprises contacting the acyclic monoolefin with a catalyst system of a homogeneous olefin disproportionation component

a. an NO containing molybdenum complex a homogeneous olefin dimerization component
b. a complex of nickel represented by the formula $(R_3P)_2NiX_2$, $(L_1)_2NiX_2$, $(L_4)NiX_2$, or $(L_5)_2Ni$ wherein R is an aromatic or saturated aliphatic radical, or an aromatic or saturated aliphatic radical substituted with halo groups or alkoxy groups, (L_1) is R_3PO, unsubstituted or R-substituted pyridine, or unsubstituted or R-substituted pyridine oxide, and X is chlorine, bromine or iodine, (L_4) is unsubstituted or R-substituted 2,2′-bipyridines, (L_5) is unsubstituted or R-substituted picolinate radicals, and the total number of carbon atoms in the complex does not exceed about 60; and a third component
c. an organoaluminum halide represented by the formula R_xAlX_y wherein x and y are integers of at least 1 whose total is 3, R is as defined above, and X is chlorine, bromine or iodine.

3,865,893

CONVERSION PROCESS UTILIZING HOMOGENEOUS METAL CATALYSTS

Judith G. Thatcher, and Rudolph C. White, both of c/o Texaco Inc., P.O. Box 3407, Richmond, Va. 23234

Continuation of Ser. No. 76,993, Sept. 30, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,746

Int. Cl. C07c *5/02, 5/24*

U.S. Cl. 260—683.2 **3 Claims**

1. A process for isomerizing alpha (α) olefins containing at least 4 carbon atoms to their isomerized internal olefinic products, comprising contacting each mole of said olefins to be isomerized to olefinic products with about 0.01 to about 0.1 moles of homogeneous cobalt catalytic complex consisting essentially of:

$$HCoN_2[(C_6H_5)_3P]_3$$

at temperatures ranging between about 0°C. and about 60°C. at pressures ranging from about 0 psig to about 600 psig, in a solubilizing amount of non-aqueous, inert solvent media in an inert atmosphere substantially free from carbon monoxide and oxygen, said atmosphere being selected from the group of gases consisting of nitrogen, the noble gases and mixtures thereof, until the desired, isomerized internal olefinic products are formed.

3. A process for hydrogenating olefinic substrates selected from the group consisting of alpha olefins, internal olefins, linear dienes and cyclodienes containing at least 4 carbon atoms to produce their desired and corresponding saturated alkanes, comprising contacting each mole of said olefinic substrates to be hydrogenated with about 0.01 moles to 0.1 moles of homogeneous cobalt complex catalyst consisting essentially of:

$$H_3Co[(C_6H_5)_3P]_3$$

at temperatures ranging from about 20°C. to about 35°C., at pressures ranging from about atmospheric to about 600 psig, in a solubilizing quantity of inert, non-aqueous solvent media in a hydrogen environment substantially free from carbon monoxide and oxygen, until the desired saturated alkanes are formed.

3,865,894

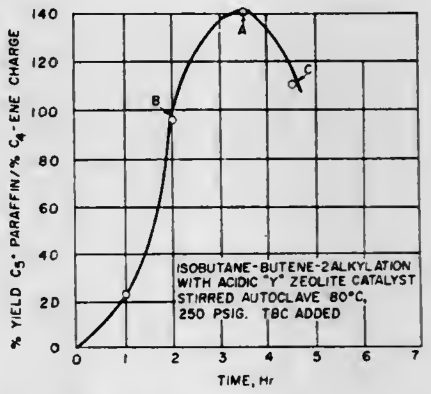
PROCESS FOR PARAFFIN-OLEFIN ALKYLATION

Francis William Kirsch, Wayne; David S. Barmby, Media, and John D. Potts, Springfield, all of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 581,129, Aug. 25, 1966, abandoned. This application Mar. 26, 1968, Ser. No. 716,190

Int. Cl. C07c *3/52*

U.S. Cl. 260—683.43 **8 Claims**



1. A paraffin-olefin alkylation process which comprises contacting monoolefin of the C_2-C_9 range in admixture with paraffin of the C_4-C_6 range and with a substantially anhydrous acidic crystalline alumino-silicate zeolite under alkylating conditions and wherein there is present in solution in the reaction mixture from 10^{-5} to 10^{-1} mole per mole of C_4-C_6 paraffin of a halide, said halide being selected from the group consisting of HCl, carbon tetrachloride and the aliphatic saturated monochlorides having no more than 6 carbon atoms.

3,865,895

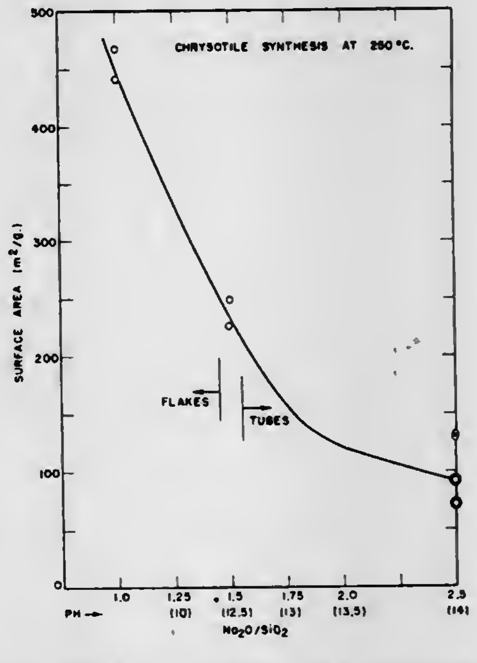
PROCESS FOR THE HYDROGENATION OF UNSATURATED HYDROCARBONS WITH CHRYSOTILE CATALYST COMPOSITIONS

Harry E. Robson, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 233,368, March 9, 1972, Pat. No. 3,804,741, which is a division of Ser. No. 63,324, Aug. 31, 1970, Pat. No. 3,729,429. This application Aug. 24, 1973, Ser. No. 391,354

Int. Cl. C10g *23/02;* **C07c** *5/14*

U.S. Cl. 260—683.9 **31 Claims**



1. A process for the hydrogenation of unsaturated hydrocarbons comprising contacting said unsaturated hydrocarbons, with hydrogen, at temperatures ranging from about 50°C. to about 450°C., and pressures ranging from about 100 psi to about 300 psi, with a catalyst comprising a chrysotile composition characterized as having repeating units defined by the following structural formula:

$$[(1-x)\ M^{(a)} + xM^{(b)}]_n(OH)_4Si_2O_5\ .\ wH_2O$$

where *M* and *M* are selected from monavalent and multivalent metal cations selected from Groups I, II, III, IVB, VB, VIB, VIIB, and VIII metals, of the Periodic Table of the Elements, having an effective ionic radius ranging from about 0.5 to about 1 A, x is a number ranging from 0 to 1 which expresses the atomic fraction of the metals M and M, a is the valence of M, b is the valence of M, n is a number equal in value to that defined by the ratio $6/[a(1-x)+bx]$, w is a number ranging from 0 to 4, and

where $x = 0$, and M is magnesium, the surface area of the composition ranges above about 110 m²/g,

where $x = 0$, and M is nickel, the surface area of the composition ranges above about 125 m²/g, and

where $x = 0$, and M is cobalt, the surface area of the composition ranges above about 190 m²/g.

3,865,896

ALKYLATION CATALYST ADDITIVE

Frederic C. McCoy, Beacon, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

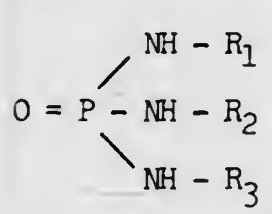
Filed Nov. 5, 1973, Ser. No. 413,123

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.51 **10 Claims**

1. In an alkylation process wherein an isoparafin hydrocarbon is alkylated with an olefin in the liquid phase with an alkylation catalyst selected from the group consisting of hydrogen fluoride, sulfuric acid, fluorosulfonic acid, mixtures of sulfuric acid and fluorosulfonic acid, and aluminum chloride, the improvement which comprises:

employing, in said alkylation process, from about 0.0005 to about 0.5 weight percent based on said liquid alkylation catalyst a compound having the chemical formula



wherein R_1, R_2 and R_3 are selected from the straight chain and branched chain alkyl radicals having from 10 to 24 carbon atoms each.

3,865,897

METHOD OF BLENDING POLYOLEFINS AND POLYDIORGANOSILOXANE GUMS AND BLENDS THEREOF

James R. Falender, Sanford; Sarah E. Lindsey, and John C. Saam, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 3, 1973, Ser. No. 385,360

Int. Cl. C08f *29/12, 35/02*

U.S. Cl. 260—827 **9 Claims**

1. A method of blending a polyolefin and a polydiorganosiloxane gum comprising mechanically mixing a polydiorganosiloxane gum and a polyolefin selected from the group consisting of low density polyethylene, high density polyethylene, polymethylpentene, polypropylene and a copolymer consisting of tetrafluoroethylene repeating units and ethylene repeating units, at a shear rate greater than 10 sec⁻¹ for a period of time suitable to obtain a viscosity within 60 percent of the maximum viscosity obtainable at mixing conditions, and at a temperature within a range for each polyolefin of from 175° to 300°C. for low density polyethylene, from 200° to 320°C. for high density polyethylene, from 225° to 300°C. for polymethylpentene, from 215° to 300°C. for polypropylene and from 275° to 350°C. for copolymers of tetrafluoroethylene repeating units and ethylene repeating units and thereafter recovering a processable stable, homogeneous blend, said polydiorganosiloxane gum being present in an amount of from 7 to 75 weight percent and said polyolefin being present in an amount of from 25 to 93 weight percent wherein the combined weight of the polydiorganosiloxane gum and polyolefin is 100 weight percent, said polydiorganosiloxane gum being a toluene soluble gum having a Williams plasticity greater than 0.020 inch, with a ratio of organic groups per silicon atom of about two wherein the organic groups are selected from methyl, phenyl, vinyl and allyl with from 1.5 to 17 mol percent of the siloxane units having vinyl or allyl groups and no more than 50 percent of the organic groups being phenyl.

3,865,898

PROCESS FOR PREPARING BLOCK COPOLYMERS WITH CARBAMATE LINKAGES BETWEEN A POLYVINYL CHAIN AND A POLYMER HAVING ACTIVE HYDROGENS

Arthur V. Tobolsky, deceased, late of 191 Snowden Ln., Princeton, N.J. 08540 (by Dorothy E. Tobolsky, executrix)

Filed Feb. 26, 1973, Ser. No. 335,560

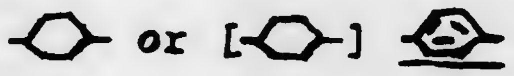
Int. Cl. C08g *41/04*

U.S. Cl. 260—859 R **28 Claims**

1. A method for preparing a block copolymer, comprising the steps of

a. reacting a polymer constituent with bis(4-isocyanatocyclohexyl) methane at a temperature ranging between about 50° and about 80°C, thereby to form an isocyanate-capped prepolymer;

b. reacting at a temperature up to about 50°C said isocyanate-capped prepolymer with a dihydroperoxide of the formula $HOOC(CH_3)_2—_{R}—_{C(CH_2}) _3OOH$ wherein R is



to form a peroxycarbamate having a peroxygen content ranging between about 0.01 and 1 percent by weight and being capable of initiating the polymerization of an ethylenically-unsaturated monomer, the mole ratio of said bis(4-isocyanatocycohexyl) methane to the —OH and —O—OH in said polymer constituent and said dihydroperoxide being about one to one;

c. adding said peroxycarbamate to an ethylenically unsaturated monomer in a liquid medium, the weight ratio of said prepolymer in said peroxycarbamate to said monomer ranging between about 5 to 95 and about 90 to 10 and the amount of said bis(4-iso-cyanatocyclohexyl) methane on said monomer ranging between about 0.01 and about 5 percent by weight; and

d. heating the mixture from step (c) at a temperature between about 60° and about 100°C for a time sufficient to polymerize said monomer and form a block polymer of alternating polyurethane and polyvinyl blocks.

3,865,899

FLATTING COMPOSITIONS

Edward R. deVries, Lebanon, N.J., assignor to Unifilm Corporation, Somerville, N.J.

Filed June 1, 1973, Ser. No. 365,827

Int. Cl. G08g *37/16;* **C08g** *41/04*

U.S. Cl. 260—841 **4 Claims**

1. A flatting composition which comprises

1. dispersed discrete flatting agent particles having a fine size range from about 0.02 to about 10 microns of the in situ prepared cross-linked reaction product of

a. a crystalline, thermoplastic polar nylon or polyester organic polymer containing reactive hydrogen groups and having a softening point of from about 120°to about 240°C. which is insoluble in common coating solvents for film-forming organic binders and soluble only at elevated temperatures in strong organic solvents for said organic polymer and

b. a cross-linking agent chemically reactive with said organic polymer and containing chemically reactive isocyanate or methylol groups;

2. a solubilized compatible film-forming organic binder; and

3. an inert liquid dispersion medium comprising

c. a common coating solvent for the compatible film-forming organic binder in which said organic polymer and said cross-linked reaction product are insoluble and

d. a strong organic solvent for said organic polymer in which the organic polymer is soluble only at elevated temperatures and in which said cross-linked reaction product is insoluble.

3,865,900

CATIONIC DYEABLE NYLON 6 CONTAINING ALKALINE METAL SALTS OF POLY (2-METHYL-2-(1-XO-2-PROPENYL) AMINO) -1-PROPANESULFONIC ACID

Joseph Donald DeCaprio, Hopewell; John Christopher Haylock, and Robert Allen Lofquist, both of Richmond, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 1, 1974. Ser. No. 447,188

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 UN **10 Claims**

1. A fiber-forming synthetic linear polycaproamide receptive to cationic dyes, containing from about 50 to about 300 gram equivalents per 10^6 grams of polymer, as sulfonate, of an alkaline metal salt of poly 2-methyl-2-((1-oxo-2-propenyl)amino)-1-propane-sulfonic acid .

3,865,901

RESINOUS COATING COMPOSITIONS HARDENABLE BY HIGH ENERGY RADIATION

Wolfgang Klein-Doepke, Darmstadt; Wilhelm Elser, Graefenhausen; Peter Quis, and Peter Rossberg, both of Darmstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Jan. 4, 1973, Ser. No. 321,006

Claims priority, application Germany, Jan. 3, 1972, 2200013

Int. Cl. C08f *21/00*

U.S. Cl. 260—871 **7 Claims**

1. A resinous coating composition, hardenable by exposure to high-energy radiation, comprising, as the radiation-hardenable binder component thereof, a mixture of: (a) 40 to 90 percent, by weight of said binder component, of unsaturated polyester having olefinic bonds, polymerizable by free-radical polymerization, in a position α,β to an ester carbonyl group from a dicarboxylic acid; and (b) 60 to 10 percent, by weight of said binder component, of a member selected from the group consisting of (i) alkoxyalkyl esters of acrylic acid and methacrylic acid, (ii) mixtures of said esters with up to an equal amount by weight of an hydroxyalkyl ester of acrylic acid or methacrylic acid, and (iii) mixtures of (i) or (ii) with up to 20 percent, by weight of said mixtures, of at least one further, different, vinyl or vinylidene monomer.

3,865,902

PROCESS FOR THE POLYMERISATION OF MONO-OLEFINS

Wolfgang Gordon, Hofheim, Taunus; Kurt Rust, Frankfurt, Main, and Erwin Schrott, Sulzbach, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Apr. 10, 1973, Ser. No. 349,850

Claims priority, application Germany, Apr. 15, 1972, 2218363

Int. Cl. C08f *1/56, 1/40, 3/10*

U.S. Cl. 260—878 B **6 Claims**

1. In a process for the preparation of a crystalline polyolefin by polymerization of at least one α-olefin of the formula $CH_2{=}CH—R$, wherein R represents an aliphatic radical having 1 to 4 carbon atoms, in suspension, in solution or in the gas phase, at a temperature of from 20° to 130°C. and a pressure of from 1 to 50 kg/cm², wherein the polymerization is carried out with a mixed catalyst, the improvement which comprises using a mixed catalyst prepared from

a. a halogen compound of the trivalent titanium

b. a halogen free, organo-aluminum compound

c. a monocyclopolyalkene having 7 or 8 ring members and respectively 2 to 3 or 2 to 4 non-cumulated double bonds in the ring or the alkyl or alkoxy substituted derivatives thereof, the alkyl radical of the substituent containing from 1 to 4 carbon atoms and

d. a cyclic or non-cyclic compound which contains as the only functional groups one or two tertiary carboxylic acid amid groups or a urea grouping fully substituted at the nitrogen atoms.

3,865,903

HEAT SEALABLE ISOTACTIC POLYPROPYLENE AND 1,3 PENTADIENE POLYMER

Michael A. Nahmias, Canandaigua, N.Y., and Edward M. Bullard, South Orange, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,211

Int. Cl. C08d *3/04;* **C08f** *29/12*

U.S. Cl. 260—889 **16 Claims**

1. A resinous blend composition comprising a blend of an essentially isotactic, crystalline polypropylene containing, a minor amount, sufficient to improve the heat sealability of film prepared therefrom, of from about 5% to about 40% by weight of a normally solid, resinous, random multipolymer of a mixture comprising pentadiene 1,3 and at least one other compound containing ethylenic unsaturation copolymerizable therewith.

3,865,904

ADDITIVES FOR POWDER RESINS

Frank Wingler, Leverkusen; Richard Muller, Bergisch Neukirchen, and Dieter Pollheide, Leichlingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 15, 1972, Ser. No. 315,621

Claims priority, application Germany, Dec. 22, 1971, 2163675

Int. Cl. C08f *31/18;* **C08f** *29/50*

U.S. Cl. 260—901 **4 Claims**

1. A composition comprising from 0.1 to 5% by weight of a solvent-free copolymer having an average molecular weight of from 1,000 to 10,000 and a viscosity of from 1 to 1,000 poises at 100° C., said copolymer comprising copolymerized units of:

I. from 1 to 20 parts by weight of an α,β-monoolefinically unsaturated carboxylic acid having from three to five carbon atoms;

II. from 0 to 50 parts by weight of an ester of acrylic acid or methacyclic acid having from one to four carbon atoms in the alcohol radical and

III. from 30 to 99 parts by weight of an ester of acrylic or methacrylic acid having from five to 20 carbon atoms in the ester alcohol,

and from 95 to 99.9% by weight of a solvent-free copolymer, said copolymer comprising copolymerized units of:

A. from 25 to 60% by weight of styrene;

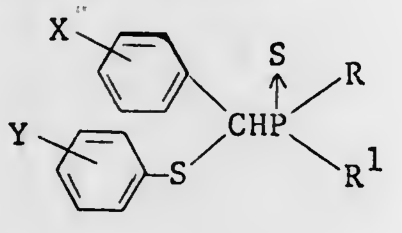
B. from 10 to 70% by weight of at least one ester of acrylic acid or methacrylic acid and

C. from 5 to 30% by weight of at least one member selected from the group consisting of a hydroxy alkyl ester of an α,β-unsaturated carboxylic acid having from three to five carbon atoms and from two to eight carbon atoms in the hydroxy alkyl moiety; acrylamide; methacrylamide; an N-methylolamide of acrylic or methacrylic acid; acrylic acid; fumaric acid; maleic acid; itaconic acid; crotonic acid and methacrylic acid.

3,865,905
DITHIOPHOSPHATE AND DITHIOPHOSPHONATES

LLewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.
Filed Feb. 19, 1974, Ser. No. 443,543
Int. Cl. C07f *9/16, 9/40;* **A01n** *9/36*
U.S. Cl. 260—949 **3 Claims**

1. A compound having the formula



in which R is alkoxy having one to five carbon atoms; R^1 is alkyl having one to five carbon atoms; or alkoxy having one to five carbon atoms; X is hydrogen, chlorine, bromine, methyl, methoxy, or ethoxy and Y is hydrogen, chlorine, bromine, methyl, methoxy or ethoxy.

3,865,906
0,0-DIALKYL-(3,5-DIALKYL-4-HYDROXYBENZYL)DITHIOPHOSPHATE COMPOSITIONS AND PROCESS FOR MAKING SAME

Kju Hi Shin, Bloomfield Hills, and Edward F. Zaweski, Pleasant Ridge, both of Mich., assignors to Ethyl Corporation, Richmond, Va.
Division of Ser. No. 131,512, April 5, 1971, Pat. No. 3,745,148. This application Feb. 26, 1973, Ser. No. 335,446
Int. Cl. C07f *9/12;* **B01j** *1/18*
U.S. Cl. 260—953 **15 Claims**

1. An antioxidant composition made by the process of:

A. reacting from 1–10 moles of unsubstituted saturated monohydric alkanol containing from one to about 50 carbon atoms with a mole of P_2S_5 at a temperature of from about 75° to about 125°C. to form a dithiophosphate reaction mixture;

B. neutralizing said dithiophosphate reaction mixture with aqueous ammonia; and

C. adding from about 1 to 3 moles of C_{1-20} alkyl-substituted hydroxybenzyl chloride to the neutralized reaction mixture and reacting at a temperature of from about 50° to 150°C. while adding aqueous ammonia at a controlled rate such that the pH is maintained in the range of about 5–6 during the reaction.

6. A process for making an antioxidant composition, said process comprising:

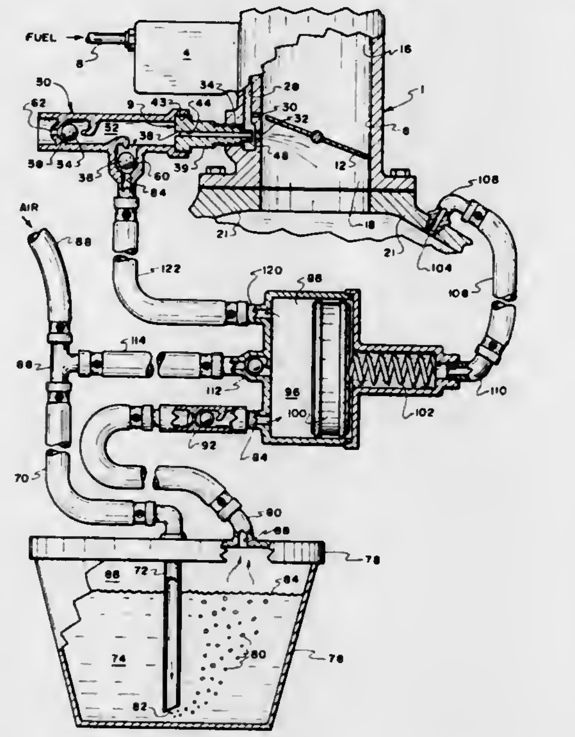
A. reacting from 1–10 moles of an unsubstituted saturated monohydric alkanol containing from one to about 50 carbon atoms with a mole of P_2S_5 at a temperature of from about 75° to about 125°C. to form a dithiophosphate reaction mixture;

B. neutralizing said dithiophosphate reaction mixture with aqueous ammonia; and

C. adding from about 1 to 3 moles of C_{1-20} alkyl-substituted hydroxybenzyl chloride to the neutralized reaction mixture and reacting at a temperature of from about 50° to 150°C while neutralizing with aqueous ammonia.

3,865,907
NEEDLE VALVE VAPOR INJECTION AND METHOD

Howard P. Rock, 5034 Del Rio, Salt Lake City, Utah 84117
Continuation-in-part of Ser. No. 324,465, Jan. 17, 1973, abandoned, which is a continuation of Ser. No. 231,988, March 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 60,552, Aug. 3, 1970, abandoned. This application Oct. 9, 1973, Ser. No. 404,468
Int. Cl. F02m *25/02*
U.S. Cl. 261—18 A **7 Claims**



1. In combination:

a carburetor having a barrel communicating with an intake manifold and a fuel passage and idle port communicating fuel to the barrel, said port being in the wall of the carburetor;

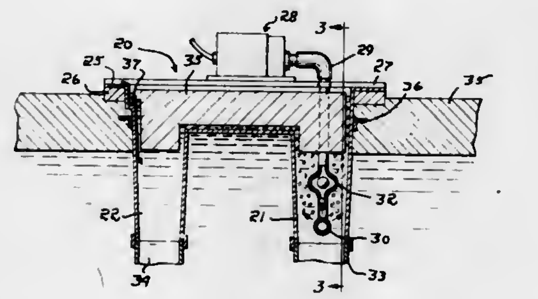
a threaded bore of greater diameter than the port axially aligned with the port, the threaded bore spanning between the port and the exterior of said carburetor;

a threaded needle valve adjustably received in said threaded bore and comprising a distal end portion seatable against said wall around said port to close said port, and external means at or near the exposed proximal end of the needle valve for adjusting the spacing of said distal end from the wall, said needle valve further comprising a central axial passageway through the entire needle;

means delivering a charge of vapor comprising water through the axial passageway of the needle valve into the carburetor at predetermined engine conditions.

3,865,908
AERATORS WITH DE-ICING MEANS

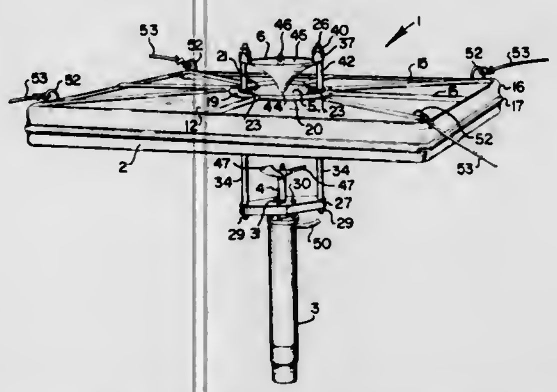
Benedict E. Hirshon, 36 Kenwood St., Brookline, Mass.
Filed Jan. 15, 1974, Ser. No. 433,840
Int. Cl. B01f *3/04;* **C02c** *5/04*
U.S. Cl. 261—77 **11 Claims**



1. An aerator for a body of open water such as a lake, pond, river, or bay, where ice formation is to be expected, said aerator being positionable therein and comprising depending inflow and outflow conduit portions, and a portion interconnecting the upper ends of said inflow and outflow portions in part below the surface level of the body of water and with their lower ends so disposed relative to each other as to inhibit substantial circulation therebetween, and also including wall structure extending above the water level to bar the inflow of surface water, means to effect the flow of water upwardly through the inflow portion through said interconnecting portion and downwardly through the outflow portion as a continuous stream and to aerate the circulating water before its entry into the outflow portion, said interconnecting portion being oriented to provide a time delay in the flow of the elevated water into the outflow portion to permit the escape of air therefrom, and means operable in the event the water in the interconnecting portions becomes frozen and when the first named means are in operation to effect communication within the wall structure between the space below the ice and the open air and if the ice has blocked the normal flow of water, to restore said normal flow between the inflow and outflow portions.

3,865,909
FLOATATION AERATOR FOR AERATING AND MOVING WATER

Roy A. Cramer, Jr., 8100 Paseo, Kansas City, Mo. 64131
Filed May 7, 1973, Ser. No. 358,085
Int. Cl. B01f *3/04*
U.S. Cl. 261—91 **6 Claims**



1. A water aeration apparatus for aerating a body of water by propelling a stream of water from said body upwardly and outwardly above the surface of said body comprising:

a. a float member of substantial area to float on a body of water and serve as a support, said float member having therethrough a central opening with a vertical axis;

b. a ring member positioned in and encasing said central opening and defining a vertical water flow passage through said float member, said ring member having laterally outward extending portions resting in supporting engagement with the float member to retain the ring member relative thereto;

c. motor support members spaced on said ring member and depending therefrom;

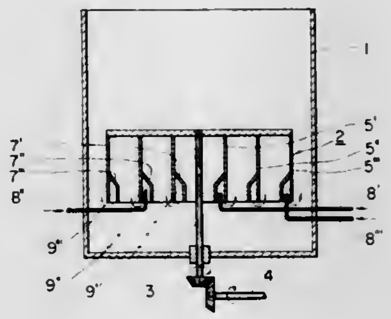
d. a submersible motor carried by said motor support members and spaced below said float member, said motor having a power shaft substantially axially aligned with said flow passage;

e. a propeller mounted on said power shaft between the motor and float member and spaced below the float member and ring member, the area under the float member and surrounding the propeller and motor having only the spaced motor support members therein for substantially unobstructed movement of water from below the float member to said propeller, said propeller being driven by said motor to propel a stream of water upwardly through said water passage;

f. a diffuser of generally inverted cone shape supported on said ring member above the float member and substantially axially aligned with said water passage, said diffuser having upwardly and outwardly curved surfaces for impingement of the stream of water and to disperse said water upwardly and outwardly over a wide area.

3,865,910
APPARATUS AND METHOD FOR CAUSING CONTACT BETWEEN GAS AND LIQUID

Shoichiro Hori, 8-6, 1-chome, Minami-yukigaya, Ota-ku, Tokyo, Japan
Filed May 17, 1972, Ser. No. 253,970
Claims priority, application Japan, May 20, 1971, 46-33591
Int. Cl. B01f *3/04*
U.S. Cl. 261—93 **5 Claims**



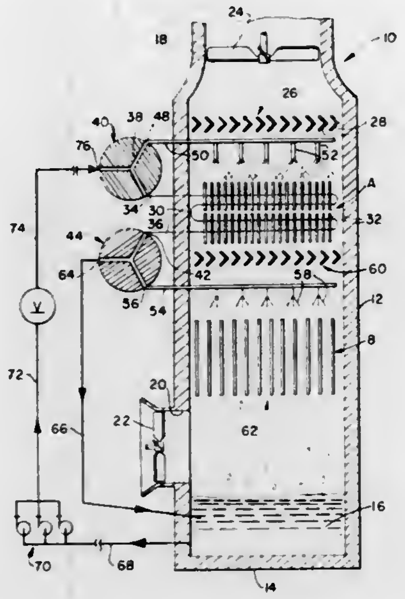
1. An apparatus for causing contact between gas and liquid including a vessel for containing the liquid which comprises a body vertically mounted for revolution comprising a plurality of integral hollow, concentric, coaxial cylinders of different diameters, having canopies secured to the cylindrical wall portions of the cylinders and spaced a predetermined distance therefrom, open at the lower ends and closed at the upper ends, a vertically mounted driving shaft for causing rapid revolution of said body in the liquid, and gas inlet pipes for supplying gas into spaces between said wall portions and said canopies, wherein the gas supplied to said spaces is made to encircle the outer walls of the respective spaces in the form of thin films due to the speed of revolution of said body and the gas film is then atomized into fine bubbles by means of the splitting force, so that the gas can be brought into contact with the liquid and wherein said liquid is maintained at a level which at least contacts the upper edge of the body capable of revolution.

3,865,911
COOLING TOWER TYPE WASTE HEAT EXTRACTION METHOD AND APPARATUS

Marcel R. Lefevre, Bernardsville, N.J., assignor to Research-Cottrel, Inc., Bridgewater Township, N.J.
Filed May 3, 1973, Ser. No. 356,721
Int. Cl. F02m *15/00, 29/04*
U.S. Cl. 261—140 **12 Claims**

1. A hot liquid cooling tower comprising a tower housing, means for directing air through the tower housing from its lower end upwardly, a first cooling section adjacent the upper end of the tower, first liquid spray means above said first cooling section, a second cooling section adjacent the lower end of the tower, second liquid spray means between the first and second cooling sections, a cooled liquid sump at the

bottom of the tower housing, and valve means for selectively directing a source of hot liquid to be cooled to at least one of said first and second spray means, and first and second cooling sections.



3,865,912
METHOD FOR CONTROLLING WALL THICKNESS DURING A BLOW-MOULDING OPERATION

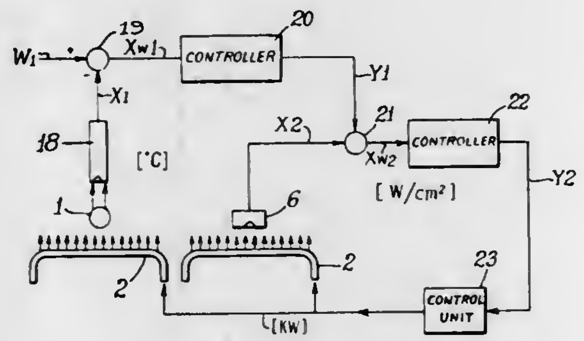
Otto Rosenkranz, 2 Jesselallee 21e, Hamburg 73; Peter Rose, 2359 Bussardweg 10, Henstedt-Ulzburg 4, and Heinz Goos, 2 Dorotheenstr. 115, Hamburg 39, all of Germany

Filed Sept. 21, 1972, Ser. No. 291,022

Claims priority, application Germany, Oct. 13, 1971, 2151067

Int. Cl. B29c *17/07*

U.S. Cl. 264—25 **1 Claim**



1. In a method of blow moulding hollow bodies of thermoplastic materials from moulded slugs having various axial zones and of substantially uniform wall thickness wherein the slugs are heated to the requisite blow moulding temperature and expanded to the desired form in a blow moulding die, the improvement of controlling the temperature of the slugs and thereby, the wall thickness of the hollow bodies comprising the steps of:

heating the slugs in each of their various axial zones to different controlled temperatures by a plurality of infra-red radiator means, to allow differential stretching of the hollow bodies at said various axial zones as they are expanded each of said axial zones having a separate radiator means associated therewith;

measuring the radiation intensity of each infra-red radiator means by a bolometer to establish a first measured quantity for each infra-red radiator means;

utilizing any deviation of the first measured quantity for each infra-red radiator means from a first predetermined guide quantity therefor as a correcting quantity to regulate the power consumption of each associated infra-red radiator means;

measuring the temperature of the moulded slugs at each of the different axial zones by pyrometer means to establish a second measured quantity for each axial zone;

utilizing any deviation of the second measured quantity made by said pyrometer means for each axial zone from a second predetermined guide quantity therefor to regulate the first guide quantity for each associated infra-red radiator means.

3,865,913
MULTISTATION PROCESS FOR MANUFACTURING HOLLOW BODIES

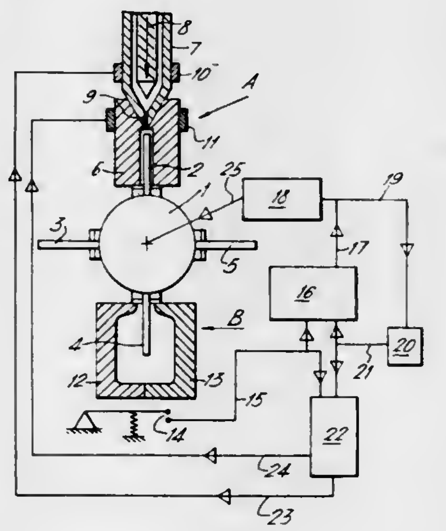
Otto Lachner, Kempten; Ludwig Beyerlein, Lenzfried, and Klaus Spelthahn, Kempten, all of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 12, 1973, Ser. No. 424,140

Claims priority, application Germany, Dec. 14, 1972, 2261225

Int. Cl. B29c *17/07*

U.S. Cl. 264—40 **4 Claims**



1. A multi-station process of forming hollow articles of thermoplastic material comprising the steps of forming a preform by injecting a quantity of plasticised material through an injection nozzle into an injection mould and blow moulding the preform to the desired hollow shape in a blow mould, each of the steps being carried out during one working cycle, establishing an optimum pre-determined constant working cycle time, sensing the beginning of a working cycle, sensing the end of a working cycle as determined by the ejection of a blow moulded article from the blow mould, comparing the elapsed time for a working cycle with the pre-determined constant cycle time, and beginning a subsequent working cycle at the end of the longest time.

3,865,914
METHOD OF MAKING A COMPOSITE BODY CONSISTING OF AT LEAST TWO COMPONENT PARTS SUCH AS PROFILES

Helmar Nahr, 54 Nurnberger Strasse, 8530 Neustadt-Aisch, Germany

Division of Ser. No. 148,437, June 1, 1971, abandoned. This application Nov. 30, 1973, Ser. No. 420,685

Int. Cl. E04c *3/27*

U.S. Cl. 264—46.5 D **3 Claims**

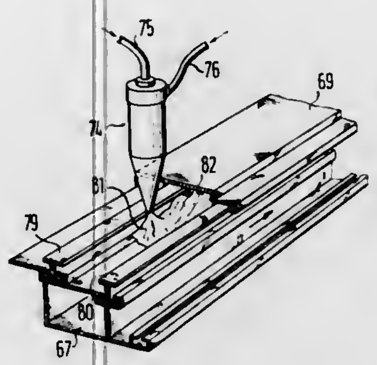
1. A method of constructing a composite frame body member including a pair of profiled elongated shaped members faced toward each other to form a laterally open cavity between them and connecting members closing the laterally open cavity and loosely securing the profiled members from moving apart from each other, comprising:

assembling one of the profiled members and the connecting members to extend at least equally in length,

placing the other profiled member in longitudinal alignment with the connecting members to receive and connect with the latter upon endwise movement of the two profiled members,

placing one of the profiled members in position to expose its interior upwardly,

introducing an expandable foam filler compound into the interior of the profiled members having its interior exposed upwardly and moving the members relative to each other to assemble the profiled members and connecting members into assembled equal length, and expanding said foam filler to tension the connecting members laterally of the composite body member.



3,865,915
INJECTION MOULDING OF COMPLEX SHAPED LAMINAR ARTICLES

Paul Johnson Garner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 71,332, Sept. 11, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 324,004

Claims priority, application Great Britain, Sept. 15, 1969, 45295/69

Int. Cl. B29d *27/00*; **B29f** *1/00*

U.S. Cl. 264—55 **8 Claims**

8. A process for the production of injection molded articles having a skin of a synthetic resinous material surrounding a core of a dissimilar synthetic resinous material at all points away from the spruc area of the molding comprising:

a. injecting a charge of a skin-forming injection moldable synthetic resinous material into a mold cavity defining the shape of the article to be molded, said cavity having at least one extension positioned at an area of the mold which is substantially filled only by the skin-forming material,

b. continuing the injection of the charge of skin-forming material to inject an amount which is insufficient to fill the mold cavity but which is in excess of that required for a substantially uniform thickness of skin on the article to be molded,

c. subsequently, but before the interior portion of the charge of skin-forming material has solidified, injecting a charge of a core-forming injection moldable foamable synthetic resinous material into the interior portion of the charge of skin-forming material,

d. continuing the injection of the charge of the core-forming material into the charge of the skin-forming material to inject an amount which extends the skin-forming material as a skin surrounding the core-forming material at all points away from the spure area of the mold cavity of fill the mold cavity, to constrain the foamable composition from foaming and to force the excess of the skin-forming material into said at least one extension so that only skin-forming material enters the at least one extension,

e. enlarging the volume of the mold cavity to allow the fomable composition to foam and extend the skin-forming material to conform a the enlarged mold cavity, and

f. removing the skin-forming material forced into said at least one extension from the skin-forming material in the mold cavity before or after demolding the molded article.

3,865,916
PARTIAL COMBUSTION PROCESS SOOT PELLETS OF INCREASED STRENGTH AND THEIR PREPARATION

Pieter Visser, and Johannes Boom, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,359

Int. Cl. B01j *2/00*

U.S. Cl. 264—85 **9 Claims**

1. A process for pelletization of soot particles suspended in water originating from a process for the manufacture of reducing gas containing carbon monoxide, hydrogen and soot by partial combustion of hydrocarbons, said soot being present in the reducing gas product in an amount which is equivalent to less than 5% of the carbon content of the hydrocarbon feed comprising:

a. setting said suspension in a turbulent motion

b. adding both a hydrocarbon binder component selected from the group consisting of a light, liquid hydrocarbon and mixtures of light liquid hydrocarbons boiling below 300° C and a pellet reinforcing additive component which is non-volatile at the conditions at which the light liquid hydrocarbon binder evaporates to the suspension in turbulent motion whereby the binder and pellet reinforcing additive spread uniformly over the soot particles in said suspension causing said soot particles to agglomerate and form pellets;

c. separating the resulting agglomerated pellets from the suspending liquid;

d. drying said agglomerated pellets and removing the hydrocarbon binder by evaporation and

e. heating under non-oxidizing conditions at a temperature of 300°–3,000° C thereby consolidating the agglomerated pellets into porous, absorbent pellets suitable as absorbent and clarifying agents.

3,865,917
PREPARATION OF ALUMINA MONOFILAMENTS

Francis S. Galasso, Manchester, and Romeo G. Bourdeau, Wapping, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 225,298, Feb. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 67,606, Aug. 27, 1970, abandoned. This application Dec. 20, 1973, Ser. No. 427,001

Int. Cl. D01f *9/00*

U.S. Cl. 264—183 **2 Claims**

1. A process for producing continuous aluminum chlorohydride filaments convertible by calcining to transparent gamma or alpha aluminum oxide filaments comprising:

providing an aqueous fiber-forming solution consisting essentially of 40–50 weight percent water, remainder an aluminum chlorohydroxide complex starting material having the formula $Al_2(OH)_5Cl$,

said solution having a viscosity of 1,500–3,000 centipoises; and

forming said viscous liquid into filaments by extruding it in a coagulating liquid consisting essentially of a liquid selected from the group consisting of isopropyl alcohol, ethyl alcohol, tertiary butyl alcohol, a mixture of ethyl alcohol and 40–70 weight percent acetone and a mixture of isopropyl alcohol and 5–25 weight percent acetone.

3,865,918
WET SPINNING CELLULOSIC PRODUCTS

Reid L. Mitchell, Morristown; Thomas E. Muller, Springfield; Hugh D. Stevens, Long Valley, and Robert S. Tabke, Parsippany, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 858,573, Sept. 15, 1969, Pat. No. 3,670,069. This application Mar. 22, 1972, Ser. No. 236,993

Int. Cl. D01f *3/00*

U.S. Cl. 264—188 **2 Claims**

1. A process for preparing low-cost viscose fibers having properties which are superior for nonwovens and disposables with respect to water absorption, water retention, cross-sectional shape, fiber elongation and tenacity comprising the steps of steeping dissolving grade wood pulp in a sodium hydroxide solution; pressing, shredding and aging said pulp to produce an alkali cellulose containing about 32 to 38 percent cellulose and about 14 to 16 percent sodium hydroxide and having an average degree of polymerization less than about 400; xanthating said alkali cellulose with about 25 to 30 percent carbon disulfide and dissolving the xanthate in sodium hydroxide to produce a viscose solution containing from about 7 to 12 percent cellulose and about 4 to 6 percent sodium hydroxide; ripening the solution to a salt index of about 1.5 to 7; deaerating and screening the solution; and extruding the solution into continuous filaments in a coagulating bath through a porous fiber forming device comprising a porous extrusion media containing a controlled number and distribution of discrete flow paths, said flow paths comprising at least about 10 percent of the total extrusion surface area.

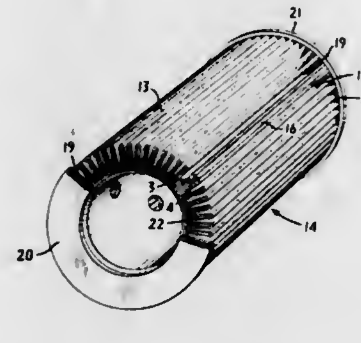
3,865,919
CYLINDRICAL FILTER ELEMENTS WITH IMPROVED SIDE SEAM SEAL

David B. Pall, 5 Hickory Hill, Roslyn Estates, N.Y. 11576, and Tadas K. Jasaitis, 2 Hayden Ave., Great Neck, N.Y. 11024

Filed Apr. 19, 1974, Ser. No. 462,291

Int. Cl. B01d *27/06*

U.S. Cl. 264—259 **4 Claims**



1. A process for forming cylindrical filter elements of filter sheet material, which comprises forming a sheet of filter material into a substantially cylindrical shape, and bringing together end portions of the sheet in a side seam such that portions of the sheet adjacent the sheet ends have one surface in face-to-face closely-abutting contact, extending to the end edges of the sheet, and the next-adjacent portions have the other surface opposite each other, extending beyond the end edges of the end portions of the sheet, and spaced apart by the folded-over abutting sheet ends, the opposed surfaces of the sheet ends and the end edges of the sheet ends defining a space therebetween; disposing a bonding agent in the space and bonding the sheets together therewith at the end edges and the opposed surfaces of the sheet substantially without penetrating the face-to-face end portions of the sheet at the seam to the outer surface of the filter sheet.

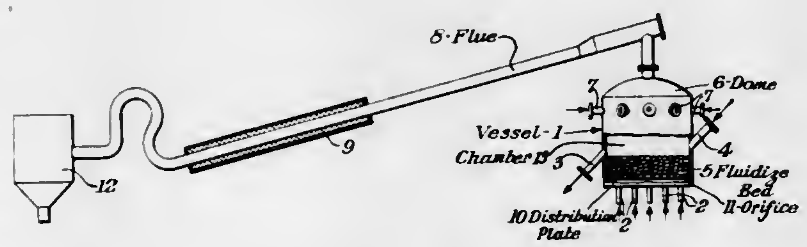
3,865,920
PROCESS FOR BENEFICIATING A TITANIFEROUS ORE AND PRODUCTION OF CHLORINE AND IRON OXIDE

Wendell E. Dunn, Jr., North Sydney, Australia, assignor to Rutile & Zircon Mines (Newcastle) Limited, Sydney, New South Wales, Australia

Filed Mar. 14, 1973, Ser. No. 341,043

Int. Cl. C01g *49/06;* **C01b** *7/02;* **C01g** *23/04*

U.S. Cl. 423—74 **11 Claims**



1. In the process for beneficiating a titaniferous ore composed of essentially titanium dioxide and iron oxide to produce a synthetic rutile titanium dioxide product and gaseous iron chlorides wherein a fluidized bed of titaniferous ore mixed with 10–30%, by weight, of coke is contacted with chlorine, at elevated temperatures, to produce a partially chlorinated product whereby the iron oxide contained in said titaniferous ore is selectively converted to iron chlorides and said process is conducted in a reactor having a chamber above the fluidized bed, the improvement which comprises producing chlorine and ferric oxide from said gaseous iron chlorides by:

a. contacting the gaseous iron chlorides, heated to a temperature of 1,250° to 1,380°K, with oxygen in the chamber above the fluidized bed of titaniferous ore to form a gaseous cloud comprised of a partially oxidized mixture of iron chlorides, iron oxide, iron oxide nuclei, oxygen and chlorine;

b. passing the partially oxidized mixture through a cooled flue, at a superficial velocity of at least 50 feet/sec, whereby substantially the remaining iron chloride is further oxidized to chlorine and an equilibrium layer of ferric oxide formed on the inside wall of the flue is continuously abraded by iron oxide solid product passing through the flue, and

c. separating the chlorine from unreacted ferric chloride and ferric oxide.

3,865,921
PROCESS FOR DECONTAMINATION OF HARDENING SALT RESIDUE

Helmut Reinhardt, Am Dem Stumpelrott 9, 5038 Rodenkirchen; Karl Trebinger, Josef-Zimmermann-Strasse 7; Gottfried Kallrath, Nordstrasse 51, both of 5047 Wesseling, and Helmut Weber, Stettiner Strasse 8, 5040 Bruhl, all of Germany

Filed June 19, 1973, Ser. No. 371,498

Claims priority, application Germany, June 30, 1972, 2232123

Int. Cl. C01c *3/12;* **C01f** *1/00*

U.S. Cl. 423—164 **7 Claims**

1. A process of decontaminating a hardening salt residue from treating steel with a hardening salt containing alkaline earth metal at least a part of which is barium and also containing cyanide and alkali chloride containing alkaline earth metal at least a part of which is barium and also containing cyanide comprising slurrying the coarsely broken pieces of salt residue in water and then treating said slurry with an amount of aqueous iron (II) chloride at least sufficient to convert the cyanide portion of said residue to alkali ferrocyanide at a pH of 7–14 and in the presence of alkali carbonate in an amount at least sufficient to convert all of the alkaline earth metal present to the carbonate but not over 30% based on hardening salt residue to be decontaminated, and separating the cyanide containing solution from the carbonate containing precipitate.

3,865,922
PROCESS FOR THE PREPARATION OF CRYSTALLINE CALCIUM SULPHATE AND PHOSPHORIC ACID

Jan Th. Boontje, Santpoort, Netherlands, assignor to Verenigde Kunstmestfabrieken Mekog-Albatros N.V., Utrecht, Netherlands

Continuation-in-part of Ser. No. 889,097, Dec. 30, 1969, abandoned. This application Apr. 25, 1972, Ser. No. 247,415

Claims priority, application Australia, Jan. 8, 1970, 10132/70; Austria, Jan. 8, 1970, 142/70; Belgium, Jan. 8, 1970, 83652; Netherlands, Jan. 10, 1969, 6900394

Int. Cl. C01b *25/16;* **C01f** *1/00*

U.S. Cl. 423—166 **7 Claims**

1. A process for the preparation of calcium sulphate hemihydrate and phosphoric acid by chemical reaction between sulphuric acid and an aqueous solution containing calcium ions and phosphate ions, in which process sulphuric acid and an aqueous solution containing the calcium ions and phosphate ions are introduced into a body of liquid consisting of a suspension of calcium sulphate hemihydrate in a mixture consisting substantially of phosphoric acid and water, said body of liquid being in the shape of a cylinder with a vertical axis and consisting of a plurality alternating cylindrical sections A and B in vertical succession, the number of section A as well as the number of section B being at least 3, each section A being at its bottom axially connected with the liquid thereunder and at its top peripherically connected with the section of liquid above, shearing forces being exerted tangentially on the top of each section of liquid A, increasing from the axis to the peripherical connection with the adjacent section of liquid above, each section B being at the top axially connected with the liquid above and at its bottom peripherically connected with the section of liquid thereunder, tangential shearing forces being exerted at the bottom of each section of liquid B increasing from the axis to the peripherical connection with the adjacent section of liquid thereunder, said shearing forces provoking movement of liquid in each section, the sulphuric acid and the aqueous solution introduced being mixed with the said body of liquid yielding thereby one single liquid phase, said mixing resulting in a reaction between the sulphuric acid and the calcium ions and phosphate ions introduced so as to form phosphoric acid and a crystalline precipitate of calcium sulphate hemihydrate, the introduction of the sulphuric acid and the aqueous solution into said body of liquid causing in said body of liquid an upward displacement of liquid, said upward displacement of liquid causing fine crystals of the calcium sulphate hemihydrate precipitate to rise through connections between successive sections A and B, such in contradistinction to crystals of said calcium sulphate hemihydrate that have grown so much that their sinking velocity exceeds the speed of the upward current in said connections, removal at the top of said body of liquid of a portion of liquid as displaced by the introduction of the sulphuric acid and the aqueous solution into said body of liquid, and withdrawal of the crystalline precipitate of calcium sulphate hemihydrate at the bottom of said body of liquid.

3,865,923
CATALYST

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 19, 1973, Ser. No. 342,786

Int. Cl. B01d *53/00*

U.S. Cl. 423—213.2 **6 Claims**

1. A method of lowering the hydrocarbon and carbon monoxide content of engine exhaust gas under oxidizing conditions and the nitrogen oxides content of engine exhaust gas under reducing conditions comprising contacting said exhaust gas under said oxidizing or reducing conditions at engine exhaust temperature with an exhaust gas catalyst consisting essentially of a uniform metal oxide composition deposited on a catalyst support, said metal oxide composition consisting essentially of about 0.1–10 weight per cent of a first metal selected from the group consisting of copper, nickel and cobalt, 1–20 weight per cent of a rare earth metal, and 0.1–20 weight per cent of manganese, in an oxide form, said percentages based upon the total catalyst weight, the balance of said catalyst consisting of said catalyst support, the atom ratio of the sum of said first metal and said rare earth metal to manganese being 1-3:1, said metal oxide deposit having a Perovskite type crystal structure as shown by X-ray diffraction.

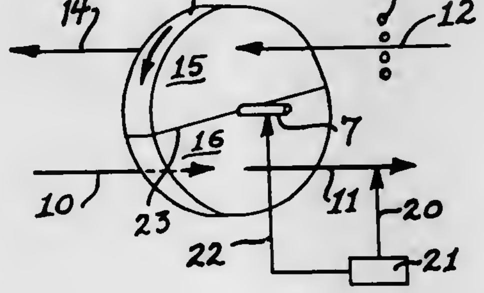
3,865,924
PROCESS FOR REGENERATIVE SORPTION OF CO_2

Dimitri Gidaspow, and Michael Onischak, both of Chicago, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Mar. 3, 1972, Ser. No. 231,530

Int. Cl. B01d *53/34*

U.S. Cl. 423—230 **12 Claims**



1. A method of removing CO_2 from a gases stream comprising the steps of:

a. passing a CO_2-containing inlet gas stream into contact with a synergistic sorbent composition of finely divided, particulate alkali metal carbonate and alumina, said alumina and carbonate being separate discrete particles and having been ground together to provide such sorbent, to sorb CO_2 thereinto and convert said carbonate to bicarbonate,

b. maintaining said sorbent composition in hydrated form, thereby to remove CO_2 from said gases stream; and c. regenerating said sorbent composition by supplying heat to reconvert said bicarbonate to said carbonate form while evolving CO_2 therefrom, without forming a crust over said sorbent.

3,865,925
PRODUCTION OF CARBON BLACK OF REDUCED GRIT CONTENT

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 3, 1972, Ser. No. 303,329
Int. Cl. C09c *1/50*

U.S. Cl. 423—450 **3 Claims**

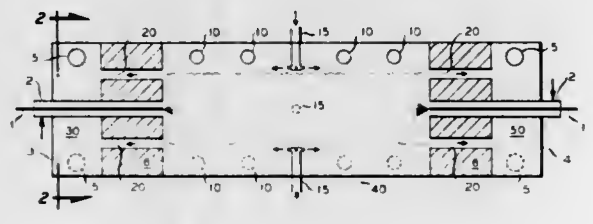
1. In a process for the production of carbon black wherein oil is axially introduced through a nozzle into a precombustion chamber of a carbon black reactor, wherein hot combustion gases resulting from the combustion of hydrocarbon fuel and air are introduced into said precombustion chamber, wherein said oil is pyrolytically decomposed by said hot combustion gases and wherein carbon black is formed during the travel of the materials through a reaction section, the improvement which comprises:

a. carrying out the carbon black production until a preselected amount of grit is contained in the carbon black;
b. changing the axial location of said nozzle to lower the grit production below said preselected value;
c. adjusting the ratio of the air feed to the oil feed so as to produce carbon black with essentially the same properties as produced during step (a).

3,865,926
CARBON BLACK PROCESS USING FLOW REVERSAL

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 8, 1972, Ser. No. 313,538
Int. Cl. C01b *31/02, 1/50*

U.S. Cl. 423—456 **6 Claims**



1. A method of producing carbon black in a reactor having two ends and being longitudinally disposed which comprises:
a. introducing a liquid hydrocarbon feed and a first gaseous oxidant selected from the group consisting of oxygen, oxygen-enriched air and air axially into an end of said reactor along its longitudinal axis;
b. introducing a second gaseous oxidant selected from the group consisting of oxygen, oxygen-enriched air and air tangentially into said reactor at a plurality of spaced apart loci along the longitudinal axis of said reactor;
c. introducing a gaseous hydrocarbon fuel into said reactor longitudinally apart from the introduction of said liquid hydrocarbon feed;
d. oxidizing said fuel with said second oxidant to produce hot combustion gases containing said second gaseous oxidant positioned adjacent the walls of said reactor;
e. contacting said hydrocarbon feed with said hot combustion gases to pyrolytically decompose said hydrocarbon feed to form carbon black;
f. passing said carbon black in a direction opposite to the direction of hydrocarbon feed within said reactor into contact with said hot combustion gases and second gaseous oxidant to oxidize said black; and,
g. recovering the carbon black produced from said reactor proximate the point of axial introduction of said hydrocarbon feed into said reactor.

3,865,927
METHOD AND APPARATUS FOR REACTING SULFUR DIOXIDE AND NATURAL GAS

William E. Watson, Mt. Tabor, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Sept. 15, 1970, Ser. No. 72,455
Int. Cl. C01b *17/04*

U.S. Cl. 423—570 **15 Claims**

1. A continuous method for the preparation of sulfur from a sulfur-dioxide-containing gas which consists essentially in the steps of:

a. preparing a gaseous reaction mixture of said sulfur-dioxide-containing gas and a gaseous reducing agent selected from the group consisting of at least one of hydrogen, carbon monoxide and a gaseous hydrocarbon,
b. preheating said gaseous reaction mixture to a temperature within the range of about 500° to 700°F.,
c. passing said preheated gaseous reaction mixture in direct heat exchange relationship with a first section of gas permeable bed of a solid, refractory, catalytically-inert material to raise the temperature of the gaseous reaction mixture to between 1,000° and 1,800°F.,
d. passing said heated gaseous reaction mixture from (c) through a bed of catalytically-active material and under equilibrium reaction conditions to effect reduction of said sulfur dioxide to a product gas stream consisting essentially of sulfur and hydrogen sulfide while maintaining the temperature in said catalytic bed within the range of 1,200° to 2,500°F. and a rise in the temperature of the product gas stream exiting from said catalyst bed of between 200° and 400°F.,
e. passing said product gas stream in direct heat exchange relationship through a second section of solid, refractory, catalytically-inert material to reduce the temperature of said product gas stream to about 850° to 1,000°F.,
f. periodically by-passing the second section of catalytically inert bed with the hot product gases to control the temperature of the reaction,
g. reacting the hydrogen sulfide in the product gas stream with sulfur dioxide under reaction conditions sufficient to effect reaction of the hydrogen sulfide and sulfur dioxide to produce elemental sulfur and recovering said sulfur; and
h. continuously reversing the direction of flow of said gaseous reaction mixture through said beds to maintain said catalyst bed at a temperature within the range of 1,200° to 2,500°F. without adding to any of said beds additional heat other than the heat resulting from the reduction reaction effected in the catalytic reaction zone.

3,865,928
PREPARATION OF ALUMINUM HYDRIDE

Paul F. Reigler, Midland, and Lz F. Lamoria, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 2, 1965, Ser. No. 437,635
Int. Cl. C01b *6/00*

U.S. Cl. 423—645 **4 Claims**

1. A novel process for preparing a substantially non-solvated, hexagonal crystal structure aluminum hydride which comprises;

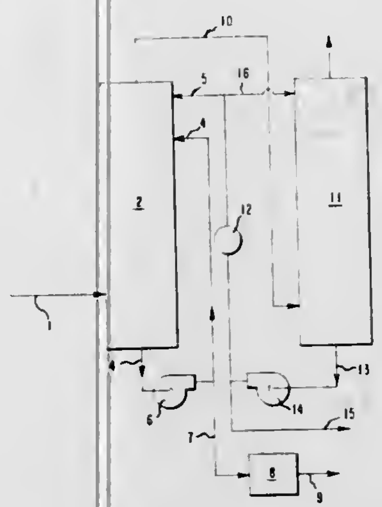
a. reacting under substantially anhydrous conditions in an inert atmosphere a solution of beryllium chloride and lithium aluminum hydride wherein the ratio of lithium aluminum hydride to beryllium chloride in the reaction mixture on a gram mole basis ranges from about 2 to about 5, the solvent for said lithium aluminum hydride and beryllium chloride being a liquid material inert to the reactants and products and dissolving said beryllium chloride and lithium aluminum hydride reactants and the aluminum hydride product produced therefrom,

b. separating the solution of said aluminum hydride from the residual lithium chloride and beryllium values solid products co-produced,
c. removing said solvent from the so-separated aluminum hydride solution,
d. heating the resulting substantially dry aluminum hydride product at an elevated temperature of from about 50° to about 140° C. under reduced pressure for a period of from about 2 to about 24 hours, and
e. recovering a substantially non-solvated, aluminum hydride of hexagonal crystal structure.

3,865,929
HYDROGEN FLUORIDE RECOVERY PROCESS

William Hollis Ehlig, Baytown, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 11, 1972, Ser. No. 296,565
Int. Cl. C01b *7/22*

U.S. Cl. 423—488 **2 Claims**



1. A process for recovering liquid anhydrous hydrogen fluoride comprising

1. feeding crude hydrogen fluoride gas containing sulfur into a gas cooler at a pressure of about 10 to 15 pounds per square inch absolute wherein the gas is cooled to within a range of 0° to 15° C. above the boiling point of hydrogen fluoride at the cooler pressure by a recirculating liquid stream of hydrogen fluoride, said recirculating stream removing sulfur from the crude hydrogen fluoride gas;
2. removing overhead hydrogen fluoride gas essentially free from elemental surfur and compounds which form elemental sulfur under conditions of cooling, condensing the gas to produce liquid hydrogen fluoride, while
3. recycling each unit of the stream through the gas cooler until the sulfur removed from the crude hydrogen fluoride gas builds up to a particle size such that a majority of the particles of sulfur have a particle size of 100 to 150 microns,
4. removing a portion of said recycling stream and filtering the sulfur therefrom,
5. recycling the removed filtered liquid to the process.

3,865,930
SELF-HEATING NEUTRALIZING COMPOSITIONS FOR PERMANENT WAVE OPERATION

Jean-Louis Abegg, and Claire Gayet, both of Paris, France, assignors to Societe anonyme dite: L'Oreal, Paris, France
Filed Mar. 29, 1973, Ser. No. 346,025
Claims priority, application Luxembourg, Apr. 4, 1972, 65099
Int. Cl. A61k *7/10*

U.S. Cl. 424—72 **7 Claims**

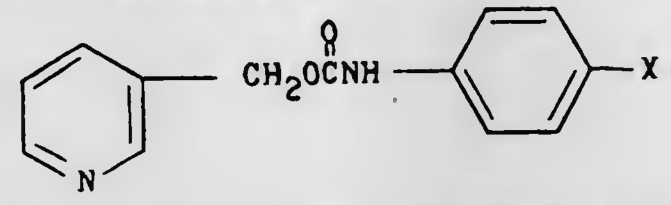
1. A neutralizing composition to effect the second stage of neutralization of a permanent waving operation, comprising a package having two separate storage means for storing the components of said composition and from which storage means said components are adapted to be dispensed for mixing with each other to provide said composition with the evolution of sensible heat, one of said storage means containing one of said components comprising a water soluble salt selected from the group consisting of sodium, potassium and ammonium sulfite; sodium, potassium and ammonium metabisulfite; and sodium, potassium and ammonium bisulfite and the other of said storage means containing another of said components comprising hydrogen peroxide, the said components being present in amounts such that the resulting mixture of said components exhibits a rise in temperature of about 15°–25° C and contains free H_2O_2 in amounts of about 0.5–3 percent by weight of said composition.

3,865,931
PYRIDYL PHENYL CARBAMATE RODENTICIDES

J. Edgar Ware, Jr., Quakertown; Edward E. Kilbourn, and David L. Peardon, both of Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Continuation-in-part of Ser. No. 235,015, March 15, 1972, abandoned. This application Apr. 19, 1972, Ser. No. 245,608
Int. Cl. A01n *17/14, 9/00, 9/22*

U.S. Cl. 424—84 **28 Claims**

1. A rodenticidal composition comprising 1) a rodenticidally effective amount of a compound having the formula:



wherein X is selected from the group consisting of $-NO_2$, $-CN$, $-CF_3$, $-SCH_3$, $-SOCH_3$, $-SO_2CH_3$ and $-SO_2NH_2$ and 2) a carrier comprising a semi-moist or dry powered material.

3,865,932
COMPOUNDS OF COPPER, CHROMIUM AND ARSENIC AS WOOD PRESERVATIVES

Bror Olof Hager, Djursholm, Sweden, assignor to Hager Aktiebolag, Stockholm SV, Sweden
Continuation of Ser. No. 733,825, June 3, 1968, abandoned. This application June 15, 1971, Ser. No. 153,412
Int. Cl. A01n *11/00*

U.S. Cl. 424—128 **3 Claims**

1. A preservative for wood with the following approximate composition

CuO	564 parts by weight
$CuSO_4 . 5 H_2O$	589 parts by weight
CrO	991 parts by weight
As_2O_5	600 parts by weight
H_3PO_4, 85 %	546 parts by weight.

3,865,933
ANALGESIC COMPOSITION

Clifton F. Mudge, Lakewood, Colo., assignor to C and A Laboratories, Inc., Denver, Colo.
Filed May 24, 1972, Ser. No. 256,307
Int. Cl. A61k *27/00*

U.S. Cl. 424—153 **4 Claims**

1. The method of alleviating pain in a patient comprising the step of administering to said patient an analgesic composition which is relatively free of side effects which comprises as the active ingredients, from 275 to 400 milligrams of mephenesin, from 0.02 to 0.05 milligrams of tropane alkaloids selected from the group consisting of atropine, hyoscyamine, and scopolamine, and from 6 to 100 milligrams of a magnesium compound selected from the group consisting of magnesium gluconate, magnesium acetylsalicylate, hydrated magnesium

bromide, magnesium chloride, magnesium hydroxide, magnesium oxide, magnesium sulfate, and magnesium lactate, together with a pharmaceutically acceptable carrier.

3,865,934
METHOD OF ENHANCING MEMORY AND LEARNING

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 2, 1973, Ser. No. 343,058
Int. Cl. A61k *27/00*

U.S. Cl. 424—177 **5 Claims**

1. The method of enhancing acquisition rate or retention level impairment in a warm-blooded animal comprising administering to an animal having an impaired rate of learning or retention an effective dose of L-pyroglutamyl-L-histidyl-L-prolinamide.

3,865,935
TABLETING OF ERYTHROMYCIN BASE

Anton Helmuth Amann, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Aug. 10, 1972, Ser. No. 279,600
Int. Cl. A61k *21/00*

U.S. Cl. 424—181 **8 Claims**

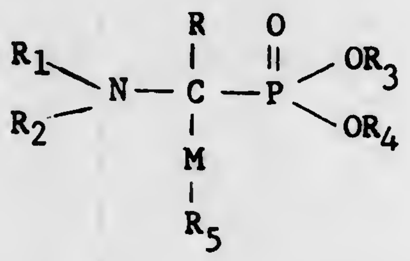
1. The process of making a solid non-enteric erythromycin dosage form for oral administration consisting essentially of thoroughly mixing a) erythromycin granules containing erythromycin base and pharmaceutically acceptable excipients readily soluble or dispersible in water or acidic environments, b) anhydrous sodium citrate or sodium citrate dihydrate, c) at least one lubricating agent and d) at least one disintegrating agent and tableting said mixture into a unit dosage form.

3,865,936
IN SITU SOIL FUMIGATION FOR COMBATING NEMATODES USING AMINOMETHYLPHOSPHONATES

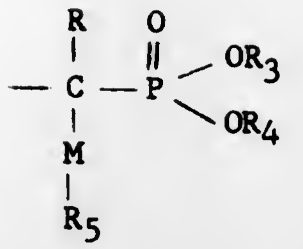
Morton Lewis, Elmhurst, Ill., assignor to Swift & Company, Chicago, Ill.
Division of Ser. No. 112,786, Feb. 4, 1971, Pat. No. 3,821,335. This application Nov. 23, 1973, Ser. No. 418,428
Int. Cl. A01n *9/36*

U.S. Cl. 424—211 **6 Claims**

1. A method of combating nematodes by fumigating the soil which comprises incorporating into the soil a nematocidally toxic amount of a compound of the formula:



wherein R, R_1, and R_2 are the same or different and are hydrogen or a straight or branched chained alkyl group of 1 – 30 carbons which may contain non-interfering groups; and R_1 may be



R_3 and R_4 are alkyl or halogenated alkyl groups of from about 1 – 8 carbons; and R_5 is hydrogen, or a straight or branched chained alkyl, or alkylaryl group of 1 – 20 carbons which may contain non-interfering groups and M is a member selected from the group consisting of —$CH_2CHXCHX$— and —$CHXCHX$— where X is halogen such that, when contacted with sufficient moisture, and intramolecular cyclic reaction will take place between the phosphorus oxygen atom bearing the R_3 or R_4 group and the carbon atom bearing one of the halogens resulting in the liberation of an alkyl halide fumigant.

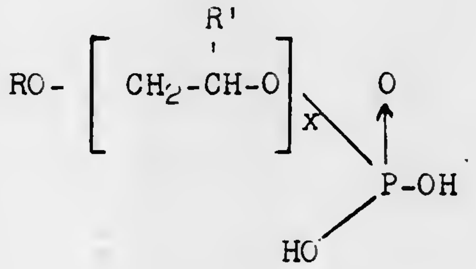
3,865,937
DRY STABLE PHOSPHOROTHIOATE INSECTICIDE FORMULATIONS

Theodore H. Koundakjian, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Mar. 1, 1966, Ser. No. 530,775
Int. Cl. A01n *9/36*

U.S. Cl. 424—218 **6 Claims**

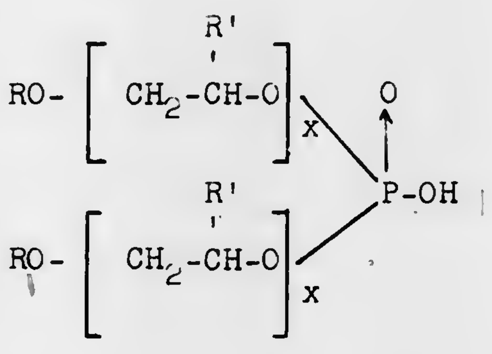
1. A stable dry insecticidal formulation comprising a toxic amount of O,O-dialkyl-O-p-nitrophenyl phosphorothioate wherein the alkyl groups are the same and each contains one to two carbon atoms, adsorbent clay carrier and a sufficient amount of ethylacetoacetate or a mixture of

(1)



and

(2)



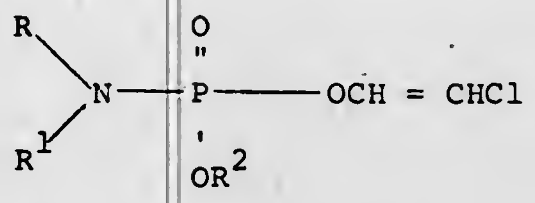
wherein R′ is hydrogen or methyl, R is an aliphatic or aromatic hydrocarbyl group of about 7 to 40 carbon atoms and *x* is an integer from 4 to 24, said mixture comprising about 65 to 80% by weight (1) and about 20 to 35% by weight (2) to stabilize the formulation.

3,865,938
NEMATICIDES

Clyde Warren McBeth, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.
Continuation-in-part of Ser. No. 329,911, Feb. 5, 1973, abandoned. This application Dec. 26, 1973, Ser. No. 430,994
Int. Cl. A01n *9/36*

U.S. Cl. 424—219 **5 Claims**

1. A method for controlling nematodes which comprises applying to the nematodes a nematicidally effective amount of a compound of the formula



where R and R^1 are independently hydrogen, methyl, ethyl or isopropyl, and R^2 is methyl, ethyl or isopropyl.

3,865,939
EDIBLE OILS HAVING HYPOCHOLESTEROLEMIC PROPERTIES

Ronald James Jandacek, Cincinnatio, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 23, 1973, Ser. No. 335,290
Int. Cl. A61k *17/00*

U.S. Cl. 424—238 **7 Claims**

1. A food composition having hypocholesterolemic activity comprising at least one edible oil in homogeneous admixture with (a) from about 2.0 to about 6.0 wt. % of a plant sterol; (b) from about 0.5 to about 15.0 wt. % of a solubilizing compound selected from the group consisting of saturated and unsaturated fatty acids having from six to 18 carbon atoms, monoesters of said fatty acids with polyhydric alcohols, and alkanols having from six to 18 carbon atoms.

3,865,940
PHARMACEUTICAL PREPARATION

Richard Kwizda, and Johannes Kotlan, both of Wien, Austria, assignors to F. Joh. Kwizda, Vienna, Austria
Filed Aug. 10, 1972, Ser. No. 279,734
Claims priority, application Austria, Aug. 19, 1971, 7265/71
Int. Cl. A61k *27/00*

U.S. Cl. 424—242 **2 Claims**

1. A pharmaceutical composition comprising an aqueous solution of dimethyl aminophenazone in a concentration between about 10 and 20%, and

the sodium salt of 1-phenyl-4-n-butyl-3,5-dioxopyrazolidine present in a solubilizing amount, the ratio of said sodium salt to said dimethyl aminophenazone being from about 4:1 to 4:3.

3,865,941
THERAPEUTIC COMPOSITIONS AND METHOD EMPLOYING 1-MORPHOLINOMETHYL-5-ETHYL-5-PHENYL BARBITURIC ACID OR THE HYDROCHLORIDE SALT THEREOF

Julius A. Vida, Boston, Mass., assignor to The Kendall Company, Walpole, Mass.
Division of Ser. No. 88,194, Nov. 9, 1970, abandoned. This application Jan. 10, 1973, Ser. No. 322,324
Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **2 Claims**

1. A therapeutic composition for treatment of convulsions in warm-blooded animals comprising a physiologically acceptable carrier and an effective amount for treatment of convulsions of 1-morpholinomethyl-5-ethyl-5-phenyl barbituric acid or the hydrochloride salt thereof.

3,865,942
METHOD OF INCREASING CEREBRAL BLOOD FLOW

Pierre Charles Wirth, Paris, France, assignor to Societe Generale De Recherches Et D'Applications Scientifiques "Sogeras", Paris, France
Filed Apr. 28, 1971, Ser. No. 138,314
Int. Cl. A61k *27/00*

U.S. Cl. 424—259 **2 Claims**

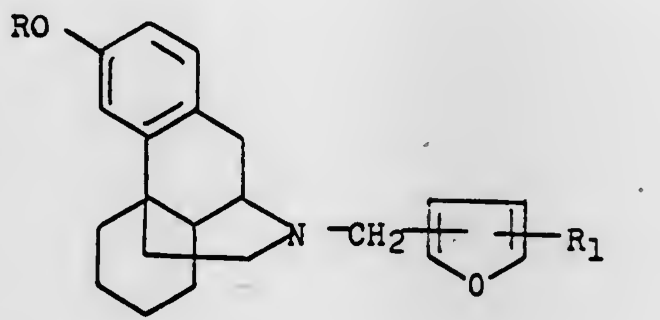
1. A method of increasing cerebal blood flow of a patient suffering from cerebal vascular insufficiencies which comprises orally administering a cerebral vasodilating amount of viquidil to the patient.

3,865,943
PHARMACEUTICAL COMPOSITIONS CONTAINING AN N-(FURYL-METHYL)-3-OXY-MORPHINAN AND METHOD OF USE

Herbert Merz; Adolf Langbein; Helmut Wick, and Klaus Stockhaus, all of Ingelheim an Rhine, Germany, assignors to Boehringer Ingelheim G.m.b.H.. Ingelheim am Rhine. Germany
Division of Ser. No. 224,973, Feb. 9, 1972, Pat. No. 3,793,329. This application Dec. 19, 1973, Ser. No. 426,215
Claims priority, application Germany, Feb. 19, 1971, 2107989
Int. Cl. A61k *27/00*

U.S. Cl. 424—260 **10 Claims**

1. A non-narcotic analgesic and antitussive pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective analgesic and antitussive amount of a racemic mixture of a compound of the formula



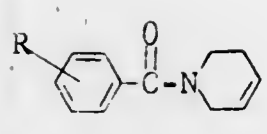
wherein
R is hydrogen, methyl or acetyl, and
R_1 is hydrogen, methyl or ethyl,
an optically active isomer component thereof, or a non-toxic, pharmacologically acceptable acid addition salt of said racemic mixture or optically active isomer.

3,865,944
TETRAHYDROPYRIDINE INSECT REPELLENT

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Division of Ser. No. 225,272, Feb. 10, 1972, Pat. No. 3,749,730. This application May 4, 1973, Ser. No. 357,151
Int. Cl. A01n *9/22*

U.S. Cl. 424—263 **5 Claims**

1. A method of repelling houseflies comprising applying to the habitat thereof a repellent amount of a compound of the formula



wherein R is alkyl having one to four carbon atoms, alkoxy having one to four carbon atoms or halogen.

3,865,945
1,2,4-TRIAZOLES FOR TREATING GOUT AND HYPERURICEMIA

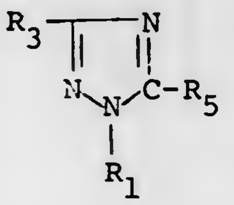
John J. Baldwin, Lansdale, Montgomery County, and Frederick C. Novello, Berwyn, Chester County, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 269,685, July 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 75,785, Sept. 25, 1970, abandoned. This application Aug. 29, 1973, Ser. No. 392,841

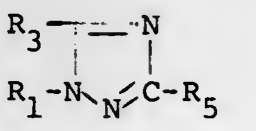
Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **20 Claims**

1. A pharmaceutical preparation having xanthine oxidase inhibiting activity useful for treating gout and hyperuricemia in dosage unit form comprising a pharmaceutically acceptable carrier and as the xanthine oxidase inhibiting agent from about 30 mg. to 1.5 g. of a thiadiazole having the formula



or



or a non-toxic pharmaceutically acceptable salt thereof wherein

R_1 is hydrogen or C_{1-5} alkyl;

R_3 is mono- or di-substituted phenyl wherein the substituents are chloro, bromo, amino, or acetylamino; and

R_5 is pyridyl.

3,865,946
METHOD OF ANESTHETIZING A MAMMAL BY ADMINISTRATION OF A SUBSTITUTED 2-ARYLALKYLOXY BENZAMIDE

Michel Leon Thominet, Paris, France, assignor to Societe D'Etudes Scientifiques Et Industrielles De l'Ile-De-France, Paris, France

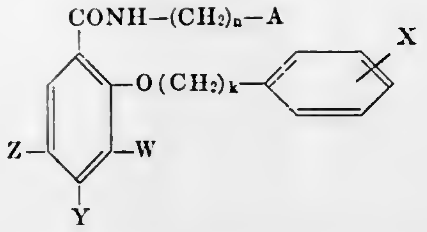
Division of Ser. No. 324,509, Jan. 17, 1973, , which is a division of Ser. No. 108,963, Jan. 22, 1971, Pat. No. 3,723,416, which is a continuation-in-part of Ser. No. 714,795, March 11, 1968, Pat. No. 3,594,417. This application Dec. 13, 1973, Ser. No. 424,216

Claims priority, application France, Apr. 3, 1967, 67.101328; June 23, 1967, 67.111808

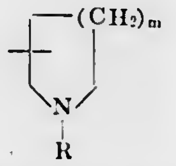
Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **2 Claims**

1. The method of anesthetizing a mammal which comprises administering to said mammal an anesthetically effective amount of a compound selected from the class consisting of 2-arylalkyloxy benzamides and their pharmaceutically acceptable acid and quaternary ammonium salts, said substituted 2-arylalkyloxy benzamides having the formula:



in which A is a monovalent heterocyclic radical having the formula:



in which *m* is 1; R is an alkyl group having from 1 to 5 carbon atoms; W, Y and Z are hydrogen, halogen, amino or alkylamino in which the alkyl group has from 1 to 5 carbon atoms; X is hydrogen or halogen and *k* is 1 or 2; *n* is 1, 2 or 3; at least one of W, Y and Z being other than hydrogen.

3,865,947
α,β-UNSATURATED ESTERS OF VULPINIC ACID

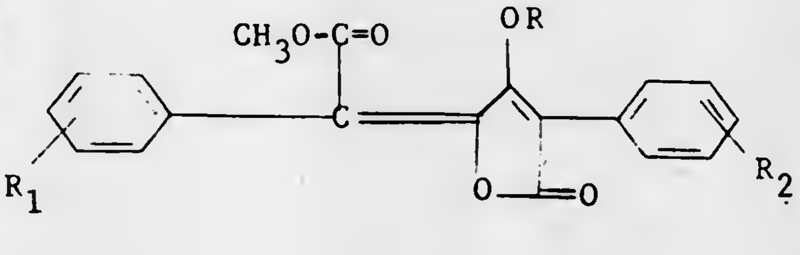
Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 276,020, July 28, 1972, Pat. No. 3,749,740, which is a continuation-in-part of Ser. No. 150,209, June 4, 1971, abandoned. This application May 7, 1973, Ser. No. 357,982

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 **2 Claims**

1. A pharmaceutical composition having anti-arthritic activity in dosage unit form comprising a pharmaceutical carrier and from about 10 mg. to about 50 mg. of a chemical compound of the formula:



wherein:

R is acrylyl, methacrylyl, dimethylacrylyl, crotonyl or cinnamoyl; and

R_1 and R_2 are each hydrogen, chlorine, bromine, fluorine, lower alkyl of from one to four carbon atoms, lower alkoxy of from one to four carbon atoms, dimethoxy, trimethoxy, or trifluoromethyl.

3,865,948
TREATMENT OF HELMINTH INFECTIONS WITH SUBSTITUTED PHENYL-THIOUREAS

David Anthony Eichler, Loughton; Joshua Michael Stuart Lucas, High Ongar; George Christopher James Martin, Brentwood; Edgar William Parnell, Hornchurch, and Garth Molesdale Thompson, Upminster, all of England, assignors to May & Baker Limited, Dagenham, Essex, England

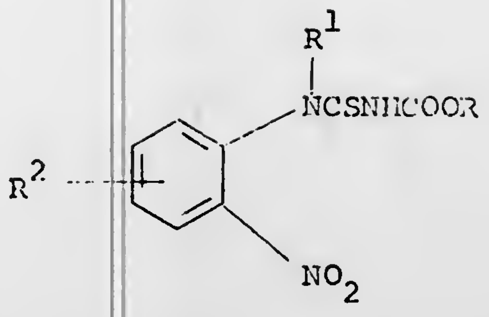
Filed June 15, 1971, Ser. No. 153,408

Claims priority, application Great Britain, Oct. 21, 1970, 50060/70; Apr. 1, 1971, 8463/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—300 **11 Claims**

1. Method for the treatment of helminth infections in man and domestic animals which comprises administering to man or a domestic animal infected with helminths an anthelmintically effective amount of at least one benzene derivative of the formula:



wherein R represents an aliphatic hydrocarbon group of 1 to 4 carbon atoms which is unsubstituted or substituted by halogen or alkoxy of 1 to 4 carbon atoms, R^1 represents hydrogen or methyl, and R^2 represents hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms which is unsubstituted or substituted by a cycloalkyl group of 3 to 6 carbon atoms, alkoxycarbonylamino of 2 to 4 carbon atoms, alkanoyl of 2 to 4 carbon atoms, benzoyl or N-methylmethanesulphonylamino.

3,865,949
PROCESS OF TREATMENT

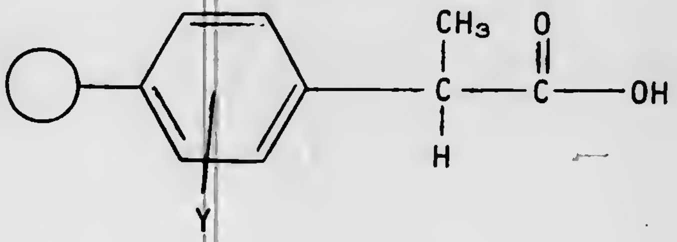
Margaret E. Greig, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 384,819, Aug. 2, 1973, abandoned, which is a continuation of Ser. No. 258,353, May 31, 1972, abandoned. This application June 14, 1974, Ser. No. 479,213

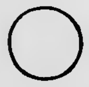
Int. Cl. A61k *27/00*

U.S. Cl. 424—317 5 Claims

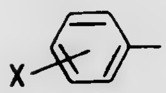
1. A process for the prophylactic treatment of allergy of a reagin or non-reagin mediated nature comprising the systemic administration of from 15 to 200 mg. of a compound of the formula:



wherein



is cyclohexane or



and X and Y can be the same or different and are hydrogen, fluoro, chloro, bromo, alkyl of from 1 to 8 carbon atoms, inclusive, or alkoxy of from 1 to 8 carbon atoms, inclusive, or the pharmacologically acceptable salt thereof in association with a pharmaceutical carrier to a sensitized human or animal subject.

3,865,950
METHYLCYCLOPROPANE ANESTHETICS

Gerald Joseph O'Neill, Arlington; Charles William Simons, Bedford, and Charles Alden Billings, Concord, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 23, 1973, Ser. No. 408,709

Int. Cl. A61k *27/00*

U.S. Cl. 424—352 5 Claims

1. The process of inducing anesthesia in a mammal which comprises administering by inhalation to said mammal an effective quantity for inducing a state of anesthesia, of a compound selected from the group consisting of 1-chloro-1,2-difluoro-2-methylcyclopropane, 1-chloro-1-fluoro-2,3-dimethylcyclopropane, 1-chloro-1-fluoro-2-methylcyclopropane and 1-chloro-1-fluoro-2,2-dimethylcyclopropane.

3,865,951
PRODUCTION OF EDIBLE PROTEIN FROM NON-TOXIC STRAINS OF PENICILLIUM

Arnold Spicer, Iver Heath, and Gerald L. Solomons, High Wycombe, both of England, assignors to Ranks Hovis McDougall Limited, London, England

Continuation of Ser. No. 116,684, Feb. 18, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,788

Claims priority, application Great Britain, Feb. 25, 1970, 8977/70; Feb. 25, 1970, 8978/70

Int. Cl. C12j *13/06;* **A23j** *3/00*

U.S. Cl. 426—60 5 Claims

1. A process for the production of a penicillin free edible protein-containing substance which is suitable for human consumption which comprises incubating and proliferating, under aerobic conditions, a non-toxic and non-penicillin producing strain of *Penicillium notatum* or *Penicillium chrysogenum* or a variant or mutant thereof in a culture medium containing essential growth-promoting nutrient substances, of which carbon in the form of assimilable carbohydrate constitutes the limiting substrate in proliferation, and separating from the assimilable carbohydrate exhausted medium the proliferated organism which is penicillin free and which constitutes the edible protein-containing substance suitable for human consumption possessing a high net protein utilization value of at least 70 based on α-amino nitrogen.

3,865,952
BLUE CHEESE FLAVOR

Karl Heinz Ney, Hamburg; I. Poetoe Gde Wirotama, Rellingen, and Wolfram Gustav Freytag, Halstenbek, all of Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 240,817, April 3, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 402,426

Claims priority, application Luxembourg, Apr. 8, 1971, 62952

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 4 Claims

1. A blue cheese flavor composition which comprises a mixture of:

i. from 1 to 8 parts by weight of 1-octen-3-ol,
ii. from 15 to 30 parts by weight of 2-alkanones having from 5 to 15 carbon atoms,
iii. from 40 to 60 parts by weight of alkanoic acids having from 2 to 12 carbon atoms, of which at least 80% contain at least 6 carbon atoms and at most 2% are branched chain alkanoic acids having 4 or 5 carbon atoms,
iv. from 0 to 25 parts by weight of 2-oxoalkanoic acids having from 2 to 6 carbon atoms and 2-oxoalkanedioic acids having 4 or 5 carbon atoms,
v. from 0 to 5 parts by weight of 2-alkanols having from 5 to 9 carbon atoms,
vi. from 0 to 0.2 parts by weight of methyl and ethyl esters of alkanoic acid having from 4 to 8 carbon atoms, and
vii. from 0 to 2 parts by weight of aldehydes having from 2 to 10 carbon atoms.

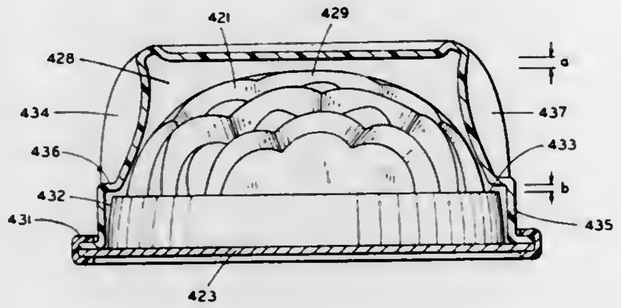
3,865,953
PACKAGING EMBOSSED-SURFACED BUTTER AND MARGARINE

Leo Peters, 750 Plymouth Rd. S.E., Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 121,010, March 4, 1971, Pat. No. 3,758,312, and a continuation-in-part of Ser. No. 236,463, March 20, 1972, Pat. No. 3,835,224. This application May 24, 1972, Ser. No. 256,411

Int. Cl. B65b *25/06, 23/00*

U.S. Cl. 426—124 11 Claims



1. A pat package for a soft food such as butter comprising a plate having a substantially flat bottom wall, a soft food pat having a flat bottom supported on said bottom wall and having a surface above said bottom wall equipped with embossments defining ridges and valleys, and a relatively rigid-bodied hard-surfaced type blister cover supported and secured on said bottom wall about said pat flat bottom, said cover being spaced from said embossments a distance great enough to avoid pressures from too close spacing but small enough to avoid unfavorable impact pressures due to movement of the butter, said cover having a shape conforming generally to the collective shape of said ridges but not to said valleys; said embossments of the pat being engageable with the cover when the package is inverted, the cover being shaped to contact, when the package is inverted, a surface area of said ridges of from about 10% to about 25% of the total surface area of both the ridges and the valleys.

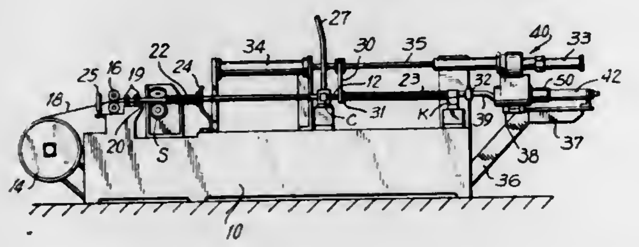
3,865,954
CLOSURE FOR SHIRRED CASING STICKS

Valdis M. Tums, Palos Park, and Thomas J. Maxwell, Lockport, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 11, 1972, Ser. No. 242,932

Int. Cl. A22c *13/00*

U.S. Cl. 426—140 4 Claims



1. A hollow shirred food casing stick having casing material from one end thereof progressively twisted into a close-packed funnel-shaped knot configuration about a passage through at least a portion thereof and at least a portion of said twisted casing being implanted within said hollow stick to form an end closure therefor, the funnel shaped configuration of said end closure comprising a first portion of casing material from the end of said stick being progressively twisted into a generally cylindrically shaped knot configuration that is totally within said hollow stick and a second portion of casing material from the end of said casing stick and continuous therewith being progressively twisted into a generally conically shaped knot configuration.

3,865,955
COMMINUTED MEAT PRODUCT STABILIZED WITH JICAMA

Herman H. Friedman, Bayside; David A. Lysak, Ossining, and John Hornyak, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 130,800, April 2, 1971, abandoned. This application Nov. 9, 1973, Ser. No. 414,552

Int. Cl. A23b *1/00*

U.S. Cl. 426—142 3 Claims

1. A bacteriologically stable food composition having a moisture content of from about 15 percent to about 50 percent by weight and a water activity of about 0.8 - 0.9 consisting essentially of:

a. a blend of one part by weight of meat normally capable of supporting bacterial growth and comminuted to a particle size ranging from about 30 mesh size to about 400 mesh size (U.S.S. Sieve), and

b. from about one-third to about one part by weight of dehydrated and comminuted uncooked jicama, said jicama having been dehydrated to deplete it of its free water content under conditions whereat its macromolecular cellular structural system is not collapsed and its bound water content undisturbed and having then been comminuted to a particle size ranging from about 70 mesh size to about 400 mesh size (U.S.S. Sieve).

3,865,956
PROCESS FOR PRODUCING SOYBEAN FOOD PASTE AND THE RESULTING PRODUCT

Danji Fukushima, Omiya; Terumitsu Hattori, and Akira Arai, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Noda-shi, Japan

Filed Dec. 15, 1972, Ser. No. 315,508

Claims priority, application Japan, Dec. 17, 1971, 46-101844; Dec. 21, 1971, 46-103225

Int. Cl. A23d *5/00*

U.S. Cl. 426—195 17 Claims

1. A process for producing an oily soybean food paste, which comprises at atmospheric pressure dry roasting soybeans or defatted soybeans having a moisture content of 17 percent by weight or less at 130° to 300°C. for 4 seconds to thirty minutes, pulverizing the beans to 200 microns or less, mixing the resulting powders with an edible fat or oil which is solid or semi-solid at a room temperature and kneading the resulting mixture.

3,865,957
LOW CALORIE SWEETENER AND SWEETENER BASE

Hubert Schieweck, Obrigheim; Georg Steinle, Grunstadt, and Ludwig Haberl, Obrigheim, all of Germany, assignors to Sueddeutsche Zucker-Aktiengesellschaft, Mannheim, Germany

Filed Apr. 11, 1973, Ser. No. 349,969

Claims priority, application Germany, Apr. 12, 1972, 2217628

Int. Cl. A23l *1/26*

U.S. Cl. 426—213 13 Claims

1. A foodstuff or beverage containing a low calorie sweetener agent approximating the taste of natural sugar for human consumption and providing said beverage or foodstuff with a taste normally obtained through pure sugar, said low calorie sweetening agent comprising finely divided, crystalline isomaltitol as the major component, and said sweetener having a degree of purity rendering it suitable in taste, appearance and quality for human consumption.

3,865,958
EDIBLE COMPOSITIONS HAVING A POULTRY MEAT FLAVOR AND PROCESSES FOR MAKING SAME

Karel W. Breukink, and Michel Van Praag, both of Hilversum, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,805

Int. Cl. A23l *1/26*

U.S. Cl. 426—211 4 Claims

1. A process for preparing an edible poultry-flavored composition comprising (A) intimately admixing in the absence of any natural meat or poultry meat products (i) a poultry egg product selected from the group consisting of enzymatic digest of the whole internal contents of poultry eggs and enzymatic digest of poultry egg yolk, with (ii) L-cysteine hydrochloride and (iii) thiamine, said poultry egg product, L-cysteine hydrochloride, and thiamine being present in amounts sufficient to produce a poultry flavor and (B) heating the resulting mixture at a temperature and for a period of time whereby a poultry-flavored product is produced.

3,865,959
EDIBLE PROTEIN FIBERS BASED ON CASEIN AND A PROCESS FOR PREPARING SAME

Willem Jan Lecluse, Veenwouden, Netherlands, assignor to Cooperatieve Condensfabriek "FRIESLAND", Leeuwarden, Netherlands

Filed Dec. 8, 1972, Ser. No. 313,255

Claims priority, application Netherlands, Dec. 10, 1971, 7116966

Int. Cl. A23j *3/00*

U.S. Cl. 426—212 9 Claims

9. A method of producing an edible fibrous protein product which comprises:

a. preparing an aqueous solution of casein in dilute sodium hydroxide solution;

b. shaping said solution into fibers;

c. contacting said fibers with an aqueous solution of at least one compound selected from the group consisting of calcium gluconate and calcium lactate until a portion of the sodium ions in said fibers is replaced by calcium ions; and

d. contacting the said fibers with an aqueous solution of phosphate ions.

3,865,960
STABILIZATION OF TARTAR IN WINE, GRAPE MUST, OR GRAPE JUICE

Karl Wucherpfennig, Riederbergstrasse 81, Wiesbaden, and Guenter Wysocki, Hohenfriedbergerstrasse 36, Dortmund, both of Germany

Filed July 3, 1973, Ser. No. 376,230

Claims priority, application Germany, July 10, 1972, 2233821

Int. Cl. C12g *1/00*

U.S. Cl. 426—239 6 Claims

1. A method for the stabilization of tartar in wine, grape must, or grape juice by the removal therefrom of sufficient potassium and tartrate ions to inhibit the precipitation of potassium bitartrate, which method comprises electrodialyzing said wine, must, or juice between an anode and a cathode through a first membrane permeable to potassium ions and a second membrane permeable to tartrate ions, in each case against a rinsing liquid present on the side of said membranes opposite said wine, must, or juice and having an osmotic pressure substantially equal to that of the wine, must, or juice being electrodialyzed, whereby potassium ions pass from the wine, must, or juice toward the cathode through said first membrane into rinsing liquid surrounding the cathode and tartrate ions pass from the wine, must, or juice through said second membrane toward the anode into rinsing liquid surrounding the anode.

3,865,961
ELECTRODIALYZING WINE TO REMOVE SULFUR-CONTAINING COMPOUNDS

Karl Wucherpfennig, Riederbergstrasse 81, Wiesbaden, and Guenter Wysocki, Hohenfriedbergerstrasse 36, Dortmund, both of Germany

Filed July 3, 1973, Ser. No. 376,229

Claims priority, application Germany, July 10, 1972, 2233798

Int. Cl. C12g *1/00*

U.S. Cl. 426—239 1 Claim

1. A method for removing substantial quantities of free and bound sulfurous acid from wine without substantial demineralization thereof, which process comprises electrodialyzing said wine at a direct current voltage of about 7.5 volts to about 30 volts between an anode and a cathode through a first membrane permeable to cations and a second membrane permeable to free and bound sulfurous acid ions, in each case against a rinsing liquid present on the side of said membranes opposite said wine and having an osmotic pressure substantially equal to that of the wine being electrodialyzed, whereby cations pass from the wine toward the cathode through said first membrane into rinsing liquid surrounding the cathode and free and bound sulfurous acid ion pass from the wine toward the anode through said second membrane into rinsing liquid surrounding the anode.

3,865,962
METHOD FOR PROVIDING A CONTINUOUS FILM OF ALGIN CONTAINING COATING MATERIAL SURROUNDING A RAW ONION PRODUCT

Roland D. Earle, P.O. Box 1209, Hollywood, Fla. 33022

Continuation of Ser. No. 669,272, Sept. 20, 1967, abandoned. This application June 9, 1971, Ser. No. 151,565

Int. Cl. A23b *7/00*

U.S. Cl. 426—291 15 Claims

1. A method for preparing a raw onion product comprising the steps of:

a. applying an edible, cold water insoluble finely divided amylaceous material to a raw onion portion

in amounts effective to form a thin layer over the entire outside surface of the raw onion portion,

b. then immersing each insoluble material coated raw onion portion in an aqueous dispersion containing water soluble algin,

c. removing each onion portion from the dispersion, and

d. treating each algin coated onion portion with an aqueous calcium ion containing gelling solution for a period of time sufficient to solidify a substantially continuous film of the alging containing coating material surrounding the onion portion without imparting any bitter taste thereto when the onion portion is consumed.

3,865,963
METHOD FOR FOLDING DOUGH

Victor F. Gugler, 8920 Helen Ave., Sun Valley, Calif. 91352

Division of Ser. No. 104,447, Jan. 6, 1971, Pat. No. 3,710,731. This application Sept. 11, 1972, Ser. No. 288,146

Int. Cl. A21d *8/02;* **A21c** *3/00, 9/04*

U.S. Cl. 426—297 2 Claims

1. A process for preparing dough for Danish pastries and the like comprising the steps of:

flowing dough as a narrow strip onto a top surface of a forwardly moving conveyor belt;

severing said strip into dough sections as it moves forward on said conveyor belt; and

lifting only a forward portion of each said dough section relative to a rearward portion thereof as it moves forward with said conveyor belt to automatically fold said forward portion rearwardly onto said forwardly moving rearward portion to produce a series of folded dough sections on said conveyor belt.

3,865,964

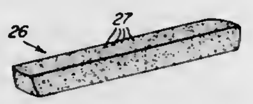
COATING THE SURFACE OF FROZEN, FRIED FRENCH FRIES WITH ATOMIZED FAT GLOBULES

Robert J. Kellermeier; James T. Knight, and Bernadine E. Steljes, all of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Ontario, Oreg.

Division of Ser. No. 124,271, March 15, 1971,. This application June 8, 1973, Ser. No. 368,191

Int. Cl. A23b *7/00*

U.S. Cl. 426—307 **2 Claims**



1. A method of producing a frozen French fry potato product, comprising deep fat frying French fry potato pieces; freezing said fried French fry potato pieces; atomizing liquid fat using spraying pressures of about 30 to about 400 psig onto the surfaces of said frozen fried French fry potato pieces in an amount of about 1 to about 6 percent by weight of said frozen, fried French fry potato pieces to provide a superficial, discontinuous coating of solidified globules or droplets of said atomized fat adherent to the frozen surfaces of said frozen fried French fry potato pieces.

3,865,965

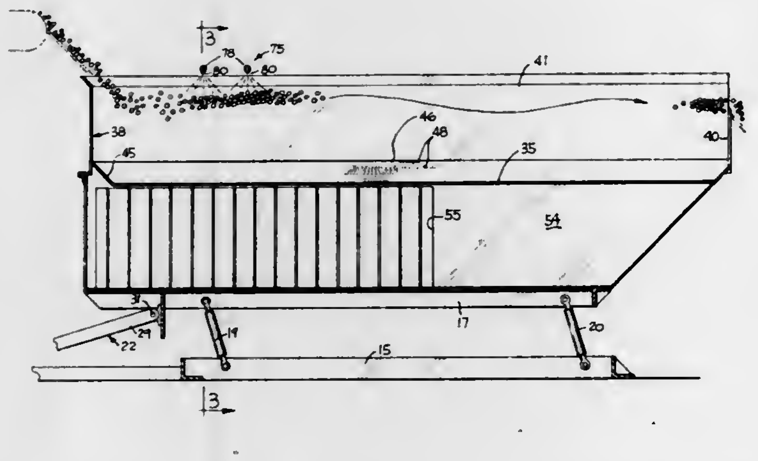
METHOD FOR COOLING FOOD IN A FLUIDIZED BED

Walter L. Davis, Milton-Freewater, and Henry V. Svehaug, Salem, both of Oreg., assignors to Key Equipment Company, Milton-Freewater, Oreg.

Filed Feb. 2, 1972, Ser. No. 222,808

Int. Cl. A23b *7/04*

U.S. Cl. 426—519 **4 Claims**



1. A method for cooling a heated food product to room temperature without substantially increasing or decreasing the moisture content of the food product, comprising the steps of: forming the heated food product in a fluidized bed,

- continuously spraying water as a mist onto said product to maintain said heated food product moist while
- simultaneously directing air upward through said fluidized bed to evaporate a portion of said sprayed water to rapidly cool said heated food product to approximately ambient room temperature without substantially increasing or decreasing the moisture content of said food product, said air being directed upward through a perforated support at a velocity sufficient to suspend said food product above said perforated support as said fluidized bed;
- continuously feeding the food product onto one end of said perforated support; and
- vibrating said perforated support in a directional occillational motion to continuously move the food product along said perforated support to another end of said perforated support.

3,865,966

EXPANDED PROTEIN LATTICE FOOD PRODUCT AND METHOD OF MAKING

Thomas B. Coppage, Richmond Heights; Ronald J. Flier, Ladue, and Bernard M. Payne, St. Charles, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 280,539, Aug. 14, 1972, abandoned, which is a continuation of Ser. No. 5,983, Jan. 26, 1970, abandoned. This application July 5, 1973, Ser. No. 376,857

Int. Cl. A23j *3/00*

U.S. Cl. 426—372 **10 Claims**

1. The method of preparing an economical chunk-type complete maintenance canned food composition which incorporates expanded soybean fiber chunks to simulate natural meat chunks in flavor and mastication properties comprising the steps of:

- Grinding raw animal meat containing proteinaceous materials to particles of a substantially uniform size;
- precooking the ground meat at temperatures of about 160° to 175°F.;
- mixing expanded soybean fiber chunks having an expanded fibrous lattice with moisture, oils and flavors therewith;
- cooking said chunks with said particles of meat, flavors, moisture and oils at a temperature of 160° to 185°F. for a time which is at least sufficient to coagulate the natural meat protein particles to impregnate the expanded fibrous lattice of the soybean fiber chunks with flavor components of said particles of meat, flavors, and oils to impart the natural meat texture and flavor thereto, said moisture content being at least sufficient to allow absorption of said flavors and oils and cause said particles of meat to adhere to the surface of said chunks;
- mixing said impregnated chunks with nutritional materials to form a nutritionally balanced food composition, packing said food composition into a can;
- heating said can to about 245° – 250°F. and about 15 p.s.i. for about 65 minutes to cook and sterilize said food composition.

ELECTRICAL

3,865,967

FLUID PRESSURIZED ELECTRICAL CABLES HAVING MEANS INCORPORATED THEREWITH FOR LOCATING LEAKS

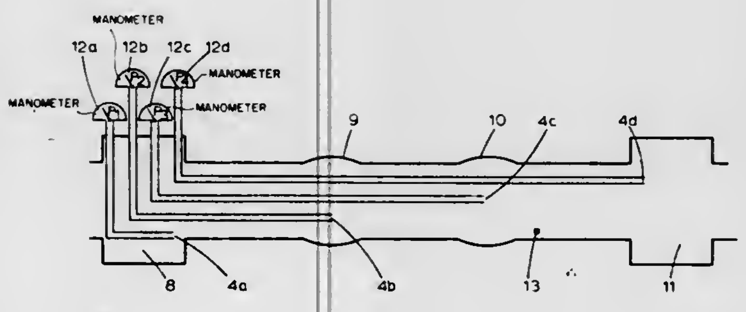
Jack Pritchett, Amersham, England, assignor to The Post office, London, England

Filed Apr. 23, 1973, Ser. No. 353,425

Claims priority, application Great Britain, May 5, 1972, 21131/72

Int. Cl. H01b *7/32;* **H02g** *15/28;* **G01m** *3/28*

U.S. Cl. 174—11 R **5 Claims**



1. A fluid filled electric cable in which a leak at any point in the cable causes a continuous pressure gradiant drop along the entire cable, said cable comprising a fluid containing sheath, a plurality of fluid impermeable pressure transmitting conduits disposed within said sheath, said conduits each having an open end located within said sheath, said open ends being spaced from one another along the length of said sheath, the other end of each conduit terminating externally of said sheath, and a plurality of individual pressure indicating means, each said other end of said conduits being connected to a respective one of said individual pressure indicating means for indicating the individual pressure at said open end of each conduit.

3,865,968

TERMINATORS FOR ELECTRICAL SUPERCONDUCTOR CABLE INSTALLATIONS

Heinz Heumann, Rheydt, and Helmut Kuhmann, Dusseldorf, both of Germany, assignors to AEG-Telefunken Kabelwerke AG, Rheydt (Rugh)-Saarn, Germany

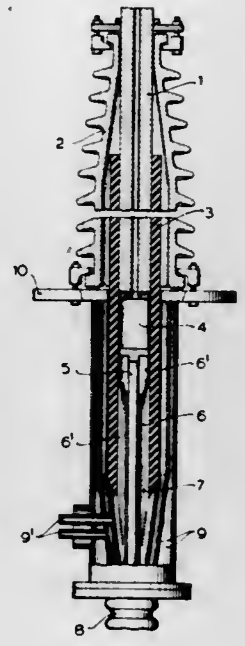
Filed Oct. 2, 1973, Ser. No. 402,810

Claims priority, application Germany, Oct. 6, 1972, 2249801; Oct. 6, 1972, 7237304

Int. Cl. Holv *11/00*

U.S. Cl. 174—15 BH **7 Claims**

1. In a terminator for an electrical superconductor cable installation, the terminator including a normal conductor, an external insulator surrounding the normal conductor and arranged to be disposed in an ambient temperature environment, a superconductor cable including a conductor and means maintaining the conductor at a temperature at which it is superconductive, and heat-exchange means defining a zone of temperature increase between the conductor of the superconductor cable and the normal conductor, the terminator presenting a longitudinal axis along which the heat-exchange means are interposed between the conductor of the superconductor cable and the normal conductor, the improvement wherein: said terminator further comprises means defining a zone of electrical field reduction; said electrical field reduction zone is separated from said zone of temperature increase;



and said zone of temperature increase is located axially outside of the region occupied by said external insulator.

3,865,969

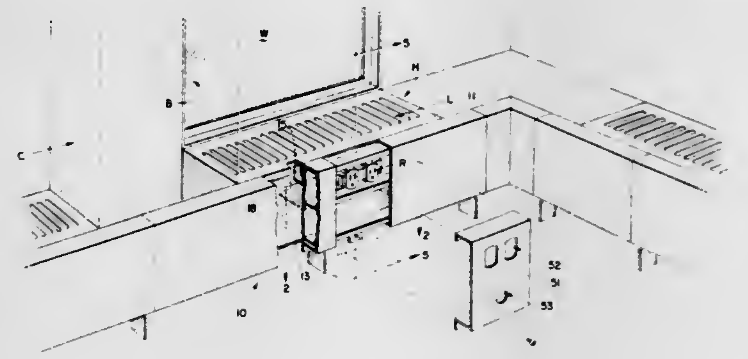
RADIATOR MOUNTED RACEWAY

Gerard Edmund Mulvey, 36 Castle Frank Rd., Toronto, Ontario, Canada

Filed Sept. 11, 1972, Ser. No. 287,979

Int. Cl. H02g *3/04*

U.S. Cl. 174—48 **11 Claims**



1. Electrical wiring duct apparatus for use in association with radiator means such as radiator units, convecting units, or the like having housing means, said duct apparatus comprising;

- panel means defining at least part of a radiator housing means;
- duct back wall means forming a further panel of said housing means, and extending continuously between adjacent housing means, and having upper and lower edges;
- duct top wall means extending forwardly from said back wall means adjacent said upper edge thereof;
- duct bottom wall means extending forwardly from said back wall means adjacent said lower edge thereof;
- duct front wall means extending between said top wall means and said bottom wall means, at least a portion thereof being removeable for access to the interior thereof, and,
- mounting means for mounting electrical outlet connection means at spaced intervals therealong.

3,865,970

VACUUM-TIGHT ELECTRIC LEADTHROUGH IN AN ELECTRIC DISCHARGE TUBE

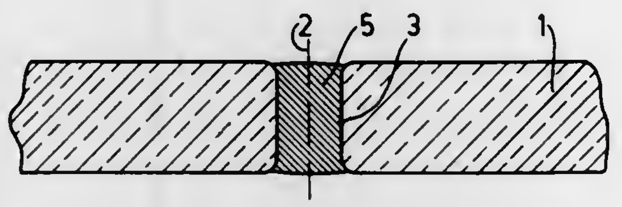
Gerardus Arnoldus Herman Maria Vrijssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,767

Claims priority, application Netherlands, Dec. 7, 1971, 7116765

Int. Cl. H01j *5/00*

U.S. Cl. 174—50.53 **3 Claims**



1. An electric discharge tube comprising at least one electric leadthrough, comprising a leadthrough hole and a plug that is disposed in said hole and is thermally bonded at the wall of said hole, said plug consisting essentially of an alloy of indium and at least one of platinum, gold, silver, copper, lead, tin, gallium, nickel, and cobalt.

3,865,971

SUBMARINE COAXIAL CABLES

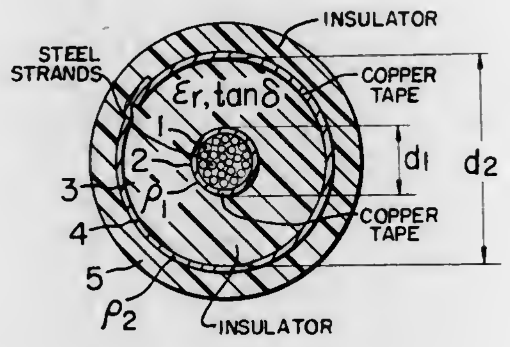
Denroku Kumagai, Tokyo; Gen Marubayashi, Mito; Kishio Arita, Mito; Shugo Kubo, Mito; Goro Yamauchi, Mito; Toshio Takahashi, Mito, and Toshihiko Sato, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Aug. 7, 1973, Ser. No. 386,284

Claims priority, application Japan, Aug. 8, 1972, 47-79241; Sept. 1, 1972, 47-87624; Sept. 1, 1972, 47-87625; Sept. 1, 1972, 47-87626; Sept. 1, 1972, 47-87627

Int. Cl. H01b *7/18*

U.S. Cl. 174—102 R **12 Claims**



1. A submarine coaxial cable characterized by comprising

a. an inner conductor,

b. an outer conductor disposed coaxially of said inner conductor and in spaced apart relation therewith to surround the same,

c. an insulating material filling the space between said inner and outer conductors, and

d. said inner conductor being made of a dispersion type conductive material having a temperature coefficient of resistivity lower than that of pure copper and consisting of copper and 0.01–5.00 percent by weight of finely divided powder dispersed in said copper, said finely divided powder being from the group consisting of metal oxides, ferrite, thermistor, carbides, and nickel-copper alloy powder.

3,865,972

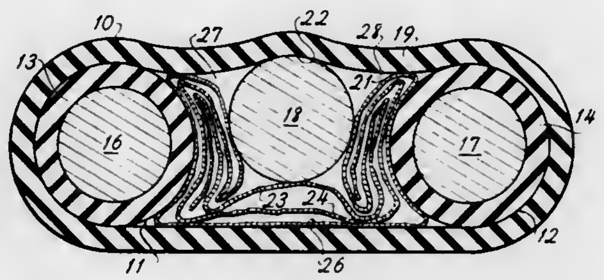
NONMETALLIC SHEATHED CABLE

Walter R. Norris, Winder, Ga., assignor to The Anaconda Company, New York, N.Y.

Filed Feb. 22, 1974, Ser. No. 444,929

Int. Cl. H01b *7/02*

U.S. Cl. 174—115 **7 Claims**



1. A nonmetallic sheathed cable comprising:

A. two parallel insulated conductors,

B. a bare conductor laid parallel between said two conductors,

C. a paper separator partially enclosing said bare conductor, said separator,

a. surrounding said bare conductor on three sides, two of said sides facing said insulated conductors, and

b. opening away from said bare conductors on a fourth side thereof so as to fold slightly around said insulated conductors,

D. an extruded polymeric jacket surrounding said conductors, said jacket comprising a lengthwise groove and said bare conductor fitting directly into said groove on said fourth side.

3,865,973

STILL PICTURE BROADCASTING RECEIVER

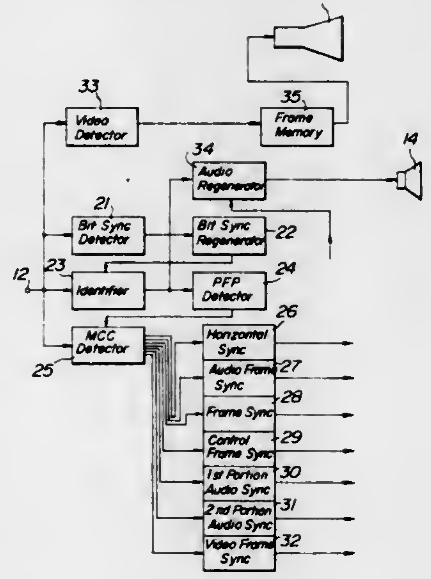
Michio Masuda, Tokyo; Katsuo Mohri; Hiroaki Nabeyama, both of Yokohama; Teruhiro Takezawa, Tokyo; Hisakichi Yamane, Tokyo; Eiichi Sawabe, Tokyo; Akio Yanagimachi, Kawasaki; Takashi Uehara, Tokyo, and Takehiko Yoshino, Yokohama, all of Japan, assignors to Hitachi Limited and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,802

Claims priority, application Japan, May 23, 1972, 47-050389; Dec. 27, 1972, 47-129796; Feb. 9, 1973, 48-016293

Int. Cl. H04n *5/04, 5/08*

U.S. Cl. 178—5.8 R **17 Claims**



1. A receiver for receiving a composite signal having a video signal and an audio multiplex signal transmitted alternately in a predetermined sequence, the video signal and the audio multiplex signal including respective pulse coded synchronizing signals having different repetition frequencies in the video signal transmission period and in the audio multiplex signal transmission period wherein parts of the two pulse coded synchronizing signals inserted in said video signal and said audio multiplex signal have an identical pulse coded mode at a common measure frequency of the two repetition frequencies of said pulse coded synchronizing signals, wherein the receiver comprises:

a coincidence circuit for generating a coincidence signal having a frequency of the common measure frequency of said different repetition frequencies of said two pulse coded synchronizing signals when said pulse coded synchronizing signals having said identical coded mode are supplied, and

a synchronizing signal generator means which is controlled by said coincidence signal for generating signals having the two repetition frequencies and phases of said two pulse coded synchronizing signals so as to reproduce said video signal and audio multiplex signal.

3,865,974

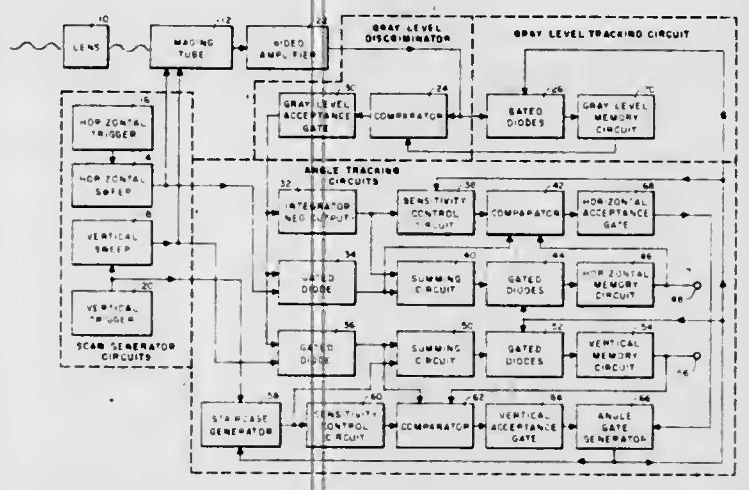
GRAY-LEVEL ANGLE-GATED ELECTRO-OPTICAL SEEKER

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1965, Ser. No. 434,740

Int. Cl. G01s *9/62;* **H04n** *3/00*

U.S. Cl. 178—6.8 **4 Claims**



1. In an electro-optical tracking system, the combination comprising:

a. an imaging tube,

b. a lens for focusing an image of the scene containing the target of interest on the face plate of said imaging tube,

c. scan generation circuit means including a vertical trigger circuit, a horizontal voltage sweep generator and a vertical voltage sweep generator coupled to said imaging tube for electronically scanning the image focused on the face plate of said imaging tube,

d. gray level tracking circuit means including gray level memory circuit means and first gated diodes coupling said imaging tube to said gray level memory circuit means for passing signals to said gray level memory circuit only when there is a change in the gray level signal from said imaging tube, and producing an output signal that is proportional to the gray level of the target being tracked,

e. a gray level discriminating means coupled to said imaging tube and to said gray level tracking circuit means for producing an output signal when the signal received from the imaging tube is the same as the signal received from said gray level tracking circuit means,

f. angle tracking circuit means coupled to said scan generation circuit means and to said gray level discriminating means for passing horizontal and vertical scan voltages in response to the signal from said gray level discriminator that represent the horizontal and vertical coordinates of objects having the same gray level as the target of interest and for then selectively passing only those voltages that represent approximately the same coordinates as the coordinates of the target of interest.

3,865,975

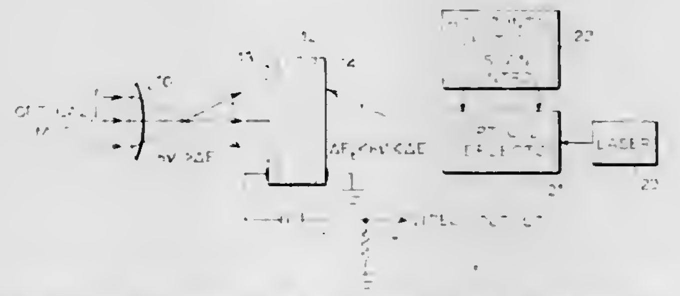
DEEP TRAP, LASER ACTIVATED IMAGE CONVERTING SYSTEM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Joseph Maserjian, 5668 Pine Cone Rd., La Crescenta, Calif. 91214

Filed Aug. 22, 1973, Ser. No. 390,468

Int. Cl. H04n *5/30*

U.S. Cl. 178—7.1 **10 Claims**



1. A system for converting an optical image to an electrical video signal comprising

a film of semiconductor material having deep level traps, said semiconductor material having a band gap between its conduction band and its valence band of energy ΔE, where said traps are of predetermined energy depth ΔE_t for electrons or holes, or electrons and holes, where ΔE_t is the larger of said predetermined values for electron and hole traps when both are present,

a conductive plate on each side of said film, at least one of said plates being transparent,

means for focusing said optical image on said film through a transparent one of said plates, said image having photons of energy $h\nu$ greater than said energy ΔE for producing electron-hole pairs in said semiconductor material for electrons, or holes, or both electrons and holes to be trapped by said deep level trap states,

means for producing a high intensity beam of energy $h\nu'$, where $\Delta E_t < h\nu' < \Delta E$,

means for deflecting said beam across said semiconductor film through one of said plates, thereby exciting any electrons and holes in said trap states into conduction and valence bands of said semiconductor material, and

means connected to said conductive plates for detecting photocurrent produced by any electrons and holes excited into said conduction and valence bands.

3,865,976

ZONE GRID ASSEMBLY PARTICULARLY FOR HIGH RESOLUTION RADIOACTIVITY DISTRIBUTION DETECTION SYSTEMS

Raymond P. Grenier, Wilmington, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.

Division of Ser. No. 258,073, May 30, 1972, Pat. No. 3,787,685. This application Mar. 22, 1973, Ser. No. 343,633

Int. Cl. G11c *11/06;* **G08c** *21/00*

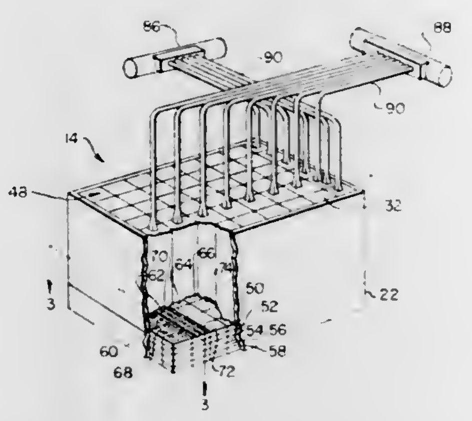
U.S. Cl. 178—18 **9 Claims**

1. A position identifying device comprising:

a. a base formed with a plurality of bores arranged in a pattern;

b. a spherical contacting member retained in each said bore, the diameter of each said contacting member being less than the diameter of each said bore, the depth of each said bore greater than the diameter of each said contacting member, each said contacting member slidable between first and second positions;

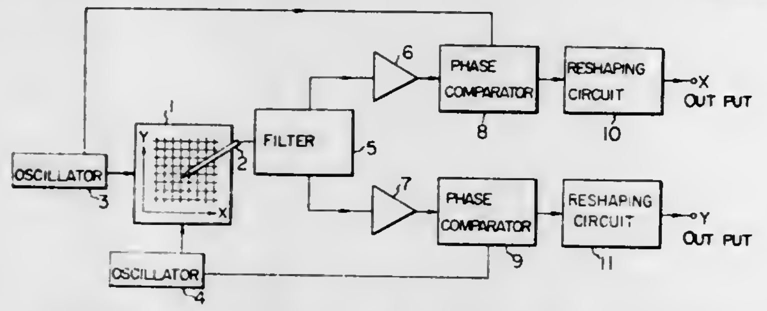
c. a printed circuit board formed with a plurality of holes, arcuate conductor pairs and elongated conductors, said holes arranged in a pattern corresponding to said pattern of bores, said printed circuit board mounted on said base in face to face relationship, said bores and said holes in axial relationship, the diameter of each said hole being less than the diameter of each said contacting member, one of each said arcuate conductor pairs disposed about the periphery of one of each said holes, each said arcuate conductor pair defining first and second conductors, each said contacting member operative to engage and disengage said conductor pair, said contacting members in engagement with said conductor pair when in said first position and disengaged from said conductor pair when in said second position, said first conductor electrically isolated from said second conductor when said contacting member associated therewith is in said second position, an electrical path established between said first and second conductors through said associated contacting member in said first position, one end of certain ones of said elongated conductors connected to selected ones of said first conductors, one end of certain others of said elongated conductors connected to selected other ones of said second conductors, the other ends of said elongated conductors defining a plurality of terminal means, a pair of said terminal means uniquely associated with each said hole; and



d. means for selectively actuating said contacting members into said first position, a pair of said terminal means uniquely identifying the position of said actuated contacting member.

3,865,977
A SYSTEM FOR IDENTIFYING THE POSITION OF A STYLUS

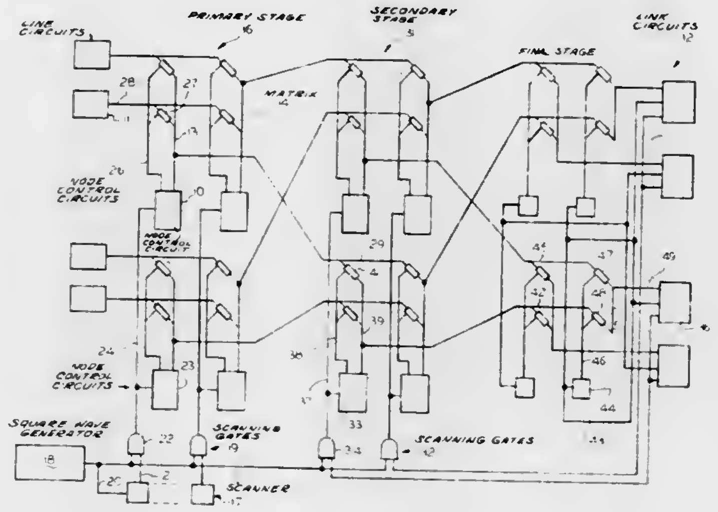
Hisao Hiraki, Nishinomiya, and Katsuhiko Miyagawa, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 23, 1973, Ser. No. 353,712
Int. Cl. G08c *21/00*
U.S. Cl. 178—19 **3 Claims**



1. A system for identifying the position of a pen comprising a two dimensional array having vertical and horizontal terminal groups of lattice electrodes, a pen movable over said lattice electrodes, two oscillators having frequencies different from each other, a plurality of phase shifters provided for each of said oscillators to shift the phase of the output thereof, and a plurality of impedance elements connected in series across the terminals of each of said plurality of phase shifters so that each terminal of the vertical and horizontal terminal groups of said lattice electrodes is connected to the associated one of the junction points of said impedance elements of said phase shifters, said plurality of impedance elements including a series circuit of resistors and capacitors, whereby said phase-shifted signals are read out at each position of said pen over said lattice electrodes to thereby identify the position of said pen.

3,865,978
NODE CONTROL CIRCUITRY

Alfred Hestad, Chicago, Ill., assignor to Control Networks Corporation, Chicago, Ill.
Filed June 21, 1973, Ser. No. 372,099
Int. Cl. H04m *7/06*
U.S. Cl. 179—18 GF **10 Claims**



1. A node control circuit arrangement for controlling switchable three terminal cross point elements at the nodes interconnecting multiples in matrices arranged in multi-stage networks,

said multi-stage networks being connected to be controlled at each node by node control circuits common to a plurality of cross point elements in each of said stages,

said node control circuits comprising test means including differential level detector means connected to determine the signal condition of a multiple being tested at a test point on one side of the switchable cross point elements, said differential level detector means providing an output signal when the signal at the said one side varies from a reference signal by a pre-determined amount,

said test means further comprising constant current generator means coupled to said test point for limiting the current flow at said test point to thereby minimize attenuation by said test means,

said node control circuit arrangement further including scanner means for sequentially supplying scanner signals to the node control circuit in at least some of the stages of said multi-stage network, and

node control gate means operated responsive to the simultaneous receipt of said output signal from said level detector and said scanner signals to provide a cross point element switching signal for switching said cross point element.

3,865,979
MATRIX CONTROL CIRCUIT

Alfred Hestad, 2518 N. Kilbourn, Chicago, Ill. 60639
Filed June 21, 1973, Ser. No. 372,225
Int. Cl. H04m *7/06*
U.S. Cl. 179—18 GF **10 Claims**

1. A matrix control switching arrangement for use with automatic switching systems to interconnect selected inlets and outlets,

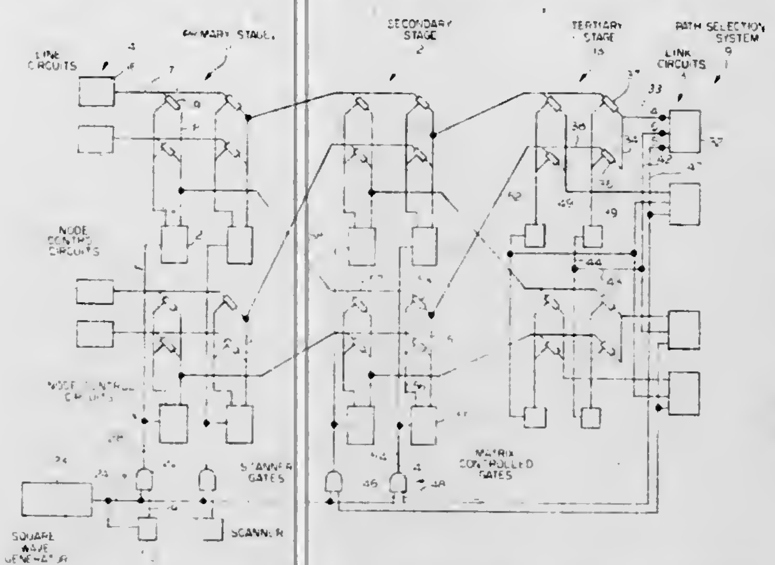
said system comprising a plurality of cascaded matrices arranged in first, intermediate and final stages,

each matrix including intersecting horizontal and vertical busses,

cross point switching elements for selectively interconnecting selected ones of said horizontal and vertical busses,

said switching elements comprising switching devices having separate control paths and communication paths,

a matrix control arrangement for applying end marking potentials at the output side of the network to cooperate with end marking potentials at the input side of the network to cause a fan out beginning at the end marked points and extending through the network,



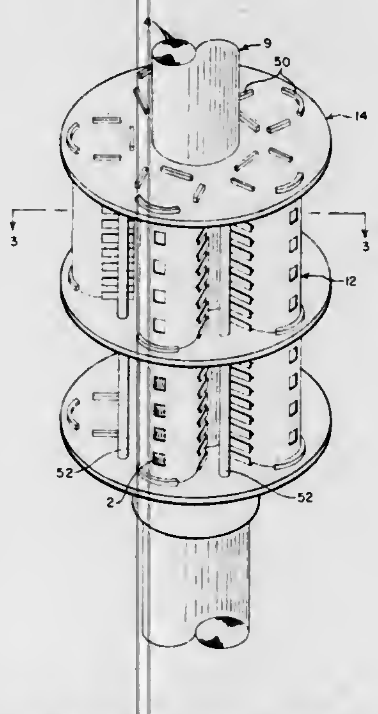
said matrix control arrangement being common to a plurality of matrices,

said matrix control circuit arrangement comprising means using ground end marking potentials for detecting and switching through the switching network, and

means responsive to the switching through of the path for providing holding current therefor.

3,865,980
LOADING COIL MEANS FOR MULTI-CONDUCTOR CABLE

Jessie Lee Moser, Highpoint; Robert Philmore Reavis, Jr., Statesville, and Melvin Andrew Soderstrom, Advance, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 27, 1974, Ser. No. 446,436
Int. Cl. H01f *15/02, 15/12, 17/08*
U.S. Cl. 178—46 **5 Claims**



1. In combination with a short section of a multi-conductor cable comprising a plurality of pairs of associated conductors, a loading coil assembly for connecting a coil to each of said pairs, said loading coil assembly comprising:

a plurality of supporting trays, each of said trays comprising a plate-like member having a central opening, said trays being mounted in spaced-apart relationship on said short section of cable with said cable extending through said central openings,

a plurality of coil housings, each of said housings having a plurality of coil receiving cells, said cells being arranged in a single row, each of said cells having a coil containaed therein,

each of said housings being mounted between adjacent trays with said rows extending parallel to the axis of said cable, each of said housings having opposite ends, said ends of each housing being supported by the opposed faces of adjacent trays,

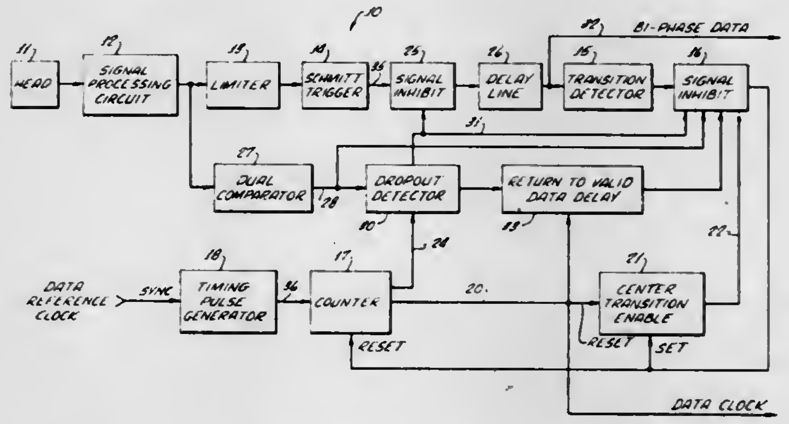
each of said housings having laterally opposite facing sides extending between said ends, electrical connecting means mounted on said sides for each coil,

said cable conductors extending laterally from said cable and being connected to said connecting means, and the lead wires from said coils extending from said coils and being connected to said connecting means whereby.

each of said conductors in said short section of cable in connected to one of said coils.

3,865,981
CLOCK SIGNAL ASSURANCE IN DIGITAL DATA COMMUNICATION SYSTEMS

James P. Welch, Glendora, and Stephen R. Siegel, Los Angeles, both of Calif., assignors to Odetics, Inc., Anaheim, Calif.
Filed July 16, 1973, Ser. No. 379,304
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 **32 Claims**



20. A digital data communication system responsive to input data, in analog form, synchronized by a reference clock comprising:

delay means responsive to said data for delaying said data by approximately one-quarter of the period of the highest frequency of said data;

detector means responsive to the output of said delay means for generating a pulse for each leading and trailing edge transition of said delayed data;

a recirculating counter having a reset input and a timing pulse input;

first gate means interposed between the output of said detector means and said reset input of said counter, said transition pulses being utilized to reset said counter;

means responsive to said data reference clock for generating a plurality of coherent timing pulses, said timing pulses being applied to said timing pulse input of said counter for clocking the same;

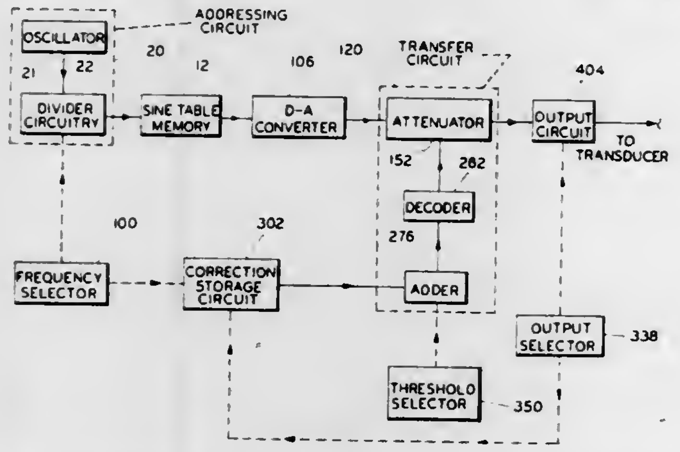
means responsive to at least one selected count output of said counter for generating a coherent clock signal for said data; and

means responsive to said data for generating a data dropout signal when the amplitude level of said data falls below a predetermined reference level, said data dropout signal being applied to said first gate means for inhibiting said transitions of said data from resetting said counter, whereby said counter continues to circulate, under the control of said timing pulses, at least one selected count output of said counter being used to generate an artificial clock signal during the duration of said dropout signal.

3,865,982
DIGITAL AUDIOMETRY APPARATUS AND METHOD

Stanley Feldman, Evanston, and William J. Mellenthin, Arlington Heights, both of Ill., assignors to Belton Electronics Corporation, Chicago, Ill.

Filed May 15, 1973, Ser. No. 360,554
Int. Cl. H04r *29/00*
U.S. Cl. 179—1 N **27 Claims**



1. In an audiometer including a transducer for producing a first sound pressure wave having a first frequency and a first period and for producing a second sound pressure wave having a second frequency and a second period, improved apparatus for generating and controlling electrical signals that energize the transducer to produce the first and second sound pressure waves comprising in combination:

memory means for storing a plurality of digital number signals representing digital numbers, each number signal representing a value of a predetermined waveform at a discrete angular position;

addressing means for cyclically addressing the memory means at a first rate such that a first set of the number signals representing a complete cycle of the waveform are read out of the memory means during a first time interval equal to the first period and for cyclically addressing the memory means at a second rate such that a second set of the number signals representing a complete cycle of the waveform are read out of the memory means during a second time interval equal to the second period;

converter means for converting the first set of number signals into a first analog signal having the first frequency and for converting the second set of number signals into a second analog signal having the second frequency;

output means for coupling the first and second analog signals to the transducer;

frequency selector means operable in a first condition for causing the addressing means to address the memory means at the firt rate so that the first analog signal is produced and operable in a second condition for causing the address means to address the memory means at the second rate so that the second analog signal is produced;

threshold selector means for generating a threshold signal having a value proportional to the magnitude of the sound pressure level desired;

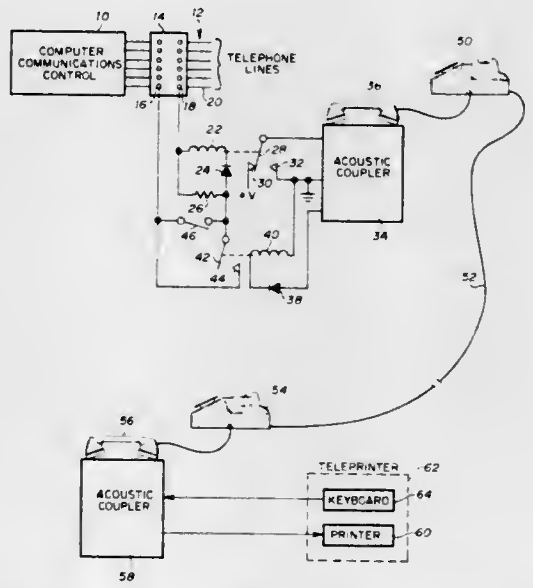
storage means for storing a first digital correction signal having a value representing a correction in the magnitude of the first analog signal and for storing a second digital correction signal having a value representing a correction in the magnitude of the second analog signal; and

a variable gain transfer means connected between the converter means and the output means and responsive to the threshold signal and the first digital correction signal during operation of the frequency selector means in the first condition for altering the magnitude of the first analog signal so that a sound pressure wave having the first frequency and a first predetermined magnitude is produced by the transducer, said transfer means being responsive to the threshold signal and the second digital correction signal during the operation of the frequency selector means in the second condition for altering the magnitude of the second analog signal so that a sound pressure wave having the second frequency and a second predetermined magnitude is produced by the transducer.

3,865,983
ACOUSTIC COUPLER SYSTEM FOR USE WITH COMMON CARRIER COMMUNICATION LINES

Barry M. Epstein, Dallas, Tex., assignor to Action Communications Systems, Inc., Dallas, Tex.

Filed Dec. 14, 1972, Ser. No. 315,213
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 DP **5 Claims**



1. A testing system for coupling to a plurality of common carrier communications lines wherein digital data is transmitted to and received from a plurality of data terminals under the control of a computer comprising:

means for selective connection to one of said common carrier communications lines,

means connected with said selective connection means for converting current variations in said selected common carrier communications line representative of said digital data to voltage variations, said current variation converting means including a first relay having a coil connected in series with said selected common carrier communications line, and further having a first switch controlled by said first relay and being positionable by said first relay for engagement with a first contact connected to a source of voltage and a second contact connected to circuit ground, said current variation converting means also including means having substantially the same impedance characteristics as one of said date terminals,

means for converting said voltage variations into tone signals and for coupling said tone signals to a conventional telephone link,

means at a remote station for displaying said digital data in response to said tone signals,

means at said remote station for inputting tone signals representative of digital data onto said telephone link,

means at said common carrier communications line for receiving said tone signals from said remote station and for converting said tone signals into voltage variations,

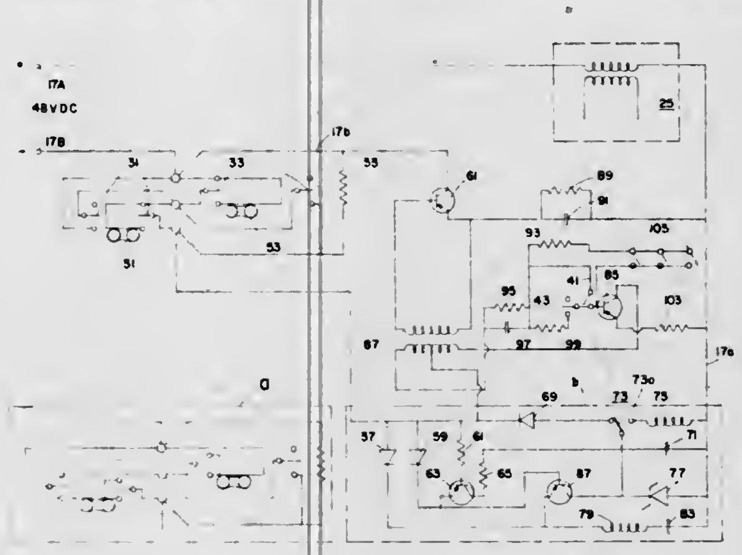
means connected with said tone signal converting means for receiving said voltage variations therefrom and for converting said voltage variations into current variations, said means including a second relay and a second switch controlled by said second relay, and

means for connecting said second switch with said selective connection means and said current variation converting means for thereby inputting said current variations into said selected common carrier communications line for operation of said data terminals connected therewith.

3,865,984
CLOSED LOOP COMMUNICATION WIRE SYSTEM

Lionel Lee Ewing, Apt. 21-B, 750 Maple St., Mansfield, Ohio 44906

Filed Dec. 18, 1972, Ser. No. 316,078
Int. Cl. H04m *11/00*
U.S. Cl. 179—2 A **20 Claims**



1. A closed loop system for controlling the actuation of an electrical or electro/mechanical device on one or more local stations from a single control station utilizing a single pair of communication wires comprising:

a direct current voltage source connected to said communication wires and for transferring a direct current voltage from said control station to each of said local stations,

capacitor circuit means at the local station for storing said voltage,

an electrical actuating device at the local station, and

switching means at said control station connecting through said communication lines said electrical actuating device to said capacitor circuit means;

a variable period oscillator,

means connected to said electrical or electro/mechanical device to reflect its state of actuation,

tuning circuit means connecting said last named means to said signal generator to control the period of oscillation in accordance with said state of actuation; and

means for connecting said signal generator to said communication wires to return electrical signals to said control station indicative of said state of actuation.

3,865,985
TELEPHONE CONTROL SYSTEM HAVING WAKEUP, MESSAGE WAITING, SPECIAL MESSAGE AND FIRE ALERT MODES

Robert W. Stankus, Fairfield, Conn., assignor to Letot, Incorporated, Fairfield, Conn.

Filed Sept. 7, 1973, Ser. No. 395,186
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 P **10 Claims**

1. A telephone message control system for use with at least one telephone connected to a telephone substation by telephone wires by way of a calling unit associated with each telephone and where each telephone has a manually operated switch which in one position is adapted to connect the telephone for audio communication and in a second position to connect the telephone to a calling signal means, said control system comprising:

a. A first calling signal means for supplying a first pulsating calling signal,

b. A first audio communication means for providing a first audio message,

c. A second calling signal means for supplying a second pulsating calling signal,

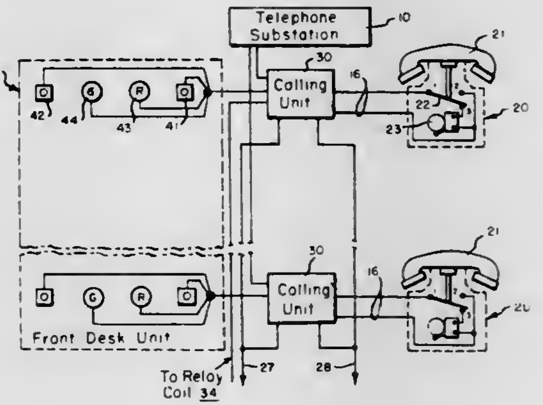
d. A second audio communication means for providing a second audio message,

e. A first message actuation means,

f. A second message actuation means,

g. A message control circuit including:

i. means for connecting said first calling signal means and said first audio transmission means to each said calling unit and disconnecting said second calling means and said second audio transmission means from each said calling unit when said first message actuation means is actuated, and



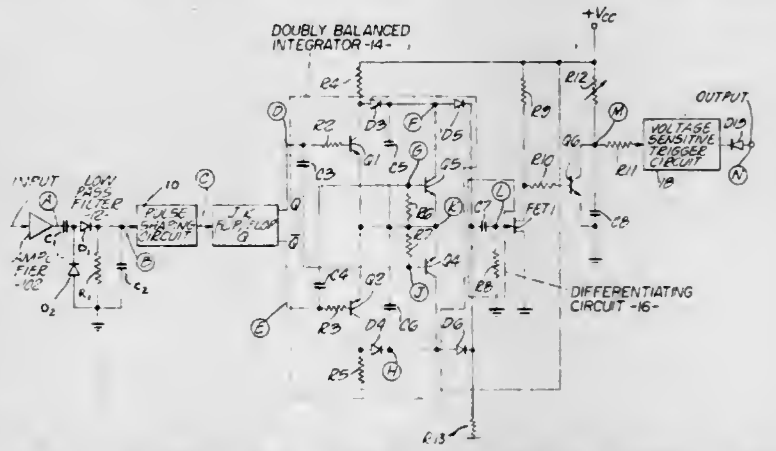
ii. means for connecting said second calling signal means and said second audio transmission means to each said calling unit and disconnecting said first calling signal means and said first audio transmission means from each said calling unit when said second actuation means is actuated, and

h. Telephone acutation means associated with each said telephone for selectively disconnecting the telephone wires from said substation and connecting said wires to a calling signal means and audio transmission means connected to the associated calling unit by the message control circuit.

3,865,986
VOICE OPERATED ELECTRIC CIRCUIT

James R. Darwood, Cerritos, Calif., assignor to T.A.D. Avanti, Inc., Paramount, Calif.

Filed Oct. 3, 1973, Ser. No. 403,035
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **10 Claims**



1. A circuit for use in a telephone answering system, or the like, including: an input circuit for receiving signals in a particular frequency range; and a double-balanced integrator coupled to said input circuit for receiving a cyclic input signal and the complement of said cyclic input signal from said input circuit in response to the first-named signals, said integrator including first and second capacitors, a first transistor circuit connected to said input circuit and to said capacitors for introducing a charge to said first capacitor during a first portion of each cycle of the input signal received from said input circuit and for discharging said capacitor at the end of each

cycle of such input signal, and a second transistor circuit connected to said input circuit and to said capacitors for introducing a charge to said second capacitor during a first portion of each cycle of the complement of such input signal received from said input circuit and for discharging said first capacitor at the end of each cycle of such complement signal.

3,865,987
AUTOMATIC TELEPHONE ANSWERING SYSTEM WITH VARIABLE SPEED DRIVE CONTROL

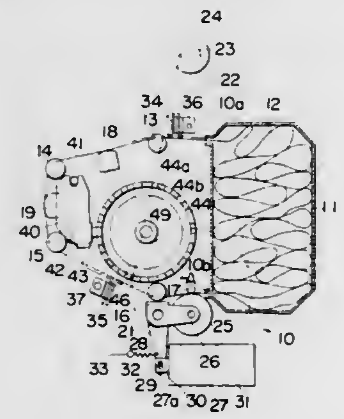
Kozo Yamamoto, and Isao Shinohara, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed May 22, 1973, Ser. No. 362,936

Claims priority, application Japan, May 25, 1972, 47-52089; June 20, 1972, 47-73547; June 20, 1972, 47-73548

Int. Cl. H04m *1/64;* **G11b** *5/48, 21/08*

U.S. Cl. 179—6 R **1 Claim**



1. An automatic telephone answering system employing a multichannel, endless magnetic tape traveling along a path and having one channel for the playback of a previously recorded answer to callers and a plurality of channels for the recording of messages from callers, comprising: a variable speed tape drive means for driving said tape and operatively connected thereto, said tape drive means comprised of a variable speed motor; first detection means for detecting each completion by said endless magnetic tape of a complete cycle of travel around its first path, said first detection means comprised of a detector operatively positioned adjacent the path of said endless magnetic tape for detecting completion of each cycle of travel of said tape, a first detection circuit coupled to said detector, said first detection circuit normally producing an output, said output terminating in respnse to a detection by said detector, and a first JK flip-flop coupled to said first detection circuit and gated thereby;

a speed control means operatively connected to said first detection means and said tape drive means, said speed control means being responsive to said first detection means for changing the speed at which said tape drive means said endless magnetic tape, for causing said endless magnetic tape to be driven more slowly during recording of messages than during playback of the previously recorded answer, said speed control means comprised of a changeover circuit coupled to said J-K flip-flop, said changeover circuit including three relays, a first relay being coupled to said variable speed motor for switching said motor from high speed to low speed and normally positioned for high speed operation, a second relay being coupled to recording and reproducing heads and normally to said reproducing head and adapted for switching to said recording head upon activation of said second relay upon completion of a first cycle of tape travel, and a third relay coupled to a warning circuit;

second detection means connected to a telephone for detecting an incoming telephone call and producing an output indicative thereof, said second detection means including a second detecting circuit coupled to the telephone line and producing an output signal in response to an incoming telephone call, a first differentiating circuit coupled to said second detecting circuit and producing an output in response to the output signal from said first detecting circuit, an RS flip-flop having inputs and and an output, one of said inputs coupled to said first differentiating circuit, a second differentiating circuit coupled between an input of said RS flip-flop and the output of said JK flip-flop, whereby output from said first differentiation circuit turns said RS flip-flop on;

power supply means connected to said variable speed tape drive means and said second detection means for supplying power to said tape drive means in response to an incoming call, said tape drive means being initially in a fast speed mode of operation; and

speed changing means connected to said second detection means, said variable speed tape drive means and said power supply means for changing the speed of said tape drive means to a slow speed mode of operation in response to the detection of a first complete tape cycle by said detection means, and for returning said tape drive means to the fast speed mode of operation and for deactivating said power supply means in response to the detection of a second complete tape cycle by said detection means, said speed changing means comprised of a third differentiating circuit coupled to said second differentiating circuit, a monostable multivibrator coupled to said third differentiating circuit, a relay coupled to said monostable multivibrator, a solenoid coupled to said relay and to said variable speed control means, a switch coupled to said solenoid and a pulley coupled to said switch, said pulley adapted to shift said recording head to a next track on the tape.

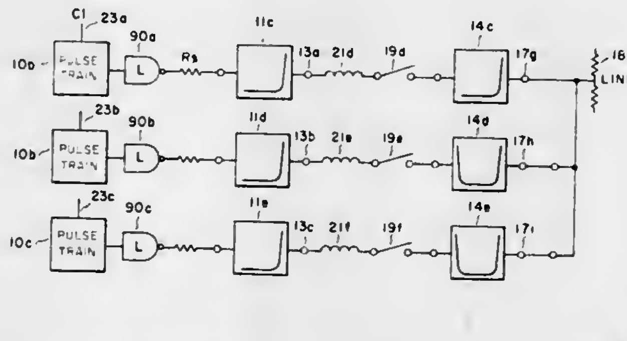
3,865,988
PULSE TRAIN WAVE SHAPING MEANS AND METHOD

Lawrence E. Getgen, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 5, 1973, Ser. No. 376,488

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AA **23 Claims**



1. In a communications system having means for converting a pulse data train into waveforms for transmission, the improvement comprising a resonant transfer circuit arrangement having:

an energy storage device having an input adapted for connection to said pulse data train and an output;

a wave shaping filter compatible with said device for operation in a resonant transfer mode, said filter having impulse response zeros at multiples of said sampling frequency, and having an input and having an output adapted for connection to a transmission line;

a. gate connecting the output of said device to said filter input;

means for periodically closing and opening said gate at a sampling frequency to periodically transfer energy stored in said device as impulses to said filter;

means providing a clock frequency for the pulse data train; and

means controlling said clock frequency relative to said sampling frequency.

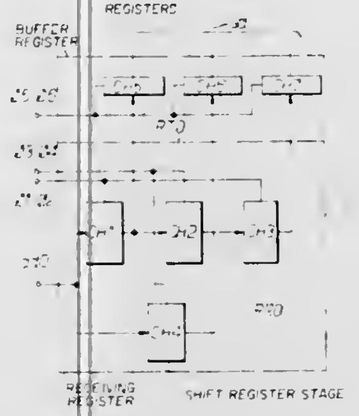
3,865,989
SWITCHING MODULE FOR A PCM SWITCHING SYSTEM

Pierre Charransol; Jacques Hauri, and Claude Athenes, all of Paris, France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 20, 1972, Ser. No. 308,295

Int. Cl. H04j *3/02*

U.S. Cl. 179—15 AQ **1 Claim**



1. A switching module comprising m output terminals, n input terminals, m times n switching circuits enabling the connection of each of the m outputs to any one of the n inputs, an address conductor for each output, a receiving register coupled to receive over one of said address conductors a multi-bit coded address supplying the identity of an input, said multi-bit coded address being in the form of a series signal including at least three data bits, a buffer register coupled to the receiving register to receive an address from the receiving register and to store it while the receiving register becomes available for the reception of a subsequent address, said register including a first chain of transistors which receives and registers the first bit, a second chain of transistors which receives and registers the second bit and a third chain of transistors which receives and registers the first bit while the second bit is being received, said first bit being supplied to the third chain by the first chain which then finally becomes available for receiving and registering the third bit sent, said receiving register including a fourth chain of transistors which receives the first bit registered by said third chain while the third bit is being received, whereby every bit is passed through an odd number of chains, providing each bit with the correct polarity in parallel at a separate terminal of said buffer register, circuits coupled to the buffer register to decode the addresses in the buffer register and means coupling one of said switching circuits to receive the decoded adddresses and connect a selected input to a selected output, whereby the module has a comparatively large number of crosspoint switching circuits and operates at a comparatively high speed, while requiring a reasonable number of input/output conductors.

3,865,990
RADIO RELAY SYSTEMS

Friedrich Kuenemund, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

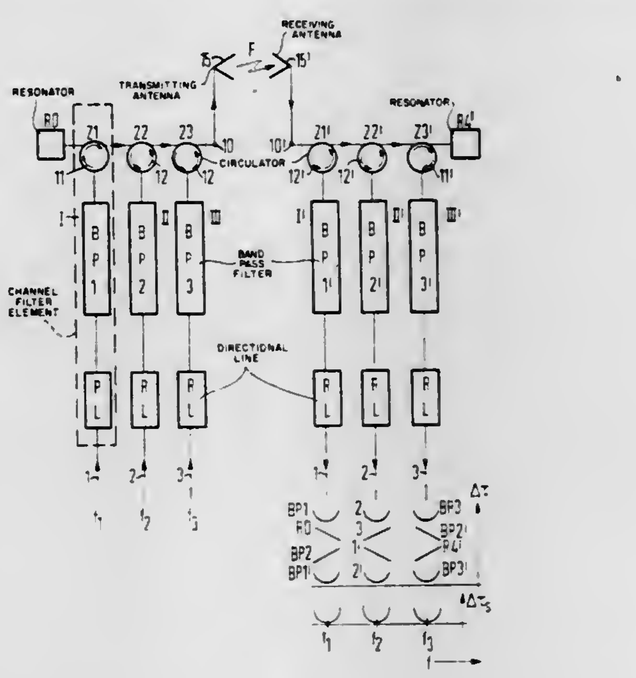
Filed Mar. 22, 1973, Ser. No. 343,854

Claims priority, application Germany, Mar. 22, 1972, 2213962

Int. Cl. H04j *1/08*

U.S. Cl. 179—15 FD **4 Claims**

3. A radio relay system in which several adjacent high frequency channels are combined to form a high frequency group, comprising: a transmitting station including a transmitting antenna, a plurality of first three-arm circulators connected in cascade to said antenna, and a plurality of first channel band pass filters each connected to an arm of a respective first circulator, said first filters arranged with the filter centered at the highest channel frequency connected to the first circulator adjacent said transmitting antenna and the filter of the lowest channel frequency connected to the circulator which is farthest from said transmitting antenna; and a receiving station including a receiving antenna, a plurality of second three-arm circulators connected in cascade to said receiving antenna, and a plurality of second channel band pass filters connected to an arm of a respective second circulator, said second filters arranged with the filter of the lowest channel frequency connected to that second circulator which is adjacent said receiving antenna and the filter of the highest channel frequency connected to the circulator which is farthest from said receiving antenna, the circulation direction of said circulators being the same in the respective circulator cascades, a first resonator in said transmitting station connected to the arm of said farthest first circulator which follows the arm which is connected the respective channel filter as viewed in the direction of circulation, and a second resonator in said receiving station connected to the arm of said farthest second circulator which precedes the arm which is connected to the respective channel filter as viewed in the direction of circulation.



3,865,991
SIGNAL ROUTING DEVICE FOR A PARALLEL TRANSMISSION AND/OR SWITCHING NETWORK OF CODED SIGNALS

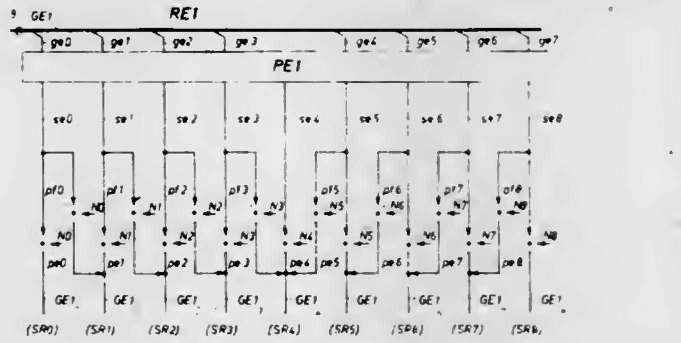
Pierre Charransol; Jacques Hauri, both of Paris, and Serge Robert Fontana, Elancourt, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,312

Claims priority, application France, July 13, 1972, 72.25409

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **2 Claims**



1. A signal routing system in a switching network for transmitting coded signals in parallel, the system comprising switching means coupling each input to an output of the network, said system having *n* signal accesses arranged according to a certain order and *n*+1 network accesses also arranged

according to a certain order and corresponding to $n+1$ network sections, as well as normal switching means associating, in rest condition, the n signal accesses with the n network accesses of corresponding ranks, the $n+1$th network access of rank p corresponding to the emergency section network, the signal routing system comprising "onto emergency" switching means provided for associating, in case of failure in one network section of rank m, the signal accesses of ranks m to $p-1$ to the network accesses of ranks $m+1$ to p, whereby each signal access is connected either to the network access of the same rank, at rest, or to the network access of the following rank, in case of failure, the signal transmission conditions remaining almost the same in both cases.

3,865,992

ELECTRONICALLY CONTROLLED RING-TRAP CIRCUIT

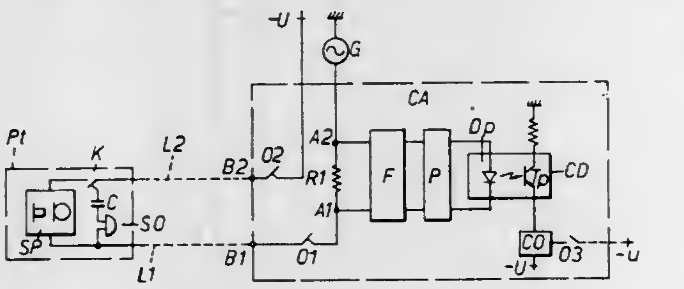
Lucien Robert Bouty, Fresnes, and Gerard Marcel LeCardonnel, Neuilly-sur-Seine, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,594

Claims priority, application France, Nov. 17, 1971, 71.41072

Int. Cl. H04m *3/04*

U.S. Cl. 179—18 HB **7 Claims**



1. A ring-trip circuit comprising a photoemissive detecting circuit associated with a telephone line, said photo-emissive detecting circuit including photoemissive means and photosensitive means, a switching circuit optically coupled via the photo sensitive means to the photoemissve means and controlled by the latter, filter means coupling the photoemissive means to the telephone line to restrict the transmission of alternating current to the photoemissive means, said photoemissive means responding to direct current along the telephone line to emit light and complete the optical couple to the switching circuit, the switching circuit including contacts over which alternating ringing current signals are supplied to the telephone line, and the switching circuit responding to completion of said optical couple to open said contacts and remove alternating ringing current from the line.

3,865,993

TRUNK CIRCUIT WITH FORCED RELEASE FEATURE

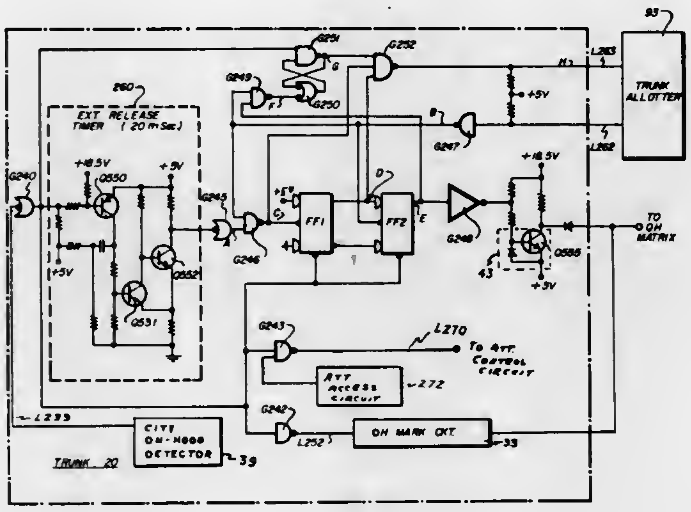
Jan Synek, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,913

Int. Cl. H04q *3/22*

U.S. Cl. 179—18 F **4 Claims**

1. In a telephone system having one exchange employing a switching network of the end-marked type, and including a trunk circuit for completing and maintaining a talking path from a local station at said one exchange through the network at said one exchange and from said trunk circuit ot a station at another exchange of said system, and in which means representing said local station provides a first holding voltage for the path through the network and the trunk circuit provides a second holding voltage for the path through said network, the invention comprising means responsive to the station at the other exchange going on-hook for releasing the second holding voltage, means for substituting a temporary holding voltage for said second holding voltage to maintain the path through the network for a timed period, and means operative at the conclusion of said timed period for releasing said other temporary holding voltage to release said path through said switching network and for releasing said trunk circuit regardless of the on-hook, off-hook condition of said local station.



3,865,994

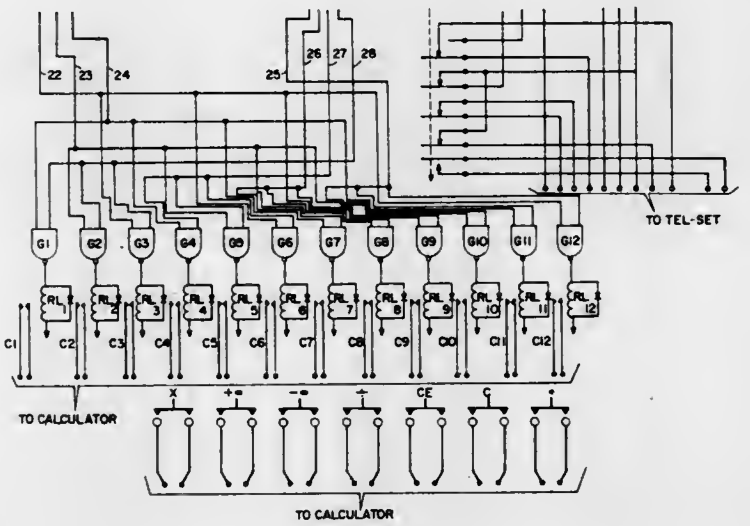
COMBINATION TELEPHONE AND CALCULATOR

Bernard A. Bender, P.O. Box 361, Cherry Hill, N.J. 08002

Filed July 30, 1973, Ser. No. 383,915

Int. Cl. H04m *1/50*

U.S. Cl. 179—90 K **2 Claims**



1. In a communications device such as a telephone including a housing, input-output lines, a numeric keyboard providing seven separate outputs as inputs to a dual tone generator to create 12 separate tone pairs, the improvement permitting dual use of the telephone keyboard for tone dialing and as an input to a calculator comprising:

an electronic calculator positioned within the telephone housing and including numeric inputs from zero to nine plus function inputs;

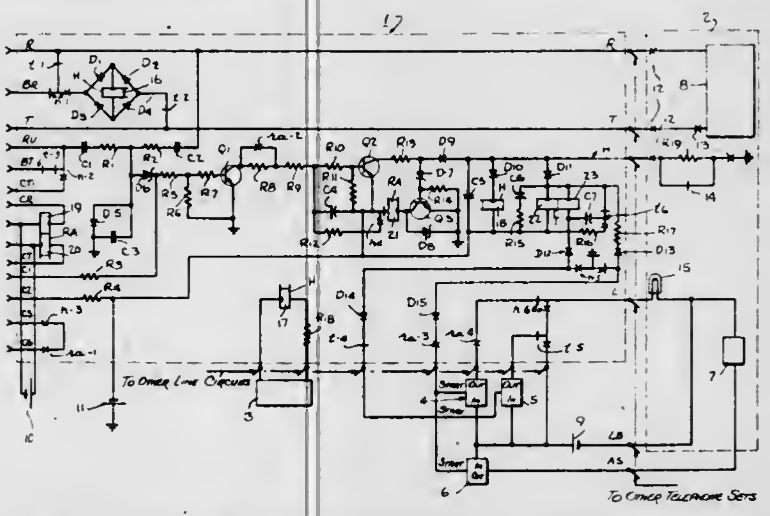
switch means disengaging the seven outputs of the keyboard from the tone generators and providing the seven separate outputs as inputs to a decoding matrix; and

a decoding matrix for decoding the seven outputs into twelve outputs representative of the numeric keyboard designations and applying the decoded outputs as inputs to the calculator.

3,865,995
UNIVERSAL SUBSCRIBER'S LINE CIRCUIT IN A KEY TELEPHONE SYSTEM

Stephen Kerman, Merrick, N.Y., and Tsuyoshi Shinoi, Kawasaki, Japan, assignors to Nippon Tsu Shin Kogyo K.K., Kawasaki-shi, Japan and TIE/Communications Inc., Stamford, Conn.

Filed Mar. 14, 1973, Ser. No. 341,209
Int. Cl. H04m *1/00*
U.S. Cl. 179—99 **11 Claims**



5. A universal line circuit for a key telephone system to connect at least one key telephone set to an office line comprising, in combination,

a normally released relay having first, second and third windings on the core thereof;

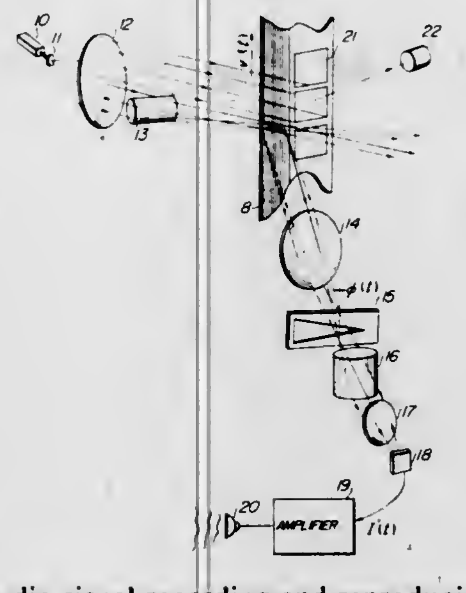
means, electrically coupled to said office line and including said first winding, for indicating the presence of ringing current applied to said office line; and

means, electrically coupled to said office line and including the electrical series aiding connection of said second and third windings, for providing an answer monitor signal to the office line, and by means of said connection of said second and third windings, a balanced d-c current supply impedance to the transmission network of said key telephone set.

3,865,996
HOLOGRAPHIC AUDIO SIGNAL RECORDING AND PLAYBACK APPARATUS

Makoto Kato, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 8, 1972, Ser. No. 251,298
Claims priority, application Japan, May 12, 1971, 46-32075
Int. Cl. G11b *7/18*
U.S. Cl. 179—100.3 G **3 Claims**



1. An audio signal recording and reproducing system comprising:

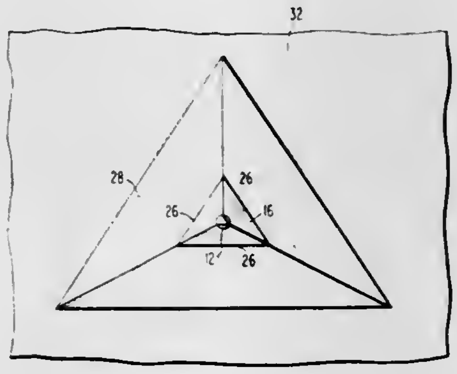
recording apparatus comprising means for generating an intermittently interrupted coherent light beam; means for splitting the beam of light from said coherent light generating means and directing one of the split coherent light beams onto a recording medium; means for phase modulating the other of said split coherent light beams with an audio electric signal; and a light blocking member including a slit having a virtually one dimensional opening through which the unmodulated one of said split light beams and the light beam modulated by said modulating means are passed coincidently to cause optical interference therebetween; and

reproducing apparatus comprising means for illuminating with a coherent beam a recording medium on which audio information has been recorded, an area type filter having a wedge-shaped opening for receiving light passed through said recording medium containing said audio information, the amount of light transmitted through said filter depending upon the degree of phase modulation in the beam impinging thereon; photoelectric converting means for receiving light from said filter, said photoelectric converting means converting the light from said filter to an audio signal corresponding to the audio electric signal used for modulating the other of said split coherent light beams; and electroacoustic transducer means for converting the output of said photoelectric converting means to said audio signal.

3,865,997
TRIANGULAR PIEZOELECTRIC TRANSDUCER FOR RECORDING VIDEO INFORMATION

Jerome Barth Halter, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,599
Claims priority, application Great Britain, Apr. 19, 1972, 18039/72
Int. Cl. G11b *3/00;* **H04r** *17/04;* **H01v** *7/00*
U.S. Cl. 179—100.41 P **14 Claims**



1. Apparatus for providing displacement of a cutting stylus in response to electrical signals and adapted for mounting to a bracket comprising:

a pedestal having first and second opposing sides of different surface area;

a cutting stylus;

a stylus mount having a base region and adapted for receiving said cutting stylus;

a piezoelectric element having first and second opposing sides, said first side of said element adjacent to and rigidly coupled to a first side of said pedestal and said second side of said element adjacent to and rigidly coupled to said base region of said stylus mount, said pedestal, piezoelectric element, and stylus mount forming a structure having all external surfaces disposed anti-parallel to each other;

means for providing electrical signals to said piezoelectric element; and

means for mounting said second side of said pedestal on said bracket.

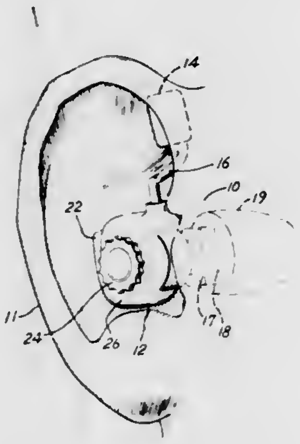
3,865,998
EAR SEAL

Erwin M. Weiss, Chicago, and Richard Brander, Cicero, both of Ill., assignors to Beltone Electronics Corporation, Chicago, Ill.

Division of Ser. No. 94,273, Dec. 2, 1970, Pat. No. 3,783,201. This application June 15, 1973, Ser. No. 370,361

Int. Cl. H04r *25/02*

U.S. Cl. 179—107 E **7 Claims**



1. A flexible seal for use in an ear, said ear having an outer ear portion, an ear canal, and an eardrum, comprising, in combination:
- a substantially oval outer section;
- a curved intermediate section conforming to the bend in said ear canal; and
- a tapered inner section having an inner tip, said tapered inner section gradually and continuously tapering from said curved intermediate section to said inner tip, said tip defining a sound outlet directly communicating with said eardrum;

said substantially oval outer section, said curved intermediate section and said tapered inner section fitting entirely within said ear canal and engaging a substantial portion of said ear canal, said substantially oval outer section, said curved intermediate section and said tapered inner section cooperatively defining a channel acoustically linking said outer ear and said ear drum.

3,865,999
AUTOMATIC TELECOMMUNICATION SWITCHING SYSTEM

Josef Margaretha Desideer Spitaels, Antwerp, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

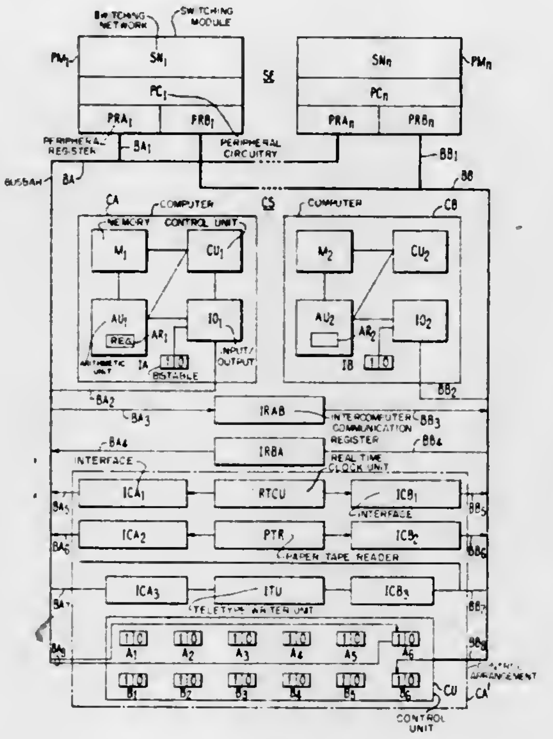
Filed Feb. 26, 1973, Ser. No. 335,531

Claims priority, application Netherlands, Feb. 25, 1972, 7202501

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.2 R **14 Claims**

1. An automatic telecommunication switching system comprising switching equipment, a control system including two computers adapted to control the establishment and release of call communications through said switching equipment, said control system further including control means cooperative with one of said computers to place said one computer in a standby condition wherein it is prevented from processing new call communications but is able to execute test operations on said switching equipment.



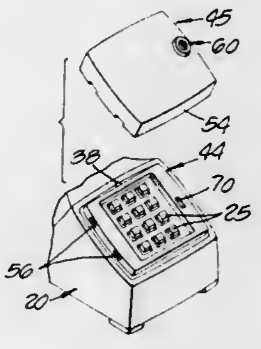
3,866,000
TELEPHONE LOCK KIT

Richard D. Gillis, 23627 Anza Ave., Apt. B, Torrance, Calif. 90505

Filed Apr. 27, 1973, Ser. No. 354,989

Int. Cl. H04m *1/66*

U.S. Cl. 179—189 D **16 Claims**



1. A kit for use with a telephone that has a casing enclosing a number mechanism including an array of manually operable number elements for manipulation by a user, the area defined by the array being smaller than the area defined by the casing that encloses the number mechanism, and a housing enclosing the casing of the number mechanism and having a window opening larger than the area defined by said array with the array exposed centrally of the window opening,

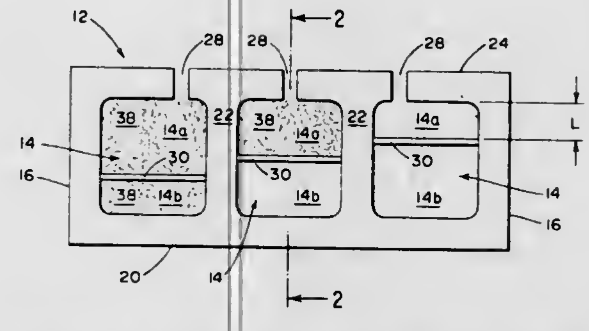
said kit comprising:
- a panel for mounting over said window opening, said panel being apertured for access to said array;
- means for connecting the panel with the housing of the telephone at the window opening;
- a protective cover for said array to prevent unauthorized access thereto; and
- means for releasably engaging the protective cover with said panel and for locking the protective cover to the panel.

3,866,001

STRUCTURAL BLOCK WITH SEPTUM

Klaus Kleinschmidt, Lexington, Mass., and David Proudfoot, Honolulu, Hawaii, assignors to Miguel C. Junger, Belmont, Mass.

Filed Mar. 4, 1974, Ser. No. 447,568
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **9 Claims**



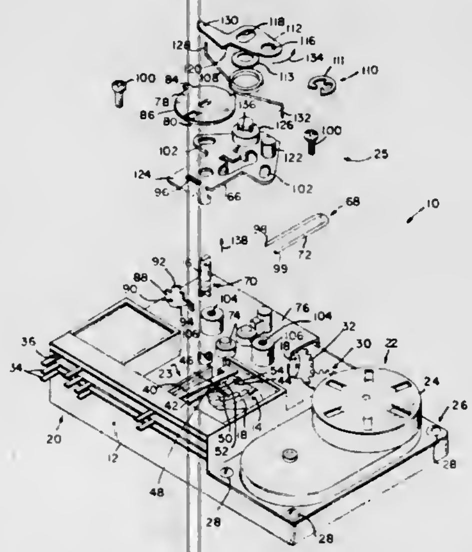
1. In a block of molded structural material having a cavity and an aperture communicating between the cavity and a source of sound energy, said cavity and aperture forming an acoustical Helmholtz resonator, and said block absorbing the sound energy about a natural resonance frequency in a low frequency range, means for enhancing the sound energy absorption of the block about a secondary resonance frequency in a high frequency range in excess of the low frequency range without detracting from the sound energy absorption in the low frequency range comprising, a septum in a continuous, annular fit with the inner surface of the cavity forming a first cavity volume communicating directly with the aperture and a second cavity volume sealed from the aperture, said septum so structured that it is substantially permeable to sound energy in the low frequency range and substantially impermeable to sound energy in the high frequency range, said second resonance being a function of the first volume.

3,866,002

DUAL-FUNCTION LINE SWITCH FOR A CAM-ACTUATED TIMER SWITCH

David W. Underwood, Clayton, and Benjamin F. Chestnut, Greenwood, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Oct. 15, 1973, Ser. No. 406,680
Int. Cl. H01h *43/10*
U.S. Cl. 200—33 R **7 Claims**



1. In a cam-actuated timer switch having a housing, a cam means having a plurality of independent cam tracks, said cam means being rotatably carried on an axially-indexable cam shaft within said housing, a plurality of contact-carrying switch blades responsive to rotation of said cam means, and an electric motor, carried by said housing means, for driving said cam means, the improvement comprising:

a. a two-position index location means carried by said housing and engaging said cam shaft to provide said cam shaft with two axial index positions in spaced relation to said housing means;

b. ramping means, carried by said housing and coupled to said cam shaft, for moving said cam shaft axially from one of said index positions to the other of said index positions at predetermined angular positions during rotation of said cam shaft;

c. a stop means carried by said housing and coupled to said cam shaft for producing resistance to turning of said cam shaft at a preselected angular position; and

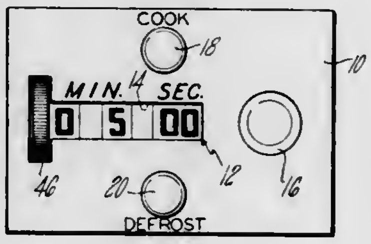
d. a line switch means for switching power to said electric motor in response to said axial movement of said cam shaft and to rotation of one of said independent cam tracks of said cam means.

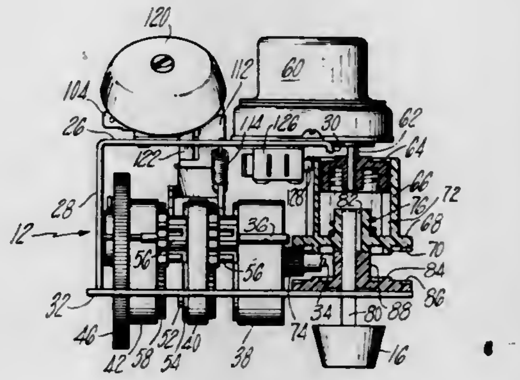
3,866,003

TIMER SWITCH ASSEMBLY CONTROLLING CONTINUOUS AND INTERMITTENT OPERATIONS OF AN OVEN

William Charles Fox, Plainville, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.

Filed Oct. 4, 1973, Ser. No. 403,521
Int. Cl. H01h *43/12*
U.S. Cl. 200—38 FA **21 Claims**

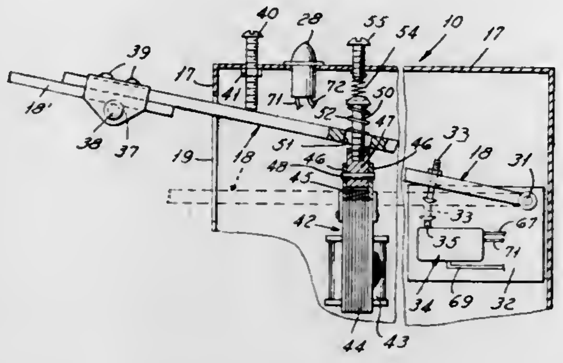




1. In a timer device adapted for controlling both continuous and intermittent operation of an electrical appliance, the combination including a manually settable predetermining counter comprising a plurality of number wheels rotatable between a predetermined count readout and a selected count readout, rotary drive means for continuously driving the number wheels from said selected count readout to said predetermined count readout, first electrical appliance control means responsive to counter movement into and out of said predetermined count readout to perform a first control function when the counter is driven out of its predetermined count readout and a second control function upon completion of counter movement toward the predetermined count readout, second electrical appliance control means separate from said first control means for effecting said second and first control functions during movement of the counter between the manually selected count readout and the predetermined count readout and cam means operatively associated with the drive means for repeatedly and intermittently operating said second control means.

3,866,004
SAFETY CONTROL DEVICE WITH OBSTRUCTION FEELER AND SWITCH ASSEMBLY

Norbert Joseph Nawrocki, Grand Rapids, Mich., assignor to F. L. Jacobs Company, Southfield, Mich.
Filed July 5, 1973, Ser. No. 376,811
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.42 **10 Claims**

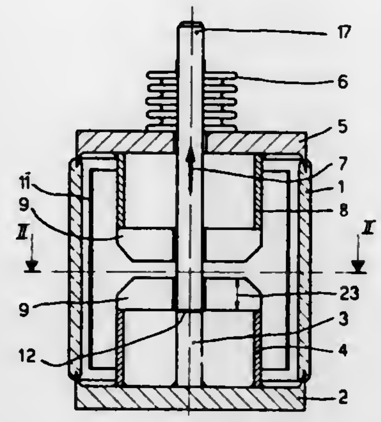


1. An impact or related type machine comprising a reciprocally movable tool part and an electrical operating circuit including a normally opened first switch and a power relay unit in series with said first switch, said power relay unit when energized effective to initiate movement of said tool part, a second switch interposed in said electrical operating circuit between said first switch and said power relay unit, said second switch having first and second positions, said second switch when in said first position opening said operating circuit between said first switch and said power relay unit, a safety control device governing operation of said electrical operating circuit comprising an elongated control arm pivotally mounted for a motion in which an end portion thereof may fully traverse a danger zone in proximity to the path of reciprocation of said tool part and prior to the reciprocation of said tool part, unless interrupted by a zone obstruction, said control device having an electrical safety circuit interposed in said operating circuit between said first and second switches parallel to said power relay unit, said electrical safety circuit being responsive to a signal initiated upon the closing of said first switch, said safety circuit including electrically responsive means connected to said control arm and when energized upon the closing of said first switch effective to swing said control arm through said danger zone unless the movement thereof is obstructed, said control arm after movement through said danger zone being effective to move said second switch to its second position thereby permitting current to flow through said power relay unit to initiate movement of said tool part.

3,866,005
ARC ELECTRODE STRUCTURE, ESPECIALLY FOR VACUUM SWITCHES

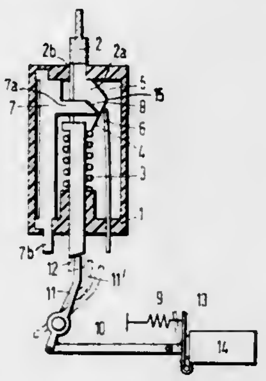
Joachim Amsler, Unterentfelden, Switzerland, assignor to Sprecher & Schuh AG, Aaru, Switzerland
Continuation-in-part of Ser. No. 232,480, March 3, 1972, Pat. No. 3,773,993. This application May 23, 1973, Ser. No. 363,048
Claims priority, application Switzerland, June 22, 1972, 9398/72
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **9 Claims**

1. An arc electrode arrangement, particularly for vacuum switches comprising two oppositely located electrode assemblies, each electrode assembly including a separation contact and arcing means having an arcing face to take up the base points of the arc, said arcing means comprising a plurality of plates separated from one another by gaps therebetween, said plates extending substantially parallel to the axis of the respective separation contact, the width of said gaps being at least equal to the thickness of a plate, the edges of the plates defining said arcing face, means rigidly connecting the plates of each respective electrode assembly directly with the respective separation contact in electrically conductive fashion, said plates being so arranged in the electrode assemblies that upon closed contact the plates of one of the electrodes assembly are not in direct contact with the plates of the other electrode assembly, said separation contact having a contact surface projecting beyond the narrow end surfaces of said plates towards the other electrode assembly.



3,866,006
PUSHBUTTON SWITCH WITH RECIPROCATING CAM

Werner Westram, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 17, 1973, Ser. No. 389,343
Claims priority, application Germany, Aug. 23, 1972, 2241346
Int. Cl. H01h *13/52*
U.S. Cl. 200—153 LA **10 Claims**



1. A pushbutton switch for use in keyboards which are utilized in typewriters and telex machines, said switch comprising a housing, a shaft mounted in the housing for reciprocation between a first and second position, means biasing the shaft towards the first position, a fixed contact mounted in said housing, a movable contact mounted in said housing, means biasing said movable contact towards the fixed contact, said shaft having a first operating surface inclined to the direction of reciprocation and a second operating surface inclined in an opposite direction to the direction of reciprocation, said first surface being disposed on the shaft to engage the movable contact to hold it out of engagement with said fixed contact and to move the movable contact in a direction away from the fixed contact as the shaft moves from the first position to an intermediate position during movement towards the second position, said second operating surface engaging the movable contact when the shaft reaches the intermediate position to enable the means biasing the movable contact to urge the movable contact along the second operating surface and into contact with the fixed contact as the shaft moves from the intermediate position towards the second position, whereby initial movement of the shaft between the first position through the intermediate position is opposed by both biasing means and subsequent movement from the intermediate posi-

tion towards the second position is aided by the biasing means acting on the movable contact.

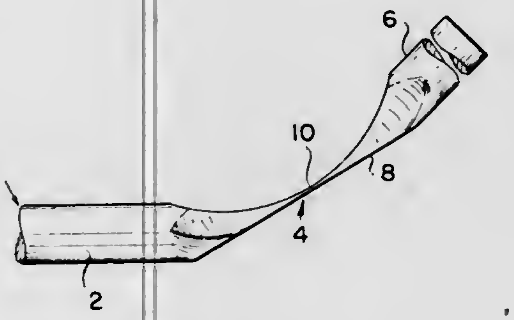
3,866,007
CONTACT REED WITH FOIL-THIN INTERMEDIATE SECTION

Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va. 22309, and Charlie D. Mariner, 121 Garrison St., Bolling Air Force Base, Washington, D.C. 20336

Filed Oct. 9, 1973, Ser. No. 404,612

Int. Cl. H01h *1/26*

U.S. Cl. 200—283 62 Claims



1. A reed for a reed switch comprising:

a. a body of conductive material having a contact section, an intermediate spring section, and a support section,

b. said intermediate section being foil-thin and having a cross sectional thickness of less than 0.003 inch,

c. said support section being substantially rigid and nonflexible,

d. said contact section being substantially thicker than said intermediate section,

e. said intermediate section comprising a leaf spring having a flexibility permitting one end of said leaf spring to flex a substantial distance through an arc of at least 25° with respect to the other end of said leaf spring without exceeding the elastic limits of said spring,

f. said intermediate section being cold-worked to a point where said conductive material assumes a substantial change in physical characteristics, and

g. said intermediate section being substantially harder, less ductile, and more dense than said contact section and having a substantially higher tensile strength than said contact section.

3,866,008
COMPOSABLE SWITCH DEVICE

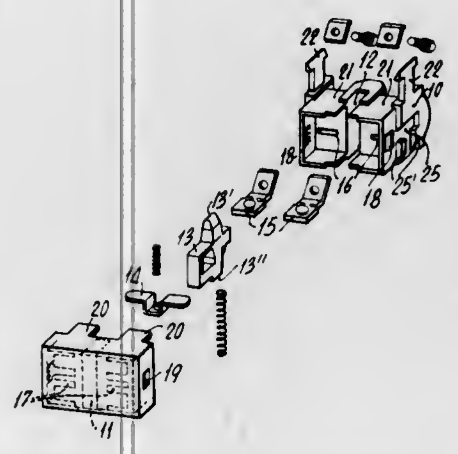
Angelo Teruzzi, Via Volta 7A, Milan, Italy

Filed Jan. 16, 1974, Ser. No. 434,906

Claims priority, application Italy, Jan. 29, 1973, 19740/73

Int. Cl. H02b *1/08;* **H05k** *5/00;* **H01h** *9/08*

U.S. Cl. 200—303 11 Claims



1. A press type of switch device comprising a hollow body containing the electrical contact element of the switch, for association with a control member, wheren said body is formed of two snap interassociable parts, of which a first part is for carrying the fixed contacts and the second part is a side closure part, said first body part defining a central longitudinal guide open at both ends for a slider carrying the movable contacts of said contact elements, said first body part having at one end two resiliently yieldable opposite legs for snap engaging in corresponding seats provided on said control member; the switch body also having corresponding seats in aligned relationship with said legs and formed at the opposite end of the switch body for enabling two or more switch devices to be interassociated with the slider aligned for a common drive.

3,866,009
SEAL MEANS FOR PREVENTING THE LEAKAGE OF MICROWAVE ENERGY FROM MICROWAVE HEATING OVEN

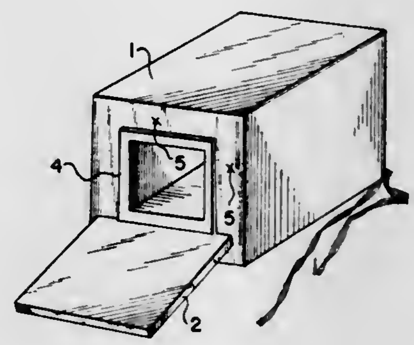
Takeshi Ishino, and Nobuyuki Ono, both of Nikaho-machi, Japan, assignors to TDK Electronics Company Ltd., Chiyoda-ku, Tokyo, Japan

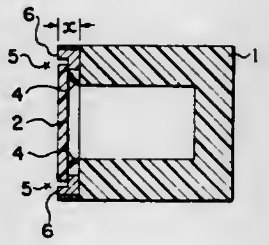
Continuation of Ser. No. 259,755, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 48,137, June 22, 1970, Pat. No. 3,742,176. This application Nov. 21, 1973, Ser. No. 418,047

Claims priority, application Japan, June 26, 1969, 44-50870; Jan. 21, 1970, 45-5098

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 D 6 Claims





1. A microwave oven comprising a body formed by walls and having an opening in one of said walls; a door provided for closing said opening; said body and said door in a closed position defining a path through which microwave energy may leak from the inside to the outside of said oven; and leakage prevention means comprising a volumetric resonant cavity in one surface of said path, and a layer of ferromagnetic material located directly along one surface defining said path and spaced from said cavity, the layer of ferromagnetic material incompletely blocking the opening of said path and having a surface exposed to said path, said surface of said ferromagnetic material and opposed surface of said path forming a gap therebetween, said ferromagnetic material consisting of a mixture of the powder of ferrite and an organic high molecular weight compound, said ferrite having the formula:

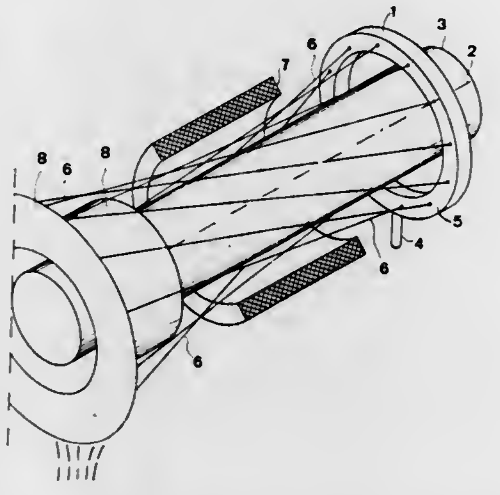
$$MFe_2O_4$$

wherein M is a divalent metal such as Ni, Cu, Zn, Mn or Mg, and said high molecular weight compound being selected from the group consisting of natural rubber and synthetic rubber, the thickness of the gap being in the order of from approximately 5 percent to 50 percent of the thickness of the layer of ferromagnetic material.

3,866,010
WATER JET DEVICE FOR INDUCTION HEATERS

Michel Cuvelier, Liege, Belgium, assignor to Elphiac, Brussels, Belgium

Filed Nov. 27, 1973, Ser. No. 419,366
Claims priority, application Belgium, Nov. 27, 1972, 4615
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.57 2 Claims

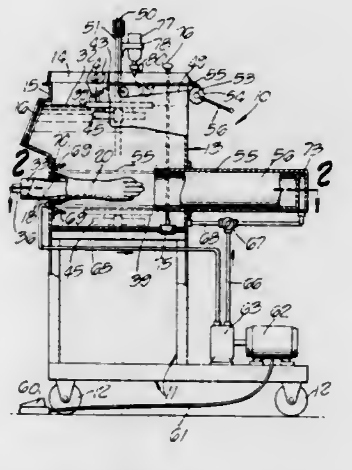


1. A jet device surrounding a passage way, wherein an article to be heated is moved, comprising a ring extending around said passage way and a series of nozzles distributed along a base circle on the periphery of the ring for directing jets of water in the direction of their axes, the axis of each said nozzle being inclined by the same predetermined angle with respect to the plane of the base circle and being tangent to a neck circle spaced from said plane and perpendicular to the radius of the point of contact on the neck circle, said neck circle being coaxial with and narrower than said base circle and coaxial with and wider than said passage way and being located inside an induction heating coil.

3,866,011
INSTRUCTIONAL APPARATUS FOR UNDERWATER WELDING

Edgar C. Cole, 724 B St., Taft, Calif. 93268

Filed July 9, 1973, Ser. No. 377,640
Int. Cl. G23k *9/00*
U.S. Cl. 219—72 25 Claims

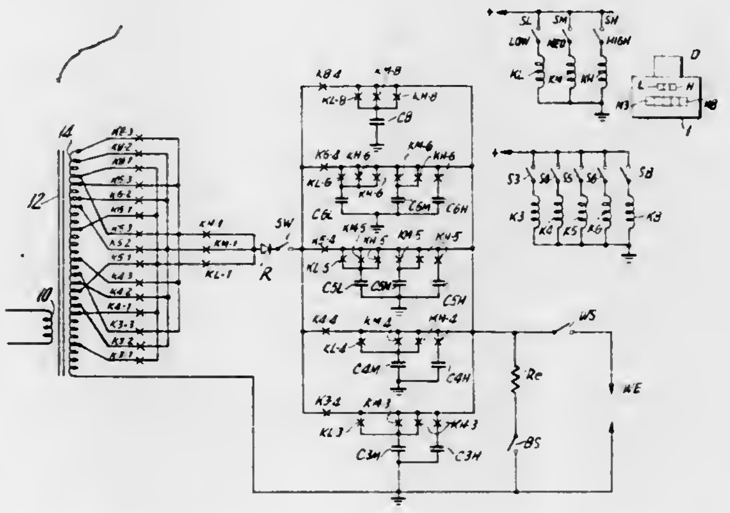


15. Instruction apparatus for use in gaining experience in underwater electric welding comprising: a water tank in direct communication with the atmosphere and normally charged with water to provide a welding station submerged in water, a flooded viewing window in the sidewall of said tank opposite said welding station, a hand manipulatable welding rod holder and electric service cord therefor, and a pair of rubber gloves having the inlet ends thereof sealed to openings through normally flooded openings in the tank wall adjacent said viewing window.

3,866,012
METHOD AND APPARATUS FOR ELECTRICAL STUD WELDING

Dankmar Tauern, Triesenberg; Rainer Wild, Schaan, and Karl-Max Harder, Vaduz, all of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed June 29, 1973, Ser. No. 374,965
Claims priority, application Germany, June 30, 1972, 2232269
Int. Cl. B23k *11/24*
U.S. Cl. 219—99 20 Claims



1. An electrical stud welding apparatus for use with bolts having different cross-section bolt welding areas, comprising capacitor means variable in capacitance value, voltage means variable in voltage for applying a voltage across said capacitor means, discharge means for discharging said capacitor means through the welding area, switch means having a plurality of manually actuable switches each correlated to one of a plurality of normal operating capacitance charging voltages in said voltage means and capacitance values in said capacitor means, said switch means being coupled to said voltage means and said capacitor means for simultaneously selecting a single capacitance charging voltage and a single capacitance value for each of said switches, each of said charging voltages and capacitance values being appropriate to a selected cross sectional area of a bolt to be welded, the selection of each of the selected one of the plurality of charging voltages and each of the selected ones of the capacitance values being settable simultaneously by a single one of said switches.

3,866,013
METHOD AND APPARATUS FOR CONTROLLING MOVABLE MEANS SUCH AS AN ELECTRON BEAM

Philip M. Ryan, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

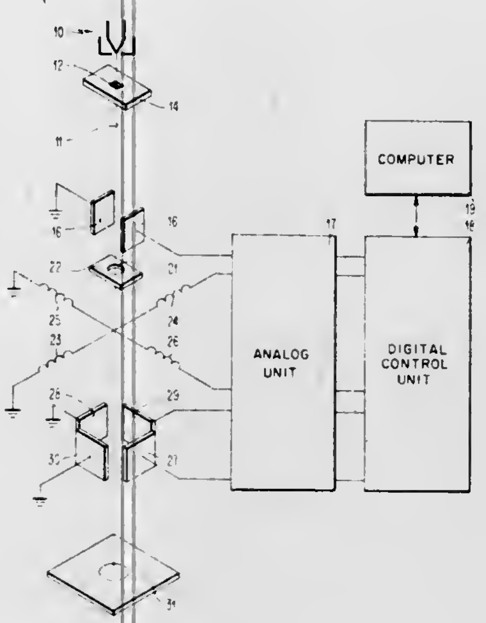
Filed Sept. 19, 1973, Ser. No. 398,734
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EM 35 Claims

1. A method of positioning means movable in a line by line pattern at each of a plurality of predetermined positions along each of the lines including:

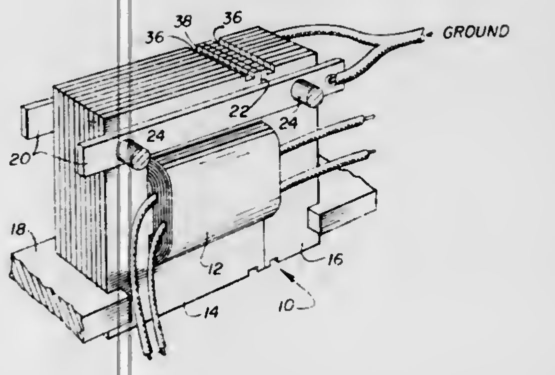
selectively controlling at least one function of the movable means at each of the predetermined positions on the line in accordance with information from a memory for each of the plurality of the predetermined positions along the line;

determining if the function at the same predetermined position in the next line is different than in the line along which the movable means is moving prior to the movable means being moved from the predetermined position;

and changing the information in the memory for the same predetermined position in the next line prior to the movable means being moved from the predetermined position if it is determined that the function is different.

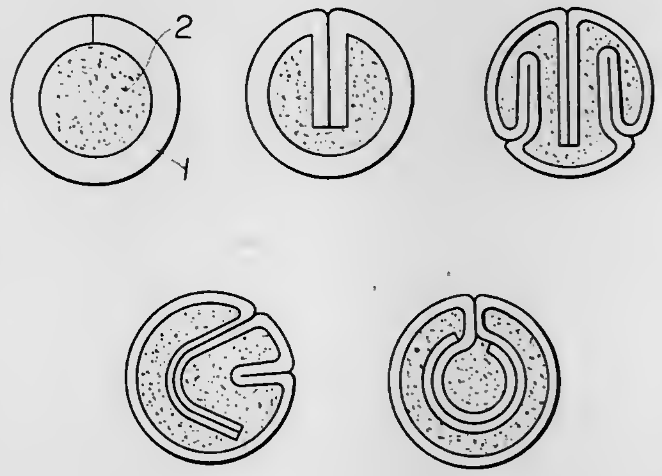


3,866,014
METHOD OF WELDING LAMINATED CORES
Earl C. Waller, Redwood Township, Richland County, Wis., assignor to Advance Transformer Co., Chicago, Ill.
Filed May 11, 1973, Ser. No. 359,373
Int. Cl. H02k *1/06;* **B23k** *9/00*
U.S. Cl. 219—137 **10 Claims**



1. A method of welding laminated cores of electromagnetic devices in which there are at least two core parts each formed of a separate stack of laminations, such parts having abutting faces forming interior connections having exterior seams, said method comprising stamping the laminations forming such parts with respective notches on opposite lateral edges, such notches each being spaced from the edge of the lamination which is to form a portion of an abutting face whereby to provide, when the laminations are stacked to form said parts, approximately half of a central projection with a contiguous parallel groove on each part at the edges to be abutted, assembling the laminated core by bringing the stacks into engagement with their opposed faces abutted to form a common connection and the part projections joining to form a full projection, the seams being located in the projection and joining after assembly to form a common seam, holding the electromagnetic device in assembly while connected to the ground terminal of welding apparatus, and passing the welding electrode of the welding apparatus along the common projection to cause the electric arc to pass through the projection closing the common seam with weldment.

3,866,015
FLUX-CORED ELECTRODE WIRE FOR NON-SHEILDED ARC WELDING
Tadashi Matsumoto, Kanagawa-ken, and Takashi Yoshida, Tokyo, both of Japan, assignors to Nippon Steel Corporation, Chiyoda-ku, Tokyo, Japan
Filed Dec. 28, 1973, Ser. No. 429,199
Claims priority, application Japan, Dec. 29, 1972, 47-3952; Feb. 26, 1973, 48-22989
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **2 Claims**



1. A flux-cored electrode wire for non-shielded arc welding with a powder flux filled in a hoop case, in which said powder flux comprises 20–70 percent of metal fluoride containing 1–30% of CeF_2, LiF or combinations thereof, and 0.5–10 percent of a complex metal fluoride, 1–20 percent of a metal carbonate, 10–30% of Al—Mg alloy containing 30–60% of Al in powder form and 5–40 percent of a metal powder other than Al—Mg, the Si content in said flux being less than 2 percent, and the weight of flux to the total weight of the wire being 10–40 percent.

3,866,016
ELECTRICALLY HEATED FABRIC WALL COVERING ASSEMBLY
Gerard Tombu, Rue des Bouchers 8, 02 St. Quentin, France
Filed Mar. 5, 1973, Ser. No. 338,277
Claims priority, application Belgium, Mar. 10, 1972, 78046
Int. Cl. H05b *3/34;* **E04b** *2/00*
U.S. Cl. 219—213 **6 Claims**

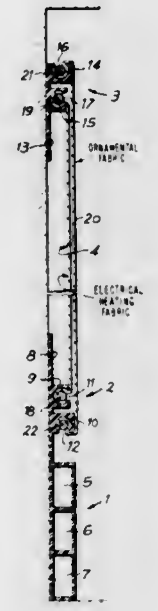
1. A heated fabric wall covering assembly comprising:

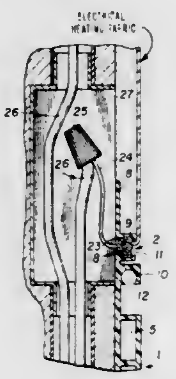
a. a heating fabric having opposite edges and including conductive electric heating means having opposite ends extending to said opposite fabric edges;

b. at least a pair of non-conductive hooking-on elements for mounting said fabric to a wall, said hooking-on elements being fixed to a wall in spaced-apart relationship;

c. each of said hooking-on elements further including a hollow rib;

d. a conductive insert in each of said hollow ribs, each insert being connected to one side of an electrical supply main;
e. the opposite edges of said fabric being inserted within the hollow ribs of said hooking-on elements, with at least a portion of said conductive heating means being in electrically conductive engagement with said inserts;



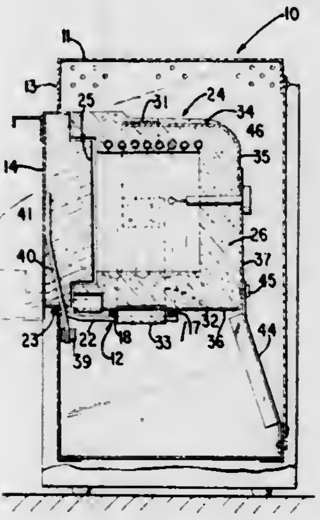


f. conductive keeper strips inserted and retained in said hollow ribs for securing each opposite fabric edge to its respective hooking-on element, said keeper strips being in electrically conductive engagement with the entire heating means within said hollow ribs;
g. whereby the said heating means is maintained in electrical conductive relationship with said supply main.

3,866,017
BOX FURNACE

William M. Keren, and Peter J. Loniello, both of Watertown, Wis., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Mar. 7, 1974, Ser. No. 449,092
Int. Cl. F27b *5/14;* F27d *11/02*
U.S. Cl. 219—390 5 Claims

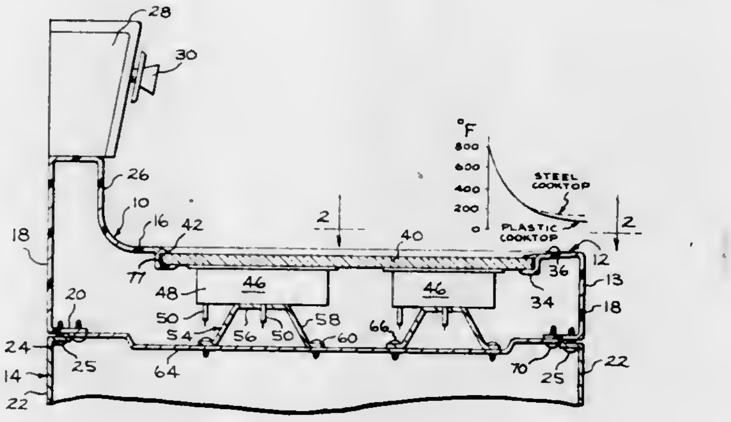


1. In an industrial furnace, the combination of an outer shell, a furnace heating unit supporting metal frame within said shell, and a heating unit of a ceramic insulating material having electrical heating elements and mounting metal band means molded in situ therewith and embedded therein, said heating unit being mounted upon said frame and secured in position by said mounting band means.

3,866,018
MOLDED PLASTIC COOKTOP WITH HEATED GLASS-CERAMIC PLATE INSERT

Bohdan Hurko, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 1, 1974, Ser. No. 457,078
Int. Cl. H05b *3/68*
U.S. Cl. 219—460 5 Claims

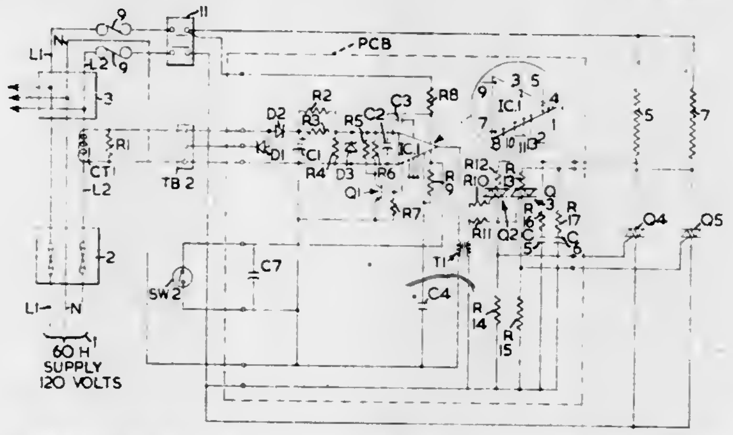


1. A heated cooktop comprising a glass-ceramic plate that is furnished with at least one electric surface heating means, a support means for the glass-ceramic plate in the form of a housing of polymeric resinous material of thin stock, the said housing having a top opening in which the glass-ceramic plate is inserted as a flush mount to form an integral part of the housing, the said housing being of shallow box-like configuration having a top surface, a plurality of shallow vertical side walls extending downwardly therefrom, the surface heating means having support means that include a rigid plate positioned adjacent the bottom of the housing and attached to certain of said side walls, whereby the housing creates a large temperature drop from the edge of the glass-ceramic plate to the outer edge of the cooktop.

3,866,019
ELECTRICAL CONTROL CIRCUIT

Jean-Pierre Cartier, 279 Chemin-Dubois, Tiedmont; David Winn, 348 Notre Dame, East, Apt. 1C, Montreal, Quebec, and Anthony L. Stelmach, 56 Brunet St., Point Claire, all of Canada

Filed Sept. 10, 1973, Ser. No. 395,835
Claims priority, application Canada, Sept. 14, 1972, 151704
Int. Cl. H05b *1/02*
U.S. Cl. 219—485 10 Claims



1. An electrical load monitoring and switching system comprising:
a. total load measuring means arranged to monitor an electrical supply;
b. switch means connectible to control the supply of electrical power from said supply to partial load means forming a substantial part of a total load, but not forming the total load; and
c. control means arranged to transfer the switch means between a closed condition in which said partial load means are energised as part of said total load from said

supply, and an open condition in which said partial load means are no longer so energised; the control means being arranged to receive an input signal from said total load measuring means and to cause transfer of the switch means between the closed condition and the open condition when a first predetermined total load is exceeded; and further to effect a transfer of the switch means between the open condition and the closed position only when the total load falls to less than a second predetermined total load, the difference between the first predetermined total load and the second predetermined total load being larger than the maximum power which the said partial load means can extract from said supply.

3,866,020
BRAILLE TAPE READER

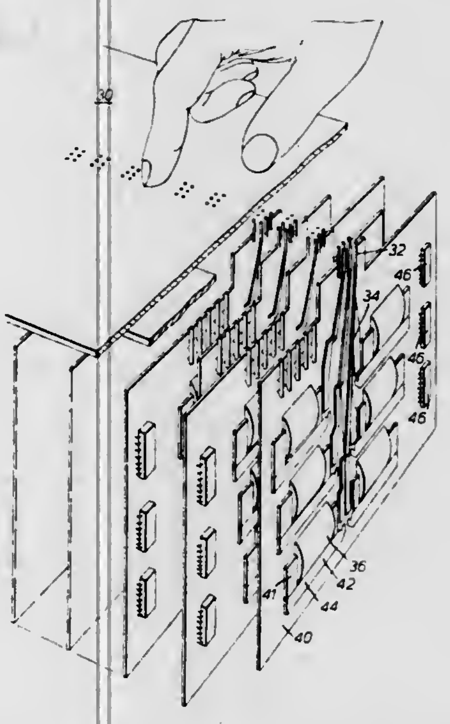
David Valentine Charlesworth, Seaford, England, assignor to Clarke & Smith Manufacturing Company Limited, Wallington, Surrey, England

Filed July 10, 1973, Ser. No. 377,960

Claims priority, application Great Britain, July 11, 1972, 32284/72

Int. Cl. G06k *7/08, 9/00;* **G09b** *21/00*

U.S. Cl. 235—61.11 D **6 Claims**



1. Tactile script presentation apparatus comprising:

a. read-out means for receiving a data storage medium on which data is stored identifying groups of characters to be presented and operable to read-out said data;

b. data storage means capable of receiving and storing data representing a complete group of characters;

c. manual control means operable to cause rapid read-out from said read-out means of data representing one complete group of characters at a time for supply to said data storage means; and

d. tactile presentation means controlled by the data in said data storage means for presenting simultaneously in tactile script a stationary array of all of the characters of the group represented by the data stored in said data storage means, whereby said characters can be selected for presentation group by group one complete group at a time, said tactile presentation means comprising

1. a stationary finger plate containing a row of cells each consisting of a plurality of apertures;

2. a plurality of pins associated with said apertures, respectively, each of said pins being arranged normal to said finger plate for movement between a normal withdrawn position in which the pin is withdrawn from the finger plate and an inserted position in which one end of the pin extends through the associated aperture and projects from the surface of the finger plate; and

3. displacement means for axially displacing selected ones of said pins from the withdrawn position to the inserted position, thereby to present selected characters for reading by feeling the selected pins.

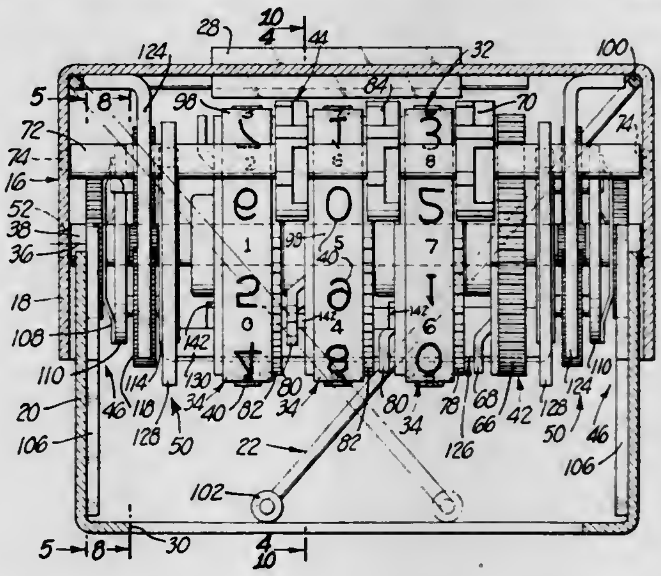
3,866,021
ELAPSED EVENT RECORDER

Stanley Kessler, 9317 Maryknoll, Whittier, Calif. 90605

Continuation-in-part of Ser. No. 075,375, Sept. 25, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,277

Int. Cl. G06m *3/06*

U.S. Cl. 235—92 EA **27 Claims**



1. An elapsed event recorder for counting a series of reoccurring events during random counting intervals and at the end of each counting interval stamping on a record card indicia representing the number of events occurring during the interval, said recorder having separating recording and driving units and comprising:

a housing having a printout opening,

a count accumulating register within said housing including a set of rotary marking wheels disposed side by side on a common axis, and means supporting said wheels in said housing for rotation on said axis,

each wheel being rotatable through a number of successive counting positions and having marking elements spaced about its circumference in a manner such that the marking elements on the several wheels are aligned in rows parallel to said axis when said wheels occupy counting positions,

input means drivably coupled to one end wheel of said wheel set for stepping said end wheel from one position to the next in reponse to occurrence of each event to be recorded, said input means comprising a rotary input member, means drivably connecting said input member and said end wheel for stepping the latter wheel through its positions in response to rotation of said input member, and a motor for driving said input member,

driving means connecting the adjacent wheels in a manner such that each wheel other than said end wheel is stepped from one position to the next in response to each full revolution of the adjacent wheel in the direction of said end wheel,

actuating means for effecting relative movement of said register away from said opening to a normal recording position in said housing and toward said opening to a marking position wherein a row of marking elements on said wheels are disposed within said opening for contact with a record card positioned opposite the opening,

said elements being arranged to stamp on said record card indicia representing the current accumulated event count in response to movement of said register to marking position,

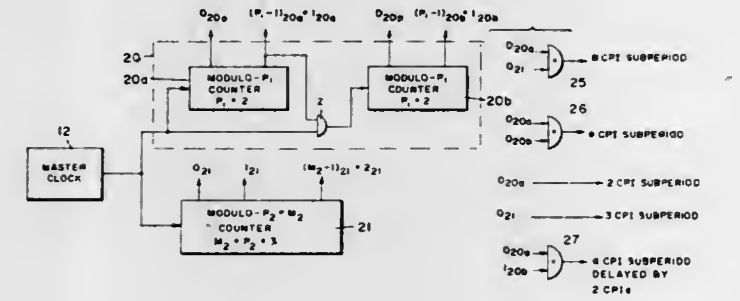
said recording unit including said housing, register, input means, driving means, actuating means, and zero return means, said driving unit including a housing containing said motor, a rotary driving member driven by said motor, and means in said driving unit housing for receiving said recording unit in driving position wherein said input member engages and is driven by said driving member, and

said recording unit being removed from said driving unit to stamp said record card.

3,866,022
SYSTEM FOR GENERATING TIMING AND CONTROL SIGNALS

James C. Fletcher, Administrator of the National Aeronautics & Space Administration in respect to an invention by; Marvin Perlman, Granada Hills; William J. Rousey, Tujunga, and Alan Messner, Monrovia, all of Calif.

Filed Dec. 26, 1972, Ser. No. 319,150
Int. Cl. H03k *21/36*
U.S. Cl. 235—92 DM **9 Claims**



0_{20a}
$(P_1-1)_{20a} \cdot 1_{20a}$
0_{20b}
$(P_1-1)_{20b} \cdot 1_{20b}$
20
20a
MODULO-P_1 COUNTER $P_1 = 2$
2
MODULO-P_1 COUNTER $P_1 = 2$
20b
12
MASTER CLOCK
0_{21}
1_{21}
$(M_2-1)_{21} \cdot 2_{21}$
MODULO-$P_2^{\alpha_2}$ COUNTER $M_2 = P_2 = 3$
21
25
26
27
0_{20a}
0_{21}
6 CPI SUBPERIOD
0_{20a}
0_{20b}
4 CPI SUBPERIOD
0_{20a}
2 CPI SUBPERIOD
0_{21}
3 CPI SUBPERIOD
0_{20a}
1_{20b}
4 CPI SUBPERIOD DELAYED BY 2 CPIs

1. A system comprising:

clock means for providing a succession of clock pulses of equal clock pulse intervals, each sequence of *M* clock pulse intervals defining a data frame, *M* being an integer other than a distinct prime and not less than one thousand;

a plurality of modulo-m_i multistage counters where each m_i is a different prime power divisor of M, each modulo-m_i counter comprising a different cascade of α modulo-p_i counters, where p_i in each cascade is the same and is a different distinct prime of M and α_i in each cascade is an integer not less than 1, with at least one α_i being greater than 1 and each $m_i = p_i$;

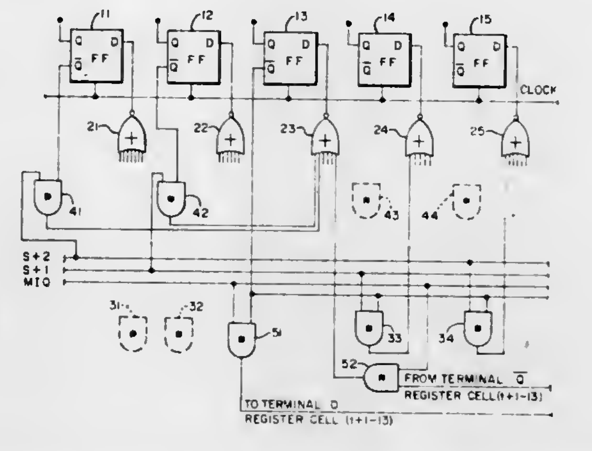
means for coupling said counters to said clock means for clocking said modulo-m_i counters in parallel with said clock pulses, with the first counter in each cascade being clocked directly with each clock pulse and each succeeding counter in a cascade is clocked by a clock pulse only when the preceding counter in a cascade changes from a last state in its state cycle to a first state in its cycle whereby each modulo-p_i counter cycles through a cycle of p_i states and the combined states of the α_i counters forming each modulo-m_i counter represent different states of a state cycle of m_i states; and

logic means coupled to selected ones of said counters for providing a plurality of subperiods of said data frame as a function of the states of the counters to which it is coupled, each subperiod being a sequence of output pulses, each with an output pulse interval which is equal to the clock pulse interval times a different factor definable as X_i, where X_i is an integer and a factor of *M* and wherein the smallest value of X_i is equal to the smallest distinct prime of *M*, said subperiods including one delayed subperiod whose first output pulse is delayed by an interval from the start of said data frame, which is not less than one clock pulse interval and not greater than *Y* clock pulse intervals, where Y $X_i - 1$.

3,866,023
APPARATUS AND METHOD FOR BIDIRECTIONAL SHIFT REGISTER OPERATION

Virendra K. Kadakia, Los Angeles, Calif., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 29, 1971, Ser. No. 215,965
Int. Cl. H03k *21/06*
U.S. Cl. 235—92 SH **12 Claims**



11
12
13
14
15
Q
D
$\overline{Q}$
FF
CLOCK
21
22
23
24
25
41
42
43
44
S+2
S+1
MIQ
31
32
51
33
34
52
FROM TERMINAL $\overline{Q}$ REGISTER CELL (i+1−13)
TO TERMINAL Q REGISTER CELL (i+1−13)

1. Apparatus for bi-directional shifting of data in storage elements comprising:

a first group of said storage elements ordered serially;

a second group of said storage elements ordered serially, wherein said first group and said second group contain an equal number of said storage elements;

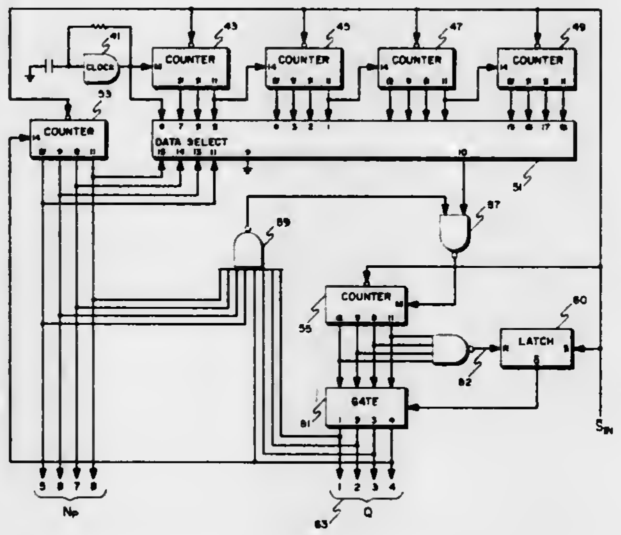
exchange means coupled to said first group and to said second group for exchanging data held in a corresponding one of said storage elements of said second groups automatically in one step; and

shift means coupled to said first and second groups for changing the position of data held in each of said groups relative to the respective storage elements thereof.

3,866,024
DIGITAL LOG-TIME GENERATOR

Richard E. Williams, Reston, Va., assignor to Scope Incorporated, Reston, Va.

Filed Oct. 23, 1973, Ser. No. 408,616
Int. Cl. H03k *21/06*
U.S. Cl. 235—92 CC **5 Claims**



1. A digital log-time generator comprising

binary counter means having multiple taps, each of said taps carrying a rate of one-half of that of the preceding tap;

clock means for supplying pulses of a predetermined frequency to said binary counter;

means for selecting one of said taps and counting the pulse output therefrom;

means for advancing the selecting means to the succeeding one of said taps after said count is completed;

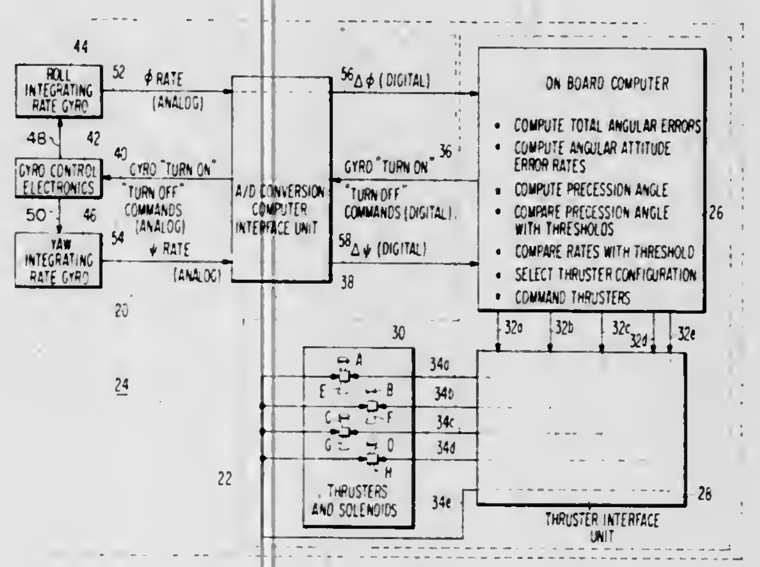
means for supplying an activating signal to said generator; and

means for constraining the output of said generator to a value of zero for a predetermined period of time after the application of said activating signal.

3,866,025
SPACECRAFT ATTITUDE CONTROL SYSTEM

John Denis Cavanagh, Ardmore, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,775
Claims priority, application Great Britain, Mar. 17, 1972, 12698/72
Int. Cl. G05d *1/10*
U.S. Cl. 235—150.2 **18 Claims**



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ROLL INTEGRATING RATE GYRO
52
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• COMPUTE TOTAL ANGULAR ERRORS
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THRUSTER INTERFACE UNIT

1. A thruster control system for a spacecraft comprising:

a. a plurality of body-mounted orbit adjust thrusters adapted to develop a thrust along a given axis of said spacecraft when operated jointly to thereby change the orbit of said spacecraft and to develop a torque when less then all said thrusters are operated,

b. attitude sensing means for determining the attitude of said spacecraft relative to a reference to generate error signals,

c. an on-board computer for controlling the operation of said thrusters, said computer comprising

c1. means responsive to a command signal for operating all said thrusters to develop a thrust of said spacecraft thereby to change the orbit of said spacecraft, and

c2. means responsive to said attitude error signals to inhibit a selected number of said thrusters while the orbit of said spacecraft is being changed to develop a torque to correct the attitude of said spacecraft.

3,866,026
ENTHALPY CALCULATING DEVICE FOR STEAM

Dominique Le Febve de Vivy, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 19, 1973, Ser. No. 426,055
Claims priority, application Switzerland, Dec. 20, 1972, 18597/72
Int. Cl. G06g *7/57*
U.S. Cl. 235—151.1 **16 Claims**

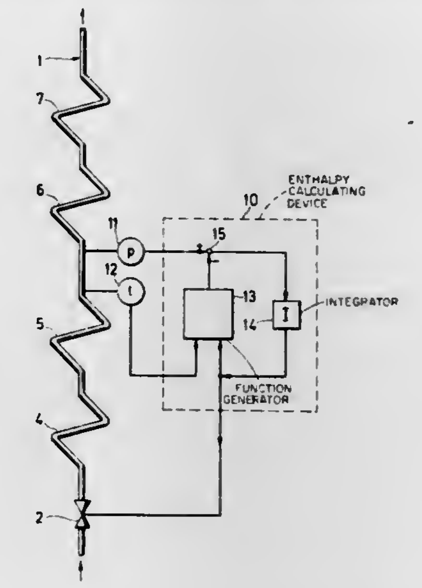
1. An enthalpy-calculating device for calculating the enthalpy of steam including

a function generator for receiving a first input signal corresponding to the magnitude of the temperature of the steam and a second input signal corresponding to the magnitude of the enthalpy of the steam, and for emitting an output signal corresponding to the determined magnitude of the pressure of the steam in response to said input signals;

a first input terminal for receiving said first input signal for emission to said function generator;

a second input terminal for receiving an output signal corresponding to the magnitude of the pressure of the monitored steam; and

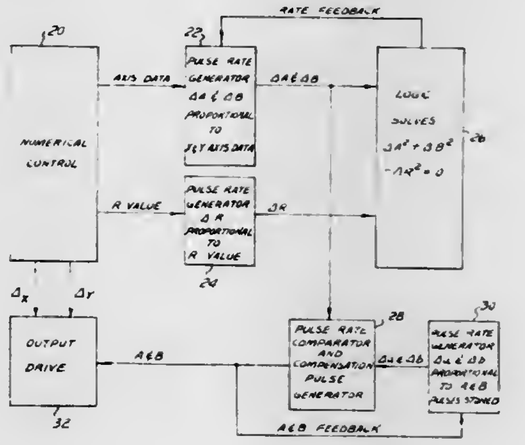
a controller means connected to said second input terminal to receive said input signal therefrom and to said function generator to receive the emitter output signal thereof for comparing said respective signals, said controller means having an output terminal for emitting said second input signal in response to a comparison of said respective signals to said function generator and to an output terminal of said device.



3,866,027
DIGITAL TOOL SIZE COMPENSATION FOR NUMERICAL CONTROL

Hymie Cutler, Detroit, and Donald Vadasy, Southgate both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 9, 1973, Ser. No. 358,768
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **21 Claims**



RATE FEEDBACK
20
NUMERICAL CONTROL
AXIS DATA
22
PULSE RATE GENERATOR ΔA & ΔB PROPORTIONAL TO X & Y AXIS DATA
ΔA & ΔB
LOGIC SOLVES $\Delta A^2 + \Delta B^2 - \Delta R^2 = 0$
26
R VALUE
PULSE RATE GENERATOR ΔR PROPORTIONAL TO R VALUE
ΔR
24
Δ_X
Δ_Y
OUTPUT DRIVE
32
A & B
28
PULSE RATE COMPARATOR AND COMPENSATION PULSE GENERATOR
Δa & Δb
30
PULSE RATE GENERATOR Δa & Δb PROPORTIONAL TO A & B PULSES STORED
A & B FEEDBACK

1. In a numerically controlled machine having computing and storage means, operative to control the movement of a cutter tool to thereby machine an article in response to a segmented profile program defined with respect to at least two perpendicular coordinate axes, each segment of said program including a block of digital data for each axis, each block of data being individually indicative of the profile along one of said coordinate axes, and wherein said computing and storage means converts said data blocks into sets of control pulses operative to actuate output drives individually associated with each coordinate axes to control the relationship between said cutter tool and said article; a system for providing compensation for the size of said cutter tool comprising:

means for inserting information relating to size of said cutter tool into said numerically controlled machine, means responsive to said information relating to the size of said cutter for generating a radius pulse proportional to said information;

means responsive to said radius pulse rate and said blocks of digital data for generating at least two offset pulse rates having a predetermined relationship to said radius pulse rates and said profile segment; and

means responsive to said two offset pulse rates for generating compensation pulses operative to offset said output drives thereby compensating for the size of said cutter tool.

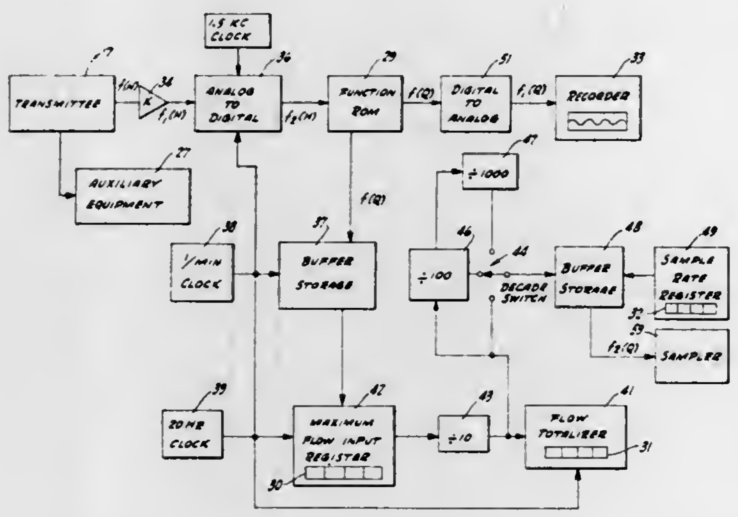
3,866,028
FLUID FLOW MEASURING SYSTEM AND METHOD

James G. Schontzler; Wendall C. Gates, both of Santa Cruz, and Victor L. DaGragnano, Redwood, all of Calif., assignors to Manning Environmental Corp., Santa Cruz, Calif.

Filed July 27, 1973, Ser. No. 383,269

Int. Cl. G01f *1/00*; G06f *9/00*

U.S. Cl. 235—151.34 **12 Claims**



1. A total flow measuring system for liquid flow through a channel having a predetermined cross section shape comprising means for detecting a fluid surface level in the channel, means for providing a signal related to fluid surface level relative to a predetermined reference level, computer means for receiving said signal related to surface level and converting said signal to a digital signal, and program means for receiving said digital signal and providing output indicative of total flow volume.

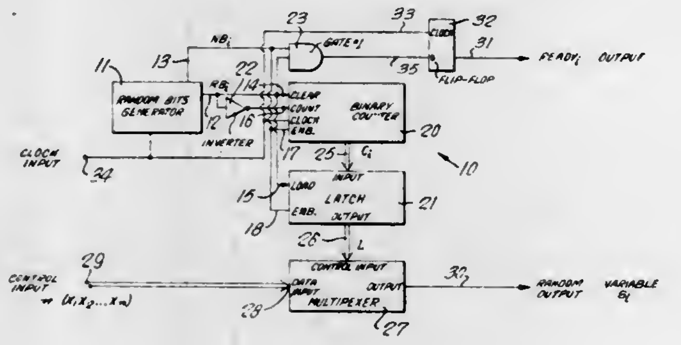
3,866,029
TWO LEVEL RANDOM NUMBER GENERATOR HAVING A CONTROLLABLE EXPECTED VALUE

Paul Chevalier, Montreal, Quebec, Canada, assignor to Prayfel Inc., West Montreal, Quebec, Canada

Filed Sept. 18, 1973, Ser. No. 398,409

Int. Cl. G06f *7/60*

U.S. Cl. 235—152 **6 Claims**



1. A random number generator for generating a sequence of binary random numbers (S_i) whose expected value is controlled by an input digital number x, comprising:

a random bit generator which generates at one output a sequence of mutually independent random variables (RB_i) such that the probability $P(RB_i=0) = P(RB_i=1) = ½$,

means to sequentially analyse the sequence of random variables (RB_i) and generate a random variable L_i which has a probability function given by:

$$P(L_i = k) = 2^{-k} \text{ where } k = 1, 2, 3 \ldots$$

each time a pattern of the form (**1,000** . . . **01**) containing (k-1) zero is detected, and

means to set the output random variable S_i of said random number generator equal to the bit X_k of x whenever the random variable L_i is equal to k, and this for $k = 1, 2, 3, \ldots$.

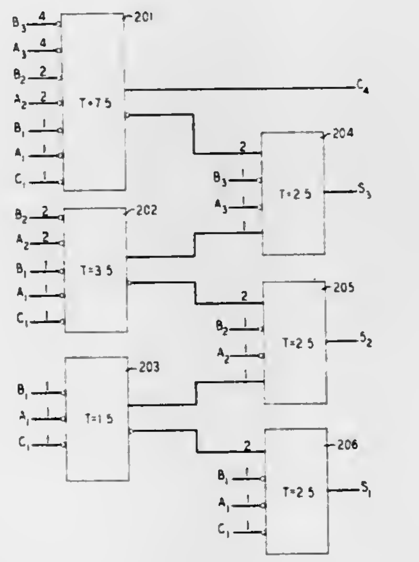
3,866,030
TWO'S COMPLEMENT PARALLEL ARRAY MULTIPLIER

Charles Richmond Baugh, Lincroft, and Bruce Allen Wooley, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 1, 1974, Ser. No. 457,079

Int. Cl. G06f *7/39*

U.S. Cl. 235—164 **14 Claims**



1. Apparatus for forming the product, $P = (p_{n+m-1}, P_{m+n-2}, \ldots, p_0)$, of an m-bit 2's complement multiplicand, $Y = (y_{m-1}, y_{m-2}, \ldots, y_0)$, and an n-bit 2's complement multiplier, $X = (x_{n-1}, x_{n-2}, \ldots, x_0)$, comprising

A. first means for forming partial product terms x_iy_j for all i and j yielding positive values,

B. second means for forming partial product terms having positive values equivalent to those x_iy_j which are negative, and

C. third means for combining said partial product terms formed by said first and second means to form said product P.

3,866,031
ANALOGUE FUNCTION GENERATOR

Ferdinand Konig, Seuzach, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 19, 1973, Ser. No. 426,115

Claims priority, application Switzerland, Dec. 20, 1972, 18598/72

Int. Cl. G06g *7/26*

U.S. Cl. 235—197 **5 Claims**

1. An analogue function generator for generating a function of the form

$$z = a_{00} + a_{01}x + a_{02}x^2 + a_{03}x^3 \ldots + a_{0m}x^m + (a_{10} + a_{11}x + a_{12}x^2 \ldots + a_{1m}x^m) \cdot Y + (a_{20} + a_{21}x + \ldots + a_{2m}x^m) \cdot Y^2$$

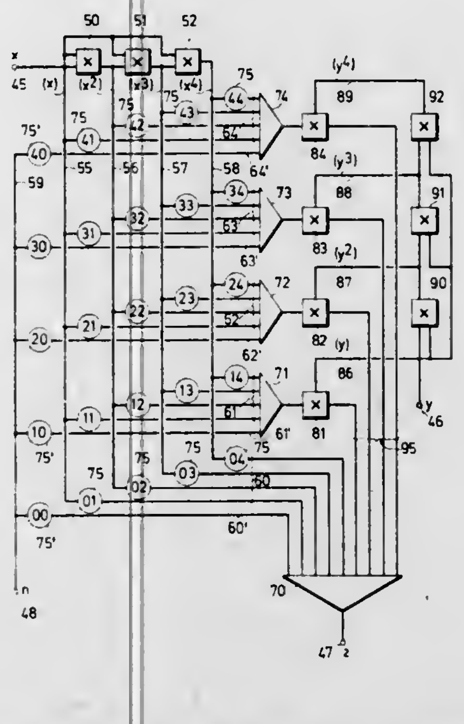
$$+ (a_{n0} + a_{n1}x + a_{n2}x^2 \ldots + a_{nm}x^m) \cdot Y^n,$$

wherein m and n are both greater than 1, comprising

means for generating signals representing $x^2, x^3 \ldots$ and x^m,

$(m + 1)$ signal lines each arranged to carry respectively a reference signal and the signals representing $x, x^2, x^3 \ldots$ and x^m,

$(m + 1) \cdot (n + 1)$ scalers of which $(n + 1)$ have inputs connected to each signal line,



$(n + 1)$ adders each having at least $(m + 1)$ inputs of which one of said is inputs connected to the output of each of $(m + 1)$ of said scalers, all of said scalers having their inputs connected to different signal lines, and

n multipliers each having one input connected to the output of a different one of n of said adders, a second input connected with a source of a signal representing y and an output connected to the input of the remaining adder, said remaining adder having an output for emitting an output signal z.

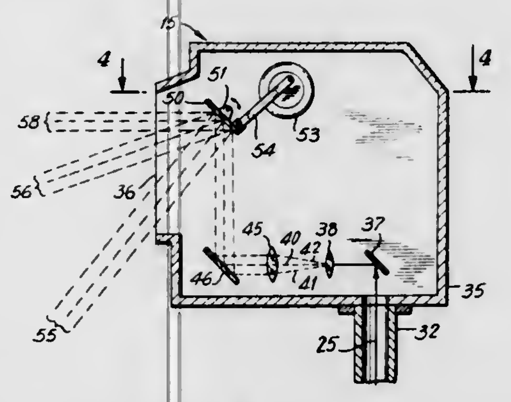
3,866,032
RUNWAY ILLUMINATION SYSTEM

Raymond M. Veres, 1145 E. 35th St., Brooklyn, N.Y. 11210

Filed Mar. 19, 1973, Ser. No. 342,753

Int. Cl. B64f *1/20*

U.S. Cl. 240—1.2 **15 Claims**



1. A system for providing illuminated striping for a surface, the system comprising:

at least one radiation station; and

means for supporting the radiation station in spaced relationship with one end of the surface, the radiation station including

laser means for producing a beam of coherent visible radiation,

an optical system for projecting the beam so that it lies in a plane which includes the striping, and

means for oscillating the beam at a constant frequency, to produce a visible line along said surface.

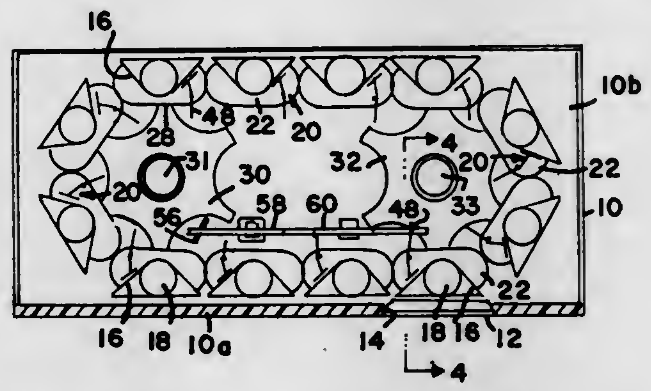
3,866,033
PHOTOFLASH ASSEMBLY WITH SERIALLY ADVANCING PERCUSSIVE LAMPS

John C. Stacy, Watsontown, Pa.; John J. Vetere, Danvers, Mass., and Sedgwick R. Bennett, Williamsport, Pa., assignors to GTE Sylvania Incorporated, Montoursville, Pa.

Filed Nov. 21, 1973, Ser. No. 417,955

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **19 Claims**



1. A photoflash assembly comprising, in combination:

a base member;

a plurality of units, each including a percussively ignitable flashlamp and an associated preenergized striker movably supported on said base member, each striker being individually releasable to fire its respective flashlamp;

means for controlling the path of travel of said movable flashlamp-striker units;

and means for moving said plurality of units along said controlled path of travel to advance said flashlamp-striker units sequentially to a firing position.

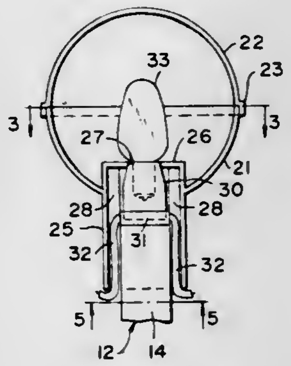
3,866,034
POST CAP LAMP

Michael T. Russo, 1805 Larchwood St., Bloomfield Hills, Mich. 48084

Filed Jan. 28, 1974, Ser. No. 437,426

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 B **6 Claims**



1. A cap lamp for mounting upon the upper end of a post, comprising:

a thin wall hollow body of a light transmitting plastic material;

a downwardly opening post socket formed integral with the lower end of the body and being of a size to snugly receive the upper end of a post for mounting the cap upon the post;

a wall substantially closing off the upper end of the socket, and a central opening formed in said wall;

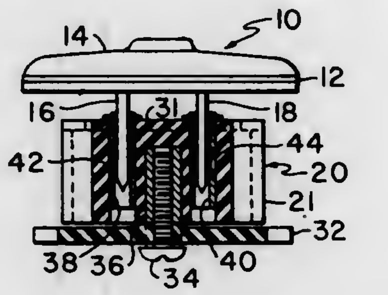
an electrical bulb-receiving socket member located within the post socket below said wall and having an upper bulb-receiving receptacle positioned beneath said wall opening;

an electrical lightbulb arranged within the body, above said wall and having a base extended downwardly through said opening and releaseably engaged with said receptacle, for securing the bulb-receiving socket member within the post socket; and

a vertically extending inwardly opening channel formed within a generally vertical inner wall surface of the post socket and extending the height thereof, said electrical bulb-receiving socket member having a generally vertical surface closely adjacent said post socket vertical surface, and a relatively stiff, electrical wire extending from the bulb-receiving socket member vertical surface and projecting immediately into and extending along said channel for holding said bulb-receiving socket against turning and twisting relative to the post socket, said wire further extending from the lower end of the post socket for connection to an electrical power source, for thereby carrying the electrical power to the bulb.

3,866,035
COSTUME JEWELRY WITH LIGHT-EMITTING DIODE

Curry E. Richey, Jr., Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.
Filed Oct. 1, 1973, Ser. No. 402,017
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 W **8 Claims**



1. In combination, an article of jewelry adapted to be attached to the clothing of a wearer, said article comprising an insulated printed circuit board having a plurality of electrical components mounted thereon, said components when energized forming an oscillator circuit, said oscillator circuit including a light-emitting diode;

light transmitting means enclosing said printed circuit board and said electric circuit, at least said illuminable device being visible therethrough when said device is illuminated;

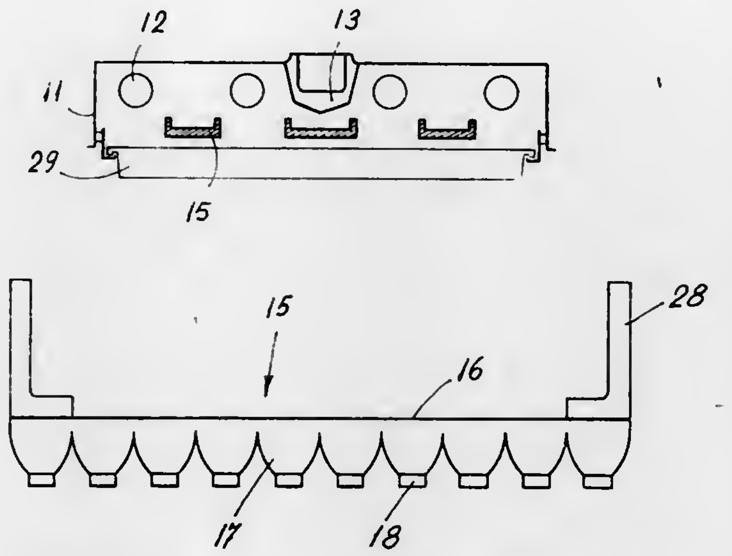
a housing for a two-terminal battery, and

mating connectors on said housing and said article for mechanically interconnecting said article and said housing, said article and said housing in combination with said mating connectors providing a clasp for securing said article of jewelry to said clothing, said mating connectors also electrically connecting said battery to said circuit for energizing said circuit.

3,866,036
FLUORESCENT FIXTURE WITH OPTICAL DEVICE

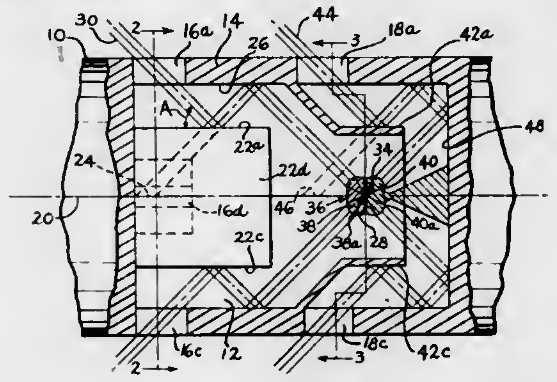
Ignacio Goytisolo Taltavull, Madrazo No. 83, Barcelona, Spain
Filed Apr. 16, 1974, Ser. No. 461,446
Int. Cl. F21v *5/02, 11/02;* **F21s** *3/00*
U.S. Cl. 240—51.11 R **21 Claims**

1. An optical device to improve the distribution of luminous flux in lighting apparatus fitted with at least one fluorescent tube which consists of an elongated element in the form of a strip made of transparent material, the length of such elongated element being substantially equal to the length of a fluorescent tube and its width equal to or greater than the width of a fluorescent tube, one of the larger faces of such elongated element having a flat plain surface and the other face a plurality of longitudinally placed triangular prisms, the bases of such triangular prisms situated close together on said face of the strip and the free salient angles of such triangular prisms being truncated in a plane parallel to the base, each angle being substituted by a prismatic portion of rectangular transversal section of small height, the larger free face of the rectangular prismatic portions having a surface capable of intercepting the luminous rays which strike it, such strip element being placed beneath and parallel to the tube or tubes of the lighting apparatus.



3,866,037
OPTICAL SYSTEMS AND ASSOCIATED DETECTING MEANS

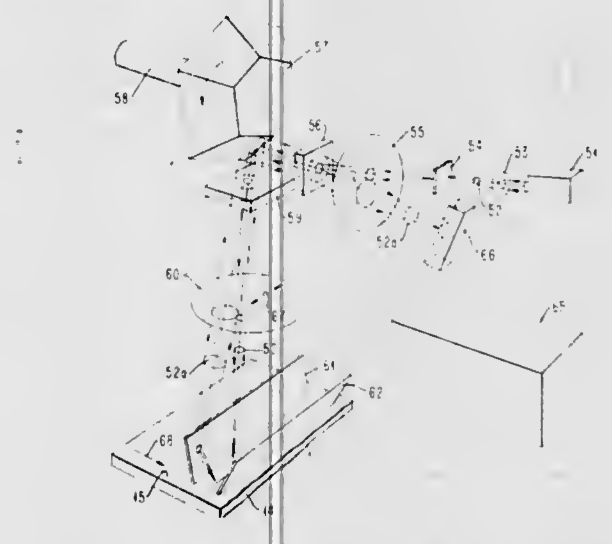
George R. Simpson, South Woodstock, Conn., assignor to American Optical Company, Southbridge, Mass.
Filed Nov. 22, 1957, Ser. No. 698,896
Int. Cl. H01j *3/14*
U.S. Cl. 250—216 **8 Claims**



1. An opaque main supporting housing and a light-collecting and detecting system disposed within said supporting housing and intermediate the spaced opposite ends thereof, said housing surrounding said light-collecting and detecting system and said system being arranged to simultaneously view through light apertures in side wall portions of said housing all parts of a first and a second predetermined generally conically shaped endless annular object field outwardly of said housing and in concentric relation to a central longitudinal axis of said housing, said system comprising a single photosensitive detecting element for detecting any appreciable change in light intensity which occurs in any part of either object field, said detecting element being of relatively small predetermined size and disposed at a fixed location in said housing and upon said longitudinal axis, a first group and a second group of similar light apertures arranged in longitudinally spaced relation to each other in side wall portions of said housing, and the light apertures of each group being arranged in circumferentially spaced relation, each light aperture being of relatively small dimensions both in the longitudinal and circumferential directions thereof, and separated from adjacent apertures of the same group by side wall portions of said housing of appreciably greater circumferential dimension, the light apertures of said first group being arranged to face outwardly at a first predetermined look angle relative to said longitudinal axis toward different predetermined sectors, respectively, of said first object field, and the light apertures of said second group being arranged to face outwardly at a second predetermined look angle relative to said longitudinal axis toward different predetermined sectors, respectively, of said second object field, each light aperture of each group being of such a shape as to admit into the interior of said housing light from all parts of the predetermined sector aligned therewith, the circumferential spacing between adjacent apertures of each group and the angular field of view of each aperture of the same group being so related as to allow all of the apertures of the same group to jointly simultaneously admit into said housing light from all parts of the endless annular object field aligned therewith, said light-collecting and detecting system also comprising optical means for receiving and directing the light energy which enters said housing through said apertures from all azimuths of all sectors of both endless annular object fields onto said photosensitive detecting element, said optical means comprising a first plurality and a second plurality of unitary optical systems, with each unitary optical system of said first plurality optically aligned with a different respective light aperture of said first group and with said detecting element, and with each unitary optical system of said second plurality optically aligned with a different respective light aperture of said second group and with said detecting element, and each of said unitary optical systems being disposed in said housing so as to focus upon said detecting element and form a real image of said detecting element at the plane of the light aperture aligned therewith, each optical system comprising a plurality of optical components having spaced optical surfaces thereon including a first optical surface for collecting substantially all of the light from the object field which enters the light aperture aligned therewith and for directing substantially all of the light so collected toward a second optical surface on said components, said second optical surface being a positive surface for receiving substantially all of said light and directing same as a focused beam onto said single photosensitive detecting element.

3,866,038
APPARATUS FOR MEASURING SURFACE FLATNESS

Hans E. Korth, Stuttgart, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 13, 1973, Ser. No. 415,475
Claims priority, application Germany, Nov. 18, 1972, 2256736
Int. Cl. H01j *3/14*
U.S. Cl. 250—236 **5 Claims**



1. Apparatus for measuring the flatness of a surface comprising:

means for producing a beam of light;

deflection means for producing a deflected beam by periodically deflecting said beam in a known manner, said deflection means being of such a nature that when said deflected beam is reflected back to said deflecting means, said deflected beam will be again deflected in a manner which is substantially equal and opposite to, and thus compensates for, said original deflection;

a first mirror for reflecting said deflected beam onto said surface at a predetermined angle;

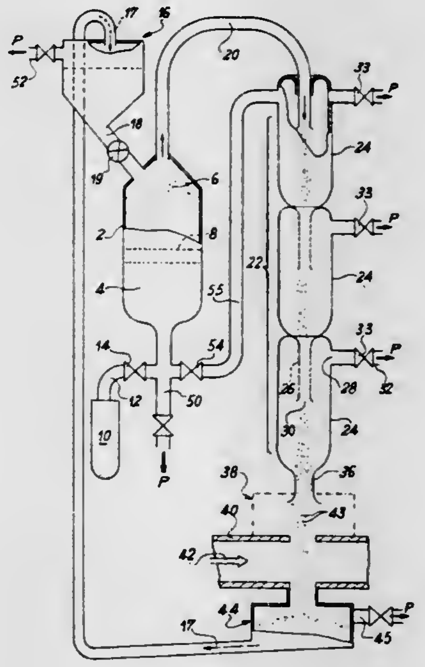
a second mirror for reflecting said deflected beam, after it has been reflected at said surface, back toward said deflection means; and

sensing means, positioned to receive said deflected beam after it has been deflected a second time by said deflection means, for sensing the displacement between the twice-deflected beam and the orginal beam of light;

said displacement being a function of the height, in relation to the rest of said surface, of the point on said surface upon which said deflected beam impinged.

3,866,039
DEVICE FOR PRODUCING A HOMOGENEOUS BEAM OF SOLID PARTICLES

Richard Geller, Grenoble; Francois Juillet, Bron, and Paul Meriaudeau, Rillieux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Jan. 7, 1974, Ser. No. 431,316
Claims priority, application France, Jan. 11, 1973, 73.00882
Int. Cl. H01j *37/00*
U.S. Cl. 250—251 **13 Claims**



1. A device for the production of a homogeneous beam of solid particles, wherein said device comprised:

a gas-tight vessel divided into two sections by a substantially horizontal porous wall,

a source of gas under pressure connected to the lower portion of the vessel for supplying said vessel with gas at a flow rate which is adjustable by means of a valve,

a tank for supplying powder constituted by said solid particles, said supply tank being adapted to communicate with the upper portion of said vessel,

a duct for connecting the upper portion of the vessel to the upper portion of a pumping column, the delivery duct of said column being such as to constitute the outlet of said device.

3,866,040
METHOD FOR THE CONTINUOUS TESTING OF LONG COMPONENTS FOR LEAKAGE, AND SYSTEM FOR PERFORMANCE THEREOF

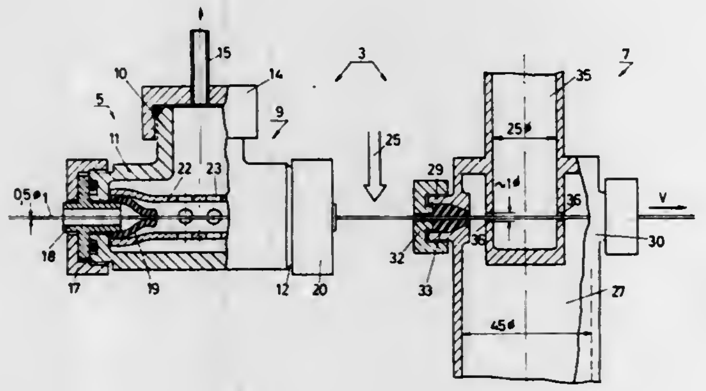
Christoph Engler, Ennetbaden, Switzerland, assignor to Gesellschaft Zur Forderung Der Forschung un Der EIDG. Techn., Hochschule Zurich, Switzerland

Filed Nov. 1, 1972, Ser. No. 302,865

Claims priority, application Switzerland, Nov. 19, 1971, 16857/71

Int. Cl. H01j *39/34*

U.S. Cl. 250—281 **3 Claims**



1. An apparatus for the continuous testing of a wire-shaped component of indefinite length for faults in the surface thereof comprising:

helium chamber means for establishing an atmosphere of helium at a pressure greater than atmospheric;

blasting means for cleaning the surface of components passing therethrough by blasting with air;

vacuum chamber means for establishing an atmosphere therein below atmospheric;

analyzer means comprising a mass spectrometer, for analyzing gas evacuated from said vacuum chamber means for the presence of traces of helium;

feed means for continuously feeding the indefinite length component through said helium chamber means, said blasting means and said vacuum chamber means; and

sealing means for sealing said helium chamber means and said vacuum chamber means from the outside atmosphere as the indefinite length component is continuously fed therethrough,

wherein said helium chamber means, said blasting means and said vacuum chamber means are sequentially aligned with respect to said feed means such that said helium chamber means, said blasting means and said vacuum chamber means can simultaneously act on different portions of the same indefinite length component.

3,866,041
METHOD AND APPARATUS FOR EVALUATING THE GAS CONTENT OF MATERIALS

Edward A. Attia, San Jose, Calif., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 23, 1973, Ser. No. 408,928

Int. Cl. B01d *57/44;* **H01j** *39/34*

U.S. Cl. 250—281 **11 Claims**

1. A method for evaluating material to be utilized in a vacuum interrupter comprising the steps of:

arranging the material in a vacuum chamber;

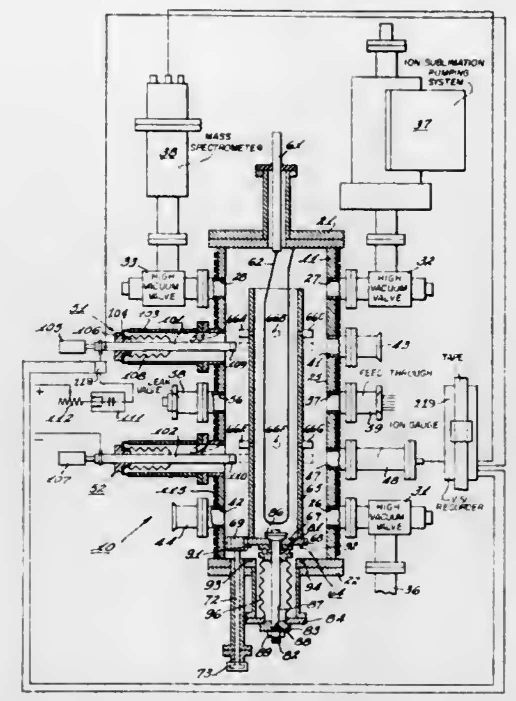
connecting the material in an electrical d.c. circuit in series with an electrode that is connected to the positive polarity of the circuit so as to function as an anode with the material serving as the cathode;

effecting a separation between the electrode and the material to draw an arc for a predetermined time interval;

interrupting the circuit to extinguish the arc;

determining the gas pressure of the gas evolved during arcing and the composition of the gas evolved; and,

comparing the results obtained to control data.



3,866,042
MICROANALYSER CONVERTIBLE INTO A MASS SPECTROMETER

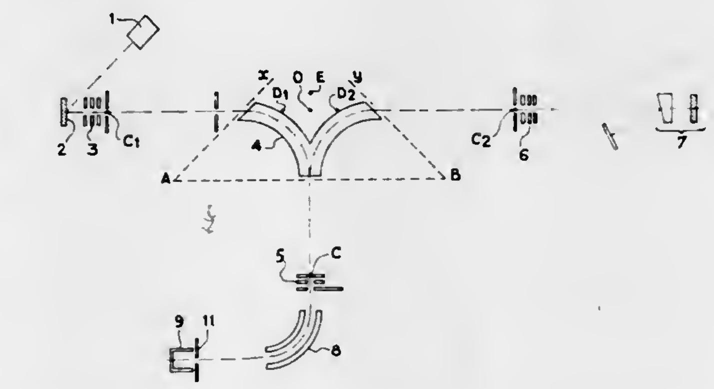
Jean Vastel, Courbevoie, France, assignor to Compagnie D'Applications Mecaniques a L'Electronique au Cinema et a L'Atomistique (C.A.M.E.C.A.), Paris, France

Filed July 17, 1973, Ser. No. 379,925

Claims priority, application France, July 21, 1972, 72.26420

Int. Cl. H01j *39/34, 37/26*

U.S. Cl. 250—296 **2 Claims**



1. Means for selectively forming an ion microanalyser or a mass-sectrometer of the double-focusing type, said means comprising:

a sliding plate having a solid first part and a second part provided with an aperture;

an ion microanalyser comprising: first means for deriving secondary electrons from a sample and focusing those secondary electrons into a beam having a cross-over; first and second magnetic prisms having a common face and respective second faces; means for directing said beam toward said second face of said first magnetic prism; an electrostic reflecting means, provided with an entrance diaphragm centered at the image point of said cross-over relatively to said first magnetic prism, for reflecting toward said common face those of said secondary ions, let through by said diaphragm, whose energy-to-charge ratio lies under a predetermined threshold, said reflector means comprising a plurality of electrodes including a solid last electrode formed by said solid first part of said sliding plate; an ion electron converter; and means for directing the ions issuing from said second face of said second magnetic prism toward said ion converter;

a mass-spectrometer comprising, in series: said first means; said first magnetic prism; said diaphragm; and energy filtering electrostatic deflector means; and an ion collector;

means for imparting to said sliding plate a first position for which said first part of said plate forms said last solid electrode of said reflector means, and a second position for which said aperture of said second part is coaxial with said diaphragm; and means for switching the potentials applied to at least two of said electrodes of said reflector means according to whether said plate is in its first or second position.

3,866,043
COATED PARTICLE FUEL FOR NUCLEAR REACTORS AND TO THE MANUFACTURE OF SUCH FUEL

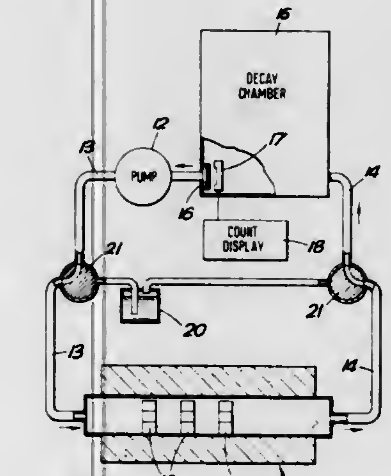
David Vernon Freck, Stroud, England, assignor to Central Electricity Generating Board, London, England

Continuation of Ser. No. 135,231, April 19, 1971, abandoned. This application Sept. 11, 1973, Ser. No. 396,232

Claims priority, application Great Britain, Apr. 20, 1970, 18833/70

Int. Cl. G01t *1/00;* **G21c** *3/02*

U.S. Cl. 250—303 **3 Claims**



1. In the manufacture of fuel bodies for a nuclear reactor having fuel particles of compacted powdered fuel material coated with a pyrolytic carbon coating and without metal cladding but surrounded by an outer matrix graphite, a method of testing the integrity of the pyrolytic carbon coating prior to irradiation in a reactor comprising the steps of incorporating radium 226 into the fuel material, heating the fuel bodies in a furnace to a temperature of at least 800°C without irradiation whilst circulating an inert gas through the furnace to pass over the matrix graphite surface of the fuel bodies and checking the gas which has passed over said fuel bodies for the presence of radon 222.

3,866,044
APPARATUS FOR DETERMINING CONCENTRATION PROFILE OF AN ELEMENT

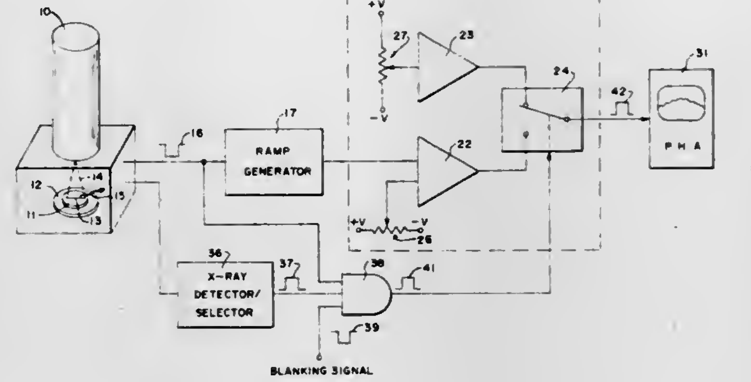
J. Evan Grund, Hayward, Calif., assignor to Nuclear Equipment Corporation, San Carlos, Calif.

Filed Feb. 1, 1974, Ser. No. 438,696

Int. Cl. H01j *37/26*

U.S. Cl. 250—310 **9 Claims**

6. In apparatus for determining the distribution of a predetermined element in a specimen from signals produced by repeatedly scanning a portion of the specimen with an electron beam and delivering an output signal whenever the element is detected, the start of each scan being accompanied by a timing signal: a ramp generator for producing a ramp signal which increases at a predetermined rate from an initial level, means for applying the timing signal to the ramp generator for resetting the ramp signal to the initial level at the outset of each scan, whereby the level of the ramp signal corresponds to the position of the beam on the specimen, and analog gate means responsive to the output signals for passing the ramp signal to produce output pulses having heights corresponding to the positions of the beam when the predetermined element is detected.



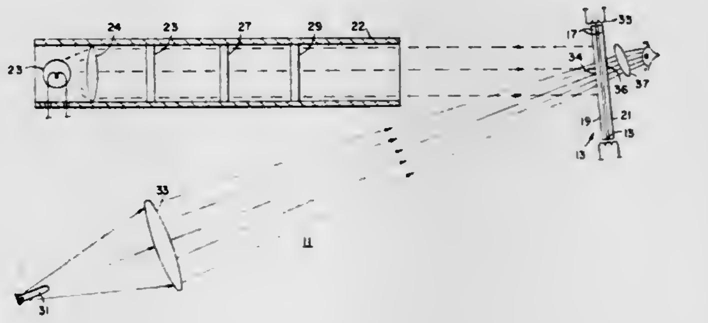
3,866,045
NIGHT VISION DEVICE

Richard E. Ely, Huntsville, and Raymond W. Conrad, Russellville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 179,216, Sept. 9, 1971, abandoned. This application Nov. 27, 1973, Ser. No. 416,904

Int. Cl. G01j *1/48*

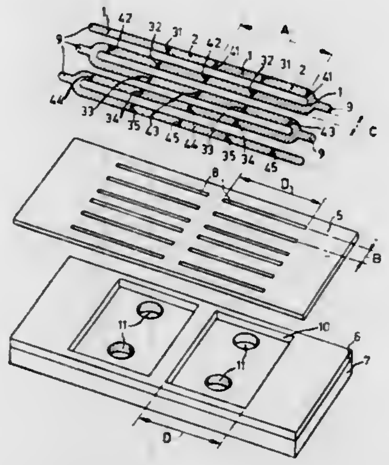
U.S. Cl. 250—331 **5 Claims**



1. A device for night vision of an object comprising: a screen with a layer of cholesteric material therein provided with one face for presentation and an opposite face for visible irradiation, a tube mounted relative to said screen for irradiation of said opposite face with circularly polarized monochromatic light, means for heating the layer of cholesteric material to the critical temperature for maximum attenuation of said circularly polarized monochromatic light, and means for focusing on said opposite face infrared rays from an object to provide an image thereof on said presentation face.

3,866,046
DEVICE FOR DIGITAL DETECTION OF OPTICAL RADIATION

Francois Desvignes, Bourg la Reine; Raymond Hybois, Chevilly Larue, and Dean Lebrun, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 5, 1973, Ser. No. 403,927
Claims priority, application France, Oct. 9, 1972, 72.35684
Int. Cl. G01j *5/02*
U.S. Cl. 250—338 **6 Claims**

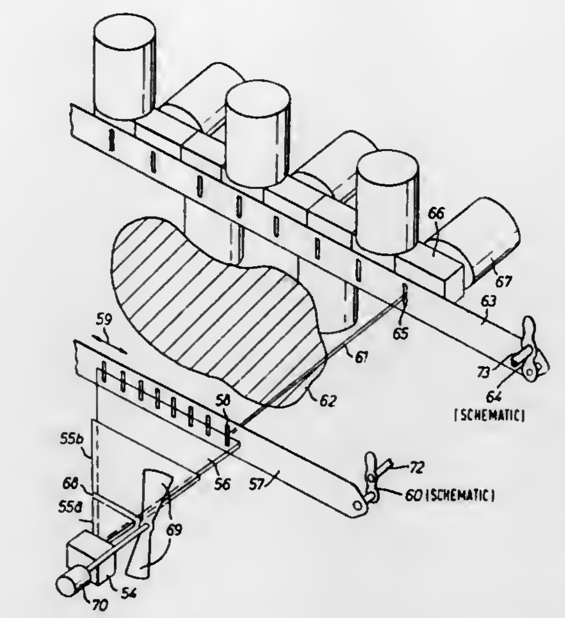


1. A device for detecting electromagnetic radiation comprising a support of thermally conductive material, a thin insulating substrate on said support, a plurality of series-connected thermocouples on said insulating substrate arranged in a pattern which comprises a plurality of straight parallel rows each constituted by a series of alternate elements made of two different electrically conductive materials, said electrically conductive materials being disposed so that the edges of adjacent elements overlap one another so as to form junctions, alternate junctions being thermally insulated and constituting the hot junctions of a thermocouple, while the junctions of either side of a hot junction, which serve as connections to the preceding thermocouple and to the succeeding thermocouple, constitute cold junctions which are in thermal contact with the said support through the very thin insulating substrate, said substrate having slits formed between and parallel to the straight parallel rows of the pattern, a slit being interposed between each two adjacent rows.

3,866,047
PENETRATING RADIATION EXAMINING APPARATUS HAVING A SCANNING COLLIMATOR

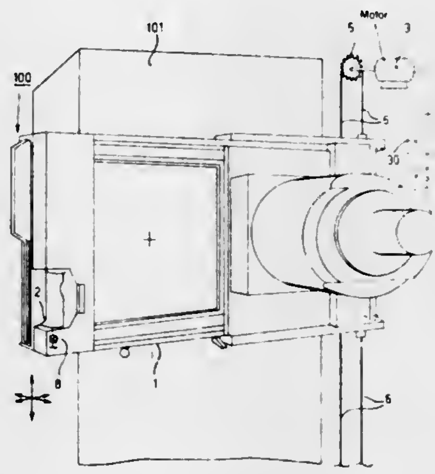
Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Hayes, Middlesex, England
Continuation-in-part of Ser. No. 212,778, Dec. 27, 1971, Pat. No. 3,778,614, which is a continuation of Ser. No. 861,538, Aug. 21, 1969, abandoned. This application Apr. 9, 1973, Ser. No. 349,198
Claims priority, application Great Britain, Aug. 23, 1968, 40317/68
Int. Cl. G01n *23/00*
U.S. Cl. 250—360 **7 Claims**

1. Apparatus for examining a body by means of penetrating radiation such as X- or γ- radiation, including source means for producing a substantially planar, sectoral-shaped swath of the radiation, directed towards the body, the plane of the swath being arranged to define a plane of interest in the body, detector means disposed to receive radiation emergent from the body, the source means and the detector means being disposed on opposite sides of an aperture in which the body can be inserted, collimator means disposed between the source means and the detector means and having a plurality of apertures formed therein through which respective finger-like beams of the radiation can pass such that the beams traverse respective linear paths in said plane of interest through the body, said detector means including a respective detector device for each of said beams, first drive means for causing said collimator means to execute a periodic, reciprocating motion in the plane of the swath to scan said beams to and fro relative to the body, and second drive means for orbiting the source means, the detector means and the collimator means around the body in the plane of said swath.



3,866,048
DRIVE SYSTEM FOR THE IMAGE SECTION OF AN X-RAY APPARATUS

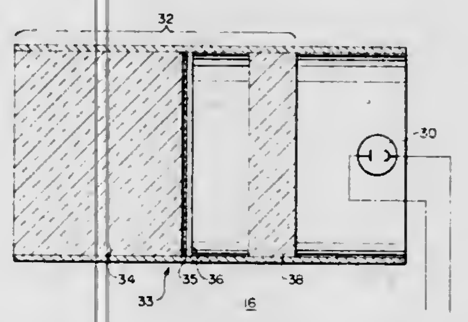
Kurt Gieschen, and Wolfgang Hecker, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 28, 1973, Ser. No. 374,513
Claims priority, application Germany, July 13, 1972, 2234398
Int. Cl. G01n *21/34*
U.S. Cl. 250—449 **11 Claims**



1. A drive system for power assisting an individual in displacing a mass which is free to move, such that the mass moves in response to manually applied forces as if it had a lower than actual mass, comprising for each direction in which such power assisting is desired:
- means for sensing the amount of force manually applied to said mass in such direction;
- integrating means responsive to said sensed amount of force for generating a voltage proportional to the time integral thereof;
- a variable speed electric motor coupled to said mass to assist in moving said mass in such direction, the velocity of said mass in such direction being proportional to the speed of said motor;
- a motor speed control circuit responsive to said generated voltage proportional to the time integral and electrically connected to said motor to drive said motor at a speed proportional to said generated voltage, whereby said motor so assists in moving said mass in such direction that said mass moves in response to said manually applied force in such direction as if it had a lower than actual mass.

3,866,049
LIGHT SOURCE

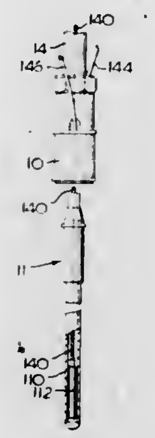
Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.
Filed Mar. 9, 1973, Ser. No. 339,570
Int. Cl. F21v *9/16*
U.S. Cl. 250—487 **10 Claims**



1. An apparatus for emitting light of a first wavelength in a predetermined direction in response to light of a second wavelength, comprising:
- transducer means for emitting light of said first wavelength when excited by light of said second wavelength;
- said transducer means including means for emitting light of said first wavelength in at least one direction other than said predetermined direction:
- said transducer means including controlled light scattering means for changing the direction of at least some of said light emitted in said one direction other than said predetermined direction to said predetermined direction and light-propagation means for reducing the amount of light of said first wavelength traveling in said predetermined direction that is scattered into other directions by said controlled light-scattering means;
- said light-propagation means including means for reducing the backscattering of light of said second wavelength.

3,866,050
REMOTELY CONTROLLED BRACHYTHERAPY UNIT

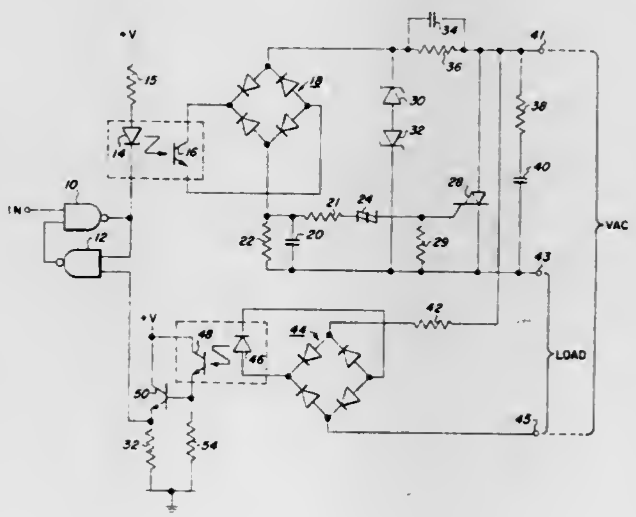
Douglas Whitfield, Stittsville, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Continuation of Ser. No. 266,507, June 26, 1972, abandoned. This application Nov. 9, 1973, Ser. No. 414,436
Claims priority, application Canada, May 15, 1972, 142103
Int. Cl. G21h *5/00;* **G21k** *1/00*
U.S. Cl. 250—497 **16 Claims**



1. A method of selectively distributing the radioactive emission from a source disposed to irradiate a given volume of material in a predetermined pattern in the body of a patient, comprising the steps of:
- disposing a source in a selected position in the body of a patient,
- oscillating said source about said selected position for a selected period of time, and
- enclosing the source ina container which is fixed relative to said body of said patient wherein the distribution of radioactive emission is non-spherical.

3,866,051
DIGITAL INTERFACE MODULE

Gerald W. Shearer, Orange, and Edward A. Wakida, Gardena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 1, 1973, Ser. No. 328,587
Int. Cl. H01j *39/12*
U.S. Cl. 250—551 **22 Claims**



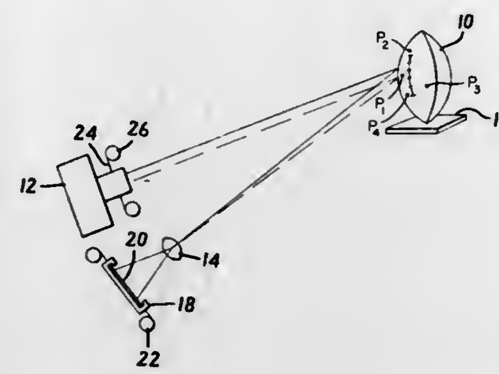
1. An interface between a digital device and a load to which a load voltage is to be applied, comprising:
- a. gating means for receiving a digital control signal from said digital device, said gating means being conditionally responsive to receipt of information from said load voltage,
- b. means, including a first optical coupler means, for transmitting said control signal to a switching means, said switching means being operable to apply said load voltage to said load,
- c. means, including a second optical coupler means for transmitting said information to said gating means, and
- d. whereby receipt of said information by said gating means allows transmission of said control signal.

3,866,052
METHODS FOR GENERATING SIGNALS DEFINING THREE-DIMENSIONAL OBJECT SURFACES

Paul L. Di Matteo, Dix Hills; Joseph A. Ross, Fort Salonga, and Howard K. Stern, Greenlawn, all of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.
Filed Nov. 2, 1973, Ser. No. 412,162
Int. Cl. H01j *39/12*
U.S. Cl. 250—558 **15 Claims**

1. A method for providing an output signal for use in defining the spatial position of a point on the surface of an object, comprising the steps of:
- a. defining a projection field extending from a first location and including at least a part of said object surface including said point;
- b. successively irradiating portions of said object surface part by successively projecting radiant energy from said first location into predetermined segments of said projection field, said segments collectively defining said projection field;
- c. making a separate record of said object surface part for each such irradiation thereof; and

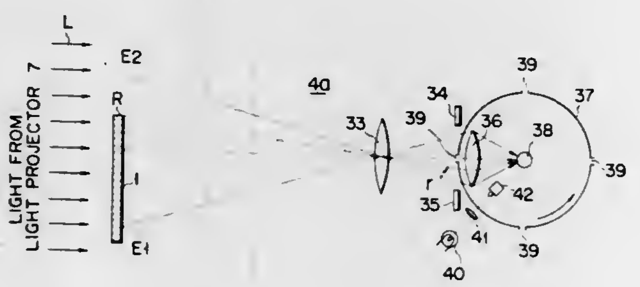
d. generating a signal indicative both of the number of said records made and of those of said records which include



said surface point, such generated signal constituting said output signal.

3,866,053
APPARATUS FOR DETECTING THE CONDITION OF AN OPAQUE BAND-SHAPED MATERIAL TRAVELLING ON A DELIVERY SYSTEM

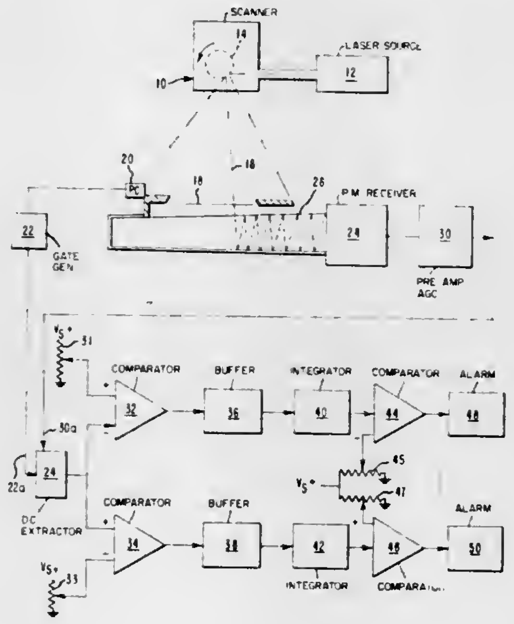
Tokumatsu Emura, Yokohama; Shigeo Kawabata, Tokyo, and Takashi Shimoma, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 348,111, April 5, 1973, Pat. No. 3,833,816. This application May 30, 1974, Ser. No. 474,593
Int. Cl. G01n *21/30*; **G06k** *11/02*
U.S. Cl. 250—561 **1 Claim**



1. An apparatus for detecting the parallelism between the lengthwise edge of an opaque band-shaped material travelling on a delivery system and the longitudinal axis of said delivery system which is set at a right angle to the cutting blade of a shearing machine to which the band-shaped material is to be delivered, comprising a first and a second detector spatially arranged along said lengthwise edge, in the direction of which it travels on the delivery system so as to detect the position of said edge, each detector comprising a first lens for focusing light from a light projector, a view mask bored with an opening in that section where light is focused by said first lens, a second lens for further focusing the light image already obtained in the view mask, a photoelectric conversion element disposed in a position where light is focused by the second lens, a scanning drum located between the view mask and the second lens and perforated with at least one scanning slit and a synchronizing pulse generator associated with said scanning drum; and the means for generating a signal indicating the parallelism of the band-shaped material comprises means for shaping the wave form of outputs from the first and second detectors, a clock pulse generator, a first and a second AND gate supplied with outputs from the wave shaping means and clock pulse generator, a subtracting gate designed to produce a signal representing the difference between the numbers of output pulses from the first and second AND gates, a counter for counting a number of pulses generated with the rotation of the cutter of the shearing machine, an AND gate supplied with carry signals from the counter and outputs from the subtracting gate, and a display unit, an upper-lower limit alarm unit and a rejection output unit, the three last-mentioned members being supplied with outputs from the last-mentioned AND gate.

3,866,054
DEFECT SIZE DISCRIMINATOR CIRCUIT FOR WEB INSPECTION SYSTEM

William Edward Wolf, Newark, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.
Filed Sept. 28, 1973, Ser. No. 401,905
Int. Cl. G01n *21/30*
U.S. Cl. 250—562 **3 Claims**



1. In an inspection system for web materials that includes electronic means responsive to means scanning the web for detecting defects in the web, said electronic means providing output signals representative of said defects, said signals having AC and DC components, the improvement comprising: a signal amplitude discriminator circuit coupled to said electronic means, said circuit including means for extracting the DC component of said signals and providing an AC signal output; first and second comparator means operating in parallel for processing said AC signal output, each comparator producing a set of logic pulse output signals, one set of logic pulse output signals from said first comparator exceeding a positive preset primary threshold value, the other set of logic pulse output signals from said second comparator exceeding a negative preset primary threshold value; first and second signal switched integrators coupled to the first and second comparator means respectively and operated by said logic pulse output signals for integrating said logic pulse output signals for the duration of each of said logic pulse output signals and for producing a signal amplitude proportional to each of said logic pulse output signals; and means coupled with each integrator means for comparing the amplitude of said integrated values of said logic pulse output signals with preselected secondary threshold values and signalling when the amplitude of said integrated values of said logic pulse output signals exceeds said preselected secondary threshold values.

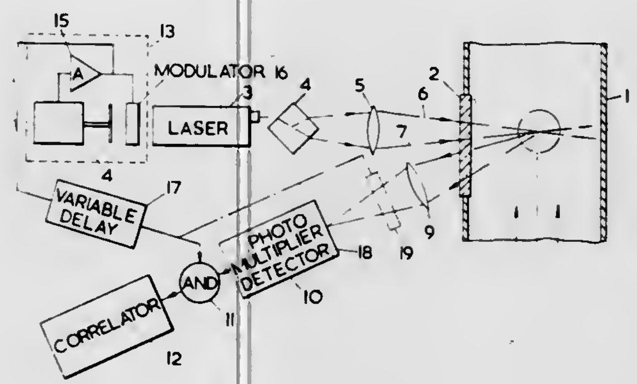
3,866,055
LASER DOPPLER VELOCIMETRY

Edward Roy Pike, Malvern, England, assignor to National Research Development Corporation, London, England
Filed Jan. 15, 1974, Ser. No. 433,533
Claims priority, application Great Britain, Jan. 17, 1973, 2416/73
Int. Cl. G01n *21/30*; **G01p** *3/36*
U.S. Cl. 250—564 **6 Claims**

1. Apparatus for measuring fluid flow comprising source of highly coherent radiation capable of giving an output beam of very short pulses of radiation,

means for splitting the output beam into twin beams,

means for causing the twin beams to intersect where required,



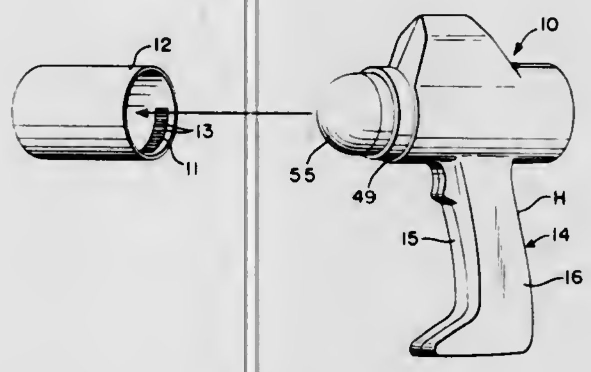
means for detecting and producing a signal representative of radiation scattered by particles moving through the intersection of the twin beams,

means for processing the signal from the means for detecting radiation to provide a Doppler signal representing the velocity of fluid flow through the said intersection, and

means for range gating the scattered radiation so that only radiation scattered from the intersection is processed.

3,866,056
SCANNING APPARATUS

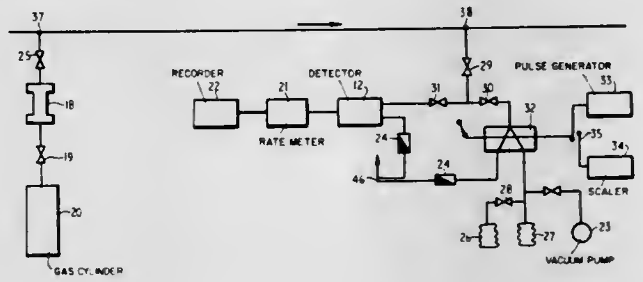
Max E. Minniear, Dayton, and Carlos B. Herrin, Bellbrook, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Dec. 17, 1973, Ser. No. 425,396
Int. Cl. G01n *21/30*
U.S. Cl. 250—566 **14 Claims**



1. Apparatus for scanning a concave coded record, comprising: a rotor, means carried by the rotor for illuminating the coded record, a light receptor, means providing a reflected light path from the coded record to the light receptor, a cover, means for movably mounting the cover for movement between one position in which the cover is in the reflected light path and another position in which the cover is out of the reflected light path, and means for driving the rotor to effect scanning of the record when the cover is in the other position.

3,866,057
METHOD AND APPARATUS FOR MEASURING GAS FLOW

Walter Thomas Spragg, Sutherland, New South Wales, and Brian William Seatonberry, Sans Souci, New South Wales, both of Australia, assignors to Australian Atomic Energy Commission, New South Wales, Australia
Filed Mar. 22, 1973, Ser. No. 344,034
Claims priority, application Australia, Mar. 24, 1972, 8410/72
Int. Cl. G21h *5/00*
U.S. Cl. 250—303 **14 Claims**



1. A method of determining the mass flow rate of gas in a pipeline or duct comprising the steps of injecting into the pipeline at an upstream point a first charge of radioactive tracer, extracting for a period of time a sample of the gas from the pipeline at a substantially constant flow rate, the extraction being at a point sufficiently far downstream that the tracer is distributed substantially homogeneously over the cross-section of the pipe, said period substantially covering the time taken for the tracer to pass the downstream point, recording said period, mixing said sample to a uniform concentration of tracer, placing at least part of said mixed sample in a fixed volume radioactivity detector and determining a count rate corresponding thereto whereby the mass of gas in the pipeline passing the point of complete mixing of the tracer during the recorded time period may be determined by comparing the said count rate with a standard count rate obtained by placing in said detector a standard sample obtained from the dilution of a second charge of radioactive tracer, the total activity of which has a known relation to that of said first charge, in a known standard volume.

3,866,058
POWER-GENERATING SYSTEM AND METHOD

Gerhard Lenssen, Bernkastel, Germany, assignor to Rheinisch-Westfalisches Elektrizitatswerk AG, Essen, Germany
Filed July 23, 1973, Ser. No. 381,434
Claims priority, application Germany, July 22, 1972, 2236059; Sept. 8, 1972, 2244084
Int. Cl. F02c *3/12*
U.S. Cl. 290—52 **8 Claims**

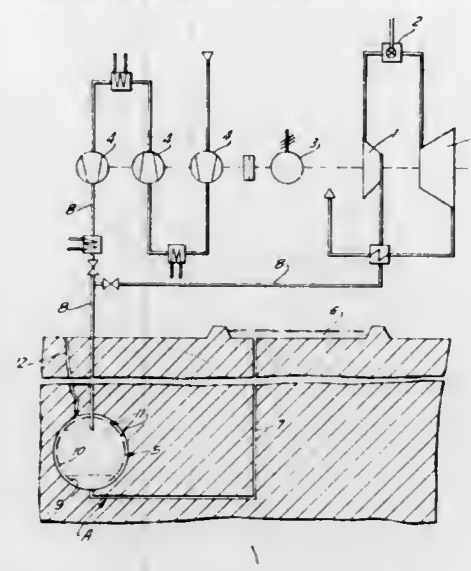
1. A power-generating system including an electrical generator, a gas turbine connected to said generator, a compressor connected to said turbine and a subterranean air-storage chamber connectable to said gas turbine at least intermittently for supplying air thereto under pressure, the improvement wherein said subterranean chamber comprises:

a cavern below the ground;

a downwardly open bell-shaped generally impermeable hood received in said cavern and supported thereagainst while having a free lower edge spaced from the bottom and lateral walls of said cavern

means communicating with the interior of said hood for feeding air to and withdrawing it from said chamber;

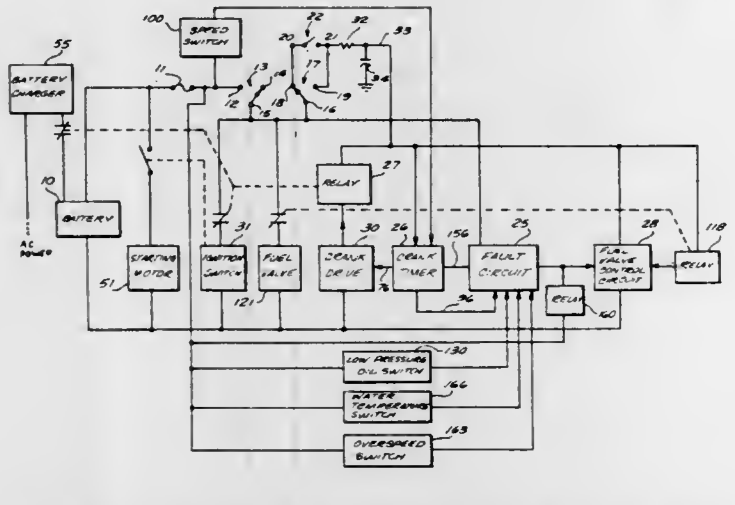
a reservoir containing a liquid to a level above the top of said chamber and hydraulically connected to said cavern for applying pressure to air in said hood upon displacement of the liquid by introduction of air into said chamber; and means for maintaining the level of said liquid in said hood above the mouth thereof in a condition of said chamber



fully charged with air and below the top of said hood in the fully discharged condition of said chamber.

3,866,059
ENGINE STARTING CONTROL SYSTEM

Walter C. Przywozny, Whippany, N.J., assignor to Automatic Switch Company, Florham Park, N.J.
Filed Nov. 12, 1973, Ser. No. 415,267
Int. Cl. F02n *11/00*
U.S. Cl. 307—10 R **6 Claims**

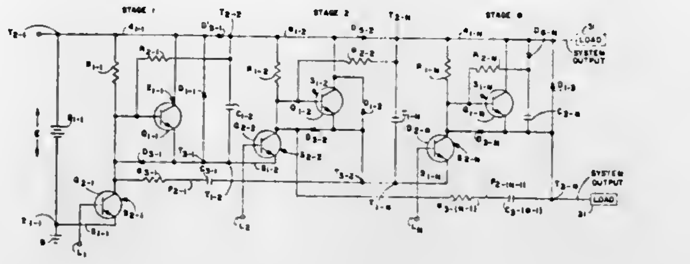


1. A control system for an engine having a starting motor, a battery, and an ignition switch for connecting the battery to the motor to crank the engine, the system comprising:
- a. means for providing a start signal,
- b. a solid state counter for providing a plurality of periodic pulses in response to a single start signal,
- c. means responsive to said pulses for closing and opening the ignition switch a plurality of times so as to energize and deenergize the starting motor to periodically crank the engine, and
- d. means responsive to a predetermined number of pulses from said counter for terminating the output of further pulses from said counter and hence for terminating engine cranking.

3,866,060
ELECTRIC POWER SOURCE

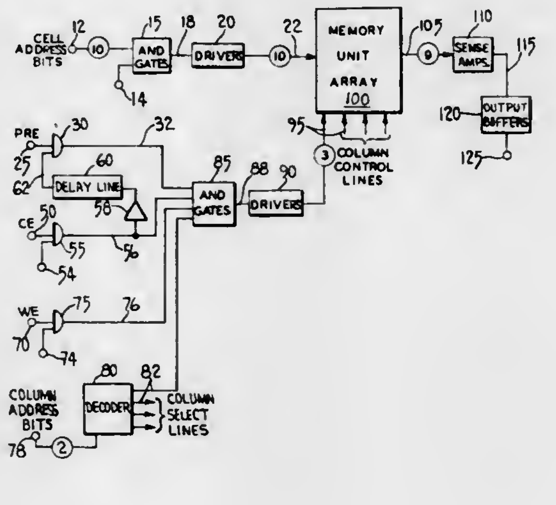
Lawrence H. Bannister, Dedham, and Richard H. Baker, Bedford, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Dec. 19, 1973, Ser. No. 426,269
Int. Cl. H02m *3/00*
U.S. Cl. 307—43 **23 Claims**

1. An electric system that comprises a plurality of N stages connected in cascade, each stage including supply voltage means connected along two alternate conductive paths to an electric output terminal of the stage, thence to the next succeeding stage and, eventually, to the electric output terminal of the Nth stage, switch means in each stage being connected and operable to determine which of the two paths is conductive at a particular state of system operation; and feedback means connected between said stages and operable to control, in part, said switch means.



3,866,061
OVERLAP TIMING CONTROL CIRCUIT FOR CONDITIONING SIGNALS IN A SEMICONDUCTOR MEMORY

Samuel S. Wen, Teaneck, and Donald J. Nelson, Sayreville, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.
Filed Aug. 27, 1973, Ser. No. 391,963
Int. Cl. H03k *19/08, 1/00*
U.S. Cl. 307—208 **5 Claims**



1. A timing circuit for precisely controlling the time during which first pulses overlap second pulses on a different conductor comprising:

first gating means for controlling a series of first pulses on a first conductor;

second gating means for controlling a series of second pulses on a second conductor, each of the second pulses overlapping the first pulses;

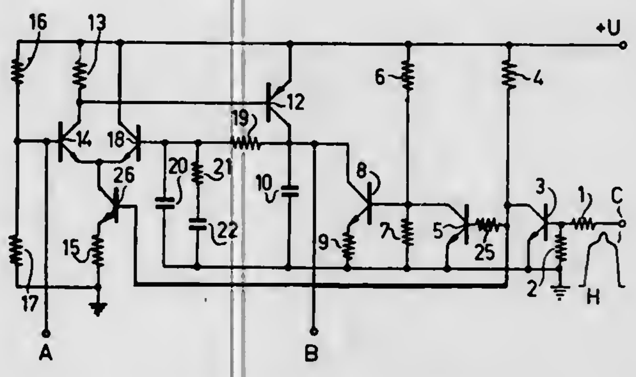
inverting means coupled to said second gating means for providing the inverse of the second pulses;

delay means coupled to said inverting means for delaying the inverse of the second pulses for a predetermined interval; and

connecting means for delivering the delayed inverse of the second pulses to said first gating means thereby controlling the conduction of said first gating means and providing resultant pulses which overlap the second pulses for a predetermined time.

3,866,062
CIRCUIT ARRANGEMENT FOR SYNCHRONISING OF THE LINE DEFLECTION IN A TELEVISION RECEIVER WITH A SAWTOOTH SIGNAL HAVING CONSTANT MEAN VALUE AND SLOPE

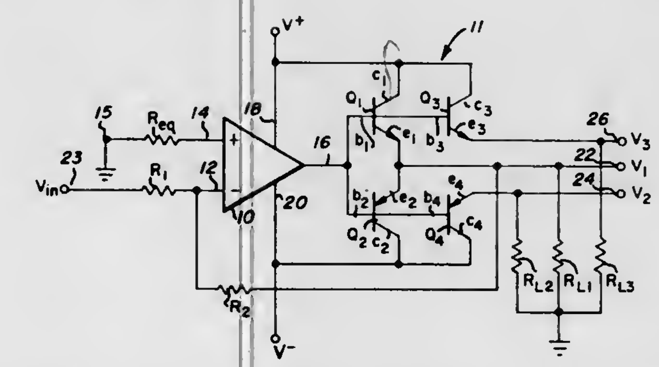
Hans-Heinrich Feindt, Schenefeld Kurzer Kamp, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 240,014, March 31, 1972, abandoned. This application Oct. 2, 1973, Ser. No. 402,843
Claims priority, application Germany, Apr. 28, 1971, 2120772
Int. Cl. H03k *4/08*
U.S. Cl. 307—228 **4 Claims**



1. A circuit for producing a sawtooth signal from a television horizontal flyback pulse, said circuit comprising limiting means having an input means for receiving said flyback pulse and an output means for supplying an amplitude limited flyback pulse; a capacitor; and means for producing said sawtooth signal with a substantially constant mean value and flyback period slope regardless of duration changes in said flyback pulse comprising means coupled to said capacitor and said output means for discharging said capacitor during the occurrence of said flyback period and charging said capacitor during the horizontal scanning period.

3,866,063
IMPROVED RECTIFYING CIRCUIT

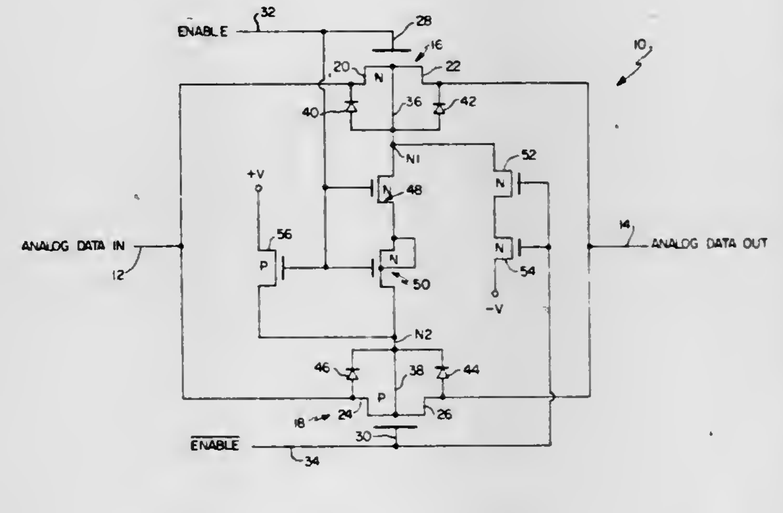
David K. Long, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Oct. 23, 1973, Ser. No. 408,682
Int. Cl. H03k *5/08;* **H03f** *3/18, 1/34*
U.S. Cl. 307—230 **5 Claims**



1. A rectifying circuit having first, second, and third output terminals comprising:
- a. operational amplifying means responsive to an input signal and operative to develop an amplified signal commensurate therewith, which includes an inverting input terminal, and a feedback circuit coupled between said inverting input terminal and the first output terminal;
- b. a first NPN transistor having a base element coupled to the output of said operational amplifying means, a collector element for connection to a power supply of positive potential and an emitter element connected to the first output terminal;
- c. a first PNP transistor having a base element coupled to the output of said operational amplifying means, a collector element for connection to a power supply of negative potential, and an emitter element connected to the first output terminal, said first NPN transistor and said first PNP transistor being operative to develop a non-rectified output signal at the first output terminal corresponding to said amplified signal;
- d. a second NPN transistor having a base element coupled to the output of said operational amplifying means, a collector element for connection to said power supply of positive potential and an emitter element connected to the second output terminal, said second NPN transistor being operative to develop a first rectified output signal corresponding to positive-going polarities of said signal;
- e. a second PNP transistor having a base element coupled to the output of said operational amplifying means, a collector element for connection to said power supply of negative potential and an emitter element connected to said third output terminal, said second PNP transistor being operative to develop a second rectified output signal corresponding to negative-going polarities of said amplified signal; and
- f. a pre-biasing circuit means including a third NPN transistor having a base element coupled to the output of said operational amplifying means, a collector element connected to the base of said first NPN transistor and an emitter element connected to the base of said first PNP transistor.

3,866,064
CMOS ANALOG SWITCH

Charles Roy Gregory, Melbourne, and William Harold White, Indialantic, both of Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Aug. 22, 1973, Ser. No. 390,499
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 **10 Claims**



6. A CMOS switch having an input terminal and an output terminal comprising:
- a pair of complementary metal oxide semiconductor devices dielectrically isolated having gates and bodies and being connected in parallel between said input and output terminals by their sources and drains; and
- a first means connected to said pair's bodies for providing a conduction path between said bodies in response to appropriate gating signals applied to said first means and for limiting the maximum voltage between said source and said bodies of said pair.

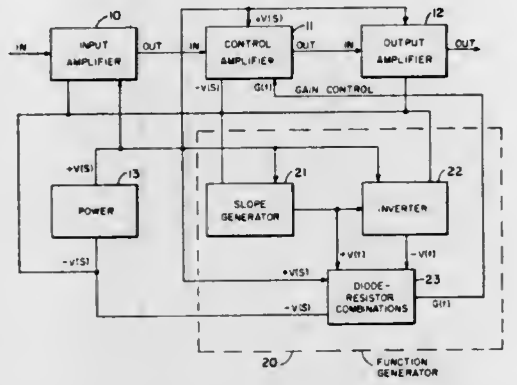
3,866,065
WAVEFORM CONTROL CIRCUIT USING GAIN-CONTROLLED AMPLIFIER STAGE

Pat H. McIngvale, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 298,194, Oct. 17, 1972, abandoned. This application Feb. 21, 1974, Ser. No. 444,580

Int. Cl. H03k *1/14*

U.S. Cl. 307—260 **3 Claims**



1. An electrical waveform control circuit employing a gain controlled amplifier stage wherein said stage has at least a gain control input, a power input, and signal input and output terminals, said circuit including: power supply means having a positive terminal and a negative terminal; function generating means connected to said power supply means and including means connected between said power supply means and said gain control input of said amplifier stage, wherein said function generating means includes means for generating a wave linearly increasing from a value less than the potential of the positive terminal of said power supply up to the value of said potential, combining means having inputs and an output; means connected to said means for generating for providing a wave linearly decreasing from said potential to a value less than said potential, said means connected between said power supply means and said gain control input including first and second sets of series-connected resistors and diodes, each set including first and second subsets of resistors, each subset in a set having the same number of resistors and having a common connection at one end of said resistors, said common connections of said first subsets being respectively connected to positive and negative terminals of said power supply means, said common connections of said second subsets being connected respectively to said means for generating a wave linearly increasing and said means for generating a wave linearly decreasing, the opposite ends of said resistors in said subsets being connected in pairs, one from each first and second subset in a set, to one end of respective diodes, said first and second sets further including third and fourth subsets of resistors with one end of each of said resistors in said third and fourth subsets being connected to a respective opposite end of said diodes, the other ends of said resistors in said third subsets being connected in common to one input of said combining means and to bias means connected to the negative terminal of said power supply means, the other ends of said resistors of said fourth subset being connected to another input of said combining means, and the output of said combining means connected to said gain control input of said amplifier stage.

3,866,066
POWER SUPPLY DISTRIBUTION FOR INTEGRATED CIRCUITS

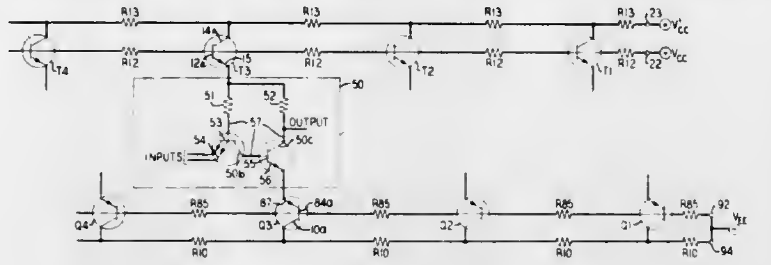
Richard Alan Pedersen, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 16, 1973, Ser. No. 379,259

Int. Cl. H01l *19/00*

U.S. Cl. 307—297 **13 Claims**

1. An arrangement for distributing a predetermined potential to individual components in an integrated circuit comprising a body of semiconductive material, said arrangement comprising means internal to said body of semiconductive material for connecting each of said components to a source substantially at said potential; said arrangement characterized by a plurality of distribution devices each having a first terminal, a second terminal, a third terminal, a p-n junction disposed between said first and third terminals and a current path between said second and third terminals; first means internal to said body of semiconductive material for connecting the first terminal of each of said devices to a first supply potential point, said point being adapted for connection to said source; means including said first means for forward biasing said p-n junction; and means for connecting the third terminal of each of said devices to at least one of said components, whereby current for each of said components is provided via said current path of a respective one of said devices.



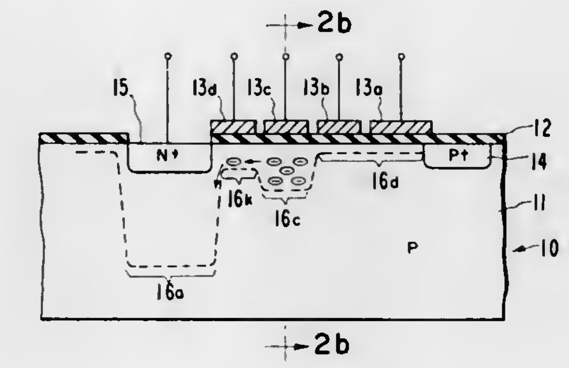
3,866,067
CHARGE COUPLED DEVICE WITH EXPOSURE AND ANTIBLOOMING CONTROL

Gilbert F. Amelio, Saratoga, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 21, 1973, Ser. No. 362,131

Int. Cl. H01l *17/00*

U.S. Cl. 307—311 **2 Claims**



1. The method of operating a light sensitive element comprising a first region of semiconductor material overlaid by a first electrode, said light sensing element being capable of containing a charge packet and being part of a charge coupled device which comprises:

allowing charge accumulated in the light sensing element to transfer to a charge sink region by lowering the potential in a first intermediate region in the semiconductor material between said light sensing element and the charge sink region;

raising the potential in said first intermediate region of semiconductor material between said light sensing element and said charge sink region to a level selected to allow a given amount of charge to accumulate in said light sensing element and any additional charge formed in said light sensing element to transfer to said charge sink region;

transferring, at the end of a given time, the charge accumulated in said light sensing element to an adjacent region of semiconductor material by lowering the potential of said adjacent region of semiconductor material and the potential of a second intermediate region of semiconductor material between said adjacent region of semiconductor material and the light sensing element to levels beneath the potential of said light sensing element; and

raising the potential of said second intermediate semiconductor material to a potential above the potential of said adjacent region of semiconductor material on the completion of the transfer of the charge accumulated in said light sensing element to said adjacent region of semiconductor material.

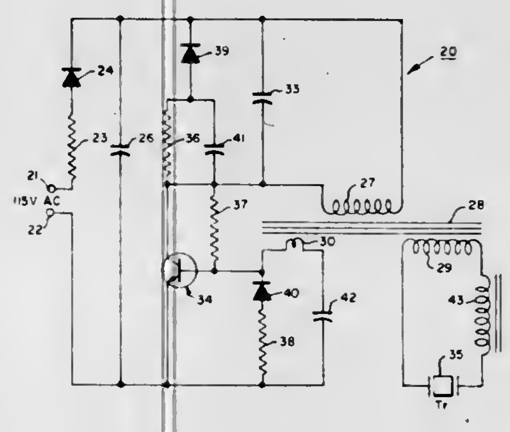
3,866,068
FREQUENCY VARYING OSCILLATOR CIRCUIT VIBRATORY CLEANING APPARATUS

Joseph Krenicki, Danbury, and Raymond L. Hunicke, Roxbury, both of Conn., assignors to Lewis Corporation, Woodbury, Conn.

Filed Mar. 20, 1974, Ser. No. 452,838

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **8 Claims**



1. An oscillator circuit for sonic and ultrasonic cleaning apparatus comprising:

A. a transformer having a primary winding, a secondary winding, and a feedback loop winding;

B. a substantially unfiltered rectifier connectable to a source of alternating line current, and delivering direct current pulses to the primary winding of said transformer;

C. first capacitance means connected across the primary winding of said transformer;

D. a network incorporating a second capacitance means in series with a blocking diode together connected in parallel with said first capacitance means providing differing effective values of capacitance in parallel with said primary winding during positive and negative half cycles of said alternating line current;

E. said primary winding, said first capacitance means and said parallel network together presenting non-linear impedance characteristics to said rectifier;

F. a piezoelectric transducer connected to said secondary winding of said transformer and also forming part of said cleaning apparatus; and

G. switching means connected to the primary winding of said transformer and the feedback loop winding of said transformer, thereby producing a circuit energizing said transducer with a pulse of oscillatory electrical energy having a plurality of different frequency components in response to each direct current pulse delivered to said primary winding, and providing automatic and controllable shifting between low frequency dominance and high frequency dominance during each said pulse.

3,866,069
HIGH VOLTAGE GENERATING DEVICE

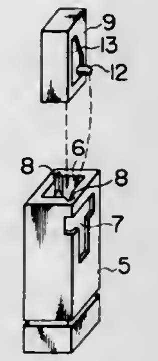
Akira Ishii, Katano; Kaneichi Kondo, Settsu, and Kenichi Uchibori, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 4, 1973, Ser. No. 394,270

Claims priority, application Japan, Sept. 7, 1972, 47-105007[U]; Nov. 20, 1972, 47-134217[U]; Dec. 13, 1972, 47-143507[U]

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.7 **2 Claims**



1. A high voltage generating device comprising:

a. an outer casing made of a synthetic resin, said outer casing having an open end, a window with a stepped portion located in one side thereof and a pin groove in an internal surface of said outer casing connecting said open end to said window,

b. a piezoelectric element located within said outer casing at one end thereof,

c. an inner casing made of a synthetic resin slidably inserted within said outer casing, said inner casing having a bore with a spring end retaining guide formed therein and a window with an inclined portion located in one surface of said inner casing,

d. an impact element having an impact pin extending from the periphery thereof, said impact element being slidably located within said inner casing with said impact pin projecting through the windows in said inner and outer casings, said impact pin being guided by said pin groove during assembly of said inner and outer casings to the window in said outer casing,

e. an impact spring positioned within the bore of said inner casing with one end secured in said spring end retaining guide and the other end connected to said impact element, said impact spring being twisted to provide it with a torsional restraining force, and

f. a return spring positioned within said outer casing between the piezoelectric element and said inner casing.

3,866,070
TURBO-GENERATOR OF THE RADIAL SLOT TYPE

Kristian Dahl Madsen, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 18, 1972, Ser. No. 315,870

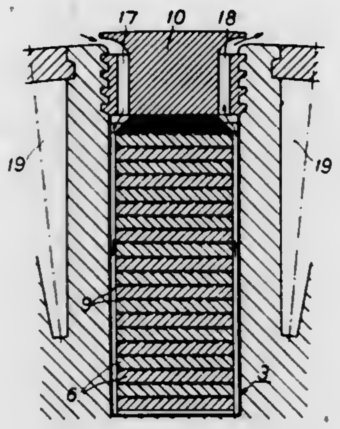
Claims priority, application Sweden, Dec. 27, 1971, 16611/71

Int. Cl. H02k *3/48*

U.S. Cl. 310—214 **5 Claims**

1. Turbo-generator of the radial slot type of at least 100 MVA and with a speed of at least 1,500 r.p.m., comprising a stator and a rotor surrounded by the stator and having an iron core and a field winding supported by said iron core, the field winding having a plurality of coils per pole, said rotor body having recesses therein of substantially the same form as the coils, each coil being arranged in a corresponding recess, each recess comprising two axially running winding slots, intended for one coil side each and furnished with slot wedges, and two circumferentially running winding slots one arranged at each end of the rotor and each intended for one coil end, each of said circumferentially running winding slots having toothed

walls, and a plurality of slot wedges in each of said circumferentially running winding slots having toothed side surfaces in engagement with the toothed walls of the slots which together absorb at least the greater part of the centrifugal forces acting on a coil end which lies in the slot, said recess having a corner part formed by one end of an axially running winding slot and one end of a circumferentially running winding slot, at least one of said slot ends having an expanded top part dimensioned to permit radial insertion of a slot wedge intended for the remaining part of the winding slot to such a depth that the toothed surfaces of said slot wedge will be on a level with the corresponding toothed walls of the winding slot.



3,866,071
ELECTRIC MACHINES

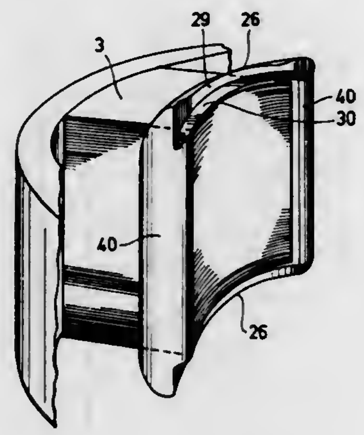
Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Continuation of Ser. No. 254,186, May 17, 1972,. This application Oct. 31, 1973, Ser. No. 411,433

Claims priority, application Sweden, May 18, 1971, 6445/71

Int. Cl. H02k *1/04*

U.S. Cl. 310—43 **4 Claims**



1. An electric machine comprising a stator assembly and a rotor supported for rotation interiorly of the stator assembly, said stator assembly including a relatively yielding stator yoke, at least a pair of radially inwardly extending poles having an arcuate configuration at the inner end faces to define a rotor recess conforming to the contour of the rotor to provide a small air gap therebetween, cup-shaped bearing support means adjacent opposite axial ends of the stator assembly and a molding member consisting of a hardening compound for supporting the poles and being formed with arcuate guide surfaces at opposite axial ends for the cup-shaped bearing support means thereby to support the rotor coaxially with respect to the rotor recess defined by the inner faces of the poles, said molding member circumscribing the poles adjacent the radially inner end faces thereof and having arcuate portions at opposite axial ends of the poles of a predetermined configuration defining transversely oriented abutment and aligning faces for said bearing support means, said molding member having portions connecting the arcuate guide portions at opposite ends operable to provide means for interconnecting the laminations of the poles and to guide said field windings.

3,866,072
POWER BOOST AUXILIARY DIODE ASSEMBLY FOR VEHICLE ALTERNATOR

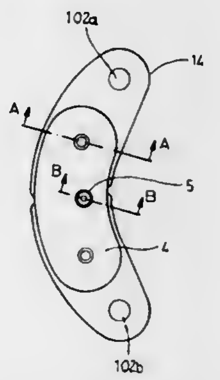
Yukio Nagai, Kariya, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Sept. 28, 1973, Ser. No. 401,579

Claims priority, application Japan, Oct. 2, 1972, 47-114

Int. Cl. H02k *11/00*

U.S. Cl. 310—68 D **5 Claims**



1. A power boost attachment for a three-phase star connected alternating current generator feeding a three-phase rectifier bridge, comprising a series-connected pair of diodes poled in the same direction with a common connection connectable to the center junction of the star connected winding of said generator and their other terminals connectable to positive and negative terminals of said rectifier bridge, so as to contribute to the output of said bridge when said center junction has an alternating voltage, all so constructed that:

said diodes (**20***a*,**20***b*) are mounted respectively on conducting cleat plates (**2***a*,**2***b*);

said conducting cleat plates are held in juxtaposition, except for a gap between them, by being held on the same side of an insulating plate (**3**) to which one connection (**10′**) of each diode penetrates, the other connection (**1***a*) of said diodes being made to the respective conducting plates;

a conducting foil or layer (**4**) is provided on said insulating plate (**3**) flush with the surface thereof on the side opposite said conducting cleat plates (**2***a*,**2***b*) so as to connect electrically the respective terminals of said diodes passing through said insulating plate (**3**);

electrically conducting tubular connection means (**5**) provided with a tubular extension projecting substantially beyond the plane of said insulation plate are provided in said gap, mounted on said insulating plate (**3**), for making electrical connection between said conducting foil or layer (**14**) and said center junction of said star connected winding, and

means (**102***a*, **102***b*) are provided on said conducting cleat plates (**2***a*,**2***b*) to facilitate direct connection of each cleat plate to one terminal of the output of said bridge rectifier.

3,866,073
COMPOSITE CONFORMABLE SUPPORT STRUCTURE ELEMENT

Niko V. Gjaja, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 152,679, June 14, 1971, abandoned. This application May 3, 1973, Ser. No. 356,710

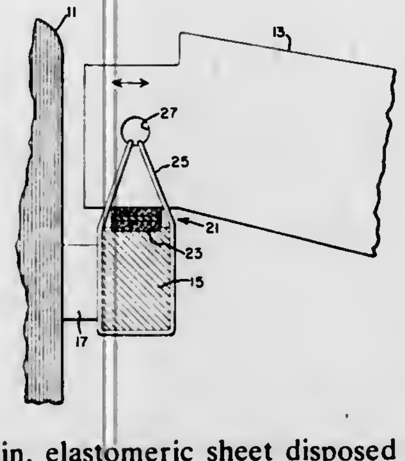
Int. Cl. H02k *5/24;* **B32b** *27/38*

U.S. Cl. 310—260 **7 Claims**

1. In combination with a support system in the end winding region of a dynamoelectric machine, and disposed therein; at least one spacer element for allowing limited movement in the axial direction and having substantially zero compressibility in the radial direction comprising:

a first relatively thick, incompressible, ply of a resin impregnated felt strip;

a second relatively thick, incompressible ply of a resin impregnated felt strip; and,



a relatively thin, elastomeric sheet disposed between said first and second incompressible plies and bonded thereto, whereby compressive stressing in a plane normal to the element is resisted while movement in the plane of the element is allowed.

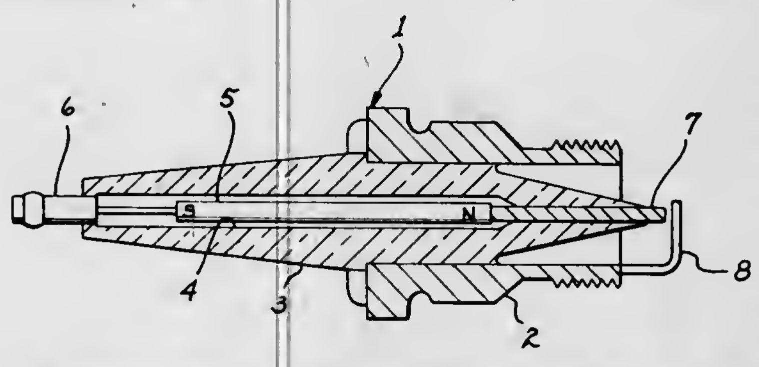
3,866,074
MAGNETIC SPARK SPREADER

David A. Smith, R.R. 1, Box 707, Willcox, Ariz. 85643

Filed July 23, 1973, Ser. No. 381,898

Int. Cl. H01t *13/42, 13/04*

U.S. Cl. 313—118 **6 Claims**



1. A spark plug for use in internal combustion engines, said spark plug being electrically connected to a source of periodically generated electrical current discharges, said spark plug comprising in combination:

A. an anode electrode connected to the source of electrical current discharges and said anode electrode extending from one end of said spark plug in juxtaposition with the longitudinal axis thereof;

B. a cathode electrode extending from said one end of said spark plug, said cathode electrode being formed in an L and having a first leg of the L parallel to but laterally displaced from the extending end of said anode electrode and a second leg of the L transverse to but displaced from the extremity of said anode electrode such that a current discharge from the source produces an electrostatic field intermediate said anode and cathode electrodes which field is generally parallel to said anode electrode;

C. an insulator for electrically shielding said anode electrode from said first leg of said cathode electrode;

a bushing for supporting said second leg of said cathode electrode, said bushing being grounded to the internal combustion engine; and

E. a magnet means disposed in proximity to said anode electrode for establishing a magnetic field parallel to said anode electrode and intersecting said second leg of said cathode; whereby, the electrostatic field intermediate said anode and said cathode is parallel with the magnetic field, which fields, in combination, produce an arc streamer having a helical locus and a resulting parabolic arc plasma.

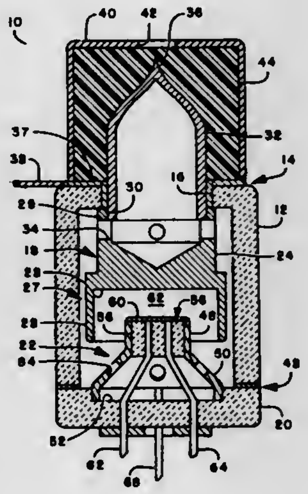
3,866,075
VACUUM TYPE TRIGGER DISCHARGE TUBE WITH CUP SHAPED ANODE

John T. Grissom, and Leslie A. Shope, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 9, 1974, Ser. No. 468,316

Int. Cl. H01j *19/68*

U.S. Cl. 313—178 **12 Claims**



1. A long-life trigger discharge tube comprising a gas impervious, generally tubular ceramic body; a ceramic, gas impervious wall sealed to and closing one end of said body; an anode assembly supported at the other end of said ceramic body, said anode assembly including a cup-shaped anode member disposed within said body having a central circular planar portion surrounded by a tubular rim portion extending into said body and facing towards said first mentioned end, an electrically conductive tubular gas impervious member coupling the interior of said body and said anode member through said ceramic body to the exterior thereof, and means for sealing said tubular member to said other end of said ceramic body and for electrically connecting to said anode member through said tubular member; a cathode assembly supported on said ceramic end wall and including a tubular cathode of smaller diameter than said anode member rim portion extending from said wall and terminating partially within and overlapping said anode rim portion spaced from said anode planar portion by a discharge gap, a ceramic cylinder positioned within said cathode having a planar surface facing said anode planar portion and contiguous with the terminating portion of said cathode, a trigger film disposed on said cylinder surface, at least one trigger electrode penetrating said ceramic cylinder to said surface and into at least partial contact with said trigger film, and means for electrically coupling said cathode and said trigger electrode to the exterior of said ceramic body through said wall.

3,866,076
ELECTRIC DISCHARGE TUBE, COMPRISING A HIGHLY LOADED ANODE

Hendrikus Willemina Evers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

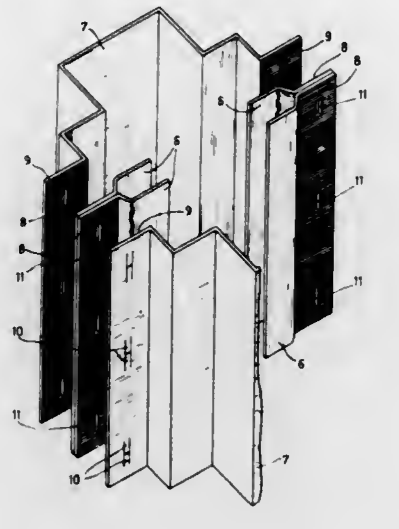
Filed Nov. 23, 1973, Ser. No. 418,583

Claims priority, application Netherlands, Dec. 29, 1972, 7217782

Int. Cl. H01j *1/46, 21/10*

U.S. Cl. 313—293 **3 Claims**

1. An electronic tube comprising an anode assembled of at least one inner anode member exposed to a higher thermal load and an outer anode member exposed to a lower thermal load, said inner anode member having surface portions placed against corresponding surface portions of said outer anode member and, at a temperature of about 500 degrees centrigrade, said surface portions of the inner anode member having a coefficient of thermal radiation which exceeds the coefficient of the facing surfaces of the outer anode member by at least 60 per cent.



3,866,077
ELECTRON EMITTERS

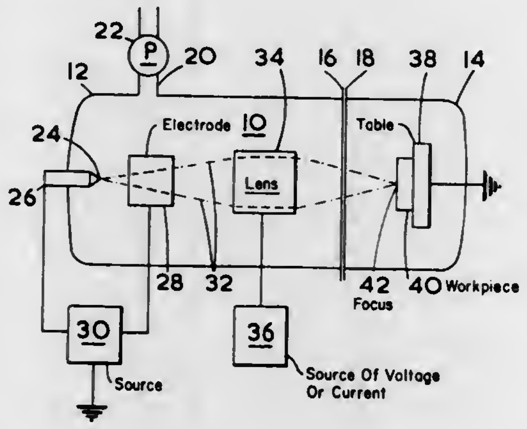
Francis Sidney Baker, Old Harlow; Charles Richard Harrison, Hovingham; Anthony Raymond Osborn, Hertford, and John Williams, Broxbourne, all of England, assignors to National Research Development Corporation, London, England

Filed July 5, 1972, Ser. No. 269,139

Claims priority, application Great Britain, July 9, 1971, 32329/71

Int. Cl. H01j *1/16*

U.S. Cl. 313—336 **11 Claims**



1. An electronic device consisting of an enclosure capable of enclosing a vacuum, a point source which can emit electrons arranged therein, which source consists essentially of at least one carbon filament having an emitting point, emission control means which can cause electrons to be emitted from the source by field emission, and means for receiving said electrons.

3,866,078
IMAGE ORTHICON

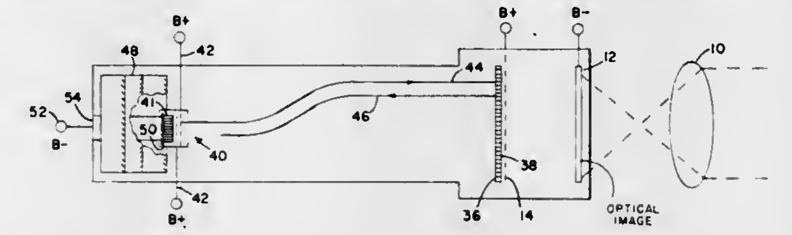
Ralph L. Norman, 3644 Marymount Dr., N.W., Huntsville, Ala. 35810; Jerry W. Hagood, 307 Mountain Gap Rd., S.E., Huntsville, Ala. 35803, and Joe Shelton, 400 Tatom St., N.W., Huntsville, Ala. 35805

Filed Oct. 26, 1973, Ser. No. 409,975

Int. Cl. H01j *31/26*

U.S. Cl. 313—377 **5 Claims**

1. In an image orthicon tube for converting impinging optical images into video signals, the improvement comprising: an electron gun for emitting an electron scan beam at ambient temperatures, said gun including a field effect electron emitter having several million parallel emitting fibers per square centimeter of emitting surface area, with the emitting ends of said fibers being terminated in a plane across the emitter surface, an insulating oxide encompassing and separating said fibers, and a conductive backing plate adjoining first ends of said fibers for applying an electric potential thereto; a field effect emitter charge carrier matrix target sheet disposed in spatial alignment with said gun, said target including a thin sheet of metal-oxide composite having several million parallel metal fibers per square centimeter of surface area and disposed substantially coaxial and parallel with said electron gun emitting fibers, said metal fibers being disposed normal to the surfaces of said target sheet, an oxide insulator between respective metal fibers for enhancing face-to-face conduction through the sheet and retarding lateral conduction through the oxide, and a thin oxide coating on a first surface of said target sheet for providing secondary electron emission when stimulated by electron impact; and a photocathode disposed in alignment with said first surface of said target sheet, said photocathode emitting photoelectrons toward said target when stimulated by an input optical signal.



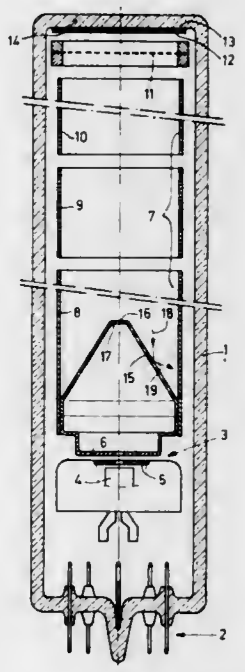
3,866,079
TELEVISION CAMERA TUBE IN WHICH THE DETRIMENTAL EFFECT OF THE RETURN BEAM IS COUNTERACTED

Theodore G. Schut, Emmasingel, Eindhoven, Netherlands

Continuation of Ser. No. 265,259, June 22, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,563

Int. Cl. H01j *31/38, 25/00*

U.S. Cl. 313—389 **1 Claim**



1. A television camera tube comprising ~~an~~ evacuated envelope having a radiation transparent end wall, a transparent electrically conductive layer on said end wall, a photoconductive layer on said electrically conductive layer on which a potential distribution is formed on the surface thereof remote from said electrically conductive layer by projecting an optical image on said layer, an electron gun having a cathode spaced from and axially aligned with said photoconductive layer for producing an electron beam, deflection means for scanning said photoconductive layer with the electron beam for periodically reducing the potential distribution on the surface of said photoconductive layer to cathode potential, and a hollow cylindrical electrode between the electron gun and the photoconductive layer, said hollow cylindrical electrode having a diaphragm integral therewith with an aperture therein for restricting the cross-section of the electron beam, the surface of said diaphragm facing said photoconductive layer extending away from said layer and forming an acute angle with the axial direction for deflecting returned electrons from said photoconductive layer, said diaphragm being a truncated cone having its smaller end nearer the photoconductive layer.

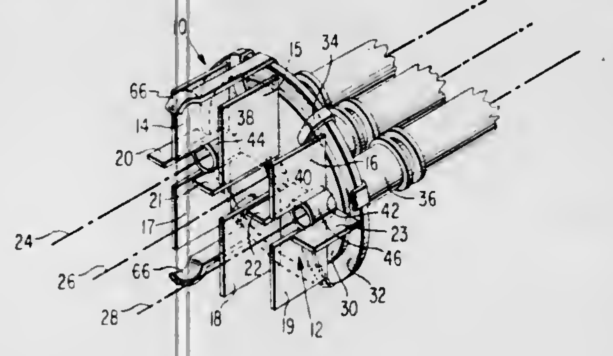
3,866,080
INLINE ELECTRON GUN HAVING MAGNETICALLY PERMEABLE PLATES FOR ENHANCING CONVERGENCE OF ELECTRON BEAMS

William Henry Barkow, Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 8, 1973, Ser. No. 386,639

Int. Cl. H01j *29/76, 31/20, 29/48*

U.S. Cl. 313—412 **1 Claim**



1. In an inline electron gun for a cathode ray tube including means for generating and directing three electron beams along substantially coplanar paths, the improvement comprising:

four first magnetically permeable plates coplanar with said electron beams and with each other being located at a beam exit from said gun between each of said paths and outwardly of the outermost paths for independently enhancing a magnetic field for deflecting said beams perpendicularly to the plane of said paths; and

six second magnetically permeable plates all perpendicular to the plane of said beams being located at a beam exit from said gun, arranged in parallel pairs, the plates of ech pair being coplanar to each other and each pair having one plate on each side of a beam for independently enhancing another magnetic field for deflecting said beams within the plane of said beams.

3,866,081
CATHODE RAY GUN HAVING FIRST AND SECOND GRIDS WITH ORTHOGONAL APERTURES

Jan Hasker, and Jacobus Johannes Maria Joseph De Klerk, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

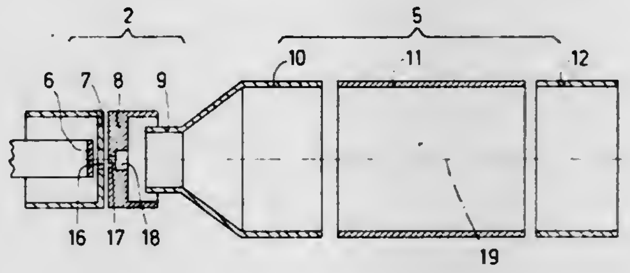
Filed June 21, 1973, Ser. No. 372,402

Claims priority, application Netherlands, June 24, 1972, 7208728

Int. Cl. H01j *29/56, 29/62*

U.S. Cl. 313—449 **5 Claims**

1. A cathode-ray tube comprising an astigmatic electron gun having centered along an axis: a cathode, a first grid, a second grid and a third grid for producing an electron beam, a focusing lens and a target upon which the electron beam impinges with a narrow elongate spot, said first grid having a narrow elongate aperture the length direction of which is substantially parallel to the vertical scanning direction, so that an astigmatic lens is present in the electron gun for producing a structure of the electron beam in which the same is focused in a point at some distance in front of the target on the side of the electron gun with respect to electron paths in an imaginary plane through the length direction of the spot in the center of the target and the said axis, and is focused substantially on the target with respect to electron paths in a plane through the said axis and at right angles to the length direction of the spot in the center of the target, said second grid having an aperture which, on the side remote from the cathode, widens in the direction of the target and is elongated at substantially right angles to that of said first grid. said aperture having a dimension which, measured parallel to the direction of the vertical scanning, is smaller than half of the dimension of the aperture in the first grid measured in the same direction, said third grid having an aperture exceeding in size the apertures of said first and second grids, the dimension of the aperture of said second grid in the vertical scanning direction and the distance between the first and second grid being adjusted for intercepting at least 5% of the electron beam by the second grid.



3,866,082
CATHODE RAY TUBE FOR DISPLAYING COLOURED PICTURES

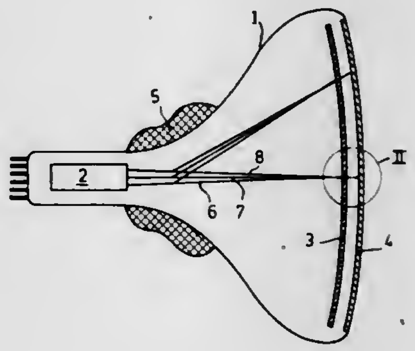
Piet Gerard Joseph Barten, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,356

Claims priority, application Netherlands, Oct. 17, 1972, 7214003

Int. Cl. H01j *29/18*

U.S. Cl. 313—470 **3 Claims**



1. A cathode ray tube for displaying color pictures comprising a display screen having a plurality of discrete regions which, upon bombardment with electrons, luminesce in three different colours, a color selection mask having a plurality of apertures, and means to produce three electron beams converging towards the display screen, each luminescent region being present in a path of an electron beam through one of said apertures, said luminescent regions being arranged according to substantially parallel color strips, said color strips being arranged in triplets each comprising three color strips which luminescen green, red, and blue, respectively, characterized in that the central color strip of each triplet luminesces red and that, over at least a part of the display screen, the distance between the centers of two adjacent color strips belonging to the same triplet is at either side of the red strip at least 5% larger than the distance between the centers of two adjacent color strips of which one belongs to the said triplet and the other belongs to an adjacent triplet.

3,866,083

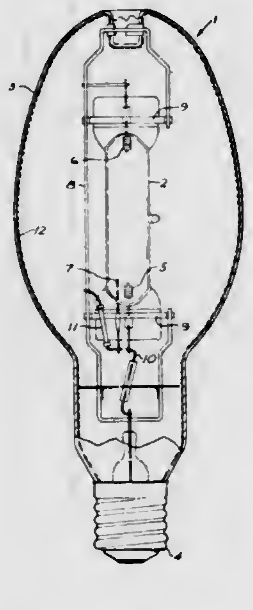
COLOR RENDITION OF HIGH PRESSURE MERCURY VAPOR LAMP

Ranajit K. Datta, East Cleveland, and Thomas Luscher, Wickliffe, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 120,511, March 3, 1971, Pat. No. 3,790,490. This application Mar. 5, 1973, Ser. No. 337,903

Int. Cl. H01j *61/44*

U.S. Cl. 313—487 **4 Claims**



1. A high pressure mercury vapor lamp comprising an inner discharge assembly including an arc tube containing a filling of mercury, a transparent outer envelope surrounding said discharge assembly and spaced therefrom to operate in a temperature range from 200° to 400°C, and a coating of a blend of red-emitting phosphor and a green-emitting phosphor consisting of strontium chlorosilicate activated by divalent europium (Eu^{2+}) and doped with divalent manganese (Mn^{2+}).

3,866,084

PLASMA DISPLAY PANEL DEVICE

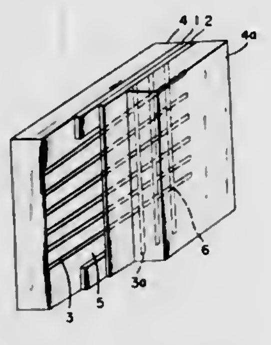
Koichiro Kurahashi; Hiroshi Tottori, and Fumihiko Isogai, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 9, 1972, Ser. No. 261,291

Claims priority, application Japan, June 22, 1971, 46-44973; Oct. 28, 1971, 46-100413

Int. Cl. H01j *7/42;* **H01k** *1/60*

U.S. Cl. 313—510 **3 Claims**



1. A plasma display panel comprising:
- a first base plate having an inner surface and an outer surface,
- a first electrode disposed adjacent to the inner surface of the first base plate,
- a second base plate having an inner surface and an outer surface,
- a spacer disposed between the first base plate and the second base plate,
- a second electrode disposed adjacent to the inner surface of the second base plate,
- the second electrode being further disposed opposite the first electrode and a gap formed therebetween by said spacer,
- a continuous insulating layer having an inner surface and an outer surface disposed within the gap,
- the gap being otherwise occupied in its entirety by a dischargeable gas,
- the first electrode being disposed between the inner surface of the first base plate and the outer surface of the insulating layer,
- whereby an electrical discharge of the gas in the gap occasioned by application of a voltage of a given polarity to the first and second electrodes establishes a wall voltage of opposite polarity on the inner surface of the insulating layer.

3,866,085

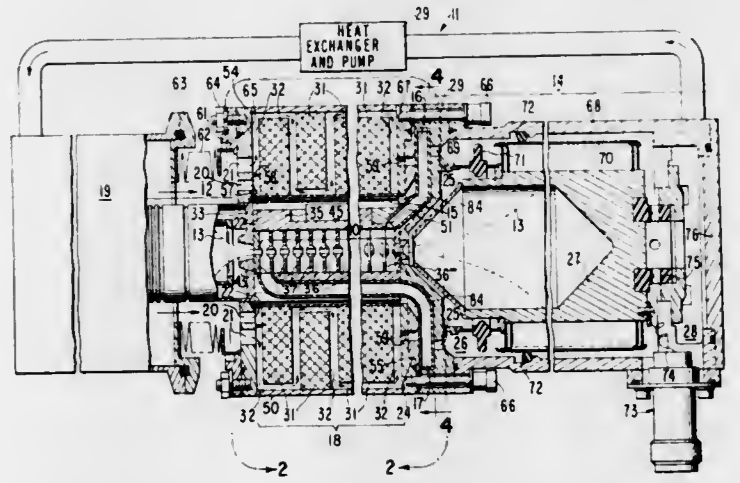
COLLECTOR POLE PIECE FOR A MICROWAVE LINEAR BEAM TUBE

Bertram G. James, Redwood City, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 3, 1973, Ser. No. 421,196

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **6 Claims**



1. In a microwave linear beam tube:
- electron gun means for forming and projecting a beam of electrons over an elongated linear beam path;
- beam collector means at the terminal end of said beam path for collecting and dissipating the energy of the electron beam;
- microwave interaction circuit means disposed along said beam path intermediate said electron gun means and said beam collector means for electromagnetic wave interaction with the beam to produce output microwave energy; electrical solenoid means disposed surrounding said microwave interaction circuit means for generating an axial magnetic field in the beam path for focusing the electron beam through said microwave interaction circuit means; a collector pole piece structure disposed at the beam collector end of said solenoid for shaping the beam focus magnetic field in the region of said beam collector means, said collector pole piece structure being made of a ferromagnetic material and including a chamber therin; at least four passageways from said chamber through said pole piece structure:
- an output waveguide structure for coupling the output microwave energy from said microwave circuit to a utilization device; a portion of said chamber containing a length of said waveguide structure, and said waveguide structure passing into and out of said chamber through two of said passageways; another portion of said chamber formed to contain a fluid coolant, and at least two of said passageways disposed for conduction of said fluid coolant into and out of said chamber.

3,866,086

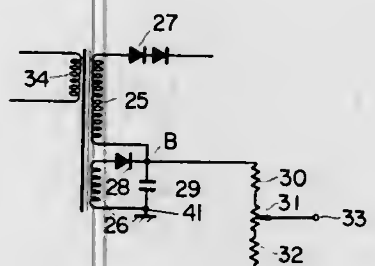
FLYBACK TRANSFORMER APPARATUS

Keisuke Miyoshi, Katano, and Naoki Shibano, Sakai, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 11, 1973, Ser. No. 369,001

Int. Cl. H01j *29/70*

U.S. Cl. 315—411 **7 Claims**



1. A flyback transformer apparatus comprising: a flyback transformer having a primary winding, a first secondary winding and a second secondary winding; at least one first rectifier connected to one end of said first secondary winding; a second rectifier connected between one end of said second secondary winding and the other end of said first secondary winding; and a capacitor connected to said second rectifier in such a manner that said capacitor is charged up by a voltage produced across said second rectifier, wherein the entire primary winding of said flyback transformer is inductively closely coupled with the high-tension side winding portion of said first secondary winding.

3,866,087

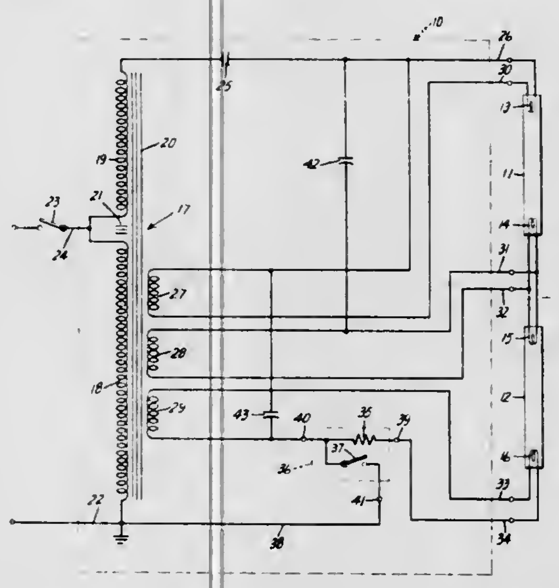
BALLAST CIRCUIT WITH INTEGRAL TIME DELAY RELAY

Walter F. Powell, Danville, Ill., assignor to General Electric Company, Indianapolis, Ind.

Filed Mar. 20, 1973, Ser. No. 342,994

Int. Cl. H05b *41/14*

U.S. Cl. 315—97 **10 Claims**



1. A ballast circuit for starting and operating at least one gaseous discharge lamp having spaced apart electrodes, each electrode further comprising a heating element; said circuit including:
- a. a transformer having a primary winding and a secondary winding inductively coupled therewith;
- b. input leads for connecting the primary winding to a source of electric energy, and output leads connecting the secondary winding to said spaced apart lamp electrodes;
- c. auxiliary windings inductively coupled to the primary winding, said auxiliary windings including electrode heating windings connected to said electrode heating elements for providing electric energy to the elements;
- d. a time delay relay including a heater and a normally open switch which closes responsive to thermal energy developed upon energization of the heater, said switch being connected in series with the secondary winding and said lamp electrodes;
- e. means connecting the relay heater to an auxiliary winding, said winding providing electric energy to the heater concurrent with application of electric energy to said electrode heating elements by the electrode heating windings.

3,866,088

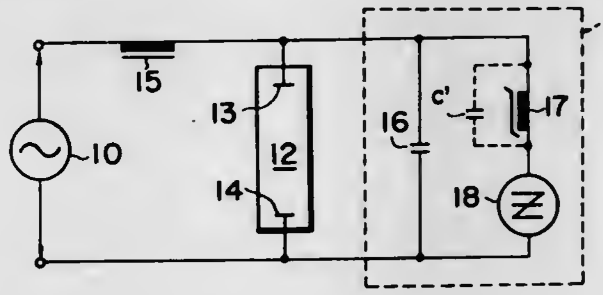
DISCHARGE LAMP STARTER DEVICE USING A BACKSWING VOLTAGE BOOSTER AND CHARACTERIZED BY THE ABSENCE OF A PREHEATING FUNCTION

Isao Kaneda, and Kiyokazu Takeuchi, both of Osaka, Japan, assignors to New Nippon Electric Company Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 202,766, Nov. 29, 1971, Pat. No. 3,753,037, which is a continuation-in-part of Ser. No. 14,325, Feb. 26, 1970, Pat. No. 3,665,243. This application Apr. 23, 1973, Ser. No. 353,250

Int. Cl. H05b *41/00, 41/14*

U.S. Cl. 315—105 **19 Claims**



1. For igniting a discharge lamp by the use of a booster oscillating voltage; a starting device characterized by the absence of a preheating function for said lamp, said starting device comprising a series circuit including a power source and a linear inductor connected in series, and a booster adapted for generating said booster operating voltage, said series circuit and booster being respectively connected across said lamp, said power source supplying an operating voltage via said inductor to said lamp, said booster including a capacitance element adapted for oscillation, a saturable non-linear inductance element and a symmetrical switching element in series connection with said non-linear element, said capacitance element being connected across said lamp, said non-linear inductance element and switching element being connected across said lamp, said non-linear inductance element including a core of magnetic and dielectric material to provide characteristic equivalent capacitance (c') and different inductances (l_u and l_s) respectively in the unsaturated and saturated states thereof, a backswing voltage being induced across the non-linear inductance element when said switching element turns off whereby said booster produces a higher voltage than the voltage of said power source during this starting period.

3,866,089

LIQUID COOLED PLASMA BURNER

Kurt Hengartner, Visp/Valais, Switzerland, assignor to Lonza Ltd., Gampel/Valais, Switzerland

Filed Aug. 1, 1973, Ser. No. 384,570

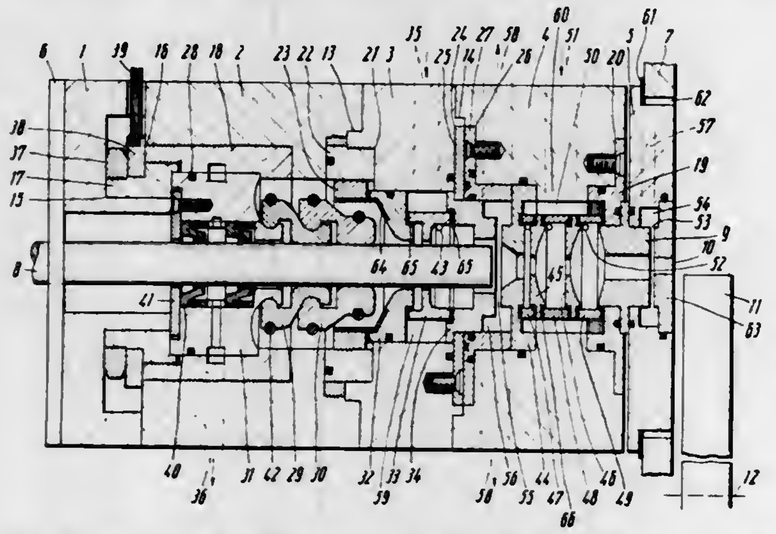
Claims priority, application Switzerland, Aug. 16, 1972, 12124/72

Int. Cl. H05b *31/26*

U.S. Cl. 315—111.2 **4 Claims**

1. A liquid stabilized plasma burner assembly comprising, in combination, a hollow cylindrical casing including an inner wall and formed from a plurality of casing rings (1–5) arranged in a coaxially aligned relationship, an electrode chamber defined by at least one (1–3) of said casing rings, first

circular inserts (**29, 30**) coaxially arranged in said electrode chamber and spaced from said inner wall of said casing, a bar electrode (**8**) arranged to be surrounded by said inserts and contacted thereby, means (**35, 58**) for passing a cooling fluid into said casing and through said spacing between said inserts and said inner wall of said casing, an arc discharge chamber defined by at least one other (**4**) of said casing rings in axial alignment with said electrode chamber, said at least one casing ring (**1–3**) defining said electrode chamber and said at least one casing ring (**4**) defining said arc discharge chamber being detachably joined together, second circular inserts (45–49), including orifice plates (**45, 46**) and intermediate rings (**47, 48, 49**) provided with tangential passages (**52**), coaxially arranged in said arc discharge chamber, said second inserts being held tightly together and spaced from said inner wall of said casing, inlet means (**51**) for feeding stabilizing liquid into said spacing between said second inserts and said inner wall of said casing, outlet means (**57**) for passing said stabilizing liquid out from said spacing, said second inserts including two inserts (**47, 49**) which are associated each with one face of said at least one ring (**4**) defining said arc discharge chamber and which are centrally and detachably mounted upon said ring, a pair of annular steps (**20, 26**) formed in opposite faces of said at least one casing ring (**4**) defining said arc discharge chamber, and at least two retaining rings (**27, 19**) seated one each in said annular steps (**20–26**) to mount thereon said inserts (**47, 49**) associated with said at least one ring (**4**) defining said arc discharge chamber, with at least one other (**48, 46**) of said second inserts being coaxially held between said two inserts (**47, 49**) associated with said at least one ring (**4**) defining said arc discharge chamber.



3,866,090

GAS DISCHARGE PANEL AND OPERATING SYSTEM

Zeger Van Gelder, and Mathieu Martinus Maria Petrus Mattheij, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

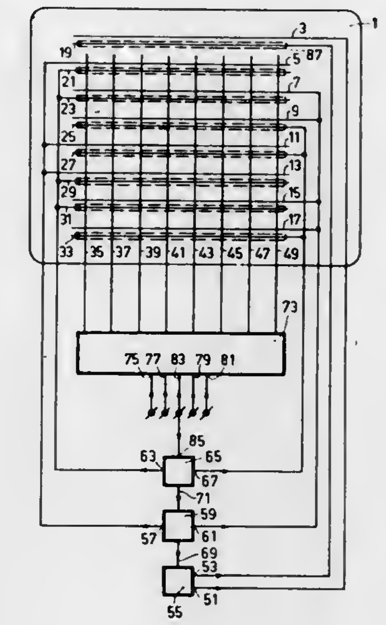
Filed Oct. 23, 1973, Ser. No. 408,401

Claims priority, application Netherlands, Oct. 31, 1972, 7214702

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **8 Claims**

1. A gas discharge device comprising a gas discharge panel including a matrix of gas cells, a cathode system including a plurality of parallel spaced electrodes, an auxiliary anode system and an anode system each comprising a plurality of parallel spaced electrodes in which at least part of the electrodes of one of these systems crosses the electrodes of one of the other systems, means for interconnecting at least part of the electrodes of the cathode system in groups, means for connecting each of a number of these groups to a different output of a line scanning control circuit for automatically scanning the panel line by line by means of an auxiliary discharge extending every time along a subsequent electrode of the cathode system, and wherein at least part of the electrodes of the auxiliary anode system extends in the same direction as that of the groups of interconnected electrodes of the cathode system and are likewise interconnected in at least two groups, means for connecting each of a number of these electrode groups of the auxiliary anode system to a different output of a second control circuit, a third control circuit for selectively energizing the anode electrodes, and means for mutually synchronizing said control circuits.



3,866,091

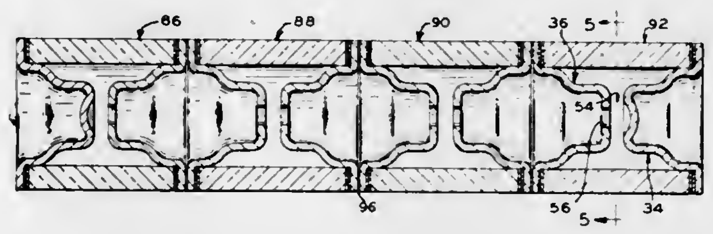
UNITARY SERIES SPARK GAP WITH ALIGNED APERTURES

Chester J. Kawiecki, Santa Barbara, Calif., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Continuation of Ser. No. 298,014, Oct. 16, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 414,858

Int. Cl. H05b *41/14*

U.S. Cl. 315—203 **15 Claims**



1. A spark-gap device suitable for providing transient protection to a line above a predetermined voltage level, said device comprising:

a first pair of conductive electrodes,

insulating spacer means positioning said first pair of electrodes with opposed portions thereof in facing relation for defining a first gap therebetween adapted to break down and support an arc discharge,

a second pair of conductive electrodes,

insulating spacer means positioning said second pair of electrodes with opposed portions thereof in facing relation for defining a second gap therebetween adapted to break down and support an arc discharge,

one of said second pair of electrodes being electrically connected to one of said first pair of electrodes for providing a series circuit including said gaps, said device being constructed so that an arc discharge across one gap causes illumination of the other gap,

and a first enclosed chamber substantially separate from the region of said gaps and communicating with the region of said gaps to promote extinguishing of an arc discharge across the said gaps after the cessation of an over-voltage condition across said gaps in series,

wherein said insulating spacer means cooperate with said electrodes to enclose the first and second gaps in second and third separate chambers respectively, said insulating spacer means being joined to the respective pairs of electrodes with which they form chambers to hermetically seal said second and third chambers except for communication with said first chamber.

3,866,092

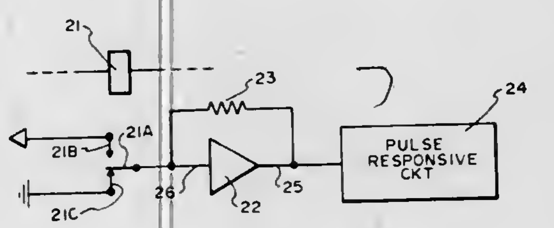
CIRCUIT FOR ELIMINATING CONTACT BOUNCE EFFECT

Robert V. Burns, Tinley Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 15, 1973, Ser. No. 406,759

Int. Cl. H02h *7/20*

U.S. Cl. 317—9 C **4 Claims**



1. Means for protecting pulse responsive circuits from multiple output signals caused by the bounce of mechanically operated switching contacts, comprising: a gain producing device comprising an amplifier including, an input alternately connectable through mechanically operable switching contacts to a source of signals of a first characteristic, and a source of signals of a second characteristic, and an output connectable to a pulse responsive circuit, said gain device initially operated in response to connection through said contacts to said source of signals of said first characteristic, to produce at said output a single signal of said first characteristic, and further operated in response to connection through said contacts to said source of signals of said second characteristic to produce at said output a single signal of said second characteristic; and a feedback circuit connected from the output to the input of said gain device, said feedback path maintaining said gain device operated to continue production of a single signal at said output of said gain device, of the same characteristic as that of the signal source last connected to said gain device input.

3,866,093

LOW LEAKAGE ELECTRICAL POWER INPUT CIRCUIT FOR ELECTROMEDICAL AND OTHER SIMILAR APPARATUS

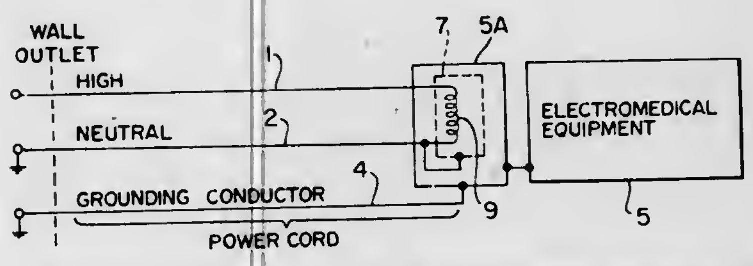
Norbert L. Kusters, 817 Eastbourne Ave., and Malcolm P. MacMartin, 45 Oriole Dr., both of Ottawa, Ontario, Canada

Filed Sept. 17, 1973, Ser. No. 398,207

Claims priority, application Canada, Sept. 18, 1972, 151921

Int. Cl. H02h *3/16*

U.S. Cl. 317—18 R **18 Claims**



1. A low leakage power input circuit for electromedical or other electrical equipment having an electrical power element and where the leakage current from the supply circuit to a grounding circuit should be very small comprising:

a. a power cord made up of a high line, a neutral line, and a grounding conductor, said high and neutral lines adapted for connection at one end to an electrical power source and said neutral and grounding conductor adapted for connection at the same end of the power cord to electrical ground,

b. said high and neutral lines connected at the power end of the power cord to the electrical power element of the electrical equipment,

c. a first guard means ecnlosing the electrical power element of the electrical equipment and connected to the neutral line, and

d. a second guard in the form of a conducting metal enclosure, enclosing the first guard and insulated therefrom, and connected to the said grounding conductor.

3,866,094

INHIBITED POWER SUPPLIES

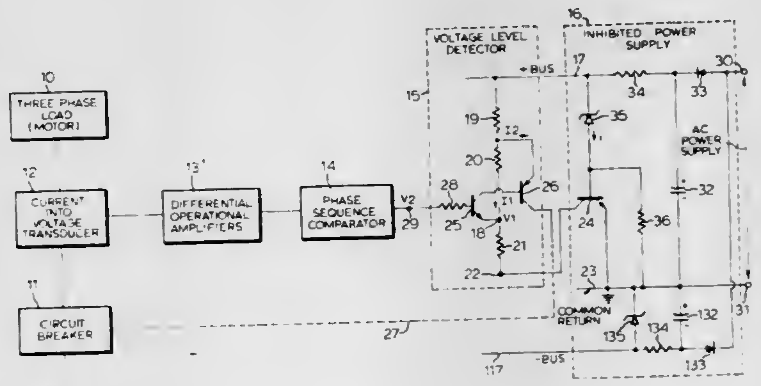
David Richard Boothman, Ennismore, and David Walter Nutt, Peterborough, Ontario, both of Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed May 21, 1973, Ser. No. 362,048

Claims priority, application Canada, Oct. 26, 1972, 155043

Int. Cl. H02h *3/24*

U.S. Cl. 317—31 **6 Claims**



1. In a fault detection circuit used for rotecting electrical apparatus against overvoltges, the combination comprising:

a voltage level detector for comparing a reference voltage and a monitored voltage, said voltage level detector producing an overvoltage signal in response to a predetermined difference between said reference voltage and said monitored voltage;

a power supply for providing said reference voltage comprising Ac input terminals, a rectifier connected to said terminals for converting alternating current into unidirectional current, capacitance means connected to the output of said rectifier for smoothing out said unidirectional current and establishing a level of DC voltage, and

a vooltage regulator connected to said capacitance means for producing sai reference voltage of lower value than said DC voltage level;

ormally "off" electroic switching means connected to be turned "on" by said reference voltge; and

means coupling said switching means to said voltage level detector for inhibiting the production of said over-voltage signal when said reference voltage falls below a predetermined voltage level.

3,866,095

PLASTIC ENCASED COMPONENT WITH REFLOWED-PLASTIC SEALED LEADS

H. Stephen Marmorek, Toronto, Ontario, Canada, assignor to Sprague Electric Company, North Adams, Mass.

Filed July 13, 1973, Ser. No. 379,021

Int. Cl. H01g *9/00*

U.S. Cl. 317—230 **6 Claims**

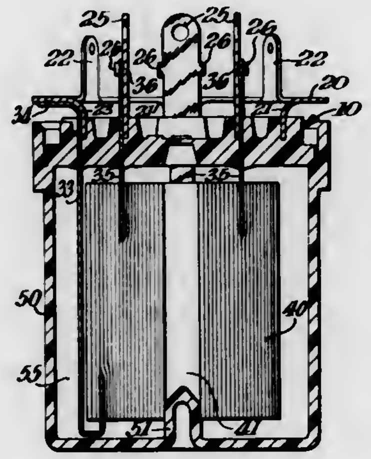
1. A sealed electrical component package comprising:

a. an electrical component having two or more leads;

b. a thermoplastic cover having holes through which said leads pass from an inner face of said cover to and projecting from an outer face of said cover, said leads being directly sealed therein;

c. metal terminals, each lying essentially adjacent to and essentially parallel with one of said leads, an end of each said terminal being embedded in said outerside of said cover, each said terminal being electrically connected to said adjacent lead in a region outside said cover;

d. a thermoplastic housing containing said component and an air space, said housing having an open side into which said cover is sealed; and



e. a metal ring positioned outside of and concentric with said cover, said metal ring having extended tab portions at least two of which are bent inward relative to said package with the ends of said at least two tab portions being embedded in said thermoplastic cover, one of said inward bent tab portions being one of said metal terminals lying adjacent, essentially parallel with and electrically connected to one of said leads in the region beyond the outer face of said cover.

3,866,096
CHARGING PHOTOCONDUCTIVE MEMBRANES

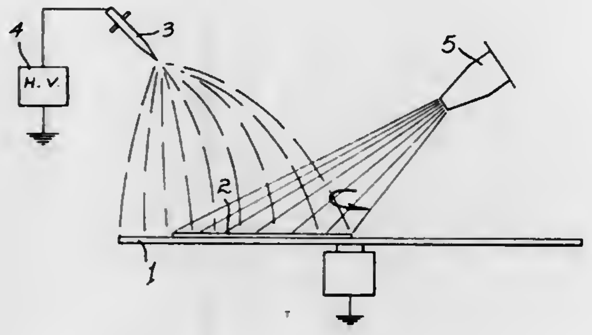
Kenneth A. Metcalfe, Lockleys, and Alwin S. Clements, Largs Bay, both of Australia, assignors to The Commonwealth of Australia Care of The Secretary Department of Supply, Parkes, Canberra, Australia

Filed Sept. 26, 1973, Ser. No. 401,105

Claims priority, application Australia, Sept. 28, 1973, 0628/72

Int. Cl. G03g *15/02*

U.S. Cl. 317—262 A **6 Claims**



1. A method of charging photoconductive membranes which comprise applying a corona-producing voltage between a corona discharge electrode and a base electrode, interposing near the base electrode a photoconductive membrane to be charged, and simultaneously directing a gas stream onto the photoconductive membrane in counterflow to charged particles tending to be rejected from the charged area, and also to permeate the gas layer at the interface, whereby there is a greater charge retention and secondary ion formation at the surface being charged.

3,866,097
CONTROL APPARATUS FOR INDUCTION MOTOR

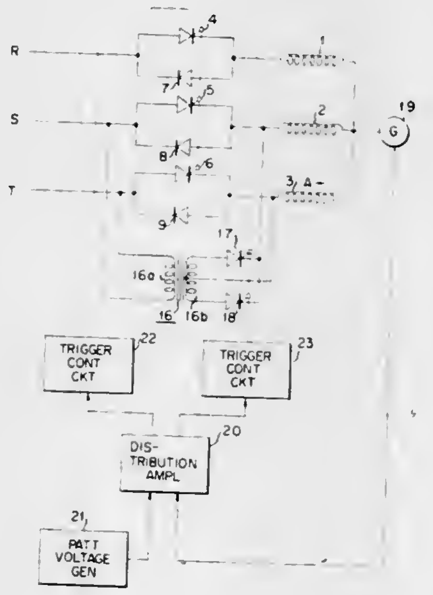
Nobuo Anzai, and Narihiro Terazono, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1973, Ser. No. 385,801

Claims priority, application Japan, Aug. 10, 1972, 47-93801

Int. Cl. H02p *3/20*

U.S. Cl. 318—212 **4 Claims**



1. A control apparatus for controlling a polyphase induction motor, comprising in combination, a source of polyphase alternating current, one main trigger controllable electric valve connected to each of a plurality of phases of said source between said source and said polyphase induction motor, a single-phase transformer including a primary winding connected across said source and a secondary winding having a center tap connected to one of the phases of said induction motor, a pair of controlling trigger controllable electric valves connected to both ends of said secondary transformer winding with the same polarity, respectively, and having respective output terminals connected together to another phase of said induction motor, motor ignition circuits connected to said main electric valves and to said controlling electric valves to control firing angles of the associated electric valves respectively, a tachometer generator operatively coupled for sensing the speed of said motor, pattern generator means operatively connected for generating a pattern of speed instruction for said motor, distribution amplifier means coupled to said tachometer generator and said pattern generator means for detecting a difference between an output from said tachometer generator and an output from said pattern generator means and producing an output dependent upon the detected difference and operatively coupled to said ignition circuits for applying its output to said ignition circuits for said main electric valves when said pattern generator means is higher in output than said tachometer generator and applying said output to said ignition circuits for said controlling electric valves when said pattern generator means is less in output than said tachometer generator, whereby said induction motor is controlled in accordance with the output from said pattern generator means and by continuously changing a voltage applied to said motor.

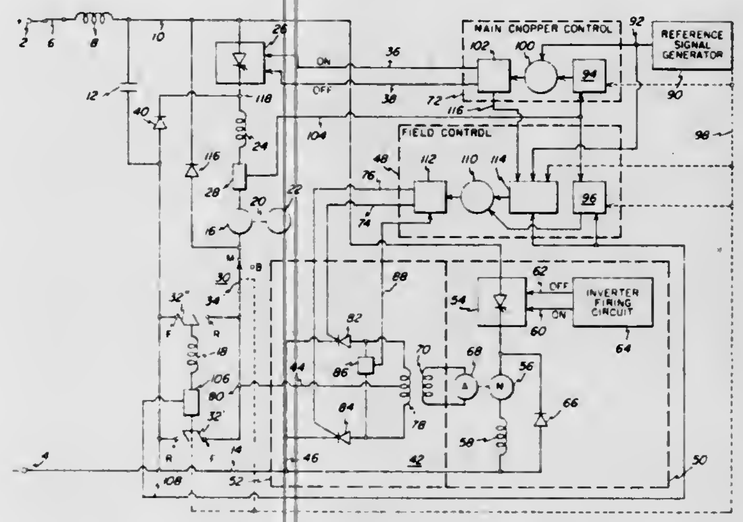
3,866,098
ELECTRICAL MOTOR DRIVE SYSTEM WITH FIELD CONTROL OPERABLE IN MOTORING AND BRAKING MODES

Earnest Franklin Weiser, Erle, Pa., assignor to General Electric Company, Erie, Pa.

Filed Jan. 14, 1974, Ser. No. 433,409

Int. Cl. H02p *5/06*

U.S. Cl. 318—251 **21 Claims**



1. A drive system wherein d-c electric motor means comprising armature and field means are coupled to a mechanical load to drive the load in a motor mode and to be driven by the load in a braking mode so as to generate armature current dissipated in a braking load circuit and retard motion of the load, comprising:

a. a source of d-c energy having first and second conductors;

b. armature means and field means;

c. motor-brake switching means coupled in circuit between said armature and field means to connect said field and armature means in a series circuit with said source only during the motor mode;

d. power conversion means having its output coupled to shunt said field means and operable in inversion or rectification modes to selectively shunt armature current from said field means during the motoring mode to provide field weakening, and to provide excitation current to said field means during the braking mode.

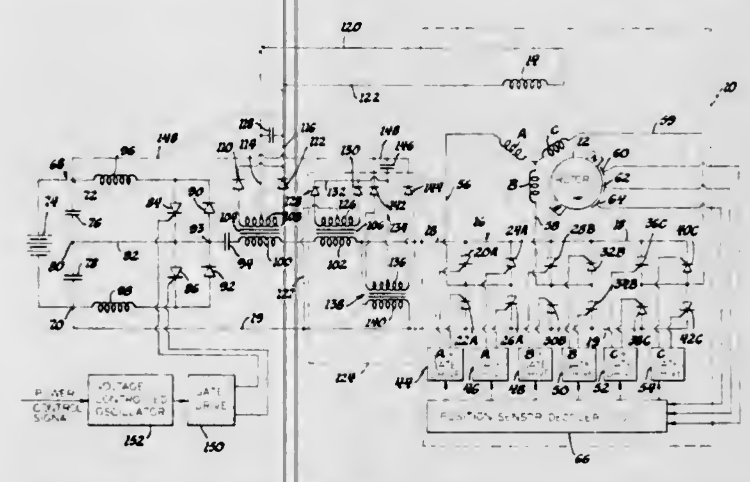
3,866,099
MOTOR POWER SUPPLY SYSTEM

Frank J. Bourbeau, Santa Barbara, Calif., assignor to General Motors Corp., Detroit, Mich.

Filed Aug. 1, 1973, Ser. No. 384,604

Int. Cl. H02k *29/00*

U.S. Cl. 318—254 **4 Claims**



1. A motor power supply system comprising, a motor having a polyphase winding and a rotor, a field winding for said motor operative when energized by direct current to provide magnetic poles on said rotor, a switching circuit comprised of a plurality of controlled rectifiers, said switching circuit having input terminals and output terminals connected with said polyphase motor winding, means for causing groups of said controlled rectifiers of said switching circuit to be gated conductive in a predetermined sequence as a function of rotor position to thereby provide current paths for energizing said polyphase winding in a predetermined polyphase sequence, each group of controlled rectifiers when gated conductive defining a full-wave rectifier circuit that is operative to apply a direct voltage to predetermined phases of said polyphase winding, the switching frequency of said controlled rectifiers being a function of rotor speed, a source of direct voltage, inverter means having an input connected to said source of direct voltage and having an output circuit, said inverter means providing a variable frequency alternating output voltage at its output circuit, a circuit connecting the output circuit of said inverter means to said input terminals of said switching circuit including coupling capacitor means connected in series between said inverter means and said switching circuit, means for varying the frequency of the alternating output voltage of said inverter means whereby the reactance of said coupling capacitor means is varied as a function of the output frequency of said inverter means to thereby control the amount of power supplied to said switching circuit from said inverter means, and means for energizing said field winding with direct current.

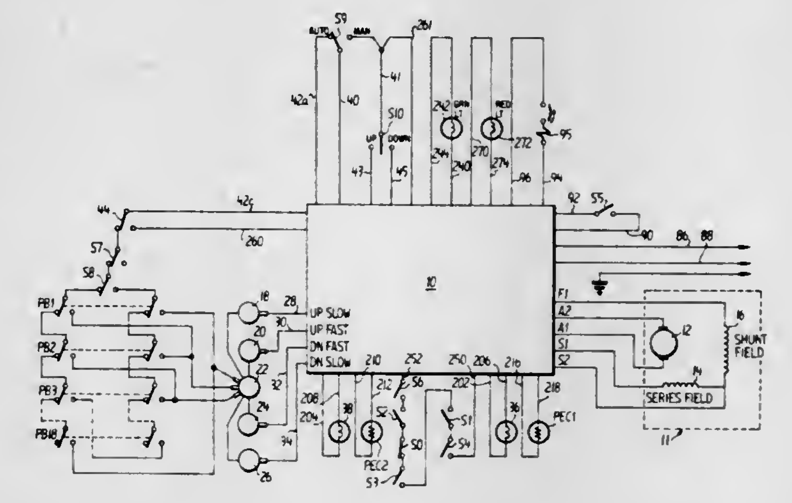
3,866,100
UNIVERSAL MOTOR CONTROL

Daniel P. Palenchar; Wayne H. Lehker, and David P. Lock, all of Marietta, Ohio, assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 30, 1973, Ser. No. 365,241

Int. Cl. G05b *11/14*

U.S. Cl. 318—257 **12 Claims**



1. A motor control circuit for controlling a motor having an armature and a series field winding, said motor control circuit comprising:

a source of full wave rectified AC voltage;

means connecting said armature and said series field winding in series across said source of voltage, said means including gating means for selectively connecting said source and said armature so that current may flow through said armature in a first or second direction;

comparator means responsive to a reference voltage and feedback signal for producing output pulses each having a duration proportional to the difference in magnitude of the signals being compared;

means responsive to said source for applying a reference voltage to said comparator means;

feedback means responsive to a signal from said motor representing motor speed for applying a feedback signal to said comparator means;

logic circuit means including means for selectively generating a first and second direction command; and,

- phase controller means responsive to said source, said comparator, and said direction commands for selectively producing phase control pulses;
- said gating means being responsive to said phase control pulses and said direction commands for selectively connecting said source and said armature.

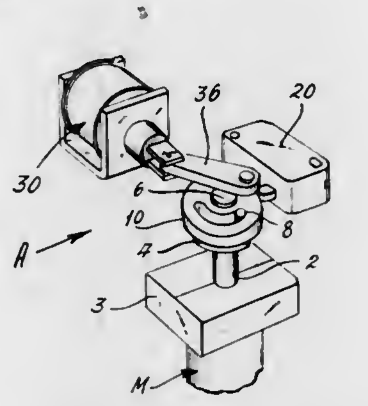
3,866,101
TIMING APPARATUS

Norman J. Burzen, Pacific, Mo., assignor to Nordon Industries-,Inc., Fenton, Mo.

Filed Dec. 17, 1973, Ser. No. 425,525

Int. Cl. H01h *43/10*

U.S. Cl. 318—487 **14 Claims**



1. A timing apparatus comprising: a motor; a switch for controlling the motor, the switch having a standby condition wherein the motor does not operate and an actuated condition wherein the motor does operate; a shaft rotated by the motor; switch actuating means rotated in one direction away from an initial position for causing the switch to change from its standby condition to its actuated condition and for thereafter permitting the switch to change back to its standby condition, the switch actuating means being rotatable independently of the shaft in said one direction and also rotatable by the shaft in said one direction; an abutment fixed rigidly with respect to the shaft and engageable with the switch actuating means for enabling the shaft to rotate the switch actuating means when the abutment is engaged therewith; and starting means for rotating the switch actuating means a limited amount in said one direction to change the switch from its standby to its actuated condition, whereby the motor will be energized and will propel the switch actuating means back toward its initial position wherein the switch may again be in its standby condition.

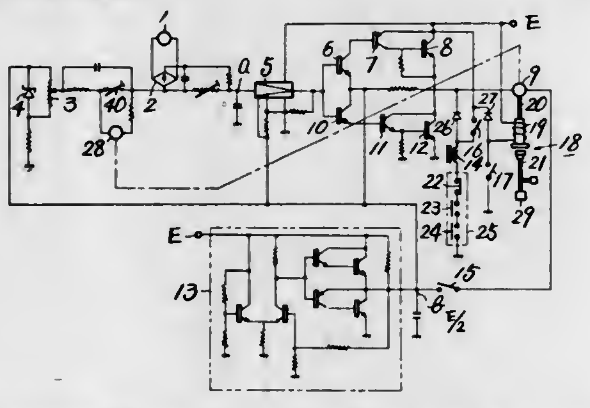
3,866,102
METHOD AND SYSTEM OF SERVO CONTROL FOR SPEED CONTROL FOR VEHICLES

Hiroshi Hashimoto; Tetsuo Abe, and Masao Suzuki, all of Aichi-ken, Japan, assignors to Sanyo Machine Works Ltd., Aichi-ken, Japan

Continuation of Ser. No. 79,772, Oct. 12, 1970, abandoned. This application Aug. 1, 1973, Ser. No. 384,694

Int. Cl. G05b *11/36*

U.S. Cl. 318—609 **3 Claims**



1. A system for speed control for vehicles, comprising means for producing d-c voltage proportional to the speed of a running vehicle, means for producing d-c voltage proportional to a desired pre-selected vehicle speed, said voltages being electrically connected with each other in mutually opposite polarity relationship, means to compare a difference in voltage between the two, a servo amplifier electrically coupled at its input end to said voltage comparison means, a servomotor electrically coupled by a driving circuit with the output end of said servo amplifier to drive said servomotor, said driving circuit being changed over by transistors operable depending upon the polarity of the output from said servo amplifier, a control clutch having a coil circuit operatively connected between the rotatable shaft of said servomotor and the rotatable shaft of a throttle valve for effecting the engagement and disengagement therebetween, the coil circuit of the control clutch being controlled by a relay circuit, said relay circuit including a normally closed contact adapted to be opened at the time of stepping on the brake of the vehicle, a normally opened contact adapted to be closed at the time of vehicle clutch engagement and a normally opened contact adapted to be closed at the time of the top-gear engagement of said vehicle when in motion, said contacts being connected in series, a diode positioned in said relay circuit and adapted to be rendered conductive by a reference voltage to drive said relay circuit whereby when a voltage substantially equal to the reference voltage is obtained, a relay is actuated to drive the control clutch and henceforth the forward and reverse rotation of the servomotor increases or decreases to the degree corresponding with the opening of the throttle valve to accelerate or decelerate the vehicle until the vehicle speed is equal to the desired speed, said system further including a comparison circuit operatively associated with the voltage producing means of the set vehicle speed and the voltage producing means of the vehicle running speed to compare the set vehicle speed and the running vehicle speed with each other and to produce a deviation voltage therebetween, comparing said deviation voltage with a changeover reference voltage, adjusting a minor feedback circuit on the basis of the result of such comparison so that when the speed difference therebetween is great, a speed feedback constant effective to increase the rotational speed of the servomotor is selected and when the speed difference is small, a speed feedback constant effective to decrease the rotational speed of the servomotor is selected.

3,866,103
SERVOAMPLIFIER DEVICE

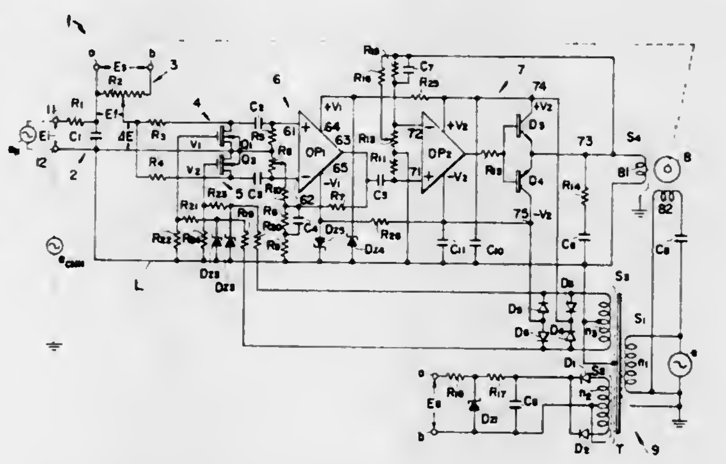
Keizo Maezawa, and Susumu Ohta, both of Tokyo, Japan, assignors to Yokagawa Electric Works, Ltd., Tokyo, Japan

Filed Aug. 10, 1972, Ser. No. 279,433

Claims priority, application Japan, Aug. 25, 1971, 46-64961

Int. Cl. G05f *1/00, 11/12*

U.S. Cl. 318—678 **7 Claims**



1. Apparatus for operating an AC servomotor having control and exciting coils, the apparatus being arranged to accept an AC power signal from an AC power source and arranged to accept a DC input signal and to control the AC servomotor therewith through a transformerless control circuit having reduced susceptibility to errors due to noise, comprising:

- a common potential reference line;
- an input circuit for comparing the DC input signal with a feedback signal controlled by the servomotor to obtain a difference signal referred to the common potential line and including chopper means balanced about the common potential line for converting the difference signal into two 180° out of phase signals referred to the common potential line and having amplitudes varying with the amplitude of the difference signal;
- a differential-input voltage amplifier having two differential inputs balanced about the common potential line and receiving the two AC signals on the two differential inputs and combining them into an AC output signal with amplitude and phase varying with the amplitude of the difference signal;
- a power amplifier for amplifying the output of the voltage amplifier to produce a signal referred to the common potential line to be applied to the control coil of the AC servomotor for driving the AC servomotor;
- power transformer means for coupling the AC power source to the servomotor exciting coil to isolate the AC power source from the servomotor exciting coil and to apply a signal to the exciting coil in phase with the AC power source signal, and
- means connected to the AC power source and including a 90° phase shifting circuit for operating the chopper means 90° out of phase with respect to the AC power source signal,
- whereby AC input noise signals and common mode noise signals are effectively elminated without an isolating transformer between the input circuit and the servomotor, and whereby safe operation of the servomotor is afforded.

3,866,104
FIVE PHASE STEPPING MOTOR

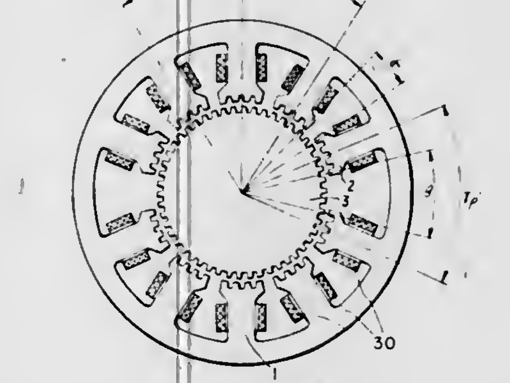
Gunter Heine, Lahr, Germany, assignor to Gerhard Berger Fabrik Elektrischer Messgerate, Lahr, Germany

Filed July 16, 1973, Ser. No. 379,223

Claims priority, application Germany, July 18, 1972, 2235086

Int. Cl. H02k *37/00*

U.S. Cl. 318—696 **20 Claims**



1. A five phase stepping motor system, comprising a stepping motor having five untapped stator windings connected said stator windings forming a plurality of connecting points, a permanent magnet rotor, control means connected to said five connecting points for energizing said windings, said stepping motor including u groups each having five main poles, each of said main poles having $n + 1$ pole teeth, said stator windings being distributed on said groups and poles, said poles being divided in accordance with the relations

$$\tau_p = n\,\tau_z + \alpha \; i \; \alpha = \tau_z(K + 0.6)$$
$$\tau_p' = n\,\tau_z + \beta \; i \; \beta = \tau_z(K' + 0.6),$$

the ratio of rotor tooth widths to stator tooth widths at the outer diameter of the rotor being equal to or smaller than unity, the number of rotor teeth T_r corresponding to the relationship $T_r = u(5n + 4K + K' + 3)$, where τ_p is the pitch of adjacent main poles, τ_z is the pitch of adjacent pole teeth, α is the angle between adjacent pole teeth on adjacent poles, τ_p' is the pitch between adjacent poles on adjacent groups, β is the angle between adjacent pole teeth on adjacent groups and n, K, and K' are whole numbers equal to or greater than 0.

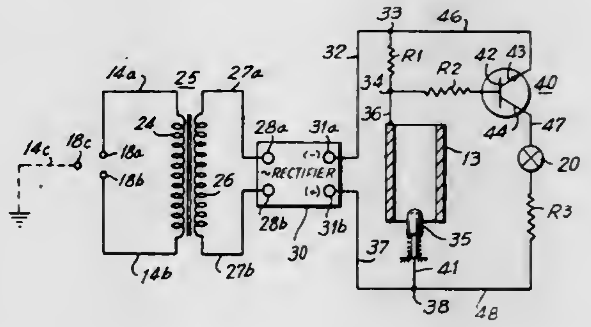
3,866,105
BATTERY-RECHARGING DEVICE FOR INDICATING LAMP

Helmut A, Heine, Upper Barvia, Germany; Irving A. Speelman, Roslyn Heights, N.Y., and Otto H. Schmidt, Herrsching Upper Barvia, Germany, assignors to Optotechnik Heine KG, Germany and Propper Manufacturing Company, Inc., Long Island City, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,049

Int. Cl. H02j *13/00*

U.S. Cl. 320—48 **7 Claims**



1. A battery-recharging device comprising, in combination, support means operable to receive and support a rechargeable electrical battery having a pair of opposite polarity terminals, and including respective contact means engageable with the battery terminals; a source of DC potential for applying a charging potential; a first circuit connected to said source and to said contact means and operable to apply said DC charging potential across a battery then in said support means; a second circuit connected to said DC potential source in parallel with said first circuit and including a normally open switch means serially connected to a light-emitting device and a current limiting resistor, said limiting resistor limiting the current flow through said light emitting device to a value less than the rated current flow thereof but sufficient to effect illumination of said light emitting device, said normally open switch means including a transistor having a base, an emitter and a collector, and switch operating means in said first circuit connected to said normally open switch means and operable to close said normally open switch means, said switch operating means supplying a bias current to the base of said transistor, to trigger said transistor conductive, responsive to flow of battery-charging current in said first circuit.

3,866,106
VOLTAGE REGULATOR WITH PROTECTION CIRCUIT FOR AN ALTERNATING CURRENT GENERATOR

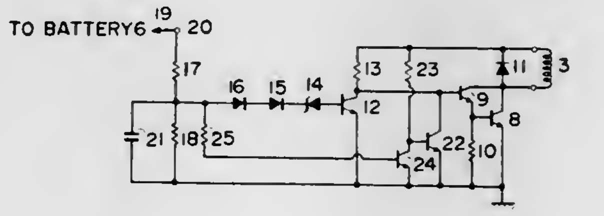
Yasuo Taguchi, and Takehiro Shimonaka, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 21, 1973, Ser. No. 371,956

Claims priority, application Japan, June 23, 1972, 47-62937

Int. Cl. H02j *7/24*; H02h *7/06*; H02p *9/30*

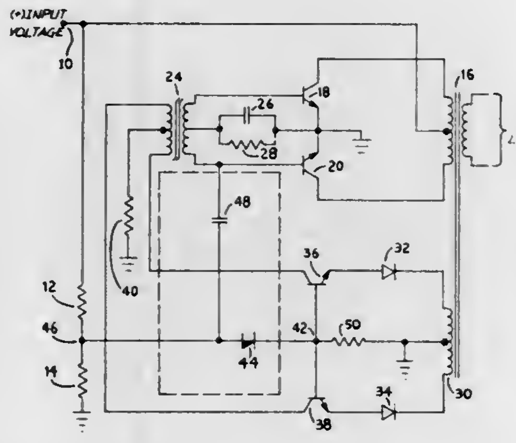
U.S. Cl. 320—64 **4 Claims**



1. An output voltage regulator for an alternating current generator comprising:

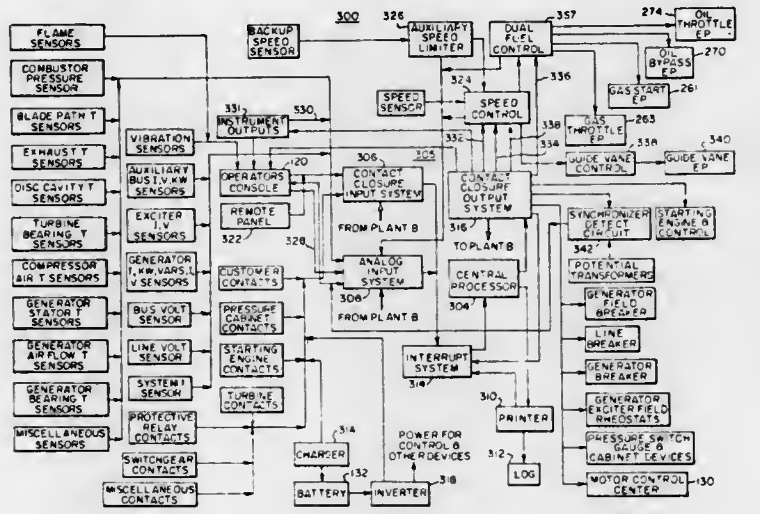
a main rectifying circuit for obtaining direct current voltage for battery charging by rectifying alternating current generated in said generator;
an auxiliary rectifying circuit having an output terminal for supplying exciting current to the field winding of said generator;
a switching circuit having at least one switching transistor connected in series between said field winding and ground;
a sensing circuit having two serially connected voltage dividing resistors coupled between the charging terminal of the battery and ground;
a control circuit including a control transistor having a base electrode coupled to the juncture of said voltage dividing resistors, a collector electrode coupled to the output terminal of said auxiliary rectifying circuit via a first biasing resistor and to the base electrode of said switching transistor and an emitter electrode coupled to ground, said control circuit being operative to control the conductivity of said switching transistor such that OFF and ON conditions of said switching transistor are attained respectively when the sensed voltage on said sensing circuit exceeds and remains below a predetermined value; and
a protection circuit including a first protection transistor coupled between ground and the output terminal of said auxiliary rectifying circuit via a second biasing resistor and having its base electrode coupled to the charging terminal of said battery through a third biasing resistor, and a second protection transistor having its collector and emitter electrodes coupled between ground and the base electrode of said switching transistor and its base electrode coupled to the collector electrode of said first protection transistor.

3,866,107
STARTING CIRCUIT FOR INVERTER
Benjamin Chandler Shaw, Granada Hills, Calif., assignor to The Bendix Corporation, North Hollywood, Calif.
Filed Jan. 28, 1974, Ser. No. 437,451
Int. Cl. H02m ***1/08***
U.S. Cl. 321—45 S **12 Claims**



1. In an inverter circuit including a main transformer having a primary winding connected to an input voltage source, a secondary winding and a feedback winding;
a pair of main switching transistors connected to said primary winding, and
a saturating feedback transformer having its secondary winding connected to said transistors and its primary winding connected to said feedback winding;
an improved starting circuit including a pair of drive switching transistors connected between the ends of said feedback winding and the primary winding of said saturating feedback transformer, and a voltage responsive semiconductor switching means connected between said source and said drive switching transistors to prevent said drive switching transistors from conducting until said source reaches a desired value and to then cause said drive switching transistors to conduct when said source exceeds said desired value.

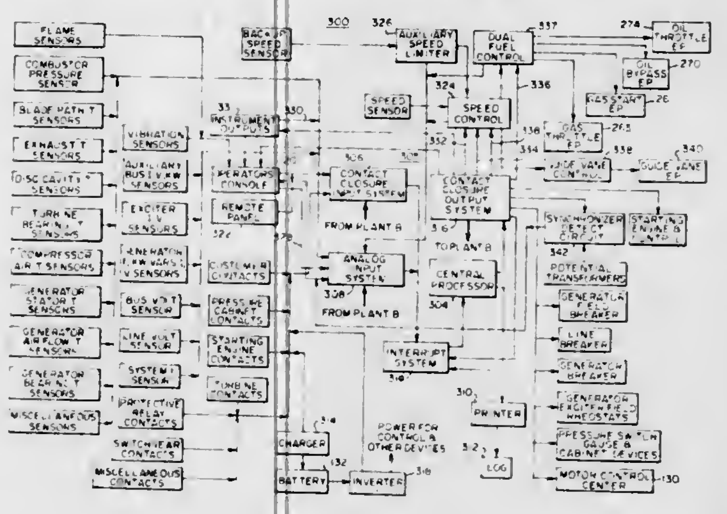
3,866,108
CONTROL SYSTEM AND METHOD FOR CONTROLLING DUAL FUEL OPERATION OF INDUSTRIAL GAS TURBINE POWER PLANTS, PREFERABLY EMPLOYING A DIGITAL COMPUTER
Robert A. Yannone, Alden, and Roy W. Kiscaden, Springfield, both of Pa., assignors to Westinghouse Electrical Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 205,261, Dec. 6, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,520
Int. Cl. H02p ***9/04***
U.S. Cl. 322—14 **13 Claims**



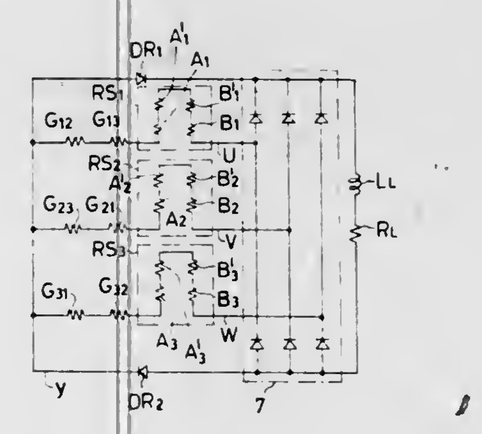
1. A gas turbine electric power plant comprising a gas turbine having a compressor and combustion and turbine elements, a generator having a field winding and being coupled to said turbine for drive power, a fuel system having plural subsystems for supplying one or more fuels to the gas tubrine combustion element, means for exciting said generator field winding, a control system including a digital computer and an input/output system therefor, a plurality of sensors disposed to monitor selected turbine parameters, said plurality of sensors comprising at least an arrangemnt of fuel pressure sensors, said plurality of sensors providing control system inputs representative of said turbine parameters, means for selectively operating one or more of said plural fuel subsystems to energize said turbine, and for controlling said exciting means, and means for operating said computer to make control action determinations for implementation by said plural fuel subsystem operating means and said exciting control means, said fuel system control actions being determined in response to time varying combinations of said sensors inputs, each of said combinations comprising at least an input from said fuel pressure sensors.

3,866,109
DIGITAL COMPUTER CONTROL SYSTEM AND METHOD FOR MONITORING AND CONTROLLING OPERATION OF INDUSTRIAL GAS TURBINE APPARATUS EMPLOYING EXPANDED PARAMETRIC CONTROL ALGORITHM
Terry J. Reed, Latrobe, and John F. Reuther, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 189,633, Oct. 15, 1971,. This application Jan. 26, 1973, Ser. No. 326,718
Int. Cl. F01d ***21/14***
U.S. Cl. 322—15 **19 Claims**

1. A gas turbine electric power plant comprising a gas turbine having compressor and combustion and turbine elements, a generator having a field winding and being coupled to said gas turbine for drive power, a fuel system for supplying fuel for said gas turbine combustion elements, means for exciting said generator field winding, a control system including a digital computer and an input/output system therefor, a plurality of sensors disposed to monitor selected turbine parameters and to provide control system inputs representative thereof, means for operating said fuel system to energize said turbine and for controlling said exciting means, means continuously responsive to a control system output for modulating air flow into said compressor, and means for operating said computer to make functionally independent control action determinations for implementation by said fuel system operating means, said exciting means and said air flow modulating means, said modulating means and said fuel system control actions being determined as some function of time varying combinations of control parameters whose values are determined in response to said sensor inputs.

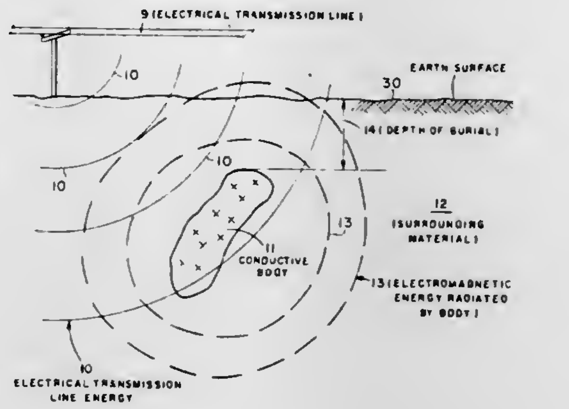


3,866,110
ELECTRICAL GENERATION AND CONTROL DEVICE
Luigi Ruggeri, Milan, Italy, assignor to Ercole Marelli & C. S.p.A., Milan, Italy
Filed Nov. 13, 1973, Ser. No. 415,374
Claims priority, application Italy, Nov. 17, 1972, 31806/72
Int. Cl. H02k ***11/00***
U.S. Cl. 322—57 **7 Claims**



1. An electric generation and control device comprising:
a. an inductor, the influence area of whose flux is such as to involve at a time at least two contiguous phases simultaneously in the magnetic armature circuit;
b. an armature having a double winding with at least three phases arranged on a magnetic stack of armature, each phase consisting of:
a generating winding arranged so that the cyclical variations of the inductor flux induce an AC voltage therein;
a smoothing and control winding electrically in series relationship with said generation winding and both electrically and mechanically phase shifted in advance with respect thereto, said smoothing and control winding being formed by at least two turns in series as wound on the two columns of at least a closed saturable core identified in the armature magnetic stack, said columns having such a cross-section and arrangement as to be cyclically saturable by the inductor flux, the spirals wound on said columns having such directions as to produce mutually additive fluxes, but the one additive and the other subtractive with respect to the inductor flux, the saturable cores of contiguous phases being magnetically coupled one to the other by bridges of a magnetic material arranged so as to connect said cores mutually in parallel with respect to the inductor flux during the saturation stage of the same cores by the inductor flux.

3,866,111
METHOD OF MINERAL EXPLORATION BY DETECTING ELECTROMAGNETIC ENERGY AT POWER LINE FREQUENCY
Roy K. Warren, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Filed July 18, 1973, Ser. No. 380,518
Int. Cl. G01v ***3/08, 3/12***
U.S. Cl. 324—3 **1 Claim**


9 (ELECTRICAL TRANSMISSION LINE)
10
EARTH SURFACE
30
14 (DEPTH OF BURIAL)
10
10
12
(SURROUNDING MATERIAL)
13
11
CONDUCTIVE BODY
13 (ELECTROMAGNETIC ENERGY RADIATED BY BODY)
10
ELECTRICAL TRANSMISSION LINE ENERGY

1. A method for exploring for a subterranean electrically conductive massive sulfide body in which induced electromagnetic energy is measured comprising the steps of:
measuring induced electromagnetic energy at selected horizontally spaced apart, aligned station locations only at the frequency, or harmonic thereof, of electrical power current being transmitted over an electrical power line capable of inducing a measurable electromagnetic field in said conductive body, said measurements being made in three coordinate directions X and Y and Z, each coordinate direction being perpendicular to the other, said X and Y and Z directions being, respectively, transverse and parallel and vertical to said conductive body; and
plotting said measurements against the station locations to produce an X curve and a Y curve and a Z curve to provide indications of the locations of said conductive body.

3,866,112

CHANNEL SELECTING APPARATUS FOR TELEVISION RECEIVER HAVING MEANS TO CUT OFF AMPLIFYING TRANSISTOR FOR PREDETERMINED TIME

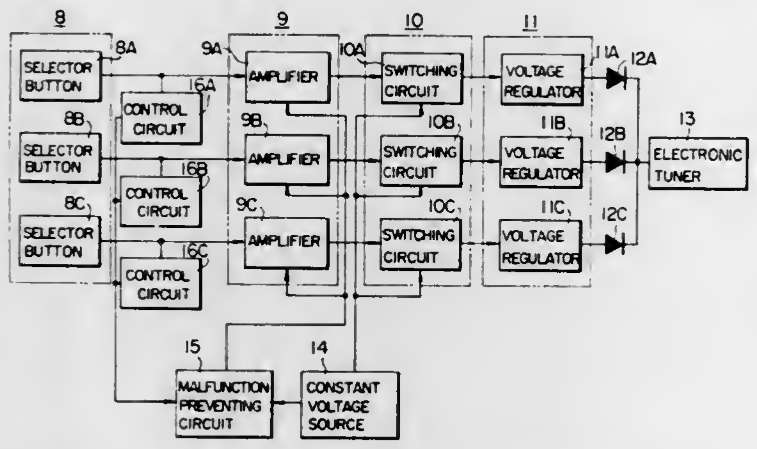
Kanji Yokoyama, Yokohama, and Hiroyuki Matsuo, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,355

Claims priority, application Japan, Feb. 10, 1973, 48-16876

Int. Cl. H03j *5/04*

U.S. Cl. 334—15 **2 Claims**



1. A channel selecting apparatus for a television receiver, comprising an electronic tuner for selecting a channel depending on the amount of the tuning voltage supplied to the input terminal thereof, a plurality of channel selecting buttons on which a signal is induced by being touched by a hand, a plurality of amplifying circuits each connected to each of the channel selecting buttons, a plurality of switching circuits each connected to each of the amplifying circuits, a plurality of voltage regulators each connected to the output terminal of each of the switching circuits, a plurality of reverse voltage blocking diodes each connected to the output terminal of each of the voltage regulators, means for connecting the output terminal of each of the reverse voltage blocking diodes to the input terminal of the electronic tuner, a plurality of control circuits each connected to each of the channel selecting buttons for deriving a part of the induced signal to effect control, a malfunction preventing circuit connected to all of the output terminals of the control circuits, means for connecting the output terminal of the malfunction preventing circuit to all of the amplifying circuits, a constant voltage source, and means for connecting the constant voltage sources to the switching circuits and the malfunction preventing circuit, whereby the amplifying circuit and the switching circuit connected to a desired channel selecting button are activated by a signal induced on the desired channel selecting button to supply an output of the constant voltage source to the voltage regulator connected to the latter switching circuit to adjust the voltage which is supplied through the corresponding reverse voltage blocking diode to the input terminal of the electronic tuner, while the malfunction preventing circuit is activated by the induced signal supplied thereto through the corresponding control circuit to produce, after the lapse of a constant time, a voltage sufficient for cutting off the amplifying circuits which is supplied to the amplifying circuits in a reverse-biassing manner.

3,866,113

TEST INSTRUMENT FOR IGNITION SYSTEMS

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Aug. 6, 1973, Ser. No. 385,823

Int. Cl. F02p *17/00*

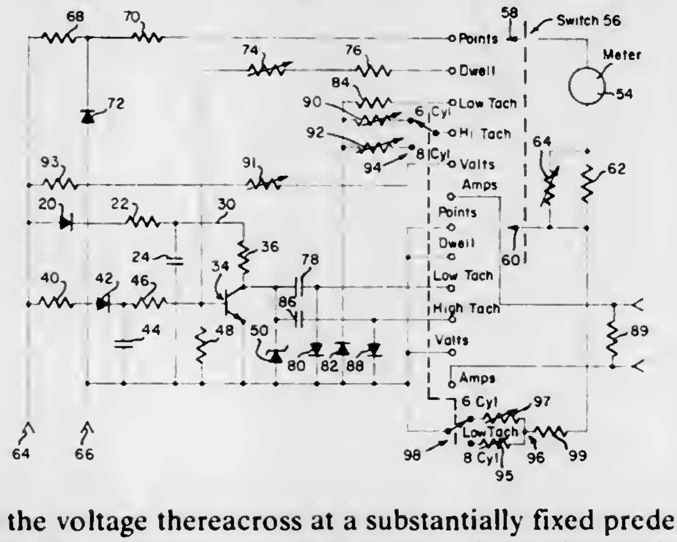
U.S. Cl. 324—16 R **4 Claims**

1. In a test instrument adapted for use in the measurement of ignition systems of the type wherein a battery is series coupled with the primary winding of a spark coil and a switching device such that pulses of current flow from the battery through the coil winding during periods a current path is provided through the switching device, a circuit arrangement comprising:

voltage supply means, having an input circuit adapted for being coupled across said coil winding and having an output circuit, for converting a portion of the energy of the current pulses which flow through said coil winding into a direct current output voltage across said output circuit;

a circuit including a transistor having its collector terminal coupled through a resistor to one terminal of the output circuit of said voltage supply means; and base, emitter bias means adapted for responding to the signal across said coil winding, for biasing said transistor on during periods said current pulses are applied through said coil windings and for biasing said transistor off during other periods;

voltage level clamping means, coupled across the collector terminal of said transistor and said other terminal of the output circuit of said voltage supply means, for maintaining the voltage thereacross at a substantially fixed predetermined amplitude value during the periods said transistor is biased off;



signal processing means coupled across the collector of said transistor and said other terminal of said voltage supply means and responsive to the voltage thereacross, for providing signal current pulses whose average value is indicative of the number of current pulses per unit of time applied through said coil winding;

a meter adapted for providing an indication of the average value of current signals applied thereto; and

switching means for selectively coupling said meter to receive the signal current pulses from said signal processing means, whereby an indication of the number of current pulses per unit of time applied through said coil winding is provided, and for selectively coupling said meter across the base and emitter terminals of said transistor, whereby an indication is provided of the percentage of time current pulses are applied through said coil winding.

3,866,114

ELECTROSTATIC MEASUREMENT SYSTEM

James E. Johnston, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 15, 1973, Ser. No. 370,255

Int. Cl. G01r *5/28, 31/12*

U.S. Cl. 324—32 **2 Claims**

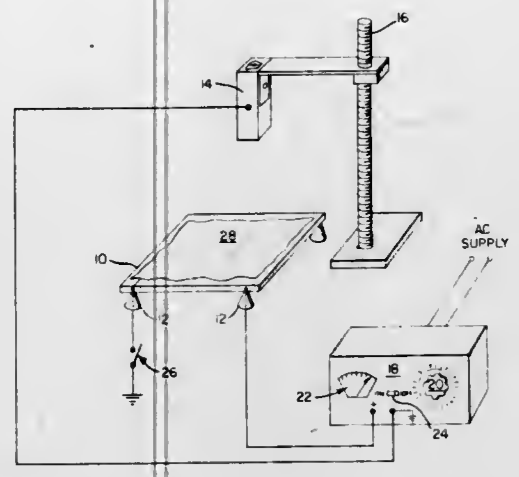
2. Apparatus for use in determining the electrostatic properties of a dielectric, comprising:

a. a contact plate insulated from electrical ground for contacting and supporting a sheet of dielectric to be tested;

b. a D.C. potential source;

c. a two-state selectively operable switch;

d. means interconnecting the plate, the potential source, the electrical ground and the switch so that in its first state, the switch holds the plate at a fixed potential relative to the electrical ground, and in the second state of the switch, the plate is disconnected from the electrical ground; and



e. an electric field meter connected to the electrical ground and spaced from the plate for measuring the electric field strength between the plate and the electrical ground when the switch is in its second state.

3,866,115

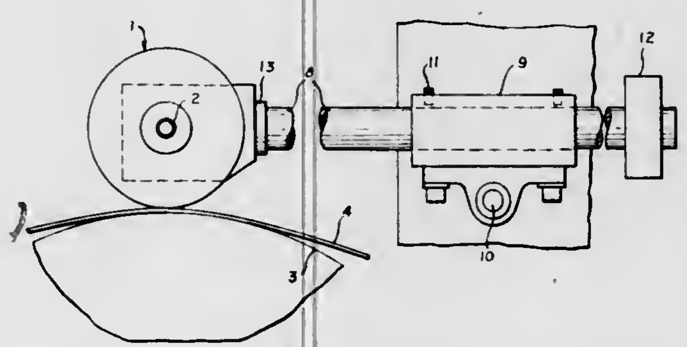
THICKNESS GAUGE SYSTEM

David W. Lewis, Rt. 2, Box 198, Charlottesville, Va. 22901

Filed Aug. 28, 1973, Ser. No. 392,199

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 TK **6 Claims**



1. A device for the continuous monitoring of thickness of a continuously moving sheet of non-conductive material using a proximity measuring system including a proximotor and a probe, a continuously moving metallic support for said sheet material, a probe mounted directly above to said moving sheet material and supported by said material so as to be held at a constant distance from the surface of said sheet material, positioning means for said electronic probe consisting of positioning elements directly supported on the continuous moving sheet of material and mounted to move in harmony with any variation in the thickness of said sheet, said electronic probe being supported non-inductively in a mechanical housing supported by said positioning elements, said housing being freely rotatably supported on the end of a rod element, said rod element being rotatably supported on a horizontal axis parallel to the plane of movement of said sheet of material, said axis being stationarily mounted relative to said moving metallic support for said sheet of non-conductive material, said rod element being adjustably mounted relative to said horizontal axis and carrying an adjustable counterweight sufficient to reduce any pressure exerted on said continuously moving sheet by said positioning means for said probe to approximately zero, said electronic probe being so constructed and arranged as to produce an electronic signal upon any lineral movement of said electronic probe normal to said metallic support for said sheet material.

3,866,116

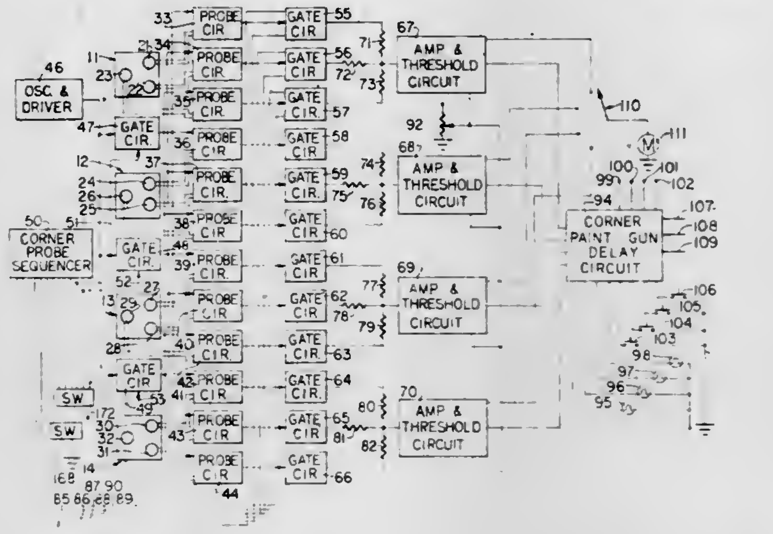
EDDY CURRENT TESTING SYSTEM HAVING PROBE SWITCHING AND GATING MEANS

Eric J. Strauts, Harwood Heights; John J. Flaherty, Elk Grove, and Donald E. Lorenzi, Des Plaines, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Apr. 23, 1973, Ser. No. 353,332

Int. Cl. G01r *33/12*

U.S. Cl. 324—40 **9 Claims**



1. In a non-destructive testing system, a plurality of eddy current probe means supported in closely spaced relation for disposition against closely spaced portions of a part, each of said probe means being operative when supplied with an energizing signal to develop an output signal corresponding to characteristics of the portions of the part adjacent thereto, a source of a high frequency energizing voltage, first coupling means coupling said energizing voltage source to said plurality of probe means, an output circuit, second coupling means coupling said plurality of probe means to said output circuit, said first coupling means comprising a first plurality of gate means corresponding to said plurality of probe means for controlling application of said energizing voltage thereto, said second coupling means comprising a second plurality of gate means corresponding to said plurality of probe means for supplying output signals from said probe means to said output circuit, and sequencing means for operating said first and second pluralities of gate means sequentially and in synchronism with each of said second plurality of gate means being operated at a time starting substantially after the start of the operation of the corresponding one of said first plurality of gate means and ending at a time not later than the end of the operation of the corresponding one of said first plurality of gate means.

3,866,117

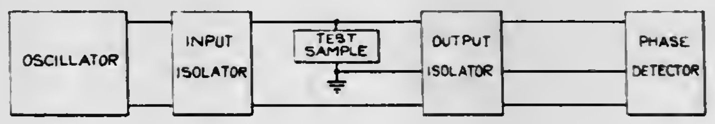
METHOD AND MEANS FOR MEASURING THE PHASE ANGLE BETWEEN CURRENT AND VOLTAGE

David M. Erdman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 331,539, Feb. 12, 1973, abandoned. This application Sept. 25, 1973, Ser. No. 400,579

Int. Cl. G01r *31/12, 25/00*

U.S. Cl. 324—54 **31 Claims**



1. Apparatus for measuring the phase angle between voltage and capacitive current across a grounded surface and an ungrounded surface of an insulator, comprising:

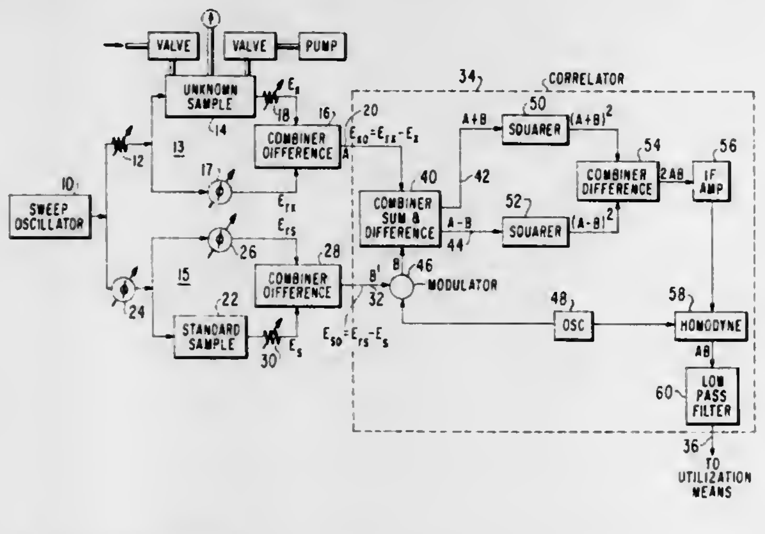
a. means for coupling the insulator to a source of alternating current to apply alternating voltage across the insulator grounded and ungrounded surfaces;

b. means for preventing parasitic capacitance and resistance of said coupling means;
c. solid state voltage transducing means connectable across the insulator grounded and ungrounded surfaces for sensing the voltage applied across the insulator to ground and for generating a first signal indicative of voltage across the insulator;
d. means for nulling parasitic capacitive and resistive current within said solid state voltage transducing means;
e. current transducing means connected in series circuit with said coupling means for sensing the capacitive current through the insulator generated by the alternating voltage applied across the insulator to ground and for generating a second signal indicative of capacitive current through the insulator; and
f. means for measuring the phase angle between said first and second signals.

3,866,118
MICROWAVE SPECTROMETER

Asoke Kumar Ghosh, D.D.O., and Harry John Moody, Pierrefords, both of Quebec, Canada, assignors to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,809
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 A **12 Claims**



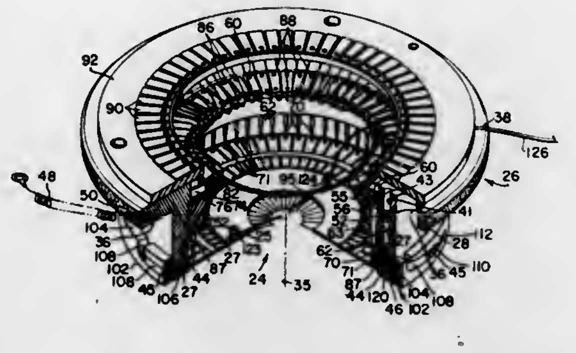
5. In combination:
means for deriving a first signal comprising solely a spectrum of frequencies of microwave energy which spectrum is formed by absorption of certain said energy by a sample of matter, said sample including a plurality of components including an unknown amount of a given component,
means for deriving a second signal comprising solely a spectrum of frequencies of microwave energy which spectrum is formed by absorption of certain of said energy by a known amount of said given component, and
correlating means responsive to said first and second signals applied thereto for cross-correlating said first and second signals to produce as an output signal therefrom a signal manifesting the amount of said given component in said sample of matter.

3,866,119
PROBE HEAD-PROBING MACHINE COUPLING ADAPTOR

Frank J. Ardezzone, Santa Clara, and Thomas A. Englert, San Jose, both of Calif., assignors to Probe Rite, Inc., Santa Clara, Calif.

Filed Sept. 10, 1973, Ser. No. 395,429
Int. Cl. G01r *31/02, 1/06*
U.S. Cl. 324—158 F **13 Claims**

1. Probe head adaptor assembly for coupling a probing machine to a head test card for testing electronic devices, the adaptor comprising
an adaptor ring member with means for mounting on a probing machine and forming a first cylindrical wall;
a pin aligning ring member positioned coaxially within the interior of the first cylindrical wall, a plurality of conductive resilient pin members supported by the aligning ring with the tip contacts of the pin members projecting from one terminal end of the aligning ring, said tip contacts establishing a predetermined pattern to correspond with the terminal pad pattern of a probe head test card to be interconnected, each of said pin members being deflectable along a plane parallel with the axis of the aligning ring;

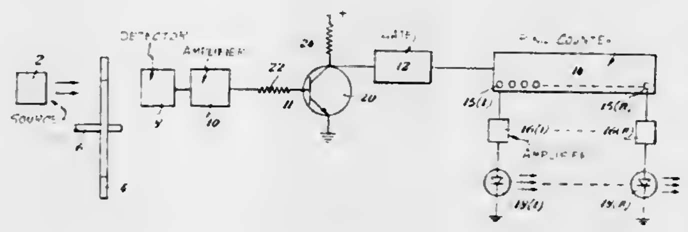


a clamping ring member forming an internal seat for receiving a probe head test card and supporting the card in a plane normal to the axis of the pin aligning ring, the clamping ring being interlockable with the adaptor ring with the probe head test card sandwiched intermediate the adaptor ring and the clamping ring with each of the terminal pads of the card abutting at least one of said pin members to form a common electrical path between said pads and said abutting pin members; and
transition means engaged about the other terminal end of the pin aligning ring for electrically interconnecting the pin members to exterior test equipment.

3,866,120
DEVICES FOR MEASURING SHAFT R.P.M.

Eric Harold Ford, London, England, assignor to Lumenition Limited, London, England

Continuation-in-part of Ser. No. 293,586, Sept. 29, 1972, abandoned. This application Apr. 3, 1974, Ser. No. 457,660
Claims priority, application Great Britain, Oct. 6, 1971, 46479/71
Int. Cl. G01p *3/48*
U.S. Cl. 324—175 **11 Claims**

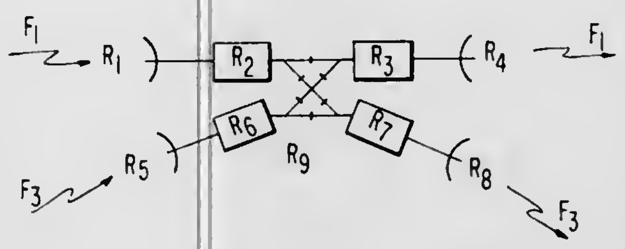


1. A device for measuring shaft R.P.M. including: means for generating a voltage of square waveform, having two voltage states and a constant mark space ratio, in synchronism with the shaft revolutions; gate means which cyclically opens to allow passage of the pulses for a predetermined time period irrespective of the speed of rotation of the shaft; a ring counter for counting the pulses passing through the gate in said predetermined time and providing a plurality of outputs; a plurality of visible diodes arranged in equi-spaced relation from one to the next; and means for connecting said diodes to respective outputs from the ring counter so that the diodes are switched on in sequence from said outputs in accordance with the pulses counted during the time which said gate is open and are switched off again as soon as the next diode in the sequence has been lit so as to cause a line of diodes to appear continuously lit during the cyclic operation, whereby the length of the line of lit diodes is proportional to the shaft R.P.M.

3,866,121
RADIO-FREQUENCY RELAY SYSTEM

Shinichi Nakamura; Kazuo Morita, and Masami Takada, all of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation and Nippon Electric Company, Limited, both of Tokyo, Japan

Filed Nov. 21, 1972, Ser. No. 308,621
Claims priority, application Japan, Nov. 24, 1971, 46-94716
Int. Cl. H04b *1/60*
U.S. Cl. 325—2 **2 Claims**

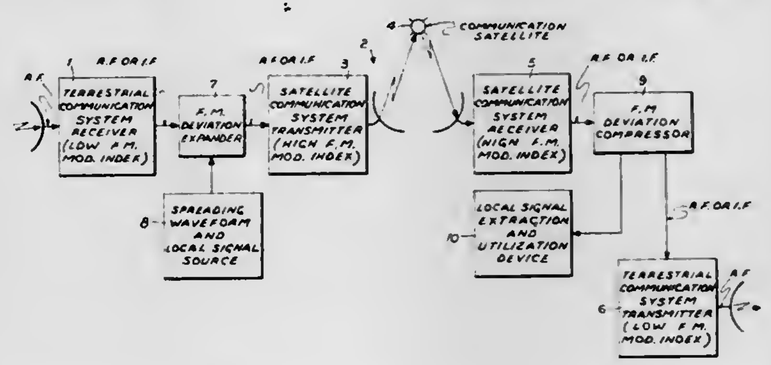


1. A radio frequency relay system for use in the frequency range above 10 GHz, comprising:
a first radio signal transmission path comprising a first plurality of consecutively positioned relay stations, each of said first plurality of relay stations comprising receiving means adapted to receive a radio frequency signal in said first radio signal transmission path, transmitter means for transmitting a radio frequency signal along said first radio signal transmission path, and means connecting said receiving means and said transmitting means for causing said transmitting means to transmit said received radio frequency signal,
a second radio signal transmission path, located over one kilometer away from said first radio signal transmission path, comprising a second plurality of relay stations, each of said second plurality of relay stations comprising receiving means adapted to receive a radio frequency signal in said second radio signal transmission path, transmitter means for transmitting a radio frequency signal along said second radio signal transmission path, and means connecting said receiving means and said transmitting means for causing said transmitting means to transmit said received radio frequency signal, and
a spare radio frequency transmission path formed at an angle with respect to and intersecting said first and second radio frequency transmission paths, said spare transmission path comprising at least two of said first plurality of relay stations (first and third relay stations) and one of said second plurality of relay stations (second relay station), wherein,
said first relay station comprises auxiliary transmitter means adapted to transmit a radio frequency signal along said spare path towards said second relay station, and switch means for selectively connecting said relay station receiver means to said auxiliary transmitter means to cause the signal received along said first path by said receiver means to be transmitted along said spare path by said auxiliary transmitter means,
said second relay station comprises auxiliary receiver means adapted to receive a radio frequency signal emanating from the auxiliary transmitter of said first relay station, auxiliary transmitter means adapted to transmit a radio frequency signal along said spare path towards said third relay station, and switch means for selectively connecting together said auxiliary receiving and transmitting means of said second relay station for causing a radio signal received by said auxiliary receiving means to be transmitted by said auxiliary transmitting means, and
said third relay station comprising auxiliary receiving means adapted to receive a radio frequency signal emanating from the auxiliary transmitter of said second relay station, and switch means for selectively connecting said auxiliary receiving means to said relay station transmitting means to cause the signal received along said spare path by said auxiliary receiver means to be transmitted along said first path by said transmitter means.

3,866,122
FM COMMUNICATION SYSTEM

Joseph Baer, Clifton, and David M. Sacks, Nutley, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Jan. 2, 1973, Ser. No. 320,414
Int. Cl. H04b *7/14*
U.S. Cl. 325—45 **20 Claims**

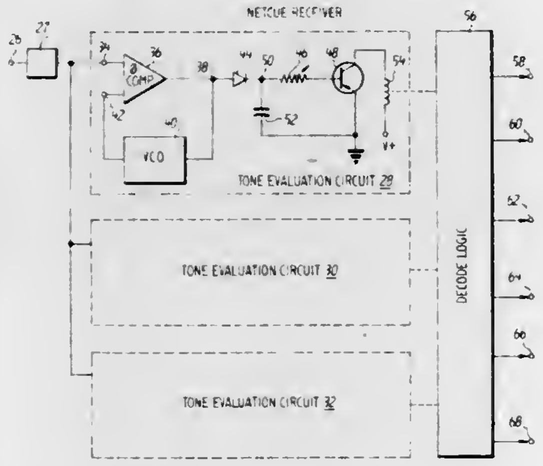

COMMUNICATION SATELLITE
R.F. OR I.F
TERRESTRIAL COMMUNICATION SYSTEM RECEIVER (LOW F.M. MOD. INDEX)
F.M. DEVIATION EXPANDER
SATELLITE COMMUNICATION SYSTEM TRANSMITTER (HIGH F.M. MOD. INDEX)
SATELLITE COMMUNICATION SYSTEM RECEIVER (HIGH F.M. MOD. INDEX)
F.M DEVIATION COMPRESSOR
SPREADING WAVEFORM AND LOCAL SIGNAL SOURCE
LOCAL SIGNAL EXTRACTION AND UTILIZATION DEVICE
TERRESTRIAL COMMUNICATION SYSTEM TRANSMITTER (LOW F.M. MOD. INDEX)

1. A frequency modulation (FM) communication system comprising:
a first FM carrier system having a first carrier frequency modulated by a first FM deviation determined by a first given FM index;
a second FM carrier system having a second carrier frequency modulated by a second FM deviation determined by a second given FM index greater than said first index;
a third FM carrier system having a third carrier frequency modulated by a third FM deviation determined by a third given FM index less than said second index;
first means coupled between a receiver of said first carrier system and a transmitter of said second carrier system operating in a first given frequency range greater than a baseband frequency range of any of said first, second and third carrier systems to expand said first deviation to equal said second deviation;
second means coupled between a receiver of said second carrier system and a transmitter of said third carrier system operating in a second given frequency range greater than a baseband frequency range of any of said first, second and third carrier systems to compress said second deviation to equal said third deviation;
said first given frequency range is selected from a radio frequency carrier range or an intermediate frequency carrier range;
said second given frequency range is selected from a radio frequency carrier range or an intermediate frequency carrier range;
said first means including
a third means coupled to said receiver of said first carrier system to frequency multiply said first carrier of said receiver of said first carrier system disposed in a selected one of said carrier ranges and said first deviation by a predetermined multiplication factor to cause said first deviation to equal said second deviation,
a first voltage controlled oscillator having a predetermined output frequency related to the frequency of said first carrier multiplied by said predetermined factor and the frequency of said second carrier of said transmitter of said second carrier system disposed in a selected one of said carrier ranges,
a first balanced mixer coupled to said third means, said first voltage controlled oscillator and said transmitter

of said second carrier system to provide said second carrier frequency modulated according to said second deviation, and
a first phase locked loop coupled between the output and input of said first voltage controlled oscillator to frequency stabilize said predetermined output frequency; said first phase locked loop including
a reference oscillator having a stable frequency equal to said predetermined output frequency,
a phase comparator coupled to the output of said voltage controlled oscillator and the output of said reference oscillator, and
a low pass filter coupled between the output of said phase comparator and said voltage controlled oscillator; and local signals coupled to said first voltage controlled oscillator to frequency modulate said predetermined output frequency by said local signals.

3,866,123
BROADCAST NETWORK SIGNALING SYSTEM AND METHOD

Wayne L. Hetrich, District Heights, Md., assignor to National Public Radio, Washington, D.C.
Filed Feb. 28, 1973, Ser. No. 336,756
Int. Cl. H04b *1/16*
U.S. Cl. 325—53 **11 Claims**


NETCUE RECEIVER
26
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34
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COMP
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VCO
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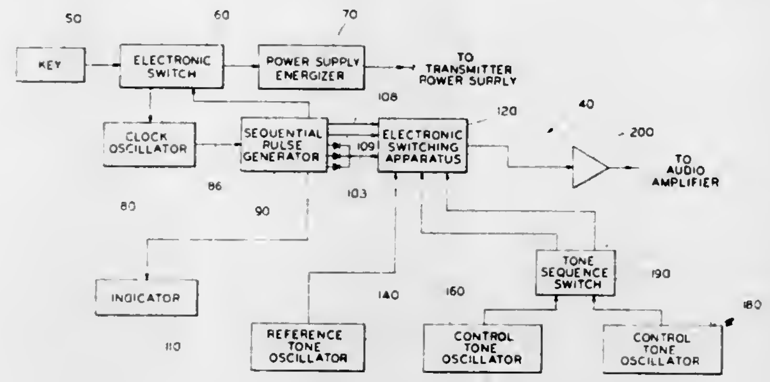
50
46
48
54
52
V+
TONE EVALUATION CIRCUIT 28
TONE EVALUATION CIRCUIT 30
TONE EVALUATION CIRCUIT 32
56
DECODE LOGIC
58
60
62
64
66
68

7. A system for alerting the interconnected individual member stations of a radio network to network operational changes comprising:
means for superimposing for a predetermined time interval at least one of a plurality of nonmusical tones each having a predetermined amplitude and frequency on the transmitted signal without interrupting the transmission of the program signal;
means for receiving the transmitted signal including superimposed tones at one of the member stations;
means for evaluating the amplitude of any received tones against a predetermined standard of amplitude;
means for generating an output signal having a frequency controllable within predetermined limits about a predetermined frequency;
a capacitor;
means for evaluating the frequency relationship between the output signal and the received tones and for charging the capacitor in response to other than a desired frequency relationship therebetween;
means for discharging the capacitor at a predetermined rate, the capacitor discharging to a predetermined level in response to the evaluation of the desired frequency relationship between the output signal and the received tones for a predetermined period of time; and,
means responsive to said amplitude evaluating means and the discharge of said capacitor to said predetermined level for providing one of a predetermined plurality of control signals.

3,866,124
COMMUNICATION SYSTEM INCORPORATING SIGNAL DELAY

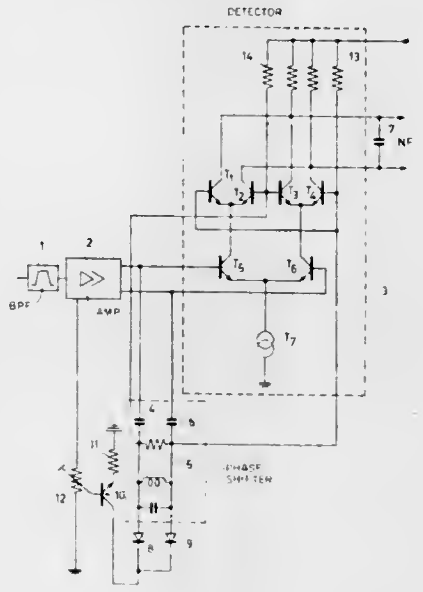
Keith H. Wycoff, 1205 N. Tyler St., Lexington, Nebr. 68850
Filed June 21, 1973, Ser. No. 372,250
Int. Cl. H04b *5/04*
U.S. Cl. 325—55 **33 Claims**



1. A communication receiver for receiving incoming signals including a sequence of a reference tone and at least one control tone, said receiver comprising a processing circuit for receiving the incoming signals and providing an undelayed sequence of tones, delay means coupled to said processing circuit for providing a delayed sequence of tones, the delay being such as to cause the reference tone in one sequence to be in time coincidence with at least a portion of the one control tone in the other sequence, mixing means having two inputs respectively coupled to said processing circuit and to said delay means for mixing the undelayed sequence and the delayed sequence, whereby said mixing means provides at least one low-frequency mixed signal having a frequency representative of the difference between the frequencies of the reference tone and the one control tone, and utilization means coupled to said mixing means for using the mixed signal.

3,866,125
CIRCUIT ARRANGEMENT FOR A RECEIVER FOR FREQUENCY-MODULATED SIGNALS HAVING VARIABLE ATTENUATION PHASE SHIFTER

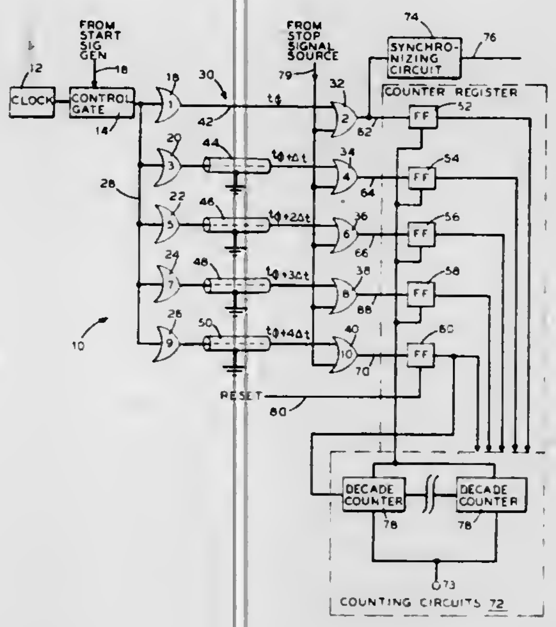
Ernst-August Kilian, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 15, 1973, Ser. No. 388,342
Claims priority, application Germany, Aug. 23, 1972, 2241344
Int. Cl. H04b *1/16*
U.S. Cl. 325—348 **6 Claims**



6. A circuit comprising input means for receiving a frequency modulated signal, a phase shifting network means coupled to said input means having a frequency dependent phase shift, and means coupled to said input means and said network for increasing the attenuation of said network with decreases in the amplitude of said received signal.

3,866,126
SIGNAL MEASURING AND COUNTING APPARATUS AND METHODS

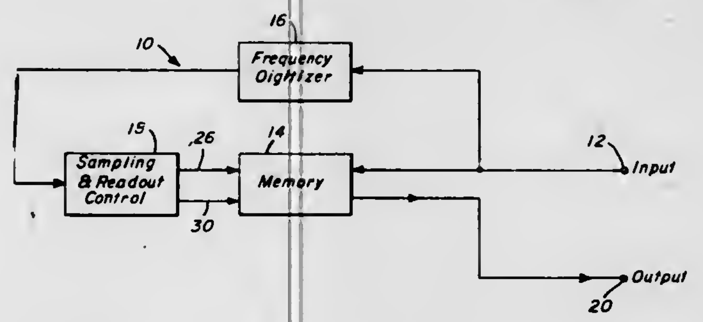
Leonard A. Cebula, Philadelphia; Joseph F. Fitzpatrick, Jr., Warminster, and Justin A. Kershaw, Jr., Churchville, all of Pa., assignors to Technitrol, Inc., Philadelphia, Pa.
Filed Feb. 20, 1973, Ser. No. 334,054
Int. Cl. H03k *5/159*
U.S. Cl. 328—15 **11 Claims**



1. Counting apparatus for counting time increments in an interval of time comprising oscillator means for producing a first signal having a preselected period, counting means having a plurality of input terminals for counting an increment of time in response to a second signal appearing at an input terminal, a plurality of time delay means coupled to said oscillator means, each said delay means progressively delaying said first signal along each of said time delay means, combining means for combining the outputs of each of said delay means for forming said second signal, said combining means connected between each one of said plurality of input terminals and said time delay means for applying said second signal to said plurality of input terminals in a predetermined sequence.

3,866,127
SELECTIVE AUDIO SIGNAL FREQUENCY MULTIPLIER

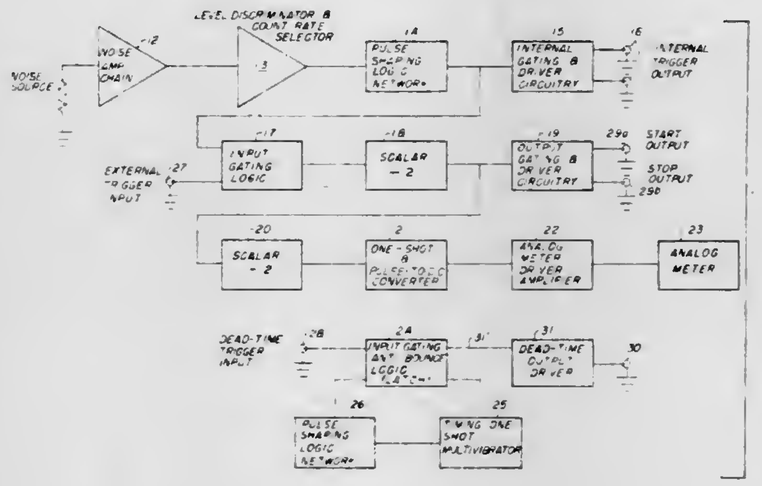
Gary A. Demos, 1153 Descanso Dr., La Canada, Calif. 91011, and David S. Ruhoff, P.O. Box 4492, Pasadena, Calif. 91106
Filed Sept. 12, 1973, Ser. No. 396,373
Int. Cl. H03k *5/00*
U.S. Cl. 328—38 **16 Claims**



1. Apparatus for multiplying the frequency of a continuous analog input signal while reproducing the wave form shape thereof without distortion, comprising memory means for storing wave form amplitude of the input signal during each signal period, signal sampling control means connected to the memory means and responsive to the input signal for rendering the memory means operative to sequentially sample and store a predetermined number of segments of the wave form amplitude during each of the signal periods, readout control means for sequentially transferring said predetermined number of wave form amplitude segments from the memory means, during a readout period of a duration that is a programmed function of the signal period, frequency control means connected to the readout control means for selecting an output frequency that is a multiple of said input frequency and output means connected to the memory means for transmitting an envelope of said transferred wave form segments at said output frequency.

3,866,128
RANDOM PULSE GENERATOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Reed S. Lindsey, Jr., Houston, Tex.
Filed June 25, 1973, Ser. No. 373,588
Int. Cl. H03k *1/00*, *3/04*; H03b *29/00*
U.S. Cl. 328—59 **7 Claims**


NOISE SOURCE
NOISE AMP CHAIN
12
LEVEL DISCRIMINATOR & COUNT RATE SELECTOR
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14
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TIMING ONE SHOT MULTIVIBRATOR

1. A programmable pulse generator capable of producing random length and random separation rectangular shaped voltage pulses, comprising:
means for producing two essentially constant amplitude, randomly occurring amplitude excursion analog voltage wave forms having a relatively wide frequency bandwidth;
means connected to said analog voltage producing means, for forming the voltage difference of said two analog voltage wave forms to provide a single, relatively wide bandwidth differential analog voltage wave form having random amplitude and random occurrence voltage components;
means connected to said voltage difference forming means for selecting only those voltage components exceeding a selected amplitude in said single differential analog voltage wave form and for producing relatively short duration, constant amplitude logic voltage pulses corresponding in time occurrence to those components exceeding said selected amplitude;
means connected to said voltage selecting means for producing rectangular shaped voltage pulses of controllable duration and controllable time separation; and
means connected to said voltage selecting means for producing rectangular shaped voltage pulses of controllable duration and controllable time separation; and
means connected to said means for producing rectangular shaped voltage pulses and responsive to said constant amplitude logic voltage pulses, for controlling the duration and time separation of said means for producing rectangular shaped voltage pulses.

3,866,129
DEVICE FOR THE DIGITAL SUBTRACTION OF FREQUENCIES

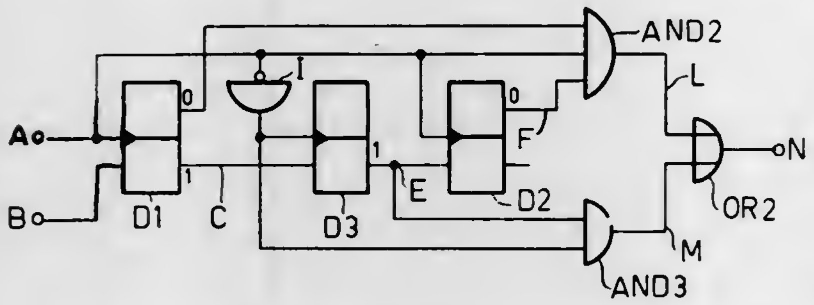
Bernardus Henricus Jozef Cornelissen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,891

Claims priority, application Netherlands, June 3, 1972, 7207569

Int. Cl. H03b *3/04;* **H03d** *13/00*

U.S. Cl. 328—133 **3 Claims**



1. A device for the digital subtraction of first periodic waveforms of a higher frequency and second periodic waveforms of a lower frequency, comprising means for deriving a first trigger pulse extending between the instant of coincidence of a steep portion of a first waveform with the top portion of a second waveform, and the instant of coincidence of the steep portion of a subsequent first waveform with the bottom portion of said second waveform, means for producing a first command pulse corresponding in length to said trigger pulse and delayed about the half-period of said first waveforms with respect to said trigger pulse, means for producing a second command pulse corresponding in length to said trigger pulse and delayed about the half-period of said first waveforms with respect to said first command pulse, means for producing an output train of waveforms corresponding to said first waveforms, means for suppressing an output waveform during the time interval between the leading edges and, respectively, during the interval between the trailing edges of said first and second command pulses, and means for inverting the phase of said ouput waveforms during the time interval of said second command pulse.

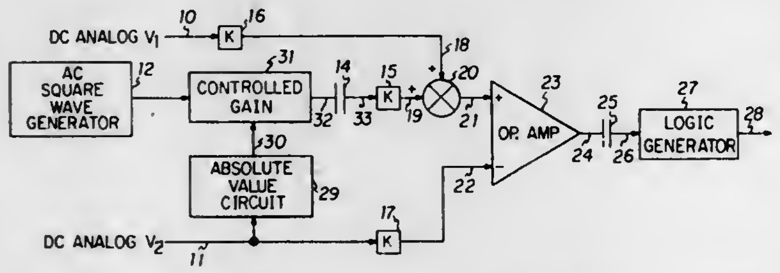
3,866,130
SIGNAL COMPARATOR WITH PROGRAMMED THRESHOLD

Melvin G. Krause, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Dallas, Tex.

Filed Mar. 7, 1974, Ser. No. 449,166

Int. Cl. H03b *3/02;* **H03k** *5/20*

U.S. Cl. 328—147 **7 Claims**



1. A signal comparator having a trip threshold programmed as a direct function of the amplitude of first and second DC analog input signals being compared, comprising a saturable differential amplifier having first and second inputs, means applying signals representing like proportions of said first and second analog input signals as respective inputs to said differential amplifier inputs; bias signal development means producing an AC square wave bias signal and comprising means controlling the amplitude of said square wave bias signal in direct proportion to the level of at least one of said analog input signals; means applying said square wave bias signal to one of said differential amplifier inputs, logic level generation means, means for capacitively coupling the output of said differential amplifier to said logic level generation means, said logic level generation means being responsive to a square wave output from said differential amplifier to derive a first voltage logic level and being responsive to a steady state saturation level output from said differential amplifier to develop a second logic level, said first and second logic levels being developed in response to the difference between the levels of said first and second analog input signals respectively exceeding and being less than the peak value of said AC square wave bias signal.

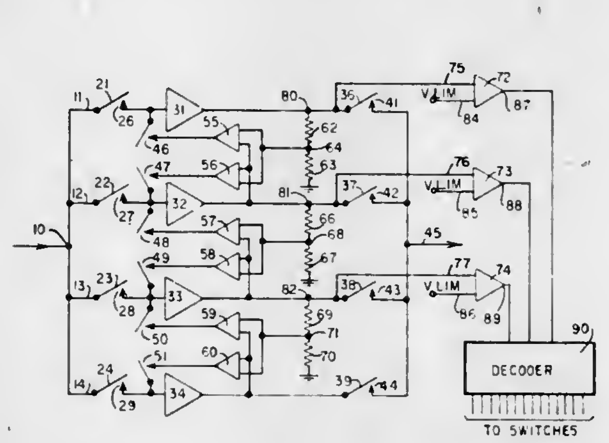
3,866,131
INTEGERATOR SYSTEM OF WIDE RANGE AND PUMP CIRCUIT THEREFOR

David R. Figueroa, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 20, 1973, Ser. No. 389,711

Int. Cl. H03k *13/06*

U.S. Cl. 328—152 **14 Claims**



1. Apparatus for integrating electrical quantities of a wide range of magnitudes, comprising:

A. means for receiving said quantities as electric pulses,

B. a plurality of integrating stages connected to said receiving means for selectively receiving and accumulating said pulses,

C. voltage dividing means coupled to said integrating stages for establishing varying contiguous ranges for said integrating stages,

D. comparing means connected to the outputs of said integrating stages for sensing critical values of said accumulated electric quantities, and

E. control means coupled to said comparing means for activating and deactivating integrating stages in response to said critical values of electric quantities.

3,866,132
MOVING FOIL STRIPPER FOR A PARTICLE ACCELERATOR

Andrew J. Gorka, Jr., Naperville, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 30, 1974, Ser. No. 474,556

Int. Cl. H05h *7/00*

U.S. Cl. 328—233 **9 Claims**

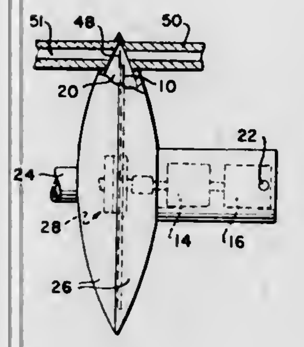
1. An apparatus for timed insertion of thin stripping foils into the beam of a particle accelerator comprising:

a circular disk disposed in a vacuum environment in a plane perpendicular to the beam and substantially tangent to the beam;

a rotating drive connected to the circular disk to rotate said disk, said rotating drive including means for adjusting the phase of rotation of said circular disk relative to the beam;

a stripping foil connected to the circular disk at a first edge of said foil near the circumference of the disk and at a second edge of said foil radially inward from said first edge; and

means for releasing said foil near said second edge while rotating said disk,



whereby release of said foil and adjustment of said phase of rotation effects timed insertion of said foil into said beam.

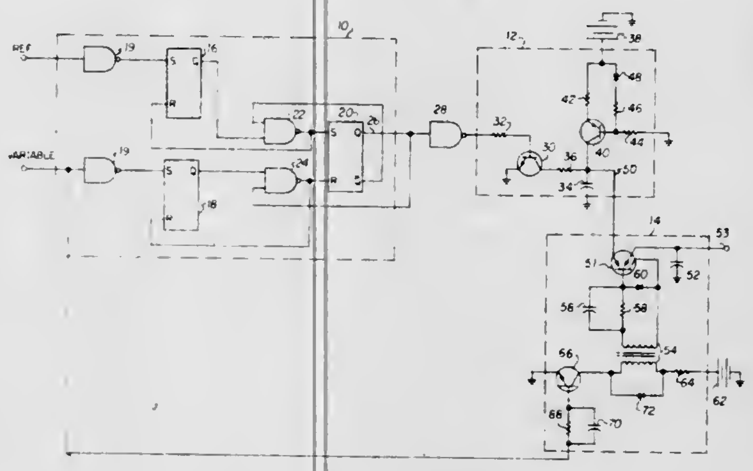
3,866,133
DIGITAL FREQUENCY-PHASE DISCRIMINATOR CIRCUIT

Roger C. Debloois, West Lake Village, Calif., and Noel E. Hogue, Cedar Rapids, Iowa, assignors to Rockwell International Corporation

Filed Mar. 7, 1974, Ser. No. 448,854

Int. Cl. H03k *9/00, 5/20*

U.S. Cl. 329—104 **2 Claims**



1. A digital frequency-phase discriminator circuit for comparing a variable periodic signal with a reference periodic signal, comprising:

discriminator means for providing one digital control signal when the frequency of the variable signal is less than that of the reference signal, another digital control signal when the variable signal frequency is greater than the reference signal frequency and alternations between the two control signals when the periodic signals have the same frequency but different phase angles with the duty cycle in such case being a linear function of the phase angle between the periodic signals;

ramp generator means having an output between two fixed levels wherein the output is maintained at one level in response to one of the control signals and is enabled to linearly change to the other level in response to the other control signal, the other level being attained in a time period corresponding to the period of the reference signal; and

sample and hold circuit means for periodically sampling the output of said ramp signal generator means and holding the sampled value until the next sample is taken.

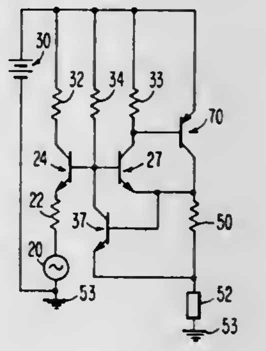
3,866,134
POWER AMPLIFIER WITH SELF BIASING AND INSENSITIVITY TO TEMPERATURE VARIATIONS

Hobart Atsushi Higuchi, and Richard Arnold Voge, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,097

Int. Cl. H03f *3/04;* **H03f** *3/68*

U.S. Cl. 330—22 **12 Claims**



1. An electric signal amplifying circuit arrangement operable independently of variation in ambient temperature, comprising:

signal input terminals,

signal output terminals,

an output transistor having base, emitter and collector electrodes,

an input transistor and a compensating transistor having base-emitter potential characteristics matched over a range of temperature through which the amplifying circuit arrangement is operable,

said input and compensating transistors each having base emitter and collector electrodes,

a bias resistor connected between one of said signal input terminals and said emitter electrode of said input transistor,

load resistors individually connected between said collector electrode of said input and said compensating transistors and a source of energizing potential,

an electric current carrying element connected between said base electrode of said output transistor and one of said load resistors at the terminal remote from said source of energizing potential,

the emitter and collector electrodes of said output transistor and a biasing resistor being connected in series between one of said signal output terminals and one terminal of said source of energizing potential

an electric current carrying element connected between said biasing resistor at the terminal thereof remote from emitter electrode of said compensating transistor,

a bias circuit resistor having one terminal connected in common to said base electrodes of said input and compensating transistors and the other terminal connected to said source of energizing potential,

whereby the effect of temperature change on the current applied to a load element connected to said output terminals is compensated.

3,866,135
REVERSING CONTROLLER

Ralph E. Clements, Loves Park, Ill., assignor to Barber-Colman Company, Rockford, Ill.

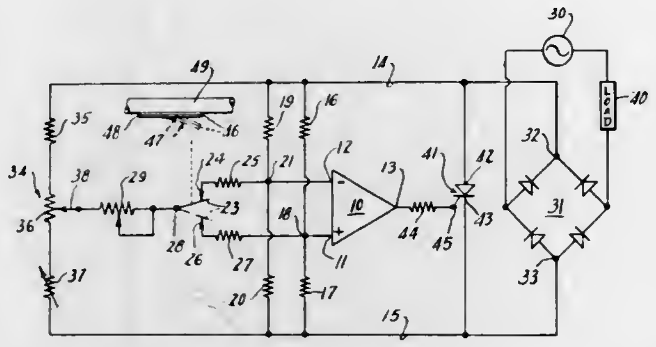
Continuation of Ser. No. 249,910, May 3, 1972, abandoned. This application Sept. 12, 1973, Ser. No. 396,511

Int. Cl. H03f *1/14*

U.S. Cl. 330—51 **10 Claims**

1. A control circuit comprising an amplifier having first and second input terminals and an output terminal, a pair of conductors for connection to a power source, a first series resistance circuit connected between said conductors and having a first tap coupled to the first input terminal, a second series

resistance circuit connected between said conductors and having a second tap coupled to the second input terminal, a voltage divider connected between said conductors and having a third tap, a variable condition sensor in the voltage divider to provide a condition variable voltage signal at said third tap, and means for selectively coupling said third tap to a selected one of the input terminals, whereby an output signal produced at the output terminal may be reversed with respect to said condition variable voltage signal.



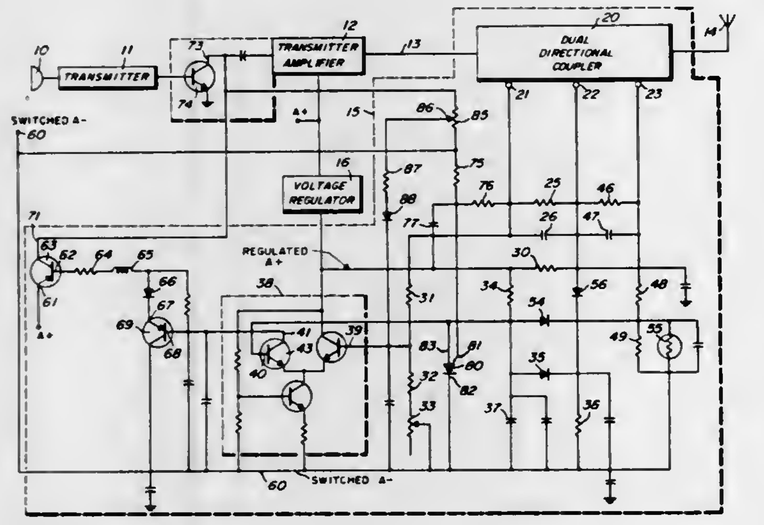
3,866,136
AMPLIFIER PROTECTION CIRCUIT

Michael J. Augustin, Hoffman Estates; Wayne C. Kramer, Villa Park, and Robert M. Treanor, Lake Zurich, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 23, 1973, Ser. No. 353,287

Int. Cl. H03f *21/00*

U.S. Cl. 330—207 P **6 Claims**



1. A protection circuit for controlling the power of a transmitter amplifier which produces an output varying with a control signal applied thereto, said circuit including in combination: first circuit means coupled to the transmitter amplifier output for sensing the forward power coupled therefrom, said first circuit means developing a first signal which varies in accordance with the sensed forward power; bias circuit means for developing a second signal; signal comparing means coupled to said first circuit means and said bias circuit means for comparing said first and second signals, said signal comparing means developing a control signal which varies in accordance with the difference between said first and second signals, said signal comparing means being coupled to the transmitter amplifier for applying said control signals thereto to vary the power developed by the transmitter amplifier; and delayed power level sensing circuit means coupled to said first circuit means and said bias circuit means, said delayed circuit means being operative in response to said forward power being below a predetermined level for a predetermined period of time to reduce said second signal, said comparison means being operative in response to said reduced second signal to reduce said control signal for decreasing said transmitter amplifier power.

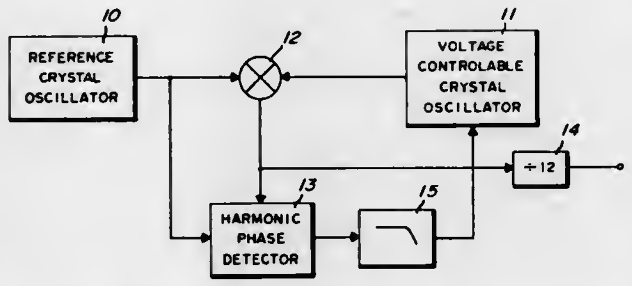
3,866,137
PHASE LOCKED FREQUENCY DIVIDER CIRCUITRY

Francis R. Steel, Pompano Beach, Fla., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 14, 1973, Ser. No. 397,482

Int. Cl. H03b *3/08*

U.S. Cl. 331—18 **7 Claims**


10
REFERENCE CRYSTAL OSCILLATOR
12
11
VOLTAGE CONTROLABLE CRYSTAL OSCILLATOR
14
÷12
13
HARMONIC PHASE DETECTOR
15

1. Phase locked frequency divider circuitry for providing a signal having a desired frequency comprising:

- a. crystal controlled reference means providing a first signal having a first frequency which is a harmonic of the desired frequency;
- b. voltage variable crystal oscillator means providing a second signal having a second frequency different from the first frequency by the desired frequency;
- c. mixer means connected to receive the first signal from said reference means and the second signal from said oscillator means and provide an output signal having substantially the desired frequency at an output thereof; d. harmonic phase detector means connected to receive the first signal from said reference means and the output signal from the output of said mixer means, said phase detector means providing an output voltage indicative of a synchronous relationship between the first frequency and the desired frequency; and
- e. means coupling the output voltage from said phase detector means to said crystal oscillator means for varying the frequency of said second signal to maintain a relatively constant synchronism between the first frequency and the desired frequency.

3,866,138
CIRCUIT ARRANGEMENT FOR AN OSCILLATOR FOR AT LEAST TWO FREQUENCY RANGES AND ITS USE AS A SELF-OSCILLATING MIXER STAGE

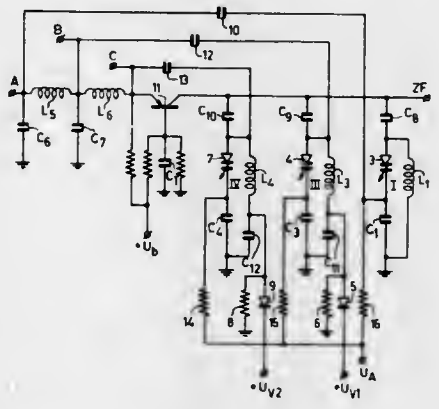
Walter Putzer, Krefeld, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,075

Claims priority, application Germany, Nov. 24, 1972, 2257574

Int. Cl. H03b *5/12;* **H03j** *5/24*

U.S. Cl. 331—60 **11 Claims**



8. An oscillator circuit for at least two frequency ranges said circuit comprising an amplifying element having input and output electrodes, a plurality of frequency-determining tuning circuits for said ranges respectively, each of said tuning circuits having an associated variable reactance tuning element

coupled to said output electrode, all of the tuning elements being commonly controlled, a resonant circuit coupled to said input electrode, a plurality of feedback paths for said ranges respectively coupled from the respective tuning circuit to said resonant circuit, means for ensuring that oscillation conditions are satisfied in only a part of the tuning range of each tuning circuit comprising the resonant circuit and said feedback paths having selected values, and means for applying to at least one variable reactance element a fixed bias.

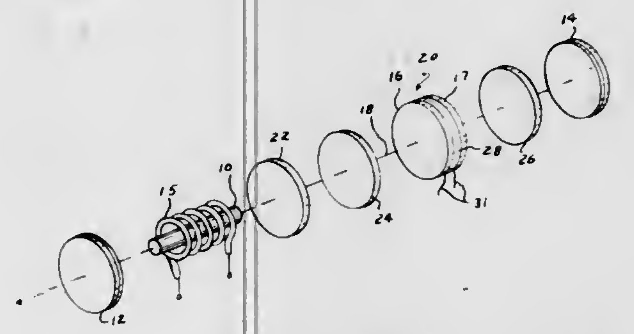
3,866,139
APPARATUS FOR LASER FREQUENCY SELECTION

George D. Currie, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,620

Int. Cl. H01s *3/00;* **G02f** *1/26*

U.S. Cl. 331—94.5 C **3 Claims**



1. A laser system comprising: first and second reflecting surfaces spaced from each other along an axis and defining a resonant cavity; a lasing medium within said cavity; means for pumping said lasing medium; said lasing medium having gain over a plurality of frequency regions within said cavity; means for linearly polarizing the light output of said lasing medium; a first quarter wave plate within said cavity, between said lasing medium and one of said reflecting surfaces, adapted to convert said linearly polarized light to circularly polarized light; a second quarter wave plate, spaced from said first quarter wave plate, between said first quarter wave plate and said one of said reflecting surfaces, adapted to convert said circularly polarized light to linearly polarized light; an etalon, having third and fourth reflecting surfaces, positioned between said first and said second quarter wave plates within said cavity, with the reflecting surfaces of said etalon being positioned perpendicular to said axis; said etalon including means for setting its transmission characteristic to coincide with only one predetermined frequency gain region of the lasing material.

3,866,140
OPTICAL CAVITY FOR A LASER

James Lee Hobart, and Wayne S. Mefferd, both of Palo Alto, Calif., assignors to Coherent Radiation Laboratories, Palo Alto, Calif.

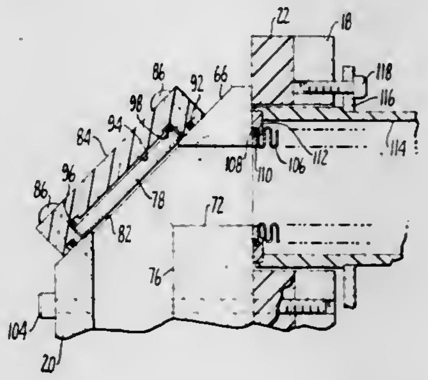
Division of Ser. No. 778,072, Nov. 22, 1968, Pat. No. 3,683,297. This application Apr. 24, 1972, Ser. No. 247,201

Int. Cl. H01s *3/02, 3/22;* **G02b** *5/08*

U.S. Cl. 331—94.5 **2 Claims**

1. In a laser having an optical path, a support body adjacent to said optical path, a pair of end mirrors mounted on said body at opposite ends of said optical path, and a lasing medium mounted on said body and extending along said optical path, the improvement comprising:

- A. at least one corner block mounted on said body for folding said optical path with said corner block comprising:
  - 1. an integral mass of ceramic material having a pair of exterior faces inclined to each other at an angle of 90°; 2. a pair of generally parallel and spaced apart bores extending through said mass from said exterior faces and intersecting said exterior faces at generally elliptical apertures;
  - 3. a transverse bore extending through said mass and connecting said elliptical apertures, and
  - 4. a recess in each of said exterior faces the minimum width of which is at least as large as the maximum width of the elliptical aperture in said face,
- B. a mirror mounted on each of said exterior faces of said mass whereby said mirrors can be rotated without bringing into said elliptical apertures any surface of said mirror which was previously in engagement with said mass, and C. a mirror support means for each of said mirrors on each corner block comprising a mounting plate having on one side thereof a central area inside the periphery of said mirror and an outer area surrounding said inner area and outside the periphery of said mirror, a resilient O-ring positioned between said mirror and said one side of said plate between said central and outer areas thereof, a through passageway in said plate extending between said central and outer areas to permit gas flow therethrough; D. mounting means for mounting said plate on said ceramic mass with said O-ring compressed and with said mirror engaging said exterior face of said mass with said mounting means having a fluid seal between said ceramic mass and said outer area of said plate; and
- E. chamber means for containing said lasing medium, with said chamber means being in gaseous communication with said mirror and with said outer area of said plate, and being in gaseous communication through said through passageway, with the side of said mirror opposite to said block.



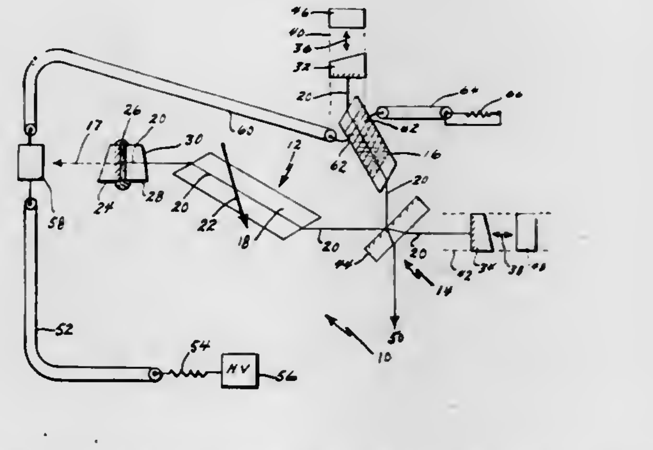
3,866,141
BANDWIDTH-LIMITED, CAVITY-DUMPED, LASER SYSTEM

David Milam, Burlington; Audun Hordvik, Acton; Rudolph A. Bradbury, Saugus, and Howard R. Schlossberg, Lexington, all of Mass., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Dec. 21, 1973, Ser. No. 427,287

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 M **9 Claims**



1. A laser system for producing bandwidth-limited, cavity-dumped pulses comprising a laser medium, a reflective surface

located adjacent one end of said laser medium and located along a common optical axis with said laser medium, a Michelson interferometer located adjacent the other end of said laser medium and in optical alignment with said reflective surface, said Michelson interferometer having a beam splitter, a first reflective surface and a second reflective surface, both said surfaces being substantially totally reflective, and a means interposed between said beam splitter and one of said substantially totally reflective surfaces for shifting the phase of that portion of a laser beam directed from said beam splitter to said one substantially totally reflective surface whereby upon a 90° phase shift of said portion of said laser beam, said bandwidth-limited pulse will be dumped from said laser system.

3,866,142

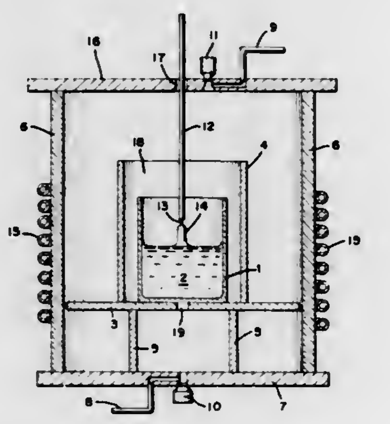
DOPED BERYLLIUM LANTHANATE CRYSTALS

Carl F. Cline, Mendham, and Robert C. Morris, Flanders, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,450

Int. Cl. H01s *3/16*

U.S. Cl. 331—94.5 F **4 Claims**



1. A laser comprising:

a. a laser host comprising at least one single crystal of doped beryllium lanthanate having the formula $Be_2La_{2-2x}Z_{2x}O_5$, wherein Z is a dopant selected from the group consisting of praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and mixtures thereof and wherein x is a positive value not greater than about 0.2; and

b. means for exciting said dopant atoms contained in said crystal to cause said atoms to emit radiation.

3,866,143

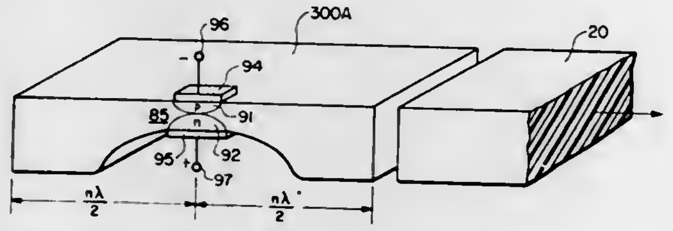
QUASI-OPTICAL INTEGRATED CIRCUITS

Harold Jacobs, West Long Branch, and Metro M. Chrepta, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 218,964, Jan. 19, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 397,184

Int. Cl. H03b *7/14*

U.S. Cl. 331—107 R **11 Claims**



1. A quasi-optical oscillator comprising an active electron device capable of operating in the millimeter and submillimeter region of the electromagnetic frequency spectrum and a cavity resonator structure having a resonant line length and consisting of a bulk intrinsic semiconductor material of high resistivity for guiding wave energy produced by said electron device, said electron device being positioned within said resonator structure, said electron device further having applied thereto a unidirectional biasing potential.

3,866,144

MICROWAVE OSCILLATOR

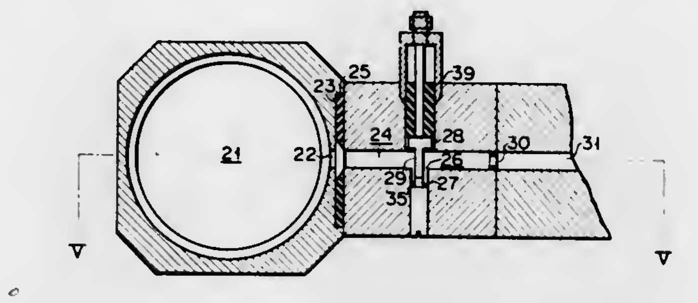
Yoshihiko Sawayama, 1806 Nagota-cho, Minami-ku, and Kenji Hirai, 4421-23, Akuwa-cho, Seya-ku, both of Yokohama, Japan

Filed Nov. 5, 1973, Ser. No. 412,836

Claims priority, application Japan, Nov. 9, 1972, 47-11158; Aug. 30, 1973, 48-96679

Int. Cl. H03b *7/14*

U.S. Cl. 331—107 G **20 Claims**



1. A microwave oscillator comprising a transmission line; an oscillation circuit including a solid oscillation element and connected to the transmission line at an intermediate point; a series circuit including an oscillation cut-off resistor having a smaller impedance than the characteristic impedance of said transmission line and a high-Q resonance circuit, said series circuit being connected to one end of the transmission line; and a reactive coupling means connected to the other end of the transmission line.

3,866,145

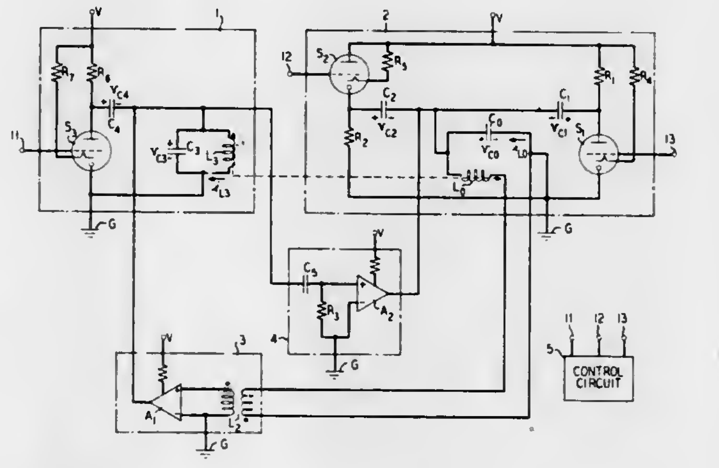
TUNED OSCILLATOR CIRCUIT FOR PROVIDING A ROTATING IN-PLANE MAGNETIC FIELD

William Emil Hess, Jr., Piscataway, and George Philip Vella-Coleiro, Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 7, 1974, Ser. No. 431,504

Int. Cl. H03b *11/08*

U.S. Cl. 331—128 **17 Claims**



1. An oscillator circuit comprising:

a tuned circuit,

first means for storing a first predetermined amount of energy,

second means for storing a second predetermined amount of energy,

first means for transferring said first predetermined amount of energy to said first storing means,

second means for transferring from said first storing means to said tuned circuit an amount of energy sufficient to initiate an oscillatory current of a predetermined frequency, amplitude and phase in said tuned circuit, and

third means for transferring from said tuned circuit to said second storing means an amount of energy sufficient to terminate said oscillatory current at a predetermined phase point without producing undesirable transient ringing effects.

3,866,146

PULSE WIDTH MODULATORS

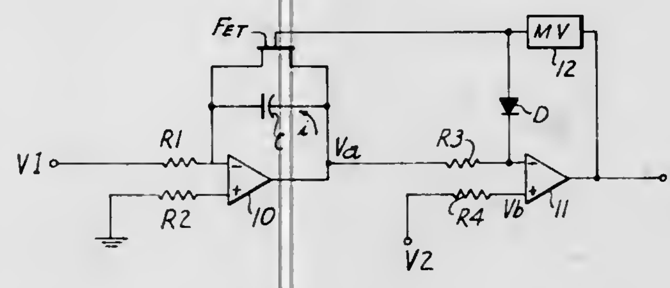
Cornelis Van Mourik, Hoogland, Netherlands, assignor to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 8, 1974, Ser. No. 449,404

Claims priority, application Netherlands, Oct. 22, 1973, 7314475

Int. Cl. H03k *7/08*

U.S. Cl. 332—9 R **10 Claims**



1. A pulse width modulator, comprising:

integrator means comprising first inverting amplifier means having a first input, a second input and a first output, one of said first and second inputs being an inverting input and the other of said first and second inputs being a non-inverting input, and storage means connected between the first input and the first output of said first amplifier means;

second inverting amplifier having a third input, a fourth input and a second output, said third input being the same type as said first input and said fourth input being of the same type as said second input;

means connecting said first output to said third input, and means providing a reference potential to said second input;

first input means for supplying a signal to said first input and second input means for supplying a signal to said fourth input; and

reset means connected to said second output for resetting said storage means.

3,866,147

BALANCED CORRELATED TERNARY CODING SYSTEM

Gilbert De Couvreur, and Marc Pastor, both of Sherbrooke, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Filed Feb. 26, 1973, Ser. No. 336,048

Int. Cl. H03k *13/24*

U.S. Cl. 332—11 R **6 Claims**

1. A modulator for converting a binary code into a ternary code comprising:

a. an inverter for receiving a binary code B and capable of generating at its output the complement B;

b. a first and a second flip flop of the JK type each having two inputs J and K and two complementary outputs Q and Q satisfying the following logic equations:

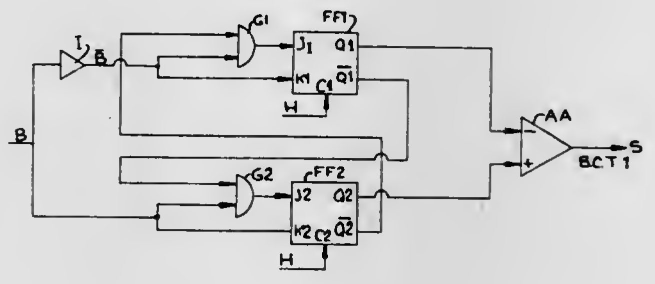
$$Q_{n+1} = Q_n J_n + Q_n K_n \tag{1}$$

$$Q_{n+1} = Q_n J_n + Q_n K_n \tag{2}$$

c. a first and a second gate each having two inputs and one output, the output of said first and second gates connected to one of the inputs J and K of the first and second flip flops respectively;

d. an arithmetic adder having a first and a second input and one output, the first and second inputs of said arithmetic adder connected to one output of said first and second flip flops respectively and the output of said arithmetic adder providing said ternary code; and

e. means interconnecting the outputs of said first and second gates to one of the inputs J and K of said first and second flip flops respectively, one of the outputs Q and Q of said first and second flip flops to the first and second inputs respectively of said arithmetic adder, one of the binary code B and its complement B to one input of said first and second flip flops and to the first input of said first and second gates, and the second input of the first and second gates to one output of said second and first flip flops respectively so that the first and second inputs of said arithmetic adder satisfy the following logic equations respectively:



$$Y_{1n+1} = Y_{1n}\ Y_{2n}\ B_n + Y_{1n}\ B_n \tag{3}$$

$$Y_{2n+1} = Y_{1n}\ Y_{2n}\ B_n + Y_{2n}\ B_n \tag{4}$$

wherein B_n = a digit of the binary code,

Y_{1n}, Y_{2n} = the present state of the ternary code expressed in binary form,

Y_{1n+1}, Y_{2n} = the following state of the ternary code expressed in binary form.

3,866,148

AMPLITUDE MODULATOR HAVING A TRANSISTOR CONTROLLED BIAS CURRENT

Thomas K. Lisle, Jr., Glen Burnie, and Joseph Romanchak, Pasadena, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,352

Int. Cl. H03c *1/38*, *1/54*

U.S. Cl. 332—31 T **4 Claims**

1. An amplitude modulator having low modulation distortion comprising:

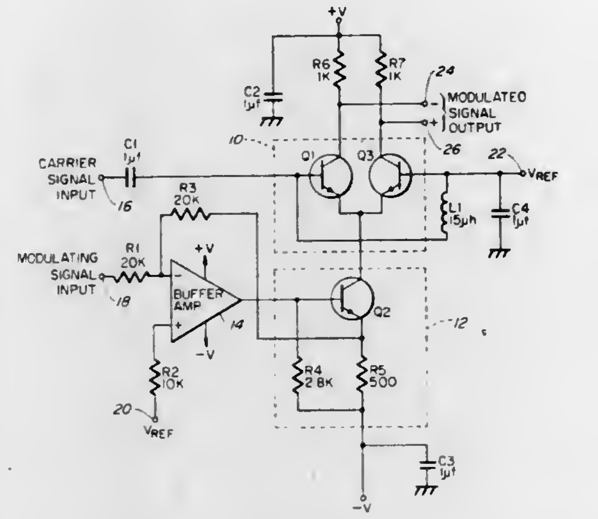
a. a common-emitter differential amplifier;

b. means for applying a carrier signal to said amplifier;

c. means for applying a reference voltage to said amplifier;

d. a transistor having its collector junction connected to the common emitter connection of said amplifier for biasing said amplifier with a voltage-controlled, linear-tuning, constant current modulation signal;

e. an operational amplifier connected to the base of said transistor, the feedback path of said operational amplifier being coupled to the emitter of said transistor whereby the non-linearity of said transistor is eliminated.



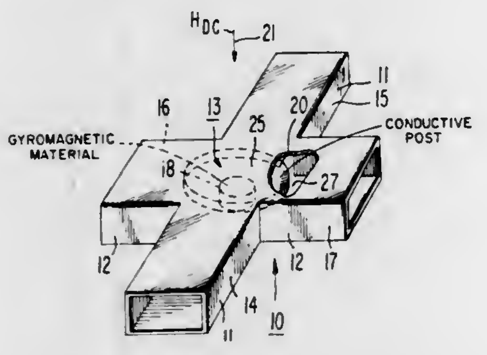
3,866,149
FOUR-PORT JUNCTION CIRCULATOR HAVING LARGER DIAMETER CONDUCTIVE POST CONTACTING GYROMAGNETIC POST

George Christian Jung, Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,313

Int. Cl. H01p *1/32*

U.S. Cl. 333—1.1 **3 Claims**



1. In a four terminal waveguide circulator operable over a given frequency range comprising a pair of rectangular waveguides extending in perpendicular relationship in a common plane to form a junction having a pair of parallel boundary walls, separated from each other by a height equal to the height of each of said waveguides, and a cylindrical post of gyromagnetic material of a first diameter disposed within said junction of said waveguides between said boundary walls and on one of said boundary walls at the center of said junction, the axis of said post of gyromagnetic material being normal to said plane and the axial length of said post of gyromagnetic material being less than the distance between said boundary walls, and means for providing a magnetic field directed axially of said post of gyromagnetic material, the improvement therewith comprising:

a cylindrical conductive post of a diameter greater than said first diameter by an amount at least approximately a half wavelength at a frequency within said give frequency range disposed between said boundary walls at said junction and on the other of said boundary walls, the axis of said conductive post being normal to said plane with said conductive post extending to contact said post of gyromagnetic material, the gyromagnetic post and the conductive post being centered on an axis which intersects the center lines of said waveguides, the relative heights and the diameters of said posts being dimensioned with a given strength of said magnetic field to provide circulator action.

3,866,150
WAVEGUIDE JUNCTION CIRCULATOR HAVING CONDUCTIVE PARTITION IN MAGNETIC MIDPLANE OF FUNCTION

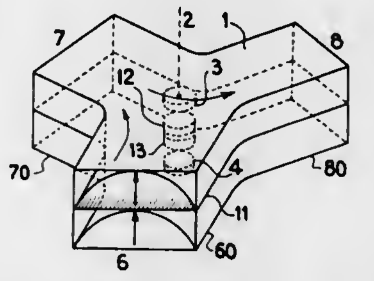
Ngo Hai Thai, and Joseph Violi, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 26, 1973, Ser. No. 418,821

Claims priority, application France, Nov. 28, 1972, 72.42261

Int. Cl. H01p *1/32*

U.S. Cl. 333—1.1 **7 Claims**



1. A circulator assembly comprising:

a waveguide structure with three coplanar waveguide arms of rectangular cross-section merging in a magnetic-plane junction centered on an axis perpendicular to the magnetic plane;

a pair of first ferrite members spacedly mounted along said axis on opposite inner wall surfaces of said structure;

a conductive partition transverse to said axis mounted in said junction substantially midway between said wall surfaces, said partition extending all-around past said ferrite members and spanning the entire area of said junction;

a pair of second ferrite members coextensive with said first ferrite members on opposite faces of said partition, said first ferrite members spacedly confronting said second ferrite members; and

magnetic-field generating means in line with said axis mounted externally on said structure.

3,866,151
SPECIFIC FREQUENCY SIGNAL DETECTING CIRCUIT

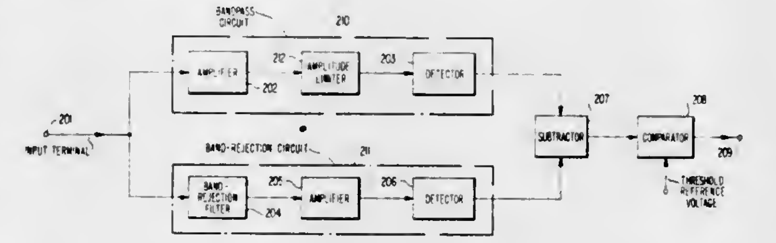
Mutsunari Tajima, and Isao Komatsu, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 13, 1973, Ser. No. 340,794

Claims priority, application Japan, Mar. 14, 1972, 47-026432

Int. Cl. H04b *3/04*; **H03h** *7/14*

U.S. Cl. 333—17 **3 Claims**



1. In a specific frequency signal detecting circuit comprising:

means for passing full-range frequency components in a transmission frequency band and for delivering a first d.c. signal representative of the level of said full-range frequency components;

means for attenuating specific frequency components in said frequency band, for passing the remaining frequency components in said frequency band, and delivering a second d.c. signal representative of the level of said remaining frequency components;

means for subtracting said second d.c. signal from said first d.c. signal; and

means for generating a detection signal when the output of said subtracting means exceeds a given threshhold value, thereby to detect a specific frequency signal contained in said specific frequency components;

the improvement comprising an amplitude limiting means in said full-range frequency components passing means for restricting the output level of said full-range frequency components passing means to a value below a predetermined level.

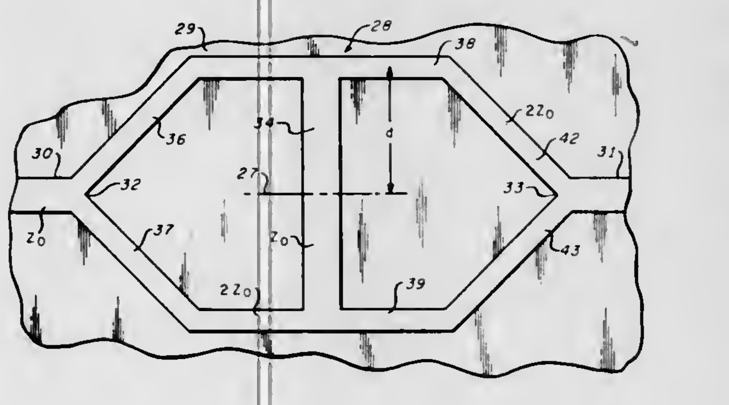
3,866,152
HIGH FREQUENCY PLANAR NETWORK WITH NON-RADIATING CIRCUIT ELEMENTS

Gerald F. Ross, Lexington, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed June 28, 1973, Ser. No. 374,299

Int. Cl. H01p *1/00*, *5/00*

U.S. Cl. 333—20 **5 Claims**



1. Planar transmission line pulse forming network means comprising:

dielectric substrate means,

symmetrically branching signal divider junction means affixed to one surface of said dielectric substrate means and having first and second port means and separate input means for receiving an electromagnetic pulse signal,

symmetrically branching signal summing junction means affixed to said surface of said dielectric substrate means and having third and fourth port means and separate output means, and

transmission line means for conductively coupling said first and second port means to said third and fourth port means for converting said received electromagnetic pulse signal into two electromagnetic pulses separated in time flowing from said signal summing junction means at said output means,

said transmission line means being disposed substantially at right angles to the direction of electromagnetic energy propagation within said input and output means symmetrically therebetween.

3,866,153
ULTRA LOW DIFFRACTION LOSS SUBSTRATE MEMBERS FOR ACOUSTIC SURFACE WAVE DEVICES

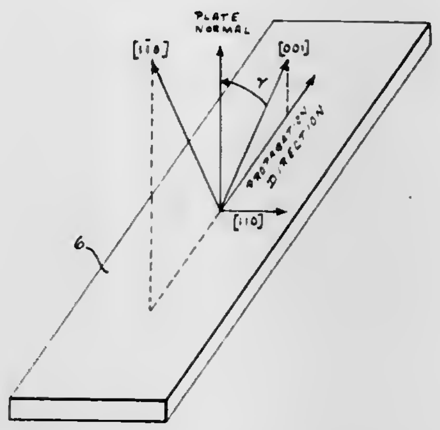
Andrew J. Slobodnik, Jr., Burlington, Mass., and Thomas L. Szabo, Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 11, 1973, Ser. No. 405,710

Int. Cl. H01v *7/02*; **H03h** *9/30*

U.S. Cl. 333—30 R **4 Claims**

1. An acoustic surface wave device substrate member of single crystal bismuth germanium oxide having a surface wave propagation surface defined by a plane that substantially coincides with the Euler angles Lambda = 45°, Gamma = an angle not less than 37° and not greater than 43, and Theta = 90°.



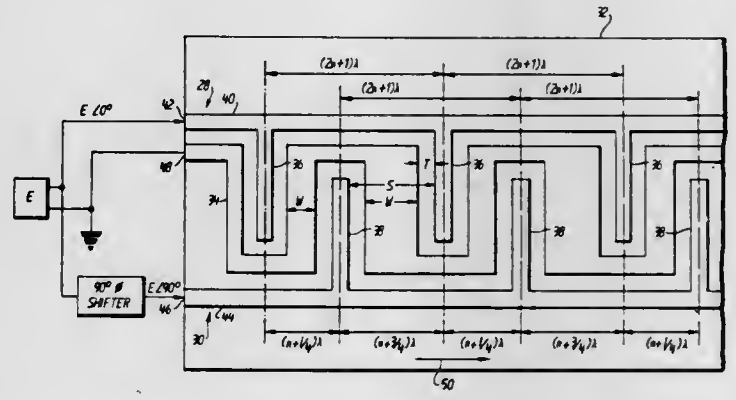
3,866,154
BROADBAND UNIDIRECTIONAL SURFACE WAVE TRANSDUCER

Robert A. Moore, Arnold, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1973, Ser. No. 421,585

Int. Cl. H03h *9/02*, *9/26*, *9/30*

U.S. Cl. 333—30 R **10 Claims**



1. A surface wave transducer comprising:

a substrate;

a first plurality of spaced, generally parallel, interconnected, electrically conductive members carried by said substrate;

a second plurality of spaced, generally parallel, interconnected, electrically conductive members carried by said substrate;

said first plurality of members extending intermediate at least some of said second plurality of members in spaced, generally parallel and coplanar relation thereto; and,

a common terminal for each of said first and second plurality of members, said common terminal comprising a strip of electrically conductive material spaced from and meandering through the spaces between said first and second plurality of members,

the center-to-center spacing between adjacent members of said first plurality of members and between adjacent members of said second plurality of members being substantially equal to an odd multiple of acoustic wavelength of the substrate material, and

each of said first plurality of members extending intermediate said second plurality of members at locations displaced approximately one quarter an acoustic wavelength from a location disposed centrally of adjacent of the members of said second plurality of members.

3,866,155
ATTENUATION POLE TYPE MONOLITHIC CRYSTAL FILTER

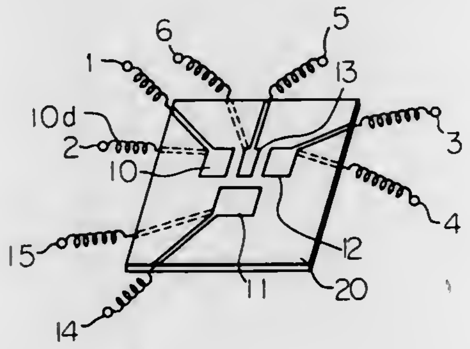
Masaki Kobayashi; Izumi Kawakami, and Katuhiko Gunji, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sept. 14, 1973, Ser. No. 397,278

Claims priority, application Japan, Sept. 20, 1972, 47-93670

Int. Cl. H03h *9/02, 9/26, 9/32*

U.S. Cl. 333—72 **5 Claims**



1. An attenuation pole type monolithic crystal filter comprising:

a. a piezoelectric plate;

b. a plurality of pairs of main electrodes arranged on said plate, first and second pairs of which are connected respectively to input and output terminals; and

c. at least a pair of intermediate electrodes positioned on said plate between successive pairs of said main electrodes in a plane defined by said main electrodes, said intermediate electrodes being electrically distinct from said successive pairs of main electrodes;

d. wherein the drop in frequency due to said intermediate electrode is larger than the drop in frequency due to said main electrodes;

e. all main electrodes being an energy trapping type electrode which generates a standing wave of mechanical oscillation therebeneath;

f. and said intermediate electrode having a mass per unit area larger than said one main electrode, said intermediate electrode operating to couple energy of said standing wave with the next successive main electrode by inverting the phase of said standing wave by 180°.

3,866,156
OVERLOAD RELAY INDICATING MEANS

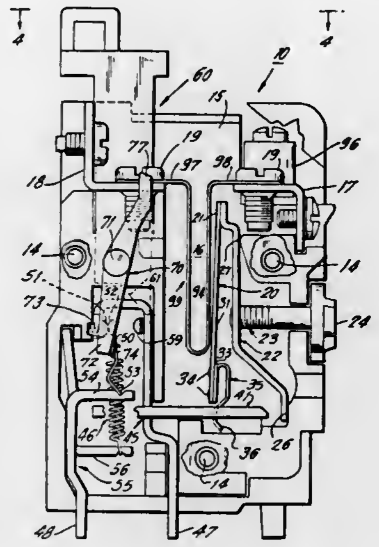
Bernard DiMarco, Bellefontaine, and Andrew J. Kralik, Marysville, both of Ohio

Division of Ser. No. 428,097, Dec. 26, 1973,. This application July 18, 1974, Ser. No. 489,807

Int. Cl. H01h *71/04*

U.S. Cl. 337—79 **3 Claims**

1. A switch device including a stationary contact, a movable contact engageable with said stationary contact, first spring means biasing said movable contact toward said stationary contact when said contacts are engaged, first means for indicating contact position, said first means including a portion engageable with said movable contact and second biasing means urging said portion into engagement with said movable contact, said second biasing means being substantially weaker than said first biasing means and acting in opposition thereto when said contacts are engaged.



3,866,157
LOAD CELL

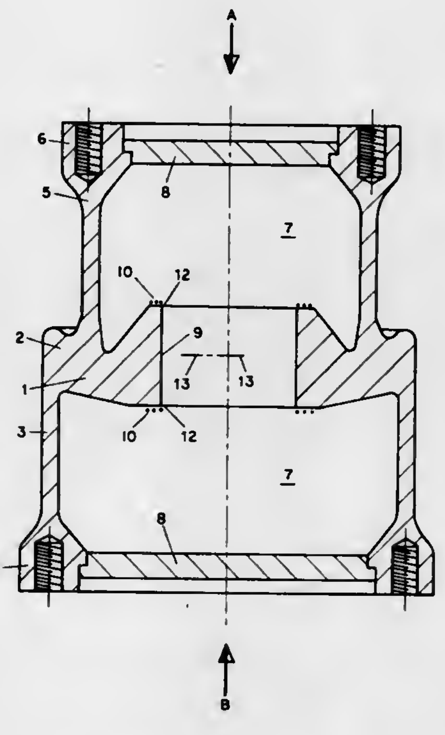
Gottfried Birkholtz, Weiterstadt, Germany, assignor to Carl Schenck AG, Darmstadt, Germany

Filed Apr. 19, 1973, Ser. No. 352,560

Claims priority, application Germany, Sept. 12, 1972, 2244615

Int. Cl. G01l *1/22*

U.S. Cl. 338—5 **13 Claims**



1. A load cell comprising a ring-shaped intermediate member, a pair of tubular members concentric with said intermediate member and extending from said intermediate member in opposite directions at different radii, for transmitting forces to said intermediate member, a ring-shaped deformation member circumferentially connected to said intermediate member and extending inwardly therefrom, whereby axially directed forces in said tubular members are substantially radially outside of said deformation member, and are transmitted to said deformation member by way of said intermediate member, and mechanical-electrical transducer means on said deformation member radially inwardly of said tubular members.

3,866,158
RESISTANCE THERMOMETER

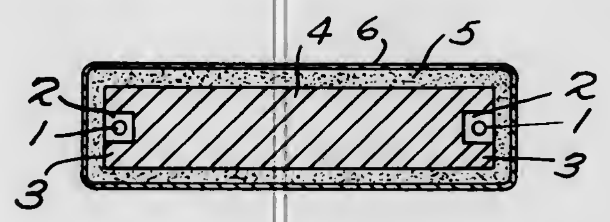
Rudi Reber, Neuenhasslau, and Robert Herzog, Grosswelzheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Aug. 17, 1973, Ser. No. 389,159

Claims priority, application Germany, Aug. 18, 1972, 2240651

Int. Cl. H01c *7/04*

U.S. Cl. 338—25 **9 Claims**



1. A resistance thermometer especially suitable for measuring temperature in electrical machinery comprising in combination a thin flexible carrier body having two opposed narrow sides and two opposed relatively wide sides and measuring wire means positioned in a first groove extending in and along the length of a narrow side of said thin flexible carrier body said wire means having a sensing portion for producing an electrical signal which varies as a function of temperature and lead portions for receiving an input signal and providing an output.

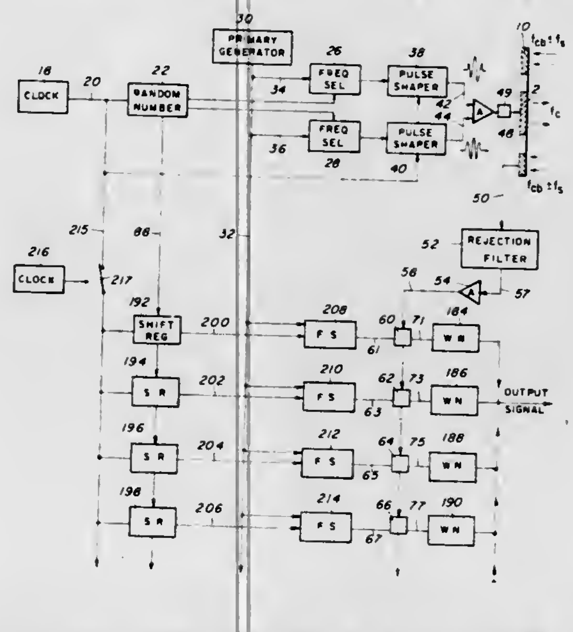
3,866,159
CARRIER BEAM SENSOR

William R. Turner, Silver Spring, Md., assignor to Automation Industries, Inc., Silver Spring, Md.

Filed Apr. 2, 1973, Ser. No. 347,101

Int. Cl. G01s *9/66, 7/66*

U.S. Cl. 340—3 R **21 Claims**



1. An improved method of detecting and isolating incoming acoustic waves comprising:

a. randomly generating a series of discrete frequency signals and projecting said signals into a medium;

b. reacting said projected signals with discontinuities present in said medium to create back-scattered components of said discrete frequency signals;

c. modulating said back-scattered components with said incoming acoustic waves to produce cross-modulation products;

d. receiving said cross-modulation products; and

e. comparing said received cross-modulation products with delayed replicas of said discrete frequency signals whereby said received products are converted into an output signal corresponding to said incoming acoustic waves.

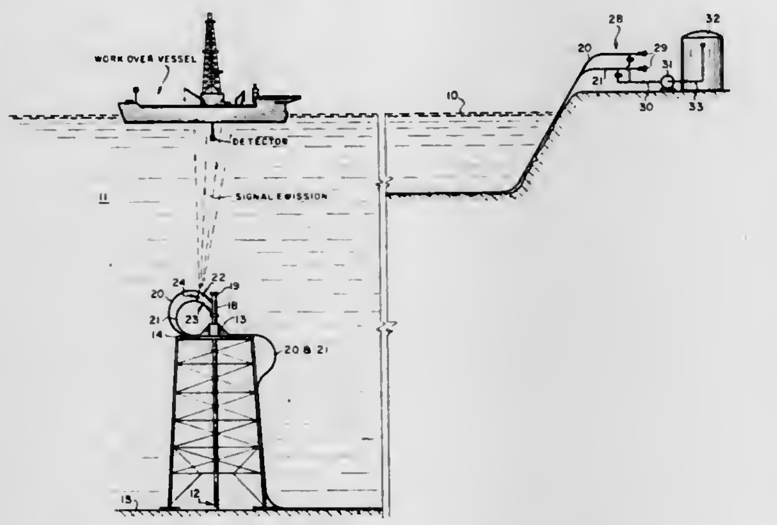
3,866,160
SIGNALING THE LOCATION OF UNDERWATER WELLS

Charles A. Brasier, 4508 Wade Dr., Metairie, La. 70003

Filed May 29, 1969, Ser. No. 828,925

Int. Cl. H04b *13/02;* **E21b** *47/12*

U.S. Cl. 340—5 R **4 Claims**



1. A method of locating the position of a selected underwater well among a plurality of horizontally spaced-apart wells, each having an underwater wellhead and at least two interconnected pipe strings, each of said wellheads being interconnected successively to another of said wellheads by underwater conduits forming fluid passageways providing fluid communication from one well to another, at least two of said wells having a remotely accessible conduit fluidly communicating with a remotely accessible location, said remotely accessible conduits forming with said underwater conduits a flow line circuit beginning and ending at said remote accessible place, said method comprising:

a. inserting a signal emitter into one of said remotely accessible conduits; and

b. propelling said signal emitter through said flow line circuit to a selected position in said flow line circuit proximate said selected underwater well.

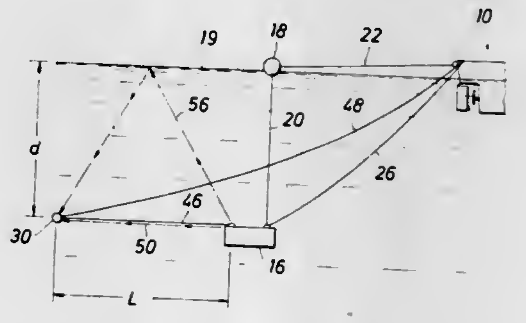
3,866,161
METHOD AND APPARATUS FOR OBTAINING A MORE ACCURATE MEASURE OF INPUT SEISMIC ENERGY

Frederick J. Barr, Jr.; W. Harry Mayne, and Clifford H. Ray, all of San Antonio, Tex., assignors to Petty-Ray Geophysial, Inc., Houston, Tex.

Filed Jan. 24, 1973, Ser. No. 326,178

Int. Cl. G01v *1/16*

U.S. Cl. 340—15.5 CP **10 Claims**



1. In seismic exploration in which seismic records are made of the waves received at seismic detectors after being emitted by a seismic source located beneath the surface and reflected from subsurface reflecting horizons, the method comprising:

locating an auxiliary detector at a depth below the surface that is large compared to the depth of the seismic source below the surface;

transmitting seismic waves from the seismic source;

recording representations of the waves received at the auxiliary detector;

adjusting each of the amount of seismic energy transmitted by the seismic source and the depth of the seismic source and repeating the foregoing steps, whereby a library of recordings is generated for different parameters; and,

pairing the recordings thus made with seismic records made with substantially the same parameters.

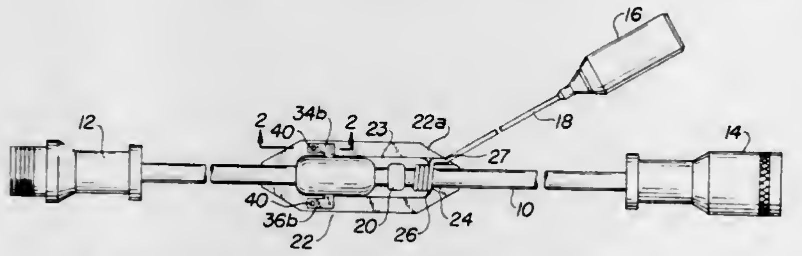
2. In seismic exploration, a method of obtaining an accurate representation of the seismic waveform reflected from a deep reflecting horizon, comprising the steps of:

obtaining a representation of the waveform directly emitted by a seismic source located below the surface; and adding to said waveform a replication of said waveform of reversed polarity delayed in time by the seismic travel time between the source and the surface, of a wave emitted by the source and reflected by the surface.

3,866,162
GEOPHONE TAKEOUT ASSEMBLY FOR SEISMIC CABLES

Eugene F. Florian, Houston, Tex., assignor to Mark Products, Inc., Houston, Tex.

Filed Mar. 15, 1973, Ser. No. 341,505
Int. Cl. G01s *9/66;* **G01v** *1/16*
U.S. Cl. 340—17 5 Claims



1. A geophone takeout assembly for connecting a geophone to a seismic cable having one or more conductors, a tensile member to take any tensile load on the cable, and an outer sheath of insulating material, said assembly comprising a takeout cable electrically connected between the conductors of the seismic cable and the geophone, a housing enclosing the electrical connection and a portion of the takeout cable for any tensile load imposed on the takeout cable by the geophone to be transmitted to the housing, and means connecting the housing to the tensile member of the seismic cable to transmit any forces imposed on the housing by the takeout cable to the tensile member of the seismic cable.

3,866,163
ANGLE DATA PROCESSOR FOR RECIPROCATING NARROW SCANNING BEAMS

George B. Litchford, Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 2, 1973, Ser. No. 375,557
Int. Cl. G01s *1/18*
U.S. Cl. 340—24 8 Claims

1. An angle data processor apparatus for reciprocating narrow scanning beams comprising in combination:

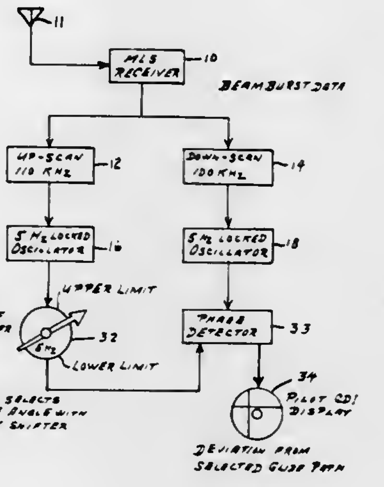
means for receiving first and second scanning signals, said first and second scanning signals being respectively modulated, said means for receiving detecting said first and second scanning signals and providing first and second detected output signals,

a first demodulating means receiving said first detected output signal from said means for receiving, said first demodulating means operating at a first demodulating frequency, said first demodulating means demodulating said first detected output signal to provide a first output pulse train in response to said first detected output signal,

a second demodulating means receiving said second detected output signal from said means for receiving, said second demodulating means operating at a second demodulating frequency, said second demodulating means demodulating said second detected ouput signal to provide a second output pulse train in response to said second detected output signal,

a first oscillator for oscillating at a first predetermined frequency, said first oscillator being connected to said first demodulating means and receiving said first output pulse train, said first oscillator being triggered by said first output pulse train, said first predetermined frequency being in response to said first output pulse train,

a second oscillator for oscillating at a second predetermined frequency, said second oscillator being connected to said second demodulating means and receiving said second output pulse train, said second oscillator being triggered by said second output pulse train, said second predetermined frequency being in response to said second output pulse train,



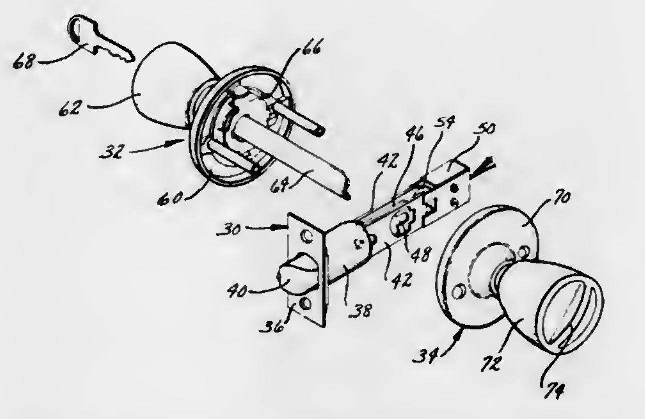
detecting means for receiving said first and second predetermined frequencies, said detecting means detecting the phase difference between said first and second predetermined frequencies, said detecting means providing a voltage output signal in response to said phase difference, and

a display means receiving said voltage output signal, said display means providing a visual display of said voltage output signal.

3,866,164
SECURITY SYSTEM AND LOCK THEREFOR

Francis C. Peterson, St. Louis County, Mo., assignor to Hinge Manufacturing Company, St. Louis, Mo.

Filed May 22, 1973, Ser. No. 362,662
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 16 Claims

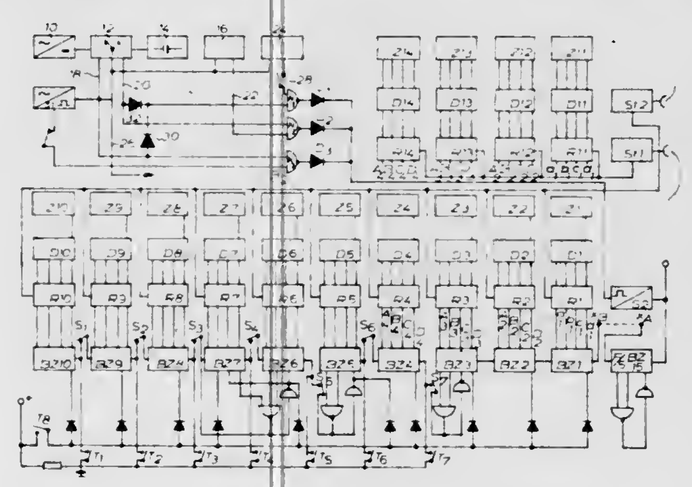


1. In a security system including a door which opens from a door frame having a strike thereon, an alarm connected with the door for signalling when the door is open, and a lock for securing the door in a closed position, the lock including a latch blot which is normally urged beyond the edge of the door for engagement with the door frame to secure the door in a closed position, and movable operating means engageable with the latch bolt to retract the latch bolt when the operating means is moved, the latch bolt being retractable independently of the operating means to enable the latch bolt to retract upon engaging the strike of the door frame without moving the operating means; the improvement comprising switch means connected to the alarm for deactivating the alarm for a limited time when said switch means is operated, the switch means being operatiedby the operating means when the operating means is moved such that it retracts the latch bolt.

3,866,165
DEVICE FOR MONITORING TRAFFIC

Herbert Maronde, Dusseldorf, and Jurgen Holzapfel, Neub, both of Germany, assignors to Robot Foto Und Electronic GmbH & Co. KG, Dusseldorf-Benrath, Germany

Filed June 27, 1973, Ser. No. 373,966
Claims priority, application Germany, July 13, 1972, 2234446
Int. Cl. G08g *1/10*
U.S. Cl. 340—31 C 10 Claims



1. In an apparatus for monitoring the traffic at a road intersection at which there is a traffic control light having a "stop" period, said apparatus including a time meter which computes the local time and having a time display means which displays the local time as computed and a camera which is actuated, by a vehicle driving into the intersection, to photograph both the intersection and the time meter display means, the improvement comprising:

said time meter computes the time with an accuracy of at least one-tenth of a second;

a time display device positioned to be also photographed by said camera when a photograph is taken of said intersection and said meter; and

memory means connected to said time meter and said time display device to transfer to said display device the local time as computed by said time meter at the beginning of said "stop" period during which the photograph was taken.

3,866,166
DIGITAL MULTIGAGE FOR MOTOR VEHICLE

William J. Kerscher, III, Flint, Mich., and Daniel A. Crawford, Boulder, Colo., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 9, 1974, Ser. No. 459,390
Int. Cl. G08b *19/00*
U.S. Cl. 340—52 F 5 Claims

1. Motor vehicle condition monitoring apparatus comprising:

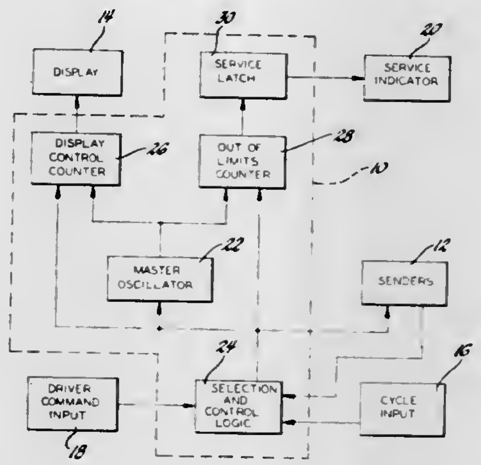
timer means, including a plurality of selectively connectable variable resistance sensor means, for establishing when enabled a time interval related to the status of the sensor selected,

oscillator means, including a plurality of selectively connectable calibrating resistor means, for producing an output signal at a frequency dependent on the calibrating resistor means selected, each calibrating resistor means being associated with a sensor means so that a particular calibrating resistor means is selected in conjunction with a particular sensor means,

counter means adapted when enabled to be clocked from said oscillator means,

display means adapted when enabled to display the digital value of the count stored in said counter means,

counter and display control means responsive to selection of each of said sensor means for enabling said timer means and said counter means and for disabling said display means, said control means responsive to the termination of said time interval for enabling said display means and for disabling said counter means,



automatic selection means for periodically selecting one of said sensor means and the associated frequency output of said oscillator means,

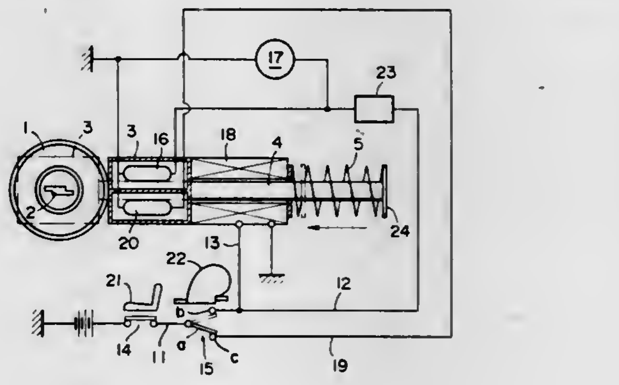
cycle selection means for sequentially selecting each of said sensor means and the associated frequency output of said oscillator means,

individual selection means for selecting other than said one of said sensor means and the associated frequency output of said oscillator means.

3,866,167
DEVICE FOR COMPELLING RIDERS TO WEAR SEAT BELTS ON AUTOMOBILES

Katsumi Hirano, Nagoya, Japan, assignor to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Nishikasugai-gun, Aichi-pref., Japan

Filed May 29, 1973, Ser. No. 364,641
Claims priority, application Japan, June 1, 1972, 47-54662
Int. Cl. B60q *9/00;* **B60r** *21/10*
U.S. Cl. 340—52 E 2 Claims



1. A device for compelling riders to wear seat belts in automobiles comprising a keyhole blocking means movable between keyhole blocking and opening positions relative to a keyhole of an ignition switch, an armature rod fixed to one end of the keyhole blocking means, an electromagnetic sole-

noid coil movably supporting the armature rod, the armature rod being movable through the electromagnetic solenoid coil, a spring normally biasing the keyhole blocking means to the keyhole opening position when the solenoid coil is not energized, two lamps disposed in the keyhole blocking means, one of the lamps being for showing a condition where a rider is not wearing a seat belt, the other lamp being for showing a condition where the rider wears the seat belt, a seat switch operably associated with the driver's seat and movable to closed position when the driver sits down on the seat, a change-over switch having a movable contact and two stationary contacts, a circuit including the seat switch, said other lamp, the movable contact and one of the stationary contacts of the change-over switch in series, a detecting circuit including the other stationary contact of the change-over switch and the electromagnetic solenoid coil in series and being connected to the seat switch through the movable contact of the change-over switch in series, and a warning circuit including said one lamp connected to the detecting circuit in parallel.

3,866,168

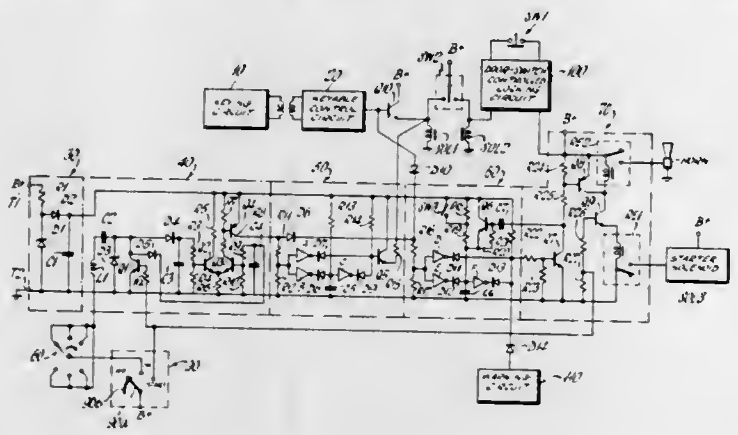
DOOR LOCK, POWER AND ALARM CONTROL CIRCUIT FOR AUTOMOTIVE VEHICLES AND THE LIKE

Francis A. McGuirk, Jr., Chatham, N.J., assignor to Wager Electric Corporation, Parsippany, N.J.

Filed Jan. 15, 1973, Ser. No. 323,827

Int. Cl. B60r *25/04, 25/10*

U.S. Cl. 340—64 **15 Claims**



1. In a vehicle including door lock control means operative when keyed to generate a control signal, an engine, engine-driven electrical spark distributor means, a starting switch for said engine, and warning means, the improvement comprising: circuit means coupled to said door lock control means, to said distributor means, to said starting switch, and to said warning means, and normally operative in the absence of said control signal to actuate said warning means upon actuation of said starting switch, and operative in response to said control signal to disable said warning means for a predetermined period of time from the termination of said control signal and to enable engine start-up by actuation of said starting switch within said predetermined period of time, and further operative to receive a pulse train generated by said distributor means during periods of vehicle engine operation, and operative in response to cessation of said pulse train to disable said warning means for a predetermined period of time after cessation of said pulse train and to enable engine restarting by actuation of said starting switch within said predetermined period of time.

3,866,169

VEHICLE SIGNALLING APPARATUS

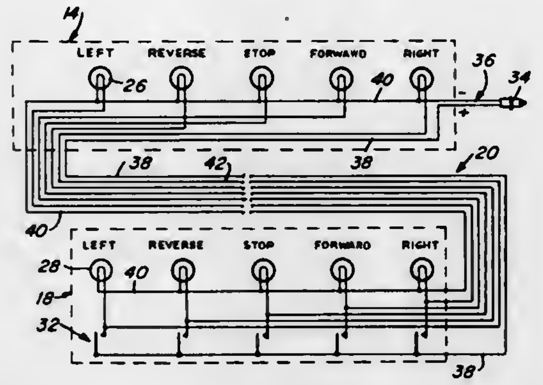
Claude R. Haglund, 7718 Pecan Wood Dr., Hitchcock, Tex. 77563

Filed Mar. 9, 1973, Ser. No. 339,950

Int. Cl. B60q *1/26*

U.S. Cl. 340—79 **9 Claims**

1. A remote signalling system for transmitting maneuvering commands to a mobile land vehicle having a source of electrical energy, comprising a signal receiving device positioned within the vehicle, a transmitter device located externally of the vehicle, each of said devices mounting a plurality of corresponding signal indicators representing said maneuvering commands, elongated, flexible cable means anchored externally on said vehicle and interconnecting said devices for simultaneous energization of the corresponding indicators respectively mounted on said devices, connector means connecting said receiving device to the vehicle source of electrical energy for supply of energy to said cable means to effect said energization of the indicators, and selectively actuated means mounted on the transmitter device and connected to the cable means for selecting the corresponding indicators energized by said source in accordance with desired ones of said maneuvering commands.



3,866,170

BINARY TRANSMISSION SYSTEM USING ERROR-CORRECTING CODE

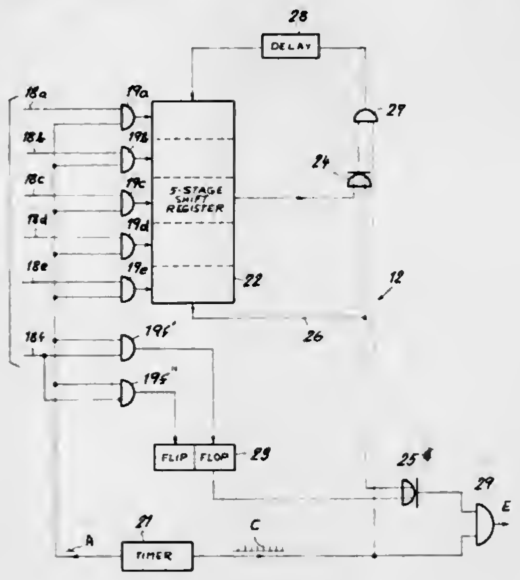
Federico Verzocchi, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A.. Milan, Italy

Filed Sept. 24, 1973, Ser. No. 400,060

Claims priority, application Italy, Oct. 3, 1972, 30001/72

Int. Cl. H04l *1/10*

U.S. Cl. 340—146.1 AL **8 Claims**



1. A system for the transmission of binary words, each word consisting of $n + 1$ bits, comprising:

a first shift register with n stages for receiving n bits of a word to be transmitted;

first feedback means connected to said first shift register for sequentially developing an n-bit combination stored therein into an invariable cyclic succession of 2^n-1 n-bit combinations starting with the combination originally stored;

first stepping means connected to said first feedback means for driving said first shift register through a full cycle of 2^n-1 combinations with resulting generation of a maximum sequence of 2^n-1 bits in any stage thereof;

a second shift register provided with second feedback means, said first and second feedback means each comprising an Exclusive-OR gate with input connections to the n^{th} stage and to a lower-ranking stage of the associated shift register;

second stepping means substantially duplicating said first shift register, first feedback means and first stepping means, respectively, for generating maximum comparison sequences of 2^n-1 bits each;

timing means operable at the beginning of a frame of at least 2^n-1 cycles of said second stepping means for introducing into said second shift register an n-bit reference combination recurring every 2^n-1 steps, each cycle of said second stepping means consisting of a number of steps greater than 2^n-1 whereby each cycle of a frame begins with a different starting combination in said second shift register;

storage means connected to said receiving means for preserving an incoming maximum sequence over 2^n-1 cycles of said second stepping means;

comparator means connected to said storage means and to a stage of said second shift register for successively comparing the bits of said incoming maximum sequence with the bits of all 2^n-1 comparison sequences emitted by the last-mentioned stage in the course of a frame, said comparator means including a counter for registering the number of bit coincidences between said incoming sequence and any one comparison sequence;

numerical discriminator means connected to said counter for generating an output signal upon the number of bit coincidences in any cycle of said second stepping means deviating by more than a predetermined amount from a mismatch-indicating count of $[(2^{n-1}-1)/2] \pm \frac{1}{2}$;

output means connected to said discriminating means and controlled by said timing means for extracting from said second shift register the starting combination of the cycle in which said output signal is generated; and

an ancillary stage for the $(n+1)^{th}$ bit of a word and a further Exclusive-OR gate with input connections to said one stage of said first shift register and to said ancillary stage for converting the generated maximum sequence into its complement in the presence of a finite $(n+1)^{th}$ bit.

3,866,171

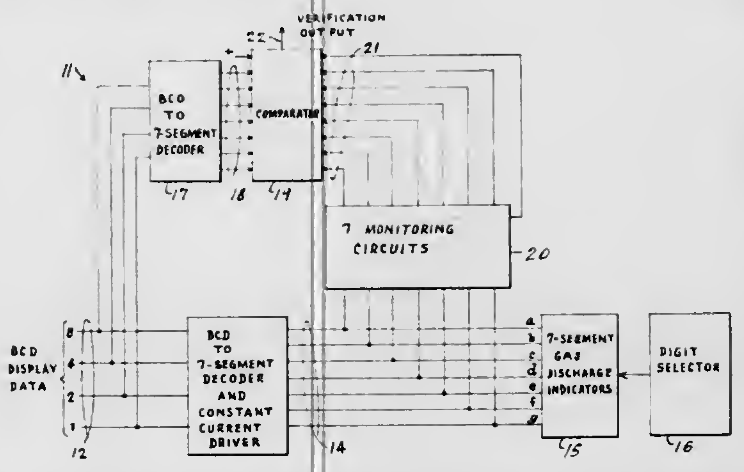
DISPLAY VERIFIER

Richard C. Loshbough, Temperance, Mich., assignor to Reliance Electric Company, Toledo, Ohio

Filed Jan. 18, 1974, Ser. No. 434,606

Int. Cl. H03k *13/32;* **G08b** *9/06*

U.S. Cl. 340—146.1 C **7 Claims**



6. A circuit for verifying the correct operation of an indicator operated from a data source, said indicator having a plurality of electrically energized character forming segments which become illuminated when energized, each segment having a first high voltage drop when open-circuited, a second voltage drop lower than such first voltage drop when illuminated, a third voltage drop lower than such second voltage drop when extinguished and a fourth voltage drop lower than such third voltage drop when short-circuited, said apparatus comprising, in combination, means responsive to data from the source for selectively energizing said indicator segments to define predetermined characters, a comparator having two corresponding groups of inputs, said comparator generating a verification signal when the two groups of inputs are identical and an error signal when the two groups of inputs are different, means for applying the data from the source to a first of said groups of comparator inputs, a plurality of electronic switch means, means connecting a different one of said switch means to each of said indicator segments for monitoring the voltage drop across said segments, each of said switch means having a first state of conducion when the voltage drop across the connected segment exceeds a predetermined voltage between said second and third voltage drops and a second state of conduction when the voltage drop across the connected segment is less than the predetermined voltage, and means connecting said switch means to the second of said groups of comparator inputs, said connecting means applying signals on said second group of comparator inputs corresponding to the signals on the first group of inputs when all of the indicator segments are illuminated and extinguished in accordance with the data from the source and applying a different input for any segment which fails to illuminate or extinguish in accordance with the data from the source.

3,866,172

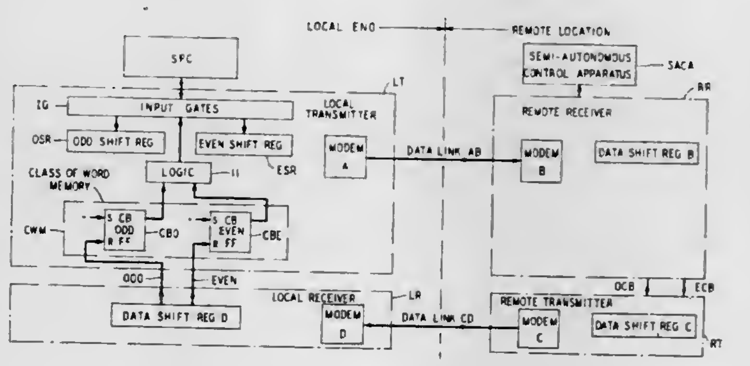
COMMUNICATION SYSTEM FOR TRANSMITTING DATA WORDS PRIOR TO RECEIPT OF ACKNOWLEDGMENTS FOR PREVIOUSLY TRANSMITTED DATA WORDS

Lionel Caron, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 16, 1974, Ser. No. 470,409

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 R **12 Claims**



1. In a data communication system for transmitting a plurality of data words of a plurality of different classes in a sequence wherein consecutive data words are of different classes, each data word containing therein data plus a designation of the class to which that data word belongs, a transmission control arrangement comprising,

transmitting means for transmitting said data words to a remote location,

receiving means for receiving class acknowledgments from said remote location, each acknowledgment defining the class of a data word received at said remote location,

memory means,

storing means controlled by said transmitting means for storing, with respect to each transmitted data word, a class indication in said memory means specifying the class of said each transmitted data word,

clearing means controlled by said receiving means for clearing from said memory means the class indication of the class defined by each received class acknowledgment, and

inhibiting means controlled by said memory means for inhibiting transmission by said transmitting means of other data words of each class specified by a class indication stored in said memory means.

3,866,173

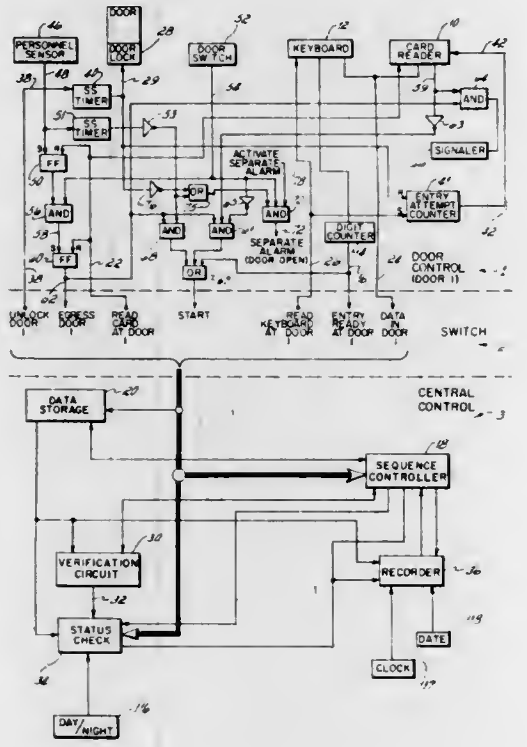
ACCESS CONTROL SYSTEM FOR RESTRICTED AREA

Charles J. Moorman; Frederick A. Reuter, both of Cincinnati, Ohio; Daniel F. Yorke, Brookfield Center, Conn., and Martin R. Meyer, Cincinnati, Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Oct. 2, 1973, Ser. No. 402,703

Int. Cl. G06k *3/00*

U.S. Cl. 340—149 A **17 Claims**



1. An access control system for controlling movement into and out of a restricted area through a door by personnel having an identification card; the system comprising, in combination;

- a remotely controllable door lock mechanism for selectively permitting the door to the restricted area to be opened in response to door unlock signals, said door lock mechanism being normally locked,
- a personnel detector within the restricted area to detect a person within said restricted area adjacent said door and in response thereto to generate a personnel signal,
- a door sensor for producing a door open signal when the door to the restricted area is open;
- an egress detector responsive to the occurrence of said door open signal and personnel signal to produce an egress signal;
- a personnel identification card reader located outside the restricted area for reading card data from a personnel identification number;
- a central control responsive to said egress signal to provide a read signal to said card reader;
- a recorder;
- said central control including means operative to receive the personnel identification number from said card reader and to actuate said recorder to record that an egress has occurred and the personnel identification number from the card read by said card reader; and
- said central control including further means operative to produce a door unlock signal to unlock said door in response to specified conditions including reading of a card inserted in said reader by a person outside said restricted area seeking entry who inserts a personnel identification card in said reader when the door is locked.

3,866,174

METHOD OF EXPLORING A MEDIUM AND ITS APPLICATIONS IN SEISMIC EXPLORATION

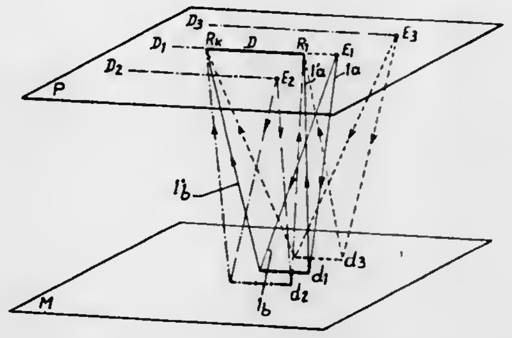
Maurice Barbier, Ousse, France, assignor to Societe Nationale Des Petroles D'Aquitaine, Paris, France

Filed May 15, 1973, Ser. No. 360,435

Claims priority, application France, May 19, 1972, 72.18172

Int. Cl. G01v *1/22*

U.S. Cl. 340—15.5 TA **8 Claims**



1. A method of exploring a medium which comprises the steps of:

- transmitting into said medium a sequence of waves in the form of a long continuous signal from a plurality of spaced emission sources, at least two of said sources transmitting signals of opposite polarity,
- actuating said plurality of emission sources for transmission at different times, the time interval between successive emissions of any two sources being less than the sum of the duration of emission by the first of said plurality of emission sources and the time α corresponding to the largest distance covered by the waves in the medium explored,
- said times of actuating the emission sources and the polarity of the signals selected such that the cross-correlation function over the length of time α of the sequence of times at which emission of all sources begin, each time being combined with the polarity of the corresponding emitted signal, with the sequence of times at which at least one source begins emitting, said times being each combined with the polarity of the corresponding emitted signal, has a ratio of the amplitude of the maximum peak to the amplitude of each of the secondary residues which is greater than the ratio of the amplitude of the long signals received after intercorrelation with a reference of the long signals emitted by each of the sources for intervals of time corresponding to the intervals separating the maximum peak from said secondary residues,
- receiving by means of a receiver unit and recording said long signals after reflection from reflectors in said medium, and
- crosscorrelating the recorded signals with a reference of the long oscillatory signal emitted by each source for determining the travel time of the reflected signals in said medium.

3,866,175

DATA COMMUNICATION SYSTEM BETWEEN A CENTRAL COMPUTER AND A PLURALITY OF DATA TERMINALS

Lloyd R. Seifert, Jr., Cambridge, and Joel H. Hinrichs, Jr., Pleasant City, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

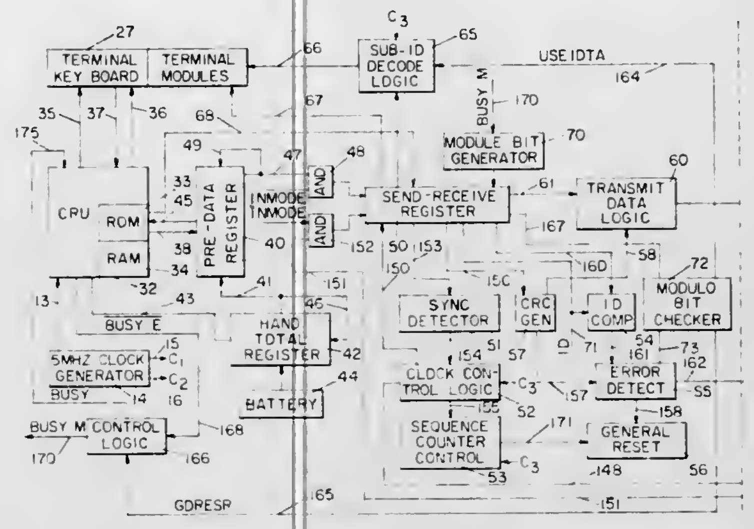
Filed Apr. 24, 1974, Ser. No. 463,627

Int. Cl. H04q *5/00*

U.S. Cl. 340—152 R **25 Claims**

1. A system for transmitting data between a central processor and a group of data terminals which includes active and inactive terminals, the group of data terminals coupled to the central processor through a controller which formats a polling message to only those terminals which are active wherein the improvement comprises:

- a. storage means for storing and outputting a plurality of control signals each representing the active or inactive state of a corresponding terminal;
- b. and means detecting the output control signal of said storage means for formatting a polling message, said detecting means being enabled to format a polling message to the terminal corresponding to the output signal of said storage means upon detecting an output signal indicating that the corresponding terminal is in an active state.



3,866,176

ADDRESS SELECTION CIRCUIT FOR STORAGE ARRAYS

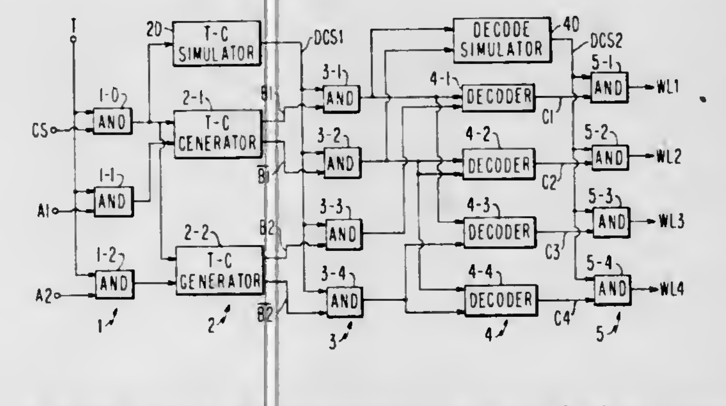
Utz G. Baitinger, Stuttgart; Werner Otto Haug, and Manfred Illi, both of Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1974, Ser. No. 438,159

Claims priority, application Germany, Aug. 11, 1973, 2340814

Int. Cl. H04q *3/00*

U.S. Cl. 340—166 R **15 Claims**



1. A logic circuit for providing a delayed logical output signal on an output terminal, comprising:

- a first logic gating means for performing a predetermined logic function and for providing an inherently delayed output signal, said first logic gating means being responsive to at least one input signal;
- output gating means responsive to said first logic gating means for providing a logical signal to said output terminal corresponding to said predetermined logic function, said output gating means also being responsive to an output gating clock pulse; and
- clock pulse generating means for generating said output gating clock pulse after said first logic function has been performed, said clock pulse generating means comprising a second logic gating means for simulating the inherent time delay of said first logic gating means and for always providing a true logical output signal in response to at least one of said input signals.

3,866,177

REMOTE CONTROL UTILIZING PULSED BEAM OF LIGHT FREQUENCY

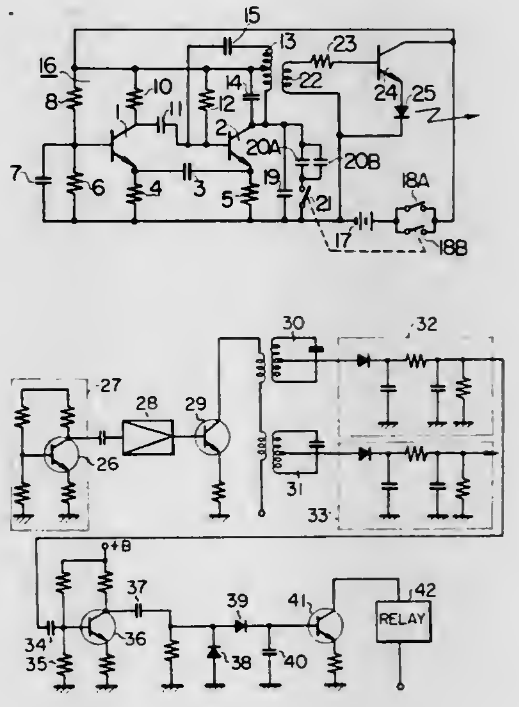
Yukio Kawamata; Keisuke Yamamoto, both of Ibaragi, and Hiroshi Mouri, Nagaokakyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 9, 1973, Ser. No. 387,168

Claims priority, application Japan, Aug. 12, 1972, 47-80965; Aug. 12, 1972, 47-80966; Aug. 12, 1972, 47-80967

Int. Cl. H04q *9/00;* **H04b** *9/00*

U.S. Cl. 340—171 R **10 Claims**



1. A remote control system including a transmitter and a receiver, said transmitter transmitting a remote control light signal for controlling a distant controllable device such as a television receiver: said transmitter comprising light generating means for generating and directing the remote control light signal toward said receiver for controlling said controllable device, oscillator means for modulating said light signal at a high frequency, multivibrator means having at least two transistors for intermittently operating said oscillator means at a low frequency to modulate the high frequency modulated light signal at the low frequency, wherein said oscillator means is in common with at least one of said two transistors of said multivibrator means; and said receiver comprising receiver means for receiving the high frequency modulated light signal further modulated at the low frequency transmitted from said transmitter, signal selection means for selectively taking out only a first signal of a frequency equal to said high frequency from the received light signal, detector means for detecting a second signal, corresponding to the low frequency, from said first signal to generate a corresponding output signal, and means for controlling said controllable device by the output signal.

3,866,178

FREQUENCY DIVISION MULTIPLEX SWITCHING SYSTEM

Jean Jacques Muller, Garches, and Andre Jean Henquet, Boulogne, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 1, 1974, Ser. No. 465,767

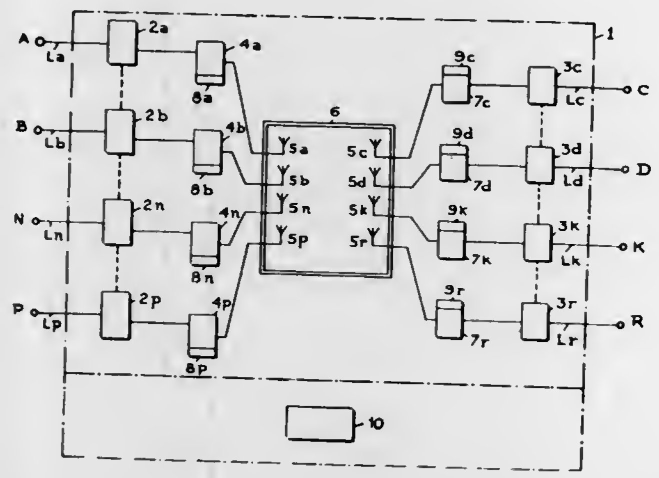
Claims priority, application France, May 22, 1973, 73.18456

Int. Cl. H04j *1/18*

U.S. Cl. 340—171 R **7 Claims**

1. Frequency-division switching system for interconnecting terminal equipment in a telecommunication exchange through

RF means using a closed common volume as a transmission medium electromagnetically shielded from the exterior, each terminal equipment comprising a tunable transmission and a tunable reception device with control means for tuning the respective frequencies of their respective transmission and reception devices, detecting means associated with the reception device of each terminal equipment, said detecting means



responsive to one or more signaling frequencies received through an RF transmission equipment and means for controlling suitable switching operations in accordance with the received signaling frequencies, and sending means associated with each transmission device to transmit one or more signaling frequencies to the detecting means associated with another terminal equipment so as to control switching operations in the other terminal equipment.

3,866,179
NUMERICAL CONTROL WITH ENVELOPE OFFSET AND AUTOMATIC PATH SEGMENT TRANSITIONS

John K. McGee, Houston, Tex., and Norbert C. Kolell, Fond Du Lac, Wis., assignors to Gidding & Lewis Inc., Fond du Lac, British W. Indies

Filed Sept. 22, 1972, Ser. No. 291,319

Int. Cl. G06f *15/46*; G05b *19/24*; G06f *15/20*

U.S. Cl. 340—172.5 **36 Claims**

1. In a control system for moving the center of a tool at a velocity V along a path which is offset perpendicularly by a distance Q from successive main path segments defined by successive blocks of numerical data, the combination comprising

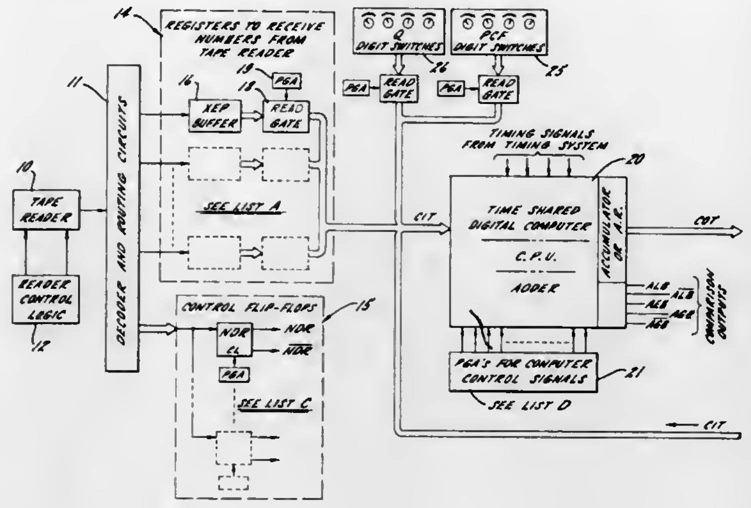
a. means including storage registers for storing and outputting first signals representing X and Y axis coordinate numbers XCP and YCP,

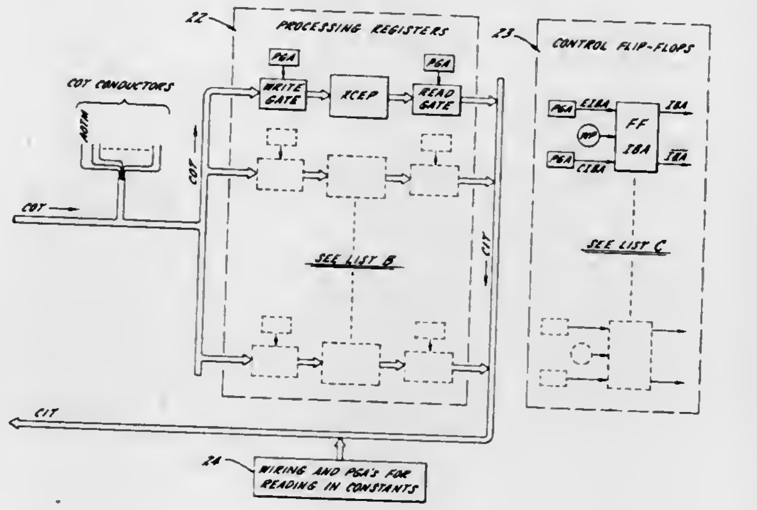
b. means for controlling said means (a) to change said first signals, and the represented values XCP and YCP, by amounts ΔX and ΔY during each of successive equal time periods ΔT, so that such first signals dynamically designate the location of a point moving progressively along the main path,

c. means including storage registers for storing and outputting second signals representing numbers QX and QY which are the X and Y components of a vector of length Q initially lying perpendicular to the main path,

d. means for controlling said means (c) to change said second signals and the represented values QX and QY during each of said periods ΔT, when the block of data for the main path segment defines such segment as a circular arc of radius R, by respective amounts $QX\Delta = QY \cdot V \cdot \Delta T/R$ and $QY\Delta = QX \cdot V \cdot \Delta T/R$, and

e. means responsive to said first and second signals from said means (a) and (c) for moving the center of the tool simultaneously along X and Y axes to keep its position





coordinates substantially and dynamically equal to XCP + QX and YCP + QY during each period ΔT.

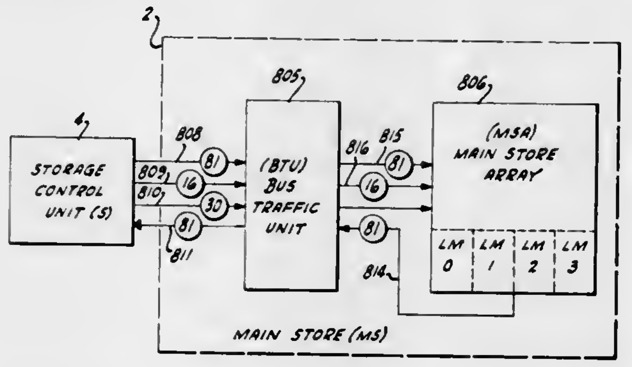
3,866,180
HAVING AN INSTRUCTION PIPELINE FOR CONCURRENTLY PROCESSING A PLURALITY OF INSTRUCTIONS

E. Leon Willette, San Jose, Calif., assignor to Amdahl Corporation, Sunnyvale, Calif.

Filed Apr. 2, 1973, Ser. No. 347,211

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **16 Claims**



1. In a data processing system having a high-speed buffer store and one or more low-speed stores, the improved low-speed store comprising,

a first array of integrated semi-conductor chips and a second array of integrated semi-conductor chips wherein said chips each contain storage locations and are energized during a charging period cyclically followed by deenergization during a discharging period and wherein information is read into or from addressed locations of accessed ones of said chips during said discharging period,

addressing means connected in common to said chips in said first and second arrays for addressing in common locations of said chips in said first and second arrays,

data access means connected in common to said chips in said first and second arrays for transmitting information between addressed locations of accessed ones of said chips and said buffer store,

control means for accessing the chips of said first array on an interleaved basis with the chips of said second array whereby the chips in said first array are being charged when the chips in said second array one being discharged when the chips in said first array are being discharged when the chips said first array are being discharged.

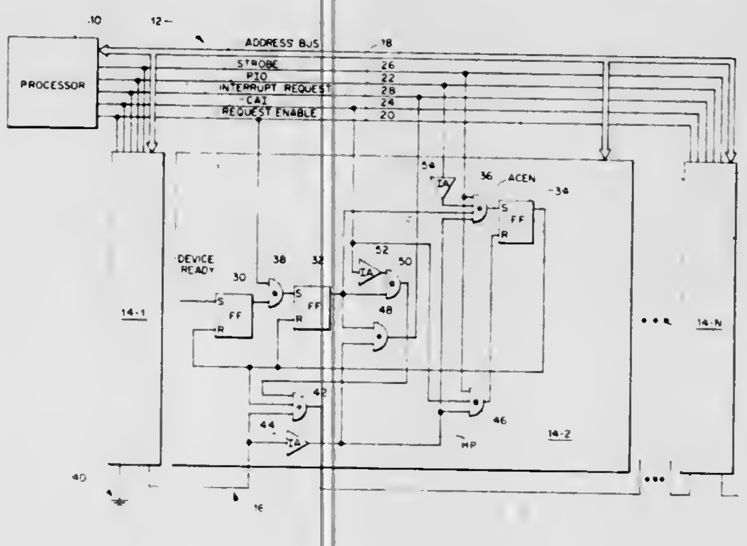
3,866,181
INTERRUPT SEQUENCING CONTROL APPARATUS

Byron G. Gayman, Holliston, Mass., and Russell A. Henzel, Doylestown, Pa., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 26, 1972, Ser. No. 318,138

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **11 Claims**



1. Interrupt sequencing apparatus coupled in a system having a data processor connected to provide interrupt service in response to an interrupt signal from any one of a plurality of devices, said devices connected in an interrupt priority arrangement, said apparatus comprising:

A. means, included in each of said devices, for generating said interrupt signal indicating that said respective device is ready to request interrupt service from said processor;

B. interrupt priority means, coupled with each of said devices, for enabling the interrupt signal from the highest priority device;

C. means, responsive to the enabled interrupt signal from the highest priority device of said devices, for receiving an indication of the commencement of interrupt service for the highest priority device generating said interrupt signal;

D. means, included in each of said devices, for storing said interrupt signals generated either before or after said means for receiving provides the indication of the commencement of said interrupt service; and

E. means, responsive to the completion of the interrupt service of said highest priority device generating said interrupt signal, for enabling the highest priority device which has stored an interrupt signal to request interrupt service from said processor.

3,866,182
SYSTEM FOR TRANSFERRING INFORMATION BETWEEN MEMORY BANKS

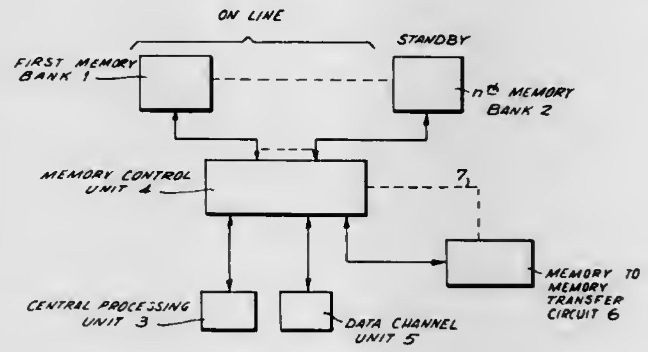
Hiroshi Yamada, and Yoshiro Yoshioka, both of Tokyo, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 866,567, Oct. 15, 1969, abandoned. This application July 18, 1973, Ser. No. 380,160

Claims priority, application Japan, Oct. 17, 1968, 43-75984

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **4 Claims**



1. A system for transferring information between a plurality of memory banks, comprising a plurality of memory banks, each of said memory banks having the same performance and capacity, at least one of said memory banks being an operating memory bank while at least one other of said memory banks serves as a standby memory bank, processing means addressing to said operating memory bank for reading information, said processing means including a central processing unit and a data channel unit, a memory control means controlling the transfer of information according to the requirements of address received by said processing means or memory to memory transfer circuit means, said memory control means including a priority setting circuit operable to give permission of said addressing to said processing means rather than said memory to memory transfer circuit means if requirement by processing means and requirement by memory to memory transfer circuit means occur at the same time, said processing means continuing the processing during transferring information in said operating memory bank to said standby memory bank and said memory to memory transfer circuit means connected to transfer the information from said operating memory bank to said standby memory bank, said memory to memory transfer circuit being operable to write the information into the address of a standby memory bank which corresponds to the address of an operating memory bank in which said processing means writes the information during the switching of memory banks, said standby memory bank then becoming the operating memory bank.

3,866,183
COMMUNICATIONS CONTROL APPARATUS FOR THE USE WITH A CACHE STORE

Ronald E. Lange, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 31, 1973, Ser. No. 393,358

Int. Cl. G06f *13/00*

U.S. Cl. 340—172.5 **7 Claims**

1. A processor communications control apparatus for controlling the retrieval of data information from either an addressable cache store in an electronic data processor or an addressable main memory store according to store address signals identifying the store location of the data information, said apparatus comprising:

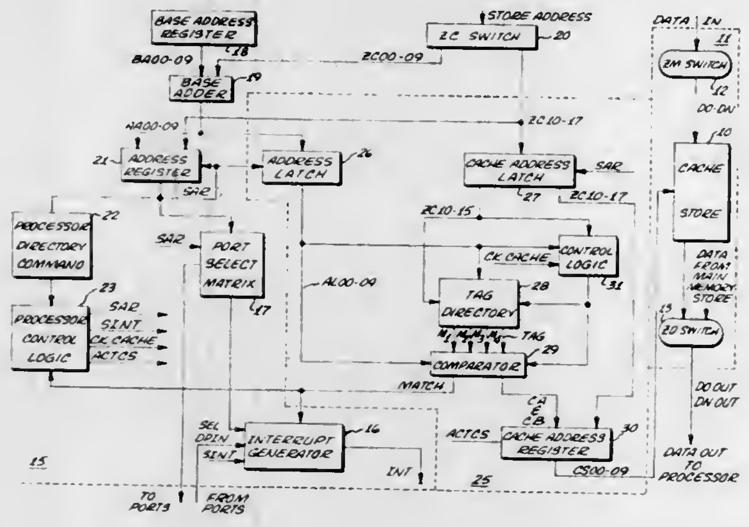
command means for generating timing signals in response to the store address signals;

a base adder connected to said command means and to receive said store address signals for adding a base address portion to the store address signals in response to a first timing signal;

checking means for checking the cache store for the data information according to the store address signals;

comparator means connected to said checking means for generating a match signal in response to the determination that the data information is in the cache store;

a port means connected to receive the added address signals from said base adder for providing a communication connection between the processor and the main memory store;



an interrupt generator for generating an interrupt signal to the main memory store to provide communication access between the processor and the main memory store through said port means in response to a second timing signal from said command means and a signal from the port means that a communication connection is available; said match signal being generated before the occurrence of said second timing signal, said match signal controlling said interrupt generator to inhibit the generation of said interrupt signal.

3,866,184

TIMING MONITOR CIRCUIT FOR CENTRAL DATA PROCESSOR OF DIGITAL COMMUNICATION SYSTEM

Rolfe E. Buhrke, La Grange Park; Gregory I. Chang, Oak Park, and Edward M. Horiuchi, Skokie, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 31, 1973, Ser. No. 393,543

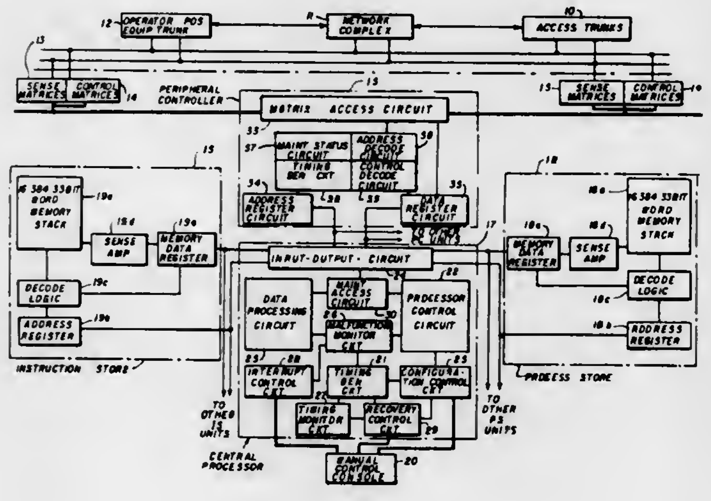
Int. Cl. G08c *25/00*

U.S. Cl. 340—172.5 15 Claims

1. In a data processing system having first and second central data processors each including processing circuits and maintenance circuits, said system being adapted wherein only one of said processors is active at one time and the other is standby, timing generating and monitoring circuitry for fault isolation comprising:

timing generator circuit means in each of said central processors for generating a plurality of sequentially occurring mutually exclusive timing level signals, a predetermined number of said timing level signals comprising a machine cycle, the timing generator circuit means in the active central processor transmitting said timing level signals to the other central processor;

timing monitor circuit means for each central processor and including timing level check circuit means receiving said timing level signals on multiple mutually exclusive circuit means from its associated timing generator circuit means for generating a timing level error level signal either when said timing level signals occur out of a predetermined order or when one of said timing level signals does not occur in a machine cycle; and



recovery control circuit means in each of said central processors responsive to said timing level error level signal for initiating a system recovery program.

3,866,185

METHOD AND APPARATUS FOR GATHERING PEAK LOAD TRAFFIC DATA

Richard Henry Etra, Highland Park, and Victor Llewellyn Ransom, New Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 16, 1974, Ser. No. 433,780

Int. Cl. G06f *3/04*

U.S. Cl. 340—172.5 14 Claims

1. Apparatus for gathering peak load traffic data for signal communication circuits, said apparatus comprising,

means for sequentially and recurrently sampling signal states on said circuits,

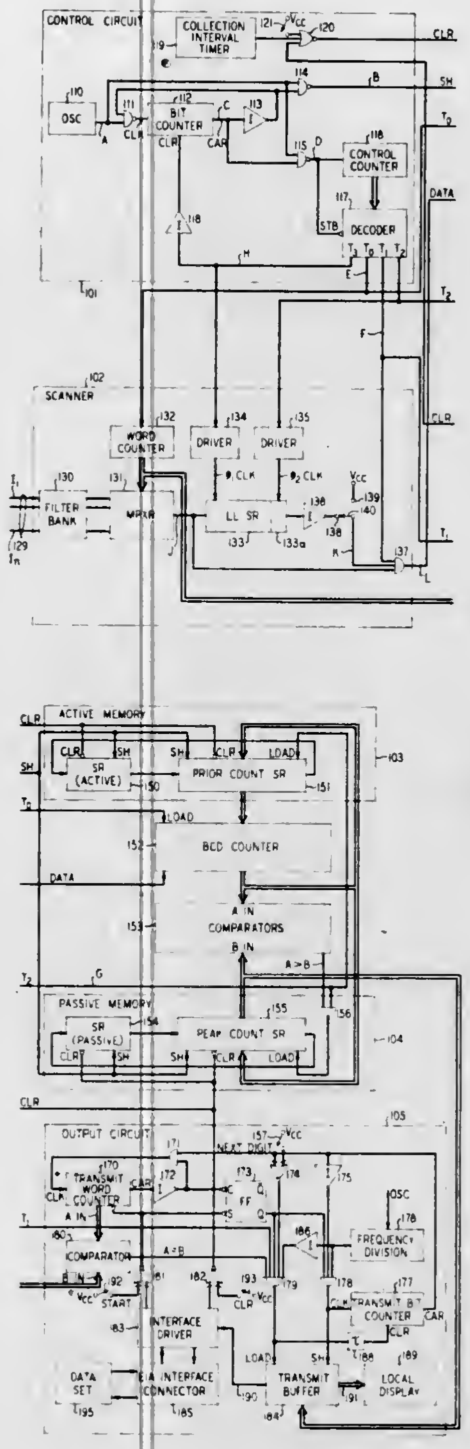
means for counting separately, and over each of plural periodically recurring scan time intervals, specified signal state changes in samples for each of said circuits,

first memory means for storing current numbers of said specified signal state changes occurring in each of said circuits in a predetermined collection interval,

second memory means for storing peak numbers of said specified signal state changes occurring in each of said circuits during a predetermined measurement interval, a measurement interval being substantially larger than a collection interval,

means for comparing the current numbers of specified signal state changes stored in said first memory means with the peak numbers of specified signal state changes stored in said second memory means, and

control circuit means for routing the larger of the two numbers of specified signal state changes ascertained by the comparison to said second memory means for storage.



3,866,186

LOGIC CIRCUIT ARRANGEMENT EMPLOYING INSULATED GATE FIELD EFFECT TRANSISTORS

Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 10, 1973, Ser. No. 358,877

Claims priority, application Japan, May 29, 1972, 47-52527; May 29, 1972, 47-52428; May 16, 1972, 47-47667

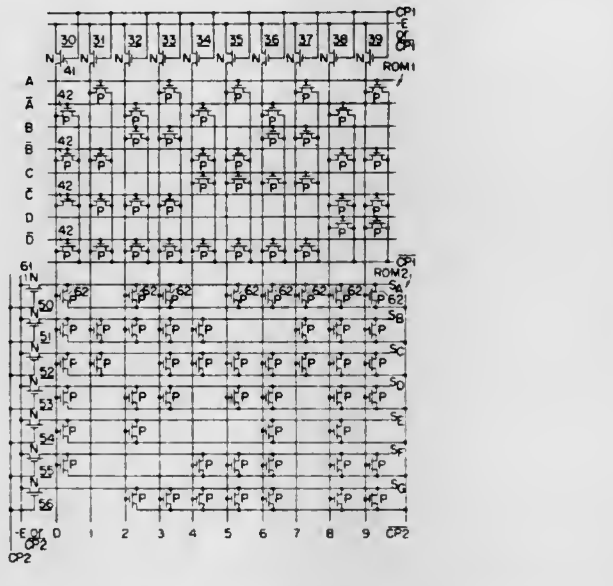
Int. Cl. G11c *11/40*

U.S. Cl. 340—173 SP 4 Claims

1. A read only memory device which comprises:

a plurality of memory units each including one first insulated gate field effect transistor of one channel type having one gate electrode and a first and a second electrode forming a conduction path therebetween, and a plurality of second insulated gate field effect transistors of the opposite channel type to the first transistor each having one gate electrode and a first and a second electrode defining a conduction path therebetween, said conduction paths of said second transistors being connected in series with the conduction path of said first transistor, the second electrode of at least one of said second transistors being connected to the second electrode of said first transistor and an output from each memory unit being derived from the second electrode of said first transistor;

means for supplying the gate electrodes of said second transistors of each memory unit with data signals;



means for supplying the gate electrode of said first transistor of the respective memory units with a first clock pulse signal; and

means for supplying the first electrode of said at least one second transistor of the respective memory units with a second clock pulse signal complementary to said first clock pulse signal.

3,866,187

METHOD OF RECORDING AND REPRODUCING INFORMATION IN FERROELASTIC METALS

Joseph Patrick Dougherty, Ossining; Andrew Lawrence Dalisa, Yorktown Heights, and Robert John Seymour, Ossining, all of N.Y., assignors to North American Philips Corporation, Briarcliff Manor, N.Y.

Filed July 2, 1973, Ser. No. 375,785

Int. Cl. G11c *13/00*

U.S. Cl. 340—173 R 10 Claims

1. A method of recording, retrieving and erasing information comprising the steps of prestressing a ferro-elastic metal having a reversible elastic transition above a given temperature to deform the surface thereof, locally heating portions of said metal above its transition temperature to relieve strain in said portions in response to an information signal and to store the information as surface relief pattern in the metal, and thereafter scanning said surface to detect variations in surface relief therein.

3,866,188

MEMORY CIRCUIT

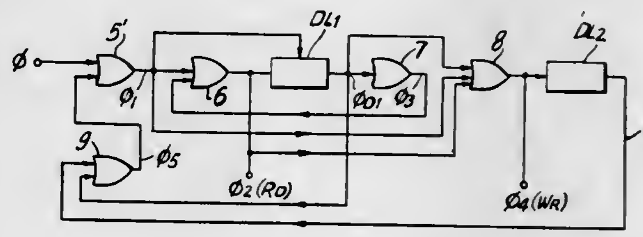
Hiroshi Watanabe, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Mirato-ku, Tokyo, Japan

Filed Sept. 18, 1973, Ser. No. 398,339

Claims priority, application Japan, Sept. 19, 1972, 47-94371

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 DR 8 Claims

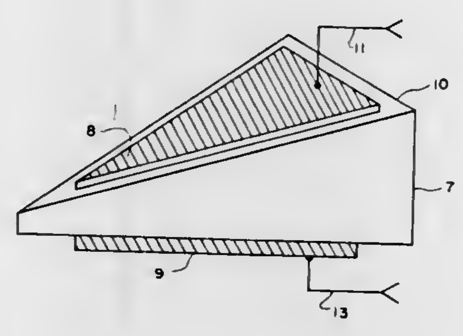


1. A memory circuit having storage means for storing information signals includes means for performing a refreshing

operation in which said stored information signals are rewritten into said storage means and in which said stored information can be destroyed by termination of said refreshing operation within a first period of time during said operation, reset means for generating a first signal to terminate said refreshing operation and to reset said memory circuit to a predetermined condition, means responsive to said first signal to generate a rewrite signal, clamping means responsive to said rewrite signal for generating a clamping signal during a second period of time at least equal in duration to said first period of time during which the stored information in said storage means may be destroyed by the termination of said refreshing operation, said clamping signal being present at least from the beginning of said rewrite signal to the end of said first period of time, said clamping signal being applied to said first signal generating means to prevent the generation of said first signal, whereby said refreshing operation is caused to continue during the presence of said clamping signal.

3,866,189
RECORDING AND PLAYBACK DEVICE WITHOUT MOVING PARTS

Judo Lewis Berger, 8614 Camden St., Alexandria, Va. 22308
Filed Feb. 16, 1973, Ser. No. 333,235
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 6 Claims



1. A recording system comprising a solid state storage means including at least one body of saturable material having a variable substantially rectangular hysteresis loop saturation characteristic and adapted to saturate at different electrical energization levels at different cross section points on a transverse axis through said body between first and second surface points, said body adapted to saturate at a relatively high electrical energization level in the vicinity of said first surface point and to saturate at progressively lesser electrical energization levels at points on said transverse axis spaced from said first surface point with the lowest energization level to saturate said body in the vicinity of said second surface point;

electrical energization means having an output substantially sufficient to saturate said body in the vicinity of said first surface point on said transverse axis, the output of said energization means electrically connected across said body in substantially orthogonal relation with respect said transverse axis;

information signal means adapted to decrease the output of said electrical energization means in accordance with input information at selected cross section points progressively distant from said first surface point on said transverse axis such that said input information is stored in defined increments at respective selected cross section points;

and means for connecting readout means across said body of saturable material;

wherein said body of saturable material comprises at least one ferroelectric capacitor means and said ferroelectric capacitor means has a dielectric of nonuniform cross section with conductive plates on opposing sides of said dielectric;

wherein said dielectric is wedge shaped and said plates of said ferroelectric capacitor means are also wedge shaped;

wherein said electrical energization means includes the following:

a first dual input signal summation means electrically connected across said body of saturable material,

a ramp generator means adapted to produce an output signal with a magnitude decreasing linearly with time; plus,

means connecting the output of said ramp generator means to one input of said first dual input signal summation means;

wherein said information signal means includes;

second dual input signal summation means,

audio information signal source means having an amplitude modulated output with a selected maximum peak amplitude,

offset voltage source means electrically connecting the output of said audio information signal source means to one input of said second dual input signal summation means, said offset voltage source having a DC output voltage of selected magnitude at least as great as said maximum peak amplitude of said audio information signal source,

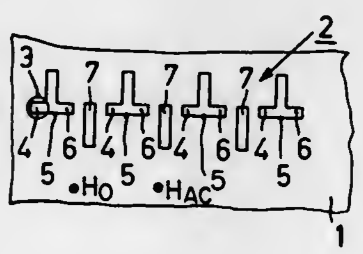
bias signal means having an AC voltage output,

and means connecting the output of said bias signal means to the other input of said second dual input signal summation means;

and wherein said information signal means also includes variable attenuator means connecting the output of said second dual input summation means to the other input of said first dual signal summation means such that by selective adjustment of said variable attentuator, information may be stored at selected cross section points on said transverse axis.

3,866,190
MAGNETIC DOMAIN PROPAGATION DEVICE

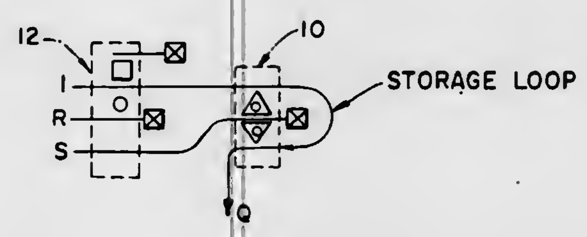
Frederik Ate de Jonge; Willem Frederik Druijvesteijn; Antonius Gerardus Hendrikus Verhulst, and Ulrich Ernst Enz, all of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 4, 1972, Ser. No. 294,909
Claims priority, application Netherlands, Oct. 14, 1971, 7114114
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 3 Claims



1. A magnetic device comprising at least one thin layer of a magnetisable material having an easy axis of magnetisation which is approximately at right angles to the surface of the layer, means for producing, maintaining and destroying magnetic domains in said layer, means for producing a driving force having a given frequency for transporting the domains in said layer, and means for producing an alternating magnetic field substantially at right angles to the propagation path having a frequency exceeding the frequency of a driving force present for the transport of a domain.

3,866,191
NON-CONSERVATIVE BUBBLE LOGIC CIRCUITS

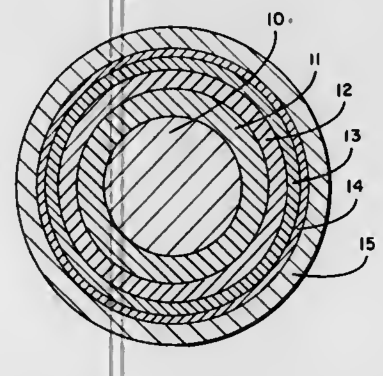
Robert C. Minnick, Houston, Tex.; Paul T. Bailey, Creve Coeur; Robert T. Sandfort, St. Charles, both of Mo., and Warren L. Semon, DeWitt, N.Y., assignors to Monsanto Company, St. Louis, Mo.
Filed Dec. 1, 1972, Ser. No. 311,402
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 13 Claims



1. A magnetic bubble flip-flop logic circuit, comprising means defining at least three adjacent bubble tracks for transmitting magnetic bubbles, one of a pair of adjacent ones of said tracks having input means for generating during each cycle of operation a magnetic bubble representing "not reset" in the absence of a reset signal, another one of said pair of tracks having input means for selectively transmitting a bubble representing "set," and a loop track interconnecting the output of one of said pair of tracks with the input of a third one of said tracks, and logically controlled transfer means between said tracks for causing an output bubble to exit said third track when in a corresponding cycle there was "set" bubble or in the immediately preceding cycle there was a "not reset" bubble and there was a bubble in said loop track.

3,866,192
PLATED WIRE MEMORY ELEMENT

Robert P. Ulmer, Minneapolis, and James O. Holmen, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 1, 1973, Ser. No. 337,227
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 QA 12 Claims



1. A plated wire memory element comprising:

a non-magnetic wire substrate,

a non-magnetic layer of controlled roughness overlaying said substrate,

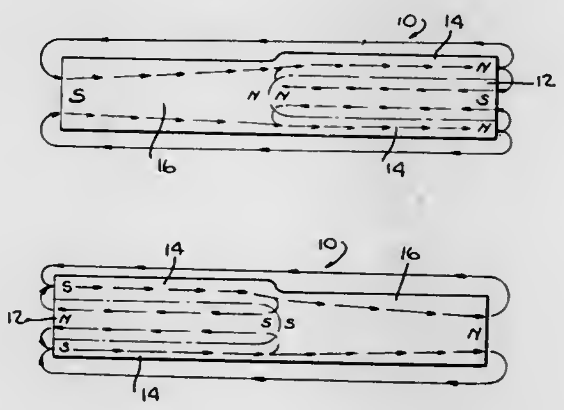
a first zero magnetostrictive magnetic layer including nickel and iron overlaying said non-magnetic layer,

thin continuous film of controlled texture cobalt overlaying said zero magnetostrictive magnetic layer, and

a second zero magnetostrictive magnetic layer including nickel and iron overlaying said thin continuous layer.

3,866,193
ASYMETRIC BISTABLE MAGNETIC DEVICE

John Richard Wiegand, Valley Stream, N.Y., assignor to Milton Velinsky, Plainfield, N.J. and John R. Weigand, Valley Stream, N.Y., part interest to each
Continuation-in-part of Ser. Nos. 247,356, April 25, 1972, Pat. No. 3,820,090, and Ser. No. 173,070, Aug. 19, 1971, abandoned, and Ser. No. 137,567, April 26, 1971, abandoned, and Ser. No. 86,169, Nov. 2, 1970, abandoned, and Ser. No. 189,027, Oct. 13, 1971, Pat. No. 3,783,249, and Ser. No. 5,632, Jan. 27, 1970, abandoned, and Ser. No. 269,525, July 7, 1972, Pat. No. 3,818,465, and Ser. No. 52,571, July 6, 1970, abandoned, and Ser. No. 173,706, July 22, 1971, Pat. No. 3,774,179. This application Nov. 15, 1973, Ser. No. 416,081
Int. Cl. G11c *11/12*
U.S. Cl. 340—174 ZB 16 Claims



1. In a unitary magnetic wire device having first and second magnetic portions wherein at least said first portion is capable of retaining net magnetization after being subjected to a magnetic field, the net coercivity of said first portion is substantially greater than the net coercivity of said second portion, said first portion has substantially the same chemical composition as does said second portion, and said portions are separated solely by a magnetic domain interface when said first portion has a net magnetization in a first direction and said second portion has a net magnetization in a second direction substantially opposite from said direction, the improvement comprising:

the configuration wherein said second magnetic portion is a core portion extending only partially along the axial length of the wire and said first magnetic portion includes a shell zone around said core and an end zone axially adjacent to said core.

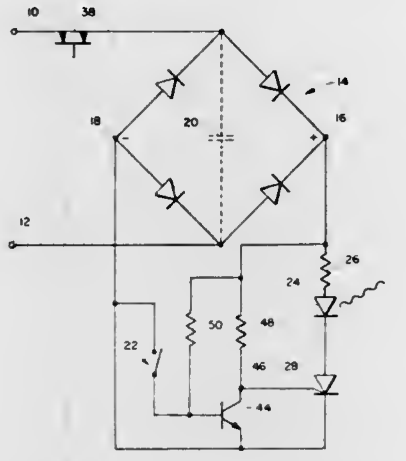
3,866,194
ANNUNCIATOR CIRCUIT

Richard A. Lawton, 235 Cassandro Blvd., Apt. 717, Don Mills, Ontario, Canada
Filed Mar. 21, 1973, Ser. No. 343,571
Int. Cl. G08b *23/00*
U.S. Cl. 340—213 R 3 Claims

1. In an alarm signalling device having at least a single-pole single-throw switch whose operation is determined by a change of ambient conditions being monitored by said device, and where said switch is connected in series with one side of a source of electrical power; the improvement comprising annunciator means associated with said alarm signalling device and connected to said power source to provide a continuous annunciation after a switching operation of said switch in response to a change of the conditions being monitored until such time as said annunciator means is at least temporarily disconnected from said power source, including;

annunciator means operable from said power source and in series with gate means; said gate means being operable only upon operation of a control circuit therefor; said control circuit being active to control said gate means only after a switching operation of said switch;

said gate means including latch means connected to said power source to maintain said gate means closed and said annunciator means operative even after a further switching operation of said switch, until said latch means is disconnected from said power source; said gate and latch means being an SCR, and said annunciator means being a light emitting diode;



said control circuit for said gate means from having a transistor whose base is connected series with said switch; resistor means connected to bias the base of said transistor so that said transistor is conductive when said switch is in its normal switching condition; and further resistor means connected at one end both to said transistor and to the gate of said SCR, so that after a switching operation of said switch said transistor become non-conductive and said SCR is fired by the voltage then impressed on the gate thereof.

3,866,195

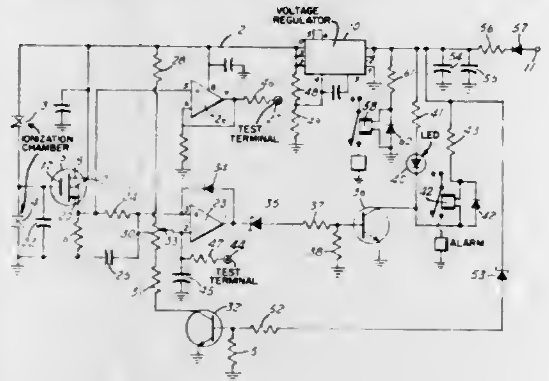
COMBUSTION PRODUCT DETECTOR AND METHOD OF CALIBRATING

Louis Ried, Jr., Boulder, Colo., assignor to Fire-Alert Company, Wheat Ridge, Colo.

Filed May 7, 1973, Ser. No. 358,041

Int. Cl. G08b *17/10*

U.S. Cl. 340—237 S **8 Claims**



1. A combustion product detector of the ionization chamber type comprising:

a. a constant voltage direct current supply,

b. means including an air sampling ionization chamber and connected across said supply for producing an output signal proportional to the density of combustion product in the air of said chamber,

c. adjustable means including a resistance connected across said supply for providing a reference voltage representing a predetermined combustion product density in the chamber,

d. means for comparing said output signal and said reference voltage and for producing a second signal when said output signal and said reference voltage are substantially equal,

e. an alarm means, and

f. means responsive to said second signal for actuating said alarm means.

3,866,196

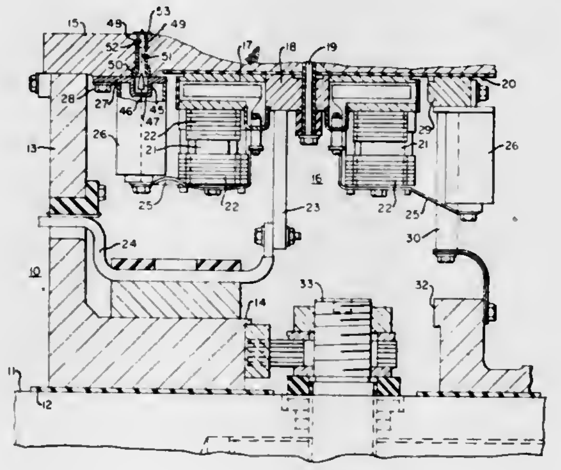
BLOWN FUSE INDICATOR FOR ROTATING EQUIPMENT

August C. Mann, Pittsburgh, and Thayer L. Dillman, North Versailles, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 1, 1973, Ser. No. 384,656

Int. Cl. H01h *85/30*

U.S. Cl. 340—250 **6 Claims**



1. In a rotating rectifier assembly including a rotatable support wheel having a plurality of rectifier circuit components mounted on a cylindrical rim thereof, a fuse mounted on the inner surface of said rim, the rim having an opening therethrough in alignment with the fuse, an indicator member disposed at one end of the fuse adjacent said opening, means for normally retaining said indicator member in position and for releasing the indicator member upon blowing of the fuse to permit the indicator member to move outward into the opening, and means for engaging the indicator member to limit its outward movement.

3,866,197

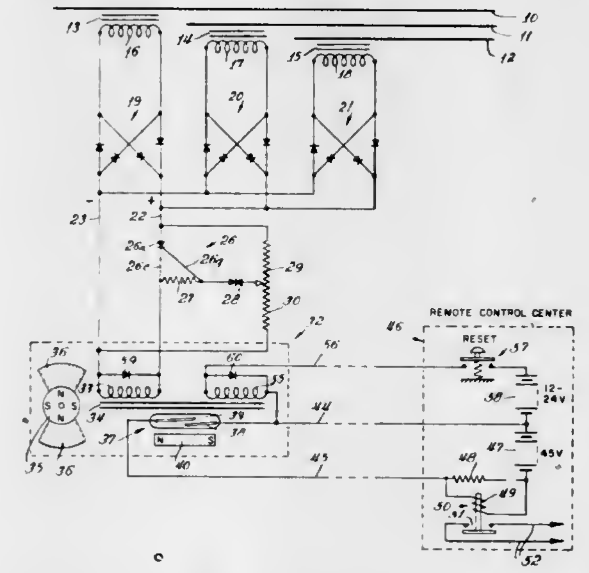
MEANS FOR DETECTING FAULT CURRENT IN A CONDUCTOR AND INDICATING SAME AT A REMOTE POINT

Edmund O. Schweitzer, Jr., Northbrook, Ill., assignor to E. O. Schweitzer Manufacturing Co., Inc., Mundelein, Ill.

Filed Dec. 10, 1973, Ser. No. 423,283

Int. Cl. G08b *21/00*

U.S. Cl. 340—253 A **13 Claims**



1. Means for detecting flow of fault current in a high voltage alternating current carrying conductor and indicating the same at a remote point comprising: a fault responsive device including a magnetic circuit, a fault responsive winding on said magnetic circuit, means for energizing said fault responsive winding with direct current according to the magnitude of flow of alternating fault current in said conductor, a reset winding on said magnetic circuit, and a normally open reed switch adjacent said magnetic circuit arranged to be closed on energization of said fault responsive winding resulting from flow of fault current in said conductor; indicating means at a said remote point connected to be responsive to closure of said reed switch, and means at said remote point for connecting said reset winding to a direct current source for reversing the magnetization of said magnetic circuit and opening said reed switch.

3,866,198

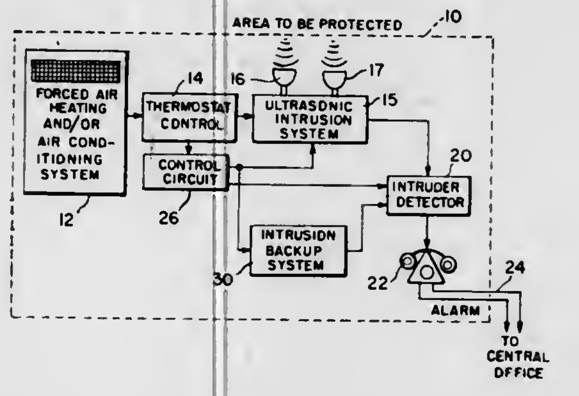
ULTRASONIC INTRUSION DETECTION SYSTEMS EMPLOYING TURBULENCE DISCRIMINATION

Leopold Cohen, 518 Seven Oaks Rd., Orange, N.J. 07051

Filed Oct. 17, 1973, Ser. No. 407,062

Int. Cl. G08b *13/16*

U.S. Cl. 340—258 A **10 Claims**



1. In an intrusion detection system for monitoring a predetermined area, said system, when activated is of the type employing a selected frequency transmitter and a receiver responsive to said transmitted frequency as determined by a Doppler shift due to the presence of an intruder in said area, the combination therewith including apparatus for operating said system in said area in the presence of a generating source of air current turbulence, which source is selectively operated according to environmental conditions of said area, and which air turbulence can undesireably cause said intrusion system to falsely indicate the presence of said intruder, comprising:

a. first means including a thermostat responsive to the operation of said selectively operated generating source to provide a control signal indicative of said operation and therefore of said air turbulence,

b. second means coupled to said intrusion system and responsive to said control signal for deactivating said system during the presence of said control signal, whereby said intrusion system is monitoring said area only when said selectively operated source is not operating as determined by said environmental condition.

3,866,199

DEVICE FOR SCANNING A FUNCTION AND METHOD OF OPERATING THE SAME

Hans-Joachim Eberhard, Lomar; Knud Overlach, Karlsruhe; Gerd Huhne, Morsch, and Ludwig Pietzsch, Karlsruhe, all of Germany, assignors to Ludwig Pietzsch, Karlsruhe, Germany

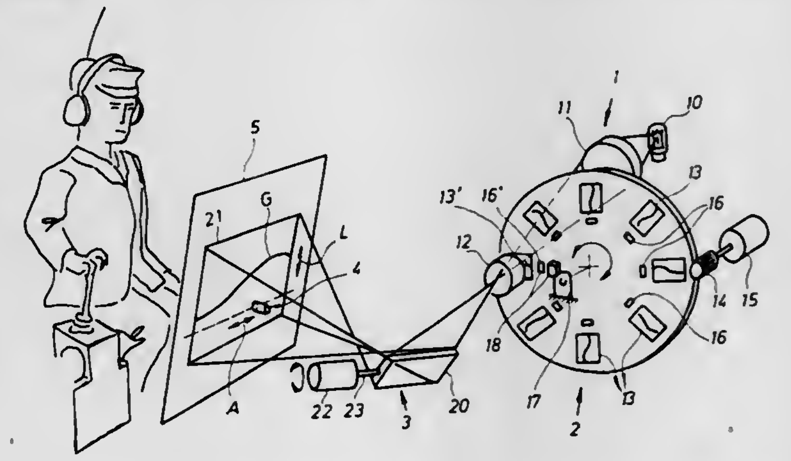
Filed Apr. 19, 1972, Ser. No. 245,573

Claims priority, application Germany, Feb. 9, 1972, 2206065; Apr. 19, 1971, 2118896; Feb. 28, 1972, 2209396

Int. Cl. G08b *21/00;* **B66c** *15/00*

U.S. Cl. 340—267 C **13 Claims**

1. Device for tracking the image of a function, comprising in combination carrier means for carrying at least one graphical representation of the pattern of a function, said carrier means including a rotary disc and a plurality of pattern representations disposed thereon about the circumference thereof, means for driving said rotary disc, and means for energizing said driving means with a signal representative of one variable of said function; an optical image-forming system for said function including an image-viewing screen, a source of illumination, means forming a defined path of illumination between said source and said screen, means for interposing said pattern in said path between said source and said screen, and means for displaying an image of said pattern on the screen; and a sensor operable to sense the image of the pattern on said screen; and means for effecting a relative movement between the image projected on the screen and said sensor according to variables of said function in relation to a fixed coordinate system.



13. Device for tracking the image of a function, comprising in combination carrier means for carrying at least one graphical representation of the pattern of a function including a film strip having a plurality of pattern representations disposed thereon; an optical image-forming system for said function including an image-viewing screen, a source of illumination, means forming a defined path of illumination between said source and said screen, means for interposing said pattern in said path between said source and said screen, and means for displaying an image of said pattern on said screen; and a sensor operable to sense the image of the pattern on said screen; and means for effecting a relative movement between the image projected on the screen and said sensor according to variables of said function in relation to a fixed coordinate system.

3,866,200

LOAD MEASURING AND OVERLOAD WARNING SYSTEM

Candelario Paredes, Dallas, and Robert Horn, Richardson, both of Tex., assignors to Forney Engineering Company, Carrollton, Tex.

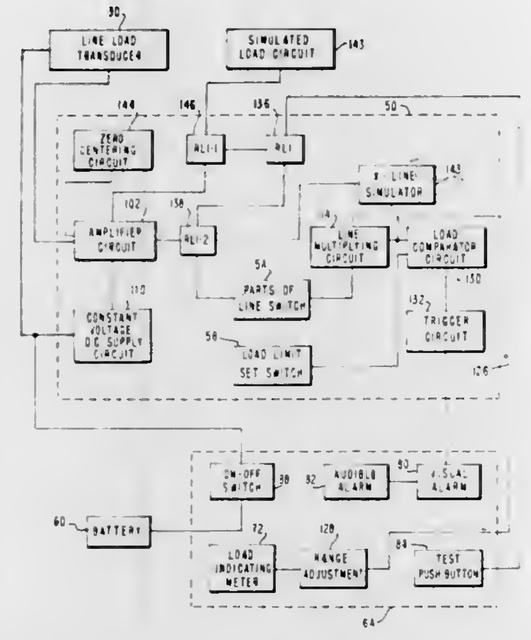
Filed July 25, 1973, Ser. No. 382,402

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 C **4 Claims**

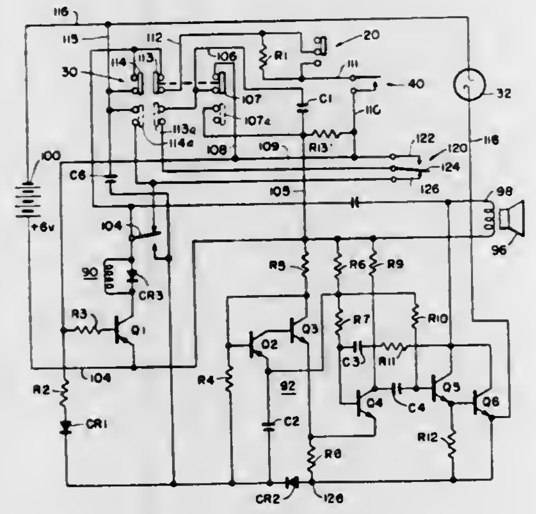
1. An improved load measuring and indication system for a multi-line hoisting rig, comprising means responsive to the tension of at least one load supporting line of such rig including, a transducer load cell associated with such line, a power pack for supplying a regulated constant voltage power to the system, a first amplifier circuit connected to said load cell for producing a signal that is proportional to the tension on such line by virtue of the load, a second amplifier for multiplying the signal by a signal corresponding to the number of lines of such rigging used in lifting the load, a selectable parts of line switch for setting such signal corresponding to the number of lines to be multiplied by such second amplifier; a third amplifier for comparing the total signal output of such second amplifier with a signal corresponding to desired load limit signal, selectable load limit switch means for establishing the signal corresponding to the desired load limit, trigger means responsive to the third amplifier operable for producing an output when the actual load signal to said third amplifier circuit reaches the desired load limit signal, display module

having a meter connected to said second amplifier for indicating the actual load signal output of the second amplifier circuit and a warning light and audible indicator energized by the trigger whenever the actual load reaches the desired load limit wherein the improvement comprises: relay means normally coupling the first amplifier with the load cell output and the parts of line switch, and operative, when energized, for breaking said connections and coupling a test input to the first amplifier, and its output to an input for the meter, test circuit means for energizing the relay and coupling the test signal corresponding to a known load simulating signal to the first amplifier.



3,866,201
SECURITY ALARM DEVICE

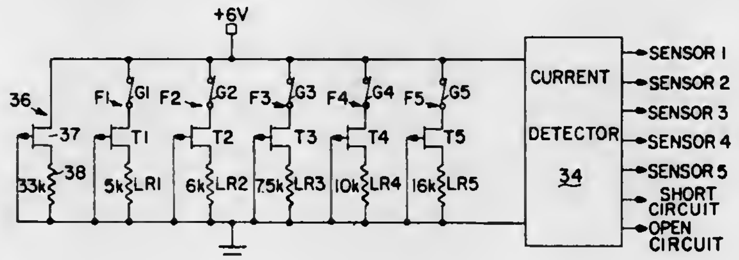
John L. Beiswenger, Pacific Palisades, Calif., assignor to National Presto Industries, Inc., Eau Claire, Wis.
Filed Nov. 22, 1972, Ser. No. 308,715
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **19 Claims**



1. A security alarm device mountable on a door and including a tripping lever sensitive to the movement of a door relative to a stationary door frame to detect opening and closing of the door, the device comprising an annunciating alarm circuit, a control circuit including a normally open switch closeable to actuate the annunciating alarm circuit, a manually retractable actuator spring-biased toward an operating position where it closes the switch, and first and second latch means for releasably holding said actuator in retracted positions remote from said operating position, said latch means being operatively associated with the tripping lever so as to release the actuator from the first latch means when the lever senses the door has closed and to release the actuator to said switch operating position from the second latch means when the door re-opens.

3,866,202
ALARM CIRCUITRY

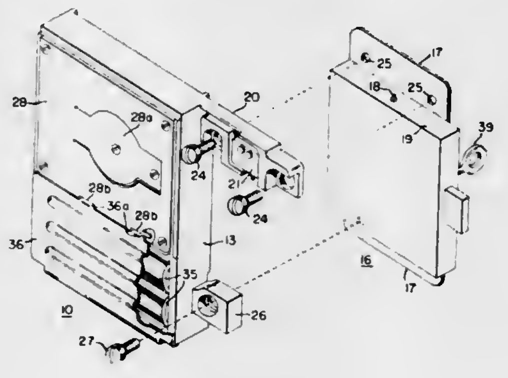
Martin H. Reiss, Newton, and James R. Adams, Framingham, both of Mass., assignors to Gulf & Western Manufacturing Company Systems, New York, N.Y.
Division of Ser. No. 153,297, June 15, 1971, Pat. No. 3,821,733. This application Oct. 29, 1973, Ser. No. 410,432
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **12 Claims**



1. Alarm circuitry for use in a structure having entrance means, comprising;
- current detection means,
- a plurality of sensors each operatively associated with an entrance means and responsive to an activation thereof to change said sensor from a first state to a second state,
- conductor means intercoupling said sensors in parallel to an input of said current detection means,
- each said sensor including a current source for drawing a predetermined amount of current whereby each current source draws a different amount of current,
- said detection means including means for registering a first condition when all said sensors are drawing current and means for registering a plurality of alarm conditions, each such alarm condition corresponding to activation of one of said sensors,
- and an additional current source connected in parallel with said sensors.

3,866,203
AUDIBLE SIGNAL APPARATUS

Charles Berns, Brookfield, Conn., assignor to Edwards Company Inc., Norwalk, Conn.
Division of Ser. No. 205,094, Dec. 6, 1971, Pat. No. 3,742,493. This application Feb. 16, 1973, Ser. No. 333,232
Int. Cl. E05b *45/12*
U.S. Cl. 340—274 **3 Claims**

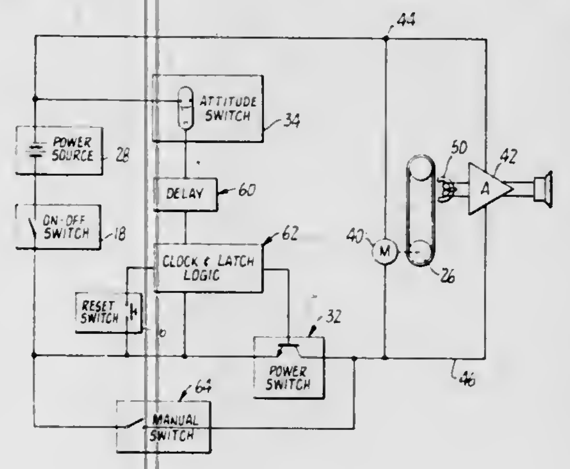


1. Audible signal apparatus for manifesting a retraction of a lock bolt comprising in combination:
- a. key actuated means for selectively retracting said lock bolt;
- b. lock housing means including therein said lock bolt and having oppositely disposed mounting flanges for securing said lock housing means on a planar surface;

- c. detent means extending through one side of said lock housing means and subject to movement in response to the retraction of said lock bolt;
- d. a shallow housing means for said audible signal apparatus whose major walls are substantially parallel and are coupled together by side walls and end walls;
- e. said shallow housing means including therein a horn having a diaphragm and an electromagnet for operating the diaphragm;
- f. said shallow housing means having a mounting bracket extending in a plane parallel to one major wall thereof and adapted for permitting said bracket to overlap a flange of the lock housing means and yet maintain a major wall of the shallow housing means in the plane of said planar surface to which said lock housing means is secured; and
- g. said bracket having a switch secured thereto in a position to be actuated when said detent is moved to energize said audible signal apparatus.

3,866,204
ELECTRONIC MEDICAL WARNING DEVICE

James H. Barkley, 1567 S. Jamaica, Aurora, Colo. 80012
Filed July 19, 1973, Ser. No. 380,768
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **3 Claims**

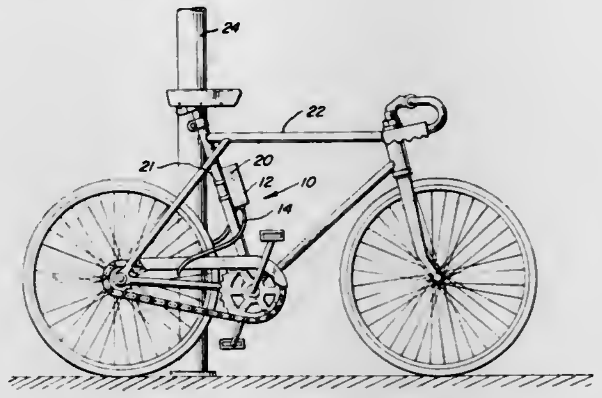


1. A warning device to be attached to a person prone to incapacitating medical conditions or prostrating seizures comprising a warning signal annunciator which when activated repeatedly emits a recorded verbal message to inform bystanders of the nature of such person's condition or seizure and how he is to be treated prior to the arrival of medical aid, a power supply for the annunciator, and control means to connect the power supply with the annunciator, said control means comprising sensing means operable to sense the existence of a supine or non-erect position of the wearer of the device and to transmit a signal only during the time the wearer is in such position, a switch operable upon closure to connect the power supply to the annunciator despite a subsequent change in the wearer's position from supine to a normal one, and time delay means to receive said signal and in response to the receipt of said signal for a predetermined period of time to close said switch.

3,866,205
LOCKING DEVICE WITH ALARM UTILIZING FLEXIBLE GAS IMPERMEABLE TUBE

Louis B. Payne, 1465 Jersey St., and Russell G. Overgard, 950 Everett St., both of Denver, Colo. 80215
Filed Apr. 18, 1973, Ser. No. 352,254
Int. Cl. G08b *21/00*
U.S. Cl. 340—280 **15 Claims**

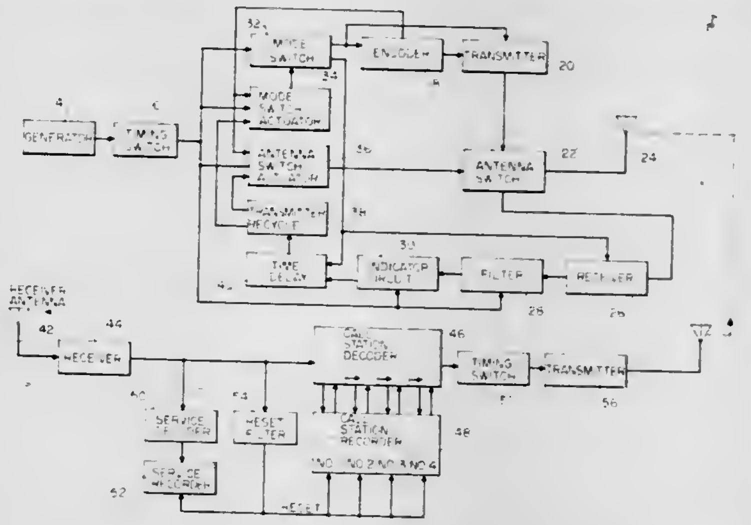
1. A portable locking apparatus adapted to be mounted on a device to be locked, including an alarm means for detecting the tampering with of a portion of the locking apparatus, comprising:
- a housing susceptible of being mounted on a device to be locked;
- an alarm means located in said housing;
- a sensing means located within said housing for actuating said alarm when a decrease in pressure is sensed by said sensing means; and



- a flexible gas impermeable tube having a first end and a second end, said tube being adapted to encircle a portion of said device to be locked wherein said first end is pressure sealed whereby after said tube encircles said portion of said device to be locked, said first end is connected to said housing by a locking means and wherein said second end is secured to said sensing means whereby when said pressure in said tube decreases, said alarm is actuated by said sensing means.

3,866,206
EMERGENCY SIGNALLING SYSTEM HAVING MANUALLY OPERATED GENERATOR

John A. DeGiorgio, Burlington; Ahmed H. Labib, and Subhash R. Rane, both of Stoneham, all of Mass., assignors to Solid State Technology, Inc., Wilmington, Mass.
Filed July 17, 1973, Ser. No. 379,967
Int. Cl. H04b *1/04*
U.S. Cl. 340—298 **17 Claims**



1. A remote electrical signalling system comprising:
- one or more call stations each including an electromechanical generator, transmitter means connected to be energized by said generator, receiver means connected to be energized by said generator, manually operable means for operating said generator for a substantial period of time, and switch means connected to direct an output from said generator to said transmitter means for an initial portion of the generator operating time for transmission of a call signal, and to said receiver means for a subsequent portion of the generator operating time for reception of a confirmation signal,

and
- a home station including receiver means for reception of a call signal, and transmitter means automatically operable

in response to the reception of a call signal for transmission of a confirmation signal.

3,866,207
APPARATUS FOR DISPLAYING IMAGE INFORMATIONS

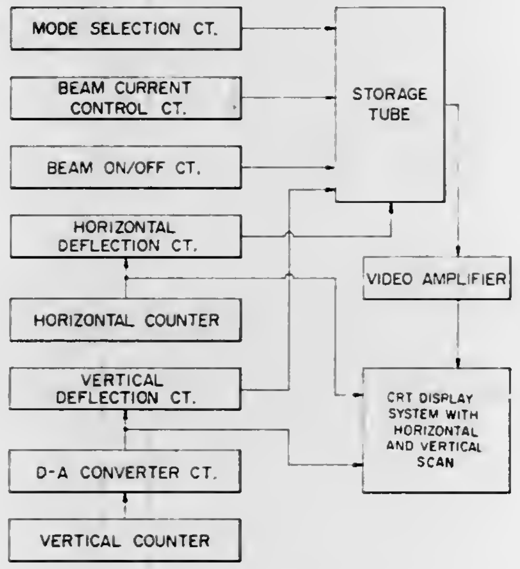
Eiichi Goto, Fujisawa; Hajime Ohiwa, Tokyo; Kansei Iwata, Tokyo, and Tadao Urano, Tokyo, all of Japan, assignors to Rikagaku Kenkyusho, Saitama-ken and Iwatsu Electric Co., Ltd., Tokyo, both of, Japan

Filed Nov. 24, 1972, Ser. No. 308,947

Claims priority, application Japan, Nov. 24, 1971, 46-94348

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD 6 Claims



1. Apparatus for displaying image information comprising a memory device to write-in and read-out image information by addressing in terms of two coordinates; a display device utilizing a scanning beam to display image information, said memory device having an image information signal input and image information signal output, said display device having an image information signal input; circuit means coupling the output of said memory device with the input of said display device to accomodate transmission to the display device of signals representing image information read-out from the memory device; addressing means associated with said memory device and operable to effect random access to one coordinate of a given information and sequential access to the other coordinate thereof; and scanning circuit means associated with said display device and operable to effect scanning movement of the display device beam to reproduce an image corresponding to the image information content of said image information signal, said display device scanning circuit means being coupled to said addressing means for synchronized operation therewith.

3,866,208
DATA CONTROL ARRANGEMENT FOR A DYNAMIC DISPLAY SYSTEM

Takao Tsuiki; Yoshikazu Hatsukano, and Kosei Nomiya, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

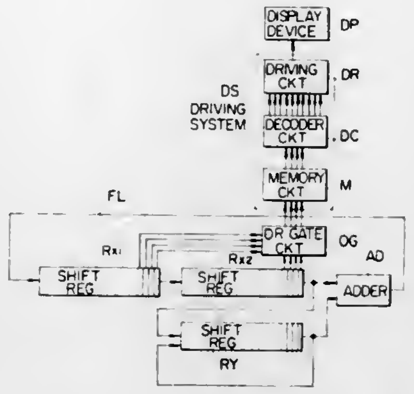
Filed Dec. 26, 1972, Ser. No. 318,652

Claims priority, application Japan, Dec. 24, 1971, 46-104583

Int. Cl. G06f *11/08*

U.S. Cl. 340—324 R 10 Claims

1. A dynamic display system comprising a plurality of series connected registers having the same storage capacities, respectively, a feedback circuit which serves to feed-back the output side of the rearmost stage of said series of registers to the input side of the foremost stage of said series of registers, an OR circuit having respective inputs to which respective output signals derived from predetermined corresponding positions in each of said respective registers are supplied, and a drive circuit which drives a display device in response to the output of said OR circuit, whereby the duty cycle of a drive signal applied to said display device is enhanced to raise the brightness of said display device.



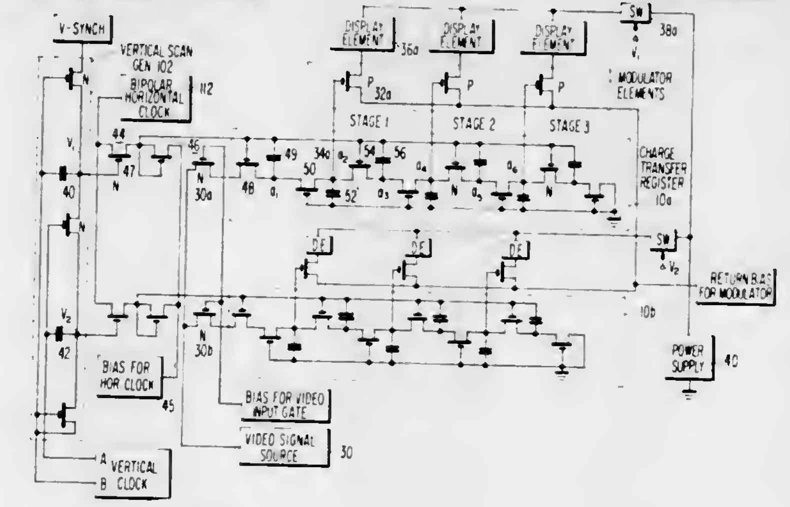
3,866,209
CHARGE-TRANSFER DISPLAY SYSTEM

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 22, 1973, Ser. No. 372,650

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 R 11 Claims



1. In combination:

a multiple-stage, charge-transfer analog signal shift register having an input terminal;

means coupled to said terminal for supplying analog signals thereto;

a plurality of analog signal display elements equal to the number of stages in said charge transfer register;

a plurality of modulator elements, also equal in number to the number of charge transfer stages, each modulator element connected to a different charge transfer stage and each controlled by the charge stored in that charge transfer stage; and

means for supplying power to each display element through its modulator element.

3,866,210
X-Y ALPHANUMERIC CHARACTER GENERATOR FOR OSCILLOSCOPES

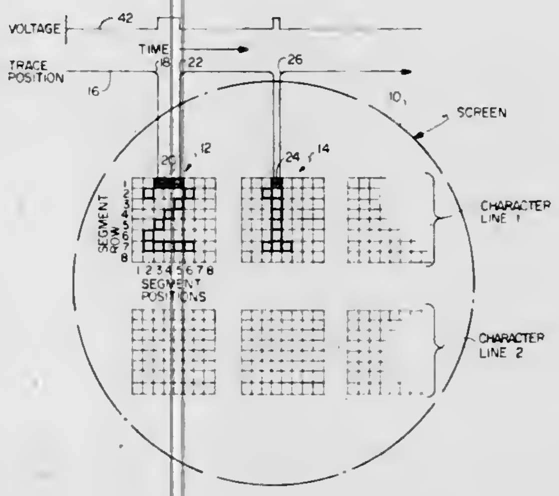
Donald C. Lokerson, New Carrollton, and Ronald E. Boston, Baltimore, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 14, 1973, Ser. No. 397,477

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD 5 Claims

1. An alphanumeric character generator for generating characters on the screen of a general purpose oscilloscope of the type having an external horizontal sweep trigger input and a vertical deflection input, said character generator comprising: means for generating a vertical clamping voltage of a value to vertically bias the oscilloscope trace in an off-screen position; means for generating a vertical deflection voltage of a value to vertically position the oscilloscope trace at a level on-screen corresponding to a desired level of a horizontal row of segments of characters to be generated; means for sequentially generating a plurality of control signals, each representative of a different character segment of a plurality of segments to be successively displayed in predetermined segment positions along a horizontal row on the oscilloscope screen during a horizontal sweep of the oscilloscope trace; and gate means coupled to each said generating means responsive to each control signal for selectively and successively presenting to the vertical deflection input of the oscilloscope either said vertical clamping voltage or said vertical deflection voltage; whereby character segments are displayed by successively moving the oscilloscope trace between the off-screen vertical position and the on-screen vertical position during a horizontal sweep of the oscilloscope trace.



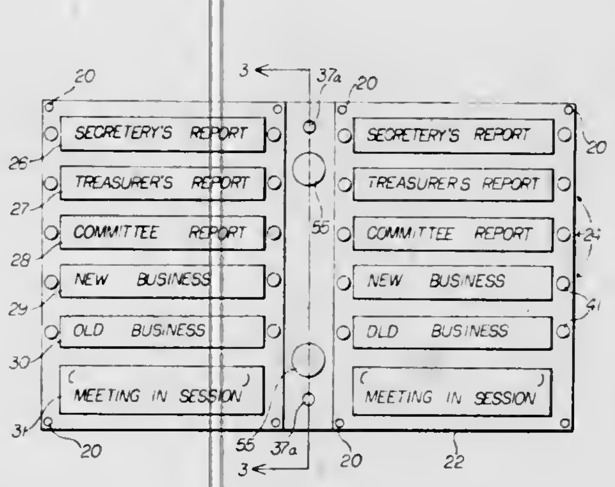
3,866,211
PARLIMENTARY PROCEDURE SIGN

Milton E. Curtis, 58 Myrtle St., Ashland, Mass. 01760

Filed Sept. 5, 1973, Ser. No. 394,504

Int. Cl. G08b *5/36*

U.S. Cl. 340—332 15 Claims



1. A lectern comprising:

enclosure means defining a platform for accommodating reading material to be read by a speaker occupying a position on one side of said enclosure means;

a panel comprising a plurality of electrically operated, individually controlled illuminated display signs, said panel mounted on an opposite side of said enclosure means so as to be readily visible to an audience facing the speaker, said signs are indicative of events contemporaneously transpiring; and

switch control means for controlling said signs, said control means being disposed on said platform so as to be readily operated by the speaker.

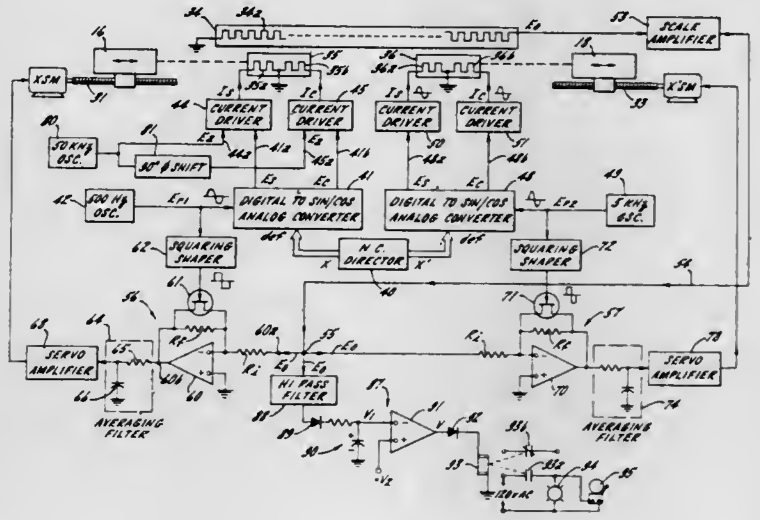
3,866,212
POSITION CONTROL SYSTEM WITH PLURAL SIGNAL TRANSMISSION THROUGH COMMON INDUCTIVE DEVICE

James B. Simon, and Thomas B. Bullock, both of Fond du Lac, Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Oct. 23, 1973, Ser. No. 408,665

Int. Cl. H03k *13/02;* G08c *9/04*

U.S. Cl. 340—347 DA 7 Claims



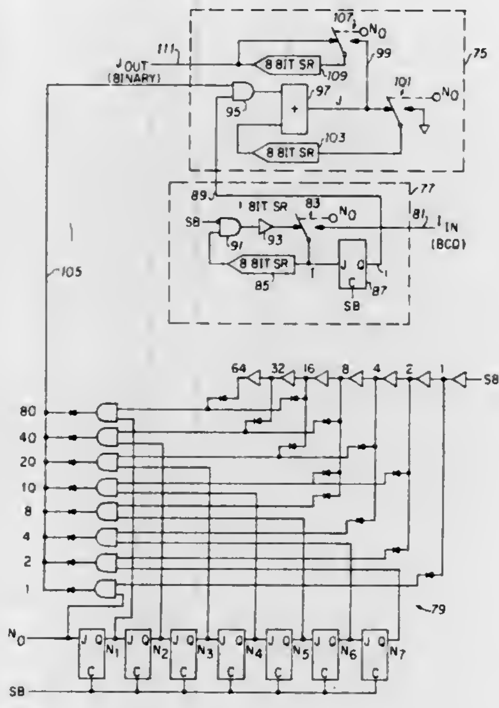
1. In apparatus having first and second members movable independently to different positions along a common path by drive from first and second respective motors, the combination comprising

- a. a resolver type device including a first part disposed stationarily along said path and second and third parts mounted respectively on said first and second members to move along and in closely spaced relation to the first part as said members move,
- b. said first part having an output winding inductively coupled to first and second input windings respectively disposed on said second and third parts,
- c. means for exciting said first input windings with alternating voltage of a first predetermined frequency and which in amplitude represents the analog of a commanded position of the first member,
- d. means for exciting said second input windings with alternating voltage of a second predetermined frequency and which in amplitude represents the analog of a commanded position of the second member,
- e. means for exciting said first input windings with alternating voltage of a third predetermined frequency superimposed upon the voltage of said first frequency,
- f. means coupled to receive the output signal induced in said output winding and responsive to the first frequency component therein for producing a first error signal indicative of the difference between the commanded and actual positions of the first member,
- g. means coupled to receive the output signal induced in said output winding and responsive to the second frequency component therein for producing a second error signal indicative of the difference between the commanded and actual positions of the second member,
- h. means coupled to receive the output signal induced in said output winding and responsive to the third frequency component therein for producing an auxiliary signal, and
- i. detector apparatus coupled to receive said auxiliary signal and including means responsive to substantial reduction in the amplitude thereof for indicating a malfunction.

3,866,213
SERIAL BINARY NUMBER AND BCD CONVERSION APPARATUS

Delaine C. Sather, Cedar Rapids, Iowa, and Bruce C. Lutz, Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed Sept. 10, 1973, Ser. No. 395,817
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **1 Claim**



1. Apparatus for converting serial BCD words to serial binary words in a time frame of N words each having N bits wherein the output word is presented least significant bit first and a synchronizing bit occurs simultaneously with the most significant bit of a word comprising, in combination:

first means for generating a series of serial binary constant words each in its consecutive corresponding word in a time frame and having the respective value of 80, 40, 20, 10, 8, 4, 2, and 1;

means for supplying an input BCD word to be converted;

detection means for providing a logic one output for an entire word time corresponding to a given logic value in the input BCD word for a corresponding word time in a frame time, said detection means comprising,

first switch means for a first input connected to said means for supplying an input BCD word, a second input and an output,

first shift register means having input connected to said output of said first switch means and having an output, gating means for passing the output of said shift register means only at times other than the occurrence of said synchronizing bits,

further shift register means connected between the output of said gating means and the second input of said first switch means, and

J-K flip-flop means connected to said output of said first switch means and activated only at said synchronizing bit times;

AND gate means connected to said first means and to said detection means for passing the received constant only during those word times that a logic one is detected in the BCD number by said detection means;

summation means including first and second inputs and an output, said first input of said summing means being connected to the output of said AND gate means;

second switch means connected to said output of said summing means for providing an output from said second switch means only during N-1 word times of a frame time;

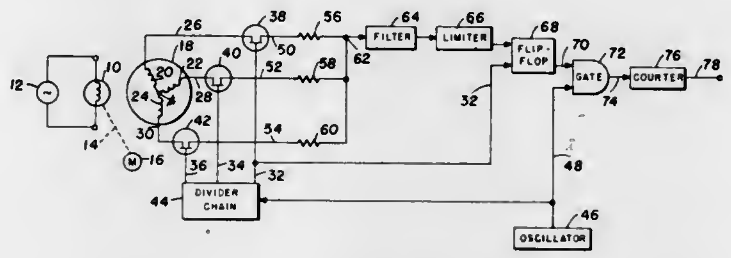
storage means connected between said output of said second switch means and said second input of said summing means for delaying data bits passed therethrough by one word time; and

apparatus output means for providing as an output converted word the word appearing at the output of said summing means at the end of each time frame.

3,866,214
SYNCHRO-TO-DIGITAL CONVERTER

Sidney A. Taylor, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1973, Ser. No. 404,063
Int. Cl. G08c *9/00;* **H03k** *13/02*
U.S. Cl. 340—347 SY **7 Claims**



1. In a system having an energized primary winding means and a plurality of secondary winding means physically displaced in phase one from another each having a signal induced thereon dependent upon the angular position of said primary winding means relative to said secondary winding means, a converter for determining said relative angular positions, comprising;

signal generator means producing an output signal of frequency greater than the frequency of said induced signals,

means connected to receive said output signal of said generator means and produce therefrom a plurality of phase-shifted output signals having a common frequency lesser than the frequency of the output signal from said signal generator means but greater than the frequency of said induced signals,

each of said plurality of phase-shifted output signals from said frequency converter means being shifted in electrical phase relative to one another by an amount equal to said physical phase displacement between associated ones of said plurality of secondary winding means,

a plurality of signal chopping means each having inputs connected to receive an induced secondary winding signal and its associated phase shifted signal and each producing an output signal therefrom,

summing means having inputs connected to receive said output signals from said plurality of chopping means for producing a summed output signal,

pulse generating means connected to receive said summed signal and a preselected one of said phase shifted signals for producing an output signal having a pulse width proportional to the phase difference between said received signals, and

gating means connected to receive said output signal from said pulse generating means and said output signal from said signal generator means for producing a pulsed signal having a number of pulses proportional to said relative angular position.

3,866,215
ELECTRONIC KEYBOARD FOR TYPEWRITER

Karel Havel, P.O. Box 66, Station M, Toronto 21, Ontario, Canada

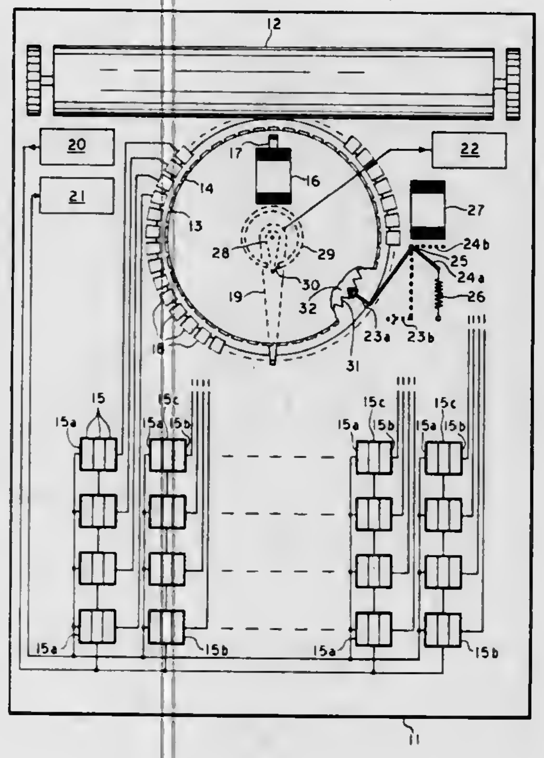
Filed Apr. 9, 1973, Ser. No. 348,937
Int. Cl. G08c *21/00*
U.S. Cl. 340—365 C **6 Claims**

1. An electronic keyboard comprising:

a plurality of electronic keys adapted for being actuated, each said key comprising conductive areas adjacent a surface thereof;

means for establishing a selected electrical coupling among said conductive areas in each said key, said coupling being changeable by actuating of said keys;

a plurality of electrical switches, each said switch comprising a plurality of contacts and a wiper movable therealong, said contacts being electrically connected according to a predetermined system to said conductive areas in said keys;



electronic sensing means for detecting a change of said electrical coupling in said keys caused by actuating of said keys, inputs of said sensing means being electrically connected to said wipers of said switches, respectively; and

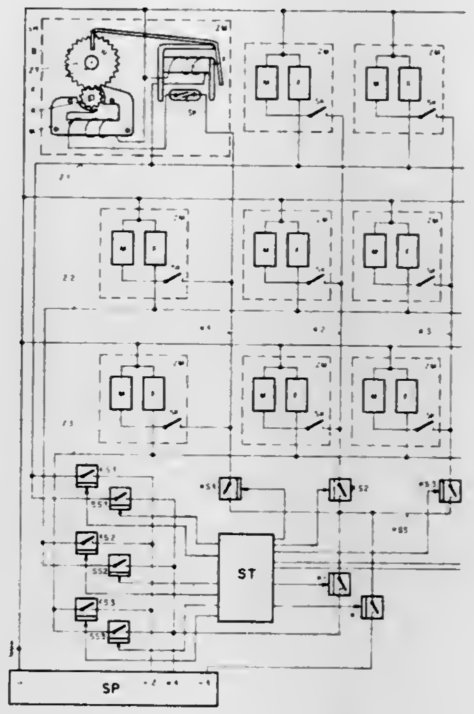
means to move said wipers, respectively, to gradually electrically connect said keys to inputs of said sensing means, respectively, for locating of actuated keys.

3,866,216
INDICATOR SYSTEM WITH SIGNAL INDICATORS

Otto Tschumi, Solothurn, Switzerland, assignor to Autophon Aktiengesellschaft, Solothurn, Switzerland

Filed Oct. 10, 1973, Ser. No. 405,146
Claims priority, application Switzerland, Oct. 16, 1972, 15045/70
Int. Cl. G08b *5/00*
U.S. Cl. 340—379 **10 Claims**

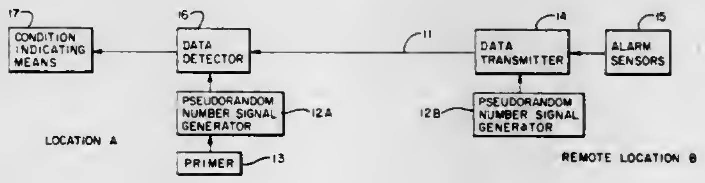
1. An indicator system comprising a plurality of interchangeable signal indicators each being placed in respective rows and columns and having a stepping motor with two conductors and a rotatable signal carrier mechanically driven by said stepping motor, and a mechanical stop for stopping said signal carrier in a defined position, and a release magnet for releasing said mechanical stop, a power supply for providing a common potential to one of the conductors of each stepping motor and to said release magnet and a predetermined voltage potential to a plurality of column conductors to which the other conductor of all signal indicators of the respective column can be connected, said power supply further adapted to supply a predetermined voltage potential to one side of each said release magnet of a selected row, a stepping motor switch means connecting each respective stepping motor to its respective column conductor, and a column control switch means interconnecting said power supply means to each respective column conductor, said stepping motor switch means being disposed within each signal indicator and being adapted for actuation in response to certain energization of said release magnet.



3,866,217
MONITORING TRANSMISSION LINK BY COMPARING PSEUDORANDOM SIGNALS

Victor A. Bennett, Jr., Gloucester, Mass., assignor to Currier-Smith Corporation, Bedford, Mass.

Filed Dec. 26, 1972, Ser. No. 318,419
Int. Cl. G08b *23/00*
U.S. Cl. 340—416 **10 Claims**


17
CONDITION INDICATING MEANS
16
DATA DETECTOR
11
14
DATA TRANSMITTER
15
ALARM SENSORS
PSEUDORANDOM NUMBER SIGNAL GENERATOR
12A
12B
PSEUDORANDOM NUMBER SIGNAL GENERATOR
LOCATION A
PRIMER
13
REMOTE LOCATION B

1. A method of monitoring a communication link to detect a change from a normal to an abnormal condition in said communication link which method includes the steps of,

establishing the same initial conditions in like first and second pseudorandom signal generating means at a first location to provide first and second like pseudorandom signals respectively occurring at substantially the same time,

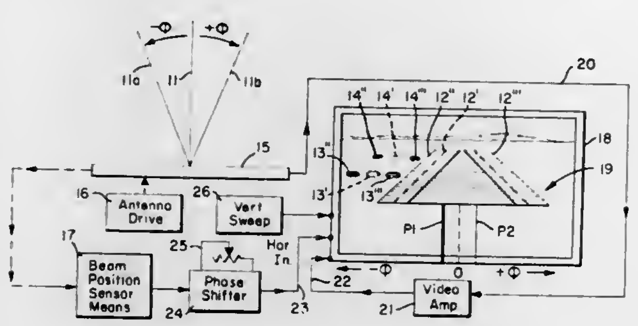
transporting said second pseudorandom signal generating means to a second location,

transmitting said second pseudorandom signal over said communication link between said second location and said first location,

comparing the transmitted second pseudorandom output signal with said first pseudorandom output signal at said first location,

and providing an indication when the latter signals differ for more than a predetermined time interval.

3,866,218
SCANNING RADAR AZIMUTH POSITION CONTROL SYSTEM
David W. Young, N. Hollywood, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed Aug. 16, 1973, Ser. No. 388,748
Int. Cl. G01s *7/20*
U.S. Cl. 343—5 LS **2 Claims**



1. A scanning radar azimuth position control system comprising, in combination:

a. a scanning radar system including an antenna for generating a beam;

b. an antenna drive means for sweeping said beam back and forth through a given azimuth angle;

c. a beam position sensor means responsive to the azimuth angle of said beam to provide a cyclic output signal which oscillates in time at the same frequency as the beam oscillates back and forth in azimuth through said azimuth angle;

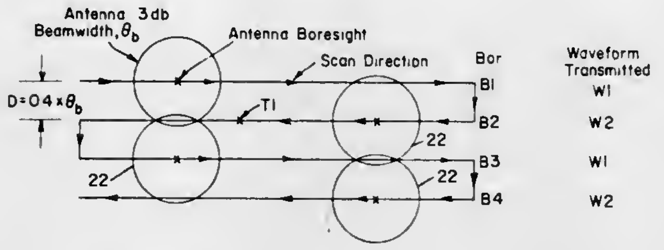
d. a radar cathode ray tube including a display screen and having a video input for receiving echo signals from said antenna and an horizontal input for receiving said cyclic signal so that said echo signals are displayed as images in first and second horizontal positions respectively generated when the beam is swept through said azimuth angle in one direction and swept back through said azimuth angle in an opposite direction as represented by said cyclic signal; and

e. phase shift means connected between the output of said beam position sensor means and said horizontal input to enable shifting of the phase of said cyclic signal, said phase shift means including adjusting means for controlling the degree of phase shift of said cyclic signal, whereby the image of said first horizontal position of echo signals displayed on said display screen can be repositioned relative to the image of said second horizontal position by said adjusting means to shift the phase of the cyclic wave form passed to said horizontal input an amount to correct any phase shift between the output of said beam position sensor means and the actual azimuth position of said beam as a consequence of errors occurring in conversion by said beam position sensor means of the actual position of the beam and the generation of the cyclic wave form representing said actual position to thereby cause said first and second horizontal positions to coincide and thereby avoid double images.

3,866,219
RADAR SYSTEM WITH TARGET ILLUMINATION BY DIFFERENT WAVEFORMS
David A. Kramer, Canoga Park, and George P. Lavas, Torrance, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 5, 1973, Ser. No. 376,858
Int. Cl. G01s *9/02, 7/28*
U.S. Cl. 343—5 R **5 Claims**

1. In a radar system of the type including an antenna movable in a multiple-bar scan pattern, transmitting means for directing signals to said antenna which are transmitted thereby, receiving means including signal processor means coupled to said antenna for receiving and processing signals received by said antenna, an arrangement comprising:

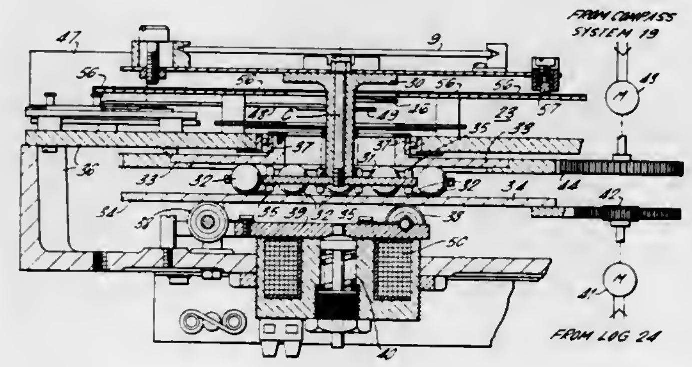
means for controlling said antenna to move in a scan pattern of a sequence of bars at different elevations, defining odd and even bars, said antenna being selected to be characterized by an elevation beamwidth definable as θ_b and the elevation spacing between adjacent bars is $n \times \theta_b$ where n is less than 0.5;



control means coupled to said antenna and to said transmitting means for controlling the latter to direct signals of different characteristics during successive bars of said scan pattern; and

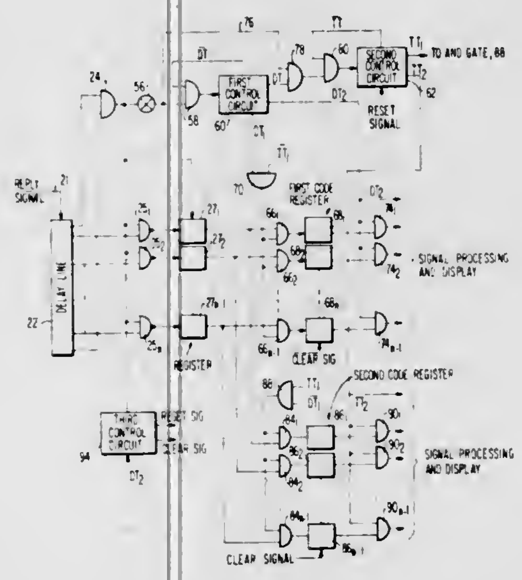
control means controlling said transmitting means to direct signals of a first set of properties, definable as a first waveform, to said antenna during each odd bar and to direct signals of a second set of properties, definable as a second waveform, to said antenna during each even bar.

3,866,220
RADAR AND LIKE ECHO-DISPLAY APPARATUS
Clifford Arthur Embling, Buckhurst Hill; Alban Harrison, Woodford Green, and Arthur Alfred Hawkes, Brentwood, all of England, assignors to Smith Industries Limited, London, England
Filed June 26, 1973, Ser. No. 373,701
Claims priority, application Great Britain, June 26, 1972, 29770/72
Int. Cl. G01s *7/04*
U.S. Cl. 343—5 ST **12 Claims**



9. Radar apparatus for use on a moving craft, comprising means for receiving echoes from objects within a region of radar surveillance, display means for providing a plan-position display of the received echoes, an image-retaining device having a light-emitting surface, said image-retaining device being operable electrically to retain images of light patterns to which it is exposed and to emit light from said surface with a distribution thereacross in accordance with the retained images, and further means mounting the image-retaining device for exposure to the display means to retain cumulatively and thereby display from said surface superimposed images of the plan-position display, said further means comprising a base structure, a pair of parallel plate members spaced from one another, a caged ring of balls sandwiched between said plate members, means mounting a first of said plate members for translation along a straight line relative to both the second plate member and said base structure, means mounting the second plate member for angular displacement relative to said base structure, a table mounted centrally with respect to said caged ring of balls for carrying said image-retaining device, first motor means for driving said first plate member along said straight line relative to said base structure in accordance with craft movement, and second motor means for displacing said second plate member angularly relative to said base structure in accordance with change in direction of the craft movement.

3,866,221
BEACON DECODER SYSTEM
Mitsuo Hikosaka, 1590-18 Kokura, Kasuga, Japan
Filed Sept. 17, 1973, Ser. No. 397,950
Int. Cl. G01s *9/56*
Claim priority, application Japan, Sept. 18, 1972, 47-95010
U.S. Cl. 343—6.5 LC **20 Claims**



1. A decoder system for use in a communication system of the character in which the format of a signal is comprised of a first and second framing pulses spaced in time by a fixed interval, said signal format additionally containing a plurality of data bits represented by the presence and absence of pulses, each occurring during a corresponding time slot of a sequence of such time slots defined between said first and second framing pulses, said decoder system being useful in discriminating between signals occurring in near time coincidence and comprising:

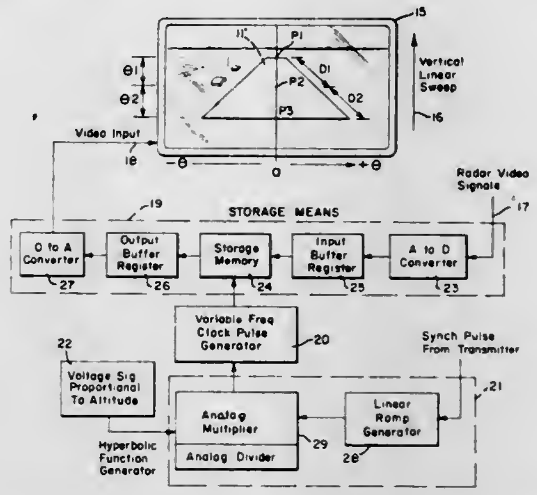
converter means for converting said signals from serial to parallel form, said converter means having a plurality of output taps each associated with one of said data bits provided between said framing pulses;

coincidence means, connected to said converter means to detect the coincidence of the first and second framing pulses of each signal and connected to produce a coincidence signal when such coincidence is detected;

a plurality of gating means, each connected to one of said converter means output taps, said gating means being responsive to said coincidence signal to read out said data pulses from said converter means; and

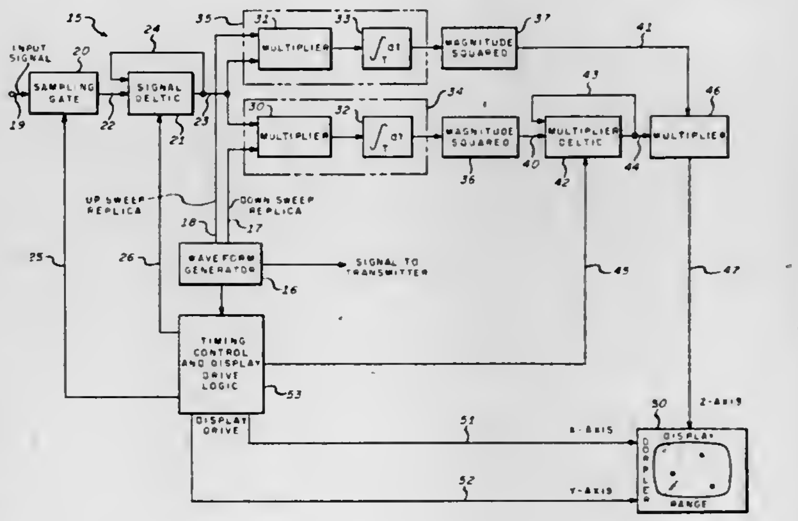
memory means comprising a plurality of data bins each for storing one of said data bits, said memory means including comparator means for comparing the width of each data pulse with that of its associated coincidence signal to accept or reject said data pulse dependent upon whether it has a width equal to that of said coincidence signal.

3,866,222
PERSPECTIVE RADAR DISPLAY USING LINEAR VERTICAL SWEEP
David W. Young, 627 N. Beachwood Dr., No. Hollywood, Calif. 91506
Filed Aug. 27, 1973, Ser. No. 391,561
Int. Cl. G01s *7/20*
U.S. Cl. 343—5 LS **7 Claims**



5. An apparatus according to claim 4, in which the vertical sweep for displaying the video signals is linear and said given function is a hyperbolic function.

3,866,223
MULTIPLICATIVE SIGNAL PROCESSOR FOR TARGET DETECTION SYSTEMS WITH SEQUENTIAL DOPPLER SEARCH
Arthur W. Crooke, Concord, Mass., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Feb. 1, 1972, Ser. No. 224,369
Int. Cl. G01s *7/28, 9/02*
U.S. Cl. 343—17.2 PC **7 Claims**



1. In a system for detecting targets by transmitting a composite signal having first and second components and processing the composite signals reflected from said targets, the combination comprising

input terminal means responsive to said reflected composite signals,

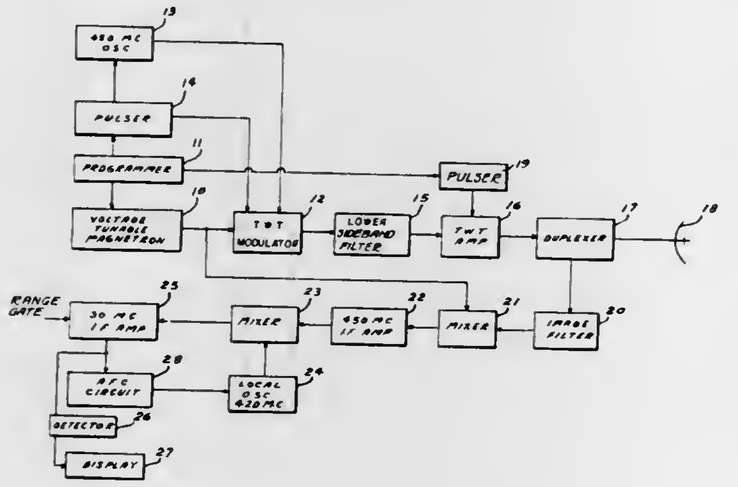
first matched filter means having an input coupled to said input terminal means and matched to said first component of said reflected composite signals and having an output for providing first signals,

second matched filter means having an input coupled to said input terminal means and matched to said second component of said reflected composite signals and having an output for providing second signals,

time compression means having an input coupled to said output of said first matched filter means for storing said first signals occurring during a predetermined time interval,

said time compression means having an output, and
multiplier means having first and second inputs coupled to said output of said time compression means and to said output of said second matched filter means respectively and having an output for providing the product of said stored first signals and said second signals.

3,866,224
FREQUENCY DIVERSITY RADAR SYSTEM
William T. Porter, Newfield, and John D. Pfeiffer, Norwich, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Oct. 13, 1958, Ser. No. 767,067
Int. Cl. G01s *7/28, 7/36, 9/02*
U.S. Cl. 343—17.2 R **3 Claims**



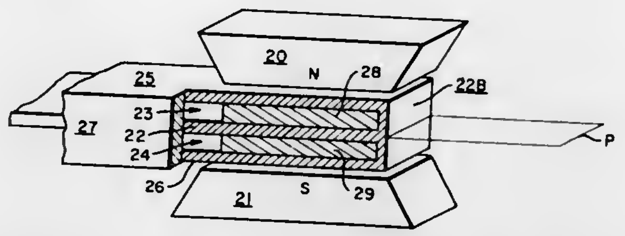
1. An anti-jamming radar system, comprising; a voltage tunable magnetron, means for controlling the output frequency of said voltage tunable magnetron, a low frequency oscillator, means for modulating said voltage tunable magnetron output with the output frequency of said oscillator, said last-named means including means for suppressing the voltage tunable magnetron frequency, means for pulsing said modulating means to add pulse information to the output signal of said modulating means, a travelling wave tube amplifier, means for passing only the first lower sideband of the modulated signal to said amplifier, means for transmitting said amplified signal toward a target and for receiving the return signal from the target, a mixer circuit, means for applying the return signal to said mixer circuit, said last-named means including means for filtering out all frequencies in the image frequency band, means for applying the output of said voltage tunable magnetron to said mixer to thereby produce an intermediate frequency of the same frequency as said oscillator frequency, a display device, means for recovering the pulse information from said return signal and means for applying the pulse information to said display device.

3,866,225
PARAMAGNETIC SAMPLE ARRANGEMENT FOR ECM FALSE ECHO GENERATION
Daniel C. Buck, Hanover, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 4, 1973, Ser. No. 366,914
Int. Cl. H04k *3/00;* **G01r** *33/08;* **H03h** *7/30*
U.S. Cl. 343—18 E **10 Claims**

1. An apparatus for providing spin echo delay lines for microwave signal pulses, said apparatus being characterized by two paramagnetic samples at opposite sides of a plane of symmetry passing through a magnetic field, said apparatus comprising:

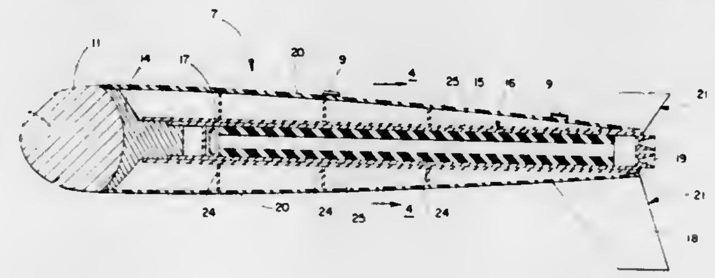
pole pieces having uniformly-spaced pole faces forming a magnetic field having a plane of symmetry passing along the space between the pole faces,

means defining two separate and superimposed waveguide chambers such that one waveguide chamber overlies the other in the space between said pole pieces, said waveguide chambers being arranged to define a wall extending between them along said plane of symmetry of the magnetic field between said pole pieces, and



paramagnetic means disposed in each waveguide chamber in a position such that with respect to said plane of symmetry the magnetic field between said pole pieces is symmetrically applied to each paramagnetic means.

3,866,226
RADAR-AUGMENTED SUB-TARGET
Chris Benneche, Newbury Park; Brochu James W., Granada Hills, and Jack S. Conner, Topanga, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed Feb. 25, 1974, Ser. No. 445,153
Int. Cl. H01q *15/14*
U.S. Cl. 343—18 B **12 Claims**



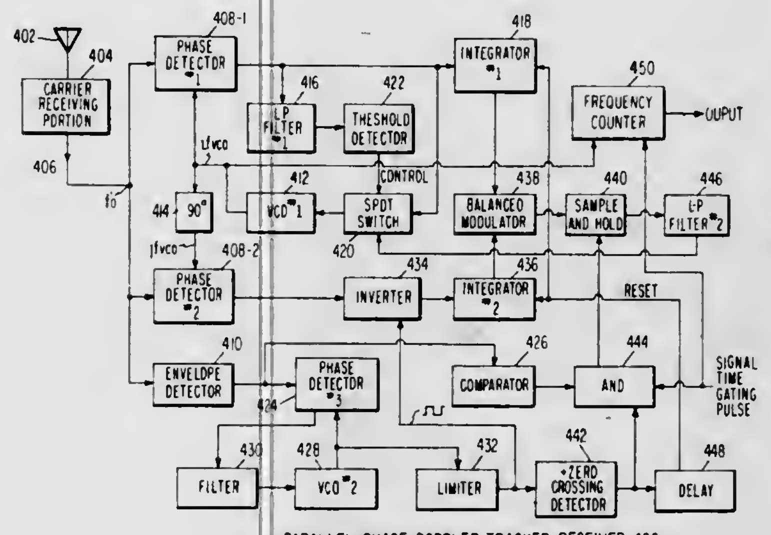
12. Target means comprising:

a. a drone aircraft remotely controlled;
b. a plurality of streamlined powered flying targets carried by said drone until ready to be launched;
c. radar reflection augmenting means in each said target;
d. drive motor in each said target being individually startable during drone flight for launching said targets individually from said drone; and
e. removable cover means forming a radar mask effectively surrounding the reflection augmenting means in each of said targets except one, and individual control means operatively connected respectively to said cover means to separate the latter from its respective target in response to actuation of its said control means.

3,866,227
DOPPLER TRACKER RECEIVER
Abraham Eli Ruvin, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 15, 1973, Ser. No. 341,779
Int. Cl. G01s *1/38*
U.S. Cl. 343—106 D **8 Claims**

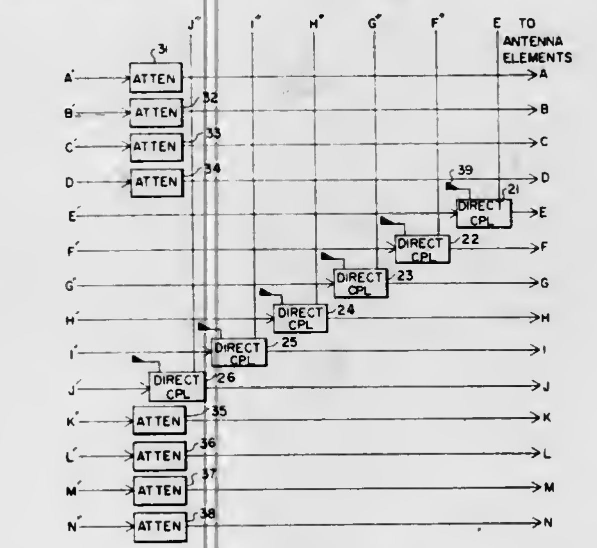
1. A doppler tracker receiver for receiving a doppler signal which at the end of each one of successively-occurring intervals exhibits a momentary phase discontinuity, said receiver comprising:

a. a voltage-controlled oscillator for producing a controlled frequency,
b. phase detection means coupled to said oscillator and responsive to said doppler signal applied thereto for deriving first and second outputs manifesting respectively the difference in phase between each of first and second phase-quadrature components of said controlled frequency and said signal,
c. phase-discontinuity detection means responsive to said signal applied thereto for determining the end and middle of each successively-occurring interval to thereby divide each interval into two halves,
d. a first integrator and first coupling means applying said first output of said phase detection means as an input to said first integrator,
e. a second integrator and second coupling means controlled by the output of said phase-discontinuity detection means for applying the second output of said phase detection means with inversion as an input to said second integrator during one half of each interval and without inversion during the other half of each interval,
f. signal translating means including a sample and hold circuit controlled by the output from said phase discontinuity detection means for sampling the algebraic product of the outputs from said first and second integrators at the end of each interval and immediately thereafter resetting said first and second integrators, and
g. third coupling means between said sample and hold circuit and said voltage control oscillator to apply an error signal to said oscillator determined by the algebraic amplitude of the held sample signal from said sample and hold circuit.



PARALLEL-PHASE DOPPLER TRACKER RECEIVER 400

3,866,228
TWO FREQUENCY LOCALIZER GUIDANCE SYSTEM
Andrew Alford, 71 Bacon St., Winchester, Mass. 01840
Filed Mar. 23, 1973, Ser. No. 344,358
Int. Cl. G01s *1/14*
U.S. Cl. 343—109 **13 Claims**

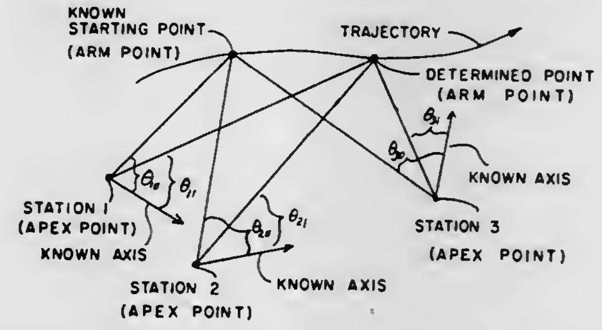


1. In a localizer signalling system for guiding an aircraft along a course, means producing radiation patterns of first and second different frequencies which define the course comprising,

sources of first and second different frequency signals,
an array of at least N radiating elements,
means energized by the source of the first frequency for feeding first frequency power along N feed lines,
means energized by the source of the second frequency for feeding second frequency power along n feed lines, and means coupling power from said N feed lines and said n feed lines to the N radiating elements, said coupling means including *n* means, each fed by one of said N lines and one of said n lines and each feeding unequal first and second frequency power to a different radiating element, whereby the radiation patterns of different frequencies for the localizer signalling system are radiated by the N elements.

3,866,229
METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING POSITION-MOTION STATE OF A MOVING OBJECT
Calvin Miles Hammack, P. O. 304, Saratoga, Calif. 95070
Continuation-in-part of Ser. No. 817,765, April 21, 1969, Pat. No. 3,691,560, which is a division of Ser. Nos. 420,623, Dec. 23. 1964. Pat. No. 3.445.847. and Ser. No. 86.770. Feb. 2. 1961. Pat. No. 3,706,096 and Ser. No. 74,180, Sept. 21, 1970, Pat. No. 3,795,911, which is a continuation-in-part of Ser. No. 278,191, May 6, 1963, abandoned. This application Sept. 12, 1972, Ser. No. 288,429

Int. Cl. G01s *5/04*
U.S. Cl. 343—112 R **104 Claims**



1. A method of determining at least one otherwise unknown dimension of the position-motion state of at least one selected point of a plurality of points in space relative to the position of at least one other of said plurality of points;

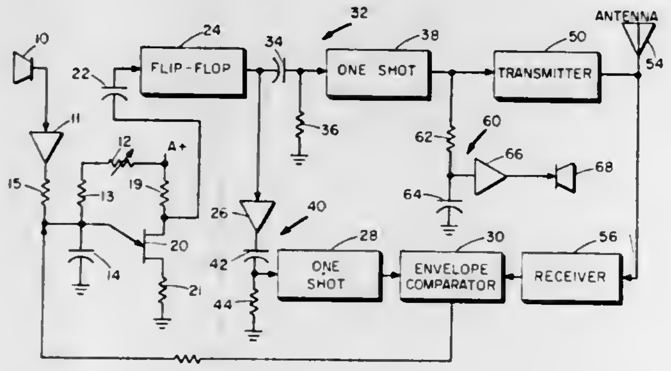
said plurality of points being divided into two groups of points, each group of points comprising at least one point of said plurality of points;
each point of the first group of points, hereinafter called an apex point, being the apex of at least one angle;
each point of the second group of points, hereinafter called an arm point, being contained in one arm of at least one of said angles and being a point along the trajectory of a moving object;
at least one dimension of the position-motion state of at least one of said second group of points being known a priori;
said method comprising the following elements:
Element 1. Determining relative to a particular one of said apex points angular data related to said particular apex point and at least one said arm point, said angular data being dependent upon the variation of direction of said moving object relative to said apex point which variation is resultant of the motion of said moving object at said last mentioned arm point,
Element 2. Performing a plurality of determinations as described in Element 1 such that at least one dimension of the position-motion state of at least one selected point of said plurality of points becomes physically defined relative to the position-motion state of other of said plurality of points by the values of said plurality of determinations, by the known parameters related to

said determinations, and by at least one said dimension which one said dimension is at least bounded by a priori data,

Element 3. Computing at least one dimension of the position-motion state of at least one selected point of said plurality of points using the information obtained in Element 1 and Element 2 and at least one said dimension known a priori.

3,866,230
SINGLE CHANNEL COMMUNICATION SYSTEM

John M. Tewksbury, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.
Filed Mar. 2, 1973, Ser. No. 337,520
Int. Cl. H04b *1/40*
U.S. Cl. 343—178 **3 Claims**



1. A station adapted for use in a common channel communication system, said system including at least one remote means for transmitting modulated pulses, said station comprising:

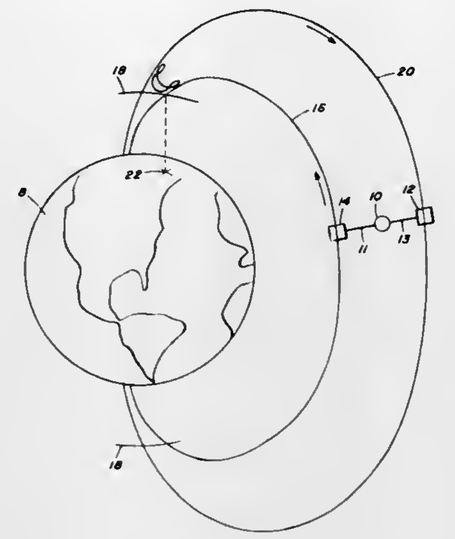
- means for receiving the pulses from said remote means;
- means responsive to the received pulses for generating individual pulses of a pulse train in the interval between received pulses and for modulating the pulse train to include the modulation of the received pulses;
- means for transmitting the modulated pulse train; wherein said means for generating and for modulating includes;
- a timing network of the relaxation type for generating the individual pulses in said pulse train; and,
- means for continuously altering the time constant of said network in response to at least the received pulses.

3,866,231
SATELLITE TRANSMITTER OF ULF ELECTROMAGNETIC WAVES

Francis J. Kelly, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 8, 1972, Ser. No. 285,896
Int. Cl. H01q *1/28*
U.S. Cl. 343—705 **2 Claims**

1. A method of creating a gigantic loop antenna in the earth's magnetosphere comprising:

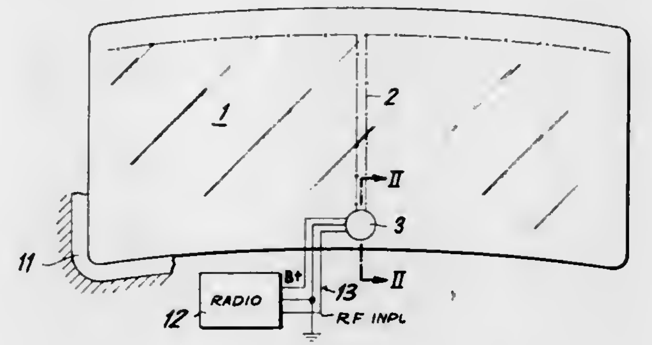
- orbiting a satellite
- extending long insulated conductors with exposed ends therefrom;
- coupling an ELF or ULF signal through said long conductors to the earth's magnetic field;
- whereby the signal flows through one conductor down along the earth's magnetic field into the ionosphere and back



along the magnetic field to another conductor of said satellite so as to complete the gigantic loop antenna.

3,866,232
AUTOMOTIVE-VEHICLE WINDSHIELD WITH BUILT-IN ACTIVE-ANTENNA SYSTEM

Paul Weigt, Gelsenkirchen, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany
Filed Dec. 5, 1973, Ser. No. 422,102
Claims priority, application Germany, Dec. 9, 1972, 7245210
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **10 Claims**



1. In a motor vehicle having a radio the improvement comprising the combination of:

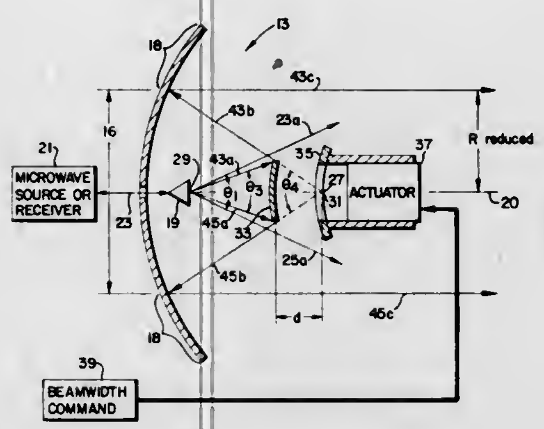
- a window glass formed with a recess;
- an antenna element bonded to said window glass and having an end at said recess;
- an active-circuit capsule having active electronic circuit components connectable to said radio and having at least one formation resiliently engageable and form-fitting in said recess with said capsule lying on said window glass over said recess; and
- means between said components of said capsule and said end of said antenna in said recess for connecting same together.

3,866,233
DISH ANTENNA HAVING SWITCHABLE BEAMWIDTH

Richard F. Schmidt, Seabrook, Md., assignor to The United States of America as represented by the National Aeronautic and Space Administration
Filed Sept. 10, 1973, Ser. No. 395,868
Int. Cl. H01q *19/14*
U.S. Cl. 343—761 **7 Claims**

1. A switchable beamwidth antenna having a wide beamwidth state and a narrow beamwidth state at a single predetermined frequency, said beamwith state being responsive to a beamwidth selection command source comprising:

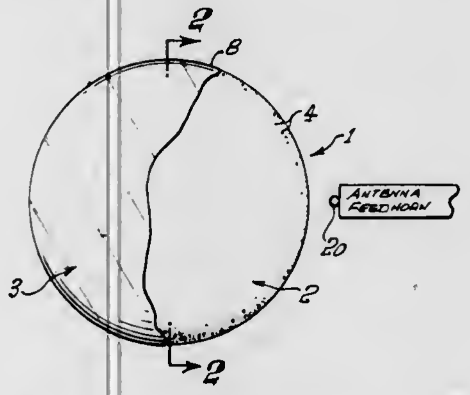
- a main reflecting dish having a boresight axis and a direction of view along said axis, wherein said dish may be divided with an imaginary contour coaxial with the boresight axis into a central portion and an outer portion bordering the central portion; and



- single frequency means responsive to the beamwidth selection command source, exciting substantially only the central portion of the main dish in the wide beamwidth state, and for exciting both the central and outer portions of the main dish in the narrow beamwidth state, said exciting means including a reducible subreflector defining in the reduced state a truncated subreflector for exciting only the central portion of the main dish so as to achieve the wide beamwidth state.

3,866,234
SHAPED CERAMIC DIELECTRIC ANTENNA LENS

Louis E. Gates, Jr., Westlake Village; William E. Lent, Los Angeles, and Jose A. Flores, Venice, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 26, 1973, Ser. No. 428,589
Int. Cl. H01q *15/08*
U.S. Cl. 343—911 R **5 Claims**

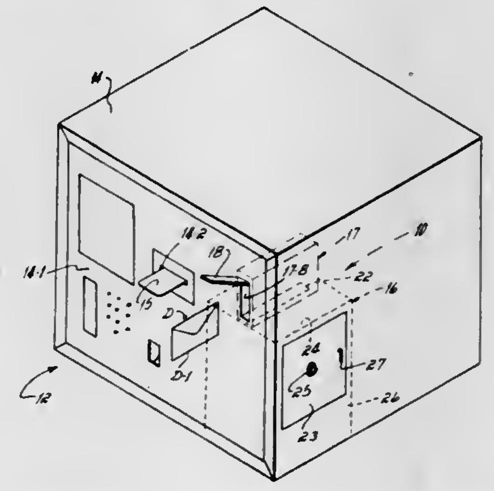


1. A temperature-resistant dielectric lens for transmitting a particular band of electromagnetic energy comprising:

- a shaped lens body formed of a quantity of porous prefired sealable ceramic granules fusably bonded one to the other for providing a shaped lens body of sufficient structural rigidity and strength to permit the formation of operatively self-sustaining shapes at thicknesses up to and exceeding 6 inches,
- each of the granules being substantially uniform in composition and size with said granule size and uniformity closely controlled to permit the formation of a lens body in which the fused granules have an intergranular and an intragranular pore size no larger than the minimum wavelength of said energy band,
- said pore size along with the granule size and composition being adjustably variable to provide a particular intragranular and intergranular porosity and a uniform dielectric constant whereby transmission efficiency of the energy band through said lens body can be maximized and distortion reduced.

3,866,235
DEPOSITORY FOR IMPRINTING AND STORING ENVELOPES CONTAINING PAPER CURRENCY AND/OR COINS

Robert W. Maynard, Cincinnati, and Kenneth W. Alexander, Westchester, both of Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio
Filed May 10, 1973, Ser. No. 359,116
Int. Cl. E05g
U.S. Cl. 346—22 **2 Claims**



1. A depository for receiving and storing items having a generally flat shape with a flat imprint receiving surface thereon comprising, in combination:

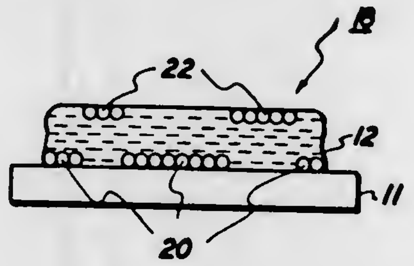
- a vault for storing received items, said vault having an item transfer opening through which an item can be transferred for storage in said vault, said vault including an access opening with a door to facilitate selective access to said vault for removal of items stored therein;
- a housing disposed above said vault, said housing including spaced generally vertically disposed side walls, a top wall, a rear wall and a bottom opening communicating directly with said transfer opening, said transfer opening being at least as large as said bottom opening;
- said housing having a manually accessible insertion opening selectably closable with a manually accessible housing door disposed at the opposite end of said housing from said rear wall;
- said housing having a generally horizontally slidable trap door mounted for movement between a blocked and an open position, said trap door comprising a floor for said housing when disposed at its blocked position to prevent access through said transfer opening to said vault and permitting items to freely fall from said housing through said bottom opening and said transfer opening directly into said vault when said trap door is disposed at its open position;
- said side walls, said top wall, said rear wall, and said trap door at its blocked position collectively comprising a receptacle for receiving flat items manually inserted directly into said receptacle through said insertion opening and temporarily storing said flat items in a generally vertical position with the flat surfaces of the item disposed generally parallel to said side walls;
- item detector means disposed within said item receptacle to detect the presence of an item said item receptacle, said item detector producing an item present signal when an item is detected within said item receptacle;
- a door closed detector for detecting when said housing door is closed and producing a door closed signal;
- control means responsive to said door closed signal and said item present signal to sequentially generate a lock door signal, a printer actuate signal, and an open trap door signal;

a selectably operable door lock operative in response to said lock door signal to lock said housing door to prevent access to said housing;
a printer disposed proximate one said side wall for imprinting one said flat surface of an item in said receptacle, said printer being actuated by receipt of said printer actuate signal, said printer being disposed at a point above said trap door; and
a trap door actuator operable in response to said open trap door signal to slide said trap door from its blocked to its open position and then back to its blocked position.

3,866,236
IMAGING PROCESS USING VERTICAL PARTICLE MIGRATION

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 254,999, May 19, 1972, abandoned, which is a continuation of Ser. No. 54,264, July 13, 1970, abandoned. This application Apr. 22, 1974, Ser. No. 462,694
Int. Cl. H04n *5/76, 3/16*
U.S. Cl. 346—74 ES 12 Claims

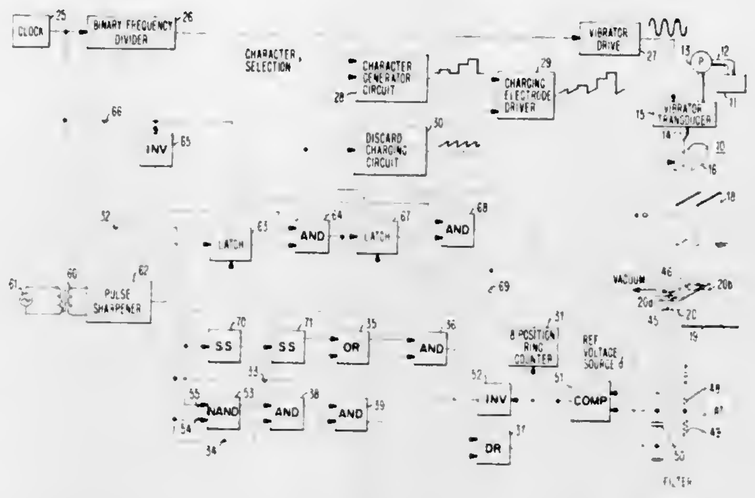


1. An imaging method comprising the steps of:
(a) providing an imaging member comprising a substantially electrically insulating liquid layer containing non-photosensitive migration material, on a substrate;
(b) then applying a uniform electrical imagewise migration force other than by a technique wherein an essential step is imagewise exposure to activating electromagnetic radiation, to said migration material whereby said migration material migrates without material lateral migration, in depth an imagewise configuration to said substrate leaving portions of said insulating liquid layer above areas of migration substantially devoid of migration material everywhere said uniform electrical imagewise migration force was applied.

3,866,237
DIGITAL PHASE CONTROL FOR INK JET PRINTER

Johann Hans Meier, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 22, 1973, Ser. No. 372,897
Int. Cl. G01d *18/00*
U.S. Cl. 346—75 12 Claims

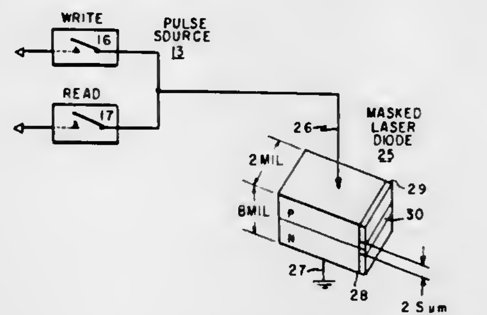
1. In an ink jet printer having a transducer for vibrating a nozzle at a predetermined frequency to produce droplets having a selected phase relation with applied, variable, input information charges induced thereon by an input information source energizing a charging electrode for correspondingly varying deflection of said droplets in an electric field between deflecting electrodes, apparatus for varying the phase relation between said transducer vibrations and said applied charges comprising:
circuit means connected to said charging electrode for applying, in response to an initiation signal, input information signals to said droplets and, in the absence thereof, applying calibration signals to droplets to be discarded;
means providing a train of clock pulses of fixed frequency; frequency dividing means connected to said clock pulse means for energizing said transducer means at said predetermined frequency;
counter means of predetermined capacity connected to said clock pulse means and said circuit means for cyclically counting said pulses and producing an initiation signal during each counting cycle at said predetermined frequency;



detecting means for said discarded droplets having a plurality of sensor locations, each said location producing an output signal peculiar to droplet presence thereon; and
control means responsive to said output signals to alter the number in said train of clock pulses at said counter means during a counting cycle and change the time of said count cycle and thereby the frequency of said initiation signal.

3,866,238
LASER DIODE FOR USE WITH FILM MEMORY SYSTEM

Marvin E. Monroe, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio
Filed June 1, 1973, Ser. No. 366,180
Int. Cl. G11b *7/00*
U.S. Cl. 346—76 L 6 Claims



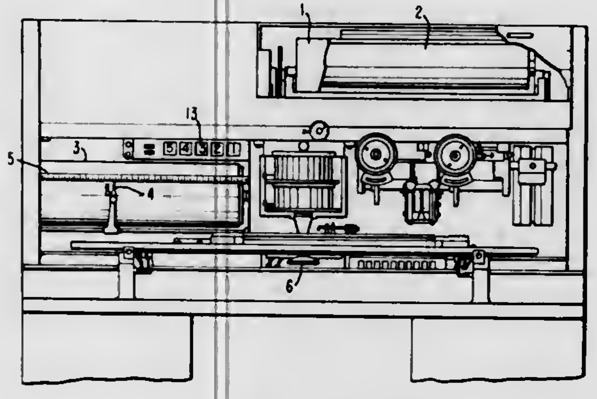
1. In a memory system using film for the storage of information, the improvement comprising a laser having a light output face, a mask disposed over said light output face including a light emitting area having at least one dimension which is formed in the mask by the beam output from said laser in the stimulated light mode, said mask being of a material which is opaque to the wavelength of light output from said laser and which is displaceable by the beam output of the laser in the stimulated light mode, whereby an emitted light beam of substantially the same dimension is provided in both the spontaneous and stimulated light modes of the laser.

3,866,239
AUTOMATIC TYPE-POSITIONING DEVICE IN PHOTOCOMPOSER

Yasushiro Semi, 5-10-25 Zaimokuza Kamakra, Kanagawa-ken, and Kenzo Ogawa, 7-403, 1, Sakurazutsumi 1, Chrome, Tokyo, both of Japan
Filed June 27, 1973, Ser. No. 374,240
Int. Cl. B41b *21/36*
U.S. Cl. 354—8 5 Claims

1. In combination with a photocomposing machine comprising:

a. a dark box which is arranged to move axially,
b. a rotatable cylinder mounted for rotation within said dark box and a photosensitive material mounted thereon,
c. a recording cylinder which is adapted to be moved with respect to axial and rotary movement of said rotatable cylinder, and
d. lens and shutter means for transmitting an image of predetermined figure or symbol in a dial plate,
e. an automatic type-positioning device including:
  i. first magnetic head means mounted on said dark box so as to move said head means with said box,
  ii. a first reference scale of magnetic material arranged to store a pulse of said first magnetic head means,
  iii. a digital counter means,
  iv. first circuit means for transmitting a signal which is representative of an axial position of said rotatable cylinder to said digital counter means,
  v. second magnetic head means movable in proportion to the rotation of said rotatable cylinder,

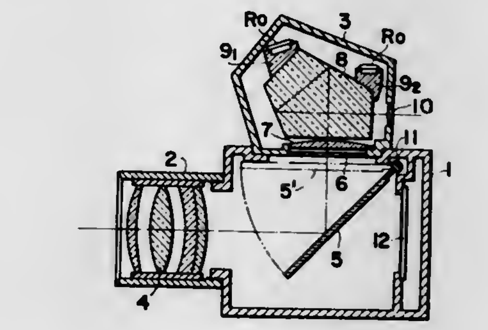


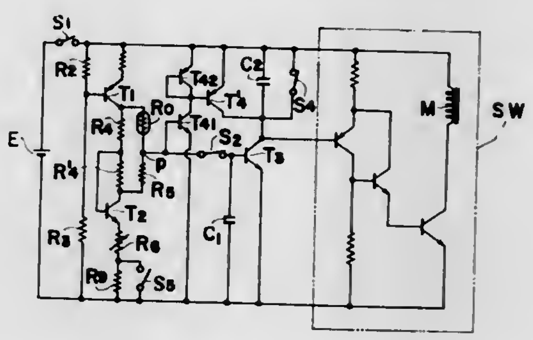
  vi. a second reference scale of magnetic material arranged to store a pulse of said second magnetic head means,
  vii. second circuit means for transmitting a signal which is representative of rotation of said rotatable cylinder to said digital counter means,
  viii. automatic switching means for switching the connection of said first or second circuit means with said digital counter means in accordance with the operation of said rotatable cylinder,
  ix. first memory means for storing the axial movement of said rotatable cylinder,
  x. second memory means for storing the rotation of said rotatable cylinder,
  xi. first reading head means for reading out the stored information from said first memory means,
  xii. second reading head means for reading out the stored information from said second memory means,
  xiii. means for selectively gating output pulses of said first and second reading head means, and
  xiv. means for operating said shutter means in response to said output pulses.

3,866,240
PHOTOGRAPHIC CAMERA HAVING A PHOTOSENSITIVE ELEMENT FOR MEASURING THE LIGHT RAYS THROUGH THE OBJECTIVE LENS

Kayoshi Tsujimoto, Osaka, Japan, assignor to Minolta Camera Co., Ltd., Osaka-fu, Japan
Filed Aug. 6, 1971, Ser. No. 169,637
Claims priority, application Japan, Aug. 12, 1970, 45-70531
Int. Cl. G03b *7/08;* **G01j** *1/44*
U.S. Cl. 354—24 8 Claims

1. An automatic exposure control device for a photographic camera of the type having a photosensitive element mounted behind a focusing plate to receive light from a scene to be photographed through an objective lens, comprising:
a light measuring circuit for generating an output signal as a function of the light intensity incident on said photosensitive element;
means for storing said output signal;
means for separating said means for storing from said light measuring circuit at least during the time period when said photosensitive element is blocked from said scene light;
means for generating current in response to said stored output signal;
means controlled by said current for timing shutter closing;
a correction circuit responsive to said output signals for generating a current in accordance with the intensity of light incident on said photosensitive element unrelated to scene light to correct said means for timing; biasing





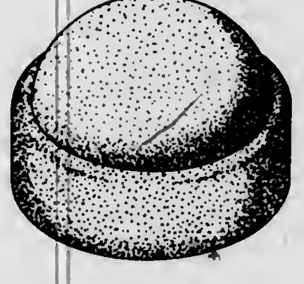
means for additionally correcting said output signal in accordance with the unblocking or blocking of saiid photosensitive element; and
switching means for actuating said biasing means only during the blocking of said photosensitive element from scene light.

8. In a single lens reflex camera including a mirror movable between a viewing position and a photographing position and a photosensitive element receiving light from a scene to be photographed through an objective lens and illuminated with stray light from an eyepiece with said mirror in said viewing position and blocked from said scene light with said mirror in photographic position, an automatic exposure control device comprising:
first means including said photosensitive element for generating a first voltage varying proportional to the logarithm of the scene brightness;
second means for generating a second voltage representative of diaphragm aperture and film sensitivity settings;
means for generating an output voltage proportional to the logarithm of exposure time said first and second voltage; means for storing said output voltage;
means for separating said means for storing from said means for generating at least during the period when said mirror is in transition between said viewing position and said photographing position;
means responsive to said stored voltage for generating current proportional to the anti-logarithm of said stored voltage;
an integrating capacitor charged by said current;
means for actuating shutter closing in response to the voltage of said integrating capacitor; and
a correction circuit having an output circuit connected across said integrating capacitor and an input terminal for constantly receiving said output voltage, whereby when said photosensitive element is blocked from the scene light, said current is also controlled by said output voltage generated by said stray light.

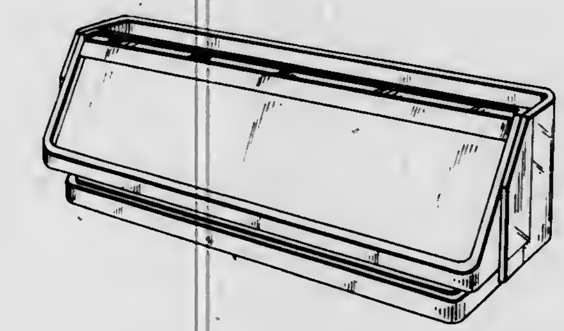
DESIGNS

FEBRUARY 11, 1975

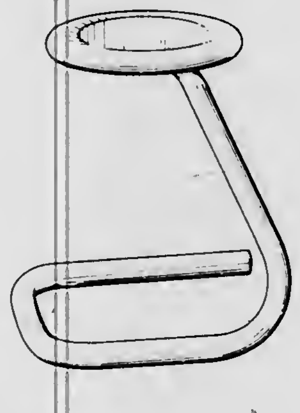
234,275
HAMBURGER BUN
Irving W. Kosecoff, 3201 Butler Ave., Los Angeles, Calif. 90066
Filed Jan. 30, 1973, Ser. No. 328,053
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—2



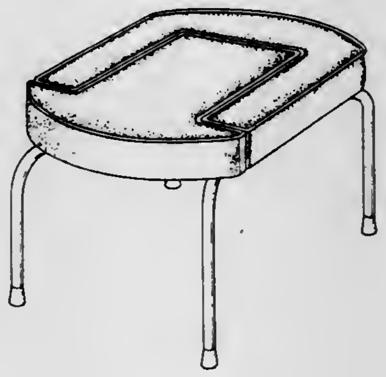
234,276
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed Oct. 30, 1972, Ser. No. 302,471
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—25



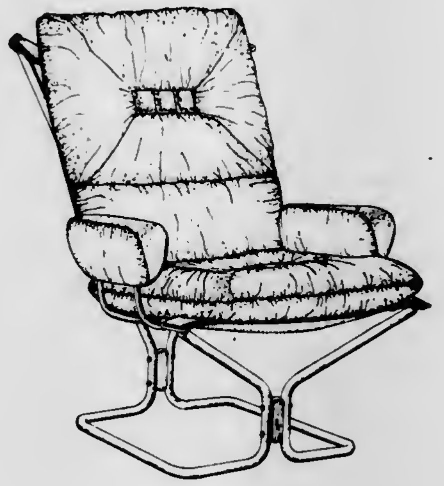
234,277
STOOL
Philip Robert Salmon, 1416 S. Sheridan Way, Sheridan School of Design, Mississauga, Ontario, Canada, and Hugh Campbell Hamilton, 4 Hedgewood Road, Willowdale, Ontario, Canada
Filed Apr. 23, 1973, Ser. No. 353,601
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



234,278
EXERCISING STOOL
Lawrence I. Jacobs, P.O. Box 4092, Palm Springs, Calif. 92262
Filed Feb. 23, 1973, Ser. No. 334,997
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—32



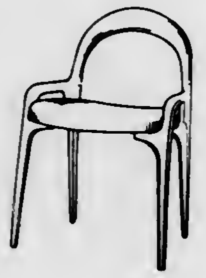
234,279
CHAIR
Harald Relling, % P.I. Langlos Fabrikker A/S, 6201 Stranda, Norway
Continuation of design application Ser. No. 318,995, Dec. 27, 1972. This application June 14, 1973, Ser. No. 370,019
Claims priority, application Norway July 3, 1972
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



234,280

CHAIR

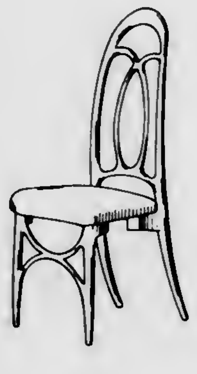
Kenji Ekuan, Tokyo, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,529
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



234,281

CHAIR

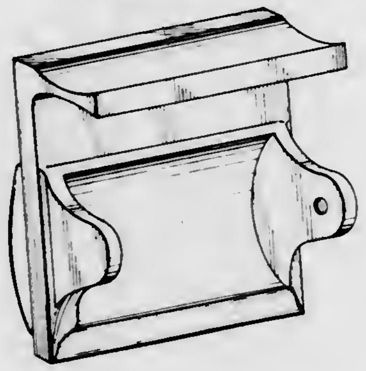
Akihiko Noda and Akira Hirose, Tokyo, Japan, assignors to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,528
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



234,282

COMBINED TOILET-TISSUE HOLDER AND SHELF THEREFOR

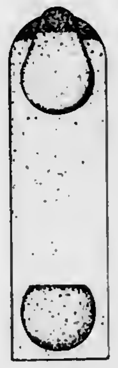
Philip Boone, 15 Fenwick Road, Winchester, Mass. 01890
Filed Nov. 6, 1973, Ser. No. 413,340
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



234,283

COAT HOOK

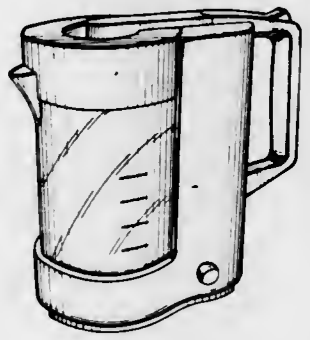
Ian Rockliff, Billinge, near Wigan, and Harold Speight, Southport, England, assignors to Crompton Nettlefold Stenman Limited, Wigan, Lancashire, England
Filed Oct. 31, 1972, Ser. No. 302,500
Claims priority, application Great Britain June 10, 1972
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—120



234,284

COFFEEMAKER

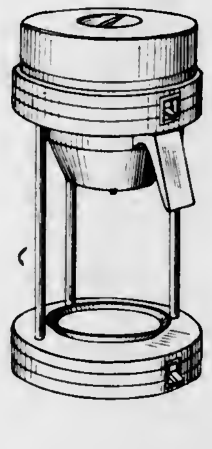
Franz Alban Stuetzer, Muehlheim am Main, and Klaus Mayer, Offenbach am Main, Germany, assignors to Rowenta-Werke, G.m.b.H., Offenbach am Main, Germany
Filed Aug. 13, 1973, Ser. No. 388,502
Claims priority, application Germany Feb. 16, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—62



234,285

COFFEEMAKER

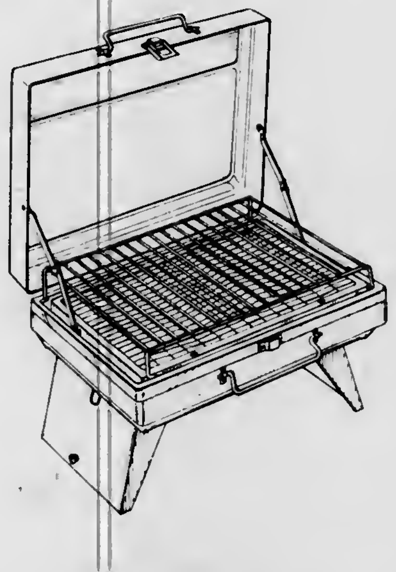
Chester H. Wickenberg, 164 Division St., Elgin, Ill. 60120
Filed July 30, 1973, Ser. No. 384,059
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85



234,286

PORTABLE GRILL

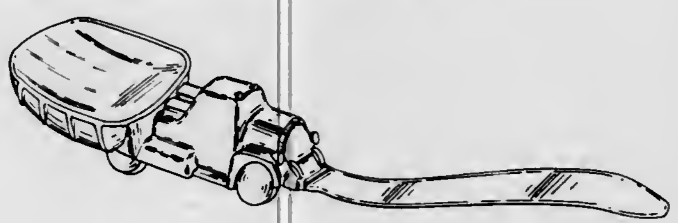
Manley R. MaKenny, Beggs, and Billy Joe Duncan, Tulsa, Okla., and Jay N. Smith, Wichita, Kans., assignors to Brunswick Corporation, Skokie, Ill.
Filed June 11, 1973, Ser. No. 368,599
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



234,287

INFANT'S FEEDING SPOON OR THE LIKE

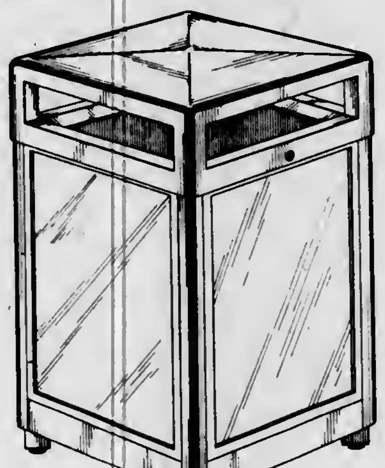
Karl Henry Pearson, Jr., R.D. 1, Prosperity, Pa. 15329
Filed Jan. 18, 1973, Ser. No. 324,774
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—141



234,288

COMBINED LITTER CONTAINER AND ADVERTISING DISPLAY DEVICE

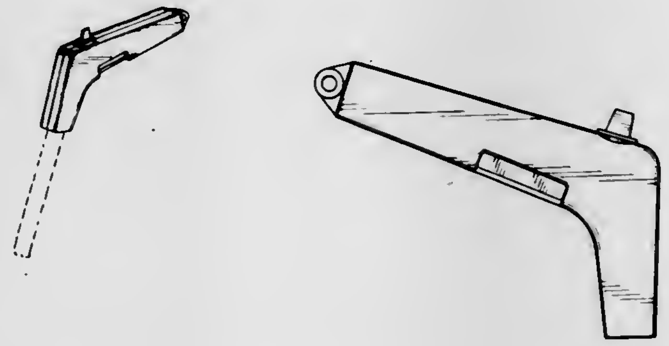
Walter Kay, 815 S. 18th St., Arlington, Va. 22202, and Raymond M. Poelvoorde, Birmingham, Mich.; said Raymond M. Poelvoorde assignor to said Walter Kay
Continuation-in-part of design application Ser. No. 226,383, Feb. 14, 1972, now Patent No. 229,279, dated Nov. 20, 1973. This application Mar. 2, 1973, Ser. No. 337,450
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D7—191



234,289

HAND GRIP FOR AN ELECTRIC GRASS SHEAR OR SIMILAR ARTICLE

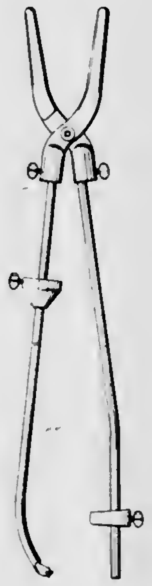
Julian R. Haynes, Hinsdale, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Oct. 12, 1972, Ser. No. 297,091
Term of patent 14 years
Int. Cl. D8—*03, 99*
U.S. Cl. D8—8



234,290

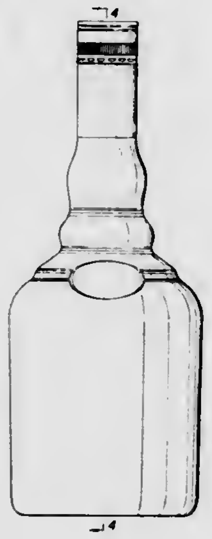
BOTTLE CUTTING APPARATUS

Ben R. Myrick, P.O. Box 595, Grand Coulee, Wash. 99133, and Wayne E. Myrick, Electric City, Wash. (P.O. Box 1191, Grand Coulee, Wash. 99133)
Filed Feb. 15, 1973, Ser. No. 332,724
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98



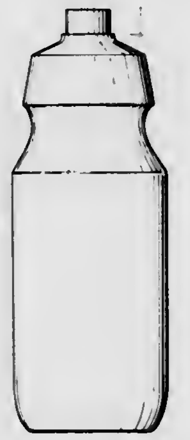
234,291
COMBINED BOTTLE AND CAP THEREFOR

Reginald Malcolm Broadhead, Maidenhead, England, assignor to Crown Distillers Limited, London, England
Filed Aug. 30, 1972, Ser. No. 284,969
Claims priority, application Great Britain Apr. 12, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—72



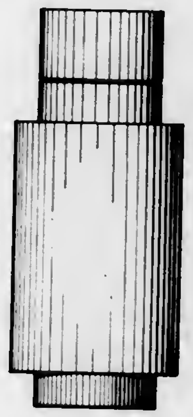
234,292
BOTTLE

James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 9, 1973, Ser. No. 349,116
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—119



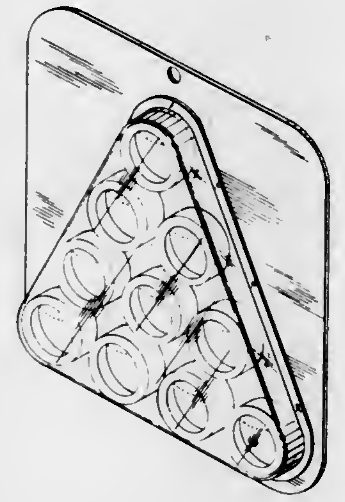
234,293
BOTTLE OR THE LIKE

Elton Cohen Toland, 691 Irola,
Los Angeles, Calif. 90005
Filed Apr. 2, 1973, Ser. No. 346,733
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—169



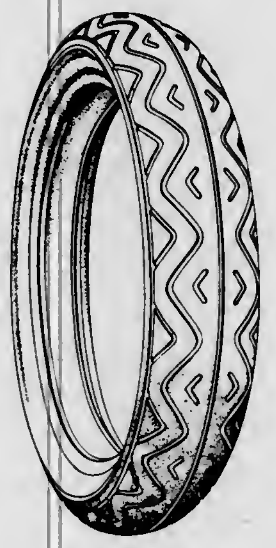
234,294
COMBINED DISPLAY PACKAGE AND DISPENSER FOR CORELESS ROLLS OF DECORATIVE RIBBON

Myer Gorman, Leonia, N.J., assignor to Sun Chemical Corporation, New York, N.Y.
Filed July 26, 1972, Ser. No. 275,450
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—192



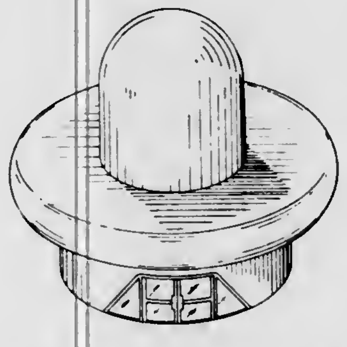
234,295
TIRE

David Lyndon Buck, Sutton Coldfield, England
(℅ Fort Dunlop, Erdington, Birmingham, England)
Filed Aug. 9, 1973, Ser. No. 387,512
Claims priority, application Great Britain Feb. 22, 1973; Mar. 13, 1973
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—144



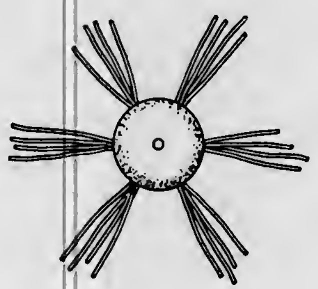
234,296
BUILDING

Eufrecio Zamora, Conroe, Tex.
Filed Aug. 9, 1973, Ser. No. 386,966
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B



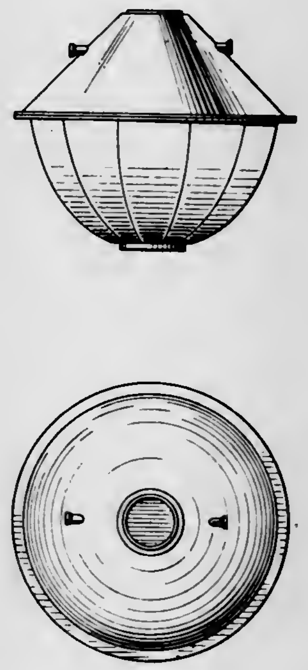
234,297
SOFT LURE BODY

James T. Peterson, 3216 Noble Ave.,
Minneapolis, Minn. 55422
Filed Apr. 5, 1973, Ser. No. 348,327
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



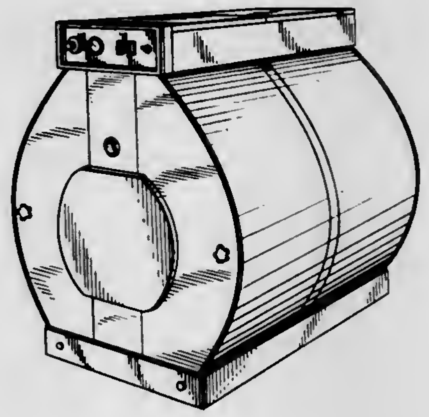
234,298
SEPTIC TANK

William M. Bower, Suffield, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.
Original design application May 17, 1973, Ser. No. 361,353. Divided and this application July 19, 1974, Ser. No. 489,860
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2



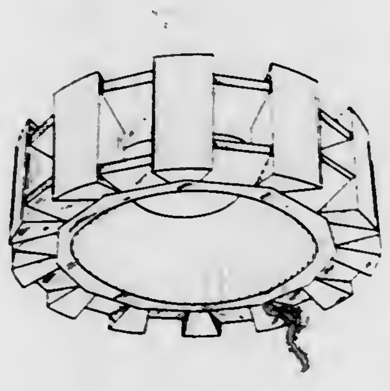
234,299
BOILER

Jacques Escaro, Villemomble, France, assignor to Societe Generale de Fonderie, Paris, France
Filed June 14, 1973, Ser. No. 370,105
Claims priority, application France Jan. 8, 1973
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—86



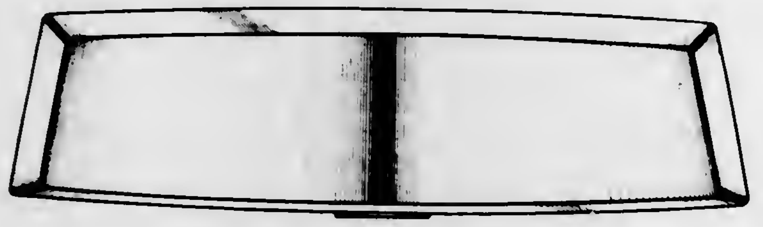
234,300
INJECTION NOZZLE RIM FOR VENTILATING APPARATUS

Jorgen Holt, Naestved, Denmark, assignor to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark
Filed July 27, 1973, Ser. No. 383,325
Claims priority, application Denmark Feb. 1, 1973
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



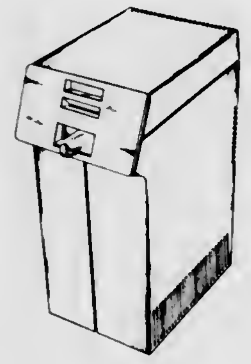
234,301
ELECTRONIC DISPLAY UNIT FOR A CASH REGISTER OR SIMILAR ARTICLE

Lynton Randolph Knapp, Orange, and Ralph Waldo Province, Westminster, Calif., assignors to MSI Data Corporation, Costa Mesa, Calif.
Filed Feb. 10, 1972, Ser. No. 225,364
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



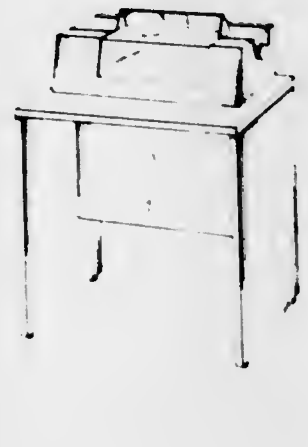
234,302
MAGNETIC CARD READER-RECORDER OR SIMILAR ARTICLE

Eliot F. Noyes, New Canaan, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 16, 1973, Ser. No. 351,721
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



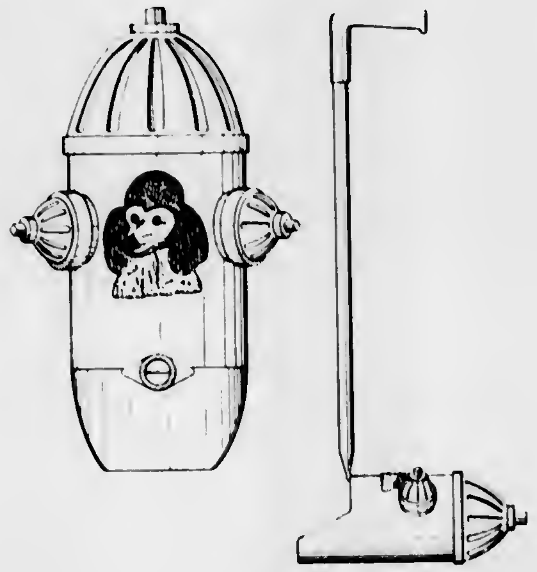
234,303
PRINTING STATION FOR AUTOMATIC DATA PROCESSING

Charles A. Pycha and Frank Wilkey, Jr., Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 18, 1973, Ser. No. 352,132
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



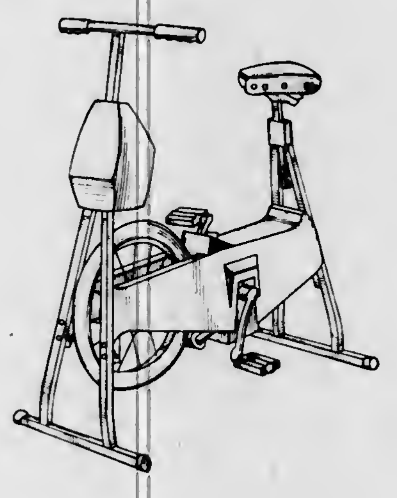
234,304
PET LITTER RETRIEVER

William L. Schmieler, 19609 Winslow Road, Cleveland, Ohio 44120
Filed Apr. 23, 1973, Ser. No. 353,548
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



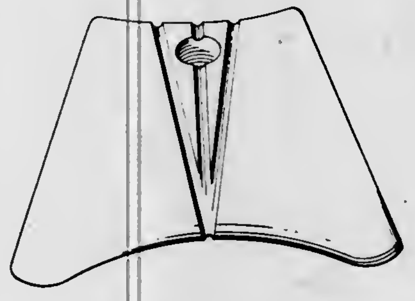
234,305
BICYCLE EXERCISER

Thomas G. Woods, Percy A. Collins, and Lewis W. Boyd, Battle Creek, and Bruce G. Remington, Kalamazoo, Mich., assignors to Battle Creek Equipment Co., Battle Creek, Mich.
Filed Aug. 18, 1972, Ser. No. 281,931
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



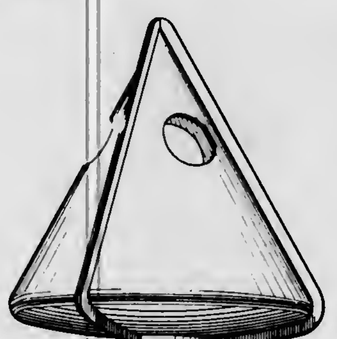
234,306
GAME CLUB HEAD

Robert T. Cummings, Long Beach, Calif. (E. 12 La Crosse, Spokane, Wash. 99207)
Filed Mar. 9, 1973, Ser. No. 335,061
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CQ



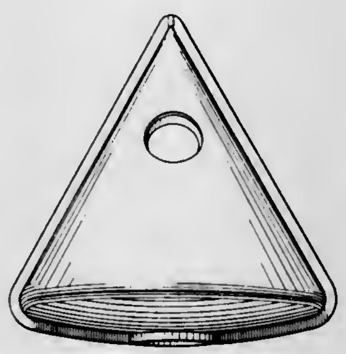
234,307
SUSPENDABLE TOY HOUSE

Wallace W. Bowley, 57 Westford Road, Stafford Springs, Conn. 06076
Filed June 6, 1973, Ser. No. 367,574
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



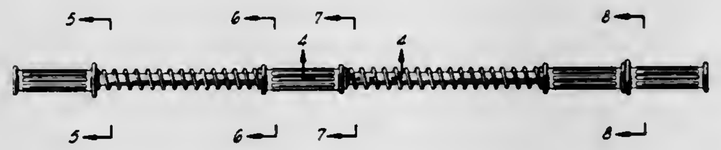
234,308
SUSPENDABLE TOY HOUSE

Wallace W. Bowley, 57 Westford Road, Stafford Springs, Conn. 06076
Filed June 6, 1973, Ser. No. 367,575
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



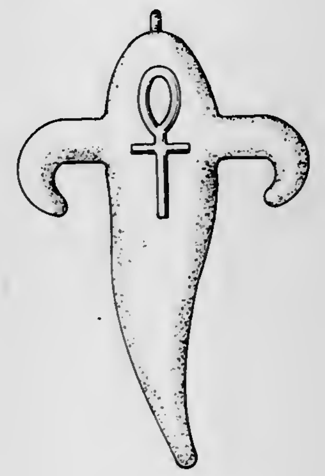
234,309
EXERCISING BAR

Norman E. Buchner, 2717 S. Florence Drive, Tulsa, Okla. 74114
Filed Aug. 6, 1973, Ser. No. 385,876
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

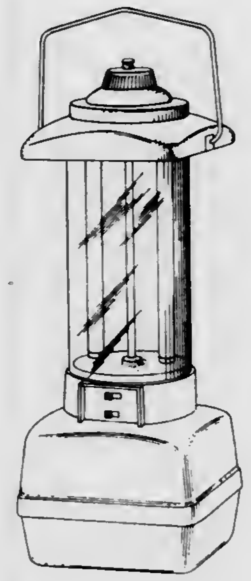


234,310
PENDANT

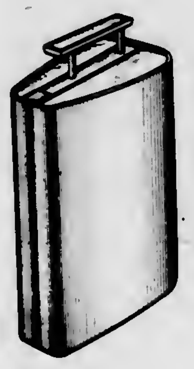
Ernest Camerino, 1310 NW. 43rd Ave., Fort Lauderdale, Fla. 33313
Filed May 7, 1973, Ser. No. 358,043
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A



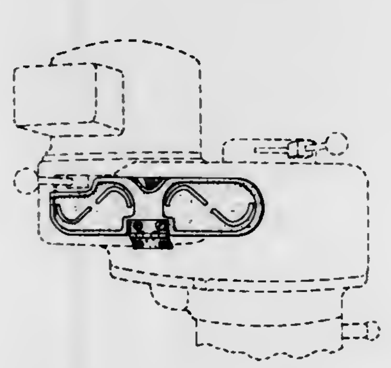
234,311
ELECTRIC LANTERN
Daniel C. Oakley, Madison, Wis., assignor to
ESB Incorporated
Filed Nov. 13, 1972, Ser. No. 306,003
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



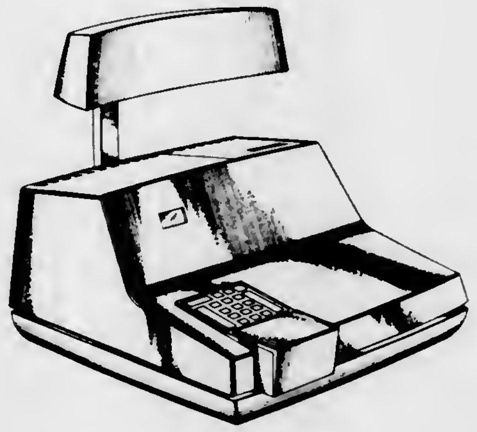
234,312
MUSICAL INSTRUMENT CASE
Hari Matsuda, Evanston, Ill., assignor to G. Leblanc
Corporation, Kenosha, Wis.
Filed Oct. 20, 1972, Ser. No. 299,466
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D56—1 B



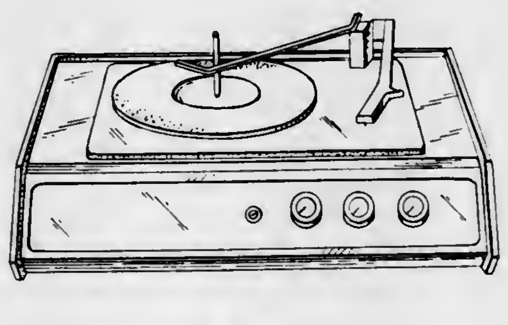
234,313
BELT GUARD FOR A MILLING MACHINE HEAD
Gilbert N. Clay, 6576 White Doe Trail, Rockford, Ill.
61102, and Donn O. Smith, 302 Hosmer St., Loves
Park, Ill. 61111
Filed May 24, 1973, Ser. No. 363,520
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—14 A



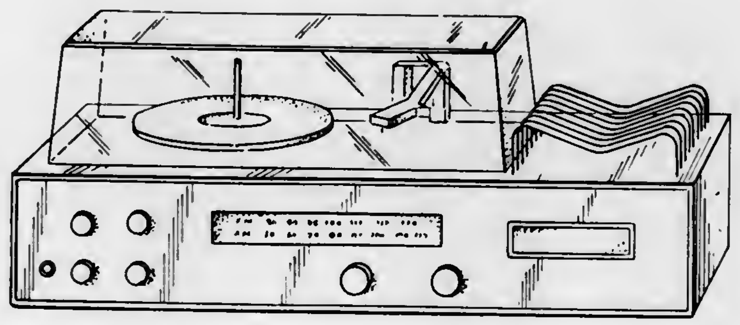
234,314
ELECTRONIC CASH REGISTER
Lynton Randolph Knapp, Orange, and Ralph Waldo
Province, Westminster, Calif., assignors to MSI Data
Corporation, Costa Mesa, Calif.
Filed Feb. 10, 1972, Ser. No. 225,374
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D52—4 A



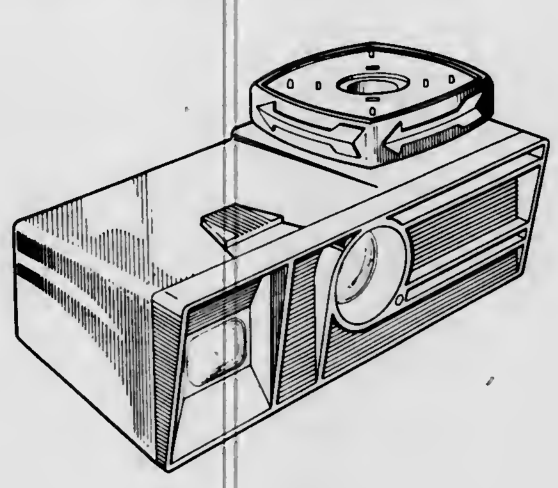
234,315
PHONOGRAPH
Robert F. Mansfield, Tokyo, Japan, assignor to
Capehart Corporation, New York, N.Y.
Filed Sept. 18, 1972, Ser. No. 290,074
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



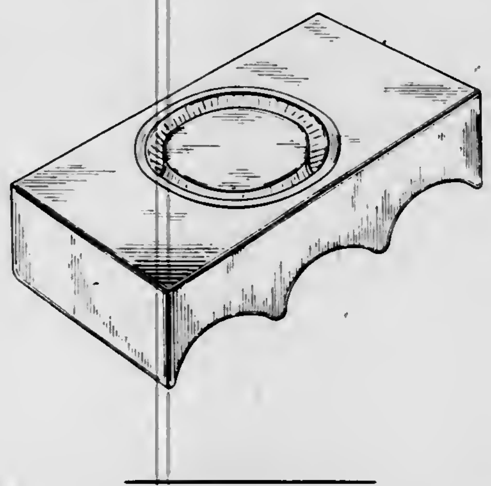
234,316
PHONOGRAPH
Robert F. Mansfield, Tokyo, Japan, assignor to
Capehart Corporation, New York, N.Y.
Filed Sept. 18, 1972, Ser. No. 290,219
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



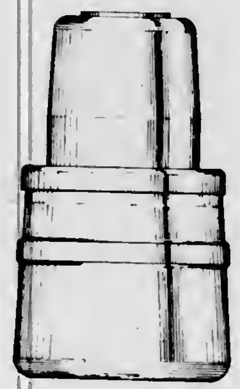
234,317
CAMERA
Thomas J. Woods, Sherman Oaks, Calif., assignor to
Bank of Montreal (California) Los Angeles, Calif.
Filed Apr. 26, 1973, Ser. No. 354,755
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



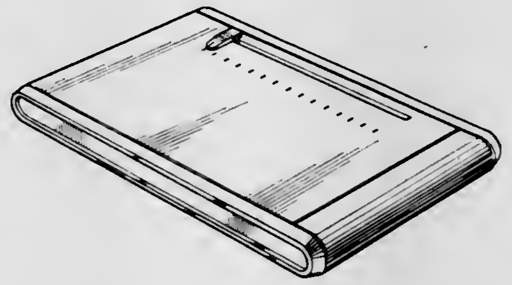
234,318
CONTACT REFRIGERATION UNIT FOR CHILLING DRINKING VESSELS
Richard F. Starrett, P.O. Box 838,
Tiburon, Calif. 94920
Filed July 27, 1973, Ser. No. 383,140
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—4



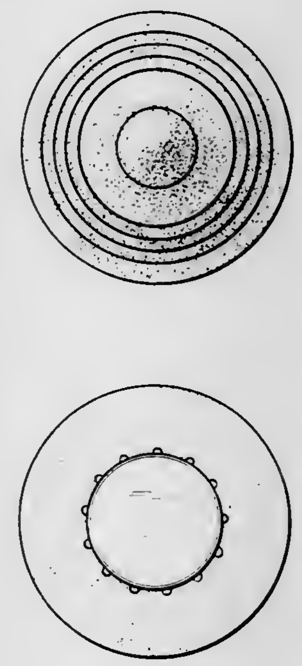
234,319
ICE CREAM FREEZER
Philip A. Knight, Jr., Concord, Mass., assignor to
Raytheon Company, Lexington, Mass.
Filed Oct. 5, 1973, Ser. No. 404,069
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D67—2 A



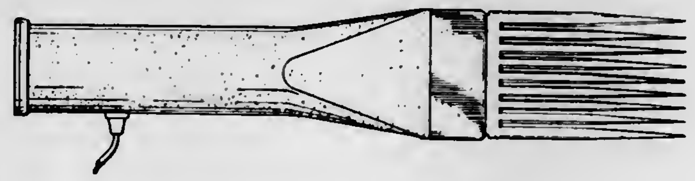
234,320
TELEPHONE LIST FINDER
Chuzo Mori, Tokyo, Japan, assignor to Carl
Manufacturing Company Ltd., Tokyo, Japan
Filed Feb. 20, 1973, Ser. No. 334,045
Claims priority, application Japan Sept. 8, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 C



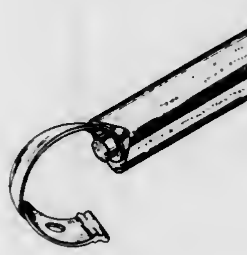
234,321
ADJUSTABLE EAR PLUG OR THE LIKE
Frederick C. Visor, Englewood Cliffs, N.J., assignor to
Flents Products Co., Inc., New York, N.Y.
Filed May 29, 1973, Ser. No. 364,855
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J



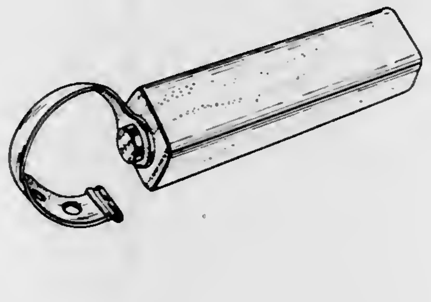
234,322
COMBINED COMB AND HAIR DRYER
William D. Smith, P.O. Box 12217,
Oakland, Calif. 94604
Filed Oct. 17, 1972, Ser. No. 300,415
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



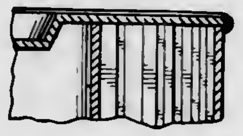
234,323
HAIR CURLER
Andre Demi, 71 Avenue Laure, 1080 Brussels, Belgium
Filed Feb. 15, 1973, Ser. No. 332,597
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



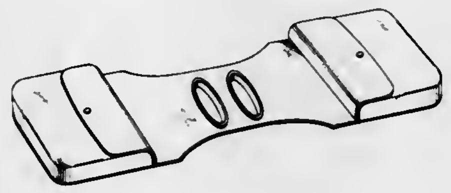
234,324
HAIR CURLER
Andre Demi, 71 Avenue Laure, 1080 Brussels, Belgium
Filed Feb. 15, 1973, Ser. No. 332,598
Claims priority, application Switzerland Sept. 11, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



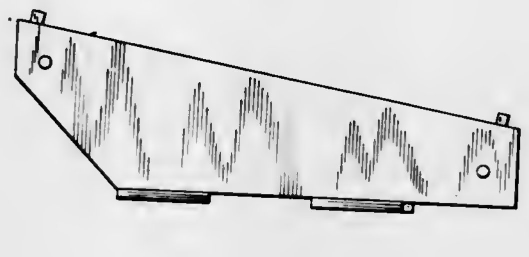
234,325
ROTATABLE CASSETTE HOLDER
Jeffrey S. Snyder, 535 E. 86th St.,
New York, N.Y. 10021
Filed May 22, 1972, Ser. No. 255,927
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



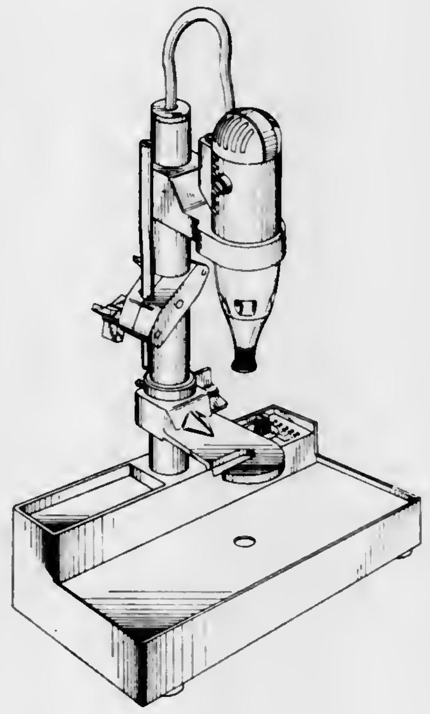
234,326
CARRYING BAG
Osamu Kato, Tokyo, Japan, assignor to Shigematsu Co., Ltd., Okazaki-shi, Japan
Filed Mar. 15, 1973, Ser. No. 341,725
Claims priority, application Japan Sept. 28, 1972
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D87—3 F



234,327
LOOM
Marianne S. Rodwell, 114 W. Brown Deer Road, Milwaukee, Wis. 53217
Filed Apr. 9, 1973, Ser. No. 349,598
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15



234,328
HOMOGENIZER
Douglas S. Fraser, New Paltz, and Robert P. Adams, Walden, N.Y., assignors to Cenco Medical/Health Supply Corporation, Chicago, Ill.
Filed Nov. 17, 1972, Ser. No. 307,410
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D98—1 A



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.B.R. Food Machinery (Canada) Limited: *See—*
  Piereder, Ludwig, 3,864,891.
A B Volvo: *See—*
  Pilhall, Stig Tore Lennart; Schalin, Pehr Harald Benedictus; Bohlin, Nils Ivar; and Forsberg, Rolf Hermann, 3,865,397.
A. G. Busch & Co. Inc.: *See—*
  Busch, Albert G., 3,865,463.
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  Hellner, Lars Ivar; Johansson, Hans Elof; and Norstrom, Lars-Ake, 3,865,644.
Abbott, Eugene A.; Isquith, Alan J.; and Walters, Patrick A., to Dow Corning Corporation. Algicidal surface. 3,865,728, Cl. 210-169.000.
Abbott Laboratories: *See—*
  Amann, Anton Helmuth, 3,865,935.
  Holleman, William Homer; and Andres, William Wolcott, 3,865,692.
  Plotnikoff, Nicholas Peter, 3,865,934.
Abe, Tetsuo: *See—*
  Hashimoto, Hiroshi; Abe, Tetsuo; and Suzuki, Masao, 3,866,102.
Abegg, Jean-Louis; and Gayet, Claire, to Societe Anonyme dite: L'Oreal. Self-heating neutralizing compositions for permanent wave operation. 3,865,930, Cl. 424-72.000.
Absalom, Ralph Rowland: *See—*
  Masters, George Ernest; Bache, John Kenneth; and Absalom, Ralph Rowland, 3,865,090.
Action Communications Systems, Inc.: *See—*
  Epstein, Barry M., 3,865,983.
Adamas Carbide Corporation: *See—*
  Flynn, James P.; Lane, George A.; and Plomer, John J., 3,865,656.
Adams, Don, III, to Chrysler Corporation. Energy absorbing steering column. 3,864,988, Cl. 74-492.000.
Adams, James R.: *See—*
  Reiss, Martin H.; and Adams, James R., 3,866,202.
Adams, Larry D., to Metrologic Instruments, Inc. Air mattress support system. 3,864,767, Cl. 5-348.00R.
Addressograph-Multigraph Corporation: *See—*
  Miles, William B.; and Copeland, John S., 3,865,486.
  Raschke, Curt Robert, 3,865,609.
Advance Transformer Co.: *See—*
  Waller, Earl C., 3,866,014.
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  Heumann, Heinz; and Kuhmann, Helmut, 3,865,968.
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  Dossier, Michel, 3,865,219.
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  Gauss, Walter; Petersen, Siegfried; Ranz, Erwin; Himmelmann, Wolfgang; and von Rintelen, Harald, 3,865,594.
  Herzhoff, Peter; Gref, Hans; Schweicher, Woltgang; Frenken, Hans; Friedsam, Josef; and Meinhardt, Gunter, 3,864,843.
Agfa-Gevaert N.V.: *See—*
  Noe, Robert Joseph, 3,865,587.
Agusta, Benjamin; Chang, Joseph J.; and Joshi, Madhukar L., to International Business Machines Corporation. Method of forming self-aligned field effect transistor and charge-coupled device. 3,865,652, Cl. 148-187.000.
Agusto, Robert G.; Taylor, Francis A.; and Briggs, Hartwell L., to Canadian Thermo Images, Ltd. Preparation of orcinol. 3,865,884, Cl. 260-621.00H.
Ahacic, Kozma; and Ljungstromer, Lars-Einar, to Granges Engineering AB. Method of bottom-casting ingots. 3,865,177, Cl. 164-133.000.
Ahlrich, Willard K. Exhaust fume treatment apparatus. 3,865,022, Cl. 98-115.00K.
Aihara, Toru; and Kimura, Kouichi. Electrically driven industrial vehicles. 3,865,209, Cl. 180-65.00R.
Aiko, Meiki: *See—*
  Tatuoka, Sizuo; Taneda, Teiichi; and Aiko, Meiki, 3,865,465.
Aikoh Co., Ltd.: *See—*
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  Manly, Donald G., 3,865,615.
  Rohrberg, Roderick, 3,865,173.
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  Washio, Takaji; and Aizawa, Tatsuo, 3,865,481.
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  Okumura, Shinji; Yoshinago, Fumihiro; Kubota, Koji; and Kamijo, Hirotaka, 3,865,690.
Akerblom, Carl-Artur, to Allmanna Svenska Elektriska Aktiebolaget. Electrical steel sheet provided with coating derived from a carbohydrate and a methylol resin. 3,865,616, Cl. 117-132.0BF.
Akerlung & Rausing: *See—*
  Boberg, Anders, 3,865,767.
Akiba, Keiichiro: *See—*
  Ozaki, Toshiaki; Kamoshita, Katsuzo; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Nakai, Shinji; and Akiba, Keiichiro, 3,865,866.
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  Horiuchi, Akira, 3,864,759.
Akin, Cavit: *See—*
  Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,865,691.
Akteibolaget Electrolux: *See—*
  Kilstrom, Lars Gunnar; and Ridderstrom, Goran Arvid Henning, 3,864,784.
Aktieselskabet Thomas Ths. Sabroe & Co.: *See—*
  Jeding, Carl-Eric Christian; and Villadsen, Vagn Hovgaard, 3,864,934.
Akutagawa, Susumu; Kumobayashi, Hidenori; and Komatsu, Akira, to Takasago Perfumery Co., Ltd. Process for producing cycloalkenes. 3,865,888, Cl. 260-666.00A.
Akzona Incorporated: *See—*
  Clutter, Raymond J., 3,865,783.
Albert Einstein College of Medicine of Yeshiva University: *See—*
  Padawer, Jacques, 3,865,548.
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  Mojonnier, Albert B.; and Lenke, Paul W., 3,865,304.
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  Sowerby, Austen E., 3,865,861.
Alexander, Kenneth W.: *See—*
  Maynard, Robert W.; and Alexander, Kenneth W., 3,866,235.
Alexander, Robert: *See—*
  Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,865,744.
Alford, Andrew. Two frequency localizer guidance system. 3,866,228, Cl. 343-109.000.
Alford, James W., to Minnesota Mining and Manufacturing Company. Self cleaning check valve. 3,865,133, Cl. 137-512.000.
Allen, Clifford H., to TRW Inc. Self adjusting tangency-clearance compressor with liquid purge capability. 3,865,515, Cl. 417-283.000.
Allen & Hanburys Limited: *See—*
  James, Michael, 3,865,279.
Allen, Herbert J., Jr.; Todd, Ronald Earl; and Wegman, Jerry Wayne, Sr., to Litton Systems, Inc., by said Allen and Todd. Fully additive process for manufacturing printed circuit boards. 3,865,623, Cl. 117-212.000.
Allen, Joseph C.: *See—*
  Christopher, Charles A.; and Allen, Joseph C., 3,865,190.
Allen, Richard C.; and Taylor, Chandler R., Jr., to American Hoechst Corporation. Thiopyranopyrrolylsalicyclic acids and derivatives thereof. 3,865,839, Cl. 260-326.280.
Allen, Travis A.; and Sylvester, Robert T., to United States of America, Atomic Energy Commission. Solder leveling. 3,865,298, Cl. 228-20.000.
Allied Chemical Corporation: *See—*
  Cline, Carl F.; and Morris, Robert C., 3,866,142.
  DeCaprio, Joseph Donald; Haylock, John Christopher; and Lofquist, Robert Allen, 3,865,900.
  Segal, Leon, 3,865,662.
  Tetenbaum, Marvin Theodore, 3,865,809.
  Watson, William E., 3,865,927.
Allied Steel & Tractor Products, Incorporated: *See—*
  Myeress, Rudolph S., 3,864,837.
Allington, Robert W., to Instrumentation Specialties Company. Light source. 3,866,049, Cl. 250-487.000.
Allis-Chalmers Corporation: *See—*
  Attia, Edward A., 3,866,041.
Allmanna Svenska Elektriska Aktiebolaget: *See—*
  Akerblom, Carl-Artur, 3,865,616.
  Boksjo, Carl Ingvar; and Olsson, Karl Erik, 3,865,438.
  Larker, Hans; and Nilsson, Jan, 3,865,387.
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- Ambac Industries, Inc.: *See—*
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- Amchem Products, Inc.: *See—*
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- Amdahl Corporation: *See—*
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  - Borgmann, John P., 3,865,701.
- American Gas Association, Inc.: *See—*
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  - Pauza, William Vito; and Poltonavage, Edward Michael, 3,865,458.
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- Amsler, Joachim, to Sprecher & Schuh AG. Arc electrode structure, especially for vacuum switches. 3,866,005, Cl. 200-144.00B.
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- Andermo, Nils Ingvar, to Hasler AG. Optical velocity meter pick-up head. 3,865,487, Cl. 356-28.000.
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- Anderson, Harold E., to McCulloch Corporation. D. C. dynamometer speed control circuit. 3,864,965, Cl. 73-134.000.
- Anderson, Harry T., to Swift & Company. Apparatus for removal of dissolved or suspended solids in waste water. 3,865,711, Cl. 204-275.000.
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- Anderson, Ronald A., to Schlumberger Technology Corporation. Force-measuring apparatus for use in a well bore pipe string. 3,864,968, Cl. 73-151.000.
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- Archer, Jean-Francois. Lifting devices. 3,865,422, Cl. 294-81.00R.
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- Aronberg, Lester, to Lake Chemical Company. Compositions for use in soldering stainless steels. 3,865,641, Cl. 148-23.000.
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- Ayers, Ray R.; and Hemphill, Dean P., to Shell Oil Company. Oil spill cleanup. 3,865,730, Cl. 210-242.000.
- Ayres, Waldemar A., to Becton, Dickinson and Company. Blood sedimentation tube barrier. 3,864,979, Cl. 73-425.40P.
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- Bagge, John, to Valmet Oy. Seaming method for sheet metal ducts. 3,864,814, Cl. 29-514.000.
- Bagnoli, Donald L.; and Ciuffreda, Anthony R., to Exxon Research and Engineering Company. Heat resistant alloy for carburization resistance. 3,865,634, Cl. 148-6.350.
- Bailey, David C., Jr., to Gillette Company, The. Assembly apparatus. 3,864,896, Cl. 53-159.000.
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- Baker, Don R., to Stauffer Chemical Company. Tetrahydropyridine insect repellent. 3,865,944, Cl. 424-263.000.
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- Baker, Jeffrey A.: *See—*
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Berg, Frances H., executrix: *See—*
Berg, Quentin, deceased; and , 3,865,455.

Berg, Quentin, deceased (by Berg, Frances H., executrix); and , to du Pont de Nemours, E. I., and Company. Circuit board socket. 3,865,455, Cl. 339-17.00C.

Berger, Judo Lewis. Recording and playback device without moving parts. 3,866,189, Cl. 340-173.200.

Berger, Julius; Pruess, David; and Scannell, James Parnell, to Hoffmann-La Roche Inc. Fermentative preparation of L-2-amino-4(2-aminoethoxy)-butanoic acid. 3,865,694, Cl. 195-80.00R.

Bergfjord, John A.: *See—*
Radler, Richard W., Jr.; Millonzi, Richard P.; and Bergfjord, John A., 3,865,798.

Berka, George B.: *See—*
Klomp, Johannes Theodorus; Van De Ven, Adrianus Johannes Cornelis; and Berka, George B., 3,865,567.

Berkley & Company, Inc.: *See—*
Swisher, Rolla Douglas, 3,864,865.

Berns, Charles, to General Signal Corporation. Method of making a buzzer structure. 3,864,823, Cl. 29-602.000.

Berns, Charles, to Edwards Company Inc. Audible signal apparatus. 3,866,203, Cl. 340-274.000.

Bernz-O-Matic Corporation: *See—*
Chvatal, Milos, 3,865,137.

Berther, Clau: *See—*
Lussi, Heinz; Berther, Clau; and Studinka, Josef, 3,865,814.

Berton, Georges Albert: *See—*
Delgendre, Jacques Claude; Kerreneur, Alain Roger; and Berton, Georges Albert, 3,865,037.

Bertsch, Richard: *See—*
Eichler, Dieter; Glockler, Otto; and Bertsch, Richard, 3,865,089.

Betz Laboratories, Inc.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,865,724.

Beyerlein, Ludwig: *See—*
Lachner, Otto; Beyerlein, Ludwig; and Spelthahn, Klaus, 3,865,913.

Beymes, Johannes Frentzel; and Quast, Christoph, to Palitex Project Company GmbH. Wetting mechanism for a textile yarn processing machine. 3,864,901, Cl. 57-35.000.

Bilbrey, Robert A.; and Maytham, Walter J., to Speed Systems. Cable scribing tool. 3,864,828, Cl. 30-91.200.

Billings, Charles Alden: *See—*
O'Neill, Gerald Joseph; Simons, Charles William; and Billings, Charles Alden, 3,865,950.

Binder, Erich, to Gretag Aktiengesellschaft. Film unwinding system. 3,865,324, Cl. 242-67.10R.

Binder, Walter: *See—*
Stich, Heinrich; Binder, Walter; Hutter, Josef; and Marecek, Helmut, 3,865,602.

Birch, Ralph William, to U.M.P. Plastics Ltd. Closure cap. 3,865,263, Cl. 215-321.000.

Birkholtz, Gottfried, to Carl Schenck AG. Load cell. 3,866,157, Cl. 338-5.000.

Birtwell, William C.; and Norton, Robert L., to Hemodyne, Inc. External cardiac assist apparatus. 3,865,102, Cl. 128-64.000.

Bishop, Jerry B.: *See—*
Owens, Frederick J.; and Bishop, Jerry B., 3,864,838.

Bishop, Virginia H. Decorative belt buckle. 3,864,791, Cl. 24-163.000.

Black, Arthur L., to Ingersoll-Rand Company. Flexible coupling means. 3,864,940, Cl. 64-13.000.

Black, Rexford E.: *See—*
Reed, Benjamin H.; and Black, Rexford E., 3,865,704.

Blackwell, John; and Fendglis, Richard A., to du Pont de Nemours, E. I., and Company. Yellow 3'-hydroxyquinophthalone-5-(p-phenylazo)carboxanilide dye. 3,865,804, Cl. 260-155.000.

Blair, Charles S., Jr.: *See—*
Bradley, Walter W.; and Blair, Charles S., Jr., 3,864,985.

Blair, Edgar A., to Princeton Polymer Laboratories, Incorporated. Carboxylated acrylonitrile-butadiene latex fabric coating. 3,865,622, Cl. 117-161.0UT.

Blake, Frederick D., to Minnesota Mining and Manufacturing Company. Water-dispersible pressure-sensitive adhesive, tape made therewith, and novel tackifiers therefor. 3,865,770, Cl. 260-27.00R.

Blaw-Knox Food and Chemical Equipment, Inc.: *See—*
Wright, Edward S.; and Angstadt, John W., 3,865,563.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See—*
Eibe, Werner W.; and Andrascik, Andrew, 3,864,954.
Eibe, Werner W., 3,864,955.

Blinder, Marvin, to Loral Corporation. Adapter for high density connectors. 3,865,454, Cl. 339-17.00C.

Block, Jacob; Herbst, Richard J.; and Triggiani, Leonard V., to W. R. Grace & Co. Process for the preparation of metal carbide and metal oxide microspheres. 3,865,745, Cl. 252-301.10R.

Blood Services: *See—*
Marston, Judith, 3,865,552.

Blossom, Armond L., to Coleman Company, The. Combination air conditioner and heater. 3,865,182, Cl. 165-27.000.

Blount & George: *See—*
Hogan, William M., 3,865,491.

Boberg, Anders, to Akerlung & Rausing. Polymer composition degradable under the influence of ultraviolet light and/or sunlight. 3,865,767, Cl. 260-23.00H.

Bochan, John, to General Electric Company. Automatic belt tightener. 3,864,986, Cl. 74-226.000.

Boehringer Ingelheim G.m.b.H.: *See—*
Merz, Herbert; Langbein, Adolf; Wick, Helmut; and Stockhaus, Klaus, 3,865,943.

Boehringer Mannheim G.m.b.H.: *See—*
Popelak, Alfred; Stach, Kurt; Thiel, Max; Schaumann, Wolfgang; and Stork, Harald, 3,865,838.

Bogart, George E.; Gallagher, Robert T.; and Lolli, Lawrence V., to Marathan Manufacturing Company. Artificial tree construction. 3,865,676, Cl. 161-24.000.

Bohlin, Nils Ivar: *See—*
Pilhall, Stig Tore Lennart; Schalin, Pehr Harald Benedictus; Bohlin, Nils Ivar; and Forsberg, Rolf Hermann, 3,865,397.

Bohm, Harald: *See—*
Gammerler, Hagen; and Bohm, Harald, 3,865,318.

Boiko, Ivan Petrovich: *See—*
Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.

Bokelman, Harold L. Drafting device. 3,864,833, Cl. 33-76.00R.

Boksjo, Carl Ingvar; and Olsson, Karl Erik, to Allmanna Svenska Elektriska Aktiebolaget. Protection means against auto-ignition for the rectifiers of a static converter. 3,865,438, Cl. 321-13.000.

Bolex International SA: *See—*
Thevenaz, Jean; and Kreienbuhl, Claude, 3,865,476.

Bolling, Robert W.; and Reeves, Jerry H., to Union Camp Corporation. Method of making bags with film liners. 3,865,019, Cl. 93-35.00R.

Boom, Johannes: *See—*
Visser, Pieter; and Boom, Johannes, 3,865,916.

Boontje, Jan Th., to Verenigde Kunstmestfabrieken Mekog-Albatros N.V. Process for the preparation of crystalline calcium sulphate and phosphoric acid. 3,865,922, Cl. 423-166.000.

Boothman, David Richard; and Nutt, David Walter, to Canadian General Electric Company Limited. Inhibited power supplies. 3,866,094, Cl. 317-31.000.

Borbely, Alexander S.; and Bereman, Jon A., to P. R. Mallory & Co. Inc. Method of coating a die cavity surface and the coated surface. 3,865,608, Cl. 117-5.300.

Boren, Paul D. Forward draw revolver holster. 3,865,289, Cl. 224-2.00B.

Borg-Warner (Australia) Limited: *See—*
Drummond, Frederick Charles, 3,865,357.

Borg-Warner Corporation: *See—*
Cronauer, Donald C.; and Baumgard, Larry G., 3,865,870.
Hopkins, Neil E., 3,864,930.
Hopkins, Neil F., 3,864,929.
Paulson, Donald L.; and Mamo, Anthony C., 3,865,104.
Velander, Hugo W., 3,865,229.

Borgmann, John P., to American Chemical & Refining Company Inc. Method for continuous high speed electroplating of strip, wire and the like. 3,865,701, Cl. 204-28.000.

Borski, William J., to Faustel Inc. Machine for making file folders. 3,865,017, Cl. 93-1.00E.

Boschman, Theodorus Antonius Cornelis; and Korsloot, Jacob Gerard, to U.S. Philips Corporation. Substituted, 6,7 ethylenedioxy 4 hydroxy 3 non oxo carbonylic quinolines. 3,865,832, Cl. 260-287.00R.

Bossler, Franklin B.: *See—*
Paxhia, Vincent B.; and Bossler, Franklin B., 3,865,311.

Boston Machine Works Co.: *See—*
Copithorne, Alton R., 3,865,077.

Boston, Ronald E.: *See—*
Lokerson, Donald C.; and Boston, Ronald E., 3,866,210.

Bostwick, Norvan W.; and Daborowski, Ignace J., to Ambac Industries, Inc. Excess fuel starting device for diesel engines. 3,865,091, Cl. 123-139.0ST.

Bott, Barry; Firth, Jack Graham; Jones, Alan; and Jones, Thomas Alwyn, to National Research Development Corporation. Semiconducting gas sensitive devices. 3,865,550, Cl. 23-232.00E.

Boulter, Thomas W.; and Van Zyl, Bernard, to United States of America, Air Force. Submissible air-to-surface warhead with propellant-diaphragm deployment mechanism. 3,865,034, Cl. 102-7.200.

Bourbeau, Frank J., to General Motors Corporation. Motor power supply system. 3,866,099, Cl. 318-254.000.

Bourcier de Carbon de Previnquieres, Alain. Snow chains and apparatus for their automatic remote fastening on the tire. 3,865,168, Cl. 152-213.00A.

Bourdeau, Romeo G.: *See—*
Galasso, Francis S.; and Bourdeau, Romeo G., 3,865,917.

Bouteiller, Charles A.: *See—*
Vizziello, Vito M.; and Bouteiller, Charles A., 3,865,161.

Bouty, Lucien Robert; and LeCardonnel, Gerard Marcel, to International Standard Electric Corporation. Electronically controlled ring-trap circuit. 3,865,992, Cl. 179-18.0HB.

Bowen, Duane C. Bathing facility. 3,864,760, Cl. 4-146.000.

Bowers, Bernard P.; and Breidegam, Delight E., Jr., to East Penn Mfg. Co., Inc. Universal battery lifter. 3,865,419, Cl. 294-63.00B.

Bowler, Katherine A.: *See—*
Zemlin, John C.; and Bowler, Katherine A., 3,865,546.

Bowles, Joseph E. Soil pulverizing device. 3,865,320, Cl. 241-278.00R.

Bowman, Bobby R.: *See—*
Drelich, Arthur H.; and Bowman, Bobby R., 3,865,764.
Drelich, Arthur H.; and Bowman, Bobby R., 3,865,765.
Drelich, Arthur H.; and Bowman, Bobby R., 3,865,775.

Bracken, Lee H. Portable tent. 3,865,123, Cl. 135-4.00R.

Bradbury, Rudolph A.: *See—*
Milam, David; Hordvik, Audun; Bradbury, Rudolph A.; and Schlossberg, Howard R., 3,866,141.

Bradley, Walter W.; and Blair, Charles S., Jr. Drive transmission. 3,864,985, Cl. 74-125.500.

Brander, Richard: *See—*
Weiss, Erwin M.; and Brander, Richard, 3,865,998.

Branick, Charles Earl. Tire bead breaking apparatus. 3,865,172, Cl. 157-1.260.

Bras S.p.A.: *See—*
Rimini, Tito, 3,865,277.

Brasier, Charles A. Signaling the location of underwater wells. 3,866,160, Cl. 340-5.00R.

Bratt, Axel Erland; Holst, Oscar Evert Ingemar; and Petre, James Gusten Ragnar, to SKF Industrial Trading and Development Company N.V. Press fit joints for mounting by means of a pressure medium. 3,865,497, Cl. 403-15.000.

Braune, Rudi Helmut. Road adjusted wheelbarrow chassis. 3,865,393, Cl. 280-47.260.

Brehm, Alma Louise. Mini-masher. 3,865,317, Cl. 241-169.200.

Breidegam, Delight E., Jr.: *See—*
Bowers, Bernard P.; and Breidegam, Delight E., Jr., 3,865,419.

Brenan, Robert R.; Bunker, Thomas D.; and Thompson, David F., to GTE Sylvania Incorporated. Fabrication Packages Suitable for Integrated Circuits. 3,864,820, Cl. 29-591.000.

Breslow, Jeffrey D.; and Jaworski, Eugene, to Marvin Glass & Associates. Fighting figure toy. 3,864,870, Cl. 46-142.000.

Breslow, Jeffrey D.; and Glass, Marvin I., to Marvin Glass & Associates. Game apparatus. 3,865,367, Cl. 273-1.00E.

Breslow, Jeffrey D., to Marvin Glass & Associates. Board game apparatus. 3,865,379, Cl. 273-134.00A.

Breslow, Jeffrey D.: *See—*
Glass, Marvin I.; and Breslow, Jeffrey D., 3,865,376.

Breukink, Karel W.; and Van Praag, Michel, to International Flavors & Fragrances Inc. Edible compositions having a poultry meat flavor and processes for making same. 3,865,958, Cl. 426-211.000.

Breuner, Gerald L. Rotor blade and hub attachment and control. 3,865,511, Cl. 416-141.000.

Briar, John R., to General Motors Corporation. Electromagnetic spring-wound clutch. 3,865,222, Cl. 192-48.200.

Bridgestone Tire Company Limited: *See—*
Oka, Takeshi, 3,865,663.
Tazaki, Sadanori; and Ishida, Yozo, 3,864,920.

Bridigum, Robert J.; and Nebiolo, Renaldo A., to Westinghouse Air Brake Company. Visual coupling indicator for automatic railway car couplers. 3,865,252, Cl. 213-75.00R.

Briggs, Hartwell L.: *See—*
Agusto, Robert G.; Taylor, Francis A.; and Briggs, Hartwell L., 3,865,884.

Bright, James A., to General Motors Corporation. Defrost timer arrangement for making clear ice. 3,864,933, Cl. 62-137.000.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,865,724.

Brinkmann, Bernd; and Griebsch, Eugen. Certain enamine compounds and methods for making and using the same. 3,865,791, Cl. 260-77.5CH.

British Ropes Limited: *See—*
Paddington, Arthur Loftus, 3,865,409.

British Steel Corporation: *See—*
Latham, James Albert, 3,865,576.

Brochu James W.: *See—*
Benneche, Chris; Brochu James W.; and Conner, Jack S., 3,866,226.

Broecker, Franz Josef; Kaempfer, Knut; Marosi, Laslo; Schwarzmann, Matthias; and Triebskorn, Bruno. Process for the preparation of a nickel magnesium aluminum catalyst. 3,865,753, Cl. 252-466.00J.

Broeker, Herbert H.: *See—*
Donovan, Robert W.; Kolster, Harvey L.; Broeker, Herbert H.; and Bailey, George W., 3,865,248.

Broling, Fred W.; Baker, Jeffrey A.; and Matras, Edward J., to FMC Corporation. Pumping apparatus with separating mechanism. 3,865,727, Cl. 210-162.000.

Brooks, Harold W. Method of controlling tissue hypothermia. 3,865,116, Cl. 128-400.000.

Brooks, William Victor Hayes, to Domtar Limited. Easily disposable diaper with sealing bead. 3,865,111, Cl. 128-287.000.

Brosene, William G., Jr., to Magnum Automotive, Inc. Lower bead breaker adapter. 3,865,171, Cl. 157-1.240.

Brown Boveri-Sulzer Turbomachinery Ltd.: *See—*
Benz, Hans, 3,865,504.

Brown, Claude H.: *See—*
Dorrough, Vernon R.; and Brown, Claude H., 3,865,436.

Brown, Richard L.: *See—*
Gogolick, Roland M.; Brown, Richard L.; and Finney, William J., 3,864,772.

Broyde, Barret, to Western Electric Company, Incorporated. Additives to negative photoresists which increase the sensitivity thereof. 3,865,597, Cl. 96-115.00R.

Bruce, John MacMillan, Jr., to du Pont de Nemours, E. I., and Company. Catalytic chlorofluorination of isopropyl fluoride to 1,1,2-trichlorotrifluoropropene-1. 3,865,885, Cl. 260-653.300.

Brude, Berton H. Telephone number recorded and reminder. 3,864,857, Cl. 40-77.400.

Brudi Equipment, Inc.: *See—*
Brudi, Ronald A.; Matthewson, Randall W.; and Wheeler, Randall P., 3,865,265.

Brudi, Ronald A.; Matthewson, Randall W.; and Wheeler, Randall P., to Brudi Equipment, Inc. Lift truck safety accessory. 3,865,265, Cl. 214-674.000.

Bruenig, Matthias. Safety head rest for automobile seats and the like. 3,865,450, Cl. 297-397.000.

Brunger, William Ernest; Madden, Stanley Gordon; and Sawyer, Benjamin Robinson, to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain, The. Firearms. 3,864,862, Cl. 42-84.000.

Brunswick Corporation: *See—*
Frazzell, Michael E.; and Snyder, Richard H., 3,865,509.
Haasl, William D., 3,865,068.

Brusch, Paul C. Cylindrical stock machining apparatus. 3,864,816, Cl. 29-563.000.

Bruson, Herman A.; and Gould, Henry, to Milchem Incorporated. Polyhydroxy compositions. 3,865,793, Cl. 260-78.50R.

BTR Industries Limited: *See—*
Lochrie, Leonard Marshall, 3,864,852.

Bucher, Ernest: *See—*
Andres, Klaus; Bucher, Ernest; and Wernick, Jack Harry, 3,865,557.

Buchholz, Willi: *See—*
Detert, Ernst-Rolf; and Buchholz, Willi, 3,865,120.

Buchner, Werner: *See—*
Ossko, Andreas; Goller, Heinz; Herzig, Joachim; Buchner, Werner; and deMontigny, Armand, 3,865,858.

Buck, Daniel C., to Westinghouse Electric Corporation. Paramagnetic sample arrangement for ECM false echo generation. 3,866,225, Cl. 343-18.00E.

Buckley, Norman Frank: *See—*
Holt, Barry; and Buckley, Norman Frank, 3,865,363.

Bueckner, John E., Sr. Prime mover for trailers and the like. 3,865,204, Cl. 180-12.000.

Buehl, Russell C., to Crucible Inc. Method for the nonconsumable electrode melting of reactive metals. 3,865,174, Cl. 164-52.000.

Buffet Crampon: *See—*
Carree, Robert Victor, 3,865,005.

Buhler, George V.: *See—*
United States of America, National Aeronautics and Space Administration; Buhler, George V.; and Havens, Dale E., 3,864,953.

Buhrke, Rolfe E.; Chang, Gregory I.; and Horiuchi, Edward M., to GTE Automatic Electric Laboratories Incorporated. Timing monitor circuit for central data processor of digital communication system. 3,866,184, Cl. 340-172.500.

Builders Brass Works: *See—*
Hoppock, William E., 3,864,785.

Bullard, Edward M.: *See—*
Nahmias, Michael A.; and Bullard, Edward M., 3,865,903.

Bullock, Thomas B.: *See—*
Simon, James B.; and Bullock, Thomas B., 3,866,212.

Bunker, Thomas D.: *See—*
Brenan, Robert R.; Bunker, Thomas D.; and Thompson, David F., 3,864,820.

Burdett Manufacturing Company: *See—*
Wick, Richard G.; and Bennett, Henry J., 3,865,076.

Bures, Alan R., to University of California, The Regents of the. Transvenous coaxial catheter. 3,865,118, Cl. 128-404.000.

Burg, Joseph L. Shock absorbing bumper. 3,865,416, Cl. 293-87.000.

Burgdorf, Jochen; and Stoka, Roberto, to ITT Industries, Inc. Spot-type disc brake. 3,865,215, Cl. 188-73.600.

Burge, Harland L., Jr.; and Salvinski, Richard J., to TRW Inc. Piezoelectric voltage generator. 3,865,539, Cl. 431-255.000.

Burger Eisenwerke AG: *See—*
Frank, Martin; and Frank, Karl, 3,864,936.

Burgess, Thomas H.; and Herzl, Peter J., to Fischer & Porter Co. Signal recovery system for vortex type flowmeter. 3,864,972, Cl. 73-194.00B.

Burkart, Robert C.: *See—*
Eash, Robert E.; and Burkart, Robert C., 3,864,822.

Burns, Robert V., to GTE Automatic Electric Laboratories Incorporated. Circuit for eliminating contact bounce effect. 3,866,092, Cl. 317-9.00C.

Burpulis, John Samuel; Souffie, Robert David; Counceller, John D.; and De Capite, Robert, to du Pont de Nemours, E. I., and Company. Apparatus. 3,865,354, Cl. 259-191.000.

Burroughs Corporation: *See—*
Wen, Samuel S.; and Nelson, Donald J., 3,866,061.

Burtis, Wilson A. Liquid homogenizing device. 3,865,350, Cl. 259-1.00R.

Burwell, Blair T.: *See—*
Wilson, David; and Burwell, Blair T., 3,865,541.

Burzen, Norman J., to Nordon Industries,Inc. Timing apparatus. 3,866,101, Cl. 318-487.000.

Busch, Albert G., to A. G. Busch & Co. Inc. Electrical adapter plug. 3,865,463, Cl. 339-176.00R.

Butler, Claud D.: *See—*
Clark, Charles R.; Gregory, M. Duane; Krehbiel, Delmar D.; Butler, Claud D.; and Kennedy, Carl D., 3,865,735.

Butler, Louis L., to Bear Manufacturing Corporation. Apparatus for use in aligning wheels. 3,865,492, Cl. 356-155.000.

Buttel, Helmut, to International Standard Electric Corporation. Method of manufacturing a sealed contact. 3,864,826, Cl. 29-630.00B.

Butters, Jeff A. Dent deflector for mobile homes. 3,865,358, Cl. 267-140.000.

Byrd, Carl; and Mueller, Martin, to Owens-Illinois, Inc. Apparatus for filling containers. 3,865,281, Cl. 222-252.000.

C. J. Patterson Company: *See—*
Linn, Carl B.; and Baiocchi, Fred, 3,865,855.

Cairns, Robert Lacock: *See—*
Volin, Timothy Earl; Benjamin, John Stanwood; Larson, Jay Michael; and Cairns, Robert Lacock, 3,865,575.

Caldwell, Alistair J.: *See—*
Bendall, Dennis M.; Harris, William R.; Summers, Peter; Pyart, Raymond S.; Kew, Jeffrey; Sherborne, Michael C. D.; Caldwell, Alistair J.; Thorp, Peter M.; and Jones, John A., 3,865,482.

Callahan, Joseph W.; and Landry, Charles A., to Cesco, Inc. Removal of polymer residue from surfaces of processing equipment. 3,865,628, Cl. 134-2.000.

Camardella, Giuseppe. Automatic coils winding turret machine. 3,865,152, Cl. 140-1.000.

Campbell, Max L., to Hydro-Flex Corporation, Inc. Floating meter mount. 3,865,338, Cl. 248-295.000.

Camper & Nicholsons (Holdings) Limited: *See—*
Phipps, Richard John, 3,865,710.

Canada Wire and Cable Limited: *See—*
Leuenberger, Urs, 3,864,869.

Canada, Atomic Energy of, Limited: *See—*
Whitfield, Douglas, 3,866,050.

Canadian General Electric Company Limited: *See—*
Boothman, David Richard; and Nutt, David Walter, 3,866,094.

Canadian Mine Services Ltd.: *See—*
Crawshay, Richard; and Hradil, John Helmut, 3,865,208.

Canadian Patent and Development Limited: *See—*
Parups, Edwin V.; and Chan, Allan P., 3,865,569.

Canadian Patents and Development Limited: *See—*
Narang, Saran A.; and Michniewicz, Joseph J., 3,865,807.
Tanney, John W., 3,864,971.

Canadian Thermo Images, Ltd.: *See—*
Agusto, Robert G.; Taylor, Francis A.; and Briggs, Hartwell L., 3,865,884.

Cand A Laboratories, Inc.: *See—*
Mudge, Clifton F., 3,865,933.

Canon Mills Co.: *See—*
Kester, Melvin E., 3,865,234.

Cardenas, Richardo L.: *See—*
Carlin, Joseph T.; and Cardenas, Richardo L., 3,865,187.

Carl Pedro and Sons, Inc.: *See—*
Pedro, Eugene M., 3,865,166.

Carl Schenck AG: *See—*
Birkholtz, Gottfried, 3,866,157.

Carlin, Joseph T.; and Cardenas, Richardo L., to Texaco Inc. Oil recovery process using surfactant mixtures. 3,865,187, Cl. 166-273.000.

Carlson, Gunnar Olof. Throw-away teeth protector. 3,864,832, Cl. 32-40.00R.

Caroli, Italo, to DBM Industries Ltd. Vacuum apparatus. 3,865,359, Cl. 269-21.000.

Caron, Lionel, to Bell Telephone Laboratories, Incorporated. Communication system for transmitting data words prior to receipt of acknowledgments for previously transmitted data words. 3,866,172, Cl. 340-147.00R.

Carree, Robert Victor, to Buffet Crampon. Wind musical instrument. 3,865,005, Cl. 84-380.000.

Carrier Corporation: *See—*
Hayes, Richmond S., Jr., 3,864,938.
Hayes, Richmond S., Jr., 3,865,344.
Kropiwnicki, Tadek M., 3,865,345.
Simmons, Walter H.; and Almilli, Saleh H., 3,865,517.

Carroll, Raymond L.: *See—*
Norris, Dale M.; Reynolds, John F.; and Carroll, Raymond L., 3,864,874.

Carson, John Robert, to McNeil Laboratories, Inc. Process of preparing 1,4-diloweralkyl-3-loweralkoxy-carbonyl-2-acetates. 3,865,840, Cl. 260-326.460.

Carter, Clyde Thomas, to AMP Incorporated. Low insertion force receptacle and cammed housing. 3,865,457, Cl. 339-74.00R.

Carter, Harry T., to Fibrac, Inc. Collapsible mop frame improvement. 3,864,782, Cl. 15-147.00A.

Cartier, Jean-Pierre; Winn, David; and Stelmach, Anthony L. Electrical control circuit. 3,866,019, Cl. 219-485.000.

Casey, Thomas P.: *See—*
Klett, Gene R.; Bedford, Billy R.; and Casey, Thomas P., 3,864,853.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Schnee, Karl; Tichy, Dieter; and Engelhardt, Friedrich, 3,865,683.

Castonguay, Roger A.: *See—*
Wenckus, Joseph F.; Castonguay, Roger A.; Hanfly, Bernard C.; and Mallahan, Francis J., 3,865,554.

Castrucci, Paul P.; Grochowski, Edward G.; North, William D.; and Palfi, Thomas L., to International Business Machines Corporation. Method of making a common emitter transistor integrated circuit structure. 3,865,648, Cl. 148-175.000.

Caterpillar Tractor Company: *See—*
Klett, Gene R.; Bedford, Billy R.; and Casey, Thomas P., 3,864,853.
McWilliams, Orcenith D.; and Rice, Roger A., 3,865,135.

Cavalleri, Bruno; Bellasio, Elvio; Testa, Emilio; and Maffii, Giulio, to Lepetit S.p.A. Gruppo per la Ricerca Scientifica e la produzione Chemica Farmaceutica. Ethyl fluoro-(2-dibenzofuranyl)-acetate. 3,865,847, Cl. 260-346.20M.

Cavanagh, John Denis, to RCA Corporation. Spacecraft attitude control system. 3,866,025, Cl. 235-150.200.

Caveney, Jack E.; and Randolph, Franklin L., to Panduit Corporation. Container. 3,865,300, Cl. 229-7.00R.

Cebula, Leonard A.; Fitzpatrick, Joseph F., Jr.; and Kershaw, Justin A., Jr., to Technitrol, Inc. Signal measuring and counting apparatus and methods. 3,866,126, Cl. 328-15.000.

Cecchetti, Claudio, to Arco Falc srl. Convertible leg assembly. 3,865,050, Cl. 108-19.000.

Cegedur GP: *See—*
Sabetay, Leon, 3,865,560.

Celanese Corporation: *See—*
Chenevey, Edward C.; Druin, Melvin L.; and Oringer, Kenneth, 3,865,876.

Cellu Products Company: *See—*
Doll, Brendan L., 3,864,877.

Central Electricity Generating Board: *See—*
Freck, David Vernon, 3,866,043.

Cesco, Inc.: *See—*
Callahan, Joseph W.; and Landry, Charles A., 3,865,628.

Cessna, Lawrence C., Jr., to Hercules Incorporated. Micro-parallel plate plastometer and viscometry method. 3,864,961, Cl. 73-54.000.

Chabardes, Pierre; Julia, Marc; and Menet; Albert, to Rhone-Poulenc S.A. Unsaturated sulphones. 3,865,878, Cl. 260-590.000.

Champlin, H. H.: *See—*
Danford, Jack De Wayne, 3,865,056.

Chan, Allan P.: *See—*
Parups, Edwin V.; and Chan, Allan P., 3,865,569.

Chang, Chi Shih; and Jen, Teh-Sen, to International Business Machines Corporation. Complementary field effect transistor having p doped silicon gates and process for making the same. 3,865,654, Cl. 148-187.000.

Chang, Gregory I.: *See—*
Buhrke, Rolfe E.; Chang, Gregory I.; and Horiuchi, Edward M., 3,866,184.

Chang, Joseph J.: *See—*
Agusta, Benjamin; Chang, Joseph J.; and Joshi, Madhukar L., 3,865,652.

Chapman, Brian Samuel: *See—*
Ross, John Edward; Marshall, David James; and Chapman, Brian Samuel, 3,865,613.

Charland, Terrence D.; and Klett, Stanley D., to Xerox Corporation. Magnetic brush developing apparatus. 3,865,081, Cl. 118-637.000.

Charles, John Frederick; and Markovchik, Carl Joseph, to du Pont de Nemours, E. I., and Company. Doffing cutter with pickup. 3,864,999, Cl. 83-100.000.

Charles S. Naiman: *See—*
Clayman, William, 3,865,631.

Chas. S. Tanner Co.: *See—*
Lindemann, Martin K., 3,865,620.

Charlesworth, David Valentine, to Clarke & Smith Manufacturing Company Limited. Braille tape reader. 3,866,020, Cl. 235-61.11D.

Charransol, Pierre; Hauri, Jacques; and Athenes, Claude, to International Standard Electric Corporation. Switching module for a PCM switching system. 3,865,989, Cl. 179-15.0AQ.

Charransol, Pierre; Hauri, Jacques; and Fontana, Serge Robert, to International Standard Electric Corporation. Signal routing device for a parallel transmission and/or switching network of coded signals. 3,865,991, Cl. 179-15.0BF.

Chatfield, John F., Jr. Hydraulically-operated fire extinguishing drill. 3,865,194, Cl. 169-70.000.

Chekmarev, Alexandr Ilich: *See—*
Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.

Chen, Keith A., to Norton-McMurray Manufacturing Company. Compression joint or coupling for pipes. 3,865,410, Cl. 285-31.000.

Chenevey, Edward C.; Druin, Melvin L.; and Oringer, Kenneth, to Celanese Corporation. Synthesis of 3,3′-diaminobenzidine from 3,3′-dichlorobenzidine. 3,865,876, Cl. 260-581.000.

Cherney, Thomas M.; and Knudson, John O., to Minnesota Mining and Manufacturing Company. Component connector. 3,865,460, Cl. 339-98.000.

Chester, Carroll W. Window shade for a vehicle or the like. 3,865,428, Cl. 296-97.00G.

Chestnut, Benjamin F.: *See—*
Underwood, David W.; and Chestnut, Benjamin F., 3,866,002.

Chevalaz, Roger A.: *See—*
Genese, Joseph N.; Rapoza, Edward J.; Galanaugh, Charles F.; Kennard, Harry M.; Chevalaz, Roger A.; and Smith, John A., 3,865,274.

Chevalier, Paul, to Prayfel Inc. Two level random number generator having a controllable expected value. 3,866,029, Cl. 235-152.000.

Chevron Research Company: *See—*
Fries, Bernard A., 3,865,736.
Goldschmidt, Alfred, 3,865,740.
Koundakjian, Theodore H., 3,865,937.

Chiba, Shyozo; Kung, Charles K. H.; and Goldwasser, Eugene, to United States of America, Atomic Energy Commission. Stabilization of urinary erythropoietin using sodium p-aminosalicylate and extracting into phenol. 3,865,801, Cl. 260-112.00R.

Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Mori, Takao, to Tanabe Seiyaku Co., Ltd. Blood urea removal device. 3,865,726, Cl. 210-152.000.

Chida, Yoshinori; and Mizutani, Seiki, to Kabushiki Kaisha Seikosha. Printing mechanism automatically positionable in the same start position. 3,865,030, Cl. 101-93.00C.

Chorvat, Robert J.; and Pappo, Raphael, to G. D. Searle & Co. 1,3-Diethers of 2-azaestratrienes and intermediates. 3,865,833, Cl. 260-289.0AZ.

Chrepta, Metro M.: *See—*
Jacobs, Harold; and Chrepta, Metro M., 3,866,143.

Chrisp, Lynn E., to Chrisp Manufacturing Company. Wire winder. 3,865,328, Cl. 242-71.900.

Chrisp Manufacturing Company: *See—*
Chrisp, Lynn E., 3,865,328.

Christie, George, to General Electric Company. Heat vulcanizable silicone rubber compositions resistant to oil degradation. 3,865,778, Cl. 260-37.0SB.

Christopher, Charles A.; and Allen, Joseph C., to Texaco Inc. Hydraulic fracturing method. 3,865,190, Cl. 166-308.000.

Chrysler Corporation: *See—*
Adams, Don, III, 3,864,988.

Chrysler United Kingdom Limited: *See—*
Jones, Clive, 3,864,989.

Church, Nathan Lewis; and DeBarbadillo, John Joseph, II., to International Nickel Company, Inc., The. Alloy additive. 3,865,582, Cl. 75-122.000.

Chvatal, Milos, to Bernz-O-Matic Corporation. Regulator valve. 3,865,137, Cl. 137-613.000.

Chvejka, Jiri: *See—*
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Ciba-Geigy AG: *See—*
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Stark, John-Hermann; Lambiel, Jean-Claude; and Jungo, Markus, 3,864,962.

Ciba-Geigy Corporation: *See—*
Mueller, Helmut; Mosher, Paul; and Linhart, Helmut, 3,865,786.

Ciuffreda, Anthony R.: *See—*
Bagnoli, Donald L.; and Ciuffreda, Anthony R., 3,865,634.

Clark, Charles R.; Gregory, M. Duane; Krehbiel, Delmar D.; Butler, Claud D.; and Kennedy, Carl D., to Continental Oil Company. Overbased branched chain aliphatic sulfonate waterflood additives. 3,865,735, Cl. 252-8.55D.

Clark Equipment Company: *See—*
Swanson, Allan R., 3,865,205.

Clark, Hal J.; and Wells, Victor S. Lift mechanism for automobiles. 3,865,214, Cl. 187-8.720.

Clark, Thomas B. Pitless water system. 3,865,513, Cl. 417-38.000.

Clarke & Smith Manufacturing Company Limited: *See—*
Charlesworth, David Valentine, 3,866,020.

Clay, Alvie L.: *See—*
Clay, Cecil W.; and Clay, Alvie L., 3,865,383.

Clay, Cecil W.; and Clay, Alvie L., to Clay & Clay Enterprises, Inc.; and Clay, Cecil W. Training device for golfers. 3,865,383, Cl. 273-183.00B.

Clay & Clay Enterprises, Inc.: *See—*
Clay, Cecil W.; and Clay, Alvie L., 3,865,383.

Clayman, William, to Charles S. Naiman. Reserve batteries. 3,865,631, Cl. 136-114.000.

Clean Energy, Inc.: *See—*
Nardi, Anthony, 3,865,522.

Clements, Alwin S.: *See—*
Metcalfe, Kenneth A.; and Clements, Alwin S., 3,866,096.

Clements, Ralph E., to Barber-Colman Company. Reversing controller. 3,866,135, Cl. 330-51.000.

Clever, Raymond E.; Hapke, Kenyon A.; and Wells, Thomas R., to Bell & Howell Company. Drive interface system. 3,865,331, Cl. 242-199.000.

Cline, Carl F.; and Morris, Robert C., to Allied Chemical Corporation. Doped beryllium lanthanate crystals. 3,866,142, Cl. 331-94.50F.

Close, Olive H. Weed puller. 3,865,348, Cl. 254-132.000.

Clubley, Michael Hilton: *See—*
Pitts, Frank; and Clubley, Michael Hilton, 3,865,760.

Clutter, Raymond J., to Akzona Incorporated. Flame-retardant polyester. 3,865,783, Cl. 260-45.9NP.

Cobaugh, Robert Franklin; and Coller, James Ray, to AMP Incorporated. Preloaded contact and latchable housing assembly. 3,865,462, Cl. 339-176.00M.

Cohen, David Lionel, to Imperial Chemical Industries Limited. Gravure printing plates. 3,865,590, Cl. 96-38.000.

Cohen, Leopold. Ultrasonic intrusion detection systems employing turbulence discrimination. 3,866,198, Cl. 340-258.00A.

Coherent Radiation Laboratories: *See—*
Hobart, James Lee; and Mefferd, Wayne S., 3,866,140.

Colaluca, Donald M., to Raymond Lee Organization, a part interest. Tape protecting cover device. 3,865,238, Cl. 206-404.000.

Cole, Edgar C. Instructional apparatus for underwater welding. 3,866,011, Cl. 219-72.000.

Cole, Edward L.: *See—*
McCoy, Frederic C.; and Cole, Edward L., 3,865,896.

Coleman Company, The: *See—*
Blossom, Armond L., 3,865,182.

Coleman, Kenneth L. Collapsible material handling and storage container. 3,865,269, Cl. 220-6.000.

Coles, Alan V., to Textron, Inc. Attachment for air cushion confining inflatable trunk structures to air cushion supported vehicles. 3,865,332, Cl. 244-102.00R.

Coles, Donald K. Keyboard type musical instrument. 3,865,004, Cl. 84-423.000.

Collaborative Research, Inc.: *See—*
Zemlin, John C.; and Bowler, Katherine A., 3,865,546.

Coller, James Ray: *See—*
Cobaugh, Robert Franklin; and Coller, James Ray, 3,865,462.

Collins Radio Company: *See—*
Sather, Delaine C.; and Lutz, Bruce C., 3,866,213.

Collins, Samuel C., to Cryogenic Technology, Inc. Apparatus for liquefying a cryogen by isentropic expansion. 3,864,926, Cl. 62-38.000.

Colucci, Stephen L.: *See—*
Vopat, Frank E.; and Colucci, Stephen L., 3,864,778.

Combustion Engineering, Inc.: *See—*
Musto, Richard Leopold, 3,865,242.

Commissariat a l'Energie Atomique: *See—*
Geller, Richard; Juillet, Francois; and Meriaudeau, Paul, 3,866,039.

- Commonwealth of Australia Care of the Secretary Department of Supply, The: *See—*
  - Metcalfe, Kenneth A.; and Clements, Alwin S., 3,866,096.
- Compagnie d'Applications Mecaniques a l'Electronique au Cinema et a l'Atomistique (C.A.M.E.C.A.): *See—*
  - Vastel, Jean, 3,866,042.
- Condolios, Elie; and Essen, Uilke Van, to N.V. Technische Maatschappij Bergmann; and Societe Grenobloise d'Etudes et d'Applications Hydrauliques. Method for separating particles from a liquid. 3,865,725, Cl. 210-73.000.
- Conner, Jack S.: *See—*
  - Benneche, Chris; Brochu James W.; and Conner, Jack S., 3,866,226.
- Connick, Francis Glenn, to Swift & Company. Pickle manufacturing. 3,865,351, Cl. 259-4.000.
- Conrad, Raymond W.: *See—*
  - Ely, Richard E.; and Conrad, Raymond W., 3,866,045.
- Consolidated Brass Company: *See—*
  - Mullis, Jerry D., 3,865,130.
- Container Corporation of America: *See—*
  - Hamlin, John R., 3,865,233.
- Contemporary, Inc.: *See—*
  - Kanzelberger, James C., 3,865,342.
- Continental Carbon Company: *See—*
  - Thomson, Ely Knox, 3,865,280.
- Continental Oil Company: *See—*
  - Clark, Charles R.; Gregory, M. Duane; Krehbiel, Delmar D.; Butler, Claud D.; and Kennedy, Carl D., 3,865,735.
  - Gordon, Ronnie D., 3,865,887.
  - Haden, Elard L., 3,865,201.
  - Kemp, Paul Clifford, 3,865,737.
- Control Data Corporation: *See—*
  - Roush, Maurice D., 3,865,183.
  - Van Mourik, Cornelis, 3,866,146.
- Control Networks Corporation: *See—*
  - Hestad, Alfred, 3,865,978.
- Cooke, Brian Alfred, to Imperial Chemical Industries Limited. Concentration and coating processes. 3,865,706, Cl. 204-181.000.
- Coop, Jack A. Tear-off cap closure. 3,865,268, Cl. 215-253.000.
- Cooper, Julius; and Reinertsen, Tormod K., to Ideal Toy Corporation. Shuffleboard type game. 3,865,377, Cl. 273-126.00R.
- Cooper, Robert P. Grain drying process and system and apparatus therefor. 3,864,845, Cl. 34-171.000.
- Cooperatieve Condensfabriek "FRIESLAND": *See—*
  - Lecluse, Willem Jan, 3,865,959.
- Copeland, John S.: *See—*
  - Miles, William B.; and Copeland, John S., 3,865,486.
- Copithorne, Alton R., to Boston Machine Works Co. Adaptor to enable coating machine to accomodate shoe sole or the like of irregular thickness. 3,865,077, Cl. 118-250.000.
- Coppage, Thomas B.; Flier, Ronald J.; and Payne, Bernard M., to Ralston Purina Company. Expanded protein lattice food product and method of making. 3,865,966, Cl. 426-372.000.
- Cordier, Paul; Jung, Louis; and Hug, Raymond. Process for the preparation of dihydrometoxazinone derivatives and products so obtained. 3,865,821, Cl. 260-244.00R.
- Corneel, Roevens Leopold Frans: *See—*
  - Van Gelder, Josephus Ludovicus Hubertus; Raeymaekers, Alfons Herman Margaretha; Corneel, Roevens Leopold Frans; and Van Laerhoven, Willy Joannes, 3,865,836.
- Cornelissen, Barnardo Henricus Jozef, to U.S. Philips Corporation. Device for the digital subtraction of frequencies. 3,866,129, Cl. 328-133.000.
- Cornelissen, Gerardus Antonius Petrus Maria; Rijpers, Johannes Cornelis Norbertus; and Siebers, Gerardus Henricus Maria, to U.S. Philips Corporation. Device for coating a wire of an electrically conducting material continuously from the gas phase. 3,865,074, Cl. 118-49.500.
- Cornelius Company, The: *See—*
  - Holcomb, Donald E., 3,865,134.
- Corns, Joseph B.: *See—*
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,865,691.
- Cosgrove, Clarence E., to Raymond Lee Organization, Inc., The, a part interest. Outdoor game including tubular hoop structure and plurality of balls. 3,865,375, Cl. 273-118.00R.
- Coty, Donald J. Viscous fluid clutch. 3,865,221, Cl. 192-58.00B.
- Coulter Electronic, Inc.: *See—*
  - Ginsberg, Guenter, 3,865,069.
- Coulter Electronics, Inc.: *See—*
  - Figueroa, David R., 3,866,131.
- Counceller, John D.: *See—*
  - Burpulis, John Samuel; Souffie, Robert David; Counceller, John D.; and De Capite, Robert, 3,865,354.
- Coval, Arthur B. Articulated haulage vehicle. 3,865,206, Cl. 180-24.000.
- Cox, Roger Douglas; and Michaels, Walter Bernard, to Globe-Union Inc. Screen tensioning apparatus. 3,865,154, Cl. 140-109.000.
- Cozewith, Charles: *See—*
  - Tornqvist, Erik G. M.; and Cozewith, Charles, 3,865,749.
- Crabtree, Kenneth L., to Keyes Fibre Company. Egg carton with flexible window well. 3,865,299, Cl. 229-2.500.
- Cramer, Roy A., Jr. Floatation aerator for aerating and moving water. 3,865,909, Cl. 261-91.000.
- Crawford, Daniel A.: *See—*
  - Kerscher, William J., III; and Crawford, Daniel A., 3,866,166.
- Crawshay, Richard; and Hradil, John Helmut, to Canadian Mine Services Ltd. Hydraulic drive apparatus for wheeled vehicle. 3,865,208, Cl. 180-6.480.
- Cricchio, Renato; and Lancini, Giancarlo, to Gruppo Lepetit S.p.A. 3-Acylhydrazonomethyl rifamycins. 3,865,812, Cl. 260-239.30P.
- Crimes, Peter B.: *See—*
  - Neumann, Norbert F.; and Crimes, Peter B., 3,865,573.
- Crocker Country Day School, Inc.: *See—*
  - Welmecke, August Philip, 3,864,850.
- Cronauer, Donald C.; and Baumgard, Larry G., to Borg-Warner Corporation. Oxidation of methylated benzenes. 3,865,870, Cl. 260-524.00R.
- Crooke, Arthur W., to Sperry Rand Corporation. Multiplicative signal processor for target detection systems with sequential doppler search. 3,866,223, Cl. 343-17.2PC.
- Crosby, Melvin A., to Kennametal Inc. Rotary mining tool retaining structure. 3,865,437, Cl. 299-86.000.
- Cross Newform Plastics Co., Inc.: *See—*
  - Sperling, Charles A., 3,865,290.
- Crouzet, Jean Claude: *See—*
  - Repiquet, Gerard; and Crouzet, Jean Claude, 3,865,762.
- Crow, Gerald W. Method and apparatus for separating wood bark from gravel. 3,865,241, Cl. 209-11.000.
- Crucible Inc.: *See—*
  - Buehl, Russell C., 3,865,174.
- Cryogenic Technology, Inc.: *See—*
  - Collins, Samuel C., 3,864,926.
- Cullen, Clifford Frank, to Vickers Ruwolt Pty. Ltd. Chain link. 3,864,906, Cl. 59-84.000.
- Cunniff, John G.: *See—*
  - Kosowsky, Leo N.; Lovejoy, Curtis N.; and Cunniff, John G., 3,865,698.
- Cunningham, James T.: *See—*
  - Koenig, William E.; and Cunningham, James T., 3,865,232.
- Cupp, Calvin Robert: *See—*
  - Fisher, Gordon Lloyd; and Cupp, Calvin Robert, 3,865,572.
- Curran, Edward T., to United States of America, Air Force. Step cylinder combustor design. 3,864,907, Cl. 60-261.000.
- Currie, George D., to United States of America, Air Force. Apparatus for laser frequency selection. 3,866,139, Cl. 331-94.50C.
- Currier-Smith Corporation: *See—*
  - Bennett, Victor A., Jr., 3,866,217.
- Curtis, Milton E. Parlimentary procedure sign. 3,866,211, Cl. 340-332.000.
- Curto, Paul A., to United States of America, Army. Fluidic oscillator having a sting mounted in a resonant cavity. 3,865,143, Cl. 137-826.000.
- Cushman, Walton W. Transportation system. 3,865,039, Cl. 104-18.000.
- Cutler, Earl F., to Cutter Repaving Associates, Incorporated. Heater for asphalt concrete roadways and the like. 3,865,098, Cl. 126-271.20A.
- Cutler, Hymie; and Vadasy, Donald, to Bendix Corporation, The. Digital tool size compensation for numerical control. 3,866,027, Cl. 235-151.110.
- Cutter Laboratories, Inc.: *See—*
  - Von Alven, Raymond D., 3,865,339.
- Cutter Repaving Associates, Incorporated: *See—*
  - Cutler, Earl F., 3,865,098.
- Cuvelier, Michel, to Elphiac. Water jet device for induction heaters. 3,866,010, Cl. 219-10.570.
- Dabbs, Everett E. Foot drying apparatus. 3,865,122, Cl. 132-73.000.
- Daborowski, Ignace J.: *See—*
  - Bostwick, Norvan W.; and Daborowski, Ignace J., 3,865,091.
- Dadura, James G.: *See—*
  - Haugen, Haakon; and Dadura, James G., 3,865,810.
- DaGragnano, Victor L.: *See—*
  - Schontzler, James G.; Gates, Wendall C.; and DaGragnano, Victor L., 3,866,028.
- Dai Nippon Printing Co., Ltd.: *See—*
  - Ohto, Michihiro; Noshiro, Atsumi; Mayuzumi, Tetsuya; and Fujino, Toji, 3,865,588.
- Daido Metal Company, Ltd.: *See—*
  - Morisaki, Nobukazu, 3,864,835.
- Daigle, Donald J.; Pepperman, Armand B., Jr.; and Normand, Floyd L., to United States of America, Agriculture. Increasing flame retardance of cellulose textile with 1,3,7-triaza-5-phosphabicyclo(3.3.1)nonane-3,7-dicarbonitrile. 3,865,618, Cl. 117-136.000.
- Daiichi Seiyaku Co., Ltd.: *See—*
  - Hirayama, Tadamasa; and Nakagawa, Kiyoshi, 3,865,825.
- Daiwa Machinery Works, Ltd.: *See—*
  - Domoto, Akira, 3,864,948.
- Dalisa, Andrew Lawrence: *See—*
  - Dougherty, Joseph Patrick; Dalisa, Andrew Lawrence; and Seymour, Robert John, 3,866,187.
- Danford, Jack: *See—*
  - Danford, Jack De Wayne, 3,865,056.
- Danford, Jack De Wayne, to Danford, Jack; and Champlin, H. H. Sewage disposal system and apparatus. 3,865,056, Cl. 111-7.000.
- Danfoss A/S: *See—*
  - De Lepeleire, Guido Amandus, 3,865,021.
  - Sjotun, Kyrre G., 3,865,518.
- Dankoff, Joseph Daniel; and Snyder, David Kent. Reclamation of components from grinding swarf. 3,865,629, Cl. 134-19.000.

- Danusso, Ferdinando: *See—*
  - Marchisio, Maria Antonietta; Ferruti, Paolo; Longo, Tito; and Danusso, Ferdinando, 3,865,723.
- Dart Industries Inc.: *See—*
  - Gaylord, Norman G., 3,865,788.
  - Hulyalkar, Ramchandra K., 3,865,772.
  - Ludwig, Jerome H.; and Dieckmann, Dale J., 3,865,787.
- Darwood, James R., to T.A.D. Avanti, Inc. Voice operated electric circuit. 3,865,986, Cl. 179-6.00R.
- Data Products Corporation: *See—*
  - Lytle, Dan R., 3,865,029.
- Datascope Corporation: *See—*
  - Saper, Lawrence; Heller, George; and Hitchcoff, David, 3,865,101.
- Datta, Ranajit K.; and Luscher, Thomas, to General Electric Company. Color rendition of high pressure mercury vapor lamp. 3,866,083, Cl. 313-487.000.
- Davidson, William H.: *See—*
  - Lovitz, David D.; Eastman, Ness; and Davidson, William H., 3,865,082.
- Davies, Hilary E. W., to LKB-Produkter AB. Electrode arrangement for an electrophoretical separation performed in a gel plate. 3,865,712, Cl. 204-299.000.
- Davis, Dale M., to United States of America, Air Force. High lethality shrapnel projectile. 3,865,036, Cl. 102-67.000.
- Davis, Walter L.; and Svehaug, Henry V., to Key Equipment Company. Method for cooling food in a fluidized bed. 3,865,965, Cl. 426-519.000.
- Davison, Robert W. Aqueous paper size composition containing hydrocarbon resin and fortified rosin. 3,865,769, Cl. 260-27.00R.
- DBM Industries Ltd.: *See—*
  - Caroli, Italo, 3,865,359.
- Dean, Carl J.; and Wright, David M., to Barry Wright Corporation. Hanging binder. 3,865,445, Cl. 312-184.000.
- DeBarbadillo, John Joseph, II.: *See—*
  - Church, Nathan Lewis; and DeBarbadillo, John Joseph, II., 3,865,582.
- Debloois, Roger C.; and Hogue, Noel E., to Rockwell International Corporation. Digital frequency-phase discriminator circuit. 3,866,133, Cl. 329-104.000.
- De Capite, Robert: *See—*
  - Burpulis, John Samuel; Souffie, Robert David; Counceller, John D.; and De Capite, Robert, 3,865,354.
- DeCaprio, Joseph Donald; Haylock, John Christopher; and Lofquist, Robert Allen, to Allied Chemical Corporation. Cationic dyeable nylon 6 containing alkaline metal salts of poly (2-methyl-2-(1-oxo-2-propenyl) amino) -1-propanesulfonic acid. 3,865,900, Cl. 260-857.0UN.
- De Couvreur, Gilbert; and Pastor, Marc, to Universite de Sherbrooke. Balanced correlated ternary coding system. 3,866,147, Cl. 332-11.00R.
- Deere & Company: *See—*
  - Von Fummetti, Cyril William; and Dennis, David, 3,865,210.
- DeGiorgio, John A.; Labib, Ahmed H.; and Rane, Subhash R., to Solid State Technology, Inc. Emergency signalling system having manually operated generator. 3,866,206, Cl. 340-298.000.
- DeGrange, Wallace L., Jr.: *See—*
  - McCormack, Leonard J.; and DeGrange, Wallace L., Jr., 3,865,285.
- De Howitt, Jack Renato; Jonkoff, Imre Mirko; and Stoveken, Robert Ernest, to du Pont de Nemours, E. I., and Company. Foam finish applicator. 3,865,078, Cl. 118-612.000.
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  - Hasker, Jan; and De Klerk, Jacobus Johannes Maria Joseph, 3,866,081.
- Delany, Harold Edward. Invalids aids. 3,865,427, Cl. 296-68.000.
- Delaware Photographic Products, Inc.: *See—*
  - Katz, Jerome, 3,865,591.
- De Lepeleire, Guido Amandus, to Danfoss A/S. Air injecting apparatus for air conditioners or the like. 3,865,021, Cl. 98-40.00C.
- Delery, Marc, to S.A. Francois Salomon & Fils. Safety binding for skis. 3,865,389, Cl. 280-11.35N.
- Delgendre, Jacques Claude; Kerreneur, Alain Roger; and Berton, Georges Albert, to Etat Francaise Delegation Ministerielle pour l'Armement. Pyrotechnical composition static relays. 3,865,037, Cl. 102-70.20R.
- Della-Porta, Clifford Anthony. Snare drum. 3,865,003, Cl. 84-411.000.
- Del Rio, Eddy Humberto, to RCA Corporation. Fingerprint display system utilizing a stored fingerprint. 3,865,488, Cl. 356-71.000.
- DeMarinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,865,819, Cl. 260-243.00C.
- De Mieri, Peter, to Raymond Lee Organization, Inc., The. Combined feeding and teething device for infants. 3,865,115, Cl. 128-359.000.
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  - Ossko, Andreas; Goller, Heinz; Herzig, Joachim; Buchner, Werner; and deMontigny, Armand, 3,865,858.
- Demos, Gary A.; and Ruhoff, David S. Selective audio signal frequency multiplier. 3,866,127, Cl. 328-38.000.
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  - Hainaut, Daniel; Toromanoff, Edmond; and Demoute, Jean-Pierre, 3,865,854.
- Demuth, Hans, to Sulzer Brothers Limited. Braking device for a shuttle in a weaving machine. 3,865,150, Cl. 139-185.000.
- Den-Tal-Ez Mfg., Co.: *See—*
  - Fortnam, George A.; and Sams, Ivan E., 3,865,341.
- Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Horlle, Shigeki; Fujii, Chiyuki; and Kosai, Yoshio, 3,865,882.
- Dennis, David: *See—*
  - Von Fummetti, Cyril William; and Dennis, David, 3,865,210.
- Dennis, Roy James; and Kielpikowski, Klemence, to Roy James Dennis. Anchor boom. 3,865,065, Cl. 114-210.000.
- De Nunzio, Anthony, to Raymond Lee Organization, Inc., The. Apparatus for operating an aerosol can. 3,865,275, Cl. 222-70.000.
- DePaola, John J.; and Morse, Charles W., to General Signal Corporation. Automatic switching control system for railway classification yards. 3,865,042, Cl. 104-26.00B.
- De Poister, David C., to Foster Wheeler Corporation. Inner furnace air chamber. 3,865,084, Cl. 122-235.00B.
- Deprez, Thomas A.; and Whalley, Frank M., to Gleason Works, The. Means for securing and removing molds from compacting apparatus. 3,865,533, Cl. 425-405.00H.
- Dera, Alain: *See—*
  - Lombard, Claude; and Dera, Alain, 3,865,312.
- Dermott, Raymond W., to Schlumberger Technology Corporation. Apparatus for perforating sub-sea well bores. 3,865,199, Cl. 175-4.510.
- Desimone, David N., to United States of America, Navy. Adjustable earmuffs. 3,864,756, Cl. 2-6.000.
- DeSoto, Inc.: *See—*
  - Sekmakas, Kazys, 3,865,771.
- Desvignes, Francois; Hybois, Raymond; and Lebrun, Dean, to U.S. Philips Corporation. Device for digital detection of optical radiation. 3,866,046, Cl. 250-338.000.
- Deters, Elmer M., to Weil-McLain Co., Inc. Control apparatus for a water supply system. 3,865,512, Cl. 417-26.000.
- Detert, Ernst-Rolf; and Buchholz, Willi, to Edward Gerlach G.m.b.H. Process for producing tobacco foils. 3,865,120, Cl. 131-140.00C.
- DeTorre, Robert P., to Molins Limited. Method of pseudosubsurface scoring and cutting glass sheets and sheet cut thereby. 3,865,673, Cl. 161-1.000.
- Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
  - Hebbel, Gerhard; Kruger, Horst; Traser, Werner; and Pfand, Herbert, 3,865,685.
  - Reber, Rudi; and Herzog, Robert, 3,866,158.
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- de Vivy, Dominique le Febve, to Sulzer Brothers Limited. Enthalpy calculating device for steam. 3,866,026, Cl. 235-151.100.
- deVries, Edward R., to Unifilm Corporation. Flatting compositions. 3,865,899, Cl. 260-841.000.
- Dial, Darrell D.; and von Bose, Robert J., to Halliburton Company. Sealed cushioning unit. 3,864,922, Cl. 61-48.000.
- Diamond Shamrock Corporation: *See—*
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- Dieckmann, Dale J.: *See—*
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- Diehn, Philip H., to Wheelabrator-Frye, Inc. Fixture for a blast cleaning machine. 3,864,876, Cl. 51-9.00M.
- Diener, Horst; Lenhart, Helga; and Seifried, Walter, to Hoechst Aktiengesellschaft. Polyester film of high strength and low electrical surface resistance. 3,865,626, Cl. 117-226.000.
- Di Gregorio, Joseph S.: *See—*
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- Dillman, Thayer L.: *See—*
  - Mann, August C.; and Dillman, Thayer L., 3,866,196.
- DiMarco, Bernard; and Kralik, Andrew J. Overload relay indicating means. 3,866,156, Cl. 337-79.000.
- Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., to Dynell Electronics Corporation. Methods for generating signals defining three-dimensional object surfaces. 3,866,052, Cl. 250-558.000.
- Dixie Type and Supply Co.: *See—*
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- Dobinson, Bryan; and Winterbottom, Kenneth, to Ciba-Geigy AG. Treatment of fibrous materials. 3,865,621, Cl. 117-141.000.
- Dr. W. Kampschulte & Cie: *See—*
  - Immel, Waldemar; and Strauss, Wennemar, 3,865,702.
- Doggett, Glenn O.; and Hallmark, Bobby Joe, to Gearhart-Owen Industries, Inc. Method and apparatus for selectively isolating a zone of subterranean formation adjacent a well. 3,865,188, Cl. 166-285.000.
- Dohnalek, Rudolf: *See—*
  - Masat, Jan; Dohnalek, Rudolf; and Chvejka, Jiri, 3,865,553.
- Dohr, Manfred; Zeidler, Ulrich; and Lepper, Herbert, to Henkel & Cie. GmbH. Process for the preparation of carboxylic acids from vicinal diols. 3,865,856, Cl. 260-413.000.
- Dola, Frank Peter, to AMP Incorporated. Cover plate for electrical outlet. 3,865,456, Cl. 339-40.000.
- Doll, Brendan L., to Cellu Products Company. Apparatus for forming slitting roll. 3,864,877, Cl. 51-34.00F.
- Domoto, Akira, to Daiwa Machinery Works, Ltd. Suction drum washer. 3,864,948, Cl. 68-184.000.

- Dompas, John Mary-Anthony; and Hazelett, Robert William, to Hazelett Strip-Casting Corporation. Casting method for twin-belt continuous metal casting machines. 3,865,176, Cl. 164-87.000.
- Domtar Limited: *See—*
  - Brooks, William Victor Hayes, 3,865,111.
- Donachie, Stephen James, to International Nickel Company, Inc., The. Process of producing by powder metallurgy techniques a ferritic hot forging of low flow stress. 3,864,809, Cl. 29-420.500.
- Donnel, Roscoe J.: *See—*
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- Donovan, Robert W.; Kolster, Harvey L.; Broeker, Herbert H.; and Bailey, George W., to Hallmark Cards, Incorporated. Wall mounted display system. 3,865,248, Cl. 211-90.000.
- Dorrough, Vernon R.; and Brown, Claude H., to Jet Research Center, Inc. Method of boring through hard rock formations. 3,865,436, Cl. 299-13.000.
- Doser, Manfred, to General Electric Company. Method of deforming sintered magnets without significantly reducing magnetic properties. 3,864,808, Cl. 29-420.500.
- Dossier, Michel, to Agence Nationale de Valorisation de la Recherche (ANVAR). One-way drive rotary couplings, especially mechanisms of the free wheel type. 3,865,219, Cl. 192-45.100.
- Dougherty, Joseph Patrick; Dalisa, Andrew Lawrence; and Seymour, Robert John, to North American Philips Corporation. Method of recording and reproducing information in ferroelastic metals. 3,866,187, Cl. 340-173.00R.
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  - Flynn, James P., 3,865,657.
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  - Flynn, James P.; Lane, George A.; and Plomer, John J., 3,865,659.
  - Goralski, Christian T.; and Klingler, Thomas C., 3,865,822.
  - Knodel, Louis Robert, 3,865,806.
  - Reigler, Paul F.; and Lamoria, Lz F., 3,865,928.
  - Small, Hamish, 3,865,717.
  - Tveter, Elmer C., deceased; Harris, Guy H.; and Lindy, Lowell B., 3,865,718.
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- Dow Corning Corporation: *See—*
  - Abbott, Eugene A.; Isquith, Alan J.; and Walters, Patrick A., 3,865,728.
  - Falender, James R.; Lindsey, Sarah E.; and Saam, John C., 3,865,897.
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- Drelich, Arthur H.; and Bowman, Bobby R., to Johnson & Johnson. Resin binder compositions. 3,865,764, Cl. 260-17.00R.
- Drelich, Arthur H.; and Bowman, Bobby R., to Johnson & Johnson. Resin binder compositions. 3,865,765, Cl. 260-17.4ST.
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- Drostholm, Frede Hilmar; and Meyer, Leonard S., to Drostholm, Frede Hilmar. Apparatus for manufacturing pipes. 3,865,526, Cl. 425-140.000.
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- Druin, Melvin L.: *See—*
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- Drummond, Frederick Charles, to Borg-Warner (Australia) Limited. Multiple spring assembly. 3,865,357, Cl. 267-91.000.
- Dry, Clinton H. Pest control package. 3,864,867, Cl. 43-131.000.
- Dubno, Abraham M.: *See—*
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- Dubno, Richard C.; and Dubno, Abraham M. Hand grenade with safety mechanism. 3,865,027, Cl. 102-64.000.
- Duescher, Margie F., to FisHair Incorporated. Fishing lure component. 3,864,864, Cl. 43-42.250.
- Duke, James C.: *See—*
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- Duling, Irl N.; and Merges, John C., Jr., to Sun Research and Development Co. Porous polyethylene sheet. 3,865,674, Cl. 161-6.000.
- Dumoulin, Jean, to Rhone-Poulenc S.A. Aqueous dispersion of (1) organopolysiloxane and (2) allyl alcohol—acrylamide copolymer as paper coating. 3,865,773, Cl. 260-29.6NR.
- Dunkerley, Kenneth; and Kenyon, Ronald Wynford, to Imperial Chemical Industries Limited. Manufacture of anthraquinone compounds. 3,865,851, Cl. 260-280.000.
- Dunkin, Albert. Punchpress feed mechanism. 3,864,950, Cl. 72-6.000.
- Dunlop Limited: *See—*
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  - Mitchell, William E., 3,865,170.
- Dunn, John William, to Owens-Corning Fiberglas Corporation. Apparatus for coating three dimensional objects. 3,865,525, Cl. 425-60.000.
- Dunn, Wendell E., Jr., to Rutile & Zircon Mines (Newcastle) Limited. Process for beneficiating a titaniferous ore and production of chlorine and iron oxide. 3,865,920, Cl. 423-74.000.
- Dunphy, Matthew J., to Pyrotector, Incorporated. Fire detection and extinguishing system. 3,865,192, Cl. 169-61.000.
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  - Berg, Quentin, deceased; and , 3,865,455.
  - Blackwell, John; and Fendglis, Richard A., 3,865,804.
  - Bruce, John MacMillan, Jr., 3,865,885.
  - Burpulis, John Samuel; Souffie, Robert David; Counceller, John D.; and De Capite, Robert, 3,865,354.
  - Charles, John Frederick; and Markovchik, Carl Joseph, 3,864,999.
  - De Howitt, Jack Renato; Jonkoff, Imre Mirko; and Stoveken, Robert Ernest, 3,865,078.
  - Freeman, John Thomas; Heiart, Robert Bernard; and Leberzammer, Ernst, 3,865,589.
  - Hartstein, Eugene Fredrick; and Kendall, Ross Edward, 3,865,316.
  - Kane, William P., 3,865,302.
  - Monroe, Elmer S., Jr., 3,865,054.
  - Musser, Michael T.; and Streitwieser, Andrew, Jr., 3,865,865.
  - Wolf, William Edward, 3,866,054.
- Du Shane, Harold P. Persistence of vision, subliminal spot light. 3,865,790, Cl. 240-49.000.
- Dutton, Lawrence D., to Truck Specialist Inc. Quick change hitch for trailer or mobile homes. 3,865,406, Cl. 280-490.00R.
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- Earle, Roland D. Method for providing a continuous film of algin containing coating material surrounding a raw onion product. 3,865,962, Cl. 426-291.000.
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- East Penn Mfg. Co., Inc.: *See—*
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- Eau Claire, Thomas J. Means for putting additive in plastic and other materials. 3,865,355, Cl. 259-192.000.
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- Eberhard, Hans-Joachim; Overlach, Knud; Huhne, Gerd; and Pietzsch, Ludwig, to Pietzsch, Ludwig. Device for scanning a function and method of operating the same. 3,866,199, Cl. 340-267.00C.
- Eberspacher, J.: *See—*
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- Educational Computer Corporation: *See—*
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- Edward Gerlach G.m.b.H: *See—*
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- Edwards, John A.; and Fried, John H., to Syntex Corporation. 1,2,3,4,-9,12-Hexahydrophenanthrenes. 3,865,883, Cl. 260-613.00R.
- Efdyn Corporation: *See—*
  - Gryglas, Bogdan R., 3,865,216.
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  - Korosi, Jeno; Szabo Nee Czibula, Gabriella; Lay Nee Konya; Erdelyi Nee Petocz, Lujza; Balla Nee Kosoczky, Bolya; and Kiszelly, Eniko, 3,865,828.
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- Eigenbrod, Lester Kurt, to Union Carbide Corporation. All-attitude cryogenic vapor vent system. 3,864,928, Cl. 62-50.000.

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- Elkins, Christopher W.; and Ruehmann, Donald W., to Teledyne Industries, Inc.; and Teledyne Aqua Tec Company. Bracket assembly for hand-held showerhead. 3,865,310, Cl. 239-283.000.
- Elliott Brothers (London) Limited: *See—*
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- Elmo Co. Ltd.: *See—*
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- Ely, Richard E.; and Conrad, Raymond W., to United States of America, Army. Night vision device. 3,866,045, Cl. 250-331.000.
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- Engelhardt, Friedrich: *See—*
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- Engler, Christoph, to Gesellschaft Zur Forderung Der Forschung un Der EIDG. Techn. Method for the continuous testing of long components for leakage, and system for performance thereof. 3,866,040, Cl. 250-281.000.
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- Epner, Elliot J.; Kitchin, Oscar G.; and Sampatacos, Peter M., to General Motors Corporation. Sheet metal steering knuckle with integral steering arm. 3,865,394, Cl. 280-96.100.
- Epstein, Barry M., to Action Communications Systems, Inc. Acoustic coupler system for use with common carrier communication lines. 3,865,983, Cl. 179-2.0DP.
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- Erdelyi Nee Petocz, Lujza: *See—*
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- Erdman, David M., to General Electric Company. Method and means for measuring the phase angle between current and voltage. 3,866,117, Cl. 324-54.000.
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  - Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.
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- Esquire, Inc.: *See—*
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- Estey Corporation: *See—*
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  - Morjan, Jean, 3,864,813.
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  - Delgendre, Jacques Claude; Kerreneur, Alain Roger; and Berton, Georges Albert, 3,865,037.
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  - Shin, Kju Hi; and Zaweski, Edward F., 3,865,906.
  - Stephens, Ruth E., 3,865,923.
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  - Fuller, Oliver C., 3,865,046.
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  - Warren, Roy K., 3,866,111.
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  - Bagnoli, Donald L.; and Ciuffreda, Anthony R., 3,865,634.
  - Quelly, Joseph R.; and McNamara, Thomas P., 3,865,880.
  - Rase, Howard F.; and Maddox, Larry A., 3,865,750.
  - Robson, Harry E., 3,865,895.
  - Sosnowski, John, 3,865,716.
  - Tornqvist, Erik G. M.; and Cozewith, Charles, 3,865,749.
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- Fairchild Camera and Instrument Corporation: *See—*
  - Amelio, Gilbert F., 3,866,067.
  - Long, David K., 3,866,063.
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  - Mengler, Helmut, 3,865,816.
  - Schorr, Manfred; and Schrinner, Elmar, 3,865,820.
  - Spietschka, Ernst; and Urban, Manfred, 3,865,605.
  - Wagner, Dieter, 3,865,829.
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- Fastner, Thorwald: *See—*
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  - Borski, William J., 3,865,017.
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  - Klein, James H.; Romano, Anthony J.; Kukacka, Lawrence E.; and Fedelem, Joseph J., 3,865,075.
- Fedorov, Viktor Viktorovich: *See—*
  - Nametkin, Nikolai Sergeevich; Gubin, Sergei Pavlovich; Tjurin, Vladimir Dmitrievich; Fedorov, Viktor Viktorovich; Usachev, Valery Zeilikovich; Matveev, Mikhail Semenovich; Larionov, Leonid Ivanovich; Eliner, Alexandr Solomonovich; and Barashkov, Ruslan Yakolevich, 3,865,715.
- Fedosenko, Igor Grigorievich: *See—*
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  - Blackwell, John; and Fendglis, Richard A., 3,865,804.
- Feniak, George, to Polysar Limited. Scorch retarders for halaogenated butyl. 3,865,763, Cl. 260-5.000.
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- Ferrari, Ottavio. Method for the production of sheath containers. 3,865,667, Cl. 156-285.000.
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- Fiegel, Harry J., Jr.; and Thatcher, Russell S., to Kels Marine, Inc. Method for assembly of cylindrical welded tanks in situ in horizontal position. 3,864,812, Cl. 29-471.100.
- Field, George Francis; and Schneider, Joachim Ulrich, to Hoffmann-La Roche Inc. 2-(Benzoyl)-3-dimethylaminoacrylonitriles. 3,865,863, Cl. 260-465.00E.
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- Fischer, Edgar, to Hoechst Aktiengesellschaft. Mixer for highly viscous fluids. 3,865,353, Cl. 259-118.000.
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- Fisher, Gordon Lloyd; and Cupp, Calvin Robert, to International Nickel Company, Inc., The. Mechanical alloying and interdispersion cold bonding agents therefor. 3,865,572, Cl. 75-0.50R.
- Fisher, Josephine Francis. Fringe measure. 3,864,795, Cl. 28-2.000.
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- Fley-O-Lators, Inc.: *See—*
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- Florian, Eugene F., to Mark Products, Inc. Geophone takeout assembly for seismic cables. 3,866,162, Cl. 340-17.000.
- Flynn, James P.; Lane, George A.; and Plomer, John J., to Adamas Carbide Corporation. Plasticized nitrocellulose propellant composition containing aluminum hydride and nitronium perchlorate. 3,865,656, Cl. 149-7.000.
- Flynn, James P., to Dow Chemical Company, The. Solid composite propellant containing fluoroamino polymers. 3,865,657, Cl. 149-19.300.
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  - Broling, Fred W.; Baker, Jeffrey A.; and Matras, Edward J., 3,865,727.
  - Ouska, Ralph Charles, 3,865,231.
  - Sheetz, Charles E.; and McClintic, Wayne L., 3,864,894.
  - Sterner, Robert A., 3,865,364.
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- Foik, Adolf, to Gewerkshaft Eisenhutte Westfalia. Apparatus for use in driving tunnels. 3,864,925, Cl. 61-84.000.
- Foley, Gerard X. Book strap. 3,865,292, Cl. 224-55.000.
- Folman, Ralph, to Raymond Lee Organization, Inc., The, a part interest. Blood circulating device. 3,865,103, Cl. 128-64.000.
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- Foote Mineral Company: *See—*
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- Ford, Eric Harold, to Lumenition Limited. Devices for measuring shaft R.P.M. 3,866,120, Cl. 324-175.000.
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- Forg, John H.; and Payet, George L., to McGraw-Edison Company. Durable press method. 3,865,545, Cl. 8-116.00R.
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- Forney Engineering Company: *See—*
  - Paredes, Candelario; and Horn, Robert, 3,866,200.
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- Foster Wheeler Corporation: *See—*
  - De Poister, David C., 3,865,084.
- Foundation Cryogenic Joint Venture: *See—*
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- Fox, William Charles, to Veeder Industries, Inc. Timer switch assembly controlling continuous and intermittent operations of an oven. 3,866,003, Cl. 200-38.0FA.
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- Fraige, Richard; and Read, Jerry, to Said Fraige by said Read. Water mattress with internal float tube. 3,864,768, Cl. 5-348.0WB.
- Frank, Karl: *See—*
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- Franks, Charles R.: *See—*
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- Frazier, Thomas J. Apparatus for subsoil irrigation. 3,865,057, Cl. 111-7.000.
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- Freeman, John Thomas; Heiart, Robert Bernard; and Leberzammer, Ernst, to du Pont de Nemours, E. I., and Company. Photohardenable layer with integral support of fabric or mesh. 3,865,589, Cl. 96-35.100.
- Freeman, Richard B., Sr. Casing and drill pipe handling device. 3,865,256, Cl. 214-2.500.
- French, Marie M. Pet trailer. 3,865,425, Cl. 296-24.00C.
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- Friedman, Fred; and Friedman, Gertrude. Nail polish dryer. 3,864,847, Cl. 34-202.000.
- Friedman, Gertrude: *See—*
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  - Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; Murakoshi, Makoto; Suwama, Toshitaka; and Noguchi, Masaru, 3,865,478.
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  - Shiba, Keisuke; Hinata, Masanao; Amano, Hiroyuki; and Hara, Hiroshi, 3,865,598.
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- Fujitsu Limited: *See—*
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- Galasso, Francis S.; and Bourdeau, Romeo G., to United Aircraft Corporation. Preparation of alumina monofilaments. 3,865,917, Cl. 264-183.000.
- Galen, Ralph W.; and Vanderpoel, John A. Bicycle rack. 3,865,244, Cl. 211-5.000.
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- Gallati, Fritz, to Mettler Instrumente AG. Laboratory feeding device for particulate material. 3,865,278, Cl. 222-161.000.
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- Garner, Paul Johnson, to Imperial Chemical Industries Limited. Injection moulding of complex shaped laminar articles. 3,865,915, Cl. 264-55.000.
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- Gauss, Walter; Petersen, Siegfried; Ranz, Erwin; Himmelmann, Wolfgang; and von Rintelen, Harald, to Agfa-Gevaert Aktiengesellschaft. Light sensitive photographic material. 3,865,594, Cl. 96-84.00R.
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- Gaylord, Norman G., to Dart Industries Inc. Organopolysiloxane elastomers exhibiting high elongation. 3,865,788, Cl. 260-46.50G.
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  - Kuhns, John P., 3,865,264.
- Gearhart, Walter S., to United States of America, Navy. Wobble plate pump. 3,865,503, Cl. 415-70.000.
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  - Kellams, Roger W.; and Dyer, Clarence H., 3,865,079.
  - Kerscher, William J., III; and Crawford, Daniel A., 3,866,166.
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- General Steel Industries, Inc.: *See—*
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  - Pearl, David R.; and Robison, Samuel Clifford, 3,864,997.

- Gergel, William C., to Lubrizol Corporation, The. Thiourea-acylated polyamine reaction product. 3,865,813, Cl. 260-239.30R.
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- Gerlach, C. Richard, to Micro-Gen Equipment Corporation. Centrifugal compressor. 3,865,506, Cl. 415-213.00R.
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  - Langdon, Roy A.; and Gerschon, Wilfried R., 3,865,535.
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  - Engler, Christoph, 3,866,040.
- Getgen, Lawrence E., to GTE Automatic Electric Laboratories Incorporated. Pulse train wave shaping means and method. 3,865,988, Cl. 179-15.0AA.
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  - Friedman, Robert H., 3,865,189.
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- Ghosh, Asoke Kumar; and Moody, Harry John, to RCA Corporation. Microwave spectrometer. 3,866,118, Cl. 324-58.50A.
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  - Ohmstedt, Harry O.; Ruth, William H.; and Gibbs, Edward E., 3,864,803.
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  - McGee, John K.; and Kolell, Norbert C., 3,866,179.
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  - Simon, James B.; and Bullock, Thomas B., 3,866,212.
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  - Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,865,744.
- Gillette Company, The: *See—*
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  - Hitchcock, William F., 3,864,897.
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  - Sareen, Sarvajit S.; Girard, Lucien, III; and Hard, Robert A., 3,865,435.
- Gjaja, Niko V., to General Electric Company. Composite conformable support structure element. 3,866,073, Cl. 310-260.000.
- Glass, Daniel S. Universal faced body fluid drainage bag with universal drainage means. 3,865,165, Cl. 150-1.000.
- Glass, Marvin I.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Game apparatus. 3,865,376, Cl. 273-125.00A.
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  - Breslow, Jeffrey D.; and Glass, Marvin I., 3,865,367.
- Gleason, C. Roy; and Thomas, Gordon A., to World-Wide Paper Reclamation, Inc. Composition for reclaiming pulp from waste papers. 3,865,684, Cl. 162-8.000.
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- Globe-Union Inc.: *See—*
  - Cox, Roger Douglas; and Michaels, Walter Bernard, 3,865,154.
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- Gogolick, Roland M.; Brown, Richard L.; and Finney, William J., to United States of America, Navy. Depth control. 3,864,772, Cl. 9-8.00R.
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- Goldenberg, David Milton, to Hoffmann-La Roche Inc. Method of producing carcinoembryonic antigens. 3,865,689, Cl. 195-1.700.
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- Goldwasser, Eugene: *See—*
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- Goller, Heinz: *See—*
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- Gomersal, Keith; and Padgett, Brian, to Rotax Limited. Governor. 3,865,125, Cl. 137-51.000.
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- Gordon, Ronnie D., to Continental Oil Company. Process for removing lower alkyl chlorides from vinyl chloride monomers. 3,865,887, Cl. 260-656.00R.
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- Gottschol, Hans Joachim; and Gottschol, Karl Josef, to Metallurgische Forschungsanstalt. Body for deoxidizing molten steel by submersion therein. 3,865,577, Cl. 75-58.000.
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  - Gottschol, Hans Joachim; and Gottschol, Karl Josef, 3,865,577.
- Gould, Henry: *See—*
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- Graham, Dennis P.: *See—*
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- Granges Engineering AB: *See—*
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  - Sieurin, Sven Ivan, 3,865,282.
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- Greenberg, Charles B., to PPG Industries, Inc. Q-switching device for glass lasers. 3,865,747, Cl. 252-301.10L.
- Greenhalgh, Lloyd V. Portable decorative plastic sprinkling fence. 3,865,309, Cl. 239-268.000.
- Greenstein, Bernard, to Owens-Illinois, Inc. Resistor Compositions. 3,865,742, Cl. 252-63.500.
- Greenwood, Roger, to International Telephone and Telegraph Corporation. Solenoid-operated, three-way fuel valve with pressure balancing. 3,865,140, Cl. 137-625.640.
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- Gregory, Charles Roy; and White, William Harold, to Harris-Intertype Corporation. Cmos analog switch. 3,866,064, Cl. 307-251.000.
- Gregory, M. Duane: *See—*
  - Clark, Charles R.; Gregory, M. Duane; Krehbiel, Delmar D.; Butler, Claud D.; and Kennedy, Carl D., 3,865,735.
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  - Brinkmann, Bernd; and Griebsch, Eugen, 3,865,791.
- Grissom, John T.; and Shope, Leslie A., to United States of America, Atomic Energy Commission. Vacuum type trigger discharge tube with cup shaped anode. 3,866,075, Cl. 313-178.000.
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- Grossman, Jack J., to McDonnell Douglas Corporation. Filter spectrograph. 3,865,490, Cl. 356-76.000.
- Grover, George M., to Q-Dot Corporation. Heat pipe and method and apparatus for fabricating same. 3,865,184, Cl. 165-105.000.
- Grund, J. Evan, to Nuclear Equipment Corporation. Apparatus for determining concentration profile of an element. 3,866,044, Cl. 250-310.000.
- Gruppo Lepetit S.p.A.: *See—*
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- Gryaznov, Vladimir Mikhailovich: *See—*
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- Gryglas, Bogdan R., to Efdyn Corporation. Continuous rotary damper. 3,865,216, Cl. 188-290.000.

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  - Buhrke, Rolfe E.; Chang, Gregory I.; and Horiuchi, Edward M., 3,866,184.
  - Burns, Robert V., 3,866,092.
  - Getgen, Lawrence E., 3,865,988.
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  - Brenan, Robert R.; Bunker, Thomas D.; and Thompson, David F., 3,864,820.
  - Painter, Howard S.; and Armstrong, Donald E., 3,865,537.
  - Stacy, John C.; Vetere, John J.; and Bennett, Sedgwick R., 3,866,033.
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  - Nametkin, Nikolai Sergeevich; Gubin, Sergei Pavlovich; Tjurin, Vladimir Dmitrievich; Fedorov, Viktor Viktorovich; Usachev, Valery Zeilikovich; Matveev, Mikhail Semenovich; Larionov, Leonid Ivanovich; Eliner, Alexandr Solomonovich; and Barashkov, Ruslan Yakolevich, 3,865,715.
- Guest, William H. Multiple tool attachment. 3,864,793, Cl. 24-243.0CC.
- Gugler, Victor F. Method for folding dough. 3,865,963, Cl. 426-297.000.
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- Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich. Device for producing semi-product tubes of constant inner diameter with thinned ends. 3,864,951, Cl. 72-6.000.
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  - Kobayashi, Masaki; Kawakami, Izumi; and Gunji, Katuhiko, 3,866,155.
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  - Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, 3,865,148.
- Guntert, Ronald M. Dredge chain, sprocket, and combination. 3,864,851, Cl. 37-69.000.
- Guttinger, Manfred, to Sandco Ltd. Process and apparatus for food freezing. 3,864,931, Cl. 62-63.000.
- Guzzo, Francesco, to Beatrice Foods Co. Molding apparatus. 3,865,529, Cl. 425-249.000.
- H. Goodman & Sons, Inc.: *See—*
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- Haarer, Erich: *See—*
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- Haasl, William D., to Brunswick Corporation. Stern drive engine mount. 3,865,068, Cl. 115-34.00R.
- Haberl, Ludwig: *See—*
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- Habert, William Charles, to Uniroyal Inc. Breaker-tread assembly transfer ring size changing mechanism. 3,865,670, Cl. 156-394.000.
- Haddon, Jesse E. Lumber making attachment for a chain saw. 3,864,830, Cl. 30-371.000.
- Haden, Elard L., to Continental Oil Company. Acoustic emission in drilling wells. 3,865,201, Cl. 175-50.000.
- Haferkorn, Herbert: *See—*
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- Hager Aktiebolag: *See—*
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- Hager, Bror Olof, to Hager Aktiebolag. Compounds of copper, chromium and arsenic as wood preservatives. 3,865,932, Cl. 424-128.000.
- Haglund, Claude R. Vehicle signalling apparatus. 3,866,169, Cl. 340-79.000.
- Hagood, Jerry W.: *See—*
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- Hainaut, Daniel; Toromanoff, Edmond; and Demoute, Jean-Pierre, to Roussel-Uclaf. Process of preparation of alkyl tridecatrienoates and intermediates. 3,865,854, Cl. 260-410.90R.
- Haines, James R. Vernier bow sight. 3,864,836, Cl. 33-265.000.
- Hakansson, Sven, to Kommanditbolaget United Stirling (Sweden) AB & Co. Sealing means for the piston rod of a stirling engine. 3,865,015, Cl. 92-78.000.
- Haldemann, Gaston, to Haldemann S.A. Safety binding for releasably securing a boot to a ski. 3,865,388, Cl. 280-11.35D.
- Haldemann S.A.: *See—*
  - Haldemann, Gaston, 3,865,388.
- Hale, Jesse R. Sandwich panel having cellular core structure with reinforcing elements. 3,865,679, Cl. 161-68.000.
- Hall, Charles M.; and Johnson, Herbert G., to Upjohn Company, The. 1,1′,4,4′-Tetrahydro-4,4′-dioxo(6,6′biquinoline)-2,2′-dicarboxylates. 3,865,831, Cl. 260-286.00R.
- Hall, George: *See—*
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- Hall, Trenton O. Air scrubber apparatus with grease removal means. 3,865,193, Cl. 169-65.000.
- Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company N.V. Electric machines. 3,866,071, Cl. 310-43.000.
- Halliburton Company: *See—*
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- Hallmark, Bobby Joe: *See—*
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- Halter, Jerome Barth, to RCA Corporation. Triangular piezoelectric transducer for recording video information. 3,865,997, Cl. 179-100.41P.
- Halvorsen, Harold W. Kitchen appliance for skimming fat. 3,865,023, Cl. 99-495.000.
- Hamann, Fred H., to Raymond Lee Organization, Inc., The. Tool extension. 3,865,502, Cl. 408-226.000.
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- Hamilton, Munroe H. Means for moving a ski boot buckle into and out of a closed position. 3,864,769, Cl. 7-17.000.
- Hamlin, John R., to Container Corporation of America. Display carton with platform support. 3,865,233, Cl. 206-45.190.
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- Hammack, Calvin Miles. Method and apparatus for automatically determining position-motion state of a moving object. 3,866,229, Cl. 343-112.00R.
- Hanfly, Bernard C.: *See—*
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- Hanson, Le Roy P.; and Trost, Calvin E. Method of repairing stripped spark plug threads in engine heads. 3,864,806, Cl. 29-401.000.
- Hapke, Kenyon A.: *See—*
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- Harder, Karl-Max: *See—*
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- Hardy, Herbert L.; Murray, Joseph E., Jr.; and Wray, William R. Motion picture viewer with sound system. 3,865,475, Cl. 352-34.000.
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- Harris, Harold E., Jr.: *See—*
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- Harrison, Alban: *See—*
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- Harrison, Charles Richard: *See—*
  - Baker, Francis Sidney; Harrison, Charles Richard; Osborn, Anthony Raymond; and Williams, John, 3,866,077.
- Harrison, Robert W., to United States of America, Atomic Energy Commission. Cermet composition containing CbC Mo and an additional carbide. 3,865,556, Cl. 29-182.700.
- Hart, Donald R.: *See—*
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- Hartigan, Edward G., to Kendall Company, The. Belt retainer. 3,864,757, Cl. 2-114.000.
- Hartop, William L., to Ortho Pharmaceutical Corporation. Expandable drug delivery device. 3,865,108, Cl. 128-260.000.
- Hartstein, Eugene Fredrick; and Kendall, Ross Edward, to du Pont de Nemours, E. I., and Company. Process for milling dyes with staurolite sand. 3,865,316, Cl. 241-22.000.
- Hartway, James W. Collapsible luggage handcart. 3,865,392, Cl. 280-35.000.
- Hartz Mountain Corporation, The: *See—*
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- Hashimoto, Hiroshi; Abe, Tetsuo; and Suzuki, Masao, to Sanyo Machine Works Ltd. Method and system of servo control for speed control for vehicles. 3,866,102, Cl. 318-609.000.
- Hashiue, Masakazu: *See—*
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Hata, Akio; and Saeki, Hiroshi, to Tokuyama Sekisui Kogyo Kabushiki Kaisha. Process for manufacturing a porous thermoplastic resin article reinforced by a glass matt. 3,865,661, Cl. 156-79.000.
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Havel, Karel. Electronic keyboard for typewriter. 3,866,215, Cl. 340-365.00C.
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Hayashi, Torahiko. Automated steaming apparatus. 3,864,846, Cl. 34-189.000.
Hayes, Geoffrey. Board game apparatus. 3,865,381, Cl. 273-134.0AD.
Hayes, Richmond S., Jr., to Carrier Corporation. Refrigerant flow control device. 3,864,938, Cl. 62-504.000.
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Hebbel, Gerhard; Kruger, Horst; Traser, Werner; and Pfand, Herbert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Multiple step bleaching of cellulose with a per compound and chloride dioxide. 3,865,685, Cl. 162-78.000.
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Heiart, Robert Bernard: *See—*
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Heine, Helmut A,; Speelman, Irving A.; and Schmidt, Otto H., to Optotechnik Heine KG; and Propper Manufacturing Company, Inc. Battery-recharging device for indicating lamp. 3,866,105, Cl. 320-48.000.
Heldenbrand, Stanley W.; Johnson, David L.; and Mote, Neil H. Viewer-copier apparatus. 3,865,484, Cl. 355-45.000.
Heller, George: *See—*
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Hellner, Lars Ivar; Johansson, Hans Elof; and Norstrom, Lars-Ake, to AB Bofors. High strength, corrosion resistant, austenite-ferrite stainless steel. 3,865,644, Cl. 148-37.000.
Helmick, James C., to Victor Comptometer Corporation. Archery bow with vertically adjustable sighting device. 3,865,095, Cl. 124-24.00R.
Helmstetter, Gerald J.: *See—*
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Hershey, Robert L. Tempo enhancement device. 3,865,001, Cl. 84-1.030.
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Herwig, Walter; and Racky, Werner, to Hoechst Aktiengesellschaft. Flame resistant thermoplastic polyesters. 3,865,780, Cl. 260-45.7PS.
Herzhoff, Peter; Gref, Hans; Schweicher, Wolfgang; Frenken, Hans; Friedsam, Josef; and Meinhardt, Gunter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for continuously measuring the surface temperature of moving webs. 3,864,843, Cl. 34-43.000.
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Hestad, Alfred, to Control Networks Corporation. Node control circuitry. 3,865,978, Cl. 179-18.0GF.
Hestad, Alfred. Matrix control circuit. 3,865,979, Cl. 179-18.0GF.
Hetrich, Wayne L., to National Public Radio. Broadcast network signaling system and method. 3,866,123, Cl. 325-53.000.
Heumann, Heinz; and Kuhmann, Helmut, to AEG-Telefunken Kabelwerke AG. Terminators for electrical superconductor cable installations. 3,865,968, Cl. 174-15.0BH.
Hewitt, Lew V., to Overhead Door Corporation. Swing door operator. 3,864,875, Cl. 49-115.000.
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Higuchi, Hobart Atsushi; and Voge, Richard Arnold, to International Business Machines Corporation. Power amplifier with self biasing and insensitivity to temperature variations. 3,866,134, Cl. 330-22.000.
Hikosaka, Mitsuo. Beacon decoder system. 3,866,221, Cl. 343-6.5LC.
Hill, Richard H., Jr. Illuminated display device. 3,864,861, Cl. 40-132.00R.
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Hirayama, Tadamasa; and Nakagawa, Kiyoshi, to Daiichi Seiyaku Co., Ltd. Pyrimidinylphrazolone derivative and process of preparing the same. 3,865,825, Cl. 260-256.40C.
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Hopkins, Neil F., to Borg-Warner Corporation. Absorption refrigeration system. 3,864,929, Cl. 62-101.000.
Hoppock, William E., to Builders Brass Works. Doorstop. 3,864,785, Cl. 16-86.00A.
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  - Bouty, Lucien Robert; and LeCardonnel, Gerard Marcel, 3,865,992.
  - Buttel, Helmut, 3,864,826.
  - Charransol, Pierre; Hauri, Jacques; and Athenes, Claude, 3,865,989.
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  - Muller, Jean Jacques; and Henquet, Andre Jean, 3,866,178.
  - Scata, Mario, 3,865,226.
  - Spitaels, Josef Margaretha Desideer, 3,865,999.
- International Technische Handelsonderneming en Adviesbureau "ITHA" N.V.: *See—*
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  - Greenwood, Roger, 3,865,140.
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  - Synek, Jan, 3,865,993.
- Inventa AG fur Forschung und Patentverwertung: *See—*
  - Lussi, Heinz; Berther, Clau; and Studinka, Josef, 3,865,814.
- Isaacs, Richard R., to Esquire, Inc. Holder construction. 3,865,237, Cl. 206-387.000.
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- Ishii, Akira; Kondo, Kaneichi; and Uchibori, Kenichi, to Matsushita Electric Industrial Co., Ltd. High voltage generating device. 3,866,069, Cl. 310-8.700.
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- Ishizumi, Kikuo: *See—*
  - Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,865,827.
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- Jabkowski, Fridolin, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Hydraulically operable tongs for charging a workpiece to be forged. 3,865,424, Cl. 294-88.000.
- Jackson, George E., to Union Carbide Corporation. Method for making a double faced warp knit fabric. 3,864,944, Cl. 66-87.000.
- Jackson, Obie R., to B & J Machinery Co., Inc. Tufting machine with positive positioning means for backing material. 3,865,059, Cl. 112-79.00R.
- Jacobs, Harold; and Chrepta, Metro M., to United States of America, Army. Quasi-optical integrated circuits. 3,866,143, Cl. 331-107.00R.
- Jacobsen, Stephen C. Rotary-to-linear and linear-to-rotary motion converters. 3,864,983, Cl. 74-89.000.
- Jacobson, Edwin B., to Jacobson Valves, Inc. Valve assembly with reciprocal float unit. 3,865,131, Cl. 137-432.000.
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  - Jacobson, Edwin B., 3,865,131.
- Jacoby, Charles H., to International Salt Company. Geothermal energy system. 3,864,917, Cl. 60-641.000.
- Jaeger, Raymond Edward; and Logan, Walter, to Bell Telephone Laboratories, Incorporated. Fabrication of glass fibers from preform by lasers. 3,865,564, Cl. 65-2.000.
- Jahn, Leonard G. Material marking apparatus. 3,865,073, Cl. 118-8.000.
- James, Bertram G., to Varian Associates. Collector pole piece for a microwave linear beam tube. 3,866,085, Cl. 315-3.500.
- James, Michael, to Allen & Hanburys Limited. Cover for aerosol inhalating device. 3,865,279, Cl. 222-182.000.
- James, Raymond Frederick, to Avon Rubber Co. Resilient side bearings. 3,865,443, Cl. 308-138.000.
- Jandacek, Ronald James, to Procter & Gamble Company, The. Edible oils having hypocholesterolemic properties. 3,865,939, Cl. 424-238.000.
- Janssen Pharmaceutica N.V.: *See—*
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- Janusc, Mieczyslaw. Convertible furniture. 3,864,764, Cl. 5-29.000.
- Jarke Corporation: *See—*
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- Jasaitis, Tadas K.: *See—*
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- Jay, Richard S., to Jarke Corporation. Modular storage and shipping rack. 3,865,250, Cl. 211-177.000.
- Jeding, Carl-Eric Christian; and Villadsen, Vagn Hovgaard, to Aktieselskabet Thomas Ths. Sabroe & Co. Cooling pump system. 3,864,934, Cl. 62-196.000.
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- Jenkins, William A., to Monarch Marking System Company. Mold assembly for making a magnetic base. 3,865,343, Cl. 249-95.000.
- Jensen, Jay W.: *See—*
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- Jesselallee; and Seifert, Karl-Heinrich. Pressure control during blowmoulding. 3,865,530, Cl. 425-387.00B.
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- Jewett, Clifford L.: *See—*
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- Jo, Seiji; and Makino, Katsuo, to Rank Xerox Ltd. Xerographic development method. 3,865,612, Cl. 117-17.500.
- Johannsmeier, Karl-Heinz, to Kasker Instruments Inc. Prealignment system for an optical alignment and exposure instrument. 3,865,254, Cl. 214-1.0BH.
- Johansson, Hans Elof: *See—*
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- Johl, Anton; and Malich, Winfried P. H., to Louis Ethan Ltd. Folding article of furniture. 3,865,051, Cl. 108-132.000.
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- Johns-Manville Corporation: *See—*
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  - Meserole, Robert H., 3,865,146.
  - Mohr, John Gilbert, 3,865,768.
- Johnson, B. Neil; and Midthun, Robert A. Traveling internal conduit support. 3,865,536, Cl. 425-472.000.
- Johnson, David L.: *See—*
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- Johnson, Norman Allen. Carrier bunk apparatus. 3,865,400, Cl. 280-179.00R.
- Johnson, Peter D.: *See—*
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- Johnston, James E., to United States of America, National Aeronautics and Space Administration. Electrostatic measurement system. 3,866,114, Cl. 324-32.000.
- Jolliffe, James D. Penetrating stud for snowmobiles. 3,865,441, Cl. 305-54.000.
- Jones, Alan: *See—*
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- Jones, Clarence O., Jr. Differential flow pressure switch for dual valve circuits. 3,865,218, Cl. 192-12.00C.
- Jones, Clive, to Chrysler United Kingdom Limited. Front suspension assemblies for motor vehicles. 3,864,989, Cl. 74-498.000.
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- Jones, John A.: *See—*
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- Jones, Wayne D. Automatic sprinkler control device. 3,865,138, Cl. 137-624.120.
- Jones, William Clifford, Jr., to General Steel Industries, Inc. Railway vehicle truck with device for damping oscillations about swivel axis. 3,865,045, Cl. 105-199.00C.
- Jonkoff, Imre Mirko: *See—*
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- Joy, David Richard, to Imperial Chemical Industries Limited. Process for the production of petroleum resins of varying softening points. 3,865,797, Cl. 260-82.000.
- Juillet, Francois: *See—*
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- Julia, Marc: *See—*
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- Jung, Botho. Watch with an adjustable time interval hand. 3,864,904, Cl. 58-22.900.
- Jung, George Christian, to RCA Corporation. Four-port junction circulator having larger diameter conductive post contacting gyromagnetic post. 3,866,149, Cl. 333-1.100.
- Jung, Horst: *See—*
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- Jung, Louis: *See—*
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- Jurd, Leonard; King, A. Douglas, Jr.; and Stanley, William L., to United States of America, Agriculture. Cinnamyl phenol antimicrobial agents. 3,865,748, Cl. 252-404.000.
- Jursich, Myron J.; and Randich, Gail T., to Nalco Chemical Company. Method of improving the retention of filler and fiber fines in papermaking processes by using an acrylamide terpolymer. 3,865,686, Cl. 162-168.000.
- Kaak, Stephanus W. Multi-floor conveyor and storage apparatus. 3,865,227, Cl. 198-84.000.
- Kabushiki Kaisha Komatsu Seisakusho: *See—*
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  - Yoshino, Takao, 3,865,510.

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Kaelin, Bette M., to Marvin Glass & Associates. Hand manipulatable figure toy. 3,864,871, Cl. 46-154.000.
Kaelin, Joseph Richard. Method for introduction and circulation of oxygen or oxygenous gas in a liquid which is to be clarified, and apparatus for carrying out the method. 3,865,721, Cl. 210-7.000.
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Kanai, Hiroshi; and Kimura, Yuji, to Kanai, Hiroshi; and Kimura, Yuji. Apparatus for measuring blood pressure. 3,865,100, Cl. 128-2.05D.
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Kaneda, Isao; and Takeuchi, Kiyokazu, to New Nippon Electric Company Ltd. Discharge lamp starter device using a backswing voltage booster and characterized by the absence of a preheating function. 3,866,088, Cl. 315-105.000.
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Kanzelberger, James C., to Contemporary, Inc. Support for frame, plaque, or the like. 3,865,342, Cl. 248-470.000.
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Kato, Kazunobu: *See—*
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Katsuyama, Yoshihisa: *See—*
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Kaufman, Len. Perpetual calendar. 3,864,859, Cl. 40-107.000.
Kawabata, Shigeo: *See—*
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Kawai, Yoshio; Asano, Kiro; and Yamaki, Kiyoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Carbonaceouss reagent for carbonaceous binder used in the manufacture of fired carbon articles and carbon-bonded refractories. 3,865,713, Cl. 208-6.000.
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Kawamata, Yukio; Yamamoto, Keisuke; and Mouri, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Remote control utilizing pulsed beam of light frequency. 3,866,177, Cl. 340-171.00R.
Kawiecki, Chester J., to Joslyn Mfg. and Supply Co. Unitary series spark gap with aligned apertures. 3,866,091, Cl. 315-203.000.
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Kazama, Ken; Ohno, Kunio; Umegae, Mamoru; and Yonei, Mineko, to Asahi Kasei Kogyo Kabushiki Kaisha. Dress form of cellular double layer of thermoplastic materials. 3,865,284, Cl. 223-68.000.
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Keil, Joseph W., to Dow Chemical Corporation. Dyeing with foam control composition of silica, polyoxypropylenes and polydimethylsiloxane. 3,865,544, Cl. 8-93.000.
Keldany, Rachid, to Ruti Machinery Works, Ltd. Device for storing a thread portion. 3,865,149, Cl. 139-122.00R.
Kellams, Roger W.; and Dyer, Clarence H., to General Motors Corporation. Electrostatic fluid bed powder coating system. 3,865,079, Cl. 118-621.000.
Kellermeier, Robert J.; Knight, James T.; and Steljes, Bernadine E., to Ore-Ida Foods, Inc. Coating the surface of frozen, fried french fries with atomized fat globules. 3,865,964, Cl. 426-307.000.
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Kern, Herbert, to Friedrich Boysen, Firma. Thermal reactor with relatively movable internal pipe sections. 3,864,909, Cl. 60-282.000.
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Kilian, Ernst-August, to U.S. Philips Corporation. Circuit arrangement for a receiver for frequency-modulated signals having variable attenuation phase shifter. 3,866,125, Cl. 325-348.000.
Kilstrom, Lars Gunnar; and Ridderstrom, Goran Arvid Henning, to Akteibolaget Electrolux. Surface treating attachment device. 3,864,784, Cl. 15-380.000.
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Kingsly, Walter D. Dual bicycle coupling kit. 3,865,401, Cl. 280-209.000.
Kinoshita, Shushi: *See—*
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Kirkevold, Kent A.: *See—*
Roden, John S.; Kirkevold, Kent A.; Tritle, Gary L.; and Sjerven, Gene A., 3,865,627.
Kirkman, Earl L., to HLS Industries. Apparatus for chemically depositing epitaxial layers on semiconductor substrates. 3,865,072, Cl. 118-4.000.
Kirsch, Francis William; Barmby, David S.; and Potts, John D., to Sun Oil Company of Pennsylvania. Process for paraffin-olefin alkylation. 3,865,894, Cl. 260-683.430.
Kiscaden, Roy W.: *See—*
Yannone, Robert A.; and Kiscaden, Roy W., 3,866,108.
Kiszelly, Eniko: *See—*
Korosi, Jeno; Szabo Nee Czibula, Gabriella; Lay Nee Konya; Erdelyi Nee Petocz, Lujza; Balla Nee Kosoczky, Bolya; and Kiszelly, Eniko, 3,865,828.
Kitchin, Oscar G.: *See—*
Epner, Elliot J.; Kitchin, Oscar G.; and Sampatacos, Peter M., 3,865,394.
Klassen, James G. Hitch pin. 3,865,407, Cl. 280-515.000.
Kleimola, Frank W. Passive containment system. 3,865,688, Cl. 176-37.000.
Klein-Doepke, Wolfgang; Elser, Wilhelm; Quis, Peter; and Rossberg, Peter, to Rohm GmbH. Resinous coating compositions hardenable by high energy radiation. 3,865,901, Cl. 260-871.000.
Klein, James H.; Romano, Anthony J.; Kukacka, Lawrence E.; and Fedelem, Joseph J., to United States of America, Atomic Energy Commission. Slab impregnation apparatus. 3,865,075, Cl. 118-50.000.
Klein, Melvin, to International Business Machines Corporation. On-line detection and measurement of contaminating gases during filling of gas display panels. 3,865,489, Cl. 356-85.000.
Kleinschmidt, Klaus; and Proudfoot, David, to Junger, Miguel C. Structural block with septum. 3,866,001, Cl. 181-33.00G.
Kleist, Dale, to Owens-Corning Fiberglas Corporation. Method and apparatus for producing and collecting fibers. 3,865,566, Cl. 65-6.000.
Klett, Gene R.; Bedford, Billy R.; and Casey, Thomas P., to Caterpillar Tractor Company. Quick disconnect cutting edge for earthworking implements. 3,864,853, Cl. 37-141.00T.
Klett, Stanley D.: *See—*
Charland, Terrence D.; and Klett, Stanley D., 3,865,081.
Kline, James D.; Yeh, William C. T.; and Preston, Ulysses A., to Foote Mineral Company. Method of adding manganese to aluminum. 3,865,583, Cl. 75-138.000.
Kline, James D.; Yeh, William C. T.; and Preston, Ulysses A., to Foote Mineral Company. Articles for adding manganese to aluminum. 3,865,584, Cl. 29-191.200.
Klingler, Thomas C.: *See—*
Goralski, Christian T.; and Klingler, Thomas C., 3,865,822.
Klomp, Johannes Theodorus; Van De Ven, Adrianus Johannes Cornelis; and Berka, George B., to U.S. Philips Corporation. Method of sealing a metal article to a glass or ceramic article in a vacuum-tight manner. 3,865,567, Cl. 65-43.000.
Klukos, Edward O. Machine for indexing and screw-mounting objects to a work piece. 3,864,805, Cl. 29-211.00R.
Knabe, Uwe; Heckmann, Werner; and Rademacher, Friedrich, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Filling of containers with liquids which are deleteriously influenced by contact with air. 3,865,157, Cl. 141-7.000.
Knecht, Rudolf: *See—*
Risi, Walter; and Knecht, Rudolf, 3,864,796.
Kniep, Joris, to International Technische Handelsonderneming en Adviesbureau "ITHA" N.V. Method and device for soil compacting. 3,865,501, Cl. 404-133.000.
Knight, James T.: *See—*
Kellermeier, Robert J.; Knight, James T.; and Steljes, Bernadine E., 3,865,964.
Knight, Lindsay Charles. Moving target trolley, moving target, and target range. 3,865,373, Cl. 273-105.200.
Knodel, Louis Robert, to Dow Chemical Company, The. Low viscosity, low equivalent weight polyether polyols and a method for their preparation. 3,865,806, Cl. 260-209.00R.
Knudson, John O.: *See—*
Cherney, Thomas M.; and Knudson, John O., 3,865,460.
Kobayashi, Masaki; Kawakami, Izumi; and Gunji, Katuhiko, to Oki Electric Industry Co., Ltd. Attenuation pole type monolithic crystal filter. 3,866,155, Cl. 333-72.000.
Kobayashi, Teruo; Inoue, Kazuo; and Sawaguchi, Hiroshi, to Fuji Photo Film Co., Ltd. Oxonol dyes and process for preparing oxonol dyes. 3,865,817, Cl. 260-240.200.
Kobe, Joze; O'Brien, Darrell E.; and Robins, Roland K., to ICN Pharmaceuticals, Inc. 2-Aryl-7-substituted pyrazolo (1,5*a*) 1,3,5-triazines. 3,865,824, Cl. 260-248.0NS.
Kobe Steel, Limited: *See—*
Suzuki, Akira; Kinoshita, Shushi; and Ueda, Takeshi, 3,865,636.
Koch, James H., to N. L. Industries, Inc. Method of making a lined die casting by employing a transplant coating. 3,864,815, Cl. 29-527.300.
Koehring Company: *See—*
Neslon, Albert W., 3,865,195.
Wilke, Raud A., 3,865,386.
Koenig, William E.; and Cunningham, James T., to Litton Systems, Inc. Plow scraper for conveyor belts. 3,865,232, Cl. 198-230.000.
Kohler, Jacques R.; and Van Amerongen, Gerrit J., to Shell Oil Company. Friction reduction. 3,865,124, Cl. 137-13.000.
Kohn, Heinz, to Babcock & Wilcox Limited. Tube fitting. 3,865,083, Cl. 122-235.00R.
Kolb, James M.: *See—*
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Kolell, Norbert C.: *See—*
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Kolster, Harvey L.: *See—*
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Kolze, Bruce Alan; and Kolze, Melvin W. Particulate waste product firing system. 3,865,053, Cl. 110-7.00A.
Kolze, Melvin W.: *See—*
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Komatsu, Akira: *See—*
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Komatsu, Isao: *See—*
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Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Hakansson, Sven, 3,865,015.
Kondo, Hiroshi. Pressure accumulative sprayer device. 3,865,313, Cl. 239-333.000.
Kondo, Kaneichi: *See—*
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Kondou, Toshihito: *See—*
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Kongelbeck, Sverre, to United States of America, Navy. Launcher mount. 3,865,009, Cl. 89-1.815.
Konig, Ferdinand, to Sulzer Brothers Limited. Analogue function generator. 3,866,031, Cl. 235-197.000.
Konishiroku Photo Industry Co. Ltd.: *See—*
Kasahara, Tadashi; and Kimura, Yoshiaki, 3,865,464.
Koniskinoku Photo Industry Co., Ltd.: *See—*
Furuya, Tetsuo; Ibe, Yoshio; and Kanisawa, Hideo, 3,865,596.
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Kooi, Else; and Hoeberechts, Arthur Marie Eugene, to U.S. Philips Corporation. Method of making a target for a camera tube with a mosaic of regions forming rectifying junctions. 3,864,818, Cl. 29-578.000.
Koontz, Harry S.: *See—*
Reese, Thomas J.; and Koontz, Harry S., 3,865,680.
Koppers Company, Inc.: *See—*
Williams, Olin E., 3,865,579.
Korn, Meyer. Bag and closure. 3,865,303, Cl. 229-62.000.
Korosi, Jeno; Szabo Nee Czibula, Gabriella; Lay Nee Konya; Erdelyi Nee Petocz, Lujza; Balla Nee Kosoczky, Bolya; and Kiszelly, Eniko, to EGYT Gyogyszervegyeszeti Gyar. N-Picolinoyl-piperazines. 3,865,828, Cl. 260-268.00C.

Korsloot, Jacob Gerard: *See—*

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Korth, Hans E., to International Business Machines Corporation. Apparatus for measuring surface flatness. 3,866,038, Cl. 250-236.000.

Kosai, Yoshio: *See—*

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Koshiba, Masao: *See—*

Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,865,827.

Kosinsky, Nathan. Pest control device. 3,864,866, Cl. 43-58.000.

Kosowsky, Leo N.; Lovejoy, Curtis N.; and Cunniff, John G., to Auric Corporation. Process for intermittent electroplating strips. 3,865,698, Cl. 204-15.000.

Kotlan, Johannes: *See—*

Kwizda, Richard; and Kotlan, Johannes, 3,865,940.

Koundakjian, Theodore H., to Chevron Research Company. Dry stable phosphorothioate insecticide formulations. 3,865,937, Cl. 424-218.000.

Kralik, Andrew J.: *See—*

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Kramer, David A.; and Lavas, George P., to Hughes Aircraft Company. Radar system with target illumination by different waveforms. 3,866,219, Cl. 343-5.00R.

Kramer, Leo; and Harris, Harold E., Jr., to Ingersoll-Rand Company. Rotary motor with fluid pressure biased vane. 3,865,520, Cl. 418-82.000.

Kramer, Wayne C.: *See—*

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Krankota, Jan L.: *See—*

Roy, Prodyot; and Krankota, Jan L., 3,865,709.

Krapcho, John; and Turk, Chester F., to E. R. Squibb & Sons, Inc. Substituted benzoxazines. 3,865,818, Cl. 260-240.00F.

Kratzer, Beat. Method for fabricating a natural fertilizer. 3,865,568, Cl. 71-21.000.

Krause, Melvin G., to Rockwell International Corporation. Signal comparator with programmed threshold. 3,866,130, Cl. 328-147.000.

Krause, Richard P. Bar handling apparatus. 3,865,255, Cl. 214-1.0BB.

Krauss-Maffei Aktiengesellschaft: *See—*

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Krehbiel, Delmar D.: *See—*

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Kreidel, Rudolf: *See—*

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Kreienbuhl, Claude: *See—*

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Krell, Karl-Heinz: *See—*

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Krenicki, Joseph; and Hunicke, Raymond L., to Lewis Corporation. Frequency varying oscillator circuit vibratory cleaning apparatus. 3,866,068, Cl. 310-8.100.

Krenzel, Ronald W., to Electronic Associates Inc. Tire load force variation testing system. 3,864,967, Cl. 73-146.000.

Krenzer, John, to Velsicol Chemical Corporation. Dialkyl acetals of heterocyclic ureidoacetaldehyde. 3,864,775, Cl. 71-90.000.

Kronsder, Hermann. Labeling device for upright standing objects. 3,865,671, Cl. 156-488.000.

Kropiwnicki, Tadek M., to Carrier Corporation. Valve plate for reciprocating compressor. 3,865,345, Cl. 251-367.000.

Kruger, Horst: *See—*

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Krumm, Charles G.: *See—*

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Krutak, James J., Sr., to Eastman Kodak Company. Process for preparing fischer's base. 3,865,837, Cl. 260-326.11R.

Ku, Ta-Cheng; and Tsao, Sherman H. M., to International Business Machines Corporation. Ink spray printer. 3,865,031, Cl. 101-114.000.

Kubick, Mark: *See—*

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Melnick, Dennis M.; and Kubick, Mark, 3,865,391.

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Kubo, Shugo: *See—*

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Kubota, Koji: *See—*

Okumura, Shinji; Yoshinago, Fumihiro; Kubota, Koji; and Kamijo, Hirotaka, 3,865,690.

Kuehn, Erich; and Wyhof, John R., to ICI United States Inc. Water-soluble dielectric resins. 3,865,869, Cl. 260-47.00C.

Kuenemund, Friedrich, to Siemens Aktiengesellschaft. Radio relay systems. 3,865,990, Cl. 179-15.0FD.

Kuhmann, Helmut: *See—*

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Kuhn, Falk, to Fouquet-Werk Frauz & Planck, Firma. Multifeed circular knitting machine. 3,864,941, Cl. 66-50.00B.

Kuhns, John P., to Gearhart-Owen Industries, Inc. Spare tire mount. 3,865,264, Cl. 214-451.000.

Kuiff, Siegfried: *See—*

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Kukacka, Lawrence E.: *See—*

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Kumagai, Denroku; Marubayashi, Gen; Arita, Kishio; Kubo, Shugo; Yamauchi, Goro; Takahashi, Toshio; and Sato, Toshihiko, to Nippon Telegraph and Telephone Public Corporation. Submarine coaxial cables. 3,865,971, Cl. 174-102.00R.

Kumobayashi, Hidenori: *See—*

Akutagawa, Susumu; Kumobayashi, Hidenori; and Komatsu, Akira, 3,865,888.

Kung, Charles K. H.: *See—*

Chiba, Shyozo; Kung, Charles K. H.; and Goldwasser, Eugene, 3,865,801.

Kurahashi, Koichiro; Tottori, Hiroshi; and Isogai, Fumihiko, to Mitsubishi Denki Kabushiki Kaisha. Plasma display panel device. 3,866,084, Cl. 313-510.000.

Kurahashi, Masayuki: *See—*

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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*

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Kurilenko, Viktor Kharitonovich: *See—*

Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.

Kusters, Norbert L.; and MacMartin, Malcolm P. Low leakage electrical power input circuit for electromedical and other similar apparatus. 3,866,093, Cl. 317-18.00R.

Kutsenko, Petr Ivanovich: *See—*

Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.

Kuwada, Yutaka: *See—*

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Kwizda, Richard; and Kotlan, Johannes, to F. Joh. Kwizda. Pharmaceutical preparation. 3,865,940, Cl. 424-242.000.

La Societe Civile Agricole de Mycelium du Centre Ouest (S.C.A.M-.Y.C.O.): *See—*

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Labbe, Francis Auguste Maurice: *See—*

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Labib, Ahmed H.: *See—*

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Lachner, Otto; Beyerlein, Ludwig; and Spelthahn, Klaus, to Lever Brothers Company. Multistation process for manufacturing hollow bodies. 3,865,913, Cl. 264-40.000.

Lacoste, Gerard H., to Herwaythorn S.A. Gear torque transmission boxes. 3,864,990, Cl. 74-606.00R.

Laforest, Pierre: *See—*

Gagnon, Pierre; and Laforest, Pierre, 3,865,025.

LaHaye, Paul G. Dry insulated parts and method of manufacture. 3,864,908, Cl. 60-272.000.

Laigle, Roger E.; and Lozano, Luis J., to Anaconda Company, The. Skiving apparatus with laterally floating support platform for producing multi-gauge metal strip of uniform width. 3,865,012, Cl. 90-24.00F.

Lake Chemical Company: *See—*

Aronberg, Lester, 3,865,641.

Lambiel, Jean-Claude: *See—*

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Lamoria, Lz F.: *See—*

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Lancini, Giancarlo: *See—*

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Flynn, James P.; Lane, George A.; and Plomer, John J., 3,865,659.

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Merz, Herbert; Langbein, Adolf; Wick, Helmut; and Stockhaus, Klaus, 3,865,943.

Langdon, Roy A.; and Gerschon, Wilfried R., to Beloit Corporation. Two piece die assembly for extruding micro-filaments. 3,865,535, Cl. 425-464.000.

Lange, Ronald E., to Honeywell Information Systems, Inc. Communications control apparatus for the use with a cache store. 3,866,183, Cl. 340-172.500.

Langewis, Cornelis, to Kaiser Aluminum & Chemical Corporation. Can trimmer device. 3,864,995, Cl. 82-54.000.

Langford, Frederic E., to Formac International Inc. System and method for balloon yarding and otherwise transporting objects between two locations. 3,865,251, Cl. 212-71.000.

Lannert, Kent P., to Monsanto Company. Detergent composition. 3,865,755, Cl. 252-558.000.

Lapham, Jerome F., Jr.; and Mataya, John A., to Sprague Electric Company. Method of making capacitor and resistor for monolithic integrated circuits. 3,864,817, Cl. 29-577.000.

Lappin, Terry A.: *See—*

Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,865,691.

Larionov, Leonid Ivanovich: *See—*

Nametkin, Nikolai Sergeevich; Gubin, Sergei Pavlovich; Tjurin, Vladimir Dmitrievich; Fedorov, Viktor Viktorovich; Usachev, Valery Zeilikovich; Matveev, Mikhail Semenovich; Larionov, Leonid Ivanovich; Eliner, Alexandr Solomonovich; and Barashkov, Ruslan Yakolevich, 3,865,715.

Larker, Hans; and Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. High pressure seal. 3,865,387, Cl. 277-190.000.

Larson, Jay Michael: *See—*

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Laser Industries, Ltd.: *See—*

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Lasscock, Jack Edward, to Stratco Metal Proprietary Limited. Gutter suspension means. 3,864,882, Cl. 52-11.000.

Lasswell, Fred D. Spindle for fruit picker. 3,864,899, Cl. 56-328.00R.

Latham, James Albert, to British Steel Corporation. Method of melting solid charges in open hearth furnace. 3,865,576, Cl. 75-43.000.

Lavas, George P.: *See—*

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Lavoie, Gilbert V. Screw conveyor hanger bearing. 3,865,444, Cl. 308-187.100.

Lawton, Richard A. Annunciator circuit. 3,866,194, Cl. 340-213.00R.

Lay Nee Konya: *See—*

Korosi, Jeno; Szabo Nee Czibula, Gabriella; Lay Nee Konya; Erdelyi Nee Petocz, Lujza; Balla Nee Kosoczky, Bolya; and Kiszelly, Eniko, 3,865,828.

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Lebrun, Dean: *See—*

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LeCardonnel, Gerard Marcel: *See—*

Bouty, Lucien Robert; and LeCardonnel, Gerard Marcel, 3,865,992.

Lecluse, Willem Jan, to Cooperatieve Condensfabriek "FRIESLAND". Edible protein fibers based on casein and a process for preparing same. 3,865,959, Cl. 426-212.000.

Ledebur, Harry C.; and Wilson, Harold R., to Wean United Inc. Apparatus for machining pilger rolls and the like. 3,864,878, Cl. 51-50.0PC.

Lee, Choong-Gil, to Lee & Lee Research Laboratories. Rotary internal combustion engine. 3,865,086, Cl. 123-8.450.

Lee & Lee Research Laboratories: *See—*

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Lee, Sung Ki, to Hooker Chemicals & Plastics Corporation. Copolymers and terpolymers and polyamide-polyesters. 3,865,792, Cl. 260-78.00R.

Leemann, Karl. Diving time measuring device. 3,864,977, Cl. 73-389.000.

Lefevre, Marcel R., to Research-Cottrel, Inc. Cooling tower type waste heat extraction method and apparatus. 3,865,911, Cl. 261-140.000.

Legendre, Serge, to Essilor International (Compagnie Generale d'Optique). Apparatus for casting a holding block on an ophthalmic lens. 3,865,178, Cl. 164-334.000.

Legille, Edouard, to S.A. Des Anciens Etablissements Paul Wurth. Control device for a distributor chute in a shaft furnace, particularly a blast furnace. 3,864,984, Cl. 74-89.150.

Lehker, Wayne H.: *See—*

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Lehureau, Jean: *See—*

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Leiblich, Gordon Francis. Fence dropper. 3,865,349, Cl. 256-47.000.

Leitner, Kajetan. Spring clips. 3,864,789, Cl. 24-73.0MF.

Lenhart, Helga: *See—*

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Lenke, Paul W.: *See—*

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Lenssen, Gerhard, to Rheinisch-Westfalisches Elektrizitatswerk AG. Power-generating system and method. 3,866,058, Cl. 290-52.000.

Lent, William E.: *See—*

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Lente, Miklos. Method of making motion pictures. 3,865,738, Cl. 352-44.000.

Leonard, Joseph A., to Raymond Lee Organization, Inc., The, a part interest. Device for brushing dentures. 3,864,781, Cl. 15-106.000.

Lepelletier, Pierre Andre Georges, to Societe Anonyme Francaise du Ferodo. Hydrostatic unit and its applications. 3,865,519, Cl. 418-61.000.

Lepetit S.p.A. Gruppo per la Ricerca Scientifica e la produzione Chemica Farmaceutica: *See—*

Cavalleri, Bruno; Bellasio, Elvio; Testa, Emilio; and Maffii, Giulio, 3,865,847.

Lepper, Herbert: *See—*

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Lesokhin, Jury Abramovich; and Ivlev, Anatoly Grigorievich. Method of controlling the efficiency of blade hydromachines with considerable head variations. 3,865,507, Cl. 416-1.000.

Letot, Incorporated: *See—*

Stankus, Robert W., 3,865,985.

Leuenberger, Urs, to Canada Wire and Cable Limited. Rotatable object with positive lock and means to unlock and rotate said object. 3,864,869, Cl. 46-78.000.

Lev, Jaroslav; and Kakac, Karel, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Mechanism for the return movement of heald shafts of a weaving loom. 3,865,147, Cl. 139-1.00E.

Lever Brothers Company: *See—*

Hinze, Adrien George, 3,865,853.

Lachner, Otto; Beyerlein, Ludwig; and Spelthahn, Klaus, 3,865,913.

Ney, Karl Heinz; Wirotama, I. Poetoe Gde; and Freytag, Wolfram Gustav, 3,865,952.

Levey, Gustave S.; and Moser, Edward, to said Levey, by said Moser. Adjustable pattern spray gun. 3,865,314, Cl. 239-590.300.

Levey, Gustave S.: *See—*

Levey, Gustave S.; and Moser, Edward (assors. to said Levey, by said Moser), 3,865,314.

Levine, Lawrence J.: *See—*

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Levy, Leonard P.; Kiesel, Joseph Anthony; and Honig, Murray H., to Service Poly-Pak, Inc. Garment-containing bags. 3,865,235, Cl. 206-286.000.

Lewis Corporation: *See—*

Krenicki, Joseph; and Hunicke, Raymond L., 3,866,068.

Lewis, David W. Thickness gauge system. 3,866,115, Cl. 324-34.0TK.

Lewis, Geoffrey Arthur, to Lucas Aerospace Limited. Pressure control arrangements for air compressors. 3,865,127, Cl. 137-115.000.

Lewis, Jack, to Imperial Chemical Industries Limited. Production of unsaturated esters. 3,865,868, Cl. 260-475.00N.

Lewis, Morton, to Swift & Company. In situ soil fumigation for combating nematodes using aminomethylphosphates. 3,865,936, Cl. 424-211.000.

Li, Chou H. Method and apparatus for storage, transport, and use of cryogenic gases in solid form. 3,864,927, Cl. 62-47.000.

Liba Maschinenfabrik GmbH: *See—*

Wunner, Roland, 3,864,943.

Lieb, Philip C.; and Kesselman, David A., to Rally Enterprises, Inc. Bicycle rack. 3,865,245, Cl. 211-5.000.

Lieb, Philip C.; and Kesselman, David A., to Rally Enterprises, Inc. Bicycle racks. 3,865,246, Cl. 211-5.000.

Liebert, Karl-Heinz; and Tischer, Werner, to Zahnradfabrik Friedrichshafen AG. Steering system with hydraulic power assistance. 3,865,211, Cl. 180-79.20R.

Light, Truman S.; and Fletcher, Kenneth S., III, to Foxboro Company, The. Apparatus for measuring ionic concentration. 3,865,708, Cl. 204-195.00M.

Lindemann, Martin K., to Chas. S. Tanner Co. Nonwoven fabrics bonded with thermosetting vinyl ester emulsion copolymers. 3,865,620, Cl. 117-140.00A.

Lindemann Maschinenfabrik GmbH: *See—*

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Lindsey, Reed S., Jr.: *See—*

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Lindsey, Sarah E.: *See—*

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Lindstadt, Hans-Jurgen: *See—*

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Linhart, Helmut: *See—*

Mueller, Helmut; Mosher, Paul; and Linhart, Helmut, 3,865,786.

Links, Heinz. Means for hydraulically controlling the operation of intake and exhaust valves of internal combustion engines. 3,865,088, Cl. 123-90.120.

Linn, Carl B.; and Baiocchi, Fred, to C. J. Patterson Company. Process for catalytically converting fatty acids. 3,865,855, Cl. 260-413.000.

Lisle, Thomas K., Jr.; and Romanchak, Joseph, to United States of America, Navy. Amplitude modulator having a transistor controlled bias current. 3,866,148, Cl. 332-31.00T.

Listhuber, Friedrich; Fastner, Thorwald; Bachner, Ernst; and Hoyer, Otto, to Vereinigte Osterreichische Eisen-und Aktiengesellschaft. Process for separating non-metallic inclusions from hot liquid metal. 3,865,175, Cl. 164-82.000.

- Litchford, George B., to United States of America, Air Force. Angle data processor for reciprocating narrow scanning beams. 3,866,163, Cl. 340-24.000.
- Litton Systems, Inc.: *See—*
  - Allen, Herbert J., Jr.; Todd, Ronald Earl; and Wegman, Jerry Wayne, Sr. (said Allen and Todd assors. to), 3,865,623.
  - Koenig, William E.; and Cunningham, James T., 3,865,232.
  - Wilson, Albert, 3,865,720.
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- LKB-Produkter AB: *See—*
  - Davies, Hilary E. W., 3,865,712.
- Lochrie, Leonard Marshall, to BTR Industries Limited. Hydraulic oscillator for digging bucket teeth. 3,864,852, Cl. 37-141.00R.
- Lock, David P.: *See—*
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- Lode, Freerk, to Lode's Instrumenten N.V. Device for exerting forces on and fixing the spinal column of a human body. 3,865,105, Cl. 128-69.000.
- Lode's Instrumenten N.V.: *See—*
  - Lode, Freerk, 3,865,105.
- Loeffler, Romain Eugene, to Johns-Manville Corporation. Purging system and method for a process producing glass fiber blankets. 3,865,540, Cl. 432-2.000.
- Lofquist, Robert Allen: *See—*
  - DeCaprio, Joseph Donald; Haylock, John Christopher; and Lofquist, Robert Allen, 3,865,900.
- Logan, Ralph Andre; Schwartz, Bertram; Tracy, Joseph Charles, Jr.; and Wiegmann, William, to Bell Telephone Laboratories, Incorporated. Dielectric optical waveguides and technique for fabricating same. 3,865,646, Cl. 148-171.000.
- Logan, Walter: *See—*
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- Lohbeck, Kurt: *See—*
  - Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,865,849.
- Lohr, Delmar F., Jr.; and Kay, Edward L., to Firestone Tire & Rubber Company, The. N-(dihydrocarbylphosphorodithio)imides as premature vulcanization inhibitors. 3,865,781, Cl. 260-45.80N.
- Lokerson, Donald C.; and Boston, Ronald E., to United States of America, National Aeronautics and Space Administration. X-y alphanumeric character generator for oscilloscopes. 3,866,210, Cl. 340-324.0AD.
- Lolli, Lawrence V.: *See—*
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- Lombard, Claude; and Dera, Alain, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Electromagnetically operated ball-type injectors. 3,865,312, Cl. 239-585.000.
- Long, David K., to Fairchild Camera and Instrument Corporation. Rectifying circuit. 3,866,063, Cl. 307-230.000.
- Long, Raymond H.; and Bauer, William V., to Lummus Company, The. Process for the production of low-sulfur prereduced iron pellets. 3,865,574, Cl. 75-4.000.
- Longo, Tito: *See—*
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- Loniello, Peter J.: *See—*
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- Lopez, Juan M., to Leviton Manufacturing Co., Inc. Safety adapter for three-wire grounding plug. 3,865,453, Cl. 339-14.00R.
- Loral Corporation: *See—*
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- Lorenz, Michael, to Sulzer Brothers Limited. Powered mobile liquefied gas carriers. 3,864,918, Cl. 60-651.000.
- Lorenzi, Donald E.: *See—*
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- Loshbough, Richard C., to Reliance Electric Company. Display verifier. 3,866,171, Cl. 340-146.10C.
- Louis Ethan Ltd.: *See—*
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- Lovdahl, Richard H., to General Motors Corporation. Limited slip differential having shaft locking and clutch actuating means. 3,864,992, Cl. 74-711.000.
- Lovejoy, Curtis N.: *See—*
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- Lovitz, David D.; Eastman, Ness; and Davidson, William H., to Hartz Mountain Corporation, The. Small animal playground. 3,865,082, Cl. 119-17.000.
- Lozano, Luis J.: *See—*
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- Lucas Aerospace Limited: *See—*
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- Luch, Daniel, to International Nickel Company, Inc., The. Electrodeposition on non-conductive surfaces. 3,865,699, Cl. 204-20.000.
- Ludwig, Jerome H.; and Dieckmann, Dale J., to Dart Industries Inc. Resin stabilizer systems of organotin sulfur-containing compounds and alkali metal bisulfite addition products. 3,865,787, Cl. 260-45.75S.
- Ludwig, Jerome H.: *See—*
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- Ludwig, Melvin, to Eagle Electric Mgf. Co. Inc. Heavy duty electrical connector and strain relief therefor. 3,865,461, Cl. 339-103.00R.
- Luffy, Dennis J.; and Mosemiller, Robert L., to Miller Printing Machinery Co. Sheet transfer cylinder. 3,865,362, Cl. 271-82.000.
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- Lummus Company, The: *See—*
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  - Schindler, Harvey D.; Sze, Morgan C.; and Riegel, Herbert, 3,865,886.
- Lundstrom, Norman H., to Thiokol Chemical Corporation. Non-toxic, non-corrosive, odorless gas generating composition. 3,865,660, Cl. 149-35.000.
- Luscher, Thomas: *See—*
  - Datta, Ranajit K.; and Luscher, Thomas, 3,866,083.
- Lushnikov, Leonid Georgievich: *See—*
  - Morgolenko, Anatoly Sergeevich; Selivanov, Gennady Dmitrievich; Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Filippov, Vladimir Vasilievich; Lushnikov, Leonid Georgievich; and Moiseeva-Smirnova, Zoya Alexandrovna, 3,864,996.
- Lussi, Heinz; Berther, Clau; and Studinka, Josef, to Inventa AG fur Forschung und Patentverwertung. Process for preparing n-substituted lactams. 3,865,814, Cl. 260-239.30R.
- Lutz, Bruce C.: *See—*
  - Sather, Delaine C.; and Lutz, Bruce C., 3,866,213.
- Lysak, David A.: *See—*
  - Friedman, Herman H.; Lysak, David A.; and Hornyak, John, 3,865,955.
- Lytle, Dan R., to Data Products Corporation. Timing signal generating means for a high speed printer. 3,865,029, Cl. 101-93.00C.
- MacDonald, John Marshall, to Pye Limited. Thermal conductivity detector apparatus. 3,864,959, Cl. 73-27.00R.
- Machine Tool Divisional Services Limited: *See—*
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- MacLean-Fogg Lock Nut Company: *See—*
  - Hlinsky, Emil J.; and Anderson, Marvin E., 3,865,047.
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- Maddox, Larry A.: *See—*
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- Madsen, Kristian Dahl, to Allmanna Svenska Elektriska Aktiebolaget. Turbo-generator of the radial slot type. 3,866,070, Cl. 310-214.000.
- Maezawa, Keizo; and Ohta, Susumu, to Yokagawa Electric Works, Ltd. Servoamplifier device. 3,866,103, Cl. 318-678.000.
- Maffii, Giulio: *See—*
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- Magnesium Elektron Limited: *See—*
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- Magnum Automotive, Inc.: *See—*
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- Mahaffy & Harder Engineering Company: *See—*
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- Maistrelli, Roger A.; Pruvot, Francois C.; and Poletti, Henri, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Hydrostatic transmissions for motor vehicles. 3,864,916, Cl. 60-485.000.
- Majerus, Gary T. Foldable bicycle and kit for making same. 3,865,403, Cl. 280-287.000.
- Maki, Isao, to Soko Co., Ltd. Synthetic fibrous unit which is three-dimensionally crimped and twisted. 3,864,903, Cl. 57-140.00J.
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- Mallahan, Francis J.: *See—*
  - Wenckus, Joseph F.; Castonguay, Roger A.; Hanfly, Bernard C.; and Mallahan, Francis J., 3,865,554.
- Malone, Laurence A. Porcelain-like composition. 3,865,774, Cl. 260-29.60S.
- Mamo, Anthony C.: *See—*
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- Mamontov, Vladimir Romanovich: *See—*
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- Manly, Donald G., to Air Products and Chemicals, Inc. Nonthrombogenic plastics. 3,865,615, Cl. 117-47.00A.
- Mann, August C.; and Dillman, Thayer L., to Westinghouse Electric Corporation. Blown fuse indicator for rotating equipment. 3,866,196, Cl. 340-250.000.
- Manning Environmental Corporation: *See—*
  - Schontzler, James G.; Gates, Wendall C.; and DaGragnano, Victor L., 3,866,028.
- Manor, Jehuda, to Israel Aircraft Industries, Ltd. Aircraft take off indicator systems. 3,865,071, Cl. 116-129.00R.
- Mansmann, Manfred; and Schmidt, Ludwig, to Bayer Aktiengesellschaft. Aluminum oxide fibers and their production. 3,865,599, Cl. 106-65.000.
- Mantel, Edward R.: *See—*
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- Marathan Manufacturing Company: *See—*
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- Marchisio, Maria Antonietta; Ferruti, Paolo; Longo, Tito; and Danusso, Ferdinando, to Zambon S.p.A. Method to form stable complexes of polyanions occurring in biological liquids. 3,865,723, Cl. 210-54.000.
- Marecek, Helmut: *See—*
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- Marion, George J. Method of producing multi-layer flat film. 3,865,665, Cl. 156-244.000.
- Mark Products, Inc.: *See—*
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- Marmorek, H. Stephen, to Sprague Electric Company. Plastic encased component with reflowed-plastic sealed leads. 3,866,095, Cl. 317-230.000.
- Maronde, Herbert; and Holzapfel, Jurgen, to Robot Foto Und Electronic GmbH & Co. KG. Device for monitoring traffic. 3,866,165, Cl. 340-31.00C.
- Marosi, Laslo: *See—*
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- Marshall, Edward T.: *See—*
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- Martin, George Christopher James: *See—*
  - Eichler, David Anthony; Lucas, Joshua Michael Stuart; Martin, George Christopher James; Parnell, Edgar William; and Thompson, Garth Molesdale, 3,865,948.
- Martinozzi, Giulio, to Kinespherics, Inc. Kinematic mechanism for the reversible conversion of reciprocating motion to rotary motion. 3,864,982, Cl. 74-60.000.
- Marubayashi, Gen: *See—*
  - Kumagai, Denroku; Marubayashi, Gen; Arita, Kishio; Kubo, Shugo; Yamauchi, Goro; Takahashi, Toshio; and Sato, Toshihiko, 3,865,971.
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- Marx, Karl; and Sandbrand-Nisipeanu, Zacharias. Method and apparatus for lining the walls of excavations. 3,864,921, Cl. 61-41.00A.
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- Marzocchi, Alfred; and McAuslan, Robert R., to Owens-Corning Fiberglas Corporation. Reinforcement of elastomeric products. 3,865,677, Cl. 161-55.000.
- Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,865,682, Cl. 161-170.000.
- Masat, Jan; Dohnalek, Rudolf; and Chvejka, Jiri, to Spolana, narodni podnik. Apparatus for continuously preparing perchlormethyl mercaptan. 3,865,553, Cl. 23-260.000.
- Maschinenfabrik Zuckermann Komm. Ges.: *See—*
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- Maserjian, Joseph: *See—*
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- Massachusetts Institute of Technology: *See—*
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- Massier, Pierre, to La Societe Civile Agricole de Mycelium du Centre Ouest (S.C.A.M.Y.C.O.). Culture of mycelium. 3,865,695, Cl. 195-81.000.
- Massoney, Dwight F., to Textron Inc. Push type threaded fastener and method of using same. 3,865,006, Cl. 85-44.000.
- Mastaj, Joseph A., to Worthington-CEI, Incorporated. Auxiliary tool control circuit. 3,865,013, Cl. 91-411.00R.
- Masters, George Ernest; Bache, John Kenneth; and Absalom, Ralph Rowland, to said Adsalom, by said Masters and Bache. Control systems especially for diesel engine installations. 3,865,090, Cl. 123-139.0AZ.
- Masterson, Daniel M.: *See—*
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- Mastronardi, Pasquale Patrick John, to Estey Corporation. Storage means with shiftable units. 3,865,446, Cl. 312-201.000.
- Masuda, Michio; Mohri, Katsuo; Nabeyama, Hiroaki; Takezawa, Teruhiro; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Uehara, Takashi; and Yoshino, Takehiko, to Hitachi, Ltd.; and Nippon Hoso Kyokai. Still picture broadcasting receiver. 3,865,973, Cl. 178-5.80R.
- Mataya, John A.: *See—*
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- Mathers, Robert Valentine; and Unsworth, Derek, to Rubery Owen-Rockwell, Limited. Manufacturing of shoes for vehicle brakes. 3,864,800, Cl. 29-149.50R.
- Mathers, Robert Valentine; and Thompson, Frederick, to Rubery Owen-Rockwell, Limited. Suspension units for multiple-axle vehicles. 3,865,395, Cl. 280-104.50B.
- Matras, Edward J.: *See—*
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- Matsuda, Yoshio, to Yoshida Kogyo Kabushiki Kaisha. Warp-knitted fastener tapes. 3,864,946, Cl. 66-193.000.
- Matsufuji, Akira; and Numajiri, Kenji. Apparatus for forming spiral steel pipe. 3,864,952, Cl. 72-135.000.
- Matsumoto, Tadashi; and Yoshida, Takashi, to Nippon Steel Corporation. Flux-cored electrode wire for non-sheilded arc welding. 3,866,015, Cl. 219-146.000.
- Matsuo, Hiroyuki: *See—*
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- Matsushita Electric Industrial Co., Ltd.: *See—*
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  - Hiraki, Hisao; and Miyagawa, Katsuhiko, 3,865,977.
  - Ishii, Akira; Kondo, Kaneichi; and Uchibori, Kenichi, 3,866,069.
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  - Kawamata, Yukio; Yamamoto, Keisuke; and Mouri, Hiroshi, 3,866,177.
  - Miyoshi, Keisuke; and Shibano, Naoki, 3,866,086.
  - Mori, Keijiro; Indo, Masahiro; and Yamamoto, Taro, 3,865,181.
  - Yamamoto, Kozo; and Shinohara, Isao, 3,865,987.
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  - Arita, Shigeru, 3,865,651.
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- Matthews, Donnell R., Jr.: *See—*
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- Matusdo, Kazuo; Shimomura, Takayoshi; and Oosawa, Kooichi, to Nippon Kokan Kabushiki Kaisha. Process of making cold reduced steel. 3,865,637, Cl. 148-12.100.
- Matveev, Mikhail Semenovich: *See—*
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- Mayfield, Albert H., to General Motors Corporation. Catalytic converter filling apparatus. 3,865,159, Cl. 141-67.000.
- Maynard, Robert W.; and Alexander, Kenneth W., to Mosler Safe Company, The. Depository for imprinting and storing envelopes containing paper currency and/or coins. 3,866,235, Cl. 346-22.000.
- Mayne, W. Harry: *See—*
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- Maytham, Walter J.: *See—*
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- McAuslan, Robert R.: *See—*
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- McBeth, Clyde Warren, to Shell Oil Company. Nematicides. 3,865,938, Cl. 424-219.000.
- McCaslin, Sadler C.; and Smith, Wilbur J. Garbage enclosure. 3,865,449, Cl. 312-352.000.
- McClintic, Wayne L.: *See—*
  - Sheetz, Charles E.; and McClintic, Wayne L., 3,864,894.
- McColl, Bruce John, to Owens-Illinois, Inc. Split phase head reach system for tree harvester. 3,865,160, Cl. 144-3.00D.

- McCormack, Leonard J.; and DeGrange, Wallace L., Jr., to Reimers Electric Steam, Inc. Seambuster. 3,865,285, Cl. 223-73.000.
- McCormick, Thomas W., to Mining Equipment Division, a division of FMC Corporation. Protective canopy for a portable drilling machine. 3,865,197, Cl. 173-23.000.
- McCoy, Frederic C.; and Cole, Edward L., to Texaco Inc. Alkylation catalyst additive. 3,865,896, Cl. 260-683.510.
- McCoy, Raymond D.: *See—*
  - Ayers, Buell O.; and McCoy, Raymond D., 3,865,562.
- McCreery, James F.; and Jones, Dennis G., to Kennametal Inc. Tool holder. 3,864,799, Cl. 29-96.000.
- McCrobie, George L.; and Donnel, Roscoe J., to Xerox Corporation. Variable magnification lens system. 3,865,470, Cl. 350-184.000.
- McCrobie, George L., to Xerox Corporation. Lens system for photoelectrophoretic copying machine. 3,865,471, Cl. 350-215.000.
- McCulloch Corporation: *See—*
  - Anderson, Harold E., 3,864,965.
- McDermott, John W., to Beaird-Poulan, Inc. Chain saw oiling system. 3,865,213, Cl. 123-196.0CP.
- McDonald, Hugh C. Surveillance aircraft muffler. 3,865,212, Cl. 181-43.000.
- McDonnell Douglas Corporation: *See—*
  - Grossman, Jack J., 3,865,490.
  - Sheratte, Martin B., 3,865,743.
- McGee, Arthur L.: *See—*
  - Begun, Robert A.; Thuse, Erik; and McGee, Arthur L., 3,865,142.
- McGee, John K.; and Kolell, Norbert C., to Gidding & Lewis Inc. Numerical control with envelope offset and automatic path segment transitions. 3,866,179, Cl. 340-172.500.
- McGehee, C. Bernie; Rees, J. Samuel; and Johnson, Luther J., Jr. Tire conditioning and truing apparatus. 3,865,527, Cl. 425-11.000.
- McGehee, Wallace L. Rotary dehydrator-granulator. 3,864,841, Cl. 34-11.000.
- McGraw-Edison Company: *See—*
  - Forg, John H.; and Payet, George L., 3,865,545.
- McGuirk, Francis A., Jr., to Wager Electric Corporation. Door lock, power and alarm control circuit for automotive vehicles and the like. 3,866,168, Cl. 340-64.000.
- McIngvale, Pat H., to United States of America, Army. Waveform control circuit using gain-controlled amplifier stage. 3,866,065, Cl. 307-260.000.
- McKay, Alexander R.; and Masterson, Daniel M., to Foundation Cryogenic Joint Venture. Pipeline system. 3,865,145, Cl. 138-113.000.
- McKenney, John D.; and Rumsey, Thomas R., to Royal Industrial Inc. Moisture separating tank. 3,865,180, Cl. 165-1.000.
- McManus, Richard J., to Hi-Tor Inventions, Corporation. Emergency data band. 3,864,856, Cl. 40-21.00C.
- McMarlin, Robert M., to Pittsburgh Corning Corporation. Method and apparatus for closing a passageway. 3,864,883, Cl. 52-221.000.
- McMillin Investments, Inc.: *See—*
  - Woodbridge, David D., 3,865,734.
- McMullen, Charles H., to Union Carbide Corporation. Preparation of ketones. 3,865,881, Cl. 260-593.00R.
- McNamara, Thomas P.: *See—*
  - Quelly, Joseph R.; and McNamara, Thomas P., 3,865,880.
- McNeil Laboratories, Inc.: *See—*
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  - Schwartz, Norman; and Mohrbacher, Richard J., 3,865,826.
- McPhail, Hazel M.: *See—*
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- McPhail, William B.; and McPhail, Hazel M. Bowl for table type game. 3,865,378, Cl. 273-128.00A.
- McWilliams, Orcenith D.; and Rice, Roger A., to Caterpillar Tractor Company. Hydraulic control valve for fluid suspension system. 3,865,135, Cl. 137-596.140.
- Mechin, Gerard H., to Societe Anonyme Poclain. Device for supplying fluid under pressure to two reversible load elements. 3,864,910, Cl. 60-420.000.
- Mefferd, Wayne S.: *See—*
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  - Hobart, James Lee; and Mefferd, Wayne S., 3,866,140.
- Meguro, Kanji; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. 1,4-Benzodiazepine derivatives. 3,865,811, Cl. 260-239.0BD.
- Mehta, Brahm Dev: *See—*
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- Meier, Johann Hans, to International Business Machines Corporation. Digital phase control for ink jet printer. 3,866,237, Cl. 346-75.000.
- Meinhardt, Gunter: *See—*
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- Mellenthin, William J.: *See—*
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- Melnick, Dennis M.; and Kubick, Mark, to Pallet Development Inc. Freezer spacer. 3,865,024, Cl. 99-645.000.
- Melnick, Dennis M.; and Kubick, Mark, to Pallet Development Inc. Sled. 3,865,391, Cl. 280-18.000.
- Memorex Corporation: *See—*
  - Sischka, Frederic J., 3,865,741.
- Menet, Albert: *See—*
  - Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,865,878.
- Mengler, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 3-(3′,4′-Dichloro-6′-alkyl-phenyl)-delta, 2-pyrazoline derivatives. 3,865,816, Cl. 260-239.900.
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- Meredith, Joel B.: *See—*
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- Merger, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 2-Hydroxy-3,3-dimethyl-4-oxotetrahydrofuran production. 3,865,850, Cl. 260-347.800.
- Merges, John C., Jr.: *See—*
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- Merrill, Duane F., to General Electric Company. Process for bodying organopolysiloxanes. 3,865,766, Cl. 260-18.00S.
- Merz, Herbert; Langbein, Adolf; Wick, Helmut; and Stockhaus, Klaus, to Boehringer Ingelheim G.m.b.H. Pharmaceutical compositions containing an n-(furyl-methyl)-3-oxy-morphinan and method of use. 3,865,943, Cl. 424-260.000.
- Merzweiler, Leo A., to Summit Plastic Corporation. Tire display apparatus. 3,864,860, Cl. 40-125.00M.
- Meserole, Robert H., to Johns-Manville Corporation. Helically wound tubing and method of forming the same. 3,865,146, Cl. 138-154.000.
- Messner, Alan: *See—*
  - United States of America, National Aeronautics and Space Administration; Perlman, Marvin; Rousey, William J.; and Messner, Alan, 3,866,022.
- Metailler, Roger, to Societe Anonyme Richier. Hydraulic system for displacing a load with automatic hydrostatic balancing. 3,864,915, Cl. 60-468.000.
- Metallgesellschaft AG: *See—*
  - Garkisch, Otto Ludwig; Ibing, Gunther; Kammholz, Gunther; Schirrmacher, Hermann; and Lohbeck, Kurt, 3,865,849.
- Metallurgische Forschungsanstalt: *See—*
  - Gottschol, Hans Joachim; and Gottschol, Karl Josef, 3,865,577.
- Metcalfe, Kenneth A.; and Clements, Alwin S., to Commonwealth of Australia Care of the Secretary Department of Supply, The. Charging photoconductive membranes. 3,866,096, Cl. 317-262.00A.
- Metrologic Instruments, Inc.: *See—*
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- Metzinger, Lothar; Gottschalk, Alfred; Schoettle, Klaus; and Schwaab, Josef. Process for the removal of volatiles from polymer solutions. 3,865,672, Cl. 159-47.00R.
- Meyer, Leonard S.: *See—*
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- Meyer, Martin R.: *See—*
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- Micro Bio-Medics Inc.: *See—*
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- Micro-Gen Equipment Corporation: *See—*
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- Micromedic Systems, Inc.: *See—*
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- Microsystems International Limited: *See—*
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- Midthun, Robert A.: *See—*
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- Milchem Incorporated: *See—*
  - Bruson, Herman A.; and Gould, Henry, 3,865,793.
- Miles, William B.; and Copeland, John S., to Addressograph-Multigraph Corporation. Area measuring device. 3,865,486, Cl. 355-64.000.
- Miller, Harry B., to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Pneumatic control system for use in automatic yarn transfer system. 3,865,321, Cl. 242-18.00A.
- Miller Printing Machinery Co.: *See—*
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- Millonzi, Richard P.: *See—*
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- Mills, King L., to Phillips Petroleum Company. Production of carbon black of reduced grit content. 3,865,925, Cl. 423-450.000.
- Mills, Terence L., to Molex Inc. Electrical terminal. 3,865,459, Cl. 339-95.00R.
- Mimco Incorporated: *See—*
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- Minckler, G. Mark: *See—*
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  - Nelson, Charles Edward; and Jewett, Clifford L., 3,865,352.
  - Roden, John S.; Kirkevold, Kent A.; Tritle, Gary L.; and Sjerven, Gene A., 3,865,627.
- Minnick, Robert C.; Bailey, Paul T.; Sandfort, Robert T.; and Semon, Warren L., to Monsanto Company. Non-conservative bubble logic circuits. 3,866,191, Cl. 340-174.0TF.
- Minniear, Max E.; and Herrin, Carlos B., to Monarch Marking Systems, Inc. Scanning apparatus. 3,866,056, Cl. 250-566.000.
- Minolta Camera Co., Ltd.: *See—*
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- Mintz, Charlotte: *See—*
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- Mita Industrial Co. Ltd.: *See—*
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- Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S., to International Telephone and Telegraph Corporation. Wet spinning cellulosic products. 3,865,918, Cl. 264-188.000.
- Mitchell, Richard E., to Sun Ventures Inc.; and Teijin Limited. Process for alkenylation of alkylbenzenes. 3,865,889, Cl. 260-668.00B.
- Mitchell S.A.: *See—*
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- Mitchell, Stanley W.; and Spenchuk, Edward N. Trailer dolly. 3,865,405, Cl. 280-476.00R.
- Mitchell, William E., to Dunlop Limited. Wheels and pneumatic tire and wheel assemblies. 3,865,170, Cl. 152-386.000.
- Mitsubishi Denki Kabushiki Kaisha: *See—*
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- Miyoshi, Keisuke; and Shibano, Naoki, to Matsushita Electric Industrial Co., Ltd. Flyback transformer apparatus. 3,866,086, Cl. 315-411.000.
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- Mizusawa, Shim-Ichiro; and Hishiki, Tsutomu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Sango Co., Ltd. Pipe joint. 3,865,413, Cl. 285-367.000.
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- Moberly, Charles W., to Phillips Petroleum Company. Arylene sulfide polymers. 3,865,795, Cl. 260-79.100.
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- Mobius, Hans Eberhard; Kubini, Jakob; and Soraya, Sorayapour. Method for thermal treatment of rings consisting of wire or strip material. 3,865,640, Cl. 148-12.900.
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- Mohr, John Gilbert, to Johns-Manville Corporation. Aqueous fiber glass sizing composition. 3,865,768, Cl. 260-23.0AR.
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- Mojonnier, Albert B.; and Lenke, Paul W., to Albert Majonnier, Inc. Bag construction. 3,865,304, Cl. 229-65.000.
- Molex Inc.: *See—*
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- Molins, Desmond Walter; Labbe, Francis Auguste Maurice; and Perkins, Clive, to Molins Limited. Cigarette filters. 3,865,121, Cl. 131-261.00B.
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  - Molins, Desmond Walter; Labbe, Francis Auguste Maurice; and Perkins, Clive, 3,865,121.
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- Monroe, Marvin E., to North Electric Company. Laser diode for use with film memory system. 3,866,238, Cl. 346-76.00L.
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- Moore, Lawrence A.; and Welty, Donald R., to Beloit Corporation. Blow molds for making containers having recessed bottoms. 3,865,531, Cl. 425-387.00B.
- Moore, Robert A., to Westinghouse Electric Corporation. Broadband unidirectional surface wave transducer. 3,866,154, Cl. 333-30.00R.
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- Morisaki, Nobukazu, to Daido Metal Company, Ltd. Device for measuring the interferences and the inclinations of abutting surfaces of a half plain bearing. 3,864,835, Cl. 33-174.00E.
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- Morris, Glenn H. Child-proof and pharmacist-assisting reversible closure for containers. 3,865,267, Cl. 215-206.000.
- Morris, John: *See—*
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- Moser, Jessie Lee; Reavis, Robert Philmore, Jr.; and Soderstrom, Melvin Andrew, to AMP Incorporated. Loading coil means for multiconductor cable. 3,865,980, Cl. 178-46.000.
- Moser, Robert; and Staheli, Paul, to Rieter Machine Works, Ltd. Apparatus for depositing fiber flock in a chute. 3,865,439, Cl. 302-59.000.
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Muse, George B. Wall structures. 3,864,885, Cl. 52-259.000.
Musser, Michael T.; and Streitwieser, Andrew, Jr., to du Pont de Nemours, E. I., and Company. Selective removal of 2-pentenenitrile and 2-methyl-2-butenenitrile from 3-pentenenitrile. 3,865,865, Cl. 260-465.900.
Mustakas, Gus C., to United States of America, Agriculture. Process for obtaining full-fat oilseed-protein beverages using water and initial acid pH. 3,865,802, Cl. 260-123.500.
Musto, Richard Leopold, to Combustion Engineering, Inc. Upstream classifier for a multi-separator. 3,865,242, Cl. 209-143.000.
Myeress, Rudolph S., to Allied Steel & Tractor Products, Incorporated. Mounting assembly for a light beam generator. 3,864,837, Cl. 33-299.000.
Myller, Rolf. Method of making a three-dimensional sheet puzzle. 3,865,382, Cl. 273-157.00R.
N. L. Industries, Inc.: *See—*
  Koch, James H., 3,864,815.
N.V. Industrieele Handelscombinatie Holland: *See—*
  Van Heijst, Willem Jan, 3,865,064.
N.V. Technische Maatschappij Bergmann: *See—*
  Condolios, Elie; and Essen, Uilke Van, 3,865,725.
Nabeyama, Hiroaki: *See—*
  Masuda, Michio; Mohri, Katsuo; Nabeyama, Hiroaki; Takezawa, Teruhiro; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Uehara, Takashi; and Yoshino, Takehiko, 3,865,973.
Nagai, Yukio, to Nippondenso Co., Ltd. Power boost auxiliary diode assembly for vehicle alternator. 3,866,072, Cl. 310-68.00D.
Nagata, Shuji: *See—*
  Takahashi, Nobuyuki; Suemune, Kenitiro; Nagata, Shuji; and Tomozoe, Tatumi, 3,865,645.
Nagler Aircraft Corporation: *See—*
  Nagler, Bruno A., 3,865,508.
Nagler, Bruno A., to Nagler Aircraft Corporation. Ramjet powered rotor blade. 3,865,508, Cl. 416-22.000.
Nahmias, Michael A.; and Bullard, Edward M., to Mobil Oil Corporation. Heat sealable isotactic polypropylene and 1,3 pentadiene polymer. 3,865,903, Cl. 260-889.000.
Nahr, Helmar. Method of making a composite body consisting of at least two component parts such as profiles. 3,865,914, Cl. 264-46.50D.
Naismith, William Dixon. Cam grinding. 3,864,879, Cl. 51-101.00R.
Nakada, Kouiti, to Kabushiki Kaisha Komatsu Seisakusho. Transfer feeder. 3,865,230, Cl. 198-218.000.
Nakagawa, Kiyoshi: *See—*
  Hirayama, Tadamasa; and Nakagawa, Kiyoshi, 3,865,825.
Nakahara, Masaki: *See—*
  Arai, Mamoru; Itoh, Yashuhiro; Nakahara, Masaki; Kayamori, Hisashi; and Sugawara, Shinichi, 3,865,693.
Nakai, Shinji: *See—*
  Ozaki, Toshiaki; Kamoshita, Katsuzo; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Nakai, Shinji; and Akiba, Keiichiro, 3,865,866.
Nakajima, Hitoshi; and Nishimaru, Hiroji, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing cyanoalkadienes. 3,865,864, Cl. 260-465.300.
Nakajima, Shinyo: *See—*
  Inoue, Toshiaki; Nakajima, Shinyo; Uraya, Tohru; Kanamori, Toshiaki; and Fukuda, Kazuo, 3,864,949.
Nakamura, Shinichi; Morita, Kazuo; and Takada, Masami, to Nippon Telegraph and Telephone Public Corporation; and Nippon Electric Company, Limited. Radio-frequency relay system. 3,866,121, Cl. 325-2.000.
Nakamura, Yoshio: *See—*
  Katagiri, Kotaro; and Nakamura, Yoshio, 3,865,799.
Nakayama, Shozo; and Kurahashi, Masayuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate compressor. 3,864,801, Cl. 29-156.4WL.
Nalco Chemical Company: *See—*
  Jursich, Myron J.; and Randich, Gail T., 3,865,686.
Nametkin, Nikolai Sergeevich; Gubin, Sergei Pavlovich; Tjurin, Vladimir Dmitrievich; Fedorov, Viktor Viktorovich; Usachev, Valery Zeilikovich; Matveev, Mikhail Semenovich; Larionov, Leonid Ivanovich; Eliner, Alexandr Solomonovich; and Barashkov, Ruslan Yakolevich. Method for the refining of gasolines to high-octane fuel. 3,865,715, Cl. 208-243.000.
Naphtachimie: *See—*
  Repiquet, Gerard; and Crouzet, Jean Claude, 3,865,762.
Narang, Saran A.; and Michniewicz, Joseph J., to Canadian Patents and Development Limited. Aromatic dextran derivatives. 3,865,807, Cl. 260-209.00D.
Nardi, Anthony, to Clean Energy, Inc. Rotary steam engine. 3,865,522, Cl. 418-161.000.
Nason, Stephen G.: *See—*
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National Public Radio: *See—*
  Hetrich, Wayne L., 3,866,123.
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  Baker, Francis Sidney; Harrison, Charles Richard; Osborn, Anthony Raymond; and Williams, John, 3,866,077.
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  Pike, Edward Roy, 3,866,055.
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  Szymanski, Chester D.; and Helmstetter, Gerald J., 3,865,603.
Nawrocki, Norbert Joseph, to F. L. Jacobs Company. Safety control device with obstruction feeler and switch assembly. 3,866,004, Cl. 200-61.420.
NCR Corporation: *See—*
  Seifert, Lloyd R., Jr.; and Hinrichs, Joel H., Jr., 3,866,175.
Neal, Donald C. Fish lure. 3,864,863, Cl. 43-42.150.
Neal, Frank, to John C. Motter Printing Press Co. Folder cylinder. 3,865,361, Cl. 270-76.000.
Neale, Robert Schwenn; and Pines, Arthur Noah, to Union Carbide Corporation. Stabilized organosilicon polymers. 3,865,784, Cl. 260-45.75R.
Nebiolo, Renaldo A.: *See—*
  Bridigum, Robert J.; and Nebiolo, Renaldo A., 3,865,252.
Nechiporenko, Anatoly Ionovich: *See—*
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Neglia, Ettore, to P. Ferrero & C. S.p.A. Column-shaped display device for parallelepipedic articles. 3,865,247, Cl. 211-72.000.
Neier, Wilhelm; Lindstadt, Hans-Jurgen; and Webers, Werner, to Deutsche Texaco Aktiengesellschaft. Process for the continuous production of aqueous paraffin emulsions. 3,865,606, Cl. 106-271.000.
Nelson, Charles Edward; and Jewett, Clifford L., to Minnesota Mining and Manufacturing Company. Static mixing device. 3,865,352, Cl. 259-4.000.
Nelson, Donald J.: *See—*
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Nembach, Siegfried, to Hydromatik GmbH. Fluid pressure control system for a compound transmission comprising an adjustable hydrostatic transmission part and a secondary mechanical load changeover transmission. 3,864,991, Cl. 74-687.000.
Neslon, Albert W., to Koehring Company. Self-propelled soil stabilizer machine. 3,865,195, Cl. 172-3.000.
Neubert, Rolf: *See—*
  Wehling, Rolf; and Neubert, Rolf, 3,864,902.
Neumann, Norbert F.; and Crimes, Peter B., to Kennecott Copper Corporation. Molybdenum and ferromolybdenum production. 3,865,573, Cl. 75-3.000.

Neumann, Robert G., to Specialty Papers Co., The. Laminated foil candy wrapper and method of preparing. 3,865,664, Cl. 156-192.000.
New England Log Homes, Inc.: *See—*
  Vizziello, Vito M.; and Bouteiller, Charles A., 3,865,161.
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Newbury, Ray S.; and Tully, Geoffrey R., Jr., to United States of America, Atomic Energy Commission. Method for coating uranium impregnated graphite with zirconium carbide. 3,865,614, Cl. 117-46.0CA.
Newcomer, William P., Jr., to Dylaker Computer Systems, Inc. Flexible tape reel. 3,865,325, Cl. 242-68.500.
Newell, E. Strohm. Locking handle. 3,865,500, Cl. 403-359.000.
Newman, Howard F. Catamaran righting apparatus and method. 3,865,061, Cl. 114-39.000.
Ney, Karl Heinz; Wirotama, I. Poetoe Gde; and Freytag, Wolfram Gustav, to Lever Brothers Company. Blue cheese flavor. 3,865,952, Cl. 426-65.000.
Neznamov, Jury Nikolaevich: *See—*
  Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.
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  Tajima, Mutsunari; and Komatsu, Isao, 3,866,151.
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  Sekino, Shozo; Sakakihara, Mizuo; and Murota, Shoji, 3,865,581.
  Takahashi, Nobuyuki; Suemune, Kenitiro; Nagata, Shuji; and Tomozoe, Tatumi, 3,865,645.
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  Kumagai, Denroku; Marubayashi, Gen; Arita, Kishio; Kubo, Shugo; Yamauchi, Goro; Takahashi, Toshio; and Sato, Toshihiko, 3,865,971.
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Nippondenso Co., Ltd.: *See—*
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Noe, Robert Joseph, to Agfa-Gevaert N.V. Electrophographic bichargeable materials and process. 3,865,587, Cl. 96-1.0PC.
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Noro, Hiroo: *See—*
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Norris, Dale M.; Reynolds, John F.; and Carroll, Raymond L. Method and apparatus for introducing a fluid into the vascular system of a tree or similar plant. 3,864,874, Cl. 47-57.500.
Norris, Russell; and Woodiwiss, Charles R., to Procter & Gamble Company, The. Crystallization seed-containing detergent composition. 3,865,754, Cl. 252-532.000.
Norris, Walter R., to Anaconda Company, The. Nonmetallic sheathed cable. 3,865,972, Cl. 174-115.000.
Norstrom, Lars-Ake: *See—*
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Northup, Francis B.; and Hart, Donald R. Apparatus and method for wrapping core yarns. 3,864,900, Cl. 57-16.000.
Norton, Calhoun, to Arens Controls, Inc. Electrical steering system for boats. 3,865,063, Cl. 114-144.00R.
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Oda, Yoshio; Uchida, Keiichi; and Morimoto, Takeshi, to Asahi Glass Co., Inc. Process for preparing acrylic acid and or methacrylic acid from acrolein or methacrolein. 3,865,873, Cl. 260-530.00N.
Odetics, Inc.: *See—*
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Officina Meccanica Erba & C. Soc. Acc. Semplice: *See—*
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Ohkubo, Kinji; and Kato, Kazunobu, to Fuji Photo Film Co., Ltd. Image-receiving element for use in photographic silver salt diffusion transfer process. 3,865,592, Cl. 96-76.00R.
Ohmstedt, Harry O.; Ruth, William H.; and Gibbs, Edward E., to General Electric Company. Cartridge brush holder. 3,864,803, Cl. 29-205.00R.
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Ohtsuka, Yozo, to Sagami Chemical Research Center. Process for preparing monoformyldiaminomaleonitrile. 3,865,862, Cl. 260-465.400.
Oka, Takeshi, to Bridgestone Tire Company Limited. Patterned rubber article and a process for making the same. 3,865,663, Cl. 156-116.000.
Okamoto, Miyoshi; Yoshida, Shusuke; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, to Toray Industries, Inc. Suede-like raised woven fabric and process for the preparation thereof. 3,865,678, Cl. 161-67.000.
Okamura, Tadasu. Toilet paper roll holding device. 3,865,295, Cl. 225-47.000.
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Okumura, Shinji; Yoshinago, Fumihiro; Kubota, Koji; and Kamijo, Hirotaka, to Ajinomoto Co., Inc. Fermentative production of L-leucine. 3,865,690, Cl. 195-28.00R.
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- Olievskaya, Maria Stepanovna: *See—*
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- Olin, John F.; and Hamm, Philip C., to Monsanto Company. Metabifunctional benzenes. 3,865,867, Cl. 260-472.000.
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- O'Neill, Gerald Joseph; Simons, Charles William; and Billings, Charles Alden, to W. R. Grace & Co. Methylcyclopropane anesthetics. 3,865,950, Cl. 424-352.000.
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- Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; Murakoshi, Makoto; Suwama, Toshitaka; and Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Microfilm projecting system. 3,865,478, Cl. 353-26.000.
- Opti-Holding AG: *See—*
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  - Kellermeier, Robert J.; Knight, James T.; and Steljes, Bernadine E., 3,865,964.
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- Ornstein, Jacob L., to Texas Instruments Incorporated. Composite thermostat metal. 3,865,559, Cl. 29-195.500.
- Ortho Pharmaceutical Corporation: *See—*
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- Ortiz, Remey: *See—*
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- Osborn, Jack S. Selective plugging of filter elements. 3,865,561, Cl. 55-18.000.
- Oshima, Shigeru, to Fuji Photo Film Co., Ltd. Film cartridge. 3,865,327, Cl. 242-71.200.
- Ossko, Andreas; Goller, Heinz; Herzig, Joachim; Buchner, Werner; and deMontigny, Armand, to Bayer Aktiengesellschaft. Hydrosilylation employing dicarbonyldichloroplatinum as a catalyst. 3,865,858, Cl. 260-448.20E.
- Ostbo, Karl Robert Ambjorn. Heat exchanger. 3,865,185, Cl. 165-165.000.
- Osterreichische Stickstoffwerke Aktiengesellschaft: *See—*
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- Ostrenko, Viktor Yakovlevich: *See—*
  - Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.
- Ostwald, Fritz, to ITT Industries, Inc. Hydraulic braking system with a plurality of booster control valves connected in series. 3,865,440, Cl. 303-21.00F.
- Othen, Sidney Arthur; and Morris, John, to Joseph Lucas (Industries) Limited. Control apparatus for hydraulic transmission system. 3,864,912, Cl. 60-431.000.
- Otis Engineering Corporation: *See—*
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- Ouska, Ralph Charles, to FMC Corporation. Roller band mechanism and suspension system for oscillating conveyors. 3,865,231, Cl. 198-220.0CA.
- Overgard, Russell G.: *See—*
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- Overhead Door Corporation: *See—*
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- Overlach, Knud: *See—*
  - Eberhard, Hans-Joachim; Overlach, Knud; Huhne, Gerd; and Pietzsch, Ludwig, 3,866,199.
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  - Kleist, Dale, 3,865,566.
  - Marzocchi, Alfred; and McAuslan, Robert R., 3,865,677.
  - Marzocchi, Alfred, 3,865,682.
  - Spence, Harry E.; and Warden, Charles B., 3,865,565.
- Owens, Frederick J.; and Bishop, Jerry B. Artificial-horizon gyroscope. 3,864,838, Cl. 33-329.000.
- Owens-Illinois, Inc.: *See—*
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  - Greenstein, Bernard, 3,865,742.
  - McColl, Bruce John, 3,865,160.
- Oya, Seigo; Noro, Hiroo; and Suzuki, Kisaburo, to Hiromichi Murata. Process for preparing reinforcing additives to be applied to inorganic cements. 3,865,779, Cl. 260-42.440.
- Ozaki, Toshiaki; Kamoshita, Katsuzo; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Nakai, Shinji; and Akiba, Keiichiro, to Sumitomo Chemical Company, Limited. Carbamic acid esters. 3,865,866, Cl. 260-471.00C.
- P. Ferrero & C. S.p.A.: *See—*
  - Neglia, Ettore, 3,865,247.
- P. R. Mallory & Co. Inc.: *See—*
  - Borbely, Alexander S.; and Bereman, Jon A., 3,865,608.
  - Underwood, David W.; and Chestnut, Benjamin F., 3,866,002.
- Padawer, Jacques, to Albert Einstein College of Medicine of Yeshiva University. Analytical apparatus and process. 3,865,548, Cl. 23-230.00R.
- Paddington, Arthur Loftus, to British Ropes Limited. Pipe couplings. 3,865,409, Cl. 285-18.000.
- Padgett, Brian: *See—*
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- Painter, Howard S.; and Armstrong, Donald E., to GTE Sylvania Incorporated. Moisture indicator for photoflash lamp. 3,865,537, Cl. 431-13.000.
- Palenchar, Daniel P.; Lehker, Wayne H.; and Lock, David P., to Sperry Rand Corporation. Universal motor control. 3,866,100, Cl. 318-257.000.
- Palfi, Thomas L.: *See—*
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- Palitex Project Company GmbH: *See—*
  - Beymes, Johannes Frentzel; and Quast, Christoph, 3,864,901.
- Pall, David B.; and Jasaitis, Tadas K. Cylindrical filter elements with improved side seam seal. 3,865,919, Cl. 264-259.000.
- Pallet Development Inc.: *See—*
  - Melnick, Dennis M.; and Kubick, Mark, 3,865,024.
  - Melnick, Dennis M.; and Kubick, Mark, 3,865,391.
- Palush, Bernard P. Positive pressure breathing circuit. 3,865,106, Cl. 128-145.800.
- Panduit Corporation: *See—*
  - Caveney, Jack E.; and Randolph, Franklin L., 3,865,300.
  - Moody, Roy A.; and Roberson, Raymond F., 3,865,156.
- Pankove, Jacques Isaac, to RCA Corporation. Method for diffusing impurities into nitride semiconductor crystals. 3,865,655, Cl. 148-189.000.
- Pappo, Raphael: *See—*
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- Paredes, Candelario; and Horn, Robert, to Forney Engineering Company. Load measuring and overload warning system. 3,866,200, Cl. 340-267.00C.
- Park Chemical Co.: *See—*
  - Foreman, Robert W., 3,865,642.
- Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael. Method of producing copper and composition therefor. 3,865,744, Cl. 252-188.30R.
- Parker, Robert, to Robert Parker Research, Inc. Reusable bottle thermometer. 3,864,976, Cl. 73-356.000.
- Parnell, Edgar William: *See—*
  - Eichler, David Anthony; Lucas, Joshua Michael Stuart; Martin, George Christopher James; Parnell, Edgar William; and Thompson, Garth Molesdale, 3,865,948.
- Parson, Brinckerhoff, Quade & Douglass, Inc.: *See—*
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- Parups, Edwin V.; and Chan, Allan P., to Canadian Patent and Development Limited. Preservation of cut blooms. 3,865,569, Cl. 71-68.000.
- Paschenko, Viktor Prokhorovich: *See—*
  - Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.
- Pase, Hugh H., to Mimco Incorporated. Apparatus for unloading bulk material. 3,865,347, Cl. 254-124.000.
- Pashkevich, Julia Maximovna: *See—*
  - Turkevich, Nikolai Mikhailovich; Olievskaya, Maria Stepanovna; Pashkevich, Julia Maximovna; Potopalsky, Anatoly Ivanovich; and Novitsky, Vasily Mikhailovich, 3,865,830.
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- Patriquin, George P., to Hudson Lock, Inc. Automatic key duplicating apparatus. 3,865,011, Cl. 90-13.050.
- Patterson, Richard J. Prescription form filing system. 3,865,447, Cl. 312-234.200.
- Paulson, Donald L.; and Mamo, Anthony C., to Borg-Warner Corporation. Connecting device for plastic encased hydrotherapy plinth. 3,865,104, Cl. 128-66.000.

- Pauza, William Vito; and Poltonavage, Edward Michael, to AMP Incorporated. Circuit panel connector. 3,865,458, Cl. 339-91.00R.
- Pauze, Denis R., to General Electric Company. Polyesteramideimides. 3,865,785, Cl. 260-75.00N.
- Pavlicek, Miroslav; and Rosenbaum, Miroslav, to Ustav pro vyzkum rud. Absorption photometer. 3,865,494, Cl. 356-201.000.
- Paxhia, Vincent B.; and Bossler, Franklin B., to Textron, Inc. Quiet jet discharge nozzle. 3,865,311, Cl. 239-568.000.
- Payet, George L.: *See—*
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- Payne, Louis B.; and Overgard, Russell G. Locking device with alarm utilizing flexible gas impermeable tube. 3,866,205, Cl. 340-280.000.
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- Pearl, David R.; and Robison, Samuel Clifford, to Gerber Garment Technology, Inc. System and method for cutting pattern pieces from sheet material. 3,864,997, Cl. 83-49.000.
- Pearson, Leonard Louis; and Plaisted, Anthony Cecil, to Fosroc AG. Soil consolidation. 3,865,600, Cl. 106-84.000.
- Pedersen, Richard Alan, to Bell Telephone Laboratories, Incorporated. Power supply distribution for integrated circuits. 3,866,066, Cl. 307-297.000.
- Pedro, Eugene M., to Carl Pedro and Sons, Inc. Weapons case. 3,865,166, Cl. 150-52.00R.
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- Pennewiss, Horst; Plainer, Hermann; and Schleier, Waldemar, to Rohm GmbH. Anti-fogging hydrophilic resin coatings. 3,865,619, Cl. 117-138.800.
- Pentron Industries, Inc.: *See—*
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- Perkons, George; and Schailey, Orrell B., to Earle Gear and Machine Company, The. Bridge-operating machinery. 3,864,777, Cl. 14-38.000.
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- Peters, Leo. Packaging embossed-surfaced butter and margarine. 3,865,953, Cl. 426-124.000.
- Petersen, Siegfried: *See—*
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- Peterson, Francis C., to Hinge Manufacturing Company. Security system and lock therefor. 3,866,164, Cl. 340-274.000.
- Peterson, Ralph L. Apparatus for moving a plug fitting. 3,865,129, Cl. 137-315.000.
- Petersson, Bengt Olov. Device for compensating excess pressures in closed containers. 3,865,270, Cl. 220-85.00B.
- Petre, James Gusten Ragnar: *See—*
  - Bratt, Axel Erland; Holst, Oscar Evert Ingemar; and Petre, James Gusten Ragnar, 3,865,497.
- Petrea, James C., to Wright Machinery Company, Inc. Multi-pack method and apparatus. 3,864,895, Cl. 53-159.000.
- Petry, Charles J., to Hazelett Strip-Casting Corporation. Method and apparatus for determining the operating conditions in continuous metal casting machines of the type having a revolving endless casting belt. 3,864,973, Cl. 73-295.000.
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- Phal, Karl-Heinz. Handrail for escalator. 3,865,225, Cl. 198-16.00R.
- Phelan, Lawrence W., Jr., to Armstrong Cork Company. Single pass multi-colored screen printing. 3,865,032, Cl. 101-129.000.
- Phillips, Michael R.; and Ludwig, Jerome H., to Queensbury Opal Co. Ltd. Doublet having fiber optical element for chatoyant or asterismal display. 3,864,939, Cl. 63-32.000.
- Phillips Petroleum Company: *See—*
  - Ayers, Buell O.; and McCoy, Raymond D., 3,865,562.
  - Banks, Robert L.; and Kenton, Joseph R., 3,865,751.
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  - Moberly, Charles W., 3,865,795.
  - Quigg, Harold T., 3,865,538.
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- Phipps, Richard John, to Camper & Nicholsons (Holdings) Limited. Purification control unit. 3,865,710, Cl. 204-228.000.
- Piereder, Ludwig, to A.B.R. Food Machinery (Canada) Limited. Meat packaging and pressing apparatus and method. 3,864,891, Cl. 53-35.000.
- Pietzsch, Ludwig: *See—*
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- Pike, Edward Roy, to National Research Development Corporation. Laser doppler velocimetry. 3,866,055, Cl. 250-564.000.
- Pilhall, Stig Tore Lennart; Schalin, Pehr Harald Benedictus; Bohlin, Nils Ivar; and Forsberg, Rolf Hermann, to A B Volvo. Vehicle safety belt systems. 3,865,397, Cl. 280-150.0SB.
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- Piotin, Maurice Joseph, to Subsea Equipment Associates Ltd. Diving bell for wellhead placing and maintenance in shallow water. 3,864,924, Cl. 61-69.00R.
- Pittman, Robert B., to Industrial Electronic Hardware Corporation. Spark gap protection in cathode ray tube sockets. 3,865,452, Cl. 339-14.00T.
- Pitts, Frank; and Clubley, Michael Hilton, to Magnesium Elektron Limited. Flame retardant materials. 3,865,760, Cl. 260-2.5AJ.
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- Plumb, John Beckett, to Imperial Chemical Industries Limited. Organo-silicon compounds. 3,865,859, Cl. 260-448.80R.
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- Popelak, Alfred; Stach, Kurt; Thiel, Max; Schaumann, Wolfgang; and Stork, Harald, to Boehringer Mannheim G.m.b.H. (5-Indolyloxy)-acetic acid compounds and therapeutic compositions. 3,865,838, Cl. 260-326.13R.
- Porter, William T.; and Pfeiffer, John D., to United States of America, Air Force. Frequency diversity radar system. 3,866,224, Cl. 343-17.20R.
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  - Greenberg, Charles B., 3,865,747.
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- Pringle, Orvie C.; and Beheyt, John E. Sprayer-mixer. 3,865,308, Cl. 239-61.000.
- Pritchett, Jack, to Post Office, The. Fluid pressurized electrical cables having means incorporated therewith for locating leaks. 3,865,967, Cl. 174-11.00R.
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- Raschke, Curt Robert, to Addressograph-Multigraph Corporation. Method for toning a latent image. 3,865,609, Cl. 117-17.500.
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- Rauchwerger, George P. Capacitance probe and system for precision measurement of liquid level. 3,864,974, Cl. 73-304.00C.
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- Reed, Benjamin H.; and Black, Rexford E. Electrolytic etch apparatus and method. 3,865,704, Cl. 204-129.200.
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- Reinwall, Ernest William, Jr. Rope lock device. 3,864,790, Cl. 24-129.00R.
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- Roess, Louis G., to Moog Inc. Extrusion apparatus having electronic interpolator. 3,865,528, Cl. 425-145.000.
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- Rycroft, Alan, to Becton, Dickinson and Company. Needle shield. 3,865,236, Cl. 206-364.000.
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- Sayles, Donald A. Combustible mixture analyzer. 3,865,707, Cl. 204-195.00S.
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- Scata, Mario, to International Standard Electric Corporation. Safety tipping mechanism for tipping trays on a continuous conveyor. 3,865,226, Cl. 198-38.000.
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- Sprague Electric Company: *See—*
  - Lapham, Jerome F., Jr.; and Mataya, John A., 3,864,817.
  - Marmorek, H. Stephen, 3,866,095.
- Spransy, George B., to W. Braun Company. Dispensing cap for discharging liquid into flush tank from a bottle during a flushing cycle. 3,864,763, Cl. 4-227.000.
- Sprecher & Schuh AG: *See—*
  - Amsler, Joachim, 3,866,005.
- Spring Associates, Inc.: *See—*
  - Anonauer, Irwin, 3,864,765.
- Spring Mills, Inc.: *See—*
  - Poole, Emory Donald, 3,865,151.
- Springfield, Redwood L. Temperature measuring apparatus. 3,864,975, Cl. 73-341.000.
- Square D Company: *See—*
  - Stanback, Harris I., 3,865,007.
- Stach, Kurt: *See—*
  - Popelak, Alfred; Stach, Kurt; Thiel, Max; Schaumann, Wolfgang; and Stork, Harald, 3,865,838.
- Stacy, John C.; Vetere, John J.; and Bennett, Sedgwick R., to GTE Sylvania Incorporated. Photoflash assembly with serially advancing percussive lamps. 3,866,033, Cl. 240-1.300.
- Stafford, David F. Energy absorbing restraint for passengers. 3,865,433, Cl. 297-390.000.
- Stafford, Eugene T., to Dixie Type and Supply Co. Apparatus for slitting sheet material. 3,865,000, Cl. 83-121.000.
- Staheli, Paul: *See—*
  - Moser, Robert; and Staheli, Paul, 3,865,439.
- Stalder, Eduard. Withdrawable cover for a swimming pool. 3,864,761, Cl. 4-172.140.
- Stanback, Harris I., to Square D Company. Torque determining allen screw. 3,865,007, Cl. 85-61.000.
- Standard Metallwerke GmbH: *See—*
  - Westhoff, Josef, 3,865,144.
- Standard Oil Company: *See—*
  - Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,865,691.
  - Steigelmann, Edward F.; and Hughes, Robert D., 3,865,890.
- Stankus, Robert W., to Letot, Incorporated. Telephone control system having wakeup, message waiting, special message and fire alert modes. 3,865,985, Cl. 179-5.00P.
- Stanley, William L.: *See—*
  - Jurd, Leonard; King, A. Douglas, Jr.; and Stanley, William L., 3,865,748.
- Stanray Corporation: *See—*
  - Hassellof, Donald Elmer; and Scherer, Cyril George, 3,865,049.
- Stantial, Charles T. Variable motion pedal assembly for a foot-powered vehicle. 3,865,366, Cl. 272-73.000.
- Stark, John-Hermann; Lambiel, Jean-Claude; and Jungo, Markus, to Ciba-Geigy AG. Capillary viscosimeter. 3,864,962, Cl. 73-55.000.
- Stauffer Chemical Company: *See—*
  - Baker, Don R., 3,865,944.
  - Fancher, LLewellyn W., 3,865,905.
- Stauth, Tommy E. Rotary hydraulic motor. 3,865,524, Cl. 418-206.000.
- Steeger, Elmer J.: *See—*
  - Elsner, Norbert E.; Perry, Louis W., Jr.; Emken, Michael R.; and Steeger, Elmer J., 3,865,632.
- Steel, Francis R., to Motorola, Inc. Phase locked frequency divider circuitry. 3,866,137, Cl. 331-18.000.
- Steen, George A. Monorail transportation system. 3,865,040, Cl. 104-18.000.
- Steigelmann, Edward F.; and Hughes, Robert D., to Standard Oil Company. Process for separating a material from a mixture of mixture which comprises employing a solid water-insoluble, hydrophilic, semi permeable membrane. 3,865,890, Cl. 55-16.000.

Steinle, Georg: *See—*
  Schieweck, Hubert; Steinle, Georg; and Haberl, Ludwig, 3,865,957.
Steinwart, Johannes; and Ruf, Max, to Audi NSU Auto Union Aktiengesellschaft; and Wankel GmbH. Piston for rotary piston machines and means for its manufacture. 3,865,179, Cl. 164-340.000.
Steljes, Bernadine E.: *See—*
  Kellermeier, Robert J.; Knight, James T.; and Steljes, Bernadine E., 3,865,964.
Stelmach, Anthony L.: *See—*
  Cartier, Jean-Pierre; Winn, David; and Stelmach, Anthony L., 3,866,019.
Stenberg, Joseph. Rotary engine. 3,865,085, Cl. 123-8.330.
Stephens, Ruth E., to Ethyl Corporation. Catalyst. 3,865,923, Cl. 423-213.200.
Stephens, Thomas M., to Envirotech Corporation. Automatic rotary sample injection valve. 3,864,978, Cl. 73-422.0GC.
Stern, Howard K.: *See—*
  Di Matteo, Paul L.; Ross, Joseph A.; and Stern, Howard K., 3,866,052.
Sterner, Robert A., to FMC Corporation. Anti-curl sheet feeding apparatus. 3,865,364, Cl. 271-105.000.
Stevens, Hugh D.: *See—*
  Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S., 3,865,918.
Stich, Heinrich; Binder, Walter; Hutter, Josef; and Marecek, Helmut, to Osterreichische Stickstoffwerke Aktiengesellschaft. Process for the manufacture of cement clinker and sulphur dioxide. 3,865,602, Cl. 106-103.000.
Stiefel, Richard; and Krumm, Charles G., to Kahle Engineering Co. Automatic charge feeder. 3,865,297, Cl. 228-11.000.
Stierli, Robert F.: *See—*
  Serafin, Frank G.; Previte, Robert W.; and Stierli, Robert F., 3,865,601.
Stock, Peter Sinclair: *See—*
  Savage, Sidney Clifford; and Stock, Peter Sinclair, 3,864,942.
Stockel, Dieter: *See—*
  Schneider, Friedrich; and Stockel, Dieter, 3,864,807.
Stockhaus, Klaus: *See—*
  Merz, Herbert; Langbein, Adolf; Wick, Helmut; and Stockhaus, Klaus, 3,865,943.
Stoddard, Patrick C. Corona discharge treatment of an oil slick. 3,865,722, Cl. 210-42.000.
Stodt, Eberhard, to Lindemann Maschinenfabrik GmbH. Silo for bulk material. 3,865,259, Cl. 214-17.00C.
Stoka, Roberto: *See—*
  Burgdorf, Jochen; and Stoka, Roberto, 3,865,215.
Stork, Harald: *See—*
  Popelak, Alfred; Stach, Kurt; Thiel, Max; Schaumann, Wolfgang; and Stork, Harald, 3,865,838.
Stoveken, Robert Ernest: *See—*
  De Howitt, Jack Renato; Jonkoff, Imre Mirko; and Stoveken, Robert Ernest, 3,865,078.
Stratco Metal Proprietary Limited: *See—*
  Lasscock, Jack Edward, 3,864,882.
Strauss, Wennemar: *See—*
  Immel, Waldemar; and Strauss, Wennemar, 3,865,702.
Strauts, Eric J.; Flaherty, John J.; and Lorenzi, Donald E., to Magnaflux Corporation. Eddy current testing system having probe switching and gating means. 3,866,116, Cl. 324-40.000.
Streets, Charles E.; and Hembree, Robert S. Charcoal starter device. 3,865,052, Cl. 110-1.00F.
Streitwieser, Andrew, Jr.: *See—*
  Musser, Michael T.; and Streitwieser, Andrew, Jr., 3,865,865.
Stronge, David G.; and Ortiz, Remey. Water tight and moisture proof toilet paper container. 3,865,323, Cl. 242-55.530.
Studer, Philip A., to United States of America, National Aeronautics and Space Administration. Magnetic bearing. 3,865,442, Cl. 308-10.000.
Studinka, Josef: *See—*
  Lussi, Heinz; Berther, Clau; and Studinka, Josef, 3,865,814.
Subsea Equipment Associates Ltd.: *See—*
  Piotin, Maurice Joseph, 3,864,924.
Subsurface Machine and Manufacturing Inc.: *See—*
  Winberg, Douglas F., 3,865,196.
Sueddeutsche Zucker-Aktiengesellschaft: *See—*
  Schieweck, Hubert; Steinle, Georg; and Haberl, Ludwig, 3,865,957.
Suemune, Kenitiro: *See—*
  Takahashi, Nobuyuki; Suemune, Kenitiro; Nagata, Shuji; and Tomozoe, Tatumi, 3,865,645.
Sugawara, Shinichi: *See—*
  Arai, Mamoru; Itoh, Yashuhiro; Nakahara, Masaki; Kayamori, Hisashi; and Sugawara, Shinichi, 3,865,693.
Suggs, Robert. Platinum plating process. 3,865,697, Cl. 204-15.000.
Sully, Fenton F., to Everest & Jennings, Inc. Rotating wheelchair arm. 3,865,434, Cl. 297-417.000.
Sulzer Brothers Limited: *See—*
  Demuth, Hans, 3,865,150.
  de Vivy, Dominique le Febve, 3,866,026.
  Konig, Ferdinand, 3,866,031.
  Lorenz, Michael, 3,864,918.
  Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, 3,865,148.
Sumimato Chemical Company, Limited: *See—*
  Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, 3,865,827.
Sumitomo Chemical Company, Limited: *See—*
  Ozaki, Toshiaki; Kamoshita, Katsuzo; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Nakai, Shinji; and Akiba, Keiichiro, 3,865,866.
Sumitomo Metal Industries Limited: *See—*
  Okuto, Koichiro; and Kai, Toshio, 3,865,498.
Summers, Peter: *See—*
  Bendall, Dennis M.; Harris, William R.; Summers, Peter; Pyart, Raymond S.; Kew, Jeffrey; Sherborne, Michael C. D.; Caldwell, Alistair J.; Thorp, Peter M.; and Jones, John A., 3,865,482.
Summit Plastic Corporation: *See—*
  Merzweiler, Leo A., 3,864,860.
Sun Oil Company of Pennsylvania: *See—*
  Kirsch, Francis William; Barmby, David S.; and Potts, John D., 3,865,894.
Sun Research and Development Co.: *See—*
  Duling, Irl N.; and Merges, John C., Jr., 3,865,674.
Sun Ventures Inc.: *See—*
  Mitchell, Richard E., 3,865,889.
Sutton, Blaine M., to SmithKline Corporation. α,β-Unsaturated esters of vulpinic acid. 3,865,947, Cl. 424-285.000.
Suwama, Toshitaka: *See—*
  Ooue, Shingo; Ueda, Hiroyuki; Hashiue, Masakazu; Murakoshi, Makoto; Suwama, Toshitaka; and Noguchi, Masaru, 3,865,478.
Suzuki, Akira; Kinoshita, Shushi; and Ueda, Takeshi, to Kobe Steel, Limited. Method of processing steel material having high austenitic grain-coarsening temperature. 3,865,636, Cl. 148-12.00R.
Suzuki, Kisaburo: *See—*
  Oya, Seigo; Noro, Hiroo; and Suzuki, Kisaburo, 3,865,779.
Suzuki, Masao: *See—*
  Hashimoto, Hiroshi; Abe, Tetsuo; and Suzuki, Masao, 3,866,102.
Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Logic circuit arrangement employing insulated gate field effect transistors. 3,866,186, Cl. 340-173.0SP.
Suzuki, Yasushi; and Itaya, Toshihisa. Tri-substituted aluminum salts or di-substituted aluminum salts of carboxyl group-containing, pharmaceutically effective compounds, and process for preparation thereof. 3,865,857, Cl. 260-448.00R.
Svehaug, Henry V.: *See—*
  Davis, Walter L.; and Svehaug, Henry V., 3,865,965.
Svensson, Bengt; and Wallin, Gunnar, to Siemens Aktiengesellschaft. Heartbeat actuator with controlled pulse amplitude. 3,865,119, Cl. 128-419.00P.
Swanberg, Melvin E., to Xerox Corporation. Electrostatic control of fan fold paper stacking. 3,865,480, Cl. 355-3.00R.
Swanson, Allan R., to Clark Equipment Company. Two wheel tractor. 3,865,205, Cl. 180-12.000.
Sweeney, Robert. Arm braced and stabilized slingshot. 3,865,094, Cl. 124-20.00R.
Swered, Paul: *See—*
  Shema, Bernard F.; Brink, Robert H., Jr.; and Swered; Paul, 3,865,724.
Swift & Company: *See—*
  Anderson, Harry T., 3,865,711.
  Connick, Francis Glenn, 3,865,351.
  Lewis, Morton, 3,865,936.
Swisher, Rolla Douglas, to Berkley & Company, Inc. Flat butt tapered leader. 3,864,865, Cl. 43-44.980.
Sybertz, Hans, to Hambak Maschinenfabrik KG. Cutter for wood comminuting machine. 3,865,164, Cl. 144-230.000.
Sylvester, Robert T.: *See—*
  Allen, Travis A.; and Sylvester, Robert T., 3,865,298.
Synek, Jan, to International Telephone and Telegraph Corporation. Trunk circuit with forced release feature. 3,865,993, Cl. 179-18.00F.
Syntex Corporation: *See—*
  Edwards, John A.; and Fried, John H., 3,865,883.
Szabo Nee Czibula, Gabriella: *See—*
  Korosi, Jeno; Szabo Nee Czibula, Gabriella; Lay Nee Konya; Erdelyi Nee Petocz, Lujza; Balla Nee Kosoczky, Bolya; and Kiszelly, Eniko, 3,865,828.
Szabo, Thomas L.: *See—*
  Slobodnik, Andrew J., Jr.; and Szabo, Thomas L., 3,866,153.
Sze, Morgan C.: *See—*
  Schindler, Harvey D.; Sze, Morgan C.; and Riegel, Herbert, 3,865,886.
Szymanski, Chester D.; and Helmstetter, Gerald J., to National Starch and Chemical Corporation. Modified starch-extended gelatin compositions. 3,865,603, Cl. 106-130.000.
T.A.D. Avanti, Inc.: *See—*
  Darwood, James R., 3,865,986.
Tabke, Robert S.: *See—*
  Mitchell, Reid L.; Muller, Thomas E.; Stevens, Hugh D.; and Tabke, Robert S., 3,865,918.
Taguchi, Seiichi; Tezuka, Sigeru; Tomotsu, Takeshi; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Multi-color dye-transfer apparatus. 3,865,033, Cl. 101-181.000.
Taguchi, Yasuo; and Shimonaka, Takehiro, to Tokyo Shibaura Electric Co., Ltd. Voltage regulator with protection circuit for an alternating current generator. 3,866,106, Cl. 320-64.000.
Tajima, Mutsunari; and Komatsu, Isao, to Nippon Electric Company, Limited. Specific frequency signal detecting circuit. 3,866,151, Cl. 333-17.000.

Takabatake, Hideo: *See—*
  Takahashi, Kihei; and Takabatake, Hideo, 3,864,792.
Takada, Masami: *See—*
  Nakamura, Shinichi; Morita, Kazuo; and Takada, Masami, 3,866,121.
Takahashi, Akinori: *See—*
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Takahashi, Hikoji; Misawa, Seisuke; Takahashi, Akinori; and Yoshimura, Hisashi, to Nippon Kokuyu Tetsudo. Water jet drill bit. 3,865,202, Cl. 175-393.000.
Takahashi, Kihei; and Takabatake, Hideo, to Yoshida Kogyo Kabushiki Kaisha. Bridge top stop for slide fasteners. 3,864,792, Cl. 24-205.11R.
Takahashi, Nobuyuki; Suemune, Kenitiro; Nagata, Shuji; and Tomozoe, Tatumi, to Nippon Steel Corporation. Cold-rolled steel sheet for press-forming. 3,865,645, Cl. 148-142.000.
Takahashi, Toshio: *See—*
  Kumagai, Denroku; Marubayashi, Gen; Arita, Kishio; Kubo, Shugo; Yamauchi, Goro; Takahashi, Toshio; and Sato, Toshihiko, 3,865,971.
Takasago Perfumery Co., Ltd.: *See—*
  Akutagawa, Susumu; Kumobayashi, Hidenori; and Komatsu, Akira, 3,865,888.
  Sakuma, Sankichi, 3,865,532.
Takashima, Masaru, to Aikoh Co., Ltd. Composition for treating steels. 3,865,578, Cl. 75-58.000.
Takeda Chemical Industries, Ltd.: *See—*
  Meguro, Kanji; and Kuwada, Yutaka, 3,865,811.
Takeuchi, Kiyokazu: *See—*
  Kaneda, Isao; and Takeuchi, Kiyokazu, 3,866,088.
Takezawa, Teruhiro: *See—*
  Masuda, Michio; Mohri, Katsuo; Nabeyama, Hiroaki; Takezawa, Teruhiro; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Uehara, Takashi; and Yoshino, Takehiko, 3,865,973.
Taltavull, Ignacio Goytisolo. Fluorescent fixture with optical device. 3,866,036, Cl. 240-51.11R.
Tanabe Seiyaku Co., Ltd.: *See—*
  Chibata, Ichiro; Tosa, Tetsuya; Sato, Tadashi; and Mori, Takao, 3,865,726.
Tanaka, Katsutoshi: *See—*
  Ozaki, Toshiaki; Kamoshita, Katsuzo; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Nakai, Shinji; and Akiba, Keiichiro, 3,865,866.
Taneda, Teiichi: *See—*
  Tatuoka, Sizuo; Taneda, Teiichi; and Aiko, Meiki, 3,865,465.
Tanney, John W., to Canadian Patents and Development Limited. Apparatus for measuring the velocity of a fluid stream relative to the apparatus. 3,864,971, Cl. 73-194.00R.
Tanus, Antonio. Theater chair automatically movable by remote control. 3,865,430, Cl. 297-217.000.
Tatuoka, Sizuo; Taneda, Teiichi; and Aiko, Meiki, to Nippon Hoso Kyokai. Compensation system for a polygonal mirror scanning system. 3,865,465, Cl. 350-7.000.
Tauern, Dankmar; Wild, Rainer; and Harder, Karl-Max, to Hilti Aktiengesellschaft. Method and apparatus for electrical stud welding. 3,866,012, Cl. 219-99.000.
Tautz, William Paul: *See—*
  Beaman, Alden Gamaliel; and Tautz, William Paul, 3,865,823.
Taylor, Chandler R., Jr.: *See—*
  Allen, Richard C.; and Taylor, Chandler R., Jr., 3,865,839.
Taylor, Francis A.: *See—*
  Agusto, Robert G.; Taylor, Francis A.; and Briggs, Hartwell L., 3,865,884.
Taylor, Leland Thomas. Apparatus for the production of ozone. 3,865,733, Cl. 250-532.000.
Taylor, Sidney A., to United States of America, Navy. Synchro-to-digital converter. 3,866,214, Cl. 340-347.0SY.
Tazaki, Sadanori; and Ishida, Yozo, to Bridgestone Tire Company, Limited. Floating breakwater. 3,864,920, Cl. 61-5.000.
TDK Electronics Company Ltd.: *See—*
  Ishino, Takeshi; and Ono, Nobuyuki, 3,866,009.
Technitrol, Inc.: *See—*
  Cebula, Leonard A.; Fitzpatrick, Joseph F., Jr.; and Kershaw, Justin A., Jr., 3,866,126.
Teijin Limited: *See—*
  Mitchell, Richard E., 3,865,889.
  Yoshida, Norio; Imanaka, Yoshihiko; and Katayama, Kiyoji, 3,865,758.
Teledyne Aqua Tec Company: *See—*
  Elkins, Christopher W.; and Ruehmann, Donald W., 3,865,310.
Teledyne Industries, Inc.: *See—*
  Elkins, Christopher W.; and Ruehmann, Donald W., 3,865,310.
Tenneco Oil Company: *See—*
  Wilson, David; and Burwell, Blair T., 3,865,541.
Terazono, Narihiro: *See—*
  Anzai, Nobuo; and Terazono, Narihiro, 3,866,097.
Terhune, Ralph D.; and Duke, James C. Emulsion breaker. 3,865,732, Cl. 210-315.000.
Teruzzi, Angelo. Composable switch device. 3,866,008, Cl. 200-303.000.
Testa, Emilio: *See—*
  Cavalleri, Bruno; Bellasio, Elvio; Testa, Emilio; and Maffii, Giulio, 3,865,847.
Tetenbaum, Marvin Theodore, to Allied Chemical Corporation. O-(n-methylthiocarbamoyl)-hexamethylenimine-2-oxime. 3,865,809, Cl. 260-239.0BF.
Tewksbury, John M., to Bendix Corporation, The. Single channel communication system. 3,866,230, Cl. 343-178.000.
Texaco Inc.: *See—*
  Carlin, Joseph T.; and Cardenas, Richardo L., 3,865,187.
  Christopher, Charles A.; and Allen, Joseph C., 3,865,190.
  Haugen, Haakon; and Dadura, James G., 3,865,810.
  McCoy, Frederic C.; and Cole, Edward L., 3,865,896.
  Smith, Harry D., Jr., 3,864,969.
  Waldbillig, James O., 3,865,739.
Texas Instruments Incorporated: *See—*
  Ornstein, Jacob L., 3,865,559.
  Robichaud, Robert H., 3,865,099.
Textron, Inc.: *See—*
  Bauer, William H., 3,864,771.
  Coles, Alan V., 3,865,332.
  Massoney, Dwight F., 3,865,006.
  Paxhia, Vincent B.; and Bossler, Franklin B., 3,865,311.
Tezuka, Sigeru: *See—*
  Taguchi, Seiichi; Tezuka, Sigeru; Tomotsu, Takeshi; and Mizuki, Eiichi, 3,865,033.
Thai, Ngo Hai; and Violi, Joseph, to Thomson-CSF. Waveguide junction circulator having conductive partition in magnetic midplane of function. 3,866,150, Cl. 333-1.100.
Thakore, Kaushik H., to Bendix Corporation, The. Energy tester for testing blasting machines that detonate electro-explosive devices. 3,865,028, Cl. 102-70.20R.
Thatcher, Judith G.; and White, Rudolph C. Conversion process utilizing homogeneous metal catalysts. 3,865,893, Cl. 260-683.200.
Thatcher, Russell S.: *See—*
  Fiegel, Harry J., Jr.; and Thatcher, Russell S., 3,864,812.
Theriot, Harry P. Playing field with net and basket structure. 3,865,371, Cl. 273-95.00H.
Thevenaz, Jean; and Kreienbuhl, Claude, to Bolex International SA. Cinematographic apparatus. 3,865,476, Cl. 352-191.000.
Thiel, Max: *See—*
  Popelak, Alfred; Stach, Kurt; Thiel, Max; Schaumann, Wolfgang; and Stork, Harald, 3,865,838.
Thiokol Chemical Corporation: *See—*
  Lundstrom, Norman H., 3,865,660.
  Munson, William O.; and Reed, Russell, Jr., 3,865,035.
Thom, Wenzel W., to Architectural Art Mfg., Inc. Cover assembly for structural joints. 3,864,886, Cl. 52-469.000.
Thomas, Alfred R. Oscillating brush. 3,864,779, Cl. 15-22.00R.
Thomas, Arwyn Theophilus; and Williams, Raymond James. Manufacture of fuse heads. 3,865,008, Cl. 86-1.00R.
Thomas, Gordon A.: *See—*
  Gleason, C. Roy; and Thomas, Gordon A., 3,865,684.
Thomas, Robert L. Stock market game. 3,865,380, Cl. 273-134.0AF.
Thominet, Michel Leon, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. Method of anesthetizing a mammal by administration of a substituted 2-arylalkyloxy benzamide. 3,865,946, Cl. 424-274.000.
Thompson, David F.: *See—*
  Brenan, Robert R.; Bunker, Thomas D.; and Thompson, David F., 3,864,820.
Thompson, Frederick: *See—*
  Mathers, Robert Valentine; and Thompson, Frederick, 3,865,395.
Thompson, Garth Molesdale: *See—*
  Eichler, David Anthony; Lucas, Joshua Michael Stuart; Martin, George Christopher James; Parnell, Edgar William; and Thompson, Garth Molesdale, 3,865,948.
Thompson, Hank A. Portable keg tapper. 3,865,276, Cl. 222-146.00C.
Thompson, William A., Jr. Bicycle hub. 3,865,220, Cl. 192-46.000.
Thomson-CSF: *See—*
  Thai, Ngo Hai; and Violi, Joseph, 3,866,150.
Thomson, Ely Knox, to Continental Carbon Company. Filling spout assembly for solid materials. 3,865,280, Cl. 222-193.000.
Thorn, Lawrence B.: *See—*
  Dreitzler, David R.; Moore, Charles R.; and Thorn, Lawrence B., 3,864,958.
Thorp, Peter M.: *See—*
  Bendall, Dennis M.; Harris, William R.; Summers, Peter; Pyart, Raymond S.; Kew, Jeffrey; Sherborne, Michael C. D.; Caldwell, Alistair J.; Thorp, Peter M.; and Jones, John A., 3,865,482.
Thuillier, Jacques: *See—*
  Bellot, Jean; Hugo, Michel; Thuillier, Jacques; and Hubert, Roger, 3,865,639.
Thuse, Erik: *See—*
  Begun, Robert A.; Thuse, Erik; and McGee, Arthur L., 3,865,142.
Tichy, Dieter: *See—*
  Schnee, Karl; Tichy, Dieter; and Engelhardt, Friedrich, 3,865,683.
Tidwell, Richard Wm. Spare tire holder. 3,865,291, Cl. 224-42.240.
TIE/Communications Inc.: *See—*
  Kerman, Stephen; and Shinoi, Tsuyoshi, 3,865,995.
Timmins, Sidney, to Air-Log Limited. Control Linkages. 3,864,914, Cl. 60-434.000.
Tischer, Werner: *See—*
  Liebert, Karl-Heinz; and Tischer, Werner, 3,865,211.
Tiss, Irving D. Collar stay. 3,865,286, Cl. 223-83.000.
Titus, Paul E.; and Di Gregorio, Joseph S., to Shell Oil Company. Preventing corrosion during the pipeline transportation of coal slurries. 3,865,547, Cl. 21-2.50R.

- Tjurin, Vladimir Dmitrievich: *See—*
  - Nametkin, Nikolai Sergeevich; Gubin, Sergei Pavlovich; Tjurin, Vladimir Dmitrievich; Fedorov, Viktor Viktorovich; Usachev, Valery Zeilikovich; Matveev, Mikhail Semenovich; Larionov, Leonid Ivanovich; Eliner, Alexandr Solomonovich; and Barashkov, Ruslan Yakolevich, 3,865,715.
- Tobolsky, Arthur V., deceased (by Tobolsky, Dorothy E., executrix). Process for preparing block copolymers with carbamate linkages between a polyvinyl chain and a polymer having active hydrogens. 3,865,898, Cl. 260-859.00R.
- Tobolsky, Dorothy E., executrix: *See—*
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- Todd, Charles E., to Uniroyal Inc. Expansible and contractible transfer ring. 3,865,669, Cl. 156-394.000.
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  - Allen, Herbert J., Jr.; Todd, Ronald Earl; and Wegman, Jerry Wayne, Sr., 3,865,623.
- Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See—*
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- Tokyo Shibaura Electric Co., Ltd.: *See—*
  - Suzuki, Yasoji, 3,866,186.
  - Taguchi, Yasuo; and Shimonaka, Takehiro, 3,866,106.
- Tolnai, Julius L., to Price Pfister Brass Mfg. Co. Appliance shutoff valve. 3,865,139, Cl. 137-625.190.
- Tombu, Gerard. Wall covering assembly for heating coverings. 3,866,016, Cl. 219-213.000.
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  - Taguchi, Seiichi; Tezuka, Sigeru; Tomotsu, Takeshi; and Mizuki, Eiichi, 3,865,033.
- Tomozoe, Tatumi: *See—*
  - Takahashi, Nobuyuki; Suemune, Kenitiro; Nagata, Shuji; and Tomozoe, Tatumi, 3,865,645.
- Toray Industries, Inc.: *See—*
  - Okamoto, Miyoshi; Yoshida, Shusuke; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, 3,865,678.
- Tornqvist, Erik G. M.; and Cozewith, Charles, to Exxon Research and Engineering Company. Butadiene polymerization catalyst. 3,865,749, Cl. 252-429.00B.
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- Tosa, Tetsuya: *See—*
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- Tottori, Hiroshi: *See—*
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- Towfigh, Keivan; and Ritchie, Douglas E., to Rangine Corporation. Shelving arrangement or the like. 3,865,337, Cl. 248-246.000.
- Towne, Delbert Douglas: *See—*
  - Hardin, William Warner; Peterson, David Ernest; and Towne, Delbert Douglas, 3,865,365.
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  - Mizusawa, Shim-Ichiro; and Hishiki, Tsutomu, 3,865,413.
  - Shimizu, Syozo; Shinohara, Hiroshi; Kondou, Toshihito; and Yamada, Norimasa, 3,865,617.
- Tracto-Technik Paul Schmidt: *See—*
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- Tracy, Joseph Charles, Jr.: *See—*
  - Logan, Ralph Andre; Schwartz, Bertram; Tracy, Joseph Charles, Jr.; and Wiegmann, William, 3,865,646.
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  - Pothier, Robert G.; and Ford, Thomas E., 3,865,301.
- Traser, Werner: *See—*
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- Treanor, Robert M.: *See—*
  - Augustin, Michael J.; Kramer, Wayne C.; and Treanor, Robert M., 3,866,136.
- Trebinger, Karl: *See—*
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- Trepka, Robert D.: *See—*
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  - Broecker, Franz Josef; Kaempfer, Knut; Marosi, Laslo; Schwarzmann, Matthias; and Triebskorn, Bruno, 3,865,753.
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  - Block, Jacob; Herbst, Richard J.; and Triggiani, Leonard V., 3,865,745.
- Tritle, Gary L.: *See—*
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- Troncoso, Fernando, Jr. Arrow locating device. 3,865,374, Cl. 273-106.50R.
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  - Hanson, Le Roy P.; and Trost, Calvin E., 3,864,806.
- Trout, Mitchel A., to Dymo Industries Inc. Imprinter. 3,865,026, Cl. 101-45.000.
- Truck Specialist Inc.: *See—*
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- TRW Inc.: *See—*
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  - Burge, Harland L., Jr.; and Salvinski, Richard J., 3,865,539.
- Tsao, Sherman H. M.: *See—*
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- Tschumi, Otto, to Autophon Aktiengesellschaft. Indicator system with signal indicators. 3,866,216, Cl. 340-379.000.
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  - Newbury, Ray S.; and Tully, Geoffrey R., Jr., 3,865,614.
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- Tupper, Burr E.; and Alva, Luis Cejudo, to Kaiser Gypsum Company, Inc. Apparatus and method for employing gypsum board as forms for poured concrete ceiling and floor structures. 3,864,888, Cl. 52-741.000.
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  - Krapcho, John; and Turk, Chester F., 3,865,818.
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- Tveter, Cora Belvin Judd, executrix: *See—*
  - Tveter, Elmer C., deceased; Harris, Guy H.; and Lindy, Lowell B., 3,865,718.
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  - Birch, Ralph William, 3,865,263.
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- Ullman, John E., to Huntingdon Industries Incorporated. Bottle packaging machine and method. 3,864,890, Cl. 53-26.000.
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- Union Camp Corporation: *See—*
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- Union Carbide Corporation: *See—*
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  - Jackson, George E., 3,864,944.
  - McMullen, Charles H., 3,865,881.
  - Neale, Robert Schwenn; and Pines, Arthur Noah, 3,865,784.
  - Rowe, Arthur W.; and Marshall, Edward T., 3,865,411.
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  - Rubin, Jack A.; and Johnson, Peter D., 3,865,746.
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  - Evers, Hendrikus Willemina, 3,866,076.
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  - Kooi, Else; and Hoeberechts, Arthur Marie Eugene, 3,864,818.
  - Putzer, Walter, 3,866,138.
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  - Van Gelder, Zeger; and Mattheij, Mathieu Martinus Maria Petrus, 3,866,090.
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  - Hall, Charles M.; and Johnson, Herbert G., 3,865,831.
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- Valentine, Charles G., to Xerox Corporation. Educational device for learning ignition system fundamentals. 3,864,849, Cl. 35-13.000.
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  - Galen, Ralph W.; and Vanderpoel, John A., 3,865,244.
- Vanderveen, John W., to Phillips Petroleum Company. Carbon black process using flow reversal. 3,865,926, Cl. 423-456.000.
- Van De Ven, Adrianus Johannes Cornelis: *See—*
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- Van Heijst, Willem Jan, to N.V. Industrieele Handelscombinatie Holland. Arrangement for anchoring a floating body. 3,865,064, Cl. 114-206.00R.
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- Voelz, Frederick L., to Atlantic Richfield Company. Method for diagnosing malfunctions in internal combustion engines. 3,864,964, Cl. 73-116.000.
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- Von Alven, Raymond D., to Cutter Laboratories, Inc. Container support. 3,865,339, Cl. 248-318.000.
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  - Dial, Darrell D.; and von Bose, Robert J., 3,864,922.
- Von Fummetti, Cyril William; and Dennis, David, to Deere & Company. Engine compartment access door latch system. 3,865,210, Cl. 180-69.00R.
- Von Hippel, Hans Joachim, deceased (by Von Hippel, Sophie, heir and legal representative); and Von Hippel, Mila, heir and legal representative. Method of and system for gasifying underground deposits of coal. 3,865,186, Cl. 166-256.000.
- Von Hippel, Mila, heir and legal representative: *See—*
  - Von Hippel, Hans Joachim, deceased; and Von Hippel, Mila, heir and legal representative, 3,865,186.
- Von Hippel, Sophie, heir and legal representative: *See—*
  - Von Hippel, Hans Joachim, deceased; and Von Hippel, Mila, heir and legal representative, 3,865,186.
- von Rintelen, Harald: *See—*
  - Gauss, Walter; Petersen, Siegfried; Ranz, Erwin; Himmelmann, Wolfgang; and von Rintelen, Harald, 3,865,594.
- Von Thuna, Peter C., to Arthur D. Little, Inc. Retroreflecting beam splitter and apparatus for measuring gravity gradients embodying the same. 3,865,467, Cl. 350-102.000.
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  - Remeika, Joseph Peter; Voorhoeve, Rudolf Johannes; and Bell Telephone Laboratories, Incorporated, 3,865,752.
- Vopat, Frank E.; and Colucci, Stephen L. Chalk eraser made from closed cell foam plastic. 3,864,778, Cl. 15-105.000.
- Voronko, Vladimir Grigorievich: *See—*
  - Gulyaev, Gennady Ivanovich; Neznamov, Jury Nikolaevich; Nechiporenko, Anatoly Ionovich; Ostrenko, Viktor Yakovlevich; Kutsenko, Petr Ivanovich; Kurilenko, Viktor Kharitonovich; Ermolov, Ivan Vasilievich; Chekmarev, Alexandr Ilich; Voronko, Vladimir Grigorievich; Boiko, Ivan Petrovich; Mamontov, Vladimir Romanovich; Pustovoichenko, Jury Ivanovich; Volovik, Gennady Mikhailovich; Zakharenko, Vladislav Georgievich; and Paschenko, Viktor Prokhorovich, 3,864,951.
- Vrijssen, Gerardus Arnoldus Herman Maria, to U.S. Philips Corporation. Vacuum-tight electric leadthrough in an electric discharge tube. 3,865,970, Cl. 174-50.530.
- Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
  - Lev, Jaroslav; and Kakac, Karel, 3,865,147.
- W. Braun Company: *See—*
  - Spransy, George B., 3,864,763.
- W. R. Grace & Co.: *See—*
  - Block, Jacob; Herbst, Richard J.; and Triggiani, Leonard V., 3,865,745.
  - O'Neill, Gerald Joseph; Simons, Charles William; and Billings, Charles Alden, 3,865,950.
  - Serafin, Frank G.; Previte, Robert W.; and Stierli, Robert F., 3,865,601.
- Wade, Robert C., to Resitron Corporation. Self-extinguishing resinous foams. 3,865,757, Cl. 260-2.5AR.
- Wager Electric Corporation: *See—*
  - McGuirk, Francis A., Jr., 3,866,168.
- Waghorne, Winfield Earle: *See—*
  - Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,865,744.
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- Wait, A. Logan, Jr. Outboard motor stand. 3,865,334, Cl. 248-4.000.
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  - Shearer, Gerald W.; and Wakida, Edward A., 3,866,051.
- Waldbillig, James O., to Texaco Inc. Thiadiazole derivatiive, mixture and compositions thereof. 3,865,739, Cl. 252-47.000.
- Walker, Frank, to Hick, Hargreaves and Company Ltd. Methods of assembling tube supports. 3,864,811, Cl. 29-455.000.
- Wallace, Eugene L. Truck bed tie-down anchoring device. 3,865,048, Cl. 105-369.00A.
- Waller, Earl C., to Advance Transformer Co. Method of welding laminated cores. 3,866,014, Cl. 219-137.000.
- Wallin, Gunnar: *See—*
  - Svensson, Bengt; and Wallin, Gunnar, 3,865,119.
- Walser, Armin: *See—*
  - Fryer, Rodney Ian; and Walser, Armin, 3,865,815.
- Walters, Patrick A.: *See—*
  - Abbott, Eugene A.; Isquith, Alan J.; and Walters, Patrick A., 3,865,728.
- Wankel GmbH: *See—*
  - Steinwart, Johannes; and Ruf, Max, 3,865,179.
- Warden, Charles B.: *See—*
  - Spence, Harry E.; and Warden, Charles B., 3,865,565.
- Ware, J. Edgar, Jr.; Kilbourn, Edward E.; and Peardon, David L., to Rohm and Haas Company. Pyridyl phenyl carbamate rodenticides. 3,865,931, Cl. 424-84.000.
- Warner, Paul F., to Phillips Petroleum Company. Method for reducing the sulfur content of a petroleum fraction. 3,865,714, Cl. 208-238.000.
- Warren, Roy K., to Exxon Production Research Company. Method of mineral exploration by detecting electromagnetic energy at power line frequency. 3,866,111, Cl. 324-3.000.
- Warren, William H. Vacuum control system. 3,865,420, Cl. 294-64.00R.
- Washio, Takaji; and Aizawa, Tatsuo, to Mita Industrial Co. Ltd. Copying machine equipped with synchronous exposing mechanism. 3,865,481, Cl. 355-13.000.
- Watanabe, Hiroshi, to Nippon Electric Company, Limited. Memory circuit. 3,866,188, Cl. 340-173.0DR.
- Watanabe, Tatsuo: *See—*
  - Okamoto, Miyoshi; Yoshida, Shusuke; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, 3,865,678.
- Watkins, Jasper. Cleaning brush with revolving bristles. 3,864,780, Cl. 15-29.000.
- Watkins, Jasper. Toy with automatically actuated speaker box. 3,864,873, Cl. 46-232.000.
- Watkinson, Leonard James, to Howson-Algraphy Limited. Lithographic printing plates. 3,865,595, Cl. 96-87.00R.
- Watson, James C.; and Hebert, Roy J., to Rockwell International Corporation. Tuning and matching of film inductors or transformers with paramagnetic and diamagnetic suspensions. 3,864,824, Cl. 29-608.000.
- Watson, William E., to Allied Chemical Corporation. Method and apparatus for reacting sulfur dioxide and natural gas. 3,865,927, Cl. 423-570.000.
- Way, Lee V. Auxiliary foldable step structure. 3,865,399, Cl. 280-166.000.
- Wean United Inc.: *See—*
  - Ledebur, Harry C.; and Wilson, Harold R., 3,864,878.
- Weber, Helmut: *See—*
  - Reinhardt, Helmut; Trebinger, Karl; Kallrath, Gottfried; and Weber, Helmut, 3,865,921.
- Webers, Werner: *See—*
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  - Allen, Herbert J., Jr.; Todd, Ronald Earl; and Wegman, Jerry Wayne, Sr., 3,865,623.
- Wehling, Rolf; and Neubert, Rolf, to Fried. Krupp, Gesellschaft mit beschrankter Haftung. Apparatus and method for spinning yarns composed of fiber blends. 3,864,902, Cl. 57-58.950.
- Weigand, John R.: *See—*
  - Wiegand, John Richard, 3,866,193.
- Weigt, Paul, to Flachglas Aktiengesellschaft Delog-Detag. Automotive-vehicle windshield with built-in active-antenna system. 3,866,232, Cl. 343-713.000.
- Weil-McLain Co., Inc.: *See—*
  - Deters, Elmer M., 3,865,512.
- Weil, Sanford A.: *See—*
  - Solbrig, Charles W.; Weil, Sanford A.; and Rosenberg, Robert B., 3,865,070.
- Weimer, Paul Kessler, to RCA Corporation. Charge-transfer display system. 3,866,209, Cl. 340-324.00R.
- Weiser, Earnest Franklin, to General Electric Company. Electrical motor drive system with field control operable in motoring and braking modes. 3,866,098, Cl. 318-251.000.
- Weiss, Erwin M.; and Brander, Richard, to Beltone Electronics Corporation. Ear seal. 3,865,998, Cl. 179-107.00E.
- Weissman, Bernard. Abrading tool and holder therefor. 3,864,884, Cl. 51-358.000.
- Weitz, Hans-Martin; and Schwarz, Helmut. Manufacture of polymers of cycloolefins by ring-opening polymerization of cycloolefins. 3,865,800, Cl. 260-93.100.
- Welch, James P.; and Siegel, Stephen R., to Odetics, Inc. Clock signal assurance in digital data communication systems. 3,865,981, Cl. 178-69.500.
- Wellcome Foundation Limited, The: *See—*
  - Riley, Clifford, 3,865,549.
- Wells, Thomas R.: *See—*
  - Clever, Raymond E.; Hapke, Kenyon A.; and Wells, Thomas R., 3,865,331.
- Wells, Victor S.: *See—*
  - Clark, Hal J.; and Wells, Victor S., 3,865,214.
- Welmecke, August Philip, to Crocker Country Day School, Inc. Teaching aid. 3,864,850, Cl. 35-31.00R.
- Welty, Donald R.: *See—*
  - Moore, Lawrence A.; and Welty, Donald R., 3,865,531.
- Wen, Samuel S.; and Nelson, Donald J., to Burroughs Corporation. Overlap timing control circuit for conditioning signals in a semiconductor memory. 3,866,061, Cl. 307-208.000.
- Wenckus, Joseph F.; Castonguay, Roger A.; Hanfly, Bernard C.; and Mallahan, Francis J., to Arthur D. Little, Inc. Pressure-and temperature-controlled apparatus for large-scale production of crystals by the czochralski technique. 3,865,554, Cl. 23-273.0SP.
- Wernick, Jack Harry: *See—*
  - Andres, Klaus; Bucher, Ernest; and Wernick, Jack Harry, 3,865,557.
- West, Emery L.: *See—*
  - Roller, William G.; and West, Emery L., 3,865,335.
- West, John Barth, to Maryland Cup Corporation. Automatic container capping and lid dispensing device. 3,864,898, Cl. 53-328.000.
- Western Electric Company, Incorporated: *See—*
  - Broyde, Barret, 3,865,597.
- Westhoff, Josef, to Standard Metallwerke GmbH. Spacer for double windows. 3,865,144, Cl. 138-103.000.
- Westinghouse Air Brake Company: *See—*
  - Bridigum, Robert J.; and Nebiolo, Renaldo A., 3,865,252.
- Westinghouse Electric Corporation: *See—*
  - Buck, Daniel C., 3,866,225.
  - Mann, August C.; and Dillman, Thayer L., 3,866,196.
  - Moore, Robert A., 3,866,154.
  - Reed, Terry J.; and Reuther, John F., 3,866,109.
  - Yannone, Robert A.; and Kiscaden, Roy W., 3,866,108.
- Westram, Werner, to Siemens Aktiengesellschaft. Pushbutton switch with reciprocating cam. 3,866,006, Cl. 200-153.0LA.
- Westvaco Corporation: *See—*
  - Falkehag, Sten I., 3,865,803.
- Whalley, Frank M.: *See—*
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- Wheelabrator-Frye, Inc.: *See—*
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- Whirlpool Corporation: *See—*
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- White, James C.: *See—*
  - Hunsinger, Peter; and White, James C., 3,865,288.
- White, Philip Henry. Multiple spindle machine with variable speed drive. 3,864,994, Cl. 82-3.000.
- White, Robert Miles; and Bates, Howard John, to Rucker Company, The. Tension mooring device. 3,865,066, Cl. 114-230.000.
- White, Rudolph C.: *See—*
  - Thatcher, Judith G.; and White, Rudolph C., 3,865,893.
- White, William Harold: *See—*
  - Gregory, Charles Roy; and White, William Harold, 3,866,064.
- Whitfield, Douglas, to Canada, Atomic Energy of, Limited. Remotely controlled brachytherapy unit. 3,866,050, Cl. 250-497.000.
- Wick, Helmut: *See—*
  - Merz, Herbert; Langbein, Adolf; Wick, Helmut; and Stockhaus, Klaus, 3,865,943.
- Wick, Richard G.; and Bennett, Henry J., to Burdett Manufacturing Company. Finishing line heat recovery. 3,865,076, Cl. 118-66.000.
- Widmer, Dieter, to Spindel-Motoren-und Maschinenfabrik A.G. Bobbin spindle. 3,865,330, Cl. 242-130.000.
- Wiegand, Charles W. Pilot operated relief valve. 3,865,132, Cl. 137-492.500.
- Wiegand, John Richard, to Velinsky, Milton; and Weigand, John R., part interest to each. Asymetric bistable magnetic device. 3,866,193, Cl. 340-174.0ZB.
- Wiegmann, William: *See—*
  - Logan, Ralph Andre; Schwartz, Bertram; Tracy, Joseph Charles, Jr.; and Wiegmann, William, 3,865,646.
- Wieschel, John E.; Zanzig, Jerald G.; and Petrykowski, Thomas F., to Heil Co., The. Refuse body with two-part packer-ejector platen. 3,865,260, Cl. 214-82.000.
- Wiggins Teape Research & Development Limited: *See—*
  - Ross, John Edward; Marshall, David James; and Chapman, Brian Samuel, 3,865,613.
- Wilcox, Howard A.: *See—*
  - Higbee, Wallace C.; Wilcox, Howard A.; and Jensen, Jay W., 3,865,329.
- Wild, Rainer: *See—*
  - Tauern, Dankmar; Wild, Rainer; and Harder, Karl-Max, 3,866,012.
- Wilde, Peter Van Dyke, to Bell Telephone Laboratories, Incorporated. Interconnection of electrical devices. 3,865,624, Cl. 117-212.000.
- Wildt Mellor Bromley Limited: *See—*
  - Savage, Sidney Clifford; and Stock, Peter Sinclair, 3,864,942.
- Wilke, Raud A., to Koehring Company. Oil sealing device. 3,865,386, Cl. 277-187.000.
- Willette, E. Leon, to Amdahl Corporation. Having an instruction pipeline for concurrently processing a plurality of instructions. 3,866,180, Cl. 340-172.500.
- Williams, John. Cutting tool. 3,864,829, Cl. 30-130.000.
- Williams, John: *See—*
  - Baker, Francis Sidney; Harrison, Charles Richard; Osborn, Anthony Raymond; and Williams, John, 3,866,077.
- Williams, Olin E., to Koppers Company, Inc. Method and apparatus for the production of steel. 3,865,579, Cl. 75-60.000.
- Williams, Raymond James: *See—*
  - Thomas, Arwyn Theophilus; and Williams, Raymond James, 3,865,008.
- Williams, Richard E., to Scope Incorporated. Digital log-time generator. 3,866,024, Cl. 235-92.0CC.
- Willis Brothers, Inc.: *See—*
  - Willis, Elmer D., 3,864,788.
- Willis, Elmer D., to Willis Brothers, Inc. Scallop spreading machine. 3,864,788, Cl. 17-53.000.
- Wilson, Albert, to Litton Systems, Inc. Releasable connection for intersecting members. 3,865,720, Cl. 209-405.000.
- Wilson, David; and Burwell, Blair T., to Tenneco Oil Company. Method for processing colemanite ore. 3,865,541, Cl. 432-13.000.
- Wilson, Harold R.: *See—*
  - Ledebur, Harry C.; and Wilson, Harold R., 3,864,878.
- Winberg, Douglas F., to Subsurface Machine and Manufacturing Inc. Tunneling machine having access passageway and invert cleaner. 3,865,196, Cl. 172-802.000.
- Wingler, Frank; Muller, Richard; and Pollheide, Dieter, to Bayer Aktiengesellschaft. Additives for powder resins. 3,865,904, Cl. 260-901.000.
- Winn, David: *See—*
  - Cartier, Jean-Pierre; Winn, David; and Stelmach, Anthony L., 3,866,019.
- Winterbottom, Kenneth: *See—*
  - Dobinson, Bryan; and Winterbottom, Kenneth, 3,865,621.
- Winterheimer, Sylvester A., to Whirlpool Corporation. Shelf retainer. 3,865,448, Cl. 312-311.000.
- Wirotama, I. Poetoe Gde: *See—*
  - Ney, Karl Heinz; Wirotama, I. Poetoe Gde; and Freytag, Wolfram Gustav, 3,865,952.
- Wirth, Pierre Charles, to Societe Generale de Recherches et d'Applications Scientifiques"Sogeras". Method of increasing cerebral blood flow. 3,865,942, Cl. 424-259.000.
- Withrow, Robert B., to American La France Inc. Reuseable pressurized dispenser. 3,865,158, Cl. 141-19.000.
- Wittenwyler, Clifford V., to Shell Oil Company. Curing of polyepoxide based foundry cores with a curing agent containing a liquid hydrocarbon and a boron trifluoride complex. 3,865,777, Cl. 260-37.0EP.
- Wojcik, Walter J., to International Business Machines Corporation. Alignment illumination system. 3,865,483, Cl. 355-43.000.
- Wolf, Clarence P. Blowout panel system for building walls. 3,864,881, Cl. 52-1.000.
- Wolf, Lloyd J. Directional guide for power hand drill. 3,864,839, Cl. 33-334.000.
- Wolf, Rainer: *See—*
  - Riedel, Manfred; and Wolf, Rainer, 3,865,604.
- Wolf, Tobin. Helicopter toy. 3,864,868, Cl. 46-1.00H.
- Wolf, William Edward, to du Pont de Nemours, E. I., and Company. Defect size discriminator circuit for web inspection system. 3,866,054, Cl. 250-562.000.
- Wolfgang, Brenner; Gunter, Feier; and Antonius, Vinnemann, to Sulzer Brothers Limited. Jacquard machine. 3,865,148, Cl. 139-59.000.
- Woll, Toni. Expandable crash-restraining means. 3,865,398, Cl. 280-150.0AB.

- Woodbridge, David D., to McMillin Investments, Inc. Irradiator apparatus. 3,865,734, Cl. 250-432.000.
- Woodiwiss, Charles R.: *See—*
  - Norris, Russell; and Woodiwiss, Charles R., 3,865,754.
- Wooley, Bruce Allen: *See—*
  - Baugh, Charles Richmond; and Wooley, Bruce Allen, 3,866,030.
- World-Wide Paper Reclamation, Inc.: *See—*
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- Worthington-CEI, Incorporated: *See—*
  - Mastaj, Joseph A., 3,865,013.
- Wossner, Felix, to Fichtel & Sachs AG. Hydraulic shock absorber. 3,865,356, Cl. 267-139.000.
- Wray, William R.: *See—*
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- Wright, David M.: *See—*
  - Dean, Carl J.; and Wright, David M., 3,865,445.
- Wright, Edward S.; and Angstadt, John W., to Blaw-Knox Food and Chemical Equipment, Inc. An apparatus for washing particulate comestible materials. 3,865,563, Cl. 55-257.000.
- Wright Machinery Company, Inc.: *See—*
  - Petrea, James C., 3,864,895.
- Wucherpfennig, Karl; and Wysocki, Guenter. Stabilization of tartar in wine, grape must, or grape juice. 3,865,960, Cl. 426-239.000.
- Wucherpfennig, Karl; and Wysocki, Guenter. Electrodialyzing wine to remove sulfur-containing compounds. 3,865,961, Cl. 426-239.000.
- Wunder, Friedrich: *See—*
  - Ferholz, Hans; Schmidt, Hans-Joachim; and Wunder, Friedrich, 3,865,872.
- Wunner, Roland, to Liba Maschinenfabrik GmbH. Warp knitting or raschel machine. 3,864,943, Cl. 66-84.00A.
- Wycoff, Keith H. Communication system incorporating signal delay. 3,866,124, Cl. 325-55.000.
- Wyhof, John R., to ICI United States Inc. Dielectric polyester resins from a blend of ethoxylated bis phenols. 3,865,789, Cl. 260-47.00C.
- Wyhof, John R.: *See—*
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- Wysocki, Guenter: *See—*
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  - McCrobie, George L., 3,865,471.
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  - Sato, Masamichi; and Fukushima, Osamu, 3,865,611.
  - Shearer, Gerald W.; and Wakida, Edward A., 3,866,051.
  - Swanberg, Melvin E., 3,865,480.
  - Valentine, Charles G., 3,864,849.
- Yakich, Sam Savo. Hip joint bearing prosthesis. 3,864,758, Cl. 3-1.000.
- Yamada, Hiroshi; and Yoshioka, Yoshiro, to Fujitsu Limited. System for transferring information between memory banks. 3,866,182, Cl. 340-172.500.
- Yamada, Norimasa: *See—*
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- Yamaha International Corporation: *See—*
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- Yamaki, Kiyoshi: *See—*
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- Yamamoto, Hisao: *See—*
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- Yamamoto, Keisuke: *See—*
  - Kawamata, Yukio; Yamamoto, Keisuke; and Mouri, Hiroshi, 3,866,177.
- Yamamoto, Kozo; and Shinohara, Isao, to Matsushita Electric Industrial Co., Ltd. Automatic telephone answering system with variable speed drive control. 3,865,987, Cl. 179-6.00R.
- Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; Koshiba, Masao; Inaba, Shigeho; and Yamamoto, Hisao, to Sumimato Chemical Company, Limited. Process for producing quanazolinone derivatives. 3,865,827, Cl. 260-251.0QA.
- Yamamoto, Sigeo: *See—*
  - Ozaki, Toshiaki; Kamoshita, Katsuzo; Tanaka, Katsutoshi; Yamamoto, Sigeo; Ooishi, Tadashi; Nakai, Shinji; and Akiba, Keiichiro, 3,865,866.
- Yamamoto, Taro: *See—*
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- Yamane, Hisakichi: *See—*
  - Masuda, Michio; Mohri, Katsuo; Nabeyama, Hiroaki; Takezawa, Teruhiro; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Uehara, Takashi; and Yoshino, Takehiko, 3,865,973.
- Yamauchi, Goro: *See—*
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- Yanagimachi, Akio: *See—*
  - Masuda, Michio; Mohri, Katsuo; Nabeyama, Hiroaki; Takezawa, Teruhiro; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Uehara, Takashi; and Yoshino, Takehiko, 3,865,973.
- Yannone, Robert A.; and Kiscaden, Roy W., to Westinghouse Electric Corporation. Control system and method for controlling dual fuel operation of industrial gas turbine power plants, preferably employing a digital computer. 3,866,108, Cl. 322-14.000.
- Yeh, William C. T.: *See—*
  - Kline, James D.; Yeh, William C. T.; and Preston, Ulysses A., 3,865,583.
  - Kline, James D.; Yeh, William C. T.; and Preston, Ulysses A., 3,865,584.
- Yevick, George J., to Personal Communications Inc. Cylindrical lens bonded microfiche. 3,865,485, Cl. 355-46.000.
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  - Salminen, Rauno, 3,865,243.
- Yi Cho, Alfred; and Reinhart, Franz Karl, to Bell Telephone Laboratories, Incorporated. Molecular beam epitaxy shadowing technique for fabricating dielectric optical waveguides. 3,865,625, Cl. 117-212.000.
- Ying, Robert S., to Hughes Aircraft Company. Method for fabricating semiconductor devices. 3,864,819, Cl. 29-583.000.
- Yokagawa Electric Works, Ltd.: *See—*
  - Maezawa, Keizo; and Ohta, Susumu, 3,866,103.
- Yokoyama, Kanji; and Matsuo, Hiroyuki, to Hitachi, Ltd. Channel selecting apparatus for television receiver having means to cut off amplifying transistor for predetermined time. 3,866,112, Cl. 334-15.000.
- Yonei, Mineko: *See—*
  - Kazama, Ken; Ohno, Kunio; Umegae, Mamoru; and Yonei, Mineko, 3,865,284.
- Yorke, Daniel F.: *See—*
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- Yoshida, Kazuaki: *See—*
  - Horie, Toshio; Yoshida, Kazuaki; Hori, Hisako; and Katsuyama, Yoshihisa, 3,865,871.
- Yoshida Kogyo Kabushiki Kaisha: *See—*
  - Matsuda, Yoshio, 3,864,946.
  - Takahashi, Kihei; and Takabatake, Hideo, 3,864,792.
- Yoshida, Kohji. Disc record player. 3,865,384, Cl. 274-23.00R.
- Yoshida, Norio; Imanaka, Yoshihiko; and Katayama, Kiyoji, to Teijin Limited. Polyurethane foam filter material containing adsorbent and method of production thereof. 3,865,758, Cl. 260-2.5AK.
- Yoshida, Shusuke: *See—*
  - Okamoto, Miyoshi; Yoshida, Shusuke; Imai, Tadashi; Watanabe, Tatsuo; and Nishikaku, Shinzo, 3,865,678.
- Yoshida, Takashi: *See—*
  - Matsumoto, Tadashi; and Yoshida, Takashi, 3,866,015.
- Yoshida, Yoshinobu, to Fuji Photo Film Co., Ltd. Photographic film unit for a photographic diffusion transfer color process containing coupler-developers. 3,865,593, Cl. 96-77.000.
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- Yoshino, Takao, to Kabushiki Kaisha Komatsu Seisakusho. Marine propeller. 3,865,510, Cl. 416-134.000.
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- Young, David E., to Schlumberger Technology Corporation. Subsurface safety valve apparatus. 3,865,141, Cl. 137-629.000.
- Young, David W., to Lear Siegler, Inc. Scanning radar azimuth position control system. 3,866,218, Cl. 343-5.0LS.
- Young, David W. Perspective radar display using linear vertical sweep. 3,866,222, Cl. 343-5.0LS.
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- Zadoo, Vijay K. Pressure regulating and shut-off valve. 3,865,128, Cl. 137-220.000.
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- Zeigler, Philip B., to General Motors Corporation. Inflator. 3,865,273, Cl. 222-5.000.
- Zeilinger, Robert G. Boat hull construction. 3,864,770, Cl. 9-6.000.
- Zemlin, John C.; and Bowler, Katherine A., to Collaborative Research, Inc. Depilatory composition and method of use. 3,865,546, Cl. 8-161.000.
- Zenser, Darwin, to Yamaha International Corporation. Bicycle. 3,865,402, Cl. 280-276.000.
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  - Henrick, Clive A., 3,865,874.
- Zuech, Ernest A., to Phillips Petroleum Company. Homogeneous disproportionation-dimerization of olefins. 3,865,892, Cl. 260-683.00D.
- Zwickl, Johann, to Volkswagonwerk Aktiengesellschaft. Impact absorber for bumpers. 3,865,417, Cl. 293-88.000.

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TO WHOM

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General Motors Corp.: *See*—
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Haskew, Harold M., and D. A. Martens, to General Motors Corp. Distributor drive arrangement. Re. 28,333, 2–11–75, Cl. 123—146.50.
Holz, George E., to Burroughs Corp. Circuit for operating multiple position display tubes. Re. 28,338, 2–11–75, Cl. 315—167.
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Nordeen, Gerald C. Fishing apparatus. Re. 28,331, 2–11–75, Cl. 43—43.14.
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    Singer, Fred J. Re. 28,337.
Schirtzinger, Joseph F., to Sea-Log Corp. Method and apparatus for preventing ice damage to marine structures. Re. 28,332, 2–11–75, Cl. 114—.5.
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134	3,864,965
141A	3,864,966
143	3,864,953
146	3,864,967
151	3,864,968
154	3,864,969
155	3,864,970
194B	3,864,972
194R	3,864,971
295	3,864,973
304C	3,864,974
341	3,864,975
356	3,864,976
389	3,864,977
422GC	3,864,978
425.4P	3,864,979
484	3,864,980
CLASS 74	
55	3,864,981
60	3,864,982
89	3,864,983
89.15	3,864,984
125.5	3,864,985
226	3,864,986
354	3,864,987
492	3,864,988
498	3,864,989
606R	3,864,990
687	3,864,991
711	3,864,992
CLASS 75	
.5R	3,865,572
	3,865,575
3	3,865,573
4	3,865,574
43	3,865,576
58	3,865,577
	3,865,578
60	3,865,579
122	3,865,581
	3,865,582
138	3,865,583
171	3,865,585
203	3,865,586
CLASS 81	
3R	3,864,993
CLASS 82	
3	3,864,994
54	3,864,995
CLASS 83	
5	3,864,996
49	3,864,997
53	3,864,998
100	3,864,999
121	3,865,000
CLASS 84	
1.03	3,865,001
115	3,865,002
380	3,865,005
411	3,865,003
423	3,865,004
CLASS 85	
44	3,865,006
61	3,865,007
CLASS 86	
1R	3,865,008
CLASS 89	
1.815	3,865,009
CLASS 90	
4	3,865,010
13.05	3,865,011
24F	3,865,012
CLASS 91	
411R	3,865,013
417	3,865,014
CLASS 92	
78	3,865,015
CLASS 93	
1C	3,865,016
1E	3,865,017
8WA	3,865,018
35R	3,865,019
36A	3,865,020
CLASS 96	
1PC	3,865,587
33	3,865,588
35.1	3,865,589
38	3,865,590
66.3	3,865,591
76R	3,865,592
77	3,865,593
84R	3,865,594
87R	3,865,595
108	3,865,596
115R	3,865,597
125	3,865,598
CLASS 98	
40C	3,865,021
115K	3,865,022
CLASS 99	
495	3,865,023
645	3,865,024
CLASS 100	
26	3,865,025
CLASS 101	
45	3,865,026
93.14	3,865,029
93.22	3,865,030
114	3,865,031
129	3,865,032
181	3,865,033
CLASS 102	
7.2	3,865,034
64	3,865,027
66	3,865,035
67	3,865,036
70.2R	3,865,028
	3,865,037
92.7	3,865,038
CLASS 104	
18	3,865,039
	3,865,040
20	3,865,041
26B	3,865,042
148MS	3,865,043
197	3,865,044
CLASS 105	
199C	3,865,045
253	3,865,046
366D	3,865,047
376	3,865,049
484	3,865,048
CLASS 106	
65	3,865,599
84	3,865,600
95	3,865,601
103	3,865,602
130	3,865,603
168	3,865,604
271	3,865,606
288Q	3,865,605
CLASS 108	
19	3,865,050
132	3,865,051
CLASS 110	
1F	3,865,052
7A	3,865,053
8C	3,865,054
CLASS 111	
4	3,865,055
7	3,865,056
	3,865,057
CLASS 112	
63	3,865,058
79R	3,865,059
CLASS 114	
.5R	Re.28,332
16R	3,865,060
39	3,865,061
43.5	3,865,062
144R	3,865,063
206R	3,865,064
210	3,865,065
230	3,865,066
CLASS 115	
12R	3,865,067
34R	3,865,068
CLASS 116	
4	3,865,069
63R	3,865,070
129	3,865,071
CLASS 117	
1.7	3,865,607
5.3	3,865,608
17	3,865,610
17.5	3,865,609
	3,865,611
	3,865,612
36.8	3,865,613
46CA	3,865,614
47A	3,865,615
132BF	3,865,616
132C	3,865,617
136	3,865,618
138.8	3,865,619
140A	3,865,620
141	3,865,621
161UT	3,865,622
212	3,865,623
	3,865,624
	3,865,625
226	3,865,626
240	3,865,627
CLASS 118	
4	3,865,072
8	3,865,073
49.5	3,865,074
50	3,865,075
66	3,865,076
250	3,865,077
612	3,865,078
621	3,865,079
637	3,865,080
	3,865,081
CLASS 119	
17	3,865,082
CLASS 122	
235B	3,865,084
235R	3,865,083
CLASS 123	
8.33	3,865,085
8.45	3,865,086
44D	3,865,093
65VC	3,865,087
90.12	3,865,088
117R	3,865,089
139AZ	3,865,090
139ST	3,865,091
146.5A	Re.28,333
148E	3,865,092
196CP	3,865,213

CLASS 124
20R 3,865,094
24R 3,865,095
3,865,096

CLASS 126
197 3,865,097
271.2A 3,865,098

CLASS 128
2.05D 3,865,100
2.06R 3,865,101
2.1E 3,865,099
64 3,865,102
3,865,103
66 3,865,104
69 3,865,105
145.8 3,865,106
222 3,865,107
260 3,865,108
283 3,865,109
284 3,865,110
287 3,865,111
290R 3,865,112
303.1 3,865,113
3,865,114
359 3,865,115
400 3,865,116
403 3,865,117
404 3,865,118
419P 3,865,119

CLASS 131
140C 3,865,120
261B 3,865,121

CLASS 132
73 3,865,122

CLASS 134
2 3,865,628
19 3,865,629

CLASS 135
4R 3,865,123

CLASS 136
86A 3,865,630
114 3,865,631
237 3,865,632

CLASS 137
13 3,865,124
51 3,865,125
101.21 3,865,126
115 3,865,127
220 3,865,128
315 3,865,129
360 Re.28,334
385 3,865,130
432 3,865,131
492.5 3,865,132
512 3,865,133
594 3,865,134
596.14 3,865,135
604 3,865,136
613 3,865,137
624.12 3,865,138
625.19 3,865,139
625.64 3,865,140
629 3,865,141
635 3,865,142
826 3,865,143

CLASS 138
103 3,865,144
113 3,865,145
154 3,865,146

CLASS 139
1E 3,865,147
59 3,865,148
122R 3,865,149
185 3,865,150
304 3,865,151

CLASS 140
1 3,865,152
2 3,865,153
109 3,865,154
123.5 3,865,155
123.6 3,865,156

CLASS 141
7 3,865,157
19 3,865,158
67 3,865,159

CLASS 144
3D 3,865,160
136R 3,865,161
144R 3,865,162
193A 3,865,163
230 3,865,164

CLASS 148
1.5 3,865,633
6.35 3,865,634
11.5F 3,865,635
12R 3,865,636
12.1 3,865,637
3,865,638
12.9 3,865,640
23 3,865,641
28 3,865,642
36 3,865,643
37 3,865,644
127 3,865,639
142 3,865,645
171 3,865,646
175 3,865,647
3,865,648
187 3,865,649
3,865,650
3,865,651
3,865,652
3,865,653
3,865,654
189 3,865,655

CLASS 149
7 3,865,656
19.3 3,865,657
3,865,658
19.4 3,865,659
35 3,865,660

CLASS 150
1 3,865,165
52R 3,865,166

CLASS 152
212 3,865,167
213A 3,865,168
330C 3,865,169
386 3,865,170

CLASS 156
79 3,865,661
94 3,865,662
116 3,865,663
192 3,865,664
244 3,865,665
245 3,865,666
264 3,865,681
285 3,865,667
291 3,865,668
394 3,865,669
3,865,670
488 3,865,671

CLASS 157
1.24 3,865,171
1.26 3,865,172

CLASS 159
47R 3,865,672

CLASS 161
1 3,865,673
6 3,865,674
24 3,865,676
55 3,865,677
67 3,865,678
68 3,865,679
125 3,865,680
170 3,865,682
205 3,865,683

CLASS 162
8 3,865,684
78 3,865,685
168 3,865,686
343 3,865,687

CLASS 164
46 3,865,173
52 3,865,174
82 3,865,175
87 3,865,176
133 3,865,177
334 3,865,178
340 3,865,179

CLASS 165
1 3,865,180
22 3,865,181
27 3,865,182
80 3,865,183
105 3,865,184
165 3,865,185

CLASS 166
256 3,865,186
273 3,865,187
285 3,865,188
294 3,865,189
308 3,865,190
315 3,865,191

CLASS 169
61 3,865,192
65 3,865,193
70 3,865,194

CLASS 172
3 3,865,195
802 3,865,196

CLASS 173
23 3,865,197
133 3,865,198

CLASS 174
11R 3,865,967
15BH 3,865,968
48 3,865,969
50.53 3,865,970
102R 3,865,971
115 3,865,972

CLASS 175
4.51 3,865,199
19 3,865,200
50 3,865,201
393 3,865,202

CLASS 176
37 3,865,688

CLASS 178
5.8R 3,865,973
6.8 3,865,974
7.1 3,865,975
18 3,865,976
19 3,865,977
46 3,865,980
69.5R 3,865,981

CLASS 179
1N 3,865,982
2DP 3,865,983
2A 3,865,984
5P 3,865,985
6R 3,865,986
3,865,987
15AA 3,865,988
15AQ 3,865,989
15BF 3,865,991
15FD 3,865,990
18ES Re.28,337
18GF 3,865,978
3,865,979
18HB 3,865,992
18F 3,865,993
90K 3,865,994
99 3,865,995
100.3G 3,865,996
100.41R 3,865,997
107E 3,865,998
175.2R 3,865,999
189D 3,866,000

CLASS 180
2 3,865,203
6.48 3,865,208
12 3,865,204
3,865,205
24 3,865,206
33R Re.28,335
44F 3,865,207
65R 3,865,209
69R 3,865,210
79.2R 3,865,211

CLASS 181
33G 3,866,001
43 3,865,212

CLASS 187
8.72 3,865,214

CLASS 188
73.6 3,865,215
290 3,865,216

CLASS 190
48 3,865,217

CLASS 192
12C 3,865,218
45.1 3,865,219
46 3,865,220
48.2 3,865,222
58B 3,865,221

CLASS 193
42 3,865,223

CLASS 195
1.7 3,865,689
28R 3,865,690
49 3,865,691
66B 3,865,692
80R 3,865,693
3,865,694
81 3,865,695

CLASS 197
6.7 3,865,224

CLASS 198
16R 3,865,225
38 3,865,226
84 3,865,227
176 3,865,228
193 3,865,229
218 3,865,230
220CA 3,865,231
230 3,865,232

CLASS 200
33R 3,866,002
38FA 3,866,003
61.42 3,866,004
144B 3,866,005
153LA 3,866,006
283 3,866,007
303 3,866,008

CLASS 203
29 3,865,696

CLASS 204
15 3,865,697
3,865,698
20 3,865,699
28 3,865,700
3,865,701
49 3,865,702
105R 3,865,703
129.2 3,865,704
130 3,865,705
181 3,865,706
195M 3,865,708
195R 3,865,709
195S 3,865,707
228 3,865,710
275 3,865,711
299 3,865,712

CLASS 206
45.19 3,865,233
45.33 3,865,234
286 3,865,235
364 3,865,236
387 3,865,237
404 3,865,238
507 3,865,239

CLASS 208
6 3,865,713
238 3,865,714
243 3,865,715
255 3,865,716

CLASS 209
1 3,865,717
5 3,865,240
11 3,865,241
143 3,865,242
166 3,865,718
170 3,865,719
240 3,865,243
405 3,865,720

CLASS 210
7 3,865,721
42 3,865,722
54 3,865,723
62 3,865,724
73 3,865,725
152 3,865,726
162 3,865,727
169 3,865,728
3,865,729
242 3,865,730
315 3,865,732
359 3,865,731

CLASS 211
5 3,865,244
3,865,245
3,865,246
72 3,865,247
90 3,865,248
163 3,865,249
177 3,865,250

CLASS 212
71 3,865,251

CLASS 213
75R 3,865,252

CLASS 214
1BB 3,865,255
1BH 3,865,254
1BT 3,865,253
2.5 3,865,256
5.5 3,865,257
6H 3,865,258
17C 3,865,259
82 3,865,260
83.26 3,865,261
152 3,865,262
451 3,865,264
515 3,865,266
674 3,865,265

CLASS 215
206 3,865,267
253 3,865,268
321 3,865,263

CLASS 219
10.55 3,866,009
10.57 3,866,010
72 3,866,011
99 3,866,012
121EM 3,866,013
137 3,866,014
146 3,866,015
213 3,866,016
390 3,866,017
460 3,866,018
485 3,866,019

CLASS 220
6 3,865,269
85B 3,865,270

CLASS 221
96 3,865,271
236 3,865,272

CLASS 222
5 3,865,273
37 3,865,274
70 3,865,275
146HE 3,865,277
146C 3,865,276
161 3,865,278
182 3,865,279
193 3,865,280
252 3,865,281
356 3,865,282
402.11 3,865,283

CLASS 223
68 3,865,284
73 3,865,285
83 3,865,286
96 3,865,287

CLASS 224
2B 3,865,289
5D 3,865,290
42.24 3,865,291
55 3,865,292

CLASS 225
2 3,865,293
3,865,294
47 3,865,295
96.5 3,865,288

CLASS 226
110 3,865,296

CLASS 228
11 3,865,297
20 3,865,298

CLASS 229
2.5 3,865,299
7R 3,865,300
14H 3,865,301
43 3,865,302
51TC 3,865,322
62 3,865,303
65 3,865,304

CLASS 235
61.11D 3,866,020
92CC 3,866,024
92DM 3,866,022
92DN 3,865,305
92EA 3,866,021
92SH 3,866,023
150.2 3,866,025
151.1 3,866,026
151.11 3,866,027
151.34 3,866,028
152 3,866,029
164 3,866,030
197 3,866,031

CLASS 237
2A 3,865,306

CLASS 238
366 3,865,307

CLASS 239
61 3,865,308
268 3,865,309
283 3,865,310
333 3,865,313
568 3,865,311
585 3,865,312
590.3 3,865,314

CLASS 240
1.2 3,866,032
1.3 3,866,033
2B 3,866,034
6.4W 3,866,035
49 3,865,790
51.11R 3,866,036

CLASS 241
4 3,865,315
22 3,865,316
169.2 3,865,317
170 3,865,318
188R 3,865,319
278R 3,865,320

CLASS 242
18A 3,865,321
55.53 3,865,323
67.1R 3,865,324
68.5 3,865,325
68.6 3,865,326
71.2 3,865,327
71.9 3,865,328
107.4 3,865,329
130 3,865,330
199 3,865,331

CLASS 244
102R 3,865,332
151B 3,865,333

CLASS 248
4 3,865,334
3,865,335
235 3,865,336
246 3,865,337
295 3,865,338
318 3,865,339
399 3,865,340
404 3,865,341
470 3,865,342

CLASS 249
95 3,865,343

CLASS 250
216 3,866,037
236 3,866,038
251 3,866,039
281 3,866,040
3,866,041
296 3,866,042
303 3,866,043
3,866,057
310 3,866,044
331 3,866,045
338 3,866,046
360 3,866,047
432 3,865,734
449 3,866,048
487 3,866,049
497 3,866,050
532 3,865,733
551 3,866,051
558 3,866,052
561 3,866,053
562 3,866,054
564 3,866,055
566 3,866,056

CLASS 251
284 3,865,344
367 3,865,345

CLASS 252
8.55D 3,865,735
11 3,865,736
33.4 3,865,737
46F 3,865,740
47 3,865,739
62.54 3,865,741
63.5 3,865,742
78 3,865,743
188.3R 3,865,744
301.01L 3,865,747
301.01R 3,865,745
301.1W 3,865,746
404 3,865,748
429B 3,865,749
443 3,865,750
457 3,865,751
462 3,865,752
466J 3,865,753
511 Re.28,336
529 3,865,756
532 3,865,754
558 3,865,755

CLASS 254
89R 3,865,346
124 3,865,347
132 3,865,348

CLASS 256
47 3,865,349

CLASS 259
1R 3,865,350
4 3,865,351
3,865,352
118 3,865,353
191 3,865,354
192 3,865,355

CLASS 260
2.5AJ 3,865,760
3,865,761
2.5AK 3,865,758
2.5AP 3,865,762
2.5AR 3,865,757
2.5B 3,865,759
5 3,865,763
17R 3,865,764
17.4ST 3,865,765
18S 3,865,766
23AR 3,865,768
23H 3,865,767
27R 3,865,769
3,865,770
29.3 3,865,771
29.6NR 3,865,773
29.6S 3,865,774
29.7H 3,865,772
29.7M 3,865,775
33.6AQ 3,865,776
37EP 3,865,777
37SB 3,865,778
42.44 3,865,779
45.7PS 3,865,780
45.75R 3,865,784
3,865,786
45.75S 3,865,787
45.8N 3,865,781
45.9NP 3,865,783
45.9R 3,865,782
46.5G 3,865,788
47C 3,865,789
3,865,869
75N 3,865,785
77.5CH 3,865,791
78TF 3,865,841
78R 3,865,792
78.5R 3,865,793
79.1 3,865,794
3,865,795
80PS 3,865,796
82 3,865,797
88.3R 3,865,798
92.8A 3,865,799

93.1 3,865,800
112R 3,865,801
123.5 3,865,802
124A 3,865,803
155 3,865,804
205 3,865,805
209D 3,865,807
209R 3,865,806
223 3,865,808
239BD 3,865,811
239BF 3,865,809
239E 3,865,810
239.3D 3,865,815
239.3P 3,865,812
239.3R 3,865,813
3,865,814
239.9 3,865,816
240F 3,865,818
240.2 3,865,817
243C 3,865,819
3,865,820
244R 3,865,821
247.1R 3,865,822
247.2B 3,865,823
247.5D 3,865,826
248NS 3,865,824
251QA 3,865,827
256.4C 3,865,825
268C 3,865,828
282 3,865,829
283P 3,865,830
286R 3,865,831
287R 3,865,832
289AZ 3,865,833
293.54 3,865,834
296R 3,865,835
309.6 3,865,836
326.11R 3,865,837
326.13R 3,865,838
326.28 3,865,839
326.46 3,865,840
330.5 3,865,842
332.2A 3,865,843
332.5 3,865,844
340.9 3,865,845
343.9 3,865,846
346.1M 3,865,848
346.2M 3,865,847
346.8M 3,865,849
347.8 3,865,850
380 3,865,851
402.5 3,865,852
409 3,865,853
410.9R 3,865,854
413 3,865,855
3,865,856
448R 3,865,857
448.2E 3,865,858
448.8R 3,865,859
456A 3,865,860
459 3,865,861
465E 3,865,863
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U. S. GOVERNMENT PRINTING OFFICE : O - 1975

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PATENT AND TRADEMARK OFFICE
C. Marshall Dann, *Commissioner*

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Vol. 931 Number 3

OFFICIAL GAZETTE
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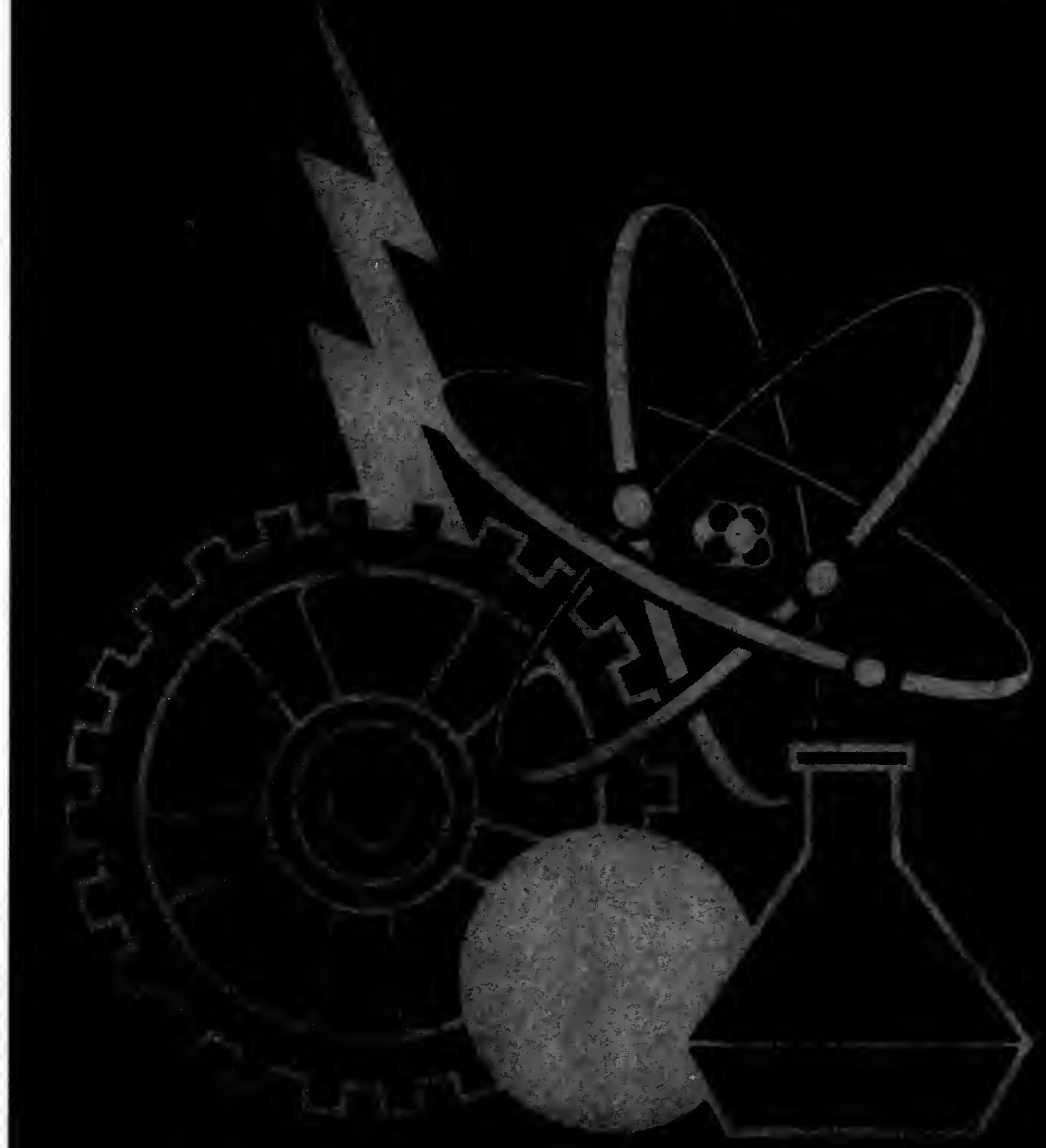
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 18, 1975



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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Certificates of Correction

New procedures for handling Certificates of Correction have been implemented to further expedite their issuance. Particular attention is directed to the following which specifically affect the patentee's input.

a. The form, PO–1050, which is used as the camera copy for printing the Certificate of Correction when approved, has been revised as a 2-part carbon interleaf set. Both parts of form PO–1050 must accompany the request, since the second part will be placed in the application file for internal use.

b. The practice set forth in the Notice of April 1, 1969, (862 O.G. 2) is hereby modified to the extent that copies of the request will not be returned when approved; therefore, the requirement for a self-addressed stamped envelope is withdrawn.

c. A perforated space at the bottom of form PO–1050 has been provided for the patentee's current mailing address, and for ordering any desired additional copies of the printed Certificate. The fee for each additional copy ordered after March 1, 1975, is $.30 per page. The fee should accompany the request.

d. Copies of the blank revised form, PO–1050, are now available and may be obtained without charge from the Correspondence and Mail Division and from the receptionist in Bldg. 3 in Crystal Plaza.

e. Where only a part of a request can be approved, or where the Office discovers and includes additional corrections, the appropriate alterations are made on the PO–1050 by the Office. The patentee is notified of the changes on Notification of Approval-in-Part, form POL–404. The Certificate is issued approximately 6 weeks thereafter.

To avoid delay in the issuance of Certificates, practitioners are urged to follow the suggestions below, which in most cases should require no additional expenditure in time.

1. The revised PO–1050 should be used exclusively regardless of the length or complexity of the subject matter. Intricate chemical formulas or pages of specification or drawings may be reproduced and mounted on a blank copy of PO–1050. Failure to use the form has frequently delayed issuance since the text must be retyped by the Office onto the PO–1050.
2. Identify on the request, the exact page and line number where the errors occur in the application file. On the PO–1050, however, the column and line number in the printed patent should be used as at present.
3. Retain the patent grant as specified in the Notice of March 18, 1969, (861 O.G. 680). The Office is no longer attaching the Certificate of Correction to pattentee's copy of the patent. If submitted, the patent will be returned to the patentee.

Requests for Certificates of Correction will not be approved as a mattter of course under 37 CFR 1.323 (Rule 323) where the error complained of resulted from the filing of priority papers or assignment documents AFTER PAYMENT OF THE BASE ISSUE FEE. Please see M.P.E.P., Section 201.14(a) and 307, respectively.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.
Jan. 24, 1975.

Patent Suits

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2,971,259, Hahnau and O'Toole, METHOD AND APPARATUS FOR DETERMINING THE POSITION OF SEWER LEAKS; **3,168,909,** Zurbrigen and Steinsberger, METHOD FOR LOCATING AND SEALING PIPE LEAKS, **filed** Aug. 22, 1974, D.C. Minn. (Minneapolis), Doc. 4–74–C 409, *Cherne Industrial, Inc.* v. *Penetryn International, Inc. and The Penetryn System, Inc.*

3,087,832, M. V. Fogle, TRANSFERABLE MAGNETIC COATING COMPOSITION AND TRANSFER WEB COATED THEREWITH, **filed** June 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1542, *The National Cash Register* v. *Allen Paper Co. et al.* By agreement case dismissed without prejudice, Oct. 5, 1973.

3,091,912, Stoddard and Seem, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY, **filed** Jan. 21, 1971, D.C., S.D. Fla. (Miami), Doc. 71–83–C–CA, *Lex Tex Ltd. Inc.* v. *Universal Textured Yarns, Inc. and G. Allen Mebane.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Mar. 10, 1971, D.C., S.D. Fla. (Miami), Doc. 71–385–C–CA, *Lex Tex Ltd. Inc.* v. *Hialeah Knitting Mills, Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Mar. 10, 1971, D.C., S.D. Fla. (Miami), Doc. 71–386–C-CA, *Lex Tex Ltd. Inc.* v. *Universal Knitting Mills, Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Mar. 10, 1971, D.C., S.D. Fla. (Miami), Doc. 71–387–C–CA, *Lex Tex Ltd. Inc.* v. *Leumas Knitting Mills, Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1610–C–CA, *Lex Tex Ltd. Inc.* v. *Wayne Weavers Mills et al.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1612–C–CA, *Lex Tex Ltd. Inc.* v. *Reva Knitting Mills.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1613–C–CA, *Lex Tex Ltd. Inc.* v. *Alro Knits Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 10, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1614–C–CA, *Lex Tex Ltd. Inc.* v. *Jack Fried.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 12, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1630–C–CA, *Lex Tex Ltd. Inc.* v. *Richard J. Traub and Texfi Industries Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 17, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1656, *Lex Tex Ltd. Inc.* v. *Irwin Redmond.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 17, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1657–C–CA. Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 31, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1719–C–CA, *Lex Tex Ltd. Inc.* v. *Serbin Fashions Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Oct. 31, 1972, D.C., S.D. Fla. (Miami), Doc. 72–1720–C–CA. *Lex Tex Ltd. Inc.* v. *Georgia Griffin Fashions, Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974. **Same, filed** Mar. 3, 1973, D.C., S.D. Fla. (Miami), Doc. 73–418–C–CA, *Lex Tex Ltd. Inc.* v. *Federated Department Stores, Inc.* Order of dismissal, complaint, *sua sponte,* is hereby dismissed, Aug. 29, 1974.

3,126,212, S. A. Young, COMBINATION GROUND JOINT AND SWEAT CONNECTION, **filed** Feb. 28, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–223, *Stephen A. Young* v. *Mansfield Sanitary, Inc.* Stipulation and order dismissing case with prejudice, Aug. 21, 1974.

3,155,814, Appleman and Eck, INFRARED RADIANT HEATING OVEN, **filed** Nov. 10, 1970, D.C., S.D.N.Y., Doc. 70–C–4916, *Alfon A. Wolz and Radiant Oven Corp.* v. *Litton Industries, Inc.* Stipulation of dismissal, May 18, 1971.

3,168,909. (See 2,971,259.)

3,184,893, W. S. Booth, CONTACT FOUNDATION METHOD, **filed** Feb. 18, 1970, D.C., S.D.N.Y., Doc. 70–C–660, *Contact Foundation Inc.* v. *M. Paquet & Co.* Filed plaintiff's voluntary dismissal, Aug. 28, 1972.

3,191,956, A. Rizzuto, WHEELED SHOPPING CART OR BASKET, **filed** Mar. 11, 1974, D.C., S.D.N.Y., Doc. 74–C–1127, *Bernard A. Guadano, Jr.* v. *Gertz, Abraham & Strauss, Bloomingdales, Inc., Macy, Sears and Roebuck and Times Sq. Stores.* Case transferred to Eastern District of New York, Apr. 11, 1974.

3,196,692, W. N. Jensen, SHAFT SUPPORT AND DAMPING MEANS FOR EDDY CURRENT INSTRUMENT, **filed** Jan. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c62, *Stewart-Warner Corp.* v. *Yazaki Corp. and American Yazaki Corp.* Case dismissed without prejudice, Mar. 4, 1974.

3,221,781, B. G. Forsstrom, SAMPLE COLLECTOR, **filed** Mar. 24, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–628–WPG, *LKB Instruments, Inc.* v. *Marvin R. Solomon, etc. et al.* Order of dismissal—pursuant to Rule 41(a), it is hereby ordered that the remaining Count 2 of the plaintiff and the counterclaims of defendant Toyo be hereby and are dismissed with prejudice, Aug. 20, 1974.

3,349,732, Perrella and Picker, INDEXING APPARATUS FOR SEWING MACHINES, **filed** July 25, 1974, D.C., S.D.N.Y., Doc. 74–C–3199, *Dynacast Limited* v. *The Reece Corporation.*

3,424,479, Ditson and Cantrel, COUPLING AND ROD SYSTEM FOR ROCK DRILLS, **filed** Aug. 29, 1974, D.C., N.D. Ga. (Atlanta), Doc. C74–1745A, *Ingersoll-Rand Company* v. *Joy Manufacturing Company and Trax, Inc.*

3,504,907, Barber and Scrymgeour, FILING SYSTEM INDEX INDICATORS AND METHOD OF PRODUCING SAME, **filed** May 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1232, *Donald Barber and Thomas Serymgeour-Toronto Canada and Datafile Limited* v. *Tab Product Co. and Tab Service Co.* Cause dismissed pursuant to Rule 41(a)(1) as to defendant Tab Service Co. only. Case still pending May 23, 1973, case dismissed Jan. 30, 1974.

3,580,982, J. B. Havewala, POLE RISER GUARD-BACK-UP PLATE COMBINATION, **filed** Jan. 18, 1974, D.C., W.D. Okla. (Oklahoma City), Doc. C–74–75–C, *Haskon, Inc.* v. *Indian Head, Inc.* Action dismissed without prejudice, Aug. 21, 1974.

3,621,961, K. Stumpf, UNIVERSAL ROLLER ASSEMBLY, **filed** Aug. 26, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV. 74–2481–FW, *Karl Stumpf* v. *Wheel Wrights, Inc.*

3,650,816, Rudy and Rapisarda, METHOD OF APPLYING ADJUVANTS TO CLOTH, **filed** Oct. 12, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2632, *A. E. Staley Mfg. Co.* v. *Lever Brothers Co.* Plaintiff's motion to dismiss under Rule 41(a) granted. Counterclaim dismissed without prejudice by consent of parties. Order of dismissal entered, May 22, 1974.

3,665,477, Budrow and Reed, ELEVATABLE AND FOLDABLE ANTENNA, **filed** Aug. 15, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–174, *Barker Manufacturing Company, Inc.* v. *Cobra Industries, Inc.*

3,677,451, O. J. Burland, SUPPORTING BAR ASSEMBLY FOR VEHICLE, **filed** Aug. 29, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2487, *Oliver J. Burland* v. *Trippe Manufacturing Company.*

3,777,423, Coulter and Pearsall, CONDITION RESPONSIVE DOOR HOLDER-CLOSER, **filed** Aug. 13, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2297, *Rixson-Firemark, Inc.* v. *Republic Industries, Inc.*

3,785,163, W. Wagner, REFRIGERANT CHARGING MEANS AND METHOD, **filed** July 29, 1974, D.C., S.D. Fla. (Miami), Doc. 74–958–C–CF, *Watsco, Inc.* v. *Graves Refrigeration Co.*

Certificates of Correction for the Week of Feb. 18, 1975

P.P. 3,648
P.P. 3,666
Re. 28,074
3,441,397
3,588,333
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3,858,222

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patent final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Reissue Patent No. 27,707, H. D. Kauffman, METHOD AND APPARATUS FOR DETECTING AND CONTROLLING THROUGH PULSE ENERGY VARIATIONS ARCING CONDITIONS IN AN EDM PROCESS, Interference No. 98,364, decided Oct. 3, 1974, claims 1, 2 and 7.

Patent No. 3,219,611, D. B. Witwer, AQUEOUS EMULSIONS OF VINYL AND VINYL AMINE COPOLYMERS, Interference No. 97,966, decided Nov. 6, 1974, the claim.

Patent No. 3,385,701, M. K. Ormsbee, R. E. Ormsbee and F. O. Bach, LITHOGRAPHIC OFFSET MASTER AND METHOD, Interference No. 96,988, decided Oct. 27, 1972, claims 1, 4, 5, 7 and 10.

Patent No. 3,402,996, P. K. Maher and C. V. McDaniel, ION EXCHANGE OF CRYSTALLINE ZEOLITES, Interference No. 97,234, decided Sept. 11, 1974, claim 4.

Patent No. 3,450,787, W. L. Kehl and R. J. Rennard, Jr., DEHYDROGENATION PROCESS, Interference No. 97,358, decided Oct. 7, 1974, claims 1, 3, 5, 7, 8 and 10–13.

Patent No. 3,533,927, E. J. Manning, SPARK ANTICIPATOR CIRCUIT FOR ELECTROCHEMICAL DEVICES, Interference No. 98,423, decided Oct. 18, 1974, claims 1, 2, 4, 5 and 9.

Patent No. 3,535,870, H. B. Mitchell, PARKING METER CONTROLLER, Interference No. 98,629, decided Nov. 29, 1974, claims 1–6 and 11–13.

Patent No. 3,551,383, J. C. Fang, AROMATIC POLYAMIDE-ESTERS AND A PROCESS FOR PREPARING THEM, Interference No. 98,577, decided Oct. 31, 1974, claim 1.

Patent No. 3,565,904, P. F. Juby, R. A. Partyka and T. W. Hudyma, 1,2,3,4-TETRAHYDRO-1-NAPHTHOIC ACIDS, Interference No. 98,096, decided Nov. 13, 1974, claims 1–6, 10, 13–15 and 19.

Patent No. 3,609,707, J. D. Lewis and A. H. Adelman, METHOD AND APPARATUS FOR GENERATING THREE-DIMENSIONAL PATTERNS, Interference No. 98,660, decided Nov. 13, 1974, claims 1–6, 8, 11–18, 20, 21, 23, 29–31 and 34–39.

Patent No. 3,731,472, I. Kamlukin, ROTARY MOWER SPINDLE BRAKE, Interference No. 98,644, decided Oct. 22, 1974, claim 3.

Patent No. 3,731,827, R. S. Eaves, LOGGING MACHINE, Interference No. 98,651, decided Oct. 9, 1974, claim 1.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 2, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating: Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-6-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-26-74
SPECIAL LAWS ADMINISTRATION, GROUP 220–C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-30-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-20-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-25-74

Expiration of patents: The patents within the range of numbers indicated below expire during February 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,821,713 to 2,825,063, inclusive
Plant Patents	Numbers 1,677 to 1,685, inclusive

REISSUE PATENTS

GRANTED FEBRUARY 18, 1975

ERRATA

For CLASS	See PATENT NO.
220-358	28,342
208-120	28,341

REISSUES

FEBRUARY 18, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,339

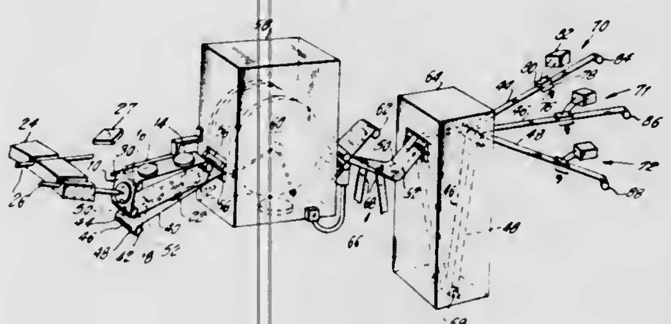
ANALYSIS ARRANGEMENT FOR MULTIPLE ANALYSES OF A SINGLE SAMPLE

Theodore Maxon, Elmhurst, N.Y., assignor to Automated Analyzers, Inc., Mineola, N.Y.

Original No. 3,607,090, dated Sept. 21, 1971, Ser. No. 863,943, Oct. 6, 1969. Application for reissue May 11, 1973, Ser. No. 359,488

Int. Cl. G01n *1/00, 1/28, 21/00*

U.S. Cl. 23—253 R **23 Claims**



1. An analysis system for performing a plurality of analyses on a single liquid sample, comprising:

a liquid sample receiving, holding and transferring strip medium, which includes at least one means for receiving and holding a single sample dispensed to it;

an analyzing strip medium which is adapted to receive liquid sample transferred to it for being analyzed on said analyzing strip medium;

said analyzing medium being so positioned with respect to said at least one sample receiving and holding means as to have sample transferred to it from said at least one receiving and holding means;

said analyzing strip medium being divided into a plurality of discrete portions; *said receiving and holding means being adapted to transfer in a single operation its sample contents to said analyzing medium;* at least a first [plurality] *group of* [which] *said portions in said plurality* are positioned and adapted to have a single liquid sample *simultaneously* transferred *from said at least one sample receiving and holding means to the said discrete portions in that said group* [to them] and are adapted to have the sample thereon react with a reagent to produce measurable reaction;

whereby a plurality of discrete analysis operations may be performed [on] *using* a single liquid sample which [is] *has been* transferred *in a single transfer operation* to said first [plurality] *group* of discrete portions of said analyzing medium *from said at least one sample receiving and holding means.*

28,340

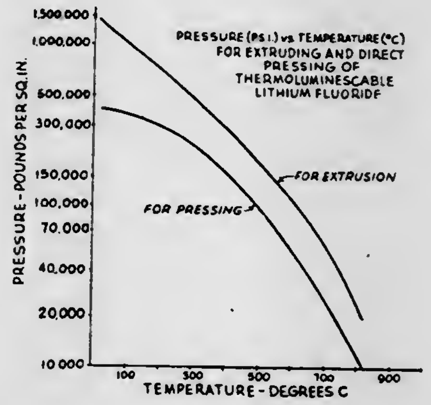
THERMOLUMINESCENT RADIATION PELLETS

Elmer C. Stewart, Highland Heights, and William S. Foulks, Jr., Chagrin Falls, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

Original No. 3,532,777, dated Oct. 6, 1970, Ser. No. 574,227, Aug. 22, 1966. Application for reissue Oct. 5, 1972, Ser. No. 295,285

Int. Cl. C09k *1/00*

U.S. Cl. 264—21 **9 Claims**



1. A process for preparing pellets adapted to be made thermoluminescent upon exposure to radiation comprising the step *either* of pressing *or extruding* a powder of a thermoluminescable material at a pressure of at least 10,000 p.s.i. while at a temperature of at least room temperature and no higher than 825° C., said pressure being [at least 400,000 p.s.i. when said temperature is in the range of room temperature to 100° C., at least 300,000 p.s.i. when said temperature is in the range of 100° to 200° C., and at least 200,000 p.s.i. when in the range of 200–300° C.] *less than 1.5 million p.s.i., greater pressures being required at lower temperatures.*

28,341

CATALYTIC COMPOSITION OF A CRYSTALLINE ZEOLITE

Robert L. Wadlinger, Niagara, N.Y., and George T. Kerr, Trenton, and Edward J. Rosinski, Deptford, N.J., assignors to Mobil Oil Corporation

No Drawing. Original No. 3,308,069, dated Mar. 7, 1967, Ser. No. 364,316, May 1, 1964. Application for reissue Mar. 4, 1969, Ser. No. 806,753

Int. Cl. B01j *11/40;* **C10g** *11/04*

U.S. Cl. 208—120 **17 Claims**

2. A crystalline synthetic catalyst material having the composition:

$$\left[\frac{X}{n}M(1 \pm 0.1 - X)H\right]AlO_2.YSiO_2.WH_2O$$

where X is less than 1, Y is greater than 5 but less than 100, W is up to about 4, M is a metal, and n is the valence of M, said material being characterized by an X-ray powder diffraction pattern essentially the same as that shown in Table 4.

15. In a process for conducting in the presence of a solid porous catalyst a hydrocarbon conversion reaction *characterized by a heat of reaction not less than zero, the improvement which comprises contacting charge hydrocarbons for said reaction at conversion conditions with a crystalline aluminosilicate catalyst at least partially in the hydrogen form resulting from treatment of the zeolite defined in claim 2 with a fluid medium containing ions selected from the group consisting of hydrogen ions and ammonium ions.*

28,342
PRECOATED PLUG

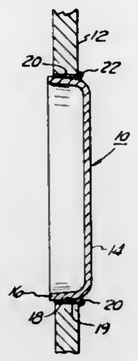
Tull C. Lasswell, 230 Pawnee Path, Lake Orion, Mich. 48035, and John L. Monier, 1968 Harwood Drive, Oxford, Mich. 48051

Original No. 3,635,369, dated Jan. 18, 1972, Ser. No. 851,261, Aug. 19, 1969. Application for reissue Aug. 3, 1973, Ser. No. 28,342

Int. Cl. B65d *41/00*

U.S. Cl. 220—358 **7 Claims**

1. A plug for closing an opening formed in a workpiece comprising a body member having a periphery of a shape which is complementary to that of said opening, and a plastic coating disposed on said periphery for creating a seal between said plug and said opening when said plug is positioned therein, said plastic coating being comprised of a polyvinylidene chloride and a solvent selected from the group consisting of methol-ethyl-ketone and cyclohexanone.



PATENTS

GRANTED FEBRUARY 18, 1975

ERRATA

For CLASS	See PATENT NO.
034-001	3,866,255
219-137	3,866,284
046-022	3,866,348
156-017	3,866,398
072-337	3,866,471
015-050	3,866,541
273-044	3,866,691
292-092	3,866,730
173-073	3,866,746
277-009	3,866,813
240-007	3,866,840
215-341	3,866,845
290-038	3,866,960
211-069	3,866,992
358-010	3,867,010
148-001	3,867,196
148-175	3,867,202
148-187	3,867,203
148-188	3,867,204
162-016	3,867,246
360-126	3,867,368
191-012	3,867,590

PATENTS

GRANTED FEBRUARY 18, 1975

GENERAL AND MECHANICAL

3,866,241

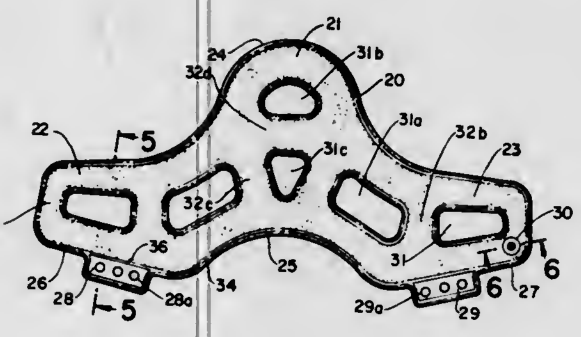
SHOULDER PAD CUSHION

Munro M. Grant, 3 Bluebell Ave., 212 Vanderbuilt Tower II, Naples, Fla. 33940

Filed Nov. 9, 1973, Ser. No. 414,347

Int. Cl. A41d *13/00*

U.S. Cl. 2—2 **6 Claims**



1. A modular, inflatable shoulder pad cushion for one shoulder adapted to be worn in readily detachable pairs for use underneath football shoulder pads, said cushion comprising skeletal, interconnected, relatively thin, narrow inflatable tubing forming a symmetrical medial portion for extending symmetrically in the fore and aft direction with respect to a wearer substantially over the top of one shoulder of the wearer; said medial portion having fore and aft, symmetrically formed cushion extensions for projecting over the chest and back of the wearer; said extensions comprising part of said skeletal tubing and being inwardly offset whereby inner edges of the extensions of a pair of said cushions worn on the shoulders of a wearer are disposed adjacent to each other; integrally formed lacing flats projecting from said inner edges for connecting a pair of cushions to each other at the extensions thereof; and inflating valve means provided at one point in said inflatable tubing.

3,866,242

PROTECTIVE SHIELD

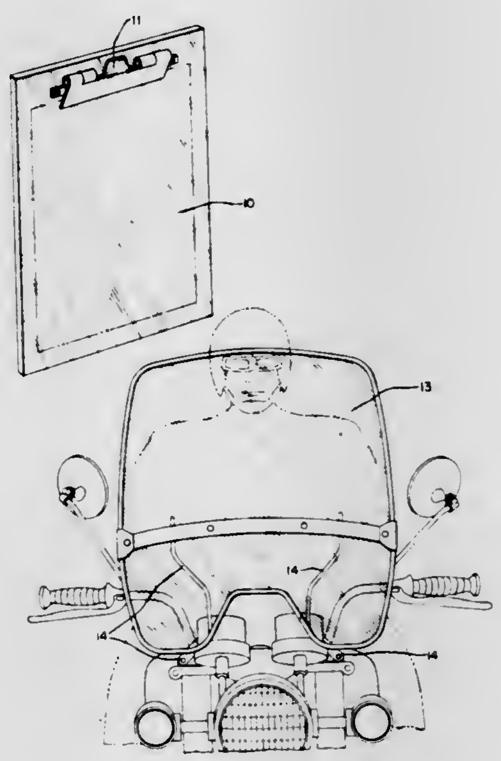
Edwin C. Slagel, Phoenix, Ariz., assignor to Goodyear Aerospace Corp., Akron, Ohio

Filed Oct. 27, 1972, Ser. No. 301,544

Int. Cl. F41h *1/02, 5/12*

U.S. Cl. 2—2.5 **6 Claims**

1. A safety shield consisting essentially of an optically clear polyurethane of about one-fourth to three-fourth inch thick, shaped in the contour of a shield and capable of stopping a 0.45 caliber 230 grain metal projectile fired at 90° obliquity at a distance of 2 feet from the shield, said polyurethane comprising the reaction product of (a) a polyurethane prepolymer prepared from either a polyether glycol or polyester glycol of about 700 to 1,000 molecular weight with methylene bis(cyclohexyl isocyanate) in the equivalent ratio of **2.7** to **4.5** NCO to each hydroxyl and (b) an aromatic amine curing agent having a methylene bridge between two aromatic rings to achieve an equivalent ratio of **0.90** to **1.04** NH_2/1.0 NCO.



6. The safety shield of claim **1** wherein the shield has the contour of a face mask.

3,866,243

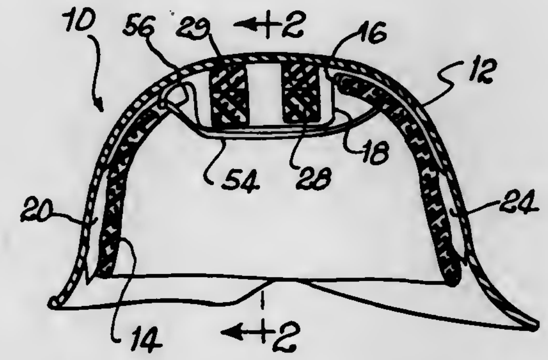
HEADGEAR WITH AUTOMATIC SIZING MEANS

Gerard E. Morgan, Lake Forest, Ill., assignor to Riddell Inc., Chicago, Ill.

Filed Oct. 15, 1973, Ser. No. 406,625

Int. Cl. A42b *3/02*

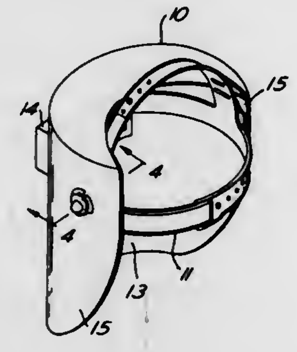
U.S. Cl. 2—3 R **28 Claims**



1. In a headgear construction comprising a shell, and fitting means within the shell for engagement with the head of the wearer, the improvement wherein said fitting means comprises at least one chamber, a source of compressible fluid, means interconnecting said source and said chamber, said interconnecting means including a first means permitting passage of said fluid from said source to said chamber, and a second means permitting passage of said fluid from said chamber to said source, means engageable by the head of the wearer upon placement of the headgear on the head operating to transfer said fluid through said first means from said source to said chamber whereby the dimensions of the head receiving space within the helmet will vary, and means for restricting operation of said second means upon placement of the headgear on the head to restrict passage of said fluid back to said source to thereby substantially maintain the variation in size change while the headgear is in place on the head.

3,866,244
HEADGEAR STRUCTURE FOR WELDING HELMETS AND THE LIKE

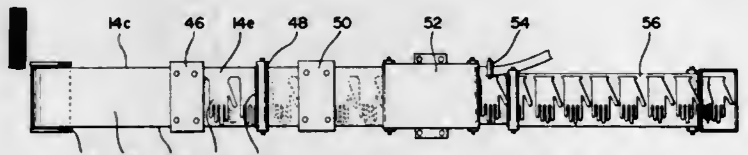
Heinz E. Ruck, Morton, Pa., assignor to The Fibre-Metal Products Co., Concordville, Pa.
Filed Nov. 8, 1973, Ser. No. 414,165
Int. Cl. A61f *9/00*; **A41d** *13/00*
U.S. Cl. 2—8 **8 Claims**



1. A headgear structure for supporting a welding helmet and comprising a headband for circumposition about a wearer's head, a bridge piece extending between spaced regions of said headband for extension across the wearer's head, a pair of elongate extensions located on opposite sides of said headband and each looped outwardly and upwardly with its terminal portion proximate to the adjacent region of said bridge piece, securing mens securing said terminal portions of said extensions to said bridge piece, and pivot mens extending through the outer portion of each looped extension for rotatively supporting a welding helmet, said headband and bridge piece and extensions being integrally fabricated of plastic, said securing means detachably securing said terminal portions to said bridge piece, said extensions being flexible to lie sustantially flat and coplanar with said headband and bridge piece in nonuse condition, said extensions each comprising an outstanding portion hingedly connected to a lower adjacent region of said headband, an upstanding portion hingedly connected to and upstanding from the outer extremity of said outstanding portion, and an inwardly extending portion hingedly connected to and extending inwardly from the upper extremity of said upstanding portion to said terminal portion.

3,866,245
PLASTIC GLOVES AND METHOD OF MAKING SAME

Donald Robinson Sutherland, 315 Forman Ave., Toronto, Ontario, Canada
Filed Dec. 22, 1972, Ser. No. 317,826
Int. Cl. B32b *31/18*; **A41d** *19/00*
U.S. Cl. 2—169 **11 Claims**



1. A method of manufacturing a glove comprising the steps of

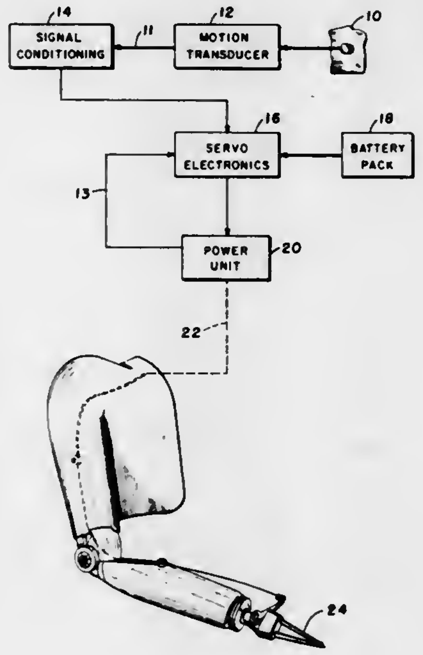
a. forming a two-ply liner web consisting of a two-ply longitudinally extending portion and a plurality of two-ply hand shaped portions, each of said hand shaped portions having distinct finger portions and a cuff portion, each of said cuff portions being integrally connected to a ply of said longitudinally extending portion such that said hand portions project laterally from said longitudinally extending portions at spaced intervals along the length thereof,

b. interposing said two-ply liner web between overlapping films of thermoplastic material and bonding said overlapping films of thermoplastic material to one another along a seal line disposed outwardly from the edges of said hand shaped portion to form a laminate, and

c. detaching individual lined gloves from the remainder of said laminate by severing said films along a line spaced outwardly from said seal line and by severing said hand shaped portions of said liner from the longitudinally extending portion thereof along a line extending across said cuff portion.

3,866,246
SHOULDER DISARTICULATION PROSTHETIC SYSTEM

Woodrow Seamone, Rockville, and Gerhard Schmeisser, Gibson Island, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 14, 1972, Ser. No. 306,480
Int. Cl. A61f *1/00*, *1/06*
U.S. Cl. 3—1.1 **7 Claims**



1. A control system for actuating a prosthesis from voluntary skin movement of a user, comprising:

a prosthesis;

displacement sensing means for measuring the amplitude of movement of a point on the skin of a user of the prosthesis, the sensing means comprising

a magnet,

connecting means joined to the magnet and adapted to be connected to a point on such user's skin, and

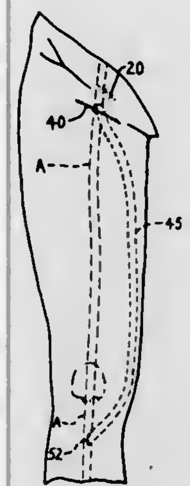
magnetic field sensitive means for sensing a change in the magnetic field on displacement of the magnet by motion of that point on such user's skin to which the connecting means is joined;

means for actuating said prosthesis in response to said sensed skin movement; and

means for providing a position feedback signal to said actuating means for identifying the degree of actuation imparted to said prosthesis.

3,866,247
GRAFT TUBES

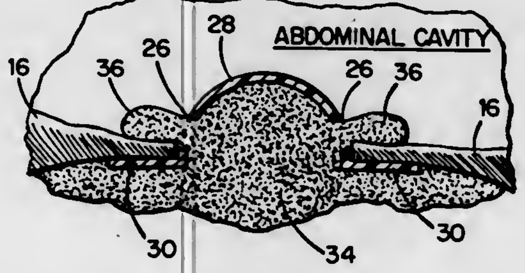
Charles Howard Sparks, deceased, late of Portland, Oreg. (by Margaret J. Sparks, executrix)
Continuation of Ser. No. 241,190, April 5, 1972, abandoned, which is a division of Ser. No. 101,031, Dec. 23, 1970, Pat. No. 3,710,777, said Ser. No. 241,190, Continuation-in-part of Ser. No. 175,914, is a division of Ser. No. 823,287, May 9, 1969, Pat. No. 3,625,198, which is a continuation-in-part of Ser. No. 655,838, July 25, 1967, Pat. No. 3,514,791. This application June 18, 1973, Ser. No. 370,861
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **5 Claims**



1. An autogenous graft tube comprising an ingrowth of connective tissue from a living body in the permanently implanted part of a mandrel assembly having a temporarily implanted part and a permanently implanted part, said temporarily implanted part comprising a flexible mandrel capable of bending with body movements, and said permanently implanted part comprising a fabric tube on said mandrel impregnated with a stiffening agent and a layer of material inside of said fabric tube holding said fabric tube spaced away from said mandrel, the entire outer surface of said fabric tube being exposed to said ingrowth of connective tissue, said ingrowth of connective tissue having a smooth cast lumen formed by said mandral, and said graft tube having a permanent blood supply established during the ingrowth of said connective tissue.

3,866,248
CEMENT RESTRICTOR FOR TOTAL HIP OPERATIONS

Frederick J. Kummer, Boston, Mass., assignor to Abcor, Inc., Cambridge, Mass.
Filed Apr. 8, 1974, Ser. No. 458,692
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **12 Claims**

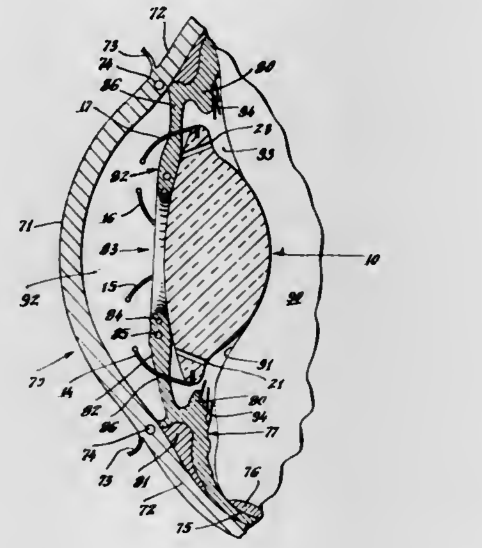


1. A cement restrictor device adapted for use in a hip replacement operation, which device comprises:

a raised cap-like upper element defining a cavity therein, the upper element having a continuous solid upper surface, the lower edge of the element adjoined to a peripheral lid element extending outwardly from the lower edge thereof, the lower crown portion of the cap-like element generally adjacent to the adjoinment to the lid element characterized by a plurality of peripheral passages therein to permit the passage of a cement material therethrough, whereby the upper element may be inserted into a hole in a bone of about the size of the upper element and cement applied to the interior cavity and forced through the passageway so as to lock the device between the lid element and the cement into the hole in the bone.

3,866,249
POSTERIOR CHAMBER ARTIFICIAL INTRAOCULAR LENS

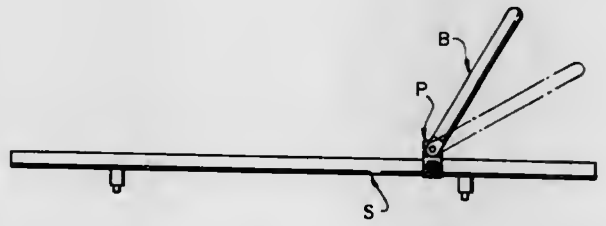
Leonard Flom, Arlen Rd., Westport, Conn. 06880
Filed Mar. 7, 1974, Ser. No. 448,966
Int. Cl. A61f *1/16*, *1/24*
U.S. Cl. 3—13 **28 Claims**



1. An artificial intraocular lens for implantation in the posterior chamber of an eye, the artificial intraocular lens comprising an optical zone portion fabricated of transparent material and shaped similar to a natural lens, and a plurality of prongs attached to the optical zone portion near the periphery thereof, the prongs protruding forwardly therefrom for insertion through the iris of the eye to hold and position the lens therein.

3,866,250
ADJUSTABLE BACK-REST

John Guythar Bradford, 47 Mansfield Dr., Ancaster, Ontario, Canada
Filed Sept. 19, 1973, Ser. No. 398,595
Int. Cl. A61g *7/06*
U.S. Cl. 5—76 **8 Claims**

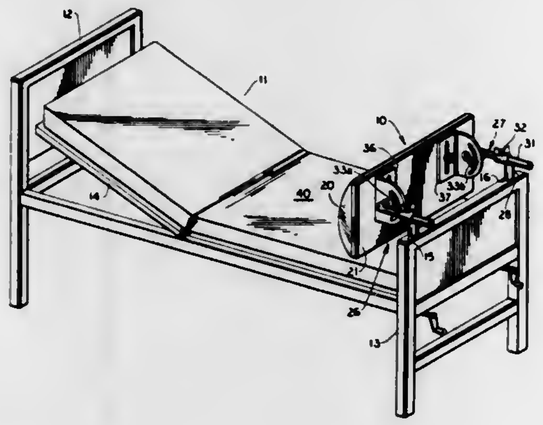


1. An adjustable back-rest for a stretcher comprising a substantially U-shaped tubular frame having a pair of side limb members joined by an upper cross bar, each said side limb member having at the lower end thereof a yoke member in the form of a pair of parallel, spaced ears with a slot therebetween, said ears being pivotally connected to a clamp member for connecting the back-rest to a stretcher, said clamp member having a projection extending into said slot, said projection having an arcuate face parallel to the pivot axis with said arcuate face having a series of spaced, radially extending holes, a locking pin mounted in each yoke member and being spring biased into engagement with one of said radial holes, said pins being connected together by a flexible cable member

which extends up within said side limbs and across between said side limbs through holes in the tubular walls with a portion of the cable between the side limbs being exposed as a loop, whereby both pins can be released from the holes to adjust the back-rest by pulling on said loop.

3,866,251
FOOTBOARD FOR HOSPITAL BED

R. Harold Pounds, 490 Manford Rd. S.W., Atlanta, Ga. 30310
Filed Nov. 24, 1973, Ser. No. 419,934
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 R **7 Claims**



1. Adjustable footboard for use with a hospital bed having an existing pair of vertical receptacle apertures in laterally spaced apart relation with each other at the foot end of the bed, comprising:

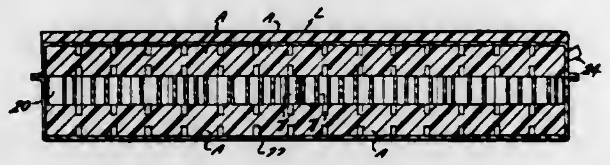
an elongate foot engagement member of length sufficient to extend laterally substantially across the width of the bed; support means attached to said foot engagement member and extending rearwardly therefrom;

bed attachment means attached to said support means and extending downwardly at substantially a right angle to said support means, said bed attachment means including a pair of elongate members each of which is dimensioned to be slidingly received within said receptacle apertures provided in the foot of the bed; and

the lateral spacing between said elongate members being identical to said lateral spacing between said apertures.

3,866,252
RESILIENT SUPPORTING STRUCTURE FOR RELIEF OF PRESSURE

John E. Rogers, Jr., 3109 Grand Ave., Huntington Park, Calif. 90255
Continuation of Ser. No. 24,099, March 31, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 301,724
Int. Cl. A47c *23/00*
U.S. Cl. 5—345 R **5 Claims**



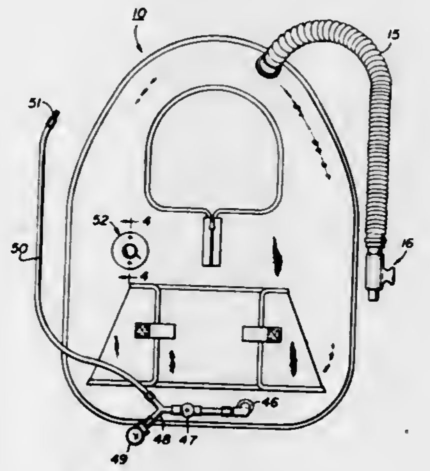
1. A cushion for effecting full surface contact with the peaks and valleys of the body portion of a patient situated thereabove to evenly distribute the weight of said patient on said cushion, said cushion comprising:

a. a resilient one-piece first sheet of a foamed resin that supports said patient, with the portion of said first sheet most adjacent said patient having a number of criss-cross grooves therein that subdivide said portion into a plurality of spaced segments that are independently movable relative to one another, and each of said sections having a height that is immediately responsive to the magnitude of the downward force exerted thereon; and

b. a second sheet of bitumen-impregnated foamed resin of substantial thickness on which said first sheet rests, with said second sheet when subjected to the weight of said patient that is transferred thereto through said first sheet slowly deforming to conform to the peaks and valleys of the portion of the patient's body supported by said first sheet, and the deformation of said second sheet being stabilized and completed when the weight of said patient is evenly distributed over said sections and said sections are in full surface contact with the peaks and valleys of the portion of the patient's body that rests on said first sheet.

3,866,253
DIVERS BUOYANCY VEST

Allen J. Sinks, Palatine; Gordon T. Shearer, Northbrook, and Vernon Pedersen, Chicago, all of Ill., assignors to Dacor Corporation, Northfield, Ill.
Filed Jan. 8, 1973, Ser. No. 321,963
Int. Cl. B63c *9/08*
U.S. Cl. 9—313 **8 Claims**



6. An inflatable safety vest for use by a scuba diver carrying a reservoir of compressed air for use in underwater breathing, said vest having a neck receiving opening, the improvement comprising

first and second separate and independent inflatable compartments in said vest,

a conduit including a manually operable valve connected between said first compartment and said reservoir for inflating only said first compartment from said reservoir with air,

a flexible conduit having a mouthpiece at one end and connected at the other end to said first compartment,

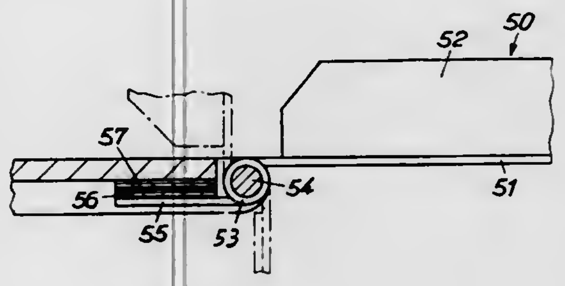
said flexible conduit being sufficiently long to permit the mouthpiece to be placed in the mouth of the diver wearing said vest,

a manually operable valve connected in said flexible conduit for controlling the supply of air between said mouthpiece and said first compartment to permit said diver to orally inflate said first compartment and to breath air from said first compartment,

means including a CO_2 cartridge carried by said vest for inflating said second compartment only with CO_2 gas, and manually and automatically operated purge valve means carried at the front of said vest substantially below said neck receiving opening to release air from said first compartment upon manual actuation or when the pressure within said first compartment exceeds the ambient pressure by a predetermined value.

3,866,254
MACHINE FOR PERFORATING AND FOR BINDING SHEETS INTO A PLASTIC RING FOLDER

Delso Gronda, Via Medardo Rosso 16, I-20159, Milan, Italy
Filed Oct. 3, 1973, Ser. No. 402,910
Claims priority, application Italy, Oct. 16, 1972, 30521/72
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 AC **9 Claims**



1. A machine for perforating sheets and for enabling binding of said perforated sheets into a folder by engagement with a flexible plastic binding ring, said machine comprising, in combination:

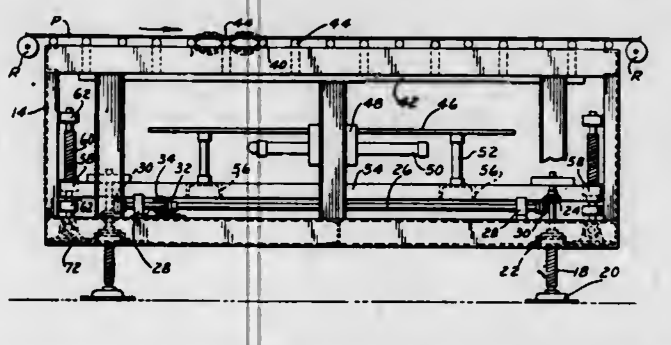
perforation means including a plurality of punching elements for perforating said sheets, a longitudinal bar, slots defined at regular intervals along a lower face of said longitudinal bar, heads defined upon said punching elements and located to extend within said slots, a guide element for said punching elements arranged beneath said longitudinal bar, side guides for directing parallel displacement of said longitudinal bar, an eccentric cam, means mounting said eccentric cam above said longitudinal bar in a position for engagement therewith, a first lever for operating said eccentric cam, and a bridge element arranged above said longitudinal bar in fixed relationship therewith in a position to be contacted by said eccentric cam during operation thereof to enable raising of said punching elements, said eccentric cam having a cam profile adapted to engage said longitudinal bar and said bridge element to directly apply thereto by operation of said first lever forces to effect positive raising and lowering of said punching elements during perforation of said sheets;

flexing means including a plurality of displaceable arm members adapted to engage said plastic ring to enable flexing thereof to a position where said perforated sheets may be placed in binding engagement therewith; and

a helical cam engaging said flexing means to effect engagement and flexing of said ring by said arm.

3,866,255
DIELECTRIC APPARATUS FOR AND METHOD OF TREATING TRAVELING PAPER WEBS AND THE LIKE

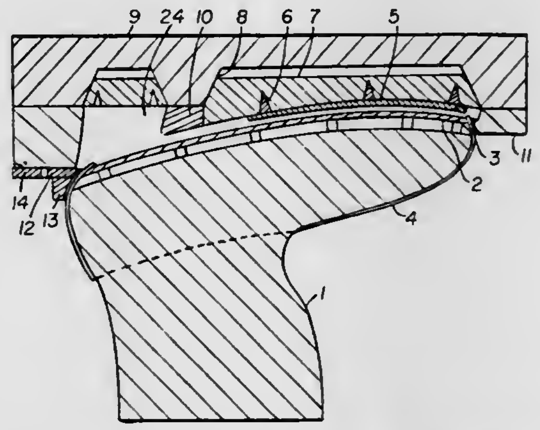
Rudolph M. Serota, East Cleveland, Ohio, assignor to Bangor Punta Operation, Inc., Bangor, Maine
Continuation-in-part of Ser. No. 385,130, July 27, 1964, abandoned. This application Oct. 21, 1965, Ser. No. 499,754
Int. Cl. F26b *3/34*
U.S. Cl. 34—1 **15 Claims**



1. Apparatus for heating a traveling web of dielectric material comprising a grounded metal frame, means for vertically adjusting said frame, a source of radio frequency energy, a first capacitor plate mounted within said frame intermediate the top and bottom thereof, means independent of said first recited means for vertically adjusting said first capacitor plate relative to said frame, a second capacitor plate fixedly mounted on said movable frame above said first plate, a first series of horizontal electrode rods carried by said second capacitor plate above the latter and in electrical connection therewith, and a second series of parallel electrode rods interposed between and alternating with said first series of electrode rods but carried by and grounded to said frame, whereby when said web of dielectric material is caused to travel closely above said electrodes in a direction transversely of the latter and radio frequency current is applied to said movable capacitor plate, a voltage gradient and current flow will be established in the material in the regions between successive electrodes to heat such material.

3,866,256
METHOD OF MANUFACTURE OF SHOES

Anton I. Liebscher, Waynesville, N.C., assignor to Ro-Search, Incorporated, Waynesville, N.C.
Continuation-in-part of Ser. No. 78,530, Oct. 6, 1970, abandoned, which is a continuation-in-part of Ser. No. 43,394, June 4, 1970, abandoned. This application Jan. 18, 1973, Ser. No. 324,785
Int. Cl. A43d *9/00*
U.S. Cl. 12—142 RS **2 Claims**



1. A method of manufacturing shoes comprising lasting an upper on a last, placing a split side frame which has a main portion and a heel portion against the peripheral margin of the upper, closing and thereby moving the side frame to exert inward pressure transverse to the sole of the last on the bottom margin of the side portion of the upper and moving the heel portion relative to the main portion and further exerting differential pressure on the heel portion of the upper lengthwise of the sole of the last.

3,866,257
SWIVEL TOP PAINT ROLLER WITH ADJUSTABLE HANDLE

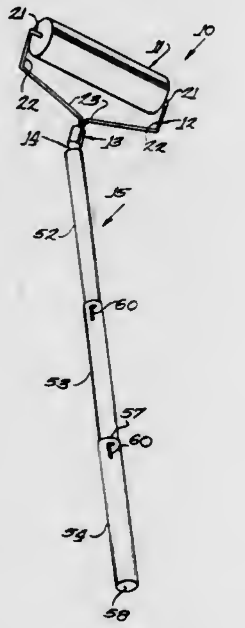
William H. Cansdale, Sr., 183 N. 3rd St., Tecumseh, Nebr. 68450
Filed Dec. 26, 1973, Ser. No. 428,316
Int. Cl. B25g *3/38;* **B44d** *3/28;* **F16b** *7/12*
U.S. Cl. 15—230.11 **3 Claims**

1. A paint roller mechanism for supporting a paint roller at various angles relative to the axis of the handle and at various elevations relative to the level of the surface on which an individual using the same is standing such that ceilings and upper portions of walls may be readily painted without requiring the use of a ladder or the like, the mechanism comprising:

an axle adapted to have a cylindrical paint applying roller mounted thereon for rotation about its cylindrical axis, the ends of the axle projecting from opposite ends of the roller;

a pair of U-shaped bracket members each associated with one end of said axle and disposed in confronting relationship with each other and each having one end secured to an associated end of said axle with the opposite end defining a free end extending in spaced relation to the side of the roller, said free end terminating in stem portions disposed adjacent to each other and extending generally normal to the axis of said axle and approximately centrally thereof;

- a socket member having a top surface, side wall surfaces, and a bottom surface with said stem members mounted in said top surface and projecting substantially axially outwardly therefrom;
- a recess including a spherical portion formed inwardly of said socket member and opening at said bottom surface thereof;
- a spherical ball member rotatably retained in said spherical portion for rotation relative thereto;



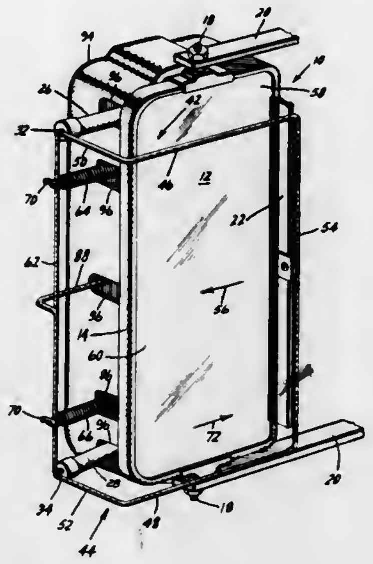
- a shank member having one end formed integrally with said ball member and projecting radially outwardly therefrom;
- a telescoping handle member having a top end connected to said projecting end of said shank member and having a bottom end spaced longitudinally from said top end; and
- said recess including means cooperative with said ball and shank members for guiding a rocking swiveling movement of said roller relative to said handle axis in a plane defined by said handle axis and said axle axis whereby said roller is swivelable in opposite directions about said ball member within said plane of movement such that the handle member may be disposed at an angle to the roller axis with the roller surface still maintaining a continuous line of contact from end-to-end thereof with a surface being painted thereby.

3,866,258

WIPER ASSEMBLY FOR SIDE-MOUNTED REAR VIEW MIRROR

Frank B. DeGraw, Rt. No. 1, Hudson, Ind. 46747
Filed Sept. 26, 1973, Ser. No. 400,845
Int. Cl. B60s ***1/12, 1/44***
U.S. Cl. 15—250.29 **9 Claims**

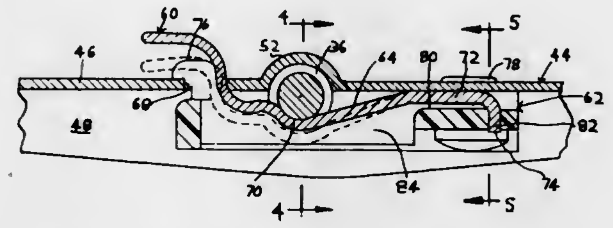
1. In combination with a side-mounted rear view mirror assembly including a mirror having a front, reflective surface and a mounting frame therefor having a rear side, a wiper assembly comprising: a wiper blade disposed for transverse, linear movement across said mirror surface, at least one transversely extending fluid power cylinder mounted on said rear side of said mounting frame and having a piston and extensible piston rod, means connecting said piston rod to said wiper blade for maintaining the same in engagement with said mirror surface and moving said wiper blade transversely there-across in reciprocal fashion upon extension and retraction of said piston rod, a solenoid-actuated fluid valve on said rear side of said mounting frame coupled to said cylinder and adapted to be connected to a source of fluid under pressure whereby said piston and piston rod are extended in response to actuation of said valve thereby moving said wiper blade transversely across said mirror surface in one direction from one edge thereof to the other, spring means acting on said piston rod for returning the same to its retracted position thereby moving said wiper blade transversely across said mirror surface in the opposite direction from said other edge thereof to said one edge, and means including a switch coupled to said solenoid and a linkage operatively connecting said piston rod to said switch for deactuating said valve responsive to substantially full extension of said piston rod thereby permitting said spring means to retract said piston rod and for again actuating said valve in response to substantially complete retraction of said piston rod.



3,866,259

WINDSHIELD WIPER BLADE CONNECTOR

Elton F. Nichols, Franklin, Mich.; John P. Moorhead, Palos Verdes Estates, Calif., and Leo J. Wubbe, Beverly Shores, Ind., assignors to The Anderson Company, Gary, Ind.
Filed Dec. 4, 1972, Ser. No. 312,209
Int. Cl. B60s ***1/40***
U.S. Cl. 15—250.32 **3 Claims**



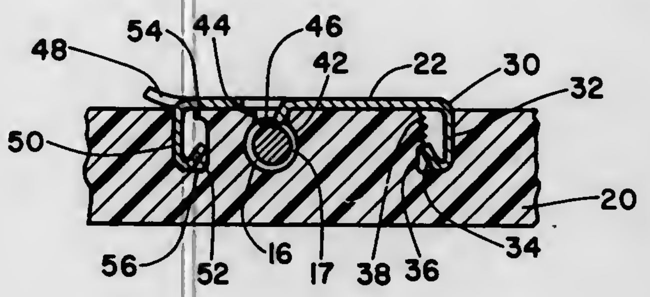
1. A windshield wiper blade assembly releasably mountable on the side of a wiper driving arm having a laterally extending pin with a reduced central portion between an enlarged outer end and an enlarged inner end comprising;

- a. a pressure distributing wiper yoke member having a channel-shaped midportion with parallel sides having aligned apertures for receiving the enlarged ends of the laterally extending pin,
- b. a mounting block secured in the channel-shaped midportion and having an aperture aligned with the apertures in the sides of the yoke member, and
- c. a U-shaped spring member having parallel spaced apart legs with the free ends of said legs secured in the mounting block, midportions of said legs extending across the aperture in said mounting block and bearing on the reduced portion of the pin, and a connecting crosspiece at the opposite end of the legs adapted to be depressed for moving the midportions of the spring out of alignment with the apertures to release the pin for removal of the yoke and whereby the enlarged outer end of the pin may be positioned between said spaced apart legs with one leg engaging in the reduced central portion of the pin to hold the blade on said driving arm.

3,866,260

LOW SILHOUETTE CONNECTOR FOR WINDSHIELD WIPER BLADES

Irwin C. Cone, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.
Filed Oct. 17, 1973, Ser. No. 407,368
Int. Cl. B60s ***1/40***
U.S. Cl. 15—250.32 **8 Claims**



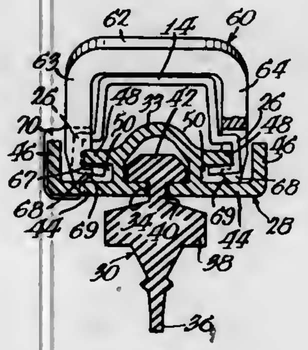
1. In a windshield wiper assembly having an elastomeric squeegee wiping element, a squeegee-retaining backing member and a pressure-distributing superstructure engaging the backing member, said superstructure including a central molded plastic yoke member having a substantially flat top surface and a transverse opening therein releasably engageable with a wiper arm by a pin and clip assembly, the improvement comprising in combination therewith:

- a substantially flat spring clip of a material having a modulus greater than the plastic of the yoke member, said clip attached to and closely engaging the top of the central yoke member forming a low silhouette connection therewith, the clip comprising:
  - a downturned retention portion securely and fixedly engaged in a receiving portion formed in the surface of the yoke member;
  - a lever portion spaced from the retention portion resiliently movable away from the upper surface of the yoke member while said retention portion remains fixed; and means intermediate said retention and lever portions of the clip protruding downwardly through a passageway into the opening in the yoke member for normal engagement with the pin, disengageable therewith upon displacement of said lever portion of the clip a predetermined distance away from the upper surface of the yoke member.

3,866,261

END CLIP FOR UNIVERSAL BLADE

Donald W. Stratton, Hammond, Ind., assignor to The Anderson Company, Gary, Ind.
Filed Feb. 1, 1973, Ser. No. 328,648
Int. Cl. B60s ***1/02***
U.S. Cl. 15—250.42 **12 Claims**



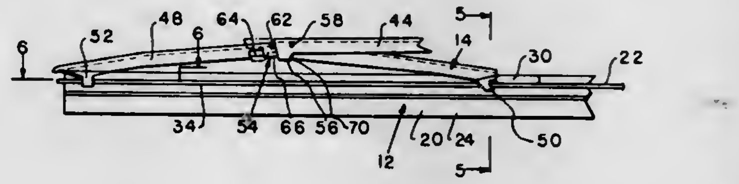
1. A clip for holding a windshield wiper blade structure in assembled relationship on a superstructure, comprising:

- a. an inverted U-shaped body of resiliently flexible material open at the opposite ends including
- b. a relatively flat crosspiece with depending legs extending in parallel planes generaly normal to the crosspiece,
- c. inwardly directed attaching means at the free ends of the legs extending toward each other,
- d. free end portion of at least one leg having a retention means for embracing one claw of a superstructure, and
- e. means at the free end of at least one leg for interlocking engagement with a blade structure.

3,866,262

WINDSHIELD WIPER BLADE

Leo J. Wubbe, Beverly Shores, Ind., assignor to The Anderson Company, Gary, Ind.
Filed Oct. 16, 1973, Ser. No. 406,808
Int. Cl. B60s ***1/38***
U.S. Cl. 15—250.42 **14 Claims**



1. A wiper for cleaning a windshield comprising a pressure-distributing superstructure operatively connected to a flexible backing strip carried by a resilient wiping member, a pair of abutments carried by said wiping member and positioned in spaced apart relationship thereon, said superstructure having a pair of secondary yokes and a primary yoke, each of said secondary yokes having means slidably engaging with one end portion of said backing strip outboard of the abutments, at least one of said secondary yokes having aligned indented portions formed intermediate the ends thereof, sidwardly projecting means formed inboard of said indented portions, stop means carried by said secondary yoke inboard of said projecting means, said primary yoke being pivotally connected to one said secondary yokes and having means on the other end portion which pass through said indented portion and pivotally engage with said projecting means and abut against said stop means, said abutments on said wiping blade urging said secondary yokes outboard relative to said primary yoke to hold the means on said primary yoke assembled with the projecting means on said secondary yoke whereby the superstructure is held assembled on the blade.

3,866,263

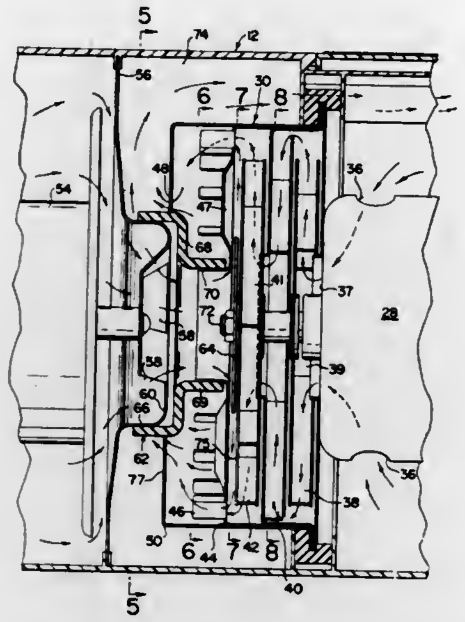
CLEANER WITH AUXILIARY AIR FLOW

Darwin S. Crouser, North Canton, and Joseph A. Powers, Canton, both of Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Apr. 17, 1973, Ser. No. 352,008
Int. Cl. A47l ***9/22***
U.S. Cl. 15—412 **10 Claims**

2. In a floor care appliance having an outer casing utilized for cleaning purposes;

- a. a motor and motor-driven fan suction means for providing a suction flow of air through said motor and a pressure flow of air discharged from said motor-driven fan suction means;
- b. said suction air moving through said motor for cooling thereof;
- c. a secondary flow of air directly induced by said motor-driven fan suction means and discharged directly into said pressure flow of air immediately downstream of said motor-driven fan suction means and within a fan housing means which encapsulates said motor-driven fan suction means, and is spaced radially inwardly of said outer casing, and

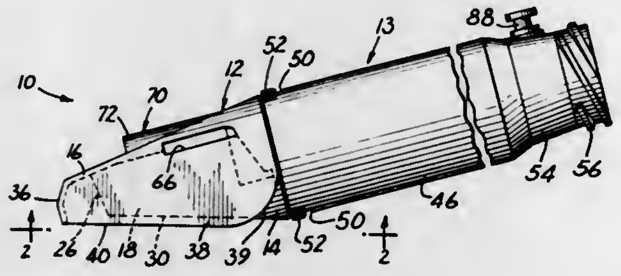
d. said secondary flow of air being discharged into said pressure flow of air downstream of said motor means



whereby said secondary flow of air does not pass through said motor means.

3,866,264
CLEANING DEVICE

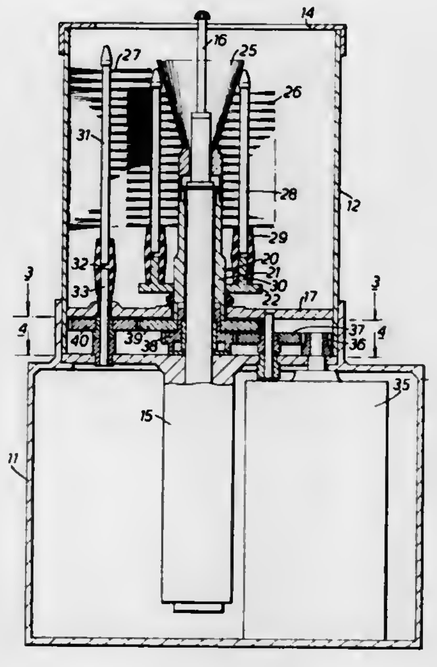
Jan-Eric Engquist, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden
Continuation-in-part of Ser. No. 185,079, Sept. 30, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,657
Int. Cl. A47l *9/02*
U.S. Cl. 15—421 **9 Claims**



1. A cleaning device for cleaning a surface such as human skin and the like through the removal of excrement and semi-liquid matter from the surface by suction, said device comprising: body means including an inner core portion and an outer skirt portion; said inner core portion having side wall surfaces, front and rear ends, and a substantially flat lower surface; said inner core portion having a suction passage therein communicating with said front and rear ends thereof; said outer skirt portion being defined by a skirt wall which is connected at its upper edge to said inner core portion and which includes a portion spaced outwardly from said front end and side wall surfaces of said inner core portion to define an air channel between said inner core portion and said skirt wall; said skirt wall having edge surface portions adapted for engagement with the surface to be cleaned in a manner to maintain said flat surface of said inner core in spaced relation from the surface being cleaned; said skirt wall and said flat surface of said inner core portion defining an intake opening generally adjacent said rear end of said core portion for the entry of matter removed from the surface being cleaned when said device is disposed in an operating position; said skirt wall having at least one opening therein for the entry of breather air into said air channel; and means at said rear end of said inner core portion for connecting said suction passage to a source of vacuum such that material removed from the surface being cleaned is caused to pass through said suction passage toward the source of vacuum.

3,866,265
GLASS WASHING MACHINES

Rodney Thomas Beazley, Kent, England, assignor to Glassmaster Company Limited, London, England
Filed Aug. 16, 1973, Ser. No. 388,777
Claims priority, application Great Britain, Aug. 16, 1972, 38263/72
Int. Cl. A47l *15/38*
U.S. Cl. 15—75 **11 Claims**

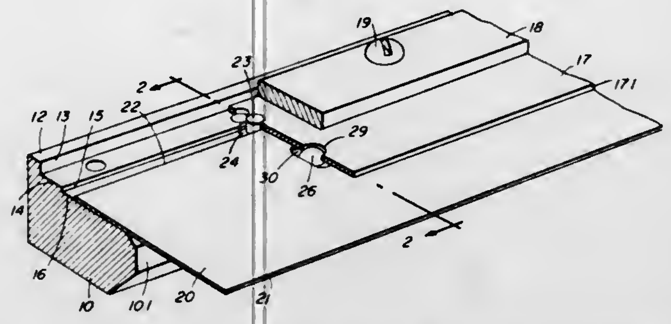


1. A glass washing machine including,
a casing having an opening in its top wall to receive a glass, bottom upwards,
a retractable plunger projecting upwardly through the opening to engage the bottom of the inverted glass to be retracted by it, the plunger being vertically movable between a first position and a second position lower than the first position,
jet nozzles adapted to direct jets of liquid to impinge on the outside and inside of the glass,
brush-like means mounted within the casing or wiping the glass,
rinsing water supply means for supplying rinsing water,
washing solution supply means for supplying detergent or sterilising solution,
and valve means actuated by the plunger to connect the nozzles to the solution supply means when the plunger is adjacent its second position, and to the water supply means when the plunger is between its first and second positions,
whereby, as the plunger is lowered and raised between its first and second positions, the glass is subjected to a cycle comprising an initial rinse, a detergent and/or sterilising wash and a final rinse.

3,866,266
SELF-ADJUSTING DOCTOR BLADES

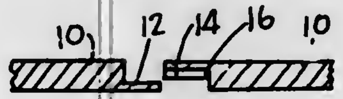
Harold E. Dunlap, Auburn, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.
Filed Nov. 9, 1973, Ser. No. 414,196
Int. Cl. D21g *3/02*
U.S. Cl. 15—256.51 **10 Claims**

1. In combination, a generally planar elongated doctor blade having extending in the direction of elongation a forward edge for doctoring a surface in motion transverse to said direction relative to the blade and a back edge spaced from the forward edge by the width of the blade, and a holder for the blade comprising first and second spaced-apart members bounding an elongated blade-receiving space having a length substantially the same as the length of said blade, and a depth less than the width of the blade for receiving a first portion of the blade bounded by the back edge while a second portion of the blade bounded by the forward edge sticks out of the holder, throughout the length of both the holder and the blade, and means fixed in the blade-receiving space for stopping said back edge in a limited region intermediate the ends of the blade, said blade being free within prescribed limits to pivot in said holder around said stopping means.



3,866,267
RUGS WITH DETACHABLE SECTIONS

Genarose J. Poletti, Oakdale, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Jan. 14, 1974, Ser. No. 433,074
Int. Cl. A47g *27/04;* **B32b** *7/06;* **A44b** *17/00;* **B32b** *3/10*
U.S. Cl. 16—8 **2 Claims**

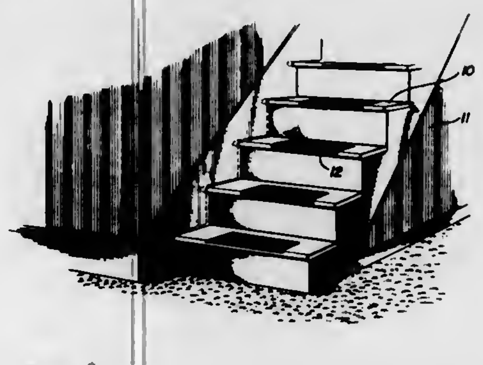


1. Apparatus for detachably interconnecting adjacent sections of rugs or carpeting having abutting peripheries to eliminate gaps, bulges and depressions, said apparatus comprising: a first type of velcro strip fastener secured to a peripheral edge of one section and extending outward and therealong, the bottom surface of the first fastener being horizontally aligned with the bottom surface of the section to which it is attached; and

a second and mating type of velcro strip fastener disposed in a recess in the abutting peripheral edge of the adjacent section, said recess extending inward from the edge and downward to the bottom surface of the adjacent section to overlie said first type fastener to enable both types of fasteners to be detachably engaged.

3,866,268
STAIR TREAD

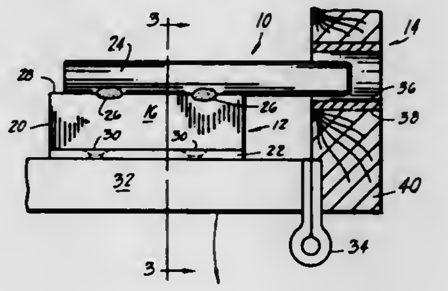
Louis A. Cormier, 42 Central St., Southbridge, Mass. 01550
Division of Ser. No. 103,743, Jan. 4, 1971, Pat. No. 3,726,327, which is a division of Ser. No. 778,365, Oct. 11, 1968, Pat. No. 3,552,084. This application Jan. 24, 1973, Ser. No. 326,531
Int. Cl. A47g *27/04*
U.S. Cl. 16—10 **2 Claims**



1. An insert for use in a recess in a stair tread, comprising a rectangular plate having parallel upper and lower surfaces and having the shape of the recess, the plate having four edges three of which form an acute angle with the lower surface and one of which forms a right angle with the lower surface, the two corners defined by the three edges and the lower surface are truncated to provide clearance at the corners.

3,866,269
DOOR SECURITY LOCK

Earnest C. Hudgins, 1050 N.W. First Ave., Boca Raton, Fla. 33432
Filed July 16, 1973, Ser. No. 379,420
Int. Cl. E05d *9/00*
U.S. Cl. 16—128 **4 Claims**



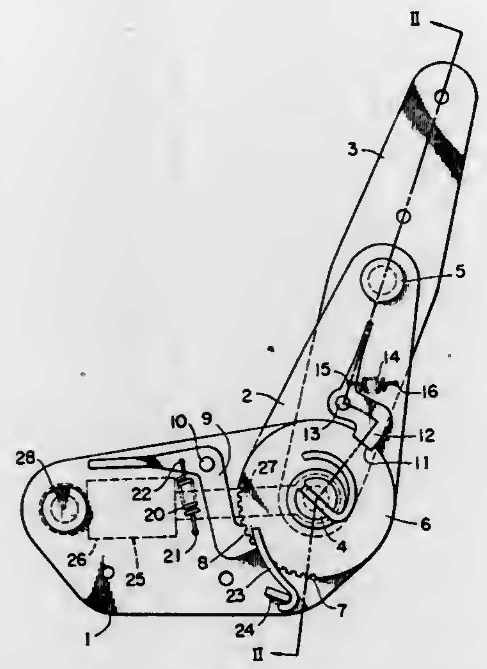
1. A security lock for a hinged door, comprising: a pair of separate interlocking members for separate attachment to a door and to a door jamb, respectively, one of said members having a fixed projecting pin and attachment receiving means for attaching said member to the hinged end of a hinged door, and the other member comprising an elongated tubular sleeve adapted to be received within a hole, in the door jamb to receive the end of said pin when the door is in its closed position, said one member including an angled support plate having at least two sections, each section disposed at 90° relative to an adjoining section, said pin being attached to one of said sections, and another section including said attachment receiving means, and a third section extending at a 90° angle from said pin carrying section and contacting the door when the said one of said interlocking members is secured thereto, whereby said third section serves as a reinforcing section for said pin carrying section, said third section lying in a plane disposed at right angles to said other sections.

3,866,270
ADJUSTABLE HINGE FITTING FOR A SEAT WITH A MOVABLE BACK

Toshio Suzuki, Okazaki; Takami Terada, Toyota; Ryoichi Fukumoto, Nagoya, and Hisao Matsumoto, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Prefecture, Japan
Filed May 3, 1973, Ser. No. 356,747
Claims priority, application Japan, May 5, 1972, 47-4752621[U]
Int. Cl. E05d *11/10;* **B60r** *21/00*
U.S. Cl. 16—146 **4 Claims**

1. A two-part hinge arrangement for adjustably connecting a seat and a backrest, particularly for motor vehicles, comprising, in combination: a first arm fastened to the seat; a second arm; a third arm, said second and third arms being both pivotally connected together to said first arm by a first pin, said second and third arms being connected by a second pin providing a swivel axis against tilting of the back rest, said first pin having a portion of reduced strength between the sections of said first pin which are connected to said second and third arms; a sector gear loosely positioned on said first pin and having on its edge an arcuate series of teeth and a recess; a first handle-and-pawl pivoted on said first arm and having at its end a series of teeth for engaging the arcuate series of teeth on said sector; a second handle-and-pawl pivoted on said second arm for engaging said recess on said sector; torsion spring means to normally urge said sector toward rotation in a predetermined direction; and damper means pivotally connected at its one end to said first arm and at the opposite end

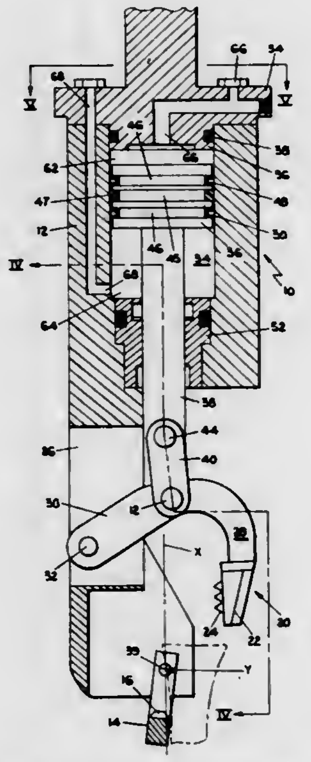
to said first pin to thereby resist angular movement of said third arm about said second pin, when said portion of reduced



strength of said first pin breaks while said second pin remains intact.

3,866,271
BONE HOLDING MECHANISM

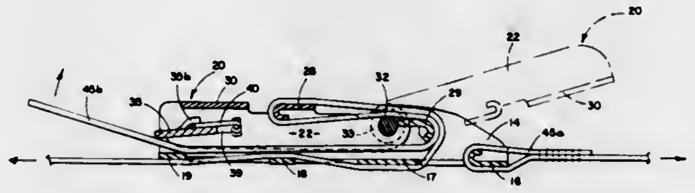
Gary McNeil, Holland, Mich., assignor to Prince Corporation, Holland, Mich.
Filed Oct. 26, 1971, Ser. No. 192,236
Int. Cl. A22c *17/04*
U.S. Cl. 17—1 G **12 Claims**



1. A bone holding apparatus comprising:
- a base member;
- a pair of jaws mounted on said base member; gripping means on each of said jaws adapted to hold said one end of a bone placed therebetween; one jaw of said pair being movable toward and away from the other jaw of said pair for forcing a bone against the gripping means of said other jaw of said pair thereby clamping said bone between said jaws; said other jaw of said pair being of a shape to encompass at least a portion of a bone held therein and being freely pivotally mounted on said base member relative to said one jaw of said pair, the pivotal mounting thereof being about an axis extending transverse to the direction of movement of said one jaw and through an area located between the two jaws permitting said other jaw to pivot to different positions locating the gripping means of said other jaw at differently spaced distances from a plane on which said axis is located and which extends generally in the same direction as the medial axis of said bones to be held therein, whereby said jaws automatically adjust to bones of varying sizes; and
- driven actuator means for moving and forcing said one jaw toward said other jaw to thereby hold and restrain said bone from longitudinal and rotational movement.

3,866,272
STRAP TENSIONING BUCKLE

Ernest Prete, Jr., Woodland Hills, and Howard T. Knox, Hawthorne, both of Calif., assignors to Ancra Corporation, El Segundo, Calif.
Filed May 20, 1974, Ser. No. 471,802
Int. Cl. A43c *11/00*
U.S. Cl. 24—68 CD **9 Claims**

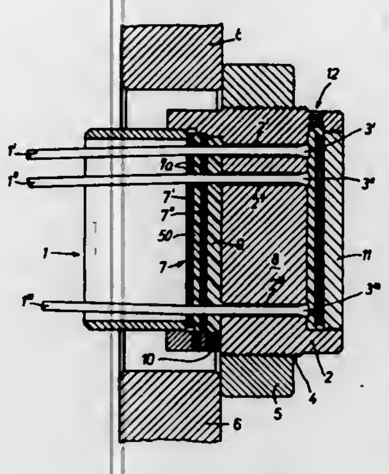


1. A strap tensioning buckle comprising:
- a frame member having a pair of substantially parallel side plates joined together by a plurality of cross bars,
- a handle member pivotally attached to said frame member, said handle member having a pair of substantially parallel side plates joined together by a plurality of cross bars, said handle member being pivotally supported at one end thereof on said frame member,
- a latch bar slidably mounted on said handle member at the end thereof opposite to said pivotally mounted end,
- spring means for resiliently urging said latch bar outwardly away from the central portions of said handle member in a direction parallel to the longitudinal axes of the handle member side plates,
- said frame member side plates having a pair of hook portions located near one end thereof and facing toward the center of the frame member, said latch bar fitting into said hook portions in engagement therewith with said handle in its latched position,
- whereby said handle is released from its latched position by depressing said latch bar inwardly against the tension of said spring to disengage the latch bar from the hook portions.

3,866,273
WIRE CABLE ANCHORING ARRANGEMENT

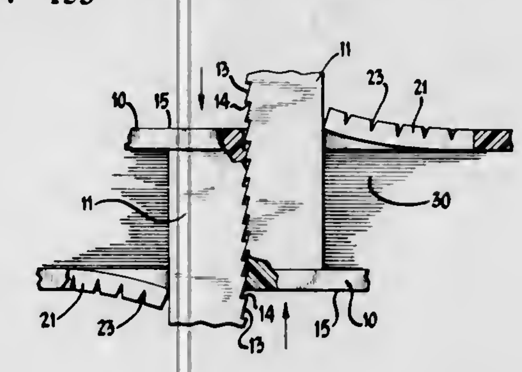
Antonio Brandestini, Kusnacht; Hans-Rudolf Siegwart, Kilchberg, and Gerald Welbergen, Zumikon, all of Switzerland, assignors to Antonio Brandestini, Kusnacht, Switzerland
Filed Jan. 15, 1973, Ser. No. 323,658
Claims priority, application Switzerland, Jan. 21, 1972, 929/72
Int. Cl. F16g *11/00*
U.S. Cl. 24—122.6 **2 Claims**

1. Wire cable anchoring arrangement for high dynamic loads, comprising a common anchoring body having bores therethrough, individual wires of a cable guided through said bores and anchored at their ends at said anchoring body, a supporting body of material softer than the wires provided at least at a wire outlet section of the bores of the anchoring body at a respective space between the wires and the walls of said bores, said supporting body bearing at the anchoring body and at the wires for taking-up the deflection forces to which the wires are exposed and for retaining the wires in a predetermined position relative to the anchoring body, and guide disk means disposed behind said anchoring body provided with perforations corresponding to the bores of the anchoring body wherein the guide disk means consists of a double disk arrangement and a sealing material arranged between both of the disks of the double disk arrangement.



3,866,274
DEVICE FOR BINDING SHEETS

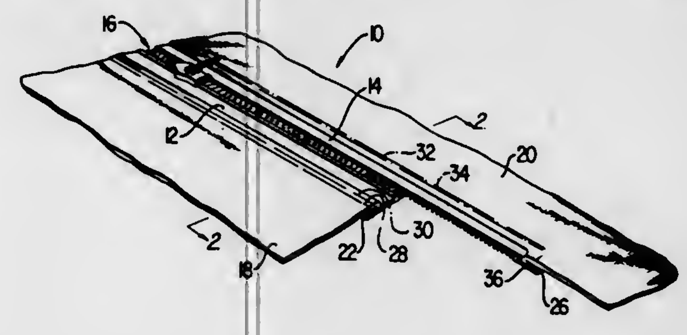
Arthur J. Malavazos, Hayward, Calif., assignor to AJM Research Corporation, Hayward, Calif.
Filed Oct. 17, 1973, Ser. No. 407,239
Int. Cl. A44b *9/00;* **B42f** *3/00*
U.S. Cl. 24—153 **4 Claims**



1. A binding device comprising a pair of substantially identical members, each of which has a base, a plurality of spaced binding posts projecting from one side thereof, a series of ratchet teeth along the corresponding face of each of said binding posts, and an aperture in each base member adjacent each binding post along the edge thereof having the ratchet teeth, said aperture being of a size to barely permit the insertion therethrough of a binding post on a cooperating member, whereby the insertion of the binding posts through the aperture of the other of said members causes the base of each ratchet tooth to nest against the base of the other.

3,866,275
SLIDE FASTENER INSTALLATION

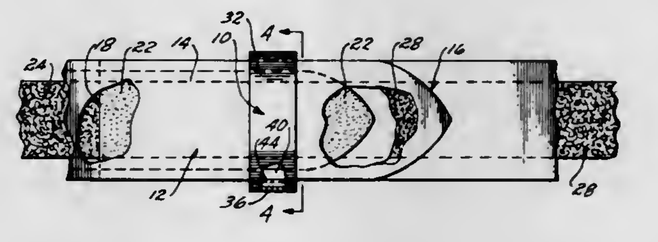
William F. Van Amburg, Meadville, Pa., assignor to Textron Inc., Providence, R.I.
Filed Apr. 12, 1973, Ser. No. 350,658
Int. Cl. A44b *19/34, 19/00*
U.S. Cl. 24—205.16 D **7 Claims**



1. A slide fastener installation comprising:
- a pair of fabric sections having edges disposed adjacent each other to define an opening therebetween;
- a slide fastener having a pair of carrier tapes respectively engaging said fabric sections adjacent the edges;
- said fabric sections and said carrier tapes being made of compatibly fusible materials;
- said pair of carrier tapes having opposed ends facing each other at one end of the opening;
- fused means securing each carrier tape to its corresponding fabric section adjacent the edge;
- a fabric section along its edge having a transversely extending portion at the one end of the opening, the transversely extending portion including a tab folded thereunder and overlapping at least one end of the opposed ends of the carrier tapes; and said fused means securing the folded under tab to the one end of said carrier tapes.

3,866,276
SPRING-LOADED BELT KEEPER

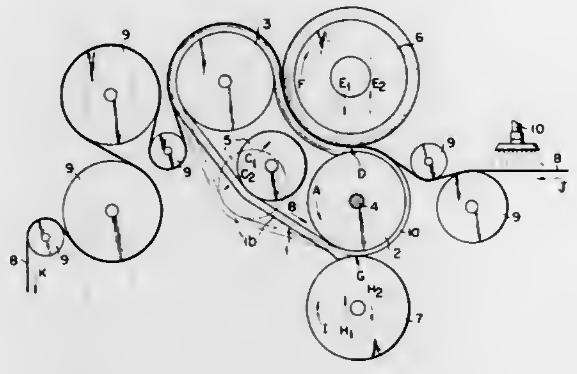
Neale A. Perkins, Sierra Madre, Calif., assignor to Safariland Leather Products, Monrovia, Calif.
Filed June 11, 1973, Ser. No. 368,981
Int. Cl. A44b *21/00*
U.S. Cl. 24—259 A **4 Claims**



1. A removable keeper for clamping the overlying portions of one or more belts or the like, the keeper comprising an integral strip of resilient material including
- an elongated front leg,
- a top leg at one end of the front leg,
- a bottom leg at the other end of the front leg,
- the top leg and the bottom leg each extending transversely relative to and away from the same side of the front leg, the top and bottom legs having remove ends spaced laterally from the front leg,
- an elongated latch-carrying leg at the remote end of the top leg extending transversely to the top leg and downwardly toward the bottom leg to a remote end spaced from the top leg, the length of the latch-carrying leg being a major portion of the length of the front leg,
- an elongated detent-carrying leg at the remote end of the bottom leg extending transversely to the bottom leg and upwardly toward the top leg to a remote end spaced from the bottom leg,
- a loop formed at the remote end of the latch-carrying leg and facing away from the front leg for providing a rounded, elongated latch member,
- a loop formed at the remote end of the detent-carrying leg and facing toward the front leg for providing a rounded, elongated detent member having a rounded undersurface spaced above the bottom leg,
- the latch member and detent member being positioned relative to each other so that the rounded surface of the latch member can be releasably engaged with the rounded undersurface of the detent member in a snap-fit, the latch-carrying leg being longer than the minimum distance between the detent member and the top leg, and being normally curved away from the front leg when the keeper is in its unlocked position such that when the latch member is engaged with the detent member in a snap-fit to lock the keeper, the latch-carrying leg is held in a position bowed inwardly toward the front leg to apply pressure to the overlying belt portions to which the keeper is applied.

3,866,277
METHOD OF SHRINKING CLOTH OR PAPER

Iwajiro Hojyo, 30-13 Katsurahitsujisaru-cho, Kyoto, Japan
Filed Apr. 30, 1973, Ser. No. 355,935
Claims priority, application Japan, Dec. 13, 1972, 47-125067
Int. Cl. D06c *21/00*
U.S. Cl. 26—18.6 3 Claims



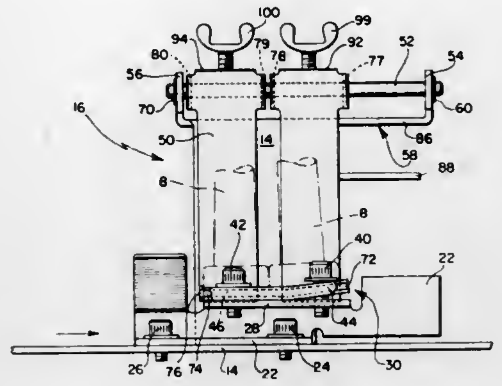
1. A method of shrinking a work material such as cloth or paper which comprises the step of:

a. providing an elastic endless rubber belt continuously driven only one way by driving means, said rubber belt having its thickness reduced when stretched;
b. providing upper and lower driven rollers such that they face each other across the driving means and endless rubber belt;
c. clamping the endless rubber belt by simultaneously shifting the upper and lower driven rollers toward two opposite clamping points on the periphery of the driving means with a relatively low and substantially equal pressure applied to the intervening endless rubber belt by cooperation of each of the upper and lower driven rollers with the driving means;
d. shifting and stretching one portion of the endless rubber belt defined between the two clamping points so as to let it have a smaller thickness than the other nonstretched portion of said belt before the rubber belt is driven;
e. continuously driving the rubber belt;
f. placing a work material on said one stretched and thinned portion of the endless rubber belt and conducting the work material to one clamping point together with said one stretched and thinned portion;
g. causing the other nonstretched portion of the endless rubber belt suddenly to contract itself immediately after said belt passes said one clamping point due to its thickness being increased by release from the stretching force applied to said one portion of said belt, thereby enabling the work material tightly attached to the surface of said other nonstretched portion to shrink to the same extent as the contraction of said other nonstretched portion; and
h. heating the work material thus treated so as to permanently set its shrunk form.

3,866,278
METHOD AND APPARATUS FOR THE CONCURRENT STRIPPING OF BOBBINS

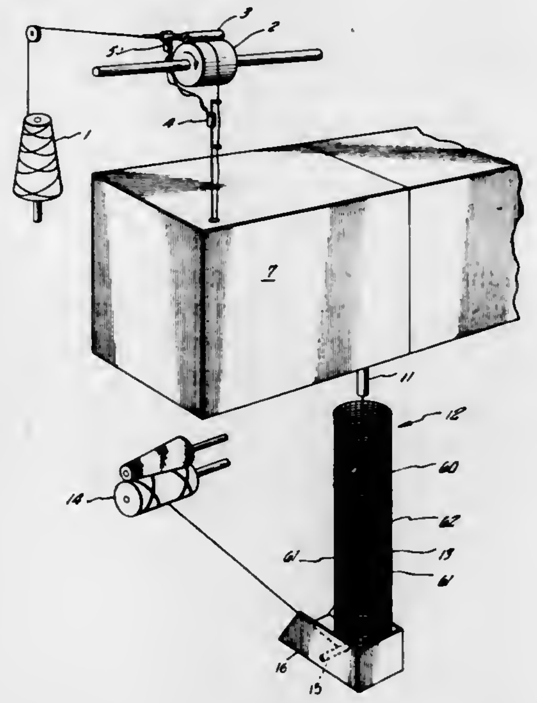
Gunter G. Golm, Providence, and Thomas Edgar Pitts, Cranston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed Oct. 25, 1973, Ser. No. 409,582
Int. Cl. D03d *45/58*
U.S. Cl. 28—19 10 Claims

1. A stripping apparatus for the concurrent stripping of bobbins comprising, means defining a common path, means associated with said common path to urge bobbins therealong, means positioned relative to said common path to strip a first bobbin in said common path, and means positioned in said common path to tilt a second downstream bobbin in said common path adjacent said first bobbin in an upstream direction towards said first bobbin and relative to said stripping means to enable the concurrent stripping of said first and said second bobbins by said stripping means.



3,866,279
YARN PROCESSING APPARATUS AND PROCESS

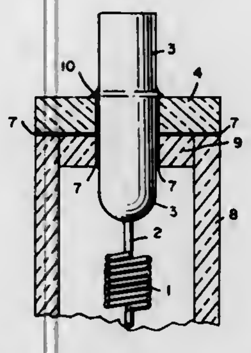
Harry R. Kennedy, Greer, S.C., assignor to The Richen Co., Inc., Greenville, S.C.
Continuation of Ser. No. 255,399, May 22, 1972, abandoned, which is a continuation of Ser. No. 880,744, Nov. 28, 1969, abandoned. This application June 20, 1973, Ser. No. 371,890
Int. Cl. D02j *13/00;* D06c *1/00*
U.S. Cl. 28—62 22 Claims



1. Yarn processing apparatus comprising a tubular convoluted conduit adapted to permit passage of yarn therethrough, a first nozzle connected to said tubular conduit having a passageway therein communicating with the entrance to said tubular conduit, means communicating with said passageway and said first nozzle to introduce air thereto, means associated with said air introduction means to heat air prior to introduction to said first nozzle, and a second nozzle connected to said tubular conduit at the exit end thereof, whereby yarn is permitted to pass through said first nozzle and said convoluted conduit in a substantially relaxed condition with radiant heat imparted thereto, said second nozzle comprising a first passageway communicating with said exit end of said tubular conduit, and means communicating with said second nozzle to admit cold air thereto to contact hot yarn passing through said second nozzle to provide for cooling of such yarn and for setting of the same while in a relaxed state.

3,866,280
METHOD OF MANUFACTURING HIGH PRESSURE SODIUM ARC DISCHARGE LAMP

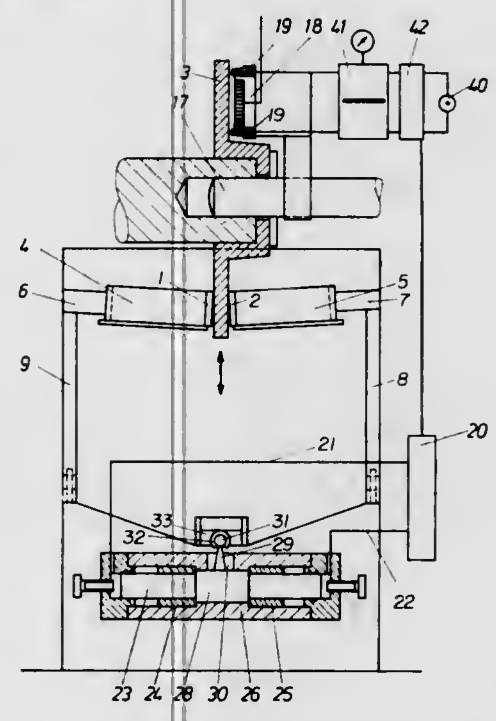
Nikolaos Barakitis, Haverhill, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.
Filed Dec. 26, 1973, Ser. No. 427,693
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.15 5 Claims



1. In the manufacture of a high pressure sodium arc discharge lamp, the steps comprising: inserting an electrode-bearing niobium tube through a hole in an alumina washer; disposing a glass-frit ring around the niobium tube; heating the frit ring to a first temperature sufficient to melt the glass and to thereby seal the niobium tube to the alumina washer; placing the tube-washer assembly on the end of an alumina arc tube which contains an interiorly disposed alumina insert sintered thereto, so that a capillary space exists between said insert and the niobium tube of said tube-washer assembly; and heating the assembly to a second temperature, higher than the first, sufficient to cause the previously melted glass to flow into said capillary space and to seal the assembly to the arc tube.

3,866,281
SURFACE SMOOTHING ARRANGEMENT

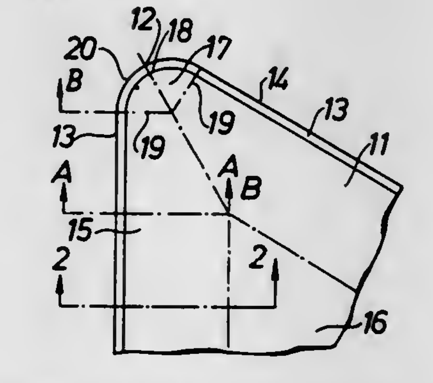
Bernhard Kunze, Erkelenz, Germany, assignor to Wilhelm Hengenscheidt GmbH, Erkelenz, Germany
Filed Sept. 10, 1973, Ser. No. 396,117
Int. Cl. B21c *37/30*
U.S. Cl. 29—90 R 5 Claims



1. Surface smoothing arrangement, comprising mounting means for mounting a workpiece having opposite faces for rotation about a first axis transverse to said faces; a pair of smoothing rolls located on opposite sides of said workpiece in pressure-engagement with said faces and rotatable about second axes which are inclined at respective small angles to the same, and located in a common plane perpendicular to said faces; support means supporting said rolls for rotation about said second axes; pressure means for pressing said rolls against said faces; means for pivoting said rolls, support means, and pressure means jointly about a third axis which extends intermediate and parallel to said faces midway between points of contact between said rolls and said faces through an imaginary line connecting said points of contact and which also extends normal to said common plane; and measuring means for measuring any curvature of said faces and for correspondingly automatically actuating said pivoting means to the extent necessary for said rolls to smooth and remove such curvature.

3,866,282
CUTTING INSERT

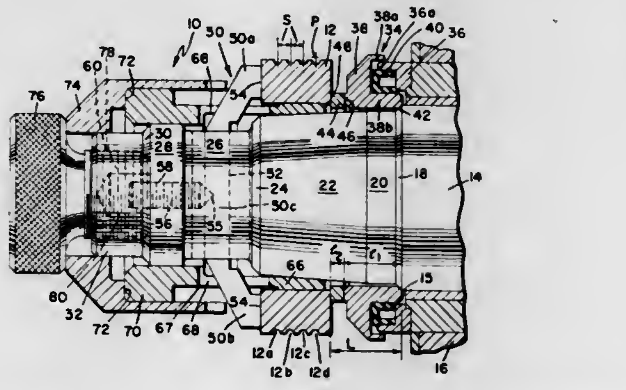
Evert Gustav Lundgren, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden
Filed Apr. 13, 1973, Ser. No. 351,012
Claims priority, application Sweden, May 17, 1972, 6419/72
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 1 Claim



1. Cutting insert for chip-forming machining of metal work pieces, said insert having at least one cutting edge (13) formed of the transition between the major faces (11) and end faces (14) and a chip breaker groove (15) extending along the cutting edge (13) on the major or rake face (11), the mentioned end faces being connected by insert corners (12) provided with nose radius (20), in which cutting insert the cutter side of the chip breaker groove, seen in transverse cross-section, has an essentially straight profile, and in which the corner part (17) of the rake face is formed with a smaller rake angle γ than the remaining parts of the cutting edge (13), said rake angle γ decreasing continuously in the direction towards the insert corner (12) within a considerable transition zone which is at the most one-third of the total length of the side or edge of the cutting insert.

3,866,283
MULTI-GROOVE ROLL MOUNTING

David E. Gould, Oxford, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Dec. 26, 1973, Ser. No. 423,431
Int. Cl. B21b *27/02*
U.S. Cl. 29—121 R 6 Claims



1. In a rolling mill, apparatus for mounting a multigroove work roll on the end section of a roll shaft in an operative position with one of the roll grooves in alignment with the mill pass line, said apparatus comprising: locating means on the roll shaft, spacer means positioned between and engageable at opposite ends respectively with said locating means and with

one end of a multi-groove work roll which is axially received on the roll shaft, and retaining means engageable with the roll shaft and with the other end of the work roll for holding the work roll against said spacer means in a fixed position on said shaft, said spacer means including at least one removable element, the presence or absence of which will change the axial length of the spacer means by a distance equal to the spacing between adjacent grooves on the work roll.

3,866,284

ONE-SIDE WELDING PROCESS

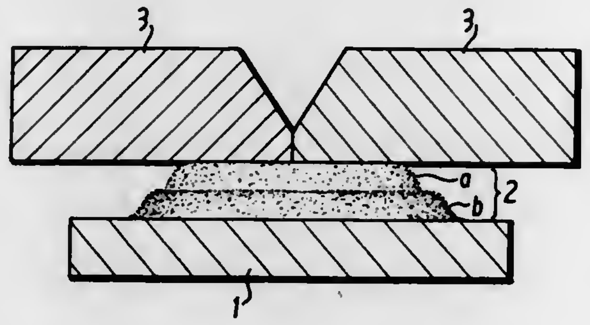
Masayasu Arikawa, Fujisawa; Motomi Kano, and Naoki Okuda, both of Kanagawa, all of Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe, Japan

Division of Ser. No. 20,657, March 18, 1970, Pat. No. 3,721,797. This application Sept. 11, 1972, Ser. No. 287,851. The portion of the term of this patent subsequent to Dec. 22, 1988 has been disclaimed.

Claims priority, application Japan, Mar. 25, 1969, 44-22587; Dec. 4, 1969, 44-17458

Int. Cl. B23k *9/02*

U.S. Cl. 219—137 **1 Claim**



1. In a single-side arc welding process wherein a copper strip is used as the backing material for the workpieces intended to be joined, the improvement comprising:

applying a freely flowing granular flux material to a copper sheet to form at least one layer wherein at least 40 percent by weight, based on the total weight of the flux, is in a particulate form having a particle size of less than 840 μ, and wherein said layer contains a granular binder material selected from the group consisting of thermosetting resin, fat, wax, paraffin, and a powdered glass having a softening point of not more than 1,000°C., which is fusible under the influence of the arc used in said welding process, applying said freely flowing granular flux binder layer to the side of said workpiece opposite said welding surface, and then conducting said single-side arc welding so as to fuse said granular binder to prevent displacement of said granular flux.

3,866,285

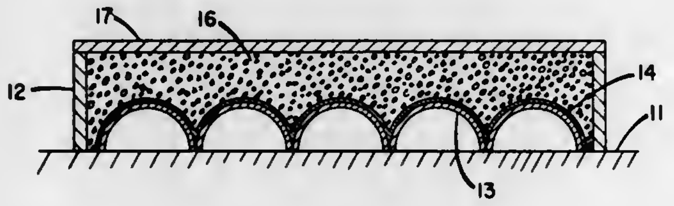
METHOD OF CONSTRUCTING A SOLAR ENERGY COLLECTOR

Harold A. Clark, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 1, 1974, Ser. No. 447,191

Int. Cl. B23p *17/00*

U.S. Cl. 29—157 R **5 Claims**



1. A method for manufacturing a solar energy collector comprising:

providing a flat base,

laying over said base a plurality of generally semicylindrical male mold portions in closely spaced parallel relationship,

placing a frame around said mold portions and extending upwardly from said base,

covering said male mold portions with a layer of foil shaped in conformity therewith,

pouring a curable foam plastic mix into said frame over said foil and curing said plastic mix,

removing the resultant composite of frame, plastic and foil from said male mold portions and base, and

providing solar energy receiving means within the recesses in said composite which were formed by said male mold portions.

3,866,286

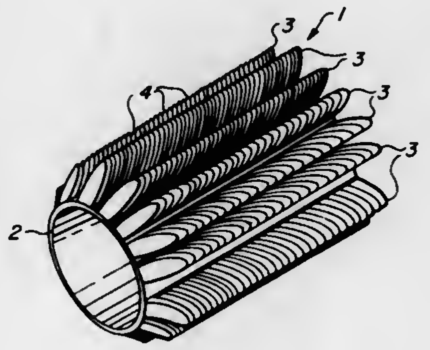
METHOD OF MAKING A FINNED TUBE HEAT EXCHANGER HAVING A CIRCULAR CROSS SECTION

Stephen F. Pasternak, Park Ridge, Ill., assignor to Peerless of America, Incorporated, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,764

Int. Cl. B21d *53/02;* **B23p** *15/26*

U.S. Cl. 29—157.3 A **11 Claims**



1. The method of making a heat transfer element comprising

a. forming an elongated tubular member having

   1. a transverse width in one direction which is greater than the width thereof in the direction perpendicular to said one direction,
   2. oppositely disposed outer wall portions extending along said first mentioned width, and
   3. transversely spaced, outwardly projecting elongated ribs on the outer surfaces of said wall portions and extending longitudinally of said tubular member

b. successively, longitudinally of said tubular member, cutting fins from said ribs,

c. turning said fins outwardly into outwardly projecting relation to said wall portions, and

d. then expanding said tubular member into a more rounded transverse cross-sectional shape.

3,866,287

METHODS FOR THE MANUFACTURE OF SPRING ASSEMBLIES

Donald O. Dulude, and Paul H. Winbigler, both of Coldwater, Mich., assignors to Kuhlman Corporation, Lansing, Mich.

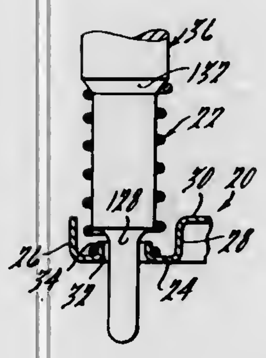
Division of Ser. No. 203,534, Dec. 1, 1971, Pat. No. 3,782,708. This application Feb. 13, 1973, Ser. No. 331,750

Int. Cl. B21f *35/00;* **B23p** *13/00*

U.S. Cl. 29—173 **37 Claims**

1. The method of manufacturing a spring assembly including a sheet metal base and a plurality of springs disposed on and extending in spaced parallelism from the base, which comprises the steps of individually securing the springs to the base to form a spring assembly, compressing said assembly between a pair of parallel electrodes with the base in engagement with one of the electrodes and with the projecting ends of all of the plurality of springs in engagement with the other one of the electrodes, applying a voltage between the electrodes to flow current through all of the springs in parallel as well as through the base, and controlling the current so that each of the individual springs is resistance heated to stress relieving temperature while limiting the current to a value to prevent heating of the base to a damaging temperature.

3. The method of manufacturing a spring assembly including a base and a plurality of compression springs each having an end turn portion abutting and secured to the base and each extending in free spaced parallelism with the other springs from the base which comprises the steps of forming with a spring coiler from spring wire a plurality of separate individual compression coil springs, said forming step including the steps of coiling the spring wire and severing the coiled spring, mechanically transferring the severed springs from the spring coiler to end-turn-portion abutting relationship with individual locations on the base, said transferring step including mechanically guiding each spring throughout its individual path from the spring coiler to its final location in abutment with the base, and directly securing only the abutting end turn portion of each of the transferred individual springs to the base with the remaining portion of each compression spring extending in free spaced parallelism with the other springs from the base.



3,866,288

ELECTROPLATED ISOTACTIC POLYPROPYLENE

Jean Claude Bernard, Le Meyran, and Pierre J. Pascal, rue Gerard Philippe, both of Martigues 13, France

Continuation of Ser. No. 49,965, June 25, 1970, abandoned. This application Feb. 20, 1973, Ser. No. 334,003

Claims priority, application France, July 1, 1969, 69.22101

Int. Cl. B23p *3/20;* **C23b** *5/64*

U.S. Cl. 29—195 **6 Claims**

1. An article formed of a polymeric material having a thin coating of a metal selected from the group consisting of nickel, chromium, combinations of nickel and chromium, gold and combinations of nickel and gold electroplated on one surface thereof after contacting said surface with an etching solution, a sensitizer, and an activator, said polymeric material being selected from the group consisting of a mixture of from 75 to 97% by weight isotactic polypropylene and 3 to 25% of an olefin copolymer having low crystallinity and a graft copolymer formed of 75 to 97% by weight of isotactic polypropylene onto which is grafted 3 to 25% by weight of a copolymer of ethylene and propylene containing more than 10% by weight ethylene, said polymeric material containing 0.1% to 2% by weight of at least one organic nitrogen derivative selected from the group consisting of amines and amides containing at least one aliphatic chain of at least six carbon atoms and at least one oxygen atom in the form of a group selected from the group consisting of a hydroxy group, an alkoxy group and an acyl group blended therewith.

3,866,289

MICRO-POROUS CHROMIUM ON NICKEL-COBALT DUPLEX COMPOSITE PLATES

Henry Brown, Huntington Woods; Thaddeus W. Tomaszewski, Dearborn, and Richard J. Clauss, Allen Park, all of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Continuation-in-part of Ser. Nos. 864,156, Oct. 6, 1969, abandoned, and Ser. No. 865,520, Oct. 10, 1969, abandoned. This application May 11, 1972, Ser. No. 252,495

Int. Cl. B32b *15/00;* **C23b** *5/50*

U.S. Cl. 29—194 **17 Claims**

1. A firmly bonded laminated composite corrosion-protective metallic coating comprising as its essential layers three adjacently bonded layers of electrodeposits, the lower layer of which consists essentially of a metal selected from the class consisting of cobalt and cobalt-nickel alloy plate containing cobalt at least about 70% and having a thickness of about 0.1 mil to about 2 mils, an over-layer of metal selected from the class consisting of nickel and nickel-cobalt alloy plate containing at least about 50% nickel and having a thickness of about 0.02 to about 0.3 mil and an over-layer of densely porous chormium plate having a thickness of 0.005 to about 0.05 mil.

3,866,290

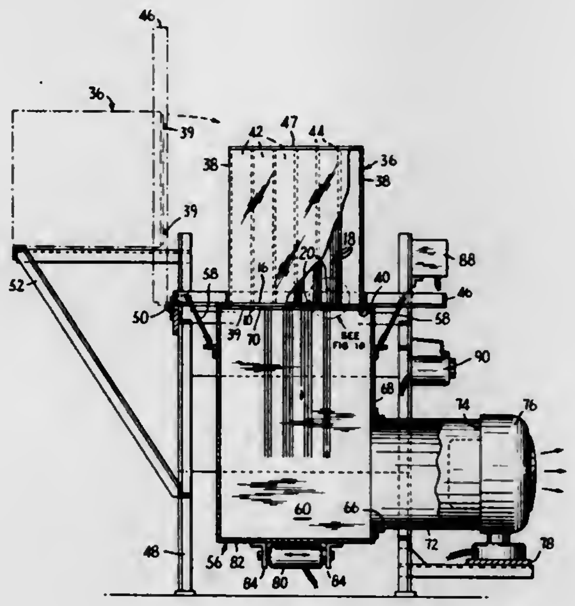
APPARATUS FOR INSERTING FIBERS INTO A SURFACE

John L. Norcross, c/o UMC Electropics, Inc., P.O. Box 3118, New Milford, Conn. 06810

Filed Apr. 23, 1973, Ser. No. 353,739

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 V **12 Claims**



1. Apparatus for inserting fibers into a surface having a multiplicity of holes therein comprising a hopper for maintaining the fibers upright adjacent to and above the surface when the surface is generally horizontal, the hopper having side walls and an open bottom end, means for effecting relative movement between the fibers and the surface to move the fibers about the surface and thereby to cause the fibers to find the holes in the surface and be received therein, and means for maintaining the surface adjacent the bottom end of the hopper while relative movement is effected between the fibers and the surface.

3,866,291

APPARATUS FOR SPLICING CONDUCTORS

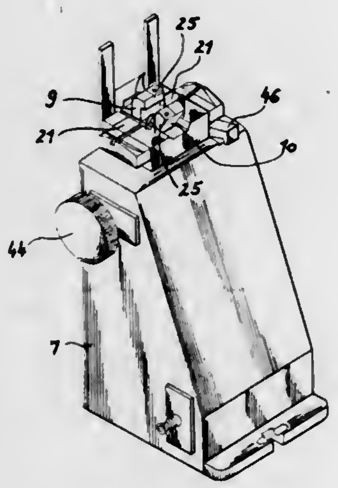
Helmut Heuser, Herdecke; Winfried Stupp, Hagen; Heinz Penz, Hagen; Walter Rose, Hagen, and Siegfried Muller, Breckerfeld, all of Germany, assignors to Walter Rose KG, Hagen, Germany

Filed July 16, 1973, Ser. No. 379,389

Claims priority, application Germany, Sept. 20, 1972, 2246151

Int. Cl. H01r *19/00*

U.S. Cl. 29—203 DS **15 Claims**



1. An apparatus for the solderless splicing of insulated electric conductors by means of a splicer which has a base and lateral walls to define a trough and in which the conductors are longitudinally coextensively positioned in opposite orientation, comprising in combination:

a. a jaw assembly having a length dimension and two ends;

b. means defining backup supports, one situated adjacent and externally of each end of said jaw assembly;

c. a first conductor guide provided on both said backup supports, said first conductor guide having an axis passing through said jaw assembly and being coextensive with the length dimesion thereof;

d. a second conductor guide provided on both said backup supports in a side-by-side relationship with said first conductor guide, said second conductor guide having an axis passing through said jaw assembly and being coextensive with the length dimension thereof;

e. a first cutting means operatively coupled to said jaw assembly and disposed at one of its two ends, said first cutting means having a cutting zone extending approximately flush with said one end of said jaw assembly and intersecting the axis of said first conductor guide;

f. a second cutting means operatively coupled to said jaw assembly and disposed at the other of its two ends, said second cutting means having a cutting zone extending approximately flush with said other end of said jaw assembly and intersecting the axis of said second conductor guide;

g. actuating means for operating said jaw assembly to bend the lateral walls of said splicer onto said base and simultaneously operating said first and second cutting means; and

h. pulling means coupled to said actuating means for drawing said conductors, extending through said jaw assembly, partially out of said splicer, said pulling means including means for moving said backup supports away from said jaw assembly parallel to the length dimension of said jaw assembly during the actuation thereof.

3,866,292

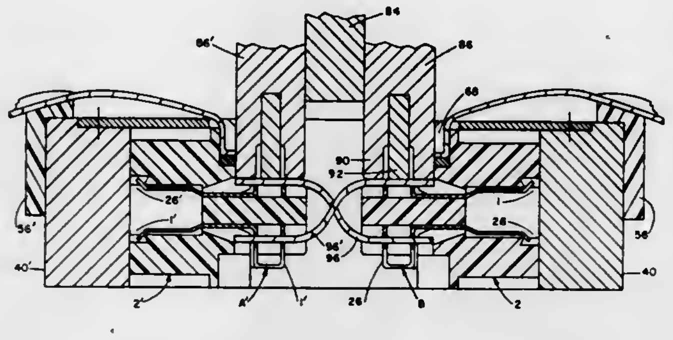
APPARATUS FOR CONNECTING CONDUCTORS TO TWO CONNECTORS WHICH ARE BACK TO BACK

John James Tucci, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 15, 1974, Ser. No. 442,941

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 MW **9 Claims**



1. Apparatus for connecting the corresponding terminals in each of two identical electrical connectors to each other, said terminals in each of said two connectors being arranged in two parallel rows having wire-receiving portions which are adjacent to the rearward ends of said connectors, said apparatus comprising:

connector jig means for positioning said connectors in back-to-back relationship with corresponding ends of said connectors proximate to each other and with the said rows of each connector offset relative to the corresponding rows of the other connector,

wire locating means on said jig means for locating wires in alignment with said wire receiving portions of said terminals in each of said connectors,

fixed wire shearing means on said jig means having fixed shearing edges extending beside said rows, and

movable shearing and insertion means having movable shearing edges cooperable with said fixed shearing edges and having insertion punch means for inserting wires into said wire-receiving portions, said movable shearing and insertion means being movable towards and away from said connectors in said jig means whereby,

upon connecting the ends of wires to the wire receiving portions in the non-corresponding rows of said connectors, positioning said connectors in said jig means, dressing the wires from each of said connectors towards the other connector and positioning the dressed wires in alignment with the corresponding wire receiving portions of said terminals in the other connector by means of said wire locating means, and moving said movable shearing and inserting means towards said connectors, said wires will be sheared and inserted into said wire-receiving portions.

3,866,293

APPARATUS FOR ELECTRICALLY TERMINATING INSULATED CONDUCTORS IN INSULATION-PIERCING CONTACT PORTIONS OF AN ELECTRICAL CONNECTOR

John Peter Nijman, West Hill, Ontario, Canada, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 1, 1973, Ser. No. 402,132

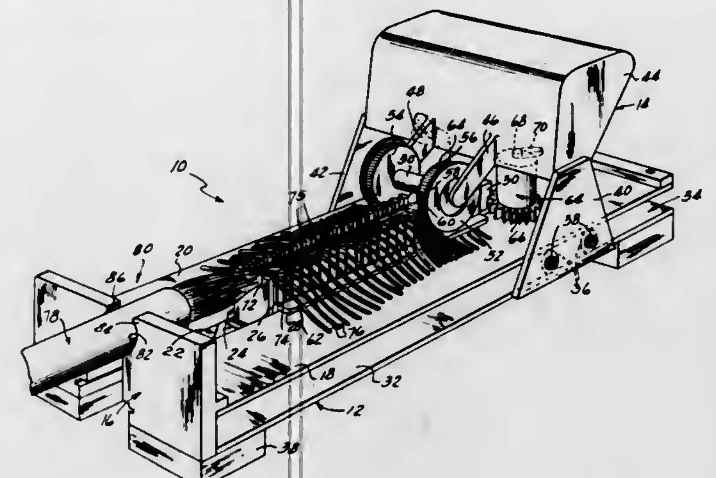
Int. Cl. H01r *43/04*

U.S. Cl. 29—203 DT **24 Claims**

1. An apparatus for terminating a plurality of free-ended, insulated electrical conductors to an electrical connector having rearwardly disposed opposite sides which support at least one row of generally parallel and aligned insulation-piercing contact portions, said apparatus comprising:

support means for supporting the electrical connector in a position to expose the aligned contact portions so that respective conductors may be positioned directly adjacent thereto;

insertion means for pressing the individual conductors into respective insulation-piercing contact portions, said insertion means comprising:



a rotatable member including a plurality of conductor insertion members disposed to sequentially enter the contact portions; and

carriage means for moving said rotatable member along the row of contact portions to sequentially terminate the conductors in the contact portions.

3,866,294

INSERTION TOOL FOR INSULATION PIERCING CONTACT

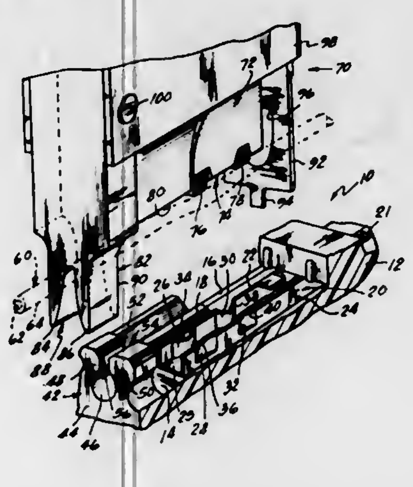
William Stephen McCaughey, East Petersburg, Pa., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 19, 1973, Ser. No. 407,779

Claims priority, application Japan, Oct. 19, 1972, 47-104019

Int. Cl. H01r *43/00;* **H05k** *13/00*

U.S. Cl. 29—203 H **23 Claims**



1. A tool for mounting an insulation covered electrical conductor in a contact member of a connector unit, the contact member having one end shaped to receive the free end of a conductor, being elongated and comprising at least one terminal flange with an insulation piercing notch disposed laterally across the contact spaced apart from the end portion and including an upper enlarged portion with upwardly diverging sides and a lower portion with narrow sides, said tool comprising:

conductor engaging means for pressing the conductor into the contact member and notch including

tool support means for receiving a conductor insertion force, and an insertion blade carried on said tool support means having a width less than the width of the upper portion of the channel for insertion therein, said insertion blade including an edge portion for engaging the conductor and projections extending from said edge portion in the direction of insertion and spaced for insertion between the sides of the insulation piercing notch, said projections shaped for entry into the lower portion of the contact member.

3,866,295

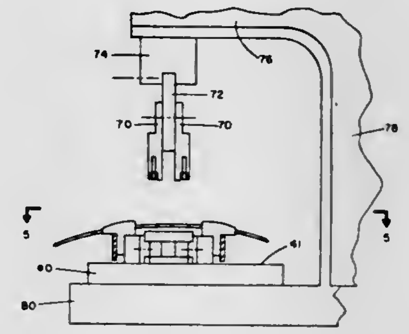
APPARATUS FOR CONNECTING CONDUCTORS TO WHICH ARE BACK TO BACK

John James Tucci, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 15, 1974, Ser. No. 442,959

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 MW **5 Claims**



1. Apparatus for connecting wires to the wire receiving portions of electrical contact terminals, said terminals being contained in two electrical connectors, said contactreceiving portions being arranged in side-by-side relationship in a row in each of said connectors, said apparatus comprising:

a connector jig plate having connector locating means thereon for locating said two connectors adjacent to each other with said rows extending parallel to each other in spaced-apart relationship,

a wire locating jig, means for locating said wire locating jig on said connector jig plate in at least partially surrounding relationship to two connectors mounted on said connector jig plate and with portions of said wire locating jig extending beside each of said rows of contact terminals, in said connectors,

fixed wire shearing means having parallel spaced-apart fixed shear bars, means on said fixed shearing means for positioning said fixed shearing means on connectors mounted on said connector jig plate with said fixed shearing bars extending parallel to said rows of conductor-receiving portions of said contact terminals,

wire locating means on said wire locating jig for locating a plurality of wires in parallel side-by-side relationship with each wire being in alignment with corresponding terminals in each of said connectors, and

movable shearing and insertion means movable along a path extending towards said jig plate, said movable shearing and insertion means having movable shearing edges for cooperation with said fixed shearing edges and having inserting punches for inserting said wires, after trimming, into said contact terminals whereby,

upon positioning said connectors in back-to-back relationship on said connector jig plate, positioning said wire locating jig on said jig plate in at least partially surrounding relationship to said connectors, positioning said fixed shearing means on said connectors, locating wires in said wire locating means on said wire locating jig, and moving said movable shearing and insertion means along said path towards said jig plate, said wires will be sheared and portions of said wires extending between said connectors will be inserted into said contact terminals.

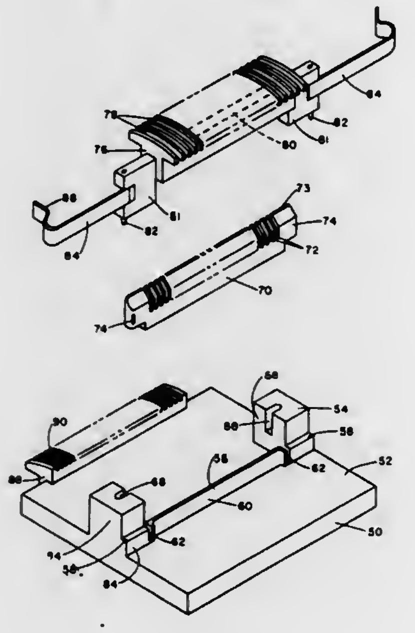
3,866,296
APPARATUS FOR CONNECTING CONDUCTORS TO TERMINALS IN CONNECTORS INTERMEDIATE THE ENDS OF THE CONDUCTORS

John James Tuccl, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 15, 1974, Ser. No. 442,960

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 MW **5 Claims**



1. Apparatus for connecting an intermediate portion of each of a plurality of wires to each of a plurality of electrical contact terminals, said terminals being arranged in first and second rows which extend parallel to each other and which are on oppositely facing sides of an electrical connector housing, said terminals having wire-receiving portions which are adapted to receive wires upon movement of said wires laterally of their axes and into said wire-receiving portions, said apparatus comprising:

a connector jig plate having a supporting surface and having connector locating means for locating said connector housing spaced from said supporting surface with said first row extending parallel to, and proximate to, said surface and with said second row remote from said surface, said locating means having recessed surface portions which provide clearance between said first row of contact terminals and said supporting surface,

a wire positioning comb comprising a bar-like member having a plurality of spaced-apart wire-receiving notches therein which is equal to the member of said contact terminals in one of said rows, said notches being spaced apart by distances equal to the spacing between said contact terminal in said rows,

comb locating means for removably mounting said comb in alignment said second row of contact terminals in a housing mounted on said jig and in spaced relationship to said surface, and

wire inserting means for inserting wires into said terminals, said wire inserting means being movable along a predetermined path towards and away from said surface whereby, wires positioned in said wire positioning comb are inserted into said contact receiving portions of said second row upon movement of said inserting means towards said surface, and said connector can be reversed on said jig plate and wires can be inserted into said one row of terminals.

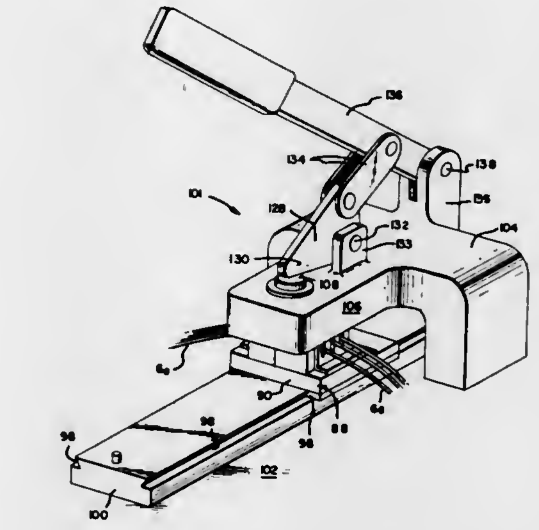
3,866,297
PRE-LOADED ELECTRICAL CONNECTORS, ASSEMBLY APPARATUS AND METHOD

Lionel Dennis Aldridge, 7635 Ridge, Seminole, Fla. 33540, and Edward Dennman Bunnell, Rt. No. 1, Box 448, Palm Harbor, Fla. 33563

Division of Ser. No. 321,505, Jan. 8, 1973, abandoned. This application July 24, 1974, Ser. No. 491,209

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 MW **8 Claims**



1. Apparatus for electrically and mechanically connecting predetermined conductors to terminals in each of two multi-contact electrical devices, each of said terminals having a conductor-receiving portion which is adapted to receive a conductor upon movement of said conductor laterally of its axis and into said conductor-receiving portion, said conductor receiving portions in each of said connectors being arranged in side-by-side relationship in a row, said apparatus comprising:

connector jig means for holding said connectors with said rows extending parallel to each other,

conductor inserting means cooperable with said conductor receiving portions of said terminals, movable along a predetermined path extending towards and away from said jig means,

conductor severing means being effective to sever conductors along first and second severing lines, each of said first and second severing lines extending adjacent to a separate row of wire receiving portions and between said rows, said severing means comprising fixed severing edge means defining said first and second severing lines and movable severing edge means movable past said fixed severing edge means, said movable severing edge means being movable with said inserting means whereby,

upon positioning said connectors in said jig means and upon locating said conductors with their axes extending across said rows of wire receiving portions and in alignment with said conductor receiving portions, and upon movement of said conductor inserting means towards said jig means, each of said conductors is inserted into the conductor-receiving slots of two corresponding terminals in said connectors, and the portion of each conductor extending between said wire receiving portions is severed from each of said conductors.

3,866,298
ASSEMBLY APPARATUS

Herman P. Nowak, Danvers, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 2, 1974, Ser. No. 429,846

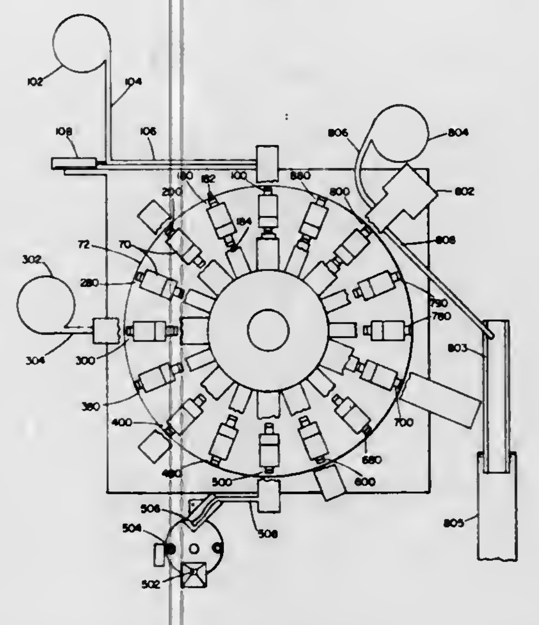
Int. Cl. B23p *19/04*

U.S. Cl. 29—208 F **47 Claims**

1. Apparatus for assembling a razor of the type having a base structure that includes a back member and a blade cartridge mount carried transversely at one end of said back member, and a handle adapted to overlie said back member, said handle and back member having mutually interlockable engagement means, comprising:

a plurality of nests, each of said nests having a back member support surface, cartridge mount support means, and means for clamping a base structure,

a station to load base structures one at a time onto said nests,



means to mount a handle in overlying vertical alignment with a loaded base structure,

a station to press a mounted handle downwardly into interlocking engagement with an underlying base structure,

a discharge station including means to disengage an assembled razor from a nest, and

means for moving said nests progressively from said base structure loading station, to said handle mounting means, to said pressing station, to said discharge station.

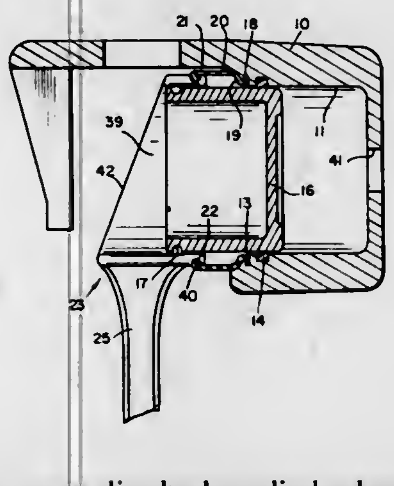
3,866,299
SEAL ASSEMBLY TOOL

Jack C. Gregg, Elwood, and Max D. White, Noblesville, both of Ind., assignors to G & D Tool Company, Inc., Elwood, Ind.

Filed Aug. 3, 1973, Ser. No. 386,286

Int. Cl. B23p *19/02*

U.S. Cl. 29—235 **1 Claim**



1. For use with a power disc brake cylinder having an open end with an inwardly-opening peripheral groove near said open end and spaced axially outwardly from said cylinder open end and partially obstructing access to said open end, an outboard shoe support bracket formed integrally with said cylinder, a piston for reciprocation in said cylinder and insertable through said open end, said piston being formed with an outwardly-opening peripheral groove near its proximal end, and a sealing gasket including an external peripheral bead at one end receivable in said first-named groove, and an internal peripheral bead at its other end receivable in said piston groove; the invention which consists of a pair of allochirally related bars, each having a handle portion and a distal portion, means pivotally connecting said bars together so that movement of said handle portions toward each other separates said distal portions, and each of said distal portions being part-circular and having a peripheral extent slightly less than 180° and being formed to provide an outwardly opening, peripherally coextensive groove for receiving said internal bead, means resiliently biasing said handle portions away from each other, and the inner surfaces of said distal portions, when separated to a predetermined degree, lying in a common circle having a diameter slightly exceeding the outer diameter of said piston whereby said piston may be axially entered through the orifice defined by said distal portions.

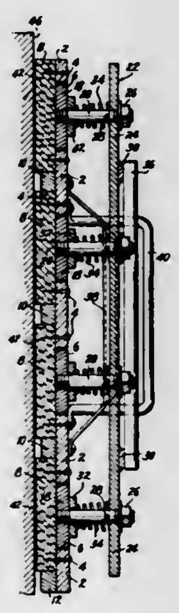
3,866,300
SETTING DEVICE FOR CORK BRICK OR THE LIKE

William A. Bell, 286 Rosemont Gardens, Lexington, Ky. 40503

Filed June 25, 1974, Ser. No. 482,862

Int. Cl. E04f *21/18*

U.S. Cl. 29—270 **9 Claims**



1. A setting device for cork brick or the like comprising a normally generally planar base plate member having a plurality of openings therethrough;

sharp prongs projecting from the front face of said plate adjacent each of said openings;

a pusher member in each of said openings and yieldable means normally holding said pusher members substantially flush with said front face, said members being mounted on said plate for movement outwardly of said front face whereby cork bricks or the like may be impaled on said prongs to overlie said openings and members and the device positioned to place said bricks against a receiving surface and the members pushed outwardly of said openings against the action of said yieldable means to thereby push said bricks off said prongs and into engagement with said receiving surface; and means on said front face of said plate arranged to position said cork brick or the like in a predetermined array thereon in uniformly spaced apart relation.

3,866,301
PROCESS FOR FORMING SHEET MATERIAL WITH EXCELLENT SURFACE CHARACTERISTICS

James A. Salsgiver, Sarver, Pa., assignor to Allegheny Ludlum Industries, Inc,, Pittsburgh, Pa.
Filed June 28, 1973, Ser. No. 374,702
Int. Cl. B23p *17/00*

U.S. Cl. 29—412 **6 Claims**

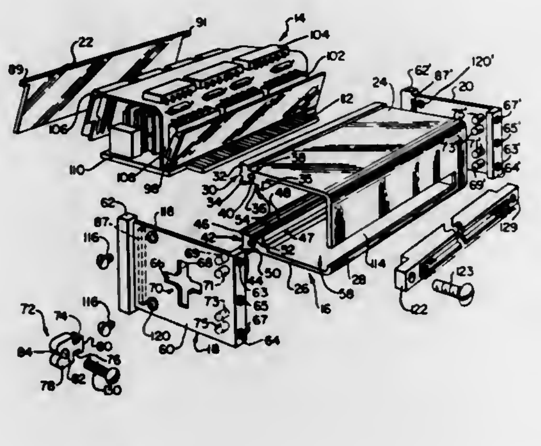
1. A process for forming sheet material substantially free from surface imperfections from brittle metal that cannot successfully be rolled comprising:

A. casting an ingot of the brittle metal,
B. maintaining the ingot at a non-damaging temperature at which the metal will creep and under a gas pressure of at least 7,500 psi for a period of time sufficient to substantially eliminate porosity,
C. slicing the resultant non-porous ingot into sheets.

3,866,302
METHOD OF MAKING A PANEL METER CONSTRUCTION

Bernard M. Gordon, Magnolia; Brant W. Becker, Sudbury, and Charles Prescott, Wilmington, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.
Division of Ser. No. 269,031, July 5, 1972, Pat. No. 3,780,353. This application Aug. 20, 1973, Ser. No. 390,158
Int. Cl. B23p *17/00*

U.S. Cl. 29—417 **6 Claims**



1. A method of making a casing for electronic components comprising the steps of:

(a) extruding a frame of indefinite length having a substantially U-shaped profile in cross section and formed with integral top, bottom and rear walls and open sides, forward edges of said top and bottom walls defining a receiving orifice;
(b) severing said frame into a section of definite length;
(c) temporarily enlarging said receiving orifice by moving said top and bottom walls away from each other at the forward edges thereof;
(d) inserting a component package into said frame; and releasing said top and bottm walls and restoring said receiving orifice to its original configuration;
(f) mounting sidewalls to said frame at said open sides thereof.

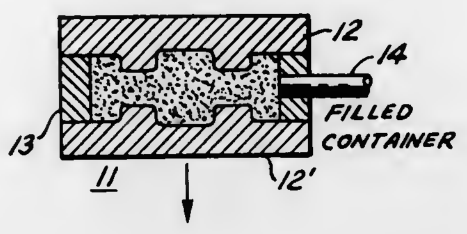
3,866,303
METHOD OF MAKING CROSS-ROLLED POWDER METAL DISCS

Stephen E. Chehi, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.
Filed June 27, 1973, Ser. No. 374,149
Int. Cl. B22f *3/24*

U.S. Cl. 29—420.5 **4 Claims**

1. A method of making contoured metal disc shapes by hot-rolling comprising the sequential steps of:

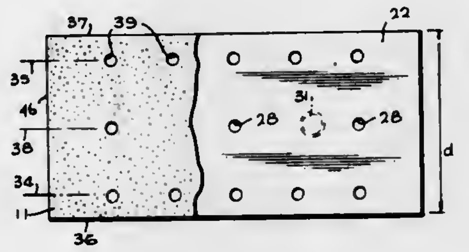
a. providing a container having an integral contoured interior surface filled with metal powder,
b. sealing, evacuating and heating the container,
c. rolling the container in a rolling mill in a plurality of rolling steps with the direction of each rolling step relative to the workpiece changed from the direction of rolling of the preceding step to reduce and compact the powder filled container, and
d. removing the container from the metal stock.



3,866,304
METHOD OF PIERCING AIR SUCTION HOLES IN ABRASIVE SHEET MATERIAL

Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107
Division of Ser. No. 282,155, Aug. 21, 1972, Pat. No. 3,788,011. This application July 16, 1973, Ser. No. 379,209
Int. Cl. B23p *9/00*

U.S. Cl. 29—445 **3 Claims**



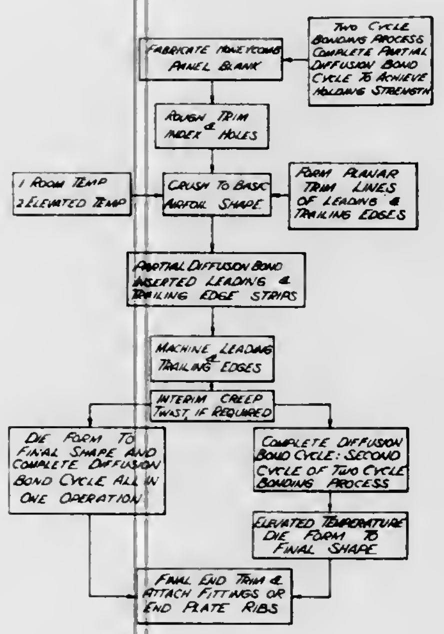
1. The method that comprises:

attaching a sheet of abrasive material to a power actuated movable section of a sander with said sheet adjacent an outer surface of said section through which a plurality of suction openings in a predetermined pattern extend for drawing air and abraded particles from the vicinity of a work piece;
said sheet at the time of initial attachment to said movable section being imperforate at the location of said suction openings;
positioning opposite said sheet of abrasive material a piercing tool having a plurality of piercing projectons arranged in a pattern corresponding to the pattern of said suction openings;
locating said piercing tool so that said projections are directly opposite and project toward said suction openings; relatively moving said projections and said movable section and carried sheet toward one another and along an axis essentially perpendicular to said sheet while maintaining said projections in axial alignment with said suction openings; and
forcing said projections through said sheet at the locations of said suction openings by said relative movement between the projections and movable section and carried sheet to form apertures in the sheet aligned with and communicating with said suction openings in said movable section.

3,866,305
INTERNALLY STIFFENED CONTOURED SHELL STRUCTURE AND METHOD FOR FABRICATING SAME

Charles E. Conn, Jr., Santa Ana, Calif., assignor to Tool Research & Engineering Corporation, Beverly Hills, Calif.
Filed Aug. 14, 1972, Ser. No. 280,645
Int. Cl. B23k *19/00*

U.S. Cl. 29—471.1 **23 Claims**


FABRICATE HONEYCOMB PANEL BLANK
TWO CYCLE BONDING PROCESS COMPLETE PARTIAL DIFFUSION BOND CYCLE TO ACHIEVE HOLDING STRENGTH
ROUGH TRIM & INDEX HOLES
1 ROOM TEMP 2 ELEVATED TEMP
CRUSH TO BASIC AIRFOIL SHAPE
FORM PLANAR TRIM LINES OF LEADING & TRAILING EDGES
PARTIAL DIFFUSION BOND INSERTED LEADING & TRAILING EDGE STRIPS
MACHINE LEADING & TRAILING EDGES
INTERIM CREEP TWIST, IF REQUIRED
DIE FORM TO FINAL SHAPE AND COMPLETE DIFFUSION BOND CYCLE ALL IN ONE OPERATION
COMPLETE DIFFUSION BOND CYCLE: SECOND CYCLE OF TWO CYCLE BONDING PROCESS
ELEVATED TEMPERATURE DIE FORM TO FINAL SHAPE
FINAL END TRIM & ATTACH FITTINGS OR END PLATE RIBS

1. A method for fabricating thin skin, internally stiffened, contoured shell structures comprising the steps of:

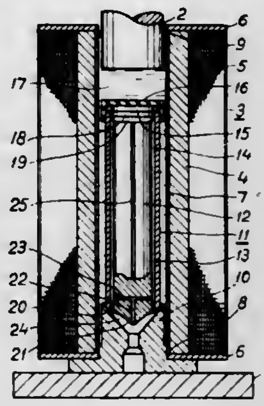
a. fabricating a panel blank comprised of a metallic cellular core disposed between and joined to first and second planar metallic face sheets, said face sheets each having a thickness dimension substantially less than its surface dimensions, said cellular core being partially diffusion bonded to said face sheets only to acheive sufficient strength to maintain said panel blank in an operative relationship, but less than final design strength;
b. forming said panel blank into a basic shape and imparting thereto basic contours in an initial forming operation;
c. forming edges along the periphery of said panel blank;
d. finally diffusion bonding said cellular core to said face sheets to achieve final design strength; and
e. forming said panel blank into its final shape and imparting thereto its final contours in a final forming operation.

3,866,306
METHOD OF HYDROSTATICALLY EXTRUDING COMPOUND MATERIAL AND COMPOUND BILLETS

Torsten Korsell; Hans Larker; Erik Lundblad, and Jan Nilsson, all of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Jan. 29, 1974, Ser. No. 437,652
Claims priority, application Sweden, Jan. 30, 1973, 73012452
Int. Cl. B21d *39/04*

U.S. Cl. 29—474.3 **7 Claims**

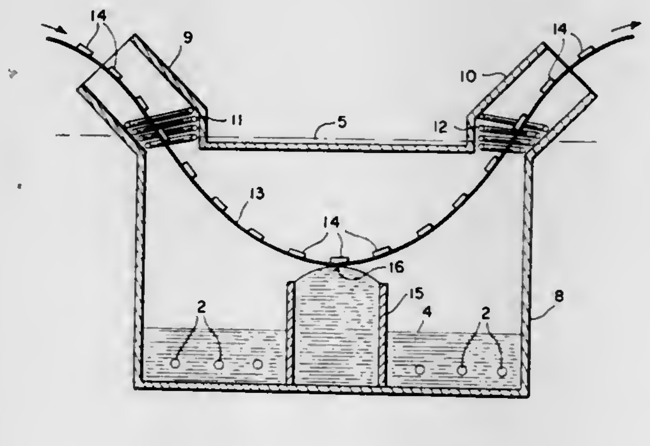
1. Method of manufacturing rods, wire or tubes of compound material having a core of one material and a casing surrounding the core of another material, which comprises hydrostatically extruding a billet comprising a core part having a conical point, a casing part surrounding the core part of substantially greater internal diameter than the external diameter of the core part, so that a space exists within the casing on the outside of the core part, said core part being shaped as a truncated cone at one end, said cone securing the casing part axially with respect to the point of the core part, and sealing means at the rear end of the billet for preventing pressure medium from penetrating into a gap formed between the core part and casing part which comprises inserting said billet in a pressure chamber and pressing it by a surrounding pressure medium through an opening in a die giving a product having the desired cross-section, in which one of the parts of the billet (11) has an air-escape channel opening adjacent the point (21) of the billet into the die opening which communicates with said space by which the air enclosed between the core part (12) and the casing part (18) is expelled from the billet (11) when the casing part (13) is forced into contact with the core part (12) during the extrusion process.



3,866,307
METHOD FOR SOLDERING, FUSING OR BRAZING

Robert Christian Pfahl, Jr., Chester, and Hans Hugo Ammann, Morris, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 7, 1973, Ser. No. 395,310
Int. Cl. B23k *31/02, 1/08, 1/00*

U.S. Cl. 29—498 **17 Claims**



1. Method for performing on an article at elevated temperature an operation comprising the melting of material, said method comprising:

a. continuously boiling substantially at atmospheric pressure a heat transfer liquid having a boiling point equal to the said elevated temperature and at least equal to the melting point of said material, thereby generating a body of saturated vapor of said heat transfer liquid at said elevated temperature;
b. inserting said article into said body of saturated vapor;
c. condensing saturated vapor directly on and in contact with said article thereby to heat said article to said elevated temperature by transfer of latent heat of vaporization from said condensed vapor to said article;
d. performing said operation on said article.

3,866,308
METHOD OF MAKING A COLUMN FOR CHROMATOGRAPHY

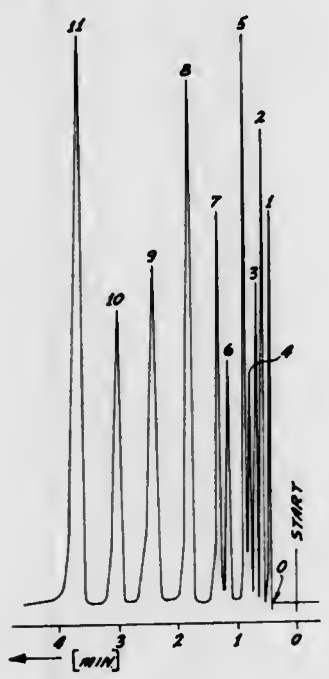
Istvan Halasz, Kobenhuttenweg 56, Saarbrucken; Jurgen Asshauer, Dudweiler; Richard Endele, Saarbrucken, and Klaus De Haas, Ludwigshafen, all of Germany, assignors to said Halasz, by said Asshauer, Endele and De Haas

Filed Mar. 4, 1974, Ser. No. 447,930

Claims priority, application Germany, Mar. 30, 1973, 2315904

Int. Cl. B23p *17/00*

U.S. Cl. 29—527.4 **5 Claims**



1. In a method of making a chromatographic separation column which includes using a drawn metal tube and packing it with granular or powdered material for chromatographic operation, the improvement comprising the step of removing a surface layer from the inner wall of the tube prior to packing.

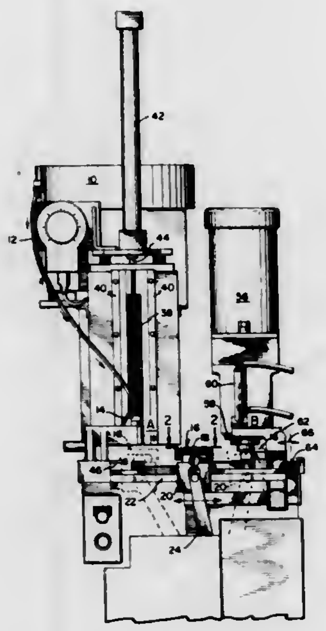
3,866,309
APPARATUS FOR MACHINING CHUCK JAW ELEMENTS

John H. Rohlfs, Torrington, Conn., assignor to Jamieson Manufacturing Company, Torrington, Conn.

Filed Jan. 28, 1974, Ser. No. 436,960

Int. Cl. B23q *7/00;* **B23p** *23/00*

U.S. Cl. 29—563 **11 Claims**



1. Apparatus for machining at least one angular flat and a thread segment on a small cylindrical work piece whereby to provide a chuck jaw element; said apparatus comprising,
- a hopper for holding a plurality of cylindrical work pieces,
- a transfer device associated with said hopper and adapted sequentially to deliver said cylindrical work pieces to a first work station removed from said hopper,
- an escapement mechanism at said first work station,
- a first work holder movable between first and second positions the former of which is at said first work station,
- said work holder and escapement mechanism cooperating at said first work station sequentially to transfer cylindrical work pieces from said transfer device to said movable work holder,
- a broaching tool movable in one and an opposite direction at said first work station for sequentially machining said flats on cylindrical work pieces held at said station by said work holder,
- a milling cutter disposed at a second work station removed from said first work station,
- a second work holder at said second work station,
- means for moving said first work holder between its said first and second positions, the latter positioned being at said second work station,
- and means for transferring said cylindrical work pieces sequentially from said first work holder to said second work holder at said second work station for milling threads in said work piece whereby to complete said chuck jaw element.

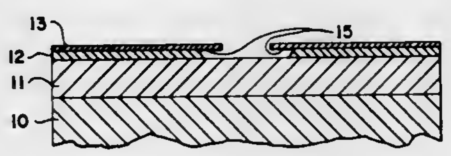
3,866,310
METHOD FOR MAKING THE SELF-ALIGNED GATE CONTACT OF A SEMICONDUCTOR DEVICE

Michael C. Driver, Trafford, and Martin J. Geisler, Murrysville, both of Pa., assignors to Westinghous Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,319

Int. Cl. B01j *17/00*

U.S. Cl. 29—571 **2 Claims**



1. A method of making a self-aligned gate field-effect transistor comprising the steps of:
- A. applying a metal layer suitable for forming source and drain contacts for a field-effect transistor on a major surface of a semiconductor member having a low resistivity region adjoining the major surface and a high resistivity region adjoining the low resistivity region and extending into the semiconductor member to form a channel of a field-effect transistor;
- B. overlaying the metal layer with a resist layer;
- C. forming in the resist layer at least one window pattern corresponding to a desired self-aligned gate contact;
- D. undercutting and removing portions of the metal layer adjacent the window pattern to expose portions of the major surface of the semiconductor member and cause undercut portions of the metal layer adjacent the window pattern to overhang and shield exposed portions of said major surface;
- E. simultaneously with step D, forming source and drain contacts for a field-effect transistor in the metal layer; and
- F. thereafter depositing metal capable of forming a Schottky barrier contact with the semiconductor member through the window pattern on unshielded exposed portions of the major surface of the semiconductor member to form a self-aligned Schottky barrier gate contact for a field-effect transistor.

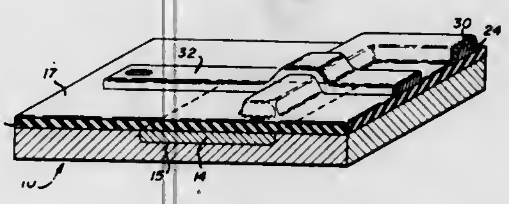
3,866,311
METHOD OF PROVIDING ELECTRICALLY ISOLATED OVERLAPPING METALLIC CONDUCTORS

Henri J. Salles, Palo Alto, and David R. Newby, Cupertino, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 152,531, June 14, 1971, abandoned. This application June 18, 1973, Ser. No. 370,925

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **9 Claims**



1. A method of making a semiconductive device having overlying metallic interconnects, comprising the steps of:
- developing a semiconductive body including at least two semiconductive portions of opposite conductivity type terminating at a surface of said body and forming a pn junction therebetween;
- growing a thermal oxide layer on said surface;
- providing a first opening through said oxide layer above said first portion and a second opening through said oxide layer above said second portion;
- forming a first metallic conductor on said thermal oxide layer and in intimate contact therewith and extending through said first opening to ohmically contact said first portion;
- exposing said oxide layer with said first conductor to an aqueous solution to form an hydrated oxide only on the exposed surfaces of said conductor; and
- forming a second conductor on said thermal oxide layer which has at least a portion overlying said first conductor and said hydrated oxide and which extends through said second opening to ohmically contact said second portion, said first and second conductors being electrically isolated from each other by said hydrated oxide.

3,866,312
METHOD OF CONTACTING SEMICONDUCTOR REGIONS IN A SEMICONDUCTOR BODY

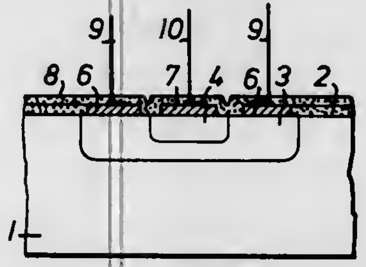
Werner Mroczek, Heilbronn, and Werner Scherber, Nordheim, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Nov. 30, 1971, Ser. No. 203,389

Claims priority, application Germany, Dec. 1, 1970, 2058931

Int. Cl. H01l *7/64*

U.S. Cl. 29—578 **18 Claims**



18. A method of making a transistor comprising the steps of: diffusing internested base and emitter regions into a semiconductor body having the conductivity of a collector region, so as to lie at one surface of said semiconductor body, removing a first insulating layer formed during the diffusion process from said one surface of said semiconductor body at least from said base and emitter regions up to adjacent the outermost edge of said base region, applying a coherent metal layer directly to at least the exposed portion of said one surface of said semiconductor body to cover same, making base and emitter electrodes from said coherent metal layer, applying a second insulating layer to said one surface of said semiconductor body, and making electrically conducting connections with said base and emitter electrodes through said second insulating layer by means of electrical leads.

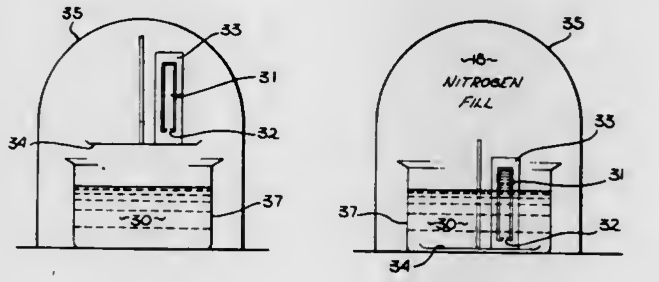
3,866,313
METHOD OF MANUFACTURING LIQUID CRYSTAL DISPLAY

James Yih, Sunnyvale, Calif., assignor to Microma Incorporated, Cupertino, Calif.

Filed Apr. 11, 1973, Ser. No. 350,070

Int. Cl. H01j *5/02;* **G02f** *1/28*

U.S. Cl. 29—592 **4 Claims**



2. A process for filling and sealing a liquid crystal display device containing a liquid crystal material and a pair of substrates, the steps comprising:
- forming a cavity between said substrates said cavity suitable for containing said liquid crystal material;
- degassing said liquid crystal material and the surfaces of said substrates by placing said liquid crystal display device in a partial vacuum with said liquid crystal material; placing said liquid crystal display device into said liquid crystal material while in a partial vacuum;
- filling said cavity of said liquid crystal display device by replacing the partial vacuum with a non-reacting gas whereby said liquid crystal material is forced into said cavity between said substrates; and
- sealing said cavity of said liquid crystal display device.

3,866,314
DYNAMOELECTRIC MACHINE ROTOR ASSEMBLY DEVICE AND METHOD

William M. Stone, and John M. Braunschwig, both of DeKalb, Ill., assignors to General Electric Company, Fort Wayne, Ind.

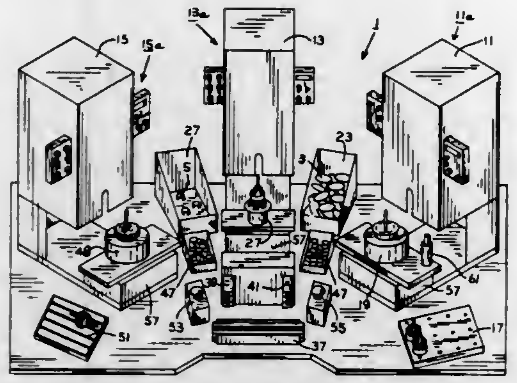
Filed Aug. 14, 1973, Ser. No. 388,302

Int. Cl. H02k *15/04*

U.S. Cl. 29—598 **45 Claims**

1. A method of operating a single operator, multiple work station for assembling components onto a rotatable assembly for a dynamoelectric machine comprising the steps of:
- a. positioning a generally flat fan stamping onto an end portion of the rotatable assembly at one of the work

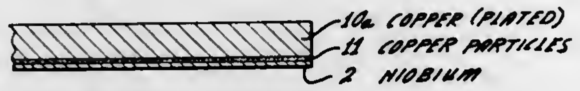
stations and securing the stamping to at least a part of the end portion; and



b. moving the rotatable assembly to another of the work stations and forming fan vanes from the stamping while it is secured to the rotatable assembly.

3,866,315
METHOD OF MAKING A STABILIZED SUPER-CONDUCTOR

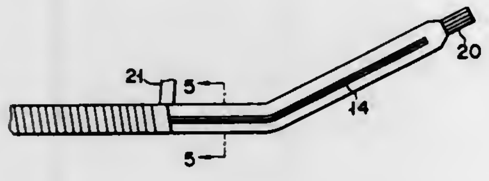
Gerhard Ziemek, Hannover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte AG, Hannover, Germany
Filed Feb. 21, 1974, Ser. No. 444,568
Claims priority, application Germany, Feb. 22, 1973, 2308747
Int. Cl. H01v *11/14*
U.S. Cl. 29—599 **7 Claims**



1. In a method of making a stabilized superconductor assembly which includes electrolytically depositing copper on a surface of a substrate containing niobium, the improvement comprising: brushing finely divided copper particles into the substrate surface, causing the copper particles to become worked into the niobium substrate to obtain a very thin copper particle layer in the substrate surface, and subsequently electrolytically depositing copper upon the copper particle-covered surface.

3,866,316
METHOD FOR MANUFACTURING AN INSULATED COIL

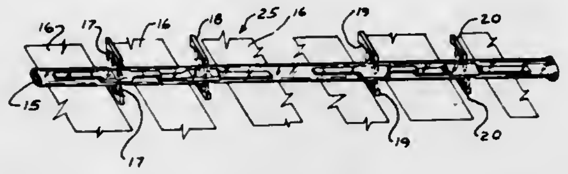
Taichi Takechi; Ryozi Kumazawa; Kimikazu Umemoto; Toshimitsu Yamada; Junichi Kamiuchi, all of Yokohama, and Eiji Koyanagi, Fujisawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku and Tokyo Shibaura Electric Co., Ltd., Kawasaki shi, both of, Japan
Filed Dec. 13, 1973, Ser. No. 424,273
Claims priority, application Japan, Dec. 25, 1972, 47-129310
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 **8 Claims**



1. A method for manufacturing an insulated coil, comprising the steps of winding an insulating tape layer by layer around a conductor with and inserting at least one string-like substance having an outer peripheral synthetic resin layer between the layers of the insulating tape so that a gap is created around the substance between the adjacent layers, impregnating a molten synthetic resin between the layers of the insulating tape and into said gap, and heating the resultant coil to cause the impregnated synthetic resin to be fused together with the outer peripheral synthetic resin layer of the string-like substance to provide an insulated coil.

3,866,317
REED SWITCHES AND PROCESS FOR MAKING THEM

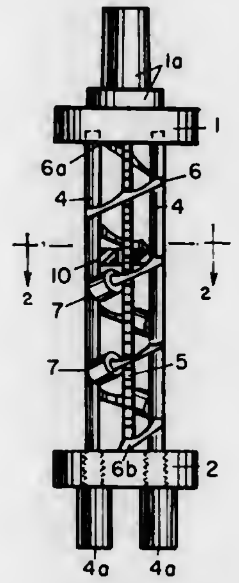
Vaughan Morrill, Jr., St. Louis, Mo., assignor to Morex, Inc., St. Louis, Mo.
Division of Ser. No. 290,113, Sept. 18, 1972, Pat. No. 3,794,944. This application Sept. 26, 1973, Ser. No. 400,796
Int. Cl. H01h *11/00*
U.S. Cl. 29—622 **7 Claims**



1. A method of forming a reed switch comprising forming a non-circular, non-magnetic tube, inserting into said tube and positioning in lengthwise spaced positions a plurality of sets of pairs of reed switch elements, each of said elements including a reed section, a sealing section engaging the inner wall of said tube, and a lead section, the reed elements of each set being in facing and partly overlapping position, and thereafter sealing the reed elements of each set within said tube along at least a part of said sealing section.

3,866,318
METHOD OF MANUFACTURING HIGH-VOLTAGE FUSE

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Division of Ser. No. 396,579, Sept. 12, 1973, Pat. No. 3,843,948. This application May 8, 1974, Ser. No. 467,939
Int. Cl. H01h *69/02*
U.S. Cl. 29—623 **2 Claims**

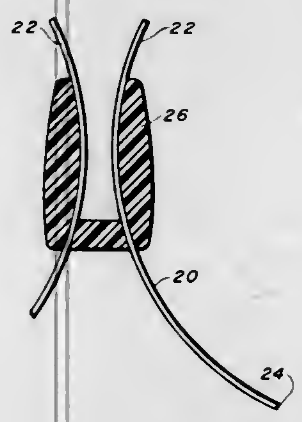


1. A method of manufacturing high-voltage fuses including the steps of

a. arranging a pair of plug terminals in coaxial relation and spacing said pair of plug terminals by insulating strip means and by a plurality of metal rods arranged parallel to the axis of said pair of plug terminals and extending through bores in one of said pair of plug terminals to the axially outer surface thereof;
b. winding fusible element means helically around said insulating strip means and said plurality of metal rods so as to be located in the surface of a prism whose edges are defined by said insulating strip means and said plurality of metal rods, and thereafter conductively connecting the ends of said fusible element means to said pair of plug terminals;
c. inserting the structure formed by said pair of plug terminals, said insulating strip means, said plurality of metal rods and said fusible element means into a tubular casing of insulating material and affixing said casing to said pair of plug terminals; and thereafter
d. filling said casing with a pulverulent arc-quenching filler through an aperture in one of said pair of plug terminals and gradually drawing said plurality of metal rods out of said casing while leaving said insulating strip means inside of said casing.

3,866,319
PRINTED CIRCUIT EDGE CONNECTOR

Carl J. Steigerwald, Wauconda, Ill., assignor to TRW Inc., Elk Grove Village, Ill.
Division of Ser. No. 228,099, Feb. 22, 1972, Pat. No. 3,795,049. This application Sept. 12, 1973, Ser. No. 396,556
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 **3 Claims**



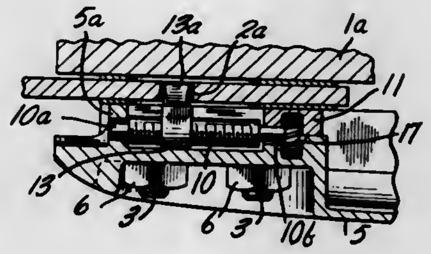
1. An improved method for manufacture of edge connector assemblies having electrical contact elements embedded therein, said method comprising steps of:

forming a continuous strip of electrical contact elements in which the contact elements are oriented in parallel spaced apart relationship and are joined at, at least one end, by a carrying strip;
passing the continuous strip of electrical contact elements through an extruding means in which an insulating body of plastic material is continuously extruded in combination with the strip of contact elements;
forming an extruded assembly in which the contact elements are partially embedded within the insulating body and are partially exposed at opposite ends, and in which the carrying strips are exposed;
removing the carrying strips; and
separating the extruded assembly into predetermined lengths for use as edge connectors.

3,866,320
GUIDE BAR ADJUSTMENT FOR CHAIN SAW

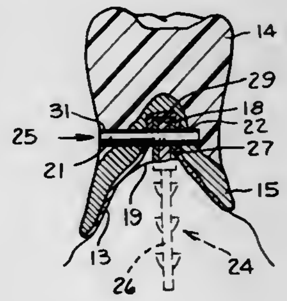
Rudolph Progl, Bayside, N.Y., assignor to Textron Inc., Providence, R.I.
Filed Mar. 4, 1974, Ser. No. 448,053
Int. Cl. B27b *17/14*
U.S. Cl. 30—386 **9 Claims**

1. In a chain saw having a chassis, an elongated guide bar mounted on and extending forwardly from the chassis, a saw chain running on the guide bar and a cover enclosing a rear end portion of the guide bar; means for adjustable moving the guide bar in a lengthwise direction relative to the chassis to adjust the tightness of the chain on the guide bar, comprising an elongated adjusting screw, means rotatably mounting said adjusting screw in fixed location relative to the chassis adjacent a rear end portion of the guide bar and with its longitudinal axis extending lengthwise of the guide bar, an internally threaded rider on said screw in engagement with threads thereof and movable lengthwise of the screw by rotation of the screw, means interconnecting said rider and guide bar to move the guide bar in a lengthwise direction by said rider, a first gear fixed on and rotatable with said screw, a second gear meshing with said first gear and rotatable about an axis normal to the axis of said screw, and driving means fixed with said second gear and extending to the outside of said cover, said driving means having means accessible from outside said cover for rotating said driving means and thereby rotating said second gear, first gear and screw to move said rider and guide bar in a direction lengthwise of the guide bar to adjust the tightness of said chain.



3,866,321
CROWN AND BRIDGE PREFABRICATED SYSTEM AND IMPLANT

Maurice Valen, 40-17 82nd St., Jackson Heights, N.Y. 11373
Filed Jan. 2, 1974, Ser. No. 430,171
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A **10 Claims**



1. A tooth implant for anchoring at least one artificial tooth to a jaw bone in a mouth of an individual, comprising:

a blade-like section having a thin cross-section and having a plurality of flexible cup-like protuberances protruding therfrom, said cup-like protuberances acting to anchor said blade-like section to the walls of said jaw bone, but being flexible so as to give when they abut against the bone of the jaw in order to prevent necrosis; and
at least one stem section extending from said blade-like section into the mouth of the individual, said stem section adapted to receive an artificial tooth disposed thereon.

3,866,322
ORTHODONTIC DEVICE

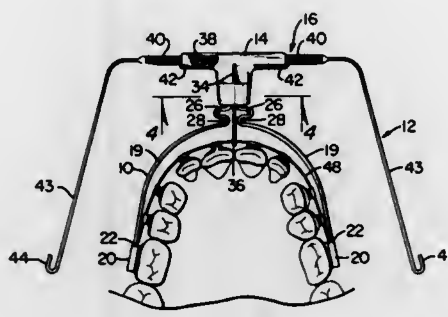
Clifford James Broussard, and Garfford Broussard, both of 9183 Katz, Houston, Tex. 77024
Filed May 14, 1973, Ser. No. 360,054
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 D **10 Claims**

1. An orthodontic device for use with a head gear for applying both tractional and torsional forces to selected teeth, said device comprising:

an inner bow lying substantially in a first plane and having spaced ends connectable to buccal attachments on posterior teeth;

an outer bow lying substantially in a second plane and having spaced ends connectable to the head gear;

means pivotally connecting said inner bow to said outer bow at the center of each so that said inner bow is pivotal with respect to said outer bow about an axis lying in at least one of said first and second planes; and

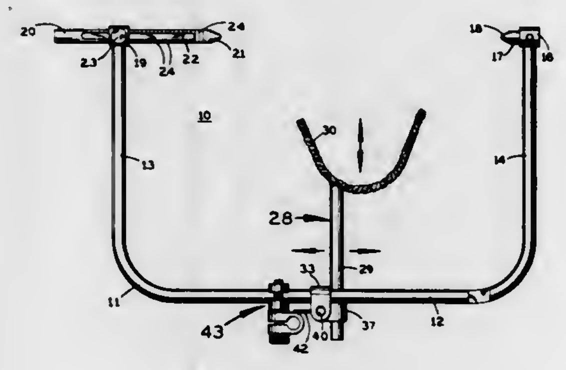


resilient force-applying means connected between said inner and outer bows applying a torsional force about said axis to said inner bow and to the posterior teeth when the ends of the inner bow are connected to the buccal attachments and the ends of the outer bow are connected to the head gear.

3,866,323
DENTAL FACE BOW AND METHOD OF USING SAME

Ernest R. Granger, Pelham, N.Y., assignor to Richard R. Granger and Robert K. Granger, both of Pelham Manor, N.Y.

Filed July 30, 1973, Ser. No. 384,077
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 D **5 Claims**

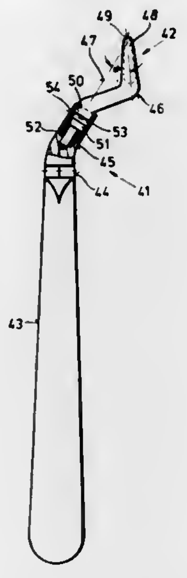


1. In combination with a dental articulator having intercondylar markings separated by uniform first increments and numbers indicative of said markings, a dental facebow comprising a U-shaped frame including a cross-piece and a pair of rearwardly directed side arms, a stationary first transversely inwardly directed stylus mounted proximate the free end of one of said side arms, an axially movable second transversely inwardly directed stylus mounted proximate the free end of the other side arm and having longitudinally spaced markings separated by uniform second increments of twice the length of said first increments and carrying numbers indicative of said markings thereon and which correspond to the intercondylar numbers on said articulator, the styli being axially aligned, a bite form including a rearwardly disposed bite section and a forwardly directed shank, and a universally adjustable coupling slidably adjustable along said cross-piece and axially adjustably engaging said form shank.

3,866,324
DENTAL FORCEPS

Julius Walser, Teggingerstrasse 14a, 776 Radolfzell, Germany

Filed Nov. 19, 1973, Ser. No. 416,859
Claims priority, application Germany, Nov. 22, 1972, 2257156
Int. Cl. A61c *3/14*
U.S. Cl. 32—66 **14 Claims**

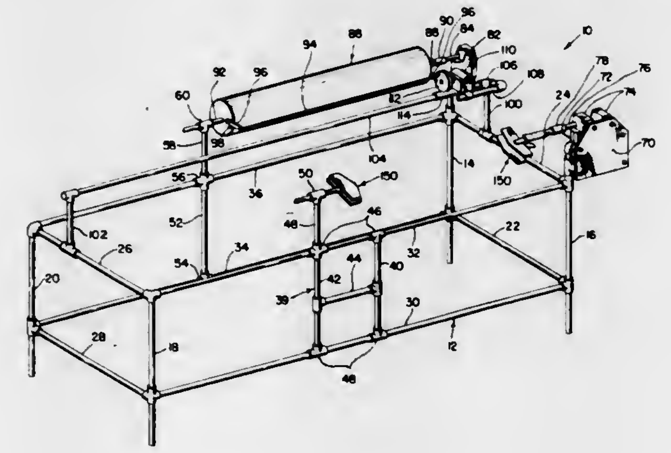


1. A forceps comprising a pair of pivotally connected handles, an integral arm on each handle swingable about the pivot to move toward each other as the handles are squeezed toward each other, a jaw member rotatably mounted in each arm and extending therefrom, a gripping nose on the end of each jaw terminating in a tip end and said jaws rotating to follow the contour of a member gripped by said tip ends to distribute the gripping load along the length of said noses and thereby reduce the unit loading.

3,866,325
CLOTH MEASURING DEVICE

Lawrence V. Wynn, 1900 N.W. 95th, Seattle, Wash. 98107

Filed Nov. 9, 1972, Ser. No. 305,158
Int. Cl. G01b *5/04*
U.S. Cl. 33—129 **18 Claims**



1. Cloth measuring device comprising:

a. a support frame,

b. a first pair of coaxially aligned, spaced apart mounting means supported on said frame for receiving a holder including first drive means for bi-directionally and singularly rotating one of said first pair of mounting means independently from the other of said first pair, said other of said first pair of mounting means being coaxially movable on said frame with respect to said one mounting means,

c. a second pair of coaxially aligned, spaced apart mounting means supported on said frame for receiving a member on which cloth is wound from the holder on said first pair of mounting means including, second drive means for bi-directionally and singularly rotating one of said second pair of mounting means independently from the other of said second pair, said second pair of mounting means and member being generally parallel to and spaced from said first pair of mounting means and holder,

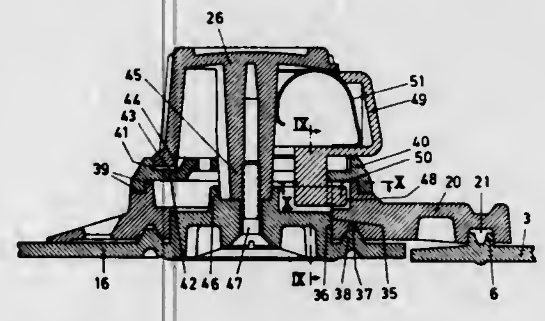
d. cloth measuring means disposed between said pair of mounting means and said member, and

e. control means for adjusting the speed at which said first and second drive means respectively rotate said one of said first and second pairs of mounting means so that when cloth is being unwound from a holder supported by said pair of mounting means to said member there is essentially no tension to distort the cloth and cause the cloth measuring means to be inaccurate, and when said cloth is rewound from said member back to said holder a predetermined tension is applied to the cloth to obtain a tight, compact rewind of the cloth on said holder.

3,866,326
DRAWING BOARD

Walter Hebel, and Ulrich Hebel, both of 4 Bruckenstrasse, 5242 Kirchen (Seig), Germany

Filed Aug. 14, 1972, Ser. No. 280,270
Claims priority, application Germany, Aug. 16, 1971, 2140903; Feb. 7, 1972, 2205621
Int. Cl. B43l *13/02, 13/24*
U.S. Cl. 33—76 R **4 Claims**



1. A drafting instrument, comprising

a. a drawing device,

b. a sliding piece, and

c. a connecting means between the sliding piece and the drawing device, the connecting means being adaptable to alternative selective placement in a first state wherein the sliding piece and the drawing device are movable with respect to one another, and a second state wherein the sliding piece and the drawing device are held rigid with respect to one another, the connecting means including a hole (**24**), a peripheral flange about the hole, a threaded, turntable ring (**30**) rotatably and concentrically mounted on the flange, holding means for preventing axial movement of the ring with respect to the hole, a threaded, service knob (**26**) engageable by the threads of the ring to draw the knob through the hole, and an abutment connected to one end of the knob to prevent the knob from passing through the hole and when the abutment is drawn adjacent the hole, to prevent rotation of the knob with respect to the hole.

3,866,327
ADJUSTABLE SPOOL AND SPOOL SYSTEM

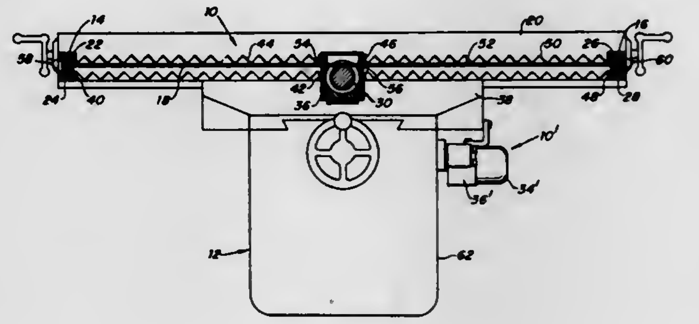
Elmo J. Pacini, Sudbury, Mass.; Alford H. Johnson, Pittsford, N.Y., and Robert B. Turner, Jr., Needham, Mass., assignors to Deaderich and Royster Inc., Charlotte, N.C.

Division of Ser. No. 82,403, Oct. 20, 1970, Pat. No. 3,739,649. This application June 6, 1973, Ser. No. 367,629
Int. Cl. G01b *5/02*
U.S. Cl. 33—125 R **4 Claims**

1. A spool system for precisely calibrating the rotary motion of a spool about its axis with relation to relative motion of the spool along a wire looped at least one time about the spool and having two ends, one anchored on either side of the spool comprising

a first annular member having external peripheral guide means and having an axially tapered internal bore of hollow conical cross-section;

a second plug member having an external axially tapered circumferential surface of substantially the same taper as said internal bore for fitting into and cooperating with said axially tapered internal bore;

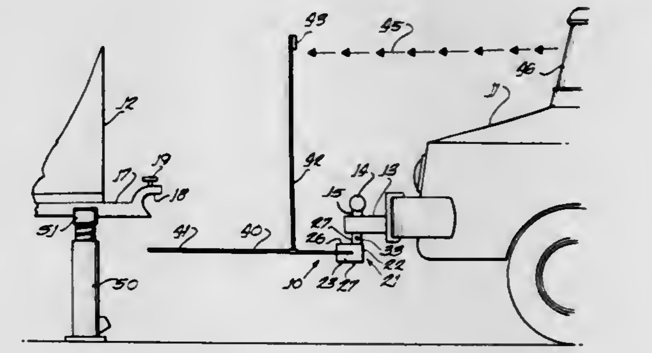


means for adjusting the depth of penetration of said plug member into said annular member to control the spreading of said annular member by said plug member to precisely control the outer diameter of the annular member; first support means for anchoring said wire at one end and second support means for anchoring said wire at the other end, at least one of said support means including means for displacing one of the anchored ends of said wire relative to the other in the direction parallel to the axis of said spool for accommodating for lateral displacement of the wire caused by its loop about said spool.

3,866,328
TRAILER HITCH GUIDE

Earl L. Alexander, and Robert K. Taylor, both of 3427 W. 11th St., Wichita, Kans. 67203

Filed Jan. 11, 1974, Ser. No. 432,636
Int. Cl. G01c *5/00*
U.S. Cl. 33—264 **4 Claims**



1. A trailer hitch guide device for visually assisting a driver in maneuvering a vehicle having a first engageable portion of a trailer hitch secured on the rear part thereof, such as a ball socket portion, to a position relative to a trailer having a second engaging portion of said trailer hitch on the forward part thereof, such as a socket portion, so as to align said ball portion with said socket portion such that they may be removably engaged together to hitch the trailer to the vehicle, the guide device comprising:

a member adapted to be detachably attached to said ball portion and disposed beneath the same in a position not to interfere with said socket portion;

means detachably attaching said member to said ball portion of the trailer hitch;

a pair of coplanar horizontally extending spaced apart flexible rod members each having a longitudinal portion, one end of each longitudinal portion being attached to said member on either side of said ball portion, an end portion diverging outwardly from the other end of said longitudinal portion, said diverging portion of each rod member cooperating with the diverging portion of the other rod member to form a funnel-type portion which leads into a longitudinal portion which is in alignment with said ball portion;

a pair of flagstaffs, each flagstaff having one end affixed to one of said rods with the flagstaff projecting a substantial distance vertically upright therefrom and terminating at a top end which is disposed in the line of vision of the vehicle driver peering through the rear view mirror or through a back window of the vehicle while viewing the front surface of the trailer;

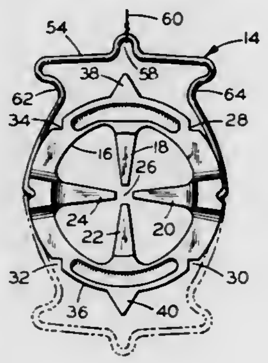
a pair of flag members, each flag member associated with one of said flagstaffs and permanently affixed to the top terminal end thereof, each flag projecting in a direction away from the other flag and substantially normal to the line of vision of the vehicle driver;

whereby said rods are adapted to cooperate with a jack or the like disposed beneath the socket portion of the trailer hitch for elevating the same, such that movement of one of the flag members indicates to the vehicle driver that the jack is contacting one side of the funnel-type arrangement and the ball portion is not in alignment with the socket portion and also indicates the direction in which the ball portion must be maneuvered to place the same into alignment with the socket portion.

3,866,329
COMBINATION VERTICAL AND HORIZONTAL PLUMB BOB

Robert F. West, West Simsbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Mar. 27, 1974, Ser. No. 455,195
Int. Cl. G01c ***15/10***
U.S. Cl. 33—392 **10 Claims**



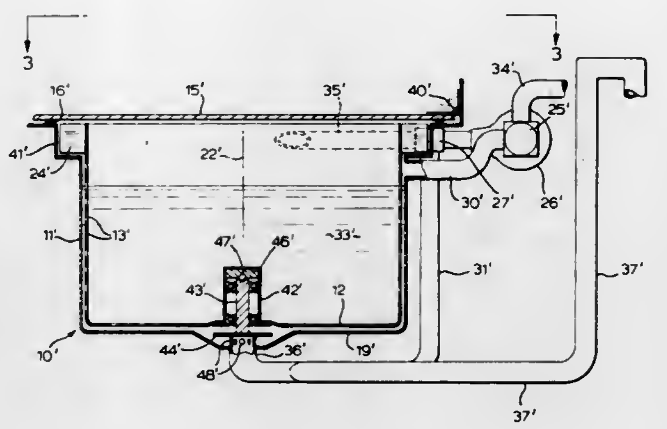
1. A plumb bob for use in a horizontal or vertical plane comprising: a body member having an aperture extending therethrough at the center thereof, indexing means including a projection provided on the periphery of said body member in alignment with a line drawn through the center thereof, and suspension means engaged with said body member permitting suspension of said body member in said horizontal plane with the principal plane of said body member disposed perpendicularly with respect to the principal plane of said suspension means with said aperture in the center of said body and in said vertical plane with the principal plane of said body member and the principal plane of said suspension means lying in the same plane with said projection at the lower end of said body.

3,866,330
LAUNDRY APPARATUS AND METHOD OF LAUNDERING

Charles Ernest Hooper, 1353 Blackwell Rd., Sarnia, Ontario, Canada (N7T 7H4)

Filed Nov. 26, 1973, Ser. No. 418,992
Int. Cl. F26b ***5/08***
U.S. Cl. 34—8 **16 Claims**

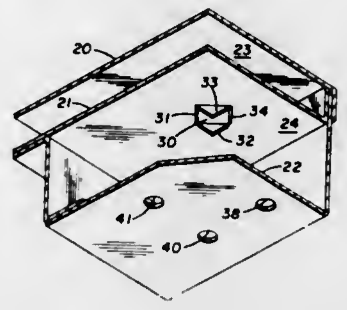
11. Method of laundering comprising supplying gas from a source thereof external of an enclosable, pressurizable container against members presented by at least a portion of the container to rotate said portion of the container, and directing said gas from said members presented by said portion of the container into the pressurizable container to increase static pressure therewithin for expulsion of a body of liquid from the container through a drain provided therein.



3,866,331
FLOW CONTROL SHRINK WRAP TUNNEL

Stephen M. Evans, Jr., Dallas, Tex., assignor to ITP Corporation, Dallas, Tex.

Filed Mar. 7, 1974, Ser. No. 449,053
Int. Cl. F26b ***19/00***
U.S. Cl. 34—216 **10 Claims**



1. In a heat shrink tunnel through which the articles pass and in which a supply chamber is flow connected to the interior of said tunnel by way of a perforated baffle plate leading to a discharge chamber and an output perforated plate leading from the discharge chamber, said baffle and output plates being positioned in a spaced parallel relationship, the combination which comprises:

a. structure adjacent to each hole in said baffle plate to compound turbulence in air passing from the supply chamber to the discharge chamber for equalizing the volume and velocity of air flow through the perforations in the plate leading from the discharge chamber, and

b. perforations in said output plate whose axes are spaced from the axes of holes in said baffle plate.

3,866,332
FLUIDIZED BED DRYER

Gerald Hertz, Pennside, Pa., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed June 6, 1972, Ser. No. 260,156
Int. Cl. F26b ***17/10, 3/08***
U.S. Cl. 34—57 A **1 Claim**

1. Apparatus for drying particulate material comprising:

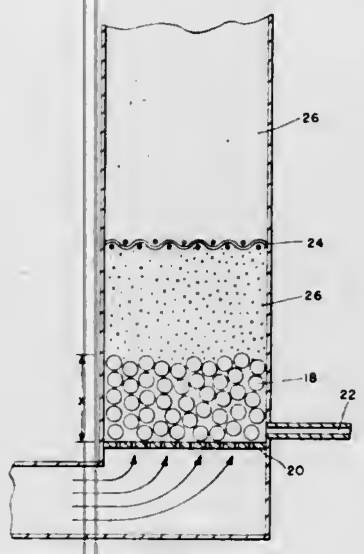
a. a chamber;

b. a gas permeable support at the lower portion of said chamber;

c. a bed of inert thermally stable particles on said gas permeable support;

d. means to introduce said particulate material to be dried into said bed;

e. a screen located above said bed in a position to intercept and retain said bed of inert particles, said screen having a mesh small enough to prevent said inert particles from passing therethrough but large enough to allow dried particulate material to pass therethrough, and said screen being located from said bed a distance at least equal to the depth of said bed but not greater than six times its depth, whereby particulate material adhering to said inert particles or to said screen is dislodged therefrom upon the impingement of said inert particles with said screen.



f. means to introduce a heated gas into said bed from beneath said support at a velocity sufficient to fluidize said inert particles and to blow dried pieces of said material through said screen; and

g. means to collect said dried pieces.

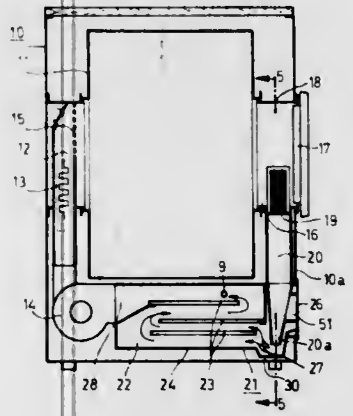
3,866,333
DEHUMIDIFIER FOR AIR UTILIZED IN LAUNDRY DRYING

Georg Sarukahanian, and Manfred Kruger, both of Berlin, Germany, assignors to Siemens Electrogerate GmbH, Munich, Germany

Filed Aug. 31, 1972, Ser. No. 285,135

Claims priority, application Germany, Sept. 17, 1971, 2147303; Sept. 23, 1971, 2148127; Sept. 29, 1971, 2149289; Nov. 2, 1971, 2155709; Mar. 23, 1972, 2214619; Mar. 23, 1972, 2214618; Mar. 23, 1972, 2214621

Int. Cl. F26b ***21/06***
U.S. Cl. 34—75 **15 Claims**



1. A dehumidifier for removing water from heated, moisture laden air produced during the drying of laundry, the dehumidifier being mounted in a laundry machine of the type having a generally rectangular cabinet provided with a generally vertical forward wall, the dehumidifier comprising,

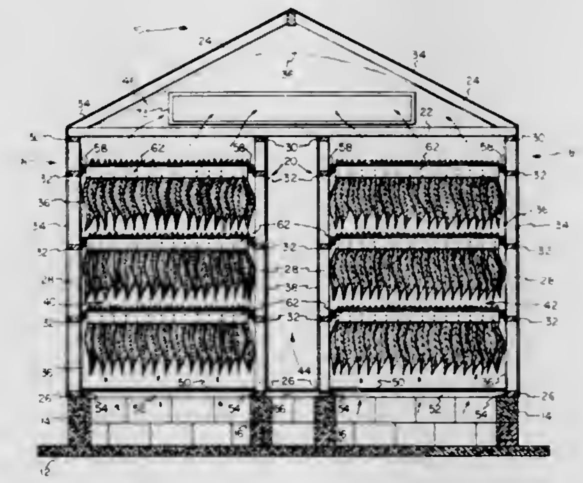
a generally rectangular housing mounted within the cabinet, a plurality of generally horizontal, water filled, shallow trays mounted within said housing in overlapped, vertically spaced relation, said trays extending in a generally longitudinal direction with the flow of water along each said tray being from one longitudinal end to the other, each said tray further including adjacent its downstream end an overflow pipe positioned transversely at approximately the center of said tray, said overflow pipe extending upwardly in such relation to the vertical dimensions of said tray that overflow of water occurs only when said tray is nearly filled with water, each being configured so as to have longitudinally extending, downwardly curved portions positioned on either transverse side of said overflow pipe with a drain opening positioned at the lowest point of curvature, said trays being arranged to cause a downward zigzag flow of water from one said tray to the next, and

means for guiding the air across said trays to cause the air to be cooled and dehumidified thereby.

3,866,334
GREENHOUSE-BULK CURING AND DRYING SYSTEM

Barney K. Huang, 5108 Kaplan Dr., Raleigh, N.C. 27606

Filed Sept. 26, 1973, Ser. No. 400,893
Int. Cl. F26b ***19/00***
U.S. Cl. 34—93 **4 Claims**



1. A bulk curing and drying structure adapted to utilize the solar energy associated with available solar radiation transmitted into the structure to cure and dry bulk tobacco disposed within said structure, said structure comprising:

a. means for continuously forcing a vertical system of air through at least one curing and drying area of said structure and including means for adding heat to the forced air as necessary to maintain a predetermined temperature within said curing and drying structure;

b. means for receiving and holding tobacco leaves in bulk form within said structure and including support structure means for supporting a volume of tobacco leaves in close side-by-side relationship with the plane of the leaves being generally vertically oriented so as to allow air to pass vertically therethrough, said support structure means disposed transversely across the entire width of the vertical system of forced air for supporting the volume of tobacco leaves transversely across the entire width of the same vertical system of air passing through the curing and drying area of said structure thereby requiring the entire vertical system of air to pass through the supported volume of tobacco leaves without by-passing the same;

c. support means associated with said structure for supporting said tobacco receiving and holding means within said structure;

d. transparent exterior means disposed about a substantial area of said structure for transmitting available solar radiation and the energy associated therewith through said structure and into the internal areas thereof; and

e. heat absorber means generally stationarily disposed interiorly of said transparent exterior means for absorbing the solar energy transmitted through said transparent exterior means and transferring the captured solar energy directly inwardly to the vertical system of air passing through said bulk tobacco disposed within said curing and drying structure and supported by said support structure means, said heat absorber means assuming a position between said transparent exterior means and the bulk volume of tobacco disposed within said structure such that said heat absorber means tends to confine the forced system of air passing through the bulk tobacco interiorly of said heat absorber means thereby permitting the captured solar energy in the form of heat to be transferred directly inwardly to the vertical system of forced air passing on the inner side of said heat absorber means opposite the space between said heat absorber means and said transparent exterior means.

3,866,335

GAS HEATED ROTARY DRIER

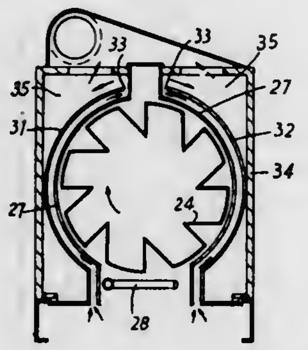
Richard E. G. Neville, Salisbury, England, assignor to AMF Incorporated, White Plains, N.J.

Filed July 16, 1973, Ser. No. 379,743

Claims priority, application Great Britain, July 21, 1972, 34291/72

Int. Cl. F26b *11/02*

U.S. Cl. 34—133 **8 Claims**



1. A rotary drier for particulate or loose material comprising a cylinder arranged to rotate about its axis inclined to the horizontal, said cylinder having formed along its cylindrical surface a plurality of hollow paddles extending axially along said cylinder and inwardly thereof, said paddles being V-shaped in cross section with one side of each paddle being disposed radially and the other side being disposed obliquely thereto, the interior of said paddles communicating with the exterior of the cylinder and at least one gas burner arranged below the cylinder to direct flame into the interior of the hollow paddles.

3,866,336

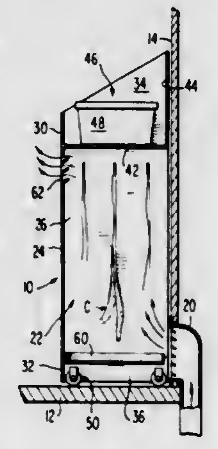
DECORATIVE LAUNDRY DRYER

Helen D. Bereza, Route 3, Box 33, Wausaukee, Wis. 54177

Filed Apr. 12, 1974, Ser. No. 460,495

Int. Cl. F26b *19/00*

U.S. Cl. 34—201 **4 Claims**



1. Portable cabinet for use in association with a heating duct outlet in a building, warm air being emitted through said heating duct outlet, the cabinet comprising:
a cabinet forward wall, and cabinet side walls, each of said walls having opposite upper and lower end portions;
a top wall fixedly secured to the forward and side walls at a location spaced downwardly from the upper end portions thereof, and a back wall projecting upwardly from said top wall, the back wall and those portions of the side and forward wall above the top wall defining a well adapted to receive a decorative device;
surface support means on the side walls adjacent the lower end portions thereof;
brackets on the side walls above the surface support means; an elongated combined drip pan and laundry transport receptacle removably seated on the brackets and spanning the distance between the side walls;
the forward wall having a series of air passage louvers formed therein below the top wall;
mounting means on each of the side walls in transverse co-alignment; and
a series of laundry drying strand means suspended between said mounting means, the warm air from said duct being directed about laundry suspended on said laundry drying strand means and outwardly through said air passage louvers.

3,866,337

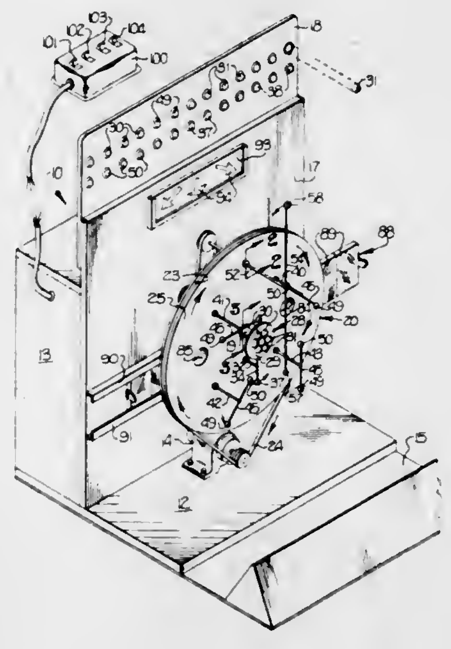
APPARATUS FOR DEMONSTRATING ATOMIC STRUCTURE

Thomas D. Burns, 3413 Lakeside Drive, Matthews, N.C. 28105

Filed July 26, 1973, Ser. No. 382,964

Int. Cl. G09b *23/20*

U.S. Cl. 35—18 A **13 Claims**



1. An apparatus for demonstrating the theoretical structure of an atom to students and other observers and comprising
a frame defining a central axis,
a disc mounted on said frame for rotation about said central axis, said disc including a forwardly facing front surface, means for representing the nucleus of an atom mounted on said frame along said central axis and forwardly of said front surface,
a shaft rotatably carried by said disc, said shaft defining a shaft axis extending parallel to and radially spaced from said central axis and including a forward end positioned forwardly of said front surface,
a transverse member mounted at said forward end of said shaft and extending perpendicular to said shaft axis, said transverse member including two end portions with said two end portions being positioned on opposite sides of said shaft and substantially equidistant therefrom,
means for representing an electron carried at each of said two end portions,
means for rotating said disc in a first direction about said central axis and at a predetermined rotational speed, and means for rotating said shaft about said shaft axis while said disc is rotated and in a direction opposite said first direction and at a rotational speed substantially corresponding to said predetermined rotational speed such that said electron representing means traces a pair of intersecting elliptical orbits about said nucleus representing means to thereby provide a three dimensional representation of a pair of electrons orbiting the nucleus of an atom.

3,866,338

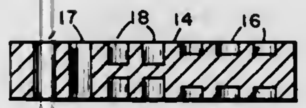
DYNAMICALLY INTERACTING TOY BLOCKS

Nils Lou, St. Paul, Minn., assignor to Lotus Games, Inc., St. Paul, Minn.

Filed July 25, 1973, Ser. No. 382,499

Int. Cl. A63h *33/04*

U.S. Cl. 35—69 **2 Claims**



1. A dynamically active rectilinear toy block having first, second, and third pairs of faces, said faces being planar and substantially smooth over a substantial portion of their surfaces and the planar portions of each pair of faces comprising rectangular parallel surfaces, the first, second, and third orthogonal dimensions of the block having predetermined ratios with the first dimensions being about three times the second dimension and the third dimension being about twice the first dimension and in which both of the faces defined by said first and third dimensions include a plurality of holes of similar diameters therein which vary in depth and are deeper at one end of the block to make that end of the block lighter.

3,866,339

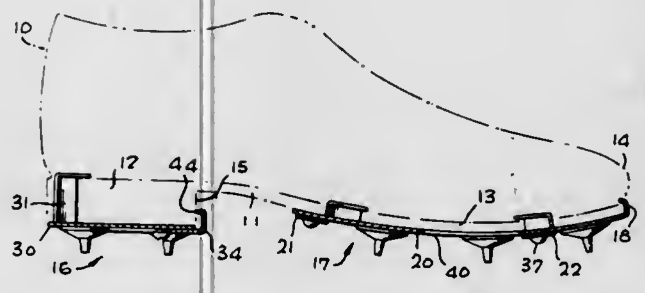
SHOE ATTACHMENT FOR GOLFERS

Nedwyn M. Latto, 16134 Hartsook St., Los Angeles, Calif. 91316

Filed Feb. 25, 1974, Ser. No. 445,541

Int. Cl. A43b *3/10*

U.S. Cl. 36—7.6 **5 Claims**



1. An attachment device for converting street shoes for use in playing the game of golf wherein each shoe includes a sole having a continuous exposed edge and a raised heel having a forward wall defining a part of the instep, the combination comprising:
a first attachment plate removably carried on said heel;
a second attachment plate removably carried on said sole in spaced relationship to said first attachment plate;
each of said plates having a plurality of clamping means arranged in spaced apart relationship along the peripheral edges of said plates and extending into frictional engagement with opposing portions of the edge of said sole;
a plurality of spikes carried on the underside of each of said plates adapted for ground engagement when said plates are affixed to said sole by said clamping means;
said clamping means comprising a pair of extensions arranged transversely across said second attachment plate having a hook fixedly carried on their respective ends adjacent said peripheral edge;
adjustment screws interconnecting said extensions to said second plate for releasable securement thereto;
said extensions include parallel rails separated by an elongated slot accommodating passage of said adjustment screws;
retainer nuts secured to said plate having a central raised portion extending through said extension slots serving as a guide for said extension during an adjustment procedure; and
said retainer nut includes an annular shoulder deformable with said plate so as to be upset and swagged into securement therewith.

3,866,340

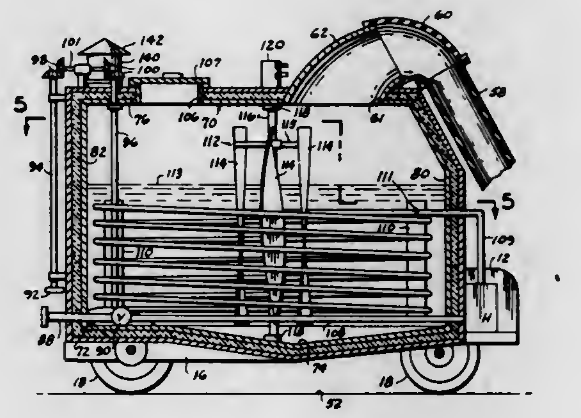
SNOW REMOVER WITH SLURRY DISPOSAL

Eli G. Krickovich, P.O. Box 106, Clinton, Iowa 52732

Division of Ser. No. 231,292, March 2, 1972, Pat. No. 3,766,586. This application Oct. 12, 1973, Ser. No. 406,019

Int. Cl. E01h *5/10*

U.S. Cl. 37—12 **6 Claims**



1. A roadway cleaning apparatus in combination with a prime mover comprising a vehicle chassis having an engine control means thereon including a control cab and having a hydraulic fluid pump, the improvement comprising:
conveyor means transversely connected to the forward end of said chassis,
  said conveyor means including a substantially cylindrical housing disposed horizontally adjacent the surface of the earth,
  said housing having closed ends and having a coextensive downwardly and forward directed intake opening,
  said housing having a rearward and upwardly directed discharge opening medially its ends,
  a pair of cooperating coaxially aligned screw conveyors extending between and journalled by said housing ends, and impeller blades interposed between and connected, respectively, with adjacent ends of said screw conveyors medially the ends of said housing, the length of each said impeller blade being equal with the radius of said screw conveyors,
  said screw conveyors being characterized by a helical edge portion generating a cylindrical plane coinciding with a circular plane generated by the outwardly directed limit of said thrower blades as the conveyors are rotated about their axis,
  said helical edge portions and said impeller blades being arcuately curved toward the direction of rotation;
guide means including a planar panel coextensive with a longitudinally connected by one marginal edge to the upper limit of said housing rearwardly of its intake opening in forwardly and upwardly inclined relation;

a triangular shaped end member connecting the respective ends of said panel with the respective closed end of said housing;

drive means including belt and pulley drive means extending between and respectively connected with said prime mover and one end portion of one said screw conveyors for rotating said screw conveyors;

a rectangular fluid containing closed tank having a material receiving opening in its top wall and having inner and outer spaced-apart walls having heat and cold insulation therebetween mounted on said vehicle chassis rearwardly of and projecting above the horizontal plane defining the upper limit of said control cab;

a pair of shafts transversely journalled in coaxial aligned relation by the forward end portion of said chassis;

a pair of arms pivotally connected at one end portion, respectively, to the respective outwardly disposed end portion of the respective said shaft, the other end portion of said arms being pivotally connected, respectively, with opposing end portions of said housing;

a pair of braces projecting forwardly of said tank in laterally spaced relation above said housing;

a pair of pressure operated cylinders extending between and connected, respectively, with the forward end portion of said braces and opposing end portions of said housing for vertical pivoting movement of said housing about the horizontal axis of said shafts;

a discharge tube connected, at one end, with said housing around its discharge opening and extending rearwardly and upward, at its other end, and connected with said tank top wall around the receiving opening;

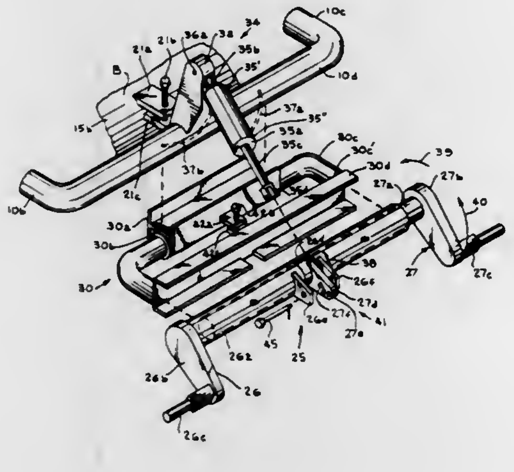
a heater mounted on said chassis;

piping connected with said heater and extending, intermediate its ends into said tank in spaced relation above the plane of the lowermost inner wall and being helically wound upwardly adjacent the inner periphery of said tank; and,

an antifreeze liquid filling said heater and said piping.

3,866,341
SCRAPER BUCKET WITH TILTABLE AXLE ASSEMBLY

Joe H. Fabrygel, Rt. 1, Box 424, West Columbia, Tex. 77486
Filed May 24, 1973, Ser. No. 363,474
Int. Cl. E02f *3/76*
U.S. Cl. 37—129 **20 Claims**



1. An earth moving device adapted for use in conjunction with a tractor or the like, comprising:

scraper bucket means for receiving and dumping earth, said scraper bucket means including means for attaching said device to a tractor or the like;

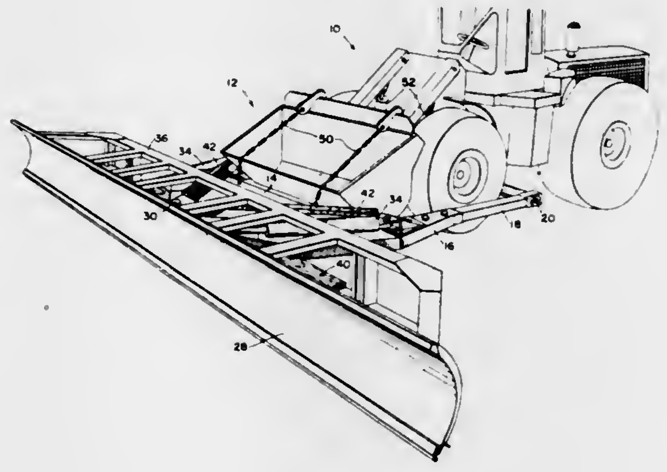
an axle assembly including first and second axle means having wheels mounted therein to rollably support said device, and means mounting said first and second axle means for relative rotational movement to a tilted position;

connect means mounting said scraper bucket means and said axle assembly for pivotal movement with respect to each other; and

actuator means mounted with said scraper bucket means and said axle assembly for raising and lowering said scraper bucket means by effecting pivotal movement between said scraper bucket means and said axle assembly, said actuator means including limit means limiting pivotal movement between said scraper bucket means and said axle assembly and power means causing relative rotation between said first and second axle means to move said axle means and said scraper bucket means to a down, tilted position.

3,866,342
REVERSIBLE SNOW PLOW ATTACHMENT FOR WHEELED VEHICLES

George R. Cooper, Bullock Rd., R.D. 1, Slingerlands, N.Y. 12159
Filed Feb. 13, 1973, Ser. No. 332,180
Int. Cl. E02f *3/76, 3/62*
U.S. Cl. 37—117.5 **8 Claims**



1. A reversible snow plow attachment for a wheeled vehicle comprising:

pivotal connecting means on said vehicle arranged for pivotal motion about a transverse axis which is horizontal and located to the rear of the front wheels of said vehicle; a frame of generally U-shape extending across and in front of the vehicle and rearwardly to said connecting means along each side outwardly of the line of the front wheels, when they are fully turned, said frame being connected to said connecting means;

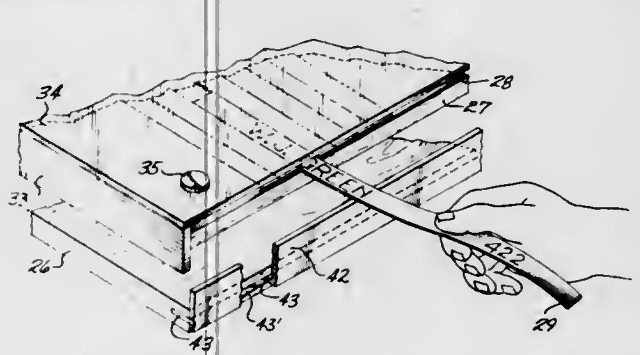
a mold board adapted for attachment to said frame in snow plowing position in front of said vehicle;

means for pivotally connecting said board to said frame to pivot about a vertical axis to a rearwardly oblique angle on either side of the vehicle; and

means for both bracing said board along its length and for restraining it against pivoting about a horizontal axis in relation to said support frame including a pair of bridge structures mounted on and extending along the rear face of the board, and sandwiching the frame for a substantial distance to the rear of the board when the board is in position on the frame.

3,866,343
INDICIA DISPLAY PANEL

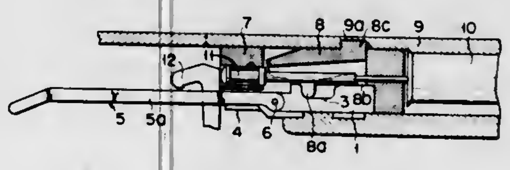
William B. Frost, 1717 N.E. 99th N.E., Bellevue, Wash. 98004, and Edward N. K. Cooper, 1375 Marine Dr. S.W., Vancouver 14, British Columbia, Canada
Division of Ser. No. 85,518, Oct. 30, 1970, Pat. No. 3,751,836. This application July 26, 1973, Ser. No. 382,923
Int. Cl. G09f *11/30*
U.S. Cl. 40—64 R **1 Claim**



1. In an indicia display directory board including a facing component having a backing panel, an outer transparent sheet overlying the backing panel and means securing the transparent sheet and the backing panel in spaced relationship for defining a cavity between the outer face of the backing panel and the transparent sheet with an access slot formed between one edge portion of the backing panel and the overlying edge portion of the transparent sheet and communicating with such cavity, an indicia strip slidable edgewise out of such cavity through such access slot, a stationary component located behind the facing component with the backing panel of the facing component closer than the outer transparent sheet to the stationary component, and securing means connecting the facing component and the stationary component, the stationary component including a fixed panel, the improvement comprising a fixed slot-obstructing side flange carried by the fixed panel of the stationary component and projecting forward from the fixed panel toward the facing component and across the access slot of the facing component into a position overlapping the slot-forming edge of the transparent sheet for obstructing the access slot to prevent removal of the indicia strip therethrough, the securing means being operable to prevent sufficient bodily movement of the facing component away from the stationary component to remove the facing component access slot from registration with and obstruction by said fixed slot-obstructing side flange, and the securing means being releasable for movement of the facing component relative to the fixed component sufficiently to remove the facing component access slot from being obstructed by said fixed component fixed slot-obstructing side flange.

3,866,344
LOCK DEVICE OF A SHOT GUN

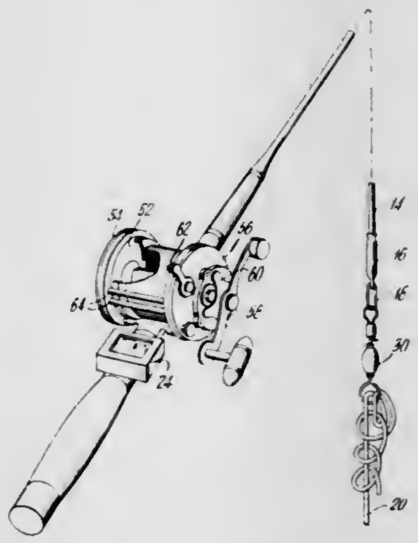
Takeji Kawamura, 1099-11, Ishinazaka-machi, Hitachi-shi, Ibaragi-ken, Japan
Filed Aug. 7, 1973, Ser. No. 386,291
Int. Cl. F41c *11/06;* **F41d** *3/00*
U.S. Cl. 42—16 **4 Claims**



1. In a lock device for a shot gun having a breech bolt and adapted to block a cartridge from behind when firing, said lock device comprising a slide body slidably disposed along a barrel and a lock member operatively associated with the slide body and adapted to be swung in unison with the sliding movement of the slide body to cause said lock member to be engaged with an engaging recess provided in the barrel to permit the cartridge to be blocked from behind, the improvement wherein said slide body is provided with a pair of recesses disposed in its top surface and spaced apart from its front end surface; and said lock member is provided with paired first and second projections extending from its undersurface and an engaging projection provided on the top surface of the front end portion of the lock member and near the paired second projections, whereby the first paired projections are slidably shiftable from the forward end portion to the backward end portion of the recesses, said first paired projections acting as a fulcrum, cam and sole pivot point which is not fixed to the breech bolt, wherein the lock member rides on a top surface section of the slide body and near the front end of the slide body to permit the engaging projection to become engaged with the engaging recess provided in the barrel.

3,866,345
FISHING TACKLE

David P. Gagnon, East Sandwich, Mass., assignor to The Sippican Corporation, Marion, Mass.
Filed Aug. 10, 1973, Ser. No. 387,230
Int. Cl. A01k *91/00*
U.S. Cl. 43—4 **4 Claims**



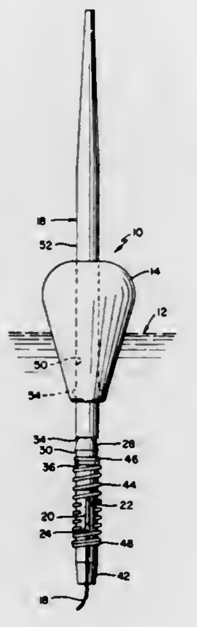
1. Fishing tackle comprising a line having a pair of insulated conductors and a temperature responsive probe at an end of the line said probe comprising a thermistor electrically connected to said conductors; a link element for attaching a leader and lure to the probe, said link element being more susceptible to breakage than said line whereby said link is constituted as means preventing the loss of the probe on the application of tension to a leader attached thereto by breaking before the line breaks, one of said conductors at an end of the line remote from said probe being connected to ground and electrically connectable to one electrode of a battery and the other of said conductors at that end of the line remote from the probe being connected in series with a meter and connectable to the other electrode of said battery, said link being constituted as means preventing the elongation of said conductors beyond a predetermined limit which would result in an error signal at said meter.

3,866,346
FISHING FLOAT

Vernon J. Schneider, Licking Pike, Alexandria, Ky. 41001
Filed July 13, 1972, Ser. No. 271,288
Int. Cl. A01k *93/00*
U.S. Cl. 43—44.87 **14 Claims**

1. A fishing float having a fixed line and a slip line condition, said float comprising: a stem, a buoyant member secured to said stem intermediate the ends thereof, an axial line receiving slot in said stem, said stem having a transverse lateral slot

opening thereinto, a spring mounted exteriorly about said stem and cooperating with said slot, said float having means thereon to provide one end of said spring with a first fixed axial position and a second fixed axial position relative to said slot wherein the float is in a fixed line condition when said one end of said spring is in the first position and wherein the float is in a slip line condition when said one end of said spring is in the second position.



3,866,347
PEST CONTROL UNIT

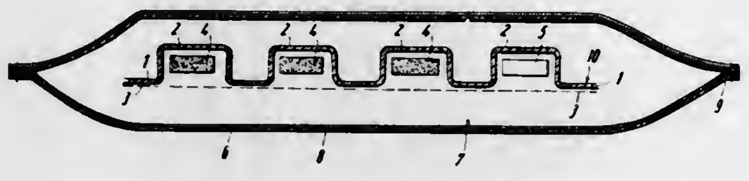
Werner Schoom, Bergen-Enkheim, Germany, assignor to Deutsche Gesellschaft fur Schadlingbekampfung GmbH, Frankfurt am Main, Germany

Filed Feb. 12, 1973, Ser. No. 331,891

Claims priority, application Germany, Feb. 11, 1972, 2206487

Int. Cl. A01m *19/00*

U.S. Cl. 43—129 **3 Claims**



1. A pest control unit comprising a tray having a plurality of recesses therein, a pest control material containing metal phosphides in at least one of said recesses of a type to generate a pest controling gas when subjected to atmospheric moisture, and a water soluble material in at least one other of said recesses, said water soluble material comprising a material selected from the group consisting of $Ca(0C1)_2$ $3H_2O$ and citric acid, chromic acid, sodium perborate with citric acid, potassium percarbonate with citric acid and sodium percarbonate with manganates, said material being chemically such that, upon the tray with the materials in said recesses being immersed in water, the water soluble material is dissolved and decomposes any residue of said pest control material to render it incapable of further generation of the pest control gas.

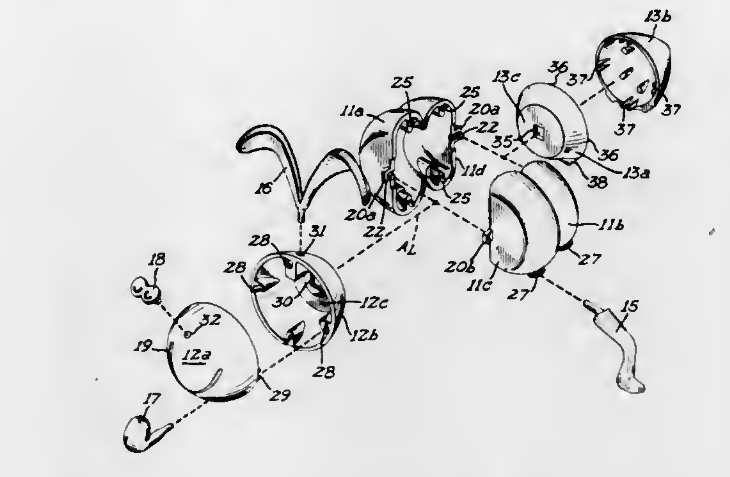
3,866,348
TOY INSECT

John H. Roby, Bloomington, and Roger R. Denlinger, Anoka, both of Minn., assignors to Kusan, Inc., Nashville, Tenn.

Filed Oct. 11, 1972, Ser. No. 296,667

Int. Cl. A63h *33/00*

U.S. Cl. 46—22 **7 Claims**



1. In a multiple section toy having a longitudinal axis with tabular means for joining the sections and wherein each of the sections are split into subsections adapted for releasable assembly, the improvement comprising

a longitudinally extending tab having a non-circular cross section integrally formed with at least one of the sections, said tab and said section being split into subsections along a longitudinal plane and wherein another of said sections is split in a plane transverse to the longitudinal axis having an aperture also transverse to the longitudinal axis with the same cross section as said tab, said tab being removeably received within said aperture whereby a rotational force can be applied to one of said sections relative to the other of said sections without forcing the subsections apart.

3,866,349
TRAP CONTAINING PHEROMONE

Geertruida M. Meijer, Delft; Fridolin J. Ritter, Waddinxveen; Albert K. Minks, Zetten; Simon Voerman, Wageningen, and Cornelis J. Persoons, Pijnacker, all of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer, The Hague, Netherlands

Filed Apr. 18, 1972, Ser. No. 245,199

Claims priority, application Great Britain, Apr. 27, 1971, 11634/71

Int. Cl. A01m *1/14*

U.S. Cl. 43—114 **4 Claims**

1. A trap for the summerfruit trotrix moth *Adoxophyes Orana* comprising:

a tunnel having an inner wall and at least one open end, said tunnel containing a mixture of cis-9-tetradecenyl acetate and cis-11-tetradecenyl acetate.

3,866,350
SOFT DOLL CONSTRUCTION

Adolph E. Goldfarb, Tarzana, Calif.; Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316, and Erin Libby, Hermosa Beach, Calif., assignors to said Benkoe, by said Goldfarb

Filed Feb. 21, 1973, Ser. No. 334,222

Int. Cl. A63h *3/20*

U.S. Cl. 46—161 **16 Claims**

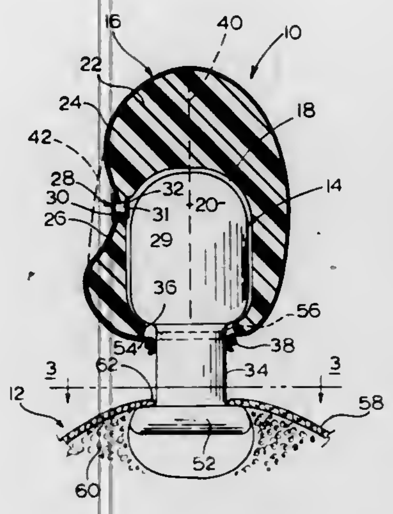
1. A soft-head doll comprising:

a head suppot means comprising an upright neck portion and a bulb portion at the upper end of said neck portion, said bulb portion having a transverse dimension larger that that of said neck portion,

a three-dimensional soft doll head mounted upon said support means, said head being of soft and resilient construction,

said head having interior means defining a cavity in said head which has substantially the same size and shape as said bulb portion so as to be essentially fully occupied by said bulb portion, said interior means defining an entrance into said cavity with a transverse dimension smaller than a transverse dimension of said cavity,

said transverse dimension of said bulb portion being larger than said transverse dimension of said cavity entrance.



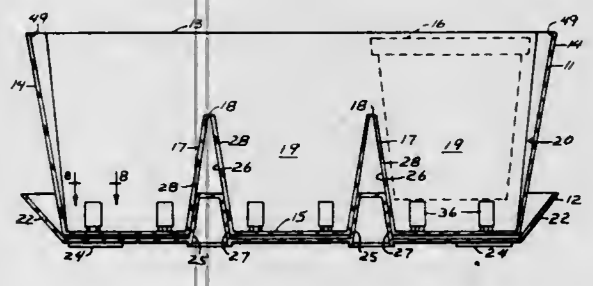
3,866,351
POTTED PLANT DISPLAY DEVICES

Barnell L. Cobia, Winter Garden, Fla., assignor to Green Island International, Inc., Winter Garden, Fla.

Filed May 25, 1973, Ser. No. 364,007

Int. Cl. A01g *27/00*

U.S. Cl. 47—38.1 **17 Claims**



1. In a potted plant display device the improvement comprising a molded receptacle of water impervious plastic for housing a plant pot and which has a water reservoir with an underlying horizontally oriented bottom wall, and means in the reservoir defining a plurality of uniformly oriented vertically extending capillary passages, said means including a molded support of water impervious plastic that is supported by and rises above said bottom wall for supporting a plant pot housed in the receptacle spacedly above said bottom wall, said molded plastic support having an upper surface that is arranged to contact the bottom wall of a plant pot supported thereon, and each of said capillary passages having inlet and outlet openings that are respectively located at said underlying bottom wall and said upper surface, said improvement further comprising a molded tray of water impervious plastic for containing water and which underlies said underlying bottom wall, and said receptacle having an overflow outlet located over said tray and spacedly above said upper surface.

3,866,352
HORTICULTURAL NONWOVEN SUBSTRATE AND SIDE MAT

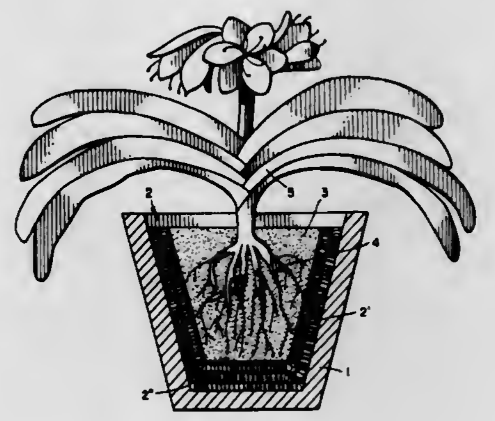
Wilhelm Herveling, Wuppertal; Alfred Birker, Neviges-Donberg; Siegfried Langefeld, Wuppertal; Berthold H. Daimler, Remscheid-Lennep; Gunter Fett, and Irmgard Dickersbach, both of Wuppertal, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Nov. 30, 1972, Ser. No. 310,981

Claims priority, application Germany, Dec. 2, 1971, 7145371

Int. Cl. D04b *3/16;* **A01g** *9/02*

U.S. Cl. 47—34 **5 Claims**



1. A horticultural nonwoven horizontal substrate combined with a substantially vertical nonwoven side mat, said substrate and said side mat being a unitary three-dimensional random fibrous nonwoven porous structure of rot-proof synthetic fibers forming a continuous aeration zone when placed beneath and around soil accommodating plant roots, said rot-proof fibers consisting essentially of a plurality of looped, intersecting and substantially amorphous filaments of melt-spun synthetic polymers bonded together at their intersection, wherein the surfaces of said mat and said substrate which are in contact with said soil have a lower porosity than the sides that do not contact said soil, said lower porosity being sufficiently low to prevent substantial penetration of soil into said aeration zone.

3,866,353
PROCESS FOR PRODUCING METHANE-RICH GASES FROM HYDROCARBONS

Hagen Krumm, Frankfurt, and Friedrich-Wilhelm Moeller, Seulberg, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 29, 1973, Ser. No. 392,722

Claims priority, application Germany, Mar. 24, 1973, 2314804

Int. Cl. C01b *2/14*

U.S. Cl. 48—214 **5 Claims**

1. Process for producing methane-rich gases by reacting vaporized hydrocarbons of the naphtha or kerosene-type being substantially free of sulphur compounds and having an upper boiling point of about 250°C with water vapor in the presence of a catalyst at elevated temperatures and under a pressure of from 15 to 100 atmospheres in two reaction zones, which comprises:

i. feeding a mixture of 40–50 percent by weight of preheated vaporized hydrocarbons with 80–90 percent by weight of the water vapor into a first reaction zone;

ii. cooling the product gas coming from the first reaction zone;

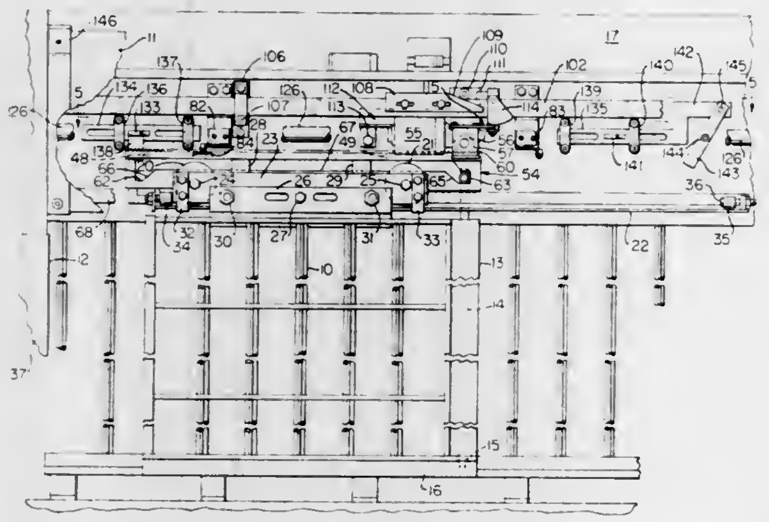
iii. thereafter mixing same with the remaining 60–50 percent by weight of preheated vaporized hydrocarbons and with the remaining 20–10 percent by weight of the water vapor and feeding the resulting mixture to a second reaction zone, thereby maintaining the temperature of the catalyst in both reaction zones in the range of 300°–500°C;

iv. the overall water vapor to hydrocarbons weight ratio being less than 1.4; and

v. the catalyst in both reaction zones containing more than 50 up to 60 weight percent nickel on a spinel ($MgAl_2O_4$) support.

3,866,354
COMBINATION ELECTRICAL AND MECHANICAL SECURITY SYSTEM

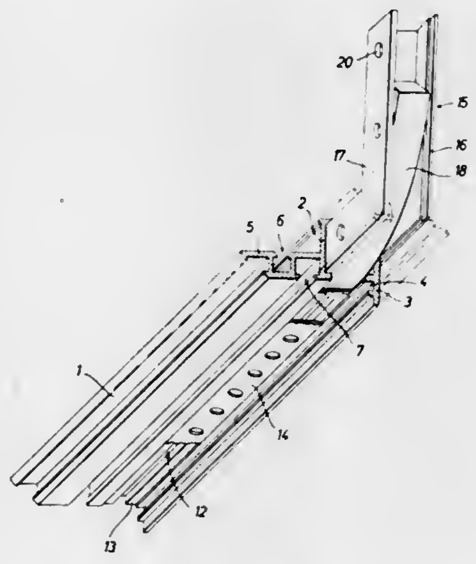
Gerald L. Butt, Independence, Ky., assignor to Stewart-Decatur Security Systems Incorporated, Covington, Ky.
Filed Aug. 1, 1973, Ser. No. 384,608
Int. Cl. E05b *47/06*
U.S. Cl. 49—16 10 Claims



1. A combination electrical and mechanical security system for separate electrical and mechanical mode operation for remotely locking and unlocking selected sliding doors comprising electric motor and gear means associated with each respective door, mechanical actuation means independent of said electric drive means, mode control means operatively connected with said electric motor and said mechanical actuation means for determining the operational mode, a drop bar locking each door in the fully opened and fully closed position, a roller rotatably mounted to the upper end of said drop bar, and a carriage assembly associated with each respective door and operatively connected with said respective drop bar to unlock said drop bar in response to said respective electrical motor and said mechanical actuation means depending on the operational mode, said carriage assembly including a linear rack, said gear means connecting said electrical motor with said rack wherein activation of said electrical motor will drive said rack in a linear direction, a pair of roller receiving channels formed at each end of said rack, said channels being connected by a roller surface wherein when said roller is in one of said receiving channels said drop bar is in the locked position and when said roller is on said roller surface said drop bar is in the unlocked position, a cam surface forming one side of each of said roller receiving channels, a pair of linear lost motion slots formed in said rack, means connecting said rack through said lost motion slots with the door wherein movement of said rack a linear distance corresponding to said lost motion slots will cause the respective cam surface to urge said roller up said cam surface onto said roller surface thereby unlocking said drop bar, a bracket mount connected with said gear means, said bracket mount being pivotally secured relative to said rack, a pendulum for holding said gear means in engagement with said rack during the electrical operational mode, said pendulum engaging said bracket mount to prevent pivoting of said mount relative to said rack, mechanical links connected with said control means, a master bar mounted in parallel relationship to said carriage assembly and supported for sliding movement relative thereto, said master bar being connected with said mechanical links, and a cam member secured to said master bar, said cam member being operatively engagable with said pendulum and said bracket mount wherein movement of said mode control means to the mechanical operational mode portion will cause said cam member to pivot said pendulum away from said bracket mount and said cam member will engage said bracket mount to pivot said mount thereby disengaging said gear means from said rack.

3,866,355
WINDOW ASSEMBLY

Gernot Jacob, Deggendorf, Germany, assignor to Gotz Metallbau GmbH, Deggendorf, Grosswalding, Germany
Filed Aug. 2, 1973, Ser. No. 384,955
Claims priority, application Germany, Aug. 7, 1972, 2238862
Int. Cl. E05d *15/52*
U.S. Cl. 49—192 21 Claims



1. A window assembly comprising:

a sash frame, said sash frame being comprised of metal and including a plurality of frame sections;

a window frame which cooperates with said sash frame to define the window assembly, said window frame being comprised of metal and including:

- at least four transversely oriented elongated box sections, each of said box sections defining a guide track at a first external side thereof;
- first flange means extending outwardly transversely from the second side of each of said box sections, said box section second sides being adjacent and oriented transversely to said box section first sides, said first flange means having at least a first groove which opens in the same direction as said guide track;
- second flange means extending from each of said box section first sides in a direction transverse to said first flange means, said second flange means defining grooves which are adjacent and parallel to said guide tracks;
- corner sections for joining transversely oriented box sections, said corner sections including arm means which are received in said box sections, said corner sections further including a curved surface defining element, said curved surface defining element forming a curved connection extension of the guide tracks on adjacent transversely oriented box sections;

at least a first fixed fitting mounted on one of said sash frame sections;

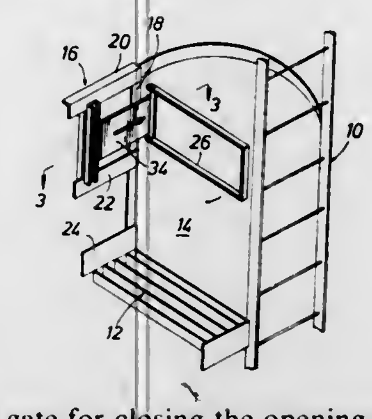
at least a first movable fitting mounted on one of said window frame box sections for cooperating with said fixed fitting;

actuating means for said movable fitting, said actuating means comprising a flexible metal band extending about substantially the entire periphery of said window frame, said flexible metal band being disposed in the guide track defined by said window frame box and corner sections; and

lever means for imparting motion to said actuating means metal band.

3,866,356
SAFETY GATE

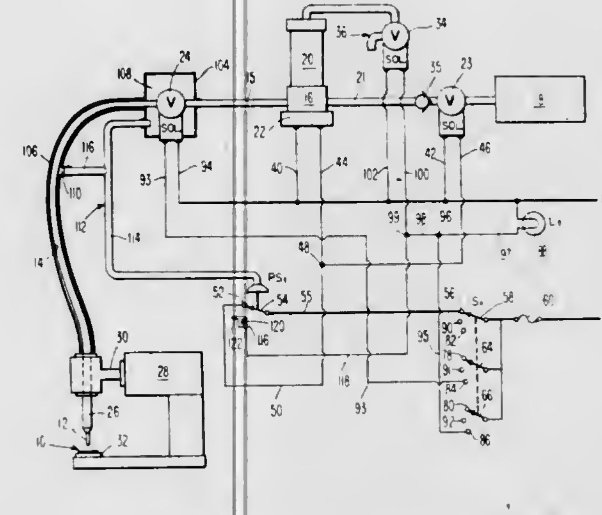
Hardy L. La Cook, and John H. Conklin, both of Houston, Tex., assignors to Fabenco Incorporated, Houston, Tex.
Filed Aug. 20, 1973, Ser. No. 390,022
Int. Cl. E05f *1/10*
U.S. Cl. 49—386 7 Claims



1. A safety gate for closing the opening in the guard rail of a walkway for a ladder, stairwell, or the like comprising a gate member, means for mounting the gate member for pivotal movement between a first position extending across such opening and a second position to allow passage therethrough, stop means for allowing the gate member to pivot in only one direction from the first position, said stop means including a first stop member mounted on one of the gate member and the gate member mounting means and a second stop member mounted on the other one of the gate member and the gate member mounting means to engage the stop means and hold the gate in the first position, said second stop means being movable sufficiently to allow the first position to be adjusted relative to the mounting means through an angle of about ninety degrees as required by the location of the opening, and resilient means urging the gate member toward the first position to maintain the gate member in the first position closing the opening to prevent passage therethrough in one direction when the gate member is not forceably held in the second position.

3,866,357
ABRADING APPARATUS

John William Callahan, Lanoka Harbor, N.J., and Martin John Capdevielle, Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 6, 1974, Ser. No. 477,127
Int. Cl. B24c *9/00, 3/00*
U.S. Cl. 51—12 4 Claims



1. In abrading apparatus having a nozzle, delivery means providing a pressurized mixture of compressed gas and abrasive powder, and a conduit for conducting said pressurized mixture from said delivery means to said nozzle, wherein said delivery means includes a solenoid valve which when energized activates said delivery means and which when deenergized deactivates said delivery means, that improvement comprising:

a. a pressure-tight enclosure enclosing said conduit in at least partly spaced relationship to define a chamber therebetween;

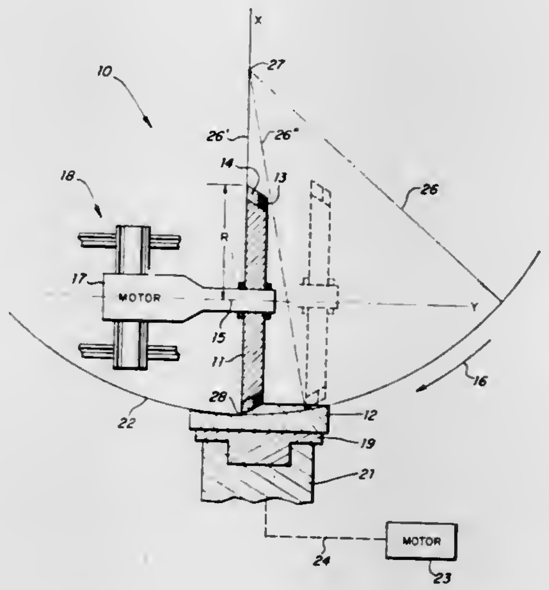
b. a pressure-responsive switch including

1. a bellows connected to said enclosure in communication with said chamber whereby said bellows is extendable in response to a substantial increase of pressure in said chamber,
2. a switch connected in an electrical circuit with said solenoid valve to energize said solenoid valve in a first position of said switch, said switch being operably associated with said bellows for movement thereby to a second position wherein said solenoid valve is deenergized when said bellows is extended,
3. retaining means holding said switch in second position against return to the first position when said bellows is depressurized, and
4. manual reset means operable for releasing said retaining means and returning said switch from second position to first position;

whereby a leak of said abrasive powder from said conduit is contained at least partly within said enclosure and said delivery means is deactivated when a leak occurs in said conduit.

3,866,358
METHOD AND APPARATUS FOR GENERATING TOROIDAL SURFACES

Wiktor J. Rupp, Lowell, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Aug. 2, 1973, Ser. No. 385,213
Int. Cl. B24b *7/00, 9/00, 1/00*
U.S. Cl. 51—33 R 9 Claims



1. Apparatus for generating a toroidal surface on a workpiece comprising:

a. means for supporting a workpiece upon which said toroidal surface is to be generated;

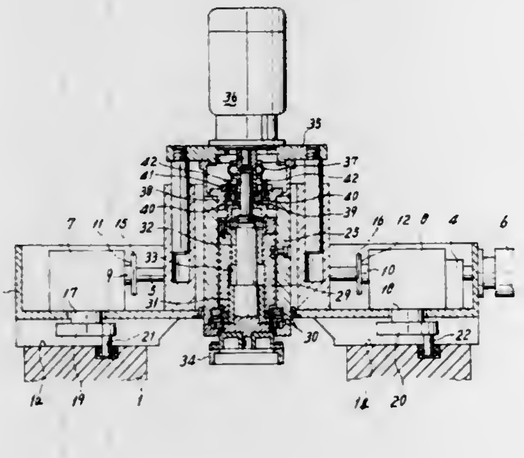
b. means for supporting a surfacing tool adjacent said workpiece for generating said toroidal surface thereupon, said surfacing tool comprising a disc tool having a substantially annular peripheral surfacing face symmetrical about a central tool axis, the radius of said annular peripheral surfacing face being generally equal to the radius of the curvature to be generated in the direction of a first major meridian of said toroidal surface;

c. first drive means for transversely sweeping said tool and said workpiece relative to one another in a curved path having radius substantially equal to the radius of the curvature to be generated in the direction of a second major meridian of said toroidal surface; and

d. adjustment means for adjusting the orientation of said tool relative to said curved path for maintaining the radius of the curvature to be generated along said first major meridian of said toroidal surface substantially constant as the radius of said tool changes due to wear.

3,866,359
SURFACE GRINDING APPARATUS

Makoto Kikuchi, Kariya, Japan, assignor to Toyoda-Koki Kabushiki-Kaisha, Aichi-Ken, Japan
Filed Mar. 25, 1974, Ser. No. 454,584
Claims priority, application Japan, Mar. 23, 1973, 48-33961
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—120 **4 Claims**



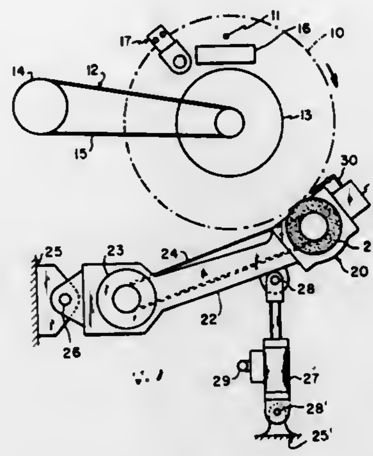
1. A surface apparatus for grinding a flat surface of a workpiece comprising:
- a bed for holding the workpiece in a machining position, said bed being provided with horizontal hydrostatic slide surfaces;
- a tool head slidably mounted on said horizontal hydrostatic slide surfaces of said bed for rotary movement in a horizontal circular path;
- driving means for moving said tool head in said horizontal circular path;
- a ram vertically slidably mounted on said tool head;
- a grinding wheel shaft rotatably supported in said ram and provided with a cup-shaped grinding wheel at the lower end thereof;
- means for angularly adjusting said grinding wheel shaft relative to the grinding surface of the workpiece in a vertical plane;
- driving means for rotating said wheel shaft; and
- means for vertically moving said ram relative to the workpiece to render infeed movement to said grinding wheel.

3,866,360
METHOD FOR BALANCE CORRECTING PNEUMATIC TIRES

Freydoun Monajjem, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 306,075, Nov. 13, 1972, Pat. No. 3,848,369. This application June 7, 1974, Ser. No. 477,242
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 R **3 Claims**

1. A method of balance correcting a pneumatic tire comprising the steps of:

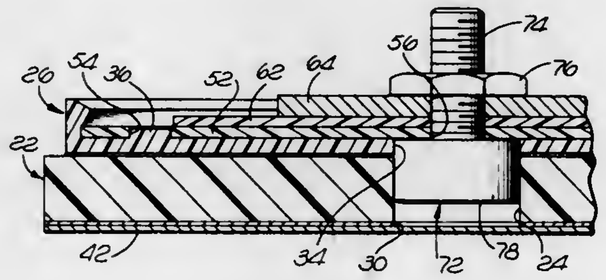
A. determining a point of imbalance in a pneumatic tire;
B. positioning a reflective material on the tire in reference to the point of imbalance;
C. rotating the tire;
D. directing light from a light source onto the tire and reflecting light from the reflective material on each revolution of the tire;
E. generating an electrical signal with light reflected by the reflective material; and



F. actuating a grinding means to selectively remove a predetermined amount of rubber from the tire at the point of imbalance by the generated electrical signal.

3,866,361
REPLACEABLE PAD ASSEMBLY

Harold R. Mauck, Woodland Hills, Calif., assignor to Standard Abrasives Incorporated, Northridge, Calif.
Filed Aug. 22, 1973, Ser. No. 390,642
Int. Cl. B24d *17/00*
U.S. Cl. 51—358 **3 Claims**



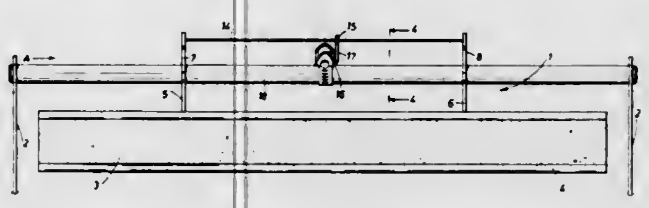
1. A replaceable pad assembly comprising:
- a body of resilient material having a first side face and a second side face;
- means for securing an abrasive finishing article to one of said side faces; and
- a generally planar drive disc having one surface secured to the other of said side faces and a second surface having drive bosses integrally formed thereon for enabling said assembly to rotate with a drive member having openings into which said drive bosses are inserted;
- means formed on said drive disc for securing said drive disc to said drive member consisting of an annular inwardly-directed retaining lip formed on the periphery of said drive disc chamfered for facilitating insertion and removal of said drive member, said drive disc periphery being sufficiently flexible to enable said drive disc to be rapidly separated from said drive member.

3,866,362
LAWN MOWER SHARPENING ATTACHMENT

Allan Riach, Ayton, and Thomas Sinclair, Eyemouth, both of England, assignors to P. D. Springall Limited, Henlow Camp, Bedfordshire, England
Filed July 11, 1973, Ser. No. 378,121
Int. Cl. B24b *3/42*
U.S. Cl. 51—250 **5 Claims**

2. In a sharpening attachment for a grass cutting machine of the rotating cylinder type having opposed side members interconnected by a tie bar and a plurality of blades rotatably mounted between the side members comprising an elongated frame, an abrasive element carried by said frame, and means for releasably securing the frame to the tie bar in a position such that the abrasive element is disposed to sharpen the blades of the machine upon rotation of the blades, that improvement which includes

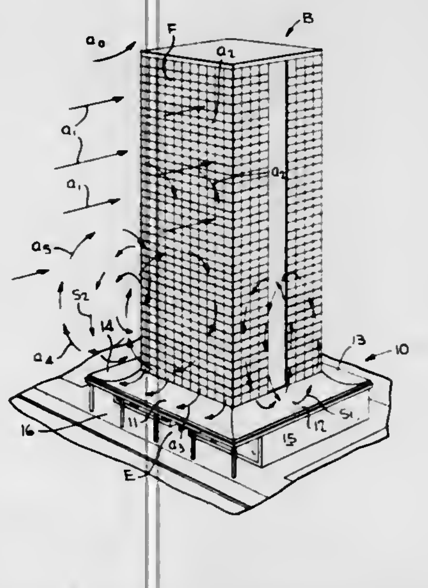
a. a plurality of arms secured to the back face of the frame and extending away from the frame,
each arm comprising a fixed part secured to the frame and an adjustable part angularly adjustable relative to the fixed part,



b. spring means interconnecting two of the adjustable parts,
c. means on each adjustable part for providing pivotal engagement on the tie bar, and
d. positioning means adjustably disposed on the tie bar intermediate the two adjustable parts for holding the spring means in a desired disposition such that in use the abrasive element, by suitable angular relationship of the arms, is brought into spring biased relationship with the blades of the machine.

3,866,363
HIGH ENERGY WIND DISSIPATION ADJACENT BUILDINGS

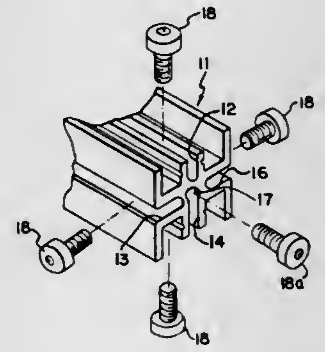
James R. King, 6804 Capstan Dr., Annandale, Va. 22003
Continuation of Ser. No. 134,621, April 16, 1971, abandoned. This application June 21, 1973, Ser. No. 372,345
Int. Cl. E04b *1/34*
U.S. Cl. 52—29 **17 Claims**



1. In combination with a multi-story building having an outside entrance level and entrance opening and sufficient height and width above said entrance level to turn horizontally arriving natural winds into high energy downdraft along the face of the building, elongated wind deflector means extending substantially horizontally along at least one side of said building, said deflector means extending outwardly away from said face above said entrance level a distance sufficient to intercept and confine in substantially controlled single path flow the high energy downdraft winds, said deflector means extending at least substantially the full length of the side and extending substantially beyond the entrance opening along the side, said deflector means substantially integrally extending from said building, the downstream and lateral edges being disposed so as to finally direct the controlled flow to a height at least above the deflector means, whereby to deflect said controlled flow away from said entrance level to allow dissipation of said energy by vortex and eddy current effect and release of the air substantially free of said entrance level, said deflector means comprising a means curved so as to be substantially arcuate in cross section to generate vortex flow, the receiving edge of said curved means extending so as to merge smoothy with the face of said building and the downstream edge extending upwardly away from the entrance level at an angle greater than approximately thirty degrees with respect to a horizontal plane.

3,866,364
MODULAR STRUCTURE FOR USE IN MERCHANDISING OPERATIONS

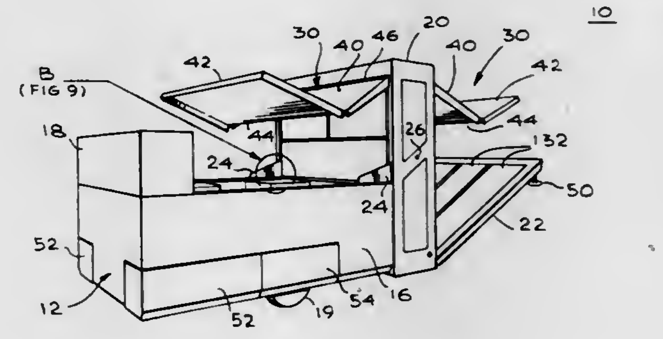
Theodore O. Pollard, Palo Alto, Calif., assignor to International Product Development Incorporated, Palo Alto, Calif.
Filed May 10, 1973, Ser. No. 358,865
Int. Cl. E04b *2/82*
U.S. Cl. 52—36 **26 Claims**



1. In a modular structure a plurality of elongate members of constant cross section configuration having a plurality of longitudinal grooves on the sides thereof, said longitudinal grooves having smooth opposing side walls, joint means for interconnecting said elongate members, screws for forming threads on said smooth opposing side walls in predetermined ones of said grooves and for engaging and attaching said joint means to said elongate members, said screws extending into said predetermined ones of said longitudinal grooves and serving to prevent longitudinal movement of said joint means with respect to the elongate members, and panel means mounted in said longitudinal grooves forming a self supporting unitary upright structure.

3,866,365
EXPANDABLE SPACE ENCLOSURE INCLUDING APPARATUS FOR ERECTING AND RETRACTING SAME

Michael L. Honigman, Los Angeles, Calif., assignor to Elm Design, Inc., Los Angeles, Calif.
Filed July 7, 1972, Ser. No. 269,848
Int. Cl. E04b *1/343;* **E04h** *1/12*
U.S. Cl. 52—70 **37 Claims**



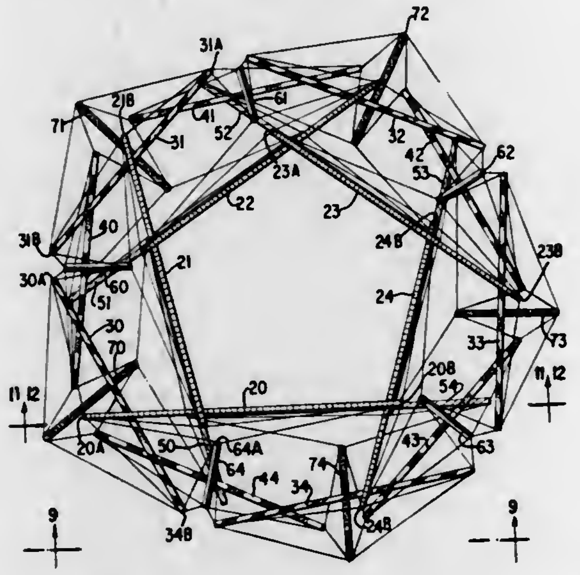
1. Apparatus for erecting and retracting an expandable space enclosure comprising:

a box for storing folded roof and wall panels therein and having at least one open side which is covered in the storage condition by a floor section pivotably connected to the box, the roof panels comprising a pair of panels hinged together as a roof section for folded storage within the box, the inner panel being pivotably mounted to said box and having cantilevered erecting means adapted to rotate the roof section about the pivot support and main-

tain said section in unfolded horizontal position upon erection;
cable means for supporting and aligning said panels during movement of the panels between expanded and folded positions relative to the box;
at least one of said wall panels comprising an end wall movable translationally between parallel expanded and storage positions while maintained aligned in a fixed attitude during said movement by said cable means;
releasable means for maintaining said box in an upright attitude for the unfolding of the panels therefrom in order to provide an expanded space enclosure and for the retraction of said panels for storage within the box; and
a control mechanism for unfolding the two roof panels relative to each other while the entire roof section is being rotated to the horizontal position relative to the box.

3,866,366
NON-SYMMETRICAL TENSION-INTEGRITY STRUCTURES

Richard Buckminster Fuller, 200 Locust St., Philadelphia, Pa. 19106
Filed Aug. 7, 1973, Ser. No. 386,302
Int. Cl. E04b *1/32*
U.S. Cl. 52—81 **7 Claims**

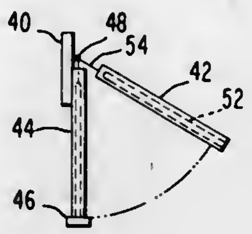


1. In a generally spherical-like building structure, the combination including a like pair of substructures, each being comprised of a plurality of column-like compression members and a plurality of tension elements, the column-like members being held in axially spaced relationship to one another by the tension elements being attached adjacent the ends of spaced column-like members, pentagon lesser circle configurations at the base of each substructure, and a plurality of column-like members between said substructures and extending directly therebetween and holding said substructures in spaced relation, said column-like members being held in axially spaced relation thereto by tension elements so that pentagon lesser circle configurations are displaced relative to each other.

3,866,367
DEFORMABLE COUPLING

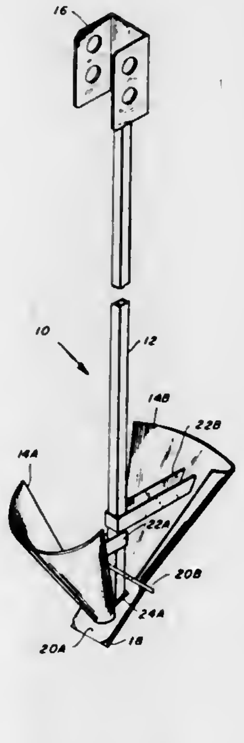
Richard A. Strizki, Ringoes, N.J., assignor to The State of New Jersey, Trenton, N.J.
Continuation-in-part of Ser. No. 151,285, June 9, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,725
Int. Cl. E04b *1/00*
U.S. Cl. 52—98 **4 Claims**

1. An assembly embodying two horizontally spaced, vertically extending supports with a member extending therebetween and a shock absorber connected to said assembly to reduce the forces exerted upon said member upon relative movement of one of said supports with respect to said member, said shock absorber including two interengaging elements one of which is connected to said one of said supports and the other of which is connected to and movable by another member of said assembly, said interengaging elements being relatively movable and one of said elements being deformable by the other of said elements upon such relative movement.



3,866,368
MOBILE HOME ANCHOR

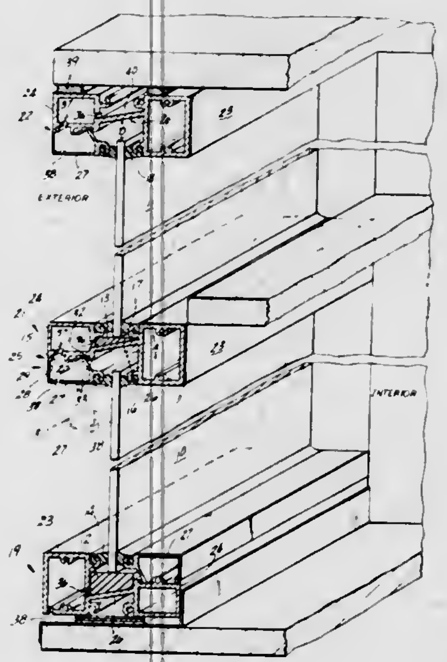
Benny C. Toops, P. O. Box 2211, Tulsa, Okla. 74101
Filed Apr. 18, 1974, Ser. No. 461,844
Int. Cl. E02d *5/74*
U.S. Cl. 52—162 **6 Claims**



1. An earth anchor for anchoring structures such as mobile homes, comprising:
- a. elongated shank means including head means at the lower end of said shank means;
- b. coupling means at the top end of said shank means;
- c. at least two fluke means at the lower end of said shank means supported by said head means;
- d. each of said fluke means comprising:
  - 1. base means including an opening adapted to slide along said shank means;
  - 2. truncated semi-conical shaped sheet means attached at its smaller end to said base means so as to form a U-shaped fluke positioned with its base directed outwardly from said shank; and
  - 3. tension means to restrain the outward movement of said shanks; and
- e. means to keep said at least two flukes positioned in opposite directions each from the other.

3,866,369
REVERSIBLE SILL ASSEMBLY WITH A POSITIVE FLUID DRAIN

David Paull, Big Rapids, Mich., assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Mar. 21, 1973, Ser. No. 343,550
Int. Cl. E04b *1/343;* **EO6b** *7/14*
U.S. Cl. 52—209 **1 Claim**

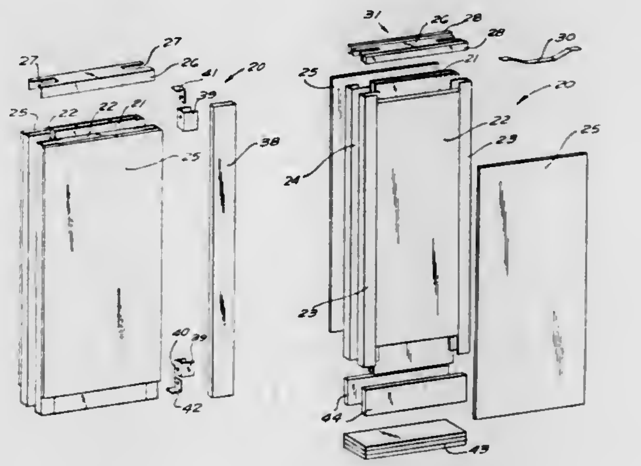


1. A reversible sill assembly operable selectively in a first position to receive closure panels from an interior station and in a second position to receive closure panels from an exterior station which comprising:
- A. a pair of spaced-apart tubular members;
- B. an inclined web joining said tubular members operable to direct fluid in a predetermined direction which subtends an included angle with respect to the horizontal ranging from 3° to 15°;
- C. a snap-on element detachably mounted on one of said tubular members and manually separable therefrom to facilitate insertion (reception) of panels; and
- D. a drain system consists essentially of a plurality of fluid drain holes located in both of said tubular members communicating with said web operable to direct fluid distally away from said web, through said tubular members and out of said assembly; wherein said sill is reversible or rotatable through 180° about a horizontal axis to permit panel installation from said interior or exterior stations, as desired, and said inclined web remains operable to direct fluid in said predetermined direction in either of said positions.

3,866,370
ADJUSTABLE MODULAR PARTITION

Michael C. Guarino, Rumson, and Frank Cacossa, Livington, both of N.J., assignors to M. C. Guarino Associates, Inc., Belleville, N.J.
Filed Jan. 26, 1973, Ser. No. 327,609
Int. Cl. E04c *2/32*
U.S. Cl. 52—241 **21 Claims**

1. An adjustable modular partition comprising:
an inner layer of a first fire resistant and sound deadening material having opposing sides;
a second layer of a second fire resistant and sound deadening material on each side of said first material so that said first material is located therebetween;
a third layer of a third fire resistant and sound deadening material on the sides of said second material distal from said first material so that first and second material are located therebetween;
a fourth layer of a fourth fire resistant and sound deadening material on the sides of said third material distal from said second material so that said first, second and third material are located therebetween;
means for fastening said four layers together to form a partition module with high sound deadening and fire resistance qualities;
each of the opposed vertical sides of the partition module containing a vertical recess adapted to receive a portion of a vertical spline member therein, another portion of each spline member being positioned in a corresponding recess in another partition module to thereby interconnect adjacent partition modules to form a modular wall partition system of desired length;

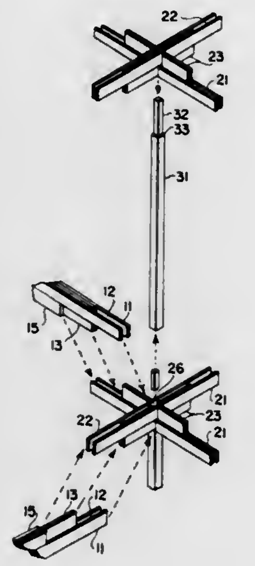


at least the surfaces forming the vertical recess being covered by a rigid supporting channel for stiffening predetermined portions of the module and which is adapted to be resiliently deformed sufficiently for accommodation of dimensional differences in spline members and to frictionally engage with an appropriate spline member so as to facilitate formation of a modular wall partition system; and
adjustable means on said partition module positioned so that when said partition module is substantially vertically located between a floor and ceiling, the adjustable means can be shifted to provide engagement between the top and bottom of the partition module and the ceiling and floor respectively.

3,866,371
STRUCTURAL FRAMING SYSTEM

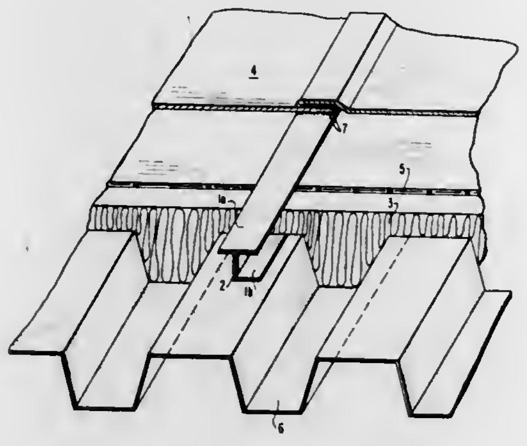
John Paul Rutherford Falconer, St. Louis, Mo., assignor to Midwest Housing Research Corporation, Jefferson City, Mo.
Filed Mar. 7, 1973, Ser. No. 338,663
Int. Cl. E04b *1/54;* **E04c** *1/04*
U.S. Cl. 52—281 **7 Claims**

1. Construction means for building low-cost easily assembled structures having joints with structural continuity and stiffness comprising: at least one beam having a stepped profile in side elevation, the middle being a full height section and at least one end portion being of reduced height, a groove extending vertically through the entire height of the end portion and longitudinally from said at least one end to the beginning of said full height section, the middle portion of the full height section being full width, and there being at least one reduced width portion longitudinally extending from said full width middle portion to the reduced height end portion; and at least two connectors also having a stepped profile in side elevation, the middle being a full height section and both end portions being of reduced height, a groove extending vertically through the entire height of the end portions and longitudinally from both ends to the beginning of the full height section, a portion of the full height section being of reduced width and the remainder being full width, a transverse vertical slot extending from the level of the reduced height end portions through said reduced width portion, which slot being in the middle of the connector and having a longitudinal width equal to said full width; said two connectors being fitted transverse to each other with the slot of one fitting into the slot of the other and over the respective full width portions of the two connectors, and said beam fitting onto the end portion of one of said two connectors, the reduced width portion of the beam frictionally fitting into the groove of the one connector and the reduced width portion of the one connector fitting into the groove of the beam so as to form a longitudinal extension of the connector with the beam, thereby forming a two-dimensional joint having structural continuity through the intersection point of two connectors.



3,866,372
MOUNTING ELEMENT AND METHOD FOR A LOOSELY LAID SYNTHETIC RESIN FILM AND ROOF CONSTRUCTION CONTAINING SAME

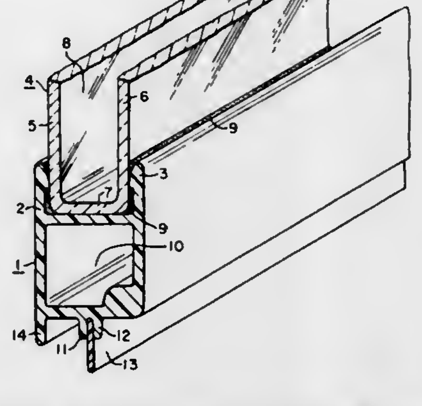
Karl Haage, Troisdorf-Spich, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed June 18, 1973, Ser. No. 370,687
Int. Cl. E04c *2/50*
U.S. Cl. 52—309 **22 Claims**



1. A mounting apparatus for synthetic resin films loosely laid on a layer of thermal insulating material for heat-insulated roof construction which are ungraveled comprising, as seen in cross section, a T-shaped element, a mounting flange unilaterally arranged at the base of the T at right angles, a bottom structure joined to and supporting the mounting flange of the T-shaped element, and heat insulation foamed onto the bottom structure and onto said flange and T-shaped element so that the upper surface of the T-shaped element remains uncovered by insulation whereby the uncovered upper surface of the T-shaped element provides a broad surface to which a loosely laid roof sheathing can be bonded.

3,866,373
PULTRUDED SHAPES CONTAINING HOLLOW GLASS OR CERAMIC SPHERES

John S. Hudock, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 6, 1972, Ser. No. 269,337
Int. Cl. E04c *2/38*
U.S. Cl. 52—309 **7 Claims**

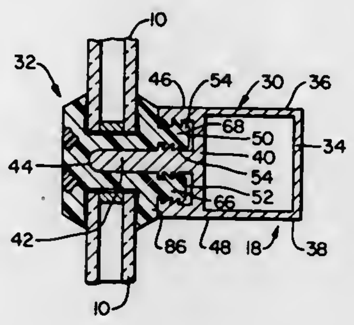


1. A pultruded window sash comprising an inelastic elongated member having two substantially parallel elongated arms for grasping window glass, a void portion forming an elongated cavity, an elongated leg opposing one of said arms, and two substantially parallel elongated extensions adjacent said leg for holding a sealing strip, said sash being constructed of materials comprising

1. about 35 to about 60 percent solventless polyester resin composition about ½ to about 2 percent of which is a catalyst,
2. about 1 to about 5 percent internal mold release,
3. about 40 to about 65 percent glass material selected from the group consisting of roving, cloth, and mixtures thereof
4. hollow spheres selected from the group consisting of glass, ceramic, and mixtures thereof, where said spheres replace a portion of said glass material equal to about 3 to about 6 percent of said sash.

3,866,374
PANEL MOUNTING SYSTEM

John A. Dallen, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio
Filed Oct. 5, 1972, Ser. No. 295,258
Int. Cl. E04b *1/66;* **E06b** *3/62*
U.S. Cl. 52—400 **5 Claims**



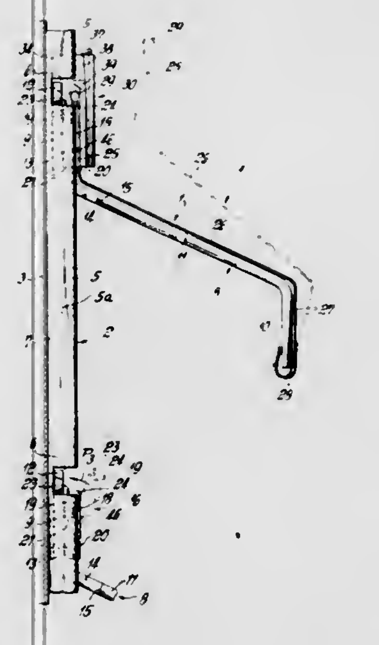
1. A glazing system for providing structural rigidity between adjacent construction panels of a building wall structure wherein a pair of said panels are disposed above one another in a generally coplanar relationship, the adjacent horizontal edges of said pair of panels being closely spaced to each other, said glazing system comprising:

an elongated rigid structural member affixible to said building structure to extend generally coextensively with said adjacent horizontal panel edges, said structural member including a rigid horizontally extending load bearing protrusion projecting outwardly therefrom generally normally to the plane of said panels and having an outer end spaced from said structural member, and a horizontally extending gasket receiving channel on each side of said protrusion, both of said channels opening outwardly toward said plane of said panels and extending generally coextensively with said protrusion,

an elongated elastomeric panel mounting and sealing gasket including first and second portions, said first portion comprising a body portion having horizontally extending panel receiving channels opening vertically therein, said second portion including means received in each of said gasket receiving channels for releasably affixing said gasket to said structural member, and a groove to receive said load-bearing protrusion, said groove extending from said second portion into said first portion and between said panel receiving channels; said panels in said panel receiving channels having coplanar outermost faces with respect to said structural member, and said outer end of said protrusion being spaced from said structural member for said protrusion to extend between said panel edges from the plane of said outermost faces toward said structural member.

3,866,375
LOUVRED CONSTRUCTION

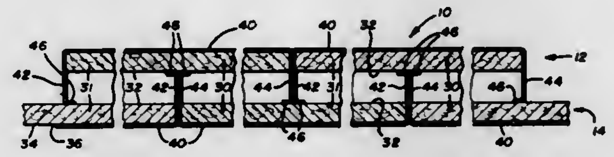
Johannes Antonius Henricus Brugman, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Willemstad, Curacao, Netherlands Antilles
Filed Apr. 10, 1974, Ser. No. 459,806
Claims priority, application Netherlands, Apr. 10, 1973, 7304969
Int. Cl. E04b *7/16;* **E06b** *7/08*
U.S. Cl. 52—473 **18 Claims**



1. A louvred construction of the type described comprising a channel support, at least one rib, said rib having one end portion thereof disposed within said channel support, a locking member for securing said one end of said rib within said channel support, said rib extending outwardly from said channel support and terminating in an outer edge, an elongated panel, means for securing one longitudinal edge of said panel to said outer edge of said rib, the other longitudinal edge of said panel being engaged with said locking member, and clamping means slidably engaged in said channel support for clamping a portion of said panel adjacent said other edge between said locking member and said clamping means.

3,866,376
METAL CLAD GYPSUM WALLS

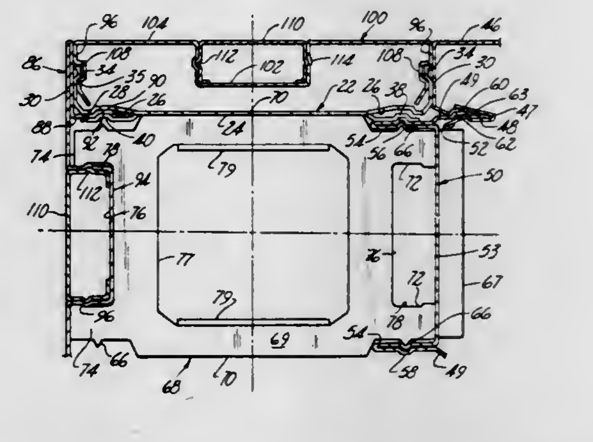
Nels Nelsson, Des Plaines, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed Oct. 5, 1972, Ser. No. 298,314
Int. Cl. E04b *2/62, 2/02;* **E04c** *1/30*
U.S. Cl. 52—493 **12 Claims**



1. In a demountable hollow wall assembly including two opposed, parallely extending, spaced-apart rows of panels, each row assembled independently of the other, the panels of at least one of the rows each being provided with a core having a front surface and a back surface, and a metal sheet adhered to the front surface; the improvement wherein said sheet includes an edge portion integral with said sheet along a vertical margin of said sheet which depends out of the plane of said sheet along the edge of said core and extends inwardly of said wall to a point beyond the back surface of the panel it covers, said edge portion being in releasible contact engagement with the back surface of a panel of the opposite row, and runner means at both the upper and lower ends of said panels providing lateral restraint for maintaining the inner walls of said panels in engagement with edge portions of opposite panels, whereby said panels are supported in spaced-apart position in the absence of separate studs.

3,866,377
WALL PANEL SPACER

Camiel R. De Schutter, Saint Clair Shores, Mich., assignor to Perfect Module Systems, Inc., Mt. Clemens, Mich.
Filed Apr. 23, 1973, Ser. No. 353,653
Int. Cl. E04b *2/30*
U.S. Cl. 52—508 **5 Claims**

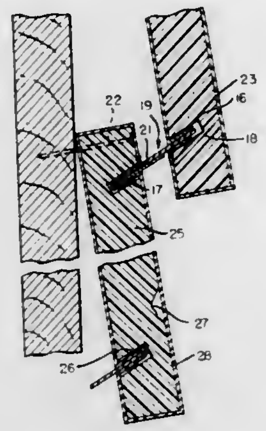


1. In a wall panel system comprising a plurality of wall panel sections connected in an end to end fashion by panel joints, a spacer member disposed within said panel system to maintain selected opposing components of said system in a predetermined spaced relationship, said spacer member comprising a body section having opposing parallel edges, two pairs of opposed spaced arms extending outwardly from said body portion in said direction as said parallel edges; the outer edge of each of said arms being provided with a rib adapted to engage components of said panel system in a snap lock fashion, each of said ribs being inwardly spaced from said body portion parallel edges; each of said pairs of extended arms defining thereinbetween a recess and the inner opposing surfaces of each of said pair of said arms having a groove formed therein for engaging in a snap lock fashion with a component of said wall panel system; the body section being provided with a central aperture of sufficient size to facilitate the passage of wiring and conduits therethrough; the side walls of said aperture adjacent said body portion being bent outwardly in

the same direction to define tab means, said tab means being inwardly spaced from said parallel edges and being disposed along an axis paralleling the edges of said body portion.

3,866,378
SIDING WITH LOOSE PLASTIC FILM FACING

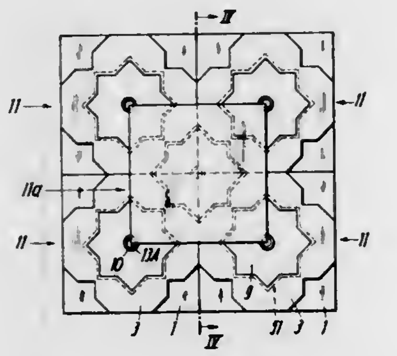
Gerald Kessler, 388 Cranberry Rd., Boardman, Ohio 44512
Continuation-in-part of Ser. No. 187,960, Oct. 12, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,145
Int. Cl. E04d *1/10, 1/20*
U.S. Cl. 52—519 7 Claims



1. a. Architectural siding board for the exterior wall surface of a building comprising
- b. a siding backerboard having a weather surface which is normally exposed when the siding is installed in place on a building structure to provide overlapping courses,
- c. a film of flexible plastic sheet material secured to said backerboard only at unexposed locations on the siding,
- d. said film lying unadheredly against and in direct contact with the backerboard at all surfaces which are exposed to the weather when the siding is installed, said film being of soft, non-rigid material smoothly stretched over the exposed surface of the backerboard and having sufficient elasticity to resume its smooth appearance even when the siding is struck sufficiently hard to dent the backerboard beneath the film.

3,866,379
TILE ASSEMBLY

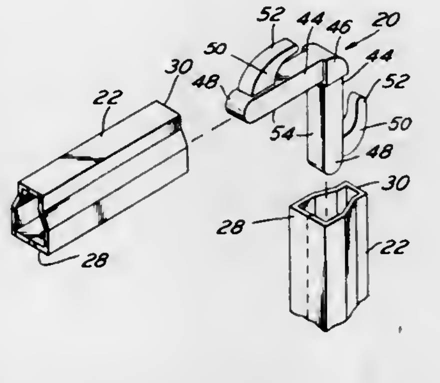
Heinz Paulke, Luebbecke No. 237, 4995 Levern Kreis, Germany
Filed Feb. 1, 1973, Ser. No. 328,629
Claims priority, application Germany, Feb. 3, 1972, 2205004
Int. Cl. E04c *1/10, 1/30*
U.S. Cl. 52—593 10 Claims



1. In a tile assembly, a combination comprising at least three identical tiles, each of said tiles being composed of three superimposed and interconnected layers, the first and second layers of each respective tile surrounding the third layer thereof and having portions extending outwardly beyond the latter so that said three layers of the respective tile define with one another a slot having a width approximating the thickness of said second layer, each respective layer being composed of four quarter-sections of predetermined shapes, the shape of the quarter-section of said second layer substantially corresponding to the shape of said portion of said first layer which extends outwardly beyond said third layer, said first layer having an exposed surface and a circumferential surface bounding said exposed surface, a first and a second of said tiles being situated adjacent to one another so that the respective circumferential surfaces of said first and second tiles abut one another and said exposed surfaces thereof face in one direction, the third tile being interfitted with said two tiles so that said exposed surface thereof faces in the opposite direction, one quarter-section of said third tile being interfitted with a quarter-section of said first tile and another quarter-section of said third tile being interfitted with a quarter-section of said second tile so that the respective quarter-sections of said second layer of said third tile extend into the associated slots of said first and second tiles and engage the associated quarter-sections of said third layers thereof and vice versa, whereby a four-layer structure is obtained, two outer layers of said structure being formed exclusively by the first layers of the respective tiles and the two inner layers being formed by the interfitting second and third layers thereof, said first and second tiles restraining said third tile during the assembling and disassembling of the tile assembly to movement in only one predetermined direction parallel to said exposed surface.

3,866,380
CONNECTOR FOR WINDOW SPACER ASSEMBLY

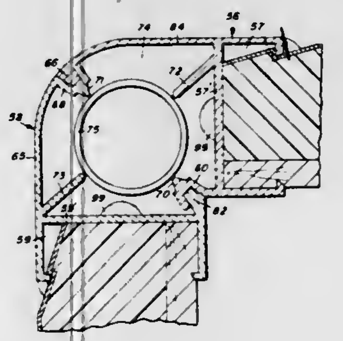
Henry Benson, Hialeah, Fla., assignor to Warren Industries, Hialeah, Fla.
Filed Apr. 2, 1974, Ser. No. 457,314
Int. Cl. E04c *2/54;* **F16b** *7/00*
U.S. Cl. 52—656 6 Claims



1. In a spacer assembly for spacing a pair of panes of glass from each other to form an insulated glass panel, said assembly comprising at least two elongated tubular spacers arranged to be secured together for disposition between said panes, each of said spacers comprising a wide integral planar inside wall, a narrow outside wall and a pair of side walls extending therebetween, said walls defining a hollow internal space, said space being of a predetermined cross-sectional area and including a major portion contiguous with said wide inside wall and a minor portion contiguous with said narrow outside wall and being of smaller cross sectional area than said major portion, the improvement comprising a connector for disposition within the interior of the spacers to securely connect the spacers together at a predetermined angle while enabling the spacers to deviate readily from said angle without loosening the connection between said spacers to thereby facilitate the construction of said panel, said connector being formed of a plastic material and comprising a pair of legs connected to each other at a junction and at said predetermined angle, each of said legs being adapted for disposition within said major portion of the interior of said spacer and being of such cross-sectional area so as to substantially fill said major portion and in contact with said wide inside wall thereof but not extending into said minor portion, each of said legs also including a free end from which a single, curved resilient finger projects backward and into the minor portion of the interior of said spacer to contact the narrow outside wall thereof to thereby effect the frictional engagement of the interior of the spacer by said leg irrespective of manufacturing tolerances in the cross-sectional area of the spacer, the cross-sectional area of said junction being substantially smaller than the cross-sectional area of the interior of the spacer but of substantially the same cross-sectional area as that of each leg to enable the legs to flex from said predetermined angular orientation.

3,866,381
EXTRUDED COLUMNAR FRAME FOR PARTITIONS, WALLS AND ENCLOSURES

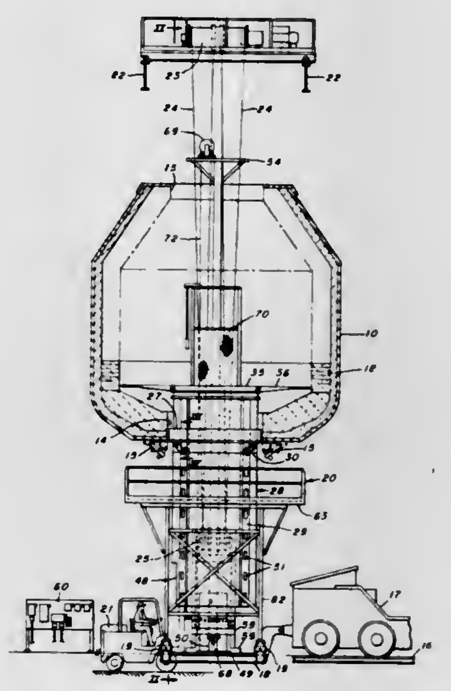
Robert C. Eschbach, Newport Beach, and John B. Colligan, Glendale, both of Calif., assignors to Aztec Manufacturing Company, Monrovia, Calif.
Division of Ser. No. 884,812, Dec. 15, 1969, Pat. No. 3,712,005. This application Jan. 22, 1973, Ser. No. 325,461
Int. Cl. E04b *2/78*
U.S. Cl. 52—731 6 Claims



1. A columnar frame member for a building structure, comprising
- a first elongated half member having a first edge incorporating a first outwardly-turned trough flange carrying a first inwardly-extending projection and a second edge incorporating a first inwardly-turned locking flange, said first half member further including a second inwardly-extending projection extending from the inner surface of said first half member and spaced between said first projection and said first locking flange;
- a second elongated half member complementary to said first half member and cooperating therewith to define a central cavity, said second half member having a first edge incorporating a second inwardly-turned locking flange adapted to interlock with said first trough flange, and a second edge incorporating a second outwardly-turned trough flange carrying a third inwardly-extending projection, said second trough flange being adapted to interlock with said first inwardly-turned locking flange, said second half member further including a fourth inwardly-extending projection extending from the inner surface of said second half member and spaced between said third projection and said second locking flange, said first, second, third and fourth projections extending into said central cavity when the respective first and second edges of said first and second half members are engaged; and
- an elongated, removable, tubular holding member located within said central cavity and extending substantially the full length of said frame member, the outer diameter of said holding member being such that the external surface of the holding member contacts the inner ends of said projections and thereby secures said first and second half members in assembled relationship.

3,866,382
APPARATUS FOR SUPPORTING WORKMEN WITHIN AN OPEN-ENDED VESSEL AND CARRYING MATERIALS INTO AND OUT OF THE VESSEL, AND METHOD OF INSTALLING SUCH APPARATUS IN A VESSEL

Robert M. Van Tassel, Franklin, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Feb. 20, 1974, Ser. No. 444,197
Int. Cl. E04b *1/35;* **E04g** *21/16*
U.S. Cl. 52—741 20 Claims



17. A method of installing an apparatus in an open ended vessel, which apparatus provides support for workmen within the vessel and means for carrying materials into and out of the vessel, said method comprising:
- positioning under the open bottom of the vessel a first handling and storage section which includes an upper tower section, tower-supporting means temporarily attached to said upper tower section, upper sections of guide means, and an elevator cage;
- hoisting said first handling and storage section through the open bottom to a position in which tower-supporting means is at a level to be attached to the vessel adjacent the open bottom;
- attaching said tower-supporting means to the vessel, whereafter said tower-supporting means engages and supports said upper tower section;
- positioning under said first handling and storage section a second handling and storage section which includes a lower tower section, and middle sections of guide means;
- joining said upper and lower tower sections;
- joining the upper and middle sections of said guide means;
- positioning under said second handling and storage section a third handling and storage section which includes a base plate and lower sections of guide means upstanding from said base plate; and
- joining the middle and lower sections of said guide means.

3,866,383
METHODS OF GROUTING TILE

Frank E. Bernett, Yardley, Pa., assignor to Tile Council of America, Inc., Princeton, N.J.
Continuation-in-part of Ser. No. 363,858, May 25, 1973, abandoned, which is a division of Ser. No. 130,006, March 31, 1971, Pat. No. 3,735,545. This application Dec. 7, 1973, Ser. No. 422,835
Int. Cl. E04f *13/00*
U.S. Cl. 52—744 16 Claims

1. In a method of grouting tile which comprises the steps of:
a. trowelling a Latex-Portland cement grouting composition

on a tiled substrate and into the joints between the tile, said tile placed on said substrate;

b. removing excess grout from the tile faces;

c. washing the tile surface and shaping the joints to the desired configuration; and

d. cleaning the tile once the tile faces are dry; the improvement which comprises an additional step of applying to the grout after trowelling a material selected from the group consisting of polyacrylic acid, polyacrylamide, and water soluble phosphates which beneficially change the rheology of the grout subsequent to its placement between tiles.

3,866,384

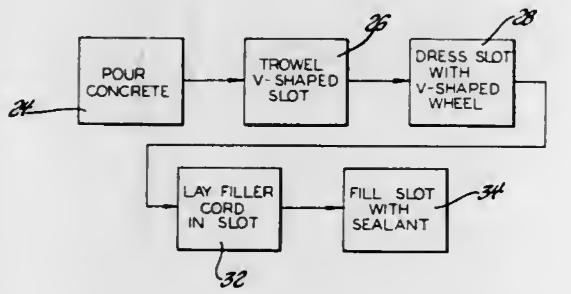
METHOD OF FORMING CRACK CONTROL SLOTS

Harry S. Peterson, Jr., Pontiac; Charles M. Peterson, and Robert King, III, both of Franklin, all of Mich., assignors to Harry A. Peterson Company, Inc., Highland Park, Mich.

Filed Sept. 25, 1972, Ser. No. 292,019

Int. Cl. E01c *11/06*

U.S. Cl. 52—744 **4 Claims**



1. A method of producing a concrete topping structure disposed over a foundation and having at least one sealed crack control slot formed therein and comprising the steps of:

a. Casting a topping layer of concrete over a suitable foundation;

b. Forming by tooling a V-shaped slot in and across the exposed surface of the topping layer while the concrete of said layer is in the unset plastic state;

c. Permitting the topping layer to substantially cure with the V-shaped slot formed therein;

d. Dressing the walls of the slot with a rotary abrading apparatus which conforms to the configuration of the slot to remove laitance and weak concrete from the slot while preserving the tooled configuration thereof, and

e. Thereafter sealing the slot by filling at least a portion of the slot with a curable flexible polymeric sealant material which, when cured, remains flexible and which adheres to the dressed concrete walls of the slot.

3,866,385

DEVICE FOR MANUFACTURING OF ROOFS

Saher Al Haj Issa, Bochum, Germany, assignor to Saher Al Haj Issa and Ali Abdulla Essa Almannai, both of Cologne, Germany

Filed May 31, 1973, Ser. No. 365,797

Claims priority, application Germany, June 2, 1972, 2226690

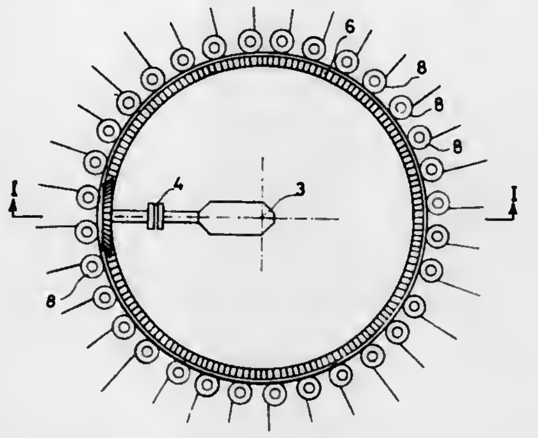
Int. Cl. E04g *21/16*

U.S. Cl. 52—749 **5 Claims**

1. In an apparatus for erecting a building structure from a plurality of building segments which are to be raised into position and locked together to form a composite building structure:

crane means disposed in operative association with the plurality of building segments to be raised into an erected building structure for raising a plurality of said segments into positions to form a raised multisegment portion of the building structure to be erected;

said crane means having, a plurality of take up means for taking up separate cable portions which are to operatively interconnect said respective take up means and said respective building segments for raising said respective building segments into position in the erected composite building structure, and common drive means operatively associated with said plurality of take up means for driving said take up means from said common drive means.



3,866,386

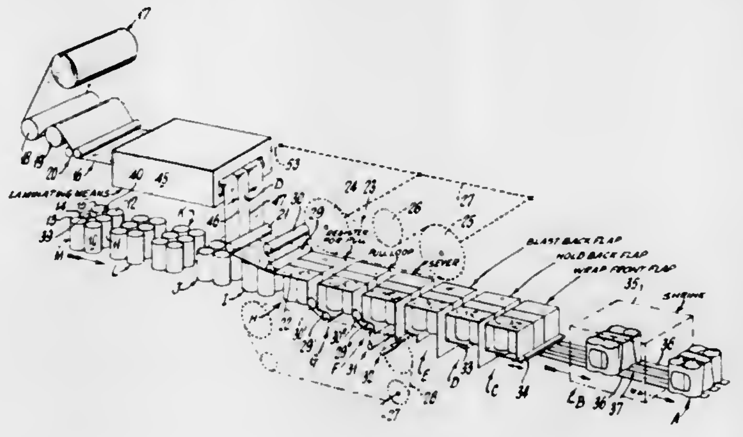
METHOD AND APPARATUS FOR MAKING A SHRINK PACK

Robert H. Ganz, 8 Ridge Crest Rd., Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 218,441, Jan. 17, 1972, Pat. No. 3,756,395. This application June 11, 1973, Ser. No. 368,527

Int. Cl. B65b *11/10, 53/02, 61/00*

U.S. Cl. 53—14 **15 Claims**



1. The method of packaging a cluster of plural like containers which comprises arranging the containers in parallel-oriented transversely aligned adjacency, selecting a length of shrinkable and bondable plastic sheet material of width exceeding the transverse extent of the cluster, forming a local relatively narrow pleat in the sheet material, said pleat extending in the length direction of the sheet, orienting the sheet material over the cluster at one end and both adjacent sides with the longitudinal ends of the sheet material overlapped at the other end of the cluster, and exposing the thus-wrapped cluster to a shrinking and bonding atmosphere for a predetermined period of time, such period of time being predetermined to assure bonded fusion of adjacent overlapped pleat and cluster-end surfaces to each other, as well as to assure concurrent shrink action of said material.

3,866,387

TRAY WRAPPING APPARATUS AND METHOD

Raymond A. Davis, Belmont, Calif., assignor to Frank A. Grant, Burlingame, Calif.

Filed July 5, 1973, Ser. No. 376,336

Int. Cl. B65b *7/28*

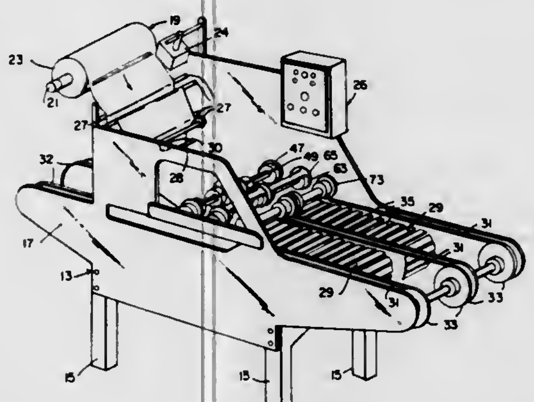
U.S. Cl. 53—42 **25 Claims**

1. A process for applying a flexible cover to a continuously advancing open tray having a peripheral flange defining a

leading lip, a trailing lip, side lips, leading corners and side corners, comprising:

a. positioning a sheet of flexible material over the advancing tray so that the margins of the sheet project beyond the flange of the tray;

b. folding downwardly at a folding station in one continuous motion the side margins, the leading margin and the trailing margin of the sheet adjacent the side lips, leading lip and trailing lip, respectively, of said flange;



c. tucking the side margins of the sheet below the side lips of said flange; then

d. tucking the leading margin of the sheet beneath the leading lip of said flange; and thereafter

e. tucking the trailing margin of the sheet beneath the trailing lip of said flange so that the tucked margins conform to the contour of the flange.

3,866,388

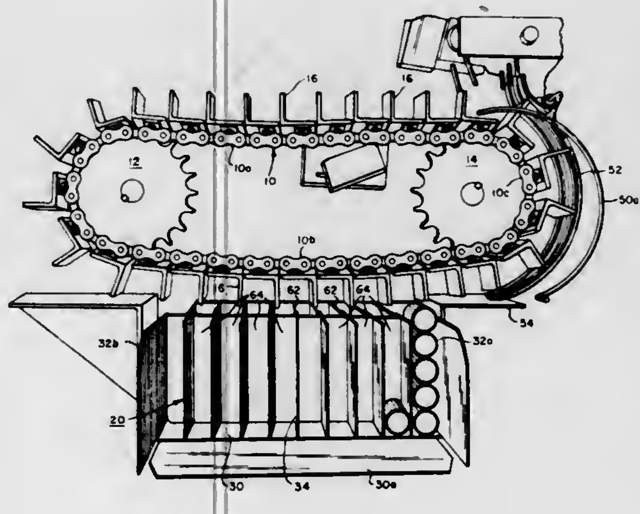
ROLL-BOXING APPARATUS

Herman J. Koehler, III, 64 Broad St., Elizabeth, N.J. 07201

Filed Jan. 11, 1974, Ser. No. 432,608

Int. Cl. B65b *57/20, 35/50*

U.S. Cl. 53—59 R **9 Claims**



1. Coin-roll boxing apparatus comprising, in combination, a continuously driven endless conveyor having upper and lower flights and incorporating means forming therewith individual roll-receiving open-mouth pockets which open downwardly throughout the length of the lower flight, means for supplying rolls to be boxed in number calculated to completely fill a box of a particular size in orderly one-at-a-time sequence to the open-mouth pockets of said lower conveyor flight from whence said rolls tend to fall by gravity, means for receiving the rolls falling from said pockets and for accumulating said rolls in a progression of discrete vertical rows, each containing a preselected small number of rolls, and power means actuable responsive to said so-supplied number of rolls having been accumulated as aforesaid for pushing same in unison from the accumulating means and into a box positioned and conditioned to receive same.

3,866,389

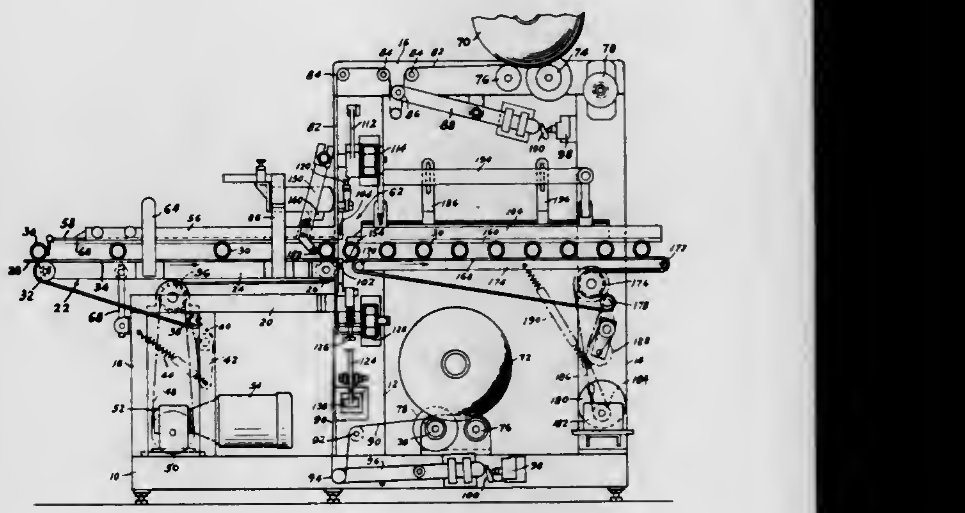
ROLL WRAPPING MACHINE

Bertram F. Elsner, and Frank Elsner, Jr., both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Continuation-in-part of Ser. No. 358,582, May 9, 1973, abandoned. This application Apr. 30, 1974, Ser. No. 465,676

Int. Cl. B65b *57/12*

U.S. Cl. 53—76 **14 Claims**

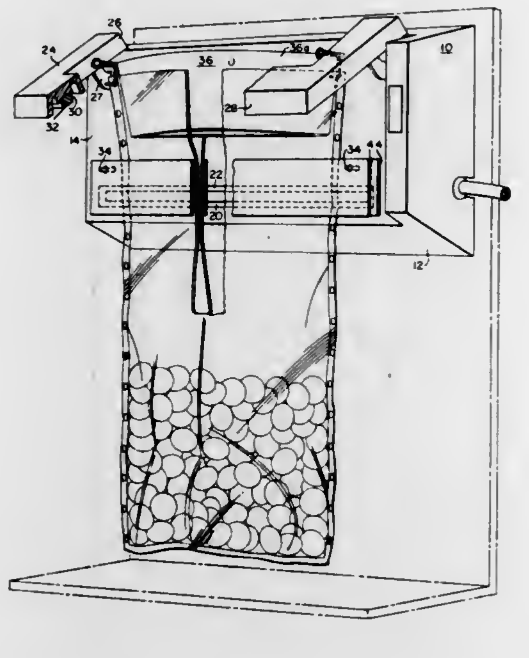


1. A machine for wrapping rolls of sheet material coiled about an axis as received from a re-winding machine and unrestrained against uncoiling, said machine comprising in combination, a frame, a first conveyor having an entrance and an opposite end supported by said frame and defining a path along which coiled rolls of material are advanced from said entrance, power means to move said conveyor along said path and away from said entrance, means operable as said coiled rolls are advanced along said path to rotate them in a direction to maintain said rolls in coiled condition, wrapper-applying mechanism including support means positioned to receive said coiled rolls of material from said first conveyor, means to apply loosely around each roll of material a heat-shrinkable wrapper positioned between the opposite ends of said rolls, means engageable with said rolls of coiled sheet material and operable to move said rolls onto said supporting means, wrapper sealing means operable while said rolls are on said supporting means to seal said wrapper axially along the length thereof to enclose each roll for the full length thereof, a second conveyor having a receiving end adjacent said wrapper-applying mechanism and defining a discharge path from said sealing means, means operable as said coiled rolls and enclosing wrapper are moved along said path by said second conveyor to rotate said rolls and wrapper continuously in a direction to maintain said rolls coiled within said wrapper, and heater means extending along the path of movement of said rolls upon said second conveyor at predetermined locations operable to shrink at least one or more portions of said loose wrapper into contiguous relationship with each roll to maintain the same coiled within said wrapper prior to subsequent shrinking of the entire wrapper into such contiguous relationship with the rolls.

3,866,390
APPARATUS FOR EVACUATING AND SEALING THERMOPLASTIC BAGS

William C. Moreland, II, Export, Pa., and Arie Van Dyck, Henderson, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1973, Ser. No. 345,811
Int. Cl. B65b *31/06*
U.S. Cl. 53—79 **5 Claims**



1. In an apparatus for evacuating air from a thermoplastic bag and subsequently sealing the mouth of said bag comprising:

evacuating means including a nozzle in fluid communication with a vacuum pump, said nozzle having spacially separated opposing walls joined at their ends to define a periphery for substantially air-tight engagement with the internal extent of said mouth; means for fusing opposing sidewalls of said bag together in sealing engagement to prevent leakage of air through said mouth, said fusing means including an electrically heated bar extending across and facing one wall of said bag and an opposing pressure bar extending across and facing the other wall of said bag, said two named bars being mounted for relative movement between a first position permitting the bag to be placed therebetween on said nozzle and a second position pressing the bag therebetween sub-adjacent said nozzle; and means interposed between said named bars and the respective adjacent wall of said bag to facilitate parting said fused portion of said bag from said fusing means wherein the improvement comprises:

said nozzle having a mouth engaging periphery describing a profile which is asymmetrial about any axis parallel to its major dimension, said nozzle further being tapered inwardly whereby said periphery thereof increases in the direction of moving said bag into said air-tight engagement.

3,866,391
WRAP-AROUND PACKER

Stanley J. Puskarz, Bristol, and Horst G. Lattke, Middletown, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Feb. 20, 1973, Ser. No. 333,453
Int. Cl. B65b *35/30, 43/00, 57/10*
U.S. Cl. 53—159 **20 Claims**

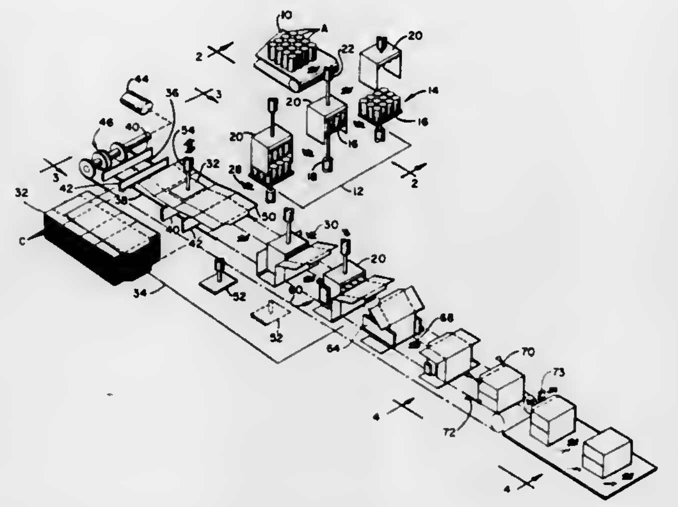
1. Apparatus for forming a box around an array of articles from an initially flap blank having a bottom panel, a pair of panels, said apparatus comprising:

a. means defining an article infeed station,

b. a vertically reciprocable structure above said infeed station defining means, said structure being of inverted U-shape,

c. a horizontally reciprocable carriage for said inverted U-shaped structure and movable in one direction to transfer the array of articles from said infeed station to a box forming station defined alongside said article infeed station,

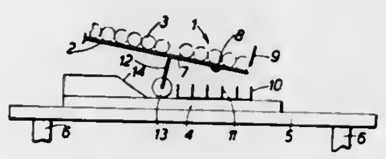
d. a vertically reciprocable mandrel at said box forming station for forming a flat blank into a generally U-shaped box open at one end to receive the array of articles so transferred.

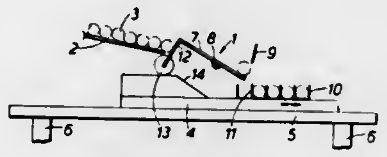


3,866,392
PACKAGING APPARATUS

Reginald Arthur Weeks, Hail Weston, and Derek Stanley Cowling, Ramsey, both of England, assignors to Dufaylite Developments Limited, St. Neots, Huntingdonshire, England

Filed May 11, 1973, Ser. No. 359,259
Claims priority, application Great Britain, May 11, 1972, 22250/72
Int. Cl. B65b *5/10*
U.S. Cl. 53—160 **11 Claims**



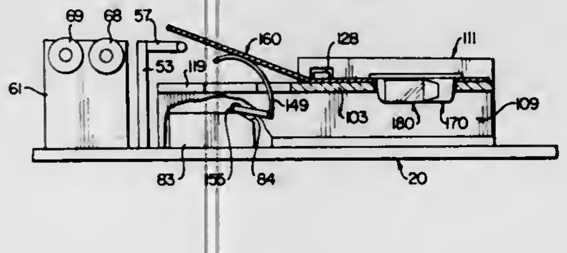


1. Apparatus for feeding articles to packages of the kind which serve for locating the articles with respect to one another in a layer, which apparatus comprises a supply station for the articles, said supply station terminating in an outlet, a feeder having an entrance end and an exit end, a fixed gate member at said exit end, said feeder being privotably mounted for pivotal movement between an article-receiving position in which the feeder is in article-receiving relationship via its entrance end with the supply station outlet and a feeding position in which its exit end is lowered to allow progressive gravitational feeding of the articles under the fixed gate member and over the exit end, a manually slidable carrier for holding the packages in turn, means mounting said carrier for reciprocating movement, said carrier being reciprocably slidable manually to withdraw a package from a ready-position beneath the feeder through a filling stroke, during which the articles fed progressively over the exit end of the feeder are distributed over the package for location thereby, to a filled position, and subsequently to carry the next package to the ready position, and interengaging parts on the feeder and the carrier formed to pivot the feeder into its feeding position as the package is withdrawn from the ready position and to return the feeder to its article-receiving position as the next package is carried to the ready position, the pivotal movement of the feeder being manually powered via the carrier and said interengaging parts.

3,866,393
APPARATUS FOR FORMING DISPLAY PACKAGES

Ronald C. Warner, Ottawa Lake, Mich.; Bobby R. Shepherd, Toledo, Ohio; Ray M. Hickok, Toledo, Ohio, and Charles A. Alexander, Toledo, Ohio, assignors to Cameo, Inc., Toledo, Ohio

Filed May 7, 1973, Ser. No. 357,771
Int. Cl. B65b *43/00, 43/10*
U.S. Cl. 53—183 **8 Claims**



1. Apparatus for forming display packages of the type including a transparent blister containing a product to be displayed and a blister supporting card, said apparatus comprising:

support assembly means to support said card and blister while said display package is formed;

means for depositing the card, the blister and the product which fills the blister, onto said support assembly means, said card having first and second portions, one of which has an aperture therein for receiving the filled blister and the other of which serves as a backing sheet for the filled blister;

adhesive applying means for applying an adhesive composition to said card;

folding means for folding said first portion of said card over and onto said second portion thereof where said adhesive composition adheres said portions together to form the display package;

ejecting means for discharging the display package from said support assembly means;

an endless conveyor;

a plurality of said support assembly means mounted in a spaced relationship on said endless conveyor; and

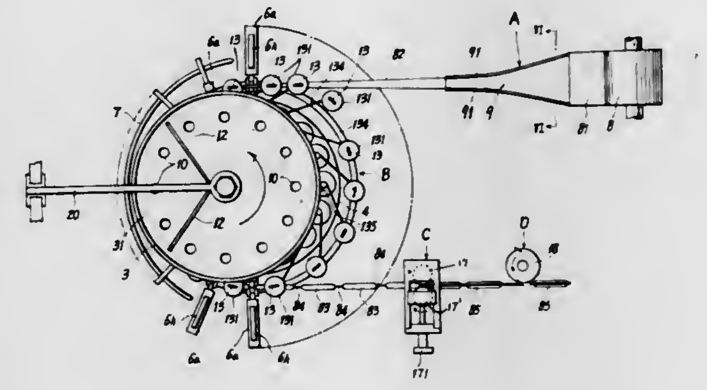
drive means for continuously driving said endless conveyor so that said plurality of support assembly means mounted thereon continuously move past said means for depositing, and said adhesive applying means,

said folding means includes engagement means carried by each support assembly means for securing said card against each support assembly means and further includes elevating means carried by each support assembly means for elevating said first portion of said card.

3,866,394
HIGH SPEED PACKAGING DEVICE

Toshio Masai, No. 78 Tennojiya, Ohoza-Yao-shi, Osaka-fu, Japan

Filed Feb. 6, 1974, Ser. No. 440,080
Claims priority, application Japan, Feb. 6, 1973, 48-15053
Int. Cl. B65b *1/02*
U.S. Cl. 53—183 **9 Claims**



1. A high speed packaging device comprising:

a. means for feeding a heat sealable film to a rotary sealing-filling device from the direction of one tangent of the device by progressively folding the film longitudinally in half so as to make the upper open edges of the folded film face upwardly;

b. the rotary sealing-filling device comprising a rotary drum having a plurality of freely openable and closable plate-shaped sealers mounted at equal spaces thereon, a bottomed cylindrical hopper for feeding a material, said hopper being disposed on the upper part of said drum so as to be rotatable eccentrically and synchronously with respect to said rotary drum and having openings of predetermined size for the material to be filled formed at equal spaces along the circumferential edge of the bottom thereof, and a plurality of material dropping spouts disposed immediately below said openings and freely elevatably along the circumference of said rotary drum and being rotatable together with said rotary drum;

c. top sealers to continuously seal the top upper open edges of a chain of filled pouches pulled out from the tangential direction opposite to the direction of feeding said folded film by said rotary sealing-filling device, said sealers mounted on said rotary drum clamping the folded film fed from one tangential direction of the rotary drum in the position in which said film is fed, closing said film only during the period of time during which said film is transferred within the range of a certain arc of the circle described by the locus of rotational movement of said sealers, pulling and taking over said film and effecting vertical seals at equal spaces at right angles with the longitudinal direction of said film and keeping said folded film opened within the other remaining locus of rotational movement, said spouts moving down from above the open edges of said folded film before said film fed from the tangential direction of said rotary drum is caught by said sealers and brought into a fully folded shape, and being inserted into the interior of the film and being guided linearly together with said film to a position of point of contact between said film and said rotary drum, said openings of said hopper forming an inscribed circle with respect to a part of the locus of rotational movement of said spouts and said openings and said spouts overlapping with each other in a certain sector range within which said film is separated from the sealers after completion of said vertical sealing, said openings being opened only when the openings and the spouts are placed in an overlapped position and the spouts underlying said openings dropping and feeding the material to be filled into the interior of sealed pouches clamped by said sealers kept closed, said top sealers being designed to pull and take over a chain of filled pouches left released from clamping by said sealers.

3,866,395

APPARATUS FOR CLOSING A FOIL PACKING, IN PARTICULAR A FOIL BAG

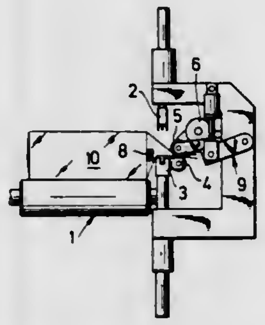
Karl-Ernst Timmerbeil, Ennepetal, Germany, assignor to Firma Packautomatic GmbH & Co. K.G., Ennepetal, Germany

Filed Aug. 16, 1973, Ser. No. 388,911

Claims priority, application Germany, Aug. 19, 1972, 2240909

Int. Cl. B65b *7/06, 13/22, 51/14*

U.S. Cl. 53—373 **6 Claims**



1. An apparatus for the tightening of a film package and the sealing of a side of the package enclosing an article on at least three sides and having a projecting flap on the side to be closed, said apparatus comprising:

a heat sealing device including
  a support,
  a first heat sealing bar mounted on said support for movement perpendicular to the longitudinal dimension of said bar,
  a further bar cooperating with said heat sealing bar to clamp said flap between said bars, and
  means for heat sealing said flap upon the clamping thereof between said bars and consituted by heating means on at least one of said bars; and
  a pulling device engageable with said flap for drawing the film of said package tightly around said article, said device including
  a first pulling roller mounted on said first bar for movement therewith,
  a second pulling roller on said support copperating with said pulling roller to grip said flap between said rollers, a swinging mechanism pivotally mounting said second roller on said support for movement toward and away from said first pulling roller,
  an electric motor operatively connected to one of said pulling rollers for driving same, and
  a respective gear on one side of each pulling roller and connected thereto, said gears meshing upon swinging movement of said second pulling roller toward said first pulling roller.

3,866,396

REMOVAL OF MARINE GROWTHS FROM LAKES, WATERWAYS, AND OTHER BODIES OF WATER

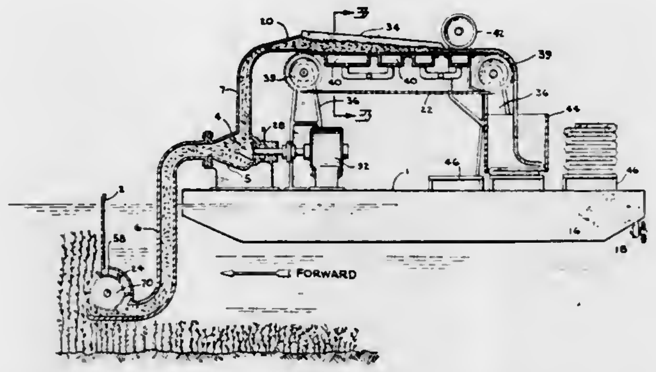
Dorman A. Meyer, 27 W. Third St., Apopka, Fla. 32703

Continuation-in-part of Ser. No. 141,539, May 10, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,114

Int. Cl. A01d *45/08*

U.S. Cl. 56—9 **27 Claims**

1. Apparatus for removing marine growths from a body of water comprising a dual cutter assembly including a first partially enclosed rotary cutter, with an unenclosed portion of such cutter arranged to move in a generally downward direction, a second partially enclosed rotary cutter disposed below said first cutter, with an unenclosed portion thereof being arranged to move in a generally upward direction, stationary cutter blades located near the bottom of the path of travel of said first rotary cutter, and near the top of the path of travel of said second rotary cutter, means for moving the dual cutter assembly into an area of marine growths, and suction means applied to the enclosures around said rotary cutters for drawing such encountered growths to the exposed portions of the dual cutter assembly, so that the encountered growths can be cut into short lengths by the coaction of said rotary cutters with the stationary blades, the upper rotary cutter drawing the growths downwardly and the lower rotary cutter drawing the growths upwardly, the suction means also serving to deliver to a remote location, the cut growths after they have been cut into short lengths by the coaction of the rotary and stationary cutters.



3,866,397

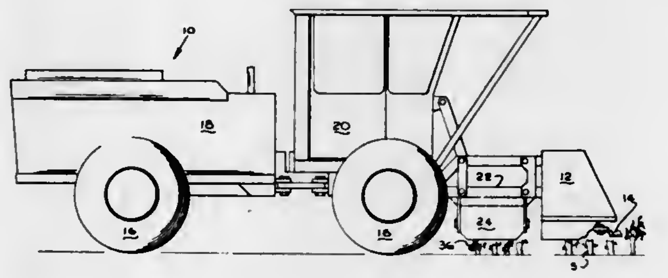
BRUSH ERADICATOR

Robert L. Koziol, 3200 Thomas St., Midland, Tex. 79701

Filed Nov. 27, 1972, Ser. No. 309,765

Int. Cl. A01d *35/12*

U.S. Cl. 56—16.8 **9 Claims**



1. In a brush eradicator including
a. a vehicle supported by
b. ground engaging wheels,
c. a power unit on said vehicle for driving same,
d. a cutter head on said vehicle,
e. knives on said cutter head for cutting brush,
f. linkage connecting said cutter head to said vehicle,
g. means operatively associated with said linkage for raising and lowering said cutter head,
h. The improvement in combination with the above comprising:
j. a spray head attached to said vehicle behind said cutter head,
k. said spray head including a plurality of flaps projecting below the spray head,
m. said flaps projecting to an elevation lower than the knives of said cutter head,
n. a plurality of spray nozzles on said spray head,
o. a source of herbicide under pressure,
p. a plurality of valves connected to said source of herbicide under pressure,
q. each of said flaps connected to one of said valves in operative relationship thereto,
r. at least one spray nozzle connected to each of said valves,
s. said spray nozzle located proximate the flap which is connected to the valve.

3,866,398

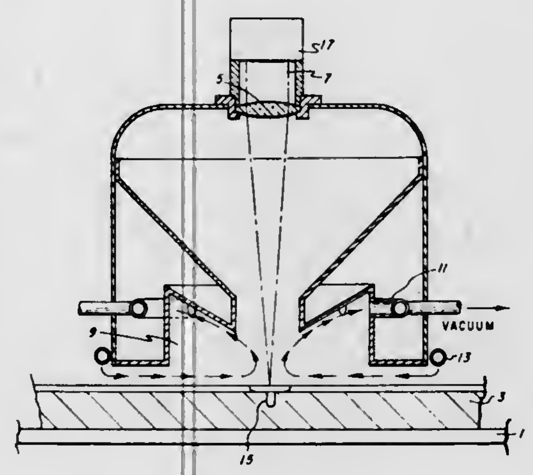
IN-SITU GAS-PHASE REACTION FOR REMOVAL OF LASER-SCRIBE DEBRIS

Robert Donvin Vernon, Jr., and Robert E. Holloway, both of Sherman, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,887

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **16 Claims**



1. A method of removal of laser-scribe debris, which comprises the steps of:
a. providing a device to be scribed,
b. directing a laser beam along predetermined points on said device to be scribed so that said beam impinges on said device,
c. directing a reagent gas, which forms a volatile compound or a solid compound inert to said device with material from said device volatilized by said laser beam, to the immediate area of impingement of said laser beam on said device, and
d. continually removing gases from the immediate area of impingement of said laser beam on said device.

3,866,399

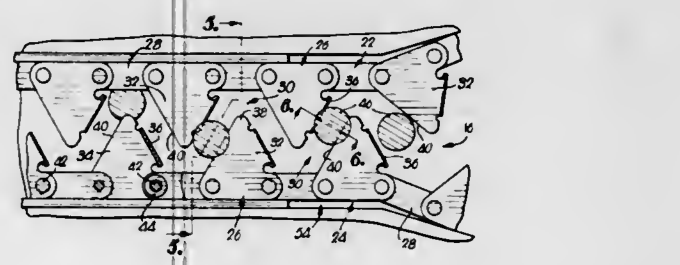
SEVERED CROP HANDLING MECHANISM FOR HARVESTERS

Ferol S. Fell, Newton; William D. Long, Hesston, and Kenneth R. McMillen, Moundridge, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

Continuation of Ser. No. 114,308, Feb. 10, 1971, abandoned, which is a continuation-in-part of Ser. No. 86,767, Nov. 4, 1970, Pat. No. 3,736,733. This application Apr. 23, 1973, Ser. No. 353,350

Int. Cl. A01d *45/02*

U.S. Cl. 56—98 **4 Claims**



1. In a row crop harvester:
a pair of rolls adapted to feed severed stalks butt first to a stalk chopper behind the rolls;
a plurality of stalk-moving elevators declined forwardly from said rolls for receiving the severed stalks and directing the same butt first to said rolls,
each elevator including a single level only of side-by-side, endless, stalk-gathering members each having a series oftriangular, bifurcated gripping lugs spaced apart to present an alternate series of stalk-receiving cavities with the apexes of the lugs of one member projecting into the cavities of the other member,
each lug having a pair of superimposed, spaced-apart plates and being provided along one extremity with stalk-creasing means presented by the corresponding pair of spaced-apart edges of the plates,
each lug being provided at its opposite extremity with backup means for cooperating with the stalk-creasing edges of an adjacent lug to firmly clamp a stalk between said edges and the backup means during operation of the members;
means augmenting said holding action of the lugs including an inclined panel underlying each elevator respectively in parallelism therewith for slidably receiving said stalk butts while the stalks are held creased by the lugs and being elevated thereby,
each pair of members having an upper, rearmost extremity wherein at least one member of the pair extends arcuately away from the other to define a point of stalk release; and means augmenting the action of the lugs of directing the stalks butt first to said rolls including a terminal portion on each panel respectively extending beyond said point of release of the stalks by the elevators to a point in close juxtaposition to said rolls,
said terminal portions being disposed to orient the stalks for movement butt first between the rolls after the stalks are released from the elevators and prior to pickup of the stalks by the rolls.

3,866,400

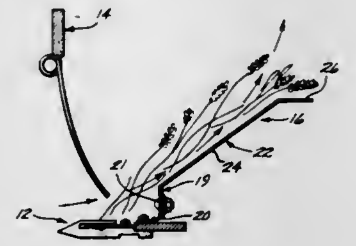
FEEDER PANEL FOR A HARVESTING MACHINE

Donald L. May, Garfield, Wash., assignor to J. E. Love Company, Garfield, Wash.

Filed Jan. 21, 1974, Ser. No. 435,000

Int. Cl. A01d *43/00*

U.S. Cl. 56—158 **8 Claims**



1. In a crop harvesting machine having a flexible cutterbar supported for travel over uneven ground and adapted to conform to the contours thereof, and a plurality of feeder panels connected to said cutterbar and disposed rearwardly therefrom, the improvement wherein each of said feeder panels is secured to said cutterbar by a plurality of hinges adapted to allow individual movement of each said feeder panel relative to said cutterbar as said cutterbar flexes and conforms to the ground contour, each feeder panel having a distinct hump in its forward portion proximate to said cutterbar over which the cut crop is tipped to provide quick removal of the cut crop from the vicinity of said cutterbar onto said feeder panel.

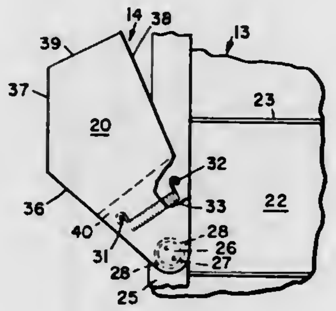
3,866,401
HARVESTING MACHINE WITH UNDER-VINE CLOSURE

Gerald L. Claxton, Lafayette, and Barris J. Evulich, Cupertino, both of Calif., assignors to Up-Right, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 292,084, Sept. 25, 1972, abandoned. This application May 30, 1973, Ser. No. 365,267

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **11 Claims**



1. A harvesting machine comprising:

a main frame adapted to straddle and move longitudinally along a row of fruit-bearing plants,

a pair of conveyor mechanisms carried by said main frame and extending along the length thereof, one on each side of the longitudinal centerline of the machine, each conveyor mechanism having a frame and a conveyor belt carried thereby,

a closure assembly secured to the inner edge of each conveyor frame, said closure assemblies forming closure planes extending inwardly and upwardly from the conveyor frames towards the longitudinal centerline of said machine,

each closure assembly comprising a plurality of flat, overlapping wing members spaced along the conveyor frame associated therewith and lying in the closure plane associated therewith, each wing member being separately and pivotally mounted at one end thereof for confined movement of said one end of said wing member in said closure plane and for movement of the other end of the wing member in said closure plane towards and away from said longitudinal centerline, and spring means connected to and interposed between each of said wing members and said frame for yieldingly maintaining each such wing member in a normal space-closing position while allowing each wing member to pivot against the bias of said spring means from said normal space-closing position in a space-opening direction away from said longitudinal centerline and to pivot against the bias of said spring means from said normal space-closing position in an overtravel direction towards said longitudinal centerline, said spring means having a first positive spring rate effective to resist pivot movment of the corresponding wing member in said space-opening direction away from said normal position with a progressively increasing force as the increasing force as the degree of space-opening movement increases and also having a second positive spring rate effective to resist pivotal movement of said wing member in said overtravel direction away from said normal position with a progressively increasing force, said first spring rate being greater than said second spring rate.

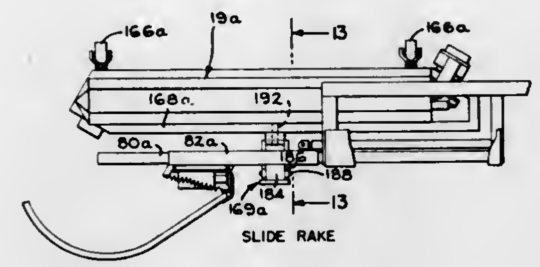
3,866,402
SIDE DELIVERY RAKE SUPPORT

Donald P. Block, Orlando, Fla., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 248,221, April 27, 1972, Pat. No. 3,762,140. This application July 11, 1973, Ser. No. 378,087

Int. Cl. A01d *77/06*

U.S. Cl. 56—377 **6 Claims**



1. A windrowing machine for raking articles supported on an uneven surface into a windrow comprising: a mobile vehicle movable over said surface; means defining a rake support connected to said vehicle and extending transversely in a substantially horizontal position; an elongated rake disposed adjacent said rake support; wheel means connected to and partially supporting said rake; and mounting means connecting said rake to said rake support for vertical movement relative thereto in response to variations detected in the ground elevation by said wheel means for causing said rake to follow the undulations of said article supporting surface; said mounting means including means defining a parallelogram linkage having an upper link pivoted to said rake support and to said rake, and a lower link parallel to said upper link and pivoted to said rake support and to said rake.

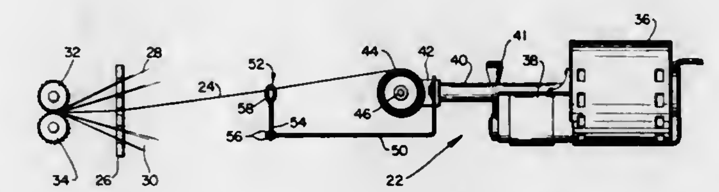
3,866,403
UNTWISTING MECHANISM

Ernest H. Zimmermann, Jr., Webster, Mass., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 29, 1973, Ser. No. 410,955

Int. Cl. D01g *1/06*

U.S. Cl. 57—1 UN **24 Claims**



9. An apparatus for untwisting a twisted continuous filament tow wound upon a spool comprising:

first means for producing rotation about a first axis;

second means attached to said first means for maintaining the longitudinal axis of said spool at an angle to said first axis;

wherein said spool is mounted on said second means for rotation with said second means about said first means; and

means for controlling the relative rotations of said first and second means to provide a substantially open and loose filament tow band.

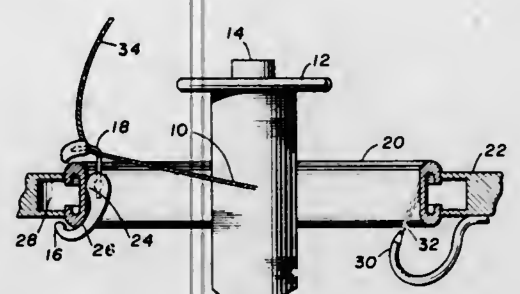
3,866,404
RING ASSEMBLY

Jack Doleman, West Melbourne, and William H. Hills, Melbourne, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 10, 1974, Ser. No. 433,023

Int. Cl. D01h *7/52, 7/62*

U.S. Cl. 57—119 **15 Claims**



1. A ring twister assembly comprising a ring support, a metallic ring mounted thereon, means for lubricating the said ring and means for force circulating a heat transfer liquid in thermally conductive contact with the said ring.

3,866,405
BLEND OF FLAME-RETARDANT POLY (ETHYLENE-2,6-NAPTHALENE DICARBOXYLATE) FIBERS AND FLAME-RETARDANT CELLULOSIC FIBERS

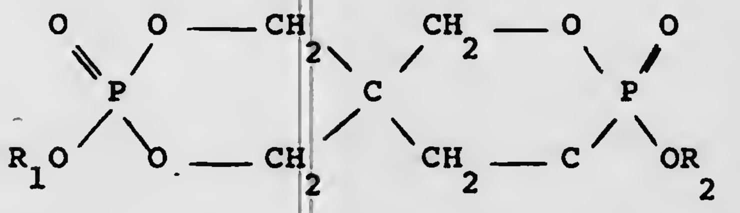
William N. Knopka, Wilmington, Del., assignor to FMC Corporation, Philadelpia, Pa.

Filed July 18, 1973, Ser. No. 380,345

Int. Cl. D02g *3/04*

U.S. Cl. 57—140 BY **10 Claims**

1. Flame-retardant yarns and fabrics of a combination of (1) fibers of a saturated polyester resin of at least 75 mol percent ethylene-2,6-naphthalene dicarboxylate units and up to 25 spirophosphate mol percent of other ester units and an aryl spitophosphate of the formula



wherein R_1 and R_2 represent aryl radicals selected from the group consisting of phenyl, naphthyl, phenyl and naphthyl radicals containing 1 to 3 chlorine or bromine atoms, and further substituted derivatives thereof the substituents being selected from the group consisting of lower alkyl, lower alkoxy, phenyl, phenoxy and phenyl or phenoxy radicals containing from 1 to 5 chlorine or bromine atoms, said spirophosphate being mixed with said polyester resin in an amount sufficient to increase the flame-retardancy thereof; and (2) flame-retardant cellulosic fibers, the polyester fibers being present in an amount of from about 10 to 90 weight percent and the cellulosic fibers being present in an amount of from about 90 to 10 weight percent.

3,866,406
SOLID STATE ELECTRONIC WRISTWATCH

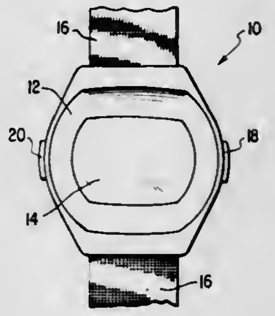
Dennis A. Roberts, Washington Boro, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Division of Ser. No. 328,639, Feb. 1, 1973, Pat. No. 3,803,827. This application Oct. 16, 1973, Ser. No. 406,941

Int. Cl. G04b *19/24, 37/00, 27/00*

U.S. Cl. 58—4 A **3 Claims**

1. A wristwatch comprising a wristwatch case having a front window and a removable back plate, a one-piece frame of electrical insulating material in said case having one side adjacent said back plate and its other side adjacent said window, said frame including cavities on said one side, a trimmer capacitor in one of said cavities, the other of said cavities being adapted to removably receive a battery, a substrate mounted on said other side of said frame, an electro-optical display comprising a plurality of light-emitting diode digital display stations, a time computing circuit comprising at least a minute counter and an hour counter and a calendar circuit, said display, time computing circuit and calendar circuit all being on said substrate, both said time computing circuit and said calendar circuit being formed as large scale integrated circuits and coupled to said display, said frame including four additional cavities, magnetic field responsive reed switches in each of said four cavities, said switches comprising a time demand switch for coupling said time computing circuit to said display, a date demand switch for coupling said calendar circuit to said display, a minute set switch for setting said minute counter, and an hour set switch 2 for setting said hour counter, a pushbutton on said case adjacent each of said time demand and date demand switches for actuating them, a first permanent magnet receiving identation on said back plate adjacent said minute set switch, and a second permanent magnet receiving identation on said back plate adjacent said hour set switch whereby insertion of a permanent magnet into one of said indentations actuates the adjacent switch.



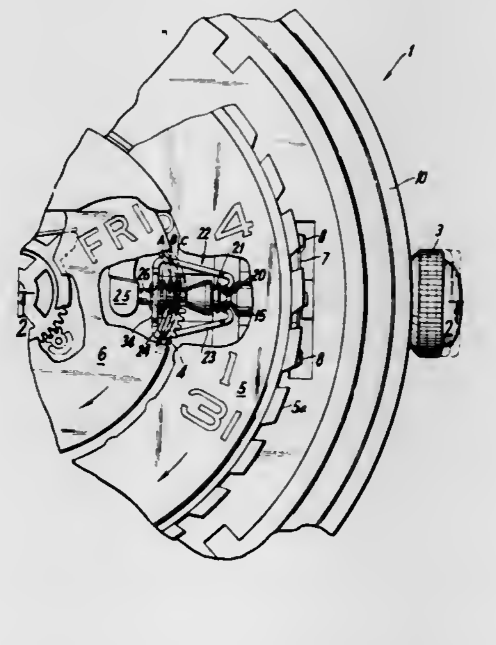
3,866,407
STEM LOCKING MECHANISM FOR ELECTRIC CALENDAR WATCHES

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Apr. 25, 1974, Ser. No. 463,947

Int. Cl. G04b *19/24, 27/02*

U.S. Cl. 58—58 **3 Claims**



1. In a watch of the type having a calendar ring with means for circumferentially advancing the ring from one position to the next during normal timekeeping and further having a time setting wheel with teeth and further having a rotatably

mounted and axially slidable stem carrying a time setting pinion mounted for engagement with said time setting wheel in a first axial stem position, and also having a fixed stem bracket receiving one end of the stem and having means cooperating with the stem to hold it either in said first axial position or to urge it toward a second axial position where the time setting pinion is disengaged from the time setting wheel, the aforesaid elements being known in the art, the improvement comprising:

a date setting member adapted to be coupled to the stem and having at least one tab means thereon engageable with said calendar ring to advance it to a new circumferential position, said member further being disengageable from the stem when it is moved to said first axial position, said stem having locking key means thereon and said stem-receiving portion of said stem bracket having an irregular aperture therein for receiving said locking key and preventing rotation when the stem is in said second axial position, and

cam means formed by the wall of said aperture to cause the stem to move to a third intermediate axial position without engaging the time setting wheel or disengaging the date setting member, whereby the date may be rapidly advanced by rotation of the date setting member.

3,866,408
TIMEPIECE SETTING MECHANISM

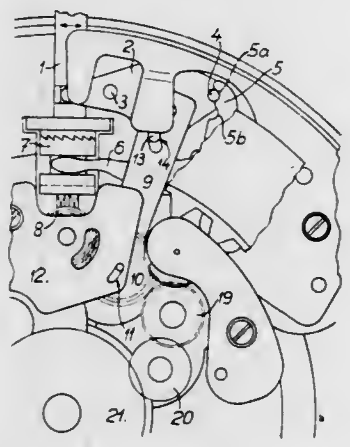
Jean-Pierre Gerber, La Chaux-de-Fonds, Switzerland, assignor to Zenith Time S.A., Le Locle, Switzerland

Filed Feb. 14, 1974, Ser. No. 442,345

Claims priority, application Switzerland, Apr. 4, 1973, 4796/73

Int. Cl. G04b *27/02, 27/00*

U.S. Cl. 58—63 **2 Claims**



1. In a watch:

hour indicator means;

a pull-out winding stem settable in a first pushed-in position for winding, a second pulled-out position for time-setting; and a third intermediate position; lever means settable by said shaft in first, second and third positions corresponding respectively to the first, second and third positions of said stem; and hour-setting means for step-by-step setting of solely the hour indicator means when the shaft is in the intermediate position, said hour-setting means comprising:

a stationary bridge; a slidable link; correcting gear pivotally carried by the link; a pinion in permanent mesh with the correcting gear; a slidable gear on said stem meshable with the pinion in the intermediate and the pulled-out positions of said stem; a toothed sector step drive gear means in selective mesh with the correcting gear for turning said toothed sector; means drivable by said toothed sector for driving, in the intermediate position of the stem, the hour indicator means through angular steps each corresponding to an angular extension of said toothed sector; and

pin-and-slot means interconnecting said slidable link with said bridge including means interconnecting said slidable link with said lever means, for maintaining the permanent mesh of said correcting gear with said pinion, and for controlling the selective mesh of said correcting gear with said step drive gear means to drive said hour indicator means through said toothed sector and correcting gear when said shaft and lever means are in their third positions.

3,866,409
CROWN ASSEMBLY

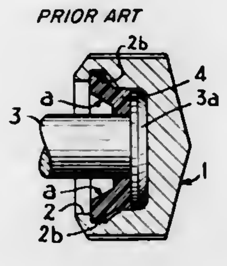
Kumiko Tanaka, Funabashi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 27, 1973, Ser. No. 428,872

Claims priority, application Japan, Dec. 29, 1972, 47-477

Int. Cl. G04b *37/08*

U.S. Cl. 58—90 B **5 Claims**



1. A crown assembly for use in a watch, comprising a metallic crown which has a blind bore and a peripheral, undercut recess of the bore; a stem having an end portion in the bore; and annular lip means extending outwardly from said end portion into the recess for coupling the crown to the stem.

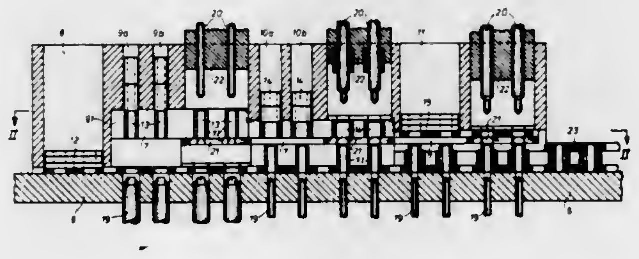
3,866,410
APPARATUS FOR ASSEMBLING ROLLER CHAIN ELEMENTS

Kurt Zwinge, Konberg, Germany, assignor to Firma Emil Linde, Wuppertal-Barmen, Germany

Filed Feb. 11, 1974, Ser. No. 441,727

Int. Cl. B21l *9/02*

U.S. Cl. 59—4 **4 Claims**



1. In an apparatus for assembling roller chain elements composed of bushings each having a longitudinal seam and a guide opening formed in the seam, rollers inserted over the bushings and side links and plates joining the bushings together to form chain blocks, the apparatus having a horizontal assembly line with a plurality of deposit ramps to receive the individual chain elements, vertical pressing members engaging the chain elements, grippers having chain receiving recesses for engaging and moving the bushings forward in a step-by-step movement, the improvement comprising:

frictional surface means disposed on the horizontal assembly line for engaging the bushings during the forward movement of the grippers so that the bushings rotate within the gripper recesses, and arresting means mounted in each gripper recess for engaging the bushing guide openings during the rotation of the bushings.

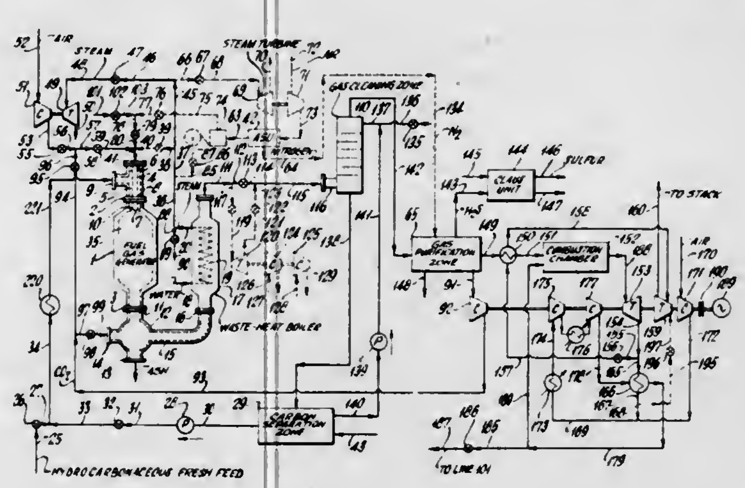
3,866,411
GAS TURBINE PROCESS UTILIZING PURIFIED FUEL AND RECIRCULATED FLUE GASES

Charles P. Marion, Mamaroneck, N.Y.; Warren G. Schlinger, Pasadena, Calif.; Albert Brent, Dix Hills, and James R. Muenger, Beacon, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1973, Ser. No. 428,980

Int. Cl. F02b *43/12*

U.S. Cl. 60—39.02 **28 Claims**



1. A process for the generation of power by means of a gas turbine having a combustion chamber and an expansion turbine comprising

1. reacting a hydrocarbonaceous fuel with a free-oxygen containing gas by partial oxidation in the presence of a temperature moderator in the reaction zone of a non-catalytic free-flow gas generator at an autogenous temperature in the range of about 1,500° to 3,500°F. and a pressure in the range of about 10 to 180 atmospheres absolute to produce an effluent gas stream comprising mixtures of H_2, CO, CO_2, and H_2O and one or more members of the group N_2, CH_4, COS, H_2S and Ar, and particulate carbon, and wherein the mole ratio (CO/H_2) dry basis of the effluent gas from the generator is at least 0.30;
2. cooling the effluent gas from (1) and introducing the cooled gas into a gas cleaning and purification zone and separately obtaining therefrom a stream of clean fuel gas comprising mixtures of H_2 and CO and one or more members of the group N_2, CH_4, CO_2 and H_2O; a CO_2-rich gas stream; a slurry stream comprising particulate carbon in a liquid vehicle; and a gas stream rich in H_2S and COS.
3. introducing into the combustion chamber of a gas turbine and burning therein the stream of clean fuel gas from (2) with a gaseous oxidizing stream produced subsequently in the process to produce a stream of clean flue gas; and
4. passing the stream of clean flue gas from (3) through an expansion turbine as the working fluid to develop power and to produce clean exhaust flue gas, and mixing at least a portion of said clean exhaust flue gas with air to produce the gaseous oxidizing stream in (3).

3,866,412
LIGHTWEIGHT, SMALL, COMBINED GAS AND STEAM MOTOR

Maurice Migneault, 69 Bowers St., Nashua, N.H. 03060

Filed Mar. 6, 1973, Ser. No. 338,543

Int. Cl. F02c *1/00*

U.S. Cl. 60—39.19 **16 Claims**

1. A lightweight, mobile combined gas and steam motor for vehicles, comprising:

a steam turbine and a gas jet turbine both included in a single housing, having a single vaned rotor fast on a power shaft, for driving said shaft;

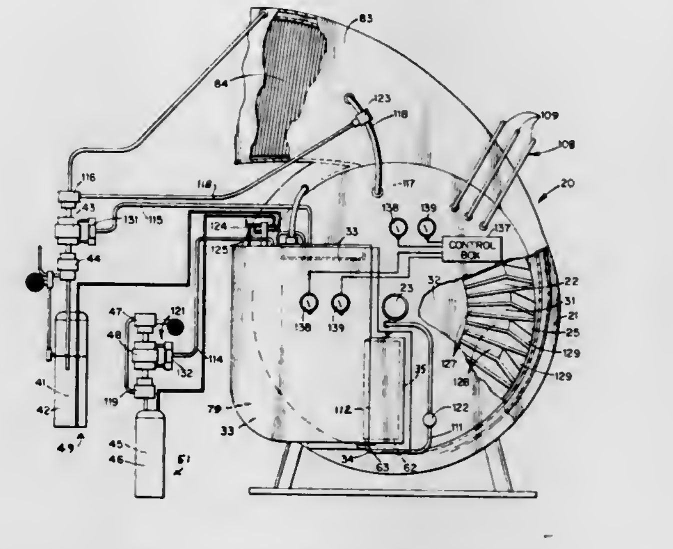
said single rotor having steam turbine vanes on one side to form a steam turbine chamber and having gas jet vanes on the other side to form a gas jet turbine chamber in said single housing;

a combustion chamber having ignition means therein and having boiler means therein;

fuel supply means and air supply means, each including a pressure tank supplying start-up pressure, said means connected to said combustion chamber for producing hot combustion gases therein while heating said boiler means to produce steam;

first conduit means connecting said boiler means to said steam turbine, said means including valved jet orifices for directing steam onto the said steam turbine vanes of said rotor;

second conduit means connecting said combustion chamber to said combustion gas jet turbine, said means including



a valved slot orifice for directing a jet of said combustion gas against the gas jet turbine vanes of said rotor;

third conduit means connecting said boiler means to said combustion gas jet turbine, said means including valved jet orifices within said combustion gas pressure chamber for directing steam against the gas jet turbine vanes of said rotor; and

valve control means for initially opening only said valved gas slot orifice, while steam builds up, then opening said valved steam jet orifice to drive, at a predetermined head of steam, said steam rotor vanes, and then opening said valved jet orifices of said third conduit means to drive said gas rotor vanes while reducing the generation of said combustion gas while said predetermined head of steam is maintained.

3,866,413
AIR BLAST FUEL ATOMIZER

Geoffrey J. Sturgess, Chardon, Ohio, assignor to Parker-Hannifin Corp., Cleveland, Ohio

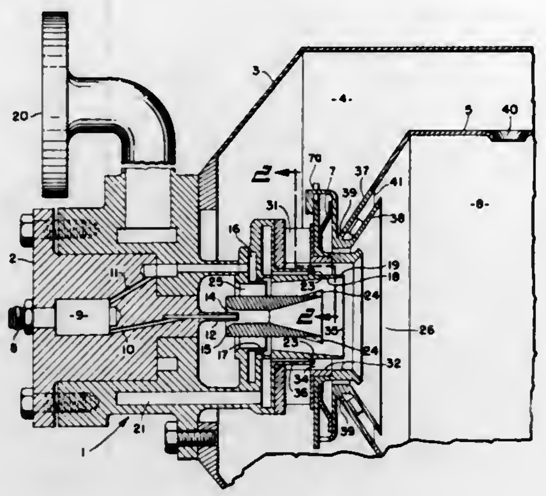
Filed Jan. 22, 1973, Ser. No. 325,243

Int. Cl. F02c *7/22*; B05b *7/10*

U.S. Cl. 60—39.74 R **4 Claims**

3. A fuel nozzle for a gas turbine engine comprising a housing having passages therein adapted for communication with fuel and air pressure sources; primary and secondary atomizing means in said housing to supply combustible fuel-air mixtures to said engine; said secondary atomizing means comprising a prefilming tube around said primary atomizing means and defining therewith and with said housing annular air passages which at their upstream ends are communicated with said air pressure source, said prefilming tube at its upstream end communicating with said fuel passage for flow of fuel in film form around the interior of said prefilming tube to the downstream end thereof from which it is discharged with a radially outward velocity component into the annular air stream around said prefilming tube; said housing having an additional passage with metering orifices upstream of the downstream end of said prefilming tube to introduce high

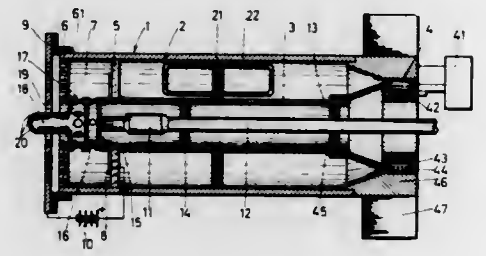
velocity discrete jets of boost air, or oxygen, or gaseous fuel into and through the annular air stream which surrounds said



prefilming tube to impinge on the film of fuel as the latter emerges with a radial outward velocity component from the downstream end of said prefilming tube.

3,866,414
ION ENGINE

Alfred Bahr, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Apr. 18, 1973, Ser. No. 352,176
Claims priority, application Germany, Apr. 21, 1972, 2219545
Int. Cl. F03h *1/00*; **H05h** *1/18*
U.S. Cl. 60—202 **7 Claims**



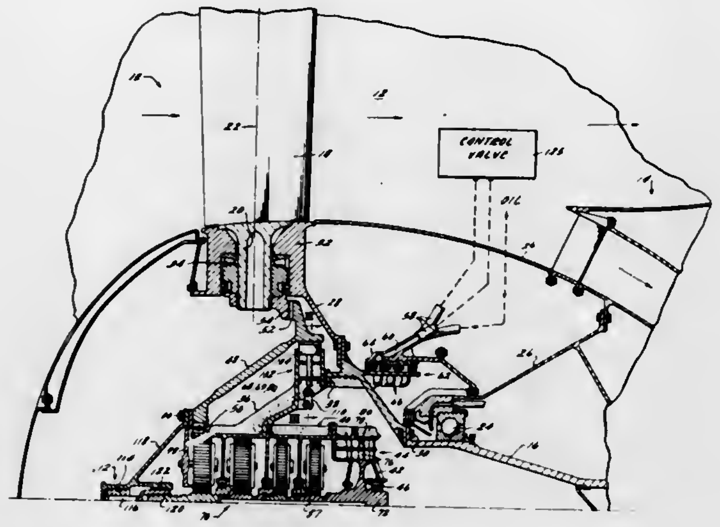
1. In an ion engine with means defining a fuel conveying system and means defining a gas discharge chamber into which fuel enters in a gaseous form, means defining a high frequency resonator, said gas discharge chamber being part of said high-frequency resonator for effecting ionization of the gaseous fuel, means defining an accelerating electrode system at one end of said gas discharge chamber for extracting ionized gaseous fuel from said gas discharge chamber and accelerating same thus creating an accelerated ion beam and means for neutralizing the accelerated ion beam, the improvement comprising said accelerating electrode being arranged adjacent to said open end of said high-frequency resonator, said high-frequency resonator producing a standing wave having a node in the center of said high-frequency resonator and an oscillation loop at said open end.

3,866,415
FAN BLADE ACTUATOR USING PRESSURIZED AIR

John J. Ciokajlo, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Feb. 25, 1974, Ser. No. 445,439
Int. Cl. F02k *3/02*; **F01d** *7/00*; **F03b** *3/14*
U.S. Cl. 60—226 R **11 Claims**

1. In a fan of the type used in a gas turbine engine having a core engine driving the fan through a fan shaft;

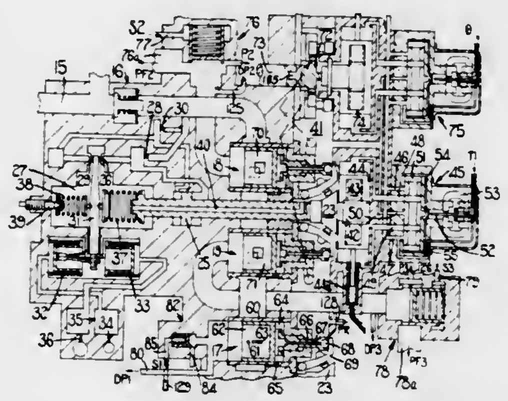
a. a plurality of variable pitch fan blades secured to said fan shaft for rotation;
b. a pitch change turbine mounted to said fan shaft for rotation relative thereto;
c. an actuation gear mounted to said fan shaft for rotation relative thereto wherein said actuation gear cooperates with said variable pitch blades to vary the pitch of said blades in response to rotation of said actuation gear relative to said fan shaft;



d. reduction gear means cooperating with said turbine and said actuation gear to rotate said actuation gear relative to said fan shaft in response to rotation of said turbine relative to said fan shaft;
e. pneumatic means for introducing air under pressure to said turbine to serve as the motive fluid of said turbine; and
f. control means to selectively regulate the flow of motive fluid to said turbine.

3,866,416
FUEL CONTROL APPARATUS FOR GAS TURBINE ENGINE

Geoffrey Arthur Lewis, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England
Filed Apr. 6, 1973, Ser. No. 348,635
Claims priority, application Great Britain, June 21, 1972, 29001/72
Int. Cl. F02c *9/06*, *9/08*
U.S. Cl. 60—243 **22 Claims**

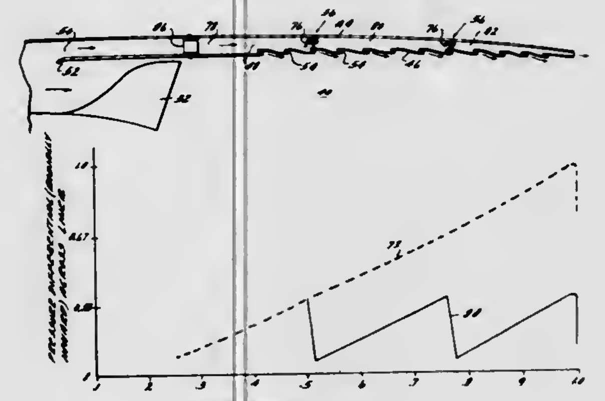


1. A fuel control apparatus for a gas turbine engine reheat system having a plurality of reheat burners, comprising a pump, a first control means means for imparting first and second motions to said first control means in response to variations in an engine temperature and an engine compressor pressure respectively, said first control means comprises a compound cam having a plurality of profiles which correspond to functions of said engine temperature for a plurality of values of said compressor pressure, a first variable metering orifice including a control member responsive only to said first and second motions of said first control means to regulate fuel

flow from said pump to a first reheat burner, a second control means positioned in response to the setting of an engine power demand device, and second and third variable metering orifices each including a control member responsive to said first and second motions of said first control means and to the position of said second control means, said second and third orifices regulating, in use, fuel flow from said pump to said second and third reheat burners respectively.

3,866,417
GAS TURBINE ENGINE AUGMENTER LINER COOLANT FLOW CONTROL SYSTEM

David A. Velegol, Colliers, W. Va., assignor to General Electric Company, Cincinnati, Ohio
Filed Feb. 9, 1973, Ser. No. 331,078
Int. Cl. F02c *7/20*; **F03k** *3/10*
U.S. Cl. 60—261 **8 Claims**



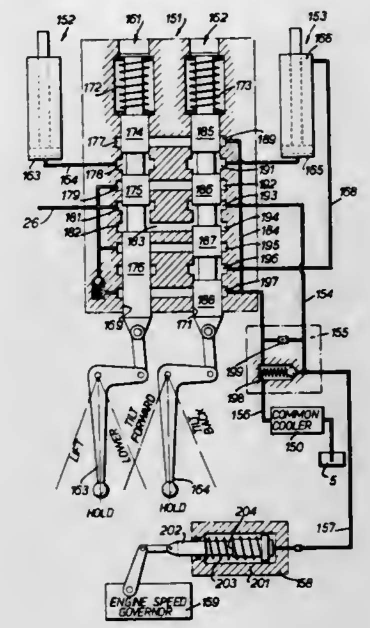
1. In a gas turbine engine of the type including a compressor, a turbine, a combustion system, an augmenter, an exhaust duct surrounding said augmenter, and a cooling liner positioned within said duct so as to form a cooling plenum therebetween, at least a portion of which liner extends downstream from said augmenter and is adapted to protect said exhaust duct from the high temperature gas generated by said augmenter, the improvement comprising:

flange means situated within said cooling plenum and dividing said cooling plenum into at least two individual chambers, said flange means occupying a predetermined radial space in said cooling plenum and providing a restricted inlet between said chambers such that the average pressure differentials across the liner in each of said chambers are substantially equal.

3,866,418
HYDRAULIC APPARATUS

John Henry Waters, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, Cheltenham, England
Filed Dec. 3, 1973, Ser. No. 420,862
Int. Cl. F16h *39/46*
U.S. Cl. 60—420 **13 Claims**

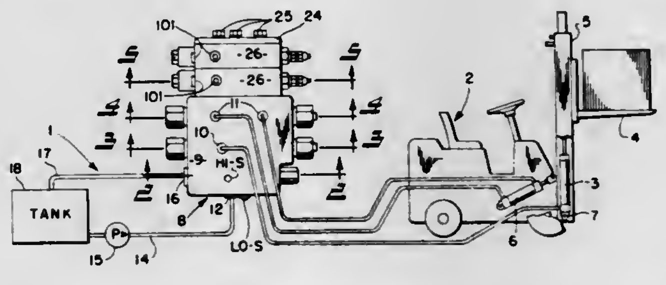
1. A power comprising assembly comprsing a positive-displacement pump, a variable speed power source adapted to drive the pump, a positive-displacement motor fed with hydraulic liquid delivered by the pump, a variable by-pass to cause some of the hydraulic liquid delivered by the pump to by-pass the motor in order to vary the motor speed, and means for controlling the speed of the power source, said means being responsive to the by-pass flow and so arranged that a



reduction in the by-pass flow will cause an increase in the speed of the power source and vice versa.

3,866,419
INTEGRATED PRESSURE COMPENSATED LOAD SENSING SYSTEM

John C. Paul, Richmond Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Sept. 6, 1973, Ser. No. 394,560
Int. Cl. F15b *11/16*
U.S. Cl. 60—427 **81 Claims**

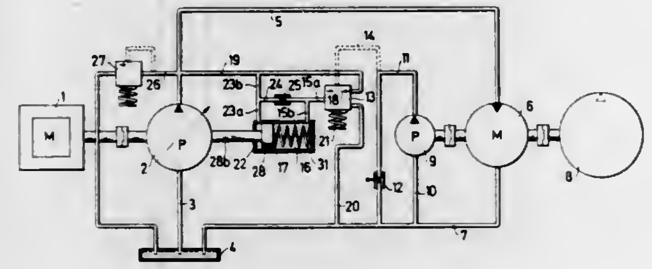


1. An integrated pressure compensated load sensing system comprising pump means; at least two fluid motors; a directional control valve having inlet, motor, and return ports respectively in fluid communication with said pump means, said fluid motors, and a tank; valve members movable in said directional control valve to control actuation of the respective motors and to define variable area orifices in the flow path of pressure fluid to the respective motors of sizes according to the extent of movement of the respective valve members; sensing means responsive to the pressure drops across said variable area orifices operative in conjunction with said pump means to maintain predetermined pressure drops across said orifices thus to actuate said fluid motors at desired speeds according to the sizes of said variable area orifices; check valves downstream of the respective orifices to render said sensing means responsive to the flow demand set by the valve member associated with the fluid motor of higher load pressure in the event of simultaneous actuation of said valve members; and pressure compensating members associated with the respective valve members; each pressure compensating member, when associated with the fluid motor of lower load pressure, sensing the flow demand of the variable area orifice set by the associated valve member and being moved to provide an additional restriction in one of the supply and return paths of fluid in said directional control valve thus to maintain the flow demand set by the variable area orifice of the valve

member associated with the fluid motor of lower load pressure.

3,866,420
HYDRAULIC DRIVE ARRANGEMENT

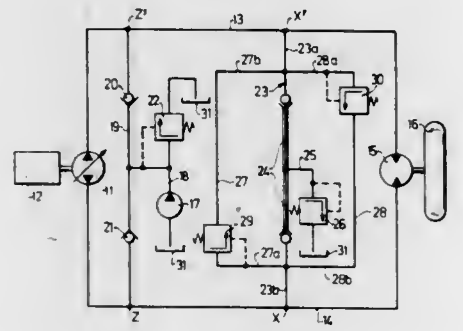
Wilhelm Appel, Donanstetten, Germany, assignor to G. L. Rexroth GmbH, Lohr/Main, Germany
Filed July 23, 1973, Ser. No. 382,095
Claims priority, application Germany, July 22, 1972, 2236134
Int. Cl. F16h *39/46*
U.S. Cl. 60—445 **5 Claims**



1. In an arrangement of the character described, a combination comprising a variable-output hydraulic pump; a hydraulic motor; a reservoir for hydraulic fluid; first conduit means connecting said pump with said reservoir and said motor; varying means for varying the output of said pump, comprising a cylinder, and a differential piston in said cylinder and dividing the interior thereof into two axially spaced chambers; second conduit means connecting one of said chambers with said first conduit means; third conduit means connecting said motor with said reservoir; fourth conduit means connecting said first conduit means in the region downstream of said motor with said reservoir; fifth conduit means connecting said fourth conduit means with the other of said chambers and communicating with said reservoir; variable valve means in said fifth conduit means; and throttling means communicating with said reservoir and with said variable valve means, said valve means being controlled by pressure which develops at said throttling means and varying the extent to which said other chamber can communicate with said reservoir.

3,866,421
FLUIDIC CIRCUIT FOR A HYDROSTATIC TRANSMISSION

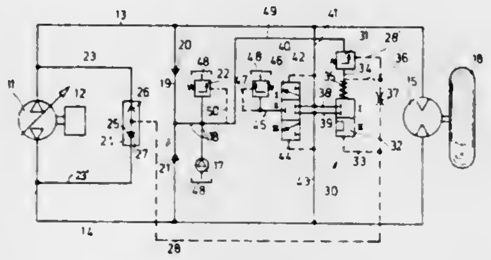
Gunter Kersten; Hans-Jurgen Fricke, both of Stuttgart, and Karl Veil, Uhingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Sept. 13, 1973, Ser. No. 397,100
Claims priority, application Germany, Sept. 22, 1972, 2246638
Int. Cl. F16b *21/04*
U.S. Cl. 60—456 **8 Claims**



1. In a hydrostatic transmission including a main pump, a hydraulic motor, a high pressure conduit means and a low pressure conduit means, in combination, a fluidic circuit comprising priming pump means having an outlet means connected with a first point of said low pressure conduit means; at least one pressure limiting valve having an inlet conduit connected with said high pressure conduit means and an outlet conduit connected with a second point of said low pressure conduit means located between said hydraulic motor and said first point; and a flushing control valve means connecting said inlet conduit and outlet conduit and having discharge means for discharging into a low pressure area so that when increased pressure in said high pressure conduit means opens said pressure limiting valve, and fluid heated in said pressure limiting valve flows into said outlet conduit, a first part of said heated fluid flows through said flushing control valve means and said discharge means into the low pressure area, and a second part of said heated fluid flows at said second point into said low pressure conduit means to mix with cool fluid discharged from said priming pump means at said first point.

3,866,422
HYDRAULIC DRIVE

Gunter Kersten, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Jan. 9, 1974, Ser. No. 431,963
Claims priority, application Germany, Jan. 13, 1973, 2301612
Int. Cl. F15b *21/04*
U.S. Cl. 60—456 **7 Claims**

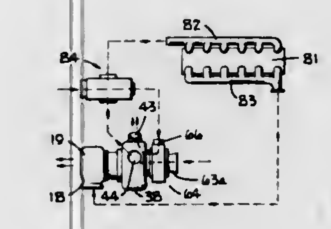


1. A hydraulic drive comprising a first hydraulic unit and a second hydraulic unit, one of said units being operated as pump and the other as hydraulic motor; a pair of main conduits connecting said units in a closed circuit, one of said main conduits being a high-pressure conduit and the other a low-pressure conduit; overpressure means including a flushing valve and pressure limiting valve means connected to said circuit so as to be operated with the pressure in said high-pressure conduit exceeds a predetermined pressure to establish a first connection between said high-pressure and said low-pressure conduit and over said flushing valve a second connection between said high-pressure conduit and a container; and a feed pump for feeding fluid from said container into said low pressure conduit.

3,866,423
TURBOCHARGER COMPRESSOR WITH DUAL INLET AND COLLECTOR CHAMBERS

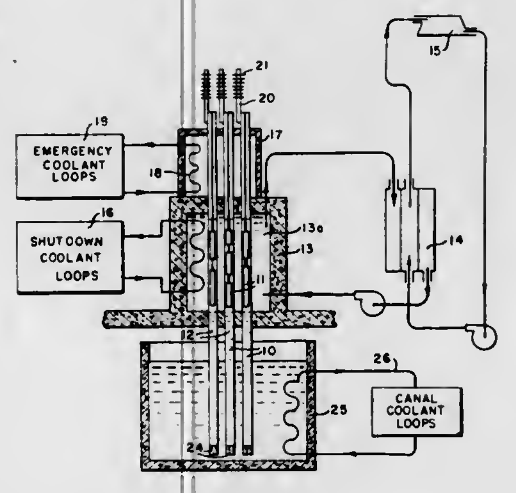
Edward F. Benisek, Indianapolis, Ind., assignor to Wallace-Murray Corporation, New York, N.Y.
Division of Ser. No. 263,009, June 15, 1972. This application May 24, 1973, Ser. No. 363,356
Int. Cl. F02b *29/04*
U.S. Cl. 60—599 **2 Claims**

1. In combination, an internal combustion engine, a turbocharger having a compressor component for delivering an air charge to the air induction system of the engine, a heat exchanger having at least two flow paths therethrough in heat exchange relation with each other, said compressor component having discrete dual air intake and discharge passages, and means connecting one flow path of said heat exchanger to atmosphere and to one of said intake passages of said compressor component, connecting the corresponding discharge passage of said compressor to atmosphere, connecting the other of said compressor component intake passages to atmosphere and the corresponding compressor component discharge passage through said other flow path of the heat exchanger to the air induction system of said engine, whereby said turbocharger compressor component draws ambient cooling air through said heat exchanger and forces charge air through said heat exchanger to lower the temperature of the charge air delivered to the air induction system of the engine, said disrete, dual air intake passages of said compressor component substantially separating the intake air coming from said heat exchanger outlet from the intake from atmosphere, whereby the heated air exiting from the heat exchanger does not substantially mix with the ambient air entering the compressor to raise the temperature of the ambient air prior to its being compressed.



3,866,424
HEAT SOURCE CONTAINING RADIOACTIVE NUCLEAR WASTE

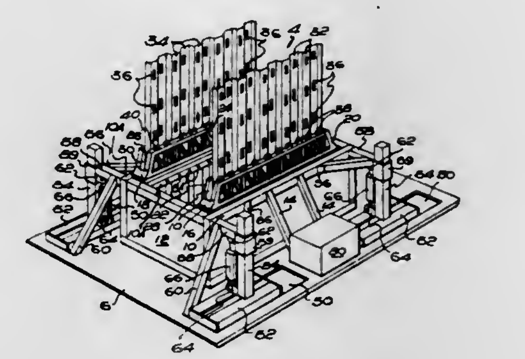
Harold M. Busey, Bethesda, Md., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed May 3, 1974, Ser. No. 466,770
Int. Cl. F03g *7/06;* **F01k** *27/00*
U.S. Cl. 60—644 **6 Claims**



1. A heat source comprising at least one sealed vertically disposed heater tube containing a boiling liquid pressurized by an inert noncondensable gas, at least one capsule containing solidified radioactive waste material suspended within each of said heater tubes and immersed in said boiling liquid, a heater box containing a primary coolant surrounding said heater tubes, the heater tubes extending above and below the heater box, means for extracting heat from said primary coolant, a backup coolant box containing emergency coolant surrounding said heater tubes immediately above said heater box and means for extracting heat from said emergency coolant, said heater tube being pressurized by the inert gas so that under normal operating conditions the interface zone between the inert gas and the vapors of the boiling liquid falls between the heater box and the backup coolant box.

3,866,425
METHOD OF AND APPARATUS FOR THE DRIVING AND EXTRACTOR OF SHEET PILES

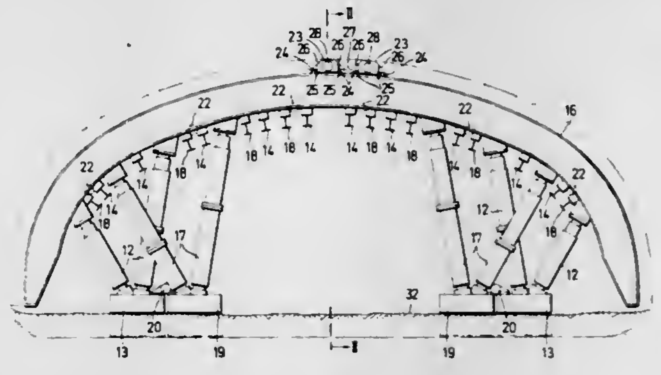
Anthony Ronald Seaton Morrice, Harrogage, England, assignor to Hudswell Morrice Ltd., Leeds, England
Filed Dec. 29, 1972, Ser. No. 319,419
Int. Cl. E02d *5/16, 7/00, 13/04*
U.S. Cl. 61—53.5 **8 Claims**



1. A method of inserting a pile comprising the steps of pitching one or more piles relative to a piling apparatus supported on a ground surface, driving said pitched pile into the ground, raising said piling apparatus clear of the ground so that the piling apparatus is supported on a plurality of movable bearing pads, moving the piling apparatus forwardly relative to the bearing pads, lowering said piling apparatus relative to the bearing pads so that the piling again rests on the ground, and excavating between the driven piles.

3,866,426
TUNNEL DRIVING APPARATUS

Armin Lobbe, Bergk-Oberaden, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Wethmar bei Lunen and Gewerkschaft Eisenhutte Westfalia, Westfalia, both of, Germany
Filed Oct. 11, 1973, Ser. No. 405,510
Claims priority, application Germany, Oct. 13, 1972, 2250296
Int. Cl. E01g *3/00*
U.S. Cl. 61—85 **12 Claims**



1. A tunnel driving apparatus comprising:

A. a plurality of roof support assemblies, each assembly having:
  - a. a front and a rear roof support member, each member extending across the tunnel;
  - b. longitudinally extending interconnecting members attached between the front and rear support members;
  - c. floor rails extending along the tunnel;
  - d. slidable ram props extending upwardly from the floor rails to the roof support members;
  - e. the front and rear roof support members of one roof support assembly being interspersed between the front and rear roof support members of another roof support assembly; and

f. means for effecting relative movement between the roof support assemblies in the direction of advancement of the tunnel;

B. a shield including a plurality of elongate elements extending along the tunnel and slidably carried by the roof support members;

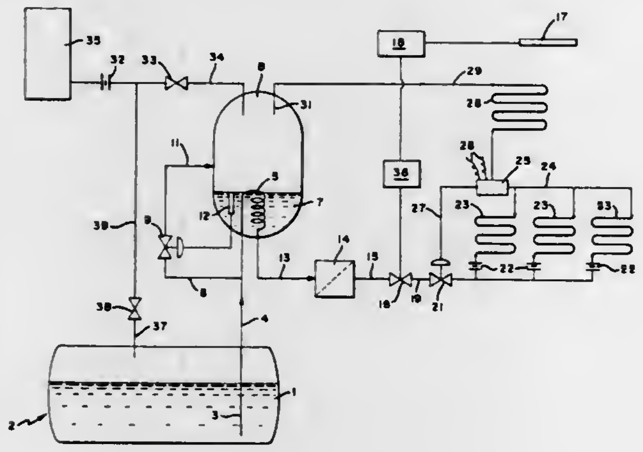
C. means for guiding the elongate elements longitudinally on the roof support members; and

D. means for moving the elongate elements in the direction of advancement of the tunnel.

3,866,427
REFRIGERATION SYSTEM

Noel Y. Rothmayer, Madison; James Crawford B. MacKeand, Convent Station, and Clark W. Smith, Bloomingdale, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,701
Int. Cl. F25b *19/00*
U.S. Cl. 62—7 14 Claims

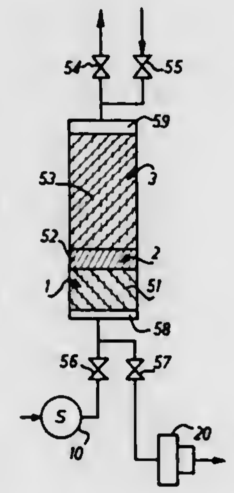


12. A method as claimed in claim 11 wherein the flow of refrigerant through the tubular evaporator is regulated, actuated by variation in temperature of said heat conductive element.

3,866,428
CRYOGENIC SEPARATION OF AN AIR FEED USING MULTI-ZONE ADSORPTION UNITS

Guy Simonet, and Claude Pivard, both of Paris, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Apr. 28, 1972, Ser. No. 248,579
Claims priority, application France, May 3, 1971, 71.15807
Int. Cl. F25j *3/00*
U.S. Cl. 62—18 10 Claims



1. A method of fractionation by adsorption of air in order to obtain a gaseous fraction impoverished in at least a first constituent and a second constituent of said air, carried out with at least one adsorption line comprising in the direction of the adsorption cycle stream successively a first adsorption zone, a thermal accumulation zone, and a second adsorption zone, said zones being fixedly connected in series and continuously in communication with each other, and said first and second adsorption zones adsorbing respectively at least said first constituent and at least said second constituent of said air, said method comprising performing at least an adsorption cycle with a single said adsorption line operating in a substantially adiabatic manner, said adsorption cycle comprising:

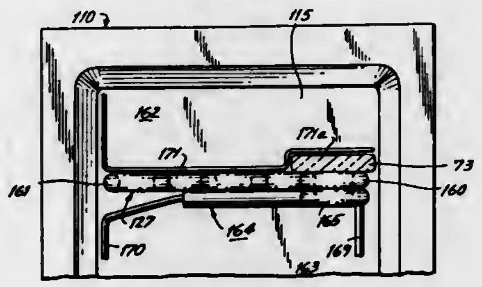
a. an adsorption and production phase during which said air enters the inlet of the adsorption line, flows in said adsorption line in the adsorption direction from said first adsorption zone, into successively said thermal accumulation zone and said second adsorption zone, and at least said impoverished gaseous fraction is obtained at the outlet of said adsorption line; during said phase, in said thermal accumulation zone there is extracted from said air a quantity of heat liberated by the adsorption of said first constituent in said first adsorption zone, and then there is restored to said air a quantity of refrigeration liberated by the desorption of said second constituent in said second adsorption zone, during a desorption and regeneration phase, hereunder defined as phase *b*, of a previous cycle carried out with said adsorption line, whereby said air is cooled between said first and second adsorption zones,

b. a desorption and regeneration phase during which at least said first and second constituent are desorbed, and a regeneration fraction flows in said adsorption line up to the inlet thereof, countercurrent to the adsorption direction, from said second adsorption zone into said thermal accumulation zone and said first adsorption zone, and at least another gaseous fraction enriched in at least said first constituent and said second constituent, is obtained at the inlet of said adsorption line; during phase *b*, in said thermal accumulation zone there is extracted from said regeneration fraction a quantity of refrigeration liberated by the desorption of said second constituent in said second adsorption zone, and then there is restored to said regeneration fraction, the quantity of heat extracted during the previous adsorption and production phase of the same cycle, hereabove defined as phase *a*, whereby said regeneration fraction is heated between said second and first adsorption zones.

3,866,429
METHOD OF FREEZING WITH THE AID OF A COOLING ARRANGEMENT HAVING A SECONDARY REFRIGERATION SYSTEM AND PRIMARY ABSORPTION REFRIGERATION APPARATUS ASSOCIATED THEREWITH

Peter Erik Blomberg, Stockholm, Sweden, assignor to Aktiebologet Electrolux, Stockholm, Sweden

Division of Ser. No. 405,153, Oct. 10, 1973. This application Apr. 17, 1974, Ser. No. 461,784
Int. Cl. F25b *15/10*
U.S. Cl. 62—65 3 Claims



1. In the art of freezing goods to be frozen and maintaining already frozen goods frozen with a primary refrigeration system employing an inert gas into which liquid refrigerant evaporates in a primary place of evaporation and a secondary refrigeration system having a heat transfer fluid which condenses in a place of condensation and evaporates in a place of evaporation, the liquid refrigerant evaporating into inert gas at a low temperature in a first part of said primary place of evaporation and at a higher temperature in a second part of said primary place of evaporation, the improvement which comprises

a. placing goods to be frozen in heat exchange relation with the second higher temperature part of said primary place of evaporation for the latter to abstract heat from such goods,

b. transferring heat to the first low temperature part of said primary place of evaporation from the place of condensation of said secondary refrigeration system to condense heat transfer fluid therein, and

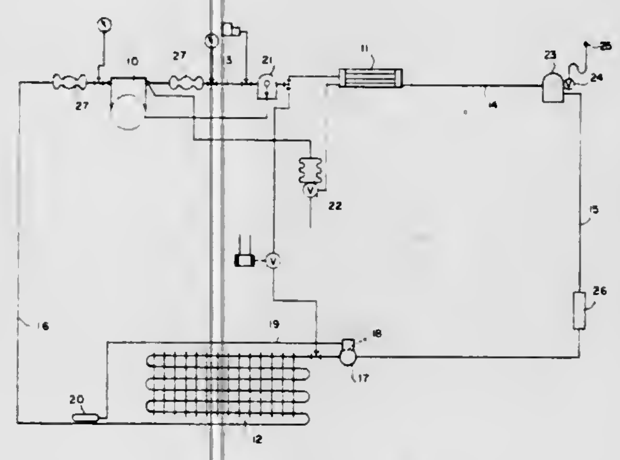
c. placing already frozen goods in heat exchange relation with the place of evaporation of said secondary refrigeration system for evaporating heat transfer fluid therein by heat abstracted from such goods to maintain the latter frozen,

d. the temperature at which refrigerant evaporates into inert gas in the second higher temperature part of said primary place of evaporation decreasing as the goods to be frozen and in heat exchange relation with such higher temperature part approaches a freezing state and reduces the refrigerating load on the primary place of evaporation.

3,866,430
METHOD AND APPARATUS FOR CONTROLLING REFRIGERANT FLOW IN CRYOGENIC SYSTEMS

Robert C. Webber, 8634 Brookville Rd., Indianapolis, Ind. 46239

Continuation-in-part of Ser. No. 425,181, Dec. 17, 1973, abandoned. This application July 26, 1974, Ser. No. 492,158
Int. Cl. F25b *41/04*
U.S. Cl. 62—115 10 Claims

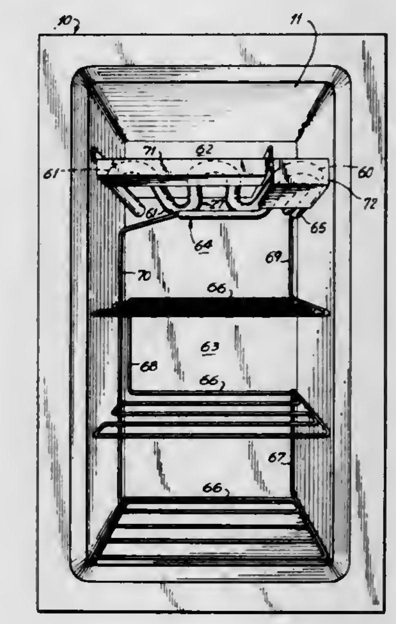


1. A method of controlling refrigerant flow in a cryogenic refrigeration circuit including a compressor, a condensor, an evaporator, conduit means connected to lead refrigerant from the compressor to the condensor, thence to the evaporator, and thence back to the compressor, and a charge of phase-change refrigerant in said circuit, which includes the steps of providing a pressure-responsive valve to control refrigerant flow through said conduit means, providing a thermo-responsive variable-pressure system operatively connected to actuate said valve, said system including a bulb arranged in heat-exchanging relation with a remote point in said conduit means, and charging said system with a limited vapor charge of a refrigerant having a boiling point significantly lower than the boiling point of the refrigerant in the said refrigeration circuit, the limited vapor charge being 20 to 40 psi at ambient temperature, and the quantity of said liquid vapor charge being such as to preclude liquefaction thereof at temperatures to be encountered by said system.

3,866,431
METHOD OF AND MEANS FOR FREEZING BY A COOLING ARRANGEMENT EMBODYING A SECONDARY REFRIGERATION SYSTEM AND PRIMARY ABSORPTION REFRIGERATION APPARATUS ASSOCIATED THEREWITH

Peter Erik Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Oct. 10, 1973, Ser. No. 405,153
Claims priority, application Sweden, Oct. 12, 1972, 13187/72
Int. Cl. F25b *15/10*
U.S. Cl. 62—183 15 Claims

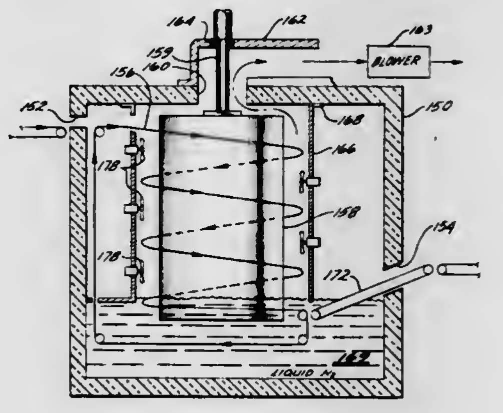


2. A freezer as set forth in claim 1 comprising a cabinet having a thermally insulated interior, and means defining a space in the cabinet interior for storing already frozen goods, the evaporation portion of said secondary refrigeration system being in heat exchange relation with said space for abstracting heat from such already frozen goods.

3,866,432
HELICAL CONVEYOR HEAT EXCHANGE SYSTEM

Donald I. Harrison, Santa Monica, Calif., assignor to Cryo-Chem, Inc., Gardena, Calif.

Filed Mar. 29, 1973, Ser. No. 345,990
Int. Cl. F25b *41/00*
U.S. Cl. 62—208 10 Claims



1. Cooling apparatus comprising a thermally insulated enclosure with an inlet and an outlet for material to be cooled, the inlet being below the outlet, a helical conveyor having upper and lower ends disposed in the enclosure about an upright axis to carry the material upwardly from the inlet to the outlet of the enclosure, an upright annular and imperforate baffle disposed within the helical convevyor, means for introducing liquid nitrogen into the enclosure to contact the material on the conveyor at a point nearer the enclosure outlet than the inlet so the liquid nitrogen absorbs sufficient heat to vaporize to nitrogen gas, fan means in the enclosure arranged to impart a horizontal velocity vector component to the nitro-

gen gas thus blowing it around the helical conveyor in the direction opposite to that in which the material is moved on the conveyor, means for creating a lower pressure at the lower end of the helical conveyor than at the upper end so that a vertical velocity vector component is imparted to the gas so that substantially all the nitrogen gas flows down the helical conveyor, the net flow of the gas being to spiral downwardly around the helix to effect countercurrent cooling of material with the nitrogen gas, and means for removing nitrogen gas from the enclosure.

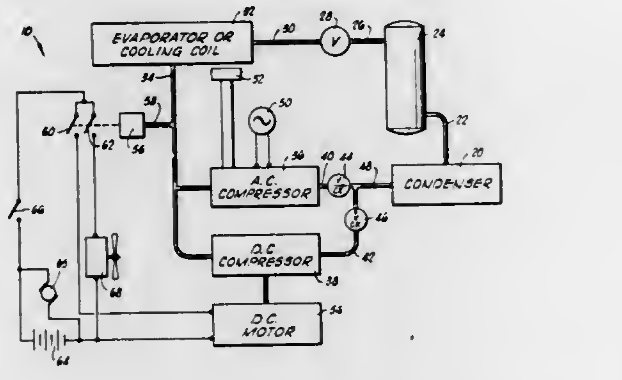
3,866,433
AUXILIARY REFRIGERATION POWER MEANS

Lawrence M. Krug, Wichita, Kans., assignor to George C. Jeffreys, Goldsboro, N.C.

Filed Sept. 12, 1973, Ser. No. 396,387

Int. Cl. F25l

U.S. Cl. 62—229 **9 Claims**



1. In an engine powered vehicle having a storage battery and a generator connected to said engine and battery, and a refrigerated compartment and a refrigeration system therefor including a cooling coil, a compressor connected by a conduit to the outlet of said cooling coil, an alternating current motor operatively connected to said compressor, a condensor connected by conduit to the outlet of said compressor and to the inlet of said cooling coil, and an expansion valve or the like in the conduit to said cooling coil, the improvement therein and therewith, comprising:

- a. a second compressor mounted on said vehicle, said second compressor connected to said condensor and said cooling coil in parallel with said first named compressor,
- b. a direct electric motor mounted on said vehicle and operatively connected to said second compressor, said direct current motor being electrically connected to said storage battery and said generator in powered relation thereto, and
- c. control means operatively connected to said system downstream of said second compressor and to said direct current motor to intermittently operate said direct current motor and second compressor relative the refrigeration demand of said system,

said second compressor is constructed and adapted to be operable during periods when said alternating current motor is disconnected from a source of alternating current electicity.

3,866,434
MENISCUS CONTROL INSERT FOR AUTOMATIC ICE MAKER WATER FILL TUBE

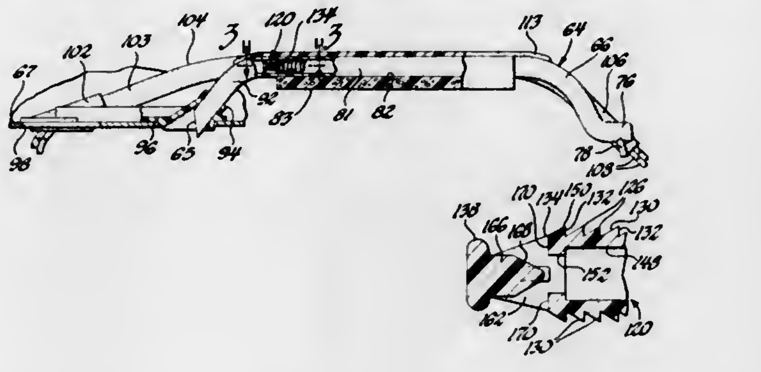
Cecil C. Pugh, Dayton, and Ronald L. Ringer, Xenia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1973, Ser. No. 416,189

Int. Cl. F25c ***1/04***

U.S. Cl. 62—340 **3 Claims**

1. A supply conduit extending through a wall of a refrigerator cabinet for supplying liquid to a freezing mold of an automatic ice maker, said conduit including an intermediate linear cylindrical portion formed with an inlet end and a downwardly curved outlet end; said conduit intermediate portion having an insert positioned therein to receive all the liquid from said inlet end, said insert comprising an elongate cylindrical stem portion on its upstream end having a central longitudinal axis and an integral frusto-conical shaped nose portion on its downstream end with the nose portion large base coincident with the downstream end of said stem portion, rib means on the outer surface of said stem portion for sealingly engaging the inner surface of said linear portion, said nose portion having an obstruction disk integrally formed on its downstream small base end concentric with said stem portion, said insert stem portion having a central water inlet passage extending therethrough to a point adjacent the downstream end of said stem portion, said central passage connecting with a reduced axial bore extending a predetermined distance into said nose portion, a diverter cone at the downstream end of said bore with its nose pointed in an upstream direction such that said cone is aligned on said central longitudinal axis, said frusto-conical nose portion having a plurality of elongated restricted exit orifices circumferentially spaced therearound defining a plurality of radial ribs therebetween, whereby liquid entering said axial bore is radially diverted by said diverter cone through said restricted exit orifices, the exiting liquid upon contacting said obstruction disk creating a turbulent reduced velocity flow of the liquid prior to exiting from said conduit outlet portion, and whereby upon said conduit supplying a predetermined charge of liquid to the mold the flow of liquid in said conduit is stopped and the meniscus of the liquid remaining in said conduit is retained at said insert restricted exit orifices obviating blockage of said supply conduit by preventing water drops from exiting and freezing at said conduit outlet portion.



3,866,435
COOLING CONTAINER

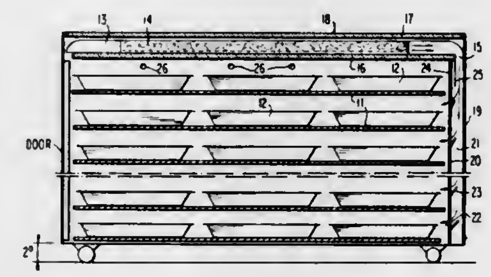
Karl Frank, Linz/Rhine; Martin A. Frank, Cologne, and Dieter Tschentscher, Mayen, all of Germany, assignors to Firma Burger Eisenwerke Aktiengesellschaft, Burg/Dillkreis, Germany

Filed June 4, 1973, Ser. No. 366,279

Claims priority, application Germany, June 5, 1972, 2227313

Int. Cl. F25d ***25/02***

U.S. Cl. 62—382 **17 Claims**



1. In a transportable cooling container adapted to keep temperature-sensitive products, such as food and pharmaceuticals, cool during transportation thereof and having

- a work space subdivided into several vertically spaced product compartments for the cooled products including an uppermost product compartment
- a coolant compartment disposed above said product compartments, there being a tendency during transportation of said container for the compartments to become progressively warmer relative to a downward direction of reference;

the improvement comprising:

- at least one passage means descending from the coolant compartment and adapted to receive a gravity flow of gasified coolant; and
- a plurality of vertically spaced apertures branching from the descending passage means and individually communicating with individual ones of said product compartments;
- the sizes of the inlet mouths of said apertures increase progressively relative to a downward direction of reference such that said apertures divide said gravity flow of gasified coolant into increasingly larger portions relative to a downward direction of reference, to maintain the temperatures of said product compartments substantially uniform.

3,866,436
COOLING CONTAINER

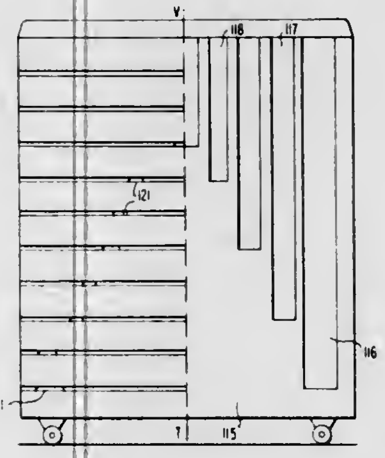
Karl Frank, Linz/Rhine, and Martin A. Frank, Cologne, both of Germany, assignors to Firma Burger Eisenwerke Aktiengesellschaft, Burg/Dillkreis, Germany

Filed June 4, 1973, Ser. No. 366,280

Claims priority, application Germany, Aug. 7, 1972, 2238829

Int. Cl. F25d ***25/02***

U.S. Cl. 62—382 **9 Claims**



1. In a transportable cooling container for keeping temperature-sensitive products cool and having

- a work space for chilled products having a plurality of vertically displaced product compartments, and
- a coolant compartment above said work space operable to contain a gasifiable coolant,

the improvement in said container comprising:

- a pair of side walls operable to extend longitudinally of a direction of transportation and transversely of an axis of tilting of said container likely to occur during said transportation; and
- a plurality of descending passages located along each of said longitudinally extending side walls, communicating with said coolant compartment and operable to receive a gravity flow of gasified coolant therefrom, and further communicating with diverse ones of said product compartments;

said descending passages being dimensioned such that the flow capacity of the descending passages of each side increases progressively so as to conduct to said product compartments a progressively greater flow of cooling gas relative to a downward direction of reference in a manner maintaining the temperatures of said product compartments substantially uniform.

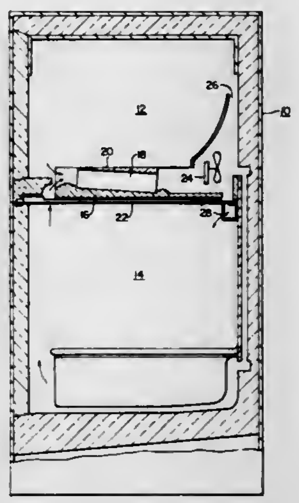
3,866,437
ADJUSTABLE DAMPER CONTROL MECHANISM

Donald J. Spencer, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 395,805

Int. Cl. F25d ***17/04***

U.S. Cl. 62—408 **8 Claims**



1. An adjustable damper control mechanism for a refrigerator/freezer having two compartments separated by a divider wall, said damper control mechanism providing means to set the position of a damper movable between open and closed positions with respect to an air duct to regulate the relative air flow to said two compartments, said mechanism including:

- a manually settable control knob mounted generally remote from said damper; and
- linkage means connecting said damper to said knob so as to correlate the position of said damper to be as indicated by said knob, said linkage means being generally disposed within said divider wall and including:
- a rotatable lever member attached to said damper; and
- a movable pivot plate for pivotally engaging said lever member, said movable pivot plate having a portion extending exteriorly of said divider wall and being manually accessible to adjust the final position of said pivot plate with respect to said damper so that the position of said damper as determined by said linkage means can be adjusted to correspond to the position indicated on said control knob.

3,866,438
MOTOR COOLING APPARATUS UTILIZING A REFRIGERANT FLOW CIRCUIT

James W. Endress, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,666

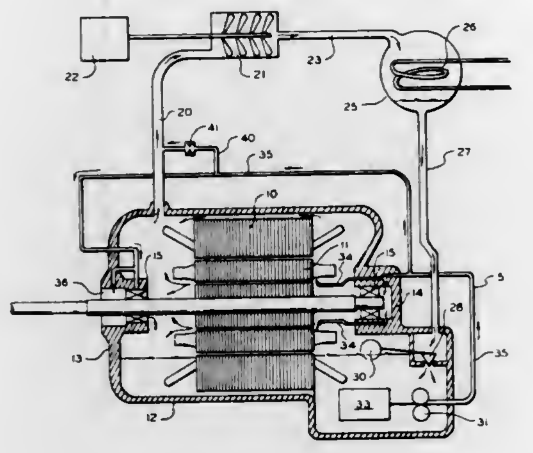
Int. Cl. F25b ***43/02***

U.S. Cl. 62—468 **1 Claim**

1. Apparatus for cooling an electric motor of the type having a casing, a stator and rotor arranged within the casing, and bearing and seal means supporting the rotor, including:

- sump means within the casing adapted to hold a supply of liquid refrigerant and lubricant,
- first conduit means extending from the sump to the portions of the motor requiring cooling and lubrication,
- pump means within the sump to pump liquid refrigerant and lubricant through the first conduit means,
- second conduit means extending from the casing to the sump,
- a condenser positioned in the second conduit means to condense vaporized refrigerant for return to the sump,
- a compressor positioned in the second conduit means ahead of the condenser to draw gaseous refrigerant with entrained lubricant from the casing and compress the refrig-

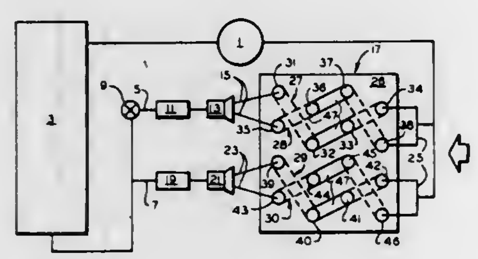
erant and to move the refrigerant through the conduit to the condenser, and



means communicating with the first conduit means so as to be subject to pressure developed by the sump to provide liquid refrigerant and lubricant from the sump into the second conduit ahead of the compressor to provide lubrication for the compressor.

3,866,439
EVAPORATOR WITH INTERTWINED CIRCUITS

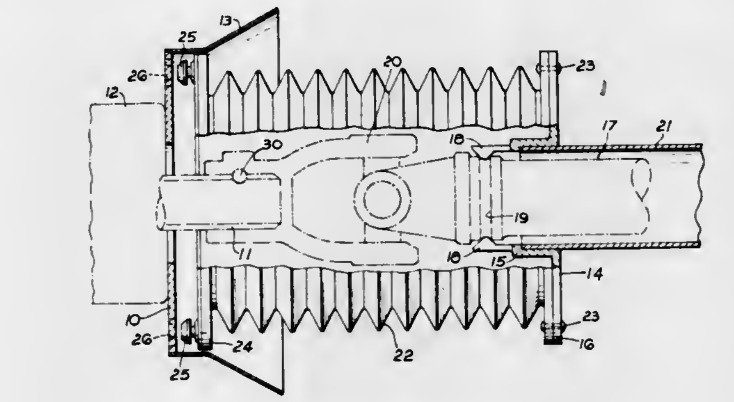
Rudy C. Bussjager, Minoa, and William W. Bell, Jr., Marcellus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Aug. 2, 1973, Ser. No. 384,879
Int. Cl. F25b *39/02*
U.S. Cl. 62—504 **5 Claims**



1. A compression refrigeration system including condenser means, a plurality of parallel refrigerant lines for conveying condensed refrigerant from said condenser means, refrigerant distribution means in each of said parallel refrigerant lines, closing means for selectively closing at least one of said parallel refrigerant lines to refrigerant flow, and an evaporator including a plurality of parallel heat exchange fins and a plurality of intertwined refrigerant circuits running through the evaporator generally transverse to said heat exchange fins, groups of said circuits covering contiguous areas of said evaporator transverse to the direction of flow of external heat exchange medium moving over said evaporator, and said groups of circuits being connected to different ones of said refrigerant distribution means, the group of circuits connected to the distribution means in the refrigerant line including said closing means being removable from service in response to the closing of said closing means to substantially reduce heat exchange between the external heat exchange medium passing through the area covered by said latter group of circuits and the evaporator.

3,866,440
SAFETY GUARDS

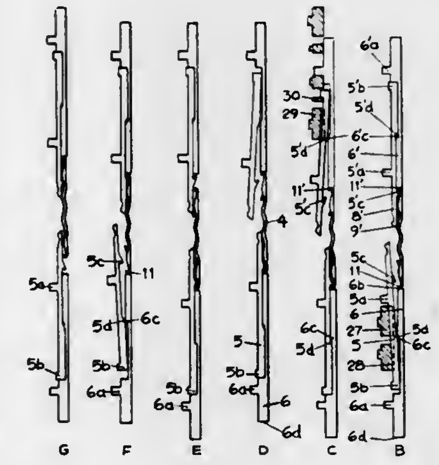
Leonard William Stananought, Whalley, England, assignor to Atkinson's of Clitheroe Ltd., Clitheroe, England
Filed Aug. 6, 1973, Ser. No. 385,722
Int. Cl. F16d *3/19*
U.S. Cl. 64—18 **6 Claims**



1. A safety guard for a universally jointed connection between main and intermediate shafts of a power take-off assembly including first locating means adapted to be operatively mounted around the main shaft while permitting rotation of the latter relative to said means, second locating means having a bearing formation adapted to be operatively mounted upon the intermediate shaft for angular movement therewith relative to the main shaft while permitting rotation of the latter relative to said second means, and an angularly flexible and axially contractible bellows member forming a continuous enclosure joining said first and second locating means to form a continuous enclosure in operative spaced surrounding relationship to said connection said bellows member being releasably connected to one of said means so as to be capable of being contracted axially on selective release therefrom to permit access to at least a part of said connection.

3,866,441
COMPOSITE SLIDERS

Roland Peberdy, South Wigston, England, assignor to The Bentley Engineering Company, Ltd., Leicester, England
Filed Feb. 20, 1973, Ser. No. 333,457
Claims priority, application Great Britain, Feb. 19, 1972, 7797/72
Int. Cl. D04b
U.S. Cl. 66—14 **17 Claims**

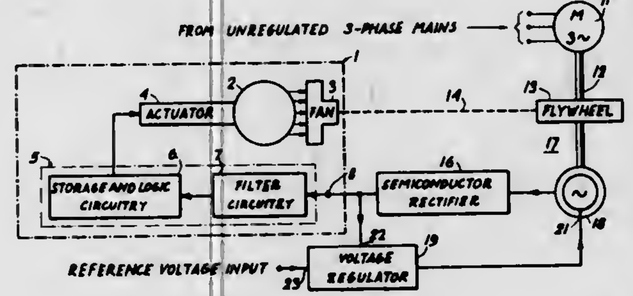


1. In a knitting machine having coaxial needle cylinders with aligned tricks, needles slidable in said tricks and transferable from one cylinder to another, said needles having hooks at opposite ends, sliders slidable in said tricks and engageable with the needles to actuate and control the needles, and means for actuating the sliders, the improvement that each of said sliders is a composite slider comprising:

- an elongate first body portion slidable lengthwise in a trick and having at one end an end face for abutting the outside on the hook of a needle in the trick,
- an elongate second body portion slidable lengthwise in the same trick relative to the first body portion and having at one end a hook inclined towards said end face for abutting with the inside of the needle hook, said first and second body portions fitting together in the trick to form an elongate composite slider,
- a first butt on said first body portion adjacent the other end thereof projecting outwardly of the first and second body portions for engagement by slider actuating means to control lengthwise movement of said first body portion in the trick,
- a second butt on said second body portion projecting outwardly of the first and second body portions for engagement by slider actuating means separately to control lengthwise movement of said second body portion in the trick, and abutment means for preventing the first and second butts moving together and maintaining them in longitudinally spaced relationship,
- said first and second body portions being movable lengthwise relative to one another by actuation of the first and second butts between a first position in which a needle hook is held firmly between said end face of the first body portion engaging the outside of the needle hook and said hook of the second body portion engaging the inside of said needle hook, and a second position in which the hook of the second body portion is separated lengthwise from said end face of the first body portion to enable the composite slider to engage or disengage the needle hook.

3,866,442
D.C. EXITATION ARRANGEMENT FOR A TEXTILE MACHINE PROGRAMMER

Oldrich Kouril, and Jaroslav Knourek, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia
Filed Jan. 12, 1972, Ser. No. 217,185
Int. Cl. D04b *15/78, 15/38*
U.S. Cl. 66—50 R **2 Claims**

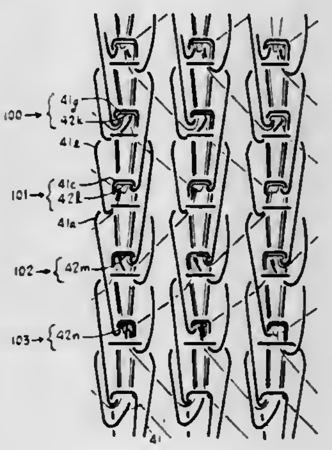


1. In a textile machine of the type in which a programmer issues commands to selected actuators associated with one or more systems of the machine in timed relation to the operation of the machine to control the pattern of the fabric to be manufactured, in which the machine further includes exhaust means for removing filamentary imperfections from the manufactured fabric by means of suction and a DC excitation arrangement including generating means driven by an AC motor coupled to an unregulated 3-phase AC source and having a stabilizing flywheel on its shaft, and in which the programmer includes first filter circuitry that is accessible via a first DC power input thereof and is excited by the output of the DC excitation arrangement:

- means for coupling the flywheel to the exhaust means for driving the latter when the AC motor is operated;
- a single phase Ac generator coupled to the shaft for producing a substantially constant output voltage;
- a first semiconductor rectifier coupled to the output of the AC generator; and
- means for coupling the output of the first rectifier to the first DC input of the programmer.

3,866,443
TERRY CLOTH

Fred E. Hunneke, Tenafly, and Martin Traumuller, Dumont, both of N.J., assignors to Domestic Fabrics Corporation, Englewood, N.J.
Continuation-in-part of Ser. No. 846,755, Aug. 1, 1969, abandoned. This application Sept. 15, 1971, Ser. No. 180,930
Int. Cl. D04b *7/12, 9/12, 11/08*
U.S. Cl. 66—194 **4 Claims**

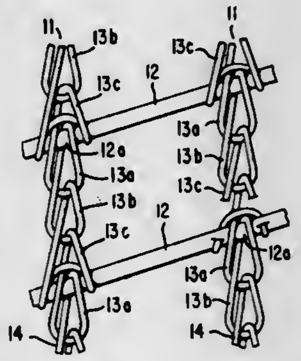


1. A terry cloth formed on a double needle bar Raschel warp knitting machine comprising, in combination:

- a. a system of threads forming a ground structure knitted upon one said needle bar;
- b. a system of terry threads being knit into the ground structure at predetermined points;
- c. said system of terry threads being chain stitches knit into the ground structure under very little tension;
- d. said system of terry threads being disposed in preselected areas upon one side of said system of threads forming said ground structure;
- e. said system of threads forming said ground structure being tighter knit than said system of terry threads;
- f. said system of terry threads being interconnected upon said one side of said system of threads forming said ground structure whereby said system of terry threads are interconnected on the terry surface of said terry cloth.

3,866,444
KNITTED OPENWORK ELASTIC MESH FABRIC

Nathan Levin, 416 Highgate Dr., Trenton, N.J. 08618
Continuation of Ser. No. 279,520, Aug. 10, 1973, abandoned. This application Apr. 5, 1974, Ser. No. 458,201
Int. Cl. D04b *21/100*
U.S. Cl. 66—195 **1 Claim**

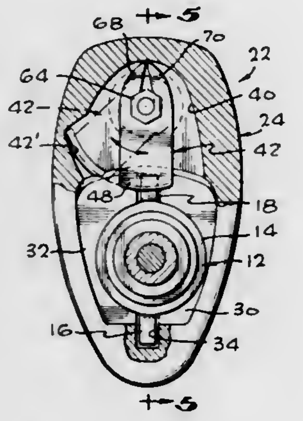


1. Seamless tubular knitted openwork mesh fabric of indefinite length comprising a circular series of individual lengthwise extending warp strings arranged in circumferentially spaced parallel array interknitted at equally spaced points along the lengths thereof with spaced convolutions of a single weftwise extending helically arranged strand of elastic yarn, such arrangement providing the fabric with quadrangular-shaped mesh openings, each of said warp strings consisting solely of successive groups of a like plurality of crochet knitted chain stitches formed of non-elastic yarn and of single

stitches formed solely of said elastic yarn disposed between and interknit with said successive groups of chain stitches whereby each said warp string is formed solely of longitudinally spaced single stitches of said elastic yarn arranged in alternating relation with respect to said successive groups of chain stitches, each stitch of the elastic yarn having been drawn through the last-formed stitch of a group of said chain stitches and the first-formed stitch of each group of said chain stitches having been drawn through a stitch of the elastic yarn, said stitches of elastic yarn being in unknit formation wherein the yarn thereof extends in linear condition in said helical arrangement of said elastic yarn when said fabric is in relaxed condition, such linear condition of said unknit stitches being due solely to the inherent characteristic of said elastic yarn itself, said nonelastic yarn floating lengthwise in non-knitted condition across said unknit elastic yarn stitches and between said last and said first formed stitches of immediately adjoining groups of said non-elastic yarn chain stitches, said elastic yarn comprising a lengthwise extending elastic core covered with transversely extending windings of yarn, only said last and said first-formed chain stitches of immediately successive groups thereof commonly embracing the unknit stitches of elastic yarn disposed therebetween in such manner that force exerted in lengthwise direction upon said fabric is exerted directly upon said groups of warp chains and causes only said last and said first-formed chain stitches of said groups thereof to correspondingly exert force in opposite directions upon said unknit stitches of elastic yarn therebetween thereby to urge the return of the same to knit loop conformation whereby said non-elastic yarn of said last and of said first-formed chain stitches of immediately successive groups thereof are caused to interengage with said windings of the elastic yarn in said unknit stitches thereof thereby to inhibit displacement of said warp strings transversely of said fabric and to maintain intact the integrity of said mesh openings therein the said fabric being formed solely of said elastic and of said non-elastic yarns arranged in the manner set forth.

3,866,445
AUTO IGNITION LOCK

Warren L. Erwin, 9906 Douney Ave., Downey, Calif. 90240
Filed July 19, 1973, Ser. No. 380,884
Int. Cl. E05b *17/14*
U.S. Cl. 70—428 **12 Claims**



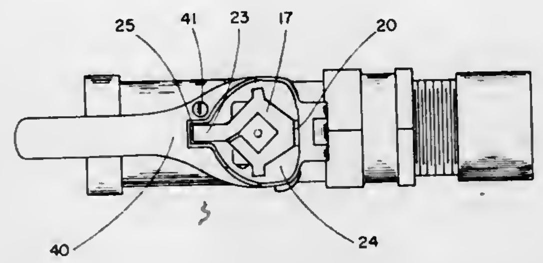
1. An auxiliary lock for providing controlled access to an auto ignition lock comprising:

housing means having an aperture configured to matingly receive an auto ignition lock, the housing being adapted to be disposed over and to prevent access to the ignition lock; and

means mounted on the housing means and movable between a first position within the aperture in engagement with the ignition lock to prevent removal of the housing means from the ignition lock and a second position out of engagement with the ignition lock and permitting removal of the housing means from the ignition lock.

3,866,446
LOCKING HANDLE COCK

Luther H. Lemley, Lafayette, Ind., assignor to Willem Corporation, Rushville, Ind.
Filed Oct. 26, 1972, Ser. No. 301,164
Int. Cl. F16k *35/00*
U.S. Cl. 70—176 **2 Claims**

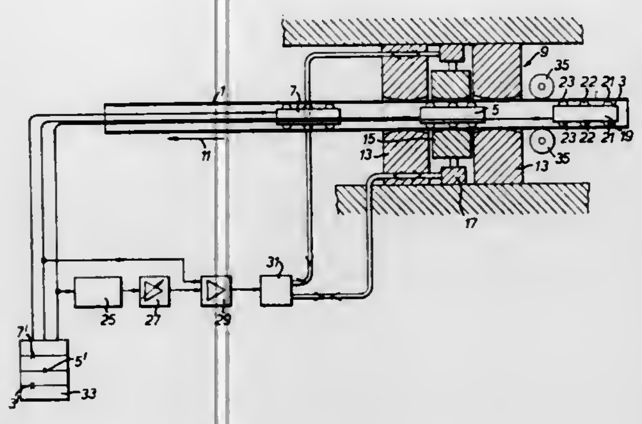


1. In a valve used in a pneumatic line extending between adjacent railroad cars, said valve having a tubular main body with an inlet, an outlet and a passage extending therebetween, said valve also having a blocking member pivotally mounted to said main body and extending across said passage, said valve further having handle means mounted to said blocking member, said means being operable to pivot said blocking member to and from a first position wherein fluid flow through said passage is allowed and to and from a second position wherein fluid flow through said passage is blocked by said blocking member, said main body having a ledge with a first stop surface and a projection with a second stop surface, said handle means having a handle pivotally mounted to said member being pivotable to and from a downward position and an upward position, said handle having a first depending ear and said member having a second depending ear, said first and second ear positioned adjacent and between respectively said second stop surface and said first stop surface when said handle is in said downward position and said member is in said first position preventing movement of said member from said first position to said second position, said handle includes a flat top wall having a slot extending therethrough with said second ear of said member extending through said slot, said handle being movable to said upward position whereupon said handle and said member may be then pivoted to said second position wherein the improvement comprises lock means mounted to said handle being operable to lock said handle to said ledge preventing movement of said handle from said downward position to said upward position when said member is in said first position, said locking means is a cylinder lock mounted to said flat top wall adjacent said slot with said cylinder lock having a movable cam wall movable beneath said ledge.

3,866,447
APPARATUS AND METHOD FOR STRAIGHTENING TUBES

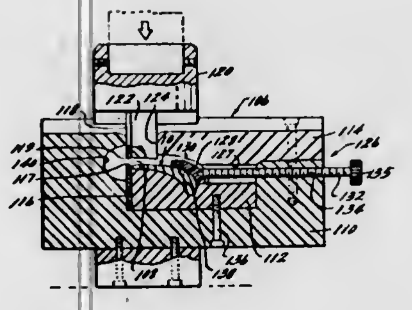
William Kerr Ritchie, Woodbridge, England, assignor to The Post Office, London, England
Filed May 14, 1973, Ser. No. 359,897
Claims priority, application Great Britain, May 18, 1972, 23372/72
Int. Cl. B21d *3/10*
U.S. Cl. 72—9 **16 Claims**

1. Apparatus for straightening a tube, including first and second measuring devices locatable within the bore of the tube and operable to generate, respectively, a control signal and a feed back signal, each of said signals being representative of the deviation from straightness in the surrounding portion of the tube; a tube straightening mechanism connected to receive the control and feedback signals and operable to apply, to that portion of the tube in which the second measuring device is located, a straightening force dependent on the relative values of the control and feedback signals derived from that portion; and a mechanism operable to effect relative movement between the tube and both the measuring devices and straightening mechanism.



3,866,448
APPARATUS FOR CONSTRUCTING AIR COOLED TURBOMACHINERY BLADING

Ronald E. Dennis, Cincinnati, and William D. Treece, Forest Park, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Division of Ser. No. 320,522, Jan. 2, 1973,. This application Apr. 12, 1974, Ser. No. 460,535
Int. Cl. B30b *15/22*
U.S. Cl. 72—30 **3 Claims**

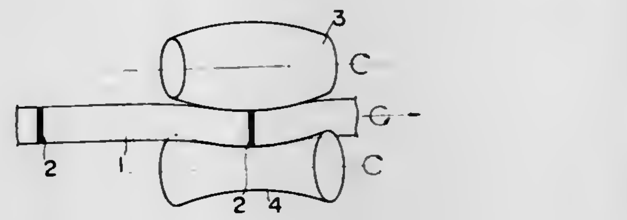


1. Apparatus for forming the trailing edge portion of a turbomachinery blade, which includes an airfoil having a leading edge portion, concave and convex side walls extending from said leading edge portion and forming at least one internal cavity within said airfoil, and a trailing edge portion comprising a first wall extending from said concave side wall and a second wall extending from said convex side wall, said first and second walls being separated by a plurality of solid wall cross ties which form trailing edge coolant passageways therebetween, and a root portion adapted to connect said airfoil portion to a turbomachinery disc, said apparatus comprising: a blade holding fixture including a casing for forming a chamber around the root portion of said blade, means for sealingly engaging said root portion of said blade while permitting fluid flow communication between said chamber and the internal cavity of said blade, means for supplying pressurized air to said chamber, and means for measuring the pressure within said chamber, and

a blade crimping fixture which receives the airfoil portion of said blade and includes a blade positioning arm for accurately locating and holding said airfoil portions therein and means for crimping the trailing edge portion of said airfoil.

3,866,449
METHOD FOR DIVIDING AN ELONGATED BODY INTO SEPARATE PIECES

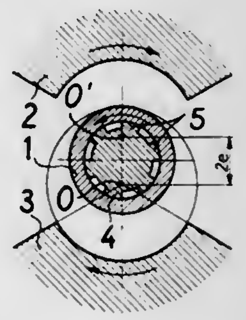
Senzo Wakabayashi; Akira Kusaba; Takayuki Koyano, all of Tokyo; Sukenori Nakano, Sagamihara; Jin-Ichi Kimura, and Akira Oyamada, both of Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Japan
Filed Aug. 10, 1973, Ser. No. 387,280
Claims priority, application Japan, Aug. 24, 1972, 47-84076
Int. Cl. B21d *51/00*
U.S. Cl. 72—70 **17 Claims**



1. In a method of dividing an elongated body of circular section into a plurality of pieces, the steps of forming a plurality of circumferential grooves in the exterior surface of the elongated body between the ends thereof while spacing the circumferential grooves one from the next in accordance with desired lengths of the pieces into which the elongated body is to be divided, sequentially bending the body at the region of sequential grooves thereof while simultaneously rotating the body around its longitudinal axis for breaking the body at the locations of said grooves, and longitudinally feeding the body while simultaneously rotating and bending the latter so that the body is continuously fed and successively broken at successive grooves.

3,866,450
METHOD OF MAKING INTERNAL SHAPES IN METAL OBJECTS HAVING SMOOTH OR TOOTHED ROTATIONAL OUTER SURFACES

Zdzislaw Marciniak, and Zeonon Kopacz, both of Warsaw, Poland, assignors to Polichtechnika Warszawska, Warsaw, Poland
Filed Nov. 27, 1972, Ser. No. 309,911
Claims priority, application Poland, May 23, 1972, 155534
Int. Cl. B21b
U.S. Cl. 72—76 **4 Claims**



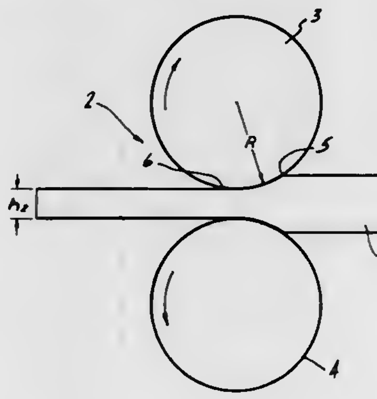
1. A method of shaping a plastically deformable hollow sleeve comprising positioning a sleeve on a core within a space defined within a pair of opposed rotatable jaws, providing irregularities on the external surface of the core conforming to the desired internal deformed shape of the sleeve, rotating the jaws around the sleeve along an eccentric path to cause the jaws first to contact the sleeve and deform the sleeve to shape the external surface of the sleeve to the shape of the jaws while simultaneously deforming the inner surface of the sleeve so the material thereof plastically flows and conforms to the irregularities on the outer surface of the core, the jaws

as they continue rotation along their eccentric path then losing contact with the thus shaped sleeve, and axially feeding the core over a feed stroke in the interval of time after the jaws have lost contact with the sleeve and before the jaws resume contact with the sleeve, said irregularities on the core being a screw thread, the axial feed of the core being effected automatically by elastically holding the core against axial displacement while rigidly preventing rotation of the core, the rotation of the jaws on the sleeve producing relative rotation of the sleeve on the core and axial displacement of the core against the elastic holding action, said core axially returning to its initial position by the elastic holding action when the jaws lose contact with the sleeve.

3,866,451
METHOD FOR PRODUCING MULTIPLE GAUGE STRIP

Joseph Winter, New Haven; Eugene Shapiro, Hamden, and Warren F. Smith, Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 4, 1974, Ser. No. 439,519
Int. Cl. B21b *1/10*
U.S. Cl. 72—199 **19 Claims**

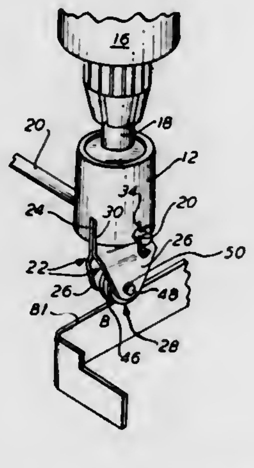


1. Method for the preparation of multiple gauge metal strip possessing improved structural quality and dimensional precision which comprises passing the strip through a grooved roll assembly comprising a dimensionally defined grooved upper roll, whereby strip reduction is confined to the area of groove contact and is determined by the ratio of L/W, L is defined as the length of the arc of contact of said upper roll with said strip, and W is defined as the width of the groove, and said L/W ratio is at least about 4.

3,866,452
DEBURRING DEVICE

Hildaur L. Neilsen, 2 Juniper St., Metuchen, N.J. 08840

Filed Apr. 29, 1974, Ser. No. 465,275
Int. Cl. B21d *19/04*
U.S. Cl. 72—211 **5 Claims**

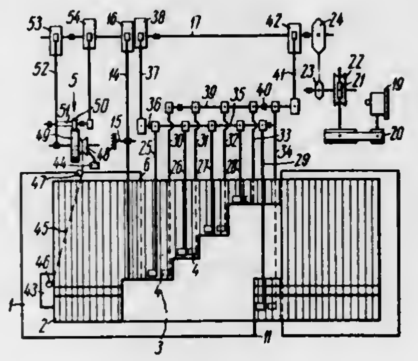


1. A deburring device for smoothing an edge of sheet metal and the like, comprising a rotary hammer having a circular, interrupted working surface, a tool including a peening roller formed with a continuous peripheral groove extending therearound, roller supporting means holding said roller in operational relationship to said hammer, and impact-transmitting means coacting between the hammer's said working surface and said roller supporting means to reciprocate the latter and to forcibly impel said roller, in its said groove, into intermittent peening engagement with said edge.

3,866,453
DEVICE FOR TRUEING PIECE ARTICLES OF VARIABLE SECTION

Alexandr Dmitrievich Afanasiev, ulitsa Kubinka, 6, kv. 35, and Alexandr Moiseevich Mogilevsky, 1 Mosfilmovsky perulok, 16, kv. 45, both of Moscow, U.S.S.R.

Filed Apr. 11, 1973, Ser. No. 349,962
Claims priority, application U.S.S.R., Apr. 19, 1972, 1771417
Int. Cl. B21d *3/02, 3/10, 3/16*
U.S. Cl. 72—214 **1 Claim**

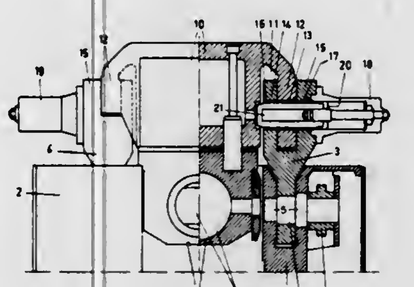


1. A device for trueing piece articles of a variable section, said device comprising: a table for a packet of articles to be laid thereon; a lever being disposed above said table; a clamp being positioned on said lever to hold said packet of articles on said table during trueing; a cam interacting with said lever to lift or lower the latter together with said clamp; a plurality of levelling rollers forming two parallel rows, with a portion of the packet of articles, free from being clamped, being arranged in a gap between said rollers; one of said rows of levelling rollers defining upper ones and being arranged on top of the packet of articles, and the other one of said rows of levelling rollers defining lower ones and being accommodated under the packet of articles; additional levers bearing said upper levelling rollers; an intermediate shaft bearing said levers of said upper levelling rollers; a drive lever secured on said intermediate shaft; a cam interacting with said drive lever for effecting the rotation of said levers of said upper rollers; additional levers bearing said lower levelling rollers; a second intermediate shaft bearing said levers of said lower rollers; a second drive lever secured on said second intermediate shaft; and a second cam interacting with said second drive lever to effect the rotation of said levers of said lower rollers; said table and clamp having lateral sides which are made with stepped through cuts; the steps of said cuts being disposed opposite to each other so as to form a stepped line of a successive bend of the packet of articles when the packet passes in between the rows of the levelling rollers; and upper and lower rollers being accommodated in said cuts.

3,866,454
ROLLING MILL

Hubert Muller, Grevenbroich, Germany, assignor to SIEMAG Siegener Maschinenbau GmbH, Hilchenbach-Dahlbruch, Germany

Filed Nov. 23, 1973, Ser. No. 418,442
Claims priority, application Germany, Dec. 19, 1972, 2262014
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **3 Claims**

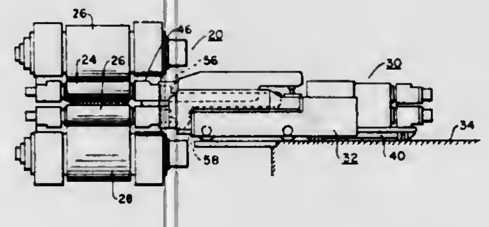


1. A rolling mill having exchangeable sets of rolls, in which the chocks serving for bearing the rolls are releasably coupled by interposed transoms operating through tie shackles with the roll housing, wherein cotter pins serve as coupling means, characterized by the fact that the end of each tie shackle (**3**, **4**) engaging the transoms (**10**) and the chocks (**8**) is constructed as a fork (**14**, **15**), between the limbs (**14**, **15**) of which a coupling eye (**13**) of the transom engages, the cotter pin (**21**) being insertable in bores (**16**, **17**) in the fork limbs (**14**, **15**) and the coupling eye (**18**, **19**, **20**).

3,866,455
MILL ROLL CHANGING SYSTEM INCLUDING A ROLL BUGGY

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Dec. 28, 1973, Ser. No. 429,345
Int. Cl. B21b *31/10*
U.S. Cl. 72—239 **11 Claims**

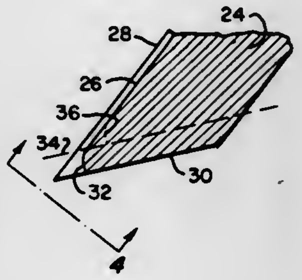


1. A buggy for changing mill rolls and the like, said buggy comprising first and second supports mounted thereon, each of said supports terminating in a roll neck socket adjacent a front or mill end of said buggy, each of said sockets being shaped to closely receive a roll neck of an associated one of said mill rolls and to support said mill roll in cantilevered fashion, means on said buggy for elevating at least one of said supports with respect to said buggy and to the other of said supports so that the distance between said roll neck sockets can be varied, and means for advancing and withdrawing said buggy from said mill for insertion and withdrawal of said mill rolls when so cantilevered.

3,866,456
FELTING NEEDLE

Richard W. Shepard, and Albert S. Ashmead, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Division of Ser. No. 217,887, Jan. 14, 1972,. This application July 5, 1973, Ser. No. 376,793
Int. Cl. B21d *43/28*
U.S. Cl. 72—324 **5 Claims**



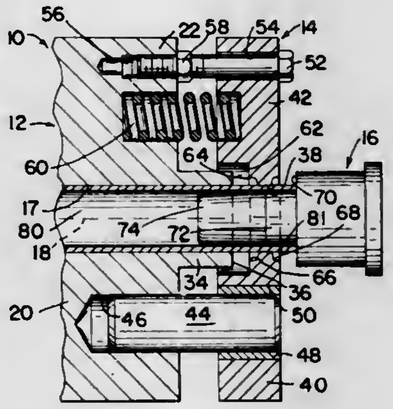
1. An apparatus for making a felting needle with a barb having a curved roof, a throat having a flat surface and a concave surface where the throat connects to the barb comprising:

a body having a base adapted to form a throat extending from the needle edge to the base of the barb, a leading face intersecting the base at an acute angle, and a groove formed in the leading face and extending into the base, said groove having the same depth along a major portion of the face to form the curved roof of the barb and a curved portion connecting the major portion of the same depth to the base, said curved portion is adapted to form the concave surface on the needle.

3,866,457
METHOD AND APPARATUS FOR TUBE FORMING

Thomas L. Bagby, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 24, 1973, Ser. No. 391,338
Int. Cl. B21d *15/06*
U.S. Cl. 72—370 **10 Claims**

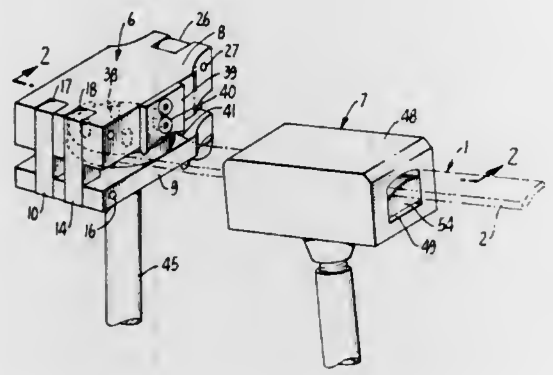


1. Apparatus for forming a tube comprising; main block means for holding a first portion of said tube to be formed, floating block means for holding a second portion of said tube to be formed, said floating block means being movable relative to said main block means in a direction coincident with the axis with said tube, said floating block means including spaced-apart first and second counterbore means for receiving third and fourth portions of said tube and forming said third and fourth portions into radially extending ribs on said tube by folding said third and fourth portions upon axial movement of said floating block means toward said main block means, punch means for non-forceable passage into the interior of said first, second, third and fourth tube portions and for axially abutting an axial end section of said fourth tube portion during said axial movement of said floating block means toward said

main block means and said folding of said third and fourth portions.

3,866,458
BENDER FOR CONTOURING SURGICAL IMPLANTS

Richard F. Wagner, 62 San Jacinto Way, San Francisco, Calif. 94124
Filed Nov. 12, 1973, Ser. No. 414,811
Int. Cl. B21d *53/00*
U.S. Cl. 72—459 **11 Claims**



11. A bending assembly for use in bending a hip fixation plate comprising a flat bowl-shaped head portion having at least one transverse bore and an integral elongated handle portion having opposed sides, comprising the combination of:

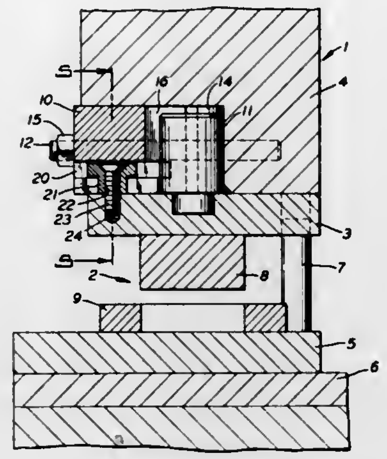
a. a first bender including;
  1. a housing,
  2. a channel extending through said housing, the surface defining one side of said channel being contoured to conform to the contour of one of said opposed sides of said handle portion,
  3. a jaw member disposed within said channel and adapted for vertical movement therein, one side of said jaw member being spaced from said surface defining one side of said channel and being contoured to conform to the contour of the other of said opposed sides of the handle portion,
  4. means interconnecting the side of said jaw member opposite said one side thereof and the housing, and
  5. means for vertically raising and lowering said jaw member within said channel whereby said handle portion may be gripped between said surface defining one side of said channel and said one side of said jaw member and released thereby, respectively; and

b. a second bender including;
  1. an upper jaw having a nipple on its inner surface which registers with and is adapted to be slidably received within said transverse bore,
  2. a lower jaw, the inner surface of which has a protrusion which is adapted to seat snugly against one side of said head portion,
  3. means for pivotally interconnecting said upper and lower jaws at one of their ends, and
  4. means for releasably interconnecting the other of their ends.

3,866,459
TOP DIE SHOE AUXILIARY RESTRAINT

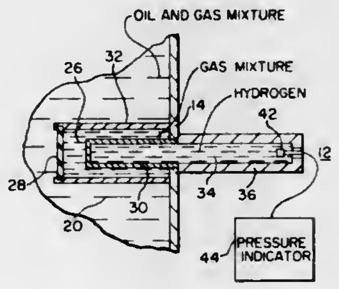
Philip H. Zepp, and Lawrence R. Mancini, both of North Canton, Ohio, assignors to The Hoover Company, North Canton, Ohio
Filed Feb. 8, 1974, Ser. No. 440,681
Int. Cl. B21j *13/02*
U.S. Cl. 72—462 **5 Claims**

1. A top die shoe securing means comprising an upper press part having a shank-receiving pocket, a die shoe having a shank adapted to be received in said pocket, a shank-securing means adapted to secure said shank in said pocket, said shank-securing means being restrained against movement with respect to said upper press part parallel to said shank, and auxiliary retaining means restricting movement of said die shoe with respect to said shank-securing means parallel to said shank, said auxiliary retaining means comprising means carried in part by said shank-securing means and means carried in part by said top die shoe which are movable relative to each other perpendicularly to said shank.



3,866,460
GAS DETECTOR FOR FLUID-FILLED ELECTRICAL APPARATUS

Henry A. Pearce, Jr., Stoneboro, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 30, 1973, Ser. No. 365,339
Int. Cl. G01n *7/10*
U.S. Cl. 73—19 **8 Claims**

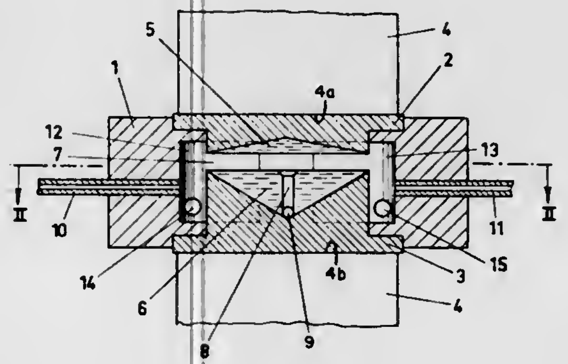


1. A gas detector for oil-filled electrical apparatus which indicates the amount of a predetermined gas in the oil, comprising:

a first chamber;
a first diffusion membrane which defines a portion of said first chamber, said gas detector adapted for placement with said first diffusion membrane directly in contact with the oil;
said first diffusion membrane being constructed of a material which permits gas contained in the oil to diffuse through said membrane to equalize the partial pressures of the gases on both sides of said membrane;
a second chamber;
a second diffusion membrane which defines a portion of said second chamber, said second diffusion membrane being located in direct contact with the gaseous atmosphere in the first chamber;
said first and second chambers being sealed for the prevention of any forced fluid flow through the chambers;
said second diffusion membrane being constructed of a material which permits only one predetermined gas which is contained in the gaseous atmosphere to diffuse through said second diffusion membrane to equalize the partial pressures of the predetermined gas on both sides of said second diffusion membrane; and
indicating means for indicating the pressure of the predetermined gas in the second chamber.

3,866,461
PARA-MAGNETIC GAS ANALYZER

Herbert Machytka, Niederhochstadt, Germany, assignor to Hartmann & Braun Aktiengesellschaft, Frankfurt/Main, Germany
Filed Apr. 12, 1971, Ser. No. 133,110
Claims priority, application Germany, Apr. 11, 1970, 2017423
Int. Cl. G01n *7/00, 27/00*
U.S. Cl. 73—23 **6 Claims**

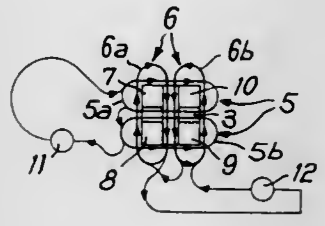


1. In a paramagnetic gas analyzer, wherein an analysis gas and a comparison gas are passed through a magnetic field from different directions and wherein a difference in the paramagnetic characteristics of the gases results in a pressure differential which can be measured, the improvement comprising:

a magnet having two flat and plane-parallel pole faces facing each other at a particular distance;
a housing body made of non-magnetic material and having a bore traversing the body from one of its sides to the respective opposite side;
a first and a second soft magnetic pole piece inserted in the bore respectively from the one side and from the opposite side of the housing body, but leaving a gap between them, the pole pieces each having a flat surface portion, the distance between the flat surface portions as inserted being the same as the particular distance between the pole faces of the magnet, so that the body with inserted pole pieces can be introduced between the pole faces respectively in form-closed, surface to surface engagement respectively of the pole faces with the flat surfaces of the pole pieces so as to magnetize these first and second pole pieces only through said engagement with the magnet;
the bore in the body having lateral recesses defining a pair of chambers which are oppositely located to each other, the recesses each being covered in parts by both of said inserted pole pieces, but being flow conductively interconnected by the gap between the pole pieces, the two gases are respectively introduced into said chambers and flowing into the gap from opposite sides; and
one of the pole pieces having a central discharge conduit bore opening into the gap and turned at right angles in said one pole piece, the housing body having an outwardly open bore in communication with said conduit bore.

3,866,462
SURFACE STRESS MEASURING APPARATUS

Claude J. Fraudin, Montlignon, France, assignor to Centre D'Etudes et De Recherches De La Machine Outil, Neuilly Sur Seine, Hauts De Seine, France
Filed July 19, 1973, Ser. No. 380,853
Claims priority, application France, July 25, 1972, 72.26758
Int. Cl. G01l *1/12*
U.S. Cl. 73—88.5 R **7 Claims**



1. Apparatus for measuring surface stresses in structures including magnetostrictive material comprising:

a magnetizable body defining at least one group of four poles arranged in two adjacent rows and two adjacent columns, said group of poles being disposed to face a surface of a structure in which stresses are to be measured;
a first coil having first and second serially connected windings supported by said body, each of said first and second windings being wound about a corresponding one of said adjacent rows of poles, said first winding being wound in a first direction and said second winding being wound in a second direction opposite to said first direction;
means for applying alternating current to said first coil to generate a magnetic field, said magnetic field having an orientation such that magnetic flux created by current passing through said first coil is directed from one row of poles in said magnetizable body to said adjacent row through said structure being measured;
a second coil having third and fourth serially connected windings supported by said body, each of said third and fourth windings being wound about a corresponding one of said adjacent columns of said poles; and
means for measuring current in said second coil, said first and second coils being disposed in such relation that magnetic flux produced by said first coil links said windings of said second coil to produce a measurable current flow in said second coil as a function of an altering of the flux distribution between said first and second coils resulting from a change in stress in said structure being measured.

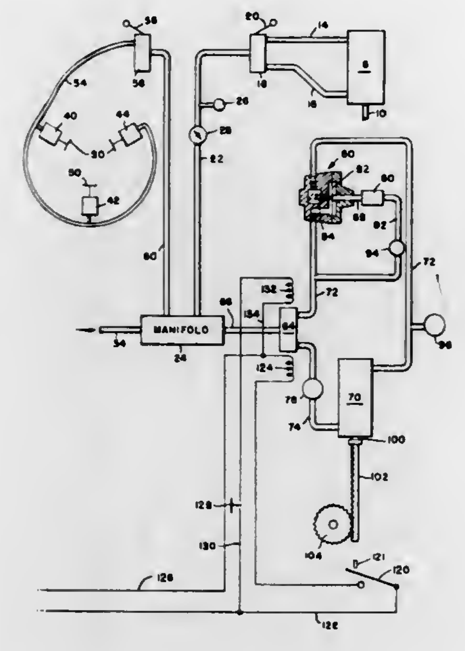
3,866,463
DEVICE FOR TESTING THE TORQUE REQUIRED TO RELEASE A SCREW CAP FROM ITS TIGHTENED POSITION

David A. Smith, Philadelphia, Pa., and Werner L. Tollefsbol, Delran, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.
Filed Nov. 19, 1973, Ser. No. 416,930
Int. Cl. G01l *5/00*
U.S. Cl. 73—99 **5 Claims**

1. A device for testing the torque required to release a screw cap from its tightened position on a container comprising:

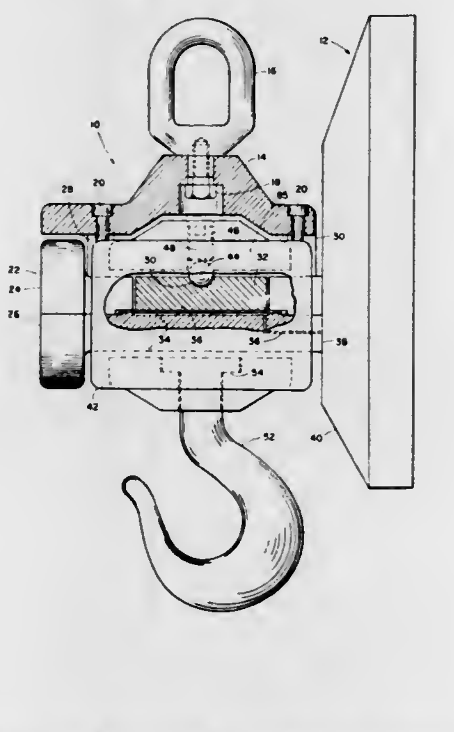
a rotary container support for rotating a container,
means to hold a cap on said container against rotation,
a fluid actuated ram,
means to connect the ram to the container support for the rotation of said support,

means to supply air at a gradually increasing pressure to one side of the ram to move the ram from a starting position to rotate the container support to loosen the cap,
means actuated by the ram to return the ram to its starting position after the cap has been loosened, and



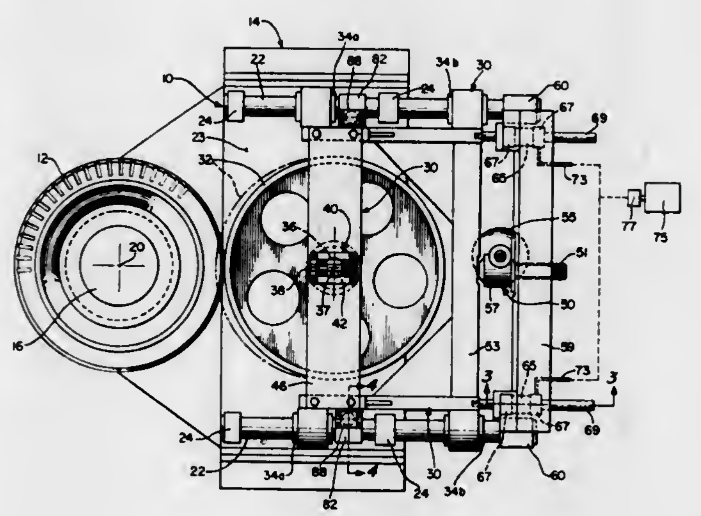
means to indicate the torque applied to the rotary container support, said last-mentioned means being pressure actuated.

3,866,464
HYDRAULIC LOAD INDICATOR
Samuel H. Franklin, Box 45181, Tulsa, Okla. 74145
Filed Sept. 4, 1973, Ser. No. 393,933
Int. Cl. G01l *1/02*
U.S. Cl. 73—141 R **6 Claims**



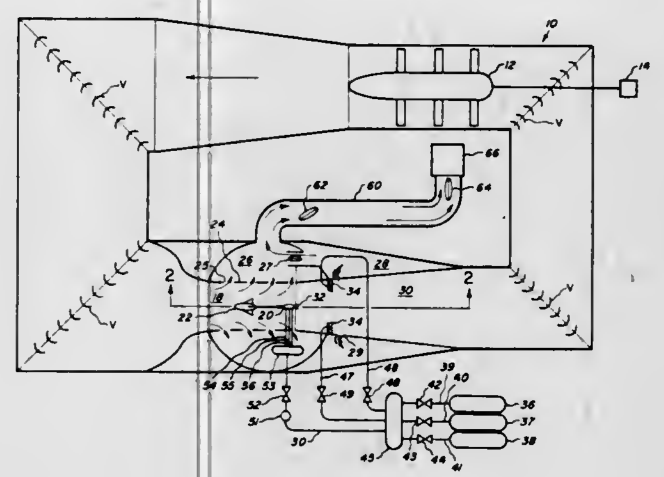
1. A device for insertion between an upwardly and downwardly extending line for measuring the tensile load comprising:
a plate having a hydraulic fluid filled cavity in the upper surface thereof and a conduit opening communicating with the cavity;
a diaphragm sealably covering said cavity;
a cylindrical piston, the lower surface of which engages said diaphragm, the piston having an axially positioned spherical recess in the upper surface thereof;
an upper line receiving means for securing an upwardly extending line thereto, said upper line receiving means being secured to said plate;
a yoke member having an upper horizontal portion extending above said piston, said yoke member being movable relative to said plate, the yoke member horizontal portion having a recess in the lower surface thereof in vertical alignment with said spherical recess in said piston;
a lower line receiving means adaptable to receive a downwardly extending line, the lower line receiving means being attached to said yoke member;
a ball positioned in said recess in said yoke member horizontal portion and said cylindrical spherical recess in said piston, the tensile force applied by said lower line receiving means being applied by said ball against said piston; and
a hydraulic pressure actuated indicating instrument supported to said plate and having communication with said conduit, the instrument being calibrated to reflect the tensile load applied between said upper and lower line receiving means.

3,866,465
TIRE FORCE VARIATION MACHINE
Richard P. Marshall, Tallmadge; James E. Rice, Cuyahoga Falls, and James D. Stokes, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 14, 1974, Ser. No. 432,931
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **6 Claims**



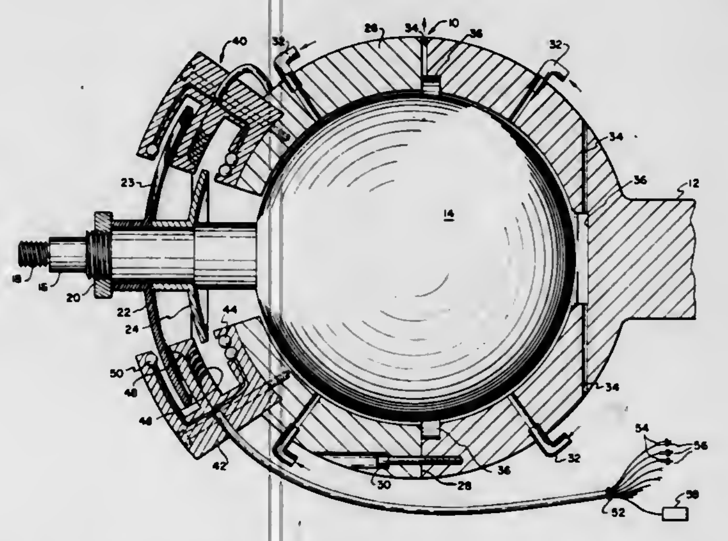
1. In an apparatus for measuring force variations of a tire, which apparatus includes means for mounting a tire for rotation about a first axis fixed relative to said frame, a load wheel carriage, means mounting said carriage on said frame for movement along a fixed path toward and away from said first axis, a load wheel, means rotatably mounting said load wheel on said carriage for rotation about an axis parallel to said first axis, and drive means for moving said carriage toward and away from said first axis;
the improvement comprising carriage locking holding means independent of said drive means and including a first member rigidly fixed relative to said frame and a second member rigidly secured to said carriage, the first and second members being engageable to prevent relative movement therebetween, said first and second members being disengageable to permit relative movement therebetween in a direction parallel to said fixed path, and control means for controlling selectively the engagement and disengagement of said first and second members.

3,866,466
METHOD AND APPARATUS FOR INCREASING THE REYNOLDS NUMBER CAPABILITY IN A TRANSONIC WIND TUNNEL
Ray W. Cotter, Amherst, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.
Filed Aug. 30, 1973, Ser. No. 393,091
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **16 Claims**



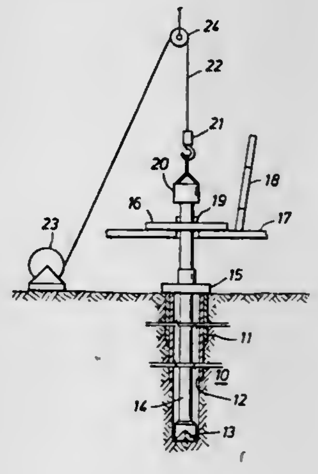
1. A method for increasing the Reynolds number capability in a closed loop wind tunnel including the steps of:
circulating air through the wind tunnel;
withdrawing air from the boundary layer of a first portion of the wind tunnel which defines a test section so as to control boundary layer build up;
exhausting the air withdrawn from the boundary layer of the test section; and
injecting high energy air into the wind tunnel at a point downstream of the test section whereby blockage due to boundary layer build up is reduced, the air mass flow is maintained and the operating range of the wind tunnel is extended.

3,866,467
WIND TUNNEL MODEL SUPPORT AND MEASURING SYSTEM WITH THREE-DEGREES-OF-FREEDOM
Eugene V. Horanoff, Clarksville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 20, 1973, Ser. No. 333,914
Int. Cl. G01m *9/00*
U.S. Cl. 73—147 **6 Claims**



1. A wind tunnel model support and scale having three-degrees-of-freedom comprising:
a socket attached to a sting support in the wind tunnel;
a sphere connectable to a model and rotatably receivable within said socket;
an air film between said socket and said sphere to permit frictionless relative movement; and
a fiber optic measuring system coupled to said socket and said sphere for indicating displacements of said model, including:
a light source affixed to said socket adjacent said sphere and located on each of the pitch and yaw axes;
a plurality of light guides having one end of each capable of illumination by said light source; and
a plurality of photoelectric pickups, one in proximity to each of the other ends of said plurality of light guides for indicating the presence of light in said light guides,
whereby movements of said model relative to the pitch, yaw, and roll axes are sensed and transmitted to a position outside the wind tunnel.

3,866,468
DRILL PIPE MONITORING SYSTEMS
Hubert Irvin Smith, and Fred L. Ott, both of Houston, Tex., assignors to Drill-Au-Mation, Inc., Houston, Tex.
Filed Oct. 4, 1972, Ser. No. 294,963
Int. Cl. E21b *47/00*
U.S. Cl. 73—151 **14 Claims**

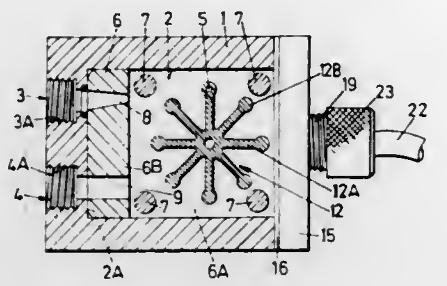


1. A method for monitoring the speed of pipe relative to a well bore comprising the steps of:
producing a first electrical signal as a function of the actual speed of the pipe as it moves relative to a well bore,
producing a second electrical signal as a function of a desired speed value,
comparing said first and second electrical signals and producing at least one electrical output signal as a function of the pre-established difference between said first and second electrical signals, and
applying said one output signal to an alarm means.

3,866,469
RECTANGULAR FLOWMETER
William Alexander Wemyss, Great Missenden, England, assignor to B. Rhodes & Son Limited, Romford, Essex, England
Filed Dec. 13, 1973, Ser. No. 424,536
Claims priority, application Great Britain, Dec. 13, 1972, 57518/72; Apr. 10, 1973, 17141/73
Int. Cl. G01f *1/06*
U.S. Cl. 73—229 **13 Claims**

1. A fluid flowmeter comprising:
a body defining a chamber of substantially rectangular cross-section having four side walls extending between substantially parallel top and bottom walls;
a metering rotor having radially-directed, axially extending blades borne for rotation with said chamber;
means defining a fluid inlet and a fluid outlet, opening to said chamber through the same of different side walls of the chamber;
said inlet including a nozzle for directing a jet of incoming fluid towards and substantially tangential to the rotor;

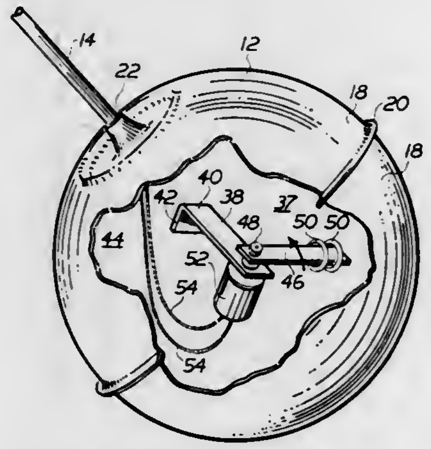
means arranged within the chamber for guiding such incoming fluid around the chamber to the outlet which means comprises:



a rod like member extending between said top and bottom walls of the chamber situated in one or more corners of the chamber, the axis of the or each such member being substantially parallel with that of the rotor;
and means for sensing the number of revolutions of the rotor to signal the amount of fluid passed.

3,866,470
SELF-CONTAINED FLOAT DEVICE

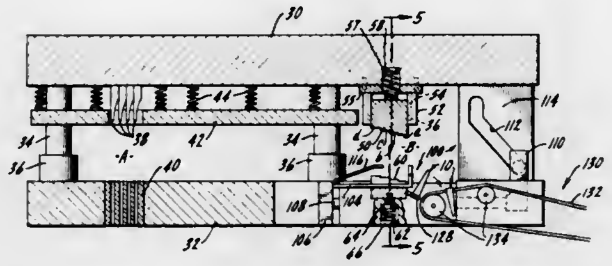
Bernard J. Miller, Andorra Rd., Lafayette Hills, Pa. 19444
Filed Jan. 8, 1973, Ser. No. 321,887
Int. Cl. G01f *23/10*
U.S. Cl. 73—313 **3 Claims**



1. A self-contained float device for providing a signal which is indicative of a liquid level, the device comprising a float that has a hollow interior, a support arm extending from the float and being pivotably secured to first support means to allow the float to rise and fall with the change of liquid level in float displacement, the improvement comprising, sensing means disposed and sealed entirely within the hollow float interior and remote means disposed at a remote location outside said float, said sensing means comprising electrical means the language electrically connected to said remote means and for providing an electrical signal thereto, said signal being indicative of float displacement, second support means mounted on the interior of the float, and a pivotably mounted arm mechanically connected to said electrical means, said arm being gravity responsive, whereupon any change in float displacement causes said arm to pivot to thereby effect a corresponding change in the electrical signal provided by said electrical means to said remote means.

3,866,471
PROGRESSIVE DIE

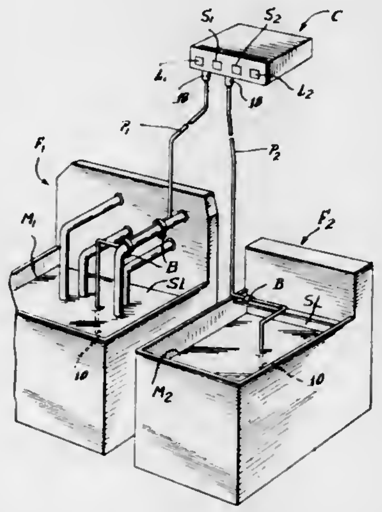
William M. Carroll, Milwaukee; Guntis M. Aulis, and Francis C. Starr, both of Menomonee Falls, all of Wis., assignors to Kaller Die & Tool Company, Milwaukee, Wis.
Filed Dec. 3, 1973, Ser. No. 420,963
Int. Cl. B21d *28/00*
U.S. Cl. 72—337 **8 Claims**



1. A progressive die for stamping, forming and stacking metal piece parts comprising:
- a an upper and lower die shoe adapted to be mounted in a vertically reciprocal press and to receive flat sheet metal;
- b. opposing die means carried by said die shoes for simultaneously forming a plurality of parts in said sheet metal;
- c. forming dies carried by said die shoes for receiving and performing metal working operations upon said parts, and said dies including vacuum means for positively holding said simultaneously formed parts vertically disposed relative to one another; and
- d. horizontally reciprocable cam operated stacking means carried by one of said die shoes cooperating with said vacuum means for stacking said parts and ejecting same from said die.

3,866,472
PROBE ASSEMBLY

Allan E. Witt, Westport, Conn., assignor to Food Automation Service Techniques, Inc., Stratford, Conn.
Filed June 15, 1973, Ser. No. 370,413
Int. Cl. G01k *1/14*
U.S. Cl. 73—362 AR **6 Claims**

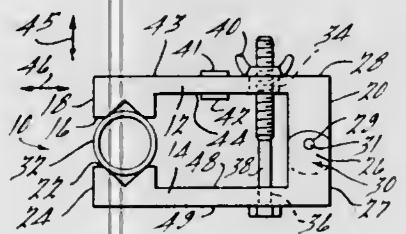


1. A probe assembly for use in a deep fat fryer wherein the length of cooking time is to be calculated by a timing computer responsive to the temperature in a predetermined location in the cooking medium, said probe assembly including
a first portion arranged to be attached to the fryer and to be partly immersed in the cooking medium,
comprising a deformable closed end sleeve adapted to be bent to a predetermined shape to conform to the contours of the fryer and to thereafter retain said shape,
said sleeve being formed of a smooth-surfaced metal impervious to said cooking medium,

a temperature sensing element fixedly positioned within said sleeve at said closed end,
flexible temperature-resistant leads within said sleeve leading from said temperature sensing element to the opposite end of said sleeve, and
means for removably attaching said sleeve to the fryer, and a second portion arranged to be attached to the timing computer and being flexible and heat-resistant, comprising a flexible shell sealingly connected to said opposite end of the sleeve,
said shell being formed of a smooth-surfaced metal impervious to said cooking medium,
flexible temperature resistant leads within said shell joining with the leads in said sleeve, and
means at the end of said second portion for fixedly but removably securing said second portion to said timing computer and for interconnecting said electrical leads with said computer,
whereby the location of the fixed end of said sleeve may be accurately and repeatedly positioned in said predetermined location in said cooking medium, thereby providing a uniform temperature data input to said computer despite repeated removal of said sleeve from the fryer for cleaning.

3,866,473
PRESSURE MEASURING TRANSDUCER

Bernard R. Teitelbaum, Birmingham, and Lawrence E. Slimak, Troy, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.
Filed Aug. 4, 1969, Ser. No. 847,225
Int. Cl. G01l *9/02*
U.S. Cl. 73—398 AR **29 Claims**

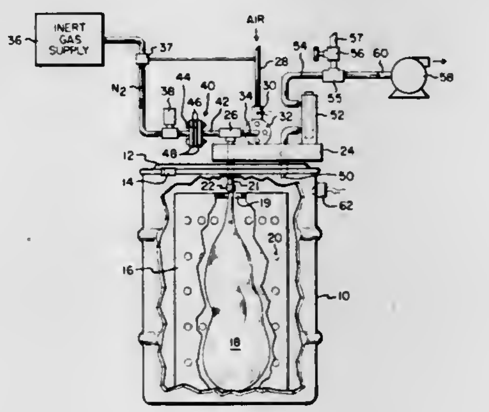


1. A transducer for detecting pressure exerted upon the periphery of an elastically deformable enclosure comprising: a member elastically deformable in response to deformation of the periphery of the enclosure;
means drivingly engaging said member with the periphery of the enclosure including a second member which cooperates with said first mentioned member to grip the enclosure therebetween, and also including means pivotally connecting said members and means to adjustably secure the enclosure between said members; and
deformation detecting means adapted to detect deformation of said first member to thereby detect pressure exerted on the periphery of the enclosure.

3,866,474
GAS SAMPLE COLLECTING DEVICE

Detlev E. M. Hasselmann, Pasadena, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed June 25, 1973, Ser. No. 372,905
Int. Cl. G01n *1/22, 1/24*
U.S. Cl. 73—421.5 R **5 Claims**

1. Gas sample collecting apparatus, comprising:
- A. a closed, rigid-walled container provided with an opening and a cover for hermetically sealing and unsealing said opening;
- B. a carton nested within said container and smaller in size relative thereto to permit insertion of said carton within said container and withdrawal therefrom through said opening;
- C. a flexible gas sample bag within said carton and having a neck through which gas may be introduced;
- D. said carton being stiff in construction and substantially closed except for the provision of an outlet for accommodating the neck of said sample bag and of a multiplicity of holes for permitting ready exhaust of the interior thereof and of the space between said carton and said container and to limit expansion of said sample bag to the volume enclosed thereby;
- E. a source of pressurized inert gas;
- F. a first gas flow path for conducting said inert gas to a common junction;
- G. a second gas flow path for conducting sample gas to said common junction where it is mixed with said inert gas;



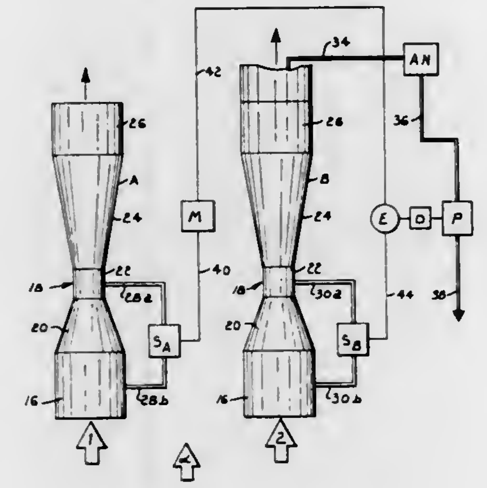
- H. a third gas flow path extending from said common junction to said sample bag for conducting the mixture of inert gas and sample gas to said sample bag;
- I. means in said first and second gas flow paths including means coupled therebetween for adjusting the relative flow rates of said inert gas and said sample gas to attain a desired dilution ratio; and
- J. an exhaust system for evacuating the space between the exterior of said sample bag and the interior walls of said container so as to cause said sample bag to fill with said gas mixture to a volume limited by the interior of said carton;
- K. means for sealing the neck of said gas sample bag, said bag being separable from said third gas flow path upon filling with said gas mixture, thereby to permit removal of said carton containing said sealed and gas filled sample bag from said container.

3,866,475
STACK SAMPLING METHOD AND APPARATUS

Stanley P. Thompson, 2718 Osborn, Topeka, Kans. 66614, and Thomas B. Swearingen, 4326 Berini Dr., Durham, N.C. 27705
Filed Nov. 19, 1973, Ser. No. 416,927
Int. Cl. G01n *1/22*
U.S. Cl. 73—421.5 R **7 Claims**

1. Apparatus for achieving isokinetic sampling of a gas passing through a conduit, said apparatus comprising:
a reference duct positioned in said conduit,
said reference duct being open at opposite ends for the unimpeded flow of gas therethrough;
a sampling duct disposed adjacent said reference duct within said conduit,
said reference and sampling ducts having like flow constants (c) and a velocity coefficient (k);
vacuum pumping means coupled with said sampling duct for causing the flow of gas therethrough;
first pressure sensitive means for monitoring the pressure drop between two points in said reference duct and converting the pressure drop value into a first electrical signal;

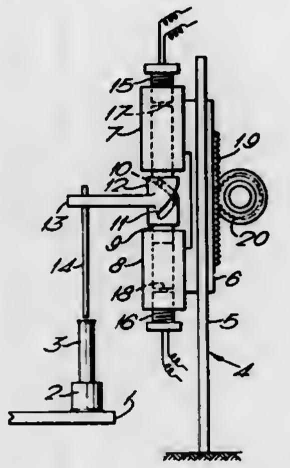
second pressure sensitive means for monitoring the pressure drop between two points in said sampling duct and converting the pressure drop value into a second electrical signal;
means for scaling the first electrical signal by a factor directly proportional to $(1/k)^2$ to provide an electrical output signal; and



means for comparing the second electrical signal with the electrical output signal to provide an electrical difference signal;
said vacuum pumping means being operable in response to said electrical difference signal to cause the velocity of the gas passing through the sampling duct to equal the velocity of the gas passing through the conduit.

3,866,476
ANALYTICAL APPARATUS

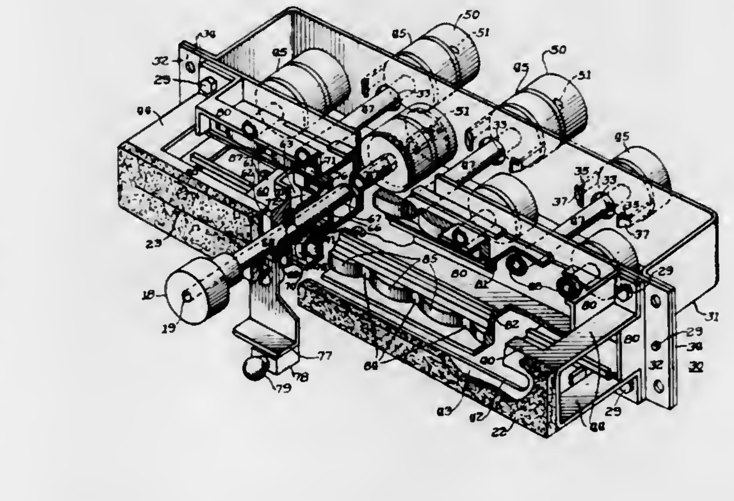
Alan John Thomas, Richmond, England, assignor to The Rank Organisation Limited, London, England
Filed Aug. 9, 1973, Ser. No. 386,885
Claims priority, application Great Britain, Aug. 9, 1972, 37076/72
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 A **7 Claims**



1. Apparatus for automatically sampling liquids, comprising:
conveying means for conveying liquid to be sampled to a sampling station,
a sampling probe,
movable support means for said sampling probe, said support means being movable to transfer said probe between said sampling station and a washing station,
washing means at said washing station,
driving means driving said movable support means to transfer said probe from said washing station to said sampling station and back to said washing station, said driving means operating to cause said probe to move in separate consecutive steps of alternate vertical and horizontal movement and including at least one rotary solenoid for effecting each step of said motion, and
a plurality of sensor means disposed in positions to detect when each said vertical or horizontal step of said movement of said probe is completed, said sensor means operating to energise said drive means to intitiate a subsequent step of said movement upon detection of completion of a preceding step thereof.

3,866,477
SINGLE KNOB, MULTIFUNCTION CONTROL ASSEMBLY FOR A TELEVISION RECEIVER

Richard G. Schmid, Glenview, and Otto H. Schwartz, Rolling Meadows, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Aug. 2, 1973, Ser. No. 384,877
Int. Cl. H03j *1/04;* **F16d** *21/00;* **F16h** *35/18*
U.S. Cl. 74—10.45 **12 Claims**



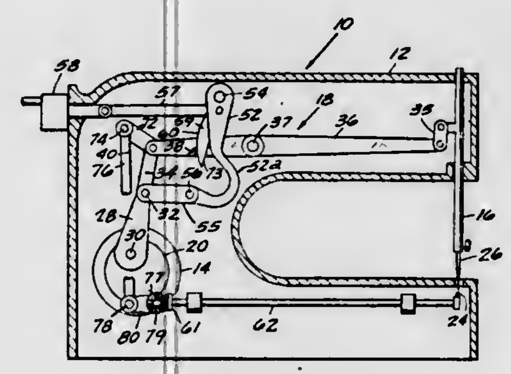
1. A television receiver having a control assembly including at least three viewer operable potentiometers each having an adjustable element, and a slidable master shaft assembly, including a master shaft for selectively adjusting said elements, said control assembly comprising:
frame means for supporting said potentiometers with said adjustable elements arranged in a line, and defining a corresponding plurality of separate tuning positions for adjustment of said potentiometers;
guide means permitting movement of said master shaft assembly to said tuning positions;
means normally biasing said master shaft out of engagement with said adjustable elements; and
means for mechanically coupling said master shaft to the selected one of said adjustable elements for adjustment of its corresponding potentiometers.

3,866,478
RECIPROCATING MOTION CONTROL DEVICE

Leighton R. McKeen, 877 Mamie Rd., El Paso, Tex. 79932
Filed Nov. 21, 1972, Ser. No. 308,390
Int. Cl. F16h *21/32;* **D05b** *69/22*
U.S. Cl. 74—40 **2 Claims**

1. In a device for converting rotary to reciprocating motion comprising:
a rotary drive means;
a work element mounted for reciprocation between first and second locations;
a lever arm pivotably mounted intermediate its ends and connected at one end to said work element;
a crank arm pivotably connected at one end to said rotary drive means;
a pitman, pivotably connected between said crank and the other end of said lever, to convert the rotary motion of said drive means to an oscillating motion on said lever arm;
a control lever pivotably mounted to said device and disposed to be skew with said lever arm;

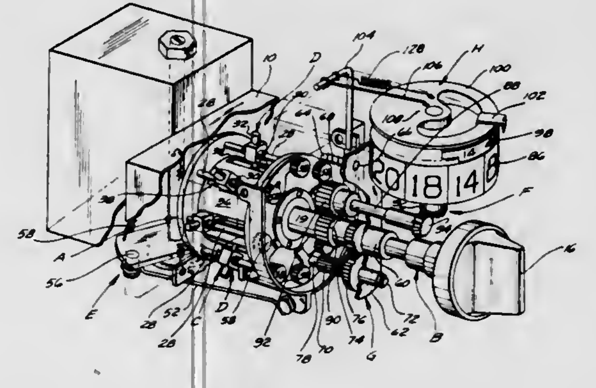
first means for selectively moving said control lever between a first and second position;
a control link pivotably connected at one end to said control lever and at its other end to said crank arm at said point of connection between the crank arm and said pitman; and
said control lever and said control link cooperating in said first position to hold the line of thrust of said pitman substantially perpendicular to said lever arm to oscillate it, and cooperating in said second position, to hold the line of thrust of said pitman substantially in a line with said lever arm to hold it stationary;



the improvements comprising:
a lug formed on said lever arm and disposed between said other end of said lever arm and its pivotal mount;
said control lever having a cam, with a cylindrical camming surface disposed to cooperate with said lug; and
said cylindrical camming surface having its center of curvature disposed at the pivotal mount of said lever arm and said surface extends a distance shorter than the arcuated travel path of said lug whenever the control lever is in said first position.

3,866,479
TUNER DRIVE ASSEMBLY FOR SELECTING A LIMITED NUMBER OF CHANNELS IN THE UHF BAND

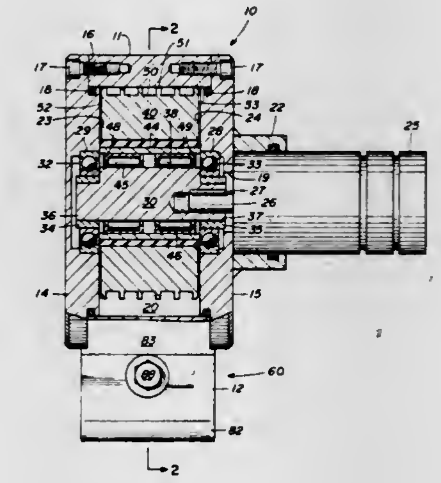
Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.
Filed Nov. 19, 1973, Ser. No. 417,142
U.S. Cl. 74—10.85 **9 Claims**



1. A tuner drive assembly for use with a tuning mechanism having a rotary control shaft comprising a housing, a rotatable input shaft mounted on said housing, a rotatable turret situated in said housing and operably connected to said input shaft to be driven thereby, said turret comprising first and second spaced end sections with a screw element rotatably mounted therebetween, said element having a threaded portion, means for rotating said element, an internally threaded member normally engaging said portion and axially movable by rotation of said element, said portion being spaced from said end sections respectively by a distance slightly less than the distance between the last thread on said member to engage said portion and the opposite end of said member therefrom, means for permitting said member too disengage from said portion when said element is rotated in a direction to move said member adjacent one of said end sections and effective when disengagement occurs to urge said member and said portion together to cause re-engagement thereof when said element is rotated in the opposite direction and sensing means for sensing the axial position of said member, said sensing means being operably connected to said control shaft to rotate same in accordance with the position of said member.

3,866,480
ORBITAL VIBRATOR

Thomas L. Elliston, Hurst, Tex., assignor to Martin Concrete Engineering Company
Filed June 2, 1972, Ser. No. 259,043
Int. Cl. F16h *33/10*
U.S. Cl. 74—87 **14 Claims**



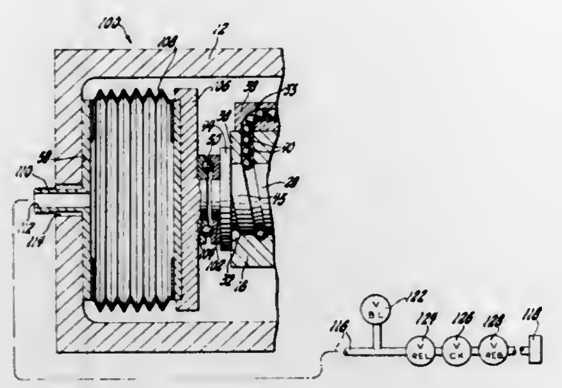
1. An orbiting mass vibrator comprising:
rotor assembly means including an enclosure defining a rotor chamber and cylindrical rotor means having a circular periphery and flat side faces including means associated with at least one side face defining hydrodynamic bearing means, said rotor means being constrained by said chamber,
drive means adapted to drive said rotor in an orbital path about said chamber,
fluid pressure relief means associated with said rotor assembly means, said pressure relief means adapted to relieve the fluid pressure between said rotor and chamber as the rotor orbits within the chamber thereby reducing the dynamic separation between the rotor and chamber.

3,866,481
TORQUE-LOADING DEVICE

John R. Fuchs, Leawood, Kans., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 23, 1973, Ser. No. 408,330
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **3 Claims**

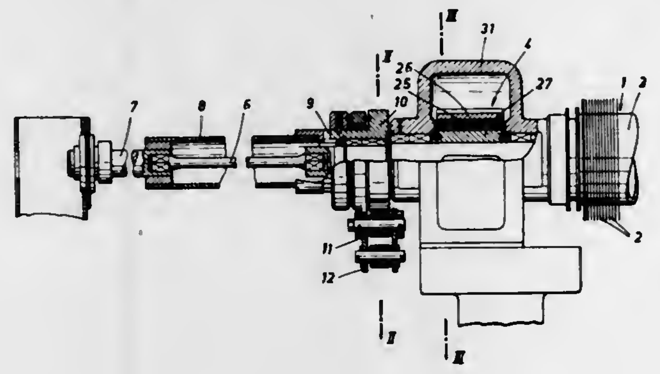
1. A device for providing torque-loading of a rotary power tool, said device comprising a housing, a sleeve member mounted in said housing, a shaft rotatably mounted through said sleeve member, circumferentially aligned spiral grooves formed in said sleeve member and on said shaft, said spiral grooves cooperating to form a spiraling conduit throughout the length of said sleeve member, a plurality of balls operatively connected to said spiraling conduit, said cooperating balls and spiralling grooves serving to change rotary movement of said shaft to axial movement thereof in response to torque applied to the exposed end of said shaft, bellows means mounted in said housing intermediate an end wall thereof and the inner end of said shaft and arranged to provide a counter-

force to said axial movement of said shaft, a source of fluid under pressure for said bellows means, and means for varying the pressure of said fluid within said bellows means to predetermined levels.



3,866,482
DRIVE SYSTEM FOR REED ROLLER OF WEAVING MACHINE

Walther Filter, Langenhagen, Germany, assignor to Vereinigte Osterreichische Eisen-Und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria and Establissement Wanderfield & Co., Schaan, Liechtenstein
Filed July 17, 1973, Ser. No. 380,064
Claims priority, application Austria, Aug. 8, 1972, 6849/72
Int. Cl. F16h *27/02*
U.S. Cl. 74—128 **8 Claims**

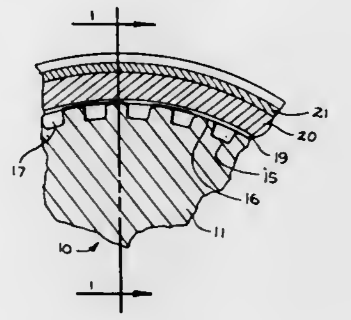


1. A drive system for intermittently rotating a reed roller incorporated in a flat weaving machine, which system comprises

1. a unidirectionally rotatably mounted reed shaft corotationally connected to the reed roller, the reed roller including a multiplicity of reed discs provided with dogs,
2. a torsion bar coaxial with the reed shaft and having first and second ends,
   a. the first end of the torsion bar being corotationally connected to one end of the reed shaft,
3. actuating means connected to the second end of the torsion bar and operable to rotate the second end of the torsion bar in the direction of rotation of the reed shaft,
4. a one-way coupling operatively connecting the actuating means to the second end of said torsion bar for the unidirectional rotation thereof,
   a. the actuating means holding the second torsion bar end in the rotated position,
5. a ratchet wheel corotationally connected to the reed shaft,
6. a locking pawl movable into and out of locking engagement with the ratchet wheel, and
7. means for holding the locking pawl in locking engagement with the ratchet wheel to hold the reed shaft against rotation during the rotation of the second end of said torsion bar by the actuating means and thus to twist the torsion bar, and for moving the pawl out of locking position with the ratchet wheel to permit the twisted torsion bar to rotate the reed shaft unidirectionally.

3,866,483
DRIVE BELT CONSTRUCTION

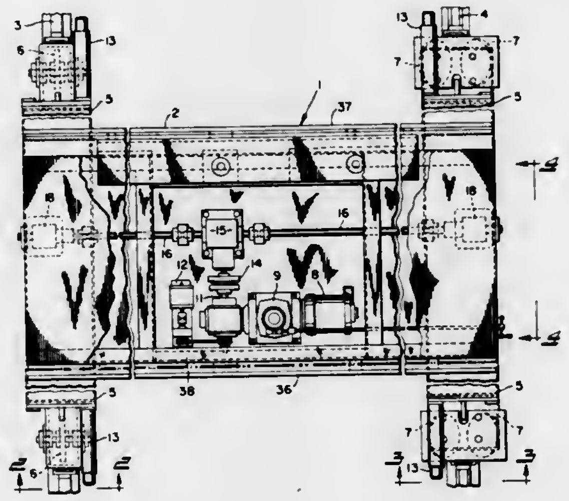
Thomas R. Smith, 710 W. 11th St. S., Newton, Iowa 50208
Filed Mar. 6, 1974, Ser. No. 448,704
Int. Cl. B29h *7/22;* **F16g** *1/22, 1/28*
U.S. Cl. 74—231 C **14 Claims**



1. A method of fabricating a reinforced drive belt comprising: assembling at least one loop of polyurethane material and a plurality of loops of generally nonextensible reinforcing material on a form that defines an endless groove, said loops of reinforcing material being placed in said groove for engagement with one surface of said loop of polyurethane material and with successive loops being spaced and electrically insulated from adjacent reinforcing loops; assembling a compression band over said reinforcing and polyurethane material; heating said polyurethane material to effect a softening thereof for embedding the loops of reinforcing material in the polyurethane material; cooling the polyurethane material; and removing the compression band and the fabricated belt from the form.

3,866,484
RACK AND PINION ACTUATED MACHINE

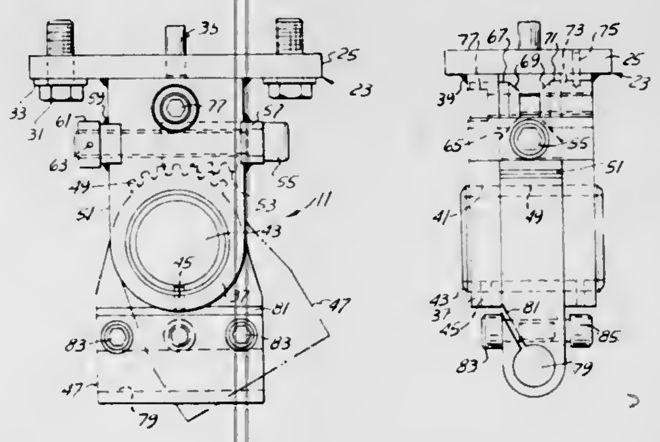
Roy H. Dreshman, Munhall, Pa., assignor to R. H. Dreshman & Sons, Inc., Homestead, Pa.
Continuation of Ser. No. 69,421, Sept. 3, 1970, abandoned, which is a division of Ser. No. 749,356, Aug. 1, 1968, Pat. No. 3,608,878. This application June 22, 1973, Ser. No. 372,766
Int. Cl. B23k *7/10;* **B61c** *11/04;* **F16h** *1/04*
U.S. Cl. 74—422 **4 Claims**



1. A machine for movably carrying a flame-cutting torch and the like comprising a carriage; a pair of essentially parallel rails supporting said carriage on wheels for horizontal movement longitudinally therealong, said wheels forming a lateral interlock on at least one rail to maintain the carriage on the rails, each rail having on one side thereof a longitudinally extending gear rack with generally vertically extending teeth having their pitch lines disposed in a vertical plane; drive gears having vertical axes and transversely horizontally movable support means therefor on said carriage to maintain said gears in meshing engagement with the respective racks despite deviation of said rails from true parallelism in a horizontal plane.

3,866,485
ANGULAR ADJUSTMENT MOUNT FOR A WORKPIECE EXTRACTOR

Leland F. Blatt, 31915 Grolsbeck, Grosse Pointe Shores, Mich. 48026
Filed Oct. 3, 1973, Ser. No. 403,034
Int. Cl. F16h *1/04*
U.S. Cl. 74—422 **4 Claims**



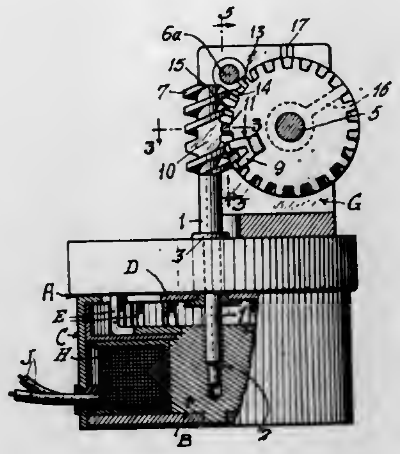
1. An angular adjustment mount for a workpiece extractor comprising a body assembly including a support plate adapted for mounting upon the reciprocal carriage of a shuttle unit, and a pair of spaced hanger plates secured thereto and depending therefrom;

a tube spanning and extending through corresponding opposed apertures in said hanger plates and secured thereto;
a hanger mount having a transverse bore mounted over and receiving said tube, pivotally mounted thereon and interposed between and depending from said hanger plates;
there being a longitudinal bore through said hanger mount at one end adapted to supportably receive and mount the hanger rod of a workpiece gripping jaw support;
there being an angular slit portion through said hanger mount extending to its bore to facilitate assembly of said hanger rod therethrough;
fasteners extending through the slit portion of said hanger mount threadedly engaging said hanger mount for drawing up the slit portion to secure said hanger rod thereto;
a rack pinion segment on said hanger mount concentric to its pivotal mounting;
an adjusting rack guidably mounted upon said hanger plates in mesh with said pinion;
means to adjust said rack relative to said pinion segment for effecting angular adjustment of said hanger mount;
and means for securing said rack in adjusted position.

3,866,486
ONE-WAY ROTATION CONTROL FOR SYNCHRONOUS MOTOR SHAFTS

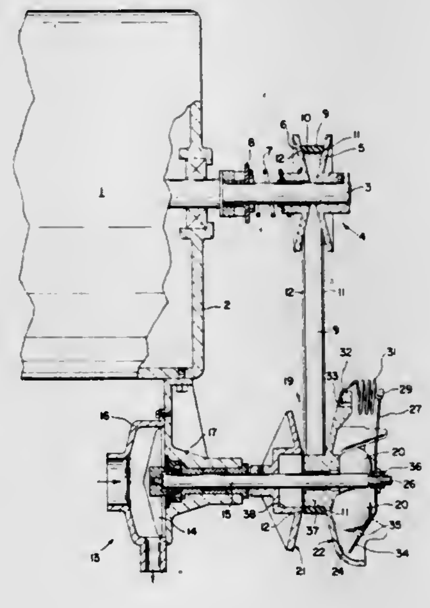
Walter L. Lechner, New Providence, N.J., assignor to Engler Instrument Company, Jersey City, N.J.
Filed Oct. 9, 1973, Ser. No. 404,621
Int. Cl. F16h *1/16, 55/04*
U.S. Cl. 74—425 **8 Claims**

1. The combination with the shaft of a synchronous motor that is capable of starting in either direction, of a worm on said shaft to rotate therewith, and a gear rotatable about an axis perpendicular to the axis of said shaft and meshing with said worm providing upon energization of the motor for free rotation of the shaft and said gear in one direction, said worm and said gear having portions coactive to block rotation of the shaft in the opposite direction.



3,866,487
PULLEY DRIVE SYSTEM

Grahame Russell Key, Aylesbury, England, assignor to The Hoover Company, North Canton, Ohio
Filed Apr. 6, 1973, Ser. No. 348,765
Claims priority, application Great Britain, May 1, 1972, 20170/72
Int. Cl. F16h *55/22*
U.S. Cl. 74—230.17 E **7 Claims**



1. A pulley drive system comprising a drive pulley assembly, a driven pulley assembly, a belt coactively connecting said pulley assemblies, said driven pulley assembly being formed of first and second half-pulleys, said half-pulleys being relatively rotatable and relatively axially movable, said first half-pulley being adapted to drive associated apparatus, a belt-receiving portion structurally integral with said second half-pulley whereby rotary motion is imparted to said second half-pulley by said belt, said belt bearing upon said belt-receiving portion and being spaced from said first half-pulley when said second half-pulley is driven below a predetermined speed so that said belt does not contact said first half-pulley, and a centrifugal mechanism associated with said second half-pulley to impart axial movement to said second half-pulley upon said belt driving said second half-pulley at a predetermined speed to bring said belt into contact with said first half-pulley to drive said first half-pulley.

3,866,488
MANUALLY OPERATED SHIFT ASSEMBLY WITH RESTRAINING ACTION FOR SHIFTING TO REVERSE

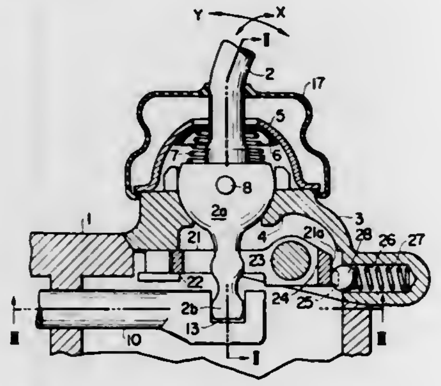
Tadao Nakata; Hideaki Mizutani; Shinichi Ito; Mitsuhiko Okada, and Nobuaki Katayama, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota Aichi-ken, Japan

Continuation of Ser. No. 325,257, Jan. 22, 1973, abandoned. This application Oct. 29, 1973, Ser. No. 410,402

Claims priority, application Japan, Jan. 24, 1972, 47-8284

Int. Cl. G05g *5/10, 9/12*

U.S. Cl. 74—475 **13 Claims**



1. In a transmission including a gear case arranged to contain change gears, at least two fork shaft positioned within said gear case in side-by-side relationship and each arranged to be axially displaceable in the opposite directions from a neutral position for effecting a speed change in the change gears, each said fork shaft having a recess with the recesses arranged in side-by-side relationship in the neutral position, manually operable first means mounted in said gear case and arranged for selective engagement within said recesses in said fork shaft for selecting one of said fork shafts in the neutral position for shifting from the neutral position in the axial direction of the selected fork shaft for changing gears, wherein the improvement comprises interlocking means for preventing said two fork shafts from being axially displaced at the same time, a first one of said two fork shafts providing a forward gear position and a reverse gear position disposed in spaced relationship in the axial direction of the shaft on the opposite sides of the neutral position thereof, the second one of said two fork shafts providing two forward gear positions arranged in spaced relationship in the axial direction of the fork shaft on the opposite sides of the neutral position, said recess in said first fork shaft having a pari of opposed sides spaced apart in the axial displacing direction with one side located closer to the reverse gear position and the other side located closer to the forward gear position, said recess in said second fork shaft having a pair of opposed sides spaced apart in the axially displacing direction with one of said sides thereof aligned in the neutral position with the reverse shift position side of the recess in said first fork shaft when it is in the neutral position, said one of said sides extending toward the recess in said first fork shaft beyond the end of the other said side thereof closer to the recess in said first fork shaft, second means in operative association with said first means for affording a limitation on the movement of said first means from the recess in said second fork shaft into the recess in said first fork shaft so that in addition to the effort required for axial displacement needed for movement from the neutral position into the forward gear position of said first fork shaft at least one restricting action is provided to be overcome for displacing said first means for shifting from the neutral position to the reverse gear position of said first fork shaft, and the restricting action of said second means limiting the displacement of said first means into the recess in said first fork shaft so that said first means contacts said extension on the one said side of the recess in said second fork shaft and said interlocking means operates to prevent said first fork shaft from being displaced into the reverse gear position until the restricting action is overcome and said first means is moved out of contact with said extension.

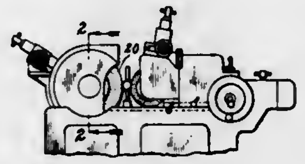
3,866,489
DYNAMIC BALANCING APPARATUS

Rudolf Johan Kimmelaar, Vlaardingen, Netherlands, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 16, 1973, Ser. No. 416,689

Int. Cl. B24b *41/04*

U.S. Cl. 74—573 **5 Claims**



1. A balancing apparatus for a body rotating about a predetermined axis comprising a spindle for supporting said body for rotation about said axis, a casing mounted on said spindle adjacent said body, an internal gear disposed in said casing in fixed, coaxial relationship with said spindle, a carrier journaled in said casing for rotation about the axis of said spindle, a pinion gear journaled in said carrier and meshing with said internal gear, a balancing mass attached to said pinion gear with its center of gravity eccentric to the axis thereof, and selectively operable means for rotating said carrier relative to said spindle thereby causing the center of gravity of said mass to describe a hypocycloidal path in a plane normal to the axis of said spindle.

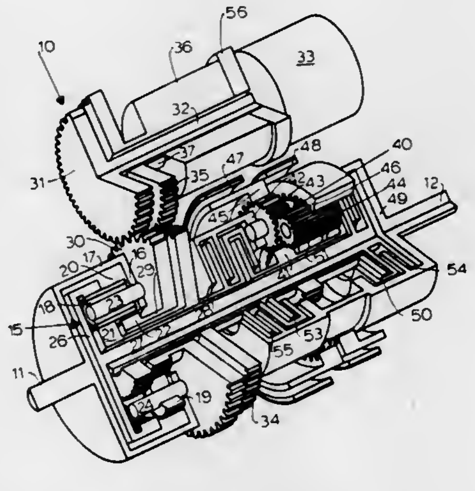
3,866,490
SPLIT POWER TRANSMISSION

Elias Orshansky, Jr., San Francisco, Calif., assignor to Orshansky Transmission Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 443,790, Feb. 19, 1974, , and a continuation-in-part of Ser. No. 361,178, May 17, 1973, abandoned. This application Mar. 15, 1974, Ser. No. 451,541

Int. Cl. F16h *47/04*

U.S. Cl. 74—687 **73 Claims**



1. A power transmission comprising:

input means,

output means,

a planetary gear assembly having an input member connected to said input means, two output members, and a reaction member,

means for successively connecting each said output member to said output means to drive said output means through a preselected speed range,

means for disconnecting each said output member from the output means after the other output member has been connected thereto, and

speed-varying means at all times in driving engagement with said reaction member and at all times in driving engagement with the same said output member and only that said output member.

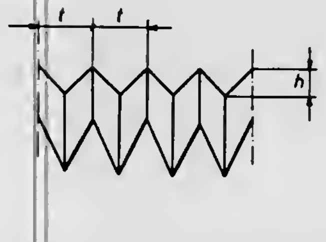
3,866,491
STAMPING KNIFE

Gustav Marchard, Waidhofen/Ybbs, Austria, assignor to Gebr. Bohler & Co. AG, Vienna, Austria

Division of Ser. No. 289,752, Sept. 15, 1972, Pat. No. 3,824,887. This application Jan. 2, 1974, Ser. No. 429,857

Int. Cl. B23p *15/28*

U.S. Cl. 76—101 R **3 Claims**



1. A process of manufacturing a stamping knife which comprises a knife body and a cutting edge which is carried by said knife body and formed with a series of teeth, each of which has a root merging into said knife body and a tip spaced from said knife body, adjacent ones of said tips being spaced 0.5–5 millimeters apart, each of said teeth having a depth of up to 5 millimeters, measured from its tip to its root, each of said teeth increasing in hardness from its tip to its root, each of said teeth having at its root at least the same hardness as the adjacent portion of said tooth body, which process comprises

hardening said knife to impart to said teeth a hardness of HRC 43–46 at their tips and of HRC 48–55 at their roots, and

tempering said knife after it has thus been hardened.

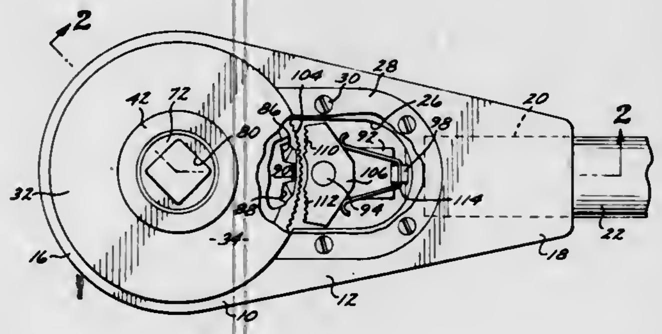
3,866,492
TORQUE MULTIPLIER

William A. Knoll, Santa Ana, Calif., assignor to Jo-Line Tools, Inc., Anaheim, Calif.

Filed Mar. 6, 1974, Ser. No. 448,455

Int. Cl. B25b

U.S. Cl. 81—52.4 R **11 Claims**



1. A torque multiplier tool with a torque limiting mechanism which comprises:

a. a housing having a through opening;

b. a planetary cage rotatably carried in said through opening and formed of a work-receiving member and an opposite spider member with a plurality of planetary gears rotatably mounted therein;

c. shaft means coaxially carried by said spider member and bearing pinion means engaged as a sun gear with said planetary gears;

d. a ring gear mounted in said through opening, surrounding and engaged with said planetary gears and bearing a detent on its outer periphery;

e. first and second toggle members carried by said housing with resilient means biasing said toggle members into an in-line relationship with said first toggle member engaging said detent;

f. detent teeth carried on an outer peripheral surface of said planetary cage;

g. a pawl pivotally carried on said housing and bearing teeth to mesh with the ratchet teeth on said planetary cage; and

h. resilient pawl actuation means carried by said second toggle member whereby movement of said toggle members from said in-line relationship will rock said pawl into engagement with said detent teeth.

3,866,493
AIR-OPERATED HAND TOOL

Chester A. Ringerud, 5537 Dundee Rd., Edina, Minn. 55436

Filed Apr. 1, 1974, Ser. No. 456,457

Int. Cl. B25b *17/00, 21/00, 13/00*

U.S. Cl. 81—57.11 **8 Claims**

1. An air-operated hand tool, which is also capable of manual operation, having a rotary output, said tool comprising:

a. a tool body;

b. means defining a hollow cylinder within said tool body;

c. a piston sealably located in said cylinder and mounted for reciprocal movement in said cylinder, said movement having a power direction and an exhaust direction; said piston having opposed first and second ends and having a longitudinally extending cylindrical bore extending axially through said piston between said first and second ends, said piston being moveable in said cylinder when subjected to air pressure on one end different from the air pressure on the second end;

d. air conduit means for directing pressurized air flow from a source to said cylinder and for venting air from said cylinder to cause movement of said piston;

e. drive shaft having a generally cylindrical outer surface and extending coaxially through said longitudinal bore in said piston, said drive shaft being rotatably moveable;

f. power train means for converting reciprocatory motion of said piston into rotary motion of said drive shaft;

g. tool bit for engaging a work piece;

h. rotatable chuck means carried by said body for holding said tool bit in axial alignment with said drive shaft;

i. power drive clutch means for operatively connecting said drive shaft with said chuck means to permit power rotation of said tool bit; and

j. manual drive clutch means for operatively connecting said tool body with said chuck means to thereby permit the tool bit to be rotated by manual rotation of said tool body.

3,866,494
RING GRIPPING TOOL

George Dotson, Bliss, Idaho, assignor to Dotson and Evans Inc., Bliss, Idaho

Filed Apr. 22, 1974, Ser. No. 462,601

Int. Cl. B25b *13/48*

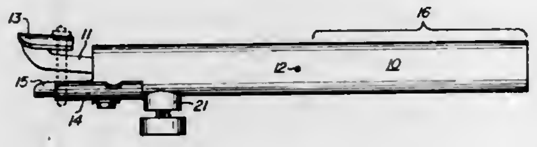
U.S. Cl. 81—72 **13 Claims**

1. A ring-gripping tool for holding a finger ring in position for polishing comprising

a. a hollow, cylindrical, elongated body member, said body member having an open end at one end and a handle portion at the opposite end,

b. a lip member having a curved ring-contacting outer surface projecting beyond at least a portion of said open end of said hollow body member,

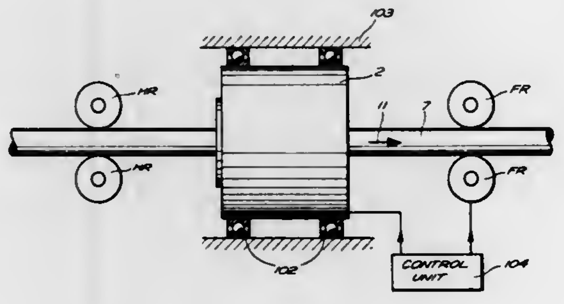
c. a lever member disposed with said hollow body member, one end of said lever member pivotally attached to said hollow body member and a free end of said lever member extending from said open end of said hollow body member, said free end of said lever member being substantially coextensive with the farthest projecting edge of said lip member,



d. a saddle member having a ring-contacting outer surface, said saddle member attached to the free end of said lever member,

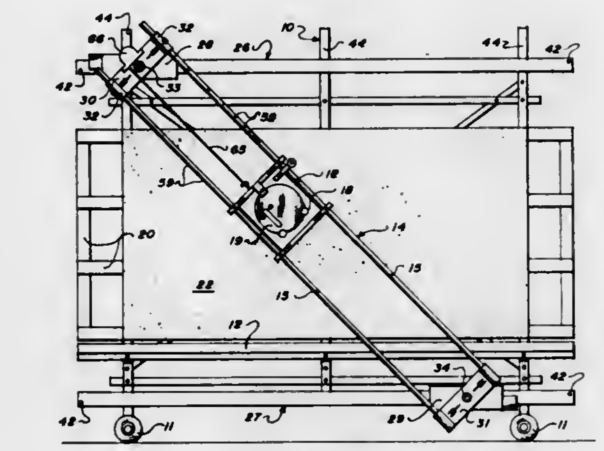
e. an adjustment screw threaded through the sidewall of said hollow body member to contact said lever member to force said free end of said lever member away from said lip member to cause said saddle member to coact with said lip member to hold a finger ring in position for polishing.

3,866,495
METHOD AND APPARATUS FOR SHAVING ELONGATED WORKPIECES
Alfons Goeke, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany
Filed Aug. 8, 1972, Ser. No. 278,861
Int. Cl. B23b *5/08, 1/00*
U.S. Cl. 82—1 C **11 Claims**



1. A method of shaving the circumferential surfaces of metallic wire, rods, tubes or analogous workpieces of generally circular profile by means of knives which orbit in a predetermined plane about a predetermined axis, comprising the steps of orbiting the knives at a relatively high initial speed and feeding a workpiece lengthwise in the direction of the axis at a starting speed so that the rapidly orbiting knives remove material at the circumferential surface of the moving workpieces at a predetermined cutting speed whose vector is the sum of vectors representing the relatively high initial speed of orbital movement of the knives and the starting speed of lengthwise movement of the workpiece; and gradually reducing said initial speed to a predetermined operating speed while simultaneously gradually increasing the speed of movement of the workpiece from said starting speed, so that the cutting speed remains unchanged during said gradual reduction of the initial speed and at said operating speed.

3,866,496
SHEETBOARD CUTTING MACHINES
Marion L. Payne, 8403 Claremont, N.E., Albuquerque, N. Mex. 87112, and Marion A. Payne, 908 N. Howard, Carlsbad, N. Mex. 87220
Filed Aug. 16, 1973, Ser. No. 388,803
Int. Cl. B23d *45/02;* **B27b** *5/06*
U.S. Cl. 83—471.3 **10 Claims**



1. A sheetboard cutting machine comprising:

a. an upstanding support frame;

b. a horizontal fence mounted frontally to said support frame and adapted to carry said sheetboard thereon edgewise;

c. a saw guide extending upwardly and across the front of said support frame in spaced parallel relation thereto;

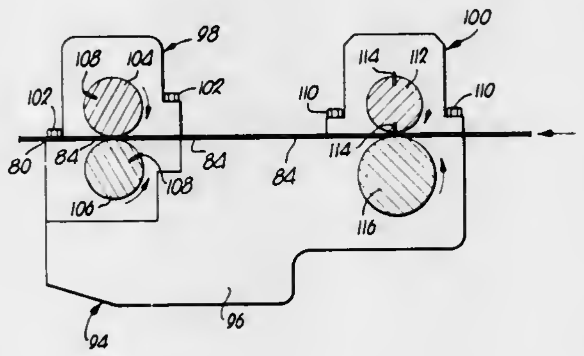
d. a saw mounting assembly slidably mounted upon said saw guide;

e. means mounted upon said saw mounting assembly for rotatably carrying the saw, whereby the saw can be selectively angularly rotated with respect to said saw guide;

f. means for movably carrying the saw guide upon the support frame, whereby the saw guide can be moved upon said support frame in a plane parallel thereto, to enable a horizontal cut to be made in the sheetboard without advancement thereof; and

g. means rotatably interconnecting said saw guide carrying means and said saw guide, whereby said saw guide can be rotated in a plane parallel to said support frame.

3,866,497
CROSS-PERFORATING OF CONTINUOUSLY MOVING, SUPERIMPOSED LEAVES
Larry B. Wolfberg, 860 Tara Ln., and John Harper, 8008 Willowbrook, both of Wichita, Kans. 67207
Continuation-in-part of Ser. No. 210,124, Dec. 20, 1971, , which is a continuation of Ser. No. 882,256, Dec. 4, 1969, abandoned. This application Nov. 24, 1972, Ser. No. 309,128
Int. Cl. B26f *1/08*
U.S. Cl. 83—30 **6 Claims**



1. In a method of preparing a cross-perforated, multi-leaved web foldable in opposite directions at preselected perforation fold line intervals for formation of a layered pack having, in each layer, a plurality of end-to-end articles separated by perforation tear lines, the steps of:

advancing a plurality of leaves in superimposed, aligned relationship with one another along a common path of travel;

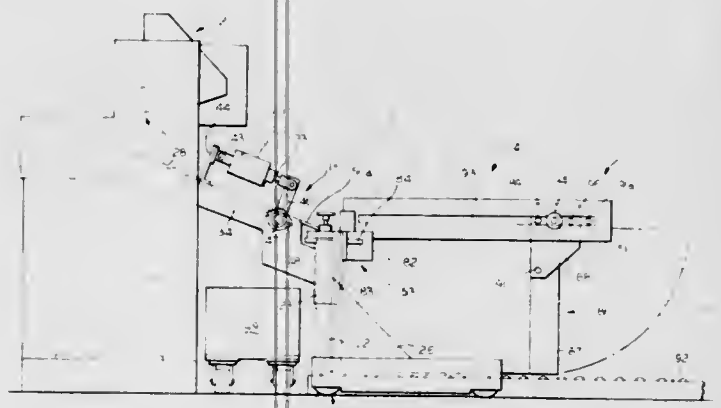
presenting the advancing web of leaves to a first perforating station;

producing spaced-apart, perforation fold lines in the advancing leaves at said first station by alternately penetrating the leaves from opposite directions at preselected intervals;

presenting the advancing web of leaves to a second perforating station independent of said first station; and

producing spaced-apart, perforation tear lines in the advancing web of leaves at said second station and at preselected intervals selected to locate at least one perforation tear line between each pair of perforation fold lines.

3,866,498
LIGHT DUTY STACKER
David J. Jarman, Box 181, R.R. 3, Aurora, Ind. 47001
Filed July 30, 1973, Ser. No. 383,666
Int. Cl. B65h *29/26, 35/04*
U.S. Cl. 83—89 **6 Claims**



1. A light duty stacking assembly for use in conjunction with shears,

said assembly comprising a conveyor portion for transporting material from the shears,

a stacking portion for use in stacking the transported material,

non-motorized means on said conveyor portion for moving the material from the shear to the stacking portion,

a stacker rail assembly common to both said stacker portion and said conveyor portion,

said stacker rail assebly comprising a pair of support cart frames oppositely disposed from each other,

standards on each of said support frames extending vertically upwardly at the shear end of said support cart frames,

stacker rail means extending between said standards,

means for attaching said conveyor to said rail,

back stop means for stopping the sheared material after it slides from the conveyor,

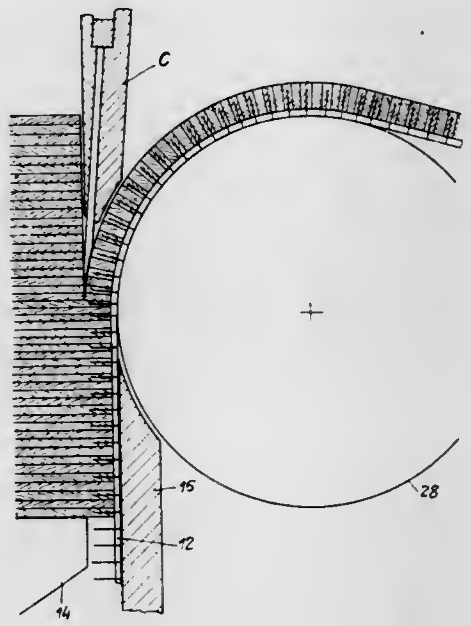
said back stop means including angle beam means,

side plates for supporting said angle beam means,

means for attaching said side plates to said rail means for supporting said side plates, and

means for enabling said back stop to rotate from a vertical position to a horizontal position.

3,866,499
APPARATUS TO MAKE PILE FABRICS IN WHICH PILE THREADS ARE BONDED TO A BASE LAYER
Jakob Messner, Unterschauersberg 66, Wels/Thalheim, Austria
Filed Mar. 24, 1972, Ser. No. 237,854
Claims priority, application Germany, Mar. 27, 1971, 2114859
Int. Cl. B26d *7/06*
U.S. Cl. 83—278 **9 Claims**



1. Apparatus to make pile fabric in which individual pile threads or fibers are joined to a base layer comprising

a needle holding web (**12**) having projecting needles transverse to the web;

means (**15**) guiding the web to the end faces of the threads with the needles projecting towards the end faces of the threads to spear at least some of the threads on the projecting needles;

cutting means (C) severing the threads at a position beyond the insertion depth of the needles;

and thread feed means (A) comprising

a plurality of spaced, stacked, plate-like elements (**2,3**) adapted to hold the thread therebetween essentially in parallel alignment and to have the end faces of the threads exposed at the ends of the plates;

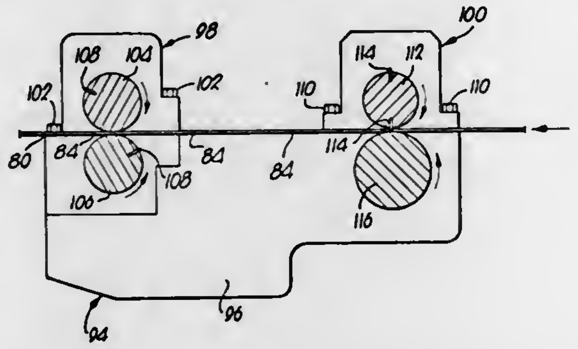
gripping means (**2**c, **3**c) located on said plate-like elements and movable between a projecting position in which the threads between the plates are engaged, and a retracted position in which the gripping means are out of contact with the threads;

and means cyclically moving the plate-like elements transverse to the web (**12**) and moving the gripping means to grip the thread when the plate-like elements are moved towards the web to feed a pile of threads, and to retract the gripping means when the plate-like elements are retracted in advance of the next feed movement.

3,866,500
CROSS-PERFORATING OF CONTINUOUSLY MOVING, SUPERIMPOSED LEAVES
Larry B. Wolfberg, and John Harper, both of Wichita, Kans., assignors to Service Business Forms, Inc., Wichita, Kans. Division of Ser. No. 309,128, Nov. 24, 1972, , which is a continuation-in-part of Ser. No. 210,124, Dec. 20, 1971, , which is a continuation of Ser. No. 882,256, Dec. 4, 1969, abandoned. This application Feb. 15, 1974, Ser. No. 442,861
Int. Cl. B26f *1/20*
U.S. Cl. 83—300 **6 Claims**

1. Apparatus for preparing a cross-perforated, multi-leaved web foldable in opposite directions at preselected perforation fold line intervals and having at least one perforation tear line

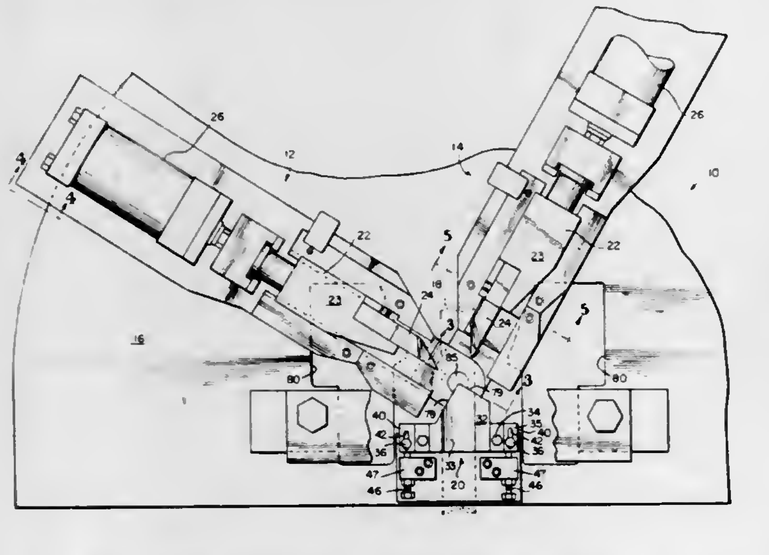
between each pair of said fold lines, said apparatus including:
frame means;
- means associated with said frame means for advancing the leaves in superimposed, aligned relationship along a common path of travel;
- a first perforating head mounted on said frame means for receiving the leaves and producing said fold lines therein, said first head having a pair of opposed rotary members disposed on opposite sides of the web of leaves, each member being provided with at least one elongated, peripherally disposed set of leaf perforating means with the set of perforating means of one member being angularly offset from that of the other member to thereby produce the fold lines at spaced intervals and alternately from opposite directions; and
- a second perforating head mounted on said frame means in spaced relation to said first head for receiving the leaves and producing said tear lines therein,
- said second head including a rotary member disposed on one side of the web of leaves having at least one elongated, peripherally disposed set of leaf-perforating means which is angularly offset from the perforating means of said first head to produce said tear lines at spaced intervals selected to dispose at least one tear line between each pair of fold lines.



3,866,501
TUBE SHEAR MACHINE

Don M. Glendenning, Dexter, Mo., and Louis Bledstein, Indianapolis, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 5, 1973, Ser. No. 412,654
Int. Cl. B23d *21/02*
U.S. Cl. 83—382 **14 Claims**

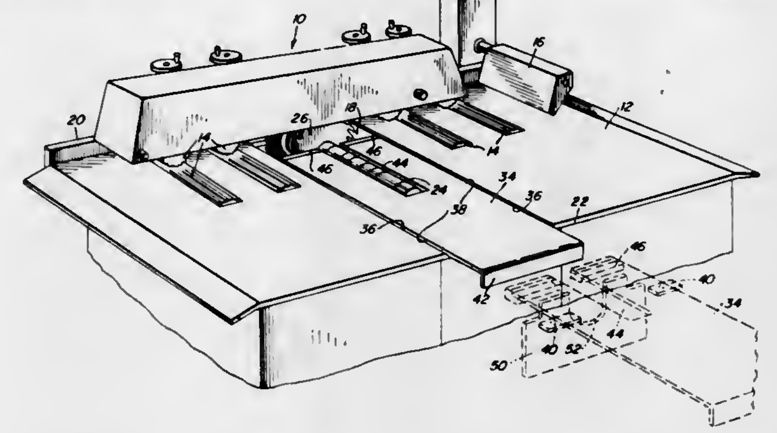


1. A tube shear machine for shearing a length of tubing, comprising a machine table, a die assembly carried on said table for releasably clamping said tubing in position and defining a pair of angularly disposed cutting faces, a pair of cutting blades operatively supported on said table and movable with respect to said die assembly, first means for angularly adjusting the path of movement of said blades with respect to each other and with respect to said die assembly, and second means for moving each of said cutting blades along one of said angulated cutting faces to shear said tubing at a pair of angles.

3,866,502
GANG RIP SAW

Clarence R. Brewer, Sr., P.O. Box 211, Central City, Ky. 42330

Filed Mar. 8, 1974, Ser. No. 449,529
Int. Cl. B23d *45/06, 47/00*
U.S. Cl. 83—477.2 **9 Claims**

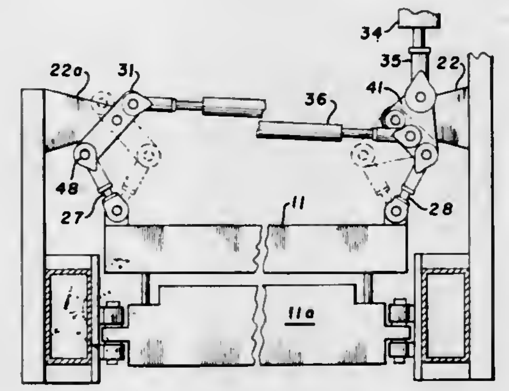


1. In a gang rip saw, a tabletop, a transversely elongated blade accommodating opening through said top, a well below said opening, an elongated blade mounting arbor in said well extending longitudinally of the opening, ganged blades mounted on said arbor and extending through said opening, and adjustable means for varying the length of said opening transversely of the top to adapt the size of the opening to the specific ganged blade arrangement.

3,866,503
RECIPROCATORY DRIVE MEANS FOR TREATMENT OF MOVABLE WEBS

Carl G. Gal, Attleboro, Mass., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Aug. 22, 1973, Ser. No. 390,482
Int. Cl. B26d *5/10, 5/18*
U.S. Cl. 83—626 **20 Claims**

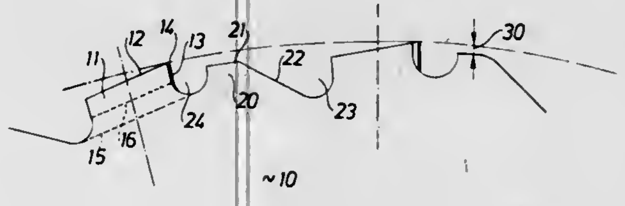


1. Reciprocating driving means for tool means for intermittent treatment of webs of film at a work station and comprising:
- a. stationary frame means defining said work station and having means supporting a web of plastic film for movement through said work station;
- b. tool means extending generally laterally across said web supporting means and having opposed first and second ends with at least one working head portion operatively secured therebetween, and reciprocatory drive means coupled to said frame means with said reciprocatory drive means having a movable mechanical output member;
- c. said stationary frame means including means for normally retaining said tool means in a plane spaced from said web;
- d. mechanical linkage means coupling said tool means to said reciprocatory drive means and arranged to drive said working head portions of said tool means into contact with said film; said linkage means including first and second laterally spaced lever elements disposed generally laterally across said web with said first lever element being coupled to said mechanical output member, and with said second lever element being coupled to said first lever element by a generally transversely extending arm;
- e. said first lever element including a pivotally mounted crank means having first and second arms extending outwardly from said pivot mount, with the first arm having at least two points of attachment, each being spaced a finite distance from the plane of said web, and with the first point of attachment being pivotally coupled to said tool means, and with the second point of attachment being pivotally coupled to said transversely extending arm, and with said second arm being pivotally coupled to said mechanical output member;
- f. said second lever element including a pivotally mounted lever arm means attached to said frame means, and with one arm of said lever being pivotally coupled to said tool means, and with the second arm of said second lever element being pivotally coupled to said transversely extending arm whereby motion of said mechanical output means in directions toward and away from said web plane are each translated into reciprocatory to-and-fro motion in said tool means.

3,866,504
SAW BLADE

Tore Vilhelm Claesson, and Johan Esbjorn Rojd, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Continuation of Ser. No. 227,810, Feb. 22, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,374
Claims priority, application Sweden, Feb. 26, 1971, 2447/71
Int. Cl. B27b *33/02*
U.S. Cl. 83—852 **5 Claims**

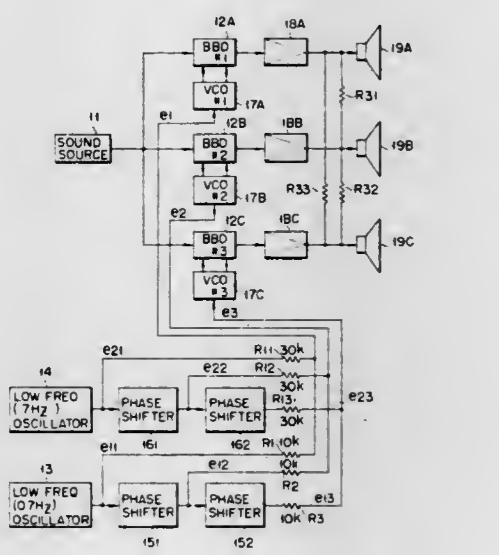


1. Saw blade adapted for cutting bush and tree branches, said blade having in combination alternating cutter teeth and depth gauge teeth which are spaced from each other at both ends, in which combination each cutter tooth is made in one piece with the body of the blade and formed by setting and has a substantially radially directed chip surface and a clearance surface formed by the edge of the blade and having a relatively small inclination to the sawing direction of up to 20°, said chip surface and clearance surface forming a cutting edge at their intersection, each depth gauge tooth being located at a short distance in front of the cutting edge and having an upper surface which is substantially parallel to a plane between the outermost points of the cutting teeth on either side of the depth gauge tooth, said cutting teeth being set along their whole length above said blade.

3,866,505
ENSEMBLE EFFECT IMPARTING DEVICE USING A BUCKET BRIGADE DEVICE FOR AN ELECTRIC MUSICAL INSTRUMENT

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed July 18, 1973, Ser. No. 380,360
Claims priority, application Japan, July 20, 1972, 47-72703; Sept. 5, 1972, 47-89006; Sept. 5, 1972, 47-89008; Sept. 5, 1972, 47-89009; Sept. 8, 1972, 47-90161; Sept. 8, 1972, 47-90162; Sept. 8, 1972, 47-104882; Oct. 27, 1972, 47-123499
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **18 Claims**



1. A sound reproducing system for reproducing musical sounds from an electrical musical instrument, comprising:
- at least one source of sound signals obtained during performance on at least one electrical musical instrument;
- a plurality of bucket brigade devices coupled with said sound signal source to receive said sound signals, each of said bucket brigade devices acting as a signal delay path for the sound signals supplied thereto from said sound signal source;
- a plurality of voltage controlled type clock pulse oscillators, each generating a clock pulse signal having a super audible frequency, coupled with a corresponding one of said bucket brigade devices to cause said bucket brigade devices to impart respective time delays to the sound signals supplied thereto from said sound signal source, the imparted time delay being a function of the frequency of the clock pulse signal generated by the associated clock pulse oscillator;
- means coupled to said clock pulse oscillators to continuously vary the frequencies of the clock pulse signals generated thereby, said means for varying the frequencies of the clock pulse signals including at least two low frequency signal sources, one of said low frequency signal sources generating a first low frequency signal having a frequency of about 0.5 to 3 Hz, and the other low frequency signal source generating a second low frequency signal having a frequency of about 5 to 12 times that of said first low frequency signal and a voltage level equal to about 1/3 to 1/5 of that of said first low frequency signal; phase shift means for converting at least one of said first and second low frequency signals from said low frequency signal sources into a plurality of signals having different phases; and means coupling said low frequency signals, including said different phase signals, to said clock pulse oscillators to cause each of said bucket brigade devices to impart to the sound signals supplied thereto from said sound source a time delay which continuously varies with the frequency of the clock pulse signal from the corresponding one of said clock pulse oscillators; and means receiving said delayed sound signals

obtained through said bucket brigade devices for generating an audio output responsive thereto.

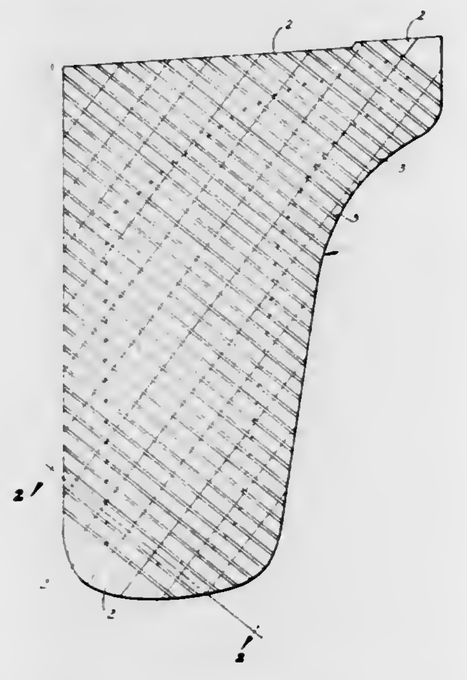
3,866,506
SOUNDBOARD CONSTRUCTION FOR STRINGED MUSICAL INSTRUMENTS

Harold A. Conklin, Jr., Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed Oct. 19, 1973, Ser. No. 407,854

Int. Cl. G10c *3/06*

U.S. Cl. 84—195 **11 Claims**



1. In a musical instrument having a plurality of strings defining the scale of the instrument, a soundboard having a series of spaced apart reinforcing ribs secured thereto, adjacent ribs throughout said series of ribs being spaced apart by a distance between their centerlines which is less than one-half the vibrational wave length of the soundboard at the fundamental scale frequency of the highest note on the scale of the instrument, the numerical ratio between the cross-sectional widths of the ribs and the distance between the centerlines of adjacent ribs being maintained essentially constant irrespective of the number of ribs employed.

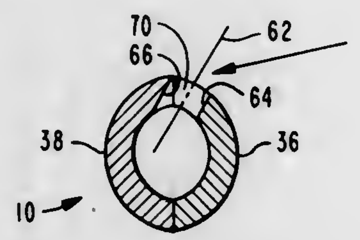
3,866,507
NONCIRCULAR HEAD JOINT FOR A CONCERT FLUTE AND METHOD OF MANUFACTURE

Raoul J. Eajardo, P.O. Box 4194, Whittier, Calif. 90605

Filed July 26, 1973, Ser. No. 382,867

Int. Cl. G10d *7/02*

U.S. Cl. 84—384 **12 Claims**



1. A head joint for a concert flute comprising a curvilinear closed wall having a connecting end and a longitudinally spaced closure end, the interior surface of the closed wall defining a cross section in a plane perpendicular to the longitudinal direction which has a gradual, continuous transition from circular at the connecting end to approximately elliptical at the closure end; and an embouchure hole extending through the wall and having a central axis longitudinally disposed nearer the closure end than the connecting end.

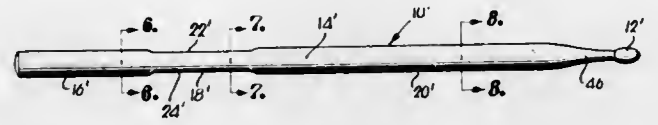
3,866,508
STICK FOR PLAYING PERCUSSION INSTRUMENTS

Elmer F. Huslig, 2020 17th St., Great Bend, Kans. 67530

Filed Sept. 21, 1970, Ser. No. 73,943

Int. Cl. G10d *13/00*

U.S. Cl. 84—422 **4 Claims**



1. A drumstick for manually striking percussion type musical instruments comprising:
- an elongated, unitary, solid member including a striking bead at one end of the member, an intermediate length of the member adapted to be gripped by a user, a connecting length of the member extending from said intermediate length to said bead, and a terminal length of the member adjacent the end thereof remote from said bead,
- said member having a fixed balance point intermediate its ends, the portions of the member between said balance point and the respective opposite ends of the member having equal masses,
- said intermediate length being disposed between said balance point and the end of the member remote from said striking bead,
- said lengths of the member each having a pair of intersecting, perpendicular, transverse cross-sectional axes,
- the transverse dimension of the member being greater along one of said axes than along the other of said axes throughout parts of the member including at least said intermediate length thereof,
- said parts of the member being provided with a pair of spaced, opposite, generally flattened side surfaces and a pair of spaced, opposite, curved edge surfaces,
- said parts of said member extending throughout said intermediate length only,
- said terminal and connecting lengths being of generally circular transverse cross section.

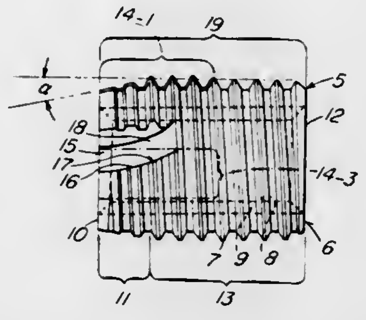
3,866,509
SELF-TAPPING AND SELF-RETAINING, SCREW THREAD INSERT

Peter E. Kraus, Ridgefield, and Kenneth C. Newton, Danbury, both of Conn., assignors to Mite Corporation, Danbury, Conn.

Filed Aug. 22, 1973, Ser. No. 390,428

Int. Cl. F16b *25/00, 37/00, 39/30*

U.S. Cl. 85—32 R **7 Claims**



1. A self-tapping and self-retaining, screw thread insert comprising an externally threaded cylindrical body of relatively hard rigid material having at least a hollow leading end portion defined by a tubular wall with external thread turns being interrupted for rotationally cutting a mating female thread into the wall of a receptive hole in a parent body of relatively softer rigid material; said insert body having a leading tip end, a tip end section, a trailing back end and an intervening midsection with the successive external thread turns on the latter being of full crest diameter and those on the tip end section having the crests thereon taper chamfered progressively to reduce the thread depth toward the tip end; characterized by the provision of
1. a generally longitudinal localized area on at least one exterior side of the tubular wall of said hollow leading end portion from said insert tip end back into said insert midsection beyond portions of at least the first two thread turns of full diameter on the latter and which extends transversely outwardly to a limited degree beyond the remaining corresponding portions of the insert, said area forming a composite camber in which the sections of the external thread turns crossing this localized camber area are humped providing thread turn hump portions projecting radially outwardly beyond adjacent thread turn portions and having smooth transitions on the rotationally leading and trailing sides of said camber area with the adjacent circular portions of these thread turns, the thread turns on said midsection, except for said hump portions, being of uniform crest and root diameters;
2. said localized camber area having a forward zone provided with a generally longitudinal and external thread-interrupting kerf channel extending forward across the external thread turns in this zone from a point rearward of at least the first full diameter turn in said midsection to said tip end without breaking inward through the wall of said sleeve body, whereby the rotationally trailing side of said kerf channel and the severed ends of the external thread turns therein provide cutting edges to form the female thread turns in the parent body receptive hole wall upon thread advancing rotation of said insert body thereinto with at least one uninterrupted full diameter thread turn of said midsection having such a hump portion crossing said camber area to serve with the female threads of said parent body an insert retaining means upon full seating of said insert into the parent body.

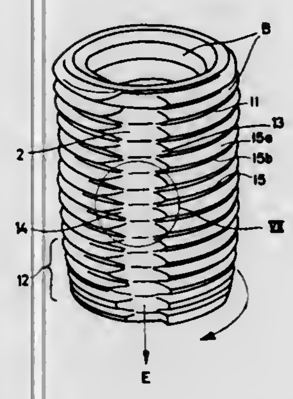
3,866,510
SELF-TAPPING THREADED BUSHINGS

Carl B. H. Eibes, deceased, late of Dr. Carl-Eibes-Str. 11, Schnaittenback, Germany (by Ursula Eibes, nee Waschau); Christian Eibes, Dr. Carl-Eibes-Str. 11, Schnaittenback, Germany; Carl-Herwig Eibes, Grunewaldstra. 30, Berlin-Schoneberg, Germany, and Maria-Theresia Wagner, nee Eibes, Hans Klopferweb Nr. 1, Amberg, Germany (legal heirs)

Continuation of Ser. No. 125,260, March 17, 1971, abandoned, which is a division of Ser. No. 733,562, May 13, 1968, Pat. No. 3,597,781. This application Feb. 5, 1973, Ser. No. 329,952

Int. Cl. F16b *25/00*

U.S. Cl. 85—47 **3 Claims**



1. A threaded self-tapping bushing adapted to be secured to a workpiece and comprising,
- an elongate member having helical male threads extending over at least a portion of its axial length said threads having crests, roots between said crests, and flanks extending from said crests to said roots on either side of said crests;
- said member having at least one axially extending bevel intersecting a plurality of successive threads,
- the crests and flanks of each said male thread at their intersection with said bevel defining frontal areas on either side of said bevel which are concave both along the circumferential direction of each said male thread and transversely thereto along the axial direction of the bushing, each said bevel being approximately as deep as the roots between the crests to ensure that the roots between successive crests are essentially discontinuous at each bevelled portion, each said frontal area providing cutting edges along at least a part of its periphery as defined by said crest, flanks, and bevel,
- one of the two said frontal areas formed at the junction of each said male thread with said bevel having a greater curvature than the other.

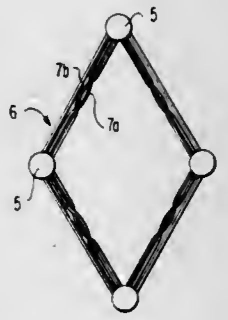
3,866,511
FISHING GILL NET

Sadayoshi Usuda, Osaka, Japan, assignor to Unitika Ltd., Hyogo, Japan

Filed Jan. 2, 1973, Ser. No. 320,335

Int. Cl. A01k *73/12;* **D04g** *1/00*

U.S. Cl. 87—12 **10 Claims**



1. In a fishing gill net made of synthetic fiber yarns, the improvement wherein: at least one of the legs betwen the knots constituting the meshes thereof, consists of two to four mono-filaments, each filament having a size of 30–3000 denier, and wherein said filaments extend in parallel or loosely entangled without twist to form leg meshes between knots when immersed in water and ground meshes between knots for multiple legs.

3,866,512
APPARATUS FOR BRAIDING KNOTLESS NETTING

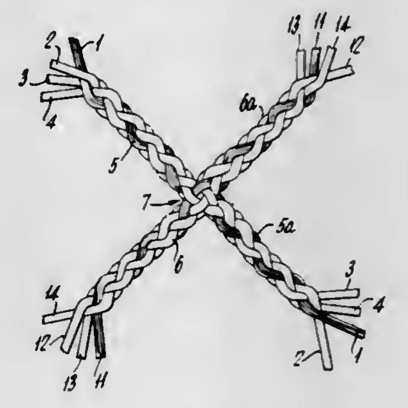
Heinz Berger, Oldenburg, Germany, assignor to August Heroz Maschinenfabrik, Oldenburg, Germany

Continuation-in-part of Ser. No. 77,509, Oct. 2, 1970, Pat. No. 3,714,862. This application Jan. 18, 1973, Ser. No. 324,605

Claims priority, application Germany, Oct. 3, 1969, 1949893

Int. Cl. D04c *3/30*

U.S. Cl. 87—37 **12 Claims**

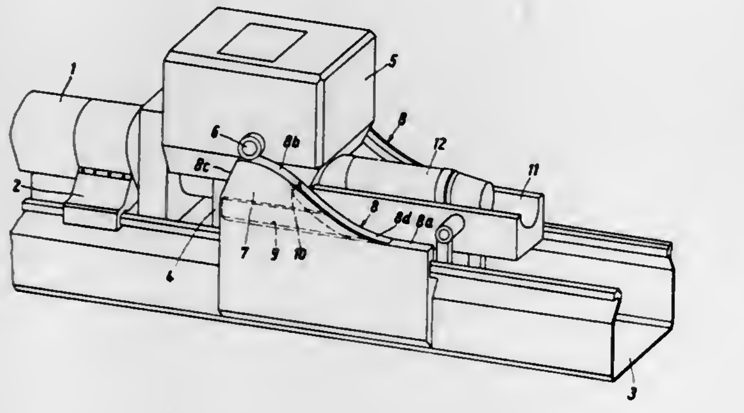


1. A machine for knotless net braiding, comprising: a generally horizontal braiding assembly having a plurality of braiding

units for braiding yarns into legs with braid-interlaced connections; a braid lifter assembly coordinated with said units, to receive the braided legs therefrom and to complete their braid-interlacing; a plurality of wing wheels in each braiding unit for said braiding; bobbin needles engageable by said wheels for sliding motions along tracks in said assembly; each of said braiding units comprising stationary guide grooves disposed in a plate member through which yarn to be braided passes; a plurality of rotary track switch units, each having a plurality of track switches, generally interposed between such braiding units; each of said track switches having movable grooves which upon shifting of said track switches connect a stationary guide groove of one braiding unit with a stationary guide groove of another braiding unit; and power and control means for the braiding and track switch units, to successively circulate the bobbin needles with the wheels and interchange them therebetween in a predetermined program.

3,866,513
TRANSVERSE SLIDING BREECH BLOCK

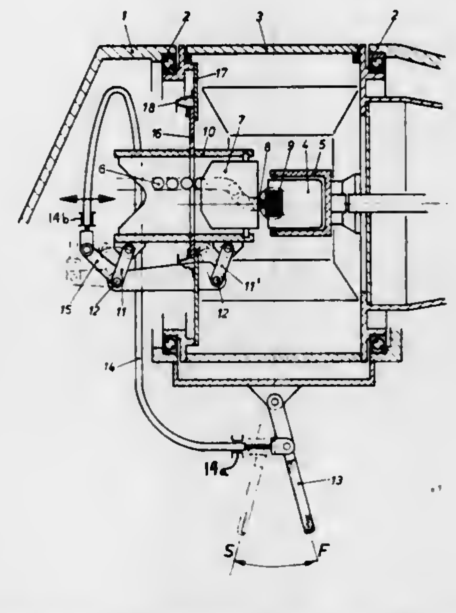
Josef Hornfeck, Dusseldorf, and Rolf Bartolles, Wuppertal-Vohwinkel, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany
Filed Dec. 5, 1968, Ser. No. 785,012
Claims priority, application Germany, Dec. 5, 1967, 1578049
Int. Cl. F41f *11/00*
U.S. Cl. 89—4 B **10 Claims**



1. In a piece of ordnance, the combination which comprises:
a. a barrel having a breech with a breech opening;
b. a breech block for closing said breech opening of said barrel, said breech block being mounted on the exterior of said breech for sliding movement relative to said barrel transversely to the axis of said barrel and in the vertical longitudinal central plane of said barrel;
c. a cradle for mounting said barrel and breech block for forward and rearward movement in the direction of said bore axis; and
d. camming means for raising said breech block and thereby uncovering said breech opening during forward movement of said barrel, said camming means including a pair of lateral cam surfaces mounted on said cradle, one on each side of said barrel, and increasing in height in the forward direction, and a pair of cam follower means mounted on opposite sides of said breech block for movement therewith and coacting with the associated one of said lateral cam surfaces.

3,866,514
SAFETY DEVICE FOR A TANK TURRET WEAPON

Siegfried Uhl, and August Schiele, both of Augsburg, Germany, assignors to Keller & Knappich Augsburg Zweigneiderlassung der Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Augsburg, Germany
Filed Apr. 11, 1973, Ser. No. 350,288
Claims priority, application Germany, May 3, 1972, 2221539
Int. Cl. F41h *7/06*
U.S. Cl. 89—36 K **4 Claims**

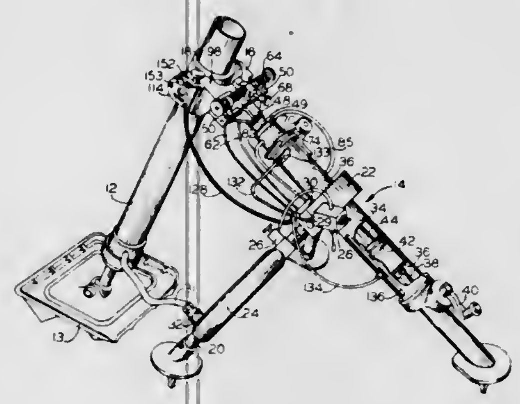


1. A safety device for a tank turret weapon placed adjacent to the weapon catch and comprising:
a cartridge feed to supply cartridges to said weapon catch;
a movable support holding said cartridge feed;
said movable support being pivotally mounted on the carriage of said weapon and separately from said weapon; and
pivot operating means (for moving said movable support and said cartridge feed in single movements toward and away from said weapon) having an arm extending from and placed within the tank turret, a plurality of levers pivotably coupling said movable support to said arm, and means for rotating at least one of said levers so that said cartridge feed is alternatively located in two positions, a first position removed from said weapon catch providing for a safety mode, and a second position adjacent to said weapon catch providing for a firing mode.

3,866,515
ADJUSTABLE ROTARY SENSORS FOR A SELF-RESTORING FLUIDIC MORTAR SUPPORT SYSTEM

William H. Ziegler, Waterford, and Gary W. Woods, Ballston Lake, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Oct. 15, 1973, Ser. No. 406,404
Int. Cl. F41f *1/06, 21/08*
U.S. Cl. 89—37 C **11 Claims**

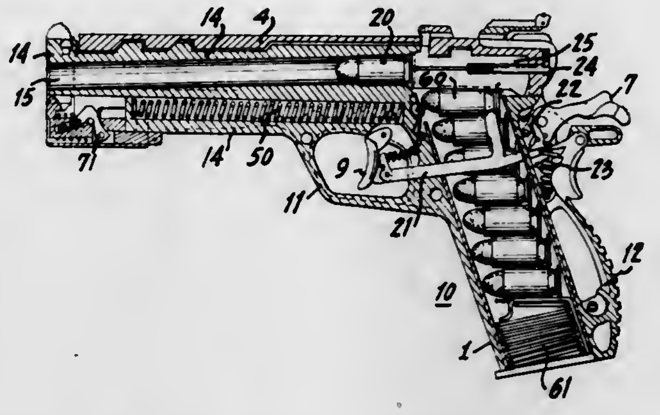
1. In an adjustable tripod support for the firing tube of a mortar having a fluidic control system for automatically restoring the tube to a previously selected sighting inclination in response to the recoil displacement encountered during the firing thereof, the combination of,
a primary leg having a yoke in pivotal supporting engagement with the firing tube,
a pair of secondary legs pivotally engageable with said primary leg for supporting the firing tube at the selected sighting inclination,
a first piston having an elongated rod extending therefrom into fixed engagement with said yoke and slidably disposed in said primary leg for imparting elevational movement to the firing tube,
a second piston slidably disposed in said yoke for imparting azimuth movement to the firing tube,
first sensing means disposed in said yoke and responsive to the elevational component of the recoil displacement of the firing tube for activating the fluidic control system to actuate said first piston until the firing tube is restored to the initial sighting inclination thereof, said first sensing means comprising,
a control shaft rotatably disposed in said yoke with one end fixed to the firing tube and the opposite end thereof having a separately rotatable segment thereon, said shaft and said segment each having a transverse chordal surface disposed in adjacent relation and extending in opposite directions to form an angle therebetween,
a cylindrical bushing rotatably disposed in said yoke in surrounding relation to said chordal surfaces, said bushing having a pair of sensing orifices through opposite sides thereof in coaxial relation and in respective alignment with said chordal surfaces, and
means for releasably locking said rotatable segment to said control shaft with the remote edges of said chordal surfaces selectively positioned relative to said sensing orifices to establish a desired deadband zone through which said control shaft must be rotated prior to unblocking one of said orifices for activating the fluidic control system to actuate said first piston,
second sensing means disposed in said primary leg in surrounding relation to said primary leg and responsive to the azimuth component of the recoil displacement of the firing tube for activating the fluidic control system to actuate said second piston until the firing tube is restored to the initial sighting inclination thereof, and
means for adjusting said first and second sensing means to delay activation of the fluidic control system until the recoil exceeds a predetermined degree of movement in azimuth and elevation, respectively.



3,866,516
SEMI-AUTOMATIC PISTON EMPLOYING A PIVOTALLY, SLIDEABLE MEMBER

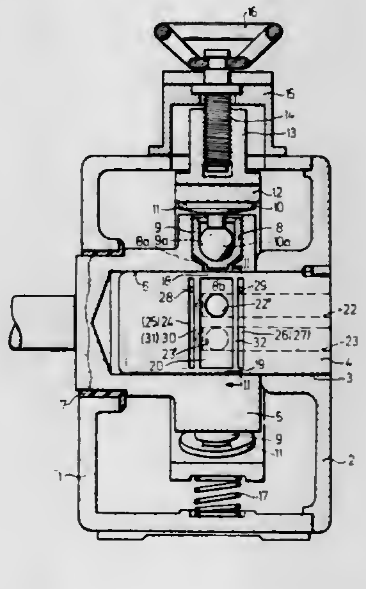
David M. Frisoli, 2 Homestead Rd., Edison, N.J. 08817
Filed July 30, 1973, Ser. No. 383,592
Int. Cl. F41d *3/06, 11/12*
U.S. Cl. 89—190 **10 Claims**

1. A firearm for firing projectiles, comprising a slide member moveable from a first position to a second position, a barrel assembly integrally formed with a frame assembly, means coupling said barrel to said slide to cause said slide to first pivot upward away from said barrel during recoil when moving from said first to said second position and while said projectile is still in the barrel and furthest away from the muzzle end of said barrel.



3,866,517
ROTOR CENTERING ARRANGEMENT FOR A HYDRAULIC MACHINE

Ulrich Aldinger, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Nov. 13, 1972, Ser. No. 305,955
Claims priority, application Germany, Dec. 10, 1971, 46528
Int. Cl. F01b *13/06*
U.S. Cl. 91—484 **10 Claims**



1. A rotor centering arrangement for a hydraulic machine, comprising, in combination, a rotor having a set of circumferentially spaced working chambers for a fluid, and an inner circumferential surface having a set of chamber ports communicating with respective ones of said working chambers and moving during rotation along a circular path; and a stationary control body having an outer circumferential surface in sliding contact with said inner circumferential surface of said rotor, and being provided in said outer circumferential surface with a pair of diametrically oppositely disposed part-circular control ports located along said path, said control body having high and low pressure conduits opening into respective ones of said control ports, so that during rotation of said rotor low pressure and high pressure fluid alternately enter said working chambers, said control body having first and second pairs of diametrically oppositely disposed part-circular grooves, said first and second pairs of grooves being located on opposite axial sides of said control ports spaced axially from the latter so that leakage fluid from said control ports flowing through the radial clearance between said outer and inner circumferential surfaces fills said first and second pairs of grooves, said control body being further formed with a first duct and a second duct both penetrating through the material of said control body and each having two open ends, the open ends of said first duct communicating with respective ones of said

first pair of grooves, and the open ends of said second duct communicating with respective ones of said second pair of grooves, whereby to equalize the pressure in the first pair of grooves and whereby to equalize the pressure in the second pair of grooves, each of said ducts intermediate the two open ends thereof being in its entirety located radially inwardly of said outer circumferential surface of said control body completely enclosed by the material of said control body.--

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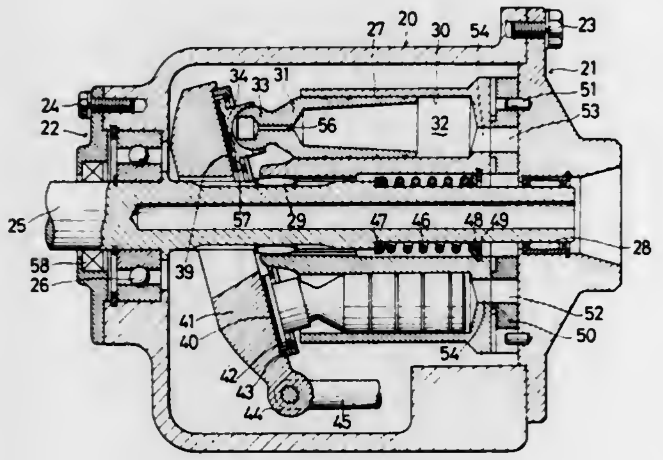
3,866,518
FLUID PRESSURE DEVICE OF THE AXIAL PLUNGER TYPE

Takayuki Miyao; Hiroaki Maeda, both of Toyota; Masanori Sato, Nagoya, and Hiroshi Motoyama, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Dec. 27, 1972, Ser. No. 319,031
Claims priority, application Japan, Dec. 27, 1971, 46-3539
Int. Cl. F01b *13/04*
U.S. Cl. 91—488 **6 Claims**



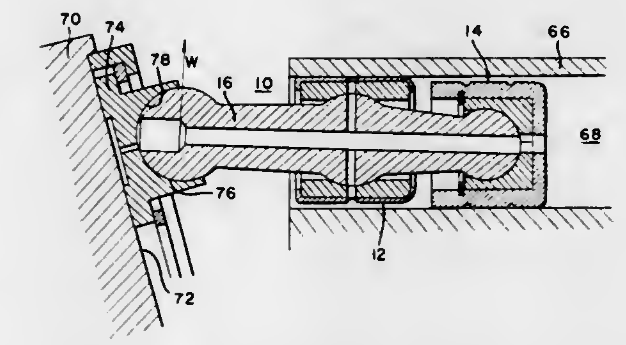
1. A fluid pressure device of the axial plunger type comprising:

a housing;
a rotatable shaft within said housing;
a rotatable cylinder block operatively connected to said shaft and provided with a plurality of longitudinal cylindrical bores therein;
plungers slidably mounted, respectively, within said bores and including spherical outer end portions;
a valve plate located in abutment with an end surface of said cylinder block and having a pair of ports which communicate successively with said bores as said cylinder block rotates;
a swash plate pivotally supported upon said housing and having a slidable planar surface; and
a plurality of plunger shoes associated with said spherical outer end portions of said plungers at spherical socket portions thereof and including slidable bearing surfaces adapted for engaging said slidable planar surface of said swash plate for causing said plungers to reciprocate,
said shoes being formed of a light weight high tensile metal material and said slidable bearing surfaces of said shoes being formed of a high load-bearing alloy, wherein said high-load bearing alloy is applied to said slidable bearing surfaces of said shoe as a powder metallurgy material.

3,866,519
PISTON OF PISTON TYPE FLUID PUMP MOTOR

Takayaki Miyao; Hiroaki Maeda, both of Toyota, and Masanori Sato, Nagoya, all of Japan, assignors to Aisin Seiki Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Jan. 16, 1973, Ser. No. 324,128
Claims priority, application Japan, Feb. 18, 1972, 47-17330; Jan. 27, 1972, 47-10106
Int. Cl. F01b *13/04*
U.S. Cl. 91—488 **13 Claims**

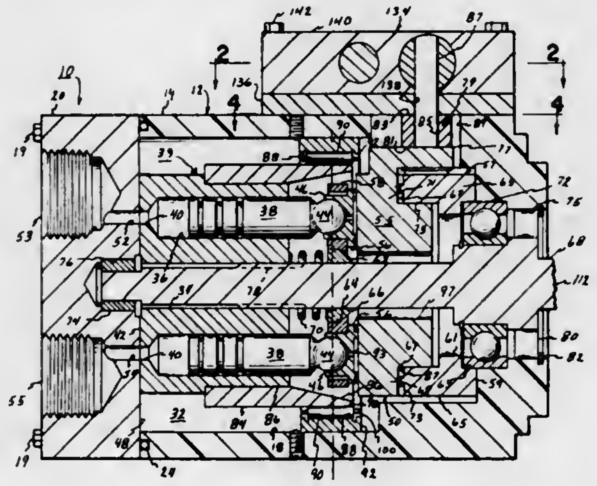


1. A piston used in a piston type fluid pump motor which comprises at least two piston heads fitted in a cylinder barrel having coaxially aligned portions, each of said piston heads being rotatably jointed by a ball-and-socket joint to a rod which is movably connected to a swash plate,
whereby a torque generated on said swash plate is transmitted to said cylinder through said piston heads.

3,866,520
FLUID DEVICE HAVING INTERCHANGEABLE DISPLACEMENT CONTROL MEANS

Wilfred S. Bobier, Bloomfield, Mich., assignor to The Oilgear Company, Milwaukee, Wis.

Division of Ser. No. 181,663, Sept. 20, 1971, Pat. No. 3,806,280, which is a continuation-in-part of Ser. No. 60,333, Aug. 3, 1970,. This application Oct. 26, 1973, Ser. No. 410,274
Int. Cl. F01b *13/04;* **F04b** *49/00*
U.S. Cl. 91—506 **3 Claims**



1. A fluid pressure energy translating device of the axial piston type comprising:

a housing;
a shaft rotatably mounted in said housing;
a cylinder barrel carried by said shaft and rotatable therewith, said cylinder barrel having a plurality of arcuately spaced cylinder bores and cylinder ports communicating said cylinder bores with one end of said cylinder barrel;
a plurality of pistons with inner ends disposed for reciprocal stroking movement within said cylinder bores;
a valve face having arcuate openings disposed for relative rotary movement with respect to said one end of said cylinder barrel, with said cylinder ports communicating successively with said arcuate openings as said shaft rotates said cylinder barrel;

a thrust plate pivotably mounted in said housing in a driving relationship with the outer end of said pistons for imparting said reciprocal stroking movement to said pistons within said cylinder barrel bores, the amount of reciprocal movement of said pistons being a function of the degree of inclination of said thrust plate with respect to the axis of rotation of said cylinder barrel;
a displacement varying mechanism comprising:
a second housing releasably attached to said first housing and having a bore with a pressure responsive member slidably mounted therein;
coupling means connecting said pressure responsive member to said thrust plate;
spool means mounted in said housing and movable between positions which selectively communicate pressure fluid to one or the other of the opposite sides of said slidably mounted pressure responsive member so as to change the position of said pressure responsive member, said pressure responsive member being connected to said coupling means so as to move said coupling means as said pressure responsive member moves in response to said pressure to thereby vary the inclination of said thrust plate with respect to the axis of rotation of said cylinder barrel;
means applying a selected force to said spool means to shift said spool means in one direction;
feedback means carried by said pressure responsive member and coupled to said spool means to move said spool means in a direction opposite from said first mentioned direction;
said pivotably mounted thrust plate further comprising a piston engaging face on one end thereof, said thrust plate adapted to be pivoted about a predetermined axis, said thrust plate having an arm member disposed along an axis which extends toward the other end of said thrust plate; a U-shaped member, the legs of which encompass a portion of said arm member, said U-shaped member being reciprocable along a portion of said arm member as said arm member moves through an arcuate path to pivot said thrust plate about said predetermined axis; and a coupling pin movable along a linear path and having one end carried by said U-shaped member, said coupling pin being disposed along an axis which is perpendicular to the path of reciprocal movement of said U-shaped member, the other end of said coupling pin being attachable to said pressure responsive member, the movement of which imparts a linear motion to said coupling pin such that said U-shaped member is simultaneously moved along said reciprocal and linear paths for pivoting said thrust plate about said predetermined axis.

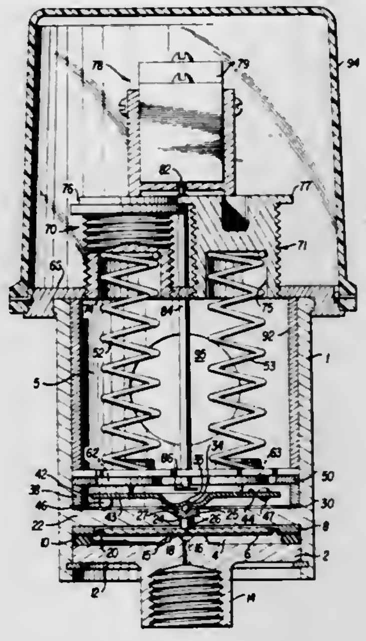
3,866,521
CONTROL DEVICE

Ernesto Juan Weber, No. 470 State of the Federal District, Lluvia, N. Mex.

Division of Ser. No. 236,732, March 21, 1972, Pat. No. 3,786,212, which is a continuation-in-part of Ser. No. 154,536, June 18, 1971, abandoned. This application Jan. 11, 1974, Ser. No. 432,460
Int. Cl. F01b *19/00, 31/00;* **F16j** *3/00*
U.S. Cl. 92—95 **2 Claims**

1. A control device comprising:

a. a housing;
b. a chamber in said housing;
c. a displaceable sensing means defining a wall of said chamber;
d. first and second compressible coil springs disposed in said housing and operatively connected to said sensing means, whereby displacement of said sensing means flexes said springs;
e. a first guide means one end of which is connected with said first spring, the other end of said first guide means being connected to said housing at a first connection point;
f. a second guide means, one end of which is connected with said second spring, the other end of said second guide means being connected to said housing at a second connection point;

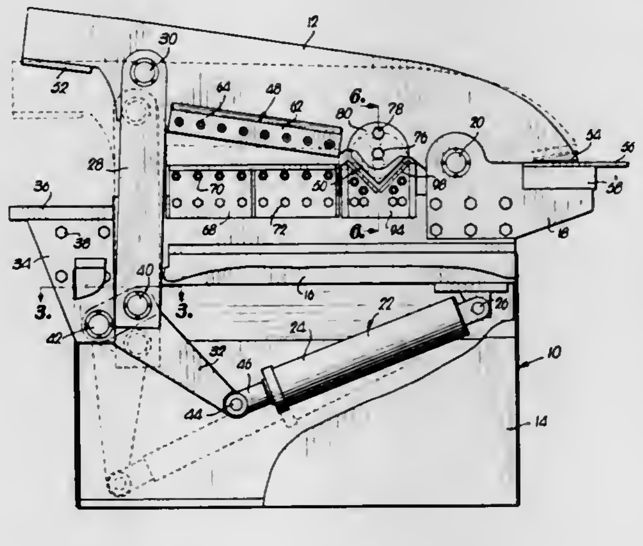


g. said first connection point being located in said housing remotely from said first spring and adjacent to said second spring, said second connection point being located in said housing remotely from said second spring and adjacent to said first spring, whereby arcuate movement of said guide means during flexing of said springs is minimized.

3,866,522
METAL WORKING MACHINE

Harry L. Oswalt, Jr., 615 Briar Hill, Garden City, Kans. 67847

Filed July 27, 1973, Ser. No. 383,092
Int. Cl. B21d *43/28*
U.S. Cl. 72—324 **8 Claims**



1. In a machine for fabricating workpieces:

a horizontally extending bed;
an elongated, generally horizontally extending beam disposed above said bed;
pivot means supporting the beam for swinging movement toward and away from the bed about an axis disposed transversely of the beam,
said beam and said bed having opposed sets of mutually cooperable tool means spaced therealong with certain sets disposed further from said axis than others;
power means disposed below said bed and including a reciprocable member having a stroke of predetermined length;
upright linkage depending from said beam to a position

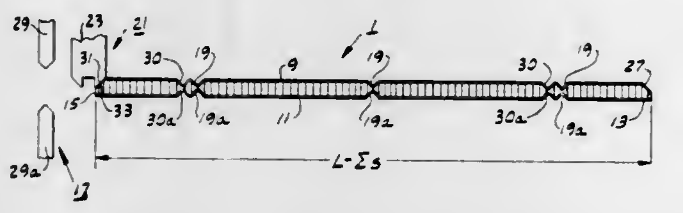
below said bed and spaced laterally from said pivot means; and

a swingable crank intercoupling said member and the lower end of the linkage for swinging the beam about said axis during actuation of said power means,

said crank disposing said linkage for movement of the linkage through a displacement substantially less than said stroke of the member whereby to multiply the force applied by said power means to the beam during actuation of the power means.

3,866,523
METHOD AND APPARATUS FOR FORMING BULK CONTAINERS FROM ARTICULATABLE COMPOSITE PANELS

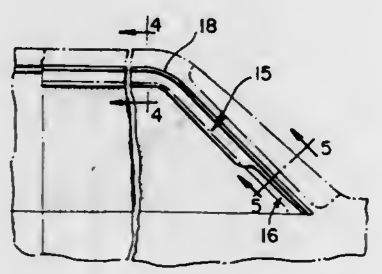
Robert C. Geschwender, Lincoln, Nebr., assignor to Lancaster Research and Development Corporation, Lincoln, Nebr.
Filed May 30, 1973, Ser. No. 365,115
Int. Cl. B31f *1/00*
U.S. Cl. 93—58 ST **25 Claims**



1. Apparatus for forming a panel of stiff but compressible material at least about one-half inch in thickness with scores in both faces thereof spaced at predetermined intervals along the length of the panel so that the panel may be articulated at said scores, said panel comprising a core with facing material adhered to opposite faces of the core having substantial resistance to bending on any axis thereof; said apparatus comprising means at a scoring station operable between open and closed positions for forming a pair of scores extending transversely of the panel, one in each face of the panel, with the two scores substantially in registry, means operable intermittently to feed the panel lengthwise in a predetermined path in the plane of the panel through the scoring means at the scoring station with said scoring means open in increments corresponding to the desired spacing of the scores with a dwell between successive feeding operations, and means for closing said scoring means to form said pair of scores and then opening it during each dwell, the formation of the two scores during each dwell causing a drawing in of the panel on opposite sides of the scoring station, and said feeding means permitting said drawing in.

3,866,524
VEHICLE WINDOW VENTILATOR

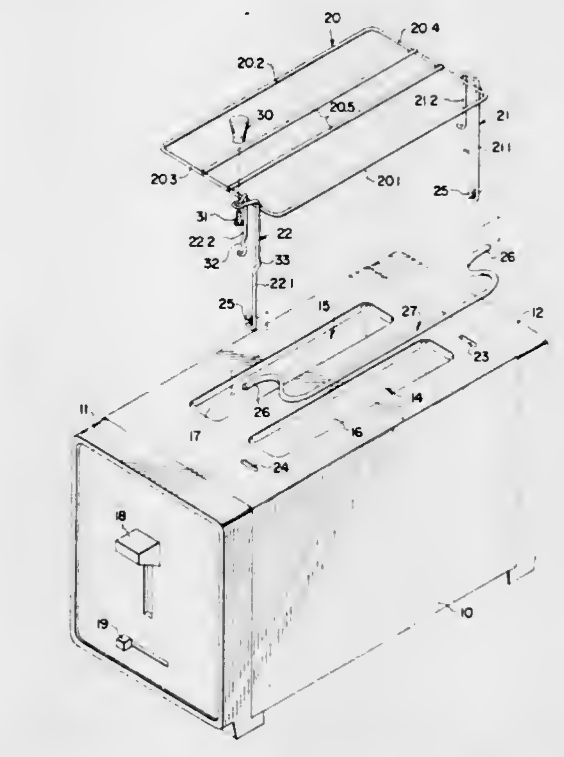
Hampton E. Forbes, Jr., 2013 Oak St., Wilmington, Del. 19808
Filed May 11, 1973, Ser. No. 359,455
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.13 **5 Claims**



1. In a ventilating apparatus for a vehicle, the combination of a window opening formed in the side wall and a part of the roof area of said vehicle said window opening having a generally horizontally disposed top portion and a rearwardly inclined front portion, a ventless window member of substantially the same shape and size as said window opening, and means for selectively changing the vertical position of said window member within said window opening, the improvement comprising a flange extension for said window opening and located on the inside of said window opening for sealing the window member within said window opening, said flange extension having a primary width along the top portion and the upper part of the rearwardly inclined front portion thereof which reduces the apparent size of said window opening and a secondary width of a smaller dimension than said primary width along the lower part of the rearwardly inclined front portion there, which secondary width provides a ventilating slot at the lower front edge of said window opening when the window is partially lowered within said window opening while the top portion and the upper part of the rearwardly inclined front portion of said flange extension still overlaps and seals the window within the window opening.

3,866,525
TOASTER WITH WARMING RACK

Berton R. Oxel, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Mar. 1, 1973, Ser. No. 337,096
Int. Cl. A47j *37/08*
U.S. Cl. 99—357 **6 Claims**



1. In apparatus for toasting bread slices and the like having a housing enclosing a toasting chamber and an upwardly directed, elongated housing opening through which a bread slice may be inserted into and removed from said toasting chamber, the improvement comprising

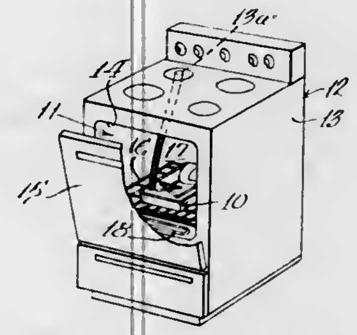
a rack disposed above said housing and vertically movable relative thereto between at least two vertically spaced positions and providing a selectively usable support for an article to be warmed by heat generated within said toasting chamber, said rack having an opening therethrough in registry with said housing elongated opening and providing for unobstructed passage of a bread slice to and from said toasting chamber,

a pair of legs structurally integral with and depending from said rack and said legs being disposed adjacent respective ends of said housing elongated opening and projecting into said housing,

and means within said housing connecting the lower portions of said legs together for simultaneous vertical movement to prevent tilting of said rack in a direction from end to end of said elongated housing opening during movement of said rack between said positions.

3,866,526
BARBECUE PAN STRUCTURE

Yat L. Eng, 237 Linden, Elmhurst, Ill. 60126
Filed Jan. 14, 1974, Ser. No. 433,088
Int. Cl. A47j *37/04*
U.S. Cl. 99—357 **15 Claims**



1. A barbecue pan structure for use in barbecueing meat in an oven chamber, comprising:

a pan adapted to hold a body of water subjacent the meat in the oven chamber;

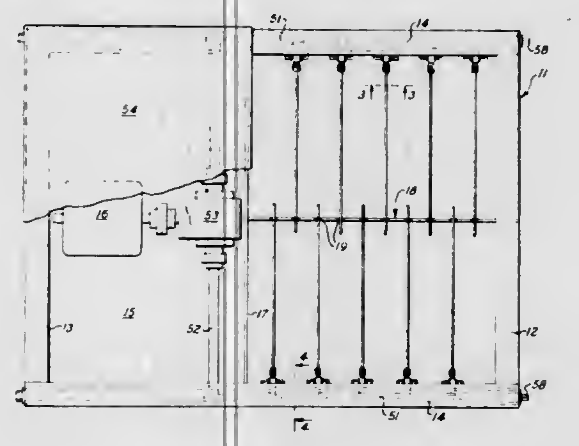
closure means substantially covering the body of water and defining an upper surface;

means for passing through said closure means liquefied drippings falling from the meat onto said upper surface; and

a flow passage duct for conducting steam evolved from said body of water from below said closure means away from said pan to a point exteriorly of said oven chamber thereby to vent such steam from said oven chamber.

3,866,527
ROTISSERIE

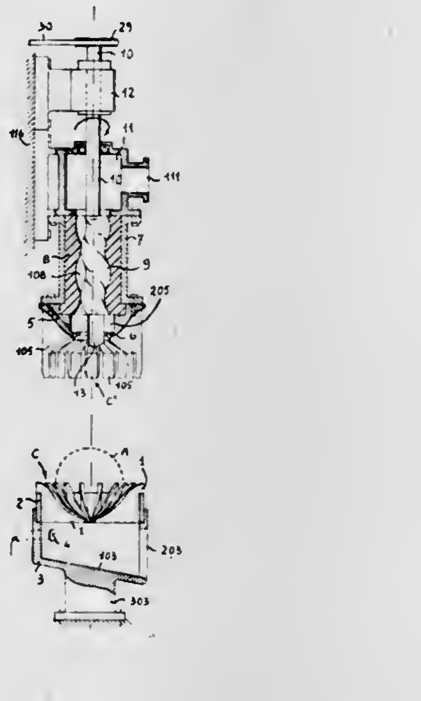
Thomas C. Katris, 8225 Kraay St., Munster, Ind. 46321
Filed Apr. 25, 1973, Ser. No. 354,353
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H **9 Claims**



1. A rotisserie structure mountable upon a conventional broiler and adapted to span the broiler from side-to-side thereof and comprising a pair of hollow frame sides arranged in parallel laterally spaced relation and adapted to rest on opposite sides of a broiler and to extend longitudinally of such broiler sides, each hollow frame side having an interior and exterior vertical wall and said walls provided at regular intervals along the frame side with aligned pairs of openings formed therethrough, a driving screw shaft journaled for rotation in the upper portion of each hollow frame side above said pairs of openings at right angles to the axes of the openings, power drive means coupled with said screw shafts to turn them in unison on their axes, drive cups mounted on each hollow frame side and having end portions journaled for rotation in said aligned pairs of openings of the frame sides, said cups having driving socket recesses opening through their interior ends and facing toward the remote hollow frame side of the structure, gears on the drive cups and meshing with said screw shafts within the hollow frame sides whereby said cups are turned in unison, spit driving shafts detachably coupled with said driving socket recesses of the cups, spits coupled with said spit driving shafts and extending axially inwardly thereof transversely of said hollow frame sides and having inner ends terminating substantially midway between the frame sides and near the lateral center of the broiler on which said structure is mountable, support means for the inner ends of the spits near the lateral center of the rotisserie structure, and a pivotal support element for each spit driving shaft secured to the adjacent hollow frame side of the structure and slidably receiving the spit driving shaft and being swingable therewith in a vertical plane to an elevated non-use position with the associated spit, said spit driving shaft then separating from said driving socket recess of its associated cup.

3,866,528
APPARATUS FOR EXTRACTING JUICE FROM CITRUS FRUIT

Nevio Montagroni, 4, Via G. Organi, Forli, Italy (47100)
Filed Jan. 22, 1973, Ser. No. 325,252
Claims priority, application Italy, Feb. 12, 1972, 12003/72; Feb. 12, 1972, 12004/72
Int. Cl. A23n *1/02;* **A47j** *19/02;* **B30b** *9/02*
U.S. Cl. 99—495 **4 Claims**



1. A device for processing whole citrus fruit comprising:

— an upper cup arranged with its axis vertical and having a bowl-like cavity directed downwardly;

— a lower cup coaxial with said upper cup and having a bowl-like cavity directed upwardly;

— each of said bowl-like cavities having a multiplicity of narrow ribs separated by correspondingly narrow slots, the ribs of each cup being aligned with the slots of the opposite cup;

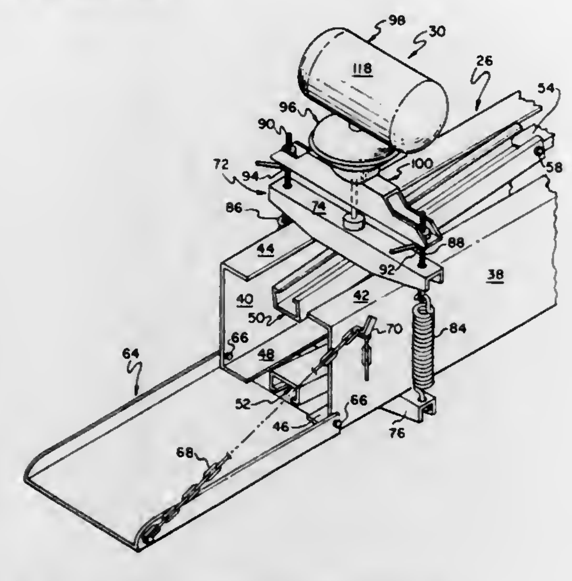
— a tubular cutting edge;

— rotary rupturing means arranged within said tubular cutting edge and capable of extending a substantial length into the cavity of the said stationary upper cup;

— suction means being provided to exert suction within said tubular cutting edge;

— for moving the lower cup towards and away from said upper cup, said tubular cutting edge being arranged at the center of the upper cup so that upon upward movement of said lower cup said cutting edge makes a neat incision in the peel of said citrus fruit and establishes a tight seal connection between the interior of the fruit and the suction means.

3,866,529
DENSITY CONTROL FOR HAY BALERS
Owen F. Holman, P.O. Box 993, Corpus Christi, Tex. 77703
Filed Aug. 14, 1972, Ser. No. 280,173
Int. Cl. B65b *13/18;* **B30b** *1/00*
U.S. Cl. 100—43 **9 Claims**



1. A hay baling machine comprising

a chute having a stationary frame and at least one wall mounted adjacent one end thereof on the frame for simple pivotal movement relative thereto for adjusting the density of hay material passing through the chute;

a mechanically driven plunger for forcing hay into one end of the chute; and

means, independent of the mechanically driven plunger, for automatically adjusting the position of the movable wall wholly in response to the compaction of material in the chute for maintaining the density of the bales relatively uniform, the adjusting means comprising

a fluid motor drivably connected to the movable wall;

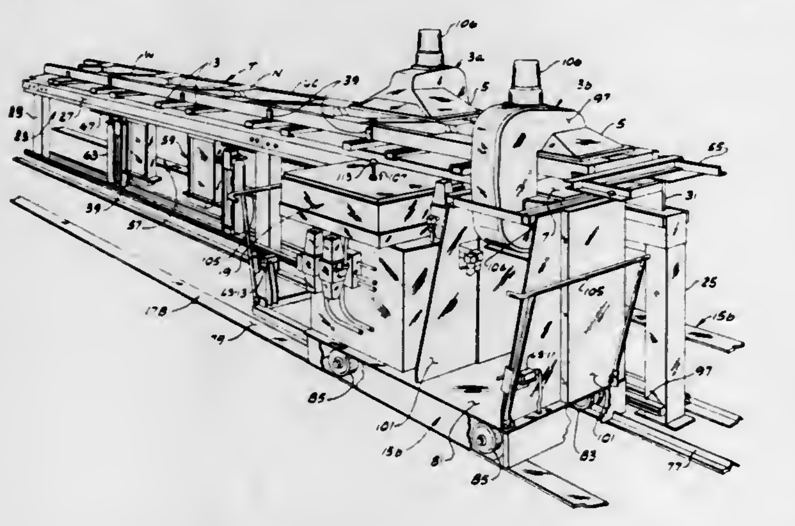
a source of relatively constant gaseous pressure;

means placing the source in constant communication with the fluid motor during baling operations;

means for filling the pressure source including a conduit having an end open to the atmosphere and a valve in the conduit for holding pressure in the source; and

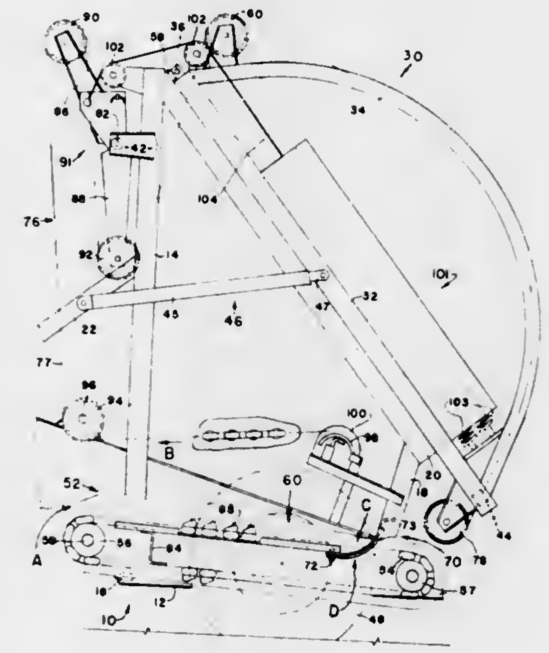
a pressure gauge in communication with the source.

3,866,530
APPARATUS FOR FABRICATING WOOD STRUCTURES
Walter G. Moehlenpah, 9906 Old Warson Rd., Ladue, Mo. 63124
Filed Jan. 4, 1973, Ser. No. 320,900
Int. Cl. B30b *15/16*
U.S. Cl. 100—53 **34 Claims**



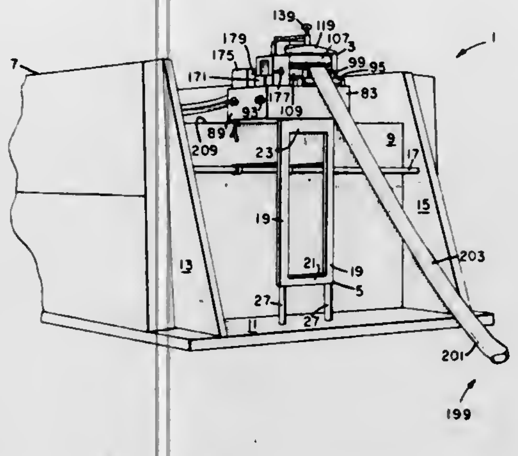
1. Apparatus for fabricating wood structures, such as trusses of the type having lower chord members, upper chord members and web members extending from the lower chord members to the upper chord members, said apparatus comprising two presses each having an upper and a lower platen which are relatively movable toward and away from one another for driving nailing plates into two or more of the wood members of a truss from above and below, means for supporting the wood members which are to be joined together by said nailing plates, said supporting means including a plurality of supports and means cantilevered relative to each support for holding wood members with clearance therebelow, means mounting one of the presses adjacent said upper chord and means mounting the other press adjacent said lower chord for movement of each press along its respective chord into an operating position at a first support for driving nailing plates into the wood members, and for movement in a generally lateral direction with respect to the press sidewise out of its operating position at said first support and into its operating position at a next successive support along its respective chord, each said press being movable along its respective chord independently of the other, and means for controlling movement of each of the press mounting means including means movable therewith for sensing the approach of said press to its operating position at a support in advance of its arrival at its operating position thereby to initiate deceleration of said mounting means and for sensing the arrival of the press at its operating position at the last-said support so as to stop movement of the press at its operating position for driving nailing plates into the wood members.

3,866,531
APPARATUS FOR CONTROLLING THE MOVEMENT OF CROP MATERIAL IN A ROLL FORMING MACHINE
Robert R. Todd, Leola, and Willis R. Campbell, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Oct. 12, 1973, Ser. No. 405,978
Int. Cl. B30b *5/06;* **A01d** *39/00*
U.S. Cl. 100—88 **8 Claims**



8. An improved hay roll forming machine having a wheeled frame, a floor mounted to the frame adapted to receive a swath of crop material, means associated with the floor for conveying the material to the rear of said floor, an upper apron assembly mounted to said frame above the conveying means and moveable in a direction opposite to the direction of said conveying means, wherein the improvement comprises, means operably associated with said floor to compress said material and to direct said material into contact with said upper apron.

3,866,532
FIREHOSE RETRACTOR
Grant M. Ogden, Jr., Elnora, N.Y., assignor of a part interest to Gloria F. Ogden, Elnora, N.Y.
Filed Feb. 21, 1974, Ser. No. 444,673
Int. Cl. B30b *3/04*
U.S. Cl. 100—171 **10 Claims**



1. A firehose retractor for retracting firehose for storage by flattening and removing trapped water and air from coupled-together, collapsible, pressure-type firehose, laid-out on the ground sepentine-fashion or otherwise, without dragging said coupled-together firehose on the ground, fraying or otherwise damaging said firehose; said firehose retractor comprising means for pivotal mounting of said firehose retractor, said firehose retractor comprising retractor rollers, guide rollers and drive means for transmitting drive to at least one of said retractor rollers, said drive means having in its drive train a torque-responsive clutch; said retractor rollers feeding therebetween said firehose and removing trapped water and air from said firehose, said guide rollers guiding said firehose to said retractor rollers, said guide rollers and said firehose-retractor, pivotal mounting means cooperating to automatically face said retractor rollers in the correct and proper direction of feed for said firehose to said retractor rollers regardless of the lie of said coupled-together firehose on the ground, and said torque-responsive clutch permitting retractor roller drive slippage to inclusively prevent said coupled-together firehose from being dragged on the ground, to prevent said firehose from being frayed and to prevent said firehose from being otherwise damaged.

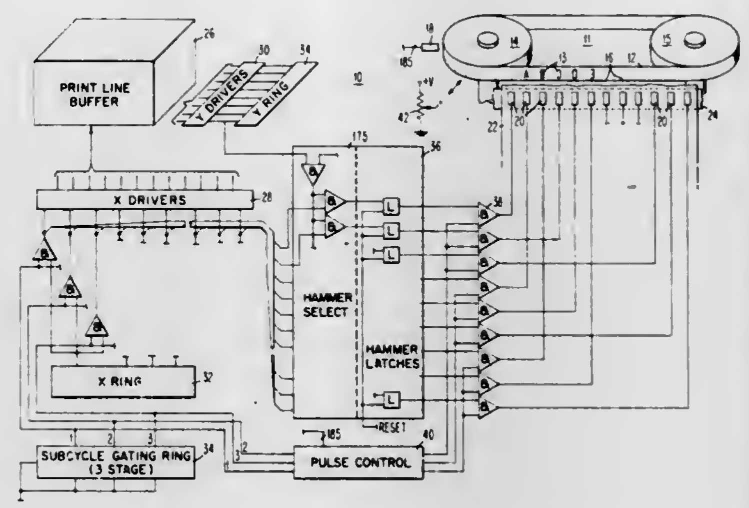
3,866,533
ELECTRICAL PRINT IMPRESSION CONTROL
Richard L. Gilbert, Endicott; John G. Hamilton, Vestal, and Tatsuo Hasegawa, Endwell; Charles O. Ross, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,309
Int. Cl. B41j *5/09*
U.S. Cl. 101—93 C **8 Claims**

1. In a control system for a printer having a type carrier bearing a plurality of type characters and movable along a print line past a plurality of print positions for impacting one or more forms having a different thickness to print thereon,

a plurality of print hammers aligned with said print positions each having unsaturated electromagnetic actuating means to impart print energy to said hammers, said electromagnetic actuating means being selectively operable in response to electrical pulses applied thereto from a source of electrical energy to actuate said print hammers to impact said forms and type characters, said print energy varying with changes in the voltage of said source and the width of said pulses,

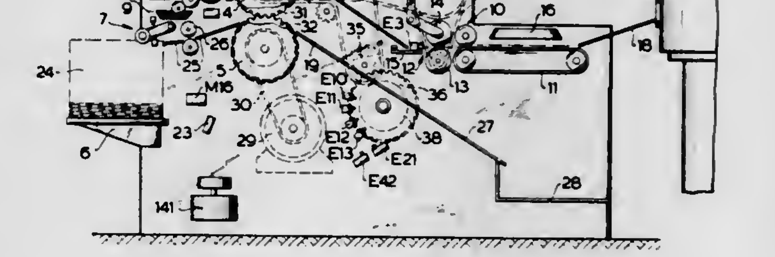
circuit means connected to effect selective energization of said print hammer electromagnetic actuating means from said source of electrical energy in accordance with the presence of particular type characters at each of said print positions, and

control means including means responsive to at least one of the variable operating conditions comprising variation of the voltage of the source and variation in forms thickness which affect the print hammer impact force connected to said circuit means and to said print hammer electromagnetic actuating means to selectively apply energizing



pulses of variable width and hence duration to said print hammer electromagnetic actuating means in accordance with said variable operating conditions to correct for changes in print impact force caused by said variable operating conditions so as to provide a substantially constant print hammer print impact force.

3,866,534
AUTOMATIC PRINTING MACHINE
Heinz Joachim Schinke, Unterkirnach, and Hans-Dieter Uhing, St. Georgen, both of Germany, assignors to Firma Mathias Bauerle GmbH, St. Georgen, Germany
Continuation of Ser. No. 42,936, June 3, 1970, abandoned. This application June 7, 1973, Ser. No. 367,746
Claims priority, application Germany, Jan. 28, 1970, 2003590
Int. Cl. B41f *7/02*
U.S. Cl. 101—144 **2 Claims**



1. In an automatic printing machine comprising:

a master-feed station adapted to receive a succession of zinc oxide masters;

abutment means at said master-feed station for temporarily retaining each of said masters at said station;

a pair of transport rollers adjacent said master-feed station for engagement with a master upon release thereof by said abutment means;

a continuously driven film cylinder spaced from said transport rollers and provided with means engageable with a master for wrapping same around and releaseably retaining the master on said cylinder;

first guide means forming a transport path between said transport rollers and said cylinder for delivering a master advanced by said transport rollers to said cylinder for engagement therewith;

pressure means juxtaposed with said cylinder and synchronously coupled therewith for pressing a copy sheet against a master wrapped around said cylinder to transfer copy from the master on said cylinder to said sheet;

copy-sheet feed means for delivering a succession of copy sheets between said master wrapped around said cylinder and said pressure means;

second guide means for conducting said copy sheets away from said cylinder and said pressure means upon the transfer of copy to said sheets; and

a presettable counter responsive to the number of copy sheets conducted along said second guide means for terminating further advance of copy sheets and ejecting the master wrapped around said cylinder;

the improvement which comprises:

first rotatable cam means at said master-feed station for displacing said abutment means to release a master for engagement and displacement by said transport rollers and for shifting one of said transport rollers to engage a released master between them;

means coupling one of said transport rollers with said first cam means for synchronous rotation therewith to advance said released master along said first guide means;

a single-revolution clutch operatively connected to said first cam means for rotating said first cam means synchronously with said clutch upon actuation thereof;

means operatively connecting said single-revolution clutch with said cylinder for synchronous rotation of said cylinder and said single-revolution clutch upon actuation thereof;

feeler switch means on said abutment means and displaceable therewith out of the path of a released master, said feeler switch means being positioned to sense the presence of a master at said station;

means operatively connecting said feeler switch means and said single-revolution clutch for actuating same upon the sensing of the presence of a master at said station by said feeler switch means;

second cam means rotatably connected to said single-revolution clutch;

a first cam-operated switch cooperating with said second cam means and operatively connected to said means engageable with said master for enabling the entrainment of the released master displaced along said first guide means by said cylinder;

hydrophilizing means along the periphery of said cylinder for treating a master wrapped thereon to render the same wettable for subsequent image-differentiated inking;

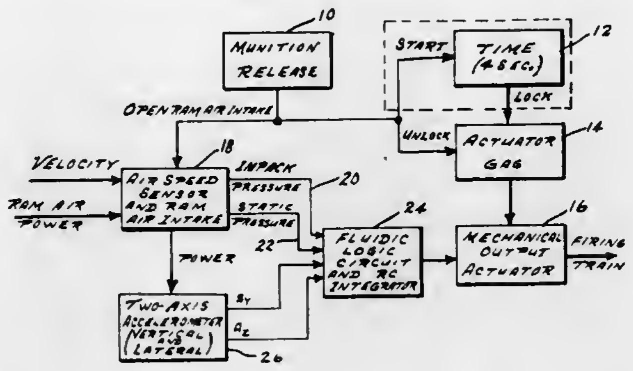
inking means along said drum for applying ink to a hydrophilized master wrapped thereabout; and

a second cam-operated switch cooperating with said second cam means and operatively connected with said hydrophilizing means for bringing same into engagement with a master wrapped on said cylinder.

3,866,535
FLUIDIC FREE FLIGHT SENSOR

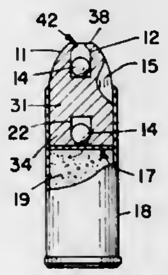
James O. Hedeen, and Harvey D. Ogren, both of St. Paul, Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 17, 1974, Ser. No. 434,155
Int. Cl. F42c *15/12, 11/04*
U.S. Cl. 102—70.2 G **3 Claims**

1. A fluidic free flight sensor for air dropped munition fuses comprising: means for allowing ram air to enter the sensor; means for allowing static air to enter the sensor; means connected to said ram air means and said static air means for determining a differential pressure; and acitvating means connected to the differential pressure determining means; a two axis accelerometer means connected to the activating means, and a mechanical actuator means connected to the activating means output to cause the said mechanical actuator to function when preset conditions are met in the differential pressure determining means and the accelerometer means.



3,866,536
CONTROLLED EXPANSION PROJECTILE

Albert J. Greenberg, 123 North St., Andover, Mass. 01810
Continuation-in-part of Ser. No. 88,741, Nov. 12, 1970, abandoned. This application Apr. 13, 1973, Ser. No. 350,932
Int. Cl. F42b *11/10*
U.S. Cl. 102—91 **15 Claims**



1. An expansion projectile comprising:

a bullet shaped body of relatively soft material having an exposed, unjacketed, soft nose and a base end;

said body having an axial bore, of predetermined longitudinal and lateral dimensions, extending from an opening in said soft nose toward said base end:

a flat tip on said soft nose;

a pellet of relatively hard material, wholly within said bore, said pellet being nearly equal in lateral dimension to said bore and freely movable therein, and of less length than said bore, to form a pellet receiving space extending toward said nose end from said pellet;

and pellet retaining means comprising an inwardly projecting, soft, annular rim of substantially reduced lateral dimensions relative to said bore and extending around said opening for preventing fall-out of said hard pellet while permitting free axial movement thereof along said bore,

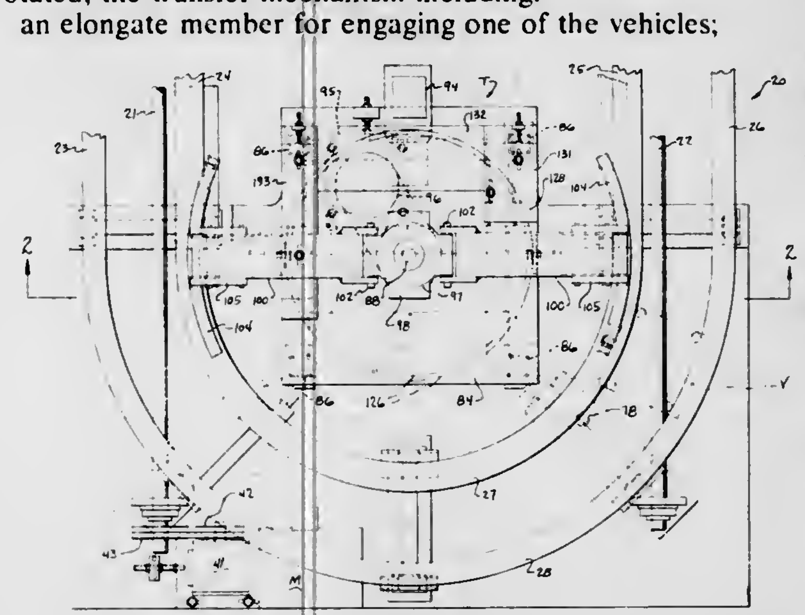
whereby said hard metal pellet is captive within but freely movable along said bore, said body collapses inwardly into said space upon impact of the flat tip of said soft nose and said soft nose flattens against said hard metal pellet as said pellet mushrooms said soft nose material.

3,866,537
TRANSFER MECHANISM

Joachim P. C. Minkwitz, Leaf River, Ill., assignor to Rockford Automation, Inc., Rockford, Ill.
Filed Feb. 13, 1974, Ser. No. 442,235
Int. Cl. B61b *13/00*
U.S. Cl. 104—99 **15 Claims**

1. A transfer mechanism for use in a conveyor system which includes a frame; first and second rotary drive shafts mounted on the frame in spaced relation to each other; means for rotating the rotary drive shafts; a first pair of tracks mounted parallel to the first rotary drive shaft; a second pair of tracks mounted parallel to the second rotary drive shaft; a pair of concentric, semicircular tracks interconnecting the first and second pair of tracks; a plurality of vehicles movably supported on the tracks; a drive wheel on each vehicle; and means mounting the drive wheel for engagement with the rotary drive shafts and at a position oblique to the axis of the rotary drive shafts to drive the vehicle as the rotary drive shafts are rotated; the transfer mechanism including:

an elongate member for engaging one of the vehicles;



drive means for driving the elongate member through a path concentric with the concentric tracks to move the engaged vehicle therealong;

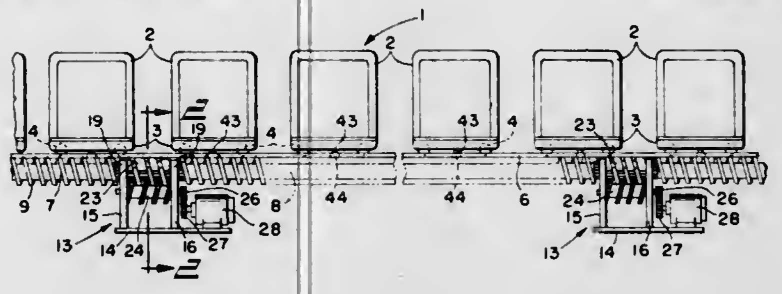
mounting means for mounting the elongate member for movement between an operative position engaged with the vehicle and an inoperative position removed therefrom; and

the elongate member having means at its forward end for engaging a preceding vehicle and camming the elongate member to inoperative position;

whereby the vehicles are transferred from the first pair of tracks to the second pair of tracks unless a preceding vehicle is encountered by the elongate member.

3,866,538
PASSENGER CONVEYOR

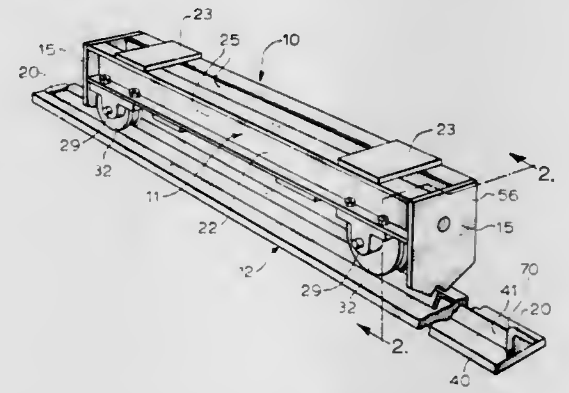
Thomas Forsey, Jr., Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 217,735, Jan. 14, 1972, abandoned. This application July 5, 1973, Ser. No. 376,422
Int. Cl. B61b *13/00*
U.S. Cl. 104—167 **9 Claims**



1. A screw driven conveyor having a driven platform, a screw with a continuous helical rib having a radially outer cylindrical surface and a continuous helical driving surface providing a helical groove with a cylindrical surface at the root diameter of said screw, and a driven member mounted on said platform and extending into said helical groove in continuous driven engagement with said helical driving surface of said helical rib comprising a supporting structure, at least three roller members mounted on said supporting structure at circumferentially spaced-apart positions around said screw with the distances between said roller members being less than the outer diameter of said outer surface of said helical rib and the angular spacing of one of said roller members with relation to at least two other roller members being at angles greater than 90° around the circumference of said screw, each of said roller members having a length less than the length of said screw and being in rolling engagement with at least one of said cylindrical surfaces of said screw, one of said cylindrical surfaces of said screw having gear teeth and the outer surface of one of said roller members having gear teeth for meshing engagement with said gear teeth of said screw, and power means to rotate the roller member in meshing engagement with said screw whereby radial movement of said screw in all directions is restrained for positively holding the roller member in meshing engagement with said screw and said screw is rotated moving said driven member axially of said screw in said helical groove between said roller members and thereby propelling said driven platform along the length of said screw.

3,866,539
WHEEL GUARD AND TRAVEL STOP ARRANGEMENT

William James Gasser, Long Grove, Ill., assignor to Brite-O-Matic Manufacturing Inc., Arlington Heights, Ill.
Filed Oct. 1, 1973, Ser. No. 402,059
Int. Cl. B61k *7/18*
U.S. Cl. 104—249 **5 Claims**



1. A wheel guard and travel stop arrangement for the carriage of a car washing device or the like, comprising:

a. a carriage frame having a front wheel and a rear wheel,

b. an elongated track on which said carriage frame is seated with said wheels supported by a load bearing member of said track for rolling movement thereon,

c. a wheel guard plate mounted on said carriage frame over said track adjacent each of said wheels,

d. each of said wheel guard plates having a lower surface with a segment thereof substantially complimentary in shape to the cross-sectional configuration of the load bearing member of the track and spaced a short distance therefrom,

e. each of said wheel guard plates also having lower surface segments which bracket said complimentarily shaped lower surface segment and are inclined upwardly therefrom to substantially avoid engagement with foreign objects outside the lateral scope of the wheels, and

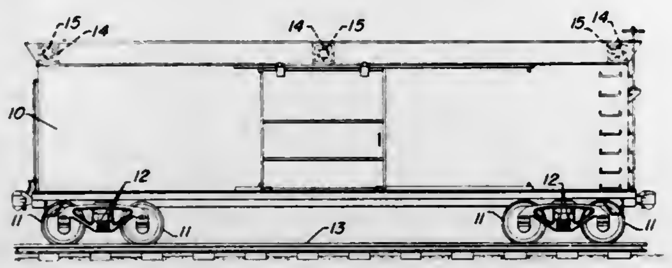
f. stop means on each end of said track for engagement by a corresponding guard plate to limit travel of the carriage in both directions.

3,866,540
ROLL STABILIZED RAILWAY CAR

Sven E. Camph, Nya Agnesfridsvagen 186F, Malmo, Sweden
Continuation-in-part of Ser. Nos. 802,854, Feb. 27, 1969, abandoned, and Ser. No. 162,993, July 15, 1971, abandoned. This application Aug. 23, 1973, Ser. No. 390,726
Int. Cl. B61f *5/06, 5/24, 5/50*
U.S. Cl. 105—1 A **2 Claims**

1. In a railway car supported on a truck having a spring mounted truck bolster and including rigid wheels riding on rails pivotably connected to car bolster through center bearing means, a mass slidably mounted contiguous to the top of said car in a plane of substantial car body oscillation amplitude

about said pivotal connection for restricted movement in a laterally transverse direction to the longitudinal axis of said



car, said mass having sufficient weight to create an opposing force sufficient to minimize the transverse roll motion of said car body about said pivotal connection.

3,866,541

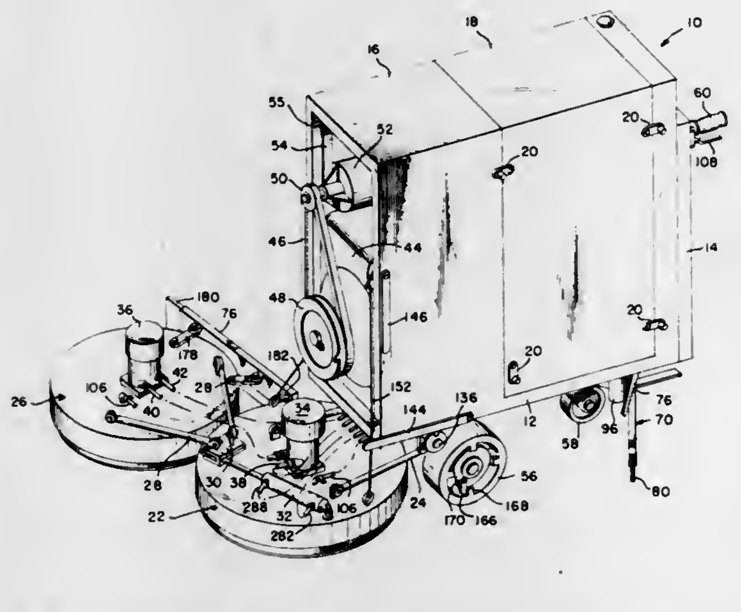
SELF-PROPELLED FLOOR CLEANING APPARATUS WITH MOVABLE BRUSH

James M. O'Connor, Seattle; Raymond A. Nelson, Portland, and Gary L. Hunter, Milwaukee, all of Wash., assignors to James M. O'Connor and Donald M. Goodfellow, both of Edmonds, Wash.

Filed Mar. 24, 1972, Ser. No. 237,846

Int. Cl. A47l *11/00*

U.S. Cl. 15—50 R **12 Claims**



1. A machine for cleaning a surface comprising:
a frame supported by wheels and having a forward end and a rearward end, said wheels including a pair of spaced drive wheels interconnected by a rigid axle, said axle mounted for rotation in said frame, said wheels mounted for rotation on said axle,
differential drive means associated with said axle and each of said drive wheels, said differential drive means being adapted to drive each said drive wheel in a first direction responsive to rotation of said axle in said first direction and being adapted to allow said axle to rotate in said wheel when said axle is rotated in the opposite direction from said first direction,
a self-contained prime mover mounted on said frame,
a first rotary brush means having a first sub-frame mounted on the forward end of said frame, said first brush means being adapted to contact said surface,
a second rotary brush means having a second sub-frame located adjacent to the forward end of said frame and adjacent to said first brush means, said second brush means being adapted to contact said surface,
means mounting said second sub-frame on said first sub-frame for movement between a first position located sidewardly of said first brush means and a second position located substantially forwardly of said first brush means, whereby as said machine travels forwardly said first brush means contacts said surface along a path substantially the same as said second brush means when said second brush means is in said second position, and
transmission means operatively coupling said prime mover to drive said first and second rotary brush means and operatively coupling said prime mover to drive said axle.

3,866,542

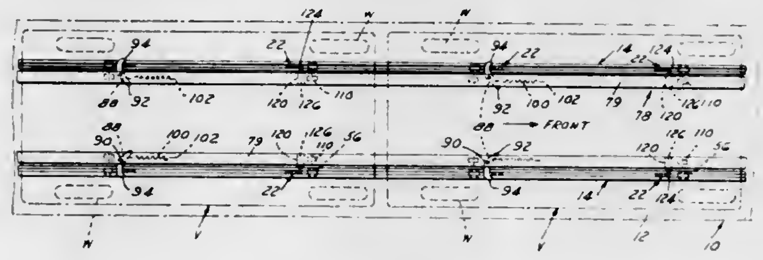
SECUREMENT SYSTEM FOR RAIL CARS

Donald J. Blunden, Southfield, Mich., assignor to Whitehead & Kales Company, River Rouge, Mich.

Continuation-in-part of Ser. No. 262,234, June 13, 1972, Pat. No. 3,797,410. This application Aug. 16, 1972, Ser. No. 281,210

Int. Cl. B60p *7/08;* **B61d** *45/00*

U.S. Cl. 105—368 R **12 Claims**



1. Apparatus for securing a vehicle on the elongated deck of a transport, comprising guide means including a rail disposed on and extending lengthwise of the deck, locking means including an elongated member having a plurality of longitudinally spaced locking lugs and being mounted lengthwise upon the deck for movement between first and second positions, and a shoe carried by the vehicle and having a plurality of longitudinally spaced cooperating means thereon adapted to be engaged by said locking lugs, said shoe being guided along said rail when the vehicle is advanced lengthwise of the deck, said rail having means engageable with said shoe to restrain upward movement of said shoe relative to said rail, said locking lugs on said elongated member being engageable with said cooperating means on said shoe in said first position of said elongated member to secure the vehicle as aforesaid and being disengageable from said cooperating means on said shoe in said second position to release the vehicle, the particular locking lugs engaged with said cooperating means on said shoe in said first position of said elongated member depending upon the position of the vehicle lengthwise of the rail car.

3,866,543

SWING DECK LOCKING DEVICE

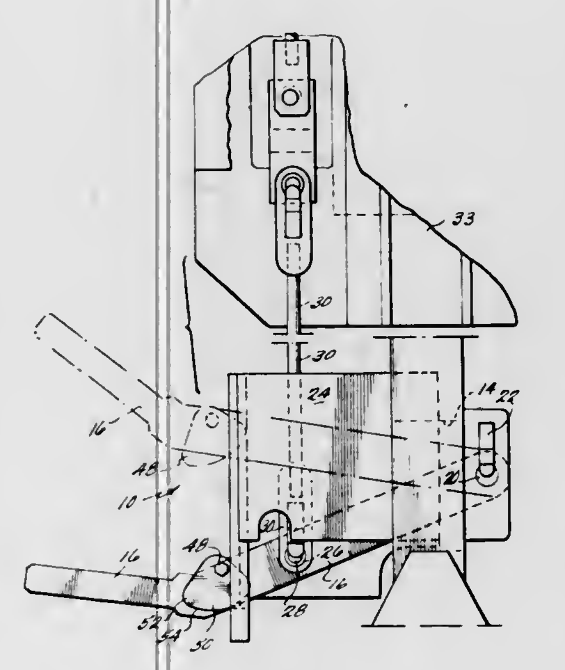
James W. Richard, Denison, Tex., assignor to Missouri-Kansas-Texas Railroad Company, Dallas, Tex.

Filed Dec. 6, 1973, Ser. No. 422,344

Int. Cl. B61d *3/02*

U.S. Cl. 105—368 R **3 Claims**

1. A control lever locking device, comprising:
a locking plate having means defining a vertically elongated slot which includes a vertically elongated main run bounded at one lateral extent by a straight side and at the other by means defining a plurality of vertically spaced notches which open toward the straight side;
an operating lever;
fixed means behind the slot pivotally mounting the operating lever;
said operating lever protruding out through the slot for manual movement up and down the main run of the slot, the operating lever being sized and constructed to be laterally movable between the main run of the slot and each notch when at the respective level thereof;
means on the operating lever for connecting the lever to whatever is to be actuated upon movement of the operating lever up and down in the slot;
pivot pin means extending laterally from the operating lever toward said straight side near the locking plate;
a cam pivotally hanging from said pivot pin and normally extending substantially in the main run of said slot and forwardly of the locking plate, the cam being positioned to be manually grasped and pivoted forwardly and upwardly about the pivot pin means to clear the main run of the slot;
the composite thickness of the cam and the operating lever where the cam is mounted, compared to the width of the slot being such that:



a. the cam cannot be in the main run of the slot unless the operating lever is stationed in one of said notches;
b. the operating lever when stationed in one of said notches cannot be removed therefrom unless the cam is pivoted forwardly and upwardly as aforesaid; and
c. when the operating lever is moved from the main run to one of said notches, the cam pivots into the main run of the slot under the influence of gravity.

3,866,544

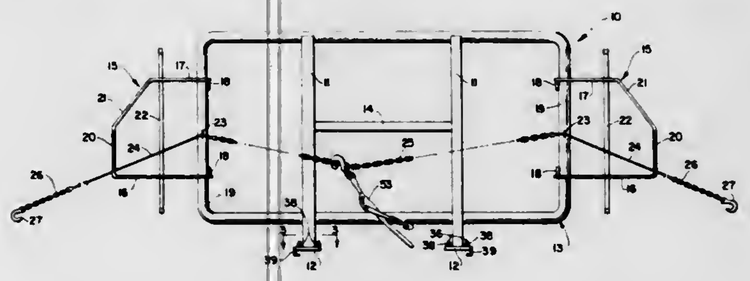
TRAILER BULKHEAD

Floyd W. Rothell, P.O. Box 232, Anson, Tex. 79501

Filed May 23, 1974, Ser. No. 472,807

Int. Cl. B60p *7/14*

U.S. Cl. 105—376 **7 Claims**



1. A bulkhead for freight carrying trailers comprising a pair of rigid uprights, means mounting said uprights on the center beams of a trailer platform, an elongated rigid frame extending across and secured to said uprights and supported thereby crosswise of the trailer platform for engagement against an end of a freight load, a pair of side members hingedly mounted on end portions of said frame and swingably movable into positions to embrace portions of the sides of the load, and non-elastic flexible means having end portions adapted to be anchored to side portions of the platform and extending across the exterior of said side members and longitudinally across said frame for anchoring the bulkhead to the platform and against the load.

3,866,545

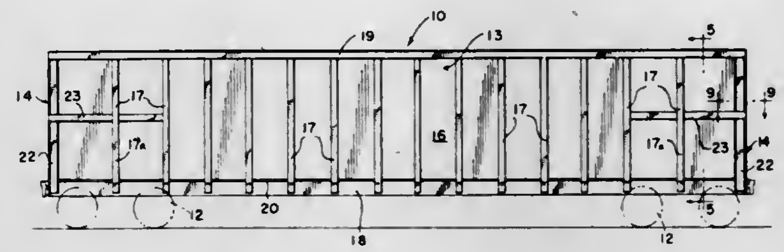
HIGH SIDE GONDOLA CAR

James C. Heap, Munster, Ind., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed May 22, 1974, Ser. No. 472,351

Int. Cl. B61d *5/00*

U.S. Cl. 105—406 **9 Claims**



1. In a railway vehicle having spaced side wall units interconnected with end wall units and each side wall unit including a longitudinally extending side sill and a vertically upwardly spaced side plate interconnected with the side sill through a side wall sheet and a plurality of vertically extending wall posts, and corner posts positioned at the corner junction of each side wall and end wall units, the improvement comprising:
each side wall unit having end portions with horizontally extending bracer members having a first end portion fixedly connected to the associated corner post;
said end wall unit including an end sill extending transversely of the vehicle and interconnecting portions of each spaced side sill;
an end plate positioned atop the end wall unit and including attaching end portions in interconnecting the adjacent side plate of each side wall unit;
a plurality of end wall reinforcing beams extending transversely of the vehicle from the associated corner posts;
an end sheet forming an enclosure for the end wall unit and being fixedly attached to the associated reinforcing beams, end sill, and end plate; and,
said reinforcing beams of the end wall unit including a connecting beam having side end portions attached adjacent the associated horizontally extending bracer member of the side wall unit and thereby combining with the end plate and end sill to transmit end forces into the side wall units.

3,866,546

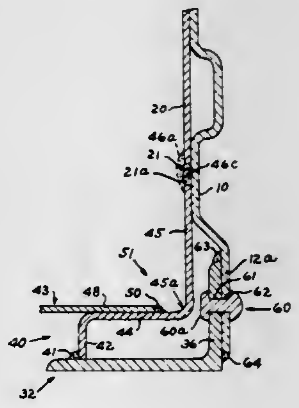
BOX CAR END STRUCTURE

Lowell L. Malo, St. Peters, Mo., assignor to ACF Industries Incorporated, New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,462

Int. Cl. B61d *17/00*

U.S. Cl. 105—410 **16 Claims**

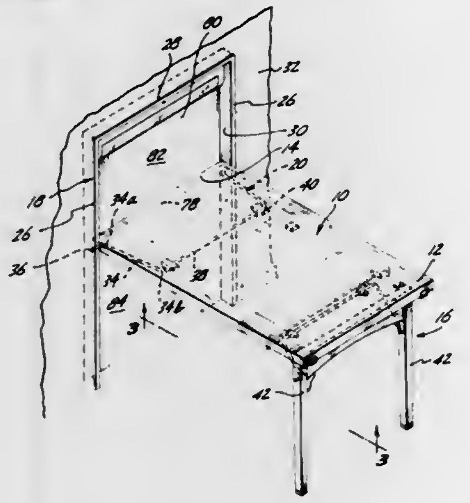


1. A box car end structure comprising:
an end sill having a generally horizontal portion extending inwardly toward the center of the car and a generally vertical extension at the end of the car;

a box car end having integrally affixed thereto a flat end liner; said box car end having an outwardly extending offset adapted to engage the vertical extension of said end sill; means integrally holding said offset portion in engagement with the vertical extension of said end sill; a floor support member integrally affixed to the horizontal portion of said end sill, said floor support member having a generally horizontal portion adapted to support a floor panel in the car, and an integral upper vertical portion extending upwardly into said car, providing a generally smooth, unobstructed essentially vertical end portion of the car.

3,866,547
STOWABLE WALL TABLE

Floyd R. Guyton, 9365 N.E. 120th Place, Juanita, Wash. 98033
Filed Aug. 20, 1973, Ser. No. 389,461
Int. Cl. A47b *3/00*
U.S. Cl. 108—38 **10 Claims**



1. A stowable table, comprising:

(a) a support structure, such as a wall or cabinet structure, adapted to have said table mounted thereto;

(b) a substantially unitary table top having an inner end and an outer end, said table top having a first vertical stowed position proximate said support structure, and a second horizontal use position where it extends horizontally from said support structure;

(c) arm means connecting said table top to said support structure, said arm means having an inner end pivotally fixed to said support structure at a predetermined location on said structure, and an outer end pivotally connected to said table top at a predetermined location proximate the inner end of the table top;

(d) leg support means connected to said table top at the outer end thereof, said leg support means having a stowed position against the table top and a supporting position wherein said leg support means extend downwardly from the outer end of the table top toward a floor surface;

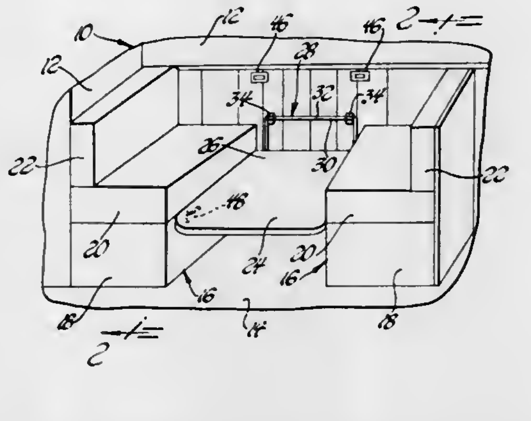
(e) floor engaging means at the outer end of said table top and adapted to move along in contact with the floor surface when the table top is being moved between its first and second positions, and

(f) said arm means being the sole primary connection between said table top and said support structure, such that both the inner end and the outer end of said table top are able to move away from said support structure, said arm means and said table top being so arranged relative to said support structure that the length of the arm means plus the distance from the pivot connection of the arm means on the table top to the inner end of the table equals the distance from the pivot location of the arm means on the support structure to a location on said structure proximate the inner end of the table in its stowed position, and the distance from the pivot connection of the table top to the outer end of the table top equals the length of the arm means plus the distance from the pivot connection on the support structure to the location of the outer end of the table proximate the floor surface in its stowed position, whereby,

with said table top in its stowed position, the upwardly disposed inner end of the table top can be moved outwardly from said support structure, with the inner end being supported by said arm means, and downwardly positioned outer end of the table can be moved outwardly from the support structure along the floor surface, with the outer end being supported by the floor surface, and then upwardly to its use position.

3,866,548
VARIABLY POSITIONABLE ARTICLE AND SUPPORT ASSEMBLY THEREFOR

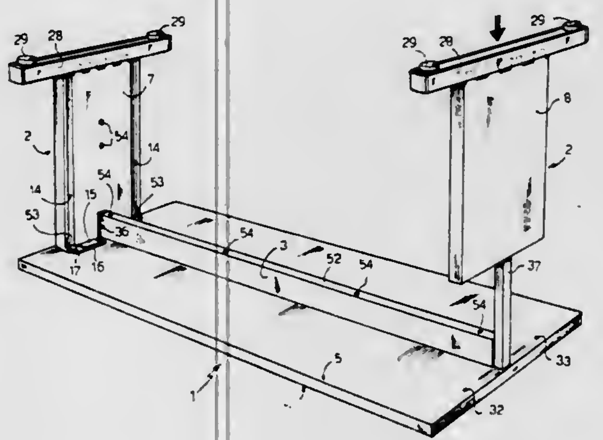
Raymond S. Skonieczny, 28129 Los Olas, Warren, Mich. 48093
Filed Feb. 5, 1973, Ser. No. 329,683
Int. Cl. A47c *19/00;* **A47b** *1/04, 83/00*
U.S. Cl. 108—79 **17 Claims**



1. A support assembly for supporting an article of furniture, or the like, wherein said article is hingedly secured at a first end portion by hinge means to a first associated support in a manner enabling said article to be vertically positionable in any one of a plurality of elevationally distinct functional positions with respect to said first associated support with said hinge means experiencing both pivotal and translational motion with respect to said first associated support and said article as said article is undergoing a change of positions from a first of said plurality of elevationally distinct functional positions to a second of said plurality of elevationally distinct functional positions, said support assembly comprising generally upwardly extending leg-like support means having an upper end thereof adapted to be continuously operatively connected to an undersurface of said article by pivot means translationally movable with respect to said article, said pivot means being translationally movable from a first translational position to at least a second translational position for enabling the easy change in position of said article from any one of said plurality of elevationally distinct functional positions to any other of said plurality of elevationally distinct functional positions, said leg-like support means having a lower end adapted to be operatively connected to second associated support structure laterally spaced from said first support structure in a manner permitting said lower end to only experience a generally pivotal motion with respect to said second associated support structure, said leg-like support being inclined with respect to the vertical as to have said upper end thereof disposed more nearly an other end portion of said article opposite to said first end portion when said article is in an elevationally lowermost position of said plurality of elevationally distinct functional positions, said translationally movable pivot means enabling said other end portion of said article to be manually raised generally upwardly as to thereby cause said first end portion to be supported by and pivotally rotate on said hinge means and cause said upper end of said leg-like support and said pivot means to translationally move with respect to said article as to move to a selected point more nearly closer to said first end portion generally midway between said first end portion and said other end portion and thereby result in said leg-like support assuming a position more nearly vertically disposed, said upper end of said leg-like support being effective when moved to said selected point to enable said article to be manually moved in a first direction generally away from said hinge means causing said hinge means to experience translational motion while also pivotally rotating with respect to said article thereby causing said article to undergo pivotal rotation in one direction about said pivot means whereby said other end portion of said article starts to move downwardly while said first end portion of said article starts to move upwardly, said upper end of said leg-like support also being effective when said article has been moved a sufficient distance in said first direction to enable said article to be manually moved in a second direction generally opposite to said first direction toward said hinge means causing said hinge means to continue experiencing translational motion while also continuing to experience pivotal rotation with respect to said article thereby causing said article to continue to undergo pivotal rotation in said one direction about said pivot means whereby said other end portion of said article continues to move downwardly while said first end portion of said article continues to move upwardly until said article attains an elevationally distinct functional position elevationally above said elevationally lowermost position of said plurality of elevationally distinct functional positions, said leg-like support being effective to generally pivotally rotate in a first angular direction generally about said lower end while said article is being moved in said first direction and to generally pivotally rotate in a second angular direction generally about said lower end while said article is being moved in said second direction.

3,866,549
COLLAPSIBLE TABLES

Marcello Berton, Ronchi di Massa, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy
Filed Sept. 6, 1972, Ser. No. 286,800
Claims priority, application Italy, Sept. 16, 1972, 69945/72
Int. Cl. A47b *3/06*
U.S. Cl. 108—153 **9 Claims**



1. A collapsible table including a working plate and comprising:

a crosspiece for bracing said working plate, said crosspiece including a lengthened portion cooperating with said working plate and two opposite ends;

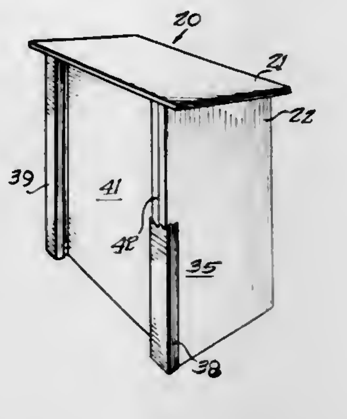
two uprights, each one of said two uprights being rigidly fixed to one corresponding of said two opposite ends and extending by one side transversely to said lengthened portion;

two supporting elements for supporting said working plate, each of said supporting elements including a recess to house said crosspiece, a pair of supporting surfaces transversal to said recess for cooperating with said working plate, and a hole for being passed through by one corresponding of said two uprights; and

fixing members for removably securing said pair of supporting surfaces and said lengthened portion of said crosspiece to said working plate.

3,866,550
LIGHTWEIGHT FOLDABLE FURNITURE PIECE AND METHOD OF CONSTRUCTING SAME

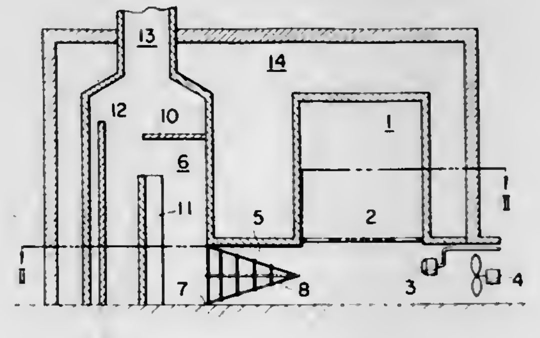
Robert C. Geschwender, Lincoln, Nebr., assignor to Lancaster Research and Development Corporation, Lincoln, Nebr.
Filed Nov. 27, 1972, Ser. No. 309,801
Int. Cl. A47b *3/06;* **A47c** *7/00*
U.S. Cl. 108—153 **3 Claims**



1. A foldable table or other piece of foldable furniture, including at least one unitary foldable leg member constructed of a single panel of composite material and including first and second substantially planar outer sheets and an inner core of enclosed cellular construction secured to the first and second planar sheets, the leg member having at least one foldable resilient joint constituted by two opposed lines of score indentations formed respectively in the first and second outer sheets at predesignated locations in registry with one another, said inner core and outer sheets having a resiliency when so indented, said score indentations providing sufficient outer sheet material in the outer score to expand to a substantially continuous surface and in the inner score to be resiliently crushed without substantial damage to adjacent parts of the inner core as the panel is bent through a substantial angle to form the leg member, the foldable leg member thereby being provided with at least two leg panels oriented at an angle to one another yet joined continuously thereto by the foldable joint, the leg panels mutually exerting a spring-biasing force on one another tending to return them to the unfolded position, a top member, and at least one brace member affixed to the top member on the underside thereof and abuttingly engaged by the two leg panels thereby restraining them against the biasing force tending to return them to the unfolded position.

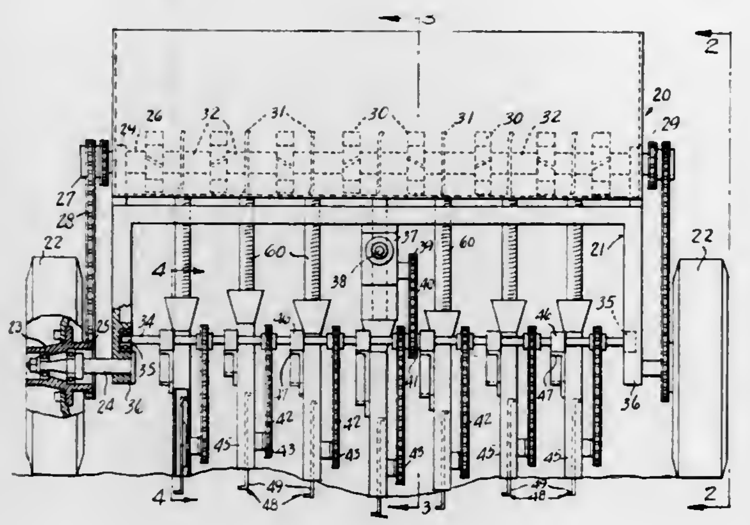
3,866,551
COMBUSTION FURNACE

Yasuhiro Sanga, 19-26, 5-chome, Tokyo, Japan
Filed Sept. 6, 1973, Ser. No. 394,913
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **7 Claims**



1. A combustion furnace comprising a primary combustion chamber having a roaster, a flue chamber, a secondary combustion chamber, said chambers being in communication with each other, and a conically or pyramidally shaped heat resisting steel grate disposed in said flue chamber with its tapered end oriented towards said primary combustion chamber from said secondary combustion chamber.

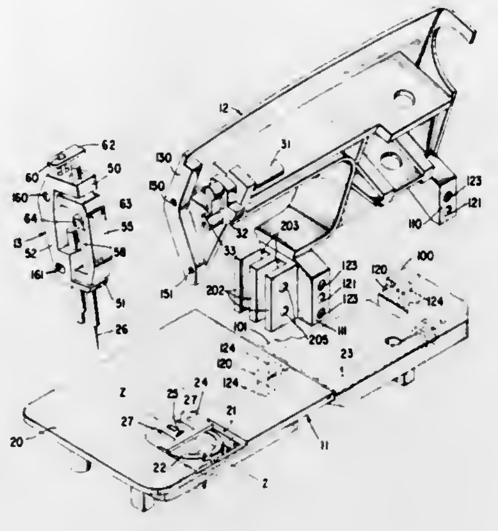
3,866,552
ROTO SOD SEEDER
Raymond H. Leidig, Route 3, Box 504, Lake Charles, La. 70601
Filed Oct. 11, 1973, Ser. No. 405,594
Int. Cl. A01c *5/00*
U.S. Cl. 111—85 **2 Claims**



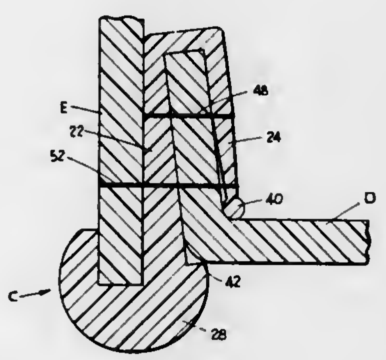
1. In a roto sod seeder, a main frame, ground engaging wheels connected to said main frame, a line shaft adjacent said frame, chain and sprocket means connecting said line shaft to said wheels, attachments mounted on said line shaft, a power gear drive unit on said frame powered from an outside power source, a power shaft operatively connected to said power gear unit, a plurality of boots, bracket means individually hingedly mounting each of said boots on said power shaft enabling each boot to follow the contour of the ground, a plurality of tiller wheels having tines for maintaining the depth of cultivation, means adjustably mounting a tiller wheel within each boot, each of said boots including a seed trough for controlling the depth of seed covering, means adjustably securing a seed trough on a bracket means, packing wheel means adjustably mounted on said bracket means for the desired amount of soil compaction around the seeds, lift means on said seeder secured to said boots for varying the width between planting rows, and a hydraulic cylinder on said seeder and connected to said lift means for selectively lifting the boots and tiller wheels, seed supply means for depositing seed into the seed troughs.

3,866,553
SEWING MACHINE FRAME CONSTRUCTION
Kenneth D. Adams, Madison, and Walter F. King, Little Silver, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed May 7, 1973, Ser. No. 357,963
Int. Cl. D05b *75/06*
U.S. Cl. 112—258 **10 Claims**

1. A sewing machine frame including a bed carrying a stitch forming loop taker and formed with a work supporting surface, a bracket arm formed with means for supporting mechanism above said bed, and a sewing head carrying an endwise reciprocable needle adapted to cooperate with said loop taker in the formation of stitches, a first set of planar mating surfaces formed on said bracket arm and on said bed, said first set of mating surfaces which are on said bed being substantially perpendicular to the work supporting surface thereon, means for fastening said first set of planar mating surfaces of said bracket arm and bed together in fixed predetermined relationship, a second set of planar mating surfaces formed on said sewing head and on said bracket arm, said second set of mating surfaces which are on said bracket arm being substantially mutually perpendicular to the first set of planar mating surfaces on said bracket arm, and means for securing said second set of planar mating surfaces on said sewing head and bracket arm together with limited capacity for adjustment therebetween in the plane of said second set of planar mating surfaces.

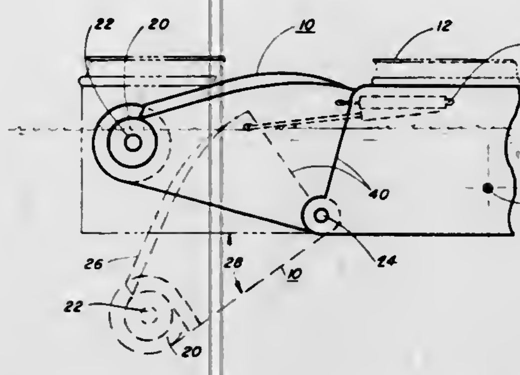


3,866,554
LUGGAGE MANUFACTURE
Joseph A. Holtzman, 8201 Symphony Dr., Baltimore, Md. 21208
Filed Sept. 7, 1973, Ser. No. 395,040
Int. Cl. D05b *35/06;* **A45c** *13/00*
U.S. Cl. 112—262 **4 Claims**



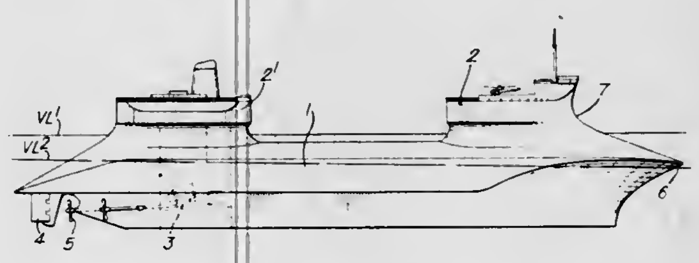
1. A method of making luggage comprising providing a flexible edge binding strip, a flexible, substantially flat side wall panel for connection to the strip, the side wall panel being generally rectangular and having a radius at each of its corners, and a flexible wall section for connection to the strip to provide the top, end and bottom walls of a luggage shell, the binding strip having in cross-section a substantially U-shaped portion providing an outer arm and an inner arm connected by a base, the outer arm having a bead at the end thereof opposite the base, the bead providing a shoulder extending from the outer side of the outer arm, positioning the side wall panel in the U-shaped portion and, while maintaining the side wall panel in substantially flat condition, urging the edge of the panel against said base while sewing through the arms and the intermediate side wall panel to provide a sub-assembly of the side wall panel having the edge binding strip around the edge thereof, and positioning the edge of said wall section against said shoulder and sewing through the adjoining portion of the aforesaid sub-assembly and the wall section.

3,866,555
APPARATUS FOR MOUNTING STERN ROLLERS IN ANCHOR PLANTING TENDERS
Mehmet D. Korkut, 3848 Veterans Hwy., New Orleans, La. 70002
Filed June 27, 1973, Ser. No. 374,207
Int. Cl. B63b *21/22*
U.S. Cl. 114—0.5 R **2 Claims**



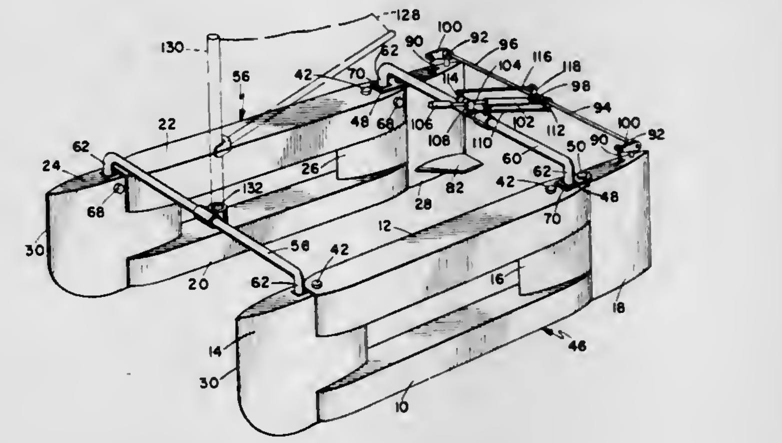
1. In a tender for leading out anchor lines and anchors in mooring semi-submersible drilling rigs and such like marine platforms, said tender having a center of gravity, a longitudinal centerline, and an indented stern symetrically arranged on said centerline; a ramp pivoted symmetrically with respect to said centerline in said indented stern with oppositely disposed free aft and forward fixed ends, said ramp being swingable between an inoperable in-hull-alignment position with said free end above said center of gravity, and an operable position with said free end below said center of gravity; and a stern roller rotatably mounted on said ramp at said free end with its axis of rotation horizontal and normal to said centerline, said stern roller being scored with a circumferential center channel symmetrically positioned with respect to said longitudinal centerline for receiving and guiding anchor lines passing thereover in leading out such and anchors to position of planting from a said drilling rig with said ramp in operable position whereby the weight of said line hanging in a catenary therebetween is supported by said tender below its center of gravity and acts to stabilize said tender in its movements.

3,866,556
SHIP CONSTRUCTION
Per Christian Sandnaes, Kaldbakkfaret 13, Oslo, Norway
Continuation of Ser. No. 126,859, March 22, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,552
Claims priority, application Norway, Mar. 20, 1970, 1059/70
Int. Cl. B63b *35/08*
U.S. Cl. 114—41 **7 Claims**



1. A ship construction of supertanker size for operation in ice-covered waters comprising a main hull with forward and aft superstructure units extending upward therefrom and being separated from one another to facilitate a reserve buoyancy and longitudinal stability of the ship, the width of said main hull being substantially greater along its length than the width of each said unit, said forward unit being spaced rearwardly from the ship's bow, said bow terminating in a point and having side surfaces extending between said bow point and said forward unit, said surfaces intersecting along a straight line extending from a lower portion of said forward unit to said bow point and sloping downwardly away from one another, said forward unit having side surfaces sloping forwardly and intersecting along a line smoothly curving into and forming an extension of said straight line, the ship being designed to travel fully loaded in open sea at a level (VL^2) located just below said bow point, each of said forward and aft units having side walls extending upwardly from said main hull and inwardly toward one another and thereafter outwardly away from one another with smooth curved sections respectively interconnecting said inward and said outward extensions thereby defining narrow width constricted base portions for both said units, said main hull having spaced outer and inner shells, ballast means defined by the space between said outer and inner shells in said main hull for maintaining the ship at substantially a level (VL^1) of said constricted base portions thereby facilitating little resistance by the ship's passage through the ice which is partly broken up by said side surfaces of said bow, the level (VL^1) being higher than the level (VL^2).

3,866,557
SEMI-SUBMERGED VESSEL ADAPTABLE TO SAILING
Thomas G. Lang, 5354 Calle Vista, San Diego, Calif. 92109
Filed Nov. 24, 1972, Ser. No. 309,187
Int. Cl. B63b *1/12*
U.S. Cl. 114—61 **11 Claims**



1. A semi-submerged vessel, comprising,

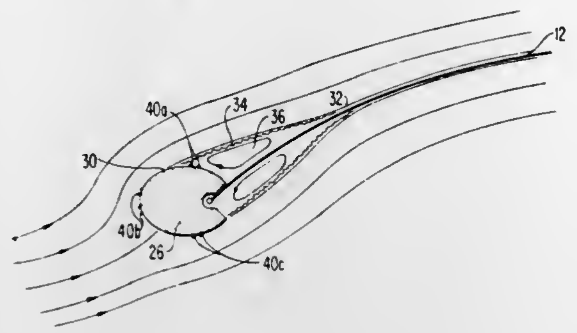
a pair of spaced elongated lower hulls disposed completely below the water line of the vessel,

forward and rearward streamlined struts extending upwardly from opposite ends of said hulls and extending above the water line, said forward streamlined struts having water penetrating tapered leading edge portions projecting forwardly of the forewardmost portion of the hulls and said rearward streamlined struts having tapered trailing edge portions projecting rearwardly of the rearwardmost portion of the hulls, and an open space between the struts, and a superstructure supported on said struts above the water line.

3,866,558
MAST FOR SAILING YACHTS AND METHOD
Lars Rune Bergstrom, Sodernas Fry, Varmdo, and Georg Sven Olof Ridder, Fregattvagen 12, Lidingo, both of Sweden
Filed Sept. 5, 1973, Ser. No. 394,460
Int. Cl. B63b *15/00*
U.S. Cl. 114—90 **21 Claims**

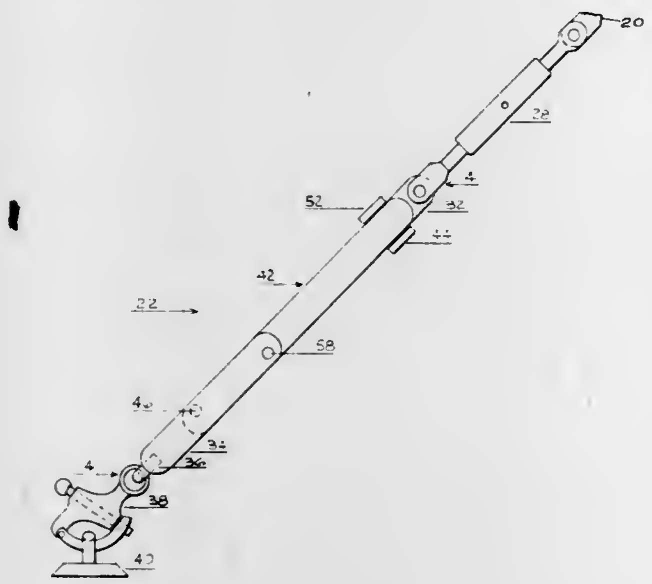
1. A mast for a sailing yacht or similar watercraft to be propelled by the lift effect by the wind on the sail; the mast comprising an elongated body having a front end and a rear end and means for attaching a sail to the rear end, and first means including individual projections on the leeward side of the mast and raised from the surface of the mast and distributed substantially throughout the length of the mast for causing air flowing around the mast to separate as a turbulent boundary layer to ultimately reduce unattached flow of air between the mast and the sail when the mast is in use, and wherein there is further included second means including

individual projections positioned on the windward side of the mast and raised from the surface of the mast and distributed substantially throughout the length of the mast and wherein there is further included third means including individual projections on the front end of the mast and raised from the surface of the mast and distributed substantially throughout the length of the mast, said second and third means also being for use in creating a turbulent boundary layer as aforesaid.



3,866,559
STAY RELEASE

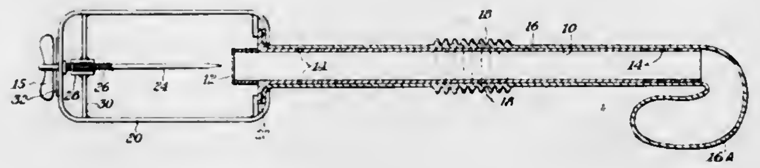
Richardt Joensen, 1701 Washington Way, Apt. 12, Marina del Rey, Calif. 90291
Filed Nov. 21, 1973, Ser. No. 417,810
Int. Cl. B63h ***9/04***
U.S. Cl. 114—108 **6 Claims**



1. A sailboat having a hull and a mast extending upward from said hull, a stay secured to said mast and extending toward said hull, a stay release interconnected between said stay and said hull for the quick release of the stay so that sails may be employed in the position occupied by the stay before its release, said stay release comprising:
an upper link, a lower link, and a toggle link, said toggle link being pivotally mounted to both said upper link and said lower link;
connection means on said upper link connecting said upper link to said removable stay;
connection means on said lower link for removable connection to said hull of said sailboat, said connection means defining an axis through said stay release, said toggle link being pivotally connected to said upper link adjacent the lower end of both said upper link and said toggle link, said toggle link being pivoted to said lower link adjacent the upper end of said lower link and intermediate the ends of said toggle link, said pivot between said upper link and said toggle link, and said pivot between said lower link and said toggle link both being off said axis when said toggle link is in its raised position;
an upper hand-hold secured to the upper end of said upper link and a toggle hand-hold secured on the upper end of said toggle link, said hand-hold acting as stops to limit motion of said toggle link in the closed direction to a position wherein said toggle link lies substantially along said axis.

3,866,560
EMERGENCY PLUG FOR SEALING OPENINGS

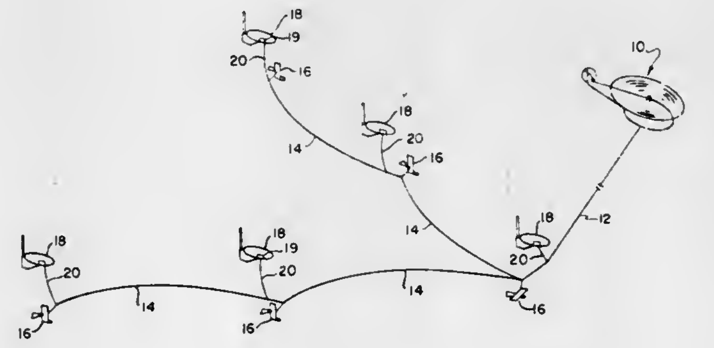
John Steward, Vancouver, B.C., Canada, assignor to Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 29, 1973, Ser. No. 392,454
Int. Cl. B63b ***43/16***
U.S. Cl. 114—227 **5 Claims**



1. An emergency plug comprising:
an elongated hollow tube sealed at one end, open at the other end and having perforations adjacent each end communicating with the interior;
a pressurized tank enclosing the sealed end of the tube;
an expandable sheath enclosing the tube and sealed to said tank; and
manually operable means disposed partially outside the tank and partially inside the tank to rupture the closed end of the tube and cause the sheath to inflate.

3,866,561
SELF-DEPLOYING VARIABLE FLOAT PENDANT

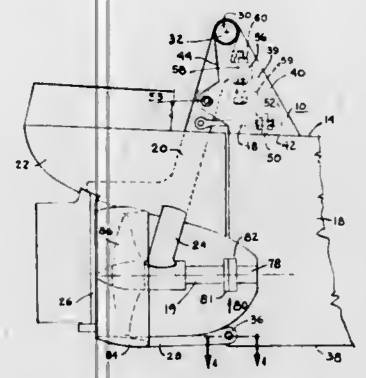
Charles W. Sieber, Sterling, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 25, 1973, Ser. No. 398,278
Int. Cl. B63b ***21/56;*** **B65h** ***49/00***
U.S. Cl. 114—235 B **4 Claims**



1. A self-deploying variable length float pendant and unwinding system for minesweeping gear, comprising:
a pendant of flexible cable material for connecting a minesweeping paravane and float;
a spindle affixed in said float;
a spool attached for rotation on said spindle, and having wound thereon a length of said pendant;
a releasable detent connecting said spool to said spindle; and
a positive detent stop on said spindle for terminating the rotation of said spool when a desired length of pendant has been payed out.

3,866,562
APPARATUS FOR RAISING UNDERWATER PROPULSION ELEMENTS ABOVE A FLOATING WATERLINE

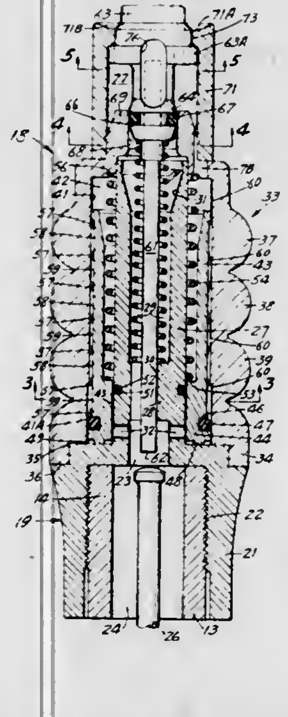
Hector V. Pazos, 2728 Valentine Ct., New Orleans, La. 70114
Filed May 22, 1972, Ser. No. 255,497
Int. Cl. B63h ***5/12***
U.S. Cl. 115—41 R **6 Claims**



1. Apparatus for raising underwater propulsion elements of a marine vessel, having a structural deck and bottom structure, and a line shaft, and comprising: a separate fantail, having a lower frame portion, and means mounting said underwater propulsion elements including a tail shaft; upper connecting means including adjustable aligning means, mounted on said structural deck and upper adjacent end of said fantail for loosely and pivotally fastening said upper adjacent end of said fantail to said structural deck; lower connecting means integral with and engaging in said lower frame portion and said bottom structure; and shaft connecting means fixed on adjacent ends of said line and tail shafts and in plane of said upper and lower connecting means for connecting and disconnecting said shafts.

3,866,563
OPTICAL READOUT APPARATUS

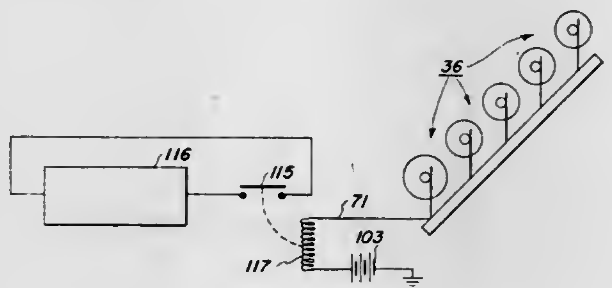
Gary R. Bluem, 7980 Wynnwood Rd., Minneapolis, Minn. 55427
Filed June 4, 1973, Ser. No. 366,682
Int. Cl. B60c ***23/04***
U.S. Cl. 116—34 R **13 Claims**



1. An optical read out apparatus to provide visual information as to the existence of a condition comprising: first means having a viewing section, second means movable relative to and adjacent the viewing section in response to a condition, said second means having information means indicating the condition, said viewing section including a transparent section having at least one annular outwardly divided bead, said bead providing an optical structure for viewing the information means when the information is located adjacent the transparent section.

3,866,564
MAGNETIC BRUSH DEVELOPING APPARATUS FOR COPIERS

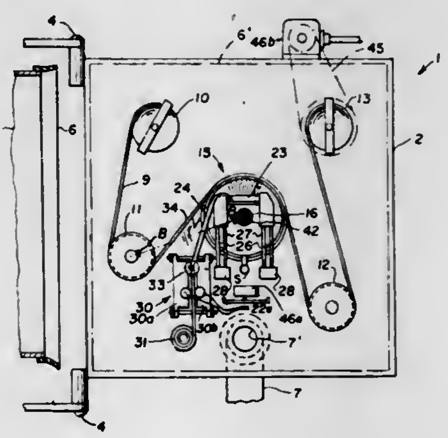
Charles D. Wilson, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 25, 1973, Ser. No. 354,416
Int. Cl. G03g ***13/00***
U.S. Cl. 118—10 **7 Claims**



1. In a reproduction machine for producing copies of originals having a photoconductive member on which latent electrostatic images of the original being reproduced are formed, with means for developing said latent electrostatic images in preparation for transfer thereof to support material, said developing means including at least one magnetic brush, together with biasing means to provide a biasing voltage on said magnetic brush, the improvement comprising:
signal indicator means;
energizing means for energizing said signal indicator means to produce a signal; and
brush short responsive means responsive to shorting of said magnetic brush to actuate said energizing means whereby to produce said signal.

3,866,565
VAPOR DEPOSITION APPARATUS WITH ROTATING DRUM MASK

David E. U. Ridout, R.D. 2, Box 89, Export, Pa. 15632
Filed Dec. 21, 1973, Ser. No. 427,124
Int. Cl. C23c ***13/12***
U.S. Cl. 118—49.1 **9 Claims**

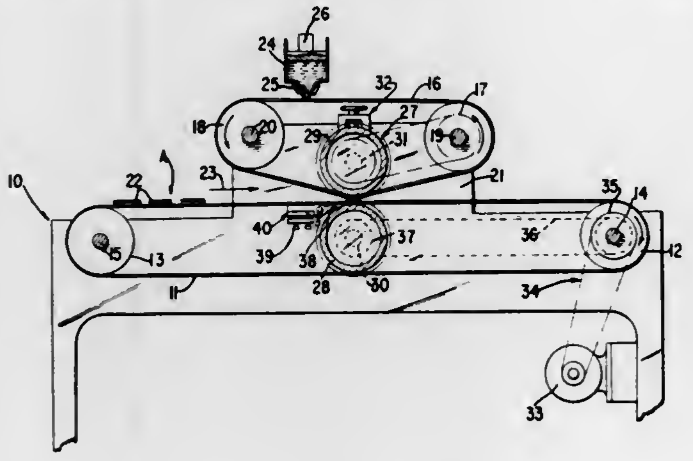


1. Apparatus for depositing vaporized metal along the intermediate longitudinal portion of an elongated base strip, comprising a drum having central opening means extending along the entire periphery, means for rotating said drum about its axis, a source of metallic vapor on one side of said opening means, means for longitudinally moving a base strip entrained on the other side of the drum overlying said opening immediately adjacent said opening means, said source of metallic vapor being contained within said drum and comprising a boat-like container which is heated to vaporization tempera-

ture of a strip of metal progressively fed into said container, and said base strip being longitudinally driven along a portion of the outer periphery of said drum so that the inner surface exposed to said slit will become coated with said vaporized metal, the edges of the slit defining the boundaries of the coated strip, said base strip being driven by a motor and further entrained about a plurality of idler wheels, a source of potential being applied between a brush which contacts the shaft of one of said idler wheels and a brush which contacts the shaft of said drum so as to provide electric heating current to a portion of said base strip extending between the periphery of one of said idler wheels and of said drum, to effect preheating of said portion before deposition of vaporized metal thereon through said slit, and means contacting said drum beyond the area of strip contact whereby to remove excess deposited metal from the edges of said slit.

3,866,566
GAUZE PAD IMPREGNATION BETWEEN BELTS

Edward W. Jones, Brigantine, N.J., assignor to Pioneer Laboratories, Inc., Pleasantville, N.J.
Filed Sept. 28, 1972, Ser. No. 292,978
Int. Cl. B05c *1/02*
U.S. Cl. 118—58 **3 Claims**

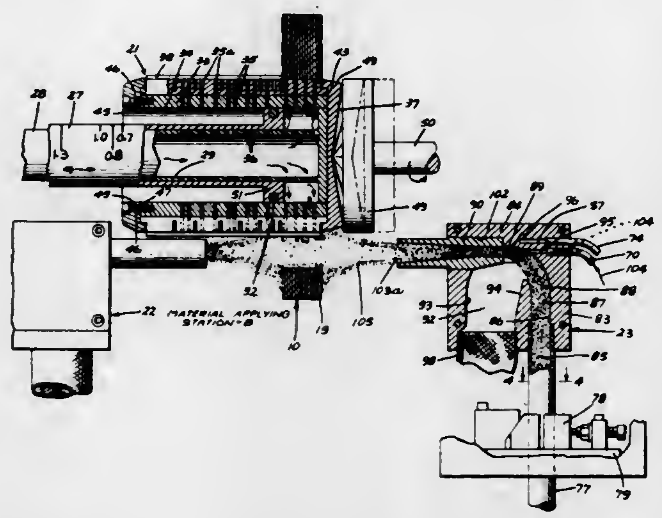


1. In an apparatus for impregnating a gauze pad, the combination including a first movable belt for supporting a pad to be impregnated, a second movable belt movable in close proximity to said first belt, nip roll means straddling said two belts comprising an upper and lower roll between which mating surfaces of said belts move, means feeding impregnant to said second of said belts, said first belt carrying said pad into contact with said second belt and through said nip roll means so that impregnant will be deposited on said pad, heating means in a zone adjacent said nip roll means, and means for adjusting the distance between said rolls in accordance with the predetermined quantity of impregnant to be placed on said pad.

3,866,567
MASKING APPARATUS FOR USE IN COATING AN ARTICLE OF MANUFACTURE

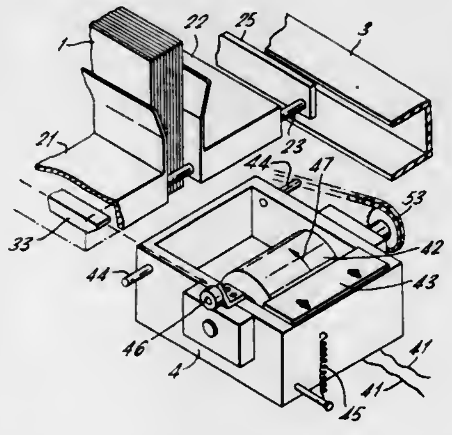
Harold L. Fritzschz, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Division of Ser. No. 879,664, Nov. 25, 1969, Pat. No. 3,696,780, which is a continuation-in-part of Ser. No. 802,795, Feb. 27, 1969, abandoned. This application May 18, 1972, Ser. No. 254,478
Int. Cl. B05b *7/14*
U.S. Cl. 118—69 **9 Claims**

1. Apparatus for masking selected surfaces of an article of manufacture having at least one passageway therethrough, while other selected surfaces are being coated with a desired material, said apparatus comprising: a coolant transmitting and article support structure disposed in adjacent relationship with a contour surface of the article and having an interior region, a plurality of coolant emission ports formed in said coolant transmitting and article support structure for directing pressurized cooling fluid from the interior region of the coolant transmitting and article support structure toward the article, said ports being spaced apart at locations circumferentially around the article support structure and longitudinally along the article support structure, the ports defining a preselected flow path for the discharge of pressurized coolant from the interior region of said coolant transmitting and article support structure, said coolant transmitting and article support structure including control means for selectively restricting the admission of pressurized coolant to those ports disposed along a predetermined portion of the article support structure adjacent to which an article is supportable to provide for selective regulation of the flow path to the emission ports during operation of the apparatus to assist in providing a predetermined masking action with respect to a given article of manufacture; said control means comprising a control member mounted to move longitudinally along the interior region of the coolant transmitting and article support structure; said coolant transmitting and article support structure including a tubular member, and said control means and tubular member being telescopically movable relative to one another whereby ports along said predetermined portion of the article support structure are selectively supplied with pressurized cooling fluid.



3,866,568
BOOKBINDING MACHINE

Hideo Minami, Kyoto, Japan, assignor to Taiyo Seiki Co., Ltd., Kita-ku, Kyoto, Japan
Filed Dec. 15, 1972, Ser. No. 315,594
Claims priority, application Japan, Dec. 20, 1971, 46-120373
Int. Cl. B05c *1/02;* **B42c** *9/02*
U.S. Cl. 118—238 **6 Claims**

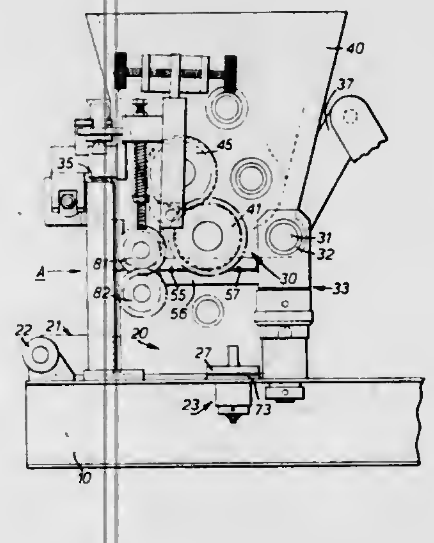


1. An apparatus for gluing together a plurality of sheets having intersecting leading edges and binding edges, comprising:

- means for clamping the binding edges of the sheets together such that they are in coincidence with a first plane and the leading edges are in alignment with one another;
- means for advancing the binding edges in the first plane;
- adhesive applicator means displaceable between spaced positions and yieldably biased in a first position to present a surface thereof into substantial coincidence with the first plane at a point in the travel of the binding edges; and,
- first and second cooperating cam means, said first cam means located on said clamping means and said second cam means located on said adhesive applicator means, said cooperating cam means being relatively engageable to displace said adhesive applicator means relatively away from the first plane against the bias thereon when the leading edges of the sheets approach said point in the direction of travel, and relatively disengageable when the leading edges have passed said point in the direction of travel.

3,866,569
PASTING MACHINES FOR STORAGE BATTERY PLATE GRIDS

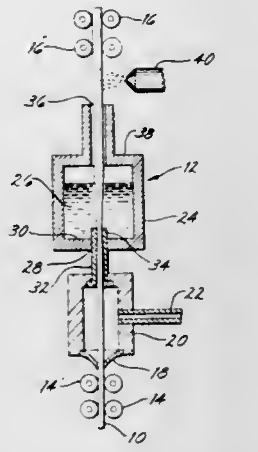
Ronald Matley Gibson, Bolton, and Robin Gordon, Stockport, both of England, assignors to Electric Power Storage Limited, Manchester, Lancashire, England
Filed June 13, 1973, Ser. No. 369,582
Int. Cl. B05g *1/00*
U.S. Cl. 118—249 **4 Claims**



1. A pasting machine for storage battery plate grid castings, comprising opposed walls forming a passage for said grid castings, said opposed walls are formed by a pair of masking plates each having at least one aperture therein, each said masking plate being formed integrally from a single piece of metal, means for advancing castings through said passage, a reservoir for paste, means including at least one first roller for feeding paste from said reservoir through an aperture in one of said walls to each casting as it passes through said passage, said first roller having portions thereof extending into at least one aperture of at least one of said masking plates, a second roller mounted opposite said first roller for recirculating said paste to the grid casting within said passage and having a portion thereof extending into at least one aperture of the other of said masking plates, resilient means holding said walls in a normal relative position corresponding to castings of a predetermined thickness, and said resilient means being arranged to yield thereby enabling said walls to part slightly to allow the passage of castings of greater thickness.

3,866,570
CONTINUOUS CASTING APPARATUS

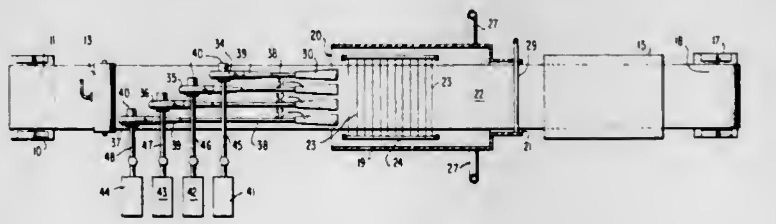
Santos Cruzado, Bridgeport, Conn.; Stanley Nicholas Dascaloff, Norristown, Pa.; John George Tolls, Southport, and Eugene Fraley Torvend, Bridgeport, both of Conn., assignors to General Electric Company, New York, N.Y.
Continuation of Ser. No. 374,331, June 28, 1973, abandoned. This application June 3, 1974, Ser. No. 475,601
Int. Cl. B05c *3/12*
U.S. Cl. 118—405 **6 Claims**



1. Apparatus for the continuous casting of meatls comprising copper by passing a metal core member comprising copper upwardly through a crucible containing molten metal comprising copper and thereby accreting and solidifying molten metal comprising copper on the core member, comprising the combination of: a crucible for the containment of molten metal comprising copper having an entry port below the surface of said molten metal for the passage of a metal core member comprising copper into the crucible and through the contents thereof, a vestibule chamber positioned adjacent to the crucible entry port, and a refractory metal cylindrical bushing member extending from within the vestibule chamber to the crucible having a cylindrical end inserted into and positioned within said entry port of the crucible and extending for a distance of about one-fourth to about one-half inch above the crucible bottom wall into the crucible.

3,866,571
APPARATUS FOR ELECTROSTATICALLY DEPOSITING A UNIFORM COATING OF FINELY DIVIDED COATING MATERIAL ON MOVING SUBSTRATES

Lowell W. Austin, and James N. Baker, both of Weirton, W. Va., assignors to National Steel Corporation, Pittsburgh, Pa.
Filed Aug. 15, 1973, Ser. No. 388,476
Int. Cl. B05c *5/02*
U.S. Cl. 118—621 **4 Claims**



1. Apparatus for applying a coating of metal on metallic strip comprising

- an elongated housing of nonelectrically conducting material having an entrance opening and an exit opening and defining an elongated passageway extending between the entrance opening and the exit opening,
- means for continuously moving metallic strip through the elongated passageway of the housing along a path in a direction from the entrance opening to the exit opening in out-of-contact relation with the material of the housing,

- means located in the housing for charging metal particles introduced into the pssageway of the housing and for producing an electrostatic field in the passageway for moving charged metal particles in a direction toward the strip passing through the passageway,
- and means for introducing a cloud of metal powder into the passageway at its entrance opening generally in the direction of movement of the strip through the passageway,
- the last-named means including a plurality of fixed nozzles spatially positioned transversely of the path of movement of the strip through the elongated passageway,
- and means for feeding to each of the nozzles a pressurized aerosol including a gas and metal powder,
- each nozzle having a discharge opening in the form of a slit, each nozzle having side walls tapering outwardly in the direction of strip movement,
- the angle of taper of the nozzles being no greater than 15°, the nozzles being positioned with the long dimension of the slit discharge openings lying in a common plane parallel to and spaced from the path of the strip material and with the discharge opening lying in a common plane perpendicular to the path of the strip material,
- the long dimension of the slit discharge opening of each nozzle being no greater than one-fourth the width of the strip material.

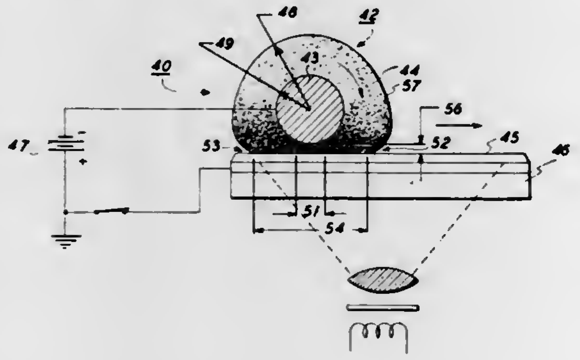
3,866,572
FORAMINOUS ELECTROSTATOGRAPHIC TRANSFER SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,463

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 18 Claims



1. In electrostatographic apparatus wherein a transfer bias voltage is applied between a roller electrode and a first support surface to provide an electrical field for transfer therebetween while relative movement is provided between said roller electrode and said first support surface and said roller is variably deformed by said first support surface at a roller nip area with pre-nip and post-nip areas at each side of said nip area, the improvement in said roller electrode comprising:

- an electrically conductive core to which said bias voltage is applied, spaced from said first support surface; and
- a thick highly compressible roller body of foraminous open cell material extending between said conductive core and said first support surface and having a substantial normal uncompressed thickness;
- said foraminous material occupying the space between said conductive core and said first support surface with a multiplicity of small discontinuities provided by said cells in said material and providing an ionization control barrier;
- said foraminous material being highly compressed between said conductive core and said first support surface in said nip area to a thickness at least approximately one-half of said normal uncompressed thickness;
- said foraminous material being much less compressed in said pre-nip and post-nip areas than in said nip area, having a much greater thickness and porosity between said conductive core and said first support surface in said pre-nip and post-nip areas than in said nip area, and said foraminous material lying over a substantial area of said first support surface, for ionization control in said pre-nip and post-nip areas.

3,866,573
ELECTROSTATIC COPYING APPARATUS

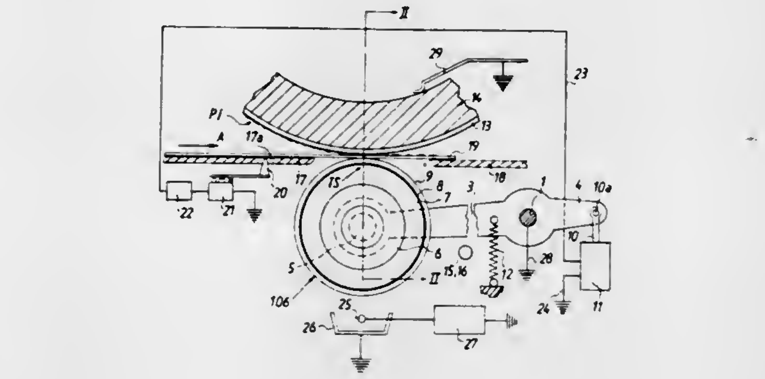
Roland Szostak, Gruenwald; Guenther Maurischat, Munich, and Ulrich Krekeler, Osterwarngau, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 24, 1972, Ser. No. 300,379

Claims priority, application Germany, Oct. 21, 1971, 2152501

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 19 Claims



1. In an electrostatic copying apparatus, the combination of transporting means arranged to advance a series of sheets of transfer material along a predetermined path toward, through and beyond a transfer station; an electrostatically charged xerographic surface located at one side of said path and arranged to transport powder images toward said transfer station; and a countersurface located at the opposite side of said path and arranged to maintain said xerographic surface in image-receiving contact with sheets advancing through said transfer station, said countersurface including a relatively thin sheet-contacting dielectric layer consisting of elastomeric material, a relatively thin current-conducting flexible second layer, and a relatively thick third layer consisting of elastomeric material, said second layer being disposed between said dielectric layer and said third layer.

3,866,574
XEROGRAPHIC DEVELOPING APPARATUS

James M. Hardennrook, Columbus, and Paul G. Andrus, Powell, both of Ohio, assignors to Xerox Corporation, Stamford, Conn.

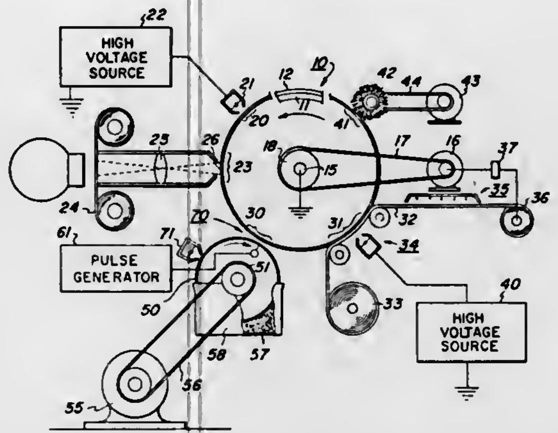
Continuation-in-part of Ser. No. 332,852, Feb. 15, 1973, abandoned. This application Jan. 10, 1974, Ser. No. 432,251

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 10 Claims

1. An apparatus for developing a latent electrostatic image recorded on an image retaining member comprising:

- a. a donor member for supporting a uniform layer of electroscopic developing material adjacent to the image retaining member, said donor member and image retaining member being spacially disposed as to create a space gap between both members;
- b. means to introduce a pulse bias across said gap, said pulse being comprised of an activation potential segment in which electroscopic particles are released from the donor member and a development potential segment of different polarity in which the electroscopic particles in non-image areas are attracted towards the donor thereby preventing particle deposition in the non-image areas.



3,866,575
MAGNET ROLL DEVELOPING DEVICE

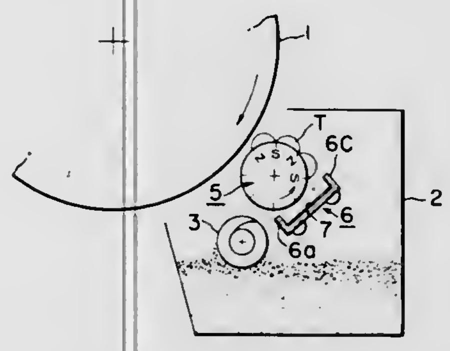
Tadayuki Kitajima, Yokohama, and Hajime Katayama, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 282,713, Aug. 22, 1972, abandoned. This application July 2, 1974, Ser. No. 485,111

Claims priority, application Japan, Sept. 6, 1971, 46-68779

Int. Cl. G03g *13/06*

U.S. Cl. 118—637 2 Claims



1. A magnet roll developing device for supporting a magnet brush for electrophotography comprising a magnet roll having a plurality of magnets arranged axially along the circumference thereof parallel to the axis of said roll in such a way that respective adjacent magnets are of opposite polarity, a pair of collar means of non-magnetic material, each having an outer diameter equal to or slightly greater than that of said magnet roll, and magnetic brush control means disposed axially adjacent said roll, said pair of collar means being mounted respectively at opposed ends of said magnet roll to prevent bulging of said magnetic brush at said ends of said magnetic roll, said magnetic brush control means comprising a plate member having a cutting portion for cutting said magnetic brush to a predetermined uniform nap length, a nap raising portion for softening the periphery of said brush, and a cutting portion for controlling the final radial length of the brush and said magnetic brush control means being arranged so that its opposed ends extend at least into radial alignment with the outer ends of said pair of collar means.

3,866,576
SMALL ANIMAL AND POULTRY FEEDER

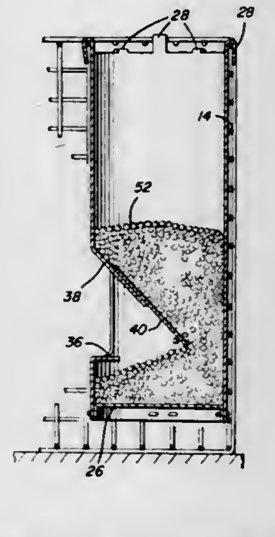
George W. Downing, Lake Geneva, Wis., assignor to Lake Geneva Metal Spinning Company, Inc., Fort Atkinson, Wis.

Filed Oct. 3, 1973, Ser. No. 402,984

Int. Cl. A01k *5/00*

U.S. Cl. 119—18 5 Claims

1. A small animal feeder comprising an upstanding tubular body open at its top and closed at its bottom, said tubular body including a first upstanding side wall portion, a feed access opening formed in said first side wall portion of said body adjacent but spaced above the closed end of said body, an interior partition within said body including at least a root end portion formed integrally with and inclined inwardly and downwardly from the portion of said first side wall portion defining the upper extremity of said feed access opening and extending from said first side wall portion inwardly toward but terminating at a point spaced from the inner surface of a lower portion of the opposite wall portion of said body, the marginal edge portion of said partition remote from said one side wall portion and spaced from said opposite wall portion being spaced above the lower marginal edge portion of said opening such that the lower marginal edge portion of said opening lies



outside the angle of repose of granular material disposed on the closed bottom of said body and extending downwardly toward said one side wall portion from the marginal edge of said partition remote from said one side wall portion, the lower extremity of said feed access opening being defined by a generally horizontally disposed and inwardly struck integral lower portion of said first side wall portion, the upper marginal edge of the side wall of said tubular body including integral peripherally spaced inwardly projecting and bendable but stiff mounting tabs, said tabs including at least four tabs spaced substantially equally about the periphery of the upper end of said side wall, whereby said body may be readily suspended, by said tabs, from a wire mesh top cover of an animal cage in which said feeder is disposed.

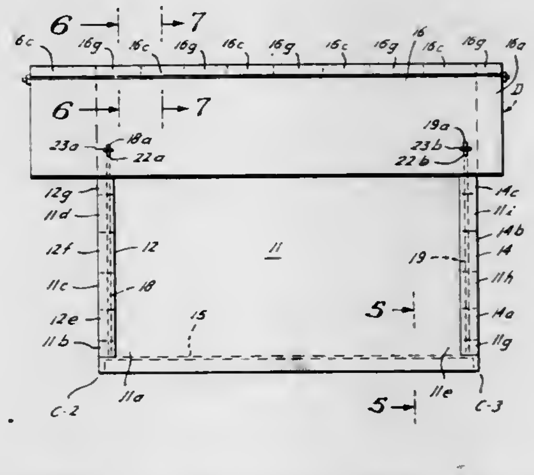
3,866,577
PREFABRICATED ANIMAL HOUSE

Harold J. Mathis, 31 Adler Circle, Galveston, Tex. 77550

Filed May 18, 1973, Ser. No. 361,635

Int. Cl. A01k *01/02*

U.S. Cl. 119—19 12 Claims



1. A prefabricated animal enclosure for dogs or the like, comprising:

- first and second side walls having spaced lugs at the ends thereof, said first and second wall lugs having openings therein;

front and rear walls having spaced lugs at the ends thereof, said front and rear wall lugs having openings therein;

said first and second side walls being mountable with said front and rear walls such that said openings in said first and second side walls lugs align with openings in said front and rear wall lugs;

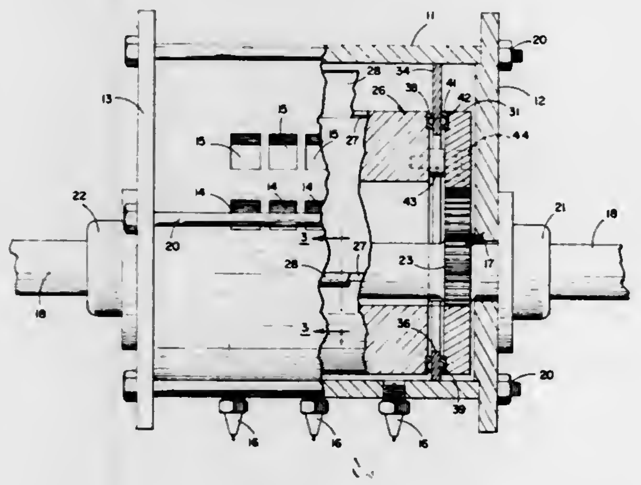
a floor for mounting with said first and second side walls and with said front and rear walls; and

pin means for locking said first and second side wall lugs with said front and rear wall lugs and for locking said side, front and rear walls with said floor and said roof means; and

said side walls having exterior moldings integrally formed therewith to cover said aligned lugs at the corners of said animal enclosure.

3,866,578
ROTARY ENGINE

Richard W. Reimer, 7915 Croesus, Los Angeles, Calif. 90001
Filed Jan. 14, 1974, Ser. No. 433,283
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **10 Claims**



1. A rotary engine comprising:

a tubular sleeve and a pair of cover plates disposed on opposite sides thereof, and forming a working cavity;

each cover plate having an eccentric hole aligned with the hole in the other plate;

an axially symmetrical rotor assembly disposed within said sleeve and between said cover plates, and having an axially symmetrical opening therethrough;

said rotor assembly having a plurality of radially disposed slots disposed therearound;

a vane slidably disposed in each one of said slots;

a drive shaft disposed through said rotor and said eccentric holes in said cover plates;

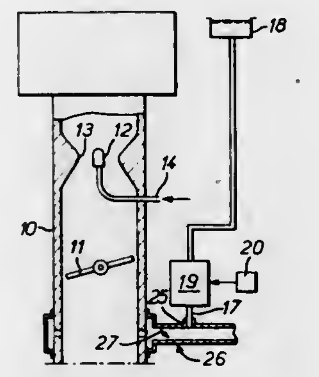
bearing means between each one of said plates and said shaft;

said axially symmetrical opening in said rotor assembly being of a larger diameter than said shaft;

gear means, including an internal gear on said rotor assembly, and a pinion gear on said shaft, wherein the pitch diameter of said pinion gear is of a smaller diameter than the pitch diameter of said internal gear, for coupling said shaft to said rotor assembly so that said rotor assembly is free to float with respect to said shaft.

3,866,579
ANTI-POLLUTION DEVICES FOR INTERNAL COMBUSTION ENGINES

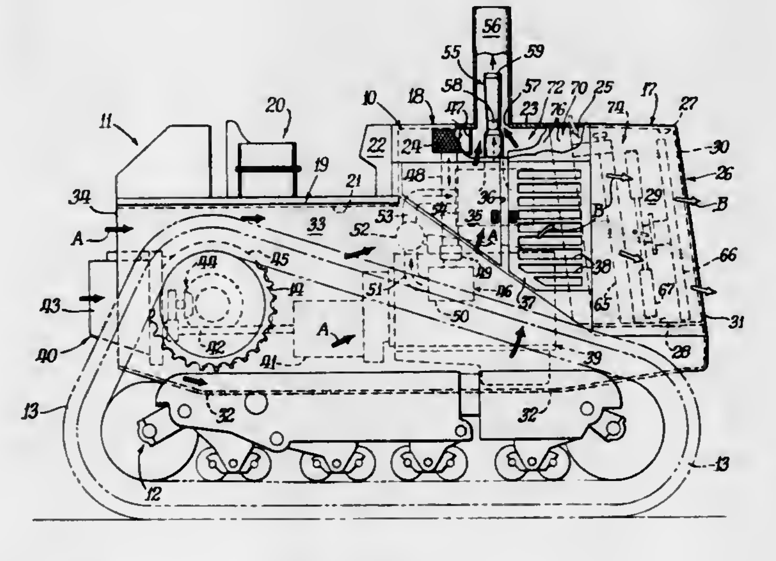
Max Serruys, 102 Rue du Bac, Paris, France
Filed June 30, 1972, Ser. No. 268,150
Claims priority, application France, July 16, 1971, 71.26080
Int. Cl. F02m *25/02*
U.S. Cl. 123—25 A **2 Claims**



1. An anti-pollution device for an engine having combustion chamber means, an induction pipe for feeding fuel-air mixture to said combustion chamber means, a throttle in said induction pipe, and air feeding means for supplying an excess of combustion air in said induction pipe, said device comprising load-sensitive liquid feeding means for spraying an aqueous liquid into the fuel-air mixture of the engine, said load sensitive feeding means comprising a liquid source, said air feeding means comprising a conduit having a throttle therein, means for feeding liquid from said liquid source into said conduit upstream of the last-named throttle and means responsive to engine load to spray said liquid at a liquid flow rate which is at its maximum when the load is high; medium when the load is medium and zero when the load is low.

3,866,580
AIR-COOLED ENCLOSURE FOR AN ENGINE

Gerald E. Whitehurst, East Peoria, and Eldon D. Oestmann, Washington, both of Ill., assignors to Caterpillar Tractor Company, Peoria, Ill.
Filed Nov. 5, 1973, Ser. No. 412,913
Int. Cl. F01p *1/02*
U.S. Cl. 123—41.7 **8 Claims**



1. An air-cooled enclosure system comprising;

a frame;

an engine supportably mounted on said frame having an exhaust pipe thereon;

an engine heat exchanger through which a liquid circulates;

outer wall means supported by said frame for generally containing said engine and said heat exchanger;

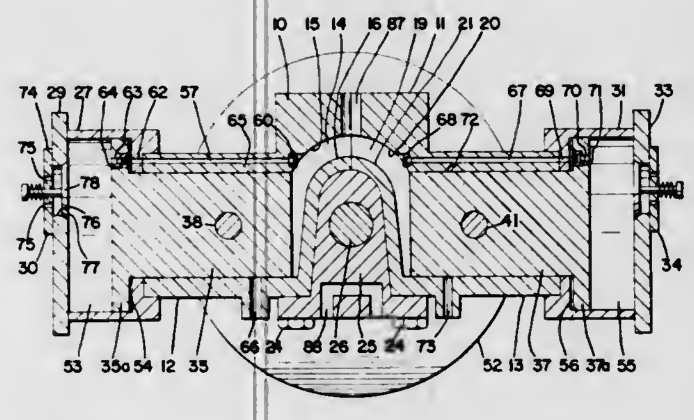
internal wall means providing a substantially enclosed engine compartment within said outer wall means having air inlet means and air outlet means relatively remotely spaced from said air inlet means, said air outlet means disposed in operative association with said engine exhaust pipe;

ejector means utilizing the flow of gases from said engine exhaust pipe for creating a relatively low pressure within said air outlet means from said engine compartment to draw ambient cooling air through said air inlet means into said engine compartment around said engine and out of said air outlet means; and

a relatively open separate engine heat exchanger compartment within said outer wall means being separated from said engine compartment by said internal wall means and providing separate air inlet passage means and separate air outlet passage means for permitting the independent circulation of ambient cooling air into said separate air inlet passage means through said heat exchanger and out of said separate air outlet passage means with a minimum of noise transmission and optimum engine cooling effectiveness.

3,866,581
OPPOSED PISTON ENGINE

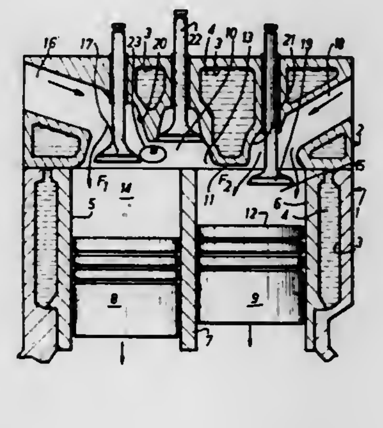
William B. Herbert, 111 Yantacow Brook Rd., Upper Montclair, N.J. 07043
Filed Sept. 10, 1973, Ser. No. 395,751
Int. Cl. F02b *25/08, 75/28*
U.S. Cl. 123—51 B **5 Claims**

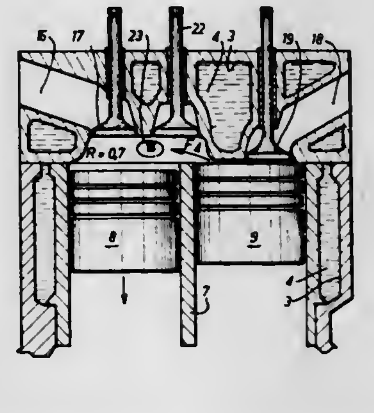


1. In a two stroke engine including a housing having at least a pair of axially spaced cylinders extending therefrom in opposite directions and axially aligned with each other, means communicating with said cylinder to define a combustion chamber, means introducing fuel into said combustion chamber, a piston mounted in each of said cylinders for simultaneous reciprocating movement, said cylinders each communicating at its respective outer end with a closed extension chamber of enlarged diameter, and each of said pistons including a head of enlarged diameter complementary to and reciprocally movable within said extension, means in the closed ends of each of said extensions selectively admitting atmospheric air into said extension chamber of said cylinder upon movement of said piston toward said combustion chamber, said portion of said piston head of enlarged diameter including valve means for admitting said atmospheric air in said extension chamber from the portion of said chamber at one side of said head to the portion of said chamber at the opposite side of said head when said pistons are moved outwardly in said cylinders away from said combustion chamber communicating means, a crank shaft extending through the space between said cylinders and provided with a pair of axially spaced eccentrics for each piston, a piston pin extending diametrically through each of said pistons, connecting rods interconnecting each of said eccentrics with said piston pins, means defining passageways extending within the walls of said cylinders and said extensions parallel with the axis of the cylinders and extensions for selectively conducting air from said chambers to said combustion chamber upon movement of said piston heads toward the combustion chamber, and exhaust means associated with each of said cylinders for discharging exhaust gases from said cylinders.

3,866,582
COMBUSTION ENGINE

Francois A. Lagarde, Le Havre, France, assignor to Compagnie Francois de Raffinage, Paris, France
Filed Feb. 14, 1973, Ser. No. 332,375
Claims priority, application France, Feb. 15, 1972, 72.05040
Int. Cl. F02b *25/12*
U.S. Cl. 123—53 A **11 Claims**

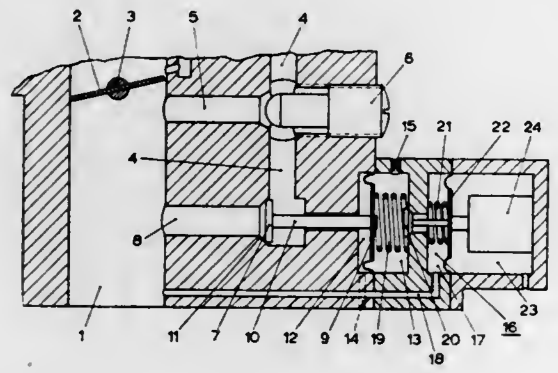




1. A four-stroke internal combustion engine comprising an even number of cylinders in constant communication therebetween in pairs at the combustion chamber level; for each pair of associated cylinders a common exhaust valve, a first inlet valve for a first carbureted mixture, and a second inlet valve for air or a second carbureted mixture which is leaner than the first carbureted mixture; the said inlet valves being arranged in such a manner that the first carbureted mixture and the air or the second carbureted mixture are admitted into the first and second cylinders, respectively, of each pair of associated cylinders, a spark plug for each pair located in the path of the first carbureted mixture adjacent the said first cylinder; that volume of the chamber above the piston operative in each second cylinder being smaller than, and shaped to expel the second carbureted mixture or air therein into, that volume of the combustion chamber above the piston operative in each respective first cylinder; the major portion of each said combustion chamber overlying each respective first cylinder and only a small portion thereof overlying each respective second cylinder, an expulsion surface overlying each respective second cylinder adjacent each respective combustion chamber and positioned so as to be closely approached by the piston operative in each said second cylinder when at its upper dead center; and the piston of each said second cylinder is delayed a pedetermined amount with respect to each respective first cylinder, sufficient to delay any substantial expulsion of the air or leaner carbureted mixture into the first cylinder until after ignition.

3,866,583
MIXTURE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH CONTROLLED INJECTION FUEL

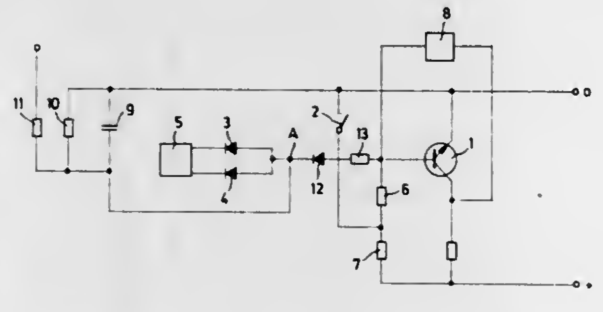
Dieter Pundt, Morse, and Gunther Schmelzer, Klein-Schoppenstedt, both of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Apr. 8, 1971, Ser. No. 132,300
Claims priority, application Germany, Apr. 10, 1970, 2017094
Int. Cl. F02d *33/02*
U.S. Cl. 123—97 B **9 Claims**



1. A mixture control system for an internal combustion engine of the fuel injection type for supplying both fuel and air during a coasting operation wherein air and fuel are delivered separately to the intake part of each engine cylinder and wherein the fuel injection is regulated in dependence on the air intake pipe pressure, characterized in the provision of an air supply channel, a valve controlling the flow of air through said channel and operated in dependence on operational values of the engine, which values in the coasting operation assume characteristic values, said valve closing the air supply channel during idling but opening it during coasting so as to enable additional air to be supplied.

3,866,584
SWITCHING DEVICE AND CIRCUIT

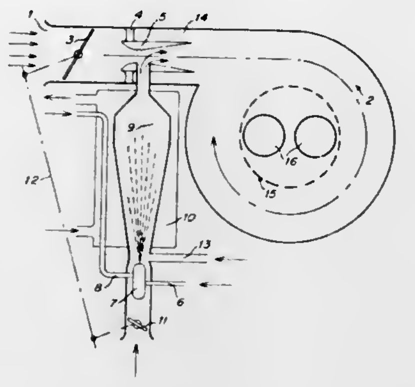
Erhard Bigalke, Wolfsburg, and Dieter Pundt, Morse, both of Germany, assignors to Volkswagenwerk Akt., Wolfsburg, Germany
Continuation-in-part of Ser. No. 86,539, Nov. 3, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,556
Int. Cl. F02b *3/00;* **F02d** *31/00*
U.S. Cl. 123—97 B **3 Claims**



1. An electronic fuel control circuit for controlling the supply of fuel to a combustion engine, comprising:
throttle switch means for controlling the fuel supply;
means for deceleration fuel cut-off additionally controlling the fuel supply in accordance with the rpm of the engine whereby the fuel supply is cut off at a predetermined rpm of said engine with said throttle switch means closed; and additional means for further controlling the fuel supply in response to the rpm of said engine whereby fuel is supplied to said engine when the engine rpm exceeds a second predetermined value greater than said predetermined rpm.

3,866,585
HIGH ENERGY FUEL ATOMIZATION AND A DUAL CARBURETION EMBODYING SAME

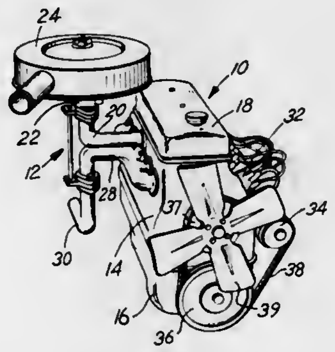
Richard D. Kopa, 6014 Wish Ave., Encino, Calif. 91316
Filed Oct. 19, 1970, Ser. No. 81,706
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **7 Claims**



1. A liquid fuel and air carburetion process for an internal combustion engine, that comprises:
providing one confined minor and one confined major stream of intake air spinning cyclonically about a longitudinal spin axis;
jetting into the minor air stream, in the downstream direction thereof, an expanding major spray of liquid fuel that is atomized by impingement by a stream of pressurized gas directed downstream along said axis so as to mix the atomized and vaporizing liquid fuel with said minor air stream, and the recycled hot exhaust gas, injected in close proximity of said expanding major spray of liquid fuel;
guiding the resulting confined turbulent mixture stream through a heated space where a complete vaporization of liquid fuel takes place and transferring said mixture stream into another unheated space where a mixing with a confined cyclonically spinning major stream of unheated intake air takes place;
guiding the final confined cyclonically spinning mixture stream to turn to one side and into a circular flow path closing on itself, such that the mixture stream continues its cyclonic spin, and spins additionally around said circular flow path;
drawing off vaporized and homogenized mixture from the mixture stream travelling around said circular flow path.

3,866,586
POLLUTION CONTROL DEVICE

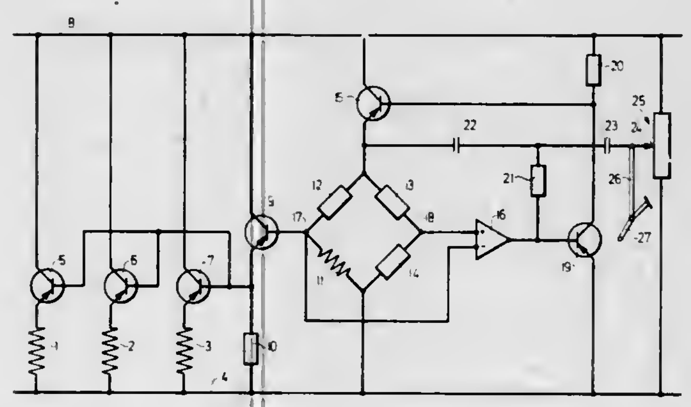
Milford M. Scott, Jr., Las Vegas, Nev., assignor to STP Corporation, Santa Monica, Calif.
Filed Nov. 1, 1972, Ser. No. 302,938
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **6 Claims**



1. In an internal combustion engine that utilizes the compressing of a fuel-air mixture, such engine comprising an exhaust manifold means and an intake manifold means, the improvement comprising control means for regulating the flow of a portion of the exhaust gases from the exhaust manifold means to the intake manifold means, said control means including an exhaust recirculating plate means in the exhaust manifold means, a passage communicating to the intake manifold means and a passage communicating to atmosphere, valve means in said exhaust recirculating plate means to meter the exhaust gas and/or ambient air recirculation flow in automatic self-response to the differential pressure of atmospheric pressure, intake manifold pressure and exhaust manifold pressure, so as to reduce the formation of oxides of nitrogen formed within the internal combustion engine, the flow of exhaust gases from the exhaust manifold means to the intake manifold means being controlled by the valve means which comprise a plate valve in the exhaust recirculating plate means which is operative responsive to the differential of intake manifold pressure, exhaust manifold pressure, and atmospheric pressure, for admitting fresh air into the exhaust recirculating plate means during idling, low cruise and deceleration and to precisely meter the flow of exhaust gases back to the intake manifold in all modes of engine operation.

3,866,587
AUTOMOTIVE FUEL HEATING CONTROL SYSTEM

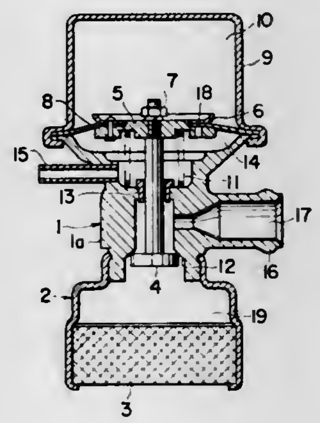
Heinrich Knapp, Leonberg-Silberberg, Germany, assignor to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany
Filed Apr. 2, 1973, Ser. No. 346,756
Claims priority, application Germany, May 17, 1972, 2224005
Int. Cl. F02m *31/00*
U.S. Cl. 123—122 F **10 Claims**

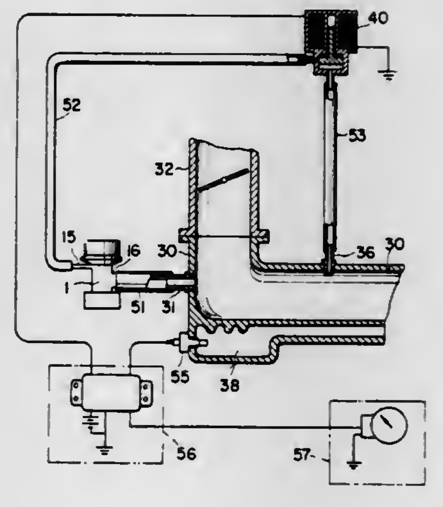


1. Automotive fuel heating control system, to control the heating effort of heating resistors (**1, 2, 3, 11**) located in the path of fuel flow to the internal combustion engine, comprising
at least one heating and heat sensing resistor (**11**) exposed to the fuel to be heated;
a reference resistance element (**12**);
an operational amplifier (**16**);
and two connecting resistors (**13, 14**), the reference resistance and the heating resistor being connected in one branch of a bridge circuit, the connecting resistors forming the other branch thereof, the operational amplifier being connected to the diagonal formed by the common junction of the reference resistance (**12**) and the heating and sensing resistor element (**11**) to sense unbalance of the bridge and to provide a resulting output signal;
means (**4, 8**) providing a supply voltage;
and means (**15, 19**) connected to and responsive to the output signal of the operational amplifier (**16**) to control the voltage being supplied from the voltage supply means to the bridge circuit, and hence the voltage applied to the heating and sensing resistor element (**11**).

3,866,588
DEVICE FOR SUPPLYING SECONDARY AIR TO A GAS ENGINE INTAKE MANIFOLD

Masahiko Nakada; Takehiko Maekawa, and Hirofumi Matsumoto, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Oct. 27, 1972, Ser. No. 301,266
Claims priority, application Japan, Apr. 28, 1972, 47-42279
Int. Cl. F02m *7/00, 23/04;* **F02d** *33/02*
U.S. Cl. 123—124 R **10 Claims**





1. In a gasoline engine including a carburetor, a device for supplying secondary air into the intake manifold of said engine, said device comprising a housing, means dividing the interior of said housing into a vacuum chamber and a space adjacent to and separated from said vacuum chamber, an air chamber containing secondary air to be supplied to said intake manifold, a small opening defined to extend completely through said means dividing the interior of said housing and establishing flow communication between said vacuum chamber and said space, first conduit means in communicataion with said air chamber for connecting said air chamber to said intake manifold, displaceable means within said air chamber for selectively admitting and blocking flow to said first conduit means, a connection in said housing opening into said space, second conduit means in communication with said connection in said housing opening into said space for connecting said space to said intake manifold, and means responsive to the operating conditions of said engine and associated with said second conduit means for admitting and blocking flow through said second conduit means to said space based upon the operating conditions of said engine, said displaceable means being arranged to selectively admit and block flow to said first conduit means in accordance with the blocking and admitting of flow to said space through said second conduit means by said means responsive to the operating conditions of said engine.

3,866,589

SEMICONDUCTOR CONTROLLED MAGNETO IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

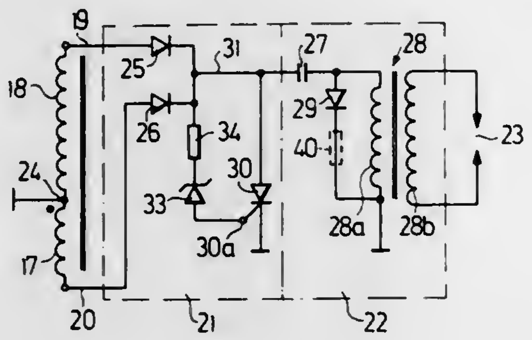
Georg Haubner, Berg, and Peter Schmaldienst, Nurnberg, both of Germany, assignors to Robert Bosch GmbH, Gerligen-Schillerhohl, Germany

Filed Feb. 8, 1973, Ser. No. 330,742

Claims priority, application Germany, Mar. 10, 1972, 2211575

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 MC **17 Claims**



1. Semiconductor controlled magneto ignition system for internal combustion engines having

a magneto generator (**10**) driven by the engine and providing output energy varying with speed of the engine,

an energy storage device (**22, 27**) connected to the magneto generator (**10**) to provide energy to a spark plug of the engine,

and an electrical control circuit including a controlled switching element (**30**) to control delivery of the stored energy to the spark plug at a proper ignition timing;

wherein the magneto generator (**10**) is wound to provide, for each revolution thereof, at least two sequential voltage half waves (U_{17}, U_{18}) to the energy storage device (22, **27**), the first (U_{17}) of the sequential half waves having a lesser amplitude than the second (U_{18}),

wherein said electrical control circuit is arranged to respond to said sequential voltage half waves;

wherein, further, the control terminal (**30***a*) of said switching element (**30**) is connected to the storage device (**22, 27**) and is provided by said control circuit with a predetermined switching control voltage threshold level (U_Z) at which switching of the switching element into conductive state takes place, when the storage device, (U_e) reaches said threshold level so that, during low-speed operation, only the second, larger voltage half wave (U_{18}) will have sufficient amplitude to store sufficient energy in the enery storage device to reach said threshold level and, upon increase in speed of the engine, the first voltage half wave (U_{17}) will have sufficient amplitude therefor and thus cause earlier conduction of the controlled switch and hence advance of spark timing,

and wherein the resistance of the circuit, to which the energy storage device (**22, 27**) is connected for charging said energy storage device, has a value high enough to prevent charging of the energy storage device to a level at which its voltage (U_c) reaches the threshold level of the controlled switching element (**30**) when the engine operates at a speed in excess of a predetermined maximum speed and thus to effect inherent governor action.

3,866,590

DUAL SPARK IGNITION SYSTEM

Homer E. Howard, 2024 Paloma Dr., Costa Mesa, Calif. 92627

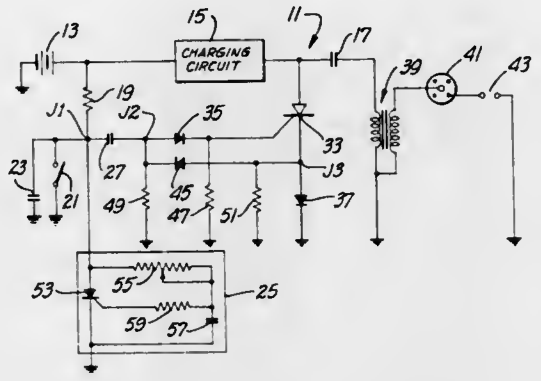
Filed Feb. 12, 1973, Ser. No. 331,685

Int. Cl. F02p *1/00*

U.S. Cl. 123—148 BC **14 Claims**

1. An engine ignition system electrically connectible to a source of electrical energy and to first timing means which is repetitively switchable between first and second states in accordance with engine speed, said ignition system comprising:

second timing means having first and second conditions and responsive to the first timing means being in said second state for assuming said second condition a predetermined time following the switching of said first timing means to said second state;



triggering means for providing a first triggering signal in response to each switching of said first timing means to said second state and a second triggering signal in response to the first to occur of said first state and said second condition following each of said first triggering signals; and

means responsive to said first triggering signal for providing a first pulse of electrical energy for ignition and responsive to said second triggering signal for providing a second pulse of electrical energy for ignition.

3,866,591

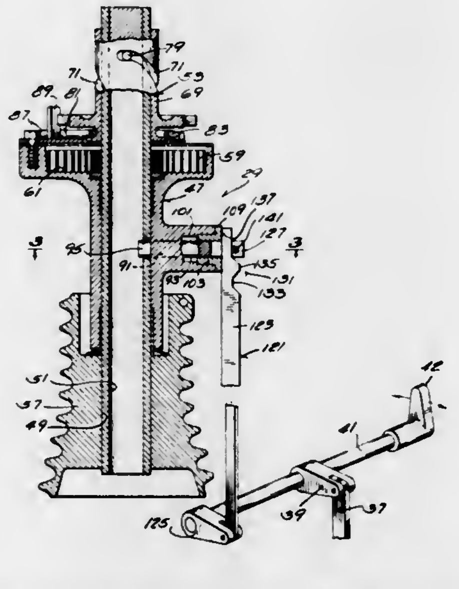
MANUAL STARTER AND SHIFT INTERLOCK MECHANISM

Dennis N. Burmeister, and Adolph J. Yourich, both of Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 31, 1973, Ser. No. 365,509

Int. Cl. F02n *15/06, 15/10*

U.S. Cl. 123—179 K **9 Claims**



1. A marine propulsion device comprising an engine having a starting gear, a starter including a rotatable starter shaft having a recess with arcuately spaced ends, a pinion carried on said shaft for movement relative to said shaft and to an engaged position in mesh with said starting gear, means for rotating said starter shaft in opposite directions, cooperating means on said shaft and on said pinion for displacing said pinion to said engaged position in response to rotation of said shaft in one direction, and means cooperating with said shaft and including a selectively locatable bolt movable axially along a path in spaced parallel relation to a line extending radially from the axis of said starter shaft between a first position in said recess to prevent rotation of said starter shaft in said one direction and a second position out of said recess to permit rotation of said starter shaft, said bolt including a side surface engagable with one of said recess ends when said bolt is in said first position to thereby prevent rotation of said starter shaft in said one direction and said bolt including an end engagable with the other of said recess ends when said starter shaft is rotated in a direction opposite to said one direction to thereby displace said bolt outwardly of said recess from said one position.

3,866,592

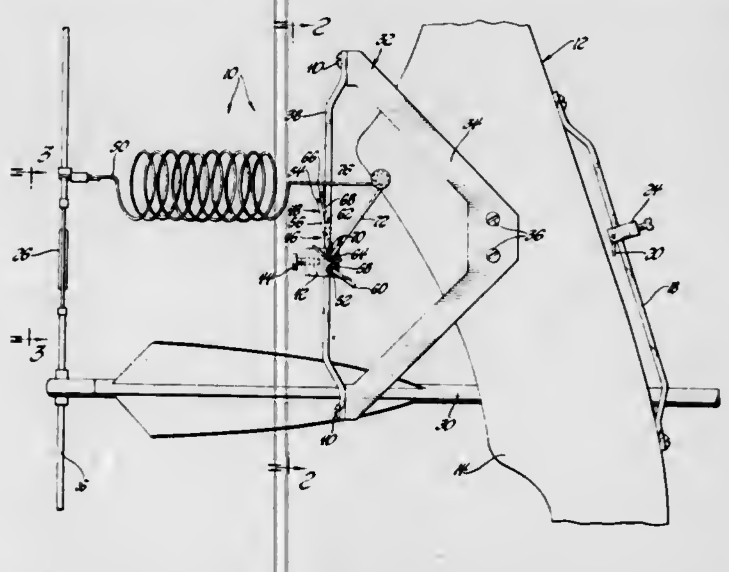
ARCHERY RELEASE INDICATING ASSEMBLY

Richard F. Carella, 35572 Strathcona, Mt. Clemens, Mich. 48043

Continuation-in-part of Ser. No. 351,836, April 17, 1973, abandoned. This application July 23, 1973, Ser. No. 381,737

Int. Cl. F41b *5/00*

U.S. Cl. 124—24 R **26 Claims**



1. An archery release indicating assembly comprising: support means adapted for attachment to an archery bow, indicator means supported by said support means for providing a signal only in response to a predetermined draw of a bowstring independently of the position of an arrow to be released, said indicator means including actuation means directly connected to said indicator means, said actuation means having means for fixed connection to a bowstring whereby said actuation means will operate said indicator means upon said predetermined draw of a bowstring.

3,866,593

FLOOR MODEL SPACE HEATER

Dan Medlock, 113 Sycamore St., Richmond, Ky. 40422

Filed Sept. 12, 1973, Ser. No. 396,383

Int. Cl. F24c *3/02*

U.S. Cl. 126—91 A **1 Claim**

1. A free standing floor model space heater intended for use in heating the surrounding air by coming in direct contact therewith, the heater comprising, in combination:

a rectangularly shaped box-like base member having a horizontal top surface and a horizontal bottom surface, the base member adapted to rest on the floor;

a pair of longitudinally extending angle iron members defining vertical standards each having one end affixed to the base member adjacent at opposite end thereof with the standards projecting vertically upwardly therefrom and terminating at the top end thereof;

an elongated hollow open end cylindrical combustion tube manufactured of sheet metal material which is rolled into a tubular cylindrical form, the combustion tube disposed horizontally above and adjacentmost to the top surface of the base, the tube having an inlet end and an outlet end;

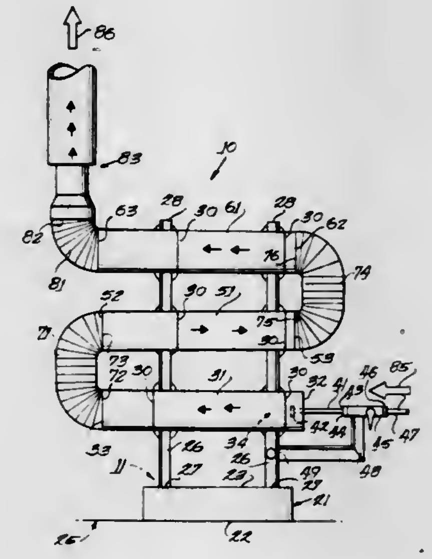
a pair of elongated rod shaped wire members member mounting opposite end portions of the combustion tube to the pair of standards to affixedly support the same thereon;

a combustion chamber portion defined at the open inlet end of said combustion tube at a disposition interiorly of said combustion tube;

a pair of identical elongated hollow open ended cylindrical first and second fire tubes each having an inlet end and an outlet end and a hollow passageway extending completely therethrough;

each of said first and second fire tubes manufactured of sheet metal material which is rolled into the tubular form of the fire tubes;

said first fire tube being disposed parallel to said combustion tube and of a slightly shorter length thereof and positioned vertically above and spaced from said combustion tube extending along said pair of vertical standards, said inlet end of said first tube disposed above said combustion tube outlet end with said first tube outlet end disposed above said combustion tube inlet end;



rod like wire members passing about opposite end portions of said first tube and mountingly affixing said first tube to said pair of standards in vertical alignment with said combustion tube;

said second fire tube being disposed in vertical alignment with said first fire tube and said combustion tube and positioned vertically above and spaced from said first fire tube along said pair of standards with said second fire tube inlet end disposed above first fire tube outlet end and with said second fire tube outlet end disposed above said first tube inlet end;

rod like wire members extending above opposite end portions of said second fire tube and mountingly affixing said second fire tube to said pair of standards with the axis of said seond fire tube extending parallel to the axis of said first fire tube and said combustion tube;

said conbustion tube, said first fire tube, and said second fire tube defining a vertical plane extending parallel to said pair of standards with each of said tubes being disposed directly above and spaced from the tube therebeneath to form an efficient and compact arrangement;

said combustion tube, said first fire tube, and said second fire tube each being of the same diameter and shape with each being manufactured of the same sheet metal material so that the first and second fire tubes are readily interchangeable with each other;

a pair of identical first and second hollow concavely curved sheet metal tubes each formed of a series of individual relatively movable segments to provide flexible sheet metal tubes in the form of flexible sheet metal elbow type structures;

said first flexible elbow tube interconnecting in an airtight manner said combustion tube outlet end with said first fire tube inlet end to direct air flow from said combustion tube through said interconnected first fire tube;

said second flexible elbow structure interconnecting said first fire tube outlet end with said second fire tube inlet end to direct air flow from said first fire tube through said second fire tube;

said first and second elbow structures each being of a hollow concave shape with each having a diameter equal to the diameter of the combustion tube, first fire tube, and second fire tube, with the elbows conducting the air flow between the interconnected tubes;

a ninety degree elbow formed of flexible sheet metal material defining a flexible tube having the same diameter of said first and second elbow structures and having one end forming an inlet end and connected in an airtight manner to said second fire tube outlet end, the opposite end of said ninety degree elbow defining an outlet end having its axis extending vertically upward parallel to said standards and normal to the axis of said second fire tube;

a gas diverter and draft control tubing having an inlet end connected in an airtight manner to said outlet end of said ninety degree elbow, the opposite end of said gas diverter and draft control adapted to be connected to a chimney to discharge air from the heater into the atmosphere exteriorly of the room in which the heater is placed;

an L-shaped brace having one end thereof affixed to the vertical standard adjacentmost the combustion tube inlet end with the brace projecting upwardly therefrom and terminating at a position forwardly of said inlet end;

a burner nozzle of an elongated cylindrical configuration having a fuel inlet port and a fuel discharge port, the nozzle being axially aligned with the inlet end of the combustion chamber with the discharge port thereof projecting into the combustion chamber concentric therewith;

an annular combustion air inlet passageway defined about said nozzle discharge port between the interior surfaces of the combustion chamber side wall surfaces and having communication with the combustion tube interior for the drawing of fresh air into the combustion tube about the discharge port of the nozzle;

a manually operable control valve having one end connected to said burner nozzle inlet port with the opposite end thereof connected to a source of burnable fuel, such as natural gas and the like, the valve operable to manually control the quantity and volume of the fuel flowing therethough between a completely "on" position and a completely "off" position, and to any selected position therebetween for accurate control of the fuel flow therethrough;

said burner nozzle and said control valve being mountedly attached to said supporting bracket; and

said fuel being injected through said control valve and through said burner nozzle inlet port to said nozzle discharge port to be injected into said combustion chamber and ignited therein to heat the combustion chamber with said heated air passing through said combustion tube, through interconnected said first and second fire tubes, and out of said gas diverter and draft control in a manner to directly heat the tubes and associated elbows to provide a direct heating effect on the air flowing about the exterior surfaces of such tubes to provide a source of heat to the room in which the heater is placed.

3,866,594
GAS FIRED HEATING INSTALLATION

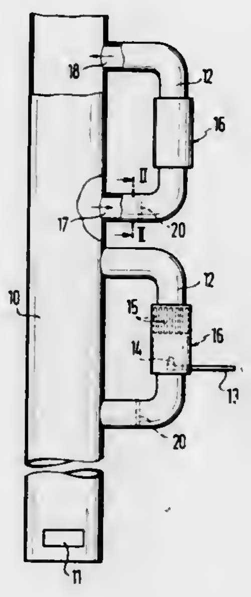
Alphons Diermayer, Diessen, Germany; Luitpold Kutzner, Marschner Strasse 78, 8000 Munich 60, Germany; Erwin Postenrieder, Mering, Germany, and Werner Diermayer, 1275 Panorama, Lafayette, Calif. 94549, assignors to Luitpold Kutzner, Munich, Germany and Werner Diermayer, Lafayette, Calif., part interest to each

Filed Feb. 5, 1974, Ser. No. 440,061

Claims priority, application Germany, Feb. 26, 1973, 2309540

Int. Cl. F24h *3/00*

U.S. Cl. 126—112 **6 Claims**



1. A gas-fired heating installation comprising, in combination:

a. a vertically extending exhaust flue;

b. a first heater assembly and a second heater assembly;

c. means for supplying air of combustion and a gaseous fuel to said first assembly, said first assembly communicating with a first portion of said exhaust flue for discharge of gases of combustion formed in said heater assembly by combustion of said gaseous fuel into said first portion,

1. said second heater assembly including

i. a branch conduit having an intake orifice and an exhaust orifice in a second portion of said flue upwardly spaced from said first portion,

ii. a burner in said conduit intermediate said orifice,

iii. supply means for supplying gaseous fuel to said burner, and

iv. flow control means in said conduit for controlling the flow of gas from said intake orifice to said burner. 2. said flow control means including means responsive to operation of said first heater assembly for increasing the flow section of said branch conduit, and responsive to the interruption of operation of said first heater assembly for reducing the flow section of said branch conduit.

3,866,595
HEATING ACCESSORY FOR USE WITH FIREPLACES

Robert E. Jones, 3650 West Amazon, Eugene, Oreg. 97405

Filed Mar. 8, 1974, Ser. No. 449,254

Int. Cl. F24b *7/00*

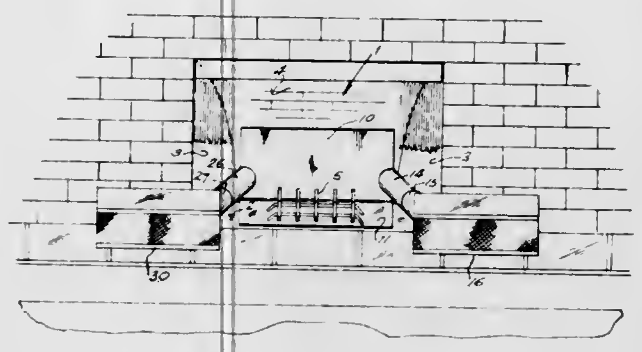
U.S. Cl. 126—121 **2 Claims**

1. A forced air heating system for placement within and forwardly adjacent a conventional fireplace opening, said fireplace having a pair of side walls, a bottom wall and a back wall, said system comprising,

an elongate heat exchanger for placement lengthwise along the back wall of a fireplace rearward of a heat source, said heat exchanger defining a plenum therewithin for the reception of a pressurized flow of air, a heat exchanger base plate for the reception of a superimposed fireplace grate, an upright heat exchanger wall integral with said base plate and partially defining said plenum,

an air intake structure disposed exteriorly adjacent the fireplace opening and including a fan and motor assembly, a collar located adjacent one end of the air intake structure,

an air exhaust structure also disposed exteriorly adjacent the fireplace opening oppositely from the air intake structure, a collar located adjacent one end of the air exhaust structure,



said air intake and exhaust structures having corresponding external wall members of identical configuration and appearance rendering the structures identical in appearance, and

air duct means extending intermediate said intake structure and heat exchanger and intermediate the latter and the air exhaust structure in detachable connection to the collars of each said structures whereby the air duct means may be detached from the air intake and air exhaust structures permitting the latter to be interchanged for one another to reverse the flow of heated air therethrough for optimum room heating without altering the appearance of the heating system.

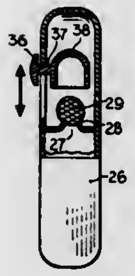
3,866,596
HEAT CONTROL FOR CATALYTIC HEATERS

Otto Gottwald, and Anthony Gottwald, both of 50 Debussy Ln., Ventura, Calif. 93003

Filed Oct. 18, 1973, Ser. No. 407,602

Int. Cl. A61f *7/06*

U.S. Cl. 126—208 **18 Claims**



1. A catalytic heater having an adjustable heat output comprising:

a. a fuel container having a vapor outlet;

b. a catalytic burner disposed over the outlet;

c. and a cover fitting closely over the burner that is relatively movable with respect to the burner,

whereby greater or lesser portions of the burner surface may be exposed to ambient air for combustion of fuel vapors.

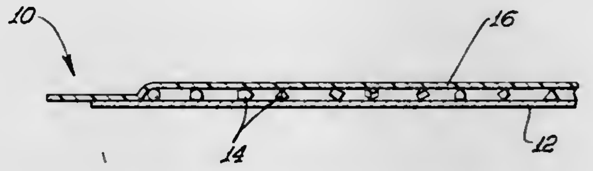
3,866,597
PROCESS AND DEVICE FOR ALLEVIATION OF NON-MUSCULAR PAIN

Steve Boxer, 1438 Benedict Canyon Dr., Beverly Hills, Calif. 94710

Filed Sept. 4, 1973, Ser. No. 393,974

Int. Cl. A61b *17/34*

U.S. Cl. 128—1 R **2 Claims**



1. A process for alleviating non-muscular pain and discomfort by applying a piece of adhesive material having a plurality of small rigid objects affixed thereon to at least one point along an acupuncture meridian so that at least one of said objects is in contact with said point and produces pressure on said point, and

maintaining said adhesive material and said objects in position for a suitable length of time.

3,866,598
PROCESSES FOR REPRODUCTION OF CELLULAR BODIES

Lynn Lawrence Augspurger, 642 Fairfax, Birmingham, Mich. 48009

Continuation-in-part of Ser. No. 418,604, Nov. 23, 1973,. This application Feb. 20, 1974, Ser. No. 444,022

Int. Cl. A61d *7/00;* **A61k** *27/00*

U.S. Cl. 128—1 R **12 Claims**

1. An embryo transplantation process by which clonally derived bodies of a specific genotype is prepared from female gametes of herbivorous and omnivorous hoofed mammals to permit reproduction of a clonal genotype comprising:

obtaining an oocyte from a selected donor mammal and placing it in a life support solution,

thereafter causing the occurance of a fertilization simulating reaction within said oocyte by exposure of said oocyte to a pseudo-fertilization means, and

inducing formation of a diploid necleus within said oocyte by fusion of a first and second genome within the cytoplasm thereof, the first of said fenomes consisting of the haploid set of chromozones contained in the pronecleus of said oocyte, and the second of said genomes consisting of the haploid set of chromozones which would normally form a polar body or consisting of that haploid set of chromozones of the pronecleus of a second oocyte which has passed the first polar body and reached the mitotic metaphase of the second maturation division.

3,866,599
FIBEROPTIC CATHETER

Curtis C. Johnson, Lynnwood, Wash., assignor to The Board of Regents of the University of Washington, Seattle, Wash.

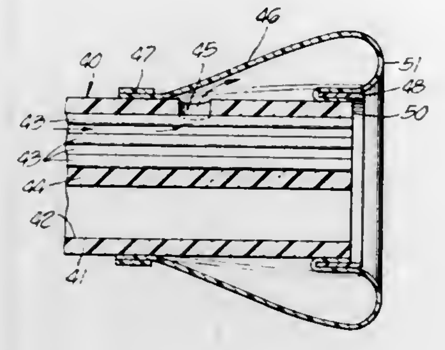
Filed Jan. 21, 1972, Ser. No. 219,666

Int. Cl. A61b *10/00;* **G01n** *33/16*

U.S. Cl. 128—2 L **1 Claim**

1. A catheter for insertion into the cardiovascular system comprising an elongated flexible element having a multiplicity of light-conducting fibers extending therethrough, a recess formed in the distal end of the element, the recess cutting across said fibers at an angle to the longitudinal axis of the fibers, the distal end of the catheter preventing the light conducting fibers from contacting said vessel wall, and an expand-

able sleeve located near the distal end and on the exterior of said catheter whereby upon expansion of the sleeve, it extends beyond said element to further maintain a space between the distal end of the fibers and the end of the sleeve.



3,866,600
DIAGNOSTIC AND THERAPEUTIC APPARATUS FOR COSMETICALLY AND HYGIENICALLY TREATING SKIN

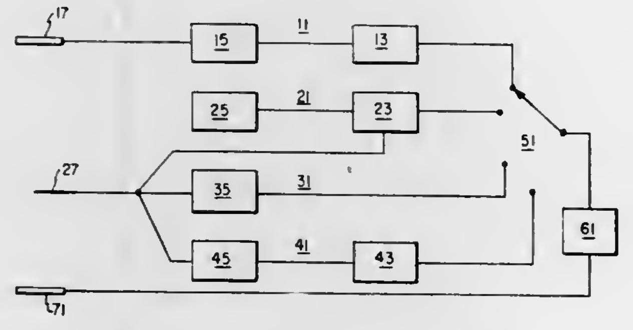
Jean Paul Rey, Paris, France, assignor to S.I.E.P.E.M., Paris, France

Filed May 3, 1973, Ser. No. 356,916

Claims priority, application France, May 8, 1972, 72.16318; Feb. 3, 1973, 73.04700

Int. Cl. A61b *5/05*

U.S. Cl. 128—2.1 R **4 Claims**



1. A therapeutic apparatus for cosmetically and hygienically treating the skin, comprising:
   a. a first electrode having a relatively large area;
   b. a second electrode having a relatively large area;
   c. a voltage source coupled to said first electrode;
   d. a third electrode having a pointed tip;
   e. selector switch means coupled to said voltage source having a plurality of positions and a plurality of output terminals;
   f. first circuit means for measuring the average resistivity of the skin between said first and second electrodes, said first circuit means comprising:
      i. an indicator coupled to said second electrode means; and
      ii. means for applying power from a first output terminal on said selector switch means to said indicator;
   g. second circuit means for detecting localized deviations in the average resistance measured between said first and third electrodes, comprising:
      i. an indicator; and
      ii. amplifier means coupled to a second output terminal on said selector switch means and coupled to said third electrode responsive to the resistance measured between said first and third electrodes for actuating said indicator; and
   h. third circuit means for obtaining a quantitative indication of the resistance between said first and third electrodes, comprising an indicator coupled to a third output terminal on said selector switch means and said third electrode.

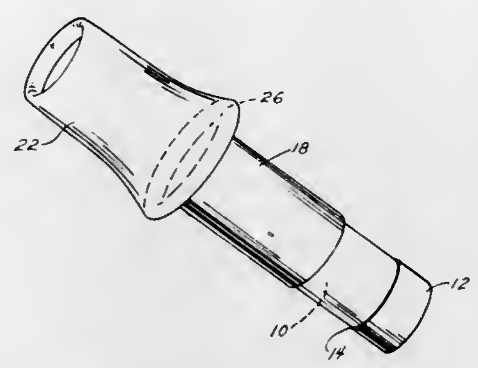
3,866,601
TELESCOPIC SPECULUM

James A. Russell, 35 Pinevale Ave., Reading, Mass. 01867

Filed Feb. 20, 1973, Ser. No. 334,133

Int. Cl. A61b *10/00, 17/24;* **A61m** *35/00*

U.S. Cl. 128—4 **3 Claims**



1. A telescopic speculum comprising a penetrating tube, a flexible sheath, and a guide tube slidable in said penetrating tube and extending into said sheath, the latter being attached to said guide tube, said sheath extending from the point of said attachment to the front end and then exteriorly of said penetrating tube and then extending in reverse over the end and rearwardly over the exterior of the latter, said sheath having an attaching member of greater circumference than, and extending around, said penetrating tube, said guide tube being of greater length than said penetrating tube and extending outwardly of said latter tube in all positions of use.

3,866,602
ENDOSCOPE CAMERA WITH ORIENTATION INDICATOR

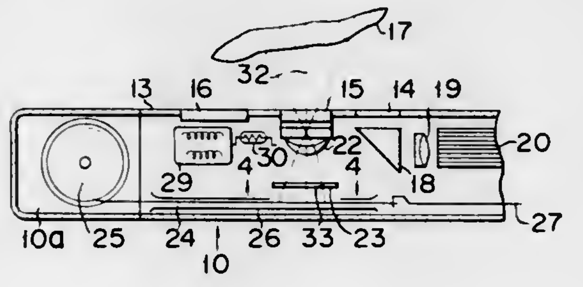
Hiroyuki Furihata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 29, 1974, Ser. No. 474,198

Claims priority, application Japan, May 29, 1973, 48-63125

Int. Cl. A61b *1/06*

U.S. Cl. 128—6 **9 Claims**



1. An endoscope having a distal end section adapted to be inserted into a body cavity of a patient for medical diagnosis, comprising an optical means optically receiving an image of the internal wall of the body cavity through the surface of the distal end section into the interior of the endoscope; a photographing means having a film strip arranged substantially perpendicular to an optical axis of the image so received; a plate mask located in front of the film strip and substantially perpendicular to the optical axis of the image and having an image passing hole for permitting a beam of light corresponding to the image to be passed therethrough with the cross section of the beam of light defined to correspond to the shape of the image passing hole, said image passing hole having at least one symmetrical axis, and the shape of the image photographed through the image passing hole onto the film strip being similar to that of the image passing hole; and at least one mark provided at the plate mask in a manner to be asymmetrical with respect to the symmetrical axis of the image passing hole, whereby an individual imaged film frame can be viewed in a correct position.

3,866,603
METHOD OF QUENCH HARDENING WITH OIL COMPRISING MONO (POLYISOBUTENYL) SUCCINIMIDE

Dale J. Wilpers, Godfrey, Ill., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1973, Ser. No. 427,204

Int. Cl. C21d *1/44*

U.S. Cl. 148—20.6 **4 Claims**

1. In a method of quenching, useful in hardening of ferrous metal, wherein a metal to be treated is heated to an elevated temperature and wherein said heated metal is then rapidly quenched in a quenching medium to increase the hardness in said metal, the improvement for simultaneously hardening said metal and imparting brightness to the metal surface which comprises using as said quenching medium a composition consisting essentially of a major portion of a mineral oil, having a high-heat exchange rate as measured by magnetic quenchometer time of from about 9 to about 15 seconds, and from about 0.1 to about 10 percent by weight of a mono(-polyisobutentyl)-substituted succinimide of tetraethylenepentamine wherein the polyisobutenyl substitutent has a molecular weight of from about 750 to about 5,000.

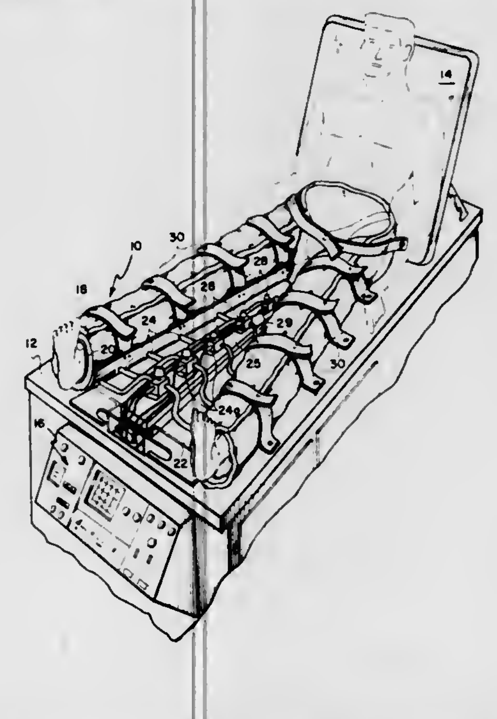
3,866,604
EXTERNAL CARDIAC ASSISTANCE

Richard W. Curless, Nabnasset; Armando Federico, Needham; Alfred E. Magro, Woburn, and Michael L. Rishton, Reading, all of Mass., assignors to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Sept. 28, 1973, Ser. No. 401,676

Int. Cl. A61h *7/00*

U.S. Cl. 128—64 **12 Claims**



1. Apparatus for external cardiac assistance comprising:
means defining a plurality of non-distensible gas fillable bladders which are wrappable aobut a human limb and unwrappable therefrom, said means including within said bladders compression preventing means for preventing complete local compression of opposing walls thereof at any point therein while allowing lateral gas flow;
means for selectively inflating and deflating said bladders by admission of gas and withdrawal of gas therefrom to selectively pressurize the cardiovascular system at the location in the limb wrapped by said bladders;
means defining a common casing blanket for overlying a series of bladder wrappings along a limb and being similarly wrappable about said limb and unwrappable therefrom along with said bladders; and
means for selectively hardening and softening the blanket casing comprising a filling of particulate material therein and means for drawing and releasing a vacuum therein to provide a substantially cylindrical reaction wall for the bladders and for softening the blanket casing to make it flexible for wrapping and unwrapping operations.

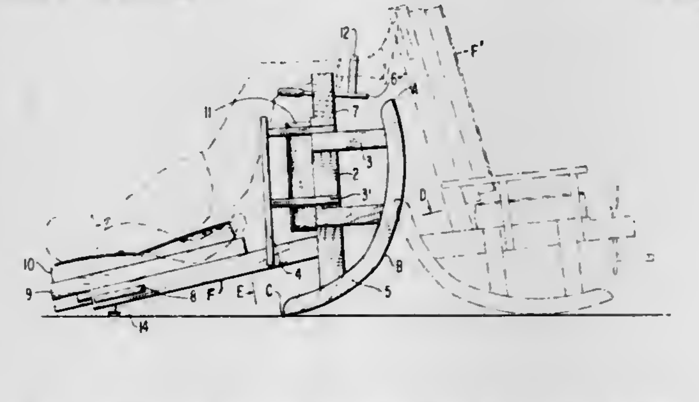
3,866,605
APPARATUS

John S. Stakeman, 2318 S. Center St., Terre Haute, Ind. 47802

Filed Apr. 2, 1973, Ser. No. 346,996

Int. Cl. A61f *5/00*

U.S. Cl. 128—70 **9 Claims**



1. An apparatus for promoting relaxation and gentle exercise of the muscles of the lower back and pelvic area so adapted that said pelvic area is suspended comprising:
   a. a frame mounted on supporting means at an angle of from about 0° to about 20° below the horizontal,
   b. an adjustable rigid means for supporting the knees adapted to be linearly adjustable from said frame whereby said pelvic area is suspended, and
   c. a supporting means for the upper back, shoulders and head.

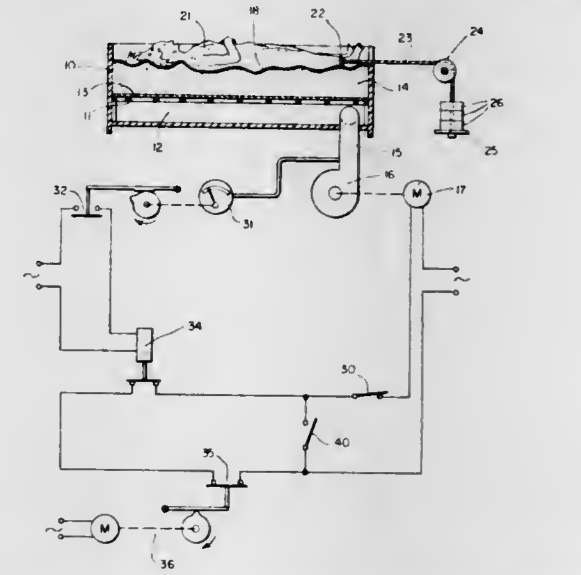
3,866,606
CYCLICALLY PRODUCED CONTOURED SUPPORT

Thomas S. Hargest, 1078 Winston Dr., Charleston, S.C. 29412

Filed Sept. 4, 1973, Ser. No. 393,909

Int. Cl. A61f *5/00*

U.S. Cl. 128—71 **6 Claims**



1. The method of repeatedly forming a precisely contoured support for a patient undergoing traction, which comprises:
supporting the patient upon a mass of granular material disposed within a container,
applying traction to a selected part of the body of the patient,
while said traction is being applied fluidizing said granular material during a short period of time for movement of the patient into a position of alignment with tensional forces produced by said traction,
forming said precisely contoured support as said fluidization is terminated for prevention of movement of said patient in the direction of said tensional forces, and
for short periods of time, of the order of three seconds in every cycle of the order of 8 to 10 minutes, again fluidiz-

ing said bed of granular material to establish for each said cycle a modified precisely contoured support for the patient.

2. In a fluidized bed for support of a person said bed having:

a gas impermeable base portion,
- a supporting cover affixed to said base portion and closing said base portion to define an enclosure,
- a mass of granular material disposed within said enclosure, and
- an air pump and driving motor for forcing a flow of gas through said mass of granular material of sufficient volume to fluidize said mass and to reduce the specific gravity thereof to a value determined by that necessary to support the person on said supporting cover, the improvement which comprises:
  - control means for cyclically energizing said motor to drive said pump to fluidize said mass for a short interval of time to provide in each cycle of said operation a three-dimensional uniform support over all parts of a substantial portion of the body of a patient in avoidance of concentrated pressure on restricted areas thereof,
  - said control means after expiration of said short interval deenergizing said motor to terminate said flow of gas, said granular material then forming a relatively rigid, patient-restraining, precisely contoured, three-dimensional support over which the pressure thereon of the patient is evenly distributed in avoidance of said concentrated pressure on restricted areas thereof, and said control means after an interval of time which is long compared with said short intervals again energizing said motor to initiate a further cycle of operation for reforming said three-dimensional contoured support.

3,866,607

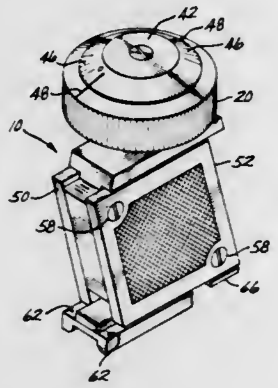
BONE FRACTURE COMPRESSION DEVICE AND METHOD OF USAGE

Alan K. Forsythe, and Charles J. Green, both of Vashon, Wash., assignors to Environmental Sciences Corporation, Vienna, Va.

Filed Aug. 9, 1973, Ser. No. 387,177

Int. Cl. A61f *5/04*

U.S. Cl. 128—92 R 7 Claims



1. An orthopedic apparatus for compression of a bone fracture and extramedulary fixation of a rigid bone plate thereon said bone plate adapted to be positioned in contact with the surface of a fractured bone, aligned parallel to the axis of said bone and overlapping a fracture therein, said plate having at least two bone screw receiving apertures positioned in each overlapping portion thereof whereby at least two bone screws may enter each segment of said fractured bone, one of said apertures comprising an elongate slot adapted for situation adjacent a fracture in said bone and having means to receive a plate engaging pin means adjacent said slot; said apparatus comprising:
- a frame means including a bone plate engaging flange means having a depending pin means adapted for engagement with said bone plate;
- a threaded member extending upwardly from said flange means and journalled into said frame means, the end of said threaded member opposite said flange means extending beyond said frame means and carrying means for indicating torque applied thereto;
- cam means having external guiding cam surfaces thereon in threaded engagement with said threaded member and adapted to translate along said threaded member in response to rotation thereof; and,
- a movable subassembly carried by said frame having cam follower means drivingly interengaged with said guiding cam surfaces and adapted for translation substantially parallel to said flange means upon movement of said cam means, said movable subassembly including hook means for engaging a bone screw positioned in said elongate slot whereby rotation of said threaded member causes said pin and said hook means to move with respect to each other, the force necessary to effect such movement being shown by said means for indicating torque.

3,866,608

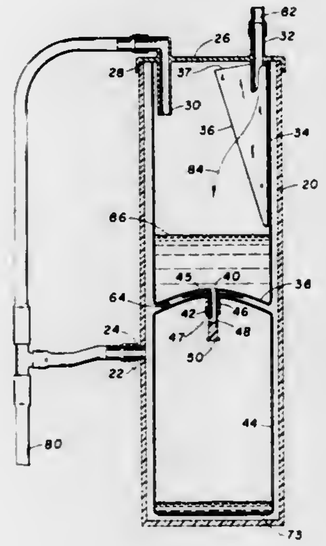
ASEPTIC SUCTION COLLECTION SYSTEM AND METHOD

Gordon S. Reynolds, Bountiful, and Karl A. Pannier, Jr., Salt Lake City, both of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed Oct. 23, 1973, Ser. No. 408,895

Int. Cl. A61m *1/00*

U.S. Cl. 128—276 14 Claims



2. A suction collection system including an exterior cannister and means for maintaining a negative pressure therein, a first collection reservoir, means for evacuating the reservoir and means for aspirating fluid at a remote location and means for transferring the fluid to the first collection reservoir, the improvement comprising:
- a second reservoir confined within the cannister, the second reservoir comprising an aperture;
- a fluid communicating conduit, telescopically uniting the second reservoir with the first; and
- means associated with the fluid communicating conduit normally accommodating fluid transfer to the second reservoir and sealing the aperture concomitant with the separation of the conduit.

3,866,609

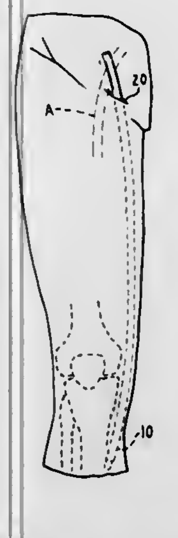
APPARATUS FOR GROWING GRAFT TUBES IN PLACE

Charles Howard Sparks, deceased, late of 3725 S.E. Martins St., Portland, Oreg. 97202 (Margaret J. Sparks, executrix)

Continuation of Ser. No. 241,189, April 5, 1972, abandoned, which is a division of Ser. No. 101,031, Dec. 23, 1970, Pat. No. 3,710,777, said Ser. No. 241,189, Continuation-in-part of Ser. No. 178,171, Pat. No. 3,703,009, is a division of Ser. No. 823,287, May 9, 1969, Pat. No. 3,625,198, which is a continuation-in-part of Ser. No. 655,838, July 25, 1967, Pat. No. 3,514,791. This application June 11, 1973, Ser. No. 368,811

Int. Cl. A61b *17/00*; A61f *1/24*

U.S. Cl. 128—303 R 7 Claims



1. A mandrel assembly for implanting in a living body to grow a graft tube with connective tissue, comprising a silicone rubber mandrel, an inner knitted tube of coarse mesh fabric on said mandrel, and an outer knitted tube of fine mesh fabric, said fabrics being impregnated with silicone rubber vulcanized in the fabric.

3,866,610

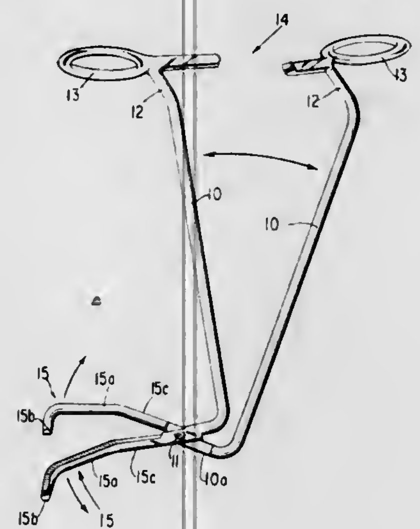
CARDIOVASCULAR CLAMPS

Harold D. Kletschka, 7336 Staffordshire, Houston, Tex. 77025

Continuation of Ser. No. 664,894, Aug. 28, 1967, abandoned. This application Jan. 11, 1971, Ser. No. 105,610

Int. Cl. A61b *17/28*

U.S. Cl. 128—322 13 Claims



1. A surgical clamp comprising two lever arms, a pivot pin pivoting said lever arms relative to each other, each of said arms comprising a manipulating member, a shaft member, a pivot section and a jaw member, said pivot pin connecting said lever arms through said pivot sections, said shaft members being disposed at substantially right angles relative to said pivot sections and movable in a common plane with said pivot sections about said pivot pin, said manipulating members being angularly offset from said shaft members parallel to said pivot pin, and said jaw members being angularly offset from the plane of movement of said shaft members and said pivot sections for a clamping engagement with each other upon movement substantially orthogonal relative to the movement of said manipulating members.

3,866,611

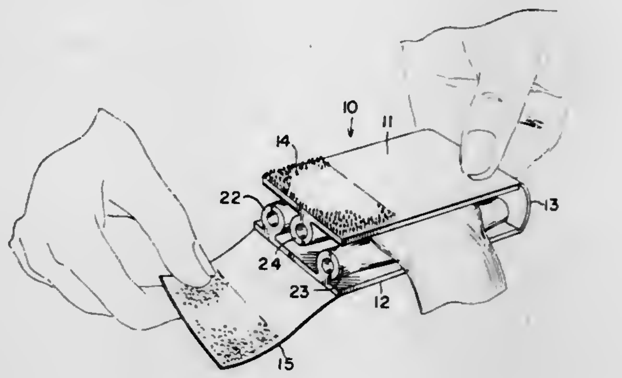
INCONTINENCE DEVICE

George O. Baumrucker, 60 S. County Line Rd., Hinsdale, Ill. 60521

Filed Dec. 17, 1973, Ser. No. 425,249

Int. Cl. A61b *17/08*

U.S. Cl. 128—346 3 Claims



1. A penile clamp for controlling male incontinence including a pair of clamping pieces, flexible hinge means hingedly connecting the clamping pieces together adjacent one end thereof, releasable fastening means securing the clamping pieces together at the opposite end thereof from the hinge means, pressure members on the respectively opposing faces of the clamping pieces, one of said clamping pieces having a pressure member extending continuously lengthwise substantially full length thereof and disposed substantially centrally between the two sides thereof, the opposite clamping piece having a pair of laterally spaced pressure members extending continuously lengthwise substantially full length thereof adjacent respectively opposite side edges of the clamping piece, said last-named pressure members being disposed in offset opposing relation to the first-named pressure member whereby to define an S-shaped clamping path between the clamping pieces and provide a plurality of sealing points, said clamping pieces comprising upper and lower hingedly connected members respectively, said firstnamed pressure member being disposed on the upper clamping piece, said last-named pressure members being disposed on the lower clamping piece, said releasable fastening means comprising a self-adhering device including a positive material piece fixed on the upper clamping piece, and a flexible negative material piece fixed to the lower clamping piece extending over the positive material piece and retained by friction.

3,866,612

APPARATUS FOR TREATMENT OF SKIN LESIONS

Vernon W. Buker, 514 N. State, Waseca, Minn. 56093

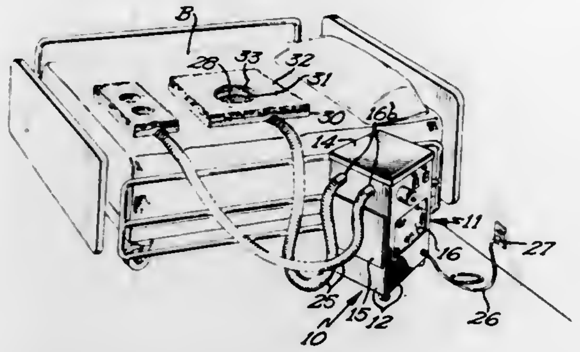
Filed Jan. 16, 1974, Ser. No. 433,843

Int. Cl. A61f *7/12*

U.S. Cl. 128—401 4 Claims

1. An apparatus for use in treating skin lesions such as bedsores of non-ambulatory patients, comprising:
- a housing having a blower chamber therein, an inlet and an outlet opening in said housing communicating with said blower chamber, a blower mechanism in said chamber for producing and causing a stream of air to flow through said inlet into said blower chamber and through said outlet, an air pervious filter extending across said inlet opening for removing air entrained particles from the stream of air,
- elongate flexible conduit means connected in communicating relation with said outlet,
- a pad formed of flexible, yieldable material presenting a support surface for a portion of the body of the person

lying thereon, and having an opening therein corresponding to a small surface area portion of the body of the person to be treated, said pad having a thickness dimension of predetermined magnitude so that said opening therein defines a flow chamber when a patient is positioned upon the pad,



air distribution means connected with said conduit means and directing air into the flow distributing chamber defined by the opening in said pad, whereby a stream of cooled air will be directed against that specific body portion of the patient circumscribed by said opening.

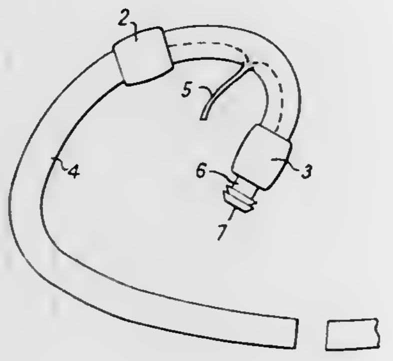
3,866,613
PESSARY RING ELECTRODE SYSTEM

John Kenny, and Alan Wilds, both of Welwyn Garden City, England, assignors to Devices Implants Limited, Welwyn Garden City, England

Filed Mar. 11, 1974, Ser. No. 450,244

Int. Cl. A61n *1/04*

U.S. Cl. 128—408 **6 Claims**



1. A pessary ring structure comprising first and second limbs adapted to fit together to constitute a closed flexible pessary ring, the first limb comprising a flexible arm, a metal electrode at or near each end of the arm and an insulated conductor lead connected to each electrode, the leads extending from the arm for the remote application of stimulating potentials, and the second limb comprising a flexible tube which may be cut to a desired length to make the complete ring fit a particular patient, there being provided coupling means for coupling the ends of the tube to the respective ends of the arm.

3,866,614
CARDIAC ACTUATOR

Bengt Svensson, Ronninge, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

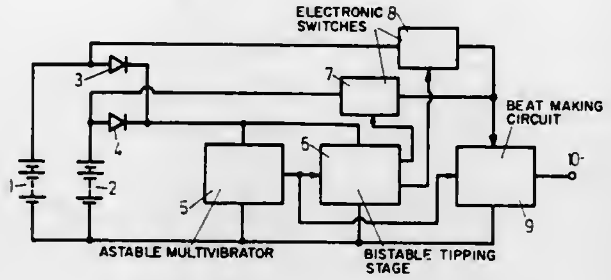
Filed Apr. 5, 1973, Ser. No. 348,237

Claims priority, application Germany, Apr. 4, 1972, 2216193

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **2 Claims**

1. A cardiac actuator, particularly an implantable heartbeat maker for producing heart stimulating impulses, comprising an outlet, at least two batteries, means interconnecting said batteries in parallel, a switching device comprising an astable multivibrator connected with said means, and a bistable multivibrator connected with said astable multivibrator, means for a separate connection of individual batteries, beat-making means connected to said outlet for applying the impulses to the heart to be stimulated, and means connecting said beat-making means individually with said batteries, said astable



multivibrator and said bistable multivibrator for supplying impulses produced by said astable multivibrator to said bistable multivibrator for varying the switching from one battery to the other one for supplying said beat-making means, and for supplying said impulses to said beat-making means to determine the rate of the stimulating impulses.

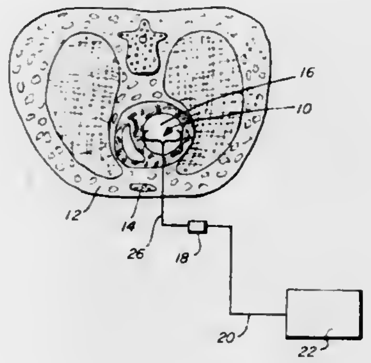
3,866,615
PORTABLE ELECTRONIC CARDIAC STIMULATOR

John R. Hewson, Manset, Maine, assignor to Claude W. Daigle, Ellsworth Falls, Maine, a part interest

Filed Jan. 15, 1973, Ser. No. 323,972

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 D **7 Claims**



1. A portable emergency cardiac stimulator comprising:

defibrillation circuit means for generating a high voltage electrical pulse for defibrillating a fibrillating ventricle of a heart when applied directly to the wall of said ventricle;

pacing circuit means for generating repetitive low voltage electrical pulses at a predetermined rate;

transthoracically insertable bipolar cardiac electrode means for directly contacting substantially diametrically opposite portions the ventricle, said electrode means having leads trailing therefrom, such that when said electrode means are disposed interiorly of said ventricle the trailing ends of said leads may extend transthoracically and be disposed exteriorly of the patient;

switch means, having an input, said switch means further including a common output lead, for selectively connecting the output of either of said defibrillation circuit means or said pacing circuit means to said common output lead;

means for detachably connecting, in electrically conductive relation, the trailing leads of said electrode means to said common output lead to enable said electrode leads to be connected to said common output lead after transthoracic insertion of said electrode means into said ventricle; and

battery means connected to the input of said switch means for powering said defibrillation circuit means and said pacing circuit means.

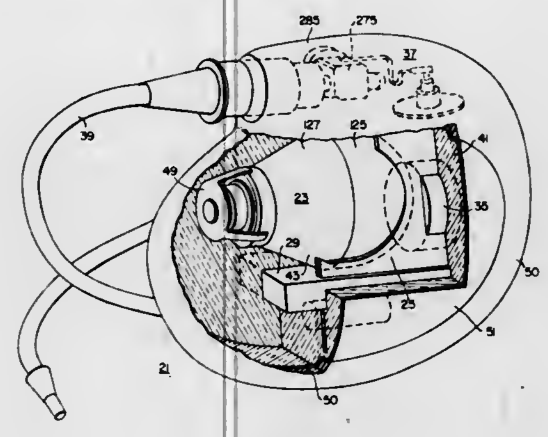
3,866,616
HEART PACER

David L. Purdy, Indiana; George J. Magovern, Pittsburgh, both of Pa., and Nicholas Smyth, Bethesda, Md., assignors to Coratomic Inc., Indiana, Pa.

Filed July 12, 1973, Ser. No. 378,636

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **5 Claims**



1. A heart pacer for a host including a primary source of heat energy, a converter connected to said source for converting said energy into electrical energy, means, connected to said converter, for deriving electrical pulses from said electrical energy, output-conductor means including a catheter, connected to said deriving means and to be connected to the heart of said host, for impressing said pulses on said heart, and a container for said source, converter and deriving means, the said container being composed of electrically conducting material and being electrically connected to said deriving means to serve as ground therefor, the outer region of said container being coated with electrically insulating material except over a relatively small limited area thereof on one side only, the conducting material of said limited area to be connected electrically to non-muscular body parts of said host connecting said ground to the body of said host.

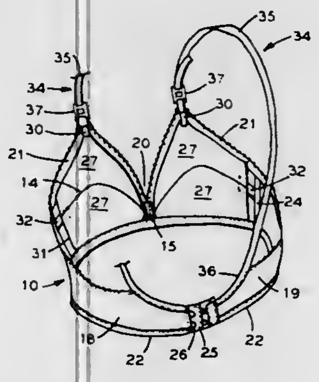
3,866,617
BRASSIERE

Lawrence Gluckin, New York, N.Y., assignor to Griffin Industries Inc., New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,325

Int. Cl. A41c *3/00*

U.S. Cl. 128—484 **3 Claims**



1. A brassiere including a bandeau to encircle the body of a user and having a front portion shaped to define a pair of individual breast receiving cups each terminating in an apex at the top and defining a cleavage therebetween,

a rear portion having connecting means at the ends thereof, and

a pair of shoulder straps each connected to said rear portion at one end and at said apex of said cups, wherein the improvement comprises

a pair of breast cup fillers substantially the shape of said breast cup and connected at their upper ends and at the outer side of said cups to elastic tapes and at their bottom ends to the bottom of said cups permitting said fillers otherwise floating, independent and free of engagement with said outer breast cup.

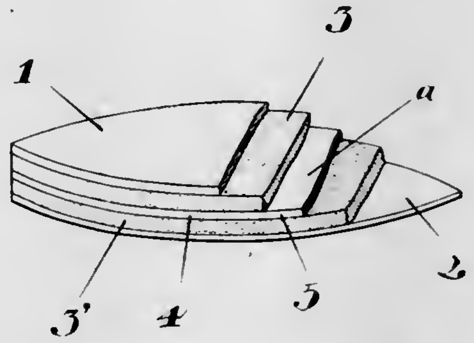
3,866,618
NAIL FILE

Sakichi Tsukamoto, 1,3-chome, Toyotama Kita, Nerima-ku, Tokyo, Japan

Filed Jan. 4, 1974, Ser. No. 430,610

Int. Cl. A45d *29/04*

U.S. Cl. 132—76.4 **4 Claims**



1. A nail file comprising a pair of file members backed with resilient perforated plastic layers respectively and an adhesive mixed and kneaded with a hardener to connect the said pair so that the said nail file has upper and lower filing surfaces on both sides thereof and the said adhesive becomes itself a core between the entire rear surfaces of said pair of file members.

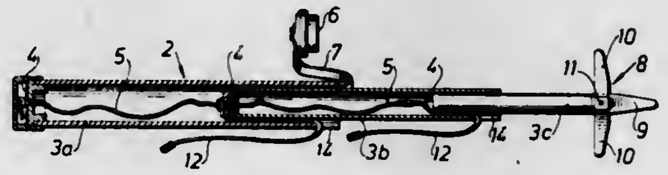
3,866,619
POLE SYSTEM

Karl Per Frisk, Orsa, Sweden, assignor to Barracudaverken Aktiebolag, Djursholm, Sweden

Filed May 31, 1974, Ser. No. 475,187

Int. Cl. A45f *1/16*

U.S. Cl. 135—15 PQ **12 Claims**



1. A pole system for pitching a tent, a camouflage net, or any similar cover, comprising

at least two tube members (**3**), which are telescopically and slidably arranged within each other,

hoisting means (**12**) which at one end are fixed at the bottom end of each inner tube member and extend upwards therefrom in the play between adjacent tube members, and which have a length such that their other ends grippably extend over the upper edge of the outer tubes, and

locking means (**14**) at the upper end of each outer tube member, permitting the hoisting means, and thus the tube members to which they are fixed, to be locked in a desired position relative to the surrounding tube members.

3,866,620
FLUID CONTROL VALVE

Robert O. Morton, Costa Mesa, Calif., assignor to Bertea Corporation, Irvine, Calif.

Filed Aug. 14, 1972, Ser. No. 280,220

Int. Cl. F15b *5/00;* **F15c** *3/14;* **F15b** *11/00*

U.S. Cl. 137—83 **12 Claims**

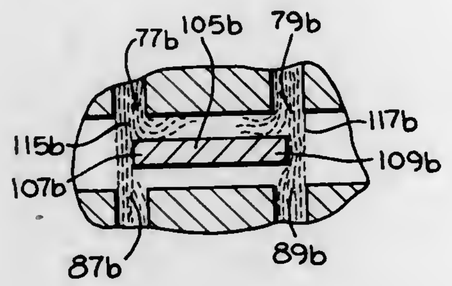
1. A servovalve connectible to a source of fluid comprising: means defining first and second receiver passages, said first

and second receiver passages having first and second receiver orifices, respectively;

ejector passage means connectible to the source of fluid, said ejector passage means having discharge orifice means spaced from said receiver orifices for discharging fluid across the space between the discharge orifice means and the receiver orifices;

a diverter having first and second opposite end portions;

means for mounting said diverter for movement in the fluid discharged by the discharge orifice means so that said end portions can be impinged by and divert the fluid discharged by said discharge orifice means relative to said said receiver orifices whereby a differential fluid output can be provided in said receiver passages, said end portions being spaced apart in the direction of movement of said diverter;



a torque motor including an elongated torque arm mounted for movement about a pivot axis which extends generally transverse to the axis of the torque arm; and

said diverter being drivingly connected to the torque arm whereby pivotal movement of the torque arm moves the diverter to control said fluid output in the receiver passages.

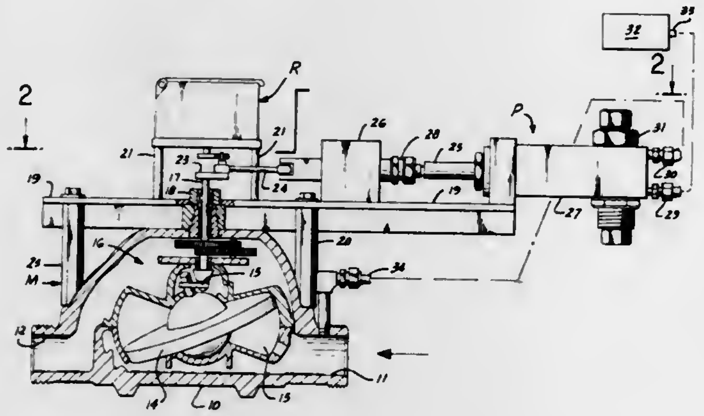
3,866,621
PROPORTIONING PUMP

George J. Greene, Jr., Houston, Tex., assignor to Greene Research Engineering, Co., Houston, Tex.

Continuation of Ser. No. 165,156, July 22, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,853

Int. Cl. G05d *11/02*

U.S. Cl. 137—99 **4 Claims**



1. A proportioning pump comprising:

a pump barrel having a bore therein and an inlet and outlet communicating with said bore,

a plunger positioned for reciprocation in said bore,

valving controlling said inlet and outlet so that liquid is pumped by reciprocation of said plunger,

a positive displacement liquid meter having a housing, and inlet, and outlet, a piston movable therein responsive to liquid flow therethrough, and a shaft driven responsive to movement of said piston, said shaft extending through said housing,

eccentric means directly connecting said plunger to said shaft for reciprocating said plunger responsive to rotation of said shaft,

a register having a rotary input shaft,

a base mounted on said housing, said base supporting said register so that said input shaft is in alignment with said shaft driven responsive to movement of said piston and also supporting said pump barrel and said plunger in operative relation to said eccentric means, and

means connecting said shafts whereby said register is actuated responsive to flow of liquid through said meter.

3,866,622
OPEN CIRCUIT BREATHING APPARATUS

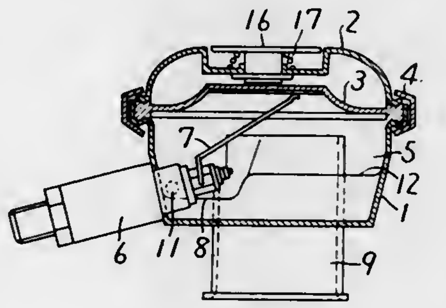
Mikio Kasahara, and Yozo Sato, both of Akashl, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-city, Japan

Filed Mar. 19, 1973, Ser. No. 342,451

Claims priority, application Japan, Mar. 18, 1972, 47-27073; Mar. 18, 1972, 47-27074

Int. Cl. A62b *7/04;* **A61m** *16/00;* **F16k** *7/00*

U.S. Cl. 137—102 **4 Claims**



1. An open circuit breathing apparatus comprising a case, demand valve assembly means mounted on said case and including a demand valve outlet means disposed in said case, demand valve control means within said case responsive to decreases in pressure within said case to open said demand valve outlet means and responsive to increases in pressure within said case to close said demand valve outlet means, a breathing tube mounted on said case and having an opening disposed generally toward said demand valve outlet means, channel means extending from adjacent said demand valve outlet means toward said opening to said breathing tube whereby a first substantial portion of a stream of gas entering said case from said demand valve outlet means flows directly into said opening to said breathing tube and a second portion of the gas bypasses said opening to said breathing tube and flows around the inside of said case, exhaust valve means disposed through said case, a rim of limited height extending into said case and disposed along at least a portion of said exhaust valve means, said rim directing the flow of the second portion of the stream of gas which is flowing around the inside of said case over at least a portion of said exhaust valve means whereby the passage of gas directed by said rim over said portion of said exhaust valve causes a decrease in pressure adjacent said portion of said exhaust valve.

3,866,623
TRACTOR PROTECTION VALVE

Boleslaw Klimek, Des Plaines, Ill., assignor to The Berg Manufacturing Companay, Des Plaines, Ill.

Filed Dec. 10, 1973, Ser. No. 423,165

Int. Cl. B60t *15/36*

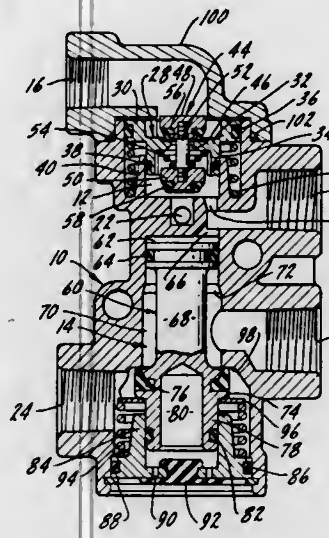
U.S. Cl. 137—102 **10 Claims**

1. A tractor protection valve including a housing having a first and second chamber, an emergency inlet and outlet and a first exhaust port in communication with said first chamber, a service inlet and outlet and a second exhaust port in communication with said second chamber and a passage in said housing opening communication between said emergency outlet and said second chamber;

a shuttle in said first chamber between said emergency inlet and outlet including a second small shuttle valve therein,

spring means urging said shuttle toward a first position and said small shuttle valve toward its closed position, closing communication between said emergency inlet and outlet, said emergency outlet being in open communication with said first exhaust port when said shuttle is in said first position;

a piston in said second chamber and means yielding urging it toward a position in which a piston seal engaged thereon closes communication between said service inlet and outlet;



fluid pressure entering said emergency inlet causing said shuttle to move initially toward a second position in which the small shuttle valve closes the first exhaust port and then toward a third position in which the small shuttle valve is forced open, completely opening communication between the emergency inlet and outlet; the resultant fluid pressure at the emergency outlet causing said piston to travel within said second chamber unseating said piston seal and thus opening communication between said service inlet and outlet.

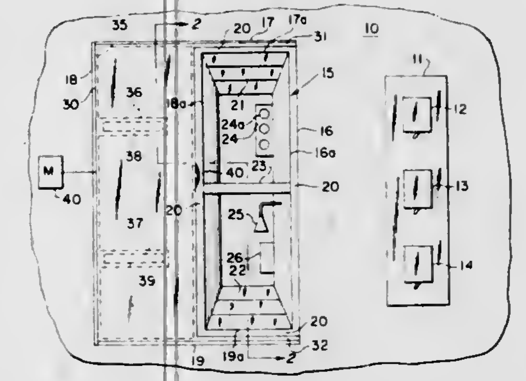
3,866,624
AUTOMOBILE SERVICE LANE WITH SERVICING PIT

Eric J. Peterson, 522 S.W. 11th Ct., Fort Lauderdale, Fla. 33315

Filed July 17, 1973, Ser. No. 379,961

Int. Cl. B60s *5/02*

U.S. Cl. 137—234.6 **8 Claims**



1. An automobile service area comprising:

a service lane arranged for an automobile to drive thereon for servicing,

a gasoline pump adjacent the service lane and a hose means for delivering gasoline from the pump into an automobile located in the service lane,

an automobile service pit located in the service lane at a distance from the gasoline pump but beneath an automobile parked in the service lane for receiving gasoline from the gasoline pump via the hose means and between the wheels of that automobile,

said pit being deep enough for a person to stand therein while servicing the bottom of the automobile,

and a retractable shield mounted in the service lane to selectively cover or uncover the service pit, and means mounting the shield such that it can support the weight of an automobile when in its closed position over the pit.

3,866,625
MANIFOLD FOR SELECTIVELY DISTRIBUTING A FLUID PRESSURE MEDIUM

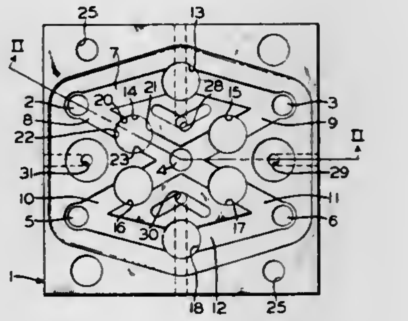
Axel Kemner, Altwarmbuchen, and Rudi Conradt, Hemmingen-Westerfeld, both of Germany, assignors to WABCO Westinghouse GmbH, Hannover, Germany

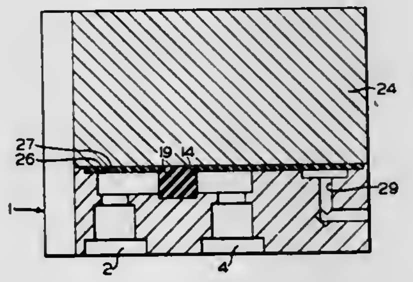
Filed Oct. 1, 1973, Ser. No. 402,049

Claims priority, application Germany, Jan. 25, 1973, 2303474

Int. Cl. F16k *11/20*

U.S. Cl. 137—269 **5 Claims**





1. A fluid pressure medium distributing manifold comprising:

- a. a distributor block having formed therein:
  - i. a plurality of ports extending transversely through and open to opposite sides of said block, any number of said ports being available as inlet ports and any number being available as outlet ports, and
  - ii. a plurality of channels of uniform depth openly formed on one side of said opposite sides of said block for interconnecting the ends of said ports opening to said one side;
- b. means removably insertable in any selected number of said channels for disrupting communication through the respective channels so selected and therefore between the ports interconnected by said selected channels, and for providing communication between the remaining inlet and outlet ports; and
- c. a cap member removably and sealingly secured on said one side of said block for sealing the adjacent ends of said ports and channels against atmosphere.

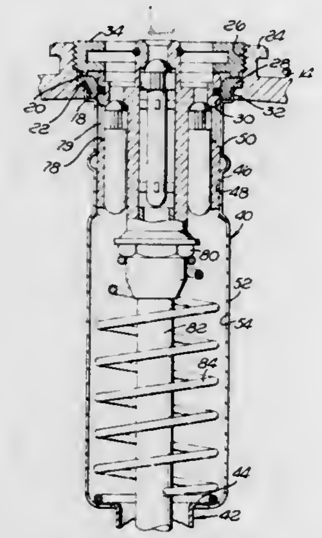
3,866,626
FILLING AND TAPPING ASSEMBLY FOR BEER KEGS AND THE LIKE

Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif. 90274

Continuation-in-part of Ser. No. 193,894, Oct. 29, 1971, abandoned. This application July 13, 1973, Ser. No. 378,856

Int. Cl. F16k *43/00*; B65b *31/02*

U.S. Cl. 137—322 **18 Claims**



1. A valve assembly for filling a keg or like container with a liquid and for dispensing a liquid therefrom, which container includes a wall having an opening therein, comprising:

a main housing having one end thereof constructed and arranged to be received and supported in the wall opening, said housing including a neck portion with an inner wall surface adjacent to said one end and a body portion with an inner surface adapted to extend into the interior of a keg in which the assembly may be mounted, said neck portion further including an annular inner sealing surface;

a valve body with an outer surface mounted in said main housing for limited axial movement therein relative to said annular surface, between a closed position in which the valve body is in sealing engagement with said annular surface and an open position in which it is spaced therefrom;

a liquid passageway extending through said valve body for the transfer of liquid from the inside to the outside of the keg when the valve body is in the closed position;

normally closed liquid valve means in the liquid passageway;

a gas passageway extending through said valve body for the transmission of gas from the outside of the inside of the keg when the valve body is in the closed position;

normally closed gas valve means in the gas passageway; and

a siphon tube having one end thereof in communication with the liquid passageway in the valve body, the other end of said siphon tube extending toward the interior of a keg in which the assembly may be mounted.

3,866,627
DUAL CHECK VALVE ARRANGEMENT

Joseph E. Dezelan, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 264,961, June 21, 1972, Pat. No. 3,779,133. This application July 9, 1973, Ser. No. 377,300

Int. Cl. F16k *15/02*

U.S. Cl. 137—512.5 **3 Claims**

1. A dual check valve arrangement comprising

a housing having walls defining a chamber having a pair of axially spaced annular seats therein,

a pair of inlet passages formed in the housing and extending through said seats,

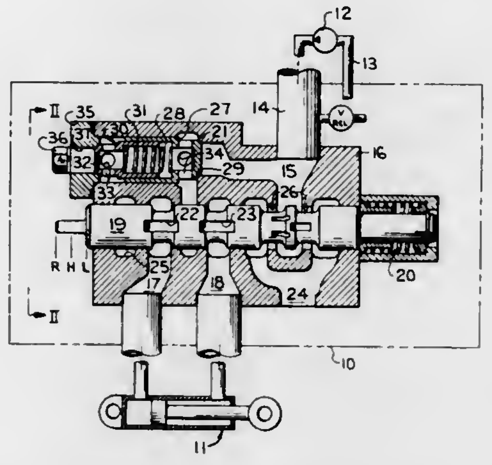
outlet passage means formed in said housing at one of said annular seats,

first and second check valve means reciprocally mounted in said chamber in back-to-back relationship for independently opening and closing said inlet passages at said seats,

each of said first and second check valve means comprising a cylindrical cup-shaped member having a closed end thereof normally engaging a respective one of said seats to close off the associated inlet passage while leaving the annular seat in communication with the outlet passage means,

spring means mounted within said members for urging said cup-shaped members away from each other to engage said seats, and

internal passage means formed through said cup-shaped members and extending between said annular seats, said internal passage means being formed large enough to provide free fluid flow therethrough from the seat opposite the outlet passage to the seat adjacent said outlet passage.



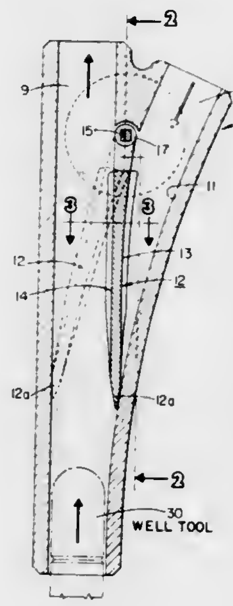
3,866,628
DETENT DIVERTER

Ronald A. Weber, Ojai, and John K. Rains, Ventura, both of Calif., assignors to Exxon-Production Research Company, Houston, Tex.

Filed June 14, 1973, Ser. No. 370,063

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.44 **6 Claims**



1. Apparatus for diverting flow from one conduit into one of two other conduits comprising:

a diverter body member having branched passageways;

a paddle arranged at the junction of said branched passagewayss and movable from one position in which flow through one of said passageways is blocked to another position where flow through said other passageway is blocked and vice versa;

a shaft nonrotatably connected to said paddle;

a cam bar having at least one arm;

said arm being nonrotatably attached to said shaft along the length thereof and having a relatively long moment and a pair of grooves formed at each end thereof, each groove having a similar curvature; and

detent bow spring means attached to said diverter body engaging one of said grooves when said paddle is in one of its diverting positions and engaging said other groove when said paddle is in its other diverting position.

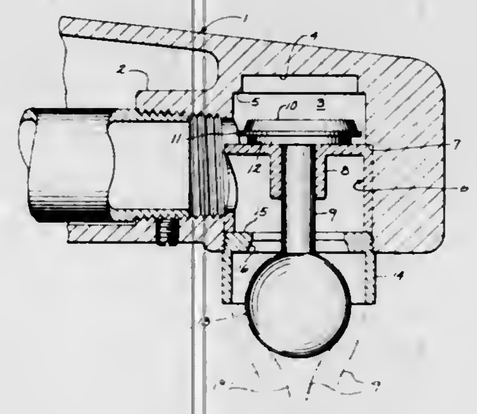
3,866,629
STATIC PRESSURE PISTON OPERATED DIVERTER MECHANISM

James R. Nicklas, Hales Corners, Wis., assignor to Bradley Corporation, Menomonee Falls, Wis.

Filed June 11, 1973, Ser. No. 368,639

Int. Cl. F16k *31/44*

U.S. Cl. 137—608 **3 Claims**



1. In a flow diverter mechanism for a discharge spout that has:

a. an outlet that presents a valve seat;

b. an internal cylinder region disposed inward of said outlet that has a remote end away from said outlet;

c. a fluid inlet that feeds said outlet and which is also in communication with said internal cylinder region;

d. a valve head located on the discharge side of said outlet movable toward said valve seat for engagement therewith;

e. a valve stem attached to said valve head extending toward said internal cylinder region;

f. a piston attached to said valve stem that is located in said cylinder region and which moves in unison as an assembly with said valve head and said valve stem, such piston entering into a blocking engagement with the walls of said internal cylinder region that closes off the remote end of said cylinder region when said valve head is in its engagement with said valve seat;

the combination therewith of:

i. a motion limiting ledge inside said spout located between said outlet and said internal cylinder region with said piston on one side thereof and said valve head on the other side thereof, said ledge supporting said piston and valve head assembly when said valve head is away from said valve seat; and

ii. the engagements of said valve head with said valve seat, and of said piston with the walls of said cylinder region providing one engagement that is an imperfect seal allowing fluid seepage therethrough, and a second engagement that is a substantially tight seal in relation to the imperfect seal.

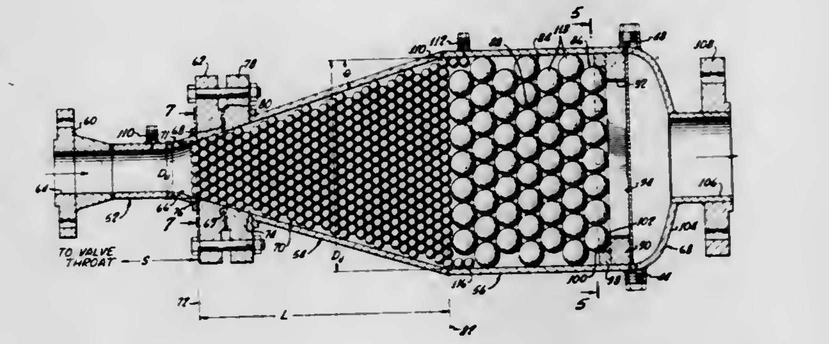
3,866,630
BALL CANISTER AND SYSTEM FOR CONTROLLING CAVITATION IN LIQUIDS

Albert A. Webb, Riverside, Calif., and James Paul Tullis, Fort Colling, Colo., assignors to Fowler, Knobbe & Martens, Orange; Fred H. Hanson, Riverside, both of, Calif.; Paul J. Tullis, Fort Collins, Colo.; Robert M. Massey, Crestline, Calif.; John M. Mylne, Riverside, Calif. and Albert A. Webb, Riverside, Calif., a part interest to each

Division of Ser. No. 95,044, Dec. 4, 1970, Pat. No. 3,731,903. This application May 8, 1972, Ser. No. 251,256

Int. Cl. F15d *1/02*

U.S. Cl. 137—583 **12 Claims**



4. In a liquid flow system, a ball canister for receiving the liquid stream at high pressure and reducing the pressure while repressing or controlling cavitation in the liquid, said ball canister comprising a case having an inlet and outlet, a volume of balls filling a portion of the length of the case, and means retaining the balls in the case, said ball filled case portion being tapered with its diameter increasing in the downstream direction, with the diameter and length of said ball filled case portion being sized to significantly repress cavitation in said system, and with the canister including a gas tap communicating with the interior of the case at the top thereof and at a position downstream of said ball volume, and a gas pressure relief valve connected to said tap.

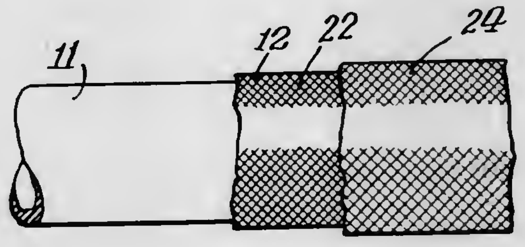
3,866,631
HOSE CONSTRUCTION

Anil H. Chudgar, Manitowoc, Wis., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed July 6, 1972, Ser. No. 269,499

Int. Cl. F16l *11/08*

U.S. Cl. 138—125 **11 Claims**



1. A hose construction comprising:

a tubular core formed of Hytrel aromatic polyester thermoplastic resin and defining a surface portion; and

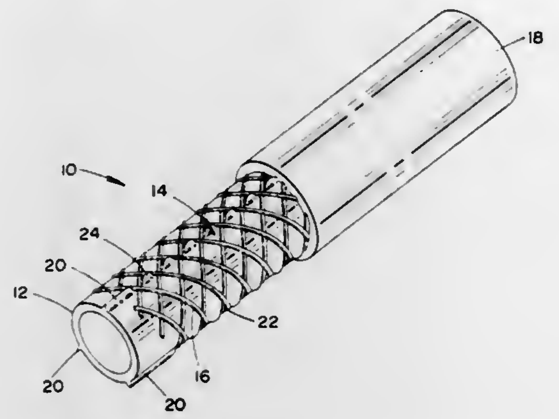
a reinforcing layer extending about the core and having an inner surface portion embedded in said core surface portion to have solely mechanically interlocked, retained association with said coore for reinforcing the same, the polyester resin of said core surface portion in which the reinforcing layer inner portion is embedded being substantially free of stress.

3,866,632
REINFORCED HOSE AND METHOD

William G. Schaffer, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed July 2, 1973, Ser. No. 375,965
Int. Cl. F16l *11/08*

U.S. Cl. 138—130 **5 Claims**



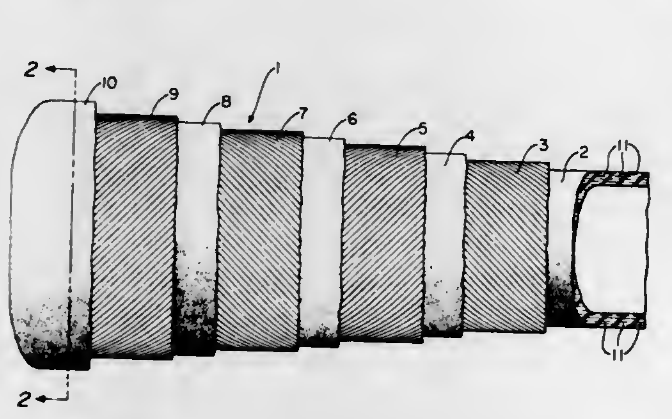
1. A flexible hose comprising:
a polymeric tube;
a plurality of circumferentially spaced ribs integral with and radially extending from the exterior of the tube;
a reinforcement of oppositely wound textile strands twined over the tube, the strands deforming portions of the ribs at points of contact therewith, undeformed portions of the ribs extending radially past the strands, and the ribs deformed to a point near the tube whereby the ribs mechanically hold and substantially maintain the strands of the reinforcement in spaced relationship on the tube; and
a cover formed over the tube, reinforcements, and ribs, the undeformed portions of the ribs extending into portions of the cover mechanically interlocking their width.

3,866,633
HOSE STRUCTURE

Challen E. Taylor, Waukegan, Ill., assignor to The Goodyear Tire and Rubber Company, Akron, Ohio

Filed June 7, 1973, Ser. No. 367,997
Int. Cl. F16l *11/08*

U.S. Cl. 138—130 **13 Claims**



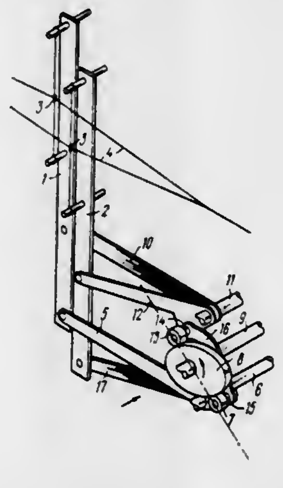
1. A flexible wire reinforced hose of integral construction adapted to resist high pressure, said hose comprising an inner tubular member of flexible polymeric material extending longitudinally of the hose to form the innermost portion thereof at least two spaced reinforcing layers comprised of a plurality of closely spaced spirally wound flexible metallic wire elements disposed around said tubular member, and an insulating layer disposed between the said reinforcing layers with the innermost reinforcing layer in direct contact with and directly supported by the outer peripheral surface of said tubular member to provide reinforcement for the hose and with said wire elements having a small cross-sectional dimension in relation to the wall thickness of said tubular member, said tubular member including a multiplicity of lengths of short filaments of flexible relatively inert high structural strength material randomly disposed throughout the material of the tubular member and oriented generally in direction parallel to the longitudinal axis of the hose to provide strength and heat resistance.

3,866,634
SHEDDING MOTION FOR LOOM

Zinovy Yakovlevich Rutkevich, Medvedkovo, 8 kvartal, korpus 18, kv. 21; Boris Alexandrovich Sakharov, ulitsa Krzhizhanovskogo, 24/35, korpus 6, kv. 404; Alexandr Alexandrovich Zabotin, ulitsa Profsojuznaya, 96, kv. 85; Eduard Arshakovich Onikov, ulitsa Panferova, 5, korpus 2, kv. 106, and Roman Anatolievich German, ulitsa Davydkovskaya, 30, kv. 50, all of Moscow, U.S.S.R.

Filed May 8, 1973, Ser. No. 358,365
Int. Cl. D03c *5/00*

U.S. Cl. 139—79 **3 Claims**



1. A shedding motion for a weaving loom, comprising; a plurality of pairs of heald shafts carrying healds for the passage of warp threads therethrough, a plurality of pairs of driving levers, each lever in each said pair of said driving levers being pivotally connected with the respective heald shaft in said pair; a plurality of pairs of driven levers, each lever in each pair of said driven levers being pivotally connected with a respective one of said heald shafts; a cam mounted intermediate of the driving levers of each pair and interacting therewith for effecting the movement of said heald shafts in a vertical plane for shedding; a driving shaft carrying said cam; followers having spindles being supported by said driving levers; a bail member mounted on the spindles of said followers and interconnecting said followers providing uninterrupted engagement thereof with said cam so as to effect synchronous flat-parallel translatory movement of said heald shafts in said vertical plane; said follower spindles being arranged so that a straight line connecting them passes through the axis of rotation of said cam; and a plurality of said pairs of driven levers being supported by the pivot axes of driving levers for each pair and being connected with the other heald shaft in the respective pair.

3,866,635
LIQUID FILLING APPARATUS

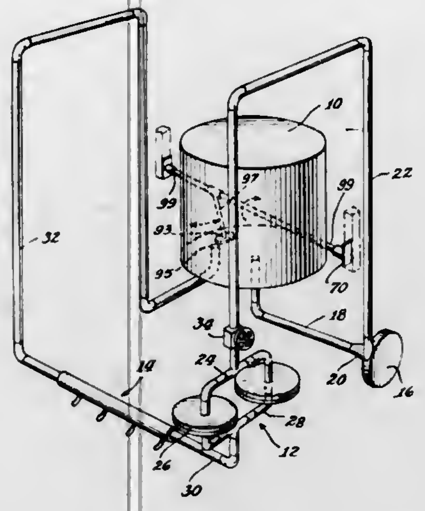
Larry Neil Pearce, Northbrook, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed July 5, 1973, Ser. No. 376,666
Int. Cl. B65b *3/04*

U.S. Cl. 141—45 **11 Claims**

11. In a fluid delivery and recirculating system for use in filling containers of the type which includes a reservoir; a recirculating liquid path connected to the reservoir; a plurality of containers to be filled with liquid, each of said containers having at least one inlet and diverting means adapted to divert liquid from said recirculating path to said inlet conduits of said containers; the improvement comprising:

means defining a plurality of restrictions, said restricting means disposed within said recirculating liquid path, also said restricting means being increasingly restrictive in the direction of flow; and



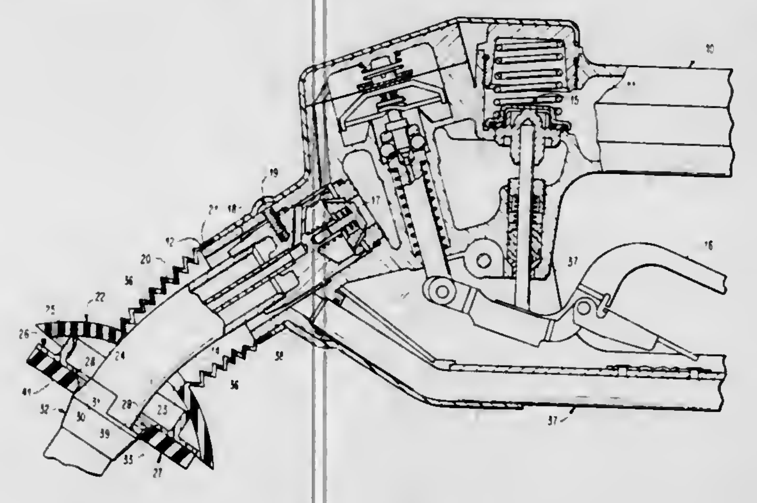
means defining a diversion flow path from each of said restrictions to the inlet of a different one of the plurality of containers.

3,866,636
SEALING ARRANGEMENT FOR LIQUID DISPENSING NOZZLE HAVING VAPOR RECOVERY

Donald A. Lasater, Fairfield, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,799
Int. Cl. B67c *3/34;* **B65b** *31/06*

U.S. Cl. 141—59 **10 Claims**



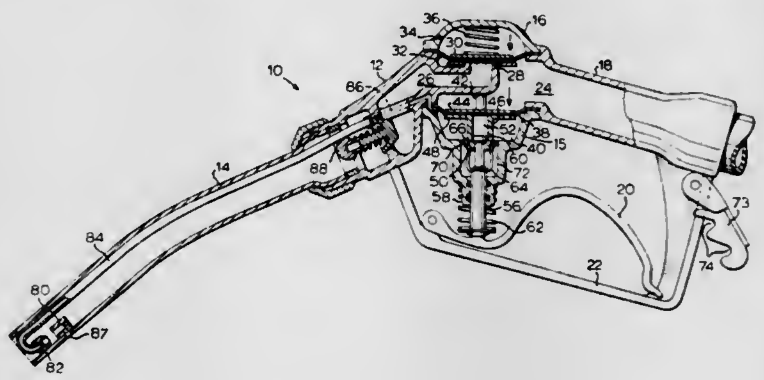
1. A liquid dispensing nozzle having a body, a spout extending from said body and having its free end for disposition in an opening of a fill pipe of a vehicle tank or the like, and means to return vapor from the tank being filled; the improvement comprising means to form a seal between the fill pipe opening and said vapor return means when said spout is disposed in the fill pipe; said sealing means including a member mounted for sliding movement along said spout; means continuously urging said member toward the free end of said spout; said member having a sealing surface formed as a sector of a sphere; first means mounted for sliding movement along said spout and rotating movement about said spout; said first means being disposed between said member and the free end of said spout; said first means being continuously positioned to engage said sealing surface of said member to form a seal therebetween; said spout having stop means disposed thereon between said first means and the free end of said spout to engage said first means when said spout is not disposed in the fill pipe to form a seal therebetween; said vapor return means communicating with a sealed space formed between said spout, said sealing surface of said member, said first means, and said spout stop means; and said first means being removed from sealing engagement with said spout stop means while remaining in sealing engagement with said member when said spout is inserted in the fill pipe by compression of said urging means, said first means forming a seal with the fill pipe independently of said member orientation to cause communication between said vapor return means and the tank being filled.

3,866,637
FLUIDIC AUTOMATIC NOZZLE

Leonard W. Swain, London, and Edward W. Hunter, Port Frank, both of Canada, assignors to Emco Limited, London, Ontario, Canada

Filed Feb. 2, 1973, Ser. No. 329,226
Int. Cl. B65b *3/26, 57/06*

U.S. Cl. 141—226 **4 Claims**



1. In an automatic nozzle for use in controlling the flow of liquids having a housing having a fluid passage opening therethrough, valve means in said passage including a valve member for opening and closing said fluid passage, and means for generating a positive fluid pressure in response to the flow of liquid through said fluid passage, diaphragm means mounted in said housing forming a diaphragm chamber communicating with said means for generating a positive pressure, said means for generating a positive pressure including means for disrupting its pressure generating abiltiy in response to the level of liquid in the tank being filled rising above a predetermined height with respect to said nozzle, manually operable valve opening means movable between a first position in which said valve member is closed and a second position in which said valve is open, the improvement of
means connecting said diaphragm means and said valve means whereby said valve means moves with said diaphragm, and wherein said manually operable actuator means includes collapsible stem means extending into said housing and engaging said diaphragm means, locking means for releasably locking said stem means in an extended position in which said stem is operable to move said diaphragm to move said valve member to an open position,
and means urging said stem means to said first position to close said valve,
said releasable locking means being released when said stem means is moved to a predetermined position at least partially opening said valve and when said diaphragm chamber is positively pressurized at a pressure sufficient to move said valve closure member independently of said stem, thereafter said valve closure means being closable in response to a predetermined decrease in pressure by collapsing of said stem.

3,866,638
NON-LATCHING, DRY-BREAK FLUID COUPLING

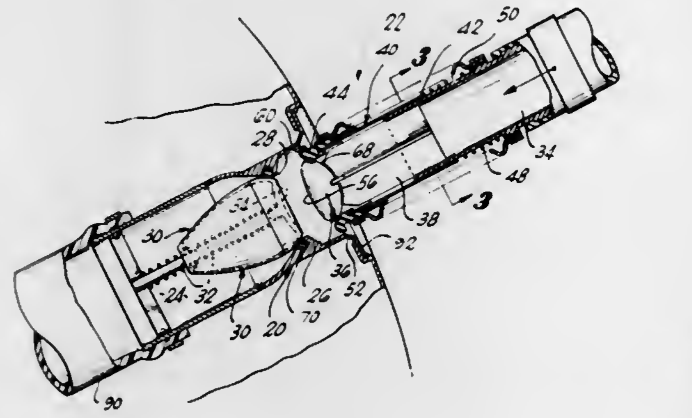
Ray E. Mingus, Mission Viejo, and Ross M. Stuart, Santa Ana, both of Calif., assignors to Kaiser Aerospace and Electronics Corporation, Irvine, Calif.

Filed July 9, 1973, Ser. No. 377,337
Int. Cl. B65b *3/07*

U.S. Cl. 141—352 **6 Claims**

1. A releasable coupling for connecting a fluid supply unit

to a fluid receiving unit to minimize spillage of fluid during couping and uncoupling, comprising:
- a housing connected with one of the units;
- a passage in said housing communicating with the one unit and having an open end;
- a valve seat in said passage having upstream and downstream sides facing toward and away from the open end thereof, respectively;
- a plunger resiliently biased against the downstream side of said valve seat to close the same;
- a hollow probe connected with the other of the units extending in an axial direction, said probe including,
  - a nose at one end of said probe;
- a sleeve valve including,
  - a tubular, substantially rigid sleeve body surrounding said probe mounted thereon for sliding motion relatively towards and away from said nose;
  - an unsupported annular collar fixedly connected to said sleeve body extending concentrically therefrom towards said nose, said collar having,

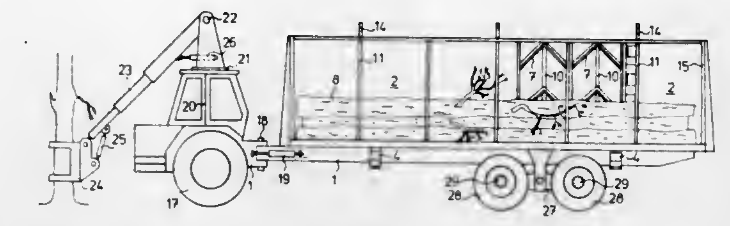


    - an internally facing, inner peripheral surface which seats in sealing relation against said nose in a closed condition;
    - an outwardly facing outer peripheral surface;
- means connected to said sleeve body for resiliently biasing said inner surface of said collar into sealing contact with said nose to prevent flow outwardly from said probe;
- said probe being insertable into said passage through the open end thereof to move said nose against said plunger thereby depressing the same from said valve seat to enable flow therethrough, insertion of said probe seating said outer surface of said collar against the upstream side of said valve seat, further inward movement of said probe causing separation between said nose and said collar to enable fluid to flow through said probe and said valve seat into the receiver, said collar being resiliently deformable to a sufficient extent to enable it to deform into peripherally continuous sealing engagement with said valve seat even when said probe is inserted into said passage in axially misaligned relation thereto.

3,866,639
TREE TRIMMING AND TRANSPORTING MACHINE
Mikko Kantola, Haukilahti, and Paavo Haataja, Rajamaki, both of Finland, assignors to Tyotehoseura R. Y., Helsinki, Finland

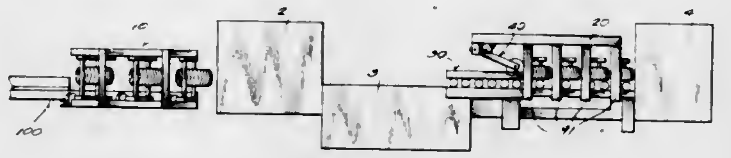
Filed Oct. 30, 1973, Ser. No. 411,062
Claims priority, application Finland, Nov. 2, 1972, 3072/72
Int. Cl. B27c *9/00*
U.S. Cl. 144—2 Z **4 Claims**

1. A mobile machine for simulaneously trimming and transporting trees, comprising a box-like load space adapted to collect a tree load, conveyors located at the bottom of said load space and on one vetical side thereof, means driving said conveyors, and stationary knife-like trimming blades located within said load space substantially parallel to said conveyors, said conveyors causing a displacement and mutual rubbing of the trees in said load space and trimming them by their rotation against said blades.



3,866,640
LOG FEEDING DEVICE
Harold J. Sweet, Rhinelander, and John G. Grimm, Jr., Tripoli, both of Wis., assignors to Marplex Products Co., Inc., Rhinelander, Wis.

Filed Dec. 26, 1972, Ser. No. 318,104
Int. Cl. B27c *9/04*
U.S. Cl. 144—3 R **20 Claims**



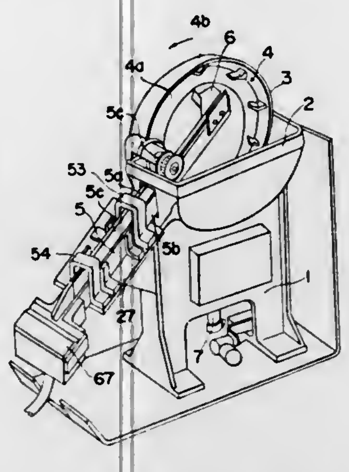
1. A device for centering moving logs or the like as they are fed into a sawing apparatus or the like, said device comprising: a supporting frame; at least one pair of generally oppositely disposed pivot arms, each pivotally mounted on said frame; a readily compressible, resilient roller for each said pivot arm, rotatably mounted on said pivot arm at a point spaced from the pivot point of said pivot arm whereby said readily compressible, resilient rollers are pivotable towards and away from one another; bias means operably connecting said pivot arm and said frame to thereby bias said rollers to pivotable movement towards one another whereby when a log passes between said rollers, said rollers compress individually and pivot away from one another to absorb irregularities in a log or the like while still holding said log or the like generally centered therebetween.

3,866,641
FLUID-OPERATED FASTENER FEEDING APPARATUS
Koichi Mizu; Koichi Kitani, and Yubi Mori, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 20, 1973, Ser. No. 399,136
Claims priority, application Japan, Sept. 20, 1972, 47-94757; Sept. 20, 1972, 47-94758; Sept. 20, 1972, 47-94769
Int. Cl. B25b *23/00*
U.S. Cl. 144—32 **7 Claims**

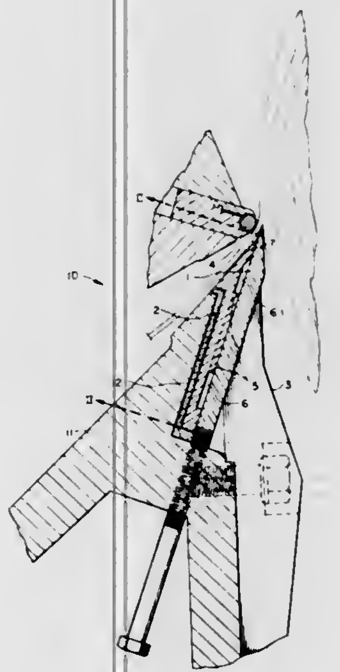
1. In combination, a fluid-operated fastener feeding apparatus and a power operated fastening tool, said combination comprising a hopper adapted to contain therein a number of fasteners, a rotary drum rotatably mounted onto said apparatus and forming one side of said hopper, a fluid-operated drive mechanism for rotating said rotary drum, a track downwardly extending from said hopper for downwardly guiding a row of fasteners that has been supplied onto said track from the bottom of said hopper by said rotary drum, an escapement mounted on said track for successively separating the downwardly guided fasteners one at a time and feeding each fastener to said fastening tool, fluid-operated detection means located along said downward sloping track for detecting the presence and absence of fasteners on said track, a fluid signal generator attached to said fastening tool for generating a fluid signal whereby the feeding of fasteners from said escapement

assembly to said fastening tool is regulated, and a fluid control circuit to which is connected a fluid source for providing fluid power to operate said fastening tool, said fluid generator, and said escapement mechanism, for providing power to control said escapement mechanism by providing the fluid for the fluid signal generated by said fluid signal generator directed to said escapement mechanism, and further providing a source of fluid power to operate said fluid-operated drive mechanism in response to a fluid signal from said fluid-operated detection means, fluid for the signal generated by said fluid-operated detection means also being provided by said fluid source.



3,866,642
VENEER PEELING WITH FLUID INJECTION
Donald C. Walser, Surrey, B. C., Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

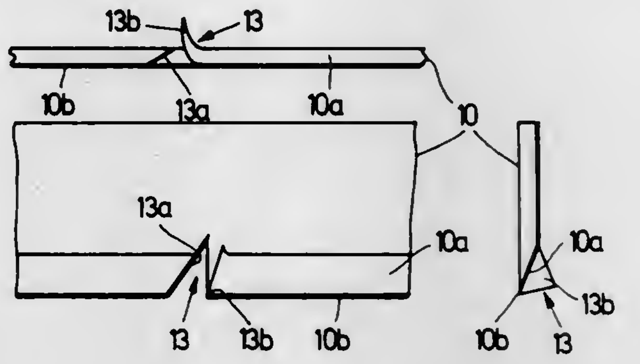
Filed Mar. 2, 1973, Ser. No. 337,562
Int. Cl. B27l *5/00*
U.S. Cl. 144—212 **4 Claims**



1. An apparatus for reducing surface roughness of veneer and the cutting forces in a veneer peeling apparatus having a cutting blade, means for supporting a wood piece and means for providing relative movement between the cutting blade and wood piece, the improvement comprising elongated chamber defining means extending substantially parallel with the cutting blade, inlet means for said chamber defining means and means for supplying pressurized steam thereto, and orifice means communicating with said chamber defining means disposed so as to direct steam generally towards the cutting edge of the blade.

3,866,643
KNIFE FOR A WOOD-SHAVING MACHINE
Karl Schaefer, 22 In der Lohe, Neu-Bamberg, Germany

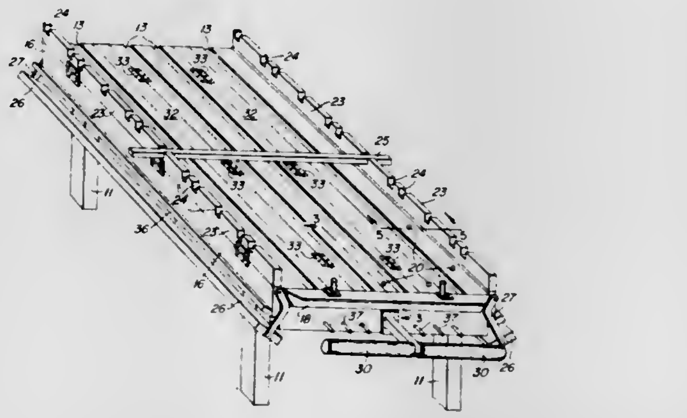
Filed Mar. 22, 1973, Ser. No. 343,729
Claims priority, application Germany, Mar. 24, 1972, 2214434
Int. Cl. B27g *13/00*
U.S. Cl. 144—241 **10 Claims**



1. For use in a machine for cutting wood shavings and simultaneously dividing them into chips of predetermined length, a knife having a series of straight cutting edges situated along a common straight line, said knife having at least at one end of each of said straight cutting edges a transverse cutting portion separating a pair of successive straight cutting edges from each other, formed integrally with and extending transversely from an end of a straight cutting edge, and terminating distant therefrom in a relatively sharp, pointed cutting tip, said transverse cutting portions cutting transversely across shavings cut by said straight cutting edges to divide the shavings into chips of predetermined length.

3,866,644
WORK TABLE FOR FABRICATING PANEL STRUCTURES
Mayo P. Stubbs, P.O. Box 131, Colorado City, Ariz. 86021

Filed Apr. 2, 1973, Ser. No. 346,968
Int. Cl. B25h *1/02, 1/20, 7/00*
U.S. Cl. 144—288 C **9 Claims**

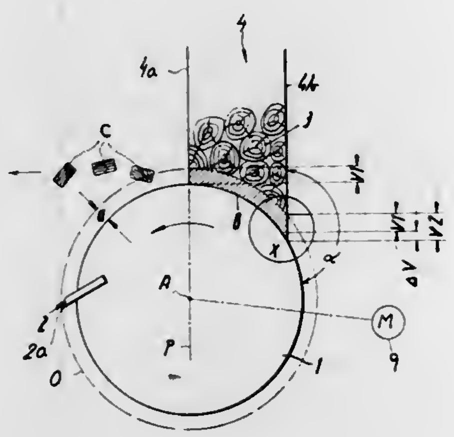


1. A work table for use in fabricating panel structures having an internal framework covered by panels, said table comprising a horizontal work area having changeable template means extending therealong; means for positioning top and bottom plate members of said framework on the work area in correct structural relationship to each other said positioning means comprising raised sections extending along the longitudinal sides and one end of said work area, said top and bottom plate members being positioned by placing the sides thereof in contact with the raised sections on the sides of said work area and the respective ends thereof in contact with the raised section on the end of said work area; and elongate jig members extending along at least two mutually opposite edges of the work area, said template means having a series of marks spaced along the length thereof, each mark indicating a particular type of framework element and the position thereof on

the work area, said jig members having a series of marks spaced along the length thereof, the individual marks corresponding to correct positions of respective framework elements in said panel to thereby indicate correct locations for nailing the panels to the framework, and said jig members being attached to the sides of said raised sections by hinges whereby said jig members can be rotated from a retracted position extending downward along the sides of said sections to a position extending vertically upward from said raised sections.

3,866,645
METHOD OF AND APPARATUS FOR PRODUCING WOOD CHIPS

Hans Sybertz, Hargesheim, Germany, assignor to Hombak Maschinenfabrik KG, Bad Kreuznach, Sandweg, Germany
Filed Feb. 13, 1973, Ser. No. 332,108
Claims priority, application Germany, Feb. 19, 1972, 2207901
Int. Cl. B27c *9/00*
U.S. Cl. 144—326 C **10 Claims**

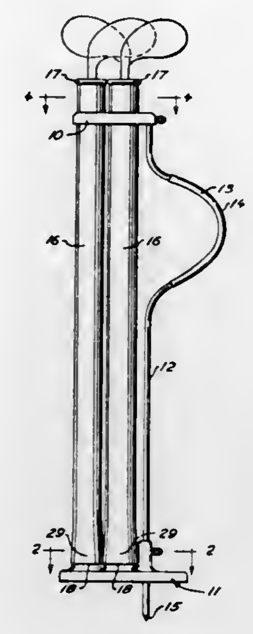


1. A method of reducing pieces of wood to chips comprising the steps of:
- rotating an elongated cutter blade about an axis whereby the cutting edge of said blade defines an orbit;
- feeding pieces of wood to said cutter in a column having a pair of sides, one of said sides forming a flatter angle with said orbit than the other of said sides; and
- advancing said pieces of wood toward said cutter more rapidly at said one side than at said other side.

3,866,646
GOLF CLUB CARRIER

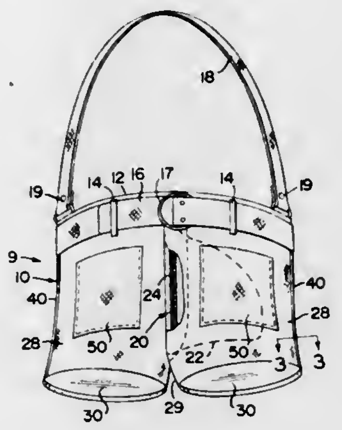
William Kenningale Nevard, Suite 505, 615 7 Ave., New Westminster, British Columbia, Canada
Filed Jan. 18, 1974, Ser. No. 434,504
Int. Cl. A63b *55/04*
U.S. Cl. 150—1.5 **5 Claims**

1. A golf club carrier comprising:
- *a* a plurality of elongated tubes disposed in parallelism, each being adapted to receive the shaft of a golf club,
- *b* a rigid spine extending substantially longitudinally of the tubes,
- *c* a collar secured to the spine embracing the tubes adjacent the upper ends of the latter,
- *d* a base plate assembly connected to the spine in a spaced relationship relative to the collar, the base plate assembly having:
  - *i* a plurality of projections over each one of which a lower end portion of a tube has a stretch fit,
  - *ii* a clamping yoke having a wedge fit between the lower end portions of the tubes,
  - *iii* a threaded connector engaging the base plate assembly and the clamp for drawing the clamp into wedging engagement with said lower end portions of the tubes.



3,866,647
AMUSEMENT DEVICE

Janet Tarkowski, 4700 Wallace Ave., Tampa, Fla. 33611
Filed Dec. 14, 1972, Ser. No. 315,095
Int. Cl. A45c *3/06*
U.S. Cl. 150—30 **28 Claims**

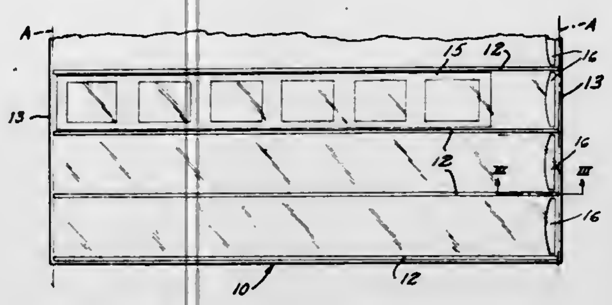


1. An amusement device in the form of a novelty purse simulating a pair of pants, comprising a flexible pants-shaped body having an upper waist-like portion providing access to within the body, a pair of depending leg portions, and between said leg portions a crotch, means closing said leg portions for retaining articles within the body, carrying means connected with said body proximate said waist portion for carrying said body, and means retaining said waist-like portion generally expanded as viewed from the front of the pants-shaped body as said body is carried by said carrying means, the retaining means including belt straps along the waist-like portion and a belt between the body and the belt straps.

3,866,648
MICROFILM COPY JACKET

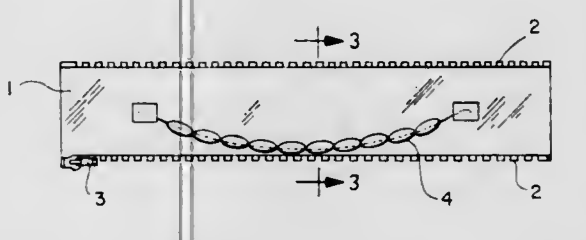
Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation, Evanston, Ill.
Filed May 11, 1971, Ser. No. 142,213
Int. Cl. A45c *11/18*
U.S. Cl. 150—39 **4 Claims**

1. A non-tearing multiple-pocket microfilm jacket having a pair of opposed generally parallel edges comprising:
- a pair of thin transparent plastic films, one overlying the other, said films being attached to one another by parallel longitudinally extending spaced bonding lines between said films, said bonding lines being formed by fusion of said films to one another to define a plurality of elongated side-by-side film retaining pockets extending the length of said jackets to receive strips of photographic film, said bonding lines being generally perpendicular to said edges, the thickness of the jacket along said bonding lines being less than the combined thicknesses of two unbonded plies of the film, said plies being unattached between said bonding lines along at least one of said edges said bonding lines terminating at their ends inwardly of said edges to present a two-ply thickness along said edges thereby preventing tearing of the films along said bonding lines upon the placing and removal of microfilm therein or upon the application of manual handling forces on the jacket transverse to the bonding lines.



3,866,649
SHOPPING CART HANDLE COVER

William F. Bringmann, 49 Grove St., Waterbury, Conn. 06710
Filed Nov. 5, 1973, Ser. No. 392,686
Int. Cl. B62b *5/00, 9/26*
U.S. Cl. 150—52 R **2 Claims**

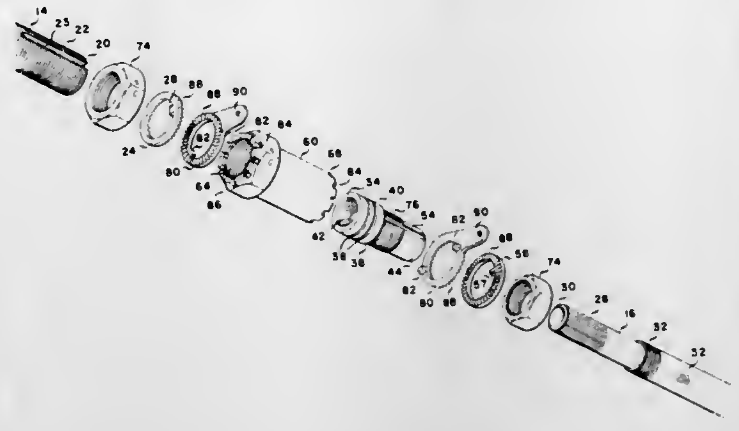


1. A removable cover for a shopping cart handle comprised of a sheet of flexible plastic cut to fit the handle, a zipper for binding the sheet of flexible plastic to the handle and a string of ornaments loosely attached to the outside of the sheet of flexible plastic.

3,866,650
INTERNAL LOCKING DEVICE

Artemas M. Larkin, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Division of Ser. No. 94,696, Dec. 3, 1970, Pat. No. 3,736,010. This application May 25, 1973, Ser. No. 364,193
Int. Cl. F16b *39/00*
U.S. Cl. 151—21 C **9 Claims**

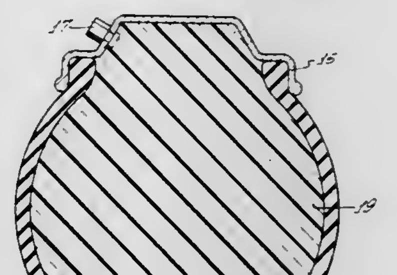
1. An internal locking device actuable only by externally mounted elements therewith, comprising in combination:
- a threaded member;
- a sleeve member having internal threads for cooperative engagement with said threaded member,
- a plurality of annular grooves in adjacently spaced relation in said sleeve member and alternately on the interior and the exterior thereof; and
- actuating means axially engaging said sleeve member on both ends thereof whereby generation of a force generally longitudinally-directed in said sleeve member compresses said grooves so as to provide a surface-to-surface contact between the threads of said sleeve member and said threaded member,
- thereby making lockable the threads of the latter to the former and providing longitudinal adjustability without



exceeding the elastic limits of deformation of the material of said sleeve member.

3,866,651
FLAT FREE PNEUMATIC TIRE AND VOID FREE FILLING THEREFOR

Edward N. Gomberg, 14191 Livingston St., Tustin, Calif. 92680
Continuation-in-part of Ser. No. 397,940, Sept. 17, 1973,. This application Oct. 10, 1973, Ser. No. 404,856
Int. Cl. B60c *1/00*
U.S. Cl. 152—313 **16 Claims**



1. A flat-free pneumatic tire casing and an essentially void-free polyurethane elastomeric filling material confined, at least in part, by aaid casing, said elastomeric material being the product of the reaction of, in the essential absence of foam producing material in the reaction zone, a defined prepolymer and a defined other reactant, where
- said prepolymer reactant is selected from the class consisting of
  1. organic polyisocyanate and hydroxyl group terminated polyfunctional polyether, wherein essentially all the prepolymer terminal groups are isocyanate groups;
  2. organic polyisocyanate and hydroxyl group terminated polyfunctional polyester, wherein essentially all the prepolymer terminal groups are isocyanate groups;
  3. organic polyisocyanate and hydroxyl group terminated polyfunctional polyether wherein essentially all the prepolymer terminal groups are isocyanate groups which groups have been blocked to afford "isocyanate" reactivity only at elevated temperature; and
  4. organic polyisocyanate and hydroxyl group terminated polyfunctional polyester wherein essentially all the prepolymer terminal groups are isocyanate groups which groups have been blocked to afford "isocyanate" reactivity only at elevated temperature;
- said other reactant is hydroxyl group terminated polyfunctional polyether, in the case of said prepolymer (1) and said prepolymer (3) to obtain poly(ether)urethane elastomeric material;

said other reactant is hydroxyl group terminated polyfunctional polyester, in the case of said prepolymer (2) and said prepolymer (4) to obtain poly(ester)urethane elastomeric material;

said polyurethane elastomeric material being characterized in part by an essential freedom from voids.

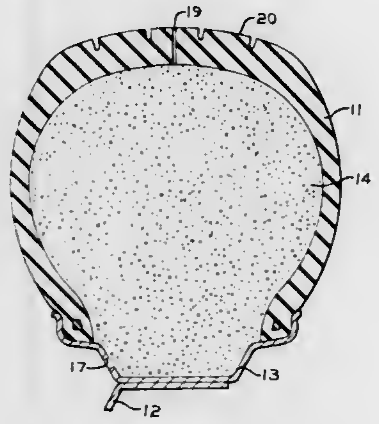
3,866,652
TIRE AND WHEEL COMBINATION

Shamim Ahmad, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,736

Int. Cl. B60c *7/12*

U.S. Cl. 152—317 **6 Claims**



1. An assembly comprising:
a. pneumatic tire;
b. a vehicle wheel having a tire-mounting rim with said tire mounted on said rim forming a cavity between the interior of the tire and rim; and,
c. said cavity filled with a solid, resilient composition comprising a mixture of:
   1. an elastomeric material;
   2. hollow spheres having diameters ranging from 10 to 300 microns, with said spheres dispersed throughout the elastomeric material and the elastomer cured, thereby forming a solid filling of said cavity.

3,866,653
FLAPS FOR TIRES

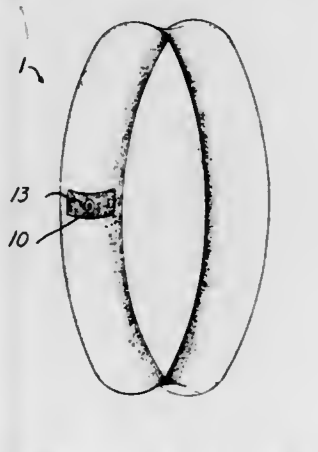
Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cil, Clermont-Ferrand, France

Filed Mar. 23, 1973, Ser. No. 344,424

Claims priority, application France, Mar. 31, 1972, 72.11709

Int. Cl. B60c *21/04*

U.S. Cl. 152—365 **3 Claims**



1. In a tire flap having an increased thickness of material around the valve hole and a reinforcement in that region, the improvement which comprises said reinforcement being constituted of

a. a rigid tubular insert which forms the wall of the valve hole through the flap, except in the vicinity of the radially outer surface of the flap, said tubular insert having two collars, the first collar being embedded in the increased thickness of the flap and spaced from the radially outer surface of the flap and the second collar forming the radially inner surface of the flap around the valve hole, and

b. a layer of reinforced elastomer which forms a covering of the radially inner surface of the flap all around the insert, said layer being formed of a rubberized cloth glued to the flap and interposed between the flap itself and the second collar.

3,866,654
DEVICE FOR INFLATING TUBELESS AUTOMOBILE TIRES

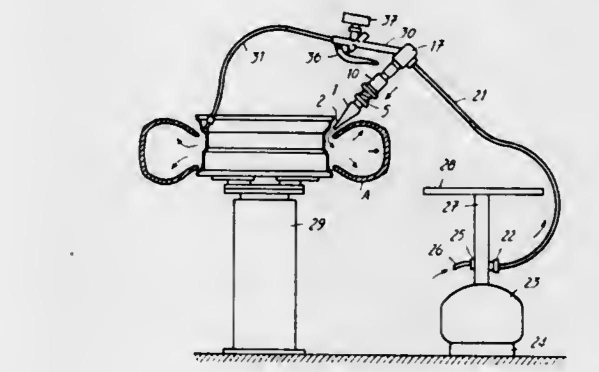
Victor Duquesne, Quellinstraat 42-44, Antwerpen, Belgium

Filed Nov. 22, 1972, Ser. No. 308,813

Claims priority, application Belgium, Nov. 30, 1971, 51485; Feb. 14, 1972, 51662

Int. Cl. B60c *29/12*

U.S. Cl. 157—1.1 **1 Claim**



1. A device for inflating tubeless pneumatic tires on valved wheel rims comprising at least one open end tube shaped injection nozzle of which one open end constitutes an air outlet mouth piece of a flat configuration with a divergent bore and capable of insertion between a deflated tire bead and the rim of a wheel on which said tire is mounted and to inject a large quantity of compressed air into the tire, a compressed air feed hose, a source of compressed air being connected to said air feed hose, a main valve to which the other end of said nozzle is secured, said main valve being provided for the rapid controlling of the flow of air to said nozzle, an extension piece secured to said main valve and said air feed hose, an outlet pipe mounted on said extension piece and being in open communication therethrough with said feed hose, said outlet pipe extending obiquely towards said main valve and serving as a handle, an inflation valve in said outlet pipe, an inflation hose connected to said inflation valve, and a fitting on said air inflation hose being capable of connection to the wheel rim valve.

3,866,655
TIRE CHANGER WITH IMPROVED TIRE CHANGING TOOL

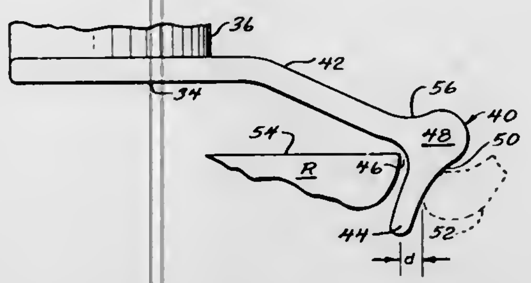
Jimmie L. Holladay, Antioch, Tenn., assignor to The Coats Company, Inc., LaVergne, Tenn.

Filed June 25, 1973, Ser. No. 373,490

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.24 **1 Claim**

1. In a tire changing apparatus including a rotatable table on which a rim may be placed for rotation therewith for mounting or demounting a tire on the rim, a structure adjacent the table mounting extendable elements above the table including a tool haaving a tool head adapted to be brought in close proximity to the upper edge of a rim on the table for guiding the bead of a tire during a mounting or demounting operation, the improvement in said tool head comprising: a member having a downwardly extending projection, said projection also extending inwardly toward said table and defining a concave area in which the upper edge of a rim may be received, said downwardly extending projection including tire bead guiding recesses on opposite sides thereof, and an upper, outwardly extending, bulbous portion under which the bead of a tire to be mounted may be received and located so that the bead of the tire will be located below the upper edge of a rim on the table whereby the circumference of the bead of the tire need not be stretched during a mounting operation and whereby a portion of the tire bead opposite that in engagement with said tool need not be located on the dropped center of a rim on said table so that the force required to locate said table during a tire mounting operation is minimized, said downwardly extending projection further including a rounded surface remote from said table, and further including an additional concave area on the upper side of said bulbous portion and adjacent said table for receiving and guiding the bead of a tire during a tire demounting operation.



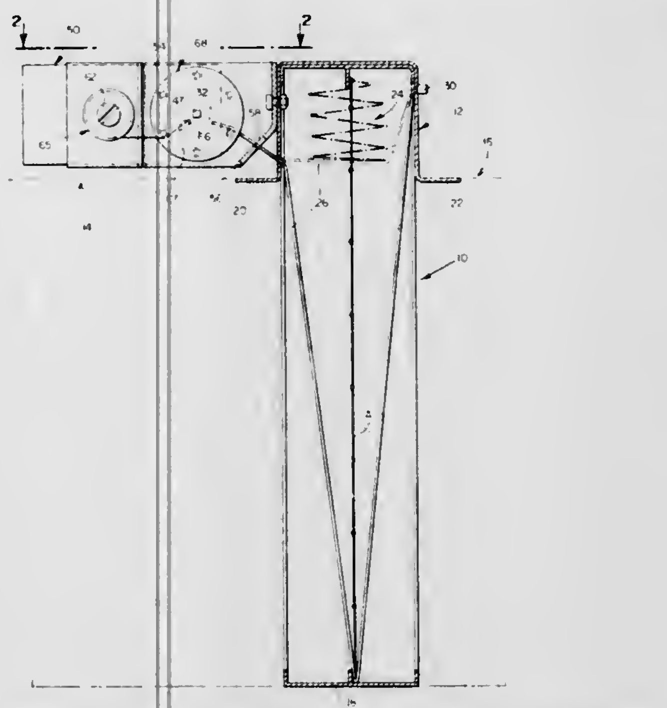
3,866,656
FOLDING BLADE FIRE DAMPER

Francis J. McCabe, P. O. Box 181, Buckingham, Pa. 18912

Continuation-in-part of Ser. No. 293,460, Sept. 29, 1972, Pat. No. 3,796,249. This application May 3, 1973, Ser. No. 357,000

Int. Cl. E05f *15/20;* **E06b** *9/204*

U.S. Cl. 160—84 **5 Claims**



1. In a damper having blades movable between a folded and unfolded condition and having a motor operated means connected thereto to move said blades to said folded condition, the improvement comprising: drive means directly connected to the motor operated means to drive said motor operated means in a reverse direction to the movement of said means when folding said blades, said motor operated means comprising a motor and gear train system, said drive means being directly connected to said gear train system to overcome the frictional resistance of that gear train system to allowing the blades to move to an unfolded condition, said motor operated means having a spool connected to a flexible member disposed about said blades to move said blades to a folded condition upon rotation of said spool in one direction, said drive means being directly connected to said spool to rotate said spool in the opposite direction, and wherein the blades create a tension in said flexible member which is resisted by the frictional forces of said gear train system, and wherein said drive means rotates said spool to reduce the tension in said flexible member to thereby allow said blades to move to an unfolded condition.

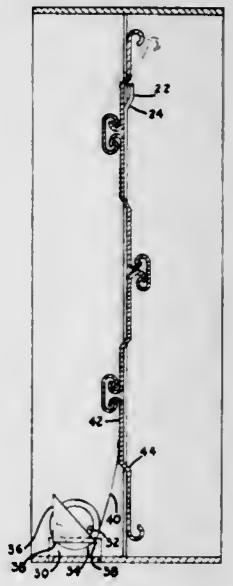
3,866,657
FIRE DAMPER

Francis J. McCabe, Hollow Horn Rd., Erwinna, Pa. 18902

Division of Ser. No. 192,006, Oct. 26, 1971, Pat. No. 3,814,165. This application Sept. 12, 1973, Ser. No. 396,392

Int. Cl. E05d *7/10*

U.S. Cl. 160—181 **2 Claims**



1. In a fire damper having a frame and a plurality of blades interconnected for movement between a folded and unfolded condition, the improvement comprising: support means integral with said frame for retaining, supporting and permitting articulation of one of said blades; said blade being z-shaped and including a web portion; said support means comprising a plurality of flanges extending inwardly from opposite sides of said frame, each of said flanges being notched in a manner creating a tab, said notches receiving said web portion.

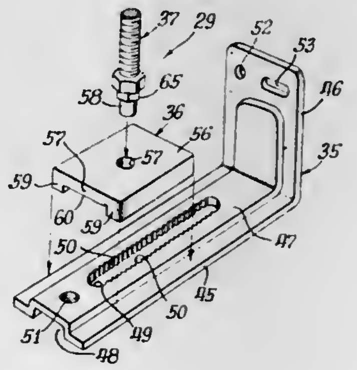
3,866,658
PIVOTAL SUPPORT AND GUIDE HARDWARE FOR FOLDING DOORS

Lester L. Smith, 230 W. Monroe St., Suite 2040, Tucson, Ariz. 60606

Filed Jan. 28, 1974, Ser. No. 436,961

Int. Cl. E05d *15/26*

U.S. Cl. 160—206 **13 Claims**



1. A hardware assembly for pivotally supporting hingedly interconnected folding door panels mounted in a door opening defined by an overhead horizontal lintel, a pair of vertical

side jamb members and a floor, comprising: an elongated track mountable on and beneath the lintel and having a lengthwise extending guide slot opening inwardly of the lower face thereof; an upper pivot block mountable within said track and having a pivot socket therein communicating with said guide slot and means for anchoring said upper pivot block at selected locations along said track laterally inward of one of said jamb members, a lower pivot block having a second pivot socket formed inwardly of its upper face, a lower pivot bracket having an elongated floor engaging arm provided with means for attaching said bracket to the floor and having an elongated central opening, plural serrated teeth formed along and extending inwardly of the lengthwise opposing edges of said opening, said lower pivot block having an anchor portion depending from and beneath a bottom face thereof for insertion into said elongated opening, said anchor portion having serrated teeth matingly engageable with the serrated teeth of said elongated opening whereby said lower pivot block is positively connected to said floor engaging arm at selected locations along the length thereof, said anchor portion being positioned adjacent one end of said lower pivot block and off center with respect to said second pivot socket therein whereby the same is reversibly positionable in said elongated opening to provide a dual range of positions for interconnecting said lower pivot block with said floor engaging arm.

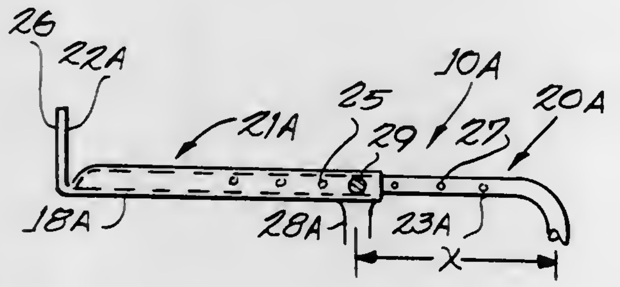
3,866,659
DRAPERY TIE BACK DEVICE

Floyd Kaminski, 8327 S. Kedvale, Chicago, Ill. 60652

Filed July 19, 1973, Ser. No. 380,576

Int. Cl. A47h *1/00*

U.S. Cl. 160—349 D **3 Claims**



1. A drapery tie-back device for use with a flexible tie-back cord for a drape to support the drapery in folds to one side of an opening, such as a window opening, with the flexible tie-back cord passed thereabout and with the drapery pleats projecting in spaced relationship to the surrounding wall, the device comprising, in combination:

a generally U-shaped member having a pair of parallel support arms connected by a bight forming cross member at one end thereof and extending normal thereto;

a cross bar connected between said support arms at a location offset inwardly from said cross member and extending parallel to said cross member;

an opening provided in said cross bar adapted to receive a split-ring element to which one end of the flexible tie-back cord may be attached;

a pair of identical separate bracket members each having an elongated hollow leg member open at its front end and closed at its back end with a mounting ear affixed to the closed back end and extending forwardly therefrom at generally right angles to the axis of said leg member;

said brackets adapted to be mounted to a wall within an end pleat of the draperies with said mounting ear projecting in an opposite direction from each other and with the brackets spaced apart a distance corresponding to the spacing between said support arms of said U-shaped member;

said support arms of said U-shaped member adapted to be telescopically received for sliding movement in associated ones of said leg members such that the cross member is movable selectively as to its distance from said mounting ears;

a series of longitudinally spaced apart and aligned openings extending along each of said support arms from the cross member to the terminal end thereof;

an opening disposed in each of said leg members of said bracket adjacent the top open end thereof and oriented therethrough in a manner to be brought into selective registration with selected ones of said openings in said support arms when said support arms are telescopically received in said brackets;

pin means adapted to pass through said leg member opening and through the selected one of said support arm openings in registration therewith to maintain the selected adjustment of said U-shaped member relative to said bracket in a manner to accommodate a variety of pleat thicknesses of draperies;

apertures disposed in said leg members adapted for receipt of a split-ring to which one end of said tie-back cord may be secured so that the cord may be selectively attached to positions on said bracket leg members;

the mounting ears of said bracket extending at generally right angles to said leg members to provide planar mounting surfaces for engagement with said drapery wall;

said cross member adapted to be disposed within a pleat of said drapery with said distance between said cross member and said mounting ears being adjusted to provide sufficient space to accommodate varying widths of pleats of said drape with a minimum of crushing of said drape pleats in a direction toward said wall by said tie-back cord.

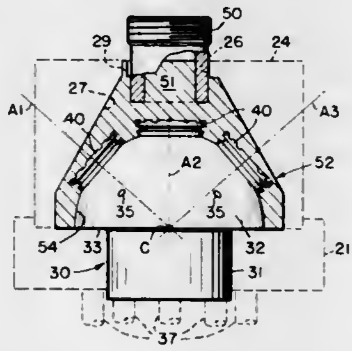
3,866,660
METHOD FOR PRODUCING A LENS BLOCKING TOOL

Charles L. Gill, Dresden, N.Y., assignor to Harris, Beach & Wilcox, Rochester, N.Y. and Angelo Pelino, Rochester, N.Y., a part interest to each.

Filed Dec. 1, 1972, Ser. No. 311,399

Int. Cl. B29d *19/06, 3/00*

U.S. Cl. 164—108 **5 Claims**



1. The method of producing a lens blocking tool containing a plurality of inserts for holding a plurality of lens blanks during surfacing operations on the blanks, comprising

providing a plurality of inserts, each having in one end a circular recess for holding a single lens blank,

mounting said inserts in a mold cavity so that the recessed ends thereof lie on a common spherical surface,

releasably holding the inserts in spaced relation on said spherical surface with a circumferential surface on the recessed end of each insert having line contact with said spherical surface, whereby the recesses in said inserts are closed by said spherical surface and have their axes automatically positioned to extend through the center of curvature of said spherical surface, and

filling the cavity with a fluid molding material to mold a tool body around said inserts and against the spherical surface between said inserts to form a molded tool in which the inserts are embedded with their circular recesses opening on a spherical surface, which is formed on the tool by the first-named spherical surface, whereby when the molded tool is withdrawn from the cavity a lens blank may be mounted in each of the circular recesses that open on the tool surface.

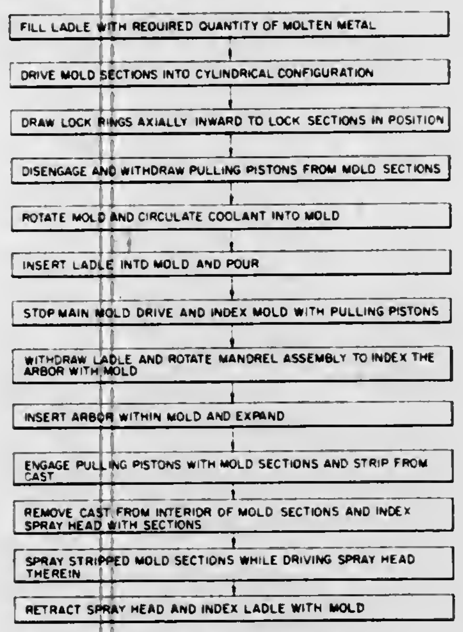
3,866,661
HORIZONTAL CENTRIFUGAL CASTING METHOD

Frederick William Baumann, Scotia; Bernard Ceasar Kaczkowski, Schenectady; George Mowry Rosenberry, Jr., Elnora, N.Y., and William Russell Smith, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 277,920, Aug. 4, 1972, Pat. No. 3,825,057. This application Feb. 26, 1974, Ser. No. 446,054

Int. Cl. B22d *13/10*

U.S. Cl. 164—114 **3 Claims**



FILL LADLE WITH REQUIRED QUANTITY OF MOLTEN METAL
DRIVE MOLD SECTIONS INTO CYLINDRICAL CONFIGURATION
DRAW LOCK RINGS AXIALLY INWARD TO LOCK SECTIONS IN POSITION
DISENGAGE AND WITHDRAW PULLING PISTONS FROM MOLD SECTIONS
ROTATE MOLD AND CIRCULATE COOLANT INTO MOLD
INSERT LADLE INTO MOLD AND POUR
STOP MAIN MOLD DRIVE AND INDEX MOLD WITH PULLING PISTONS
WITHDRAW LADLE AND ROTATE MANDREL ASSEMBLY TO INDEX THE ARBOR WITH MOLD
INSERT ARBOR WITHIN MOLD AND EXPAND
ENGAGE PULLING PISTONS WITH MOLD SECTIONS AND STRIP FROM CAST
REMOVE CAST FROM INTERIOR OF MOLD SECTIONS AND INDEX SPRAY HEAD WITH SECTIONS
SPRAY STRIPPED MOLD SECTIONS WHILE DRIVING SPRAY HEAD THEREIN
RETRACT SPRAY HEAD AND INDEX LADLE WITH MOLD

1. A method of centrifugally casting finned cylindrical structures comprising juxtaposing a plurality of arcuate sections to form a horizontally disposed cylindrical mold, rotating said mold at a predetermined speed, pouring molten material into said mold to centrifugally cast said finned cylindrical structure, registering said cast structure with a horizontally disposed arbor, obtaining relative movement between said arbor and said cylindrical structure to insert said arbor within said structure, expanding at least a portion of said arbor into contact with the interior surface of said cast structure, applying a radially outward force to each said arcuate section to strip said section from said cast cylindrical structure, removing said cast structure from the interior of said stripped mold sections and applying a radially inward force to said sections to reassemble said horizontally disposed cylindrical mold for casting a subsequent structure.

3,866,662
METHOD OF CASTING QUIET STEEL IN MOLDS

Robert Klages, Dortmund, and Heinrich Kleeschulte, Dortmund-Barop, both of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Nov. 15, 1972, Ser. No. 306,715

Claims priority, application Germany, Nov. 16, 1971, 2156768

Int. Cl. B22d *27/04*

U.S. Cl. 164—123 **12 Claims**

11. A method of casting quiet steel in a mold which includes:

1. introducing molten steel to be cast into the bottom of the mold to fill the mold;
2. adding carbon-free casting powder on the upper surface of the molten steel when it reaches a level intermediate the top and bottom of the mold;
3. when the steel reaches the desired top level in the mold, instantaneously and completely discharging water on to the liquid slag layer covering the steel, thereby causing the slag layer to solidify and separate from the steel, so that the latter is contacted by the water.

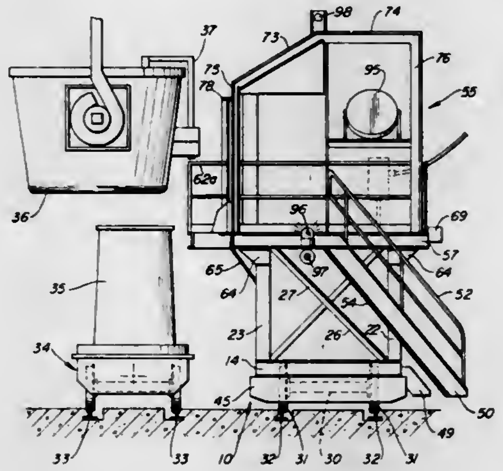
3,866,663
MOBILE PERSONNEL CAR FOR INGOT POURING OPERATIONS

Leland H. Hutton, 2815 Claver Rd., University Heights, Ohio 44118

Filed Feb. 7, 1973, Ser. No. 330,254

Int. Cl. B22c *19/04;* **B22d** *41/12;* **B66c** *6/00*

U.S. Cl. 164—155 **13 Claims**



1. The combination with a car having ingot molds to be filled from a ladle containing molten metal, said car being movable on rails, a mobile personnel car from which the pouring of metal into the molds is controlled, said personnel car being movable on rails independent of said first-named rails in a direction parallel with said first-named rails, said personnel car comprising a lower unit and an upper unit, each having a platform, said upper unit having a side at least partially closed and disposed adjacent said ingot molds and having partially closed ends extending from said side, said ends having openings therein adjacent said side for egress of personnel from the upper unit, said lower unit having stairways mounted at its ends and leading from said openings to points immediately rearwardly of said personnel car and adjacent ground level, said stairways disposed in planes substantially parallel with the ends of said lower unit and inclined in a direction away from said ingot molds, said stairways having guard plates provided therebelow for preventing molten metal from splashing upward therethrough.

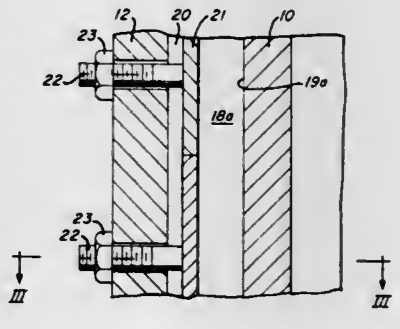
3,866,664
MOLD FOR USE IN CONTINUOUS-CASTING OF METALS

Paul M. Auman, Franklin Township, Westmoreland County; John E. Bower, Jr., Monroeville Borough, Allegheny County, and Hugh E. Pry, North Huntingdon Township, Westmoreland County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed June 1, 1973, Ser. No. 365,872

Int. Cl. B22d *11/00*

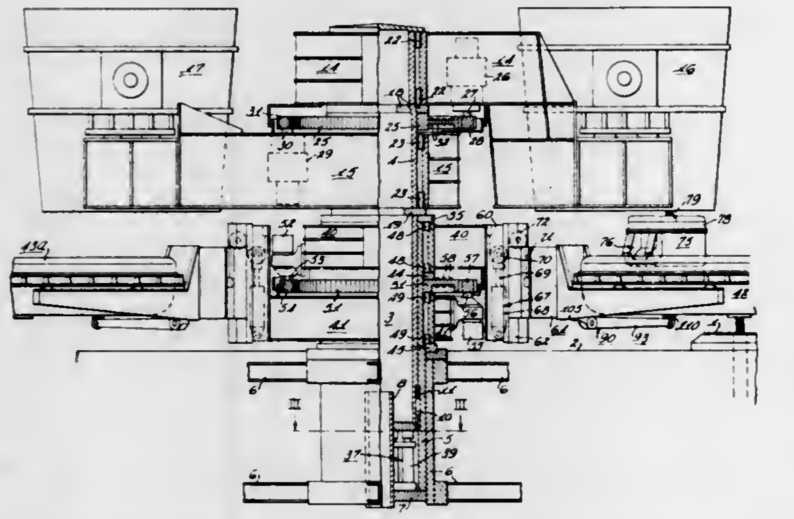
U.S. Cl. 164—283 M **6 Claims**



1. In a continuous-casting mold which includes an open-ended liner of heat conductive metal, and backup plates fas-

tened to the outside faces of said liner, said liner having a series of vertical ribs in its outside faces defining with said backup plates a plurality of parallel unobstructed water-circulation passages, the combination therewith of improved means fastening said backup plates to said liner, said means comprising opposed laterally directed lips formed on certain of said ribs, metal strips inserted in these passages under said lips, the latter ribs defining with said strips additional unobstructed water-circulation passages, studs fixed to said strips and extending through said backup plates, and nuts threadedly engaged with said studs outside said backup plates.

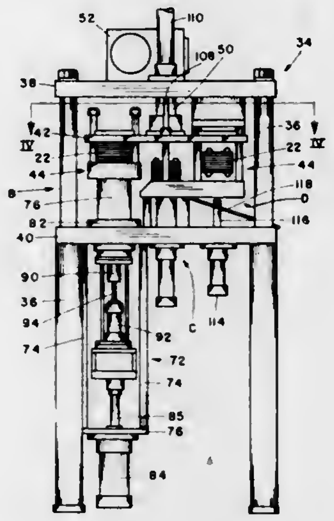
3,866,665
TWIN STRAND CONTINUOUS CASTING APPARATUS WITH A TUNDISH LOAD BALANCING VESSEL
Rudolf Schoffmann, Linz, Austria, assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Jan. 2, 1974, Ser. No. 430,032
Int. Cl. B22d *11/10, 37/00*
U.S. Cl. 164—281 **8 Claims**



1. A twin strand continuous metal casting apparatus comprising:
- a. two casting molds spaced apart in a common horizontal plane;
- b. a vertical arbor assembly horizontally spaced from both molds;
- c. a tundish carrier assembly mounted on the arbor for pivotal movement in a horizontal plane above the molds, said assembly having a hub around the arbor and a pair of forks projecting radially outward from the hub in a common horizontal plane;
- d. a plurality of tundishes, with one tundish mounted on each fork;
- e. a tiltable tundish loading vessel having a pair of discharge spouts projecting from opposite sides of the vessel;
- f. vessel supporting means connected between said forks and carrying the tundish loading vessel transversely above the forks with each of the spouts over one of the tundishes; and
- g. ladle supporting means adapted to carry a ladle containing molten metal and operative to move a ladle of molten metal into a teeming position over the tundish loading vessel to discharge metal thereto for selective flow through both said spouts to both said tundishes.

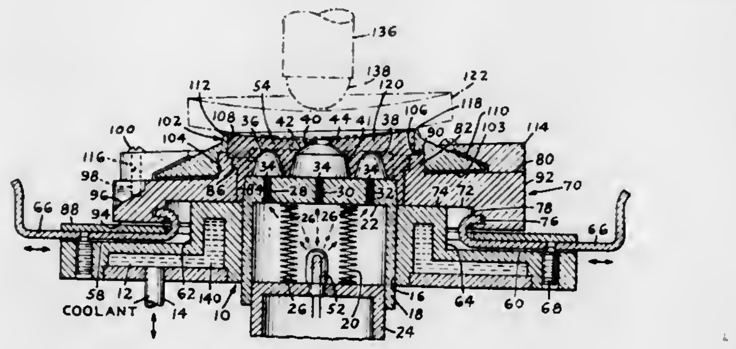
3,866,666
DIE CASTING APPARATUS
William G. Wunder, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.
Division of Ser. No. 294,523, Oct. 3, 1972, Pat. No. 3,826,302.
This application Mar. 20, 1974, Ser. No. 452,961
Int. Cl. B22d *17/04*
U.S. Cl. 164—327 **7 Claims**

1. Die casting apparatus comprising:
- a framework having an upper supporting surface and a lower supporting surface having a plurality of stations;
- indexing means rotatably supported on said upper support surface;
- a plurality of molds having upper and lower mold cavity die sections mounted on said indexing means for sequential movement through a plurality of stations, said lower die section of each of said plurality of molds being mounted for vertical movement with respect to said upper die section and having gate means therein for the entrance of molten, metallic material into said cavities;
- charging means for said mold mounted on said lower support surface, said charging means including a shot sleeve and a piston movable axially in said sleeve;



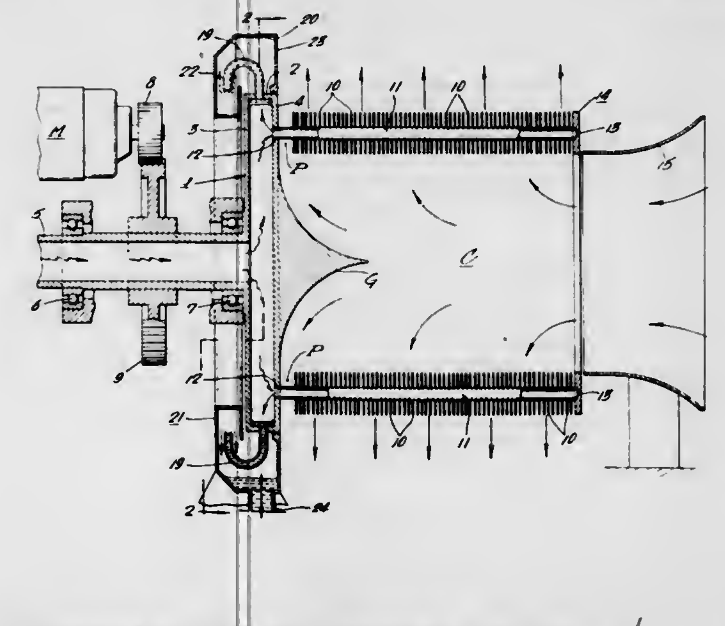
- said indexing means at one of said stations supporting a mold in vertical alignment with said charging means;
- means for moving said shot sleeve into communicating relationship with said lower die member and for shifting said lower die member into clamping engagement with said upper die member;
- means for driving said piston through said shot sleeve to thereby force the molten material therein through said gate means into said mold cavity; and
- means for rotating said indexing means to sequentially position each of said moldss in charge-receiving position over said charging means.

3,866,667
LENS BLOCKING DEVICE
Lloyd F. Knight, Belleair Beach, Fla., assignor to Textron, Inc., Tampa, Fla.
Filed Dec. 10, 1973, Ser. No. 423,448
Int. Cl. B22d *17/24, 19/00*
U.S. Cl. 164—334 **7 Claims**



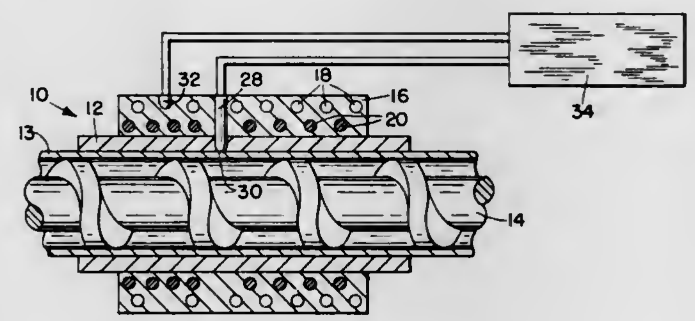
1. A lens blocking device comprising
- a pair of wedge-shaped prism rings, one of which is rotatably adjustable relative to the other about the axis of said one of said rings,
- said rings having contiguous plane faces which are inclined with respect to the axis of said one of said rings,
- means for holding said rings in axial alignment and in rotatable contact with one another,
- indicia on each of said rings for selecting a predetermined amount of prism in diopters by rotating said rings relative to each other,
- a base,
- means for holding said one of said rings in axial alignment and in rotatable contact with said base,
- indicia on said base for selecting a predetermined prism axis by rotating said rings relative to said base,
- means on the distal face of the other of said rings for engaging the surface of a lens blank to be blocked,
- said rings, base and lens blank surface defining a cavity shaped to form a lens block,
- and means for supplying molten metal to said cavity for molding said lens block in said cavity and adhering it to said lens blank, whereby a predetermined amount of prism in diopters and a predetermined meridianal orientation of said prism may be incorporated into siad lens block.

3,866,668
METHOD OF HEAT EXCHANGE USING ROTARY HEAT EXCHANGER
William A. Doerner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 110,478, Jan. 28, 1971, , which is a continuation-in-part of Ser. No. 25,857, April 4, 1970, abandoned. This application Nov. 17, 1972, Ser. No. 307,612
Int. Cl. F28d *11/04;* **F28f** *5/00*
U.S. Cl. 165—1 **2 Claims**



1. In rotary heat exchange apparatus comprising
- an array of a plurality of annular fins disposed coaxially in predetermined spaced parallel relation for rotation as a unit about a common axis, each fin having the same inner radius and the same outer radius and a predetermined inner to outer radii ratio in the range of 0.70 to 0.85,
- a plurality of heat exchange tubes each extending longitudinally through said fins in spaced relation to the common axis and arranged circumferentially thereabout,
- means for introducing a gaseous first fluid interiorly of said array of annular fins,
- means for introducing and withdrawing a second fluid into and from said heat exchange tubes,
- and means for rotationally driving said plurality of fins about said common axis,
- the improvement which comprises rotationally driving the plurality of fins at a predetermined speed of rotation correlated to the axial spacing of said fins and the kinematic viscosity of said gaseous first fluid to provide a Taylor number in the range of 5.0 to 10.0 and operable at said inner and outer radii ratio of the fins to convey and accelerate said gaseous first fluid by viscosity shear forces spirally outward between the fins substantially to the velocity providing optimum heat exchange between the gaseous first fluid and the second fluid in said heat exchange tubes.

3,866,669
EXTRUDER AND TEMPERATURE CONTROL APPARATUS THEREFOR
Robert A. Gardiner, Westerly, R.I., assignor to Crompton & Knowles Corporation, New York, N.Y.
Continuation of Ser. No. 314,887, Dec. 13, 1972, abandoned.
This application Nov. 29, 1973, Ser. No. 420,129
Int. Cl. F28f *27/02*
U.S. Cl. 165—27 **8 Claims**

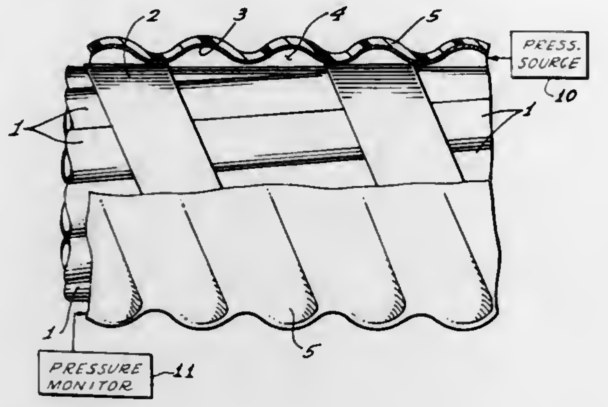


1. An extruder having an extruder barrel and temperature control apparatus comprising:
- a. a shell surrounding at least a portion of an extruder barrel, said shell being made of a material having a substantially higher thermal conductivity than said barrel, said shell having a total heat capacity of between 0.5 and 1.5 times that of said barrel portion;
- b. means for cooling said shell;
- c. means for heating said shell;
- d. a first temperature probe set into said extruder barrel for sensing the temperature of said barrel and providing a proportional current;
- e. a second temperature probe set into said shell for sensing the temperature of said shell and providing a proportional electrical current;
- f. an electrical temperature control unit connected to said first and second probes and effective to selectively activate said heating and cooling means in response to the electrical currents from said first and second probes; and
- g. means for weighting the temperature probe current from said barrel to a greater extent than the temperature probe current from said shell.

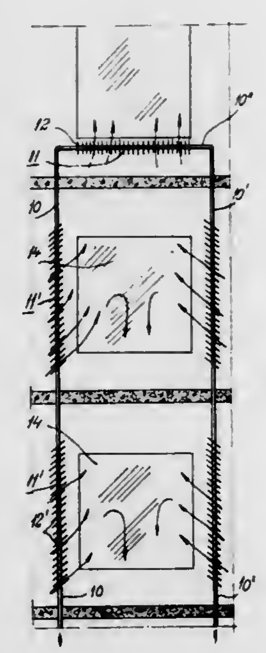
3,866,670
TUBE BUNDLE CABLE
Christoph Cramer; Hans-Martin Schmidtchen; Hans Jurgen Schwartze, all of Osnabrueck, and Bernd Eichmeyer, Lechtingen, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Continuation of Ser. No. 10,502, Feb. 11, 1970, abandoned.
This application Mar. 9, 1972, Ser. No. 233,157
Claims priority, application Germany, Feb. 22, 1969, 1908993
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 **12 Claims**

1. Conduit structure for a plurality of different fluids, at least some of them being pressurized, comprising:
- a plurality of individual tubes disposed in relation to each other to form a cable bundle;
- a longitudinally bent and longitudinally seam welded tape establishing a tubular jacket around the tubes, the jacket being pressure proof by virtue of the longitudinal seam welding and having helical corrugation which defines helical channels inside of the jacket; and
- fluid maintained in the helically corrugated jacket and flowing in and along the helical channels inside of the jacket but in helical, circumscribing flow as to the bundle,

for uniformly providing the fluid in heat exchange contact with the bundle from the periphery thereof to obtain temperature isolation of the tubes of the bundle from the environment.

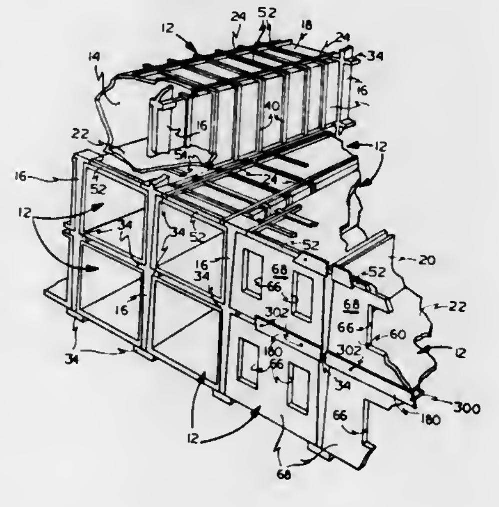


3,866,671
CONVECTORS AND TO SYSTEM EMPLOYING SAME
Sven Runo Vilhelm Gebelius, Fridhemsgatan 27, 112 40 Stockholm K, Sweden
Filed Feb. 28, 1972, Ser. No. 229,701
Claims priority, application Sweden, Mar. 26, 1971, 3949/71
Int. Cl. F24f ***3/00***
U.S. Cl. 165—50 **3 Claims**



1. An air conditioning system for an enclosure comprising:
a. a looped pipe extending along an apertured wall of the enclosure in which heat exchange medium flows in a circuit to and from a temperature regulating unit;
b. an air ventilating shaft for passing a current of ambient air along said wall and into said enclosure;
c. said ventilating shaft being arranged in heat exchange relationship with the return loop of said pipe to precondition the air prior to being passed into the enclosure;
d. said pipe being provided with one set of inclined convector fins for directing conditioned air upwardly through the apertured wall into the enclosure and with oppositely inclined convector fins for directing the ambient air downwardly through said ventilating shaft.

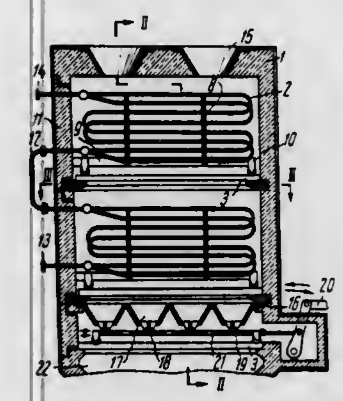
3,866,672
BUILDING
Frank D. Rich, Jr., Darien, and Alexander D. McDonald, Glenbrook, both of Conn., assignors to F. D. Rich Housing Corporation, Stamford, Conn.
Division of Ser. No. 163,274, July 16, 1971, Pat. No. 3,750,366, which is a continuation-in-part of Ser. No. 4,156, Jan. 19, 1970, abandoned. This application Apr. 27, 1973, Ser. No. 355,064
Int. Cl. F24f ***3/00***
U.S. Cl. 165—50 **18 Claims**



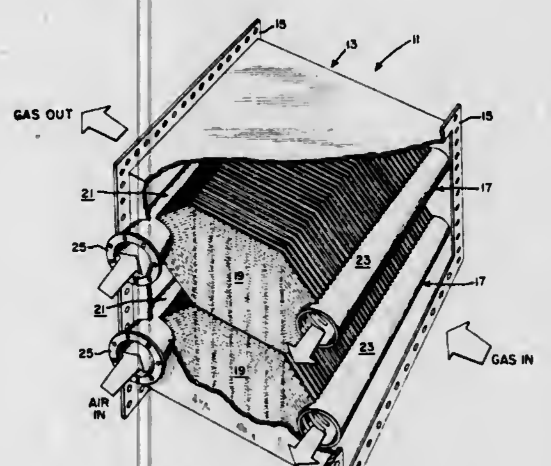
1. A building with a hypocaust type of radiant heating and/or cooling system; comprising: a plurality of columns; a plurality of box modules each enclosing interior building space which is to be heated and/or cooled; means on said columns supporting said modules; said modules each being formed of ceiling, floor and wall plates fabricated separately from said building columns and each having a relatively thin cross-section dimension compared to the interior space enclosed by said box modules, whereby to be an efficient heat radiator and/or radiation absorber for said space; said columns separating a horizontally adjacent pair of modules to define therebetween a vertical air chase covering a majority of the surface area of the confronting wall plates of said horizontally adjacent modules; said means on said columns supporting said modules in vertically spaced relationship to define a horizontal air plenum between a pair of vertically adjacent modules covering a majority of the surface area of the confronting floor and ceiling plates thereof; ribs on the outer surface areas of said module plates, said ribs on adjacent modules not contacting one another, at least some of said horizontal plenums and vertical chases adjacent surfaces of said modules being in communication with each other to form one or more air jackets at least partially surrounding individual modules; a heating and/or cooling plant connected for delivering heated and/or cooled air into said air jackets whereby to be in heat-exchange relationship with said module wall, ceiling and/or floor plates; and means providing an air outlet from said air jackets.

3,866,673
HEAT EXCHANGER FOR COOLING ORE CINDERS
Anatoly Petrovich Pavlov, prospekt Veteranov 35, kv. 39; Vladimir Matveevich Bogomolov, Ligovsky prospekt 63, kv. 19; Felix Borisovich Kupershmidt, ulitsa Radischeva, 32, kv. 44, all of Leningrad; Igor Afanasievich Nechitailo, ulitsa Akademika Pavlova, 25, kv. 17, Gorlovka Donetskoi oblasti; Nikolai Nikolaevich Nosilov, ulitsa Sofii Perovskoi, 3, kv. 4, and Isaak Zalmanovich Levin-Kogan, ulitsa B. Porokhovskaya, 45, kv. 265, both of Leningrad, all of U.S.S.R.
Filed Oct. 16, 1973, Ser. No. 406,922
Int. Cl. F24h ***3/02***
U.S. Cl. 165—120 **1 Claim**

1. A heat exchanger for cooling lumpy material, particularly ore cinders, comprising a housing having an upper portion and a bottom portion; tubular sections located horizontally one above the other in said housing and adapted for passing cooling water; adapters successively connecting said sections to each other; said heat exchanger housing having charging openings in its upper portion; said bottom portion being provided with slot-shaped holes parallel to each other and having their cross section shaped as trapeziums having their smaller base facing downwardly; a perforated plate reciprocably mounted underneath said bottom portion of the heat exchanger being capable of reciprocating motion in a direction perpendicular to the holes in the bottom portion; a strip installed along each hole in said bottom portion and protruding beyond the lower edge thereof and serving for directing the material being cooled to the holes in said perforated plate, when the latter is moving.

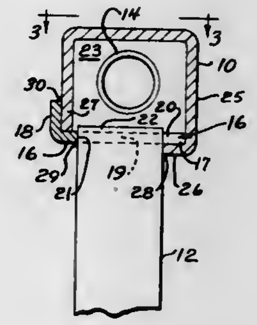


3,866,674
GAS TURBINE REGENERATOR
Salvatore S. Tramuta; James G. Miller; Howard M. Adriance, and Robert W. Barta, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 1, 1973, Ser. No. 402,261
Int. Cl. F28f ***3/12***
U.S. Cl. 165—166 **3 Claims**



1. A heat exchange section for passing a high pressure air flow in a heat exchange relation with a high temperature gas flow comprising:
- a tubular inlet and outlet plenum disposed in said housing, said tubular plenums having at least one open end for receiving and discharging said high pressure air flow, a plurality of axially spaced, circumferentially elongated slots formed in said inlet and outlet plenums, said plenums disposed in spaced, generally parallel relationship with the slots of one plenum generally facing and axially aligned with the slots of the other plenum;
- a plurality of discrete high pressure air passage means for directing high pressure air flow from said inlet plenum to said outlet plenum and for transferring heat thereto from said high temperature gas flow passing through said housing, said means extending between and interconnecting said inlet and outlet plenums and arranged in generally spaced parallel relationship and in generally parallel flow relationship to said gas flow with each said means comprising a pair of closely spaced generally parallel plates joined together at their peripheral edges so as to define an air passageway therebetween and formed with an open slot at opposite ends for flow into and out of said air passageway, each said passage means having one open end inserted into a slot of one plenum and joined thereto and the other open end inserted into the corresponding axial slot of the other plenum and joined thereto so as to form a gas passageway between each pair of high pressure passage means, whereby said passage means are connected to each other through and supported exclusively by said tubular plenums so as to permit removal and replacement of an individual one of said passage means and to reduce thermal stressing of said passage means.

3,866,675
METHOD OF MAKING A HEAT EXCHANGER AND A HEAT EXCHANGER
Melvin C. Bardon, and Norman G. Bauernfeind, both of Racine, Wis., assignors to Modine Manufacturing Company, Racine, Wis.
Filed Aug. 3, 1973, Ser. No. 385,536
Int. Cl. F28d ***7/06;*** **B23p** ***15/26***
U.S. Cl. 165—173 **6 Claims**



2. The heat exchanger of claim 1 wherein said other plate edge portion is shaped to provide a flange which is positioned to overlap said opposite tank edge portion and said one tank edge portion is shaped to provide a flange which is positioned over said slots at their open ends to abut against said tubes.

3. The method of making a heat exchanger having a tank and spaced tubes, comprising: providing a header plate having a pair of opposite side edge portions with spaced slots extending inwardly from one plate edge portion to short of the other plate edge portion, each slot having an open end at said one plate edge portion; providing a plurality of fluid flow tubes each having a tube end; positioning a tube end snugly in each said slot; positioning a metal tank part sheet having opposite edge portions on said header plate to enclose said tube end with one tank edge portion covering and closing said slot open ends and the other tank edge portion contacting said other plate edge portion, the intermediate portion of said tank part sheet between said edge portions being spaced from said tube ends to define a fluid tank means with said header plate; and joining together said tube ends, said tank edge portions and said header plate.

5. The method of claim 3 wherein said one tank edge portion is shaped to provide a flange which is positioned over said slots at their open ends to abut against said tubes.

3,866,676

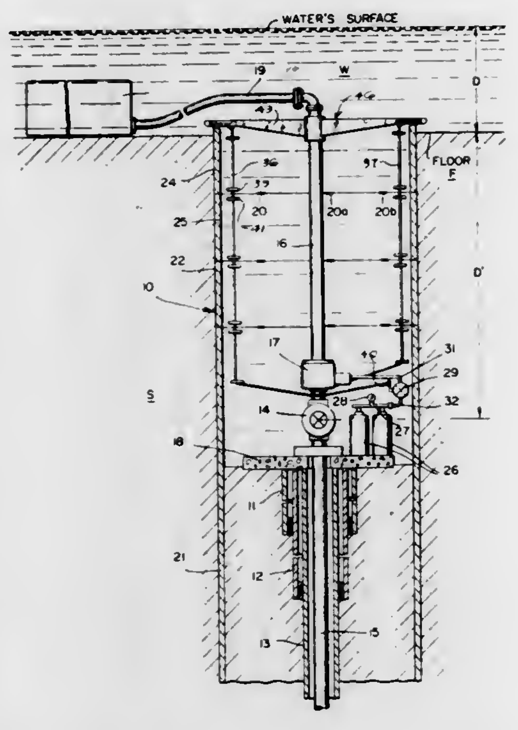
PROTECTIVE STRUCTURE FOR SUBMERGED WELLS

Robert B. Burns, Long Island, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed May 23, 1973, Ser. No. 363,289

Int. Cl. E21b *43/01*

U.S. Cl. 166—.5 **10 Claims**



1. Well structure for a hydrocarbon fluid producing well submerged beneath a body of water subject to moving ice masses and other floating objects which might scour the substrate, said well including;

a flow line embedded into said substrate beneath said body of water to conduct hydrocarbon fluid from a subterranean reservoir,

a caisson surrounding the upper end of said flow line, extending downwardly into the substrate from the surface of the latter, and defining a cavity,

flow control means connected into said flow line, being operable to regulate the fluid passage through the latter, and being disposed at the floor of said cavity a predetermined distance to avoid contact with substrate scouring ice masses,

said flow control means including a remotely operated flow shut off means, and a trigger mechanism connected to said caisson and to said flow shut off means respectively, whereby to actuate the latter and discontinue said fluid flow at such time as said caisson is damaged by scouring action of a moving ice mass.

3,866,677

UNDERWATER CONNECTION APPARATUS

Benton F. Baugh, Houston, Tex., assignor to Vetco-Offshore, Inc., Houston, Tex.

Filed Aug. 7, 1973, Ser. No. 386,431

Int. Cl. E21b *33/035, 43/01*

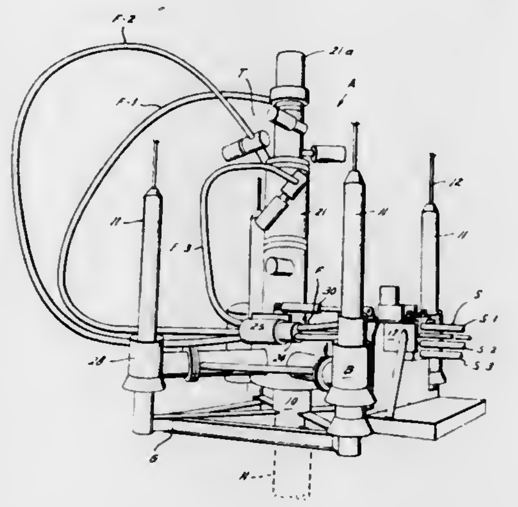
U.S. Cl. 166—.6 **39 Claims**

1. Apparatus for selectively making fluid connection to a well drilled into a formation underlying a body of water, comprising:

a well fluid flow control network for being positioned at a well drilled in a body of water, said well fluid flow control network including first flowline means for transferring well fluid outwardly of said well;

second flowline means for extending from a remote point to said well, said second flowline means being lowered into the body of water for connection with said first flowline means such that said well fluid is transferable through said well fluid flow control network and said first and second flowline means to a remote point;

wireline positioning means for mounting at said well and utilizing wireline apparatus to move said second flowline means into a position of initial attachment with said wireline positioning means, in which position said second flowline means is partially aligned with said first flowline means;



remotely operable power means for mounting at said well for engaging and moving said second flowline means from said position of initial attachment to a locked position in said wireline positioning means and for moving said wireline positioning means and said second flowline means to a position in which said second flowline means is substantially completely aligned with said first flowline means for connection therewith; and

flowline connection means for operatively connecting said first and second flowline means whereby well fluid is transferable from said well and through said first and second flowline means.

3,866,678

APPARATUS FOR EMPLOYING A PORTION OF AN ELECTRICALLY CONDUCTIVE FLUID FLOWING IN A PIPELINE AS AN ELECTRICAL CONDUCTOR

John D. Jeter, Dallas, Tex., assignor to Texas Dynamatics, Inc., Dallas, Tex.

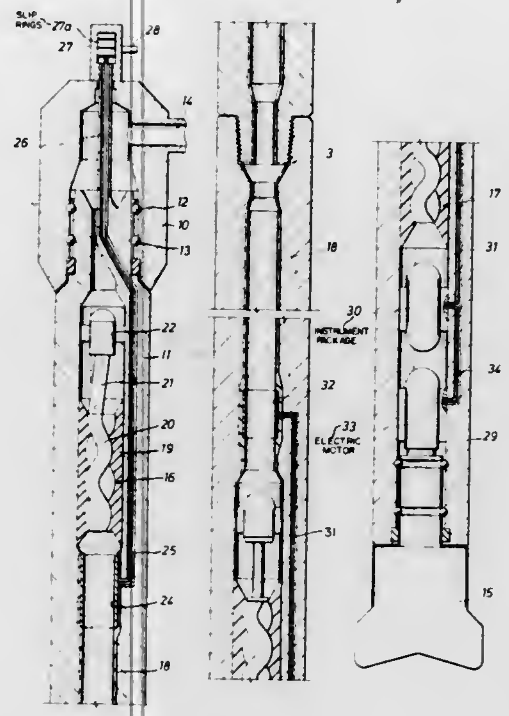
Filed Mar. 15, 1973, Ser. No. 341,771

Int. Cl. E21b *7/00, 41/00;* **H01b**

U.S. Cl. 166—66 **5 Claims**

2. Apparatus for conducting electrical energy through a well bore comprising a pipe string located in a well bore having a coating of non-conducting material on the inner surface thereof through which an electrically conductive fluid flows

and insulating means located in the pipe string at spaced points through which the conductive fluid can flow for electrically insulating the fluid in the pipe string between the spaced insulating means from the fluid on the opposite sides thereof.



3,866,679

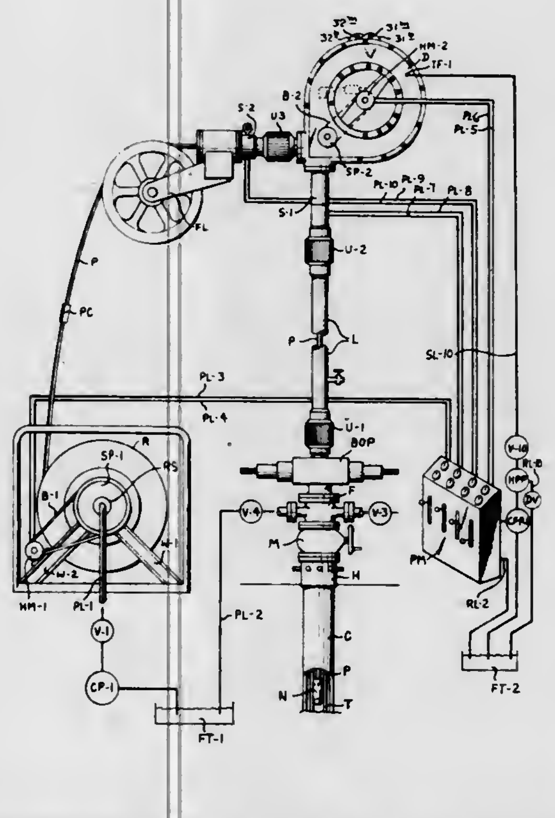
APPARATUS FOR INSERTING FLEXIBLE PIPE INTO WELLS

Tibor Laky, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 25, 1972, Ser. No. 300,831

Int. Cl. E21b *17/00, 33/03*

U.S. Cl. 166—77 **44 Claims**



1. Apparatus for injecting an elongate soft flexible conduit into a well under pressure including: drive means connected to the upper end of the well in fluid communication therewith; seal means connected with the drive means in fluid communication therewith and sealing the drive means and the well bore against the escape of well fluids from the well bore through the drive means past the seal means; means in said drive means engaging said soft flexible conduit for drawing the same through the seal means into the drive means for passage from the drive means into the well bore; and fluid pressure supply means connectable with the end of said elongate flexible conduit exteriorly of the well for maintaining fluid under pressure within said conduit to prevent said conduit from collapsing as it is moved into the well against the pressure of well fluids confined in said well.

3,866,680

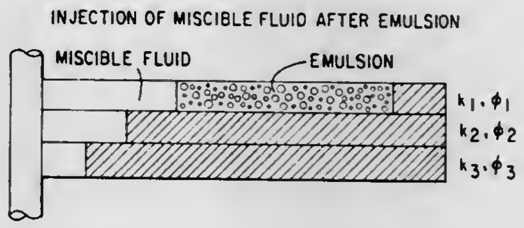
MISCIBLE FLOOD PROCESS

Dwight L. Dauben, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed July 9, 1973, Ser. No. 377,879

Int. Cl. E21b *43/22*

U.S. Cl. 166—273 **6 Claims**



1. In a method for the recovery of crude oil from an underground deposit thereof by a miscible flooding process and wherein such deposit exhibits a substantial degree of reservoir heterogeneity insofar as concerns the permeability and porosity thereof, said deposit being penetrated by an injection well and a production well, the improvement comprising:

1. introducing via said injection well an oil-in-water emulsion in which the diameter of the dispersed phase droplets is approximately the same as the diameter of the pores in the more permeable portion of said deposit whereby said emulsion primarily penetrates said more permeable portion;
2. injecting a micellar solution via said injection well into said deposit; and
3. displacing said solution toward said producing well to recover crude oil therefrom.

3,866,681

METHOD AND APPARATUS FOR ESTABLISHING A PACKER

Billie J. Shirley, P.O. Box 20648, Oklahoma City, Okla. 73120

Filed Sept. 10, 1973, Ser. No. 395,749

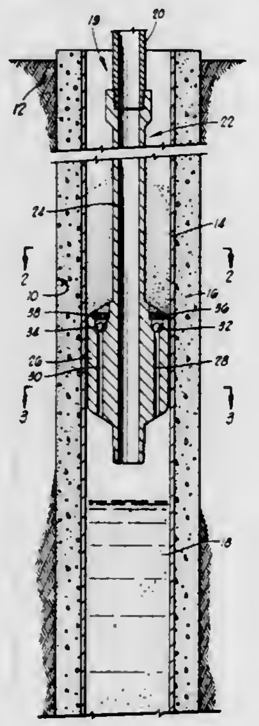
Int. Cl. E21b *33/12, 33/13*

U.S. Cl. 166—285 **4 Claims**

1. A method for establishing a packer around a tubing in a down hole location comprising:

forming an obstruction around the well bore contained-tubing in the annulus therearound at the location where the packer is to be formed;
moving a pumpable slurry of sand and liquid down through the tubing to a point below said obstruction; then
diverting the slurry upwardly through passageways in said obstruction into the annulus above said obstruction; and
allowing the sand to settle by gravity down upon the obstruction to fill a portion of the annulus.

3. A packer for use in packing around a tubing string in a well bore comprising:



a rigid supporting and obstructing structure which includes an enlarged body portion secured in the tubing string and having downwardly and outwardly sloping shoulders at the upper side thereof, said enlarged body having a bore therethrough communicating with the bore of the tubing string and further having at least one fluid passageway extending therethrough from the lower side to the upper side thereof; and
a body of laterally supported sand resting on top of the obstructing structure.

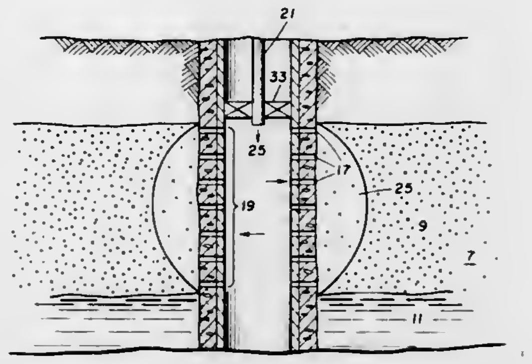
3,866,682
PROCESS FOR CONTROLLING WATER AND GAS CONING

Lloyd G. Jones, and Nathan Stein, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Oct. 12, 1972, Ser. No. 297,174
Int. Cl. E21b *33/00*

U.S. Cl. 166—285 5 Claims

1. A method of controlling the water-petroleum ratio of fluids produced via a cased well from a subsurface formation having a petroleum-bearing portion and an underlying water-bearing portion, said cased well having an open production interval communicating with said petroleum-bearing portion, comprising:

a. injecting via said open production interval into said petroleum-bearing portion a first fluid barrier-forming material;
b. injecting via said open production interval into said petroleum-bearing portion a second fluid to displace said first fluid barrier-forming material into the shape of a hollow frustum having the small end of said hollow frustum closed about said well at about the interface between said petroleum-bearing portion and said water-bearing portion;



c. maintaining said first fluid barrier-forming material in the shape of said hollow frustum to form a barrier shaped as a hollow frustum; and
d. producing petroleum from said petroleum-bearing portion via said open production interval of said well.

3,866,683
METHOD FOR PLACING CEMENT IN A WELL

George P. Maly, Newport Beach, and Paul W. Fischer, Whittier, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Feb. 1, 1974, Ser. No. 438,526
Int. Cl. E21b *33/13*

U.S. Cl. 166—292 11 Claims

1. A method for placing cement in a well drilled with a drilling mud containing agents that deleteriously affect the setting of the cement, which comprises:

displacing the drilling mud from the well with a preflush fluid comprising a highly gelled aqueous suspension of a hydrated clay that is substantially free of the deleterious cement retarding agents and that has a density at least equal to that of the drilling mud;
pumping a cement slurry into the well;
displacing the cement slurry to a desired location in the well with a displacing fluid comprising a highly gelled aqueous suspension of a hydrated clay that is substantially free of the deleterious cement retarding agents; and
permitting said cement to set in said well.

3,866,684
METHODS FOR SELECTIVE PLUGGING

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.
Division of Ser. No. 270,244, July 10, 1972, Pat. No. 3,811,508. This application Apr. 1, 1974, Ser. No. 456,781
Int. Cl. E21b *33/13*

U.S. Cl. 166—294 2 Claims

1. A method for selectively plugging water-rich strata of a relatively high-temperature subterranean formation containing strata which are water-rich and other strata which are oil-rich, and said strata having at least one borehole therein, comprising:

providing an aqueous composition comprising
  a water-soluble soap of a first, high-molecular-weight, water-insoluble acid, and
  an ester of a second acid, said second acid being a stronger acid than said first acid;
passing said composition into said borehole;
injecting said composition into said formation at a pressure sufficient to overcome the natural formation pressure;
hydrolyzing said ester in said high-temprature formation to form its alcohol and second acid constitutents, and thence reacting said second acid with said soap to produce as a reaction product, said first, high-molecular-weight acid, said reaction product being effective to greatly reduce the permeability of said water-rich strata, over a relatively long distance and over a relatively long period of time.

3,866,685
METHODS FOR SELECTIVE PLUGGING

Robert H. Friedman, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.
Division of Ser. No. 270,244, July 10, 1972, Pat. No. 3,811,508. This application Apr. 1, 1974, Ser. No. 456,782
Int. Cl. E21b *33/13*

U.S. Cl. 166—294 4 Claims

1. A method for selectively plugging water-rich strata of a subterranean formation containing strata which are water-rich and other strata which are oil-rich, and said strata having at least one borehole therein, comprising:

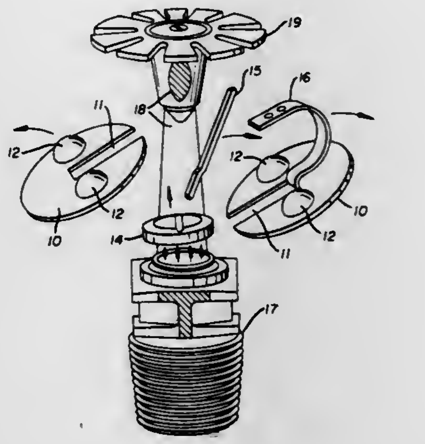
providing an aqueous composition of a metal salt suitable for providing available metal ions;
injecting said composition through said borehole into said formation;
providing a dilute aqueous composition of a water-soluble oil-insoluble metal soap of a high-molecular-weight acid; thence passing said soap composition into said borehole; injecting said soap composition into said formation at a pressure sufficient to overcome the natural formation pressure;
reacting said soap with the metal ions previously injected into said formation, to form as a reaction product, a second metal soap of said acid, said second metal soap being water-insoluble and oil-soluble, said reaction product being effective to greatly reduce permeability of said water-rich strata, over a relatively long distance and over a relatively long period of time.

3,866,686
FUSIBLE LINK FOR FIRE SPRINKLERS

Earl M. Goodsell, Jr., Hudson, and Theodore Vorkapich, Brunswick, both of Ohio, assignors to American La France Inc., Willoughby, Ohio
Filed June 10, 1974, Ser. No. 478,155
Int. Cl. A62c *37/12*

U.S. Cl. 169—39 6 Claims

1. A fusible link comprising a pair of metal members positioned in superimposed relation and soldered to one another, each of the metal members having projecting registering configurations arranged to prevent the metal members from sliding sidewardly with respect to one another and each of the metal members having a slot formed therein from one side thereof, the respective positioning of the metal members being reversed in assembly so that the slot in one of said members

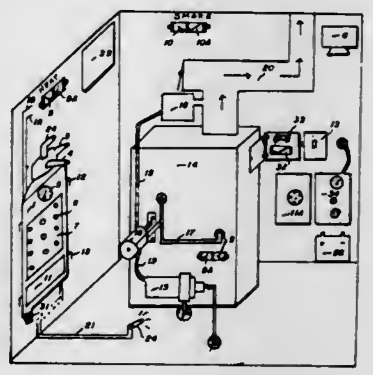


extends to one side and the slot in the other of the metal members extends toward the opposite side of the fusible link and so that the inner ends of the slots register and form an opening through said metal members.

3,866,687
AUTOMATIC FIRE EXTINGUISHER MEANS

Philip M. Banner, 28 Oxford Rd., Massapequa, N.Y. 11758
Continuation-in-part of Ser. No. 217,098, Jan. 12, 1972, abandoned. This application Apr. 18, 1973, Ser. No. 352,127
Int. Cl. A62c *35/04*

U.S. Cl. 169—61 27 Claims

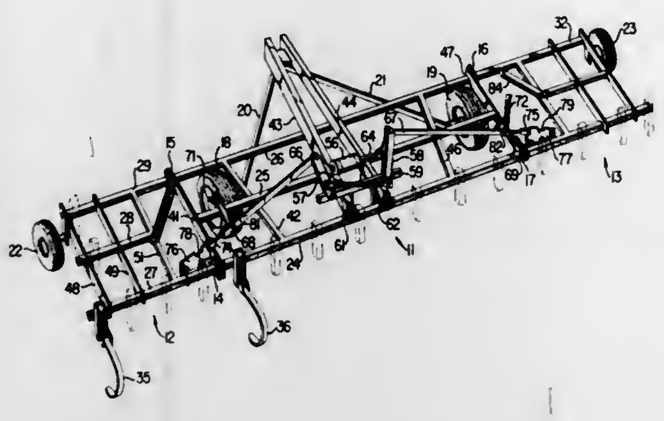


1. An automatic fire extinguisher system of the type used for fire, heat, smoke and explosion control in an area to be protected containing a plurality of hazardous zones, comprising a tank containing a fire extinguishant under pressure, a plurality of nozzles mounted on said tank, each nozzle directed towards a different hazardous zone,

an electrically actuated valve associated with each nozzle for controlling the flow of extinguishant through said nozzles, conduit means connecting said tank with said nozzle, a separate condition responsive means associated with each nozzle for detecting an abnormal condition in each hazardous zone, control circuit means connected between said condition responsive means and said valves for actuating each of said valves individually in response to detection of an abnormal condition by each of said condition responsive means and maintaining the flow of extinguishant for as long as said condition responsive means detects the abnormal condition, and automatic communication means activated by said control circuit for sending out a warning signal in response to a hazardous condition.

3,866,688
FIELD CULTIVATOR WING LIFT

Loren F. Hansen, Ankeny, Iowa, assignor to Koehring Company, Milwaukee, Wis.
Filed Dec. 13, 1972, Ser. No. 314,679
Int. Cl. A01b *63/00*
U.S. Cl. 172—311 **7 Claims**

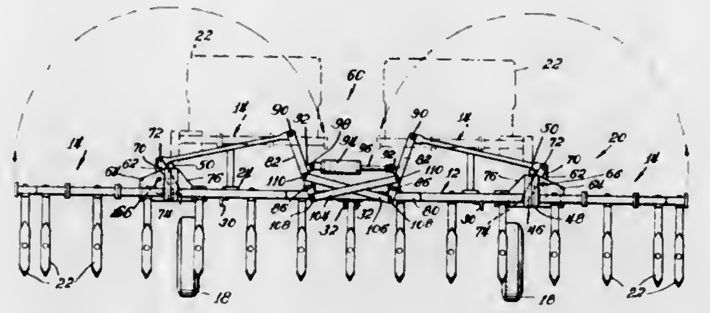


1. An agricultural implement comprising:
- A. a central frame;
- B. a pair of wing frames;
- C. pivot means connecting each of said wing frames to said central frame in side-by-side relationship for movement of said wing frames relative to said central frame between a working position substantially in horizontal alignment with said central frame, and a transport position obliquely over said central frame; and
- D. power means connected between said central frame and said wing frames including a single piston power source and a pair of linkage systems joined together for simultaneous movement for moving said wing frames from said working position to said transport position and for moving said wing frames from said transport position to said working position, said linkage systems comprising:
  - 1. a pair of upwardly extending arms spaced longitudinally on, and pivotally connected at their lower ends to, said central frame, said arms being pivotally connected to said piston power source;
  - 2. means interconnecting said arms for causing said arms to move simultaneously; and
  - 3. a pair of connectors, one of which connects one of said arms with one wing frame and the other of which connects the other of said arms with the other wing frame, each of said connectors comprising:
    - a. an elongated rigid member pivotally connected at one end to one of said arms and pivotally connected at the other end to
    - b. a rigid linking member pivotally connected to one of said wing frames,
    - c. a latch pivotally connected to at least one of said elongated and linking rigid members, and
    - d. means on said wing frame for engaging said latch when said wing frame is in the transport position.

3,866,689
WING FRAME CONTROL MECHANISM FOR GROUND WORKING IMPLEMENT

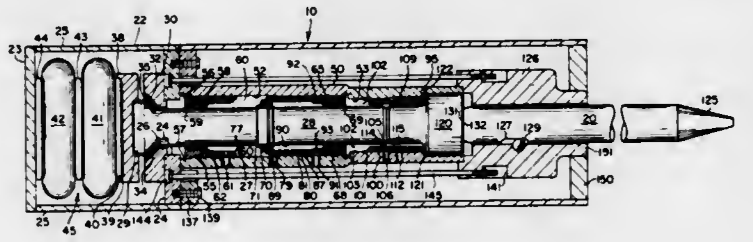
Charles W. Anderson, Kewanee, Ill., assignor to Kewanee Machinery & Conveyor Co., Kewanee, Ill.
Filed Jan. 31, 1973, Ser. No. 328,472
Int. Cl. A01b *15/14*
U.S. Cl. 172—311 **7 Claims**

1. In a ground working implement having a main frame and a pair of wing frames supported by the main frame on opposite sides thereof for pivotal movement about horizontal axes between operating positions wherein the wing frames extend outwardly from the main fame in substantially planar alignment therewith and non-operating positions raised 180° from their operating positions wherein the wings are disposed horizontal and at rest on support members of the main frame; the combination therewith of control means comprising first control arms pivotally connected to each of the wing frames, second control arms pivotally connected to the main frame inwardly of and below said horizontal axes on which the wing frame pivotally move, third control arms pivotally connected to the main frame inwardly of said second control arms, each said first control arms being pivotally connected to one of said second control arms, and a control link pivotally interconnected between a respective one of said pivotally connected first and second control arms and a respective one of the third control arms, actuating means interconnecting said third control arms and operatively movable between first and second positions to effect selective movement of the wing frames through pivoting of said control arms and links, and cross linkage means interconnecting said third control arms for effecting simultaneous equal and opposite pivotal movements of the wing frames through substantially 180° between their operating and non-operating positions upon said actuating means moving between the first and second positions.



3,866,690
HYDRAULICALLY POWERED IMPACT DEVICE

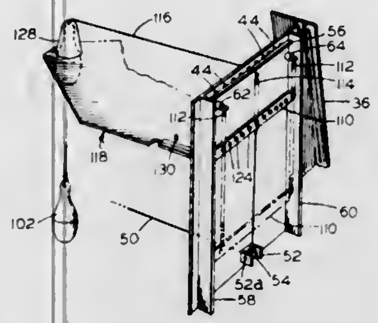
Raymond E. Lance, Fort Worth, and Ronald N. James, Arlington, both of Tex., assignors to Construction Technology, Inc., Grand Prairie, Tex.
Filed Sept. 25, 1972, Ser. No. 292,161
Int. Cl. B25d *9/04*
U.S. Cl. 173—15 **17 Claims**



1. The hydraulic device comprising:
means forming a cylinder bore,
a reciprocable member carrying a piston reciprocally disposed in the bore, and
a valve member reciprocally disposed in the bore and adapted to sealingly engage the piston and divide the bore into first and second expansible fluid chambers such that when high pressure fluid is introduced to the first fluid chamber the combined fluid forces acting on the piston and the valve member will drive said reciprocable member against a load,
said valve member being positioned between said first chamber and said piston and having a first surface exposed to the high pressure fluid of said first chamber and a second surface abutting the piston to transfer the fluid force on the first surface to the piston thereby supplementing the area of said piston to aid in moving said reciprocable member against the load, and
means for separating the valve member from the piston after the load has been driven a distance to bypass fluid in the first expansible fluid chamber around the piston as the load returns the piston.

3,866,691
AUTOMATIC PINSETTING BOWLING GAME

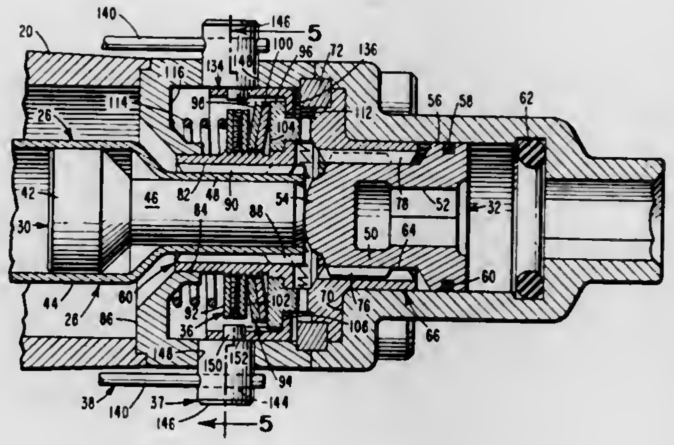
Richard Freeman, Manchester, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Sept. 4, 1973, Ser. No. 394,519
Int. Cl. A63d *5/08*
U.S. Cl. 273—44 **8 Claims**



1. A bowling game adapted to be played by rolling a bowling ball into engagement with a plurality of bowling pins comprising:
- a. a housing assembly including a front housing, a rear housing, and a longitudinally extending substantially planar playing surface having one end thereof connected to said front housing and the other end thereof connected to said rear housing;
- b. a plurality of bowling pins supported on said housing assembly for movement into and out of engagement with said playing surface;
- c. automatic pinsetting means including reset means having a first operating condition and a second operating condition, and control means operatively connected to said reset means;
- d. said reset means including first magnetic means supported on said playing surface, second magnetic means supported on said bowling pins, a plurality of cord-like members each having one end thereof attached to a corresponding one of said plurality of bowling pins, biasing means including a plurality of resilient first members each having one end thereof secured to the other end of a corresponding one of said plurality of cord-like members, a support brace having the other end of each of said resilient first members attached thereto, and stabilizing means comprising a plurality of resilient second members having one end thereof affixed to said rear housing and the other end thereof connected to said support brace for supporting said support brace in spaced relation to said rear housing for movement relation thereto between a first position which corresponds to said first operating condition of said reset means and a second position which corresponds to the second operating condition of said reset means, said stabilizing means being further operable to stabilize the movement of said support brace in moving between said first and second position thereof; and
- e. control means connected to said control brace and including manually operable means supported on said housing assembly so as to be externally accessible, said control means being operable in response to actuation of said manually operable means to cause said support brace to move between said first position thereof, wherein said plurality of resilient first members of said biasing means and said plurality of resilient second members of said stabilizing means are in an extended condition thereby placing said reset means in said first operating condition thereof and said second position of said support brace wherein said plurality of resilient first members of said biasing means and said plurality of resilient second members of said stabilizing means are in a substantially relaxed condition thereby placing said reset means in said second operating condition thereof.

3,866,692
POWER TOOLS

Charles R. Stelljes, Fayetteville, N.Y., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Feb. 2, 1973, Ser. No. 328,916
Int. Cl. B25d *11/12*
U.S. Cl. 173—48 **8 Claims**



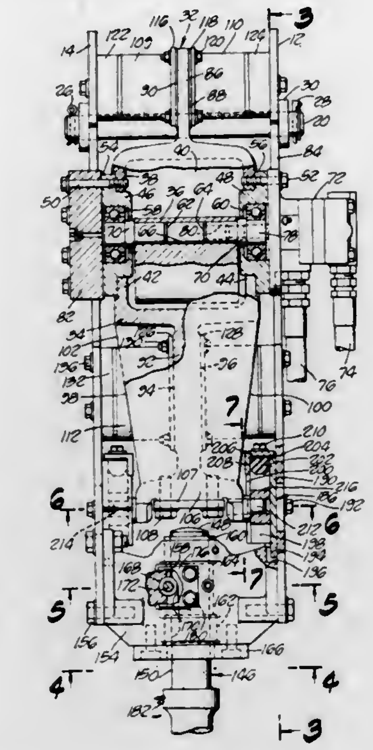
1. A power driven device, comprising: a casing; a tool holder rotatably mounted in said casing; means which can be cycled through impacting and return strokes for imparting axial impacts to a tool mounted in said tool holder; means including a driving member and a driven member having means providing a drive connection therebetween for so connecting said impact imparting mechanism to said tool holder that said mechanism rotatably indexes said tool holder and the tool mounted therein during one of the strokes in each cycle thereof but does not effect rotation of the tool holder in the other of said strokes; and means selectively operable to effect a relative displacement between said driving and driven members which will interrupt the drive connection therebetween so that said tool can be axially impacted without rotating it, said driven member being connected to said tool holder for rotation therewith and being axially fixed relative to said casing, said tool holder and said driving member being axially movable relative to driven member, the means for connecting the impact imparting mechanism to said tool holder including means biasing said driving member toward said driven member to complete the drive connection therebetween, and the means for interrupting said drive connection being arranged to move said driving member away from said driven member against the force exerted by said biasing means.

3,866,693
VIBRATORY IMPACT HAMMER

Bernard A. Century, Cleveland Heights, Ohio, assignor to Allied Steel & Tractor Products Incorporated, Cleveland, Ohio
Filed June 11, 1973, Ser. No. 368,463
Int. Cl. B25d *11/06*; F16h *33/18*
U.S. Cl. 173—49 **32 Claims**

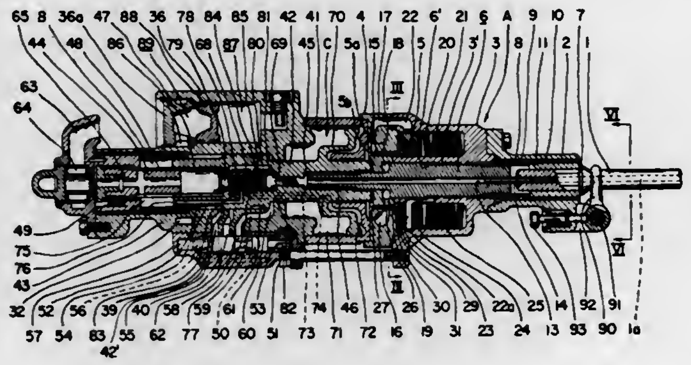
1. An impact force producing apparatus, comprising
a support frame;
an impacting member resiliently mounted on said frame for relatively free vibrational movement thereof;
a plurality of resilient elements, each resilient element being attached at one position thereof to said support frame and at a second position thereof to said impacting member;
vibration drive means operably mounted on said impacting member, said drive means being positioned to induce straight line motion in said impacting member at one

location on said impacting member; and
an impact transmitting surface located on said impacting member at the point on said impacting member where straight line motion is experienced.



3,866,694
ROCK DRILL

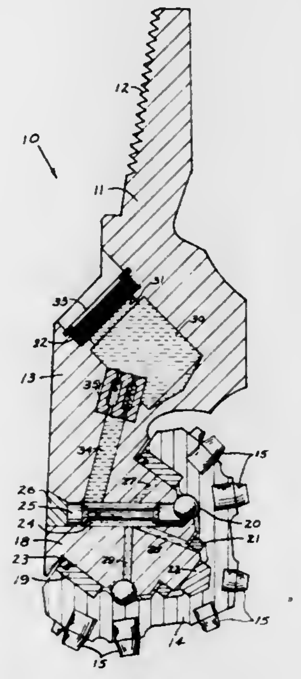
Michio Motokura, Osaka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed July 13, 1973, Ser. No. 379,075
Claims priority, application Japan, July 14, 1972, 47-69886; July 14, 1972, 47-69888; July 14, 1972, 47-82989
Int. Cl. B25d *9/00*
U.S. Cl. 173—75 **7 Claims**



7. A rock drill comprising:
a head body;
a sleeve formed on the inside of said head body;
a drilling tool slidably and rotatably engaged with said sleeve and having an air hole therein;
a main body connected to said head body;
hydraulically operated drill hammering means for imparting reciprocal movement to said tool having a piston slidably inserted within said sleeve and said main body and having a passage formed axially therethrough;
rotating means for rotating said drilling tool having a piston slidable therein and engaged with the piston of said drill hammering means; and
means for blasting air from said drilling tool to remove particulate matter from around said tool comprising an air intake port connected to said drilling tool hole through said passage of said drill hammering means and said piston of said drill rotating means, check valve means in said piston of said drill rotating means and air accumulating means, wherein said piston of said drill rotating means operates as a compressor interposed between said air accumulating means and the passage in said piston of said drill hammering means and said check valve means for feeding compressed air through said passage of said piston of said drill hammering means to said drilling tool.

3,866,695
BEARING CAVITY PRESSURE MAINTENANCE DEVICE FOR SEALED BEARING ROCK BIT

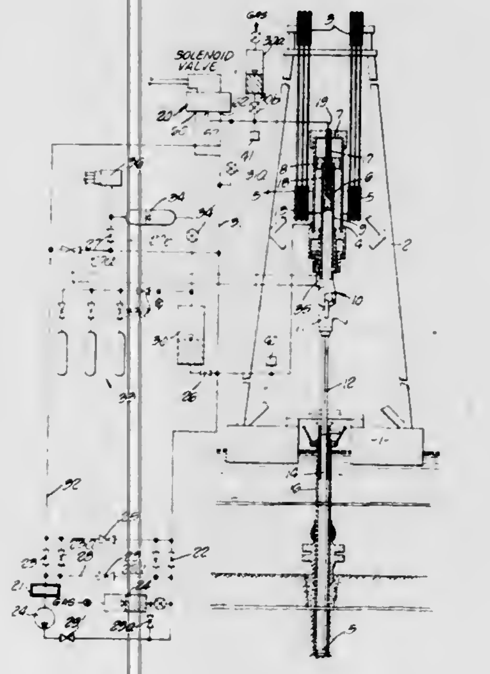
Robert Allen Jackson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed July 1, 1974, Ser. No. 484,385
Int. Cl. E21b *9/08, 9/35*
U.S. Cl. 175—228 **6 Claims**



1. A sealed bearing rotary rock bit with an internal reservoir containing lubricant for drilling in a fluid-filled borehole wherein pressure differentials occur between the pressure of the lubricant in the internal reservoir and the fluid in the borehole, comprising:
a bit body;
at least one bearing shaft extending from said bit body;
a cutter rotatably mounted upon said bearing shaft;
bearing means between said cutter and said bearing shaft for promoting rotation of said cutter;
a lubricant area between said cutter and said bearing shaft;
seal means for retaining lubricant in said lubricant area and preventing fluid in the borehole from entering the lubricant area;
a lubricant reservoir in said bit body;
means for equalizing the pressure of lubricant in the lubricant reservoir with the pressure of fluid in the borehole;
passage means channeling lubricant from said lubricant reservoir to said lubricant area;
means for allowing flow of lubricant from said lubricant reservoir to said lubricant area in response to any pressure differential; and
means for allowing flow of lubricant from said lubricant area to said lubricant reservoir at pressure differentials above a predetermined pressure differential.

3,866,696
METHOD AND APPARATUS FOR THE CONTROL OF A WEIGHT SUSPENDED FROM A FLOATING VESSEL

Edward Larralde, and Glen Robinson, both of Santa Barbara, Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.
Continuation-in-part of Ser. No. 274,880, July 25, 1972,. This application June 27, 1973, Ser. No. 373,968
Int. Cl. E21b *19/08*
U.S. Cl. 175—5 **16 Claims**

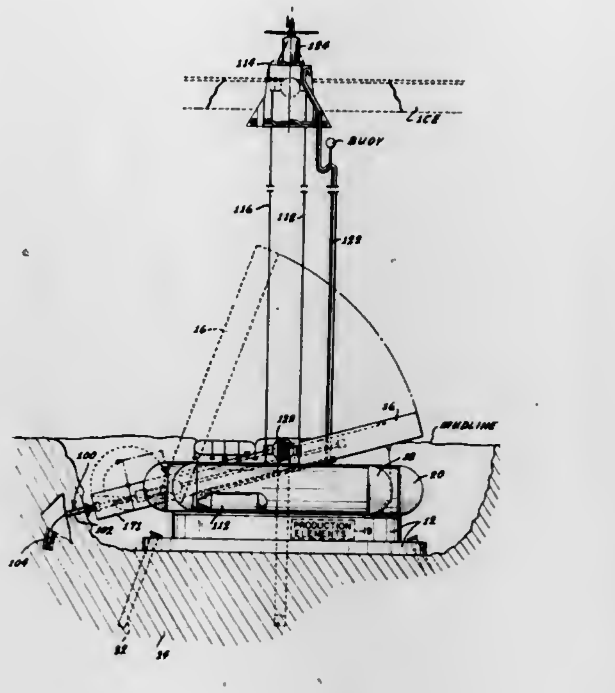


1. In an apparatus adapted to be mounted on a vessel subjected to heave due to wave action, which apparatus includes a piston and hydraulic cylinder and co-acting pneumatic accumulator system for control of the pressure in the hydraulic cylinder, means for connecting a load to said piston, the improvement which comprises means adapted to pass liquid under pressure from a source of liquid to the accumulator system, during that portion only of the heave when the volume of the liquid in the accumulator tends to decrease, a reservoir, means for withdrawing liquid from the accumulator to said reservoir during that portion only of the heave when the volume of liquid in the accumulator tends to increase.

3,866,697
DRILLING SYSTEM

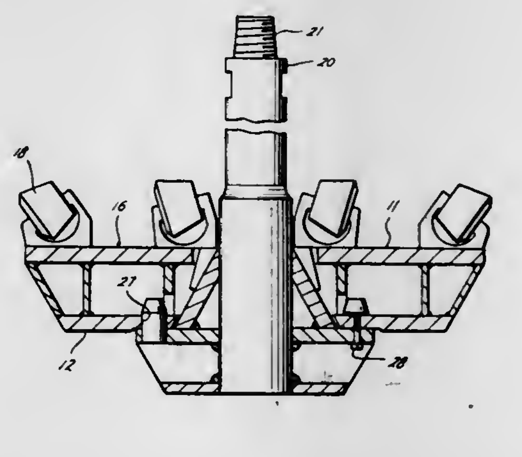
Andre M. Rossfelder, La Jolla, and William S. Bates, Arcadia, both of Calif., assignors to Tetra Tech, Inc., Pasadena, Calif.
Filed July 12, 1972, Ser. No. 271,117
Int. Cl. E21b *7/12*
U.S. Cl. 175—5 **8 Claims**

1. A drilling system for functioning in a subsurface environment comprising:
a base for being connected to ground;
a platform rotatably connected to said base;
a cylindrical drilling structure pivotally mounted to said platform, said drilling structure including a hinged cover over one end thereof; and
a plurality of drill pipe aligned parallel to the longitudinal axis of said drill structure and along the inner periphery thereof.



3,866,698
RAISE DRILLING BIT

John M. Stanley, Houston, Tex., assignor to Reed Tool Company, Houston, Tex.
Filed Nov. 16, 1973, Ser. No. 416,362
Int. Cl. E21c *23/00*
U.S. Cl. 175—53 **10 Claims**



1. A rotary drill bit for producing a raise bore by disintegrating the earth formation surrounding a pilot hole comprising:
a drill head having an upper mounting member and an attachment portion,
a plurality of cutters secured to said upper mounting member,
a drive stem,
said drive stem being fastened to said attachment portion and extending through said upper mounting member without force transmitting contact therewith thereby to be floating with respect to said upper mounting member.

3,866,699
PERSONNEL SCALE APPARATUS

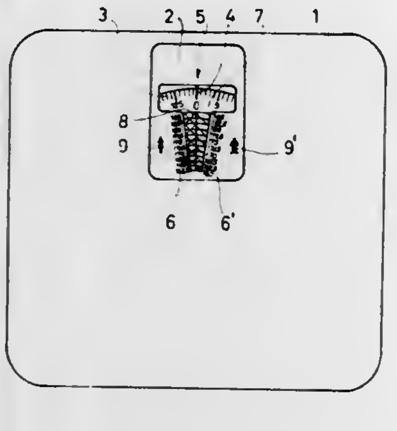
Karl Soehnle, Murrhardt; Richard Scheerer, Murrhardt-Harbach; Klaus Gutzy, Murrhardt; Rido Busse, Oberelchingen, and Reinhold Rapp, Ulm/Donau, all of Germany, assignors to Murrhardter Waagenfabrik Gebr. Soehnle, Murrhardt, Germany

Filed Sept. 21, 1973, Ser. No. 399,507

Claims priority, application Germany, Feb. 17, 1973, 2307879

Int. Cl. G01g *19/04, 23/00*

U.S. Cl. 177—34 **23 Claims**



1. A personnel scale apparatus, comprising first means for determining the actual weight of a person; second means for indicating different body heights, including a body-height scale and two prisms which are spaced from said body-height scale and from one another and which extend in parallelism with said body-height scale; third means for indicating for each body height the ideal weight which is desirable; and fourth means for indicating the actually determined weight as well as the magnitude of deviation of the actually determined weight from the ideal weights associated with respective different body heights.

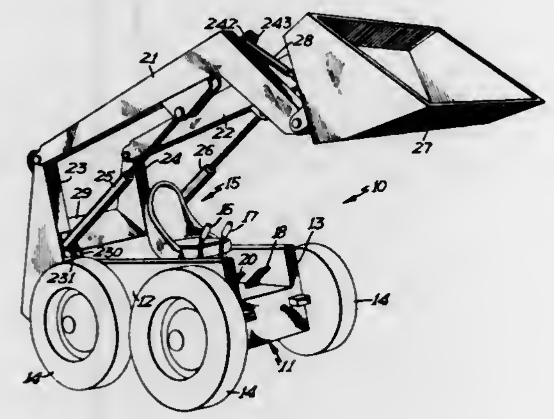
3,866,700
TRACTOR VEHICLE WITH HYDROSTATIC DRIVE MEANS

James J. Bauer, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Division of Ser. No. 800,839, Feb. 20, 1969, Pat. No. 3,635,365. This application Sept. 16, 1971, Ser. No. 181,211

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.48 **9 Claims**



1. In a tractor vehicle having an engine in the rear and a pair of ground engaging wheels on each side of said vehicle, the space transversely between the pairs of wheels being greater than the space longitudinally between each wheel of the pairs of wheels on opposite sides of the vehicle hydrostatic means for each pair of wheels to selectively connect said engine to said wheels to propel said vehicle, each of said hydrostatic means comprising:

- a variable displacement pump driven by said engine;
- a hydraulic motor operatively connected to said pump; and means for varying the displacement of said pump infinitely between a range of zero to maximum displacement in either forward or reverse directions at a given r.p.m. to thereby drive said wheels on one side of said vehicle independently with respect to said wheels on the other side of said vehicle in forward and reverse directions.

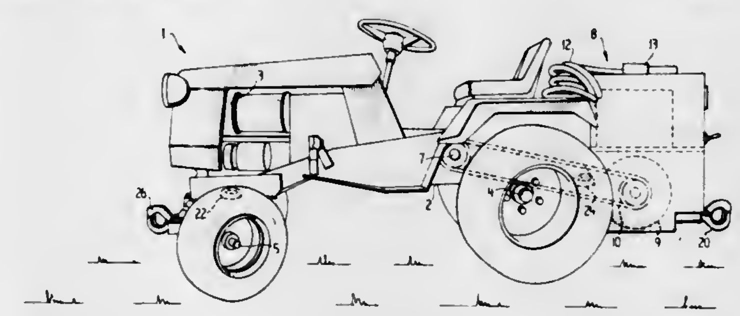
3,866,701
GROUND SUPPORT UNIT

Peter O. E. Bekker, 23 Upland Ln., Armonk, N.Y. 10504

Filed May 21, 1973, Ser. No. 362,532

Int. Cl. B60d *1/16*

U.S. Cl. 180—14 C **7 Claims**



1. A ground support vehicle for supporting and transport by aircraft including

- a rear axle,
- a forward axle,
- an engine mounted adjacent said front axle,
- engine starting means mounted adjacent said rear axle on the side thereof remote from said engine,
- coupling means for engaging and moving aircraft, said coupling means including
- a coupling positioned below said engine-starting means and mounted on said vehicle on a plane below the level of the rear axle and
- lifting means distributed on said vehicle for engagement and transport by aircraft.

3,866,702
ACCELERATOR FOR CAR TRANSMISSION SYSTEM

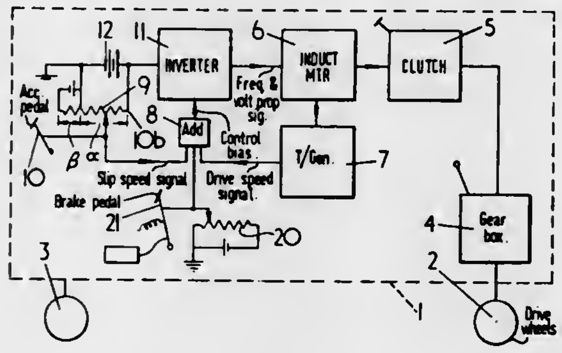
John Frederick Eastham, Long Ditton, England, assignor to K. G. Engineering Laboratories Limited, Birmingham, Warwickshire, England

Filed July 2, 1973, Ser. No. 375,643

Claims priority, application Great Britain, July 26, 1972, 35009/72

Int. Cl. B60k *1/00*

U.S. Cl. 180—65 R **13 Claims**



1. A battery driven vehicle having an inverter provided with d.c. and a.c. terminals, a battery connected to said d.c. terminals, an induction motor powering said vehicle and connected to said a.c. terminals, biassing means controlling the frequency and power output of said inverter, an accelerator member having a rest position and consecutive first and second ranges of movement from said rest position, resilient means urging said member to said rest position, a transducer providing a first electrical signal which varies with movement of said member from said rest position, and speed sensitive means driven by said induction motor and providing a second electrical signal which is significant of the induction motor speed said first and second signals being fed to said biassing means to control the inverter frequency; in which vehicle the transducer provides said biassing means in the first range of member movement with a first signal which diminishes progressively in a range corresponding to the generation of negative torque by the induction motor and consequential regenerative braking, while progressive movement through the second range of member movement causes the first signal to accelerate the induction motor.

3,866,703
ELECTRIC DRIVE TRANSMISSION SYSTEMS

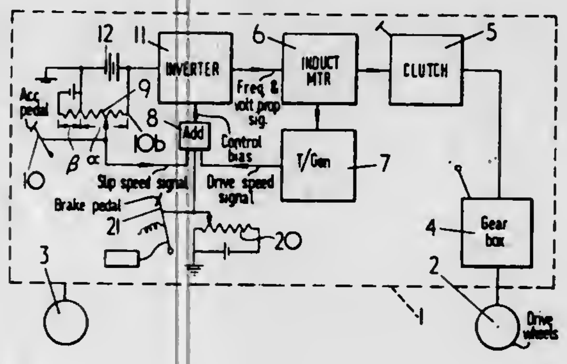
John Frederick Eastham, Long Ditton, England, assignor to K. G. Engineering Laboratories Limited, Birmingham, Warwickshire, England

Filed July 2, 1973, Ser. No. 375,644

Claims priority, application Great Britain, July 26, 1972, 35008/72

Int. Cl. B60k *1/00*

U.S. Cl. 180—65 R **3 Claims**



1. A car having a battery, a solid state inverter connected to receive direct current from said battery, an induction motor supplied with alternating current from the inverter, drive wheels, a drive transmission connecting the induction motor to the drive wheels, a gear box and clutch connected in said drive transmission, a speed control pedal, a brake pedal, bias means controlling the operating frequency of said inverter so that the motor slip speed is that required to produce a desired motor output torque, first signal generating means controlled by said motor and providing said bias means with a first signal significant of the actual speed of the motor, and second signal generating means controlled by said speed control pedal and producing a first range of second signals with slight depression of the speed control pedal and a second range of second signals with further depression of the speed control pedal said second signal generating means providing said second signals to the bias means; said bias means so controlling said inverter output frequency and the gears being so chosen that the motor delivers the called-for torque at high efficiency without overheating and the influence of said first range of second signals on the bias means is to so vary the inverter output that the motor is regeneratively braked by feeding power back through the inverter to the battery while the influence of said second range of second signals on the bias means is to vary the inverter output to accelerate the motor to an increased torque delivery dependent on the pedal position.

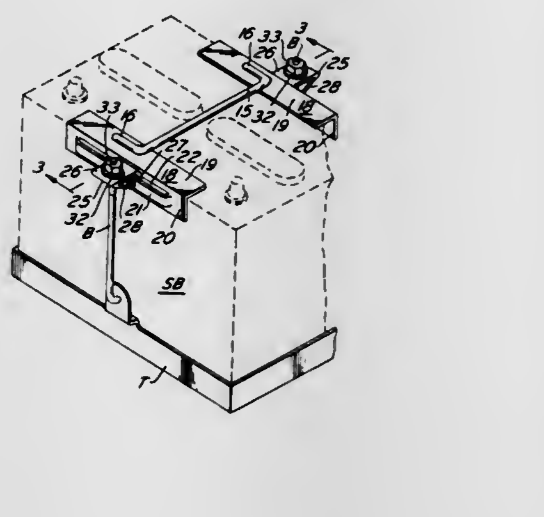
3,866,704
BATTERY HOLDDOWN

Bernard P. Bowers, Ontelaunee Twsp., Berks Co., and Delight E. Breidegam, Jr., Kutztown, Berks Co., both of Pa., assignors to East Penn Manufacturing Company, Inc., Lyon Station, Pa.

Filed Feb. 8, 1973, Ser. No. 330,516

Int. Cl. B60r *18/02*

U.S. Cl. 180—68.5 **6 Claims**

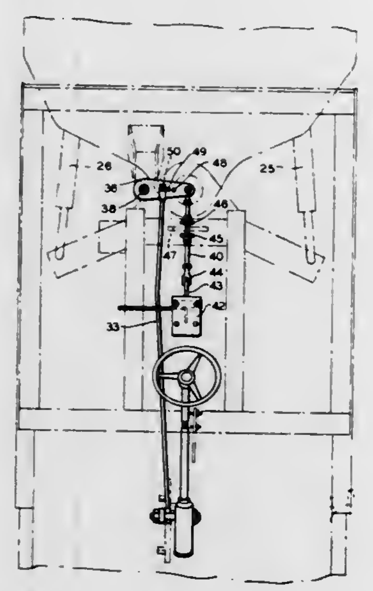


1. A battery holddown device which comprises

- a cross rod,
- holder brackets of inverted L-shape in cross section with horizontal flanges having upper faces to which the ends of said cross rod are secured in fixed relation,
- said holder brackets having lower faces for engagement with a battery case,
- said holder brackets having integral vertical flanges extending downwardly from said horizontal flanges with inner faces for engagement with said battery case,
- each of said vertical flanges having an outer face with a strip therealong for the major portion of the length of the holder bracket offset outwardly from the outer face to provide a vertical space between the strip and the vertical flange, and
- members selectively positioned along and engaging each of said holder brackets for holding said holder brackets in engagement with a battery case,
- said last mentioned members each having an upper portion adapted to be held against movement from exteriorly of the holddown device and a portion extending vertically downwardly therefrom and in said space,
- at least one of said members comprising a clip having a portion in clamped engagement with an outer face of said strip,
- said clip having
  - said upper portion horizontally disposed,
  - said vertically downwardly extending portion extending from one edge of said upper portion,
  - a downwardly and inwardly inclined bracing wall portion extending from the other edge of said upper portion,
  - a vertically upwardly extending terminal rib providing the portion in clamped engagement with the outer face of said strip and extending upwardly from said bracing wall portion, and
  - said upper portion of said clip and said downwardly inclined bracing wall portions having openings for the reception of a vertical clamping bolt.

3,866,705
ADJUSTABLE RATIO STEERING CONTROL FOR ARTICULATED VEHICLE

Charles M. Anderson, Aylmer, Ontario, Canada, and Charles R. Sturtz, Jr., Romulus, Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 17, 1973, Ser. No. 407,406
Int. Cl. B62d *13/00*
U.S. Cl. 180—79.2 B **7 Claims**



1. In an articulated vehicle having a front frame section, a rear frame section pivotally connected to the front frame section on a vertical steering axis between the two sections about which one section turns relative to the other, a pair of steering jacks, one on each side of the steering axis extending between the front and rear frame sections being fluid operable to extend and retract to cause turning movements of the frame sections, and a manual steering device located on the front frame section operable to impart steering commands for controlling the steering jacks, the improvement comprising an adjustable ratio steering control system including a single steering control lever pivotally mounted on the rear frame section on a vertical axis offset laterally with respect to the steering axis, first means fluid coupling the steering jacks mounted on the front frame section having movable fluid control means operable from a neutral position at which the steering jacks are held at relatively equal extensions for straight ahead steering of the vehicle sections to positions displaced from said neutral position for supplying fluid under pressure to the steering jacks causing one to extend and the other retract proportionately to the magnitude of said steering commands, second means connecting the manual steering device and steering control lever for transmitting said steering commands to the latter, third means connected between said steering control lever and said movable fluid control means and steering sensitivity adjustment means on said steering control lever adjustable to various positions at which steering commands are received by the steering control lever increasing in sensitivity as the radial distance increases from the pivot axis of said lever.

3,866,706
VEHICLE STEERING ARRANGEMENT

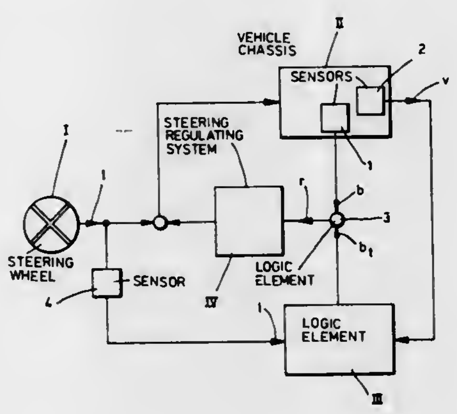
Wolfgang Lincke; Walter Zimdahl, both of Wolfsburg; Peter Andreas, Fallersleben; Harald Schimkat, Flechtorf, and Hans Kuhlborn, Wolfsburg, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Apr. 15, 1974, Ser. No. 460,709
Claims priority, application Germany, May 2, 1973, 2322062
Int. Cl. B62d *5/00*
U.S. Cl. 180—79.2 R **7 Claims**

1. Vehicle steering apparatus having means for compensating the influence of disturbing lateral forces on the direction of travel, said apparatus comprising, in combination:

a. first reference signal generator means for producing at least one first signal corresponding to the actual lateral acceleration of the vehicle;

b. second reference signal generator means for producing at least one second signal corresponding to the steering commands of the vehicle operator;

c. third reference signal generator means for producing at least one third signal corresponding to the travelling speed of the vehicle;



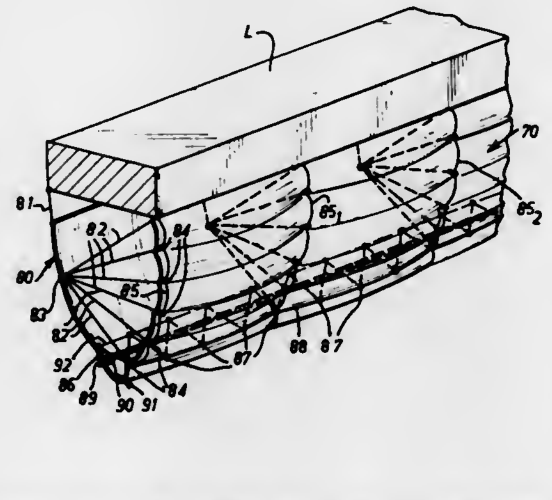
d. first logic means connected to said second and third generator means for receiving said second and third signals and producing at least one fourth signal corresponding to the theoretical lateral acceleration of the vehicle which should occur as a result of the vehicle steering commands;

e. second logic means connected to said first generator means and to said first logic means for receiving said first and fourth signals and producing a control signal corresponding to the difference between said first and fourth signals; and

f. steering regulator means connected to said second logic means for regulating the steering servomechanism of the vehicle in accordance with said control signal.

3,866,707
AIR CUSHION VEHICLE FLEXIBLE SKIRT ARRANGEMENT

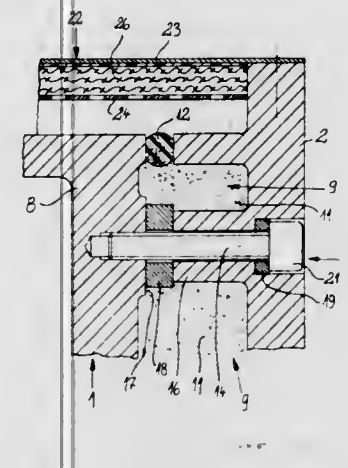
Charles Paoli, Groupe Scolaire Albert Camus, Le Port Marly, France
Filed Mar. 7, 1973, Ser. No. 339,003
Claims priority, application France, Mar. 10, 1972, 72.08341
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 **13 Claims**



8. The construction as claimed in claim 7 wherein said one arm extends parallel to said structural element.

3,866,708
MEANS FOR REDUCING NOISE IN TOBACCO PROCESSING MACHINES OR THE LIKE

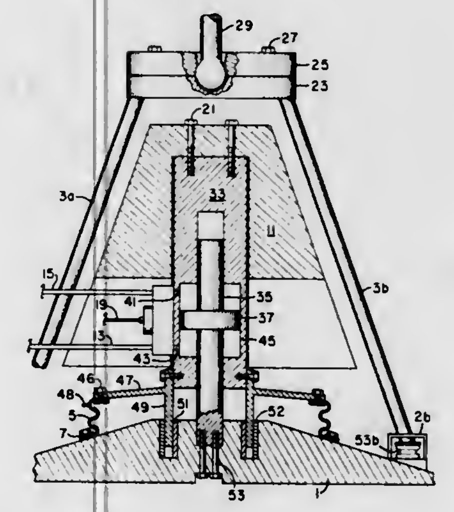
Willy Rudszinat, Dassendorf; Anton Baier, Ahrensburg; Uwe Heitmann, and Peter Brand, both of Hamburg, all of Germany, assignors to Hauni-Werke Korber & Co., KG, Hamburg, Germany
Filed Apr. 2, 1974, Ser. No. 457,230
Claims priority, application Great Britain, Apr. 18, 1973, 18585/73
Int. Cl. A24c *5/30*
U.S. Cl. 181—33 R **13 Claims**



1. In a machine for the production and/or processing of smokers' products, the combination of a mounting wall; a plurality of processing devices movably supported by said wall; a transmission assembly having a plurality of mobile elements, said transmission assembly being connected with said mounting wall and said element being arranged to drive said processing devices with attendant generation of noise; first soundproofing means interposed between said wall and said transmission assembly; and second soundproofing means interposed between said elements and said devices.

3,866,709
VIBRATORY SEISMIC ENERGY GENERATOR

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.
Filed Nov. 12, 1973, Ser. No. 415,266
Int. Cl. G01v *1/04*
U.S. Cl. 181—114 **5 Claims**



1. Apparatus for producing vibratory seismic energy in the earth, comprising:

an earth coupling plate;

means for imparting vibratory motion to said plate including power piston means, power cylinder means for said piston, and connecting rod means connecting said piston to said plate;

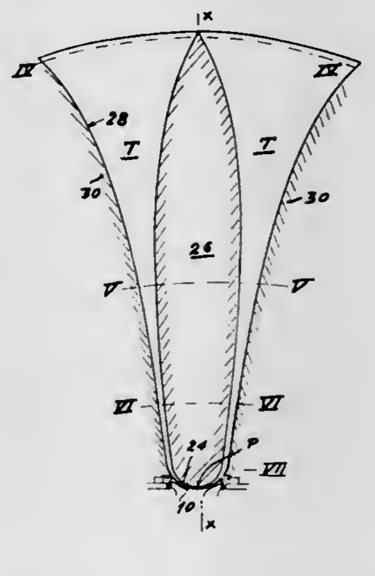
annular sleeve bearing means in said plate surrounding said rod means;

annular movable bearing means around said rod means connected to said cylinder means and extending into said annular sleeve bearing means; and

elastic means of low compliance connected to said plate and to said cylinder means or said movable bearing means for supporting said cylinder means on said plate.

3,866,710
HORN LOUDSPEAKERS

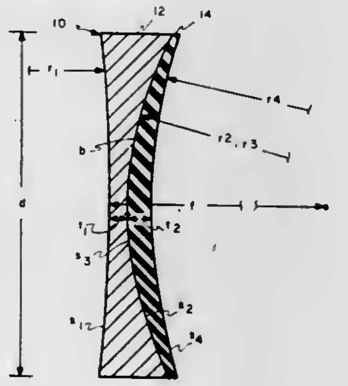
Mario Cesati, 16 Via De Vitalis, Brescia, Italy
Filed Nov. 1, 1972, Ser. No. 302,752
Int. Cl. G10k *11/10*
U.S. Cl. 181—159 **9 Claims**



1. An acoustic device, particularly a horn-type loudspeaker, comprising an electro-magnetic transducer comprising a substantially rigid diaphragm having an active surface having a center and being mounted for oscillation in its entirety in a direction substantially normal to the outer contour of said surface; a first stationary member having an outer surface a portion of which is closely adjacent to said active surface; a second stationary member surrounding at least in part said first stationary member and having an inner surface from said outer surface of said first member, the curvature of the surfaces of said members and said diaphragm defining an air passageway extending from the center of said diaphragm in a direction transverse to said direction of oscillation, the cross section of said air passageway being minimal at said center and increasing in said direction.

3,866,711
SOLID ULTRASONIC LENS DOUBLET

Donald L. Folds, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 4, 1973, Ser. No. 366,398
Int. Cl. G01s *3/80;* **H04r** *23/00*
U.S. Cl. 181—176 **9 Claims**



1. An ultrasonic lens of the character described comprising:

a first thin lens element comprised of a substantially acoustically clear, rigid, first solid material;

a second thin lens element comprised of a substantially acoustically clear, elastically pliant second solid material which is soft compared to said first solid material;

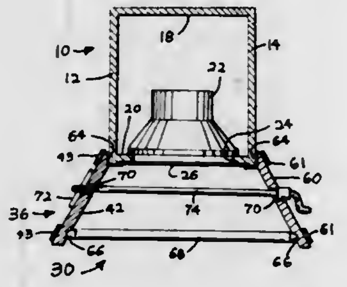
said first lens element having first and second surfaces respectively characterized by first and second radii of curvature;

said second lens element having third and fourth surfaces respectively characterized by third and fourth radii of curvature; and

said second material of said second lens element being bonded directly to said first solid material of said first lens element, with said second and third surfaces being defined by the boundary between said solid materials.

3,866,712
COLLAPSIBLE SPEAKER EXTENSION

James A. Carruthers, P.O. Box 40, Warrenton, Oreg. 97146
Filed Apr. 19, 1974, Ser. No. 462,373
Int. Cl. G10k ***11/10***
U.S. Cl. 181—178 **14 Claims**

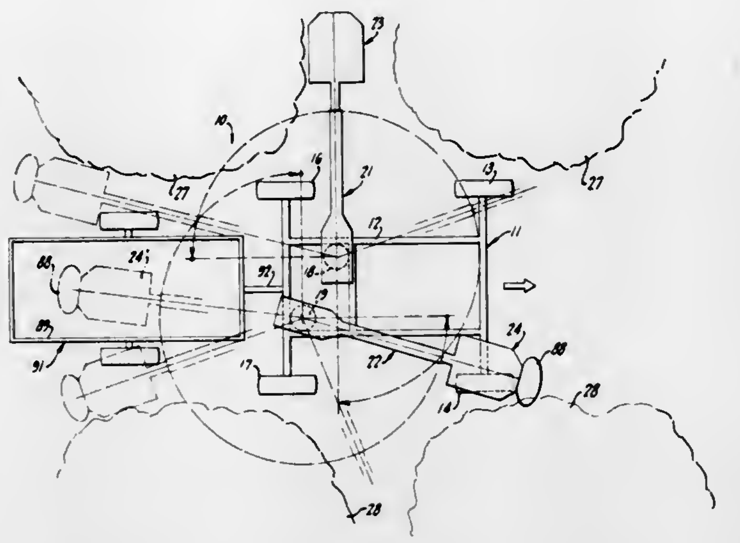


1. A collapsible extension for an acoustical speaker comprising a substantially planar top member having opposed marginal edge portions, a first side pivotally connected to one of said edge portions and a second side pivotally connected to the opposite edge portion of said top member, said first and second sides being swingable toward and way from each other between operative positions disposed at substantial angles relative to said top member and extending outwardly in a common direction from the top member and closed positions disposed substantially parallel to and adjacent said top member, substantially rigid spacer means insertable between said sides when said sides are in their operative positions, operable to inhibit swinging of said sides toward each other to maintain a preselected spacing therebetween, and detachable tension means interconnecting said sides operable to draw said sides toward each other and hold them against said spacer means.

3,866,713
AERIAL PLATFORM APPARATUS

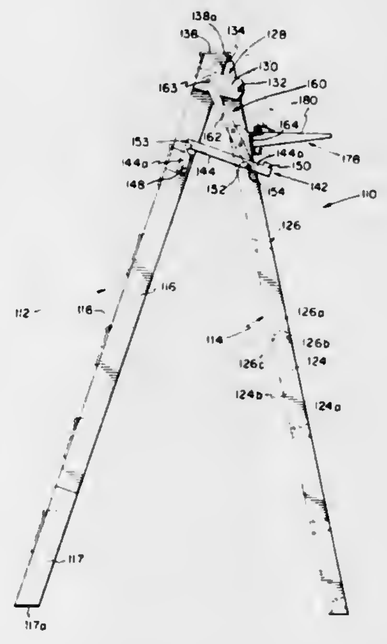
Charles E. Carpenter, and James M. Carpenter, both of Lakeport, Calif., assignors to Carpenter and Carpenter, Lakeport, Calif.
Filed Feb. 1, 1973, Ser. No. 328,511
Int. Cl. B66f ***11/04***
U.S. Cl. 182—2 **3 Claims**

1. In apparatus for moving an operator relative to a work location, such as a fruit-bearing tree, the combination including a mobile vehicular support, an upright tower carried by the support, a platform for carrying said operator, and an extensible boom having a distal end mounted on said platform and a proximal end, a bearing member mounted on said tower for pivotal movement about a vertical axis, means mounting said boom proximal end on a margin of said bearing member for pivotal movement about a horizontal axis, a support frame mounted on a portion of said tower below said bearing member for rotary movement about said vertical axis, brace means interconnecting said bearing member for rotary movement with said support frame, and rotary actuator means on said mobile support for selectively rotating said support frame about said vertical axis.



3,866,714
CONVERTIBLE LADDER

Noel E. Waldron, Rt. No. 1, Elwell, Mich. 48832
Continuation-in-part of Ser. No. 267,551, June 29, 1973, Pat. No. 3,785,455. This application Dec. 13, 1973, Ser. No. 424,189
Int. Cl. E06c ***1/18***
U.S. Cl. 182—22 **11 Claims**



1. A ladder which can be selectively converted to either an extension ladder or a step ladder comprising:

front and rear ladder longitudinally extending sections each including a plurality of longitudinally spaced steps;

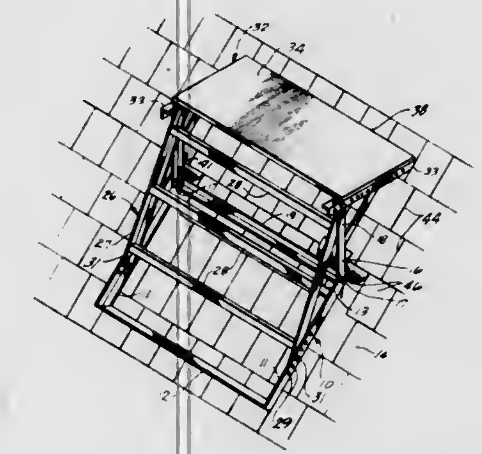
coupling means mounting said rear ladder section on the rear face of said front ladder section for either swinging movement between a position, generally parallel to and coextensive with said front ladder section, and a position inclined to said front ladder section in which said ladder is configured as a step ladder, or generally parallel, longitudinal, relative sliding movement between said coextensive position and an extended position, generally parallel to said front ladder section, in which said ladder is configured as an extension ladder including:

rear ladder section support means having at least a portion mounted on said front ladder section for movement with the rear ladder section when said rear section moves between said coextensive position and said inclined position, said portion being movable between a position permitting said rear section to be moved from said extended position to said coextensive position, and a support position underlying a portion of said rear ladder section to preclude relative movement of said rear ladder section from said extended position to said coextensive position; and

latch means mounted on said front ladder section for movement between a first position in which it holds said rear section in said inclined position and a second position in which it prevents said support means and said rear ladder section from moving away from said front section when said rear ladder section is in either said coextensive position or said extended position.

3,866,715
ADJUSTABLE ROOFING PLATFORM

Frank M. Foulk, 2015 S. Primrose, South Pasadena, Calif. 91030
Filed Apr. 22, 1974, Ser. No. 462,855
Int. Cl. E04g ***3/12***
U.S. Cl. 182—45 **11 Claims**



1. An adjustable roofing platform comprising:

a roof frame adapted to lie flat against a sloping roof;

an L-shaped platform support frame comprising:

a riser; and

a stage bracket normal to the riser and rigidly secured thereto;

means for pivotally interconnecting the lower end of the riser and the upper end of the roof frame;

a diagonal bracing frame;

means for pivotally interconnecting the upper end of the bracing frame to the platform support frame at an upper portion thereof;

means for connecting the lower end of the bracing frame to the roof frame at any of a plurality of positions spaced below the riser for setting the riser in a vertical plane and the stage bracket in a horizontal plane on a sloping roof;

a stage;

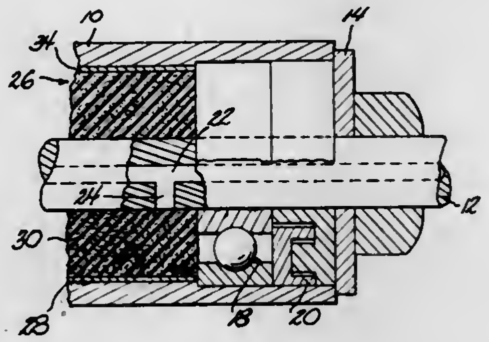
means for mounting the stage on the stage bracket in any of a plurality of positions along the length thereof so that an edge of the stage is in or only slightly above the plane of the roof frame; and

spike means only at the upper end of the roof frame for embedding in a roof and preventing sliding of the roofing platform.

3,866,716
ROTARY ROLLER LUBRICANT ACCUMULATOR

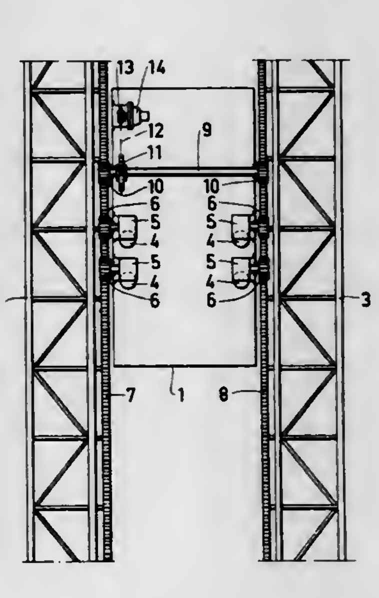
Carl G. Matson, 410 E. Central Blvd., Kewanee, Ill. 61345
Filed Jan. 14, 1974, Ser. No. 433,098
Int. Cl. F01m ***1/00;*** **F16n** ***1/00***
U.S. Cl. 184—14 **17 Claims**

1. A rotary roller lubricant accumulator structure including a cylindrical shaft, a cylindrical member having a hollow cylindrical interior loosely concentric with the shaft and providing, with the shaft and the interior of the member, a cylindrical annular space, a pair of coaxially spaced apart antifriction bearings inter-journalling the shaft and member, a pair of lubricant seals respectively axially outwardly of the bearings, said shaft having an axial passage opening radially to said space intermediate the bearings and opening at at least one end of the shaft for accommodating the supply of lubricant under pressure to said space, and lubricant accumulator means in said space, characterized in that said means includes a cylindrical tubular shell relatively closely surrounded by the interior surface of the member and extending substantially from one bearing to the other, and a cylindrical core within and substantially coextensive in length with the shell and having an axial opening relatively closely surrounding the shaft, said core being of resilient, sponge-like material capable of radial deformation under pressure of lubricant forced between the shaft and core via the supply passage and also capable of recovering its pre-deformed state so as to pressurize the lubricant axially toward the bearings.



3,866,717
RACK AND PINION ELEVATOR WITH AT LEAST TWO RACKS

Martin Johansson, Skelleftea, Sweden, assignor to Linden-Alimak AB, Skelleftea, Sweden
Filed Feb. 23, 1973, Ser. No. 335,387
Claims priority, application Sweden, Feb. 24, 1972, 2279/72
Int. Cl. B66b ***11/04***
U.S. Cl. 187—19 **4 Claims**



1. A rack and pinion elevator system comprising a pair of horizontally spaced, vertically extending racks having an elevator cage vertically movable therebetween, drive means for selectively effecting movement of said cage along said racks comprising at least two separate drive motors carried by said cage, a first one of said drive motors having a first output shaft carrying a first output pinion which is in driving engagement with one only of said racks, a second one of said drive motors having a second output shaft separate from said first output shaft and carrying a second output pinion which is in driving engagement with the other one only of said racks, and a transmission device carried by said cage and extending between

said racks for movement along said racks with said elevator cage, said transmission device being separated from said drive means and being responsive to off-center placement of a load in said cage for transferring forces from the less-loaded one of said racks to the more-loaded one of said racks thereby to substantially equalize the loads on said two drive motors, said transmission device comprising an elongated third shaft spaced from each of said first and second shafts and extending between said pair of racks in parallel relation to said first and second shafts, said third shaft being mounted for rotation at a predetermined position on said elevator cage spaced from the location of said drive motors, the opposing ends of said third shaft respectively carrying third and fourth pinions which engage said pair of racks respectively at positions spaced from each of said first and second output pinions.

3,866,718
REELING OF LOAD AND SAFETY CABLES OR ROPES FOR CAGES SUSPENDED IN FRONT OF BUILDINGS OR THE LIKE

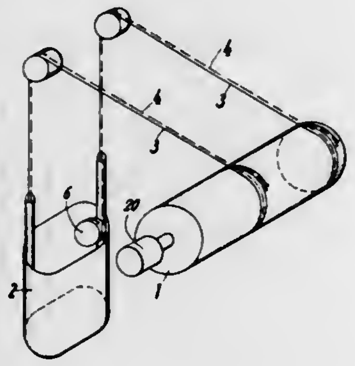
Richard Hiergeist, Munich, Germany, assignor to Mannesmann Leichtbau Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed June 13, 1972, Ser. No. 262,255

Claims priority, application Germany, June 14, 1971, 2129447

Int. Cl. B66b *11/06, 5/00*

U.S. Cl. 187—27 **5 Claims**



1. In a reeling device for at least one load rope or cable and at least one safety rope or cable both being attached to a cage for suspending the cage to be lifted and lowered and used, for example, in front of buildings, the device including, a single reeling drum having a spiral groove;
- a winch-motor connected to the drum for driving the drum in one or the opposite direction;
- the load and safety ropes or cables being connected to the drum, so that upon rotation of the drum by operation of the winch motor in one direction, a first one of the ropes or cables is wound to locate in the spiral groove of the drum and in adjacent loops thereon, thereby establishing a second spiral groove, a second one of the ropes or cables locating in the second groove during the rotation, the first one of the ropes or cables having one additional loop to start the second spiral groove for placing the second one of the ropes or cables therein;
- the first one of the ropes or cables as being wound in the spiral groove of the drum establishing a first layer on the drum having a diameter larger than a diameter of the second one of the ropes or cables as being wound concurrently in a second layer on top of the first layer and in the second spiral groove as it is being established by winding of the first rope or cable; and
- means connected to one of the ropes or cables and being continuously effective during winding and unwinding of the ropes or cables onto and from the drum for continuously providing an effective length change of the portion of the one cable or rope as extending from the drum and to the cage where attached thereto, in addition to the length change resulting from lifting or lowering the cage, for compensating for differences in reeled lengths of the load and safety ropes due to difference diameters of said layers, for obtaining similar lengths displacement of the load and safety cables or ropes at the cage.

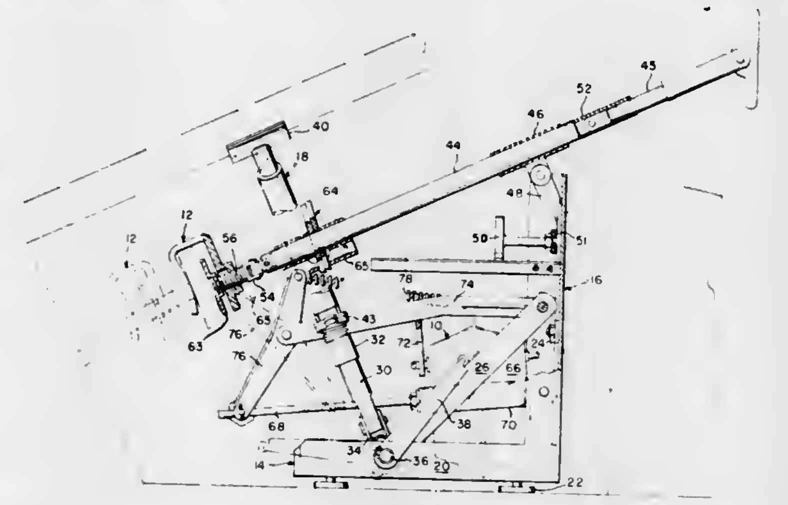
3,866,719
REMOTELY CONTROLLED BRAKE SYSTEM

John F. Streutker, Route 4, Box 553, Port Orchard, Wash. 98366

Filed Feb. 22, 1973, Ser. No. 334,862

Int. Cl. B60t *13/24*

U.S. Cl. 188—3 R **7 Claims**



1. A remotely controlled brake system operating between towed and towing vehicles in which the towed vehicle has a floor, a seat, a rigid support above the floor and a pedal-type foot brake operating mechanism comprising brake actuator means in the towed vehicle; means removably coupling said brake actuator means to the foot brake operating mechanism of the towed vehicle for depressing the pedal along a path, said actuator means including powered means for moving the brake pedal, first brace means for supporting the powered means on the floor, second brace means for supporting the powered means from the seat of the towed vehicle, and third brace means for supporting said powered means from the rigid support; and control means coupled to said powered means for controlling the operation of said brake pedal, said coupling means including a clamp having an abutment surface for engaging the brake pedal and an opposed clamping surface adjustably connected with said abutment surface for clamping the pedal therebetween, said actuator means including a guide bar coupled to said clamp in generally axial alignment with said pedal depressing path and having means for quickly adjusting the distance between the pedal and the powered means for initially pressing the abutment surface against the pedal, and a lever arm pivoted to said second brace and to said guide bar for movement generally along said path for depressing the pedal upon energization of the powered means.

3,866,720
FRICTION DAMPER

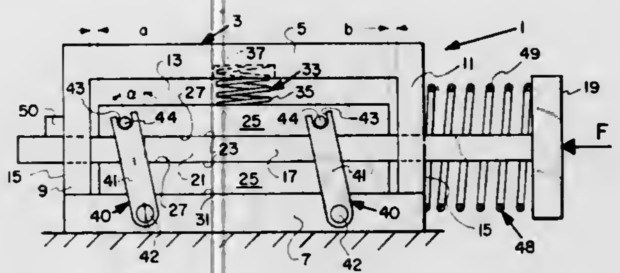
Leon Wallerstein, Jr., Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Sept. 20, 1973, Ser. No. 399,763

Int. Cl. B65h *59/10*

U.S. Cl. 188—67 **18 Claims**

1. A friction damper comprising
- a housing,
- an elongate bar disposed longitudinally within said housing, said housing and bar being capable of reciprocating movement longitudinally relative to each other in an energy absorbing stroke and return stroke,
- friction shoe means disposed between said housing and bar for movement parallel to said bar and housing,
- resilient means urging said shoe means and one of said housing and bar transversely relative to the other of said housing and bar and normally maintaining sliding frictional engagement between said shoe means and the one said housing and bar,
- said shoe means and the other of said housing and bar being disposed for and subject to limited relatively free sliding relative movement between each other substantially independent of said resilient shoe urging means,
- means for limiting the movement of said shoe means relative to the other of said housing and bar in the energy absorbing stroke beyond said relatively free sliding relative movement, and



- spacing means operative independently of said resilient shoe urging means in response to said free sliding relative movement for controlling the spacing between said shoe means and the one of said housing and bar, said spacing means being operative in the energy absorbing stroke to permit maintenance of frictional engagement by said independent resilient shoe urging means between said shoe means and the one of said housing and bar, said spacing means being operative in the return stroke in response to and during said relatively free sliding relative movement to positively increase the spacing between said shoe means and the one of said housing and bar and relieve said frictional engagement.

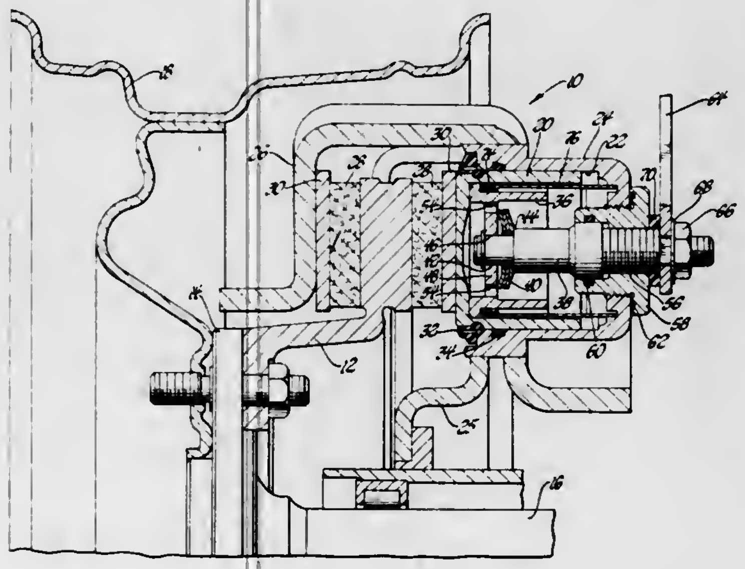
3,866,721
DISC BRAKE PARKING FEATURE

William L. Pringle, Gross Pointe Shores, Mich., assignor to William L. Pringle & Associated, Inc., Detroit, Mich.

Filed Jan. 15, 1973, Ser. No. 323,481

Int. Cl. F16d *55/26*

U.S. Cl. 188—72.6 **14 Claims**



1. A disc brake assembly comprising: friction means for frictionally engaging a rotor, and actuator means for moving said friction means into frictional engagement with the rotor in response to the application of a braking force; said actuator means including a mechanically movable shaft member, an actuator member engageable with said friction means mounted on said movable shaft member and movable relative to said movable shaft member between first and second positions, said first position being toward frictional engagement, and mechanical energy storage means operatively connected between said movable shaft member and said actuator member to continuously urge said actuator member toward said first position for maintaining said friction means in frictional engagement with the rotor wherein said mechanical energy storage means acquires mechanical energy during the application of a braking force which causes movement of said actuator member from said first position to said second position.

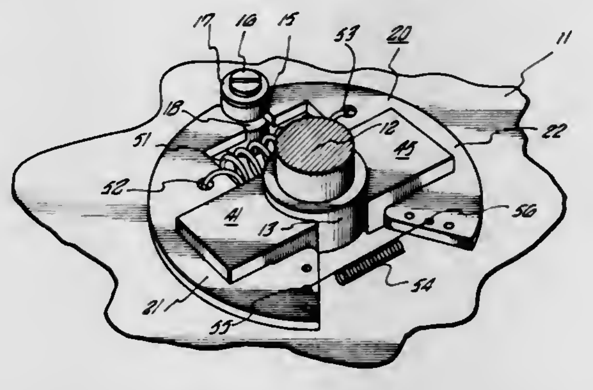
3,866,722
MECHANICAL DRAG BRAKE ASSEMBLY

Magne J. Kjos, 1748 La Granada Dr., Thousand Oaks, Calif. 91360, assignor to Burrough Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,456

Int. Cl. F16d *49/16*

U.S. Cl. 188—75 **8 Claims**



5. A drag brake assembly adapted for self-aligning mounting to provide braking force upon a cylindrical shaft comprising in combination:
- a. a first brake shoe having a contoured face shaped to engage the surface of said cylindrical shaft and a bearing end opposite the contoured face;
- b. a first brake shoe support member having first and second ends and an intermediate portion between the first and second ends, the intermediate portion of said support member and the bearing end of said first brake shoe being arranged in interlocking relationship, free of attachment therebetween;
- c. a second brake shoe substantially identical to said first brake shoe;
- d. a second brake shoe support member substantially identical to said first brake shoe support member; and
- e. spring means connected between said first and second brake shoe support member for holding said first brake shoe support member with its first brake shoe and said second brake shoe support member with its second brake shoe in a position about the cylindrical shaft, said support members being relatively rotatable and translatable over a limited range with respect to each other.

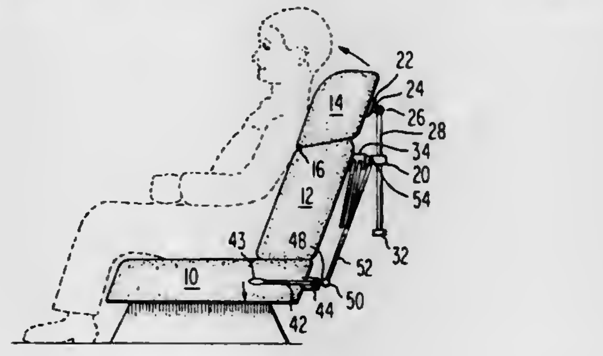
3,866,723
SAFETY DEVICE FOR ACTUATING A BRAKE

Elmer M. Smith, 2425 Kuser Rd., Trenton, N.J. 08690

Filed Nov. 12, 1973, Ser. No. 414,769

Int. Cl. B60t *7/14*

U.S. Cl. 188—109 **5 Claims**



1. In a motor vehicle having a seat for an operator and a brake for controlling such vehicle, means for actuating such brake, which means is automatically responsive to the presence and absence of an operator in his seat, comprising a movable member associated with said seat and operatively connected to said brake, such movable member being movable from a first position in which such member acts to disengage the vehicle brake when the operator is in a normal driving position on said seat, to a second position in which such member acts to disengage said brake when the operator is not in a normal driving position on said seat, the movable member consisting of a two part seat back, one part of which is nonmovable and conventionally attached to the base of the seat, and the other part of which is movable, and hinged to the non-movable part and subject to the pressure of a spring which will cause such movable part to rotate around its hinge in the absence of the force of a vehicle leaning against the seat back when said operator is in a normal driving position.

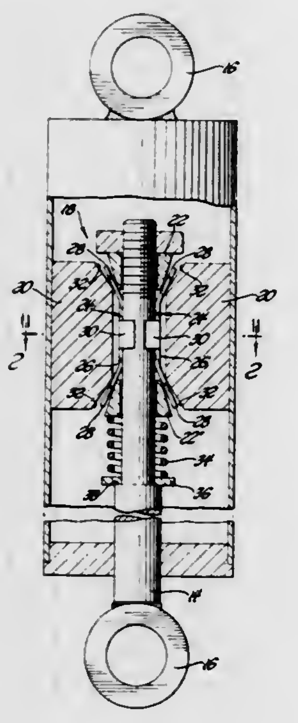
3,866,724
VARIABLE TWO-WAY SHOCK ABSORBER

Harold S. Hollnagel, 918 W. Laramie Ln., Milwaukee, Wis. 53217

Filed Aug. 13, 1973, Ser. No. 387,938

Int. Cl. F16f *7/08*

U.S. Cl. 188—129 **30 Claims**



1. An energy absorbing device comprising: first and second relatively displaceable members adapted for independent connection to separate, external, relatively movable elements, friction means disposed between said members including at least one friction member, wedge means including a wedge member carried by one of said relatively displaceable members, resilient actuating means disposed between said friction member and said wedge member for moving said friction member into frictional engagement with the other of said relatively displaceable members, a wedge surface on said resilient actuating means defining a wedge angle engaged by said wedge member to change said wedge angle in proportion to the magnitude of force urging movement between said relatively displaceable members.

3,866,725
LOAD-DEPENDENT BRAKING DEVICE FOR CONVEYING SYSTEMS

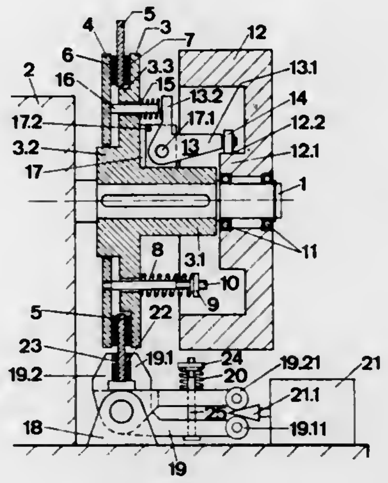
Wilfried Greutter, Vienna, Austria, assignor to Inventio AG, Hergiswil, Switzerland

Filed July 23, 1973, Ser. No. 381,976

Claims priority, application Switzerland, July 26, 1972, 11239/72

Int. Cl. B60t *7/12*

U.S. Cl. 188—134 **12 Claims**



1. A load-dependent braking device for conveying systems comprising a primary brake possessing a fixedly adjusted braking moment, a secondary brake with a variable braking moment, the braking moment of the secondary brake being adjusted as a function of the loading moment acting upon a drive means for the attainment of a braking deceleration independent of load, the improvement comprising said primary brake having a rotatable brake part, the secondary brake having a fixed brake part and a rotatable brake part, the rotatable brake part of the primary brake being rigidly connected with the fixed brake part of said secondary brake, brake pad means, resilient means for exerting a spring pressure for urging the rotatable brake part of the secondary brake through the agency of the brake pad means against the fixed brake part of the secondary brake, setting cam means, a rod arrangement, means for providing a spring force for urging the rod arrangement against the setting cam means, said rod arrangement serving to lift-off the rotatable brake part of the secondary brake as a function of the change of speed which occurs upon braking of the drive means, said drive means including a drive shaft, a flywheel disk at which there is arranged said setting cam means, means for mounting said flywheel disk to be freely rotatable at the drive shaft, said setting cam means actuating the rod arrangement in opposition to the spring force in proportion to the angle of displacement between the flywheel disk and the drive shaft.

3,866,726
COUPLING WITH TILTABLE ELLIPTICAL DISC

Oskar Arenz, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Continuation of Ser. No. 245,313, April 19, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 347,159

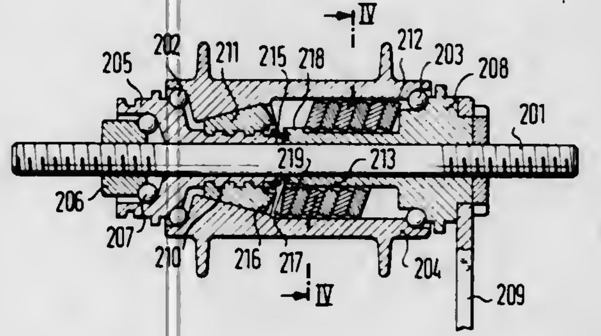
Int. Cl. F16d *67/02*

U.S. Cl. 192—6 R **13 Claims**

1. A wheel hub for a bicycle and like vehicle comprising, in combination:

a. a normally stationary shaft having an axis;
b. a hub shell mounted for rotation about said axis and having an inner wall about said axis;
c. a driver rotatable about said axis in an axially fixed position, said driver having respective axial portions in said hub shell and projecting from said hub shell;
d. a tubular carrier member receiving a portion of said shaft in said shell;

e. first securing means for securing said carrier member against rotation about said axis;
f. a substantially rigid disc member;
g. second securing means securing said disc member on said carrier member against rotation on said carrier member about said axis while permitting tilting movement of said disc member in a plane including said axis toward and away from a position of locking engagement of said disc member with said inner wall; and
h. tilting means for tilting said disc member in said plane, said tilting means including



1. first abutment means axially secured relative to said shaft,
2. second abutment means, said first and second abutment means being offset from said disc member in opposite axial directions and from said axis in opposite radial directions for engagement with said disc member, and
3. threaded means threadedly connecting said second abutment means to said driver for axially moving said second abutment means toward and away from said first abutment means when said driver rotates about said axis in respective directions.

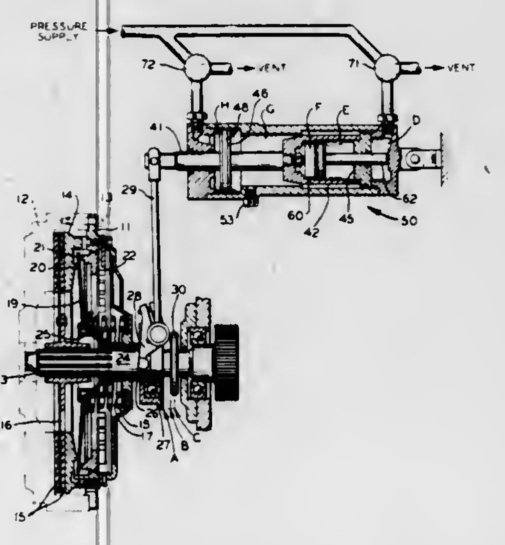
3,866,727
FLUID OPERATED CLUTCH AND BRAKE WITH DASHPOT

Gerald L. Myers, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 18, 1974, Ser. No. 434,532

Int. Cl. F16d *67/04*

U.S. Cl. 192—13 R **7 Claims**



1. In a clutch including an input, an output, a brake, a shift means having first, second and third positions and wherein said input and output are connected when said shift means is in said first position and disconnected when said shift means is in said second and third positions and wherein said brake is actuated when said shift means is in said third position and an actuating means associated with said shift means the improvement wherein said actuating means comprises a cylinder having first, second and third pistons therein, said first piston being operatively connected to said shift means, said second piston being shiftable between a first position allowing travel of said first piston to said third position thereof, and a second position, limiting travel of said first position to said second position thereof, said third piston being adapted to allow free travel of said first piston from said first to said second and third positions thereof and to inhibit travel of said first piston from said second and third positions thereof.

3,866,728
OVERLOAD CLUTCH

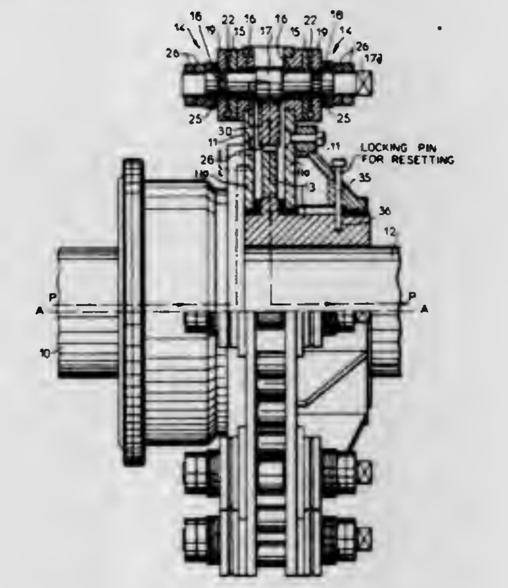
Olaf John Barclay Orwin, Quinton, England, assignor to Gib Precision Limited, Cirencester, England

Filed May 24, 1973, Ser. No. 363,587

Claims priority, application Great Britain, May 26, 1972, 24852/72

Int. Cl. F16d *43/20*

U.S. Cl. 192—56 R **21 Claims**



1. In an overload clutch comprising a pair of rotatable members, disengageable drive means to transmit torque between said members, said drive means comprising a plurality of pairs of disengageable drive transmitting abutments and a plurality of torque limiters operative up to a predetermined torque to prevent disengagement of said drive transmitting abutments to enable transmission of torque between said members and operative above said predetermined torque to permit disengagement of said abutments to interrupt transmission of torque between said members, the improvement wherein each torque limiter comprises a pair of clutch elements, means mounting one element of each pair for overrunning movement relative to the other when more than a predetermined torque is applied and means preventing such overrunning movement until such torque is exceeded, comprising a plurality of restraining members adapted for rolling movement and maintained in restraining engagement with the torque limiter clutch elements by loading means and in which the abutments of each pair of drive transmitting abutments are mounted for mutual relative movement in a first path on said overrunning movement to permit disengagement of the abutments and for relative movement in said first path and a second, different path, to permit resetting of the torque limiters and re-engagement of the abutments after overload has occurred.

3,866,729
ELECTROMAGNETIC OPERATED CLUTCHES AND BRAKES

Josef Eichenhofer, Brampton, Canada, assignor to Automatic Research Development Co., Willoughby, Ohio

Filed June 13, 1973, Ser. No. 369,502

Int. Cl. F16d *27/04;* **B60l** *7/00*

U.S. Cl. 192—84 C **12 Claims**

1. An electromagnetically operated clutch or brake comprising:

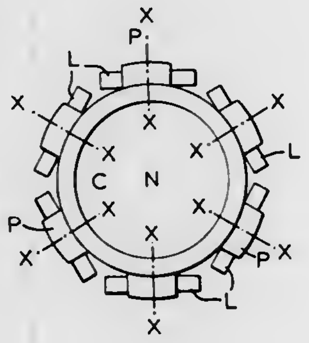
a first rotatable torque transmitting member defining a rotary axis,

first and second mutually engageable members adapted when engaged to transmit torque between said first rotatable torque transmitting member and a second torque transmitting member, and

an electromagnet having a core and a movable armature mounted coaxially with the first rotatable torque transmitting member, the armature being axially displaceable in relation to the core to effect engagement of said mutually engageable members,

the core being of annular configuration providing an annular end face, and having a plurality of radial pole pieces symmetrically arranged around said axis, and

the armature being of annular configuration providing a first face confronting the ends of said pole pieces and an annular second face confronting said annular end face of the core.



10. In an electromagnetically operated clutch or brake having an electromagnet which is operable to effect engagement between first and second mutually engageable members for transmitting torque between respective torque transmitting members, the electromagnet comprising a core, a movable armature, and energizing means therefor, the improvement wherein said core is of annular configuration providing an annular end face, and has a plurality of pairs of symmetrically arranged, radially outwardly extending, pole pieces, the pole pieces of each pair being diametrically opposed, said armature being of annular configuration providing a cylindrical first face confronting the ends of said pole pieces and an annular second face confronting said annular end face of the core.

3,866,730
INACTIVE CASE FOR EMERGENCY EXIT BOLT

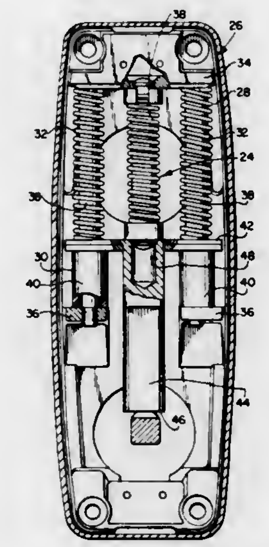
Walter O. Balducci, New Britain, Conn., assignor to Emhard Corporation, Bloomfield, Conn.

Filed Nov. 29, 1973, Ser. No. 420,282

Int. Cl. E05c *15/02*

U.S. Cl. 292—92 **5 Claims**

1. In an inactive case for an emergency exit bolt assembly and having a frame assembly including a frame, a slide, means supporting said slide on said frame for sliding movement relative thereto between a first and a second position, and means for biasing said slide toward said first position, the improvement comprising an auxiliary spring unit for snap-in assembly with said frame assembly and including a compression spring, a support rod extending through said compression spring, and means for retaining said compression spring in a compressed condition on said support rod prior to snap-in assembly with said frame assembly, said auxillary spring unit in assembly with said frame assembly providing additional biasing force for urging said slide toward said first position.



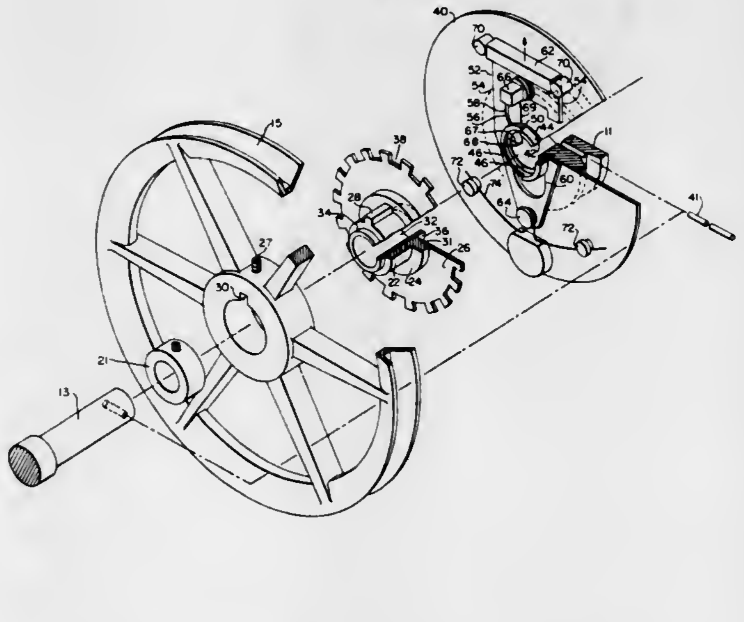
3,866,731
SPEED RESPONSIVE CLUTCH

George W. Nagel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 25, 1973, Ser. No. 382,422

Int. Cl. F16d *43/16*

U.S. Cl. 192—104 C **8 Claims**



1. A speed responsive clutch mechanism for effecting engagement or disengagement of a first drive means to a driven member, said driven member also drivingly coupled to a second drive means and wherein said first drive means drives said driven member at a relatively low speed in relation to said second drive means, said mechanism comprising:

a first rotational plate drivingly coupled to one of said drive means;

a slide means including a projecting engagement means mounted on said plate for movement to a radially outer position from a first position in response to centrifugal force,

means biasing said slide to normally assume said first position,

a second rotational plate drivingly coupled to the other of said drive means; said second plate coaxial with said first rotational plate and defining means for drivingly engaging said engagement means when said slide is in said first position; said engagement means and said engaging means being disengaged with respect to one another when said slide it in said radially outer position; and

means resiliently biased to a position obstructing movement of said engagement means from said radially outer first position and normally in said position obstructing movement whenever the rotational speed of said first rotational plate is less than provides sufficient centrifugal force to maintain said slide in said radially outer position but greater than the rotational speed of said second plate said biased means subsequently forced to a nonobstructing position permitting said engagement means to move to said first position for driving engagement between said engagement means and said engaging means in response to the rotational speed of said first plate decreasing to a speed less than the rotational speed of said second rotational plate.

3,866,732
Patent Not Issued For This Number

3,866,733
SELF-ADJUSTING RELEASE MECHANISM FOR FRICTION CLUTCHES

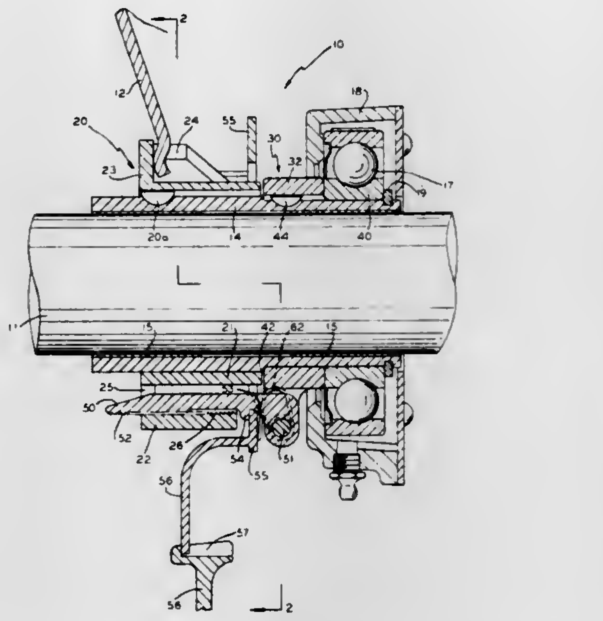
Donald F. Linn, Manlius, and George L. Wishart, North Syracuse, both of N.Y., assignors to Lipe-Rollway Corporation, Syracuse, N.Y.

Filed Nov. 28, 1973, Ser. No. 419,769

Int. Cl. F16d *13/75*

U.S. Cl. 192—111 A **5 Claims**

1. In a friction clutch for connecting driving and driven shafts, the clutch having means for normally effecting a driving connection between the shafts and release levers actuatable to disengage said driving connection, the improvement comprising an inner sleeve member axially slidable on the driven shaft, an outer sleeve member axially slidable on the inner sleeve, means on one of said sleeve members engageable with the release levers for actuation of same, a jaw having a gripping surface, means to pivotally connect said jaw to one of the sleeves, a gripping surface on the other sleeve which is normally gripped by the jaw whereby axial movement of the one sleeve member in one direction operates to correspondingly move the other sleeve and actuate the release levers, and means for releasing said jaw from said gripping surface, the release means being operable when the wear on the clutch driving connection reaches a particular point to permit relative axial movement between sleeve members to compensate for the wear.



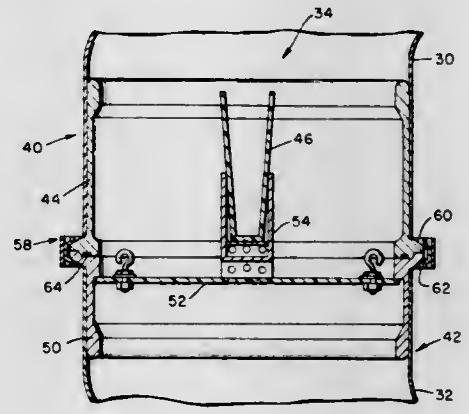
3,866,734
DOUBLE CHECK VALVE BETWEEN SEPARABLE INFLATABLE UNITS

Paul A. Elkins, Palos Verdes Peninsula, Calif.; Ralph A. Miller, New Monmouth, N.J., and Lawrence E. Scheer, Phoenix, Ariz., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Aug. 15, 1973, Ser. No. 388,708

Int. Cl. A62b *1/20*

U.S. Cl. 193—25 B **14 Claims**



7. A double check valve disposed between an inflatable ramp disposed at an elevated egress and a separable inflatable evacuation slide and raft in fluid communication therewith extending from the inflatable ramp to a surface below the elevated egress, comprising:

a first check valve operably associated with said inflatable ramp;

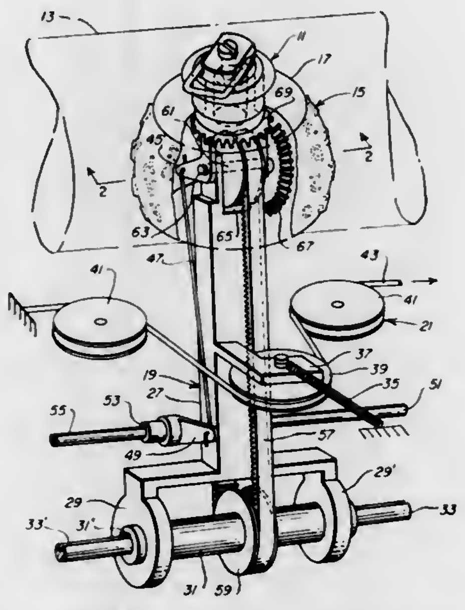
a second check valve operably associated with said inflatable evacuation slide and raft;

means to operably connect said first check valve to said second check valve, said second check valve including means to maintain said first check valve in an open position when said first and second check valves are operably connected; and

means to quickly disconnect said first check valve from said second valve when the inflatable slide and raft is separated from the inflatable ramp.

3,866,735
ROTATIONAL POSITIONING MECHANISM FOR SINGLE ELEMENT PRINTER

Herbert Decker, Lauf, Germany, assignor to Triumph Werke Nurnberg A.G., Nurnberg, Germany
Filed Oct. 18, 1973, Ser. No. 407,551
Claims priority, application Germany, Oct. 26, 1972, 2252447
Int. Cl. B41j *1/32*
U.S. Cl. 197—55 **4 Claims**

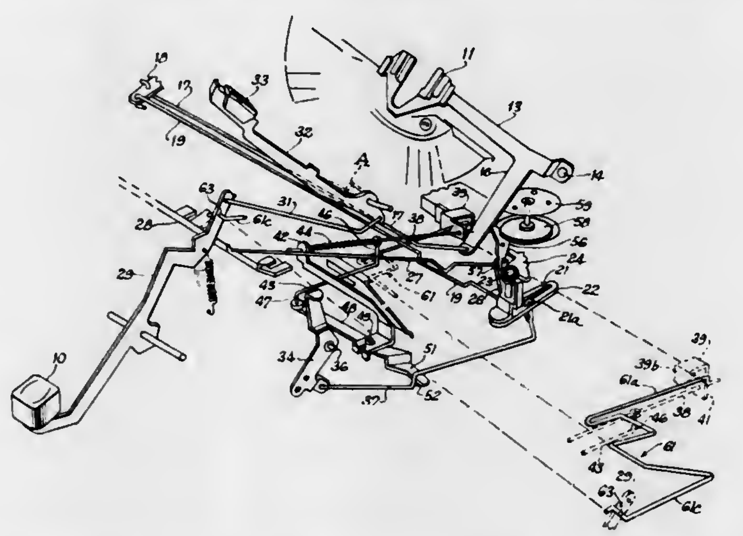


1. In a printing machine having a hollow downwardly open cup-shaped typehead on which a plurality of type characters are located in columns and rows on its outer periphery, said typehead being adapted to be rotatably positioned about a rotate axis to select a column of type characters and to be tiltably positioned about a tilt axis to select a row of type characters, comprising,
support means extending into the hollow interior of said typehead for supporting said typehead for movement about an external axis to effect printing of a type character at a selected row and column location,
a first shaft defining said external axis,
a second shaft parallel to said first shaft rotatably supported on the portion of said support means within said typehead, said second shaft defining said tilt axis,
a tilt frame pivotally supported on said second shaft,
a first gear rotatably supported on said tilt frame and having its axis along said rotate axis,
means securing said typehead to said first gear,
a second gear secured to said second shaft meshing with said first gear,
a first pulley rotatably mounted on said first shaft,
a second pulley secured on said second shaft,
drive means comprising a belt trained around said first and second pulleys to rotatably position said typehead about its rotate axis,
and means for rocking said tilt frame about said second shaft to select a row of type characters without twisting movement of said belt.

3,866,736
MANUAL TYPEWRITER WITH MEANS FOR ERROR CORRECTION

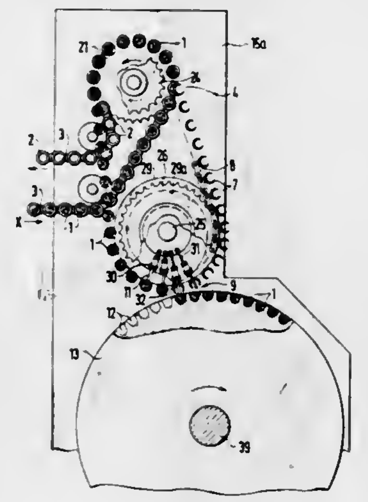
Chester E. Ozimek, Park Ridge, and Kenneth L. Eldridge, Jr., Naperville, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Aug. 6, 1973, Ser. No. 386,203
Int. Cl. B41j *29/36*
U.S. Cl. 197—181 **1 Claim**

1. In an error correcting typewriter comprising character printing mechanism including printing control keys operatively connected to type bars, paper support mechanism, spacing means including an escapement arch operatively engageable by said type bars for stepwise moving said paper support mechanism in a forward direction to accomplish printing a line of characters, a ribbon providing a printing field and a print obliterating field, a pivotally mounted ribbon vibrator having a depending arm and actuated by the printing control keys to guide said ribbon to bring a ribbon field momentarily in impressing position, inhibiting means comprising a slidable member disposed in the path of travel of said arm to limit the movement of said ribbon vibrator, back space drive means for stepwise moving said paper support mechanism in a backward direction in letter width increments, the improvement which comprises a manually operable key connected to a special type bar carrying a universal obliterating type font, said special type bar being free of any engagement with said escapement arch whereby upon actuation of said manual key the paper support mechanism is not moved, a link operatively connected to said manual key for moving said slidable member out of the path of travel of said arm whereby upon actuation of said manual key the ribbon vibrator is caused to elevate the print obliterating field into impressing position to be impinged upon by said type font to obliterate a character imprinted in error.



3,866,737
METHOD AND APPARATUS FOR THE CONTINUOUS TRANSFER OF LONGITUDINALLY EXTENDING WORKPIECES

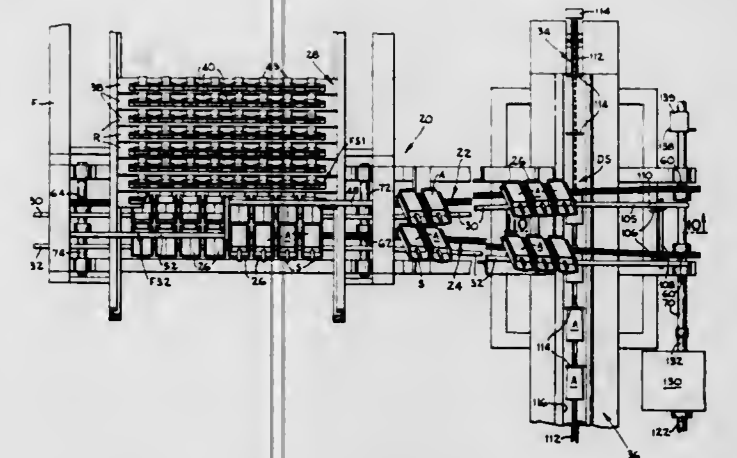
Stefan Simon, Moedling, Niederosterreich, Austria, assignor to Dr. Carl Hahn GmbH, Dusseldorf, Germany
Filed Jan. 10, 1972, Ser. No. 216,624
Claims priority, application Germany, Jan. 15, 1971, 2101932
Int. Cl. B65g *47/00*
U.S. Cl. 198—22 R **12 Claims**



1. An apparatus for the continuous transfer of longitudinally extending tampons of compressed absorbent fiber material of like dimension to a high-speed receiver means, which apparatus comprises a driveable shaft carrying a first transfer drum disposed theeabout, said transfer durm provided with at least one transfer mandrel, means for displacing said transfer mandrel concentrically and longitudinally parallel to the drum axis, a chain-like element provided with sleeve-like tampon receiver means, said receiver means forming extensions of hollow hinge pins, said sleeve-like receiver means extending from the chain in the direction of a workpiece carrying means, an endless transfer element having mounted thereon workpiece carrying means having a slot therein, each of which workpiece carrying means is in the form of a trough-like member having an inside cross section smaller than the cross section of the tampon to be carried and elastic long sides forming clamping jaws which can enclose around the tampon to a point above a longitudinal axis through its center, said workpiece carrying means at least at its end remote from and facing said first transfer drum being closed to substantially the full height of the tampon to be carried so that the closed end of the workpiece carrying means facing said first transfer drum, in the transfer position thereof, forms a substantially closed transfer passage with said receiver means, a second transfer drum carrying said endless transfer element, said chain-like element and said endless transfer element trained with respect to one another, said transfer mandrel and said means for displacing said transfer mandrel such that in the area of end-to-end alignment of said receiver means with said workpiece carrying means said means for displacing said transfer mandrel moves said transfer mandrel concentrically and longitudinally parallel to said drum axis whereby said transfer mandrel transfers a tampon from said receiver means to said workpiece carrying means, said apparatus having a reversing shaft on which said second transfer drum is mounted rigidly said second transfer drum carrying, at least in part, said endless flexible element, said second drum provided with transfer push-rods mounted at identical angular distance and means for displacing said push-rods radially outward through a slot in the workpiece carrying means, a revolvable drum having depressions provided on the periphery thereof, said drum disposed in facing relationship to said second transfer drum whereby tampons can be serially ejected from said workpiece carrying means into said depressions.

3,866,738
ARTICLE TRANSFER MECHANISM

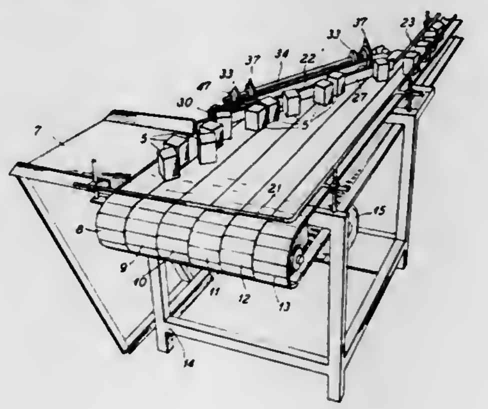
John S. Aterianus, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.
Filed Sept. 21, 1973, Ser. No. 399,572
Int. Cl. B65g *47/38*
U.S. Cl. 198—27 **12 Claims**



1. An apparatus for transferring elongated articles having longitudinal axes and predetermined lengths at high speed from a multi-lane driven inlet conveyor which supports the articles with their longitudinal axes vertical and spaced apart a distance less than the length of the articles to a single lane output conveyor with the longitudinal axes being horizontal and the spacing between articles being greater than the length of the articles comprising, a pair of spaced transfer conveyors disposed transversely of the inlet and outlet conveyors, means for effecting transfer of articles from a predetermined plurality of lanes of multi-lane inlet conveyor into one of said transfer conveyors and for effecting transfer of the articles from other predetermined lanes of the inlet conveyor into the other transfer conveyor, means on said transfer conveyors for supporting and shifting the articles from a vertical to a horizontal position and advancing the articles until the articles are aligned with said single lane output conveyor, means for simultaneously transferring one article from each transfer conveyor into the single lane output conveyor, and drive means for driving each of said conveyors in timed relation.

3,866,739
FREE FLOW DEVICE FOR CONTAINER UNSCRAMBLERS

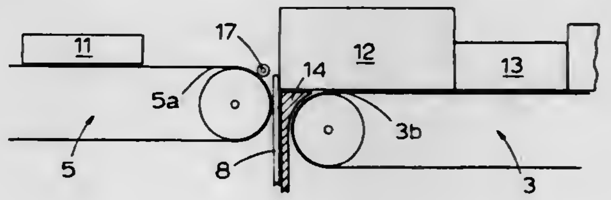
Thaddeus John Sikorski, Park Ridge, Ill., assignor to Standard Metal Products, Franklin Park, Ill.
Filed Feb. 28, 1973, Ser. No. 336,450
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 **12 Claims**



1. Apparatus for unscrambling containers, comprising:
a take away conveyor;
a shunting bar converging toward said take away conveyor;
means for conveying containers to and along the shunting bar toward the take away conveyor;
means for vibrating the shunting bar to assure free flow movement of the containers from the bar onto the take away conveyor; and
means on the bar for effecting spinning of the containers which contact the bar by being propelled theretoward by said conveying means, and wherein said means for effecting spinning comprises a frictional cushioning strip attached to and providing a facing of substantial thickness along the bar for engagement by the containers.

3,866,740
METHOD OF FEEDING DISCRETE ARTICLES FROM A STORAGE LOCATION AND A MACHINE THEREFOR

Thomas William Greathead, Billericay, England, assignor to The Post Office, London, England
Filed July 5, 1972, Ser. No. 269,209
Claims priority, application Great Britain, July 6, 1971, 31756/71
Int. Cl. B65g *47/26*
U.S. Cl. 198—34 **4 Claims**



1. A system for feeding discrete articles of diverse shape and size from a first work station to a second work station at which the articles are processed sequentially in an operation which takes a randomly variable time; said system comprising first conveying means for conveying the articles along a path from

the first work station to a storage location; second conveying means for conveying the articles from the storage location to the second work station, each of said first conveying means and said second conveying means having a start and an end with the end of the first conveying means being adjacent to the storage location; a barrier interjacent the end of the first conveying means and the start of the second conveying means, means for moving the end of the first conveying means, transversely of said path, relative to the barrier between a first relative position in which the barrier is clear of said path and transfer of an article from the first conveying means to the second conveying means is permitted and a second relative position in which the barrier blocks said path and said transfer is prevented; intermediate conveying means located between the barrier and the start of the second conveying means above the level of the barrier to be engageable with each article during transfer thereof and arranged to be driven at a rate sufficient to convey the article being transferred towards the start of the second conveying means faster than the first conveying means conveys articles thereon towards the storage location thereby to effect separation between the article being transferred and other articles on the first conveying means; and control means for controlling the relative position of the barrier and the end of the first conveying means, said control means being operable at the second work station to cause the barrier and the end of the first conveying means to assume their first relative position and sensing means arranged to sense said separation and cause the barrier and the end of the first conveying means to assume their second relative position whereby the articles are transferred seriatim.

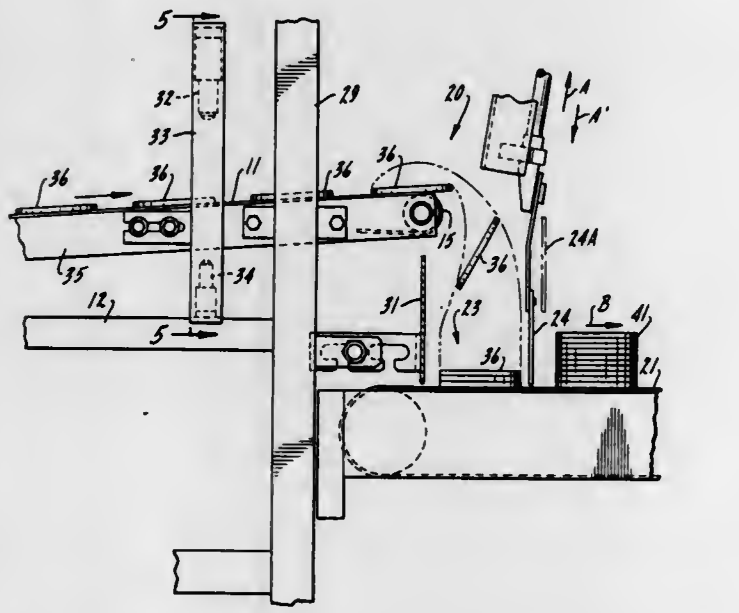
3,866,741
STACKER AND METHOD OF STACKING FROZEN FOOD PATTIES

Thomas J. Carbon, Addison; Josef T. Zeisberger, Chicago; Louis R. Richards, Mokena, and Henry N. Lekan, Chicago, all of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed June 21, 1973, Ser. No. 372,236

Int. Cl. B65g *57/00*

U.S. Cl. 198—35 **10 Claims**



1. A stacker for stacking frozen food patties or like disc-shaped articles, comprising:

a substantially horizontal input conveyor, having a terminal end located at a stacking station for conveying frozen food patties or like disc-shaped articles to the stacking station at a predetermined speed and with predetermined minimum spacing, the input conveyor discharging the articles, in free fall, over its terminal end;

a normally stationary stacking conveyor, extending outwardly of the stacking station from a stacking location at a point directly below the terminal end of the input conveyor, the vertical distance from the terminal end of the input conveyor to the stacking conveyor being sufficient to allow each article to rotate through an angle of about 180° as it falls toward the stacking conveyor;

a guide, movable between a stack guidance position adjacent the stacking conveyor and a stack release position displaced upwardly from the stacking conveyor and outwardly from the stack guidance position, for guiding the articles to accumulate in an orderly stack on the portion of the stacking conveyor at the stacking location;

stacking conveyor actuating means for actuating the stacking conveyor for a limited time interval, not substantially greater than the time interval between discharge of successive articles into the stacking station, to transport an accumulated stack of articles away from the stacking location;

guide actuating means for actuating the guide from stack guidance position to release position and back again in timed relation to operation of the stacking conveyor actuating means, the guide returning to stack guidance position before more than one article for the next stack reaches the stacking conveyor;

and means to monitor article accumulation at the stacking location and to energize both of said actuating means when a desired accumulation has been attained.

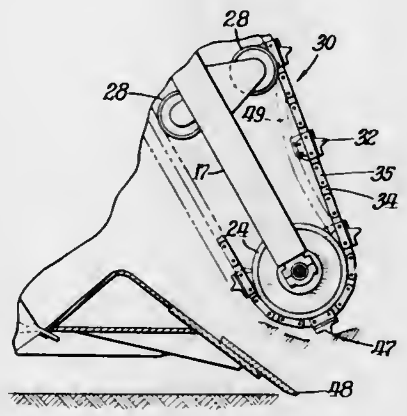
3,866,742
ANTI-KINK AND ROLLBACK DEVICE FOR ELEVATING SCRAPERS

Gary P. Freese, and Ronald E. Sarff, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 18, 1972, Ser. No. 316,049

Int. Cl. B65g *19/00*

U.S. Cl. 198—175 **5 Claims**



1. In a chain and flight assembly consisting of a plurality of flight members and a plurality of chains, at least one flight member extending between the chains, said flight member pivotally associated through link pins with a plurality of chain links, said chains comprising two parallel series of inner and outer overlapping side bars pivotally connected by said pins, and further including means for limiting rollback as well as back-flexing of the chain, said last named means comprising two pairs of stops mounted on said at least one flight member, each of said stops including a first stop surface thereon positioned so as to contact associated chain links and thereby limit back-flexing of the chain, a second stop surface thereon positioned so as to contact associated chain links and thereby limit rollback of the chain, and wherein said second stop surface is angled with respect to said first stop surface, and wherein each flight member comprises a baseplate and wherein said stops are located thereon with two pairs of spaced stops secured to each baseplate in line with the inner side bars so as to be adapted to be in contacting relation therewith and thereby limit rollback as well as back-flexing of the chain.

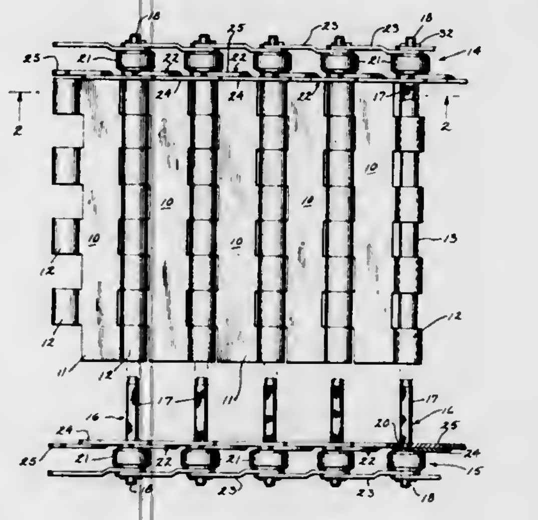
3,866,743
HINGED METAL BELT CONVEYOR

Charles T. Jorgensen, 6046 Lake Worth Rd., Box 946, Lake Worth, Fla. 33460

Filed July 20, 1973, Ser. No. 381,215

Int. Cl. B65g *15/30*

U.S. Cl. 198—195 **5 Claims**



1. A metal belt conveyor comprising:

a hinged apron belt assembly comprising a plurality of conveyor plate sections, hinge loops carried by the ends of said sections with the loops of adjacent sections in transverse alignment, and hollow hinge rods extending through said loops;

and left and right hand roller chain assemblies each comprised of

a plurality of shafts each having a mounting portion, a projecting portion adapted to be inserted and held within the open end of one of said hinge rods, and a shoulder separating said mounting and projecting portions,

said roller chain assemblies being joined to said belt assembly solely by the engagement of said projecting portions within the open ends of said hinge rods;

a side wing mounted on the mounting portion of each pair of adjacent shafts with adjacent side wings overlapping each other,

a roller received on the mounting portion of each shaft,

and restraining means disposed adjacent the end of each mounting portion opposite said shoulder, said restraining means cooperating with said shoulders to prevent axial withdrawal of the side wings and rollers from said mounting portions.

3,866.744
DUCT FOR FILM-CONTAINING CASSETTES

Klaus Klose, Holzkirchen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

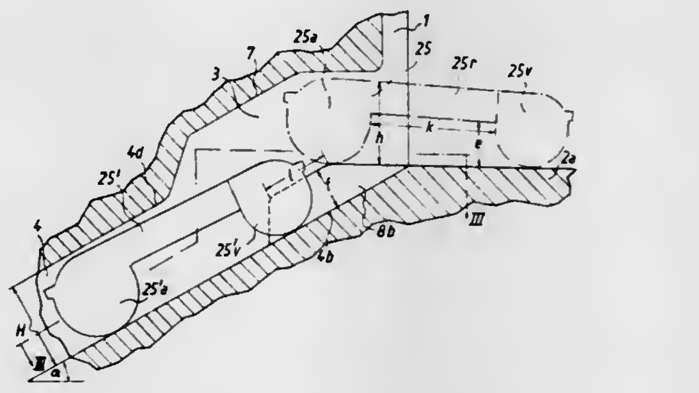
Filed Sept. 20, 1973, Ser. No. 399,181

Claims priority, application Germany, Sept. 22, 1972, 2246524

Int. Cl. B65g *11/20*

U.S. Cl. 198—278 **7 Claims**

1. A duct for substantially U-shaped film-containing cassettes of the type having a first leg constituting a supply section, a second leg constituting a takeup section and having a width exceeding that of said first leg, and a web constituting an intermediate section, said duct including wall means defining a channel having an inlet and a main portion communicating with said inlet, said inlet being configurated to allow therein the passage of cassettes in a plurality of different orientations and said wall means being provided with restricting means located in the region of said inlet and arranged to permit cassettes to pass through said inlet and into said main portion of said channel only in a single predetermined orientation of cassettes during introduction into said inlet, a U-shaped cassette being in said single predetermined orientation when said second leg is located ahead of said first leg, as considered in the direction of introduction into said channel and said first and second legs extend downwardly from said web, said wall means having surfaces bounding said inlet of said channel and one of said surfaces including a pair of ramps over which said second leg of a cassette slides during introduction into said inlet, said ramps forming part of said restricting means and being spaced apart by a distance exceeding the width of said first leg of a U-shaped cassette so that such first leg can travel between said ramps during introduction of the respective cassette into said channel.



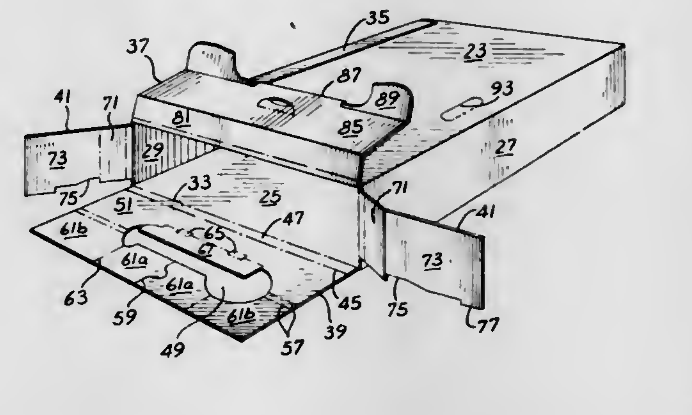
3,866,745
FIBERBOARD CONTAINER FOR PACKAGING AN ARTICLE

Joseph J. Dlugopolski, Lombard, Ill., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Dec. 18, 1972, Ser. No. 316,110

Int. Cl. B65d *25/10*

U.S. Cl. 206—45.14 **10 Claims**



1. A partially folded paperboard container blank for packaging a flanged article having a surface extending transversely from the flange thereof, which blank comprises

a tubular body section proportioned to receive the flanged article and having top and bottom panels and a pair of side panels,

end closures at each end of said tubular body section for closing the openings thereinto,

at least one of said end closures having upper and lower flaps attached respectively to said top and bottom panels, one of said flaps being constructed to extend into said body section in overlying relationship to a portion of the flange of the article and having an edge which is shaped to lie in generally abutting relationship with the transverse surface of the article when the closure is completed, at least one of said side panels extending perpendicular to said top and bottom panels when set up to receive a flanged article, said one side panel having a side flap hinged thereto which forms a part of said one end closure, said side flap having a first panel adapted to extend into said tubular body section and a second panel hinged thereto for extension toward said other side panel, said second panel having a locking tab located for insertion between said shaped edge of said one flap and the transverse article surface when said one end closure is completed, and

the other of said upper and lower flaps including a subpanel adapted to extend into said body section and a main panel hinged thereto for disposition extending generally transverse to and between said top and bottom panels, said main panel having means for engagement with said one flap to lock said main panel in said transverse disposition.

3,866,746

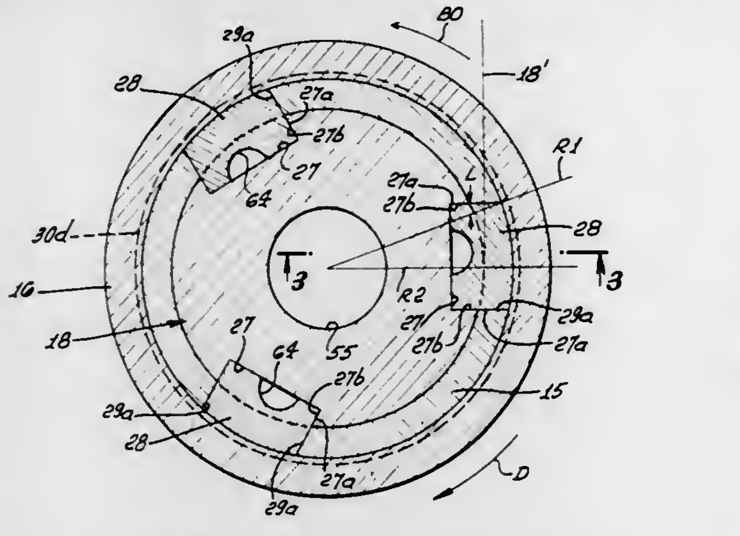
ROTARY BORE HOLE AIR HAMMER DRIVE MECHANISM

Alfred R. Curington, Houston, Tex., assignor to Bakerdrill, Inc., Spartanburg, S.C.

Filed Aug. 27, 1973, Ser. No. 392,076

Int. Cl. E21c *1/12*

U.S. Cl. 173—73 **19 Claims**



1. In hammer drilling apparatus comprising: a housing structure connectible to a drill string and including a housing section and a drive member detachably secured to and surrounded by said housing section; an anvil in the housing structure; a piston reciprocable in said housing structure for intermittently impacting against said anvil; said anvil having a plurality of circumferentially spaced, longitudinal recesses formed by side walls disposed on generally radial opposed planes; said drive member having circumferentially spaced openings therein extending completely through said drive member, said openings also being formed by side walls disposed on generally radially opposed planes; drive segments in said recesses and openings and having side walls engaged by said walls of said anvil and said drive member; said housing section surrounding said drive member, openings and segments to close said openings, said housing section engaging said segments to retain said segments in said recesses and openings.

3,866,747

CIGARETTE CASE

William A. Scholz, 555 Armsley Sq., Ontario, Calif. 91761

Filed Jan. 10, 1973, Ser. No. 322,389

Int. Cl. A24f *15/18;* **B65d** *85/10*

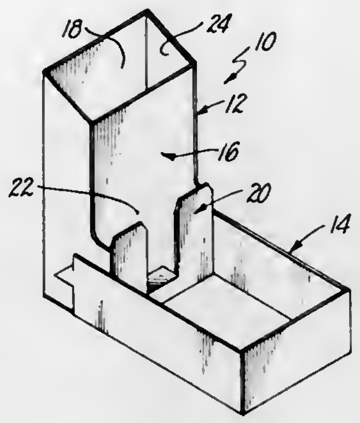
U.S. Cl. 206—94 **15 Claims**

1. A cigarette case for containing a cigarette pack and an additional article such as a match book, lighter, keys or the like, comprising:

a hollow rectangular body having front and rear side walls, edge walls and a bottom wall joined to one another along their edges to form a first rectangular pocket opening through the upper end of said body for receiving a cigarette pack, portions of said edge and bottom walls extending forwardly beyond said front side wall, and an additional wall extending between said edge wall portions forwardly of and in spaced parallel relation to said front wall and joined along its edges to said edge and bottom wall portions to form with said wall portions and said front side wall a second upwardly opening pocket located at the front side of said front side wall and externally of said first pocket for receiving said article,

a cover, and

hinge means joining said cover to said body for movement between a closed position wherein the cover closes the top opening of said first pocket and open position wherein said top opening is uncovered.



3,866,748

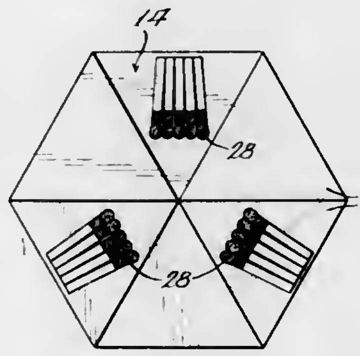
MEANS FOR CARRYING AND DISPLAYING ARTICLES

Robert A. Manning, Jr., 4714 Lee St., Downers Grove, Ill. 60515

Filed June 20, 1972, Ser. No. 264,633

Int. Cl. A24f *27/00;* **B65d** *73/00;* **A63h** *33/00*

U.S. Cl. 206—111 **4 Claims**



1. Means for carrying articles comprising a flexible device comprising a plurality of hingedly connected panels folded in a twisted closed loop in a substantially planar configuration, said device being manipulable to reversibly locate certain panels facing outward with certain other panels facing one another, and a substantially thin and flat article mounted on one of said facing panels and being entirely hidden from view, said device being manipulable to expose said article.

3,866,749

HOLDER FOR GOLF BALL POSITION MARKER AND A MARKER THEREFORE

Arthur Thomas Stainer, Poole, England, assignor to Jack Smith (Gunmakers) Limited, Poole, Dorset, England

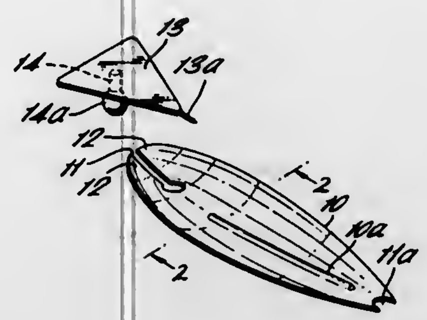
Filed Apr. 10, 1973, Ser. No. 349,863

Claims priority, application Great Britain, Apr. 10, 1972, 16426/72

Int. Cl. A63b *57/00;* **B43k** *29/00;* **B65d** *85/54*

U.S. Cl. 206—234 **2 Claims**

1. In combination a holder for a golf ball position marker and a marker therefore, wherein the holder comprises an elongated member provided with ends, a recess formed in one end and wherein said maraker comprises a substantially flat head portion and a stem member provided on one side of the head portion, said stem member being received in the recess in the holder, said marker having means to retain the marker in a detachable manner on the holder, and wherein the head portion of the marker is provided with a writing means extending from a side edge thereof.



3,866,750

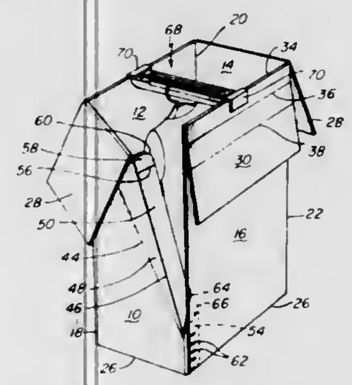
SHIPPING WARDROBE

Herbert S. Collin, c/o Collin Box & Supply Co., Newton, Mass. 02118

Filed Dec. 10, 1973, Ser. No. 423,204

Int. Cl. B65d *85/18*

U.S. Cl. 206—290 **5 Claims**



1. A storage and shipping wardrobe comprising:

a pair of sidewalls, a rear wall and a front wall arranged in a rectangular configuration;

flap means connected to the bottom edge of each of said walls and being constructed to be foldable to define a bottom for said wardrobe;

at least one of said side panels having a flap formed along the upper edge thereof, said flap being foldable at least in part downwardly along the outer surface of said side panel to define a gripping handle having a slot which is exposed at least at the front of said wardrobe;

said front wall of said wardrobe having a door hinged along a hinge line, said door having a free edge which, when said door is closed, lies adjacent the front edge of said at least one panel, said door having a tongue formed along said free edge thereof, said tongue being hinged to said door and disposed at a location to enable said tongue to be inserted exteriorly of said sidewall and into said slot when said door is closed.

3,866,751

BOOK WITH CASSETTE HOLDING RECESS

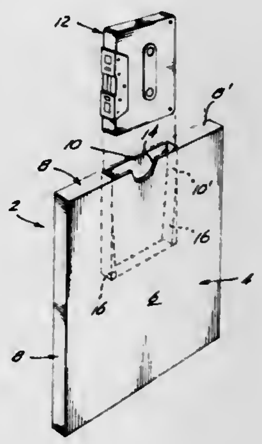
Donald C. Holert, 3915 S.W. Monroe, Seattle, Wash. 98116

Filed Apr. 24, 1972, Ser. No. 247,140

Int. Cl. B65d *79/00, 81/00, 85/67*

U.S. Cl. 206—387 **7 Claims**

1. In combination, a tape cassette, and a flat, stiff, discrete, hollow, broad-profiled, narrow-edged case which is adapted to stand upright on edge without lateral support, and which has a quadrilateral outline about the profile thereof, and oppositely disposed faces thereon which are spaced apart by substantially the edgewise thickness of the cassette, and which coterminate with one another at the outline of the case and define the edges of the case therebetween, the profile dimensions of the case being adapted so that the case is readily perceivable and graspable in the manner of a book, on and from a shelf, and the cassette being removably inserted in the case adjacent one edge thereof, in a profile portion of the case constituting a minor fraction of the profile area of the case, and there being an opening in the one edge of the case which is in registry with the cassette and adapted so that the cassette can be passed edgewise into and out of the case therethrough, and means disposed in the case about the cassette, which are operative to define a trapezoidally cross-sectioned recess in the case adjacent the opening in the one edge thereof, the non-parallel walls of which recess are formed by a pair of wedge-shaped members which are secured in the case at the recess and yieldably constructed to interengage with the cassette upon the insertion thereof to releasably retain the cassette in the case when the opening is downwardly oriented.



3,866,752

INCLINED ENDLESS SCREEN BELT WITH TRANSVERSE BAR

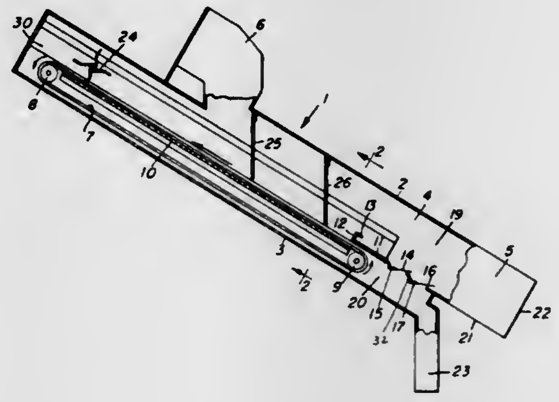
Oliver K. Hobbs, Box 1306, Suffolk, Va. 23434

[*] Notice: The term of this patent subsequent to June 6, 1991 has been disclaimed.

Continuation of Ser. No. 882,846, Dec. 8, 1969, Pat. No. 3,667,599. This application Jan. 20, 1972, Ser. No. 219,452

Int. Cl. B03b *7/00*

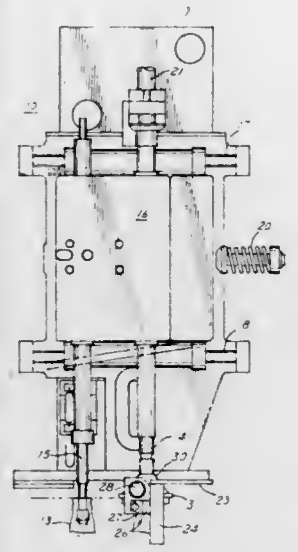
U.S. Cl. 209—12 **9 Claims**



1. An apparatus for separating particles which will roll from particles which will slide down an incline comprising a continuous belt looped about longitudinally spaced rollers, said belt having an inclined upper reach with one end elevated above the other end and a surface adapted to support said particles, means for driving the belt with the upper reach moving towards its elevated end, said surface having upstanding ribs with spaces therebetween adapted to trap only some of said particles, an upstanding bar disposed across the belt adjacent to its said other end which prevents particles from sliding from the said other end of the belt but permits rollable particles to roll thereover, and means for collecting all of the particles which roll over the said bar.

3,866,753
BOTTLE HEIGHT INSPECTION APPARATUS

Colin Milton, Thornton, Colo., assignor to Columbine Glass Company, Inc., Wheat Ridge, Colo.
Filed Sept. 26, 1973, Ser. No. 400,890
Int. Cl. B07c
U.S. Cl. 209—73 **6 Claims**



1. In a machine for the continuous testing on a production line of bottles of substantially uniform size including means for moving the bottles in line at the same rate and at equal spacing and a test head for effecting a test of a bottle characteristic moved axially into engagement with each bottle in turn at a test position and moving laterally forward along the line in engagement with the top of the bottle for a predetermined stroke during the test period and then being withdrawn, and means positioned along the line of bottles for ejecting each defective bottle, a device for testing the height of each bottle in turn which comprises:

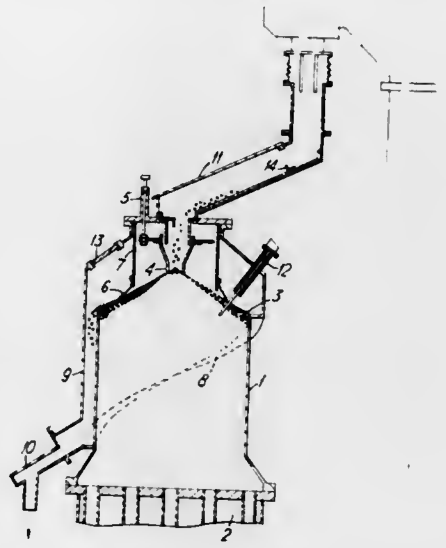
- a magnetic probe mounted in a predetermined position on said machine and having a sensing axis transverse to the line of bottles and laterally forward of said test position within the length of said predetermined stroke,
- a magnetic member on the test head positioned to be spaced from said sensing axis of said probe when said test head moves laterally into engagement with a bottle having a predetermined acceptable height and said member lying in the path of said probe axis when said head engages a bottle having a predetermined different height during said stroke, said magnetic member being a ring mounted on said head concentrically about the central axis thereof whereby rotation of the head on its axis does not affect the minimum spacing between said member and said probe, and
- means responsive to the magnetic sensing of the proximity of said magnetic member for preparing and actuating said bottle ejecting means to eject the different height bottle from the line.

3,866,754
PELLET SEGREGATION AND APPARATUS THEREFOR

David Evans, Swansea, Wales, assignor to The International Nickel Company, Inc, New York, N.Y.
Division of Ser. No. 156,288, June 24, 1971, Pat. No. 3,722,464. This application Nov. 21, 1972, Ser. No. 308,309
Claims priority, application Great Britain, July 7, 1970, 32963/70
Int. Cl. B07c ; B07b *13/10*
U.S. Cl. 209—73 **5 Claims**

1. A pellet classifier comprising:

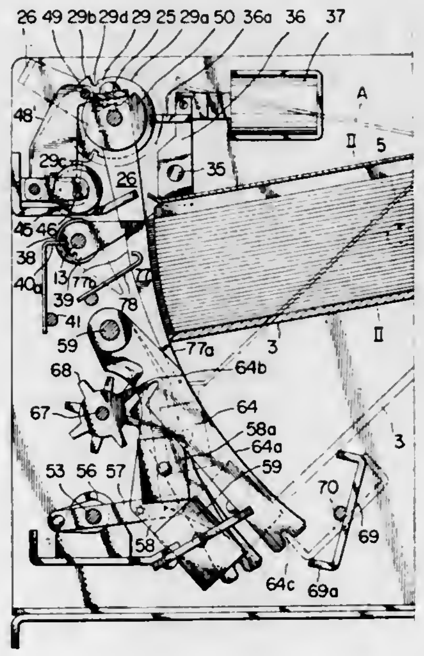
a. an open-topped reservoir having a continuous periphery;
b. feeding means including a nozzle for feeding a mixture of oversized and undersized pellets to the reservoir center to fill the reservoir and for forming a pellet pile having a conical surface, apex upwards, so that oversized pellets flow over the conical surface and over the reservoir periphery while undersized pellets become lodged in interstices in the conical surface;
c. at least one energy absorbing flexible curtain surrounding the nozzle, between the feeding means and the reservoir periphery for slowing the flow of pellets down the conical surface, thereby increasing the chance of lodging undersized pellets in the interstices in the conical surface;
d. a plurality of outlet means in the bottom of the reservoir for removing pellets from the reservoir to maintain the height of the pellet pile substantially constant;



e. adjustable dam means mounted on the reservoir periphery for maintaining a substantially horizontal dam over which oversized pellets overflow;
f. collecting means surrounding the reservoir periphery for collecting pellets overflowing the reservoir periphery; and
g. a screen for screening pellets overflowing the reservoir periphery into oversized and undersized pellets and means for recirculating the undersized pellets to the feeding means.

3,866,755
INFORMATION CARD SELECTION AND RETRIEVAL METHOD AND APPARATUS

Nobuyuki Yanagawa, Tokyo, Japan, assignor to Richo Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1973, Ser. No. 429,193
Claims priority, application Japan, Dec. 28, 1972, 47-130176
Int. Cl. B07c *3/10*
U.S. Cl. 209—80.5 **15 Claims**

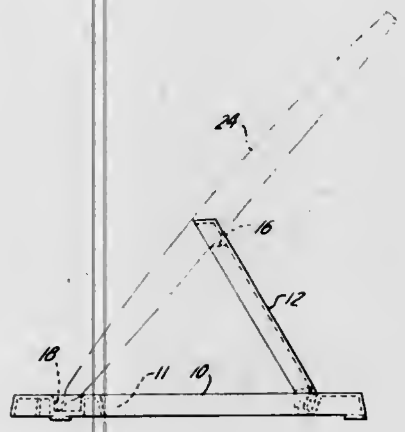


1. An information card selection and retrieval apparatus comprising:

- a cassette for containing a stack of information cards each having an edge coded with at least one notch and containing magnetic material, the coded edges of the cards facing in the same direction and protruding from the cassette;
- a tray for fixedly mounting the cassette and means for moving the tray pivotally about an axis parallel to the coded edges of the cards between a lowermost position at which the coded edges of the cards are at a lowermost position and are substantially lower than the opposite edges thereof and upper positions;
- a plurality of selector bars disposed to face the coded edges of the cards in the lowermost position of the tray, each selector bar movable between an ON position to abut said coded edges and an OFF position away from the coded edges, each selector bar being narrower than a notch;
- settable means for disposing at least one selector bar in its ON position;
- selector magnet means and means for moving the magnet means against the coded edges of the cards while the tray is in its lowermost position to couple magnetically with the magnetic material of the cards and for subsequently moving the magnet means away from the cassette to thereby move therewith to a selected position partly out of the cassette each card whose notch coding is registered with said at least one selector bar in the ON position while the other cards are prevented from such movement by the lack of registration between their notch coding and the at least one selector bar in the ON position;
- means for subsequently pivoting the tray upwardly; and
- means for engaging each selected card in the selected position to withdraw it further from the cassette.

3,866,756
PEN STAND

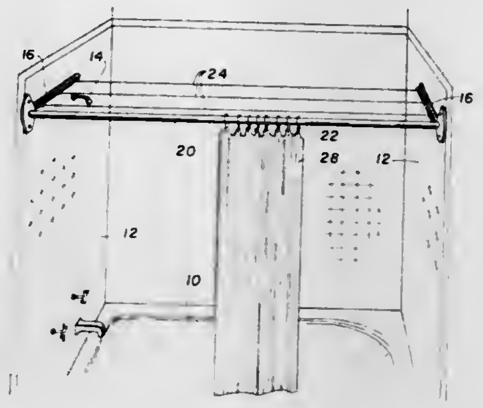
James G. Moore, Cedar Rapids, and Fay W. Oltman, Anamosa, both of Iowa, assignors to Souvenir/Inc., Cedar Rapids, Iowa
Filed Jan. 2, 1974, Ser. No. 429,875
Int. Cl. B43k *23/04*
U.S. Cl. 211—69.5 **5 Claims**



1. A pen stand including a base and a pen-rest, the base comprising a frame having an opening that receives and surrounds the pen-rest in a collapsed condition of the pen stand, means at one side of the frame for securing one end of the pen-rest to the base, said pen-rest having a pen-receiving and locating formation at a portion thereof remote from its secured end for receiving and locating a portion of a pen spaced substantially from the writing tip thereof, the part of the frame remote from said one side thereof having a writing tip locating formation for locating the writing tip of a pen, said writing tip locating formation being adjacent the pen-receiving and locating formation of the pen-rest when the latter is disposed in the frame.

3,866,757
CLOTHES DRYER FOR BATHROOMS

John R. Lund, 419 Markham Rd., Scarborough, Ontario, Canada
Filed Sept. 14, 1973, Ser. No. 397,343
Int. Cl. A47h *1/02*
U.S. Cl. 211—105.1 **3 Claims**

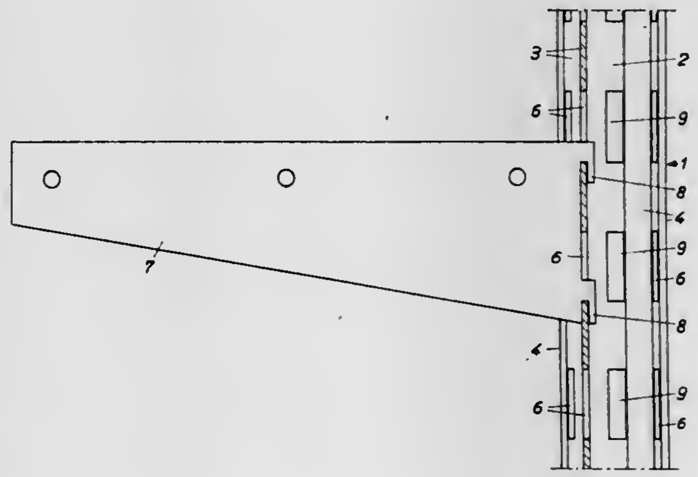


1. In combination with a bathtub shower extending between first and second parallel vertical walls, a shower head extending out of one of said walls

- first and second horizontally elongated brackets lying in a common horizontal plane disposed above the head, each bracket being secured to a corresponding wall, each bracket having at a corresponding end rod supporting means;
- a horizontal curtain rod overlying the front edge of the tub, said rod being supported at each end by a corresponding one of the rod supporting means and extending between the brackets; and
- a plurality of horizontal parallel wires which are plastic coated and which are coplanar with and parallel to said rod, each wire being secured at each end to a corresponding bracket and extending tautly therebetween.

3,866,758
FRAME WORK

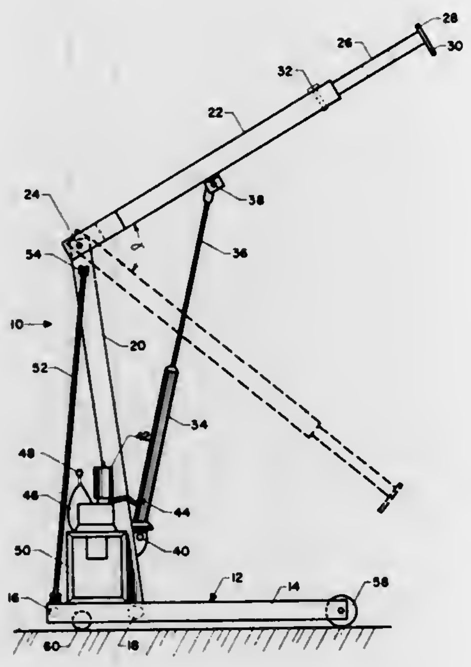
Marcel R. Strassle, Rosenberg, 9533 Kirchberg, Switzerland
Filed Apr. 16, 1973, Ser. No. 351,484
Claims priority, application Switzerland, Apr. 14, 1972, 5524/72
Int. Cl. A47f *5/08*
U.S. Cl. 211—107 **5 Claims**



1. A framework having at least one support column and a bracket adapted to be engaged thereto comprising: a tubular support column with a substantially rectangular or square cross-section and a plurality of vertical bridge-elements projecting outwardly therefrom; each of said bridge-elements carrying a flat rail disposed substantially parallel to a wall face of said tubular column; at least some of the bridge-elements having first vertically aligned slot-like orifices; least one wall face of said tubular column having similarly disposed second

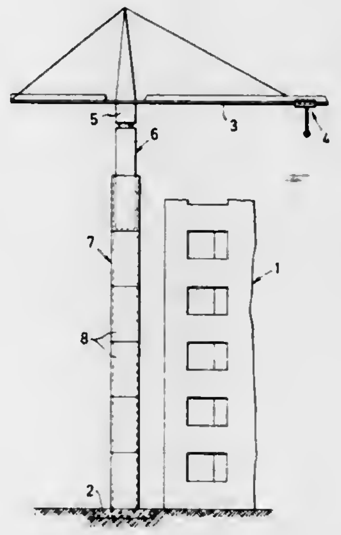
vertially aligned slot-like orifices; said first and second slot-like orifices of said bridge-elements and said wall face residing in perpendicular planes; whereby said bracket may be engageable with said first and second slot-like orifices, said bracket including hook means adapted to engage either said first or second slot-like orifices with the width of said slot-like orifices being substantially equal to the thickness of said hook means, adjacent rails defining an intermediate space for the passage of said bracket extending outwardly from engagement with a slot-like orifice, said intermediate space having a width substantially equal to the thickness of said bracket, said rails thereby limiting lateral movement of said bracket extending outwardly therebetween.

3,866,759
PORTABLE HOIST
Charles M. Lucas, c/o Gold Coast Corp., 2990 Griffin Rd., Ft. Lauderdale, Fla. 33312
Filed Nov. 16, 1972, Ser. No. 307,008
Int. Cl. B66c *23/06*
U.S. Cl. 212—8 R **1 Claim**



1. A portable crane comprising:
a structural frame;
a first pair of wheels coupled to one end of said frame;
a second pair of wheels coupled to the opposite end of said frame;
said frame comprising a first pair of rigid parallel structural members;
first pair of cross-members, the first of said cross-members coupled perpendicularly at one end of each said structural frame member, a second cross-member coupled substantially near the mid-section between said first structural frame members whereby the cross-members and portions of the structural frame side members form a rectangular portion;
a vertical support member obliquely coupled to said middle cross-member bar;
a boom rotatably coupled to one end of said vertical structural member;
boom lifting means obliquely coupled to said boom and said vertical support member for moving the boom through an angular distance;
extension means coupled within said boom for extending the length of said boom;
lifting means coupled to the end of said boom extension for coupling to an object to be lifted;
means for locking at least one of said wheels to prevent rotational motion of said wheel relative to said structural frame;
said boom lifting means includes a hydraulic chamber, a hydraulic piston moveably engaged within said chamber, a structural member coupling said piston to said boom;
means for providing hydraulic fluid into said piston chamber for raising said boom;
said hydraulic means includes an electric motor, said motor connected to hydraulic pump, and a hydraulic fluid reservoir coupled to said pump and into said piston chamber, said hydraulic chamber coupled at one end to said vertical supporting structure and at the other end to a mid-point on said boom; and
a pair of supporting rails, each of said rails coupled obliquely at its lower end to said frame and at its upper end to the lateral side of said vertical support member.

3,866,760
ROTARY TOWER CRANE
Elmar Reich, Biberach, Germany, assignor to Hans Liebherr, Biberach/Riss, Germany
Filed June 14, 1973, Ser. No. 369,971
Claims priority, application Germany, June 15, 1972, 2229318
Int. Cl. B66c *23/62*
U.S. Cl. 212—144 **8 Claims**

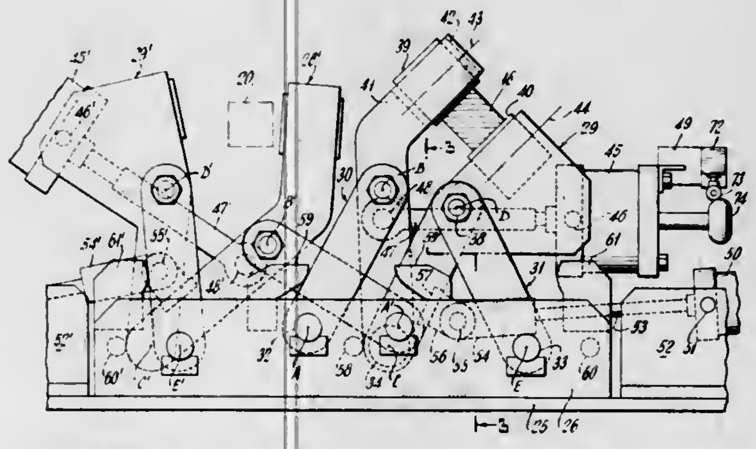


1. A rotary tower crane having a tower formed from a plurality of axially aligned tower sections each of said tower sections comprising:
a plurality of intersecting planar walls;
each of said planar walls of said tower section formed from at least one uniformly sized sidewall unit;
each of said sidewall units including a planar center section and two longitudinal edges;
connecting flange means on each of said longitudinal edges of said sidewall units, said connecting flange means detachably connecting adjacent sidewall units to form tower sections having cross sections of standard, closed, geometric forms;
each of said connecting flange means extending the length of said sidewall units and comprising:
first flange means connected to and intersecting said planar section of said sidewall means;
second flange means connected with said first flange means and intersecting said first flange means; and
said first flange means and said second flange means on adjacent sidewall units on adjacently intersecting walls of said tower sections coacting to form closed hollow sections.

3,866,761
DEVICE FOR PASSING TUBES THROUGH A HEAT TREATMENT INSTALLATION
Robert Della Rosa, Sedan, France, assignor to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France
Filed Mar. 16, 1973, Ser. No. 342,221
Claims priority, application France, Mar. 22, 1972, 72.10008
Int. Cl. C21d *9/14*
U.S. Cl. 214—1 P **9 Claims**

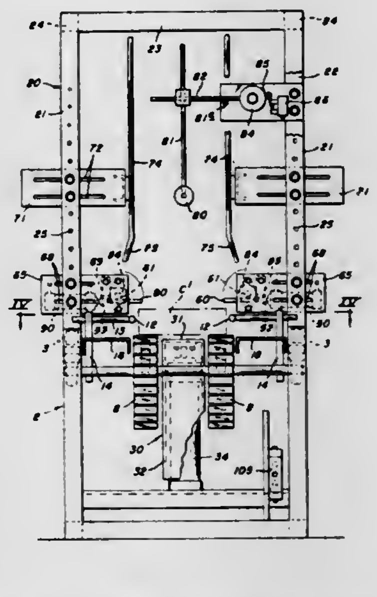
1. A device for passing tubes through a heat-treatment installation, comprising a heat-treatment installation, an input conveyor upstream of said heat-treatment installation having an assembly of pairs of rollers, an output conveyor downstream of said installation having an assembly of pairs of rollers, a carriage adapted to travel on the rollers of the conveyors and having two heads which are arranged at either end of said treatment installation and a beam which joins the two heads, a cap being provided on each head, mounted on a retractable arm and designed to fit just inside an end of the tube, and positive control means for displacing the carriage on the conveyor rollers in such a way that the caps can be introduced into the two ends of the tube to keep it round throughout the passage of the tube through said treatment installation on the carriage driven by said control means which, in addition, return the carriage to its starting position to receive another tube.

3,866,762
BILLET TWISTER
Hans Joachim Paletzki, Georgetown, S.C., assignor to Georgetown Steel Corp., Georgetown, S.C.
Filed July 24, 1973, Ser. No. 382,136
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QG **26 Claims**



1. Mechanism for removably engaging and rotationally translating a workpiece having opposed sides, comprising a frame, two jaw members pivotally connected to each other and having opposed work-engaging means at corresponding locations offset from their pivotal connection, a first linkage member pivotally connecting a first point on said frame to one jaw member at a location intermediate the work-engaging and jaw-to-jaw pivot locations thereof, a second linkage member pivotally connecting a second point on said frame to the other jaw member at a location intermediate the work-engaging and jaw-to-jaw pivot locations thereof, said frame pivot locations being sufficiently spaced in excess of the spacing between link-to-jaw connections for a work-engaging condition of said jaw members that a limited arcuate displacement of said link members will effect a rotational displacement of work engaged by said work-engaging means, and frame-referenced actuating means connected to at least one of said members for imparting such limited arcuate displacement.

3,866,763
AUTOMATIC CASE STACKER
Frank P. Alduk, 116 Guadalcanal Rd., New Castle, Pa. 16105
Filed July 12, 1972, Ser. No. 270,948
Int. Cl. B65g *37/30*
U.S. Cl. 214—6 BA **17 Claims**



1. Apparatus for arranging similar units into vertical stacks of predetermined height comprising:
a. a supporting frame with parallel sides and with a horizontally-extending conveyor means thereon comprising two parallel endless conveyors, one near each side of the frame with a space between them, the frame and conveyor having a receiving end onto which units to be stacked are placed in succession and a delivery end opposite the receiving end,
b. elevator means on the frame intermediate the two ends thereof and positioned in the space between the two endless conveyors, said elevator means having a platform which has a lower position over which units to be stacked are carried in succession by the conveyor means arranged to elevate each unit in turn to a selected uniform level above the conveyor means, with each succeeding unit after the first in a stack being raised underneath the one ahead until the stack comprises a predetermined number of units and is of a predetermined height, the elevator comprising also a fluid pressure-operated ram on which the platform is fixed and by which it is moved vertically,
c. said frame having upwardly-extending frame members at each side thereof between which the elevator lifts the units to form a stack, the side frame members each having a unit-supporting dog thereon with the dog on one side being directly opposite the one on the other side, said dogs being movable in a vertical arc between a position where they are clear of the upward travel of the elevator platform but project under a unit raised above the level thereof by said platform to a position entirely clear of any contact with the units, there being horizontally-acting cylinder and piston units arranged to move and hold said dogs in position where they are entirely clear of any contact with the units and effecting their return to a position where they may extend under a unit that has been elevated by the platform,
d. fluid pressure-actuated means controlled by the height of the stack of units above said dogs for selectively holding said dogs out of unit-contacting position whereby the completed stack may then be lowered into said conveyor means to be carried thereby to the delivery end of the conveyor.

3,866,764
APPARATUS FOR THE SINGLE WITHDRAWAL OF ARTICLES IN SHEET FORM FROM A STACK

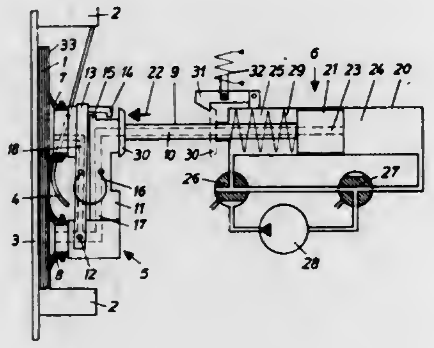
Hermann Leiser, Lohn, Switzerland, assignor to Strausak AG, Lohn, Switzerland

Filed June 6, 1972, Ser. No. 260,095

Claims priority, application Switzerland, June 11, 1971, 8493/71

Int. Cl. B65g *59/04*

U.S. Cl. 214—8.5 D **4 Claims**



1. An apparatus for the single withdrawal of articles of sheet from a stack, especially for picture postcard vending machines, having a suction device connected to a vacuum pump and movable to and fro in the direction of the stack and a drive device for the advance and retraction of the suction device, characterized in that:
- the suction drive comprises two suction cups which are so arranged in relation to the stack that the first suction cup comes to act in the middle part and the second cup comes to act adjacent the edge of the article of sheet to be withdrawn, and in that
- the drive device includes a longitudinally movable guided drive rod; and in that
- the suction device includes a cross-carrier connected to an end of the drive rod and extending transversely from the drive rod, a pivot arm pivotally connected to the cross-carrier and movable in a plane determined by the axes of the suction cups, stops limiting the pivoting range of the pivot arm, and a spring connected to the cross-carrier and the pivot arm for pressing the pivot arm toward the stack end of the pivoting range, the first suction cup being located on the pivot rod substantially in coaxial alignment with the drive rod, and the second suction cup being located adjacent the pivotal connection of the cross-carrier to the pivot arm, the axis of the second suction cup being parallel to the drive rod, whereby the drive device is operatively connected to the suction device to provide a limited amount of idle motion between the drive device and the first cup during the beginning of the retraction of the suction device in the withdrawal movement direction, so that the second suction cup is firstly retracted alone, thus lifting the edge of the article of sheet form away from the stack before its withdrawal.

3,866,765
SHEET STACKING AND PILE SEPARATING APPARATUS AND METHOD

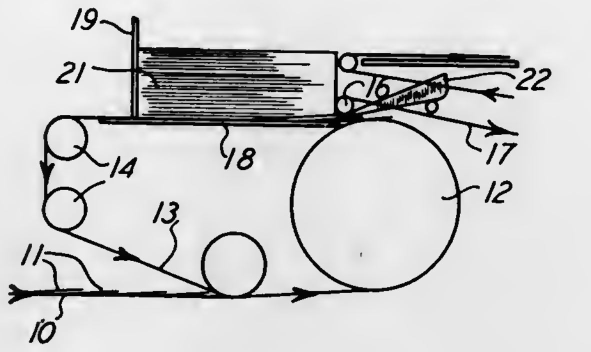
Walter J. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Oct. 11, 1973, Ser. No. 405,688

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 SS **22 Claims**

1. A sheet stacker and pile separator apparatus comprising a conveyor for supporting sheets in a horizontal orientation and an imbricated relation and moving said sheets in a stream relation in the direction of the imbrication, a stop disposed at the downstream end of the stream in the path of movement of said sheets for stripping said sheets from their stream relation and causing them to form a stack of said sheets, a stack platform disposed adjacent said stop for receiving and supporting said stack, a combined separator and stack displacer member movably mounted directly above the stream and being movable along with said stream for movement of said member into said stack in the direction of movement of the stream of sheets and thereby separating the end of said stack into an end pile of said sheets, and a powered member connected to said combined separator and stack displacer member for displacing said end pile from the remainder of said stack.



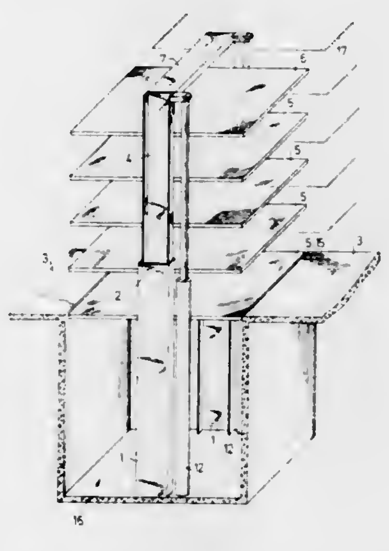
3,866,766
MULTI-LEVEL PARKING APPARATUS

Kaspar Klaus, 46 Schlachthofstrasse, 894 Memmingen, Germany

Filed July 28, 1972, Ser. No. 276,036

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 E **5 Claims**



1. In a multi-level parking apparatus to accomodate a plurality of vehicles comprising a plurality of superimposed platforms connected together in a rigid structure, movable guide members disposed on said structure cooperating with fixed guide members, and means for raising and lowering said structure through the agency of said movable and fixed guide members, wherin the improvement comprises said structure being disposed within cavity-defining means with which a vehicle drive-on area is associated and wherein said guide members comprise a plurality of fixed upright guide elements associated with said cavity-defining means and a plurality of movable guide elements associated with said structure and engaging telescopically with said structure and engaging telescopically with said fixed guide elements so as to overlap them when said structure is in a raised position, said movable guide elements being adjustable in their height so that in a lowered position said structure is disposed substantially below the ground, said movable guide elements being disposed on opposite sides and near the central portion of the platform structure and extending beyond the uppermost platform, a cross member, said guide elements being interconnected by said cross member.

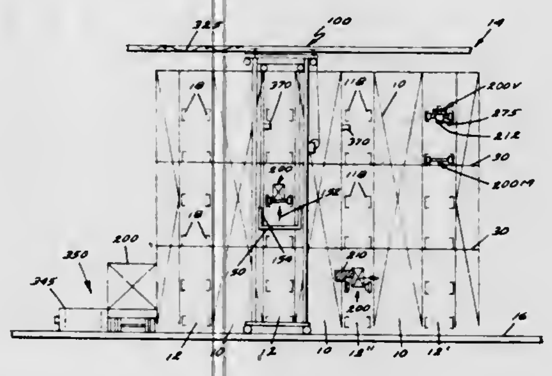
3,866,767
MOBILE TIER PICKING APPARATUS FOR A WAREHOUSING SYSTEM

Howard A. Zollinger, Ada Township, Kent County, and Le Roy Lubbers, Grand Rapids, both of Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

Filed Feb. 15, 1973, Ser. No. 332,903

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 B **10 Claims**



1. In a warehouse system comprising a mobile transfer vehicle, tiers of storage bin levels including access aisles with pairs of vertically spaced guide and support means extending along said aisles at each storage bin for carrying thereon in one said guide and support means of said pair, said mobile transfer vehicle which is adapted to travel within said aisles at a predetermined bin level, means on said mobile transfer vehicle for transferring unitized loads between a selected storage bin and said vehicle, said system including means movable across an end of said access aisles for transferring said mobile transfer vehicle between bin and aisle levels; the improvement comprising a mobile picking vehicle movable along the other one of said guide and support means of said pair at a predetermined bin and aisle level, said picking vehicle including picking means movably positioned thereon for picking an uppermost layer of articles of a unitized load removed from a storage bin and for transferring said layer of picked articles from said picking vehicle to a mobile transfer vehicle aligned with said picking vehicle at a selected storage bin level within an access aisle.

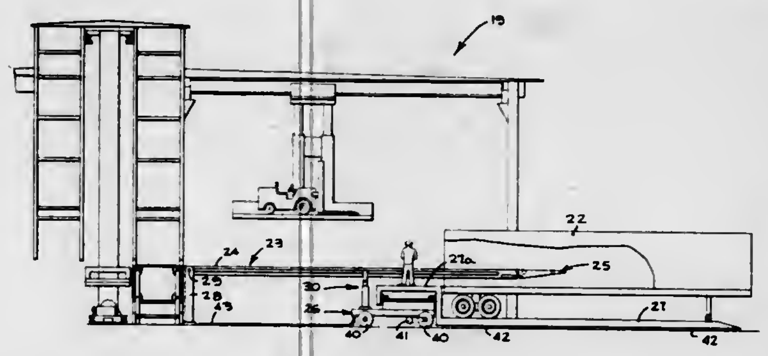
3,866,768
LOADING AND UNLOADING CONVEYOR

Stanley M. Weir, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 147,921, May 28, 1971, Pat. No. 3,715,043, which is a division of Ser. No. 20,711, March 18, 1970, Pat. No. 3,613,910. This application Aug. 1, 1972, Ser. No. 277,028

Int. Cl. B65g *67/02*

U.S. Cl. 214—38 B **2 Claims**



1. Apparatus for loading or unloading articles into or from a freight container comprising in combination, an elongated conveyor, means on said elongated conveyor for moving articles received thereon from one end thereof to the other, a ramp conveyor pivotally connected at one end to one end of said elongated conveyor and terminating at its opposite end in a wedge-like edge insertable under articles in the freight container, means on said ramp conveyor to move articles incrementally thereon from one end thereof to the other, said means including interdigitating stationary and movable fingers, said stationary fingers having a substantially planar lower surface, power operated means to raise and lower said one end of the elongated conveyor to bring the ramp conveyor to the approximate level of the floor of the freight container, and power operated means to pivot said ramp conveyor on the elongated conveyor to bring said ramp conveyor finger lower surface adjacent the level of the floor of the freight container to dispose said wedge-like edge for scooping articles from the container floor or depositing articles on the container floor.

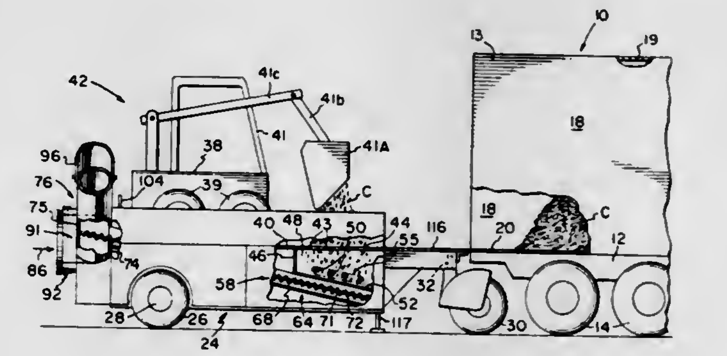
3,866,769
WOOD CHIP HANDLING SYSTEM

Norval K. Morey, Weidman, and Leward N. Smith, Remus, both of Mich., assignors to Morbark Industries, Inc., Winn, Mich.

Filed Feb. 20, 1974, Ser. No. 443,957

Int. Cl. B65g *67/26*

U.S. Cl. 214—44 A **5 Claims**



1. Apparatus for unloading and piling particulate material, such as wood chips or the like from a load carrying vehicle having a load supporting floor, said apparatus comprising a material handling vehicle having frame means defining a material handling chamber, deck means on said frame means extending at a level above the chamber longitudinally fore and aft of said handling vehicle, means for vertically positioning the forward end of said deck means at the level of the floor of a load carrying vehicle, means defining an opening through said deck means through which material may be dropped into said chamber, said deck means including wheel support portions extending along the sides of said chamber forming elongate, fore and aft extending supports for the wheels of an auxiliary material carrying vehicle such as a front end loader to enable it to move back and forth lengthwise of said deck means across said opening to and from a rearward end limit in which said auxiliary vehicle is positioned to dump material through said opening into said chamber, blower means at the rearward end of said handling vehicle for blowing material from said chamber, and conveying means in said chamber for conveying material introduced into said chamber through said opening to said blower means.

3,866,770
CONVEYING APPARATUS FOR A MATERIAL HANDLING VEHICLE

Harold S. Palmer, Oskaloosa, Iowa, assignor to Production Acres Mfg. Co., Oskaloosa, Iowa

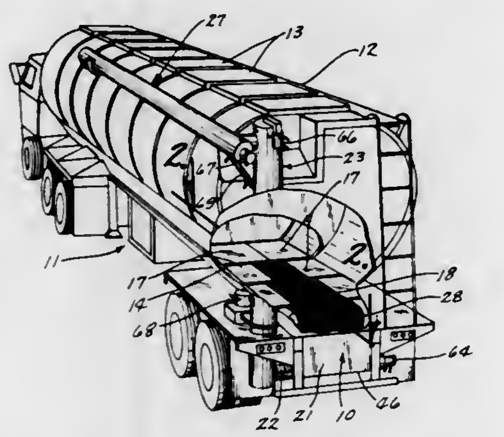
Filed Mar. 8, 1974, Ser. No. 449,217

Int. Cl. B60p *1/38*

U.S. Cl. 214—83.2 **7 Claims**

1. In a material handling system for a vehicle including a body unit having a longitudinal row of upright material containers having corresponding selectively operable bottom discharge outlets and a common discharge hopper for receiving material from said discharge outlets, a conveying apparatus for delivering material from said discharge outlets to said common discharge hopper comprising:

a. a longitudinally extended endless conveyor of a mesh construction having an upper run movable below and adjacent said outlets,
b. front and rear longitudinally spaced rollers for said endless conveyor, said upper run extended between said two rollers,
c. a drive roller for said endless conveyor located in said discharge hopper at a position downwardly and forwardly of said rear roller,
d. an idler roller located forwardly of said rear roller,
e. said endless conveyor having a portion which from said rear roller is trained about the lower portion of said drive roller and the upper portion of said idler roller and a lower run extended from said idler roller to said front roller in a parallel relation with the upper run thereof,
f. a feed pan corresponding to said upper length extended substantially between said front and rear rollers having an upper surface in contact engagement with the bottom surface of said upper length, and
g. a return pan corresponding to the lower run of said endless conveyor having an upper surface in contact engagement with the bottom surface of said lower run, said return pan having an upright curved front section arranged in a concentric relation with the front half section of said front roller.

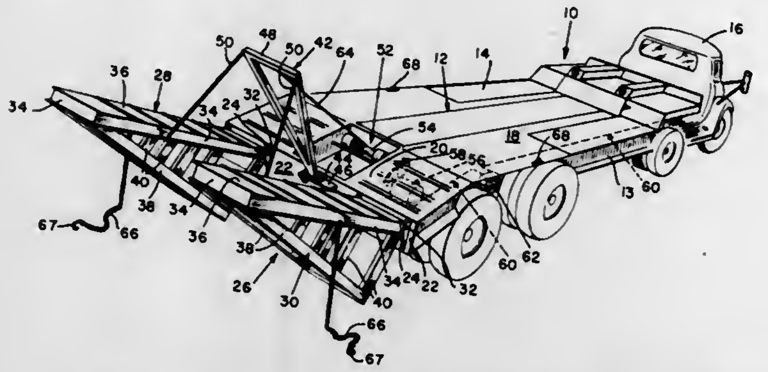


3,866,771

VEHICLE LOADING RAMP DISPLACEMENT APPARATUS

Lloyd W. Reid; Billy D. Rayle, both of Greensboro, and Harold C. Flinchum, Liberty, all of N.C., assignors to Reid's Trailer Inc., Pleasant Garden, N.C.

Filed Apr. 16, 1973, Ser. No. 351,543
Int. Cl. B65g *67/02*
U.S. Cl. 214—85 5 Claims



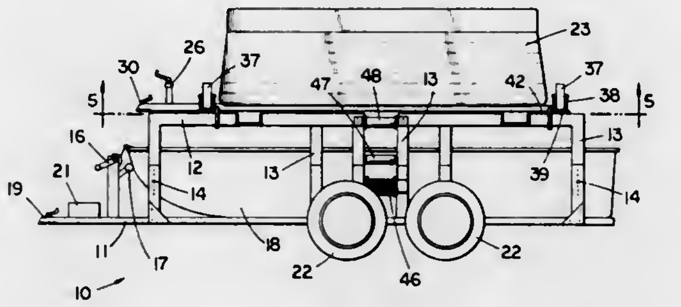
1. A vehicle having an elongated frame, a deck upon said frame defining a cargo supporting area, loading ramp means including a pair of spaced ramps at one end of said frame, means pivotably mounting said loading ramp means upon said frame for movement between a first, lowered position for facilitating loading and unloading of cargo, and a second, raised position during travel of the vehicle, a boom pivotably connected to said frame between said spaced ramps and flexible means interconnecting each of said spaced ramps to said boom, and power means including a winch recessed within said frame between said spaced ramps and having an elongated flexible member attached thereto and to the free end of said boom for pivoting said ramp means relative to said frame.

3,866,772

TWO DECK SPORT TRAILER

Dan J. Gardner, 2705 E. Washington St., Indianapolis, Ind. 46201

Filed Jan. 31, 1974, Ser. No. 438,434
Int. Cl. B60p *3/10*
U.S. Cl. 214—85.1 3 Claims



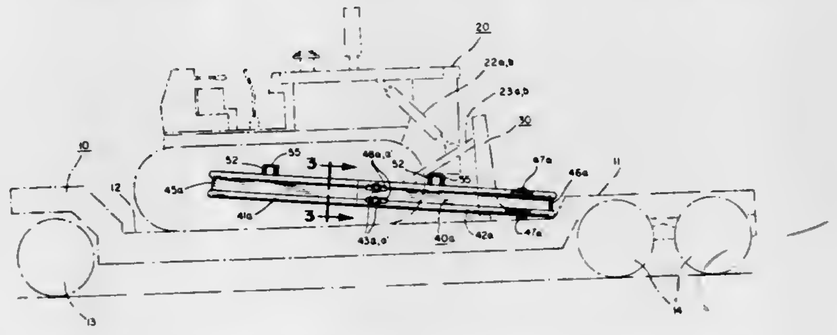
1. A trailer for transporting both a camper enclosure and a boat in stacked relation comprising, in combination, a wheeled trailer frame having an upper and a lower deck separated by upright frame members and a hitch at one end adapted for securing to a towing vehicle, an auxiliary frame of generally rectangular configuration adapted for attachment to the underside of a conventional camper enclosure, said auxiliary frame carrying wheels on the shorter pair of opposed sides of the auxiliary frame, said wheels having a pivotal connection to said auxiliary frame and thereby moveable between a supporting position in which they underlie and support the camper and a stowed position in which they are disposed in non-supporting position outboard of the camper, inclined ramp members detachably secured to said trailer frame adjacent said upper deck and spaced apart an amount corresponding to the space between the wheels on said auxiliary frame when in their supporting position for accommodation of said wheels, a winch on said wheeled trailer frame for drawing said auxiliary frame and attached camper up said ramp members and onto said upper deck, jacking means for temporarily lifting said auxiliary frame and camper to permit said wheels to be moved to their stowed position, means for fastening said camper to said upper deck, said lower deck of the trailer frame carrying longitudinal guide rails and further winch means for drawing a boat onto, and removing it from, said lower deck through the trailing end of said trailer frame, whereby said boat and camper can be loaded or unloaded on said trailer independently of each other.

3,866,773

METHOD OF FENDING COLLISIONS

Terry David Koch, Telford, Pa., assignor to Inno-Cept Corporation, Ambler, Pa.

Filed Oct. 16, 1972, Ser. No. 297,949
Int. Cl. B60p *3/06;* B60r *19/02;* B61f *19/04*
U.S. Cl. 214—152 4 Claims



1. Method for reducing the risk of injury to motorists from a collision with a large bulldozer in transist on an open-sided vehicle, said method consisting of separably attaching to said bulldozer a 'traffic protective device comprising a pair of longitudinally-extended rigid guard members each of which is separably attached to said bulldozer in a position generally parallel and adjacent to the exterior side of a blade-lifting arm member of said bulldozer, and each of which is adapted in length and configuration, when attached in the aforesaid position, at one of its ends to partially shield at least a portion of the adjacent vertical edge of said blade member of said bulldozer and at its other end at least to partially shield the adjacent extremity of said blade-lifting arm member, thereby to deflect another vehicle colliding with said open-sided vehicle away from said vertical edge.

3. Method for transporting on an open-sided vehicle a bulldozer having a generally transverse blade member of a width sufficient to cause said blade member to extend beyond a side of said open-sided vehicle, so as to reduce the risk of injury to motorists from a collision with said bulldozer in transit, said method consisting of:

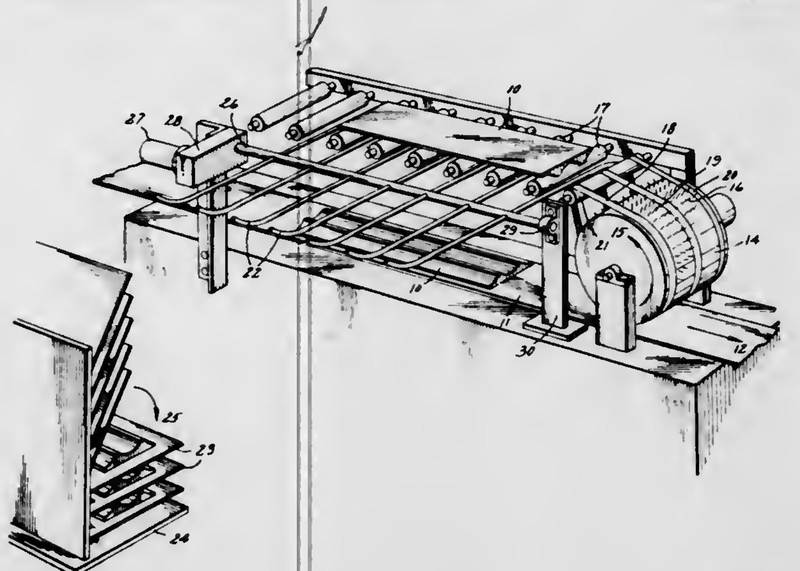
A. separably attaching to said bulldozer a traffic protective device comprising a pair of longitudinally-extended rigid guard members each of which is separably attached to said bulldozer in a position generally parallel and adjacent to the exterior side of a blade-lifting arm member of said bulldozer, and each of which is adapted in length and configuration, when attached in the aforesaid position, at one of its ends to partially shield at least a portion of the adjacent vertical edge of said blade member of said bulldozer and at its other end at least to partially shield the adjacent extremity of said blade-lifting arm member, thereby to deflect another vehicle colliding with said open-sided vehicle away from said vertical edge;
B. loading said bulldozer having said protective device on an open-sided vehicle with the longitudinal axis of said open-sided vehicle where said protective device is adjacent a side of said open-sided vehicle; and
C. transporting said bulldozer.

3,866,774

MECHANIZED THREAD BOOKING METHOD

Horst O. H. Ims, Waterloo, Ontario, Canada, assignor to Uniroyal, Ltd., Montreal, Quebec, Canada

Division of Ser. No. 299,493, Oct. 20, 1972,. This application Dec. 5, 1973, Ser. No. 421,907
Int. Cl. B65g *31/04*
U.S. Cl. 214—152 3 Claims



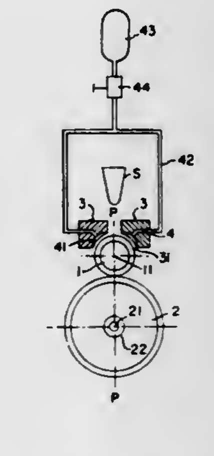
1. A method of booking tire teads in a tread truck having a plurality of vertically spaced leaves, comprising the steps of:
a. sequentially delivering a plurality of tire treads to a common station;
b. positioning said tread truck at a predetermined location adjacent to said common station;
c. moving said tire treads from said common station to said truck leaves along predetermined paths, each of which paths includes a portion thereof through which said treads are aerially projected to land on predetermined truck leaves.

3,866,775

FLUID SUPPORT AND DRIVE ARRANGEMENT FOR ROLLER TESTING DEVICES

Rudolf Diem, Schweinfurt, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Continuation of Ser. No. 109,808, Jan. 26, 1971, abandoned. This application May 4, 1973, Ser. No. 357,352
Claims priority, application Germany, Feb. 3, 1970, 2004628
Int. Cl. B65g *7/00*
U.S. Cl. 214—340 8 Claims



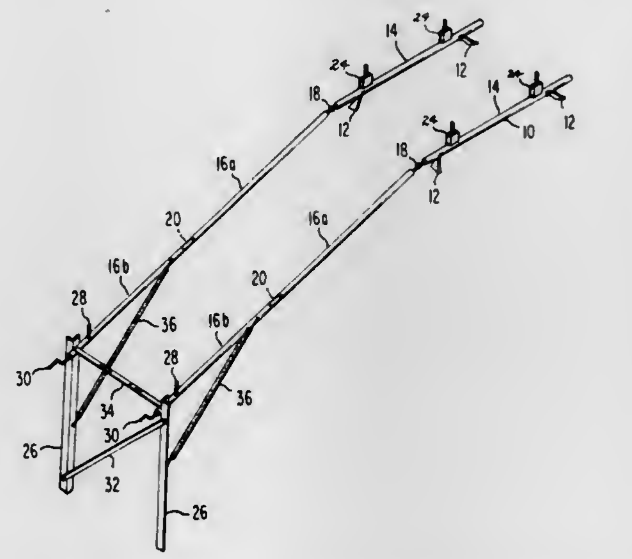
1. In an apparatus for testing and inspecting the surface of an elongated body of rotation, an arrangement for supporting and driving said body about its longitudinal axis comprising a driving wheel adapted to engage the surface of said body at a point on its surface, a plurality of supporting elements, at least one of said supporting elements being spaced about said body, in opposition to said driving wheel, at least one of said supporting elements being spaced from the axial end of said body and the remainder of said supports being spaced from the circumference of said body, means for conducting a pressurized medium through said supporting elements to the face of said body, said medium forming a cushion between the interfaces of said body and said supports maintaining said supports supports spaced from said body, said supports and said driving wheel being arranged to cause said medium to retain said body against said drive wheel and against sliding movement with respect to the drive means.

3,866,776

BOAT LOADER OF THE SIDE MOUNTING TYPE

Michael J. Partyka, 22 Jeremiah Ave., Trenton, N.J. 08610

Filed Oct. 25, 1973, Ser. No. 409,758
Int. Cl. B60p *3/10*
U.S. Cl. 214—450 1 Claim

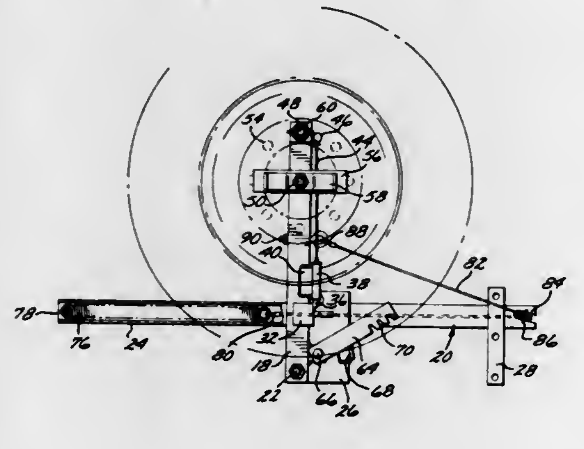


1. A boat carrier mountable upon a motor vehicle and comprising:
1. a pair of parallel, generally horizontal cross members mountable on a vehicle roof and disposed to extend trans-

versely of said roof, at least one end of the cross members terminating adjacent one side of the vehicle;
2. means detachably connecting the respective cross members to the vehicle;
3. a pair of elongated, parallel rails pivotally joined at one end to said ends of the respective cross members and extending laterally downwardly from said side of the vehicle as continuations of the respective cross members;
4. a series of rollers disposable in supporting relation to the boat to be carried, and positioned to rollably support said boat upon the rails and cross members;
5. a pair of legs pivotally attached to the respective rails at the other ends thereof for swinging movement between a collapsed position in which said legs underlie and extend alongside the respective rails to an extent sufficient for disposition of said other ends of the rails at ground level, and a rail-supporting position in which the legs extend vertically downwardly from the rails, the legs in the collapsed position thereof supporting the rails in a position of greater inclination from the horizontal than is assumed by the rails when the legs are in their rail-supporting positions; and
6. resiliently contractile means detachably connectable between said rails and the respective legs and tensioned to bias the legs from their rail-supporting to their collapsed positions whenever the legs are shifted vertically upwardly out of contact with the ground surface while in the rail-supporting positions thereof, said rails being pivotable upwardly from said positions of lesser inclination thereof to free the legs from contact with the ground surface, said legs being free to gravitate to their rail-supporting positions when the resiliently contractile means is disconnected and the rails are pivotally moved upwardly from said positions of lesser inclination thereof.

3,866,777
SPARE TIRE CARRIER

Steve Staranick, 2062 Mori Ln., Orange, Calif. 94087, and Jerome R. Garrison, 7931 Orangewood, Stanton, Calif. 90680
Filed Dec. 20, 1973, Ser. No. 426,876
Int. Cl. B62d *43/00*
U.S. Cl. 214—454 **5 Claims**

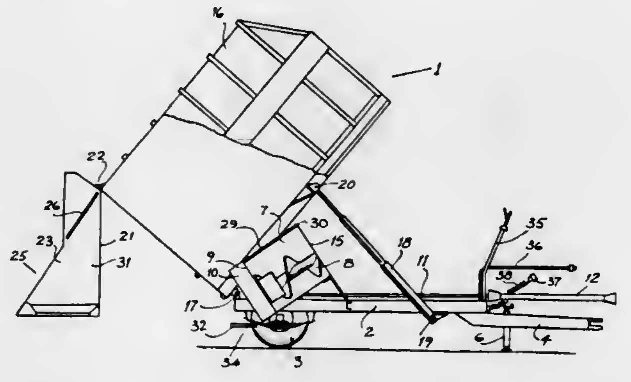


4. The invention defined in claim 3 in which said second member comprises a tube, said spring being disposed within said tube.

3,866,778
REFUSE COLLECTOR BODY

Manus Coffey, Dublin, Ireland, assignor to Murco Environmental Limited, Cork, Ireland
Filed June 1, 1973, Ser. No. 365,984
Claims priority, application Ireland, June 2, 1972, 755/72
Int. Cl. B60p *1/16*
U.S. Cl. 214—508 **8 Claims**

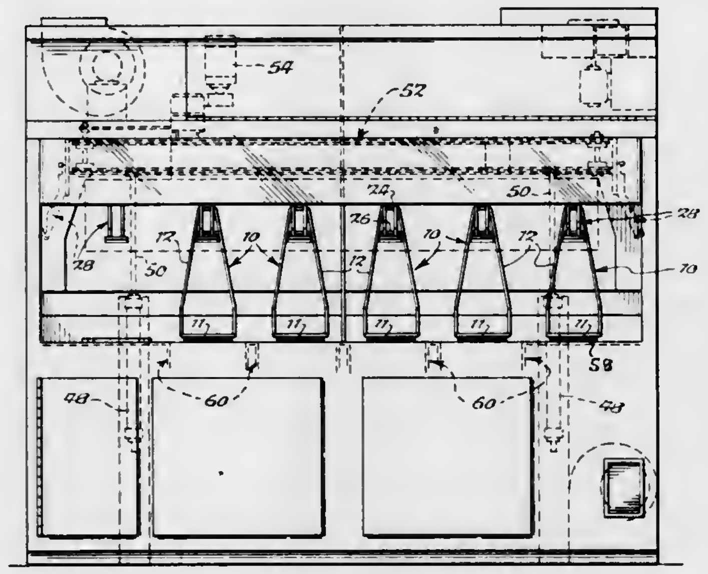
1. A refuse collector body comprising:
a base chassis;
a main container body, means pivotally mounting said main container body chassis;
a separate loading hopper, means mounting said loading hopper on the base chassis separate from said main container body, said loading hopper having an entrance for the reception of refuse and an exit communicating with the interior of the main container body;



a feed screw mounted in the loading hopper;
means for pivoting the main container body relative to and over the loading hopper; and
means for closing the entrance to the loading hopper.

3,866,779
AUTOMATIC PICK-UP DEVICE FOR HOLDING A CARRIER

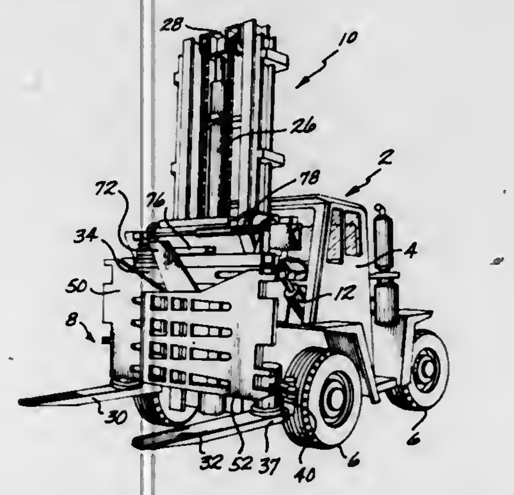
Anthony A. Dongelmans, Hacienda Heights, Calif., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Jan. 25, 1974, Ser. No. 436,578
Int. Cl. B65g *47/02*
U.S. Cl. 214—621 **3 Claims**



1. A pick-up device, adapted for raising and lowering a carrier, which carrier includes an upwardly extending handle including an upper portion offset from the gravitational line of force passing through the center of gravity of the carrier which handle comprises first and second upwardly extending rods each having first and second ends and being joined proximate their second ends by a third rod at least a portion of which is in a horizontal position and by a fourth rod spaced from and below the third rod at least a portion of which fourth rod is in a horizontal position, which pick-up device comprises:
a carrier arm including at least one slot for engaging the third rod of the carrier and at least one slot for engaging the fourth rod of the carrier said slots being defined by front and rear walls the front wall of each of said slots being the wall closest to the gravitational line of force passing through the center of gravity of the carrier, the front wall of the slot for contacting the third rod of the carrier having a vertically directed lower portion for engaging the third rod and an upper portion directed upwardly and outwardly toward said gravitational line of force, which upper portion is adapted to guide the third rod into the vertically directed lower portion; and
a horizontal bar secured to the carrier arm said horizontal bar being adapted to locate between the first and second rods of the handle and being substantially equal to the distance between the first and second rods of the handle at the vertical position of attachment of the horizontal bar when the third and fourth rods of the handle are engaged in the slots.

3,866,780
MATERIAL HANDLING ATTACHMENT FOR A FORKLIFT TRUCK

Richard Guy Miller, Federal Way; Ronald Adair Brudi, and Kenneth Lynley Brainard, both of Longview, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Sept. 4, 1973, Ser. No. 394,231
Int. Cl. B60g *47/00*
U.S. Cl. 214—655 **6 Claims**

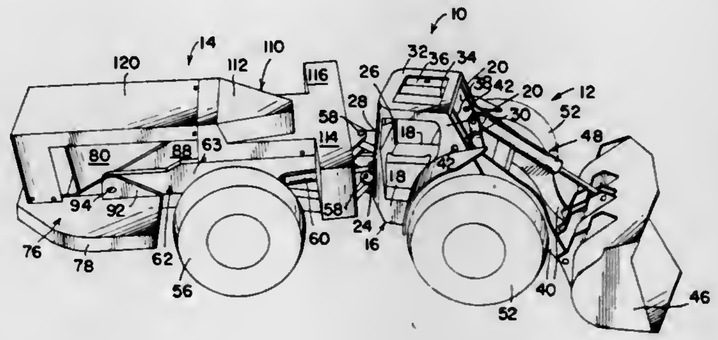


1. A carriage assembly for an industrial load handling apparatus of the type adapted to be vertically movable on a frame, wherein the improvement comprises:
a carriage bulkhead having a front substantially vertical face,
a plurality of spaced apart fork arm members attached to said bulkhead toward the bottom thereof,
means to rotate said fork arm members from an extended working position to a retracted position generally behind said bulkhead,
a plurality of side arm members attached to said bulkhead generally at the sides thereof,
means to rotate said side arm members from an extended working position to a retracted position juxtaposed against said bulkhead,
a center support arm attached to said bulkhead and extending generally in a vertical plane,
means to rotate said center support arm from an extended working position to a retracted position juxtaposed against said bulkhead, and
said fork arm members, side arm members, and center support arm being rotatable independently of each other depending upon the type of load to be handled.

3,866,781
UNDERGROUND MINING MACHINE

Robert N. Stedman, Chillicothe; Jay J. Murphy, and Everette M. Volle, both of Morton, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 25, 1973, Ser. No. 409,623
Int. Cl. B66f *9/00*
U.S. Cl. 214—778 **12 Claims**

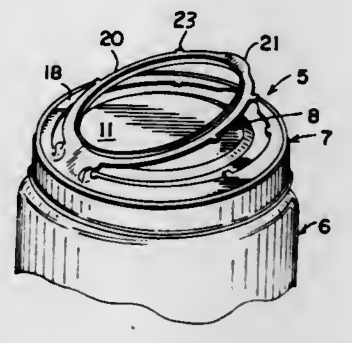
1. A material handling vehicle comprising:
a rear section having a pair of supporting wheels;
a front section having a pair of supporting wheels, the rear and front sections being connected together for pivotal movement about a vertical axis;
said front section comprising a unitary frame comprising a lower frame portion, an upwardly extending frame portion extending therefrom and comprising front leg means, and a roof portion at the upper portion of the upwardly extending frame portion;



a material handling implement adjacent the front of the front section; and
means on said front leg means and in front of said roof interconnecting the implement and the unitary frame of the front section for raising and lowering the implement relative thereto.

3,866,782
COMPOSITE CLOSURE

James E. Westfall, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,247
Int. Cl. B65d *41/46*
U.S. Cl. 215—253 **3 Claims**

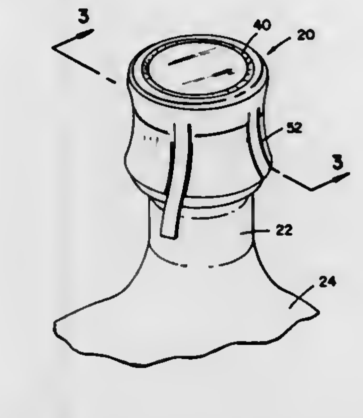


1. In a composite press-on, pull-off closure cap for hermetically sealing and maintaining a vacuum in a container whereby the closure and container in combination provide a package which is readily openable by a consumer without the use of tools, said composite closure having an integrally-formed, semi-rigid, plastic fitment with a top and a depending skirt and a relatively rigid, disc-shaped gasketed closure element retained within said fitment and having a continuous center panel terminating at the outer margin in a depending skirt or circumferential flange having a trimmed edge, said depending skirt of said fitment having interior shoulder means for lifting engagement with said trimmed edge, and said top of said fitment having an outer annular portion surrounding a lift ring joined to said annular portion by a hinge portion and a plurality of spaced frangible connections, the improvement which comprises, having the plastic material from which said fitment is formed thinned in a relatively small area adjacent at least one end of said hinge portion where it joins said annular portion whereby on lifting said lift ring after said frangible connections are broken, the thinned material in said small area is permanently stretched.

3,866,783
CLOSURE FOR WATER BOTTLE

Joseph John Bullock, Atherton, and Robert M. Greenhood, San Francisco, both of Calif., assignors to California Plastics Inc., San Francisco, Calif.

Filed May 29, 1973, Ser. No. 364,354
Int. Cl. B65d *41/48*
U.S. Cl. 215—254 **9 Claims**

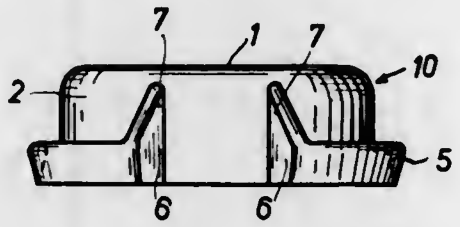


1. A cap for a container of the kind having a hollow neck, an annular finish at the end of the neck, an upper external first bead on the neck, a lower external second bead on the neck and a reduced diameter portion between the beads, said cap comprising, a generally flat circular top and a generally cylindrical skirt connected to and extending downwardly from the top, both the top and the skirt being formed from a plastic material as a unitary imperforate cap having sufficient flexibility to be pressed over the beads to a fluid sealing position, and wherein the skirt includes tension ring means for engaging an area of the skirt with an annular part of the lower surface of the first bead under a high unit pressure to provide a fluid seal and to retain the cap on the container neck and wherein the tension ring means include a substantially increased wall thickness in a ring extending circumferentially in the skirt and including a downwardly curved transition area between the top and the skirt and wherein said transition area is a reduced wall thickness section which elongates in length and effects an additional seal on the curved finish at the end of the neck and beginning of the first bead when the cap is pressed into sealing position on the container neck and wherein the top has a central disc shaped diaphragm for closing the hollow interior of the bottle neck and including expansion ring means between the diaphragm and the transition area for providing a hinge between the diaphragm and the transition area and skirt and for permitting the expansion required during said elongation of the curved transition area.

3,866,784
SINGLE-PIECE PLASTIC CLOSURE CAP

Reinhold Beck, Pfeffingen, Switzerland, assignor to Albert Obrist & Co. Dalplast-Produktion, Reinach, Switzerland

Filed Mar. 2, 1972, Ser. No. 231,291
Claims priority, application Switzerland, Mar. 16, 1971, 3790/71
Int. Cl. B65d *41/32*
U.S. Cl. 215—321 **2 Claims**

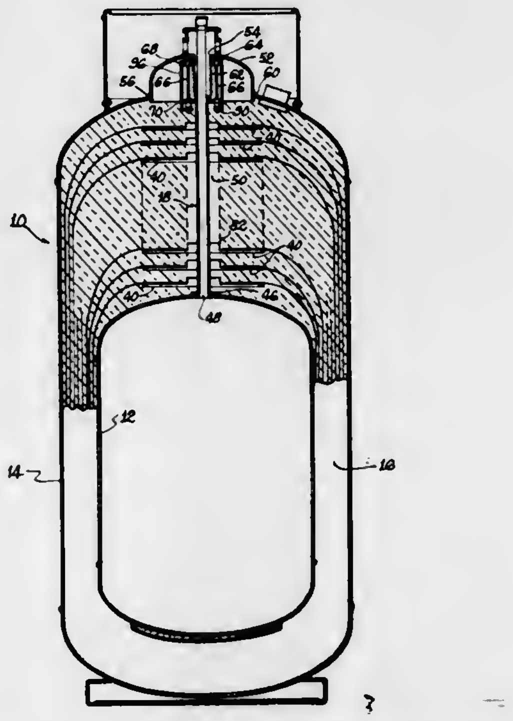


1. A closure cap formed of plastic for containers or the like, comprising a cap member having a substantially ring-shaped outer wall provided with an inwardly protruding annular bead at the central region of the axial length of said outer wall, a strap partially enclosing said ring-shaped outer wall of the cap member and disposed adjacent the free end of said outer wall, said strap extending along an arc which exceeds 180° and is less than 360° and having terminal regions which are bent toward the outer wall of the cap and connected with the outer wall of said cap member at spaced and neighboring positions, the end of the bent terminal regions of said strap forming an obtuse angle with the neighboring sections of said strap, the end of the bent terminal regions of the strap adjacent the top of the cap member being provided each with a wedge-shaped support wall connected with the outer wall of said cap member and extending toward the closed end of the cap member over said inwardly projecting bead, whereby said strap provides a point of leverage at the portion of said bead closest to the free end of said outer wall to facilitate removal of said cap from containers or the like.

3,866,785
LIQUEFIED GAS CONTAINER

Rolland R. Conte, Bourdonne/Conde, France, assignor to Beatrice Foods Co., Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 314,136
Int. Cl. F17c *13/00*
U.S. Cl. 220—9 D **4 Claims**

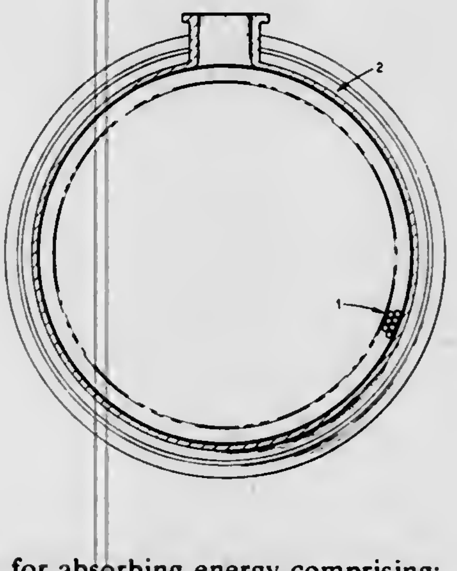


1. In a double walled liquefied gas container having an inner storage vessel with an opening at the top for access into the interior of the vessel, an outer shell substantially enclosing said inner shell with an insulation space in between, a neck tube connected at one end to the inner vessel about the opening and at the other end with an opening through the outer shell for the transmission of liquid and vapors therethrough into and out of the vessel, and a composite multi-layered insulation disposed about the inner vessel within said insulated space comprising multi-layers of low thermal insulating material alternating with one or more layers of reflective barrier sheets, the improvement comprising a plurality of rings of high heat conductive material secured in thermally contacting relation along longitudinally spaced apart portions of the neck tube and which extend outwardly from the neck tube for a short distance, disc members formed of thermally conductive material each having a central opening corresponding to the cross section dimension of the rings with one disc member secured at its inner edge portion to each of corresponding ones of said rings in thermally contacting relation, and heat conductive layers extending into the multi-layered insulation and overlapping at least a portion of each disc member for contacting relation therewith, in which the rings are formed with an annular skirt portion depending from the peripheral edge portion of the rings and in which the disc members are formed with an annular skirt portion extending substantially perpendicularly from the inner periphery thereof and means joining the skirt portions of said rings said disc members in telescoping relation one with the other.

3,866,786
ENERGY ABSORBING STRUCTURE IN A STEAM GENERATOR

Adrian B. Van Weelderen, Pensacola, Fla., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 22, 1972, Ser. No. 291,477
Int. Cl. B65d *3/22, 25/14*
U.S. Cl. 220—10 **4 Claims**



1. Apparatus for absorbing energy comprising:
a. two concentric thin-walled cylinders,
b. a plurality of thin-walled tubes disposed in the zone between said cylinders in an abutting relationship with each other and with said cylinders, said tubes extending along the entire length of said cylinders and being tightly filled with compacted steel wool.

4. The apparatus of claim 3 wherein the outer cylinder has an outside diameter in the range of from 34 to 40 inches, and an inside diameter in the range of from 33½ to 39½ inches, and the inner cylinder has an outside diameter in the range of from 32½ to 38½ inches and an inside diameter in the range of from 32 to 38 inches.

3,866,787
MATERIAL HANDLING CONTAINER WITH OPENABLE SIDEWALL

Theodore H. Allegri, Peoria; John M. Womble, Morton, and Norman Cannon, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 4, 1972, Ser. No. 311,825
Int. Cl. B65d *21/00, 7/20*
U.S. Cl. 220—19 **8 Claims**

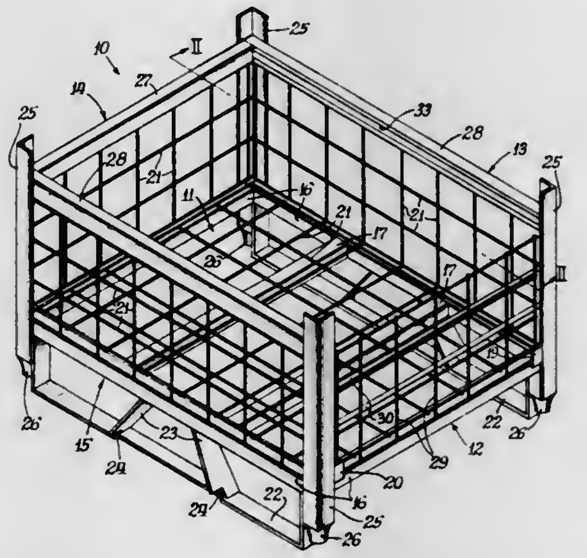
1. An open top container comprising a horizontally disposed bottom wall,

three vertically disposed sidewalls each extending vertically substantially the full height and width of said container and connected together and to said bottom wall to define a storage compartment in said container, each of said bottom and sidewalls comprising a rigid rectangular frame including a plurality of vertically and horizontally disposed bars,

a fourth vertically disposed sidewall comprising a rigid rectangular frame including a plurality of vertically and horizontally disposed bars extending substantially the full height of said container but having a width slightly less than the width of said container,

continuous guide means, comprising first parallel guide portions disposed interiorly on a pair of said vertically disposed bars at said one sidewall and second parallel guide portions disposed interiorly on a pair of said horizontally disposed bars at the top of said container, slide means secured to opposite sides of said fourth sidewall, a given distance below the top thereof and engaging said guide means to permit movement thereof from its normal, vertically disposed closed position to a horizontally disposed open position at the top of said container and

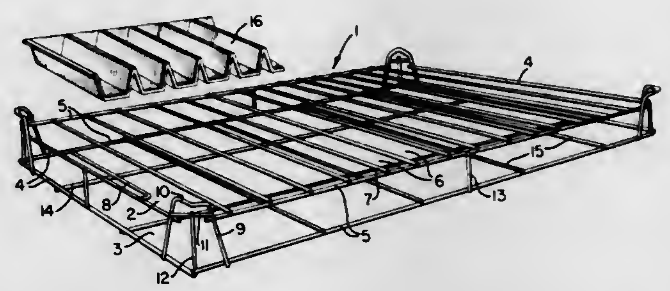
upstanding guide means rigidly mounted on the exterior of the edge of said bottom wall which corresponds to the bottom edge of said fourth sidewall when in its normal vertically disposed closed position, said upstanding guide means having a vertical height less than said given distance of said slide means below the top of said fourth sidewall whereby said bottom edge of said fourth sidewall is received behind said upstanding guide means when said fourth wall is in its normal vertically disposed closed position to rigidly restrain said fourth sidewall against horizontal forces exerted outwardly thereon from the interior of said container, and whereby said fourth sidewall may be raised vertically said given distance to disengage said bottom edge thereof from said upstanding guide means before it is pivoted to said horizontally disposed open position thereof at the top of said container by the engagement between said slide means thereon and said continuous guide means.



3,866,788
WIRE CRATE

Jacobus Cornelis Smit, Venhuizen, Netherlands, assignor to N. V. Bekaert S. A., Zwevegem, Belgium

Filed Feb. 28, 1973, Ser. No. 336,461
Claims priority, application Belgium, Apr. 10, 1972, 781867
Int. Cl. B65d *7/20, 21/00*
U.S. Cl. 220—19 **3 Claims**



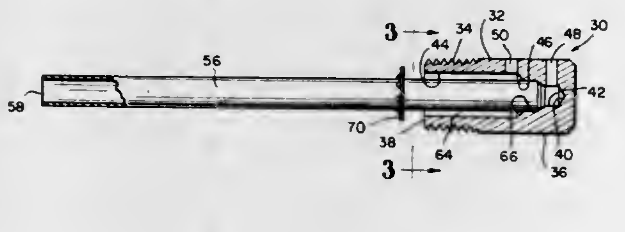
1. A wire crate for plant strips and the like comprising:
a. substantially parallel upper and base surfaces,
b. each of said surfaces being formed by spaced parallel end and side wire members,
c. said upper surface being evenly divided into a plurality of rectangles by means of regularly spaced cross-wires parallel to one of said members and positioned so that the distance between said cross-wires is substantially equal to the width of the upper surface of the plant strips to be placed in said rectangles,

d. said upper surface including a distance keeper parallel to said one of said members and said cross wires and positioned between said one of said members and the cross wire nearest thereto so that the distance between said one of said members and said distance keeper is substantially one half of the width of said rectangles,

e. whereby when one of said crates is rotated 180° with respect to another of said crates and stacked on said other of said crates, none of the rectangles in said one of said crates will be directly above the rectangles in said other of said crates.

3,866,789
VENT PLUG FOR GEAR CASE

George M. Lambert, Columbus, Ind., assignor to Reliance Electric Company, Cleveland, Ohio
Filed Jan. 16, 1974, Ser. No. 433,730
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 R **7 Claims**

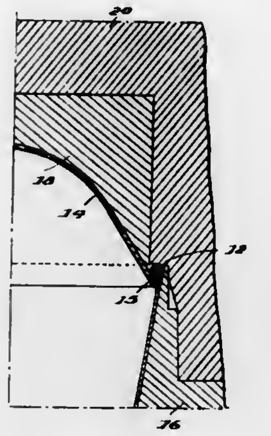


1. A vent plug for use with a gear case containing lubrication oil and rotating transmission elements and having an opening in its wall, said plug comprising a fitting adapted to engage and close said opening, said fitting having an engaging body portion proportioned and designed to be disposed in the wall opening and an outer body portion proportioned and designed to extend outwardly from the wall, said fitting being provided with an axially extending bore entering the inner end of said engaging body portion and terminating with a closed end in said outer body portion, said bore having an outer section of a first diameter and an inner section of a second and greater diameter, said inner section of said bore terminating in said outer body portion, said fitting also having, in said outer body portion, a transaxially extending opening venting the outer section of said bore and a second transaxially extending opening venting the inner section of said bore, and a tube concentrically and axially disposed in said bore and extending axially into the interior of the case to provide communication between the outer bore section and said interior, said tube having an outer diameter less than the said second diameter to provide an annular passageway communicating between said inner bore section and the interior of the case.

3,866,790
CONICAL CONTAINER WITH DOME-SHAPE LID

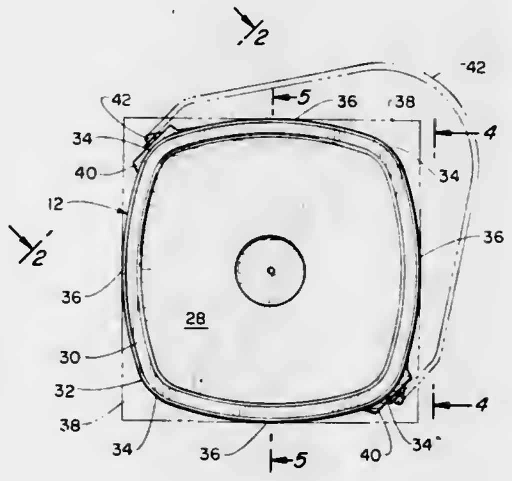
Thomas E. Marion, Baltimore, and Richard D. Collins, Timonium, both of Md., assignors to Maryland Cup Corporation, Owings Mills, Md.
Division of Ser. No. 269,304, July 6, 1972, Pat. No. 3,779,191. This application Aug. 24, 1973, Ser. No. 391,326
Int. Cl. B65d *51/00*
U.S. Cl. 220—67 **2 Claims**

1. A package comprising a conical container having an outwardly curled rim around an open end thereof in combination with a dome-shaped closure means having an annular flange, said dome shaped closure means being secured in said open end of said conical container by crimping said curled rim and annular flange together, said curled rim being constrained inboard of said container and crushed into juxtaposition with said annular flange.



3,866,791
CONTAINER AND COVER INCLUDING CORNER POURING AND BAIL NESTING FEATURES

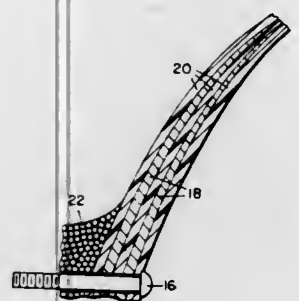
William H. Roper, Los Angeles; Robert E. Roper, Los Alamitos, and Charles R. Roper, Huntington Beach, all of Calif., assignors to Frank Roper, North Hollywood and Ralph A. Miller, Van Nuys, both of Calif., part interest to each
Filed May 17, 1972, Ser. No. 254,042
Int. Cl. B65d *25/28*
U.S. Cl. 220—95 **16 Claims**



1. In a container of the type having upstanding side walls terminating upwardly defining a container top extremity somewhat rectangular in top plan view; the improvements comprising: said container top extremity in top plan view curving continuously arcuately outwardly oppositely from joining corners to maximum outward projection at side central portions; bail attachments on said container aligned with diagonally opposite of said top extremity joining corners and projecting outwardly of said top extremity joining corners; said container top extremity in top plan view defining an area greater than the area of an imaginary circle of maximum radius totally within said container top extremity area; and said bail attachments approaching while being totally within corner portions of an imaginary rectangle of maximum size formed about said container top extremity in top plan view touching said container top extremity maximum outward projections.

3,866,792
INTEGRAL FILAMENT REINFORCED COMPOSITE-ROCKET CHAMBER/ADAPTER

Charles M. Minke, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.
Filed Mar. 2, 1973, Ser. No. 337,351
Int. Cl. B65d *7/42*; **F02k** *9/00*
U.S. Cl. 220—72 **2 Claims**



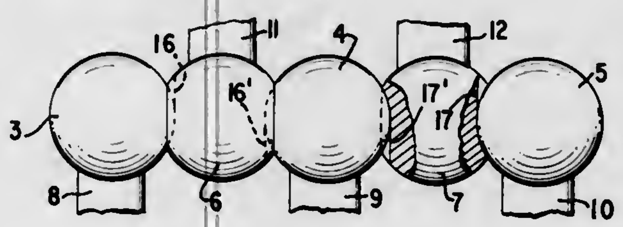
1. A lightweight, high pressure, integral filament reinforced composite chamber/adapter comprising:

a. a filament wound chamber having an interior cavity, an exterior surface, and at least one polar opening extending from the interior cavity to the exterior surface of said chamber, said chamber comprising helical windings of glass filament, and

b. a filament reinforced composite adapter integral with said chamber, said adapter comprising a plurality of mats interspaced between the helical windings of glass, said mats comprising a plurality of spirally hoop wound high modulus filaments faced with glass fiber tapes extending radially outwardly from said polar opening, said filaments having a modulus of elasticity of at least 20×10^6 pounds per square inch, said spirally hoop wound filaments extending outwardly from said polar opening, said glass filament windings and said mats providing a dimensionally stable adapter surface for attachment of chamber accessories.

3,866,793
HINGED BOX

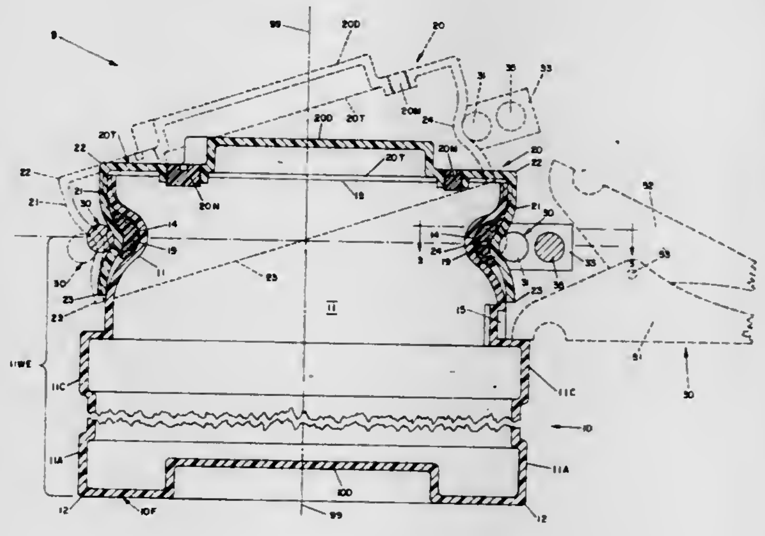
Robert J. Mulligan, Wheaton, Ill., assignor to Richardson-Merrell Inc., New York, N.Y.
Filed Oct. 27, 1970, Ser. No. 84,429
Int. Cl. B65d *51/04*
U.S. Cl. 220—31 S **2 Claims**



1. A hinged box having a body section and a cover section with two hinge members each comprising 5 ball-like elements which terminate on studs extending outwardly from the back sections of the box, the center line of said five ball elements being on a line parallel to the back of the box and in a plane formed by the inner edges of the body section and cover section of the box, two pairs of said ball elements of each hinge member protruding from one section of said box, and three ball elements of each hinge member protruding from the other section of said box, each ball of the two ball element members having two grooves extending only part way across the chord of the ball, the bottommost section of each groove extends halfway across each ball element, the two innermost grooves of each of said two ball elements being parallel and running in the same direction, the grooves on each of the outer-most faces of the said two ball elements being parallel to each other but starting across the ball elements from a different direction than do the grooves on the other side of the balls.

3,866,794
READILY RE-CLOSEABLE AND RE-USABLE CONTAINER OF THE LID AND OPENHEAD DRUM TYPE

Raymond W. Kerr, 3731 N. 58th St., Lincoln, Nebr. 68529
Continuation of Ser. No. 279,461, Aug. 10, 1972, now abandoned. This application Jan. 21, 1974, Ser. No. 434,961
Int. Cl. B65d *45/32, 41/00, 51/18*
U.S. Cl. 220—320 **6 Claims**



1. A readily re-closeable and re-useable container of the lid and open-head drum type for storing solids, liquids, and other bulk materials therein in readily withdrawable condition, said container comprising:

A. A stably uprightable open-head drum comprising an open-top tubular housing surrounding a vertical-axis and extending upwardly from an annularly connected floor-panel that transversely intersects said vertical-axis whereby the floor-panel and tubular housing together provide an open-head type drum receptacle, the external side of said drum tubular housing nearer the annular upper open-end than to the floor-panel being provided with a cross-sectionally narrowed waist that completely surrounds said vertical-axis, the drum below the narrowed waist being provided with an externally accessible notched portion adapted to provide a bearing point for one leg of a reverse-scissors type bearing tool;

B. A removably engaged lid closure for the open-head drum annular upper open-end, said lid closure including a transversely extending roof-panel together with a depending skirt annularly connected to the roof-panel, said depending skirt including an annular lower open-end and also including thereabove an inwardly extending annular rib located within and frictionally engaged with the drum narrowed waist, said depending skirt being additionally provided with an externally grooved portion at co-elevation with said inwardly extending annular rib and

C. A tightenably constrictable horizontal girth band located within the externally grooved portion of the lid skirt, said girth band surrounding the drum vertical-axis and being provided with a horizontal bolt tightener means located spatially radially outwardly offset from said girth band, said frictionally engaged housing and lid skirt being resiliently spreadable away from each other with a said leverage tool engaged within two bearing points comprising said drum notched portion and the tightenable girth band bolt means whereby the lid skirt inward annular rib can pass vertically between the housing narrowed waist and the upper open-end thereof to permit opening of said container.

3,866,795

VENDING MACHINE HAVING HEATING AND COOLING CHAMBERS

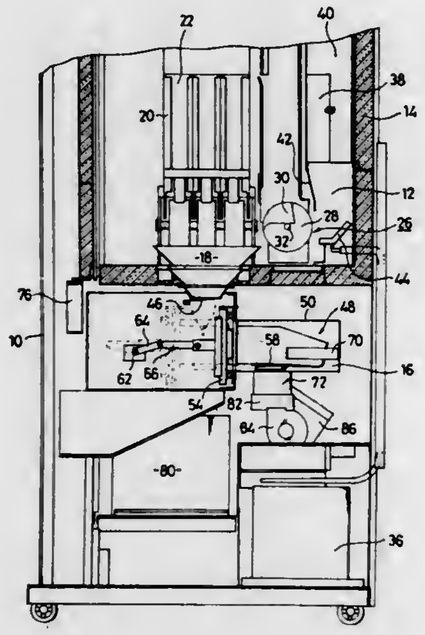
Hitomi Urano, Tokyo, Japan, assignor to Hoshizaki Electric Co., Ltd., Toyoake, Aichi Prefecture, Japan

Filed Nov. 10, 1972, Ser. No. 305,477

Claims priority, application Japan, July 1, 1972, 47-66264

Int. Cl. B65g *59/06*

U.S. Cl. 221—150 HC **3 Claims**



1. A vending machine comprising a cold storage chamber, a heating chamber contiguous to said cold storage chamber and being heat insulatingly separated therefrom, said cold storage chamber being provided with food compartment means for accommodating food products therein, feed cam means in said cold storage chamber and mounted in operative relation to said compartment means for permitting discharge of at least one food product under control of a customer applied coin, and conduit means extending between said feed cam means in the cold storage chamber and said heating chamber for supply to the latter of the food product discharged from said compartment means, said heating chamber including an electronic heating means including a fixed casing and a movable container disposed in relation to said conduit means to receive the food product discharged from said compartment means for movement with the container into the fixed casing for heating therein, said container being adapted for removal from said casing after said heating of said product and for automatic discharge of the product from the container as a function of container removal from said casing.

3,866,796

CHILDPROOF PILL DISPENSER

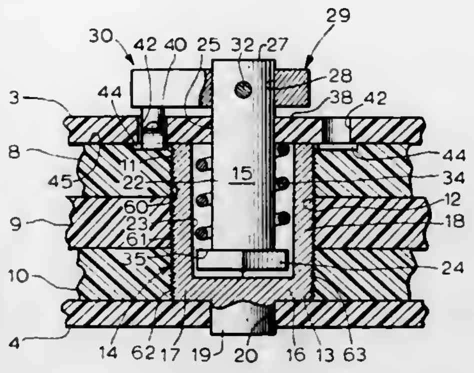
John S. Bozek, Chicago, Ill., assignor to Continental Can Company, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,540

Int. Cl. G07f *11/16;* **B65d** *83/04*

U.S. Cl. 221—152 **11 Claims**

1. In a childproof closure for a container having a wall structure with a discharge opening therein, manually operable metering means having a predetermined course of movement for metering the contents from said container through said opening, manually positionable latch means disposable in noninhibiting position to said movement of said metering means, and means for releasably interlocking said latch means with said metering means for shifting said latch means for said non-inhibiting position to an interlocking position with said metering means upon a predetermined manipulated movement of said metering means.



3,866,797

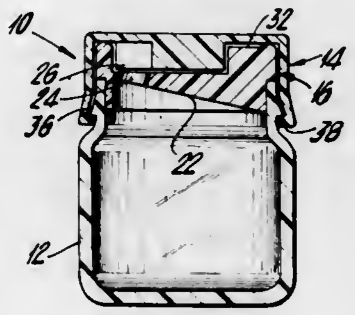
CONTAINER CAP WITH TRAP DISPENSING MEANS

Manuel W. Palomo, 2530 Thorn Dr., Mississauga, Ontario, Canada

Filed Feb. 21, 1973, Ser. No. 334,304

Int. Cl. B65d *83/04*

U.S. Cl. 221—263 **1 Claim**



1. A container cap comprising a lower partitioning member adapted to plug the mouth of a container and be held in fixed position with respect therewith; an upper capping member mounted over the plug having a chamber formed in its underside; said capping member being movable around the container mouth; a discharge opening formed in the capping member; a discharge passage formed in the lower partitioning member; the chamber and passage being unobstructedly alignable upon the movement of the capping member; the chamber and the opening being alignable upon further movement of the capping member; said capping member being spring biased with the spring obstructing the discharge passage in the rest position of the capping member.

3,866,798

LEAK DETECTION APPARATUS

Barry T. Marsh, Bridgeport, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 213,029, Dec. 28, 1971, Pat. No. 3,788,127. This application Aug. 17, 1973, Ser. No. 389,410

Int. Cl. B67d *5/34*

U.S. Cl. 222—52 **2 Claims**

1. An improved fuel dispensing system comprising:

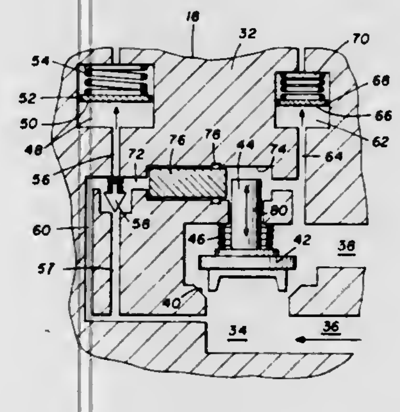
a fuel reservoir;

pump means disposed in communication with said reservoir for pumping fuel out of said reservoir;

a fuel dispenser located remote from said reservoir and including fuel delivery means and a valve for controlling the flow of fuel to said fuel delivery means;

conduit means connecting said pump means and delivery means in fluid communication; and

leak detection means operably connected in said conduit means remote from said fuel dispenser, said leak detection means having a fuel flow passageway extending therethrough, an annular valve seat encircling said passageway, a valve member moveable toward and away from said valve seat, means biasing said valve member toward said seat for closing said passageway, timing accumulator means in communication with said passageway between said valve member and pump means, said timing accumulator means including a chamber, pressure responsive means in said chamber, and means for controlling the rate of flow from said chamber whereby said chamber will empty in a predetermined time after said valve is closed, leak-rate accumulator means in communication with said passageway between said valve member and said valve, said leak-rate accumulator means including a chamber, pressure responsive means in said chamber, and means for controlling the rate of flow from said chamber to the conduit between said valve member and valve, passage means connecting said timing and leak-rate accumulator means, and a piston sealingly disposed in said passage means and moveable therein between a first position when pressure in said leak-rate accumulator means is greater and a second position for engaging said valve member to limit movement of said valve member away from said valve seat, when pressure in said timing accumulator means is greater thereby indicating a leak by reducing the fuel flow rate when fuel is subsequently dispensed from said fuel dispenser.



3,866,799

MIXER WITH AUTOMATICALLY CONTROLLED DISCHARGE SYSTEM

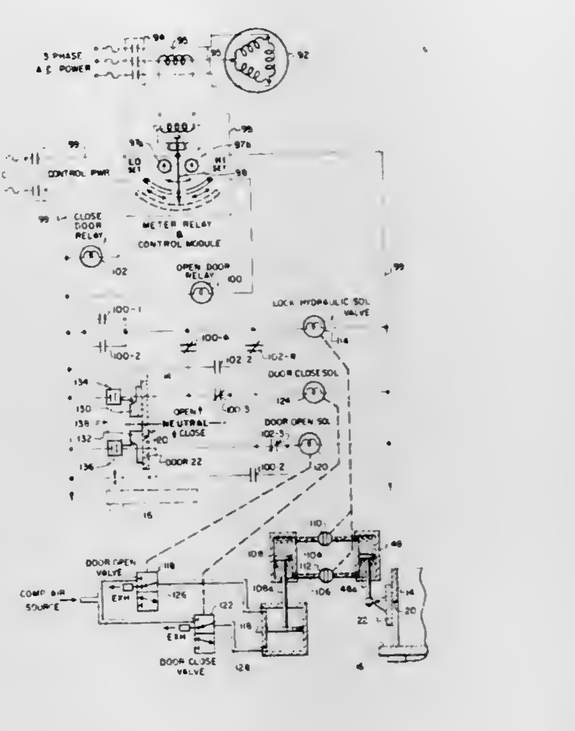
Leslie D. Rikker, Oak Forest, and Gerhard A. Suckfuell, Mount Prospect, both of Ill., assignors to National Engineering Company, Chicago, Ill.

Filed June 18, 1973, Ser. No. 370,794

Int. Cl. B67d *5/08*

U.S. Cl. 222—63 **5 Claims**

1. A mixer for conditioning bulk material comprising in combination; a mixing chamber and motor means driving a rotary mixing element in said chamber; and a controllable discharge system for discharging material from said chamber at a selected rate, said discharge system comprising an outlet opening formed in said mixing chamber, a discharge door adjacent said opening mounted for reciprocal vertical movement between a closed position covering said opening and an open position uncovering said opening, and means for normally maintaining said door in a fixed neutral position partially uncovering said opening and operable to move the door out of said neutral position when a selected variation in load on said motor means is exceeded and to return said door to said neutral position when said variation is no longer exceeded, said maintaining means including a fluid motor connected to said door and means for entrapping noncompressible liquid in said motor to retain said door in said neutral position, said entrapping means including liquid valve means operable to release entrapped liquid whenever said selected variation in load is exceeded.



3,866,800

NON-PRESSURIZED PACKAGE CONTAINING SELF-HEATING PRODUCTS

William H. Schmitt, Elmhurst, Ill., assignor to Alberto Culver Company, Melrose Park, Ill.

Filed Feb. 12, 1969, Ser. No. 798,628

Int. Cl. B65d *35/24*

U.S. Cl. 222—94 **12 Claims**

1. A non-pressurized packaged product comprising two separate compositions which are adapted to be mixed together to form a final heated composition which is dispensed from said package, said package having two separate compartments for separate storage of said two compositions, one of said compartments containing a composition comprising an oxidant in an aqueous medium, and the other of said compartments containing a substantially anhydrous composition which includes a reductant, a water-soluble organic solvent, a compressible gas which is substantially water-insoluble but which is soluble in said organic solvent, said compressible gas existing as a gas at a temperature in the range of ambient temperature to about 70°C. and existing as a liquid at said temperature under superatmospheric pressure, the aforesaid two separate compositions, when admixed, resulting in the release of said compressible gas by reason of the insolubility of said gas in the solution of said organic solvent and said water.

3,866,801

DISPENSER WITH METERING TUBE HAVING OUTLET VALVE

Johnny R. Stapleton, 907 Ayers St., Coffeyville, Kans. 67337

Filed Aug. 28, 1973, Ser. No. 392,326

Int. Cl. B67d *5/62*

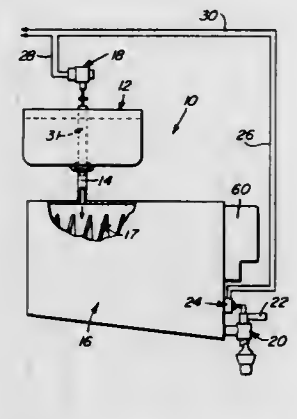
U.S. Cl. 222—146 C **2 Claims**

1. Dispensing apparatus, comprising, in combination:

a. a hopper having a bottom provided with an outlet, and an outlet pipe affixed to the bottom of the hopper and arranged extending from the hopper, the outlet pipe being arranged surrounding the outlet;

b. a measuring tube housing in the form of a longitudinally extending tube provided with a pair of spaced, open ends, one of which open ends is provided with a restriction forming a valve seat and an enlarged portion arranged adjacent the one of the open ends and partially forming a wall of the tube, and an opening provided in the enlarged portion substantially at a right angle with respect to the one of the open ends, the enlarged portion spaced from one of the open ends a distance permitting the enlarged portion to form an abutment engaging a bottom of the hopper and limiting insertion of the one of the open ends into the outlet pipe associated with the hopper, the one of the open ends being sealingly inserted into the pipe outlet;

c. a valve element movably arranged in the housing for selective movement toward and away from the one of the open ends and between sealing engagement with the fluid passing disengagement from the restriction forming the valve seat; and



d. a spigot arranged for controlling flow from a freezing chamber associated with the hopper outlet pipe, and a solenoid connected to the valve element and to the spigot for being actuated by a flow permitting position of the spigot and unblocking the one of the open ends and maintaining a constant amount of a material passing from the hopper to a freezing chamber while preventing air from escaping from the freezing chamber to the hopper during blending of the material in the freezing chamber.

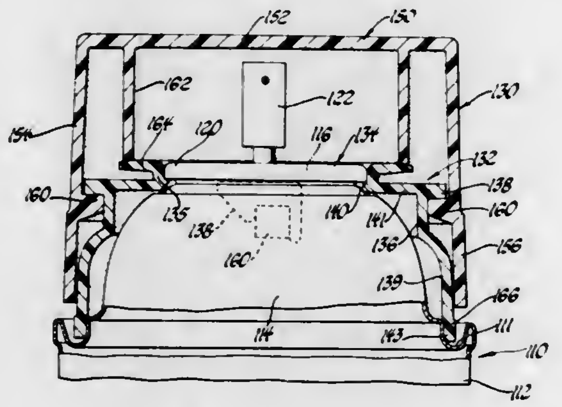
3,866,802
CHILD PROOF CLOSURE ASSEMBLY

Stewart Hector Birrell, Mississauga, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Windsor, Ontario, Canada

Continuation-in-part of Ser. No. 158,823, July 1, 1971, abandoned. This application May 5, 1972, Ser. No. 250,720

Int. Cl. B67d *5/32*

U.S. Cl. 222—153 **32 Claims**



1. A child proof closure assembly comprising: an adapter having a central opening and a mounting portion adapted to be secured to an aerosol container or the like, a container locking portion extending axially with respect to said central opening, a plurality of container locking elements spaced from each other on said container locking portion, and container mounting means for securing said adapter to a container; a cap having an end wall, a peripheral skirt projecting from said end wall for receiving said container locking portion, and a plurality of cap locking elements spaced peripherally from each other on the inner surface of said skirt; said cap locking elements being engageable with and disengageable from said container locking elements by an axial motion followed successively by a rotative motion of said cap relative to said adapter; and biasing means engageable between said cap and adapter for biasing said cap locking elements toward locked engagement with said container locking elements, said biasing means including radially projecting spring means integrally formed on one of said cap and adapter and plunger means integrally formed on the other of said cap and adapter, said plunger means being engaged with said spring means with the cap and container locking elements are in locked engagement with each other such that the cap and container locking elements are biased against movement from locked engagement with each other by the engagement of said plunger means with said spring means; said cap and container locking elements being axially disengageable by axial movement of said cap toward said adapter to cause said plunger means to deflect said spring means.

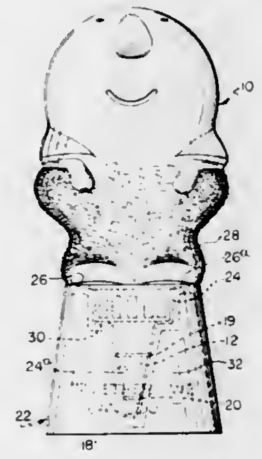
3,866,803
DECORATIVE FIGURINE AND DISPENSER

Max H. Kipfmueller, Berea, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio

Filed Sept. 20, 1973, Ser. No. 399,189

Int. Cl. B65d *37/00*

U.S. Cl. 222—179.5 **11 Claims**



1. In combination a flexible free-standing decorative figurine and dispenser comprising, a collapsible hollow stylized member providing a squeeze container, a dispensing nozzle projecting from the underside thereof for discharging the contents of said container member upon squeezing of the latter, a base member for supporting said container member in nozzle-down position, said base member having a recess formed therein adapted to receive said nozzle in the supported condition of said container member on said base member, whereby the stylization of the container member is visible in said nozzle-down position on said base member, said nozzle having means on the exterior thereof adapted for sealing coaction with the defining side surface of said recess in said base member for preventing egress of odors and solidifying of the contents of said container member in the inverted nozzle-down supported condition of said container member on said base member, said means on said nozzle comprising at least one circumferential-like embossment projecting generally laterally outwardly, said container member on its underside engaging an upper surface of said base member, said nozzle being generally spaced from the confronting defining side surface of said recess except where said embossment engages said defining side surface in snug sealing relation, said engagement of said embossment with said defining side surface occurring below the supported engagement of said container member on said upper surface of said base member.

3,866,804
AEROSOL VALVE WITH PRESSURE RELIEF VENT

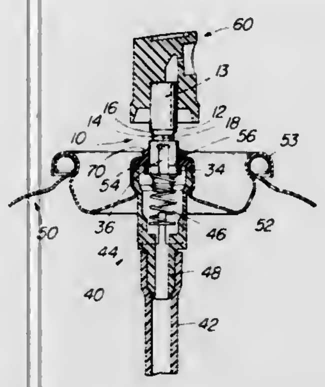
Silvester William Stevens, Macquarie Fields, New South Wales, Australia, assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,408

Claims priority, application Australia, Mar. 7, 1973, 52991/73

Int. Cl. B65d *83/14*

U.S. Cl. 222—396 **4 Claims**



1. In a valve for a pressurized aerosol dispenser comprising a product container having an apertured end closure including means for supporting the valve; the valve comprising:

- a valve housing;
- a movable valve member in said housing and having a body portion including a shoulder normally interior of the dispenser, a product outlet passage for conveying product through the end closure aperture and a transverse valve orifice in communication with the outlet passage;
- a resilient annular gasket blocking the transverse orifice and overlying said shoulder; and means to bias the movable member toward closure of the valve;
- the excessive internal pressure relief improvement which comprises a size relationship between the movable member body portion and the end closure aperture which will allow the body portion and shoulder to distort the annular gasket and be forced partially through the annular gasket and end closure aperture against the resistance provided by the gasket and the end closure aperture by excessive internal pressure and a duct formed in the exterior surface of the body portion, the uppermost portion of the duct extending through the end closure past the distorted gasket to vent excessive internal pressure only when the body portion has been forced through the aperture.

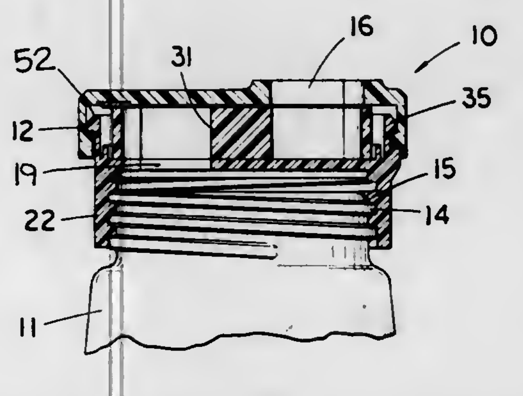
3,866,805
DISPENSING APPARATUS WITH A TRAP CHAMBER PULVERULENT

Earl F. Hamilton, Jr., 636 Rayham Ct., Indianapolis, Ind. 46234

Filed Oct. 5, 1973, Ser. No. 403,807

Int. Cl. G01f *11/46*

U.S. Cl. 222—427 **5 Claims**



1. An apparatus for dispensing pulverulent material from a container with said container having a first outlet opening downwardly comprising:

- a ring having a top end and a bottom end with said top end adapted to be mounted to said first outlet, said ring including a lid wall mounted between said top end and said bottom end and adapted to extend across and cover said first outlet with said lid wall having a second opening to allow passage of pulverulent material;
- a cap with a third opening, said cap being rotatably mounted to said bottom end of said ring, said cap having means engageable with said ring operable to limit rotational movement of said cap from a rotor engaging position to a dumping position and back to said rotor engaging position and further operable to limit rotational movement of said cap to prevent said third opening from overlapping said second opening;
- a one-way rotatable rotor mounted to said bottom end of said ring between said lid wall and said cap with said rotor being rotatable about an axis in a given direction, said rotor including a plurality of radially extending vanes forming a plurality of pulverulent material storage spaces with one each of said spaces being located between two each of said vanes, said vanes being positioned to simultaneously align one of said spaces with said second opening and another of said spaces with said third opening when said cap is in said rotor engaging position, said rotor including a plurality of leaf spring receiving recesses with one each of said recesses being provided for one each of said storage spaces; and,
- a leaf spring having a proximal end mounted to said cap between said cap and said rotor, said spring having a distal end with said spring extending from said proximal end to said distal end in said given direction, said distal end being spring biased into one of said recesses to force said rotor to rotate with said cap as said cap is rotated from said rotor engaging position to said dumping position, said distal end being yieldable to disengage said rotor and allow said rotor to be stationary as said cap is rotated to said rotor engaging position.

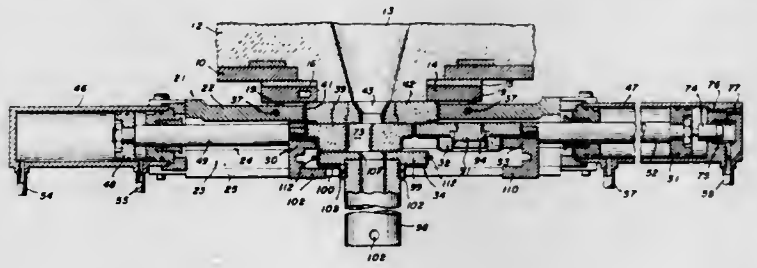
3,866,806
OPERATING MECHANISM FOR SLIDABLE GATES AND METHOD OF OPERATING SLIDE GATE

Earl P. Shapland, Jr., Champaign, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 1, 1973, Ser. No. 337,252

Int. Cl. B22d *37/00*

U.S. Cl. 222—504 **16 Claims**

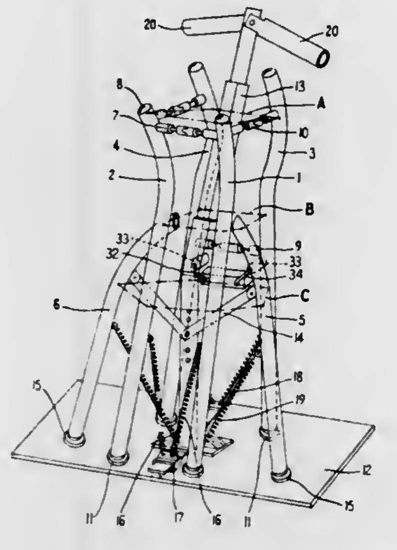


1. An operating mechanism for slidable gates which are used to control flow of liquid from a bottom-pour vessel, said mechanism comprising a frame for attachment to the bottom of the vessel, gate-supporting means on said frame for slidably supporting blank and orifice gates for movement between a ready position, a slow-motion region under the vessel outlet, and a removal position beyond said slow-motion region, the slow-motion region of an orifice gate extending at least from a position of the gate in which the vessel outlet is partially open to a position in which it is fully open, and main and auxiliary drive means carried by said frame at opposite ends of the path of gate movement, said main drive means being adapted to push a gate from said ready position into said slow-motion region and to displace a gate already in said slow-motion region into said removal position, said auxiliary drive means including means for retarding the rate of movement of gates as they reach said slow-motion region, which

last-named means permits an orifice gate to move rapidly from said ready position to said slow-motion region and thereafter slowly and under close control in either direction to any teeming position within said slow-motion region.

3,866,807
FORMER FOR MOULDING GARMENTS

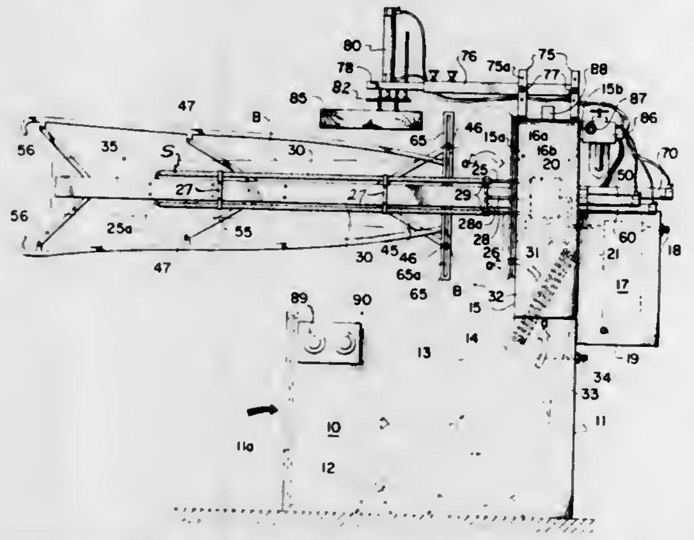
William Geoffrey Parr, Pontypool, England
Filed Mar. 8, 1974, Ser. No. 449,558
Claims priority, application Great Britain, Mar. 20, 1973, 13301/73
Int. Cl. A41h *5/00*
U.S. Cl. 223—68 **7 Claims**



1. A former for moulding a fabric garment shape having chest, hip and waist planes corresponding to a person's body, said former comprising a number of members interconnected and arranged about an imaginary common axis such that at least four of said members define a quadrilateral at the chest plane, at least six of said members define a hexagon at the hip plane, and at least four members define a geometrical figure selected from the group consisting of a quadrilateral, pentagon and hexagon at the waist plane.

3,866,808
PANTS PRESSER

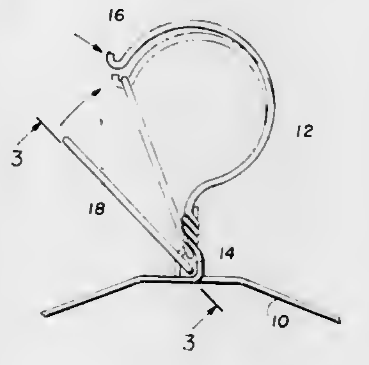
Stanley M. Bailey, 342 Washington St., Hamburg, Pa. 19526
Filed May 14, 1974, Ser. No. 469,829
Int. Cl. D06c *15/00*
U.S. Cl. 223—73 **20 Claims**



1. In a pants finishing machine having a base support and an upwardly positioned hot fluid supplying head thereon, a pair of transversely spaced-apart longitudinally forwardly extending support members, a side pair of upper and lower longitudinally forwardly extending creasing blades operatively positioned along each of said support members, cooperating upper and lower spread arms in the form of side pairs operatively connected at their outer ends to an associated side pair of said blades, and drive means operatively carried by said support members and connected to inner ends of said spread arm side pairs for expanding and contracting spacing between the upper and lower arms of said side pairs of spread arms to enlarge and shorten spacing between the associated side pair of creasing blades.

3,866,809
GARMENT HANGER WITH LOCK

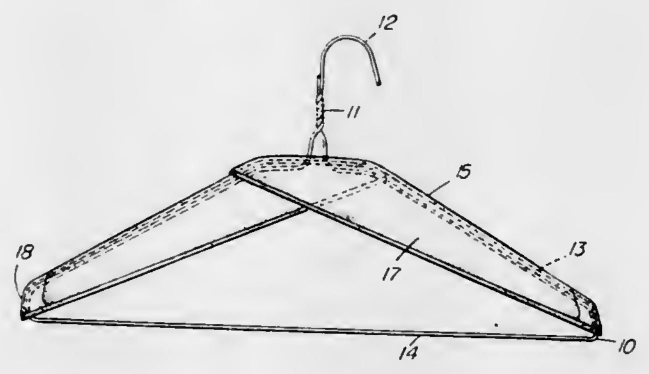
Edwin E. James, Carson, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed May 22, 1973, Ser. No. 362,804
Int. Cl. A47j *51/098*
U.S. Cl. 223—88 **1 Claim**



1. A garment hanger employing a single elongated length of wire shaped to define a horizontally elongated wire body for receiving a garment and a coplanar open wire suspension main hook secured to the midpoint of the body and extending upward therefrom, the main hook being shaped from one end of the wire and having a shank integral with one end of the body, the other end of the wire being integral with the other end of the body and being wound together with the shank into a coil, the coil and the body having at the juncture thereof a hole lying in the plane of said body and said main hook, the free end of the main hook having an upwardly turned small hook coplanar with the main hook and said body, and an elongated closed flat loop pivotally disposed at one end in the hole, the other end of the loop being detachably engageable with said auxiliary hook.

3,866,810
GARMENT SHAPER

John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Nov. 15, 1973, Ser. No. 416,305
Int. Cl. A47j *51/086*
U.S. Cl. 223—98 **5 Claims**



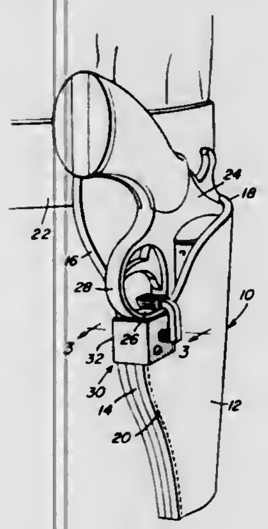
1. The combination of a garment hanger and two shaping bodies on said hanger comprising:

a. a garment hanger providing two dimensional support for a garment, said hanger having a central vertical shank connected to two oppositely disposed downwardly sloping shoulder elements and

b. two elongated shaping bodies disposed one on each shoulder element of said hanger to impart a third dimension of support to the combination, each shaping body having the form of an inverted trough with a base extending over a shoulder element and side and end walls flaring outwardly and downwardly from the base, one end of each elongated shaping body having an angled portion with a flat surface smoothly converging to form said angle with said base and a downward flared lip on the distal end of the flat portion so that one such portion can overlie the other in nesting relationship adjacent the central vertical shank, and an aperture through each angled portion for threading the shank therethrough.

3,866,811
HOLSTER SAFETY CLASP

Robert L. Hamby, 1508 First Ave., Dodge City, Kans. 68701
Filed Apr. 16, 1973, Ser. No. 351,449
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 B **8 Claims**



1. In combination with a handgun holster including a pair of side-by-side upstanding panels having spaced apart upper edges and pairs of corresponding upstanding side edges joined together to form an upwardly opening recess defining receptacle for receiving all but the butt and trigger guard portions of a downwardly directed handgun inserted barrel first into said recess, latch means including an elongated generally horizontally directed portion extending and having a longitudinal axis generally transverse of said panels and supported from said holster for axial back and forth shifting between operative and inoperative positions, means yieldingly biasing said latch means to a position with said horizontally directed portion in said inoperative position, and readily releasable latch retaining means operatively associated with said holster and latch means for retaining said latch means in the operative position thereof, said horizontally directed portion being disposed slightly above one pair of corresponding ends of said upper edges inwardly of the terminal ends thereof and extending through the planes of said panels adjacent the intersection of the upper ends of one pair of upstanding edge portions of said panels and the adjacent ends of the upper edges of said panels when in said operative position for preventing withdrawal of the handgun from the holster and being horizontally retracted to said planes when in the inoperative position.

3,866,812
MACHINE FOR AUTOMATIC STRINGING OR COLLARING OF PACKAGES WITH PLASTIC TAPE

Paul Gutjahr, Zurich, Switzerland, assignor to Erapa AG, Zumikon, Switzerland
Filed May 2, 1973, Ser. No. 356,513
Claims priority, application Switzerland, May 19, 1972, 7469/72
Int. Cl. B65h *17/22, 23/08*
U.S. Cl. 226—50 **8 Claims**

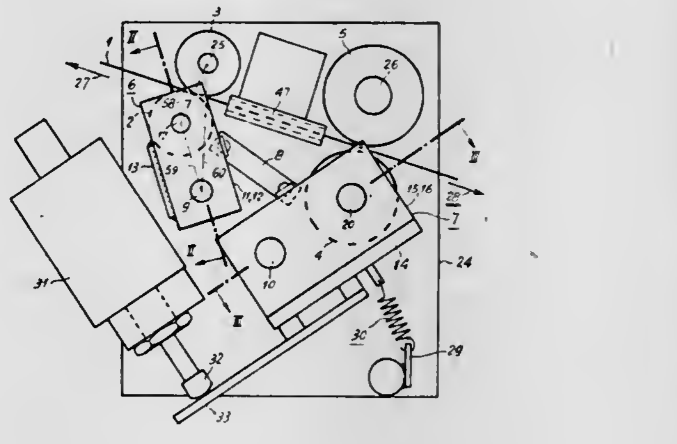
1. A tape drive means comprising:

a pair of rollers consisting of a first driving roller and a first counterpressure roller for advancing the tape;

a second driving roller and a second counterpressure roller for retracting the tape;

a seesaw upon which the driving rollers of the two pairs of rollers are mounted, the two counterpressure rollers being fixed, the first driving roller in a first position of the seesaw cooperating with said first counterpressure roller, and the second driving roller in a second position of the seesaw cooperating with said second counterpressure roller;

said seesaw being provided with two pivotal frames rotatable about corresponding swivel shafts and connected together by a guiding member and which carry, at a predetermined distance from the corresponding swivel shaft one driving roller each of the roller pairs;



two alternatingly energized driving motors having different rates of rotation, the driving motor having the higher rate of rotation used for both advancing the tape and retracting the tape, and the driving motor having the lower rate of rotation being used for generating the final tension in the tape during the final stage of tape retraction;

and wherein, when the respective driving roller is in its position of operation, each of the pivotable frames assumes a position such that each of the lines connecting the shafts of the driving rollers with the swivel shafts of the pivotable frames, and each of the lines connecting the shafts of the driving rollers with the shafts of the corresponding counterpressure roller include an acute angle with the line connecting the swivel shaft and the shaft of the corresponding counterpressure roller, whereby the reacting tensile force of the tape engaged by the active pair of rollers tends to rotate the corresponding pivotable frame by togglelever action.

3,866,813
AXIALLY ADJUSTABLE LIP SEAL ASSEMBLY

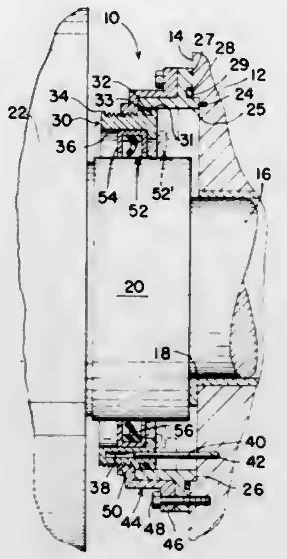
Donovan Y. Arnold, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 30, 1973, Ser. No. 420,721
Int. Cl. F16j *15/32*
U.S. Cl. 277—9 **9 Claims**

1. A rotary seal assembly for providing a dynamic seal between a rotating shaft and a stationary housing comprising a ring-shaped adapter member adapted to be mounted on a housing to circumvent a shaft,

a ring-shaped insert member adapted to be slidably received within said adapter member,

means forming a static seal between said adapter member and said insert member,

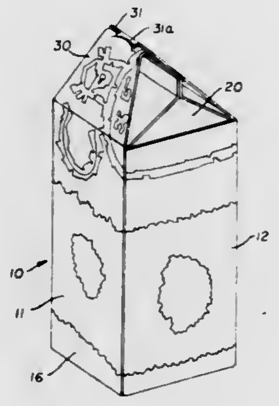
dynamic seal means carried by said insert member and adapted to contact a shaft in dynamic sealing engagement therewith, and means coupling said insert member and said adapter member together for axial movement relative to each other



whereby the axial location of said insert member within said adapter member may be varied selectively.

3,866,814
SLIPOVER COVER

William L. Bissler, Kent, Ohio, assignor to Consolidated Foods Corporation, Chicago, Ill.
Filed Feb. 7, 1973, Ser. No. 330,298
Int. Cl. B65d *3/26, 5/74*
U.S. Cl. 229—8 **9 Claims**



1. A decorative slipover cover for use with a beverage container having a closable opening in its top end, comprising:

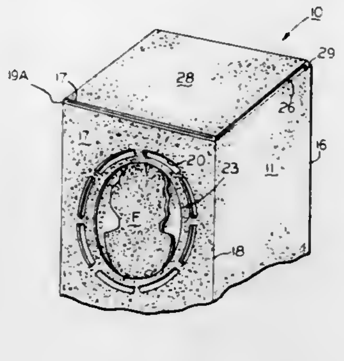
A. a body having
  1. a cross-sectional configuration corresponding to the cross-sectional configuration of the container,
  2. a substantially closed bottom end, and
  3. a pair of opposed top end flaps releasably engagable with each other and covering only a portion of the top of said container when they are engaged and forming an opening corresponding to the closable opening in said container.

3,866,815
CARTON WITH DECORATIVE FEATURE

John D. Desmond, Philadelphia, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Apr. 8, 1974, Ser. No. 458,817
Int. Cl. B65d *5/02*
U.S. Cl. 229—8 **3 Claims**

1. In a folding carton having a dimensional decorative element, said carton being formed from a cut and scored blank of paperboard or the like and comprising:

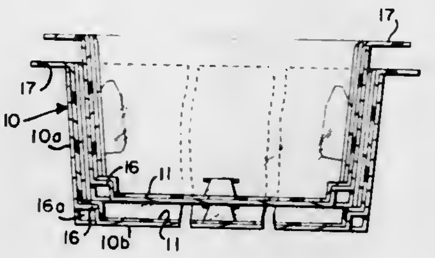
a. a plurality of foldably connected panels arranged to define a tube;
b. an ultimate panel and a penultimate panel foldably connected to each other with the penultimate panel being foldably connected to a distal end of said plurality of panels;
c. a viewing aperture in said penultimate panel;
d. a subpanel in said ultimate panel foldable through an angle of 180° with respect to said ultimate panel;



e. said subpanel being viewable through said aperture;
f. said ultimate panel and said subpanel being disposed in position between said penultimate panel and the other distal panel of said plurality of panels.

3,866,816
BOILABLE BAKEABLE PACKAGE AND METHOD

Robert P. Bemiss, Hillsborough, Calif., assignor to Robalex, Inc., Trustee, San Francisco, Calif.
Continuation-in-part of Ser. Nos. 83,704, Oct. 26, 1970, Pat. No. 3,715,853, and Ser. No. 154,784, June 21, 1971, Pat. No. 3,779,447. This application Jan. 23, 1973, Ser. No. 326,104
Int. Cl. B65d *15/22*
U.S. Cl. 229—14 B **5 Claims**



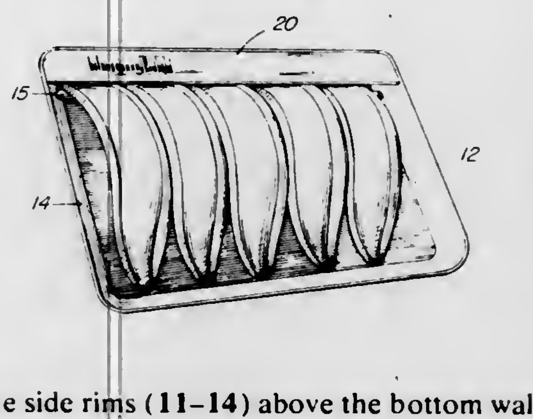
1. A tray or carton structure including an outer tray or part of paperboard having a bottom wall and four side walls, an inner tray or part comprising a formed layer of film conforming closely to the inside contour of said outer part of paperboard, said paperboard part and said film part individually lacking wall strength sufficient for handling as an individual container but together providing mutual reinforcing elements having a combined wall strength to provide for handling as a container for food or the like, and an interface between said film part and paperboard part being devoid of an adhesive said paperboard structure has upwardly divergent side walls providing for handling of said structures in nested relation as a stack, and said side wall including inwardly indented structured elements adjacent its bottom providing stop means for nesting of a similar paperboard structure therein and also providing an opening for communication with a source of vacuum.

3,866,817
PLASTIC PACKAGING TRAY, PARTICULARLY FOR BANANAS

Morell J. Holden, Jr., Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,034
Int. Cl. B65d *3/24*
U.S. Cl. 229—15 **9 Claims**

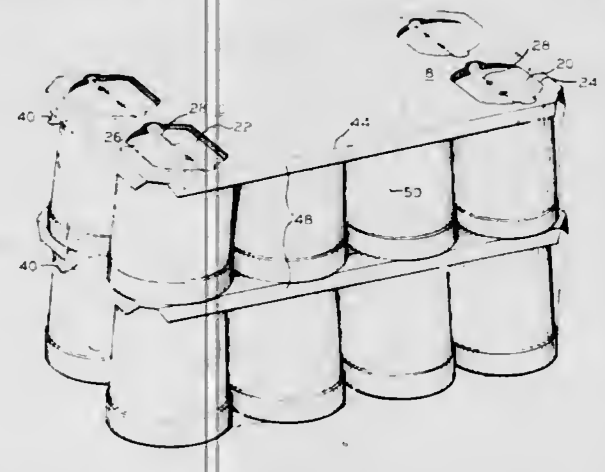
1. Banana packaging tray comprising

a bottom wall (**10**) of approximately rectangular outline;
continuous upstanding side rims (**11, 12, 13, 14**) extending outwardly at an angle from said bottom wall (**10**) to form a surrounding rim about the support surface;
a projecting ridge (**15**) extending transversely across said bottom wall (**10**) and located spaced from and adjacent to one of said side rims (**11**) the ridge (**15**) projecting by a distance (h) which is a fraction of the height of projection of the side rims (**11–14**) above the bottom wall (**10**); and a cover flap (**20**) unitary with one of said side rims (**11**) and extending the width of the outer dimensions of the rims (**12, 14**) adjacent to said one rim (**11**), said cover flap being hinged (**21**) to said one rim, said flap (**20**) having a length (FL) of at least about the projected distance (PL) between the peak of the projecting ridge (**15**) and the edge of said one rim.



3,866,818
PACKAGING TRAY

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 29, 1972, Ser. No. 319,443
Int. Cl. B65d *5/20*
U.S. Cl. 229—30 **10 Claims**



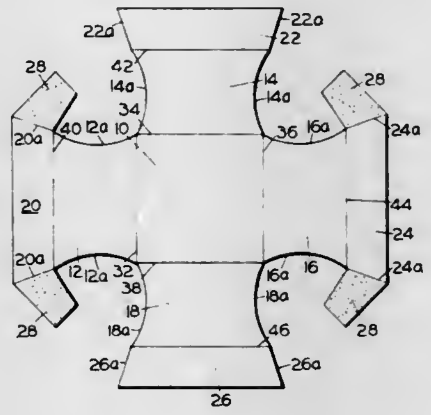
1. A tray for maintaining a plurality of articles at preselected locations relative one to the other, each article having a recessed portion, said tray having at least one flap, each flap having an edge connected to said tray along a hinged line of attachment, and each said flap having a portion which is of a width (*w*) greater than the width of the recessed portions of said articles, each said flap being positioned to be wedged into a respective recessed portion.

3,866,819
FLARED PRODUCE CARTON WITH CORNER CUT-OUTS

Henry R. Goebel, Ventura, Calif., assignor to Western Kraft Corporation, Camarillo, Calif.
Filed Aug. 6, 1973, Ser. No. 386,110
Int. Cl. B65d *5/20*
U.S. Cl. 229—30 **4 Claims**

1. A produce carton formed from a single blank of foldable paperboard and comprising:

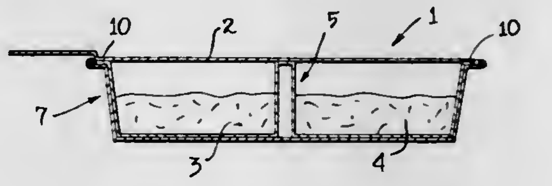
a. a substantially rectangular bottom panel having four scored edges,
b. four side wall panels each hinged by one of said scored edges to the bottom panel,
c. at least one adjacent pair of side wall panels having at least one of their adjacent side edges concavely recessed to form a corner opening in the side walls of the assembled carton, and
d. a plurality of laterally extending glue flaps hinged by score lines to side edges of the side wall panels and arranged to overlap adjacent side wall panels for adhesive attachment thereto in the assembled condition of the carton,



e. each of the side wall panels having a scored upper edge and a side wall segment hinged by said scored upper edge to said side wall panel, the side wall segments having outwardly tapered side edges for outward flaring of the segments in the assembled condition of the carton, the glue flaps being hinged to said segments and being positioned to overlap the adjacent segments for adhesively securing them thereto.

3,866,820
MULTI-COMPARTMENT CONTAINER

Horst Zumsteg, Neuhausen am Rheinfall, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland
Filed Oct. 5, 1972, Ser. No. 297,257
Claims priority, application Switzerland, Oct. 6, 1971, 14555/71
Int. Cl. B65d *85/72*
U.S. Cl. 229—43 **6 Claims**

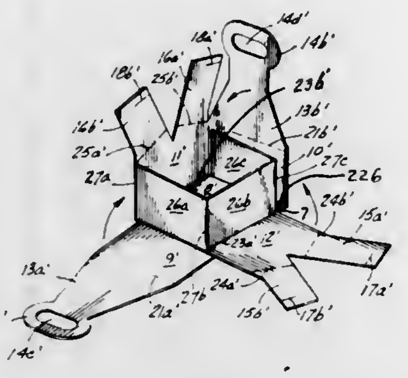


1. A multi-compartment container, especially for storing foodstuffs comprising

a heat sealable metal lid for hermetically closing said container including a laminated layer of plastic film or heat sealable lacquer
a multi-compartment inner-container for the stored foodstuff,
said inner container being made from plastic material and comprising
a side rim and partition walls
a single compartment metallic outer-container having a side rim;
said inner container conforming in size to said outer container whereby the inner container is supported by said outer container;
said heat sealable metal lid being heat sealable to the partition walls; and
said rims of said inner container and said rim of said outer container being assembled together with said heat sealable lid by heat sealing.

3,866,821
DISPOSABLE PORTABLE DOUBLE-BOTTOM-LIFT HANDLED CARTON

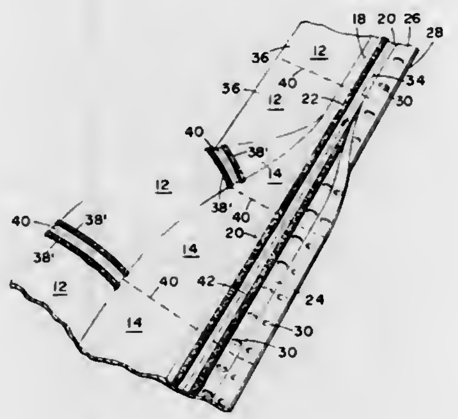
Henry C. Schaerf, 360 East 72nd Street, New York, N.Y. 10021
Filed Nov. 21, 1973, Ser. No. 417,971
Int. Cl. B65d *5/46, 25/22, 25/28*
U.S. Cl. 229—52 B **8 Claims**



1. A portable container device comprising in combination: a sheet structure having opposite upper and lower substantially flat faces, the sheet structure including two portions separated by a line of severance extending substantially more than half a length of the sheet structure and a first fold line aligned with and in series with the line of severence and extending the remaining length of the sheet structure from the termination of the line of severence, the first fold line extending the remaining length between the two portions, and including at least two additional third and fourth fold lines spaced apart and parallel to one-another extending across both portions at points where the portions are severed from one-another, the third and fourth fold lines extending the width of the sheet structure, opposite ends of the length of one of the portions of the sheet structure including extensions shaped as opposite-end handle structures, and each of opposite ends of the length of the other portion including extensions shaped to form latching means for latching one end latching means to an opposite end latching means lockably.

3,866,822
ENVELOPE MAILING PIECE

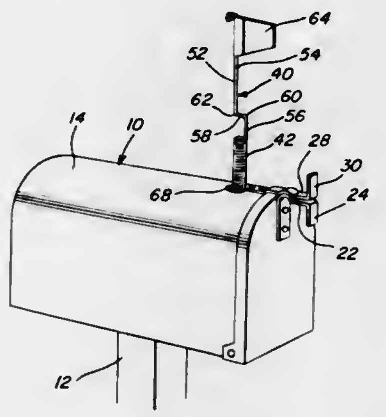
Hans G. Faltin, 4135 Wilshire Dr., York, and William G. Faltin, 1434 1st Ave., York, both of Pa.
Filed Nov. 25, 1968, Ser. No. 778,428
Int. Cl. B65d *27/10*
U.S. Cl. 229—69 **21 Claims**



17. A multi-ply unit adapted to be attached to a carrying piece or sheet, said unit being formed from a sheet of thin material folded upon itself to form said multi-ply unit which comprises a pair of flatly abutting panels, means permanently connecting the edges of the opposite ends of said panels together, rows of separating means extending along said abutting panels in parallelism with said fold and spaced a limited distance therefrom to define respectively on opposite sides thereof a relatively narrow multi-ply attaching and feeding strip and an envelope of flatly abutting panels, said strip being defined by said fold and row of separating means, securing means parallel to and adjacent said row of separating means permanently connecting said envelope panels along one edge and the opposite edges of said panels being separable to provide an open edge to receive items within the envelope, and an additional panel substantially of similar size to one of said envelope panels foldably connected to the outer edge of one of said envelope panels adjacent said open edge of said envelope and adapted to be folded across said open edge of said envelope to close the same and overlie the other envelope panel from that to which it is foldably connected, and remoistenable adhesive applied to one surface of said additional panel adjacent the outer edge thereof and adapted to be activated and contact said opposite envelope panel from that to which said additional panel is foldably connected in order to seal the envelope in closed condition, said additional panel being adapted to be inscribed in connection with the use of said envelope.

3,866,823
RURAL MAILBOX SIGNAL

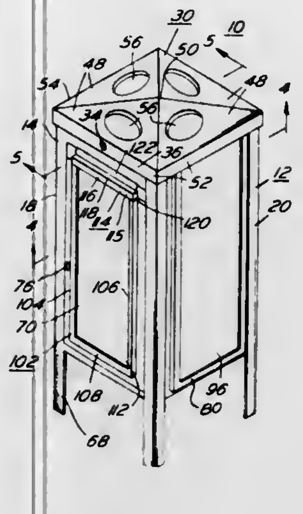
Robert E. Grayson, Rt.2, S., Great Falls, Mont. 59401
Filed Feb. 12, 1974, Ser. No. 441,842
Int. Cl. A47g *29/12*
U.S. Cl. 232—35 **6 Claims**



1. In combination with a mailbox of the type defining a horizontal tubular housing open at one end and provided with a hinged cover door for said one end pivoted along one marginal portion from a lower portion of the open housing end for swinging about a horizontal transverse axis in an upstanding plane between an upstanding closed position and an open position with the opposite marginal portion of said door swung outwardly and downwardly away from said one end of said housing, said opposite marginal portion of said door including a generally right-angled flange portion overlying, in slightly spaced position, the upper outer surface of the adjacent upper portion of the open end of said housing when said door is in the closed position, said housing and door including coacting means releasably securing said door in said closed position, a signal assembly comprising an upright metal expansion coil spring having abutting adjacent convolutions, one end of said coil spring being anchored at its lower end to an upper portion of the open end portion of said housing and the other end of said coil spring including a rod-like lengthwise extension provided with spaced oppositely angled right angle bends intermediate its opposite ends interconnected by a generally horizontal section of said extension extending therebetween, the free end portion of said extension remote from said coil spring including an enlargement visible from a distance, said spring being bendable, after said door has been opened, into inverted U-shaped configuration with the inverted horizontal section of said extension abutted against said upper outer surface and the free end of said extension and said enlargement directly in front of the open end of said housing and said door then being swingable to the closed position with said inverted horizontal section sandwiched between said upper outer surface and said right-angled flange portion.

3,866,824
RECEPTACLE DEVICE WITH ADVERTISING MEANS

Linford H. Lewis, 3408 Ashville St., Philadelphia, Pa. 19136
Filed Oct. 26, 1973, Ser. No. 410,041
Int. Cl. G09f *23/00*
U.S. Cl. 232—43.2 **6 Claims**

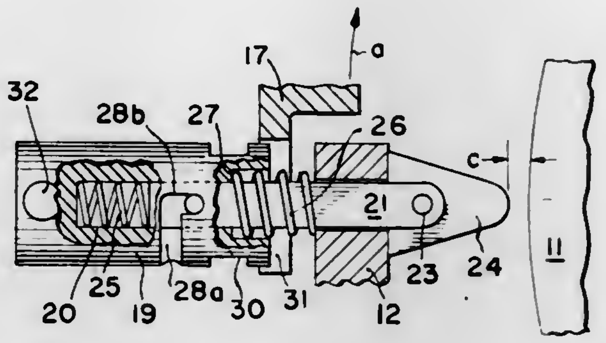


1. A receptacle device comprising a body having an outer surface providing front, side and rear vertical rectangular walls, said body having an opening at its top and a chamber therein for storing refuse, a top cover member hingedly secured at the top of said body along the rear vertical wall for movement between a first position enclosing the opening at the top of said body and a second position away from said opening, track means including one or more sets of track units respectively secured with one or more of the outer surfaces of the walls of said body with each of said units having an entrance at the top of said body for removably receiving advertising sheet material therein, said cover member enclosing the entrances of said track means and preventing removal therefrom or receipt therein of advertising sheet material when said cover member encloses the opening at the top of said body, and means for locking said top cover member in its first position, one of the walls of said body including a rectangular door with a top horizontal edge and outer and inner vertical surfaces enclosing a side opening of said body communicating with its chamber, said door being hinged about a vertical axis to move between closed and open positions, a set of track units secured with the outer surface of said door having an entrance at the top thereof for removably receiving advertising sheet material therein, and a track closure element supported by said door having a cover portion positioned over and enclosing the entrance of said last set of track units and a retaining portion extending behind said door, said retaining portion being concealed when said door is in its closed position and exposed when said door is in its open position, said track closure element being secured with said door against removal when said door is in its closed position and being removable from over said last set of track units for opening its entrance when the door is in its open position, and including locking means for locking said door in its closed position.

3,866,825
MOTION SENSING LOCK FOR SECURING A COVER OR GUARD FOR A ROTATABLE MEMBER SUCH AS A CENTRIFUGAL CONTACTOR SHAFT

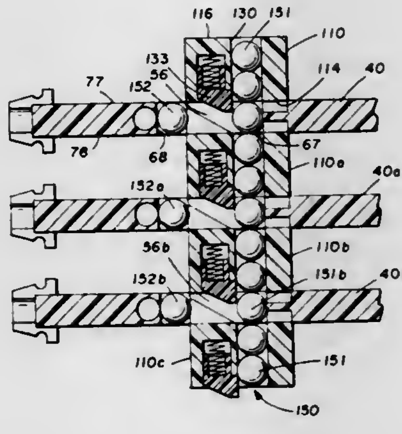
Richard J. Balazer, deceased, late of Saginaw, Mich., and James A. Farrand, administrator, Saginaw, Mich., assignors to Baker Perkins, Inc., Saginaw, Mich.
Filed Nov. 24, 1972, Ser. No. 308,967
Int. Cl. B04b *7/06*
U.S. Cl. 233—1 B **14 Claims**

1. A machine comprising: a framework, a drivable part, such as a centrifugal rotor, movably mounted on said framework; a releasable guard for the part; a latch part mounted on one of said framework and said guard; a rotatable lock member having a cylindrical bore supported for rotary movements about the axis of said bore between a position in which it coacts with said latch part to fix said guard in a position in which it cannot be released and a position in which said guard can be released; and motion sensing element means slidably received in said rotatable lock member for engaging said drivable part and controlling whether said lock member can be rotated between said positions.



3,866,826
VOTING MACHINE

Cothburn M. O'Neal, Dallas; Alfred M. Mayo, Richardson, both of Tex., and George William Childs, deceased, late of Dallas, Tex. (by Patricia M. Childs, executrix), assignors to Riverside Press, Inc., Dallas, Tex.
Filed Nov. 24, 1972, Ser. No. 309,174
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 A **10 Claims**



1. A mechanical interlock for limiting the number of selections permissible in a voting machine having a plurality of aligned moveable voting keys, said interlock comprising:

cam block means interposed between adjacent voting keys having a through passage and a blind receiving bore therein, said block means being moveable between a first and second position relative to said voting keys;

said keys having first and second bores therethrough whereby said first bores and said block means in said first position define an aligned passageway and said second bores carry displacement balls therein;

shiftable ball means forming an aligned column of balls in said passageway; and

cam means associated with each of said keys at said first and second bores, whereby movement of said cam block means to said second position establishes a selection group with said receiving bore at one limit and whereby actuation of a predetermined number of said keys to said second position in said group will displace said column of balls a predetermined distance toward said receiving bore by introducing one of said displacement balls therein for each key actuated, thereby blocking actuation of additional keys when said receiving bore is fully occupied by displaced balls.

3,866,827
MAGNETIC CARD APPARATUS

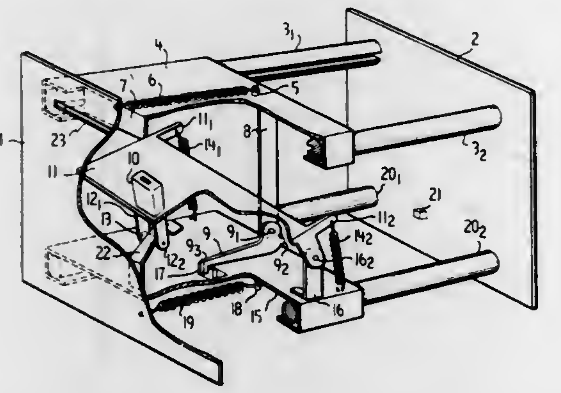
Atsushi Obata, Kitakata, and Mamoru Namikawa, Tokyo, both of Japan, assignors to Tokushu Seiko Co., Ltd. and Tokyo Magnetic Printing Co., Ltd., both of Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,172

Claims priority, application Japan, Feb. 17, 1972, 47-17015; Apr. 28, 1972, 47-50875

Int. Cl. G06k *7/08, 7/10*

U.S. Cl. 235—61.11 D **6 Claims**



1. Apparatus for reading data recorded on a surface of an information bearing medium, said apparatus comprising:

means including first and second guide rods having opposing grooves formed therein and defining a guide path between a first entrance position and a second position for receiving an information bearing medium to be directed along said guide path,

a first assembly movable along said first and second guide rods in response to the insertion of the information bearing medium,

first spring means for urging said first assembly against movement from the first to the second position,

a read head assembly and third and fourth guide rods for receiving said read head assembly for movement along said third and fourth guide rods and adjacent said guide path,

release means including a detent arm pivotally mounted upon said first assembly for engaging said read head assembly, whereby upon insertion of the information bearing medium, said first assembly and said read head assembly are moved toward said second position,

second spring means for biasing said read head assembly toward said first position,

said release means being responsive to disposition of said read head assembly at said second position for releasing said read head assembly to permit said second spring means to move said read head assembly toward said first position, and

said read head assembly further including a read head support member, carrying a read head thereon, pivotally mounted upon said read head assembly and biased to direct said read head toward said guide path, whereby said read head scans the surface of the information bearing medium during movement by said second spring means of said read head assembly from said second to said first position.

3,866,828
COUNTING DEVICES

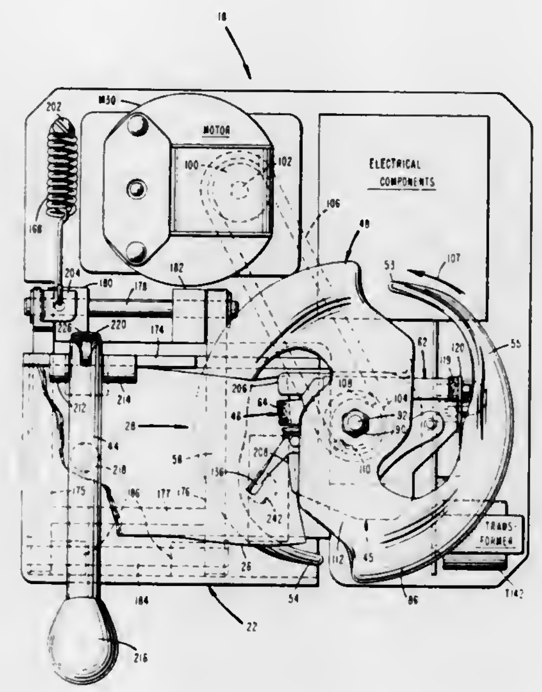
Robert D. Young, Accord, N.Y., assignor to Canyon Research Corporation, Accord, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,974

Int. Cl. B61l *1/16*

U.S. Cl. 235—98 R **24 Claims**

1. Apparatus for counting the number of items in a stack thereof, comprising: a support means; means for immobilizing a stack of items to be counted against said support means, a cyclically operable means for displacing like portions of successive items in the stack thereof thus immobilized; means for counting the number of like portions so separated and thus the number of items in the stack; and means including a member relative to which said displacing means is free to move displaceable by each said item as the like portion thereof is displaced to actuate said counter and change the count shown thereby.



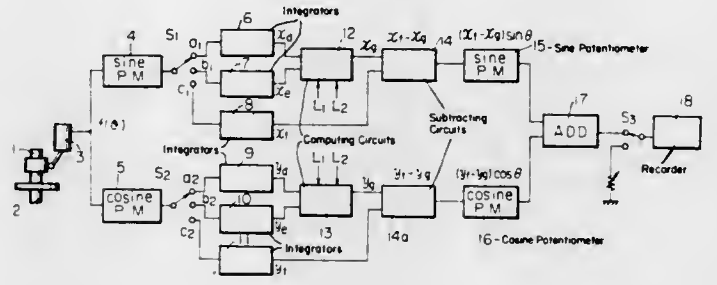
3,866,829
METHOD AND APPARATUS FOR MEASURING CONCENTRICITY

Mitsuru Egawa; Masahiro Akahane, and Tomohiro Sanada, all of Tokyo, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed June 14, 1973, Ser. No. 369,889

Int. Cl. G06g *7/48*

U.S. Cl. 235—151.3 **9 Claims**



1. In the method of measuring the concentricity of a workpiece, said workpiece being positioned with a reference axis of the workpiece inclined relative to an axis of rotation of a measuring system, where the least squares circles computed from the measured contour of the workpiece is a measurement circle, the improved steps resulting in an ascertainment of the coordinates of a measurement circle comprising:

obtaining first signals representing the central coordinates of two reference circles defined relative to the workpiece; obtaining second signals representing the distance between the reference circles and the measurement circle; computing the coordinates of a reference point of the measurement circle where said reference point is the point of intersection of the line connecting the centers of said two reference circles and the plane of said measurement circle, from said first and second signals, thereby ascertaining the coordinates of the center position of the measurement circle.

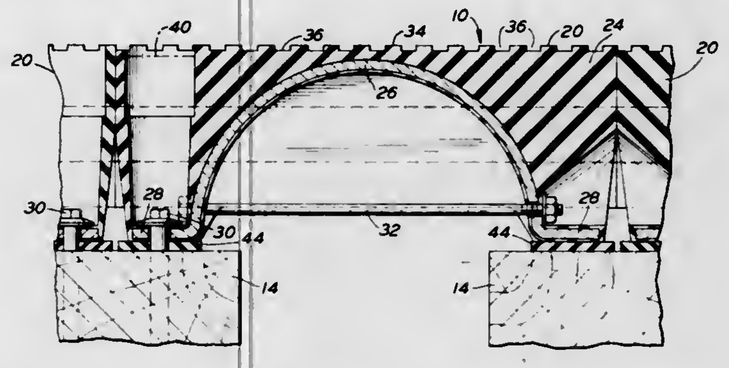
3,866,830
ELASTOMERIC RAILROAD CROSSING STRUCTURE

Richard D. Hein, and Gary L. Fordyce, both of Wabash, Ind., assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Sept. 7, 1973, Ser. No. 395,207

Int. Cl. E01b *27/28*

U.S. Cl. 238—8 **28 Claims**



1. An elastomeric railroad crossing pad member comprising:

A. an elongated arch member having an upwardly extending arch and including horizontal flanges extending from each side of said arch,

B. said arch member being of width substantially the same as the center spacing of adjacent railroad ties,

C. said arch member being adapted for respective connection through said flanges to adjacent railroad ties with the longitudinal axis of said arch member disposed substantially parallel to the axes of said railroad ties,

D. a plurality of tension support means connected in chordal relation across the arch of said arch member and along the tops of said flanges, and

E. an elastomeric pad body defining a horizontal upper surface and bonded to the upper surfaces of said arch and said flanges.

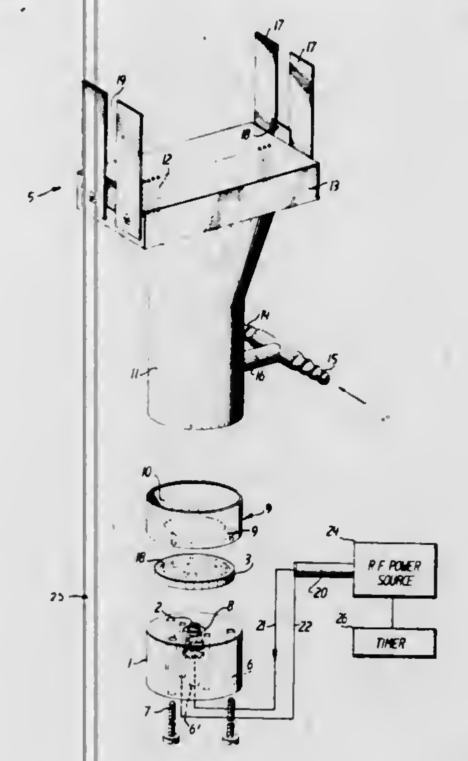
3,866,831
PULSED ULTRASONIC NEBULIZATION SYSTEM AND METHOD FOR FLAME SPECTROSCOPY

Medona Bonner Denton, Tucson, Ariz., assignor to Research Corporation, New York, N.Y.

Filed Oct. 10, 1973, Ser. No. 404,919

Int. Cl. B05b *17/06;* **G01n** *21/56*

U.S. Cl. 239—4 **15 Claims**



1. A pulsed ultrasonic nebulizer system for flame spectroscopy, which comprises:

means for receiving a liquid sample to be analyzed;

means for generating a pulsed RF signal; and

transducer means responsive to said pulsed RF signal for nebulizing said liquid sample into an aerosol spray.

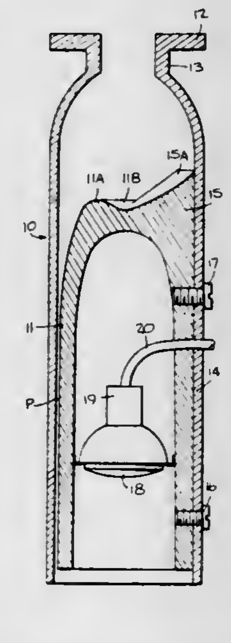
3,866,832
NOZZLE ASSEMBLY FOR PRODUCING AN INTERNALLY ILLUMINATED WATER COLUMN

Isamu Noguchi, Long Island City, N.Y., assignor to Noguchi Fountain and Plaza, Inc., Cambridge, Mass.

Filed Dec. 27, 1973, Ser. No. 428,749

Int. Cl. F21p *7/00*

U.S. Cl. 239—18 **10 Claims**



1. A nozzle assembly for producing a coherent column of water comprising:

A. a flow tube having a water inlet,

B. a core piece coaxially mounted within the tube by a laterally-extending pedestal to create a longitudinal slot in the hollow water column emitted from the mouth of the flow tube to expose the interior of the column to the atmosphere, the head of the core piece which faces said inlet being rounded to minimize the impact of water thereon.

3,866,833
IRRIGATION HOSE

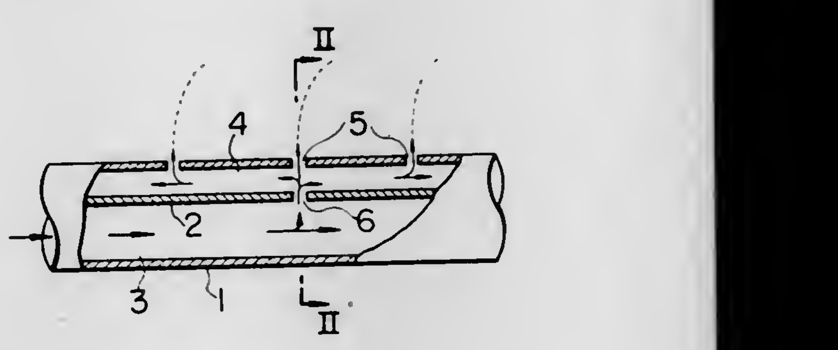
Osamu Shibata, Suita; Susumu Kojimoto, Ibaragi, and Takeshi Okuno, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sept. 17, 1973, Ser. No. 397,727

Claims priority, application Japan, Sept. 20, 1972, 47-94886

Int. Cl. B05b *1/20*

U.S. Cl. 239—76 **2 Claims**



1. An irrigation hose for agriculture comprising a plastic pipe having a plurality of flow paths each partitioned independently by diaphragms helically formed and extending longitudinally, that portion of an outer wall of the plastic pipe which defines at least one of the flow paths being formed with small bores properly spaced for sprinkler use along its length, and serving as a constant pressure path while at least one of the other flow paths, separated from the constant pressure path by the diaphragm, serves as a supply path, and small bores communicating both the constant pressure path and the supply path formed in the diaphragm separating the both paths along its length.

3,866,834

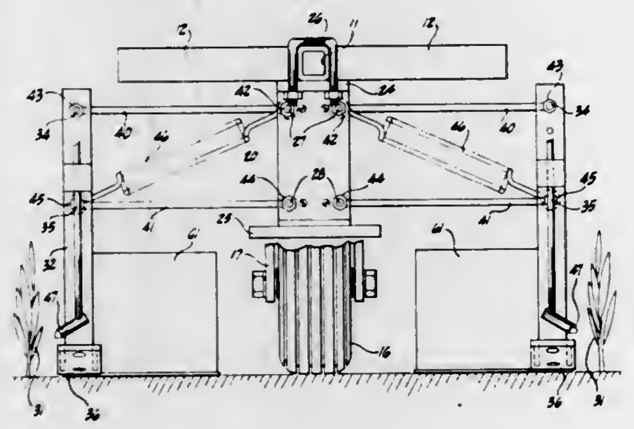
CULTIVATOR ASSEMBLY

Jefferson C. Shannon, c/o Shannon Tractor Co., Inc., P.O. Box 808, Yazoo City, Miss. 39194

Filed Aug. 29, 1973, Ser. No. 392,482

Int. Cl. A01m *7/00, 15/00*

U.S. Cl. 239—167 11 Claims



1. In a cultivator adapted to travel along and cultivate row crops:

a. a cultivator frame,

b. a mounting bracket secured to the frame,

c. a side frame spaced laterally from each side of the mounting bracket, the side frames being adapted for location at the sides of adjacent crop rows, and the side frames having ground-engaging members for following the contour of the ground along the sides of adjacent crop rows,

d. a pair of spaced, substantially parallel wing arms pivotally connected to each side frame and to the mounting bracket to provide a parallelogram linkage that enables independent, substantially vertical movement of the side frames in response to the ground contour, and

e. means carried by the side frames for treating the adjacent crop rows.

3,866,835

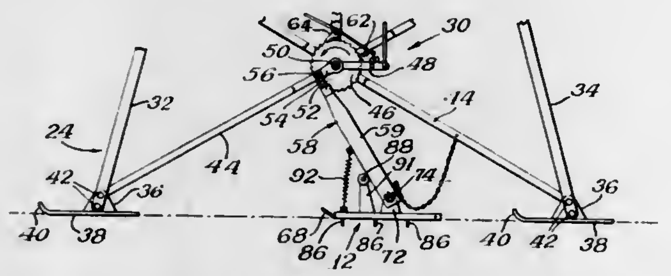
PROPELLING SHOE FOR USE IN AN IRRIGATION SYSTEM

Leo J. Dowd, 117 S. Parkway, Columbus, Nebr.

Filed Mar. 11, 1974, Ser. No. 449,629

Int. Cl. B05b *3/02;* **B62m** *27/02, 29/02*

U.S. Cl. 239—177 6 Claims



1. In an irrigation system of the type which includes an elongated, substantially horizontal water distribution pipe, means for pivotally mounting said pipe at one of its ends, means spaced along said pipe for supporting said pipe between one end and the other end thereof, and means for pivoting said pipe about said mounting means, said pivoting means including shoe means for drivably engaging said ground, the improvement comprising, in combination, shoe means having a substantially planar lower ground contacting surface, aperture means defined in said planar surface, drive shaft means pivotally interconnected to said shoe means, said drive shaft means being pivotable relative to said shoe means between first and second positions, cleat means operatively interconnected to said drive shaft means, said cleat means including planar means guidably received by said aperture means transversely of said planar surace and movable into said ground, said planar means being movable in and out of the ground in response to movement of said drive shaft means between a ground disengaged condition when said shaft means is at said first position, and a maximum ground penetrating condition when said shaft means is at said second position.

3,866,836

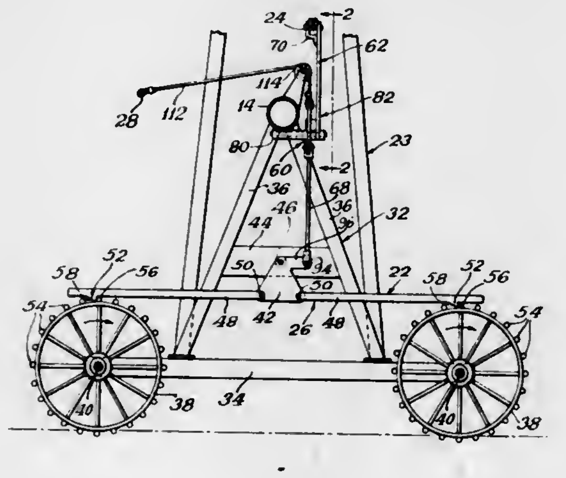
SELF PROPELLED IRRIGATION SYSTEM WITH CLUTCH

Leo J. Dowd, 117 S. Parkway, Columbus, Nebr.

Filed June 17, 1974, Ser. No. 479,860

Int. Cl. B05b *3/12;* **B60p** *3/30;* **A01m** *7/00*

U.S. Cl. 239—177 12 Claims



1. In an irrigation system of the type which includes an elongated, substantially horizontal water distribution pipe, and a plurality of laterally spaced aligned support means for said pipe, the improvement comprising, in combination, an arm supported by said support means, a reciprocal drive cable for moving said arm, wheels mounted on said support means for movement of said support means and said pipe along the ground, a drive mechanism for rotating said wheels, a connecting member for imparting the movement of said arm to said drive mechanism for rotation of said wheels, a control cable having a first condition when said support means lags behind other support means and having a second condition when said support means moves ahead of other support means, and clutch means having an engaged position when said control cable is at said first condition, for transmitting motion from said arm to said drive mechanism, and having a disengaged position when said control cable is at said second condition for stopping the transmission of motion from said arm to said drive mechanism.

3,866,837

SPRAY ARM BEARING

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 15, 1973, Ser. No. 406,647

Int. Cl. B05b *3/06*

U.S. Cl. 239—261 3 Claims

1. A dishwashing machine including a tub for receiving articles to be washed and a spray arm rotatably arranged in said tub for spraying liquid onto said articles;

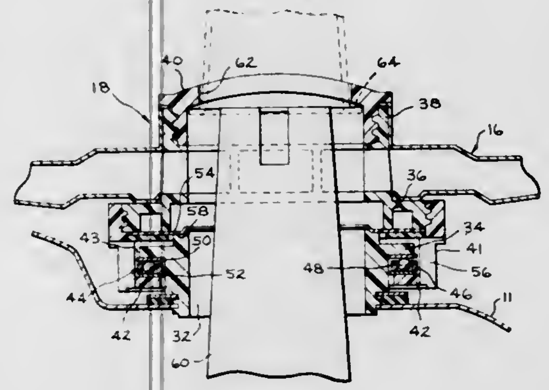
a stationary tubular liquid receiving hub member arranged in the bottom wall of said tub defining a liquid inlet;

a tubular spray arm support member mounted on said hub member for rotation relative thereto when liquid is received through said hub member;

said spray arm support member having a circumferentially disposed wall spaced outwardly from and parallel to said hub member;

annular retaining means integral with said hub member projecting toward said circumferentially disposed wall;

annular support means integral with said circumferentially disposed wall projecting toward said hub member below said annular retaining means;



friction reducing bearing means arranged between said retaining means and said support means for allowing rotation of said spray arm support member when the thrust of liquid through said liquid inlet causes axial movement of said spray arm support member and engagement of said bearing between said stationary annular retaining means and said annular support means;

resilient seal means arranged between said hub member and said support member to reduce leakage of liquid passing therebetween to said bearing means; and

drain openings on said circumferentially disposed wall for allowing liquid leaking past said seal means to drain away from said bearing means.

3,866,838

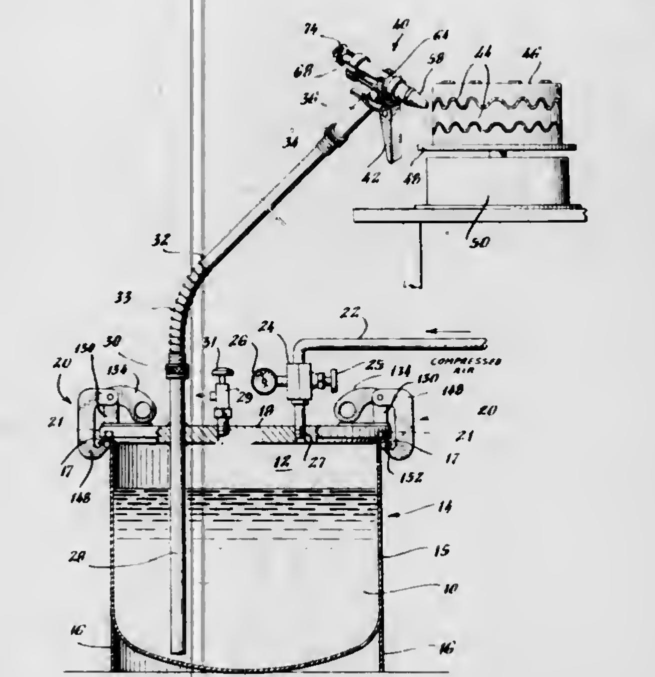
ICING GUN SYSTEM FOR DECORATING CONFECTIONARY ARTICLES

George N. Miles, Silvermine Ave., Norwalk, Conn. 06850

Filed Nov. 5, 1973, Ser. No. 412,964

Int. Cl. A62c *13/25*

U.S. Cl. 239—372 12 Claims



1. An icing gun system for decorating confectionary articles with icing material comprising a pressurizable container adapted to hold the icing material, said container having a removable cover, clamp means for releasably clamping the cover onto the container, an applicator gun having a tip opening for discharging the icing material onto the confectionary articles to be decorated, a flexible hose line connectible between the pressurizable container and the gun for feeding icing material to the gun, a manually operable trigger on the gun, a movable valve member which is exposed to the pressure of the icing material and is actuatable by said trigger for controlling the flow of icing material out of said tip opening, and a second movable member in opposed relationship to said valve member and connected to said valve member, said second movable member being exposed to the pressure of the icing material for balancing out the effect of the pressure on said valve member, whereby the valve member is readily controllable by said trigger.

3,866,839

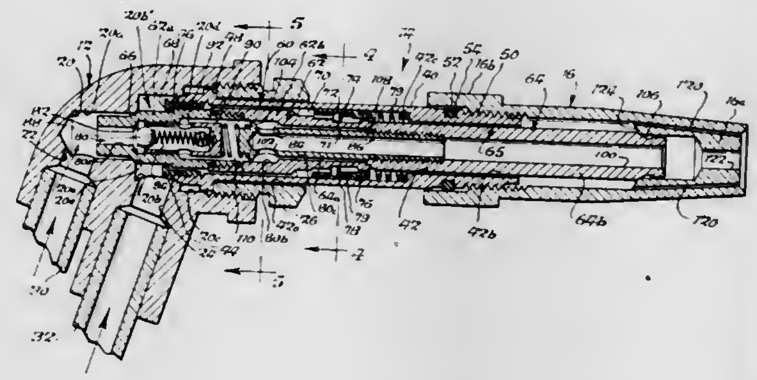
TORCH HEAD CONSTRUCTION

Edward J. Magner, 197 Elk St., Buffalo, N.Y. 14210

Filed Aug. 2, 1974, Ser. No. 494,058

Int. Cl. B05b *7/06*

U.S. Cl. 239—416.5 6 Claims



1. A torch head construction comprising in combination:

a torch head defining an end opening socket and oxygen and fuel gas inlet ports entering said socket at points spaced lengthwise thereof;

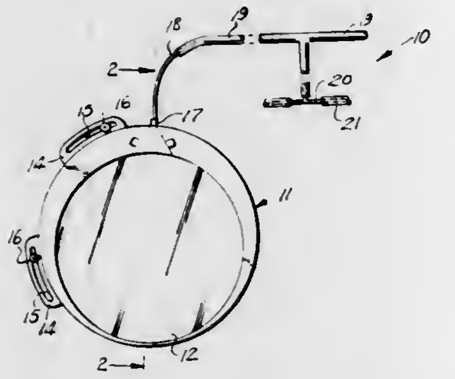
an extension assembly having a sleeve and an inner assembly extending lengthwise within said sleeve, said inner assembly having a rearwardly disposed end seated within said socket and cooperating therewith to define an oxygen chamber communicating with said oxygen inlet port, said inner assembly defining an oxygen passageway opening adjacent said rearwardly disposed end into said oxygen chamber and opening through a forwardly disposed end of said inner assembly, said sleeve having a rearwardly disposed end portion seated within said socket and cooperating therewith and said inner assembly to define a fuel gas chamber communicating with said gas inlet port, said sleeve and said inner assembly additionally cooperating to define a fuel gas passageway opening into said fuel gas chamber adjacent said rearwardly disposed end portion and opening through a forwardly disposed end portion of said sleeve, said inner assembly defining a valve device including an operator defining said forwardly disposed end of said inner assembly and movable between forwardly extended and rearwardly retracted positions for blocking and unblocking flow of oxygen through said oxygen passageway, respectively, and means for normally maintaining said operator in said forwardly extended position; and

a series of torch tips removably mounted one at a time to said forwardly disposed end portion of said sleeve, said series of tips including welding and cutting tips of generally cup-shaped configuration characterized as including base walls and side walls having tip mounting rim portions, said welding tip having an essentially centrally disposed fuel gas outlet opening extending through said base wall thereof, said cutting tip having an essentially centrally disposed oxygen outlet opening and a plurality of gas outlet openings arranged radially outwardly of said oxygen opening extending through said base wall thereof, said welding tip having means engageable with said sleeve for maintaining an inner surface of said base wall thereof disposed forwardly of said operator, and said cutting tip having an inner surface of said base wall thereof arranged to engage said operator to provide a fluid seal peripherally of said oxygen opening thereof and said oxygen passageway and to maintain said operator in said rearwardly retracted position.

3,866,840

VEHICLE HEADLIGHT DE-FILMING DEVICE

John Harkrider, P.O. Box 5671, Irving Tex. 75062
Filed Aug. 14, 1973, Ser. No. 388,238
Int. Cl. B60q *1/00, 3/00*
U.S. Cl. 240—7.1 R **4 Claims**

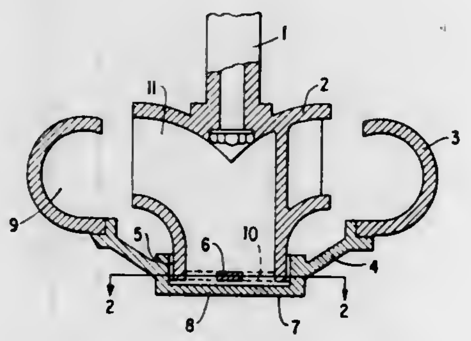


1. A headlight de-filming device and a vehicle headlight comprising a ring integral with a pair of ears along a periphery thereof, slots in said ears receiving mounting screws secured to a vehicle, said ring being installed around a sealed beam headlight of said vehicle, a spray nozzle secured to said ring, an outlet of said nozzle being adjacent a front edge of said ring, said nozzle being connected by flexible hose means through a pump to a windshield washer water supply.

3,866,841

SUBMERSIBLE PUMP EQUIPPED WITH CUTTER

Masakuni Iwahara, Kishiwada, Japan, assignor to Elepon Technical Center Kabushiki Kaisha, Osaka Prefecture, Japan
Filed May 17, 1973, Ser. No. 361,244
Claims priority, application Japan, Sept. 11, 1972, 47-106269
Int. Cl. B02c *18/40*
U.S. Cl. 241—46.11 **2 Claims**



1. A submersible pump equipped with cutters for cutting foreign material carried by the liquid being pumped comprising:

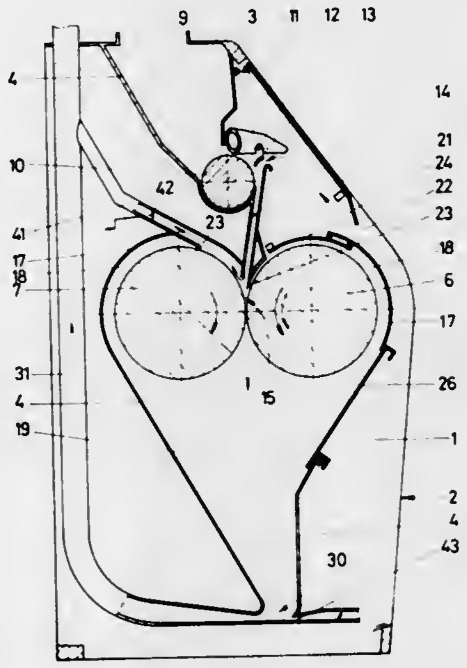
a. a rotating vane-wheel having a circular lower inlet portion, a circular outlet portion, and a cutter bar carried at the circular lower inlet portion thereof, said cutter bar being flat and extending diametrically across said circular lower inlet portion in a plane perpendicular to the axis of rotation of said vane-wheel, with the area above said cutter bar being entirely open in said vane-wheel and said circular lower inlet portion likewise being open except for said cutter bar so as to minimize flow restriction through said vane-wheel,

b. a fixed pump casing having a lower inlet portion concentrically arranged around the circular lower inlet portion of said vane-wheel, said casing being formed with cutter means extending into said lower inlet portion of said casing below said cutter bar of said vane-wheel, said cutter means comprising flat bar means extending diametrically across said lower inlet portion parallel to and spaced from said cutter bar carried by said vane-wheel, the lower inlet portion of said pump casing being entirely open except for said flat bar means so as to not significantly adversely affect the volume of liquid delivered to said pump, the rotation of said vane-wheel, and thus the cutter bar carried thereby, serving to cut into pieces foreign objects pumped into said inlet portions with the liquid being pumped.

3,866,842

GRINDING MILL

Robert Linzberger, Saint Gallen-Bruggen, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland
Filed Jan. 23, 1974, Ser. No. 435,854
Claims priority, application Switzerland, Jan. 24, 1973, 1012/73; Dec. 6, 1973, 17103/73
Int. Cl. B02c *23/02*
U.S. Cl. 241—47 **26 Claims**

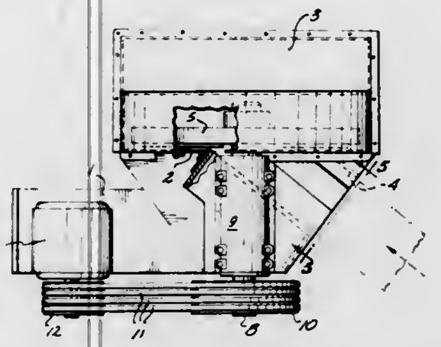


1. In a grinding mill, a combination comprising wall means defining a housing including a feed hopper and a downwardly convergent chamber located below said feed hopper and having an upper region and a lower region provided with an outlet; a pair of cooperating grinding rollers arranged in substantial axial parallelism in said upper region of said chamber spaced from said feed hopper and defining with one another a grinding gap from which ground material drops into said lower region; first pneumatic conduit means for conveying material to be ground from the region of said feed hopper to the region of said grinding gap; second pneumatic conduit means; feed means for feeding ground material from said lower region through said outlet into said second pneumatic conduit means; and suction conduit means having one open end portion communicating with said second pneumatic conduit means, and another open end portion located proximal to said grinding gap for aspirating air from said first pneumatic conduit means into said second pneumatic conduit means via the region of said grinding gap, whereby to maintain suction in the region of said grinding gap.

3,866,843

OVERHUNG DISK CHIPPER

Edward O. Lunn, Vancouver, British Columbia, Canada, assignor to Nicholson Manufacturing Company, Seattle, Wash.
Filed Aug. 27, 1973, Ser. No. 391,628
Claims priority, application Canada, Sept. 5, 1972, 150963
Int. Cl. B02c *18/14*
U.S. Cl. 241—55 **4 Claims**

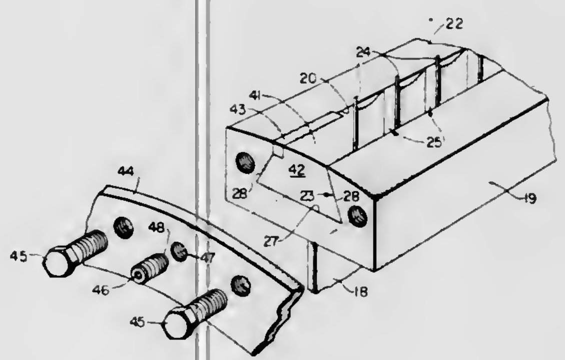


1. An overhung disk chipper comprising a base, a generally horizontal drive shaft carried rotatively by said base and having a cantilever end portion, an overhung chipping disk carried rotatively by said cantilever end portion of said drive shaft for upward movement of the portion of said chipping disk at one side of said shaft and downward movement of the portion of said chipping disk at the other side of said shaft and said chipping disk carrying chip-cutting bits on the side thereof to which said shaft is connected for cutting wood into chips, a housing for said chipping disk having an upright wall at the same side of said chipping disk as said shaft, and an elongated feed spout at the same side of said chipping disk as said shaft and housing upright wall, having an end connected to said housing upright wall only at a location above said shaft and having its length disposed substantially parallel to a horizontal plane and at an acute angle relative to the upwardly-moving portion of said chipping disk for guiding pieces of wood to be cut into chips to move lengthwise of such wood pieces and lengthwise of said feed spout through said housing upright wall to said chipping disk.

3,866,844

SHAVINGS MAKING MACHINE

W. T. S. Montgomery, Jacksonville, Fla., assignor to Montgomery Industries International Inc., Jacksonville, Fla.
Filed Aug. 16, 1973, Ser. No. 388,799
Int. Cl. B02c *18/06*
U.S. Cl. 241—282.2 **17 Claims**

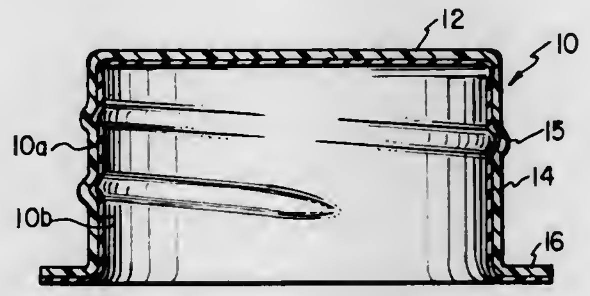


1. A rotor assembly for a shavings making machine or the like comprising a rotor having on its periphery a series of circumferentially spaced parallel longitudinal rows of relatively short knife blades, said knife blades being mounted in spaced relation longitudinally of the rotor and all being similarly inclined relative to an intersecting diametrical plane containing the rotor axis and each said row comprising a series of spacer elements and a series of knife blades separated by and clamped between adjacent spacer elements.

3,866,845

CONTAINER CLOSURE WITH LINER AND METHODS OF MAKING THE SAME

Frederick D. Keeler, Trumbull, and Carleton Ellis, Jr., Southport, both of Conn., assignors to The KLM Company, Stratford, Conn.
Filed May 18, 1973, Ser. No. 361,636
Int. Cl. B65d *53/00*
U.S. Cl. 215—341 **10 Claims**



1. A thermoformed container closure comprising:

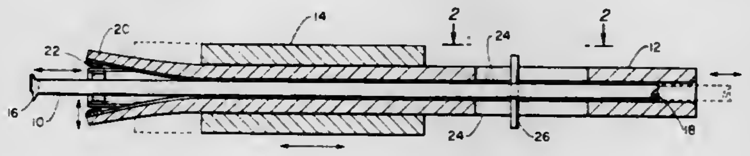
an outer shell of plastic material of substantially uniform thickness throughout except in the areas where deformed and having a top wall and a skirt wall depending therefrom,

and a thermoformed liner of a material different from and softer than said shell material and of substantially uniform thickness throughout except in the areas where deformed bonded to the interior of said outer shell throughout the entire inner surface area of said shell.

3,866,846

WIRE WRAP TOOL

Ted C. Dorsey, 4479 Westmont St., Ventura, Calif. 93003
Filed Sept. 25, 1972, Ser. No. 292,055
Int. Cl. B21f *3/04*
U.S. Cl. 242—7.06 **6 Claims**



1. A tool for removing and replacing coil wire wraps comprising:

a first tubular member having a raised external helical groove having a predetermined depth at one end;

a second tubular member concentric with the first tubular member and having at least one flexible collet jaw at one end adjacent to the helical groove of the first tubular member;

a third tubular member slidable over and concentric with the second tubular member to force the collet jaw of the second tubular member against the helical groove of the first tubular member whereby a coil wire wrap may be retained in the tool.

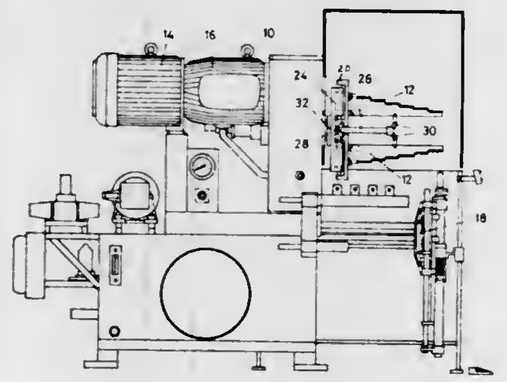
3,866,847

APPARATUS FOR WINDING COILS FOR STATORS OF ELECTRICAL MACHINES

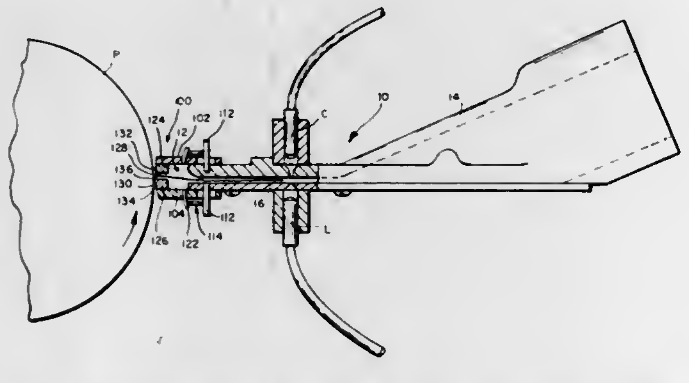
Hans Droll, An der Rosenhelle 4, 6369, Niederdorfelden, Germany
Filed Dec. 14, 1972, Ser. No. 314,964
Claims priority, application Germany, Dec. 15, 1971, 2162145
Int. Cl. B21f *3/04;* **H02k** *15/04;* **H01f** *41/06*
U.S. Cl. 242—7.09 **8 Claims**

1. An apparatus for winding coils for stators of electrical machines, comprising: a frame, a hollow shaft rotatably mounted in the frame, a face plate means fixed to the hollow shaft and extending radially outwardly therefrom, means

formed on said face plate for providing at least two radially extending guide surfaces, a sliding member on each guide surface, a former portion fixedly mounted on each sliding member to move radially therewith, a connecting means connecting each guide surface to its respective sliding member, each said connecting means including means for supporting its respective sliding member on its respective guide surface so as to form a driving connection from said shaft via said face plate and said connecting means to said sliding member and to its respective former, said connecting means further including means for mounting its respective sliding member so as to constrain the sliding member to move radially only in a plane perpendicular to the axis of rotation of the shaft, the former formed by the former protions thus receiving coil windings thereon about its periphery and being movable by said radial movement in said plane to at least two winding cross-sections and a smaller cross-section for drawing off a wound coil, a rod extending through the said hollow shaft to a position between said former portions, a rod mounting means for mounting the rod for axial movement relative to the shaft and for rotatable movement with the shaft, at least one link pivotally connecting the rod to each former portion such that upon axial movement of the rod the links pivot and urge their respective former portions to move radially by their sliding members sliding on their respective facing plate means guide surfaces, whereby the axial position of the rod determines the radial position of the former portions and hence determines the former cross-section, and including stop means for positively stopping the rod to locate the position thereof corresponding to said at least two cross-sections.

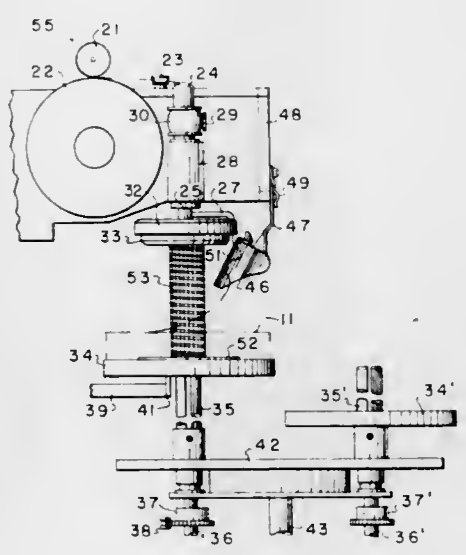


3,866,848
END FINDING NOZZLE
Samuel L. Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.
Continuation of Ser. No. 207,245, Dec. 13, 1971, abandoned. This application Jan. 3, 1974, Ser. No. 430,470
Int. Cl. B65h *54/22*
U.S. Cl. 242—35.6 E **2 Claims**



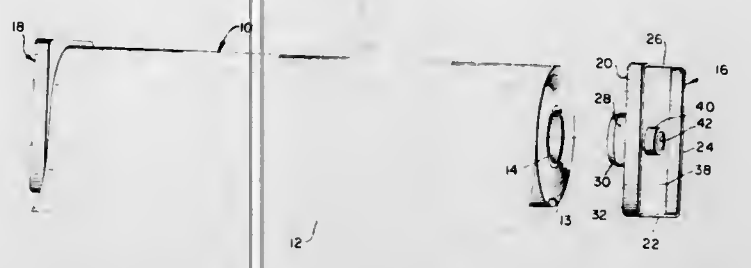
1. End finding apparatus for finding an end of yarn on a package of yarn and withdrawing it therefrom, said apparatus comprising means for supporting a package of yarn for rotation about a predetermined axis, means supporting an end finding nozzle adjacent the package at a predetermined fixed distance from the surface of the package for directing a flow of air across the surface of the package to carry an end of yarn into the nozzle, said nozzle having a narrow elongate mouth confronting and extending along the surface of the package substantially parallel to the axis of rotation thereof, a pair of lip plates each comprising a single elongate rigid flat plate having a uniformly straight leading edge, said lip plates being mounted on the roof and bottom of the mouth for movement with the nozzle toward and from the package, pins fixed to the roof and bottom of the mouth with their axes perpendicular to the said lip plates on which the lip plates are pivotally mounted, said lip plates containing slots disposed at right angles to their leading edges in which the pins are received such that the lip plates are capable of moving angularly about the axes of the pins and linearly at right angles to the leading edges and springs mounted on the pins yieldingly urging the lip plates to distended positions with respect to the mouth such that when the mouth is moved up to said predetermined position adjacent the package for a finding operation the lip plates are yieldingly held engaged with the surface of the package and wherein at said position the lip plates are freely pivotal about the axes of said pins.

3,866,849
APPARATUS FOR PRODUCING A NOVEL YARN PACKAGE
Paul W. Eschenbach, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of Ser. No. 211,137, Dec. 22, 1971, abandoned, which is a division of Ser. No. 92,078, Nov. 23, 1970, Pat. No. 3,675,864. This application Nov. 19, 1973, Ser. No. 417,159
Int. Cl. B65h *54/80*
U.S. Cl. 242—47 **1 Claim**



1. Apparatus for winding a yarn package with a high degree of uniformity in the yarn density throughout the package comprising: means to supply yarn, a rotatable yarn distributing means, rotatable yarn collecting means including a supporting base, a central core and yarn deflecting means supported between said yarn distributing means and said yarn collecting means to periodically deflect yarn from said yarn distributing means toward said central core, means for advancing said yarn collecting means toward said yarn distributing means to a predetermined spacing therefrom prior to delivery of yarn to said yarn collecting means, and means for moving said yarn collecting means away from said yarn distributing means as yarn is deposited on said yarn collecting means at a rate sufficient to maintain the spacing between said yarn distributing means and the yarn deposited on said yarn collecting means.

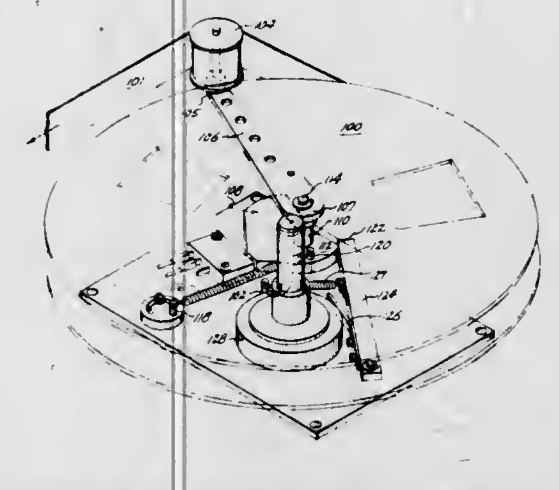
3,866,850
STRIP CHART HOLDING DEVICE
George H. More, Houston, Tex., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed June 26, 1972, Ser. No. 266,169
Int. Cl. B65b *19/02*
U.S. Cl. 242—68.4 **6 Claims**



1. A roll strip chart holder for engaging a generally cylindrically shaped roll of strip chart for use with a recorder, comprising:

- a body member having a substantially flat surface for positioning at one end of the roll of strip chart to bear against the edges of chart paper carried upon a roll core for strip chart paper, the body member having a generally centrally disposed hub for rotatably engaging a mount associated with a recorder, the body member having at least two portions which protrude outwardly from the centrally disposed hub to integrally form a substantially flat landing extending beyond the periphery of the roll of strip chart to provide edge alignment of the strip chart with the roll core and support for the roll of strip chart during handling.

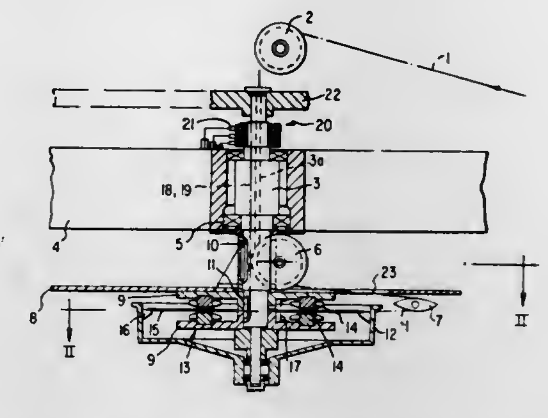
3,866,851
HIGH SPEED IMPACT PRINTER
Robert J. Brooks, Bellevue, Wash., assignor to Interface Mechanisms, Inc., Mountlake Terrace, Wash.
Filed Oct. 3, 1973, Ser. No. 403,277
Int. Cl. B65h *25/22*
U.S. Cl. 242—75.43 **8 Claims**



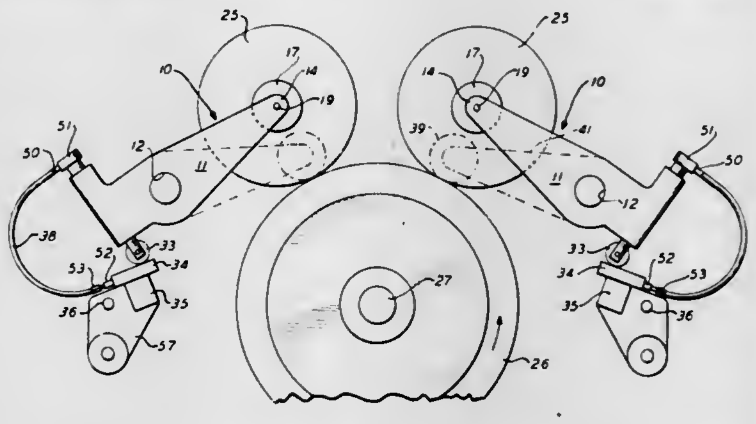
6. An apparatus of claim 5, wherein said braking means is rotatable about a second axis spaced apart from said first axis.

3,866,852
COIL WINDING MACHINE
Horst Kunz, Friedhofstrasse 24, Mandeln, Germany
Filed Dec. 18, 1973, Ser. No. 425,812
Claims priority, application Germany, Dec. 18, 1972, 2262077
Int. Cl. B21c *47/14*
U.S. Cl. 242—82 **15 Claims**

1. In a wire coiling machine having a coiling winding head with a freely rotating coiling disk which floats on a drive shaft extending through a stationary housing and being nonrotatably connected to a rotor with which said coiling disk is in driving relationship via an equalizing gear means, the wire running through a channel in said drive shaft and over an adjacent guide pulley onto said coiling disk, the improvement wherein said equalizing gear means is secured to a bearing support inside said coiling disk and is designed as a direct remote-controlled non-contacting intermediate power system for effecting a controlled slow rotation, if any, between said rotor and said coiling disk.



3,866,853
REWIND ARM ASSEMBLY
Elvin A. Mastriani, Roseland, and Frank A. Pozar, Succasunna, both of N.J., assignors to Arrow Converting Equipment, Inc., Fairfield, N.J.
Filed Apr. 3, 1973, Ser. No. 344,251
Int. Cl. B65h *17/08*
U.S. Cl. 242—65 **19 Claims**



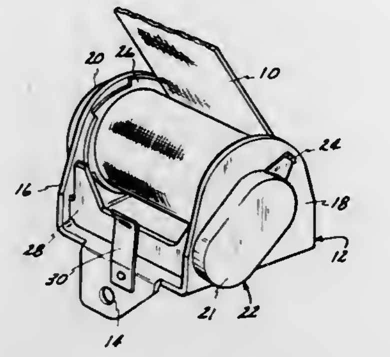
1. In a rewinding arm assembly for use in a machine for rewinding a drum onto a rewinding roll of movably mounted rewind arm,

- a. a piston movably mounted at one end of said arm and having a free end extending therefrom,
- b. a cam plate mounted relative to the piston for cam engagement of the free end of the piston therewith, and
- c. means for moving the piston to urge the free end thereof into engagement with the cam plate, to thereby urge the other end of the rewind arm toward the winding drum.

3,866,854
SEAT BELT LOCKING MECHANISM AND ALARM SYSTEM
William C. Wehner, Clarence Center, N.Y., assignor to International Engineering Service, Inc., Troy, Mich.
Filed Nov. 18, 1971, Ser. No. 199,952
Int. Cl. B65h *75/48;* **B60q** *1/26*
U.S. Cl. 242—107.4 **11 Claims**

1. An alarm system for a vehicle passenger seat belt comprising a drum, a belt engageable and lockable about a passenger, said belt having one end attached to and wound on said drum, locking means for preventing rotation of said drum after rotation of said drum a predetermined number of revolutions during belt unwind, said alarm system comprising an electrical alarm device and switching means for activating said alarm device, said switching means comprising a stationary switch contact, a movable switch contact and a switch operating means, said operating means comprising a member dis-

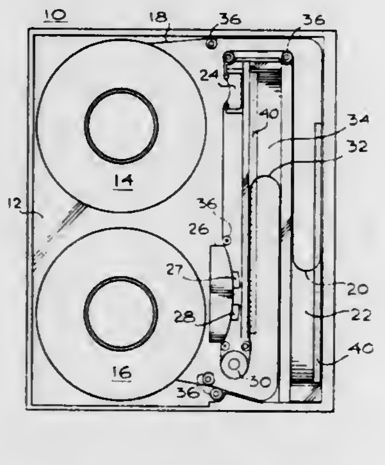
placeable by rotation of said drum and supporting said movable contact for holding said movable contact in engagement with said stationary contact to activate said alarm device until a predetermined number of revolutions of said drum have occurred, wherein said stationary contact is mounted on an insulating plate, said plate being adjustable manually in the direction of travel of said movable contact to position said stationary contact relatively to said movable contact to preset



the duration of activation of said alarm device during belt unwind, and wherein said member displaceable by rotation of said drum is a nut member threaded on a threaded shaft driven in unison with said drum, said switch operating means further comprising means preventing said nut member from rotating such that rotation of said shaft causes longitudinal displacement of said nut member, said movable switch contact being mounted on said nut member.

3,866,855
TAPE TENSION AND VELOCITY CONTROL SYSTEM

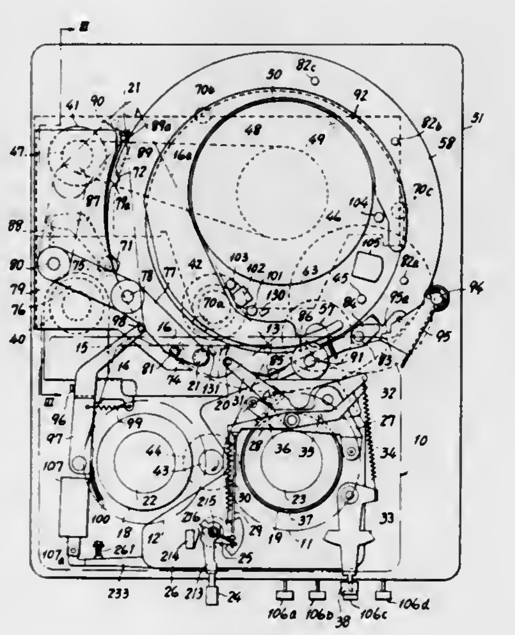
Philip Stuart Bryer, Woodland Hills, Calif., assignor to Wangco Incorporated, Los Angeles, Calif.
Filed Oct. 24, 1972, Ser. No. 299,719
Int. Cl. B65h *17/02*
U.S. Cl. 242—184 **19 Claims**



1. Apparatus for controlling a web member such as a magnetic tape comprising:
- pickup and supply reels for said tape;
- means for guiding said tape along a predetermined path including a tape head from one to the other of said reels; tape drive means for frictionally engaging the tape to drive it along the path;
- reel drive means for driving said reels;
- at least one main vacuum chamber for developing at least one buffering loop in said tape along said path;
- means for developing a control signal proportional to the extent of the loop in said chamber, said means comprising a transducer responsive to a selected parameter which varies within limits as the length of the tape loop is varied and a wall portion of said chamber having a predetermined non-linear configuration selected to linearize the relationship between the selected parameter and the length of the tape loop;
- means for controlling the reel drive means in response to said control signal; and
- means defining a plenum chamber adjacent the vacuum chamber, the wall portion including means for controlling the pressure in the plenum chamber in accordance with the extent of the tape loop in the vacuum chamber.

3,866,856
AUTOMATIC TAPE LOADING TYPE, RECORDING AND/OR REPRODUCING APPARATUS

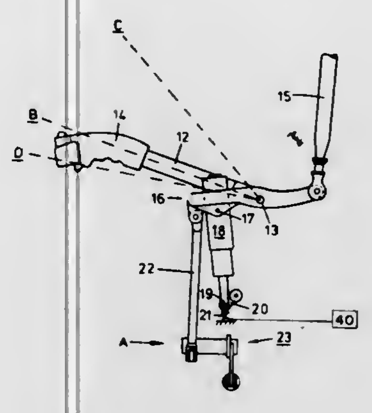
Hiroshi Katoh, Yokohama, Japan, assignor to Victor Company of Japan Ltd., Yokohama City, Kanagawa-ken, Japan
Filed Aug. 2, 1973, Ser. No. 384,939
Claims priority, application Japan, Aug. 3, 1972, 47-77813; Aug. 11, 1972, 47-79891
Int. Cl. B65h *59/38;* **G03b** *1/04;* **G11b** *1/52*
U.S. Cl. 242—188 **8 Claims**



1. An automatic-tape-loading type, recording and/or reproducing apparatus comprising:
- loading means for drawing out a tape-form recording medium from a tape storing housing structure and loading the recording medium in a specific tape path outside of the housing structure;
- means for accomplishing recording/reproducing of signals on/from the recording medium traveling along the specific tape path; and
- means for returning the recording medium on the specific tape path into the tape storing housing structure,
- said means for returning the recording medium comprisng a take-up reel for driving a take-up reel within the tape storing housing structure;
- a driving roller for driving in rotation said reel disc,
- first locking means for locking the driving roller in its pressed state for driving against the take-up reel disc in relation to the control manipulation placing the apparatus in the recording/reproducing mode and for unlocking the driving roller in relation to the changeover of the operation to the stop mode, and
- second locking means operated at the time of drawing out of the recording medium from the tape storing housing structure to lock the driving roller in its pressed state for driving against the reel disc and unlocking the driving roller when all of the recording medium outside of the storing housing structure has been returned thereinto,
- said driving roller being held in pressed state against the reel disc by the second locking means still in locking state thereby to continue to drive the reel disc in rotation even though the driving roller is unlocked by the first locking means at the time of control of the operation to the stop mode.

3,866,857
HELICOPTERS

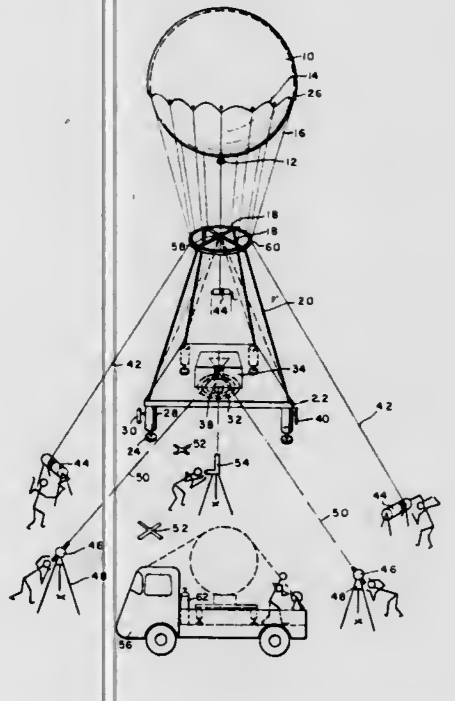
Tadeusz Leopold Ciastula, Yeovil, England, assignor to Westland Aircraft Limited, Yeouil, Somerset, England
Filed June 18, 1973, Ser. No. 370,779
Claims priority, application Great Britain, June 29, 1972, 30477/72
Int. Cl. B64c *27/76*
U.S. Cl. 244—17.25 **8 Claims**



1. A helicopter having:
- a main rotor system with a plurality of rotor blades,
- a control system including a collective pitch control means for changing the pitch angle of each rotor blade by an equal amount,
- said control means including a control lever operable in a generally vertical plane between opposed minimum and maximum stops which establish, respectively, minimum and maximum ends of a range of flying collective pitch angle settings,
- said minimum stop including means for concurrently forming said minimum stop and also permitting that minimum stop position to be overrun by movement of the said lever beyond said minimum stop position to a negative collective pitch angle setting of the rotor blades, and wherein the extent of the said overrun is variable.

3,866,858
AERIAL PHOTOGRAPHIC MAPPING APPARATUS

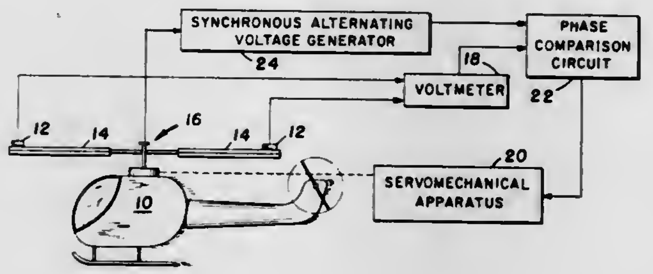
John E. Rattenberry, Burnaby, British Columbia, Canada, assignor to Raymond Lee Organization, Inc,, New York, N.Y., a part interest
Filed Aug. 8, 1973, Ser. No. 386,525
Int. Cl. B64b *1/48*
U.S. Cl. 244—32 **2 Claims**



1. Apparatus used in aerial photographic mapping comprising:
- an inflatable balloon;
- parachute means enveloping the balloon to control the rate of fall of an elevated balloon when same is ruptured, allowing its use in populated areas at low heights;
- a horizontal camera carrying platform having a central hole extending therethrough;
- a camera disposed on the platform and having a downwardly disposed lens aligned with said hole;
- a ring disposed horizontally below the balloon and above the platform;
- first shroud means securing the ring to the parachute;
- second shroud means securing the platform to the ring;
- a plurality of concentric rings on the bottom of the platform centered on the hole and defining a target;
- four shock absorbers;
- four flexible foot pads, each pad being secured through a corresponding absorber to the bottom of a corresponding corner of the platform; and
- battery powered warning lamps secured to said absorbers.

3,866,859
METHOD AND APPARATUS FOR DEFINING AN EQUIPOTENTIAL PLANE IN THE ELECTROSTATIC FIELD IN THE ATMOSPHERE UTILIZING ROTATING POTENTIAL SENSING PROBES

Maynard L. Hill, Silver Spring, Md.
Filed Nov. 16, 1973, Ser. No. 416,661
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 R **12 Claims**


SYNCHRONOUS ALTERNATING VOLTAGE GENERATOR
24
PHASE COMPARISON CIRCUIT
18
VOLTMETER
22
12
14
16
14
12
20
SERVOMECHANICAL APPARATUS
10

1. Apparatus for detecting the attitude relative to a reference plane of an airborne vehicle operating in the electrostatic field existing in the earth's atmosphere, comprising:
- probe means mounted on said vehicle and responsive to the magnitude of said electrostatic field;
- means for rotating the probe means in a given plane; and, means connected to said probe means for producing an output signal having an amplitude proportional to the angular attitude of the given plane, relative to the reference plane, in which the probe means are rotated and a phase related to the azimuthal direction of maximum tilt of the given plane, said output signal indicating the degree of alignment between said plane and the reference plane, the reference plane comprising an equipotential plane existing in the earth's electrostatic field.

12. A method for stabilizing an airborne vehicle operating in the electrostatic field existing in the earth's atmosphere relative to a reference plane, comprising the steps of:
- rotating at least one sensing probe responsive to the electrostatic field in a given plane;
- generating an output signal having an amplitude proportional to the angular attitude of the given plane, relative to the reference plane, in which the probe is rotated and a phase related to the azimuthal direction of maximum tilt of the given plane; and,
- angularly displacing the position of the plane in which the probe is rotating to align with the reference plane, said reference plane comprising an equipotential plane existing in the electrostatic field.

3,866,860

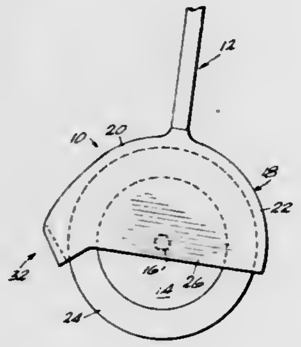
AIRPLANE WHEEL ROTATOR

John M. Opitz, Sr., 2641 Aqueduct Rd., Schenectady, N.Y. 12309

Filed Sept. 24, 1973, Ser. No. 400,068

Int. Cl. B64c *25/40*

U.S. Cl. 244—103 S **5 Claims**



1. An airplane wheel rotating device for the landing gear mechanism of an aircraft having a rotatable wheel and tire comprising, an air stream deflecting fairing in covering relation with respect to a major portion of the wheel and tire and exposing less than a 50 percent portion of the circumference of the tire and wheel to the air stream when the airplane landing gear is in landing position, the air stream deflecting fairing having a forward portion aligned vertically with the axis of the wheel, the upper and side portions of the air stream deflecting fairing rearwardly of the forward portion being contoured to deflect the air stream away from the wheel and tire, the lower portion of the air stream deflecting fairing rearwardly of the forward portion being contoured in front of the tire and wheel and extending downwardly at an angle to terminate substantially beneath the centerline through the forward portion of the fairing and the axis of the wheel and terminating closely adjacent to the tire to deflect the air stream downwardly from the forward portion of the fairing to induce the air stream to impinge on the tire in a downwardly and rearwardly direction to exert a rotative component of force on the central portion of the tire and wheel to rotate it in the direction of flight of the air craft when the wheel assembly is in the airplane landing position, the lower portion of the air stream deflecting fairing along the sides of the tire and wheel beneath the centerline through the forward portion of the fairing and the axle being contoured to terminate closely adjacent to the side walls of the tire and wheel to deflect the air stream away from the side walls of the tire and wheel whereby the air stream flowing over the exposed lower portions of the tire and wheel exerts a turning force on the tire and wheel to rotate it in the direction of the flight preparatory to the landing of the aircraft.

3,866,861

FIRE-SAFE AIRCRAFT REFUSE DISPOSAL SYSTEM

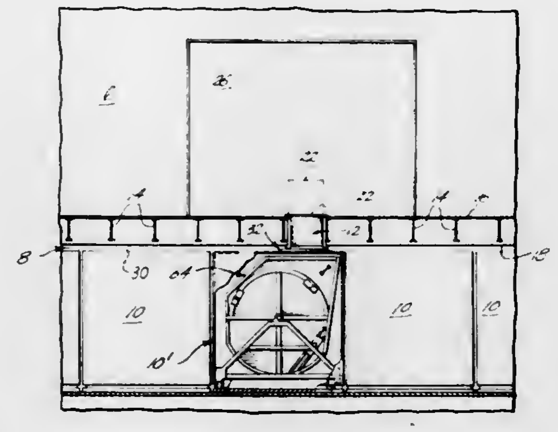
Ronald R. Ratcliff; John F. Watts, and Alden D. Simonson, all of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 22, 1974, Ser. No. 462,719

Int. Cl. B64d *11/00*

U.S. Cl. 244—118 P **21 Claims**

20. In an aircraft fuselage, a passenger deck having a hold therebelow and a chute therein through which refuse is fed to the hold, said hold having spaced surfaces and said chute opening into the hold at one of the surfaces, a refuse container removably insertable in the space between the surfaces and having an aperture therein that substantially registers with the opening of the chute, gasket means that is operatively interengaged between the container and the one surface about the chute, the gasket means being displaceable in relation to the one surface, and yieldable biasing means that is responsively connected with the gasket means so that the gasket means forms a compression seal between the container and the chute under the bias thereof, to the effect that the refuse in the chute is fed to the container through a passage which is closed to the hold.



3,866,862

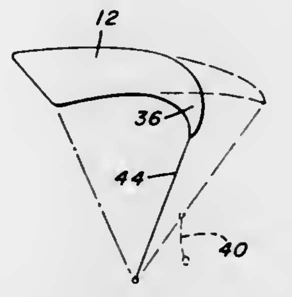
RISER CONTROLS FOR GLIDING PARACHUTES

Stephen L. Snyder, 331 Cherry Hill Blvd., Cherry Hill, N.J. 08034

Division of Ser. No. 244,034, April 14, 1972, Pat. No. 3,829,045. This application Apr. 5, 1973, Ser. No. 348,058

Int. Cl. B64d *17/34*

U.S. Cl. 244—152 **6 Claims**



3. In combination with a gliding parachute having a canopy with a continuous curvature when fully inflated, a plurality of suspension lines connected to the canopy and a payload harness connected to said suspension lines, brake control means operative on a portion of the canopy before complete deployment of the parachute, comprising at least one control line connected to said portion of the canopy, distortion control means connected to the control line between the canopy and the harness for maintaining the control line under tension to distort said portion of the canopy from the continuous curvature and thereby restrict inflation of the canopy during deployment of the parachute, and means connected to the control means for releasing the control line to permit unrestricted inflation of said portion of the canopy to said continuous curvature.

3,866,863

SPACE VEHICLE

George L. von Pragenau, Huntsville, Ala., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 21, 1974, Ser. No. 453,232

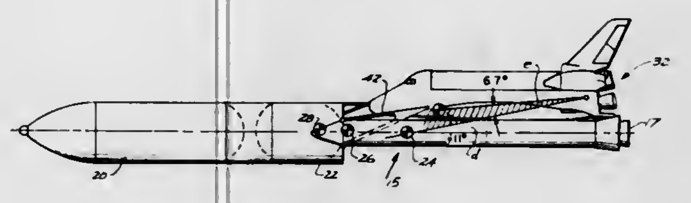
Int. Cl. B64c *39/02*

U.S. Cl. 244—162 **6 Claims**

1. A space vehicle having an improved ascent configuration adapted to be launched from the earth's surface comprising:

A. an orbiter having re-entry capabilities including an elongated fuselage and a rearwardly directed liquid rocket engine fixed to said fuselage;

B. an external tank of an elongated configuration disposed forwardly of said fuselage and connected with said rocket engine for supplying thereto liquid propellants;



C. an expendable booster stage for propelling said vehicle including a pair of solid rocket boosters disposed beneath said fuselage and extended in substantial parallelism therewith; and

D. connecting means for releasably connecting said external tank and said booster stage with said orbiter.

3,866,864

MOUNTING ARRANGEMENT

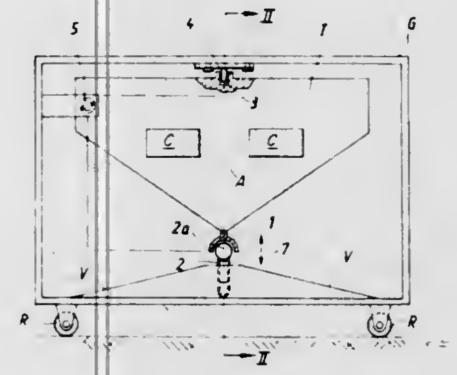
Christian Gotze, Munchen, and Friedrich Hujer, Grunwald, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 20, 1973, Ser. No. 399,059

Claims priority, application Germany, Sept. 22, 1972, 2246523

Int. Cl. A47g *29/00*

U.S. Cl. 248—1 **11 Claims**



1. In a photographic roll copier having a plurality of components whose relative orientation is to be fixedly maintained, an improvement in a mounting arrangement for said components comprising a frame which is subject to flexural deformation under the influence of external forces; a substantially rigid carrier for mounting said components in said relative orientation; and journalling means journalling said carrier in said frame with freedom of pivotable displacement relative thereto so as to prevent the transmission of stresses from said frame to said components.

3,866,865

SYSTEM FOR SUPPORTING AND ALIGNING DRIVE MOTORS

Jerald V. Dunlap, Pacific Palisades, Calif., assignor to Intercompressor, Inc., Santa Monica, Calif.

Division of Ser. No. 245,319, April 19, 1972, abandoned. This application Mar. 11, 1974, Ser. No. 449,964

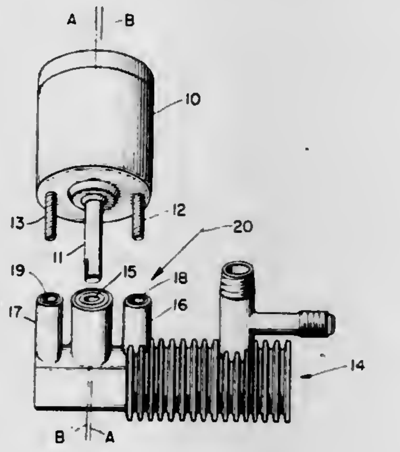
Int. Cl. F16c *35/00;* **F04b** *17/02;* **F16p** *15/06*

U.S. Cl. 248—2 **4 Claims**

1. In a driving motor having a housing and a rotatable driving shaft supported in said housing coupled to a driven device having a housing including a bearing for receiving said shaft, means for supporting said driving motor housing to said driven device housing and maintaining alignment of said shaft in said bearing for rotation about a common axis of the shaft and bearing, comprising:

a. at least two projections rigidly secured to and extending from one of said housings in radially spaced relationship to said common axis;

b. means in said other housing defining at least two projection receiving bores of greater cross-sectional area than said projections and radially spaced from said axis at positions receiving said projections when said shaft and bearing are in substantial alignment; and



c. means rigidly securing said projections in said bores after an exact alignment of said shaft with said bearing has been effected so that said exact alignment is maintained permanently.

3,866,866

COLLAPSIBLE FITTING

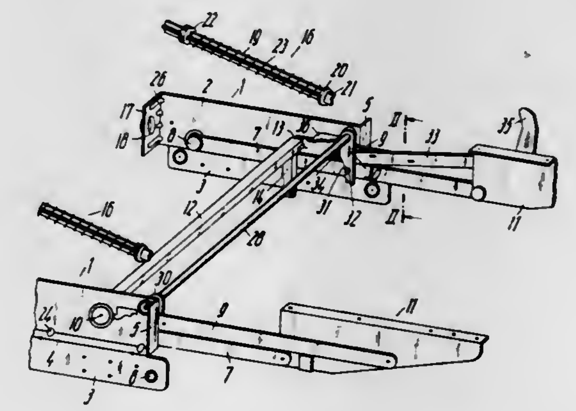
Karl Kneile, Holzmaden/Teck, Germany, assignor to Robert Krause KG Zweiniederlassung Weilheim/Teck, Weilheim/-Teck, Germany

Filed Dec. 14, 1973, Ser. No. 424,760

Claims priority, application Germany, Dec. 16, 1972, 2261733

Int. Cl. F16m *13/00*

U.S. Cl. 248—16 **15 Claims**

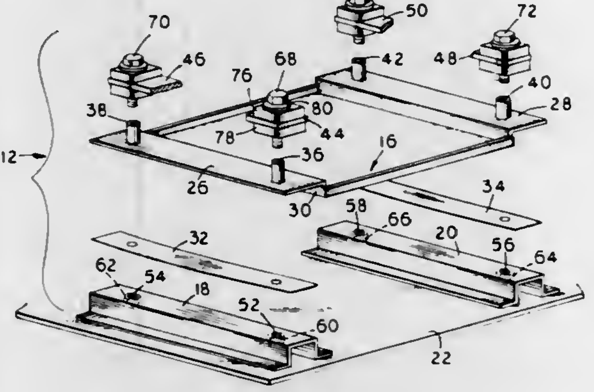


1. A fitting adapted for connection to an article of furniture, especially for supporting a machine such as a typewriter or the like therein for movement between extended working and retracted storage positions on the article of furniture, said fitting comprising; two laterally spaced parallelogram bar systems each comprising a bracket member, a connecting flange on each said bracket member for connection thereof to the article of furniture, a pair of parallel links pivotally connected at one end to each bracket member, a support platform pivotally supported on the other ends of said links and adapted for supporting a machine such as a typewriter, at least one said connecting flange being offset relative to the respective bracket member in a direction away from the other bracket member, arresting means operatively disposed between at least one bracket member and said links for retaining said platform in extended working position, said links extending outwardly from one end of said bracket members when supporting said platform in working position and extending downwardly from said bracket members when supporting said platform in storage position, and means connecting corre-

sponding links of said pairs of links to cause the links to pivot on said bracket members in synchronism.

3,866,867
MOUNT FOR AIR CONDITIONER COMPONENTS

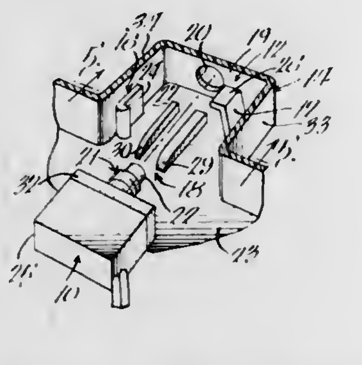
Martin LaRocca, Staten Island, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Oct. 11, 1973, Ser. No. 405,362
Int. Cl. F16m *11/04, 3/00*
U.S. Cl. 248—23 **4 Claims**



1. Means for supporting a compressor, motor, motor-compressor, or other unit of an air conditioner in an air conditioner housing, said means comprising parallel guide rails affixed to the housing, a mounting pad for said unit including a pair of flanges supported on the rails and depending structure between the flanges to engage inside surfaces of the guide rails whereby movement of the mounting pad is restricted to directions parallel to the directions in which the guide rails extend, a slide between each rail and associated flange of the mounting pad permitting the mounting pad to be easily moved on the rails, a plurality of sleeves on the mounting pad, removable fastening elements extendable through the unit, sleeves, slides and rails for defining a retracted position for the mounting pad and unit in said housing, means engageable with said fastening elements for securing the mounting pad and unit in said retracted position but disengagable therefrom to permit the mouting pad and unit thereon to be moved outwardly from said retracted position, and cushions on each of said sleeves compressible by the fastening elements for resiliently supporting the unit.

3,866,868
VACUUM CLEANER SWITCH MOUNTING MEANS

Warren Fish, White Bear Lake, and Arman Sundquist, Saint Paul, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 16, 1974, Ser. No. 433,915
Int. Cl. F16m *13/00*
U.S. Cl. 248—27 **14 Claims**



1. In an electrical appliance having a portion defining a wall, means for mounting an electrical control switch to said wall for selective manipulation of the switch, comprising:

a catch carried on said wall defining a forwardly facing latching shoulder;

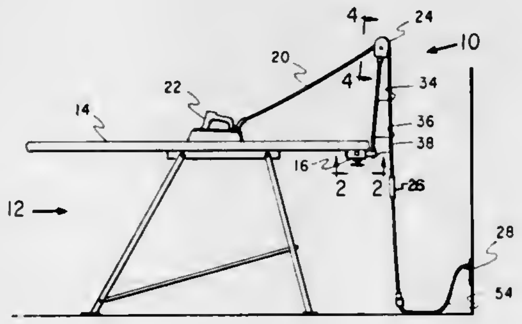
resiliently deflectible presser means carried on said wall spaced from said catch for receiving said switch in a switch receiving space therebetween and resiliently urging the switch into retained association with said catch;

retainer means carried by said presser means for yieldably retaining the switch against movement outwardly from said space transversely to the direction of spacing between said presser means and catch; and

means carried by said wall for camming the switch against the retainer means as a result of movement of said switch into said space whereby said presser and retainer means further yieldably retain said switch against said cam means.

3,866,869
CORD RETRACTOR FOR ELECTRIC IRON

Carroll E. Woods, 4636 S.E. Fieldcrest Ave., Milwaukee, Oreg. 97206
Filed Oct. 9, 1973, Ser. No. 404,175
Int. Cl. F16l *3/00*
U.S. Cl. 248—51 **7 Claims**



1. A retractor apparatus adapted for mounting on an ironing board supported above a floor for retracting an electric iron cord which comprises:

a. a pulley having a pair of outer rims disposed on the respective sides thereof for supporting the cord;

b. a pair of outwardly-flared side flanges adjacent either side of said pulley for preventing the cord from slipping off of said pulley, said flanges being higher than the respective outer rims of said pulley and defining an open-topped slot-like receptacle for placement of the iron cord, the space directly above said pulley being free of any member attached to said retractor apparatus;

c. an elongate arm adapted to be mounted in an upright position on said ironing board having means at its top for supporting said pulley a distance above the ironing surface of said ironing board so as to prevent the cord from contacting the ironing surface, and having an elongate square member at its bottom extending generally at a right angle therefrom;

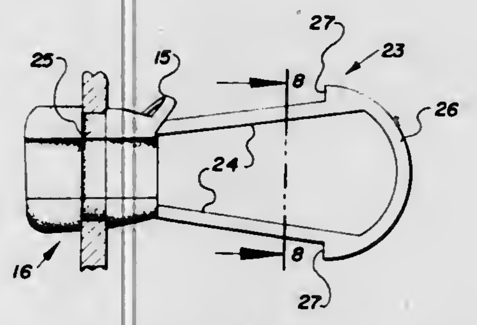
d. means adapted to be attached to the cord at a location between said pulley and the floor for weighting the cord;

e. a clamp adapted to be attached solely to the underside of said ironing surface for detachably holding said arm selectively either in said upright position or in a second position parallel to and on the underside of said ironing surface, said clamp comprising means defining two elongate square apertures intersecting one another at right angles adapted to slidably accept said elongate square member and a threaded rod with a manual turning knob attached to one end thereof screwed into said clamp mechanism so as to communicate with the intersection of said apertures and adapted to be tightened against said elongate square member when said member is inserted in either of said apertures, for permitting said arm to be changed from one of said positions to the other solely by the detachment and re-attachment of said arm to said clamp; and

f. means for attaching said clamp to the underside of said ironing surface.

3,866,870
CORD ANCHORAGE SECURING DEVICE AND SECURE CORD ANCHORAGE

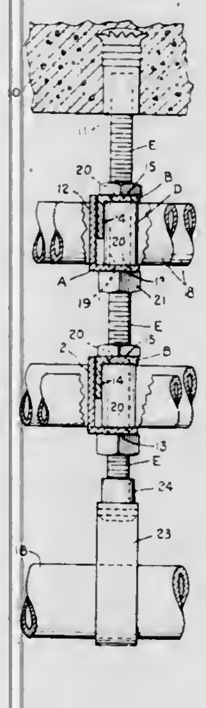
John H. Nicholson, Perndowne, England, and William Jemison, Summit, N.J., assignors to Heyman Manufacturing Company, Kenilworth, N.J.
Division of Ser. No. 223,203, Feb. 3, 1972, Pat. No. 3,779,494. This application Aug. 13, 1973, Ser. No. 387,677
Int. Cl. F16l *5/00*
U.S. Cl. 248—56 **2 Claims**



1. In combination an appliance securing device for securing an electric cord anchorage device to a body having an aperture adapted to receive said electric cord anchorage device, and an electric cord anchorage device, said electric cord anchorage device comprising at least a grip block and a shank, said appliance securing device having a resilient arm portion and at least two integral stem portions, said at least two stem portions extending from a point inward of the ends of said resilient arm portions spaced apart a distance greater than the width of said aperture, and said electric cord anchorage device being integral to said stem portions.

3,866,871
PIPE HANGER

Robert S. Dupuy, Sr., 2909 Tournefort St., Chalmette, La. 70043
Filed Jan. 31, 1973, Ser. No. 328,266
Int. Cl. F16l *3/22*
U.S. Cl. 248—59 **1 Claim**



1. A pipe hanger comprising:

A. a pair of elongated aligned opposed L-shaped elements each having a leg and a web at substantially a right angle to said leg;

B. a plurality of spaced pipe receiving portions carried in each leg;

C. said pipe receiving portions of one leg being in alignment with complementary pipe receiving portions of the other leg in opposed pipe receiving relation thereto with said legs overlapping in gripping engagement with said pipes;

D. a single spacer having a longitudinal opening therein positioned between opposed webs;

E. each of said webs having an opening therein aligned with said longitudinal opening in said spacer;

F. an elongated threaded hanger passing through said opening in each of said webs and through said longitudinal opening in said spacer;

G. a threaded fastening means threadably carried on said elongated hanger on each side of said opposed webs retaining said opposed elements and spacer for exerting a gripping force on said pipes and for adjustably mounting on said hanger as a unitary assembly;

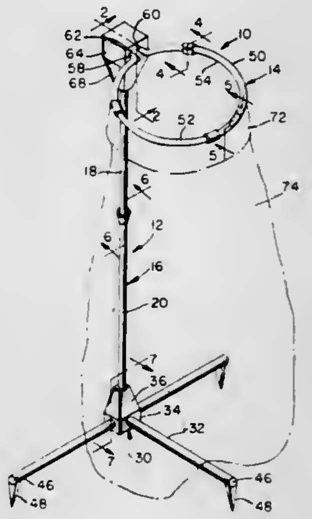
I. said spacer is positioned centrally of said elongated elements with complementary pipe receiving portions carried on each side thereof; and

J. a second pair of such elongated aligned opposed elements with an additional such spacer adjustably mounted upon said hanger with threaded fastening means on each side thereof;

whereby a plurality of spaced pipes may be received and retained in respective pipe receiving portions and carried upon a single hanger.

3,866,872
BAG HOLDER

Lloyd Eugene Burgess, 737 E. Third St., Flora, Ill. 62839
Filed July 6, 1973, Ser. No. 377,054
Int. Cl. B65b *67/12*
U.S. Cl. 248—97 **3 Claims**

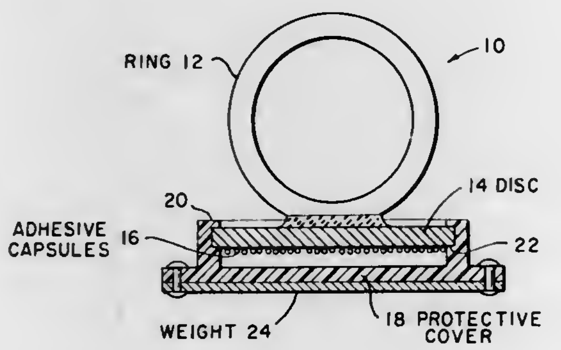


1. A bag holder comprising a base block having a body portion provided with a vertical bore, said body portion having a front face and opposing side faces disposed angularly to the front face, each of said faces being provided with a horizontal bore, horizontally disposed rod elements having inner ends frictionally fitted in the horizontal bores and having outer ends provided with ground engaging feet, said rod elements defining stabilizing legs and being angularly spaced apart in their horizontal extension from the front and side faces of the base block with legs being coplanar and supporting the base block, a vertically disposed standard having a lower end portion frictionally fitted in the vertical bore of the base block, a head block having a body portion provided with a vertical bore, said standard having an upper end portion frictionally fitted in the vertical bore in the head block whereby the head block is supported in a position overlying and spaced above the base block, said head block having a front face provided with a pair of horizontal bores, a circular split ring having an open inner end defined by offset fingers that are frictionally

fitted in the horizontal bores of the head block so that the ring projects horizontally from the upper end of the standard in a manner to substantially overlie the legs, tubular spring clips disposed on the ring for attaching the edges of the open end of a bag therewith, said clips being split lengthwise and being slidable on the ring, said ring being tubular and having split outer ends and a plug frictionally fitted in such outer ends to detachably secure them together in abutting relation.

3,866,873
ADHESIVE-FASTENED PADEYE DEVICE

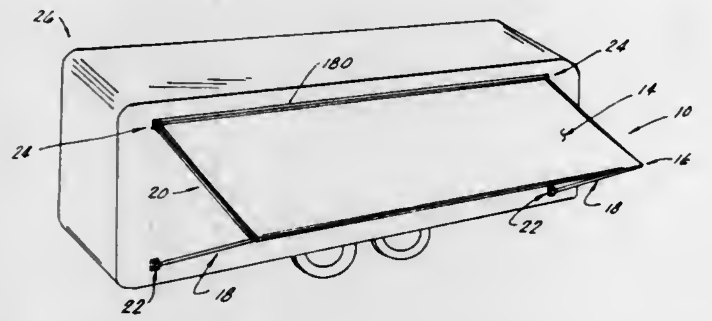
William H. Bohli, Catonsville, Md., assignor to The United States of America, as represented by the Secretary of the Navy, Washington, D.C.
Filed June 16, 1972, Ser. No. 266,523
Int. Cl. A47b *93/10*
U.S. Cl. 248—205 A **6 Claims**



1. A padeye attachment assembly adapted to be secured to a surface comprising:
- a supporting plate;
- an annular handle affixed to one side of said plate for manipulating said assembly and for support and atttachment of other devices;
- a plurality of adhesive-containing, frangible microcapsules attached to the other side of said plate; and
- a shallow, cup-shaped protective cover adapted to engage the edge of said plate and spaced therefrom to cover and protect said microcapsules.

3,866,874
BRACKET FOR MOUNTING AWNINGS AND THE LIKE

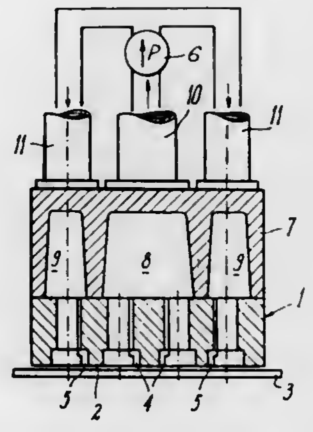
Albert E. Upton, Jr., Wichita, Kans., assignor to Scott and Fetzer Company, Lakewood, Ohio
Filed Mar. 26, 1973, Ser. No. 344,903
Int. Cl. E04f *10/06*
U.S. Cl. 248—251 **4 Claims**



1. Bracket means for mounting and supporting retractable awnings on a supporting surface comprising:
- a. a portion of said bracket means having means for mounting said bracket means on said supporting surface,
- b. another portion of said bracket means having means for mounting a rigid support member, and
- c. said means for mounting a support member having an aperture therethrough constructed and adapted to receive and hold a pin or the like,
- d. said bracket member having on a normally upper surface thereof a notched portion formed by an inclined portion and an upright portion.

3,866,875
METHOD AND APPARATUS FOR SUPPORT OF SHEET MATERIAL

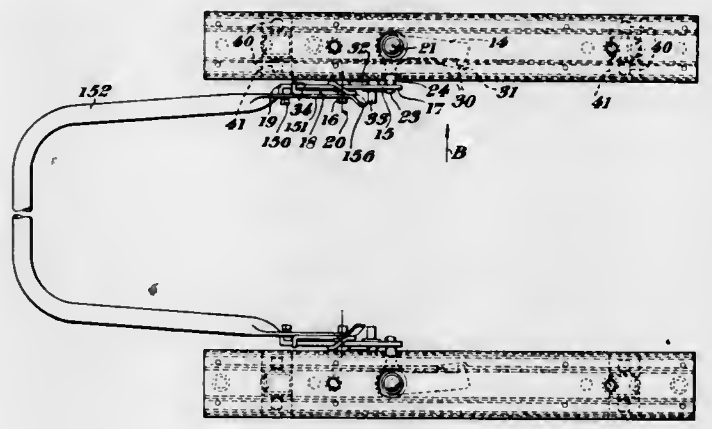
Yves Fournier, Chalon Sur Saone, France, assignor to Saint-Gobain Industries, Neuilly sur Seine, France
Filed Feb. 6, 1973, Ser. No. 330,103
Claims priority, application France, Feb. 10, 1972, 72.04433
Int. Cl. F16m *13/00*
U.S. Cl. 248—363 **4 Claims**



1. Apparatus for the support of sheet material from above against the force of gravity, said apparatus comprising a plate having a plurality of exhaust ports therethrough for the aspirated exhaust of gas from beneath said plate and having a plurality of inlet ports therethrough for supply of gas through the plate to the space below it, said inlet ports being disposed at least in part on opposite sides of said exhaust ports, a stopper partly obturating each of said ports, the stoppers in the inlet ports being of a different size from those in the outlet ports means to maintain a sub-ambient pressure at said exhaust ports and means to maintain a supra-ambient pressure at said inlet ports.

3,866,876
SEAT SLIDE MECHANISM

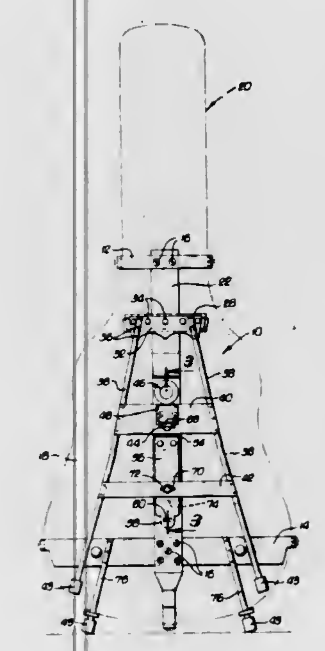
Albert John Adams, Fetcham, England, assignor to A. W. Chapman Limited, London, England
Filed May 20, 1974, Ser. No. 471,333
Claims priority, application Great Britain, May 29, 1973, 25533/73
Int. Cl. F16m *11/20;* **F16c** *29/00;* **A62b** *35/00*
U.S. Cl. 248—429 **8 Claims**



1. A seat slide mechanism including a slide and a rail, a rack on said rail, a catch lever pivotally mounted on said slide, spring means influencing said catch lever into engagement with said rack to lock the slide and the rail to one another, an operating member pivotally mounted on said slide and having two ends, one of said ends being connected to said catch lever, whereby angular movement of the other of said ends of said operating member about the horizonatal pivotal axis of said operaing member causes the catch lever to move angularly about its vertical pivotal axis against the influence of said spring means out of engagement with said rack.

3,866,877
STAND DEVICE FOR MUSICAL INSTRUMENT CASE

Ira G. Thompson, 4033 Bell Ave., No. 7, Bell, Calif. 90201
Filed May 31, 1974, Ser. No. 474,892
Int. Cl. A47g *29/00*
U.S. Cl. 248—359 **2 Claims**

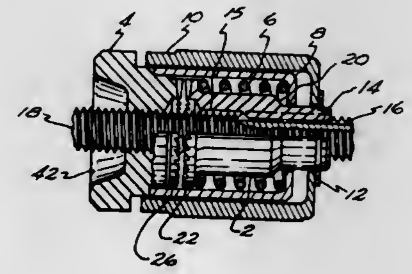


1. A stand device for a musical instrument case comprising: a support means rigidly mounted to said case and having a securing block mounted thereon;
- a top hinge means secured to said support means by one leaf of said hinge means and having leg support means secured to the other leaf of said hinge, said leg support means being provided with an upper crossbar member and a lower crossbar member, said upper crossbar member having a latch block means and a slot and said lower crossbar member having an opening in its middle portion;
- a bottom hinge means having a latching means for securing said stand device in an open position and in a closed position, said latching means including a tongue member having its inner end hingedly secured to said support means and its outer end formed with a slot therein and its middle portion having an opening therein formed to fit around said securing block of said support means;
- a latch key means having its bit portion retained in said latch block means of said upper crossbar member and having said lower end formed to fit into said slot of said tongue member; and
- flange retaining means mounted on said support means above said tongue member and having a slot formed in its upper portion to receive said tip of said lower end of said latch key when said stand device is in a closed position.

3,866,878
UNITARY LOCK NUT ASSEMBLY

Albert K. Yamamoto, Huntington Beach, Calif., assignor to Tridair Industries, Redondo Beach, Calif.
Filed June 8, 1973, Ser. No. 368,426
Int. Cl. B65d *45/24*
U.S. Cl. 248—500 **2 Claims**

1. A unitary lock nut assembly for securing a member comprising in combination
- A. A threaded bolt having a keyway substantially along its length and attachment means at one end for attachment to a supporting member,
- B. A nut threadably engaged with said bolt and having
  - a. an annular shoulder with a cam surface thereon,
  - b. a reduced diameter portion rearwardly of said shoulder, and
  - c. a series of ratchet teeth along its rearward end face,
- C. A substantially cylindrical follower in nonrotatable but slidable engagement with said bolt rearwardly of said nut, said follower having
  - a. a key within the keyway of said bolt,
  - b. an increased diameter section forming an annular stop shoulder along its forward end face, and
  - c. a plurality of ratchet teeth on its forward end face adapted for engagement with the ratchet teeth of said nut,
- D. A cup-shaped spring retainer carried over said follower,
  - a. said retainer having an opening at its closed end,
  - b. said rearward end of said follower extending through the opening of said retainer, and
  - c. the open end of said cup-shaped retainer secured to the reduced diameter portion of said nut,
- E. A cup-shaped drive knob carried over said spring retainer,

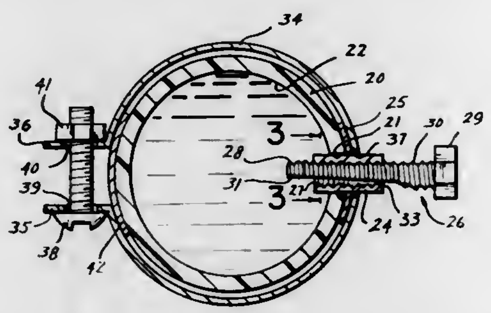


  - a. said drive knob having an opening at its closed rearward end,
  - b. said rearward end of said follower extending through said drive knob opening,
  - c. said drive knob having a cam surface at its forward end for caming engagement with said cam surface on said nut,
  - d. said drive knob having a knurled outer surface to facilitate manual gripping, and
  - e. said drive knob rotatable with respect to said nut and said bolt,
- F. A retaining means for retaining said drive knob on said follower,
- G. A spring bearing against the shoulder of said follower and the closed end portion of said spring retainer biasing said ratchet teeth of said follower and the ratchet teeth of said nut into ratchet engagement and biasing said cam surface on said drive knob and said cam surface on said nut into caming engagement, and
- H. said cam surfaces arranged with respect to said ratchet teeth whereby said ratchet teeth are engaged and disengaged by said cam surfaces when said drive knob is rotated relative to said nut.

3,866,879
WATER LEAK VALVE

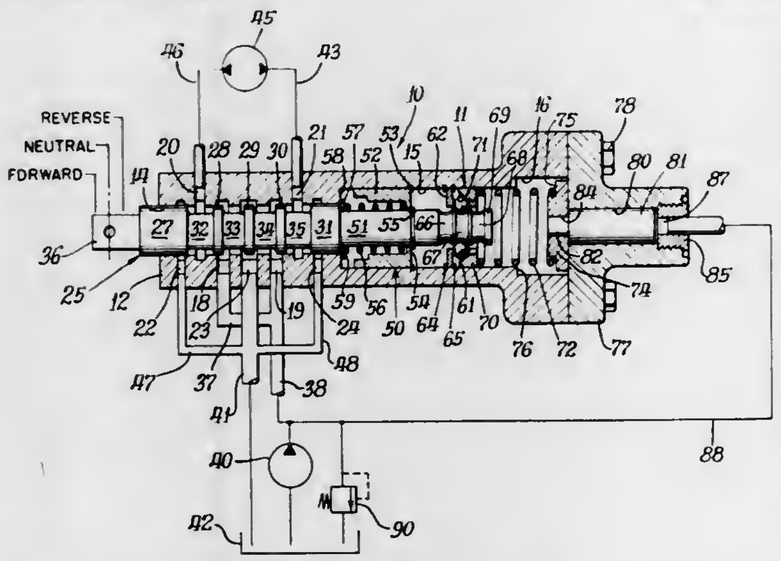
David Villarreal Elizondo, Calle Sor Juana Ines de la Cruz No. 323; Armando Reyna Rendon, Calle Rio Balsas No. 411 Sur, and Patrick W. MacKay Murphy, Calle Martin de Zavala No. 760 Sur, Apt. 106, all of Monterrey, N.L., Mexico
Filed Mar. 13, 1972, Ser. No. 233,978
Int. Cl. F16k *51/00*
U.S. Cl. 251—145 **1 Claim**

1. In a surface irrigation system consisting of at least one pipe including a longitudinally extending bore and at least one communicating and radially extending bore, a water leak valve comprising a member including a longitudinally extending bore terminating at opposing ends in first and second openings with at least the portion of said bore adjacent said second opening provided with internal threads, an outwardly extending flange on said member, said member inserted in said radially extending bore in said pipe until stopped by said flange, said first opening in said member communicating with said longitudinally extending bore in said pipe, said member secured in said pipe by transversely extending means at least partially passed around said pipe and at least partially passed around said flange, a valve comprising first and second sections of external threads, said first section comprising at least two complete helices, said second section comprising a longitudinally extending and angularly inclined flat with not less than one half of each of said external threads removed at any transverse plane along the length of said second section whereby adjustment of said valve provides an opening between said flat of said valve and said second opening in said member through which liquid may be metered.



3,866,880
VALVE ASSEMBLY HAVING A PRESSURE RESPONSIVE DETENT MECHANISM

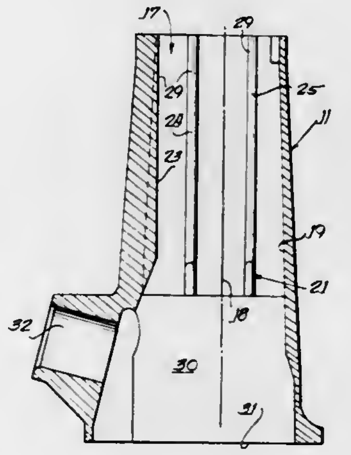
Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Calif.
Filed Oct. 9, 1973, Ser. No. 404,213
Int. Cl. F16k *11/02, 31/143*
U.S. Cl. 251—297 **7 Claims**



1. A hydraulic valve assembly comprising:
a valve body having a cylindrical bore and fluid inlet and outlet openings communicating with said bore;
a spool reciprocably disposed in said bore and movable to at least a first operating position to effect communication between said inlet and outlet openings, and to a neutral position to block said communication;
centering spring means for biasing said spool to said neutral position; and
pressure responsive detent means disposed in said valve body and responsive to a predetermined operating fluid pressure to hold said spool in said operating position against the force of said centering spring, and operative in response to a drop in said fluid pressure below said predetermined pressure to release said spool for movement by said centering spring to neutral position,
said detent means comprising a plurality of annular grooves extending around the outer diameter of said spool, a plurality of balls mounted in said valve body surrounding said spool for engagement with said grooves, reciprocal annular camming means extending around said spool externally thereof for engaging and biasing said balls into said grooves, and piston means mounted in said housing and responsive to fluid pressure for biasing said annular camming means into camming engagement with said balls, including resilient means connecting said piston to said annular camming means.

3,866,881
JACK HOUSING

Richard S. Graafsma, Benton Harbor, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.
Filed Aug. 24, 1973, Ser. No. 391,237
Int. Cl. B66f *13/00*
U.S. Cl. 254—1 **5 Claims**

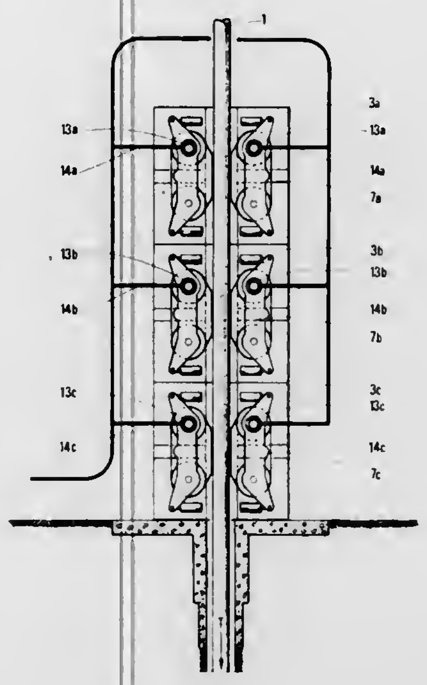


1. A die cast jack stand casting having an elongated axially tapered hollow formed therein defined by a tapered interior wall and open at the divergent end, and guide means for guiding a jack member for extensible and retractible motion relative to the casting, said guide means including a plurality of narrow, inwardly and longitudinally extending ribs integral with and spaced around said interior wall, said ribs presenting jack member engaging guide surfaces diverging from said interior wall and substantially parallel to each other and to the longitudinal axis of said casting, said tapered interior wall being formed for permitting removal of the casting from a die while still presenting said substantially parallel surfaces.

3,866,882
DEVICE FOR CONTINUOUSLY PULLING AN ELONGATED MEMBER

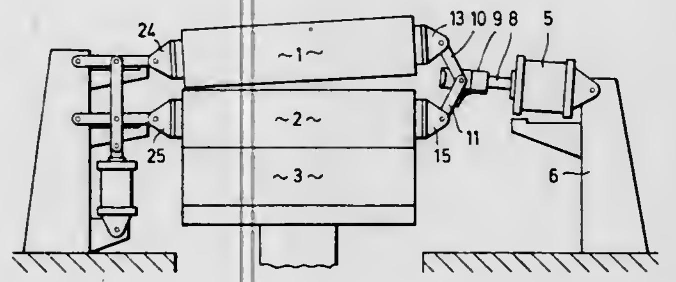
Yves Willm, Suresnes; Jean Thiery, Le Pecq; Michel Chatard, Chatou, and Pierre Grolet, Orgerus, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France
Filed May 22, 1973, Ser. No. 362,739
Claims priority, application France, May 30, 1972, 72.19408
Int. Cl. E21b *19/00*
U.S. Cl. 254—29 R **4 Claims**

1. A device for continuously pulling an elongated member, comprising frame means provided with a passageway for the elongated member, said passageway having an axis, a series of pulling means carried by said frame means and arranged along said axis, each of the pulling means comprising at least two endless pulling devices carrying gripping pads, guide means provided in said frame means for each endless pulling device, each endless pulling device being provided with hydraulic jack means releasably connected to said endless pulling device and carried by said frame means, said hydraulic jack means being provided for reversibly displacing said endless pulling device from a position spaced from said axis to a gripping position closer to said axis, first hydraulic pipe means connected to each of said jack means for applying hydraulic pressure thereto, and means for synchronizing said pulling devices including a plurality of hydraulic motors operatively connected to each of said pulling devices, respectively, and second hydraulic pipe means comprising supply pipes for connecting said hydraulic motors in parallel to a common source of pressurized hydraulic fluid.



3,866,883
APPARATUS FOR PARTING ADHERING BODIES

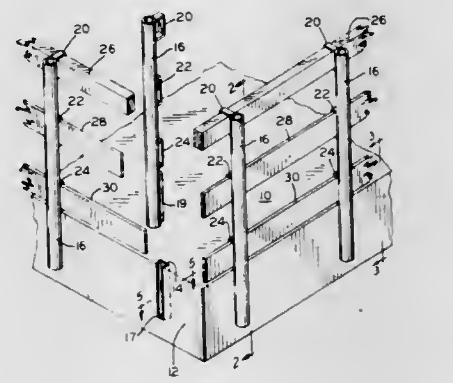
Rolf Erik Goransson, Akarp, Sweden, assignor to Internationella Siporex Aktiebolaget, Malmo, Sweden
Filed Dec. 11, 1973, Ser. No. 423,826
Claims priority, application Sweden, Dec. 21, 1972, 16833/72
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **7 Claims**



1. An apparatus for forcing apart a pair of bodies which adhere to each other with substantially planar surfaces and both of which have two opposite and free side surfaces located in a pair of planes which, at least approximately, are parallel and at right angles to the adhering body surfaces, said apparatus comprising first jaw means operative to frictionally engage one side surface of one of the two bodies, second jaw means operative to frictionally engage the corresponding side surface of the other body, counterholding means operative to engage the opposite side surface of the two bodies, holder means connected to said first and second jaw means and common to them, actuator means for varying the distance between said holder means and said counterholding means and operatable to forcibly reduce the distance between said holder means and the bodies, and means movably connecting said holder means to each of said first and second jaw means in a manner to bring about forced spreading of said jaw means after their engagement with the two bodies, when the distance between said holder means and the bodies is reduced.

3,866,884
GUARDRAIL ARRANGEMENT AND METHOD OF INSTALLING

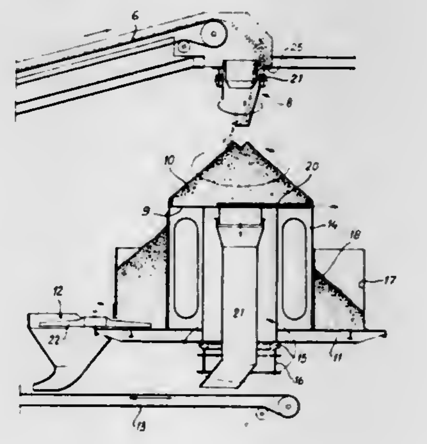
Roland Lee Heil, Wakarusa, and Albert John Mroczkiewicz, North Liberty, both of Ind., assignors to Miller Steel & Supply Company, Incorporated, Elkhart, Ind.
Filed Jan. 2, 1973, Ser. No. 320,459
Int. Cl. E04h *17/18*
U.S. Cl. 256—59 **9 Claims**



1. A safety guardrail, especially for use in buildings under construction to guard openings in the floor, comprising post means adapted to be supported substantially vertically adjacent the edge of the opening to be guarded, spaced bracket means on said post means adapted to receive and support horizontal rails therein, and cooperating elements of connecting means one disposed in the floor and the other forming a part of post means respectively and comprising a dove tail socket formed within the floor and forming a part thereof the floor adjacent said edge and a coacting means secured to one side of said post means and proportioned to be received in a vertical sense within said socket by upward and downward vertical movements and proportioned to prevent bending in any vertical plane out of such dove tail socket which reduces in dimension toward the outer edge of the floor to maintain said post means in a substantially vertical position adjacent said edge while providing for vertical insertion and removal relatively to said dove tail socket.

3,866,885
WORKING METHOD FOR HOMOGENIZING PARTICLE MATERIAL

Arnold W. Gerstel, Woerden, and Karel G. L. Meyers, Zaandam, both of Netherlands, assignors to Litton Systems, Inc., Passaic, N.J.
Filed Oct. 25, 1972, Ser. No. 300,877
Claims priority, application Netherlands, Oct. 25, 1971, 7114653
Int. Cl. B01f *9/10*
U.S. Cl. 259—3 **6 Claims**



1. A working method for the homogenizing of particle material: comprsing

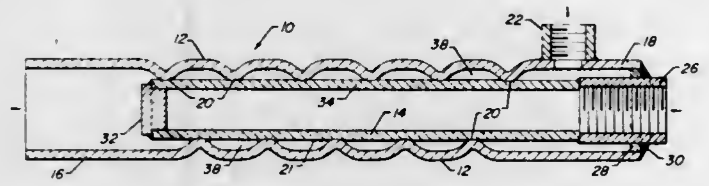
a. rotating a particle supply apparatus at a predetermined speed in a closed circuit and with a uniform motion about a predetermined axis of rotation;
b. providing particle material to and from said supply apparatus;
c. depositing said particle material layer by layer upon a catch plate or gutter of a circularly moving apparatus so as to form a ring-shaped pile having a first end rising up from said circularly moving apparatus at the natural slope angle formed by said particle material as it is deposited and a second end which rises up to a predetermined maximum height from said circularly moving apparatus;
d. moving said circularly moving apparatus about said predetermined axis of rotation at a speed considerably lower in velocity than said predetermined speed of said supply apparatus; and
e. reclaiming said particle material from said pile at a fixed position and at a rate approximately equal to the rate at which said particle material is deposited upon said pile.

3,866,886

SPIRAL TUBE MIXING DEVICE AND METHOD OF MAKING

John K. Thorne, Decatur, Ala., and Jay E. Sobel, Highland Park, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 2, 1973, Ser. No. 402,871
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **7 Claims**



1. A mixing device comprising a porous inner tube and an outer tube having an axially extending continuous spiral groove in contact with the outer surface of said porous tube, said porous inner tube having flow restriction means at one end and being open at the other end for receiving a pressurized supply of a first fluid to be pumped through the porous walls of said inner tube into said spiral groove under pressure, said outer tube being open at one end for receiving a second fluid, and being open at its other end for delivering a mixture and/or a reaction product of said first and second fluids.

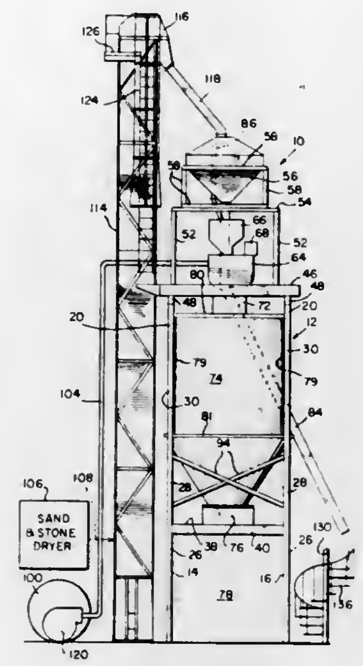
3,866,887

VERTICALLY INTEGRATED ASPHALT PLANT

Howard E. Potter, Bedford, Ind., assignor to Oolitic Ground Limestone Co., Inc., Bedford, Ind.

Filed Dec. 13, 1973, Ser. No. 424,446
Int. Cl. B28c *1/22*
U.S. Cl. 259—154 **8 Claims**

1. An asphalt plant comprising a main, vertically extending framework including a first support frame at a first elevation and a second support frame at a second and higher elevation, a heated and insulated storage hopper supported on said framework and extending generally between said first and second support frames, said hopper providing a loading gate approximately at the height of said first support frame, said first support frame being disposed at a height sufficient to accommodate conventional asphalt trucks thereunder to be loaded from said hopper, said hopper being of a size sufficient to contain several truck loads of heated asphalt mix, a mixing system mounted on said second support frame, said mixing system including means for mixing hot liquid asphalt with sand and stone, means for conveying such hot liquid asphalt upwardly to said mixing means, said mixing means being disposed to drop the hot mixed material downwardly into the upper end of said storage hopper, a weigh hopper disposed above said mixing means and arranged to deposit controlled amounts of sand and stone into said mixing means, a second storage hopper for holding sand and stone disposed above said weigh hopper, and means for coveying sand and stone upwardly to said second hopper.

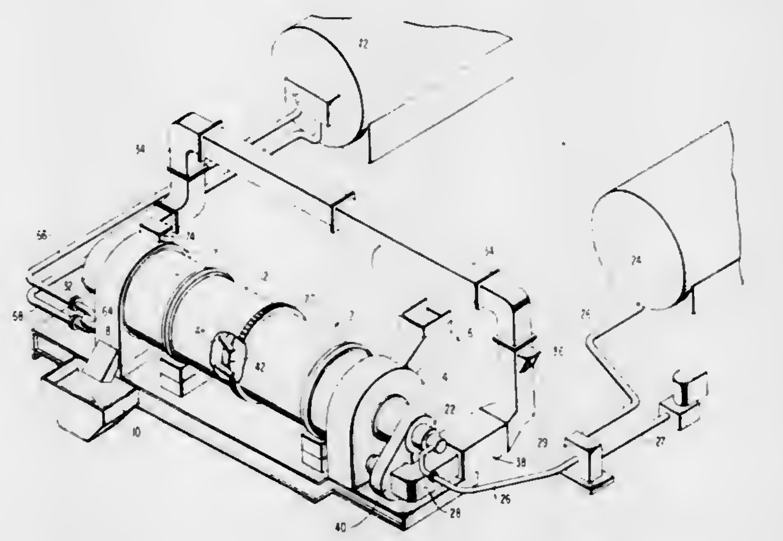


3,866,888

APPARATUS FOR MAKING HOT ASPHALT PAVING MATERIAL

Michael Dydzyk, Baltimore, Md., assignor to Thomas I. Baldwin; William E. Baldwin and Frank P. Scrivener, all of Millersville, Md., a part interest to each

Filed Jan. 26, 1973, Ser. No. 326,730
Int. Cl. B28c *1/22*
U.S. Cl. 259—158 **9 Claims**



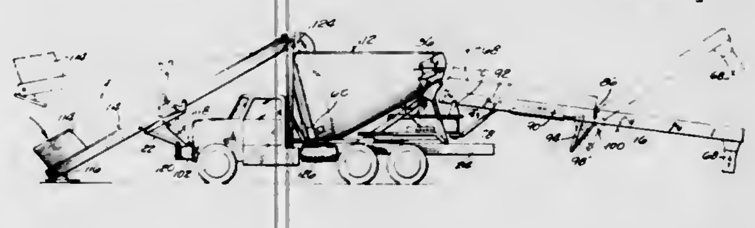
1. Apparatus for making asphalt paving material from a particulate aggregate material and asphalt, comprising,
a rotary drum having an inlet end and an outlet end,
means for rotating the drum about its longitudinal axis,
said drum having a drying section extending inwardly from the inlet end thereof and a mixing section extending inwardly from the outlet end thereof,
burner means for directing a flame into the drying section,
means for lifting the aggregate material in the drying section and releasing the material so lifted downwardly through the area heated by the flame for removal of moisture,
a heat shield located within the drum in axial alignment with the flame,
said heat shield defining the downstream end of the drying section and the upstream end of the mixing section,
an opening in the plane of the shield permitting the flow of aggregate material from the drying section to the mixing section,
means in the mixing section for introducing hot asphalt into the aggregate material,
agitator means in the mixing section for agitating and mixing together the asphalt and aggregate material, means for withdrawing exhaust gases from the mixing section, and
recirculation means for returning the exhaust gases and airborne solid particles therein to the drying section at the inlet end of the rotary drum whereby the heat and combustible constitutents of the exhaust gases aid the combustion process in the drying section and the airborne solid particles are removed from the gases upon contact with the hot asphalt in the mixing section.

3,866,889

MOBILE CONVEYOR SYSTEM

Glenway W. Maxon, III, Milwaukee, Wis., assignor to Stowell Industries Inc., Milwaukee, Wis.

Filed Aug. 16, 1972, Ser. No. 281,230
Int. Cl. B28c *5/14, 5/42, 7/06*
U.S. Cl. 259—161 **5 Claims**



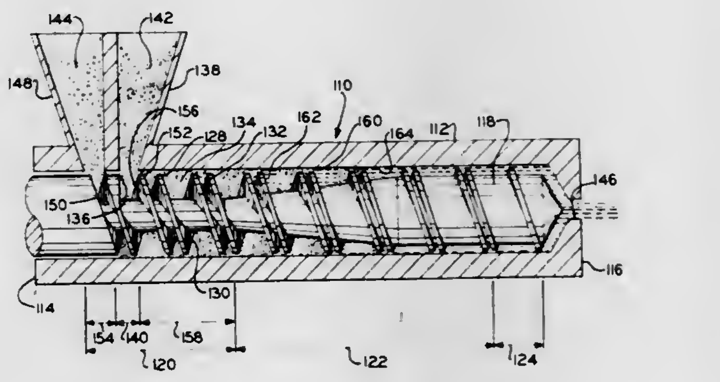
1. A mobile conveyor system for receiving and distributing a material including components of different weights, such as concrete, at a controllable rate comprising, in combination
a truck having a chassis;
an open-top surge hopper mounted on said chassis for receiving and temporarily holding a quantity of the material, said surge hopper having a capacity sufficient to accommodate surges in supply of the material in excess of the desired rate of distribution and to accommodate a reserve supply of the material so distribution can be continued when there is a temporary interruption of supply of material to said hopper;
an upwardly inclined supply conveyor mounted on said truck for delivering material to the front end of said surge hopper, said supply conveyor having an upper end and a receiving hopper at the lower end which is adapted to receive material from delivery vehicles;
a deflector mounted on the top portion of said surge hopper and positioned adjacent the upper end of said supply conveyor such that material being discharged from the upper end of said supply conveyor strikes said deflector before falling downwardly toward said surge hopper, said deflector serving to baffle the material so that heavier components do not separate therefrom while being discharged into said surge hopper;
a discharge opening in the rear portion of said surge hopper;
an agitator including blade means which imparts an auger action on material held in said surge hopper to move the material rearwardly towards said discharge opening;
means for controlling the rate of which the material is discharged through said discharge opening;
means for tilting said surge hopper about a transverse axis adjacent the rear of said surge hopper to facilitate discharge of the material through said discharge opening, said deflector being sufficiently spaced from the upper end of said supply conveyor to permit said surge hopper to be tilted without interference with said supply conveyor; and
means mounted on the rear of said truck for distributing the material discharged through said discharge opening.

3,866,890

APPARATUS FOR SIMULTANEOUS PLASTICATING AND MIXING

Zehev Tadmor, Haifa, Israel, and Imrich Klein, Highland Park, N.J., assignors to Scientific Process & Research Inc., Highland Park, N.J.

Filed Nov. 13, 1973, Ser. No. 415,389
Int. Cl. B29b *1/04, 1/06*
U.S. Cl. 259—191 **18 Claims**



1. Apparatus for preparing a plasticated mixture from a basic material and at least one selected ingredient such that the ingredient is mixed throughout the plasticated mixture, said apparatus comprising:
a barrel extending axially between an upstream end and a downstream end;
a screw conveyor in the barrel;
a flight on the screw conveyor for conveying material axially downstream along the barrel, said flight having a leading face facing downstream and a trailing face facing upstream;
said flight defining a channel between the leading face and the trailing face, through which channel said material will pass as the material is conveyed downstream;
means for supplying the basic material to the channel;
means for supplying the ingredient to the channel separate from the basic material; and
means for confining the ingredient to a portion of the channel at least until the remainder of the channel is supplied with the basic material.

3,866,891

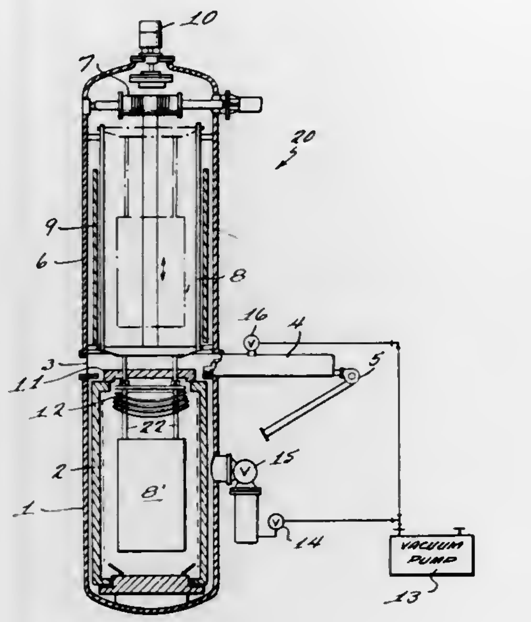
VACUUM FURNACE EQUIPMENT FOR HEAT TREATMENT, HARDENING AND BRAZING WORKING PARTS

Fritz Kalbfleisch, Lieblos, Germany, assignor to Deutsche Gold-und Scheideanstalt Vormals roessler, Frankfurt (Main), Germany

Filed Nov. 8, 1972, Ser. No. 304,632
Claims priority, application Germany, Nov. 12, 1971, 2156306
Int. Cl. C21d *9/00*
U.S. Cl. 266—5 E **7 Claims**

1. In combination a vacuum furnace unit for heat treating, hardening and brazing of work pieces, a removable protective dome for said furnace, a vacuum slide valve operatively connected to said furnace, means in said dome for supporting the work pieces inside said dome, means in said dome for raising

and lowering said supported work pieces to position out of and in said furnace and separate treating means for receiving said



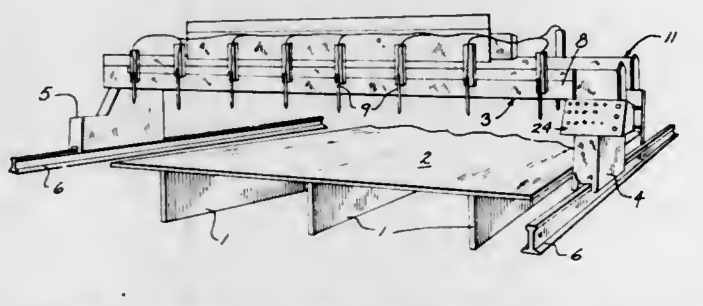
work pieces while external to, but supported by, said dome and while out of said furnace.

3,866,892
DUAL TORCH CUTTING APPARATUS

Harry Hooper, Brookfield, Wis., assignor to C-R-O Engineering Co., Inc., Brookfield, Wis.

Filed June 11, 1973, Ser. No. 368,498
Int. Cl. B23k *7/02*

U.S. Cl. 266—23 K **8 Claims**



1. A flame cutting apparatus for flame cutting of a workpiece supported in a work area, comprising a longitudinal carriage means mounted for longitudinal movement over a work area, a first bridge unit attached to said carriage means and extending across said work area, said first bridge unit including transverse carriage means to support a plurality of cutting torches for simultaneous transverse movement over the work area, a second bridge unit attached to said longitudinal carriage means in longitudinally spaced relation to said first bridge unit, said second bridge unit having a second transverse carriage means movably supporting a torch means for transverse movement over essentially the complete work area, and control means having a first position operably connected to said first transverse carriage means and a second position operably connected to said second transverse carriage means to transversely move one or the other carriage means and thereby provide alternate working capabilities of the apparatus.

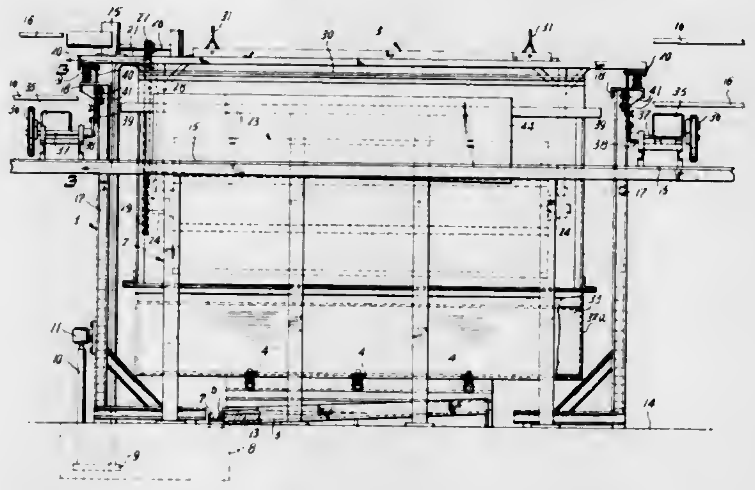
3,866,893
APPARATUS FOR DESOLDERING SCRAP RADIATOR CORES AND RECOVERING SEPARATED METALS

Richard Hoberman, 1030 Hillcrest Dr., Omaha, Nebr. 68132

Filed Feb. 5, 1974, Ser. No. 439,743
Int. Cl. F27b *17/00*

U.S. Cl. 266—33 S **7 Claims**

1. Apparatus for desoldering radiator cores comprising:
a. a fixed frame and tank support assembly;
b. a tank supported by said support assembly, said tank having a top opening and a bottom;
c. a fused heat transfer medium in said tank, the temperature of said medium being maintained by a suitable heating means at a temperature greater than the melting temperature of the solder to be separated from said radiator cores, but less than the melting temperature of said cores;
d. a basket assembly for supporting radiator cores to be desoldered in said heat transfer medium, said basket assembly comprising a perforated basket mounted for rotary motion about a longitudinal axis within said heat transfer medium through said tank top opening, and supported with respect to said fixed frame and tank support assembly for reciprocating motion in a plane extending transversely of said longitudinal axis;



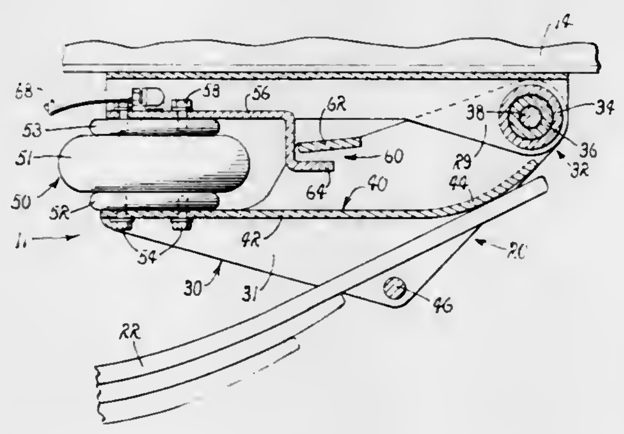
e. means for simultaneously rotating said basket about its longitudinal axis and causing its cyclic reciprocation in said transverse plane to impart intense agitation to radiator cores placed in said basket and to cause solder sweated out from said cores by said heat transfer medium to be separated from said cores; and
f. means for recovering separated solder from said tank bottom.

3,866,894
AIR SPRING UNIT FOR SUSPENSION SYSTEMS

Phillip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Fresno, Calif.

Filed Sept. 27, 1973, Ser. No. 401,241
Int. Cl. F16f *11/34*

U.S. Cl. 267—31 **1 Claim**



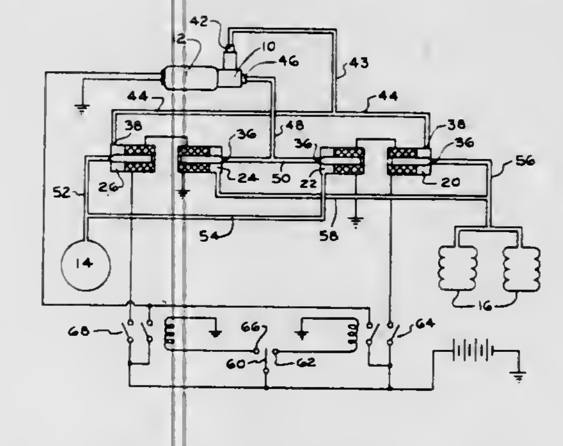
1. In combination with a suspension system for a vehicle of a type including a load-supporting axle and a leaf-spring assembly extended transversely of said axle and mounted thereon in a load-supporting relation with the frame of the vehicle, an improved air spring unit comprising:
A. means including a bracket suspended from said frame;
B. a force dissipating arm of an elongated configuration;
C. coupling means supporting said arm for pivotal motion in a vertical plane, including a horizontally extended pivot pin for pivotally connecting one end of said arm to said bracket in a coplanar relationship therewith;
D. a variably pressurized air bag interposed between said arm and said bracket and connected with said arm at the end thereof opposite said one end;
E. means for maintaining the height dimension of said air bag substantially constant, including an operable leveling valve connected with said air bag for varying the pressure within the air bag as predetermined pivotal motion in opposite directions is imparted to the force dissipating arm, and motion limiting means including a motion limiting stop for arresting pivotal motion of said force dissipating arm in at least one direction; and
F. means for causing the air bag to support said arm in a substantially uniform manner against rotation about said pivot pin through a moment arm of a substantially fixed length including a wear plate defined on said arm in juxtaposition with said one end of the arm and in spaced relation with the end thereof opposite said one end, said wear plate being continuously seated on said leaf-spring assembly with the juxtaposed surfaces of the wear plate and the leaf-spring assembly being mated in a slidable relationship.

3,866,895
SUSPENSION SYSTEM FOR VEHICLES

Forrest O. E. Schultz, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 1, 1973, Ser. No. 402,263
Int. Cl. B60q *11/30*

U.S. Cl. 267—65 D **11 Claims**



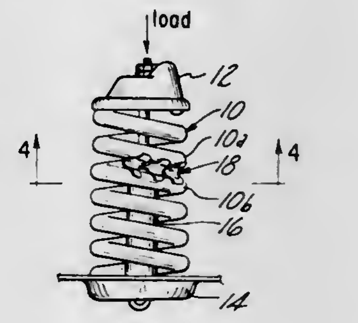
1. A vehicle suspension system comprising a fluid reservoir, a fluid pump, a variable volume fluid suspension unit between sprung and unsprung portions of a vehicle, conduit means interconnecting said suspension unit, reservoir and pump, control means interposed in said conduit means and being operable in response to a first signal to increase pressure and to a second signal to decrease pressure in said suspension unit, means for operating said pump in response to said first and second signals, said control means being initially responsive to said first signal to communicate said reservoir with said suspension unit to equalize pressures in said suspension unit and said reservior when the pressure in the latter is higher than in said suspension unit and said pump being operable thereafter to receive air from said reservoir and deliver air to said suspension unit until said first signal is terminated, said control means being initially responsive to said second signal to communicate said suspension unit with said reservoir independently of said pump to equalize pressures in said suspension unit and reservoir when the pressure in said suspension unit is higher than the pressure in said reservoir and said pump being operable thereafter to receive air from said suspension unit and deliver it to said reservoir until said second signal is terminated.

3,866,896
RESILIENT COIL SPRING ADJUSTER AND METHOD OF FABRICATION

William C. Wehner, Inkster, Mich., assignor to Howard E. Crawford, Dearborn and Robert C. Hauke, Holly, both of, Mich.

Filed Apr. 2, 1973, Ser. No. 346,759
Int. Cl. F16f *1/12*

U.S. Cl. 267—61 S **3 Claims**



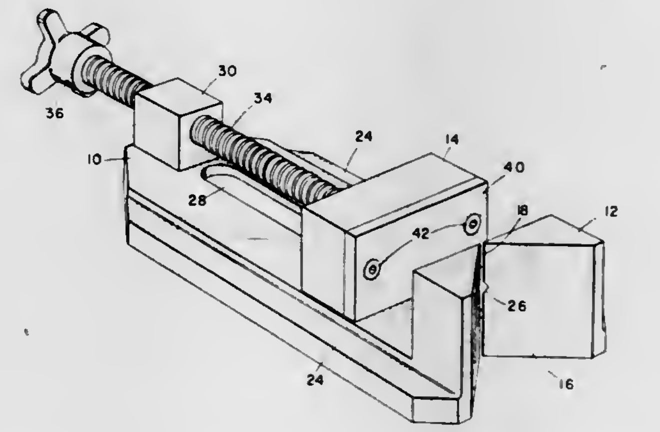
1. An adjuster for a coil spring having a spring axis and a dimension between adjacent coil surfaces of the coil spring comprising a plurality of spaced strips of material each formed with its ends adapted to engage respectively facing surfaces of adjacent spring coils and its intermediate portion adapted to flex resiliently resisting compression of said spring coils, said intermediate portion having outer dimensions taken on a line parallel to said spring axis being slightly greater than the dimension between said adjacent coil surfaces taken when said spring in uncompressed, the intermediate portion of each strip connected to its adjacent strip intermediate portion by a connector means.

3,866,897
COMBINED VICE AND SAW GUIDE

Raymond Stephen Whalen, Jr., 10625 Itzamana Rd., La Mesa, Calif. 92041

Filed Jan. 14, 1974, Ser. No. 427,434
Int. Cl. B23q *3/06*

U.S. Cl. 269—87.2 **6 Claims**

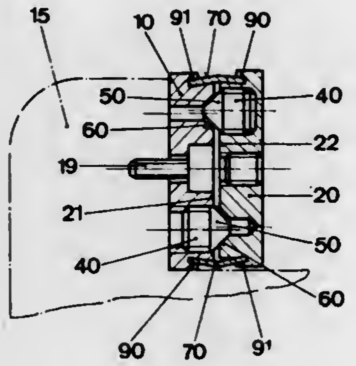


1. A vice for holding a work piece during metal working operations including severing of the work piece by a band saw comprising,
a base means including a generally planer under surface for support from and movement on a band saw table,
a fixed jaw extending generally vertically upwardly from said base and fixed at one end of said base,
said base and said fixed jaw being cut away to form a substantially V-shaped saw access guide,
said jaw access guide extending over the entire vertical extent of said base and said fixed jaw and terminating in a saw access guide opening,
a slot extending along a substantial portion of said base connecting with said saw access guide opening,
a movable jaw mounted on said base for movement toward and away from said fixed jaw, having a vertical generally planer clamping surface,

whereby a work piece clamped between said fixed jaw and said movable jaw may be entirely severed by a vertically running and horizontally cutting saw blade guided in said opening by movement of said base on said band saw table.

3,866,898
PULL DOWN JAW

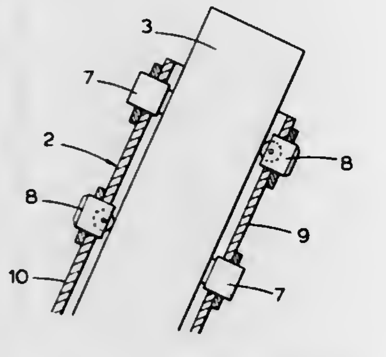
Ernst Spengler, Zeughausstrasse 46, Lenzburg, Switzerland
Filed Apr. 16, 1973, Ser. No. 351,562
Int. Cl. B23q *3/00*
U.S. Cl. 269—138 **1 Claim**



1. Pull down jaw comprising two nearly equal size rectangularly shaped plates abutting each other, flexible elements engaging said plates for lifting of one of said plates relative to the other, screw joints for permitting bracing of said plates at a slant, said plates being provided with a plurality of bracing devices, one section of each bracing device terminating in a generated surface while the other section of the same bracing device is an indentation engageable by said generated surface, said generated surface being a truncated cone including an end of a screw which is mounted in one of said plates nearly perpendicular thereto, said plates bracing one another on these bracing devices only when not under load but abutting each other when under load, said plates including tapered cooperating grooves therein, said grooves being inclined at an angle of up to 8° in the direction of the nucleus of said plates, and said flexible elements being steel spring bands that are bent in the center thereof and clamped into said cooperating grooves.

3,866,899
OPERATION TABLES AND CHAIRS

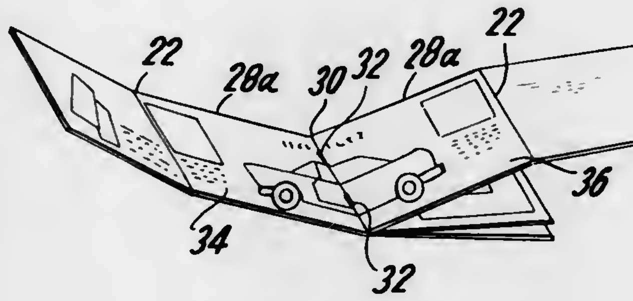
Norman John Lee, London, England, assignor to Matburn (Holdings) Limited, London, England
Filed May 31, 1973, Ser. No. 365,468
Claims priority, application Great Britain, June 8, 1972, 26732/72
Int. Cl. A61g *13/00*
U.S. Cl. 269—322 **1 Claim**



1. A device for supporting a patient during surgical procedures comprising a base member, an upwardly extending support column fixed to the base and inclined with respect to the vertical, a movable support column reciprocably slidable within and with respect to the inclined support column, a patient-supporting platform mounted atop the movable support means for raising and lowering the movable support and the patient-supporting platform thereon along a plane inclined from the vertical, the support column having two opposite walls in parallel vertical planes and two opposite walls in parallel inclined planes, the movable support reciprocably sliding within the support column, low friction bearings between the fixed support column and the movable support column including a pressure-bearing pad and a pressure-bearing roller mounted on each of the opposing inclined walls of the support colunn, the lower of the inclined walls having the load supporting bearing roller disposed above and spaced from the bearing pad and the upper of the inclined walls having the load supporting bearing roller disposed below the bearing pad, thereby to reduce rocking movement of the movable support about the aforesaid load supporting upper bearing roller on the lower wall with respect to the support column on repeated reciprocation of the movable column with respect to the support column.

3,866,900
METHOD FOR FORMING SPECIAL INSERT FOR ADVERTISING BROCHURES, MAGAZINES AND THE LIKE

John J. Kebba, 1270 Avenue of the Americas, New York, N.Y. 10020
Continuation-in-part of Ser. No. 220,583, Jan. 25, 1972, abandoned. This application Aug. 15, 1973, Ser. No. 388,355
Int. Cl. B41f *13/58*
U.S. Cl. 270—5 **1 Claim**



1. A method for forming a 12-page double gate insert of the type suitable for advertising, said method comprising the steps of (a) providing a sheet having printed material on at least one surface thereof, (b) in a folding machine, folding one edge of said sheet over a first fold line formed at a distance from said one edge that is less than or equal to one-third the width of said sheet, (c) thereafter folding in said machine said once-folded sheet over itself along a second central fold line perpendicular to said first fold line, (d) thereafter folding in said machine said twice-folded sheet along a centrally formed third fold line parallel to said first fold line, (e) thereafter applying securing means along said centrally formed third fold line while leaving said one edge unfastened to any other portion of said thrice-folded sheet, and (f) thereafter cutting said thus-folded sheet along at least said second central fold line.

3,866,901
REVERSE BUCKLE FEEDER

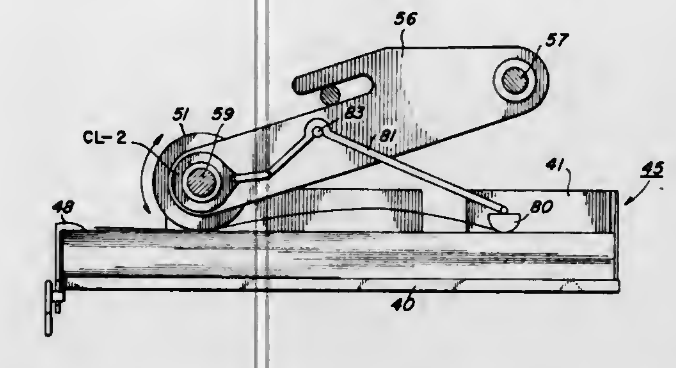
John L. Brock, Smithfield, Tex., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 1, 1973, Ser. No. 402,233
Int. Cl. B65h *3/06*
U.S. Cl. 271—21 **6 Claims**

1. Apparatus for separating and forwarding individual sheets from a supply stack including:

sheet feeding means for engaging the top sheet within a stack for moving said sheet in a first direction toward the rear of said stack and then in the opposite direction along a predetermined path of travel;

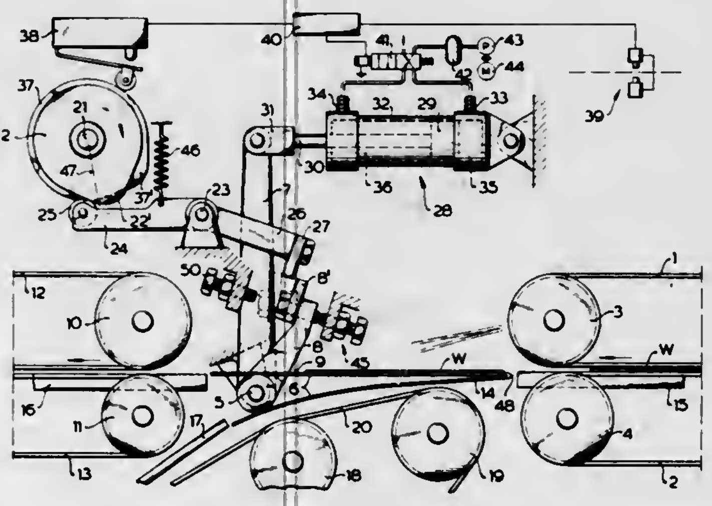
holddown means for contacting the top sheet in said stack; lever means connected at one end to said holddown means and at the opposite end to said sheet feeding means;

control means interposed between said lever means and said sheet feeding means including a one way clutch arranged to force said holddown means into pressure contact against the stack when said sheet feeding means moves said sheet in a rearward direction and to release said holddown pressure when said sheet feeding means moves said sheet in the opposite direction.



3,866,902
ACTUATING APPARATUS FOR A DIVERTER FOR SHEET ARTICLES

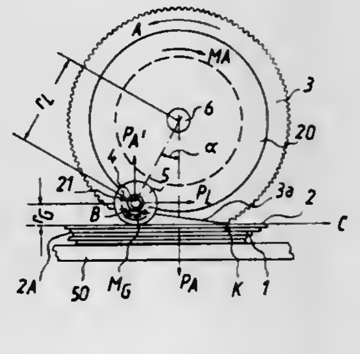
Richard Feldkamper, Lengerich, Germany, assignor to Windmoller & Holscher, Lengerich, Germany
Filed June 12, 1973, Ser. No. 369,198
Claims priority, application Germany, June 15, 1972, 2229286
Int. Cl. B65h *29/60*
U.S. Cl. 271—64 **5 Claims**



1. An actuating apparatus for a diverter for sheet articles moving at equal time intervals along a first path comprising a diverter positioned at a fork junction and being moveable between a first position where said articles are moved along said first path and a second position where selected articles are diverted out of said first path into a second path, an actuating linkage for causing said diverter to move to said second position in response to a signal, control means upstream of said fork junction for monitoring said articles moving along said first path and for delivering said signal, first energy storage means for biasing said actuating linkage so that said diverter is moved to said second position when energy is stored therein, means for storing energy in said first energy storage means during a fraction of one of said equal time intervals in response to said signal and for keeping energy stored in said first energy storage means for a predetermined period, second energy storage means for moving said actuating linkage so that said diverter is moved to said first position when energy is stored therein, locking means for holding said actuating linkage against the bias of said first energy storage means, a shaft rotatable in sequence with said equal time intervals, said locking means being coupled to said shaft and being releasable at least once during each of said equal time intervals, and a lever attached to said diverter, said locking means comprising a double-acting abutment moveable into the path of said lever, said lever being moveable when said diverter is actuated and having corresponding abutments surfaces, said double-acting abutment being moveable to lock said diverter in either said first or second positions.

3,866,903
SHEET FEEDING APPARATUS

Rudolf Eppe, Taufkirchen; Karl Hartwig, Unterhaching, and Juergen Vossnacke, Pullach, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Oct. 27, 1972, Ser. No. 301,601
Claims priority, application Germany, Oct. 30, 1971, 2154223
Int. Cl. B65h *3/06*
U.S. Cl. 271—119 **5 Claims**



1. In a sheet feeding apparatus, particularly for transporting successive topmost sheets of a stack of sheets into the range of sheet advancing means in an electrostatic copying machine whereby the leading portions of successive topmost sheets must bypass corner separators and front stops, a combination comprising a carrier for a stack of sheets including a topmost sheet; a rotary feeding device including a topmost sheet; a rotary feeding device including an elastically deformable element having a peripheral surface normally bearing against the topmost sheet of the stack on said carrier, the material of said element having a high coefficient of friction; and means for rotating said device about the axis of said element so that said element moves the topmost sheet lengthwise, said feeding device further including a disengaging member arranged to disengage said peripheral surface of said element from the topmost sheet in a predetermined angular position of said feeding device, said disengaging member including a roller having a portion extending beyond the peripheral surface of said element and an axis which is parallel to the axis of said element, said roller engaging the topmost sheet of the stack on said carrier in said predetermined angular position of said feeding device, the line connecting the axis of said element with the axis of said roller and the line including the axis of said element and extendng at right angles to the plane of the topmost sheet of the stack on said carrier making in said predetermined angular position of said feeding device an angle alpha which satisfies the equation

$$\sin \alpha = 1/P_A\ (M_G \cos \alpha/r_G - M_A/r_L),$$

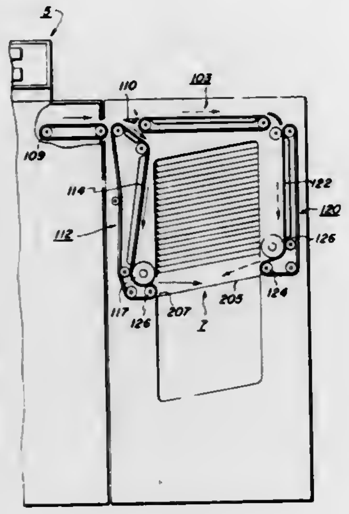
wherein M_g is the moment of frictional resistance of said roller, M_A is the moment of frictional resistance of said element, P_A is the bias of said element upon the topmost sheet of the stack on said carrier, r_G is the radius of said roller, and r_L is the distance between the axes of said element and said roller.

3,866,904
MULTIPLE FEED SORTING APPARATUS

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 29, 1972, Ser. No. 319,955
Int. Cl. B65h *29/60*
U.S. Cl. 271—173 **1 Claim**

1. Sorting apparatus for receiving sheets from a reproducing machine distributing in both simplex and duplex sorting modes of operation comprising:

a frame,
- an array of vertically extending closely spaced tray members adapted to move in a vertical direction relative to said frame,
- first transport means for moving sheets towards a first sheet discharge zone adjacent to the path of the moving tray member,
- second transport means for moving sheets towards a second sheet discharge zone on the opposite side of the moving tray members from a first discharge zone, and



- gate means positioned in the sheet path for directing sheets towards said first or second transport means according to whether simplex or duplex sorting is required,
- wherein said tray members are supported on at least one vertically extending cam member having a spiral shape, said cam member being driven by a reversible drive to move the tray members up and down past the sheet discharge zone to receive the copy sheets,
- wherein said cam member is formed with a higher pitch camming surface at the sheet discharge zones to effect a spreading movement between tray members upon passing said sheet discharge zones.

3,866,905

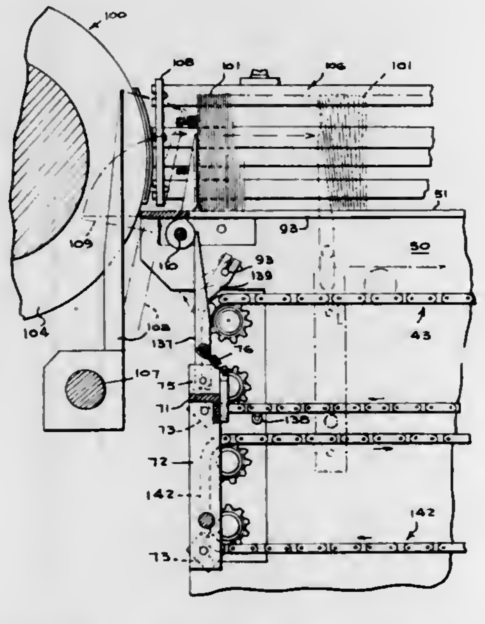
SEPARATOR AND TRANSFER DEVICE FOR PAPER NAPKINS, TOWELS AND THE LIKE

John F. Trogan, Ashland, and James H. Beebe, Bayfield, both of Wis., assignors to C. G. Bretting Manufacturing Co., Inc., Ashland, Wis.

Filed Oct. 4, 1972, Ser. No. 294,920

Int. Cl. B65h *29/22, 33/02*

U.S. Cl. 271—181 **3 Claims**



1. Apparatus for separating and transferring a plurality of non-rigid articles along a generally horizontally disposed path from a source of articles, said apparatus comprising a frame located adjacent to said source, a tray mounted on said frame in a generally horizontal position, one end of said tray being located in a position to receive articles from said source, means for continuously moving articles from said source onto said one end of said tray, shaft means mounted on said frame, at least one separator finger fixed to said shaft, rotatable means fixed to said shaft for maintaining said separator finger in inoperative position until a predetermined quantity of articles have been placed on said tray, lever means swingably mounted on said frame and normally disposed in the path of rotation of said rotatable means, means for swinging said lever means out of the path of said rotatable means to permit rotation of said shaft, means for rotating said shaft so that said separator finger engages and moves the articles away from said one end, at least one transfer member movably mounted on said frame, means for moving said transfer member in a first direction to a position behind and in engagement with said articles on said tray and moving said transfer member in a second direction to move said articles to the opposite end of said tray.

3,866,906

CONVEYING SHEET MATERIAL

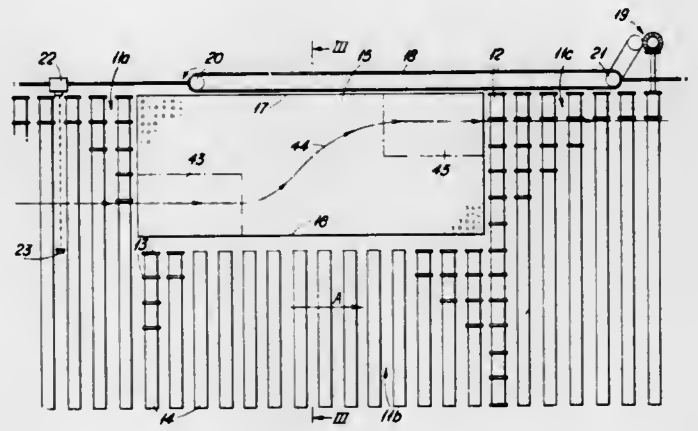
Ronald Frank Berry, Hindley Green, near Wigan, England, assignor to Pilkington Brothers Limited, Liverpool, England

Filed Oct. 17, 1972, Ser. No. 298,387

Claims priority, application Great Britain, Oct. 19, 1971, 48653/71

Int. Cl. B65h *9/02, 35/10*

U.S. Cl. 271—227 **15 Claims**



13. A method of effecting a sideways shift of a forwardly travelling sheet member, comprising conveying the sheet member lying in a generally horizontal plane in a forward direction over a support table provided in the conveying path, passing gas through ducts in the table to provide a gas cushion beneath the sheet member being conveyed, selectively raising one edge of the table to tilt said table from a horizontal position to an inclined position to move the sheet member in a direction transverse to said forward direction while it is supported on the gas cushion, arresting lateral movement of the sheet member at the opposite edge of the table thereby to locate it at a desired lateral position in said transverse direction, returning the table to the horizontal position, and advancing the sheet member in a sideways shifted position onto a downstream conveyor in said generally horizontal plane.

3,866,907

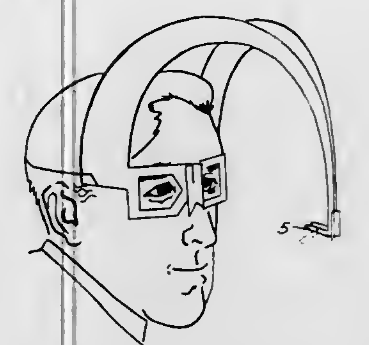
APPARATUS FOR ALIGNING IMAGE WITH BLIND SPOT OF EYE

John Willard Goudie, 6517 Northam Rd., Camp Springs, Md. 20031, and Raymond Lewis Zukowski, 1713 Fenwood Ave., Oxon Hill, Md. 20021

Continuation-in-part of Ser. No. 275,041, July 25, 1972, abandoned. This application Mar. 9, 1973, Ser. No. 339,503

Int. Cl. A63j *5/00*

U.S. Cl. 272—8 R **12 Claims**



1. Apparatus to be disposed upon the head of a viewer for facilitating the alignment of an image of a distant object with respect to the blind spot of the viewer's eye whereby the distant object seems to disappear, said apparatus comprising: support means for mounting said apparatus on the head of the viewer, in alignment with the viewer's eyes said support means including a member adapted to be disposed across the face of the viewer, said member having first and second slots therein to be aligned with the eyes of the viewer;
- an opaque tab member to be aligned in the line of sight of each of the viewer's eyes; and
- suspending means for suspending said tab member centrally of and spaced from the eyes of the viewer a distance such that the distant object may be aligned with the blind spot of one of the viewer's eyes, said suspending means disposed remotely of the viewer's lines of sight upon said member.

3,866,908

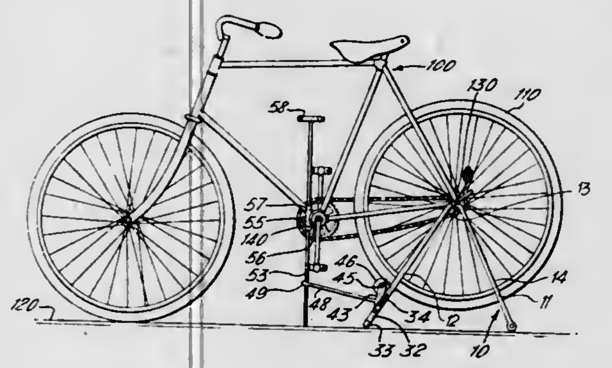
BICYCLE CONVERSION STAND

Frank X. Hangler, 3117 Connaught Ave., North Vancouver, B. C., Canada

Continuation-in-part of Ser. No. 190,611, Oct. 19, 1971, abandoned. This application Apr. 26, 1973, Ser. No. 354,545

Int. Cl. A63b *69/16*

U.S. Cl. 272—73 **11 Claims**



1. A stand for a manually powered vehicle comprising:
- a. a support frame assembly including a pair of spaced apart members, each in upstanding relation, and a pair of abutment means including respective transversely extending elongated hollow sleeves mounted on respective ones of said members and projecting towards one another from said members to provide respective first clamping faces in transversely spaced apart, face-to-face relation;
- b. a pair of clamping members extending along and within respective ones of said sleeves for sliding movement towards and away from one another in a direction transversely of said support frame, each said clamping member including an elongated stem terminating in an enlarged head portion having a substantially uninterrupted planar surface, and, on a surface opposite to said planar surface, and facing said stem, a second clamping face disposed in face-to-face relation with a respective one of said first clamping faces;
- c. a pair of actuating means drivingly engaging respective ones of said stems of said clamping members, each said actuating means engaging said frame for adjusting said clamping members transversely with respect to said frame, for clamping respective portions of a frame of a manually powered vehicle directly between respective ones of said first clamping faces and the associated said second clamping faces; and
- d. a roller supporting means pivotally mounted on said support frame, and a roller mounted on said roller supporting means, for movement of said roller into and out of engagement with a driven wheel of a manually powered vehicle whose frame is clamped to said stand, said movement being in response to pivotal movement of said roller supporting means with respect to said support frame.

3,866,909

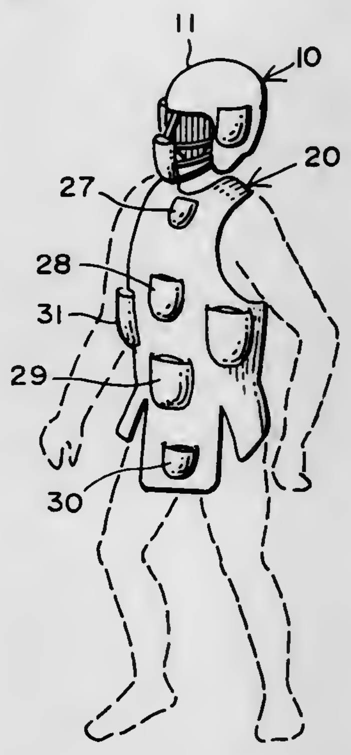
PROTECTIVE GARMENT FOR KARATE WITH FORCE INDICATING MEMBERS THEREON

Nino M. DeSantis, Miami, Fla., assignor to Salvatore G. Militana, Miami Shores, Fla., a part interest

Filed Apr. 9, 1973, Ser. No. 349,423

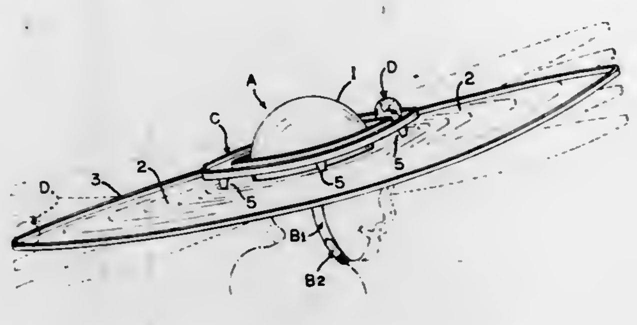
Int. Cl. A63b *69/00;* **A41d** *13/00*

U.S. Cl. 272—76 **5 Claims**



1. A uniform for combatants engaging in Karate and the like comprising a protective garment consisting of blow absorbing material, means mounted on said material for securing said garment about the torso of said combatants, a plurality of force indicating means mounted on said garment and positioned so as to cover the vulnerable parts of the body of each of said combatants for indicating when a blow of predetermined force has been inflicted on one of the combatants by the other, each of said means consisting of a pliable member forming an enclosed chamber inflated so as to only contain matter consisting essentially of fluid material, said fluid material including a substantial proportion of gas, said member requiring said blow of predetermined force to become ruptured and to simultaneously emit a substantially loud noise to indicate reception of said blow at one of said vulnerable parts of not less than said predetermined force by said one of said combatants and further means removably securing said pliable members to said garment whereby ruptured members are readily replaced by unruptured members.

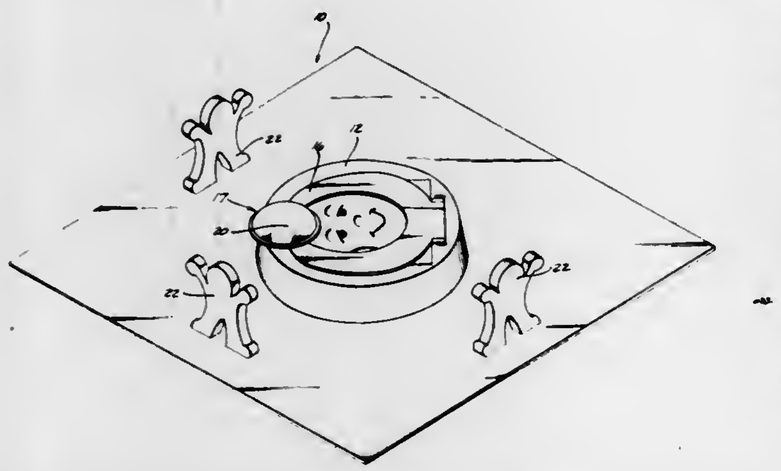
3,866,910
NECK EXERCISING DEVICE
Bernard D. Herring, 712 Longride Rd., Oakland, Calif. 94610
Filed Jan. 7, 1974, Ser. No. 431,103
Int. Cl. A63b *21/18, 21/22, 23/00*
U.S. Cl. 272—80 **4 Claims**



2. A device of the type described comprising:

- a. a hemispherical crown to fit over the head;
- b. a brim extending from the crown with the plane of the brim lying substantially in the plane of the open end of the hemispherical crown, said brim having an upturned circular flange at its outer edge to prevent a ball from falling off from the brim;
- c. a circular track extending around the crown and being spaced therefrom; and
- d. a plurality of legs extending at right angles from said brim for supporting said track above said brim.

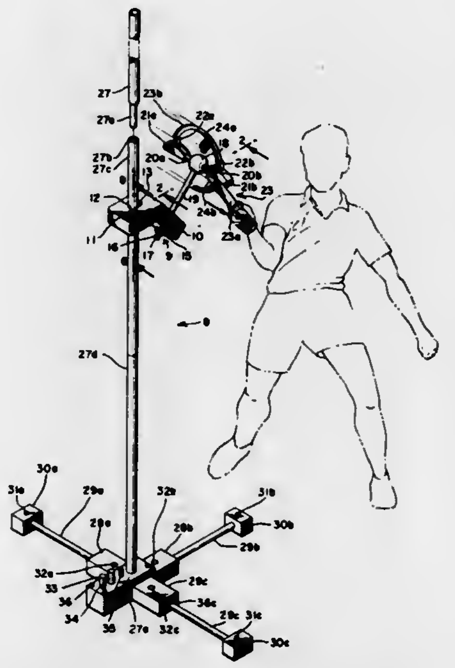
3,866,911
GAME APPARATUS WITH ROTATING STRIKER MEANS
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356; George C. Strader, and Judy D. Strader, both of Paso Robles, Calif., assignors to Adolph E. Goldbarb, Tarzana, Calif., by said Strader and Strader
Filed Feb. 21, 1973, Ser. No. 334,442
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **19 Claims**



1. Apparatus for producing variably directed impact strokes comprising:

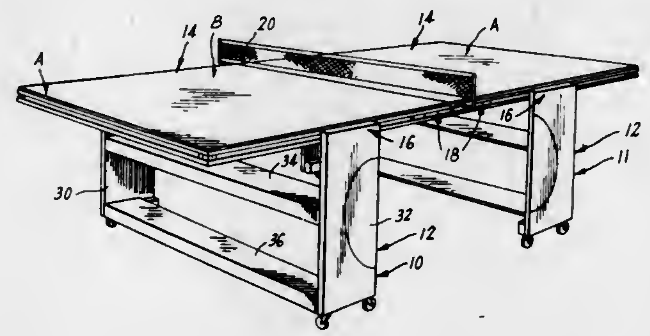
- a rotatable member having a top surface and having an axis of rotation;
- a striking element pivotally coupled to the rotatable member and having an axis of pivoting at an angle of substantially 90° with respect to said first mentioned axis of rotation, the striking element being positioned so that centrifugal force is exerted thereupon due to rotation of the rotatable member to dispose the striking element in a set position adjacent said top surface of said rotatable member; and
- impelling means coupled to the striking element to exert force upon the striking element in a substantially opposite direction to the centrifugal force, to pivot said striking element through approximately 180° to a striking position spaced from said set position upon substantial reduction of rotation of said rotatable member.

3,866,912
TENNIS-STROKE PRACTICE TARGET COMBINATION
Jack P. Scainetti, 198 Euston Rd. S., Garden City South, N.Y. 11530
Continuation-in-part of Ser. No. 381,047, July 20, 1973, abandoned. This application Nov. 5, 1973, Ser. No. 412,636
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **11 Claims**



1. A tennis-stroke practice target device comprising in combination: A base and an elongated upright guide post supported by said base providing support intermediate its ends for a support arm, said support arm being elongated and having one end extending outward from said upright guide post; an elongated target mounted on the distal end of said support arm remote from said upright guide post, said target providing guidance in the follow through of a tennis practice stroke and being suspended with its elongated axis extending substantially perpendicular to said upright guide post, each opposite end of said target being provided with an elongated member having tapered ends with enlarged cross-section, becoming larger progressively from each end towards an intermediate portion of said elongated member; said elongated member also having mounted thereon a target structure of substantially spherical shape resembling a tennis ball and mounted intermediately between said elongated members and being integral with said elongated target.

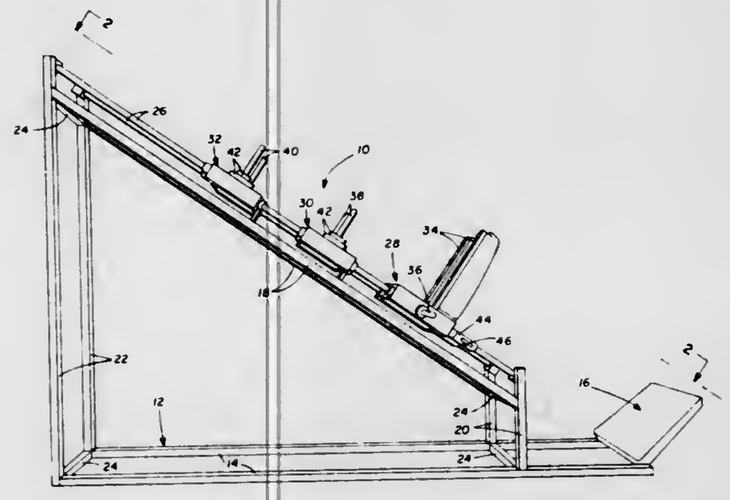
3,866,913
CONVERTIBLE TABLE TENNIS TABLE ASSEMBLY
Melvin Zimmers, Westport, and Gary A. Gerber, Weston, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.
Filed Feb. 7, 1973, Ser. No. 330,175
Int. Cl. A63b *67/04*
U.S. Cl. 273—30 **33 Claims**



1. A convertible game table assembly adapted for coupling with a second game table assembly of similar construction comprising:

- a. a base having a pair of spaced sidewalls;
- b. an elongated generally rectangular table member having ends and sides;
- c. means connecting said sidewalls to said table member sides to pivotably support said table member in both a horizontal table position and vertical storage position on said sidewalls for movement about an axis perpendicular to said sidewalls and the sides of said table member; and
- d. means for aligning and coupling said table member of said game table assembly with the table member of a similar game table assembly including coupling means movably mounted on said table member for movement between a fully retracted storage position and an outwardly extended coupling position extending beyond an end of said table member when said table member is in said horizontal table position in which said couping means is adapted for coupling with a table member of an associated similar game table assembly.

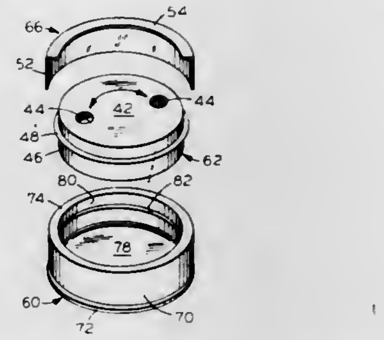
3,866,914
VARIABLE WEIGHT RESISTANCE FOOTBALL TRAINING DEVICE
Donald W. Jackson, Metairie, La., assignor to Bruce Boswell, Ft. Worth, Tex.; a part interest
Filed May 24, 1971, Ser. No. 146,254
Int. Cl. A63b *67/00*
U.S. Cl. 273—55 R **7 Claims**



1. An exercise device comprising:

- a base member having a guide, said guide being upwardly inclined relative to said base member;
- a first member slidably supported on the guide for movement from a normal position upwardly along a predetermined path under direct muscular action of a user and against the action of gravity, said member presenting sufficient resistance to sliding movement to tax the muscles of the user;
- means responsive to movement of the first member through first and second predetermined distances upwardly along the path for abruptly applying additional forces to the member which further oppose movement of the member upwardly along the path,
- said additional force applying means comprising:
- a second member supported on the guide in the path of the first member for engagement by the first member upon movement thereof through the first predetermined distance and thereafter for movement with the first member upwardly along the guide; and
- a third member supported on the guide for engagement by the second member only after movement of the first and second members through the second predetermined distance and thereafter for movement with the first and second members upwardly along the guide.

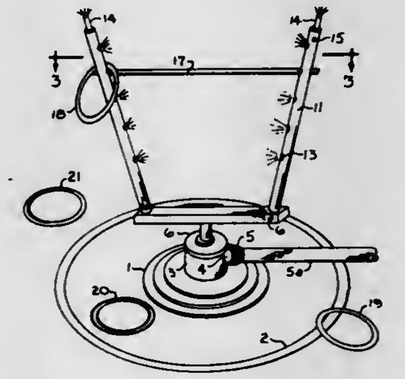
3,866,915
PLAYER PIECES FOR VIBRATORY GAME APPARATUS
Henryk Rzepczyk, Lachine, Quebec, Canada, assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Mar. 12, 1973, Ser. No. 340,119
Int. Cl. A63f *9/14*
U.S. Cl. 273—85 R **17 Claims**



14. A player piece for game apparatus having a vibratory board surface upon which the player piece is movable by vibratory action comprising:

- a base having a sidewall and a top wall with a depending portion of generally circular cross section providing an upwardly opening cavity of circular cross section, said base having a multiplicity of resiliently deformable leg elements depending from said depending portion to below the level of the lower edge of said sidewall to support the player piece upon the playing board surface;
- a cap having a generally cylindrical sidewall and a top wall, said sidewall of said cap being cooperatively dimensioned to rotatably seat within said cavity; and
- a player figure mounted on said top wall of said cap for rotation therewith, whereby said cap and player figure may be rotated relative to said base while said leg elements retain their original orientation.

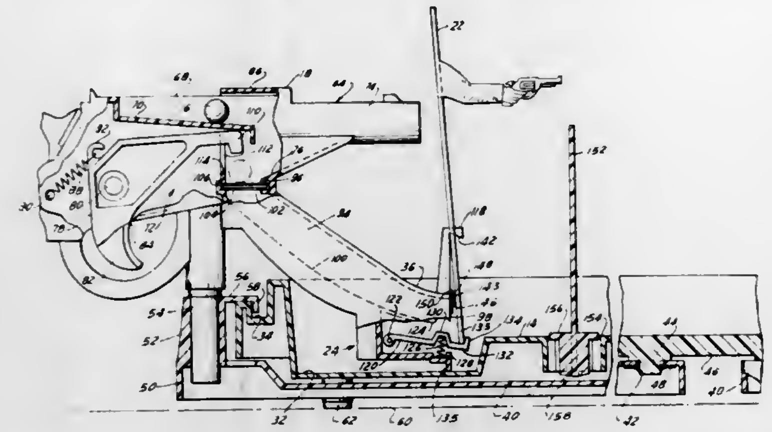
3,866,916
WATER ACTUATED RING TOSS TARGET
William A. Clarke, 1001 Linden Ave., Erie, Pa. 16505
Filed Dec. 7, 1973, Ser. No. 422,904
Int. Cl. A63b *71/02*
U.S. Cl. 273—105.2 **6 Claims**



3. A rotatable ring toss lawn sprinkler toy comprising a base, a set of rings, a hollow head, means for journalling the head on the base, a hose fitting in said base for conducting water under pressure into the interior of said head, an upstanding hollow pin having its lower end fixed to said head and communicating with the interior of said head and having its upper end free to receive rings, said head and pin constituting a rotatable element provided with water spray nozzles and means for rotating the head to shift the position of the pin.

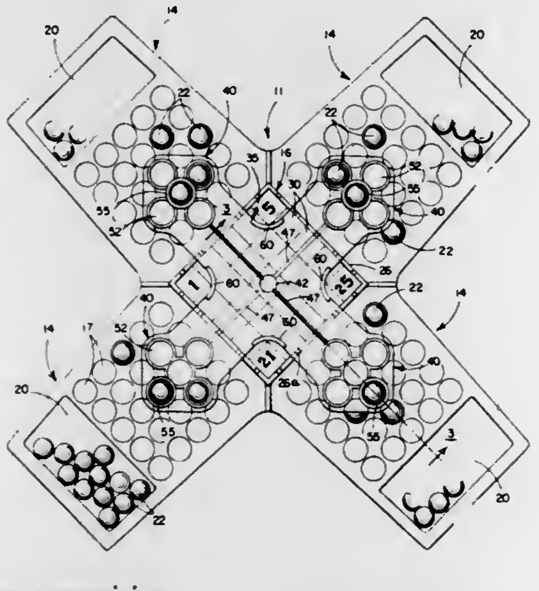
3,866,917
GUNFIGHT GAME
Burt Ensmann, Flushing; Michael Ieda, Ft. Solanga, and Madhusudan Joshi, Hempstead, all of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed July 6, 1973, Ser. No. 376,990
Int. Cl. A63f *7/10*
U.S. Cl. 273—120 R **15 Claims**

1. A toy gun comprising a housing in the shape of a gun, means in said housing for discharging a projectile from the housing, a target operatively engaged with and removably mounted on said housing, and means in said gun shaped housing responsive to an impact against said target for indicating that said target has been hit by a projectile from another source.



3,866,918
PIECE ALIGNMENT GAME WITH OVERLYING MEMBERS

Adolph Eddy Goldfarb, Tarzana, and Howard L. Dekan, Chatsworth, both of Calif., assignors to Adolph E. Goldfarb, Tarzana, Calif.
Filed Feb. 21, 1973, Ser. No. 334,390
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **19 Claims**



1. A game comprising:

a base member having a plurality of areas, each of said areas having a plurality of receptacles, said base member further having a portion thereof marked to indicate a plurality of groups of segments, each group of segments having a different indicia thereon,

an upper member positioned over said base member in overlying relationship and having a plurality of areas, each area of the upper member corresponding to an area of the base member, an indicator on the upper member overlying at least a portion of the marked portion of the base member for selective alignment with one of the segments of the base member, a plurality of apertures being formed in the areas of the upper member, at least some of the apertures of each of the areas overlying receptacles of the corresponding area of said base member,

a marker member for selectively marking at least one of the apertures of each of the areas of the upper member,

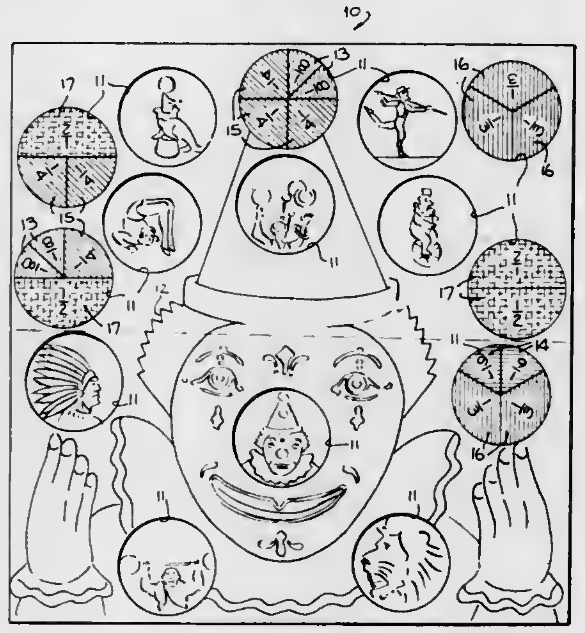
a plurality of pieces adapted to fit through the apertures in the areas of the upper member and into the receptacles in the areas of the base number, and

chance selector means for randomly selecting one of the indicia of the base member segments,

whereby the marker members are each placed at one of the apertures of each of the upper member areas, said selector means is then operated to select one of said indicia, and said upper member is positioned with the indicator thereof over any segment of the base member having the selected indicia, one of the pieces then being placed through each aperture marked by said marker member into an opposite base member receptacle, the players attempting to form a predetermined arrangement of said pieces in the receptacles of said base member.

3,866,919
GAME APPARATUS

Jeffrey David Powell, Forest Hills, N.Y., assignor to Teaching Concepts, Inc., New York, N.Y.
Filed May 24, 1973, Ser. No. 363,635
Int. Cl. A63f *3/00*; G09b *23/02*
U.S. Cl. 273—135 AC **4 Claims**



1. Game apparatus comprising in combination a plurality of identical playing fields of predetermined individual area, a plurality of sets of playing pieces, the pieces within any one set being identical and having for each set respective areas equal to a different predetermined simple proper fractional unit of said playing field area, said pieces being shaped such that any combination of pieces whose total area equals said predetermined area can be assembled to coincide with and completely fill one of said playing fields, there being a sufficient number of pieces to fill all of said playing fields, and means for enabling each player at his turn to select separately by chance that one of said sets from which pieces are to be played and the number of pieces to be played from said selected set, said last mentioned means comprising a pair of chance devices, one of which is associated with indicia indicative of the number of pieces to be played, and the other of which is associated with two separate sets of indicia designating, respectively, playing pieces equal in area to a first and second set of said different fractional units of said playing field area, and said sets of playing pieces have indicia designating their respective different fractional unit areas.

3,866,920
PLAYPIECE AND BASE MEMBER SELECTIVELY INTERENGAGEABLE TO ACTUATE EFFECT MEANS

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Dr., Encino, Calif. 91316
Filed Feb. 19, 1974, Ser. No. 443,772
Int. Cl. A63f *9/00*
U.S. Cl. 273—138 A **12 Claims**

1. Game apparatus comprising:

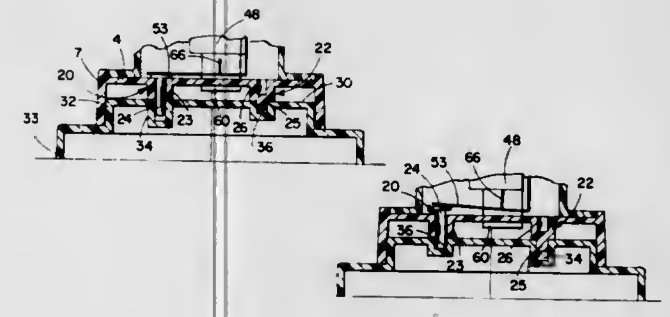
a. a base member selectively movable between a plurality of different orientations;

b. a playpiece member positionable on the base member in at least two different positions relative thereto;

c. effect means for being actuated incident to the relative positioning of the playpiece member on the base member to produce an effect related to play of the game;

d. first actuating means on said base member and second actuating means on said playpiece member for interacting, said first and second actuating means being positioned in interacting relationship to one another whereby they will actuate the effect means when the playpiece member is in at least one of said relative positions, said first and second actuating means being positioned in non-interacting relationship to one another whereby they will not actuate the effect means when the playpiece member is in at least a different one of said relative positions; and

e. nonactuating means on at least one of said members simulating in appearance the actuating means on said at least one member, said nonactuating means being configured and arranged not to cause the effect means to be actuated when said nonactuating means is positioned in said interacting relationship with the actuating means on the other member.



3,866,921
SHELL GAME

Elizabeth A. Klock, 1614 N.E. 173rd St., North Miami Beach, Fla. 33162
Filed Aug. 23, 1974, Ser. No. 500,139
Int. Cl. A63f *9/00*
U.S. Cl. 273—138 R **5 Claims**

1. A game intended to be played by two and more players comprising:

a pair of dice, each die being six-sided and having indicia representing the numerals one – six disposed on respective sides thereof;

a pair of identical open topped bowls each having a compartment defined therein;

a first group of a multiplicity of shells each having the same general configurations and coloring;

a second group of a multiplicity of shells each having the same general configuration and coloring to each other;

means distinguishing the second group of shells from the first group of shells;

a single third shell of an identical configuration and color to the second group of shells and intended for use therewith;

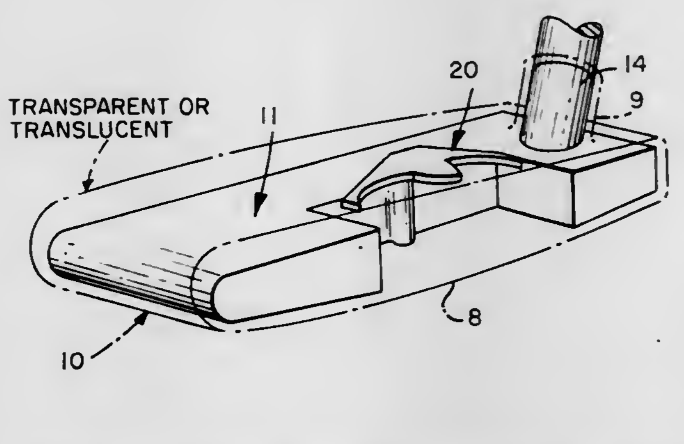
marking indicia on one surface of each of the second group of shells, the marking indicia being in the form of numerals selected from the group of numerals 1 through 9;

marking indicia on one surface of each of the first group of shells, the marking indicia being in the form of numerals selected from the group of numerals 1 through 9;

marking indicia on one surface of the third shell distinctively identifying the third shell from the shells of the second group of shells.

3,866,922
GOLF PUTTER WITH IMBEDDED ALIGNMENT INDICATOR

Vincent C. Marci, 236 Maryal Dr.; James E. Osborn, 486 Belment Dr., and David F. Watkins, 828 Via Maria, all of Salinas, Calif. 93901
Filed Nov. 24, 1972, Ser. No. 309,200
Int. Cl. A63b *53/04*
U.S. Cl. 273—164 **4 Claims**

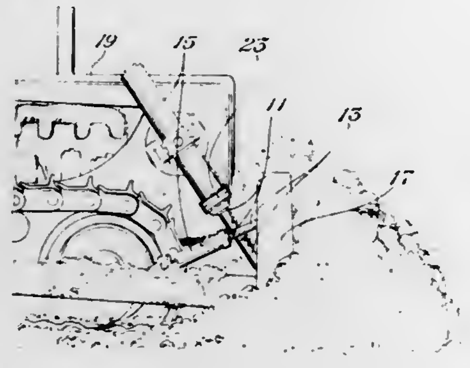


1. (Amended) A golf putter head of a generally elongated type having a generally flat putter face, comprising:

a putter head fabricated from a light transmitting material and having an externally visible alignment indicating means completely imbedded therein for indicating the proper alignment between the putter face and a golf ball, said putter head having a weight means imbedded therein to provide said putter with satisfactory impact imparting characteristics and to broaden the sweet spot on said putter face, said weight means comprising a homogeneous member including a toe portion having greater mass than a heel portion thereof and a body connecting said toe and heel portions, said toe and heel portions each extending forwardly from said body towards said putter face to define a sight window adjacent said putter face as viewed from above, said heel portion being adapted for attachment to a putter handle, said alignment indicating means being positioned in said window, said indicating means including an elongated alignment indicator positioned perpendicularly to said putter face approximately adjacent the sweet spot on said putter face and a generally arcuate strip terminating in pointed tips in said window adjacent said putter face, each of said tips being equal distance from said indicator on either side thereof.

3,866,923
SEALING ROD WIPER

Gerald W. Gorman, Rt. 2, Box 320, Midlothian, Tex. 76065
Filed Oct. 26, 1973, Ser. No. 409,905
Int. Cl. F16j *15/16*
U.S. Cl. 277—24 **9 Claims**



1. A rod wiper for sealing intermediate a cap ring and a rod disposed concentrically therewithin; said cap ring having a planar exterior surface, a recess disposed concentrically about said rod, and extending inwardly of said recess a shoulder defining a concentric surface of smaller diameter than said recess and larger diameter than said rod; said rod wiper comprising:

a. an annular base ring adapted for conformably fitting within said recess of said cap ring and having a first inner diameter larger than the first outer diameter of said rod, and having operationally innermost and outermost surfaces;

b. an annular neck portion connected with said outermost surface of said base ring at its radial interior and extending away from said base ring at its radial interior; said neck portion being adapted for extending upwardly through the annular space between said rod and said concentric surface; said neck portion also having an inner diameter greater than a first predetermined outer diameter of said rod and having a second outer diameter no larger than a predetermined second inner diameter of said concentric surface and adapted to loosely and conformingly fit said concentric surface; and

c. an annular exterior wiper portion connected with said neck portion and adapted to fit exteriorly of said cap ring; said exterior wiper portion having an enlarged annular head having an inner wiper diameter that is less than said first inner diameter of said neck portion and less than said first predetermined diameter of said rod so as to form an interference to fit with said rod when said rod is inserted therethrough; said enlarged head having an outer sealing diameter greater than said predetermined second inner diameter of said concentric surface and having an inner surface that is adapted to provide an operationally planar fit with said planar surface of said cap ring; said exterior wiper portion having a compression means intermediate said wiper inner diameter and said sealing outer diameter for maintaining respective wiping and sealing contacts with said rod and said cap ring;

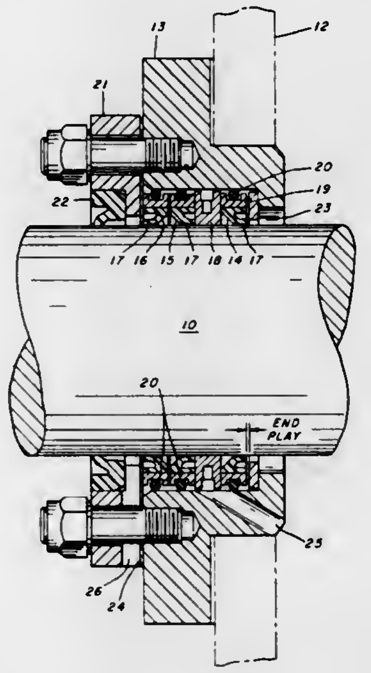
whereby said rod wiper can be installed with its base within the recess within said cap ring and said rod inserted therethrough and said wiper portion is forced into interference fit with said rod and said cap ring to provide exceptionally long lived and clean wiping action on said rod.

3,866,924
WIPER AND DIAPHRAGM SEAL DEVICE

Joseph W. French, Garland, Tex., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Aug. 16, 1973, Ser. No. 389,601
Int. Cl. F16j *15/34*
U.S. Cl. 277—59 **3 Claims**

2. In a mechanism which includes an axially movable elongated member subject to limited transverse displacement, a housing through which said member extends, a wiper and seal device within said housing encompassing said member, and means holding said device in said housing, the improvement in which said device comprises:

wiper rings of relatively inflexible material having a low coefficient of friction and being of U-shape in cross section and having lips which extend substantially parallel with the surface of said member and closely hug said member;



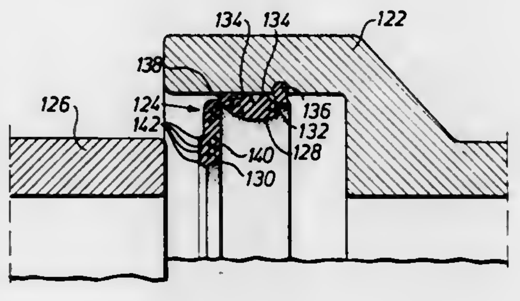
the lips of at least one of said wiper rings facing in one direction and the lips of at least another of said wiper rings facing in the opposite direction to afford a two-way seal against fluid leaking in either direction around said member; and

flexible resilient O-rings encircling each of said wiper rings and bearing against the inner circumferential face of said housing;

whereby said wiper rings float with said member on transverse displacement of the latter.

3,866,925
DEVICE FOR INCREASING THE ELASTIC FORCE OF AND REINFORCING OBJECTS MANUFACTURED FROM AN ELASTIC MATERIAL

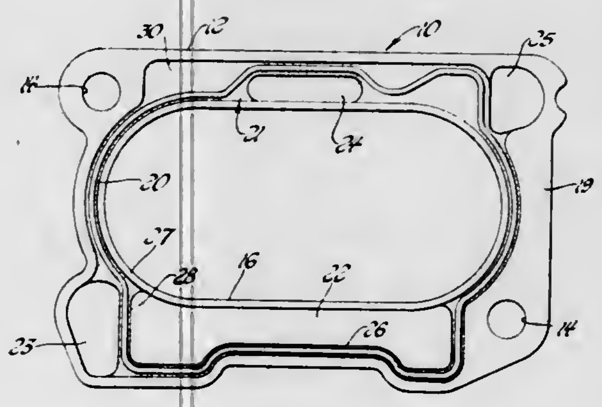
Sven-Erik Maimstrom, Naters, and Sten Sporre, Forsheda, both of Sweden, assignors to Forsheda Ideutveckling AB, Varnamo, Sweden
Filed Jan. 30, 1973, Ser. No. 328,025
Claims priority, application Sweden, Jan. 31, 1972, 1048/72; June 5, 1972, 7335/72; June 19, 1972, 8023/72; Oct. 6, 1972, 12905/72
Int. Cl. F16j *15/12*
U.S. Cl. 277—164 **21 Claims**



1. An object composed of elastic material and provided with strengthening means embedded within said elastic material, wherein the strengthening means comprise a spring element comprising a flattened helix or coil spring having its windings positioned within a plane substantially parallel with the longitudinal axis of the object, said windings being positioned to enclose portions of the elastic material so that the enclosed portions are subject to a compression when the object and the spring element are subject to a tensile stress.

3,866,926
CARBURETOR GASKET

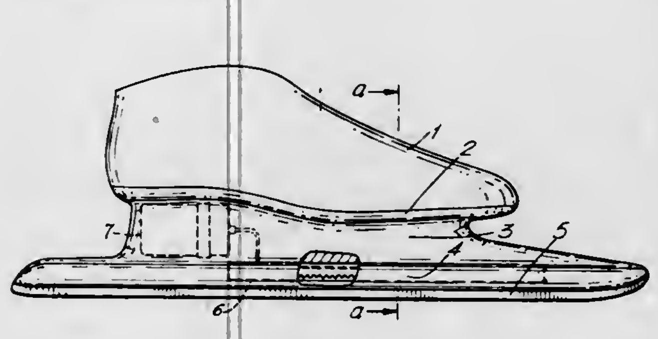
Robert J. Traum, Trenton, Mich., assignor to McCord Corporation, Detroit, Mich.
Filed Mar. 19, 1973, Ser. No. 342,329
Int. Cl. F16j *15/10*
U.S. Cl. 277—166 **21 Claims**



1. A gasket assembly adapted to be disposed between two members comprising: body means defining two parallel surfaces each of which is adapted to abut one of the members, an opening extending through said body means, and sealing bead means disposed about the periphery of said opening; said body means including first recess means for receiving said sealing bead means and second recess means for defining insulating cavities between the members.

3,866,927
ICE SKATE HAVING A ONE-PIECE SUPPORT PROVIDED WITH A HEATING ELEMENT

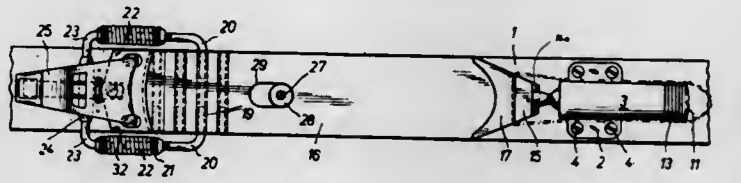
Nils Joergen Tvengsberg, Olav Trygvasonsvei 7F, 1412-Sofiemyr, Norway
Filed Mar. 1, 1973, Ser. No. 336,961
Int. Cl. A63c *1/00*
U.S. Cl. 280—11.12 **1 Claim**



1. A skate assembly comprising a boot plate member for mounting a boot thereon, an elongated intermediate member depending from said boot plate, a skate blade support member for supporting a skate blade therein including means defining a plurality of openings therein, said boot plate, intermediate member and skate blade support member being formed of a one-piece, uninterrupted moldable plastic material with the material in said support engaging through said openings to secure said blade thereto, said members shaped to define an aerodynamic profile, and a heating element in said support member operable to maintain said blade at a predetermined temperature.

3,866,928
SAFETY SKI BINDING

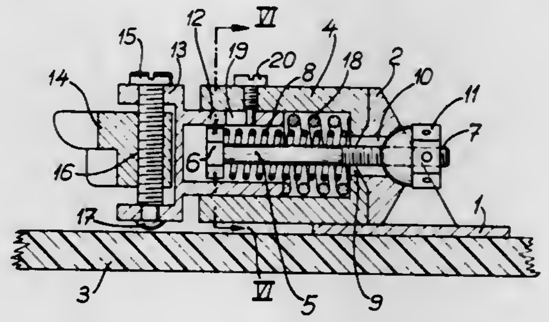
Ernst Gertsch, Wengen, and Ulrich Gertsch, Matten, both of Switzerland, assignors to Gertsch AG
Filed Nov. 8, 1972, Ser. No. 304,736
Claims priority, application Switzerland, Nov. 17, 1971, 16696/71
Int. Cl. A63c *9/081*
U.S. Cl. 280—11.35 K **14 Claims**



1. A releasable ski binding for a ski comprising a release plate intended to be releasably secured to a ski boot, said release plate being provided at one end with a supporting surface, a holder element for attachment to the ski, said holder element including a holding surface which engages with the supporting surface of the release plate, a spring-loaded locking pin cooperating with the other end of the release plate, means for adjusting the spring-loading of said spring-loaded locking pin, said release plate being releasable laterally as well as upwardly with regard to the ski, a substantially circular-shaped bearing disc for attachment to the ski, said release plate having a lengthwise extending slot which engages said bearing disc, so that said release plate can pivot about the bearing disc, can displace in the lengthwise direction relative thereto and can be raised away from said bearing disc, said supporting surface of the release plate and the holding surface of the holder element forming a lateral guide with regard to the axis of the bearing disc, said supporting surface of the release plate and the holding surface of the holder element cooperating with one another to provide selective vertical release action, said lateral guide having an arcuate surface cooperating with an arcuate surface of said release plate for freely permitting pivoting of said release plate, said spring-loaded locking pin providing both lateral release action and vertical release action for said binding, said spring-loaded locking pin in conjunction with said bearing disc providing different release moments for the ski binding for the vertical release action and for the lateral release action, respectively.

3,866,929
SKI BINDING

Daniel Lacroix, 76 route de Viver Bois d'Amont, Les Rousses, France 39220
Filed Aug. 17, 1973, Ser. No. 389,211
Claims priority, application France, Aug. 21, 1972, 72.29785; Aug. 3, 1973, 73.28540
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **10 Claims**



1. Safety ski binding, comprising a plate adapted to be fixed on a ski surface, a stop member fixed on the plate, an elongate hollow body having a first end and a second end and a longitudinal axis extending from the first end to the second end, means for pivotally connecting said body towards the first end

thereof to the stop member for pivotal movement of the body about at least two distinct pivoting axes, a boot-sole engaging jaw mounted on said body at said second end thereof, and adjustable spring means disposed within said body for holding said body in a rest position relative to said stop member with said longitudinal axis substantially parallel to said ski surface and with said jaw in a boot-sole engaging position and for opposing movement of said body away from said rest position by pivoting about at least one of said pivoting axes.

3,866,930
SAFETY RELEASABLE SKI BINDING

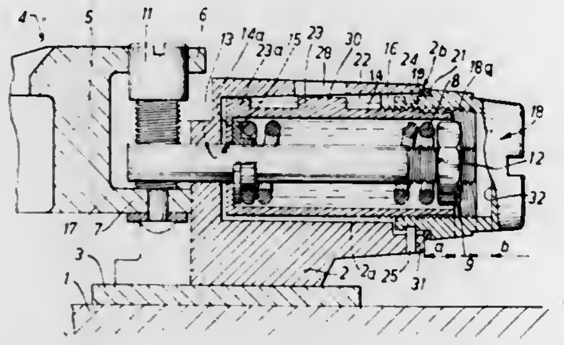
Georges Pierre Joseph Salomon, Annecy, France, assignor to S.A. Francois Salomon & Fils, Annecy, France

Filed Feb. 12, 1974, Ser. No. 441,814

Claims priority, application France, Feb. 14, 1973, 73.05190

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 T **14 Claims**



1. Disconnectable safety stop for a ski, comprising a body mountable on the ski, a jaw pivotably mounted on the said body for holding the toe end of a ski boot in a central position of rest, resilient means arranged longitudinally in respect of the ski in a longitudinal hollow portion of the said body and acting on the said jaw in the direction of the central position for securing the boot, an intermediate connecting member at least partly held in the said hollow portion and connecting the said jaw to one end of said resilient means remote from said jaw, and means for adjusting the tension of said resilient means, said tension adjusting means comprising a regulating member and an elongate member extending into the longitudinal hollow portion of the body coaxially with said resilient means and said intermediate connecting member, the said elongated member being provided, at its end remote from the jaw, with a screw-threaded portion onto which said regulating member is screwed such that said regulating member engages the body, said resilient means bearing, by its other end close to the jaw, on the other end of the said elongate member.

3,866,931
PAIR OF SKI POLES

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

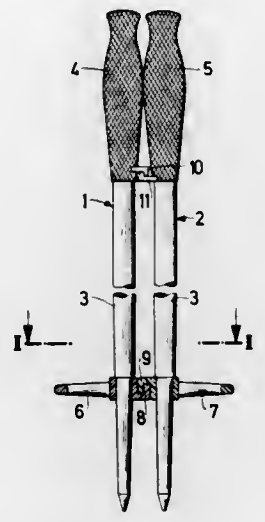
Filed Feb. 6, 1974, Ser. No. 439,973

Claims priority, application Austria, Feb. 9, 1973, 1201/73

Int. Cl. A63c *11/22*

U.S. Cl. 280—11.37 B **3 Claims**

1. A pair of ski poles, each comprising a tubular shaft having an upper portion carrying a handle and a lower portion carrying a snowhead, the handles and the snowhead having interlocking connecting elements whereby the two poles can be detachably interconnected, the snowheads being asymmetrically mounted on the tubular shafts so that a portion of the periphery of each snowhead is close to the tubular shaft, said portions having the interlocking connecting elements whereby the two snowheads can be interconnected, the connecting element of the handle of one ski pole engaging the connecting element of the handle of the other ski pole from below and the connecting element of the snowhead of said one ski pole engaging the connecting element of the snowhead of said other ski pole from above to prevent a longitudinal movement of the ski poles relative to each other, and the tubular shafts being elastically deformable in length to at least the extent of the depth of interengagement of the connecting elements of the snowheads.



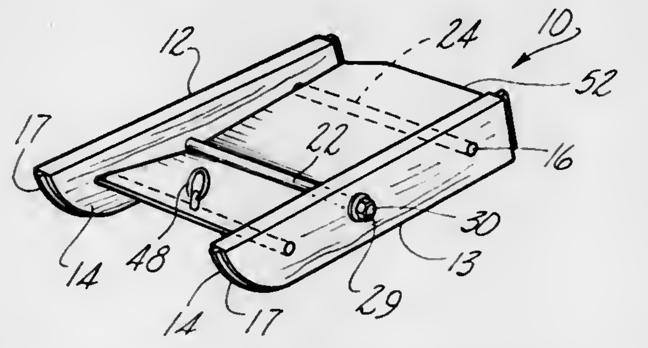
3,866,932
SLED

Josip Milicevic, 23001 Euclid, St. Clair Shores, Mich. 48082

Filed June 22, 1973, Ser. No. 372,697

Int. Cl. B62b *13/16*

U.S. Cl. 280—12 R **1 Claim**



1. A sled for gliding over snow and ice, said sled comprising: a pair of parallel, longitudinally extended runners, each having three longitudinally spaced bores, said runners having arcuately rounded forward sections that terminate in a longitudinal edge adapted to ride on a snow surface;

- a pair of metal ribs of a width less than that of said runners and which extend along the full longitudinal edge of said runners terminating at the top rear edge of said runners, said ribs being attached to said runners by a suitable fastening means thereby providing for greater stability when said sled is used over ice;
- three parallel and laterally disposed bar members, cylindrical in shape, and which terminate in reduced diametered end sections forming shoulders adapted to be inserted into said longitudinally spaced bores in said runnerss to positively maintain said runners' parallel relationship, the center bar member being provided with threaded ends extending through said runners for a threaded engagement with nuts on the opposite sides of said runners to secure said runners to said bar members in order to provide quick assembly and disassembly of said sled;
- a seat comprising a flat board, said board having a front section and a rear section respectively disposed in planes intersecting at an obtuse angle at a central section of said seat, said seat being disposed between said runners such that the bottom sides of said front and rear sections of said seat are in an abutting supporting relationship, respectively, with the top surfaces of the foremost and rearmost of said bar members, the top side of the midsection of said seat being in an abutting support with the bottom portion of said center bar member, said seat extending beyond the ends of said runners and terminating with angled edges which form a trapezoidal protrusion which may be grasped by a human hand for facilitating manipulation of said sled to control the direction of movement of said sled; and
- a ring of a diameter sufficient to permit grasping thereof by a human hand and being affixed to said seat near the edge of said front section and midway between said runners such that said sled may be towed and controlled during use.

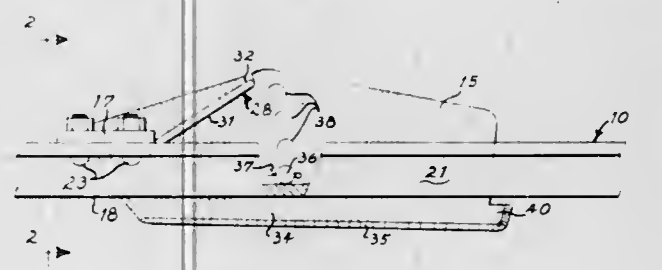
3,866,933
SNOWMOBILE SKI GUIDE

Frederick Jay Mollring, Jackson, Wyo., assignor to Mollring Snoglide, Inc., Jackson, Wyo.

Filed Mar. 23, 1973, Ser. No. 344,174

Int. Cl. B62b *17/08*

U.S. Cl. 280—28 **7 Claims**



1. An accessory for a vehicular ski of the type having a longitudinal central well extending along the length thereof and a longitudinal central slot formed through the bottom wall of the well beneath a turning axis of the ski; the accessory comprising:

- bracket means adapted to be fixed to the ski at opposite sides thereof, including opposed support members adapted to fit into the well along the side walls thereof;
- a pivot pin adapted to be carried by the respective support members of said bracket means at a location adjacent the forward end of the slot formed through the ski;
- an upright blade pivotally mounted about the pivot pin and adapted to extend rearwardly therefrom when mounted on a ski, the blade being centered across the pin so as to be aligned with the slot of the ski and having a lower portion of the blade adapted to protrude through the slot; yieldable means engageable with the blade adapted to urge the lower portion thereof downwardly when the accessory is mounted on a ski;
- said blade further comprising a rearwardly projecting tab at the lower blade portion adapted to protrude rearwardly beyond the slot as an extension of the blade and adapted to limit upward pivotal movement of the blade relative to the ski by abutment of the tab against the bottom surface of the ski.

3,866,934
GOLF CART UMBRELLA HOLDER

Robert A. Braun, 4904 Karen S.W., Wyoming, Mich. 49508

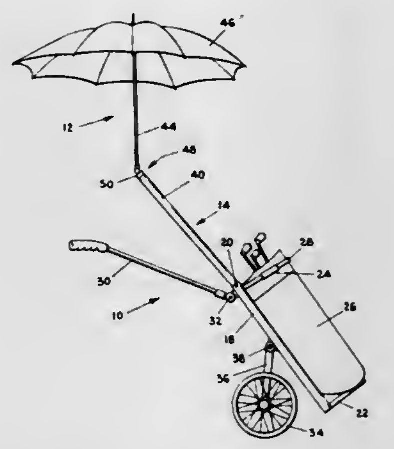
Filed May 14, 1973, Ser. No. 359,852

Int. Cl. B62b *1/04*

U.S. Cl. 280—36 C **11 Claims**

1. In a hand-pulled gold cart having a generally upright frame, a pair of wheels mounted at the lower end of the frame, a handle mounted on the frame, and mounting means for holding a golf bag, an improvement comprising:

- a hollow outer tube with an open upper end;
- a hollow inner tube that fits within the outer tube through the open top thereof and is slidable therein in telescoping fashion from a collapsed position to a raised position, said inner tube having an open upper end;
- attachment means for attaching the tubes in a generally upright position to the frame of the golf cart;
- holding means adapted to releasably hold the inner tube in place when it has been raised to its raised position;
- an umbrella comprising a shaft having a collapsible top on one end and an umbrella handle on the other end, said top and shaft being of a size sufficient to permit the shaft and top to be stored inside the inner tube when the top is collapsed, said umbrella handle being formed so as to be engageable with the outer end of the inner tube in such a manner as to hold the umbrella in a generally upright position when the umbrella is withdrawn from the inner tube.



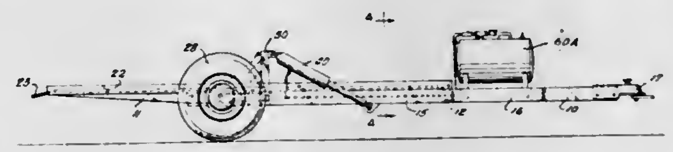
3,866,935
SUSPENSION FOR UTILITY TRAILER

Charles C. Nelson, 1036 A Del Mar Ave., Richardson, Tex. 93109

Filed Jan. 30, 1973, Ser. No. 327,940

Int. Cl. B60p *1/18*

U.S. Cl. 280—43.23 **11 Claims**



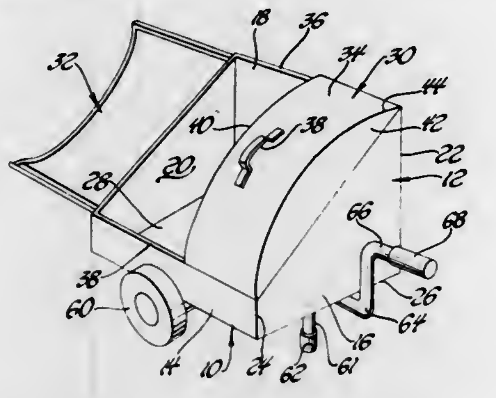
1. A trailer comprising

- a frame having means at its front end for coupling to a towing vehicle; suspension means comprising a ground engaging wheel mounted at each side of said frame intermediate the ends thereof;
- mounting means for each wheel comprising a crank arm mounted to oscillate about a transverse axis, and coacting rotatable support means on said frame and crank arm defining said transverse axis; said crank arm defining first arm means carrying a wheel spindle in spaced relation to said transverse axis, and defining second arm means carrying an operating pivot in spaced relation to said transverse axis;
- an extensible fluid motor, having an expansible chamber, mounted between said frame and said crank arm operating pivot, operable in extended condition to position said crank arm and wheel to support said frame in elevated transport condition, and operable in retracted condition to lower said frame relative to said wheel; said motor expansible chamber defining, at least in part, a cushioning air chamber providing an air spring suspension between said frame and said crank arm;
- and control means mounted on said frame, for said extensible fluid motors; said control means comprising a reservoir for operating fluid for said extensible fluid motors; conduit means communicating said reservoir with said fluid motors, and flow control means associated with said reservoir and said conduit for directing fluid under pressure to said extensible fluid motors to extend said motors,

and for releasing fluid from said motors to effect retraction of said motors.

3,866,936
TRASH CART

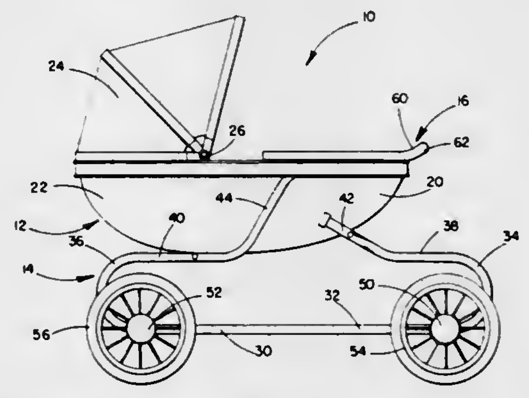
James H. Hedges, 35709 Schley, Westland, Mich. 48185
Filed Oct. 12, 1973, Ser. No. 405,865
Int. Cl. B62b *1/10*
U.S. Cl. 280—47.26 8 Claims



1. In a cart for transporting trash, the improvements comprising:
- a body member having four sides and a bottom;
- the bottom being substantially rectangularly shaped and each of the sides being attached at the bottom portions thereof to said bottom portion;
- one pair of said sides being parallel with one another and perpendicular to another pair of said sides which are in turn perpendicular to one another;
- each of said sides of said first mentioned rectangular pair being substantially rectangularly shaped, with one side having a substantially lesser height than the other of said sides of said first mentioned pair;
- each of said sides of said second mentioned pair of sides being substantially congruent with respect to one another and each being in the shape of a trapezoid with the higher height of said trapezoid attaching to the one of said first mentioned pair of sides having the higher height and the lower height of each of said trapezoidal sides being attached to said other one of said first mentioned pair of sides having a lower height;
- an axle and ground engaging wheel assembly being attached near the rear portion of each one of said first pair of rectangular sides;
- a handle member being in the shape of an ell and having a forward extending portion extending forward of said cart and a lower downwardly depending portion integral therewith and being attached near the central portion of the forward one of said second pair of trapezoidal shaped sides;
- a third ground engaging member attached near the forward center portion and extending downwardly from said bottom portion;
- a lid member having a substantially upwardly extending curved portion and a substantially rectangularly shaped bottom edge engaging the top edges of said side portions; said bottom portions of said lid member being of substantially the same shape and dimension as the top edge peripheries of said sides;
- each of said sides, said bottom and said lid being made of a relatively thin gauge of metal;
- said cart operable to rotate about the axis of said wheel and axle assemblies in an upwardly pitching direction responsive to the manual lifting of said cart at the aforementioned handle;
- said cart operable to be wheeled on said wheel and axle assemblies for translation with respect to the ground responsive to a pulling on said handle in a direction forward of said cart and operable to be pushed in a backward direction by translation with respect to the ground by rolling on said aforementioned wheel and axle assemblies responsive to a pushing in a backward direction by said handle;
- said cart operable to rotate with respect to the ground responsive to a force applied by manual means on said handle in a direction at an angle to the forward or backward direction with respect to said cart by rolling on said wheel and axle assemblies in response to said force;
- said lid operable to be manually lifted for loading and deloading of trash within the body of said trash cart;
- whereby trash may be stored within said cart and also transported to a place of dumping or collection by de-loading said cart at the point of collection or dumping.

3,866,937
HIGH-STABILITY WHEELED PUSH DEVICE

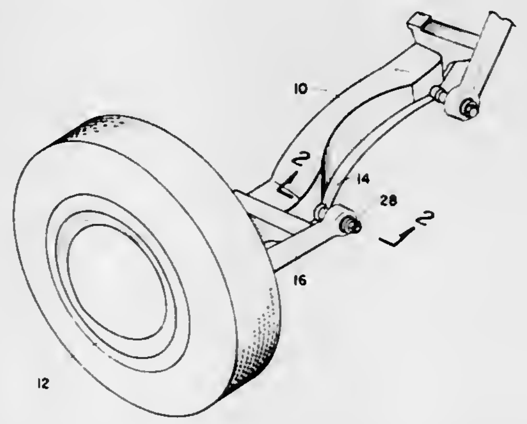
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356
Filed Nov. 20, 1972, Ser. No. 308,246
Int. Cl. B62b *7/00*
U.S. Cl. 280—47.38 6 Claims



1. A stable wheeled carriage comprising:
- a carrier section having a front end and a rear end,
- a carriage assembly connected to the carrier section for supporting the latter in an elevated position and having fixed-location transversely extending rear wheel axle means adjacent the rear end of said carrier section, and a pushing means secured to the rear end of the carrier section and including a gripping portion comprising a transversely extending bar, said gripping portion being disposed entirely forwardly of said rear wheel axle means, the latter means being configured to permit access to said gripping portion of said pushing means without interfering with a person utilizing the gripping portion.

3,866,938
CAMBER ADJUSTING MEANS

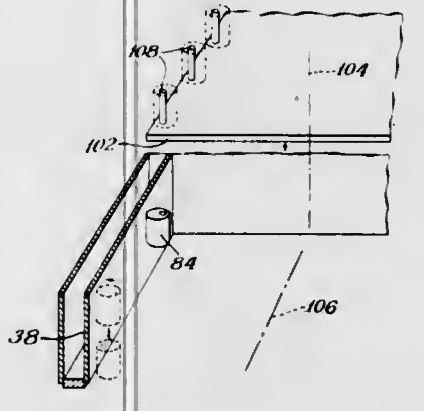
Elmer E. Boyd, 7559 E. 49th St., Bldg. 59, Apt. 112, Tulsa, Okla. 74145, and Alvin S. Powell, 15300 E. Pine, Tulsa, Okla. 74116
Filed May 14, 1973, Ser. No. 360,128
Int. Cl. B62d *17/00*
U.S. Cl. 280—96.2 B 1 Claim



1. In an automobile front end suspension system including a chassis forward cross-frame, a lower support arm and a pivot bolt extending from the cross-frame, the pivot bolt extending perpendicular the longitudinal length of the cross-frame and being threaded at the outer end, the inner end of the lower support arm having an opening therethrough, the axis of said opening being perpendicular the longitudinal length of the lower support arm, improved means of adjustably pivotally supporting the lower support arm to the pivot bolt as a means of adjusting the front wheel camber, comprising:
- a bushing having a cylindrical external surface rotatably received in said opening in the lower support arm, said bushing having a longitudinal opening therethrough, the axis of which is parallel the bushing cylindrical axis, the bushing opening being eccentric to the cylindrical exterior, the bushing receiving said pivot bolt by said longitudinal opening, the length of said bushing measured parallel the cylindrical axis being greater than the thickness of said lower support arm measured parallel the axis of said opening therethrough whereby a portion of said bushing extends exteriorly on both sides of said support arm, and wherein said bushing includes opposed wrench flats on the external cylindrical surface of said portion of said bushing extending exteriorly and rearwardly of said lower support arm, said flats serving as a means of rotatably positioning said bushing on said pivot bolt to thereby longitudinally position said lower support arm,
- a nut threadably received on said threaded outer end of said pivot nut, said bolt when inwardly threadably advanced serving to directly clamp said bushing against said cross-frame to prevent the rotation thereof; and
- a tubular bearing interposed between said bushing and said lower support arm opening.

3,866,939
MOUNTING BLOCKS IN VEHICLE FRAME AND METHOD OF INSTALLATION THEREIN

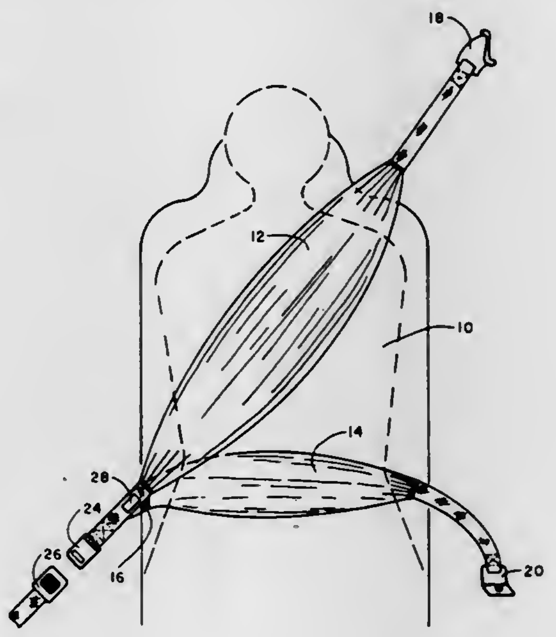
Ronald J. Fanslow, Palatine, Ill., assignor to International Harvester Company, Chicago, Ill.
Division of Ser. No. 87,038, Nov. 5, 1970, Pat. No. 3,713,203. This application July 24, 1972, Ser. No. 274,140
Int. Cl. B62d *25/20*
U.S. Cl. 280—106 R 10 Claims



1. A mounting block assembly for a vehicle frame, comprising:
- a frame with inner walls defining a mouth;
- a door received by the frame for being bolted thereto, and sized to cover the mouth of the inner frame walls;
- door mounting blocks installed generally tangentially on the inner walls in juxtaposition behind the door, and being cylindrical with *r* radius; and
- bolt openings presented by the blocks to receive door bolts, each having *e* eccentricity to the cylinder, and having the opening center with an offset of about *r* from the adjacent inner wall yet, during installation, affording selective offsets of the opening center approximately within the range $r + e$ to accommodate actual practice.

3,866,940
DIFFERENTIALLY INFLATABLE RESTRAINING BAND FOR VEHICLES

Donald Joseph Lewis, Troy, Mich., assignor to Allied Chemical Corporation, Morristown, N.J.
Filed Jan. 11, 1973, Ser. No. 322,653
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB 2 Claims



1. Inflatable restraining means for a vehicle safety system comprising a unitary inflatable member folded in uninflated condition to be in the form of a seat belt with frangible means ruptured on commencement of inflation to obtain full inflation thereof, said folded inflatable member comprised of a plurality of inflatable first sections integral therewith containing said frangible means connected by at least one uninflated intermediate section integral therewith, said first sections being inflatable to a cross-section greater than said uninflated intermediate section; said unitary member extending at uninflated sections to points of connection on the vehicle, said first inflatable sections in gas communication with one another via said intermediate section unitary therewith, said first inflatable sections comprise a lap and shoulder restraining portion, and the intermediate section secured to a portion of a buckle and containing said means for inflating said sections, and means for restricting radial expansion of said intermediate section, means capable of rupturing said frangible means on commencement of inflation of said member in response to a preselected condition of the vehicle.

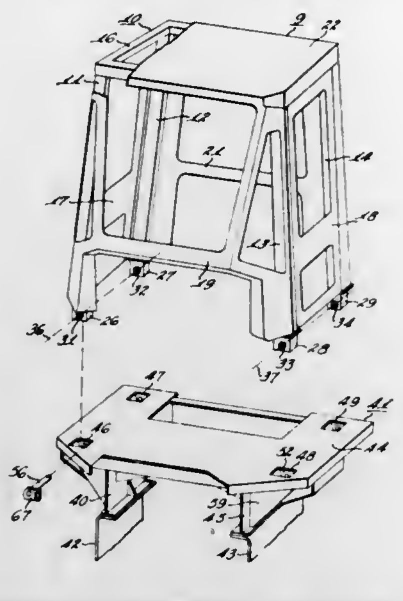
3,866,941
Patent Not Issued For This Number

3,866,942
ROLLOVER PROTECTION APPARATUS

William J. Dobeus, Lake Forest; James V. Cheetham, Chicago; Daniel Pacheco, Libertyville; Carl A. Keyzer, Mundelein, and Don G. Sandrock, McHenry, all of Ill., assignors to Allis-Chalmers Construction Machinery Inc., Milwaukee, Wis.
Filed Aug. 16, 1973, Ser. No. 388,974
Int. Cl. B62d *25/06*
U.S. Cl. 280—150 C 5 Claims

3. Rollover protection apparatus for a vehicle having an operator's platform including a floor, said apparatus comprising: a plurality of openings in said floor, a rollover protection structure having a plurality of depending legs with bottom end portions extending into said openings, respectively, and means releasably connecting said bottom end portions to said platform below said floor, said means including an opening in

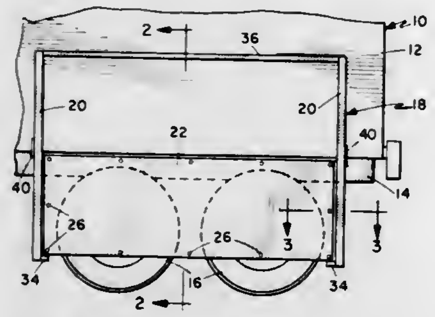
each of said end portions, vertical brackets secured to the underside of said floor and presenting aligned holes and pins



releasably mounted in said openings and holes, said brackets being integral with vertical bracing members for said floor.

3,866,943
SPLASH GUARD

Pamela B. Innis, 2733 St. Laurent Pl., La Jolla, Calif. 92037
Filed Apr. 23, 1973, Ser. No. 353,565
Int. Cl. B62d *25/16*
U.S. Cl. 280—154.5 R **1 Claim**

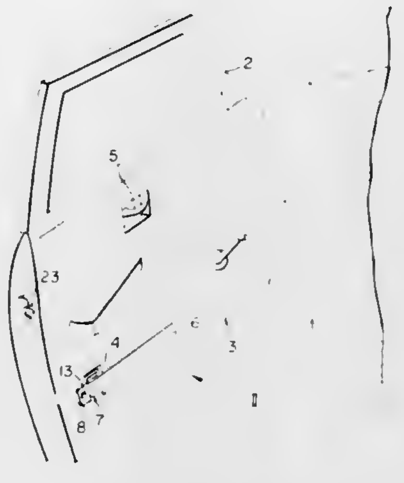


1. A splash guard for a truck having at least one ground-contacting wheel and a body portion overhanging said wheel and a side of said body portion disposed above and outwardly of said wheel, said splash guard comprising:
- two vertically spaced tracks mounted to and extending above and below the lowermost portion of said side;
- a panel slideably received in said tracks and disposed outwardly of said wheel and substantially normal to the axis thereof and coextensive with a major portion of said wheel, whereby sidespray or swash created by the turning wheel on wet pavement is deterred from sidewise escapement;
- said panel being capable of upward displacement in said tracks to permit access to said wheel for maintainance; and
- a locking means whereby said panel can be established at any of a plurality of vertically spaced levels.

3,866,944
LOCKING DEVICE FOR SEAT BELT FOR VEHICLES

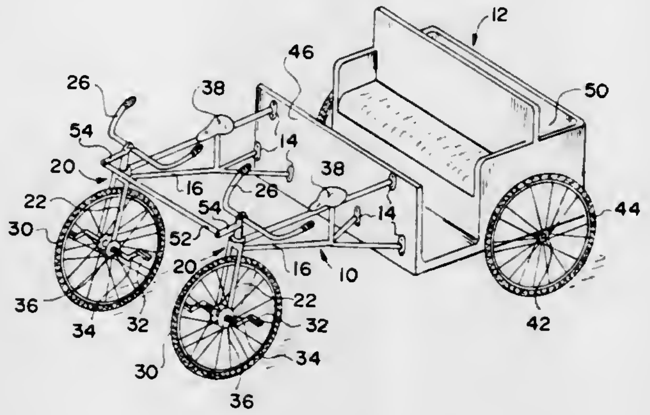
Kuniyuki Takahashi, Nogoya, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 3, 1973, Ser. No. 356,714
Claims priority, application Japan, May 10, 1972, 47-54443; May 26, 1972, 47-52860; May 26, 1972, 47-52861
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **5 Claims**

1. A locking device for a seat belt releasably binding the body of the passenger to the seat in a vehicle having a striker mounted on the vehicle body comprising a seat belt retractor for releasably holding one end portion of said seat belt, said seat belt retractor including a shaft hving a retracting direction, an automatic locking wheel having a plurality of tooth portions and mounted firmly on said shaft, a locking lever pivoted at substantially the central portion thereof to the door by a pin and having an engaging end portion engageable with said tooth portions of said automatic locking wheel, a return spring associated with said locking lever for normally biasing said engaging end portion of said locking lever toward said automatic locking wheel, a release lever engageable at one end portion thereof with the other end portion of said locking lever, a ratchet wheel rotatable in unitary relation with a latch wheel engageable with the striker mounted on the vehicle body, and a rod connecting the other end portion of said release lever to a portion of said ratchet wheel.



3,866,945
RECREATIONAL VEHICLE

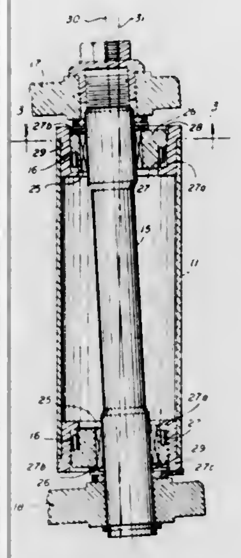
John A. Bingham, 84-A Lakeview Dr., Whispering Pines, N.C. 28389
Filed May 22, 1973, Ser. No. 362,789
Int. Cl. B62k *5/04, 5/08, 19/46*
U.S. Cl. 280—202 **2 Claims**



1. A recreational, multi-use vehicle comprising a drive section including a frame, a steering column pivotally mounted to the front end of said frame and a wheel rotatably mounted to the lower end of said steering column by means of an axle extending through said wheeel and rotatably supported by said lower end of the steering column, a drive means comprising pedals attached to the ends of said axle, said frame further including an upper horizontal bar and a lower horizontal bar extending rearwardly from said front end of the frame, said lower bar being bifurcated in the rear portion thereof to provide in combination with said upper bar a three-point first connector means at the terminal ends of said upper bar and said bifurcated lower bar, a wheeled carriage comprising a planar front wall, and means connecting said three-point connector means to said front wall.

3,866,946
MOTORCYCLE STEERING HEAD ANGLE ADJUSTMENT

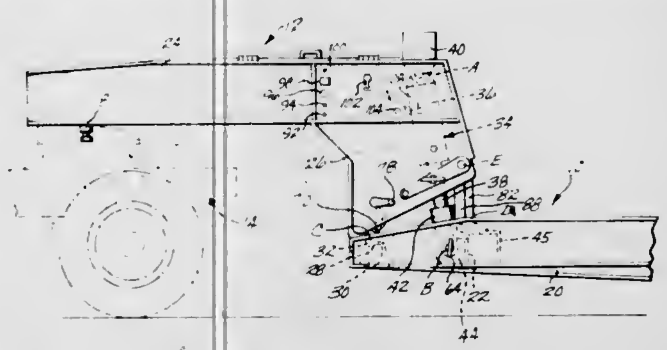
Gary A. Robison, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Oct. 11, 1973, Ser. No. 405,276
Claims priority, application Canada, Oct. 26, 1972, 154941
Int. Cl. B62k *19/00*
U.S. Cl. 280—279 **10 Claims**



1. A mechanism for adjustment of the steering head angle of the front fork of a motorcycle, said mechanism comprising: a steering head spindle; two bearing means arranged at locations spaced longitudinally of the spindle, said bearing means mounting said spindle in a motorcycle frame for angular rotation about a generally upright axis in the central longitudinal vertical plane of the motorcycle; means coupling said front fork to said spindle in fixed relation thereto for rotation with said spindle; one of said bearing means including adjustment means operable to vary the angular position of said axis in said vertical plane thereby to vary the steering head angle of said front fork.

3,866,947
REMOVABLE GOOSENECK LOW BOY TRAILER

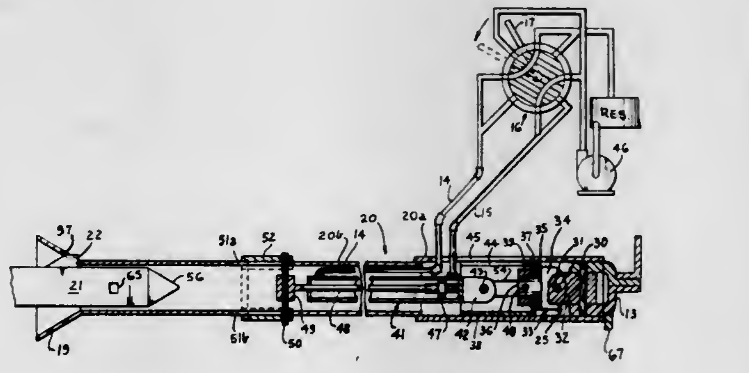
Michael J. Yakubow, Church Hill, Md., assignor to Centreville Tag-A-Long Trailers, Inc., Centreville, Md.
Filed Apr. 26, 1973, Ser. No. 354,752
Int. Cl. B62d *53/06*
U.S. Cl. 280—425 A **12 Claims**



1. In a trailer assembly including a trailer bed and a gooseneck, apparatus connecting one end of the trailer bed to the gooseneck, said apparatus comprising:
- a. detachable coupling means interconnecting said trailer bed and said gooseneck at a first forward location at the one end of said trailer bed,
- b. hydraulic ram means having a first end connected to said gooseneck at a second location spaced from said first location, and having a second force transmitting end,
- c. bearing means on said trailer bed adapted to detachably engage the second end of said ram means so as to receive a thrust force imparted by said ram means, said bearing means being positioned at a third location spaced rearwardly of said coupling location, whereby said ram means and said coupling means provide a force couple for relative rotation of said gooseneck to said trailer bed,
- d. thrust block means, independent of said ram means, being movable between a first position where said thrust block means is interposed between a rear portion of said gooseneck and a bearing surface of said trailer bed positioned rearwardly of said coupling means so as to be loaded in compression thereby, and a second position where said thrust block means is out of thrust engagement between said trailer bed and said gooseneck to permit relative rotation of said gooseneck and trailer bed to lower the trailer bed.

3,866,948
COUPLING MECHANISM WITH LATCHING ALSO WITH RELATIVE UNIVERSAL MOVEMENT UNCOVERING BETWEEN OBJECTS

Gerald J. Crochet, Sr., 1000 Roselawn Dr., Lafayette, La. 70501
Filed Nov. 1, 1972, Ser. No. 302,862
Int. Cl. B62d *53/00*
U.S. Cl. 280—478 R **10 Claims**



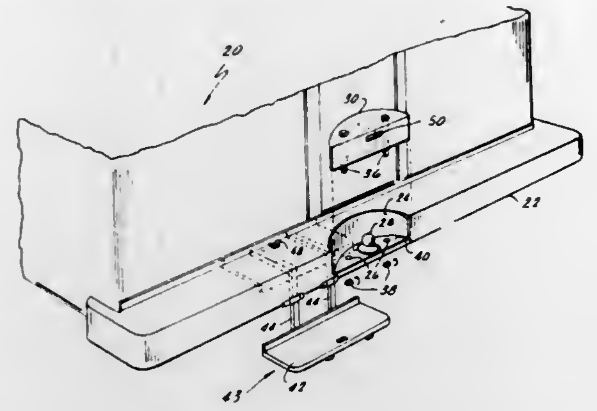
1. A coupling mechanism for employment with two objects to be latched together for travel in tandem, said coupling mechanism including a projectable member, a universal joint assembly with respective members adapted to permit articulation, relative rocking vertically, and side sway or rotation about axis of travel, operating means to project said projectable member in one direction for an included connection means to effect latching between said objects and to move said projectable member in such relation to said universal joint assembly as to permit relative universal movement, between objects, said projectable member upon projection to another position by said operating means, transforming said universal joint assembly by engagement therewith to effectuate substantially rigid connection between said objects.

3,866,949
SAFETY COVER FOR A BUMPER HITCH

John R. Green, 1047 N. Estelle, Wichita, Kans. 67214
Filed July 16, 1973, Ser. No. 379,714
Int. Cl. B60d *1/06*
U.S. Cl. 280—507 **7 Claims**

1. A safety cover for a bumper hitch connected to a bumper having an indented recess with an open top and an open front with said bumper hitch being positioned on the bottom of said recess, comprising:
- a. a cover member to confine said bumper hitch,
- b. means for stepping pivotally attached to said bumper in proximity to said recess and having means for securing said cover member when mounted on said bumper and pivoted to rest on said bumper comprising, a step plate member, at least one generally L-shaped support member, said L-shaped support member including a back having the upper most portion thereof pivotally connected to said bumper and a base abutting the centermost portion of said step plate member and connected to the bottom thereof, said step plate member having a portion

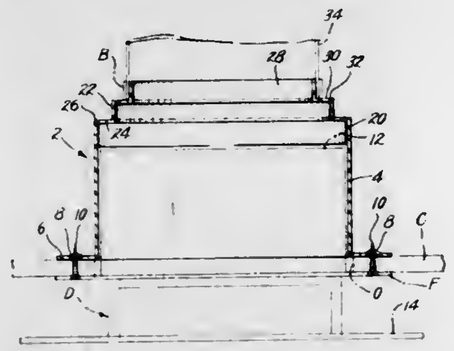
closely sheltering part of said cover member to hold said cover member in an encompassing position with respect to said recess when pivoted to rest on said bumper, and



c. said cover member including exterior surfaces that collimate and align with the exterior surfaces of said bumper when attached thereto.

3,866,950
MULTI-SIZE ADAPTERS

Edward L. Skoch, East Meadow; Sigfried W. Anderson, Westbury, and Ronald R. Slogick, East Meadow, all of N.Y., assignors to Versatile Industries, Inc., Plainview, N.Y.
Filed May 21, 1973, Ser. No. 362,250
Int. Cl. F16l *35/00*
U.S. Cl. 285—4 **9 Claims**



1. A multi-size connector unit for use in air distribution systems, comprising: an adapter having an outlet end of generally rectangular, box-like configuration to receive an air diffuser, and having an inlet end including at least two axially extending wall sections of different size to fit ducts of corresponding size; a transverse wall connecting the lower end of the smaller section to the upper end of the larger section, said transverse wall having a groove formed therein at its juncture with the wall of said larger section to reduce the thickness of the transverse wall at said juncture to facilitate separation of the smaller section from the larger section by severing along said groove; and a bellows section comprising a series of interconnected convolutions generally V-shaped in radial cross-section disposed between the inlet end and the outlet end of the adapter

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3,866,951
COMBINATION SKID AND COUPLING ASSEMBLY

Wells D. DeLoach, 3353 Rio Bonito, Covina, Calif. 91722
Filed Sept. 17, 1973, Ser. No. 397,705
Int. Cl. B05b *15/00;* F16l *21/02*
U.S. Cl. 285—5 **2 Claims**

1. A combination skid and coupling assembly for joining adjacent pipe sections of an irrigation drag line comprising:

a pair of mating coupling parts including a coupling head and a coupling yoke each comprising an integral one-piece structure,

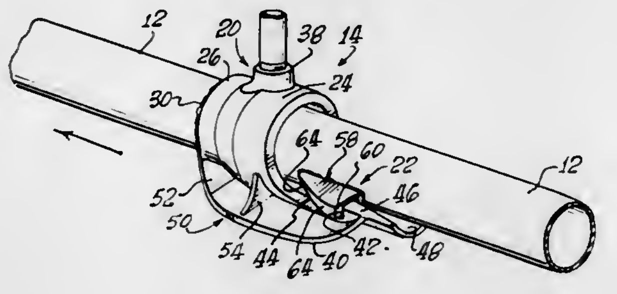
said coupling head including a tubular coupling body having a coupling nipple at one end for attachment to one pipe section and a coupling socket at the other end for removably receiving one end of the other pipe section, a generally semi-cylindrical cradle extending axially from the bottom of and beyond the latter end of said coupling head, and providing an upwardly opening trough for cradling said other pipe section, and a ground skid at the bottom of said coupling head having arcuate lateral extensions projecting beyond opposite sides of said body and cradle and curving upwardly toward each end of said coupling head,

the upper edges of said cradle being stepped to provide thrust shoulders spaced from and facing said coupling head and upwardly opening recesses between said head and thrust shoulders,

said coupling yoke including an arcuate band to fit about and be secured to said other pipe section, and coupling lugs projecting radially outward from the ends of said band,

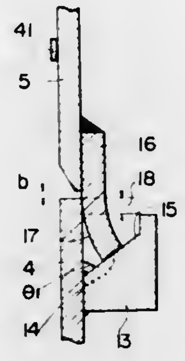
said coupling parts being adapted to be assembled in coupled relation, wherein said lugs are disposed in said cradle edge recesses with the normally lower surfaces of the lugs facing the cradle edges and one end of the lugs engaging said cradle thrust shoulders to interlock said parts against axial separation, and

the cradle edge portions in the regions between said thrust shoulders and the outer cradle end sloping downwardly toward said cradle end and said lower coupling lug surfaces sloping upwardly toward the opposite ends of the lugs and the radially outer edges of the lugs converging in the direction of said latter lug ends to guide said coupling parts into assembled relation.



3,866,952
JOINT STRUCTURE FOR STEEL PIPE PILES

Jiro Inoue, Kamakura; Ken Takatori, Kawasaki, and Tsuyoshi Nakamata, Hiratsuka, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed May 16, 1973, Ser. No. 360,929
Claims priority, application Japan, Dec. 9, 1972, 47-141578
Int. Cl. F16l *13/02*
U.S. Cl. 285—21 **6 Claims**



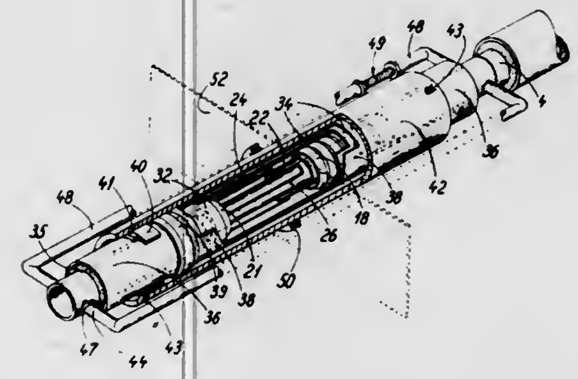
1. A joint structure for jointing upper and lower steel pipe pile pieces, comprising:

a stopper member secured to the inner periphery of said lower pipe pile piece below the joint end edge of said lower pipe pile piece, the upper surface of said stopper member having an angle of inclination of under 90° relative to the inner periphery of said lower pipe pile piece; and

a generally tubular joint metal piece secured to said upper pipe pile piece and projecting therefrom so as to be received within said lower pipe pile piece, the end of said joint metal piece remote from the end of said upper pipe pile piece being of reduced diameter relative to the remainder of said joint metal piece, the end face of said reduced diameter portion of said joint metal piece being formed with an inclined surface having an angle of inclination corresponding to said angle of inclination of said upper surface of said stopper member, so that said end face of said joint metal piece comes into close contact with said upper inclined surface of said stopper member when said upper and lower pipe pile pieces are joined.

3,866,953
AXIAL PIPE COMPENSATORS

Ove Thastrup, Fredericia, Denmark, assignor to A/S E. Rasmussen, Fredericia, Denmark
Filed Apr. 25, 1972, Ser. No. 247,331
Int. Cl. F16l *11/12*
U.S. Cl. 285—47 **7 Claims**



1. An axial compensator unit comprising:

a pair of end tubes axially spaced from one another, each one of said pair being adapted to be connected to respective end portions of longitudinally adjacent pipe sections, thereby joining said pipe sections together;

an expandable bellows means for absorbing axial expansion and contraction forces on said pipe sections, said bellows means being secured to said pair of end tubes between said pair of end tubes;

first and second guiding tubes disposed concentrically within said bellows means, each of said first and second guiding tubes being connected to respective ones of said pair of end tubes, said first and second guiding tubes being relatively movable with respect to one another;

third guiding tube means concentrically mounted within said first and second guiding tubes, said third guiding means being secured to one of said pair of end tubes and relatively movable with respect to the other of said pair of end tubes;

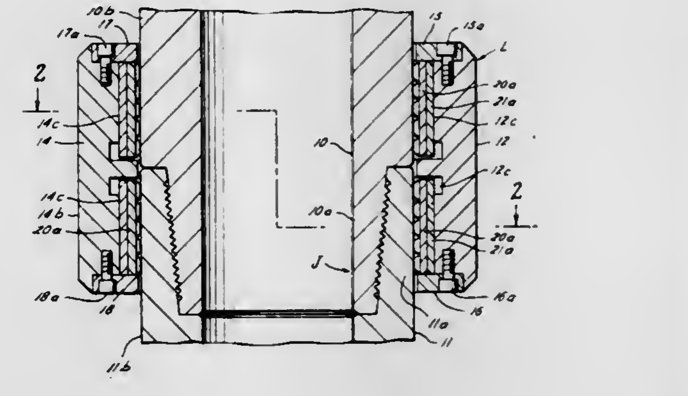
protective sleeve means of an elastomeric material for insulating said bellows means from moisture and corrosion, said protective sleeve means surrounding said bellows means and secured to said pair of end tubes;

an exterior protective means for absorbing external pressure on the unit, said exterior protective means surrounding said elastomeric sleeve means and said bellows means, and said exterior protective means connected to said pair of end tubes; and

at least one holding means for holding the unit in a predetermined arrangement, said holding means being connected to said pair of end tubes.

3,866,954
JOINT LOCKING DEVICE

Damon T. Slator, and Archie W. Peil, both of Houston, Tex., assignors to Bowen Tools, Inc., Houston, Tex.
Filed June 18, 1973, Ser. No. 370,811
Int. Cl. F16l *35/00*
U.S. Cl. 285—82 **10 Claims**



1. A positive joint locking device for locking a threadedly connected joint of pipe or the like against threaded disengagement, comprising:

split housing sections for forming an annular assembly, each housing section having an inner curved surface for mounting about the ends of threadedly connected pipe or the like;

releasable attaching means for releasably attaching said split housing sections together about said threadedly connected pipe ends;

gripper means mounted with said split housing sections at the inner surface thereof for gripping said threadedly connected pipe ends to prevent disengagement of said pipe ends; and

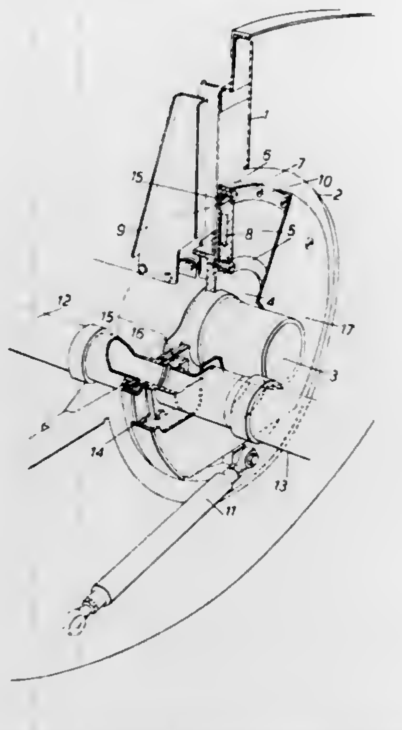
wedge means for wedging said gripper means substantially radially inwardly relative to said inner surfaces of said housing sections in response to the exertion of lateral forces on said gripper means tending to move same laterally, which lateral forces are caused by forces tending to disengage said threaded connection between said pipe ends, said wedge means and gripper means cooperating to prevent threaded disengagement of said pipe ends.

3,866,955
ROTARY COUPLINGS

Harry Maynard, Brough, and Roy Desmond Boot, Hull, both of England, assignors to Hawker Siddeley Aviation Limited, Surrey, England
Division of Ser. No. 187,083, Oct. 6, 1971, Pat. No. 3,755,626. This application May 14, 1973, Ser. No. 359,631
Claims priority, application Great Britain, Oct. 6, 1970, 47499/70
Int. Cl. F16l *39/00*
U.S. Cl. 285—136 **4 Claims**

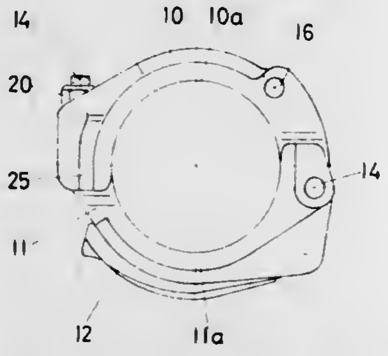
1. A rotary coupling, for the transfer of at least one liquid between relatively rotating assemblies, comprising an annular stator and a co-operating annular rotor, the stator and rotor being in mutual contiguity and concentric with the axis of relative rotation, and there being an annular channel in one providing fluid flow passage continuity between respective flow ports in the stator and rotor when relative rotation oc-

curs, and wherein the rotor is secured rigidly to the end of a rotating member and carries the stator mounted in a channel in the rotor, the stator being held against rotation by a universally-jointed tie rod connection to fixed structure.



3,866,956
DEVICE FOR THE RELEASABLE FASTENING OF HOSE OR PIPE ENDS

Karl Weinhold, Im Jagdfeld 43, 4040 Neuss, Germany
Filed Apr. 23, 1973, Ser. No. 353,627
Claims priority, application Germany, June 22, 1972, 2230464; Mar. 8, 1974, 2310681
Int. Cl. F16l *33/00*
U.S. Cl. 285—243 **23 Claims**

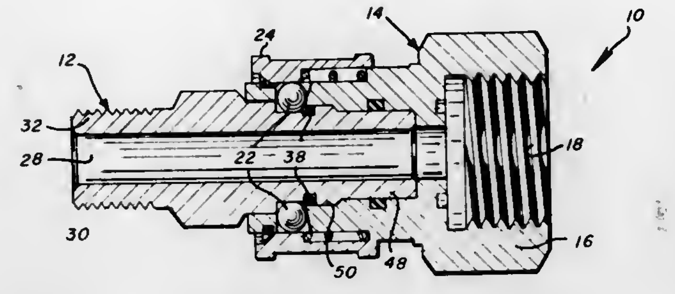


1. A device for releasbly fastening of hose or pipe ends, comprising two half-shells; a lever operated fastener for closing said two half-shells at one end; and adjustable means for adjustably closing said two half-shells at the other end, said adjustable means comprising a pin pivotally mounted at one end on one of the half-shells and extending into a bore provided in the other half-shell, and means for retaining said pin in said bore.

3,866,957
PLUG ASSEMBLY

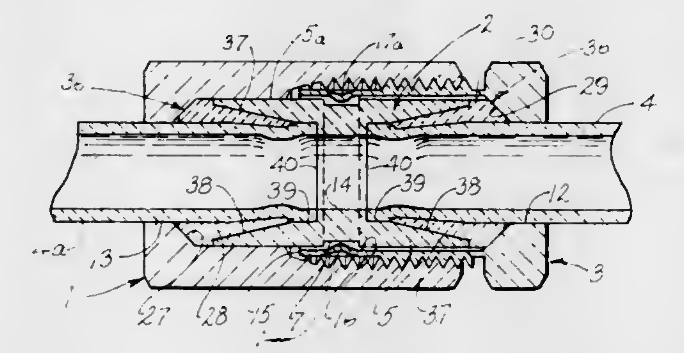
James F. Norton, Berea, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio
Filed Aug. 17, 1973, Ser. No. 389,166
Int. Cl. F16l *37/18*
U.S. Cl. 285—316 **3 Claims**

1. In a coupling for interconnecting fluid conduits and including a plug having a body and a socket assembly for receiving at least a portion of said plug body and having locking elements for engaging said plug to hold it against axial movement relative to said socket assembly, the improvement comprising ring means disposed on said plug body for abutting engagement with said locking elements, said ring means including an annular metal ring disposed in abutting engagement with said plug body and formed of a metal which is harder than the material forming said plug body, said ring having a circular cross sectional configuration in a radially extending plane and an outer surface which is engaged by said locking elements when said plug body is received in said socket assembly.



3,866,958
FLUID TIGHT CONDUIT FASTENING SYSTEM

Harold Gold, 3645 Tolland Rd., Shaker Heights, Ohio 44122
Filed July 13, 1973, Ser. No. 379,199
Division of Ser. No. 124,741 Mar. 16, 1971, Pat. No. 3,746,376.
Int. Cl. F16l *19/00*
U.S. Cl. 285—334.2 **3 Claims**



1. The means for fastening a conduit having a flanged end in a fluid tight assembly comprising: said flanged end, a seat member, a first coupling member and a second coupling member; said seat member having coaxial end faces, one of said end faces mating in sealing relationship with the seal face of said flanged end, said first coupling member being adapted to engage said flanged end and said coupling members being mutually adapted to clamp said seat member against said sealing face of said flanged end:

a. said seat member being a cylinder coaxial with the axis of said end faces, said cylinder having a coaxial cylindrical groove spaced between said end faces by cylindrical lands;

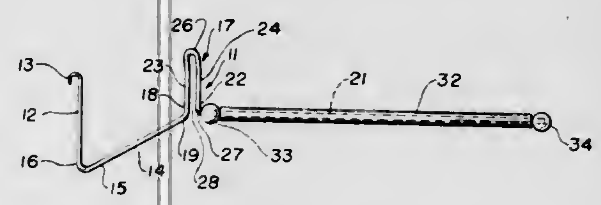
b. said first coupling member being a screw member, said screw member having a coaxial tubular portion extending forward of the threads of said member, the bore of said tubular portion extending in said screw member and joining a smaller coaxial bore therin, the shoulder formed at the junction of said bores being adapted to engage said flanged end, a pair of diametrally opposite inward indentations being in the wall of said tubular portion, said indentations projecting into said cylindrical groove in said seat member to attach said seat member to said screw member;

c. the diametral distance between the innermost points of said indentations being less than the diameter of said lands but greater than the diameter of said groove, the diametral clearance between said lands and said bore of said tubular portion being sufficient to allow said tubular portion to ovalize when said indentations engage said lands thereby permitting the insertion of said seat member into said bore through the application of an axial force between said seat member and the screw member, the width of said groove being greater than the width of said indentations, lateral and axial play being thereby provided in said attachment; and,

d. said second coupling member being a body having a threaded bore that mates with said screw member and having an internal shoulder that mates in sealing relationship with the second of said end faces of said seat member.

3,866,959
WHIP FINISHING TOOL

Frank W. Matarelli, 4426 Irving St., San Francisco, Calif. 94122
Filed May 8, 1974, Ser. No. 468,030
Int. Cl. D03j *3/00*
U.S. Cl. 289—17 **10 Claims**



1. A whip finishing tool comprising:

a rigid slender element having a first substantially straight free end portion with a hook formed at its free end;

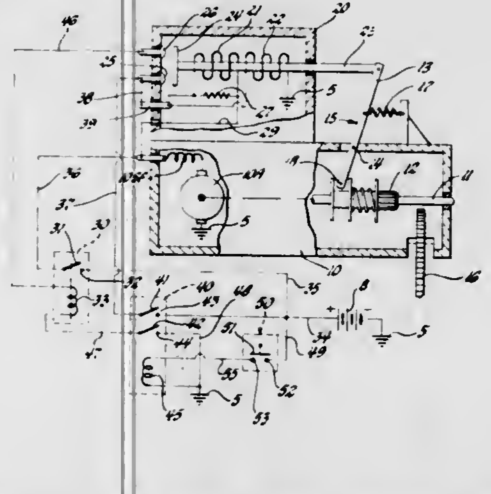
a substantially straight first intermediate portion having one end connected to and extending laterally from the opposite end of said first end portion;

a second U-shaped intermediate portion having one end connected to the opposite end of said first intermediate portion and extending laterally therefrom in the direction of said first end portion; and

a manually engageable substantially straight second end portion connected to the opposite end of said second intermediate portion and extending therefrom in a direction away from said first intermediate portion.

3,866,960
INTERNAL COMBUSTION ENGINE CRANKING MOTOR ENERGIZING CIRCUIT

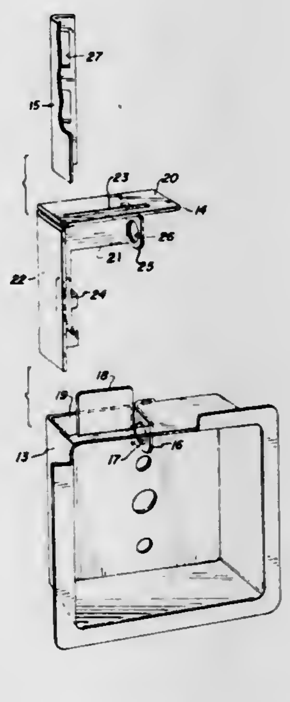
Satish M. Chohan, Bolingbrook, Ill., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 4, 1974, Ser. No. 439,287
Int. Cl. H02p *9/04*
U.S. Cl. 290—38 **7 Claims**



1. An internal combustion engine cranking motor energizing circuit comprising in combination with a cranking system including an electric cranking motor having an extended shaft, a pinion gear slidably mounted upon and rotated by the extended motor shaft and a shift mechanism operable to axially slide the pinion gear in one direction to engge and in an opposite direction to disengage the pinion gear and the cranking gear of the associated internal combustion engine and a source of direct current potential: an electrical solenoid having a pull-in coil connected in series with said cranking motor, a hold-in coil, an armature member in operative engagement with said shift mechanism which is operated to a first position by a spring and to a second position upon the energization of said pull-in and hold-in coils to effect, respectively, the disengagement and engagement of said pinion and engine cranking gears, an electrically conductive member carried by said armature and a pair of electrical contacts bridged by said electrically conductive member when said armature is operated to said second position; a resistor connected in parallel across said pull-in coil; an electrical switching device of the type having normally open current carrying elements operable to the electrical circuit closed condition in response to an electrical signal; means for connecting said current carrying elements of said electrical switching device and said cranking motor in series across said source of direct current potential; a relay having two movable and stationary contact pairs and an operating coil; an energizing circuit including one of said movable and stationary contact pairs of said second relay for each said pull-in coil and parallel connected resistor and said cranking motor in series and said hold-in winding; an electrical circuit including said same one movable and stationary contact pair of said second relay, said pair of electrical contacts of said solenoid and the other said movable and stationary contact pair of said second relay through which an electrical signal may be supplied to said electrical switching device; an electric crank switch; and an energizing circuit including said electric crank switch for said operating coil of said second relay.

3,866,961
RECESSED LOCKING MECHANISM

Herbert A. List, Flossmoor, Ill., assignor to List Industries, Incorporated, Harvey, Ill.
Filed Sept. 4, 1973, Ser. No. 394,296
Int. Cl. E05b *65/44*
U.S. Cl. 292—336.3 **5 Claims**



1. In a storage locker, a locking mechanism operable to latch and unlatch the locker door comprising:

a pan extending rearwardly from the surface of the door and having its open front portion in the plane of the surface of said locker door, said pan including an opening in one of its sides:

guide means projecting outwardly from a location adjacent to said opening;

a bracket covering said opening and movable on said guide means by a force directed through said opening wherein said opening is of sufficient size so that said force can be generated directly on said bracket by the fingers of a hand;

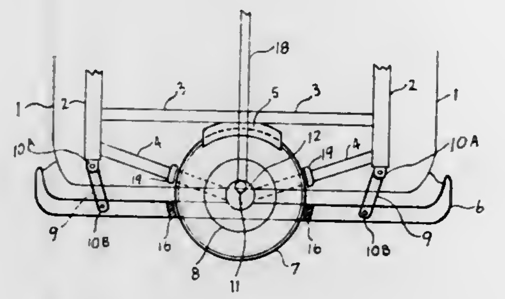
latching means responsive to the movement of said bracket; and

locking means located within the recessed portion of said pan capable by itself or in combination with a removable lock of fixing said bracket in a locked position.

3,866,962
LATERAL MOTION BUMPER SYSTEM

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137
Continuation-in-part of Ser. No. 325,822, Jan. 22, 1973,. This application Sept. 24, 1973, Ser. No. 400,225
Int. Cl. B60r *19/10;* **B61f** *19/04;* **B61g** *11/08*

U.S. Cl. 293—19 **7 Claims**

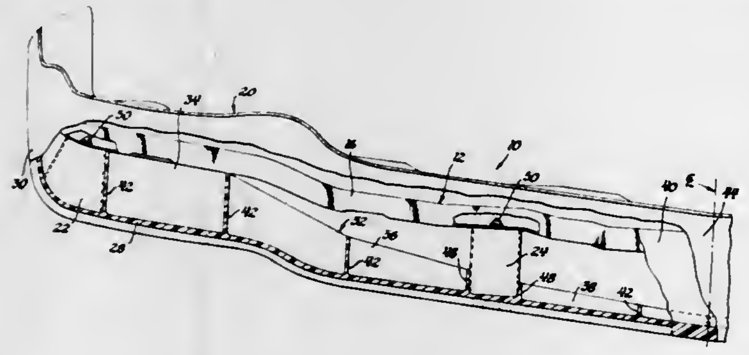


1. A lateral motion bumper system for a motor vehicle having a frame comprising, a bumper rail mounted on a longitudinal extremity of said frame transversely thereof, a wheel and inflated tire horizontally positioned and partially surrounded by said bumper rail, stop members for bearing against said tire and said frame, and hinge means connecting said bumper rail and said frame so that when said bumper rail strikes an obstruction before it, the rail will be moved transversely and longitudinally of the vehicle to strongly thrust the wheel and tire against the stop members.

3,866,963
ENERGY ABSORBING BUMPER ASSEMBLY

Peter A. Weller, Durham, N.H., assignor to McCord Corporation, Detroit, Mich.
Filed Aug. 13, 1973, Ser. No. 388,025
Int. Cl. B60r *19/08*

U.S. Cl. 293—88 **27 Claims**

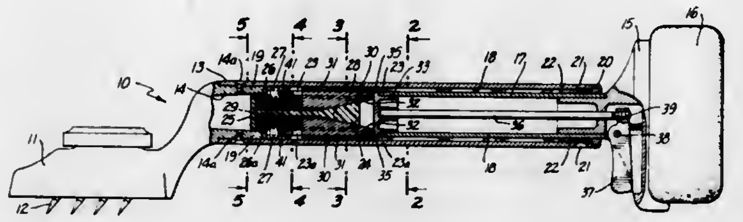


1. An energy absorbing bumper assembly comprising: a mounting means adapted for attachment to a vehicle, an elongated shell disposed adjacent said mounting means, first bumper means disposed between said mounting means and said shell for absorbing a first quantity of energy, and second bumper means disposed between said mounting means and said shell for absorbing a second quantity of energy, said second quantity of energy being different than said first quantity, said first and second bumper means being spaced longitudinally along said shell, said first bumper means including a plurality of spaced blocks of elastomeric material, said shell having a varying configuration therealong and said second bumper means varies in configuration longitudinally along said shell.

3,866,964
CARPET STRETCHER WITH TELESCOPING TUBING LOCKING DEVICE

Earle F. Prater, Long Beach, Calif., assignor to Roberts Consolidated Industries, Inc., City of Industry, Calif.
Filed Dec. 26, 1973, Ser. No. 427,578
Int. Cl. A47g *27/04*

U.S. Cl. 294—8.6 **7 Claims**



1. In an assembly of telescoping tubular members having releasable locking means therebetween, the combination of:

an outer tubular member;

an inner tubular member concentric in said outer tubular member;

a pair of shoe members in said outer tubular member and radially movable therein into and out of engagement with the inner wall of said outer tubular member;

wedge means extending between said shoe members and longitudinally movable with respect thereto in one direction to move said shoe members radially outwardly into locking engagement with said outer tubular member and in an opposite direction to permit said shoe members to move radially inwardly out of locking engagement with said outer tubular member;

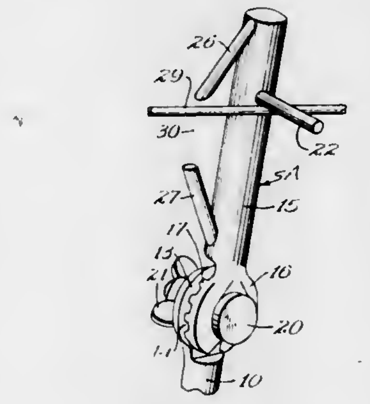
connecting means connecting said wedge means and said inner tubular member so that longitudinal movement of said inner tubular member in said one direction similarly moves said wedge means in said one direction and movement of said inner tubular member in said opposite direction permits movement of said wedge means in said opposite direction; and

release means connected to said shoe members, independent of said connecting means and movable to move said shoe members in said one direction and out of locking engagement with said wedge means.

3,866,965
HOT STICK ATTACHMENT

Howard A. Homeier, 625 1st. St., Kenyon, Minn. 55496
Filed Jan. 14, 1974, Ser. No. 433,073
Int. Cl. A47f *13/06*

U.S. Cl. 294—19 R **7 Claims**



1. An attachment for the upper end of a hot stick including: a first arm projecting radially from the attachment on a first plane through the axis of the attachment,

a pair of inclined arms projecting from the hot stick attachment on a second plane through the axis of said attachment in angularly spaced relation from said first plane,

said second arms including a first arm projecting in outwardly and downwardly extending relation and a second arm in outwardly and upwardly inclined relation from said attachment to terminate in spaced relation to provide a gap between the extremities of said inclined arms,

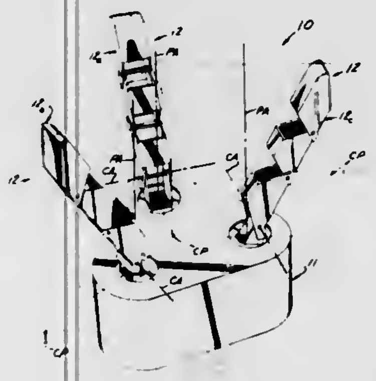
said gap being slightly below a third plane substantially normal to the axis of said attachment and through the axis of said radially projecting first arm, whereby

said hot stick may be rested against wire to be engaged with said first arm above said wire and the attachment may be lowered until the radial first arm rests upon the wire, and the hot stick may be turned about its axis until said wire extends through said gap.

3,866,966
MULTIPLE PREHENSION MANIPULATOR

Frank R. Skinner, II, 2248 Ann Dr., St. Joseph, Mich.
Division of Ser. No. 360,022, May 14, 1973, abandoned. This application Mar. 5, 1974, Ser. No. 448,342
Int. Cl. A61f *1/06*

U.S. Cl. 294—106 **9 Claims**



1. A multiple prehension manipulator mechanism comprising:

a plurality of finger means;

finger drive means for selectively opening and closing said finger means to grasp; and,

positioning drive means for selectively positioning said finger means so that at least two of said finger means are aligned along a common path in direct opposition to each other at a first position, and are parallel to each other and laterally spaced from each other in a second position.

3,866,967
TRUCK AIR FOILS

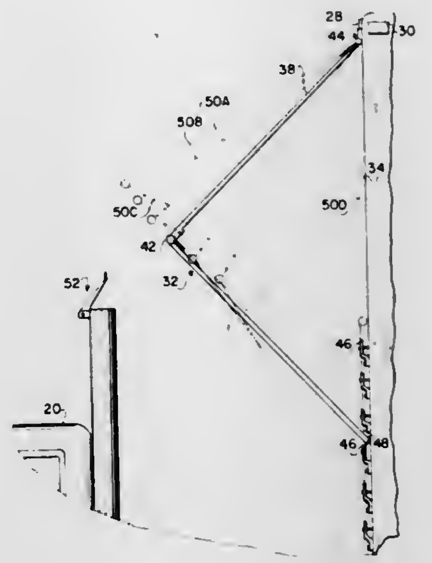
Robert G. Landry, 45 Rachel Blvd., Lewiston, Maine 04240, and Sherman R. Jenney, 27 Rochelle St., Auburn, Maine 04210
Filed Oct. 16, 1973, Ser. No. 407,029
Int. Cl. B60j *9/04*

U.S. Cl. 296—1 S **9 Claims**

1. A truck air foil mounted on the front surface of a box thereof, and the like, comprising:

A. a generally triangular shaped air foil including:
  i. a substantially rectangularly shaped solid top portion;
  ii. a substantially rectangularly shaped solid bottom portion; and
  iii. means hingedly and adjustably interconnecting said top and bottom portions;

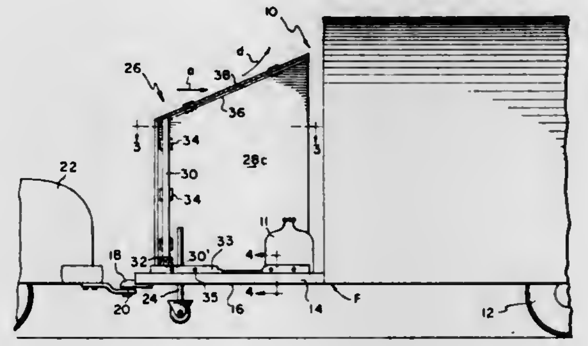
B. a mounting means for said air foil including:
  i. means connecting said air foil to said box by attaching a hinge to said box and to said substantially rectangularly shaped top portion on its free edge opposite the edge hingedly and adjustably interconnecting said top and bottom portions; and,
  ii. a plurality of parrallel vertically spaced positioning brackets on said surface of said box hingedly and adjustably connecting the substantially rectangularly shaped bottom portion to said box by engaging the free edge of said bottom portion opposite the edge hingedly and adjustably interconnecting said top and bottom portions, whereby the angular configuration and position of said air foil can be adjustably varied by selectively connecting said free edge of said bottom portion to different positioning brackets on said box, and whereby said airfoils are capable of movement to a stored inoperative position with respect to said box to minimize overall box dimentions.



3,866,968
DRAG REDUCING APPARATUS FOR A TRAILER

Jack R. Donahue, Vaughn Trailer Park, Box 45, Care, Mich. 48723
Filed Sept. 27, 1973, Ser. No. 401,369
Int. Cl. B62d *37/02*

U.S. Cl. 296—1 S **6 Claims**



1. Drag reducing apparatus for detachably mounting on the front of a trailer and the like comprising:

a pair of side walls each having an upwardly, rearwardly inclined upper edge portion;

means swingably connecting said side walls for movement between rearwardly diverging, operative positions and inoperative, folded positions;

a top wall; and

means mounting said top wall on one of said side walls for swinging movement between an upwardly inclined position in which it spans the inclined upper edge portions of said side walls when said side walls are in said operative positions, and a position extending alongside at least one of said side walls when said side walls are in said inoperative positions so that said apparatus can be removed and folded for storage.

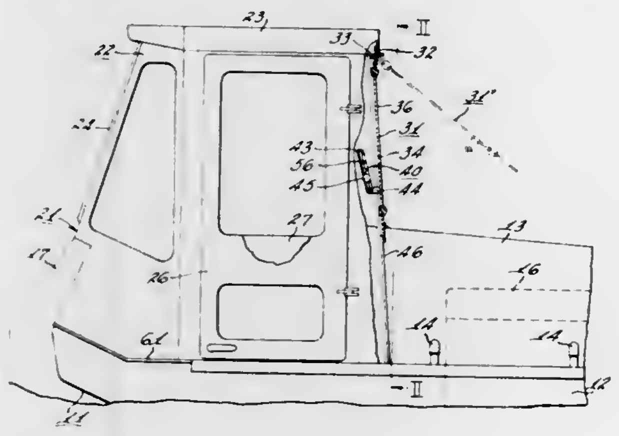
3,866,969
OPERATOR'S COMPARTMENT WITH SWINGING WINDOW

Don G. Sandrock, McHenry, and Roy E. Kline, Wadsworth, both of Ill., assignors to Fiat-Allis Construction Machinery, Inc., Milwaukee, Wis.

Filed Aug. 16, 1973, Ser. No. 388,973

Int. Cl. B60j *1/00;* **B62d** *33/06*

U.S. Cl. 296—28 C **7 Claims**



1. An operator's compartment for a motor vehicle of the type having a removable engine hood, said compartment comprising:

a basic structure including a top and side walls,

a window panel structure pivotally connected near its top to said basic structure for outward and upward swinging movement about a transverse axis between closed and open positions and having a bottom sealing edge adapted to sealingly engage the top of said hood, and

side panels releasably secured to said basic structure having laterally inward seal edges adapted to sealingly engage opposite sides, respectively, of said hood and having top portions in lapped engagement with laterally spaced bottom portions of said window panel structure when the latter is in its closed position, said side panels being laterally adjustable relative to said basic structure.

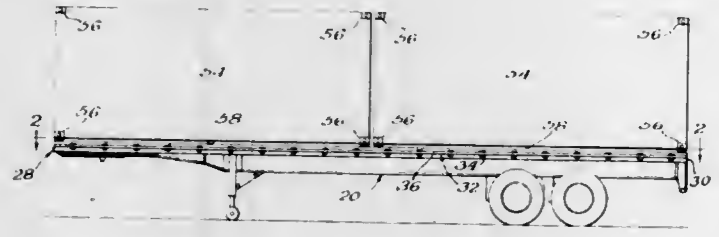
3,866,970
TWIST LOCK CONTAINER SUPPORT

Phillip D. Schwiebert, 599 Greenleaf, Glencoe, Ill. 60022

Filed June 19, 1972, Ser. No. 263,981

Int. Cl. B60p *1/64;* **B65j** *1/22*

U.S. Cl. 296—35 A **16 Claims**



1. An improved twist lock container support which is adapted to be attached to a trailer for transporting freight containers and which is adapted to secure a conventional, twist lock corner fitting of a freight container to the trailer during transport, the improved container support comprising:

a platform including a first aperture therein having a generally vertical axis and including first detent means on the lower surface thereof, with the first detent means being spaced from and about said vertical axis of the first aperture;

means for mounting the platform to a structural member of the trailer, adjacent to the periphery of the trailer, and for positioning the platform in a first position wherein the platform is disposed in a generally horizontal plane defined by the bottom surface of the freight containers transported on the trailer;

a locking cone which is carried by the platform and which includes a head portion that projects upwardly above the upper surface of the platform and a shaft portion that is connected at one end to the head portion and that extends through the first aperture in the platform such that its other end is below the lower surface of the platform, the head portion of the locking cone being adapted to be rotatably moved, about said vertical axis and with respect to the platform, between a first position wherein the head portion can be received within the aperture of the corner fitting of a freight container positioned on the trailer such that the corner fitting rests on the upper surface of the platform and a second position wherein the head portion secures the corner fitting and the container support;

an operating handle, disposed below the plane of the platform, having its one end projecting from said vertical axis toward the periphery of the trailer so that the one end can be grasped by a person actuating the container support and having its other end projecting inwardly beyond said vertical axis;

means for connecting the operating handle, intermediate its ends, with the othehr end of the shaft portion of the cone so that rotational movement of the operating handle, about said vertical axis and in a plane substantially parallel to said horizontal plane, results in a corresponding rotational movement of the head portion of the cone, with the connection means also permitting limited vertical pivotal movement of the handle with respect to the shaft portion of the cone;

second detent means carried by the operating handle between the connection means and the one end of the operating handle, such that the second detent means may selectively cooperate with the first detent means; and

means for resiliently biasing the operating handle so that the second detent means is normally biased upwardly against the lower surface of the platform, the biasing means including a spring disposed between the other end of the operating handle ad the lower surface of the platform and normally biasing the other end of the operating handle downwardly away from the lower surface of the platform.

3,866,971
MEANS FOR FASTENING A DRIVER PROTECTION SCREEN ON THE FRONT OF A MOTORCYCLE FRAME

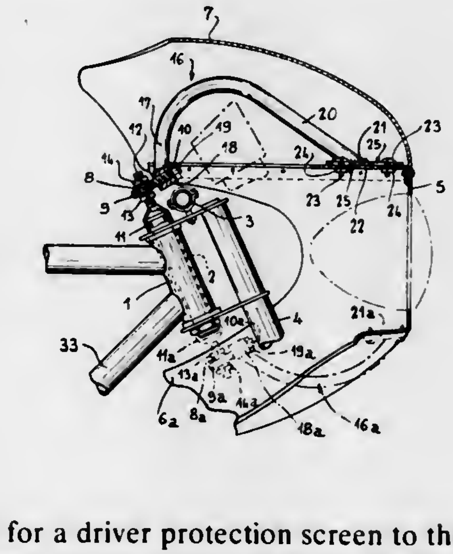
Daniel Hugon, 38 Rue Pasteur, Moirans-En-Montagne, France

Filed May 17, 1973, Ser. No. 361,206

Claims priority, application France, Dec. 8, 1972, 72.44436

Int. Cl. B62j *17/00*

U.S. Cl. 296—78.1 **10 Claims**



1. Fastening for a driver protection screen to the front of a motorcycle frame having a pivot shaft for handle bars, comprising: a pivot connection fixed to the screen and consisting of a pivot element fixed to move intergrally with the handle bars and disposed coaxially to their pivot shaft to support and orient the screen axially in the plane of symmetry of the motorcycle frame, and at least one brace fastening the screen to the motorcycle frame and locking it transversely in relation thereto in such position that the planes of symmetry of the said screen and frame remain at least approximately in coincidence regardless of the angular position of the handle bars relative to the frame; the pivot connection consisting of a swivel whose pivot forms a ring provided with a spherical peripheral bearing which is blocked on the pivot shaft about which the handle bars pivot on the frame; and the pivot being completed by a coaxial bolt designed to replace on the threaded end of the pivot shaft of the handle bars the bolt which normally retains it axially in the sleeve of the frame acting as a bearer therefor.

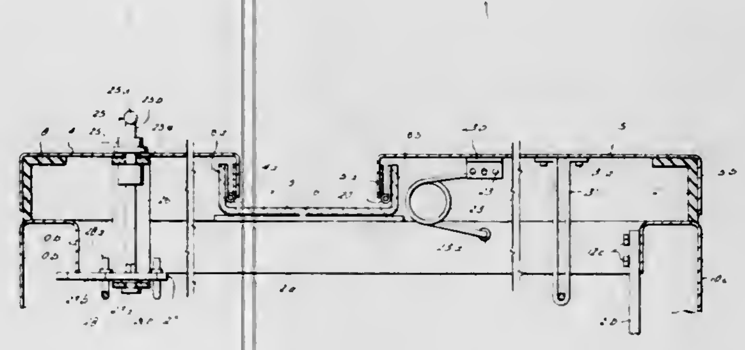
3,866,972
TRUCK BED COVER ASSEMBLY

Murray C. Reese, 3046 Golfcrest, Houston, Tex. 77017

Filed Feb. 28, 1973, Ser. No. 336,850

Int. Cl. B60j *7/10*

U.S. Cl. 296—137 B **8 Claims**



1. A flush-fitted cover apparatus for the bed of a pick-up truck or the like wherein said bed in formed of an upstanding front wall, upstanding side walls, a floor and a pivotally mounted rear gate, comprising:

a frame assembly adapted for mounting inside said bed, said frame assembly including, front and rear frame members having mounted therewith a central frame member positioned between said upstanding bed side walls;

a pair of cover panels and hinge means mounting said cover panels onto said central frame member for movement between closed and open positions;

each of said cover panels extending outwardly over said upstanding bed side walls with said cover panels in said closed position;

a lock means mounted with each of said cover panels for locking said cover panels in said closed position, each of said lock means including lock rods that, in a locked position, lockingly engage under said front and rear frame members to lock said cover panels in said closed position; and

said central frame member being U-shaped in cross-section and including a horizontal base and opposed, facing vertical sides extending upwardly from the base;

said hinge means including first and second hinge assemblies respectively mounted to the inward facing portions of said vertical sides and to said cover panels whereby said cover panels are independently mounted onto said central frame member and respectively extend over said vertical sides when in the closed position to substantially prevent water leakage between said cover panels.

3,866,973
DENTAL PATIENTS CHAIR WITH AUTOMATIC ACTUATION

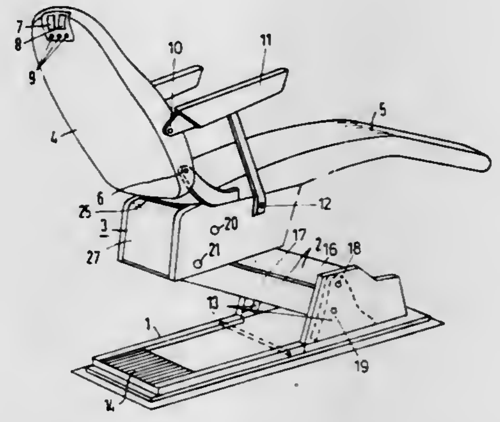
Erich Heubeck, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Oct. 17, 1973, Ser. No. 407,258

Claims priority, application Germany, Oct. 21, 1972, 2251737

Int. Cl. A61g *15/00*

U.S. Cl. 297—316 **8 Claims**



1. A dental patients' chair, comprising a chair upper part having an adjustable seat and an adjustable back, a carrier supporting said upper part, a base, a parallelogram carrying arm connected with said carrier and said base for adjusting the height of said upper part, devices for shifting said seat and said back, an electrical actuating device for said shifting devices, said actuating device comprising a rotary potentiometer constituting an actual value transmitter and having an axle and a key finger connected with said axle, said finger having a free end engaging the part of said parallelogram arm connected with said carrier and changing its position when the height position of the seat is changed for the purpose of detecting the change of the seat position relatively to the base, a value transmitter, a setting member connected with the last-mentioned transmitter to preset a selected position for the seat and a supporting part arranged on said carrier and carrying the last-mentioned transmitter and said setting member.

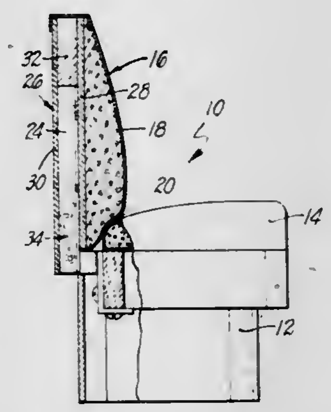
3,866,974
BENCH SEAT

Ferris E. Jones, 943 Millbury, La Puente, Calif. 91744

Filed June 25, 1973, Ser. No. 373,111

Int. Cl. A47c *7/40*

U.S. Cl. 297—353 **6 Claims**



1. A bench seat comprising: a seat frame, a seat member supported on said frame, a backrest member at the rear of said seat member, and means supporting said backrest member on said frame for vertical movement between a lower position of use wherein the lower edge of said backrest member is disposed in close proximity to the rear edge of said seat member and an elevated cleaning position wherein a relatively wide clearance space exists between the lower edge of the backrest

member and the rear edge of the seat member to facilitate cleaning of the bench seat

said bench seat having an angular L-shaped configuration, with said backrest member having angularly disposed portions to support a plurality of occupants, and said backrest portions are integrally joined for movement in unison between said use and cleaning positions,

said backrest member is removable from said frame by elevation of said latter member above said elevated cleaning position, and

said bench seat includes means for releasibly latching said backrest member in said elevated cleaning position.

3,866,975

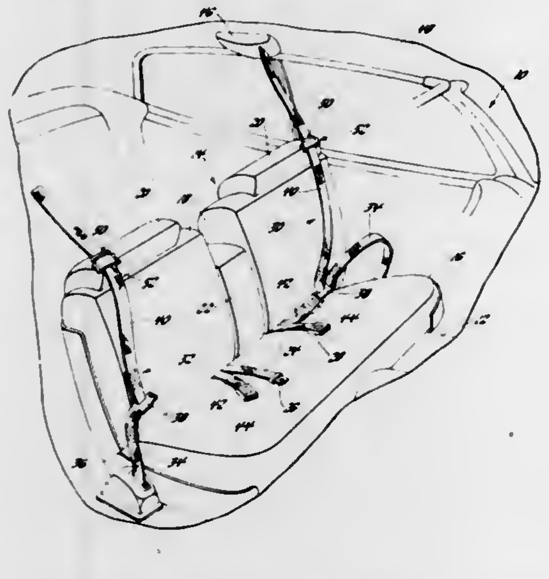
VEHICLE OCCUPANT RESTRAINT BELT SYSTEM WITH COMFORT CLIP ASSEMBLY

John J. Fricko, Harper Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 6, 1974, Ser. No. 439,893

Int. Cl. A62b *35/00*

U.S. Cl. 297—388 **3 Claims**



1. In an automotive vehicle including an occupant seat having cushion and back portions, a restraint belt system for a seated occupant comprising:

lap and shoulder belts, a common first buckle component secured to adjacent first ends of the lap and shoulder belts, a second buckle component for selectively attaching the first buckle component so as to secure the belts in an occupant restraining position, the lap belt extending generally laterally with respect to the vehicle across the occupant's lap while in the restraining position, and the shoulder belt extending diagonally across the occupant's chest while in the restraining position;

means attaching the other end of the lap belt so as to secure the lap belt in the occupant restraining position;

an inertia locking type belt retractor receiving the other end of the shoulder belt so as to normally tension the shoulder belt across the chest of the belted occupant and to store the shoulder belt upon detachment of the buckle components;

a stop through which the shoulder belt passes, the stop being located toward the shoulder belt retractor with respect to the shoulder of the belted occupant over which the shoulder belt passes while extending diagonally across the occupant's chest in the restraining position, and the stop allowing the shoulder belt to be freely pulled in either direction therethrough so that the shoulder belt is not impeded thereby during movement to the restraining position and does not, in and of itself, prevent the shoulder belt retractor from tensioning the shoulder belt across the occupant's chest; and

a plastic comfort clip assembly positioned on the shoulder belt between the first buckle component and the stop, the comfort clip assembly being of a two-piece construction including

an integral plastic comfort clip having a generally planar base that extends between the opposite edges of the shoulder belt in a generally parallel relationship with respect to the plane of this belt and having a pair of clamping portions integrally supported by the base so as to extend about the edges of the belt back toward each other and to terminate short of each other in a manner that defines a slot extending parallel to the longitudinal axis of the belt, and

an integral plastic retainer having a generally planar base located between the clamping portions of the clip and the shoulder belt so as to close the clip slot and to thereby prevent an intermediate portion of the shoulder belt from moving back through the slot after insertion thereof into the clip through the slot such that the clip assembly is thereby held on the shoulder belt,

the base and the clamping portions of the clip cooperating to clamp the shoulder belt therebetween with a force that is not so large as to prevent the clip assembly from being readily slid along the shoulder belt by a manual effort to provide adjustment thereof, the clamping force being sufficiently large to prevent the shoulder belt retractor from pulling the shoulder belt through the clip assembly, and the clip assembly engaging the stop to prevent movement therethrough so that appropriate manual adjustment of the clip assembly along the shoulder belt will prevent the shoulder belt retractor from tensioning the shoulder belt across the occupant's chest while in the restraining position.

3,866,976

SITTING FURNITURE AND STRUCTURAL UNITS THEREFOR

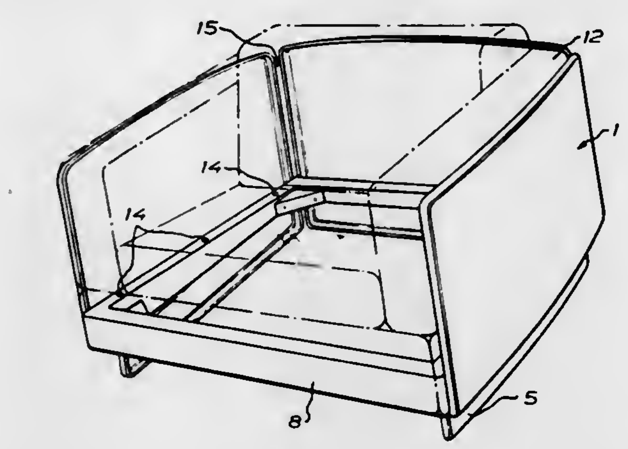
Folke E. H. Ohlsson, 302 Selby Ln., Atherton, Calif. 94025

Filed Aug. 8, 1973, Ser. No. 386,500

Claims priority, application Sweden, Aug. 10, 1972, 10370/72

Int. Cl. A47c *7/00*

U.S. Cl. 297—445 **6 Claims**



1. A structural unit for use in a piece of sitting furniture as back rest and lateral parts, comprising three integrally formed panel sections, viz, an upper panel section having substantially rectangular outline, an intermediate shelf panel section protruding at substantially right angles from said upper panel section and having substantially the outline of an isosceles trapezoid, the long base of which is the merging line between said intermediate shelf panel section and said upper panel section, and the non-parallel sides of which form an angle of substantially 45° with the long base of the isosceles trapezoid, and a lower panel section having substantially rectangular outline and protruding at substantially right angles from said intermediate shelf panel section, the merging line between said intermediate shelf panel section and said lower panel section forming one of the long sides of the rectangular outline of said lower panel section and the short base of the isosceles trapezoid outline of said intermediate shelf panel section, means on said lower panel section for supporting the structural unit on the floor, and connecting means on said shelf panel section for fastening a seat frame on said shelf panel section.

3,866,977

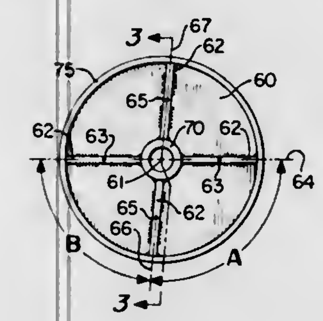
SUPPRESSION OF VIBRATION IN ROTATING DISCS

James E. Rice, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 254,022, May 17, 1972, Pat. No. 3,794,384. This application Jan. 28, 1974, Ser. No. 437,104

Int. Cl. B60b *3/04, 19/00*

U.S. Cl. 301—5 R **11 Claims**



1. The method of suppressing plate mode structural vibration of a disc rotating about an axis comprising supporting said disc by a plurality of pairs of vibration suppressing members fixed on said disc and extending inwardly of the circumference thereof, each respective member of each said pair thereof being disposed in diametrally balancing relation with the other member of such pair, and spacing said pairs of members at unequal angular intervals such that any interval differs from the next interval by at least 5°.

3,866,978

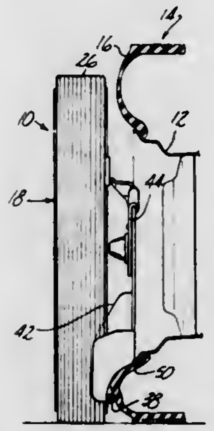
AUXILIARY WHEEL

Maynard W. Fine, 7178 Stonebrook Rd., West Bloomfield, Mich.

Filed Apr. 17, 1973, Ser. No. 351,961

Int. Cl. B60c *17/04*

U.S. Cl. 301—39 T **10 Claims**



1. An auxiliary wheel for use with a conventional pneumatic tired wheel of a vehicle when the pneumatic tire carried by the rim of the conventional wheel is inoperative, said auxiliary wheel comprising;

a circular rim member having an outer diameter greater than the rim of said conventional wheel;

a tire carried on the outer peripheral surface of said circular rim member;

structural support means interconnecting portions of the inner periphery of said circular rim member;

a coupling member having attaching means for releasably attaching said member having a portion thereof arranged to extend radially beyond said attaching means;

means pivotally connecting said extended coupling member portion to said circular rim member, said circular rim member being in a non-coaxial position with respect to said wheel rim when said coupling member is attached thereto, said rim member being movable from said non-coaxial position to a coaxial position with respect to said wheel rim when said wheel is rotated a limited distance.

3,866,979

FAIL SAFE VEHICLE WHEEL BRAKING ANTI-LOCK SYSTEM

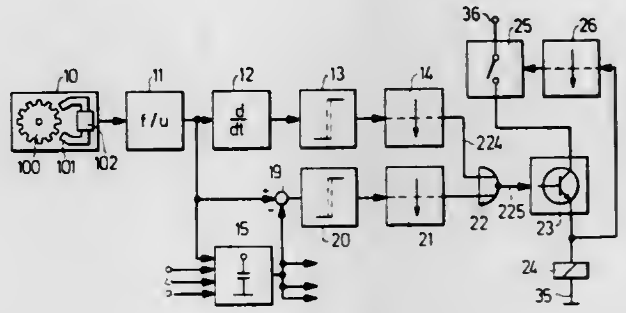
Friedrich Rabus, Schwieberidingen; Bernd Peter, Kornwestheim, and Hermann Eisele, Ditzingen, all of Germany, assignors to Robert Bosch GmbH, Gerlingen, Germany

Filed June 4, 1973, Ser. No. 366,691

Claims priority, application Germany, June 9, 1972, 2228104

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 AF **16 Claims**



1. In a vehicle wheel anti-lock system in which fluid pressure applied to a vehicle wheel brake is relieved, having a solenoid (24) to operate a bleed valve, and means (10, 11) providing a signal representative of wheel speed;

differentiating means (12) delivering a differentiated derivative signal representative of rate of change of wheel speed;

threshold switch means (13) having the differentiated speed signal applied thereto and providing a pressure relief control signal to the solenoid when the differentiated signal exceeds a predetermined limit;

valve switching means (23) responsive to the pressure relief control signal to control energization of the bleed valve solenoid;

a first timing circuit means (14, 21) interposed between the threshold switch means (13) and the bleed valve switching means (23) and energized upon beginning of the pressure relief signal to start measuring a predetermined time interval and to conduct said pressure relief signal to the bleed valve switching means (23) during said time interval only to permit response of the solenoid coil to relieve brake pressure, said timing circuit means (13), after said predetermined time interval, interrupting application of said pressure relief signal to the valve switching means (23) regardless of persistence or non-persistence of the pressure relief signal, whereby control of relief of braking pressure by said pressure relief signal is limited to said time interval, and the time of relief of fluid pressure applied to the brake is always limited to said predetermined time interval;

and an additional turn-off circuit (26) including a turn-off relay (25, 251) connected between the power supply (35, 36) and said bleed valve solenoid (24) to interrupt current to the solenoid upon response of said turn-off circuit when energized, said turn-off circuit comprising

a solenoid condition sensing circuit (27) connected to provide a signal when current flows through the solenoid to operate said solenoid;

a turn-off timing circuit (28) having a second timing period longer than the timing period of the first timing circuit (14);

a logic gate (**29**) connected to the sensing circuit (**27**) and to the turn-off timing circuit (**28**) and providing an output upon logical conjunction of:
a. current flow to the solenoid, and
b. elapse of said second timing period,
the output of said logic gate being connected to said turn-off control relay (**25, 251**) to interrupt power to the solenoid upon response of said logic circuit after elapse of the second timing period of said turn-off timing circuit (**28**).

3,866,980
BRAKE ANTI-LOCK TEST SYSTEM

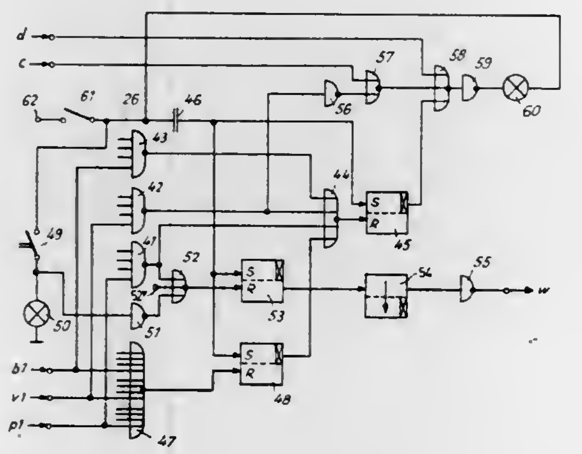
Hermann Eisele, Ditzingen; Harald Kizler, Schwieberdingen; Ardelio Gualco, Schwieberdingen; Friedrich Rabus, Schwieberdingen; Peter Jurgen Schmidt, Schwieberdingen, Germany; Johannes Locher, and Wolfgang Misch, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 28, 1973, Ser. No. 374,306

Claims priority, application Germany, June 29, 1972, 2231864

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 AF **27 Claims**



1. Test system to test operational reliability of a vehicle wheel brake anti-lock system having a pressure fluid operated brake, a pressure relief valve (**14**) in the pressure fluid line to the brake, controlled switching means (**38**) controlling operation of said relief valve (**14**), and a wheel acceleration sensing means (**29**) having means (**32, 33**) generating a deceleration signal (**b1**) connected to and controlling operation of the controlled switch means (**38**) when a predetermined level of wheel deceleration is sensed, said test and monitor system comprising
a pressure switch (**25**) connected to be responsive to fluid pressure in the respective wheel brake cylinder (**16**) and providing a pressure signal (**p1**);
electrical means (**54**) generating a simulated wheel deceleration signal (**w**) connected to the deceleration signal generating means (**32, 33**);
a test indicator (**60**);
a logic circuit (**44**) having said deceleration signal (**b1**) and said pressure signal (*p***1**) applied thereto and logically combining said signals to provide an output signal indicative of presence of the pressure signal (*p***1**) and the wheel deceleration signal (*b***1**);
and controlled switch means (**45**) connected to said indicator, and being controlled to set to "test" state upon energization of the controlled switching means, said controlled switch means being further connected to and controlled by the output of said logic circuit (**44**) to reset in response to an output from said logic circuit (**44**).

3,866,981
ANTISKID VEHICLE BRAKE SYSTEM FOR INDIVIDUAL WHEEL CONTROL

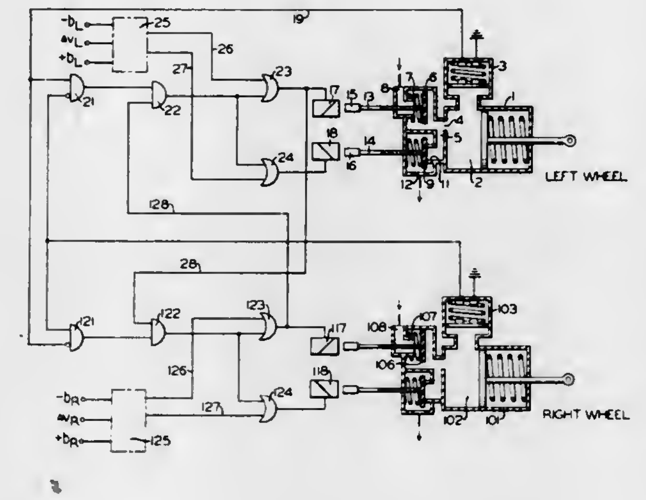
Alfred Klatt, Ronnenberg, Germany, assignor to WABCO Westinghouse GmbH, Hannover, Germany

Filed Mar. 27, 1974, Ser. No. 455,246

Claims priority, application Germany, June 29, 1973, 2333125

Int. Cl. B06t *8/12*

U.S. Cl. 303—21 A **5 Claims**



1. An antiskid control system for fluid pressure actuated brakes of a vehicle having a pair of independently rotatable wheels on a common axle of the vehicle, each wheel having monitoring means for generating a plurality of wheel behavior signals according to the dynamic conditions of that wheel and evaluation means controlled by said wheel behavior signals for effecting operation of modulator valve means disposed in the brake line connecting an operator controlled foot valve device to a brake cylinder of the wheel being monitored so as to adjust that wheel brake pressure, wherein the improvement comprises control circuit means for effecting operation of said modulator valve means in parallel with the evaluation means, said control circuit means including means for providing a brake pressure signal indicative of the wheel brake pressure being above or below a preselected value, said brake pressure signal of either one of the wheels being connected to said control circuit means of the other wheel to effect operation of the modulator valve means thereof when the brake pressure of the one wheel is below said preselected value and the brake pressure of the other wheel is above said preselected value.

3,866,982
FAILSAFE ANTISKID CONTROL FOR FLUID PRESSURE BRAKE SYSTEM

Georg Geier, Hannover, and Alfred Klatt, Ronnenberg, both of Germany, assignors to Wabco Westinghouse GmbH, Hannover, Germany

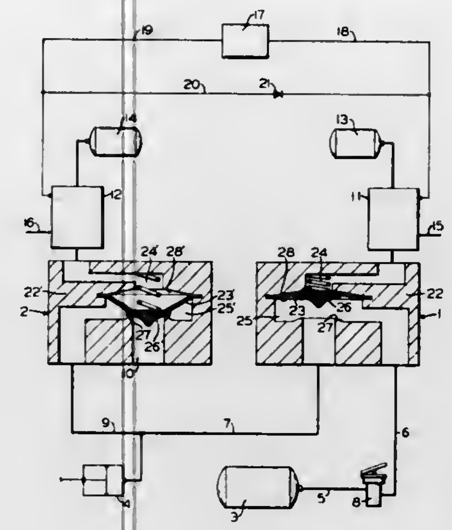
Filed Mar. 27, 1974, Ser. No. 455,248

Claims priority, application Germany, June 18, 1973, 2331003

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **5 Claims**

1. A vehicle antiskid brake control system of the type having wheel monitoring means for producing output signals according to the dynamic behavior of the wheel, a first one of said output signals being connectable with an inlet modulator valve and a second one of said output signals being conectable with an outlet modulator valve to control operation thereof for effecting adjustment of the wheel brake pressure during a cycle of wheel skid control, wherein the improvement comprises means for connecting said second output signal to said inlet valve in parallel with said first output signal to effect operation of said inlet valve when said outlet valve is operated in the absence of said first output signal.



3,866,983
ANTI-SKID DEVICE FOR AUTOMOTIVE VEHICLES

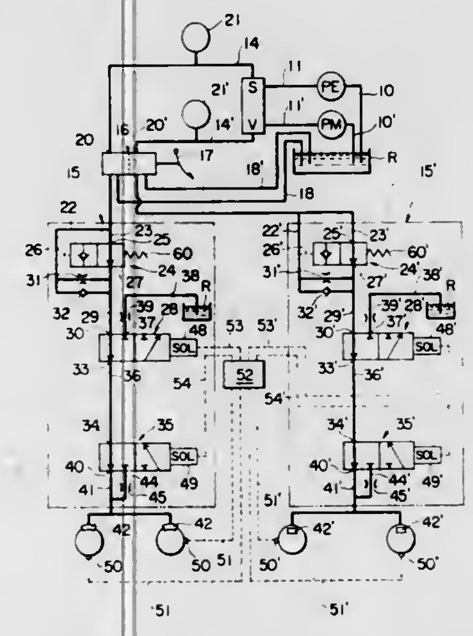
Toshiyuki Kondo, Toyota, Japan, assignor to Aisin Seiki kabushiki Kaisha, Kariya City, Japan

Filed May 22, 1974, Ser. No. 472,502

Claims priority, application Japan, June 1, 1973, 48-61692

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **6 Claims**



1. An anti-skid braking system for at least one wheel of a vehicle, comprising
a hydraulic fluid reservoir,
a hydraulic pressure pump having an inlet and an outlet, said inlet communicating with said reservoir,
a pressure operated brake,
conduit means connecting the outlet of said hydraulic pump to said pressure operated brake,
normally closed control valve means disposed in said conduit means, said normally closed control valve means being operatively connected with a brake pedal for selectively controlling said control valve means to control the flow of fluid through said conduit means,
pressure controlled valve means disposed in said conduit means, said pressure controlled valve means including,
means defining a first path from said hydraulic pressure pump to said pressure operated brake,
a throttle in said first path,
means defining a second path in parallel with said first path,
a valve member in said second path,
a control gate communicating with said pressure operated brake and responsive to the braking pressure to close said valve member and block said second path when the braking pressure exceeds a predetermined threshold value so that only available brake pressure applying path is said first path through said throttle, and
pressure discharging means including,
an electronic anti-skid control device sensitive to the dynamic state of said wheel, said electronic anti-skid control device being operatively connected with said pressure discharging means to actuate said pressure discharging means during a wheel braking operation in response to the dynamic state of the wheel being braked to selectively release the braking pressure being applied to said pressure operated brake to prevent a vehicle skidding condition from arising.

3,866,984
LOAD-DEPENDENT BRAKE FORCE DISTRIBUTOR WITH A FAILSAFE BYPASS VALVE

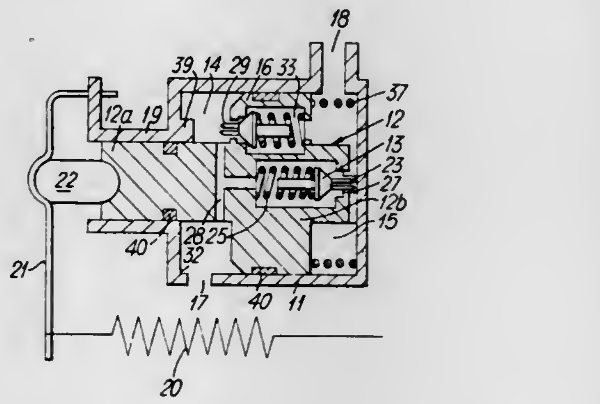
Hermann Seip, bad Vilbel, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Division of Ser. No. 301,040, Oct. 26, 1972. This application Jan. 14, 1974, Ser. No. 434,451

Claims priority, application Germany, Nov. 9, 1971. 2155706

Int. Cl. B60t *8/18, 11/34*

U.S. Cl. 303—22 R **4 Claims**

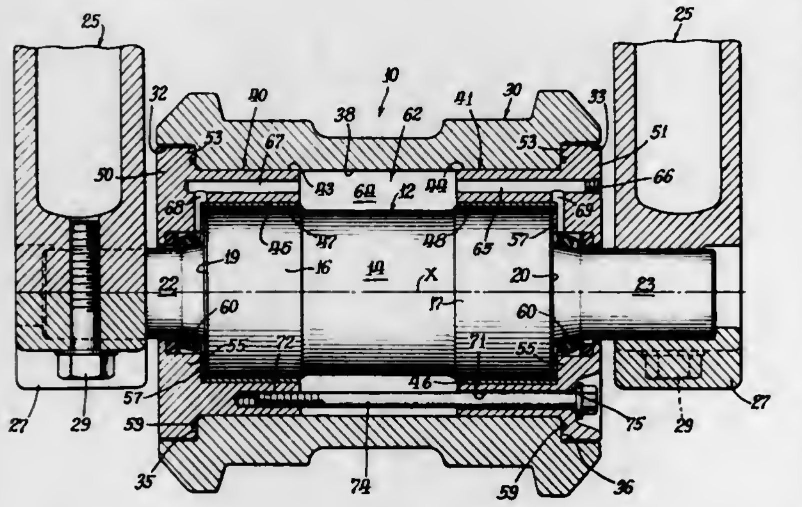


1. A load-dependent brake force distributor connected between a master cylinder and wheel brake cylinders comprising:
a cylinder;
a stepped piston disposed in a longitudinal slidable sealed relation in said cylinder;
an input pressure medium chamber formed between one end of said cylinder and one side of said stepped piston;
an output pressure medium chamber formed between the other end of said cylinder and the other side of said stepped piston;
a first valve disposed concentrically of said stepped piston to connect said input chamber to said output chamber in its open position;
a first arrangement connected to said stepped piston responsive to a load-dependent control force to open and close said first valve; and
a second arrangement associated with and actuated by said cylinder to provide a direct connection between said input chamber and said output chamber when said control force fails;
said cylinder having a first diameter and including
a cylindrical projection extending therefrom having a second diameter less than said first diameter;
said stepped piston including
a first portion spaced from said cylindrical projection having a third diameter less than said first diameter,
a second portion adjacent said cylindrical projection having a fourth diameter equal to said first diameter, and

a third portion having a fifth diameter equal to said second diameter slidably sealed to the inner surface of said cylindrical projection;
said first arrangement including
a traction spring exerting a force dependent upon said load,
a bar connected at one end to said cylindrical projection and at the other end to said traction spring, and
a push rod connected between said bar and said third portion of said stepped piston;
said cylinder including
a transverse closing wall spaced from the adjacent end of said first portion of said stepped piston;
said first and second portions of said stepped piston including
a cavity disposed concentrically of the longitudinal axis of said stepped piston,
an aperture at each end of said cavity, one of said apertures communicating with said input chamber and the other of said apertures communicating with said output chamber,
said first valve being disposed within said cavity, and
a valve spring disposed about said valve within said cavity to assist in the control of said first valve;
said first valve including
a pin projecting from one end thereof through said other of said apertures, said pin abutting said closing wall and opening said first valve against the force of said valve spring when a predetermined amount of said control force is applied to said third portion of said stepped piston;
said second arrangement including
a normally closed second valve which is opened when said control force fails by the movement of said stepped piston away from said closing wall to cause said cylinder to engage and open said second valve;
said cylindrical projection including
a projection parallel to the longitudinal axis of said stepped piston extending into said input chamber; and said second valve is disposed in said second portion of said stepped piston parallel to said longitudinal axis thereof in alignment with said projection;
said second valve including
a tappet extending therefrom to engage said projection to open said second valve upon failure of said control force.

3,866,985
TRACK ROLLER

Gerald E. Whitehurst, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 4, 1974, Ser. No. 447,986
Int. Cl. F16c *13/02*
U.S. Cl. 308—20 **6 Claims**

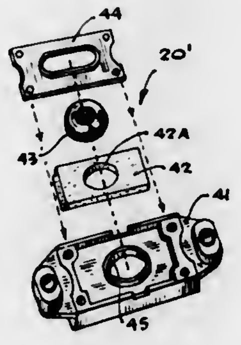


1. A track roller for rotation about a predetermined axis comprising;

a cylindrical rim concentric to said axis and including a pair of opposed, axially spaced end faces and a longitudinal, centrally disposed bore formed therethrough transpiercing said end faces;
an elongated, longitudinally disposed shaft including a relatively large diameter center portion having a pair of axially spaced cylindrical bearing surfaces formed thereon and opposite ends defining a pair of opposed, axially spaced thrust surfaces;
a pair of cylindrical retainer sleeves individually positionable in axially spaced, radially supporting relation within said bore of said rim and about a respective one of said bearing surfaces of said shaft, each of said retainer sleeves being provided with a flange formed on one end thereof having a radially outwardly extending flange portion positionable along a respective one of said end faces of said rim and a radially inwardly extending flange portion positionable along a respective one of said thrust surfaces of said shaft; and
tie means extendible between said retainer sleeves axially to clamp said outwardly extending flange portions of said retainer sleeves against the opposed end faces of said rim to secure said rim and said retainer sleeves in unitary assembly about said shaft.

3,866,986
RESILIENT SPHEROIDAL BEARING SUPPORTS

Frank Holper, Cary, Ill., assignor to Original Equipment Motors Inc., Crystal Lake, Ill.
Filed Oct. 5, 1973, Ser. No. 404,378
Int. Cl. F16c *23/04, 23/10, 27/06*
U.S. Cl. 308—72 **6 Claims**

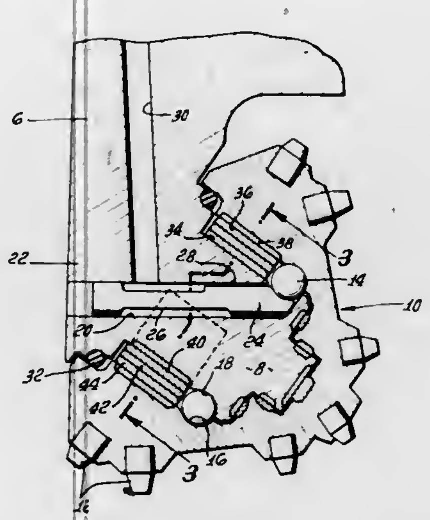


1. A spring retainer for a bearing having an axial bore and a spherical surface and comprising a plate of spring metal having an elongated oval-shaped opening formed in the plane thereof, the metal surrounding said opening being bent outwardly to present a continuous collar-like wall having opposite sides convergent toward one another outwardly of said opening, said wall having a free edge and the spaced portions of said free edge corresponding to said opposite sides being substantially parallel to one another and spaced from one another a distance sufficient to enable the bearing to be disposed therein with the spherical surface of the bearing captured by the convergent sides of said wall.

3,866,987
DRILL BIT WITH LAMINATED FRICTION BEARING

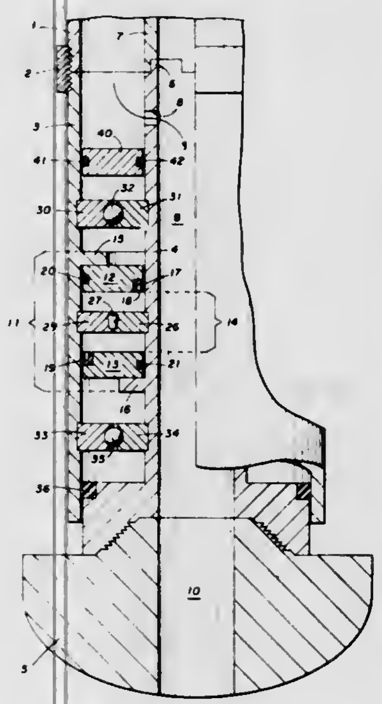
Lloyd L. Garner, Los Alamitos, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Jan. 14, 1974, Ser. No. 433,068
Int. Cl. F16c *19/00*
U.S. Cl. 308—8.2 **9 Claims**

1. A bearing assembly for a drill bit having a leg journal and a rotary cutter thereon, the leg journal and cutter having concentric opposed surfaces of revolution comprising bearing surfaces, wherein the improvement comprises: at least a pair of concentric friction bearing rings, one ring comprising an inner ring in rotary sliding contact with the leg journal bearing surface, an outer ring in rotary sliding contact with the rotary cutter bearing surface, and said concentric rings being in frictional engagement and rotatable relative to each other.



3,866,988
BEARING SYSTEM

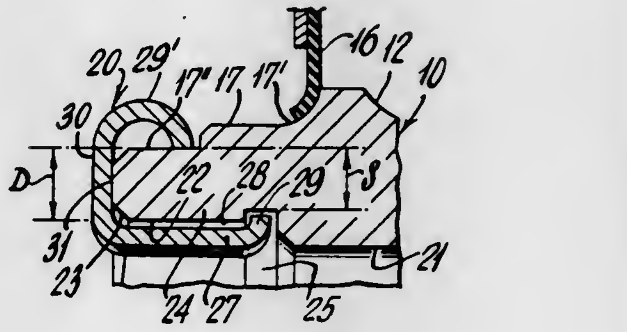
John H. Striegler, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Feb. 26, 1973, Ser. No. 335,539
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.1 **11 Claims**



1. In a well drilling tool whereby a drill bit is rotated in the earth on a downhole motor shaft means to drill a wellbore, a housing carried concentric with said shaft and spaced therefrom thereby providing an annular chamber between said housing and shaft, the improvement comprising at least one liquid thrust bearing means operably connected between said housing and shaft in said annular chamber, said at least one liquid bearing means comprising at least one first seal means, at least one second seal means, said first and second seal means being spaced apart to define an inner chamber therebetween, said first seal means coacting with one of said housing and shaft, said second seal means coacting with whichever of said housing and shaft said first seal means does not coact with, whereby a force can be transmitted between said housing and shaft by way of said first and second seal means and through said inner chamber, and said first and second seal means are adapted to keep a liquid within said inner chamber.

3,866,989
LOCKING DEVICE FOR A BEARING

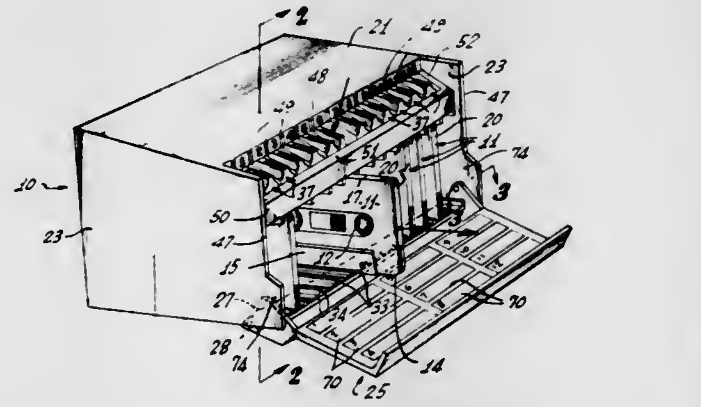
Howell L. Potter, New Britain, Conn., assignor to Textron Inc., Providence, R.I.
Division of Ser. No. 194,676, Nov. 1, 1971, Pat. No. 3,792,880. This application Aug. 1, 1973, Ser. No. 384,833
Int. Cl. F16c *33/30*
U.S. Cl. 308—236 **19 Claims**



1. In an antifriction bearing, inner and outer ring components having opposed raceways and coaxially spaced by antifriction elements in said raceways, one of said ring components having inner and outer cylindrical surfaces one of which is sized to fit a given cylindrical mounting profile, said one ring component having an annular axially extending end portion projecting in axially offset relation to a body portion containing the raceway of said one ring component, said end portion extending radially between spaced geometric cylinders containing said inner and outer cylindrical surfaces, said end portion adjacent said one surface being relieved over a limited arcuate extent about an axis eccentric to the axis of said one surface, said end portion including circumferentially extending radial flange means defining an axially inner retaining wall portion, and clip means comprising a generally C-shaped stiffly compliant metal ribbon engaging over the axially outer end of said flange means at a limited location thereof, said clip means including a tongue of thickness less than the maximum extent of eccentric relief and of arcuate extent substantially less than said limited arcuate extent, said tongue projecting axially inwardly within the relief region of said one ring component, said clip means being limited to substantially said limited angular location, and a radially projecting integral flange portion on said tongue extending into retaining radial overlap with the axially inner wall portion of said flange means.

3,866,990
STORAGE AND DISPENSING CABINET

William P. McRae, 19969 Acre St., Northridge, Calif. 91324
Filed Oct. 18, 1973, Ser. No. 407,751
Int. Cl. A47b *81/06*
U.S. Cl. 312—15 **14 Claims**



1. A storage and dispensing cabinet for generally rectangular tape cassettes of predetermined length, width and thick-

ness, each having a recess in a predetermined position on one longitudinal edge, said cabinet comprising:

a one-piece, box-like plastic case having upright side walls, open front and rear sides, a top wall having a front edge spaced rearwardly from said front side, and a bottom wall that converges forwardly toward said top wall;

said front side being spaced from said rear side a distance greater than the length of the tape cassettes, and said top wall being spaced from said bottom wall a distance substantially greater than the width of the cassettes;

a rear wall snap-fitted onto said case and closing said rear side;

supporting means for said case beneath said bottom wall for holding the case on a horizontal surface with said top wall substantially horizontal and said bottom wall inclined upwardly toward said front side;

a plurality of laterally spaced, parallel ribs on said bottom wall extending from adjacent said rear wall to adjacent said front side, and defining between them a plurality of slideways for tape cassettes;

a stop rib projecting forwardly from said rear wall for positioning engagement with tape cassettes on said slideways, said rib being spaced from said front side a distance approximately the same as the length of the cassettes;

a plurality of elongated, one-piece, molded plastic key levers disposed in side-by-side relation in said case beneath said top wall and having front end portions projecting forwardly beyond said top wall, and rear end portions terminating short of said rear wall, each of said key levers being vertically aligned with one of said slideways in a generally horizontally idle position, and having a transverse hole between its ends that is aligned with the holes in the other key levers;

a first elongated pivot rod extending generally horizontally through said holes and secured at its ends to said side walls;

a plurality of one-piece, L-shaped molded plastic ejector cranks disposed in side-by-side relation in said case beneath said top wall, each of said ejector cranks having an upper generally horizontal leg with a front end portion overlying the rear end portion of one of said key levers, a generally vertical leg extending downwardly along said rear wall in alignment with one of said slideways to lie behind a tape cassette engaging said stop rib, and a transverse hole therethrough adjacent the juncture of said legs and aligned with the holes in the other ejector cranks;

a second elongated pivot rod extending generally horizontally through said holes and secured at its ends to said side walls;

said key levers having upwardly projecting fingers adjacent their rear ends in free sliding engagement with the undersides of said generally horizontal legs, and downwardly projecting fingers adjacent their rear ends positioned for detenting engagement with the recesses in the cassettes; a depending flange formed integrally with the front edge of said top wall and terminating in a lower edge adjacent the tops of said key levers and spaced rearwardly from the front ends thereof, said flange having laterally spaced zones aligned with the key levers for displaying identifying indicia;

an elongated crossbar extending across said front side along said front ends of said key levers and covering the lower portions thereof, said crossbar being integrally joined at its ends to said side walls;

an elongated flat plate disposed beneath said front end portions and integrally joined at its ends to said side walls and along its front edge to said crossbar, said plate being spaced below said front end portions and having a rear edge spaced rearwardly from said first pivot rod for engaging the undersides of said key levers to determine the idle positions thereof, while permitting upward rocking of said rear end portions in response to depression of said front end portions;

and a cover door overlying said open front side and hingedly connected to said case adjacent said bottom wall to swing forwardly and downwardly into an open position in which the cover projects forwardly from the case, the inner side of said cover door having a plurality of identifying plates thereon for information correlating said key levers with the cassettes stored in said cabinet.

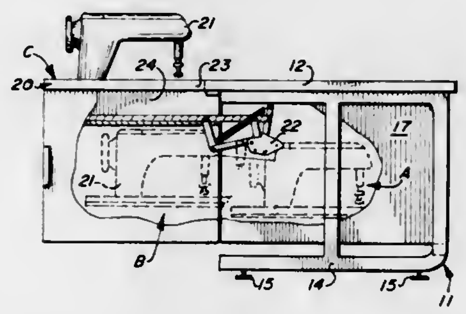
3,866,991
CANTILEVER SEWING MACHINE TABLE

Harry Wener, Phoenix, Ariz., assignor to Inc. International Education Sewing Manual, Phoenix, Ariz.

Filed Jan. 16, 1973, Ser. No. 324,137

Int. Cl. A47b *81/00*

U.S. Cl. 312—29 **1 Claim**



1. A cantilever type sewing machine table comprising in combination:

a pair of upstanding spaced U-shaped leg members,

each of said U-shaped leg members comprising a pair of legs horizontally arranged and facing in the same direction,

one of said legs of each of said members arranged to support a table top along its length and the other of said legs of each of said members being arranged for positioning along the floor,

an overhanging table top supported on said one of said legs of each of said members,

a compartment suspended from said table top between said members at one end of said table top,

a drophead machine support member supported on said table top within said compartment, said drophead machine support member comprising a platen and a sewing machine support telescopically arranged for relative movement longitudinally of each other a predetermined amount,

said sewing machine support moving on said platen a distance substantially equal to the overhang of said table top, and

clamping means mounted on said platen for cooperating with a fixed part thereof mounted on the under side of said table top for securing said platen and said table top in a common horizontal plane when said drophead machine support member is in machine operative position.

3,866,992
WRITING UTENSIL

Otto Katz, Schwabach, Germany, assignor to A. W. Faber-Castell, Stein bei Nurnberg, Germany

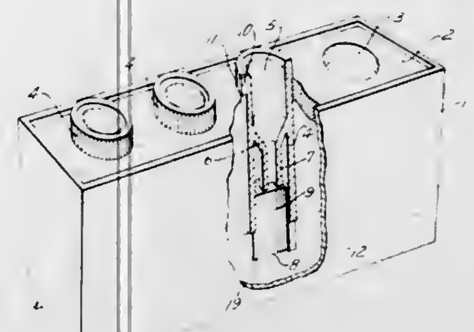
Filed Nov. 13, 1973, Ser. No. 415,385

Claims priority, application Germany, Nov. 15, 1972, 2255943

Int. Cl. A47f *7/00*

U.S. Cl. 211—69.5 **9 Claims**

1. In a writing utensil, a combination comprising a writing instrument having a barrel and a writing tip which is to be kept moist; a moistening receptacle adapted to contain a liquid and having a normally upwardly facing open side, a cover on said open side and provided with a hole, a tubular insert received in said hole and having a larger-diameter axially outer tubular portion having an inner open end, and an open-ended smaller-diameter axially inner tubular portion located within said axially outer tubular portion and extending from a region intermediate said hole and said inner open end towards but short of the latter, and a terminal insert partly received in said inner open end in abutment with said axially inner tubular portion and provided with a plurality of capillaries through which liquid can pass from the interior of said receptacle so that, when said writing tip is received in said tubular portion, the writing tip will remain moist; and cooperating sealing surfaces on said barrel rearwardly of said writing tip and in said tubular insert at said region, said sealing surfaces engaging one another when said writing instrument is inserted into said tubular insert so as to seal the interior of said receptacle against the ambient atmosphere.



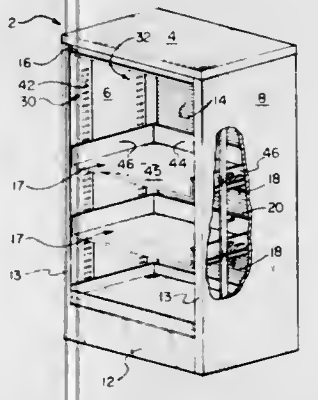
3,866,993
CABINET INTERLOCK MECHANISM

Carl J. Dean, Charlton; David M. Wright, Shrewsbury, and Bernard T. Cournoyer, Holden, all of Mass., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Sept. 27, 1973, Ser. No. 401,385

Int. Cl. E05b *65/46*

U.S. Cl. 312—216 **7 Claims**



1. In a filing cabinet containing at least two pull-out storage components, apparatus for maintaining prescribed ones of said components in retracted position when a selected one of said components is pulled out to an extended position, comprising:

a slidable locking bar assembly spanning said pull-out components, said locking bar assembly comprising a locking bar, at least two locking pins, one for each of said pull-out components, and lock means releasably securing said locking pins to said locking bar, said locking pins being moveable lengthwise of said locking bar when said lock means are released, said locking pins projecting laterally of said locking bar into adjacent relation with said pull-out components, and

cam means mounted on each of said pull-out components in position to engage the adjacent locking pin, said cam means each comprising a first portion for engaging and camming the adjacent locking pin so as to move said locking bar in a first direction from a first unlocking position to a second locking position when the pull-out component on which said cam means is mounted is pulled out to an open position, and a second portion for engaging said adjacent locking pin so as to prevent the pulling out of the pull-out component on which said cam means is mounted when said locking bar has been moved to said second locking position by the camming action of another of said cam means on another of said locking pins.

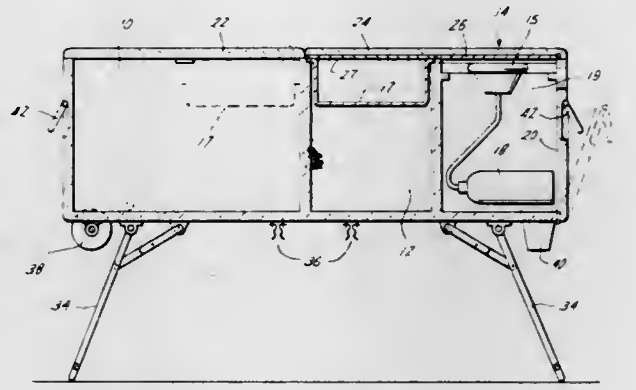
3,866,994
CAMPING UNIT

Tracy Earl Bonin, Rt. 1, Box 321-C, Conroe, Tex. 77301

Filed Dec. 14, 1973, Ser. No. 424,909

Int. Cl. A47b *77/08*

U.S. Cl. 312—236 **6 Claims**



1. A camping unit comprising,

an insulated body having bottom, end wall and side wall body members,

a first partition in the insulated body spaced from one of the end wall body members forming a first compartment,

a second partition in the insulated body spaced from the other of the end wall body members and the first partition forming a second compartment between the first and second partitions and a third compartment between the second partition and the other of the end wall body members,

the first, second and third compartments adapted for use as an ice chest, a storage compartment and a stove compartment,

a third partition in the insulated body forming with at least one of the body members a water compartment, the third partition forming a wall of the compartment used as the ice chest, the ice chest having a wall forming at least a portion of a wall of the storage compartment whereby water in the water compartment is cooled by ice in the ice chest and the cooled water assists in maintaining a cool temperature in the storage compartment, and

lids on the insulated body closing the providing access to at least the compartments used as the ice chest and the storage compartment.

3,866,995
ROTATABLE ELECTRIC CONNECTOR

Louis Campo, 99 Waverly Ave., Patchogue, N.Y. 11772

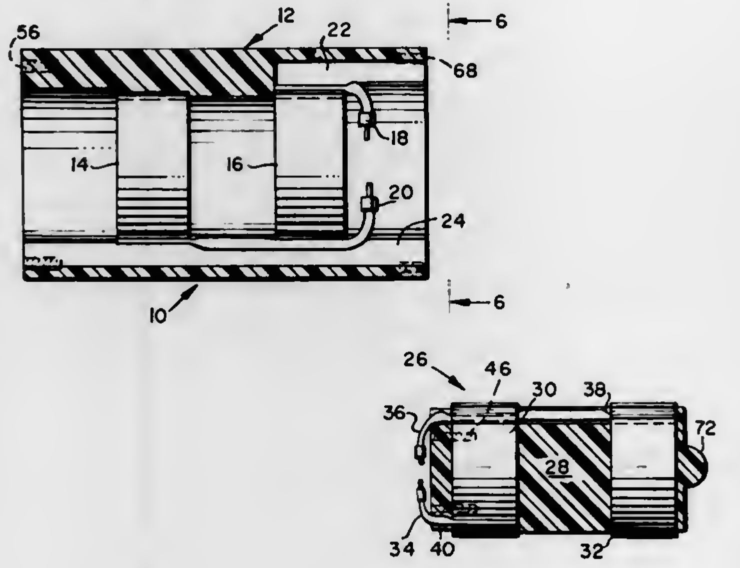
Filed June 26, 1973, Ser. No. 373,857

Int. Cl. H01r *39/00*

U.S. Cl. 339—8 R **6 Claims**

1. A rotatable electrical connector comprising, in combination, a shell-shaped member of electrically insulating material; a plurality of electrically conductive rings attached to the internal wall of said shell-shaped member in spaced relationship from each other; a core-shaped member of electrically insulating material and rotatable within said shell member, said core-shaped member being supported by said shell-shaped member on the interior of said shell-shaped member; a plurality of conductive rings mounted in spaced relationship on the external surface of said core-shaped member, each ring on said core-shaped member being in electrical contact with one ring attached to said shell-shaped member; a first plurality of conductors connected to said conductive rings on said shell-shaped member; and a second plurality of conductors connected to said conductive rings on said core-shaped member, so that electrical current applied to said first plurality of conductors is transmitted to said second plurality of conduc-

tors through said conductive rings while said core-shaped member is rotating with respect to said shell-shaped member and when said core-shaped member is stationary with respect to said shell-shaped member, said shell-shaped member and said core-shaped member being of cylindrical shape, said conductive rings on said shell-shaped member and said core-shaped member being spaced along the axes of said cylindrical shell-shaped member and core-shaped member; a cover member attached to one end of said shell-shaped member, said first plurality of conductors being attached to said cover member; a first cap member attached to one end of said core-shaped member, said second plurality of conductors being attached to said cap member; a second cap member abutting said first cap member and fastened to said shell-shaped member for covering the ends of said second plurality of conductors; and a third cap member attached to said shell-shaped member for covering the ends of said first plurality of conductors, said third cap member abutting said cover member.



3,866,996
MULTI-CONDUCTOR CONNECTOR APPARATUS FOR TELEPHONE AND OTHER DATA TRANSMISSION SYSTEMS

Luejene Elkins, Chicago, Ill., assignor to Bunker Ramo Corporation, Oakbrook, Ill.
Filed Oct. 16, 1972, Ser. No. 297,713
Int. Cl. H01r *11/20*
U.S. Cl. 339—99 R **9 Claims**

1. Connector apparatus for rapidly and interchangeably connecting an electrical data handling instrument to a data transmission system for communication with other data handling instruments connected in the system, said connector apparatus comprising:

a single-instrument fixed connector station comprising:

an insulator base including a cover receiving outer surface; a first terminal block disposed within said surface; a plurality of bifurcated front-engagement quick-connection contacts mounted in said first terminal block and projecting outwardly thereof in a predetermined pattern including at least one longitudinally extending row, each contact including bifurcations to penetrate the insulation on a single communication conductor outwardly of said base and to complete an electrical connection thereto upon insertion of the conductor between the bifurcations of the contact; first cable mounting means within said surface for mounting the end portion of a multiple-conductor cable, comprising a part of said data-transmission system, on said insulator base, laterally spaced from and adjacent said terminal block and into electrical connection with one of said front-engagement contacts;

said base including within said surface, a wall between said cable mounting means and said terminal block with a plurality of outwardly open slots for insertion of said conductors to said contacts, a connector receiving slot longitudinally adjacent said terminal block, and a polarized shape to orient a mating connector for mating engagement with said contacts,

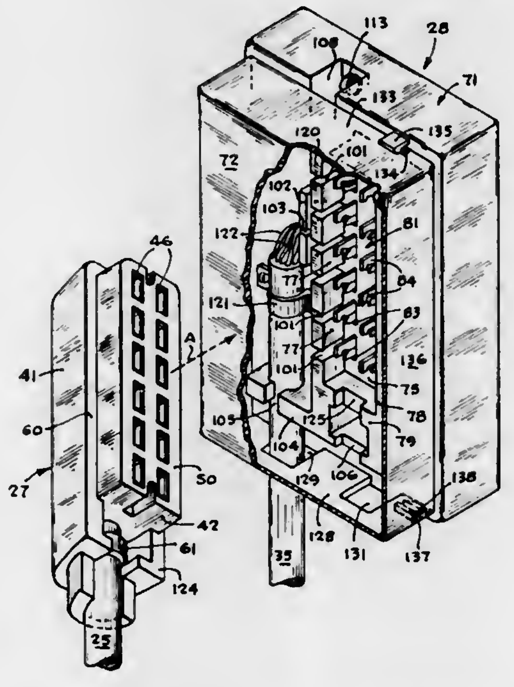
a cover, movable between a closed position covering said receptacle and an open position in which said receptacle is exposed;

and releasable latch means for latching said cover on said base in its closed position;

and an instrument cable connector comprising:

a connector housing including a second terminal block of polarized configuration corresponding to said polarized shape;

a plurality of female contacts mounted in said second terminal block, in said predetermined pattern; and second cable-mounting means for mounting the end portion of a multi-conductor cable, comprising a part of said data-handling instrument, in said connector housing, said housing affording a covered wiring channel to permit connection of each conductor from said cable to the inner end of one of said female contacts; said cable connector being directly mountable on said base of said fixed connector station with said cover in its open position, with said second terminal block extending into said polarized shape and said female contacts of said cable connector receiving said bifurcations of said front engagement contacts to interconnect the individual conductors of the two cables in accordance with said predetermined pattern.



3,866,997
PRINTED CIRCUIT BOARD CONNECTOR AND METHOD AND TOOL FOR REMOVING CONTACTS THEREFROM

Erich Kreutter, Winterbach, and Hans Lindner, Rohrbronn, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Oct. 23, 1973, Ser. No. 408,593
Claims priority, application Germany, Dec. 6, 1972, 2259774
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **7 Claims**

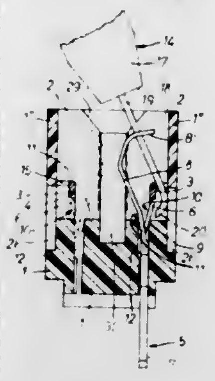
1. A printed circuit board connector comprising:

an insulated housing member having a bottom, a pair of spaced side walls extending upwardly from said bottom and plurality of contact chambers formed along at least one of said side walls above said bottom;

a slot in said housing member between said side walls communicating with said contact chambers and adapted to slidably receive a printed circuit board therein;

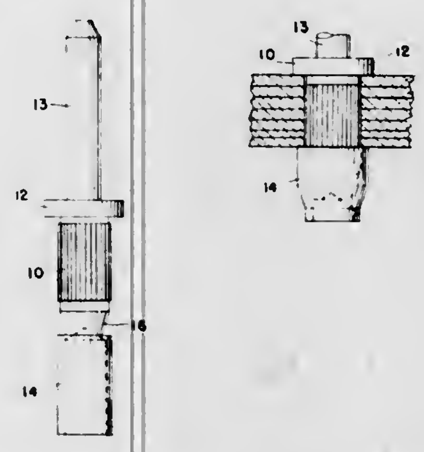
a longitudinally extending bridge member in each of said contact chambers, said bridge member in each said chamber being spaced from said one side wall and said bottom and defining a first upwardly extending opening and a second opening extending away from said bottom and bounded by said one side wall and said bridge member extending inwardly toward said slot from said one side wall and bounded by said bottom and said bridge member; and

a plurality of contact receiving holes in said bottom located on the side of said bridge member opposite to said one side wall.



3,866,998
CONDUCTIVE TERMINAL FOR FLEXIBLE CIRCUIT BOARDS

James Iantorno, Mamaroneck, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.
Filed Aug. 30, 1973, Ser. No. 392,964
Int. Cl. H01r *9/08*
U.S. Cl. 339—220 R **8 Claims**



1. A conductive metal terminal for mounting within a hole formed in an insulator comprising an integral construction of: a cylindrical shaft for mounting within said hole formed in the insulator and extending beyond one side thereof;

a shoulder formed integrally with one end of said shaft for limiting against the other side of the insulator;

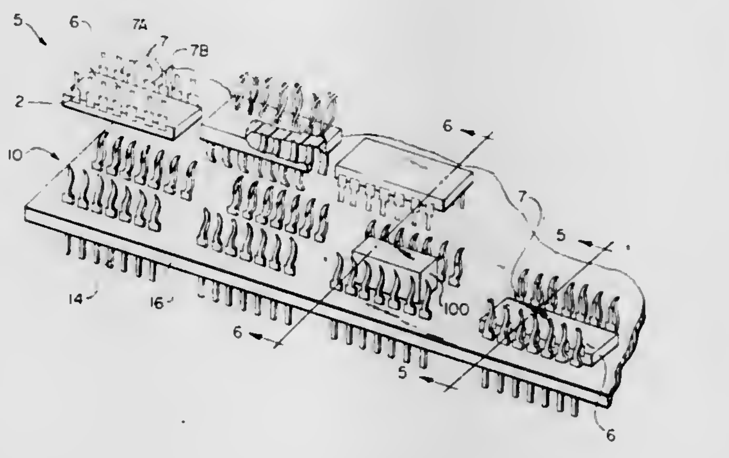
a terminal post, for connection to a circuit component, formed integrally with the shoulder and extending in axial alignment with said shaft;

a spreader cone formed integrally with the opposite end of said shaft, said spreader cone being of a truncated conical configuration with its greater diameter end formed integrally with the shaft and being substantially equal in diameter with the diameter of said shaft, while the opposite end of said spreader cone is of smaller diameter than the diameter of said shaft; and

a hollow cylindrical ferrule integrally formed with said spreader cone and connected to the smaller diameter portion of said spreader cone, with the outer diameter of said hollow ferrule being substantially equal to the diameter of the shaft and the larger diameter of the spreader cone, while the internal diameter of said hollow ferrule is substantially equal to the smaller diameter of said spreader cone, such that the integral portion of the terminal connecting said spreader cone to the hollow ferrule defines a diminished shear section whereby, after said shaft is inserted into the hole and said shoulder abuts the insulator, an axial mechanical force may be applied to the terminal to cause shearing of the diminished shear section and radial expansion of the ferrule as it is forced over the spreader cone so as to form a pressure contact for mounting the terminal within the hole of the insulator.

3,866,999
ELECTRONIC MICROELEMENT ASSEMBLY

John Joseph Doherty, Jr., Franklin, Mass., assignor to IFE Division of Plastic Mold & Engineering Company, East Providence, R.I.
Filed Nov. 16, 1973, Ser. No. 416,420
Int. Cl. H05k *1/04*
U.S. Cl. 339—17 CF **5 Claims**



1. An electronic microelement assembly comprising an electronic microelement having a body with two opposite parallel sides, a plurality of terminals extending from one of said parallel sides, an equal number of a plurality of terminals extending from the other of said two parallel sides, the terminals on one side being aligned with the terminals in the opposite parallel side to form pairs of terminals, all of said terminals projecting in one direction and each of said terminals having a tongue profecting from a base, a circuit board having an upper surface which said microelement body overlies, a bottom surface, and a plurality of connectors carried by the circuit board in insulated relation to one another, said connectors arranged in two parallel rows with the connectors in one row aligned with the connectors in the other of said two parallel rows to form pairs of connectors, said assembly being characterized by each of said connectors:

A. having an anchoring part anchored in the circuit board;

B. having a receptacle end that projects generally upward from said upper surface and which

1. is grooved to define a slot which has substantially constant width along its length and having a back and two opposite sides, and in which the outer portion of a terminal is closely received by said back and two opposite sides;

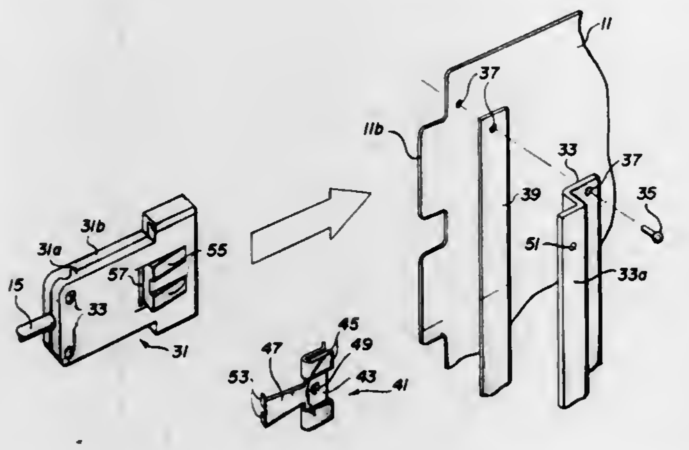
2. has its groove sinuously curved so that the tongue is housed in said groove; and

C. each of said connectors having a contact part which projects from said bottom surface of said circuit board for connection with other conductors,

D. in assembled relation, said pairs of terminals engaging said pairs of connectors to resiliently urge said pairs of connectors away from each other.

3,867,000
LATCHING SPRING CLIP DEVICE FOR SECURING ELECTRICAL CABLE CONNECTORS TO PRINTED WIRING CARDS

Bogumil M. Michalak, Melrose Park, and Ansano Bertellotti, Addison, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Sept. 10, 1973, Ser. No. 396,021
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 L **5 Claims**



1. Apparatus for securing an electrical cable connector to a printed wiring card, said cable connector including a housing slidably mating with a connector on said printed wiring card to complete an electrical connection, said apparatus comprising:

a latching device mounted on said printed wiring card comprising a single flat spring member extending outwardly therefrom in substantial parallel spaced alignment therewith and having a pair of spaced tabs extending normally therefrom toward said connector on said printed wiring card;

a pair of inclined riders on said housing ending at respective back edges and spaced to correspond to said spaced tabs, said tabs engaging said inclined riders and sliding thereon as said housing is mated with said connector on said printed wiring card until said tabs hook over said back edges to secure said housing to said printed wiring cards; and

a stiffener bracket mounted on said printed wiring card adjacent said connectors, said latching device being mounted on said stiffener bracket.

3,867,001
SPARK PLUG ADAPTER AND METHOD OF MAKING

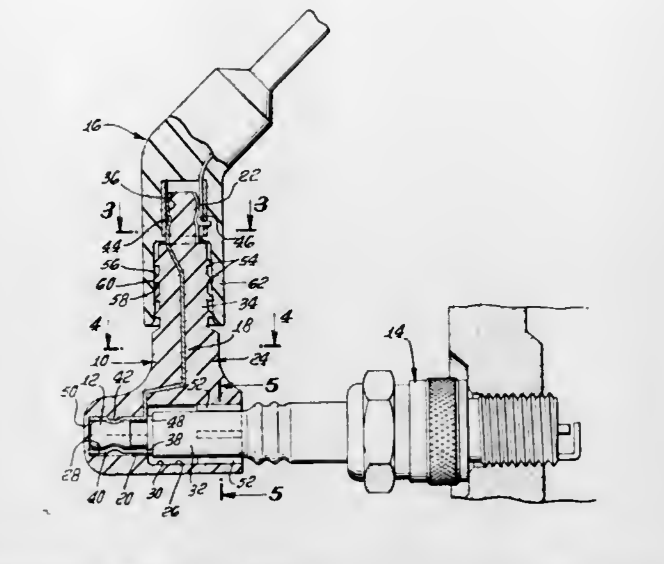
Robert W. Hedman, 11260 Overland Ave., No. 26C, Culver City, Calif. 90230
Filed Dec. 26, 1973, Ser. No. 427,933
Int. Cl. H01r *13/50*
U.S. Cl. 339—26 **2 Claims**

1. In a spark plug ignition-wire adapter, the combination of: an integral body member formed of a non-conductive, elastomeric material, having a socket portion having an axis and having a socket adapted to fit over an exposed terminal of a spark plug, and having a connector portion having an axis and extending at an angle from said socket portion;

a conductor formed of electrically conductive material, embedded in said body member, and having a first end extending into said socket for electrical engagement with such a terminal, and having a second end extending out of said body member for electrical engagement with an ignition wire connector;

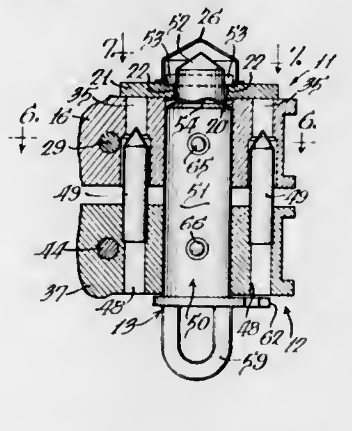
the axis of said connector portion being substantially perpendicular to the axis of said socket portion and said axes intersecting about midway between the ends of said socket portion; and

said first end of said conductor being generally tubular in form to receive in frictional engagement the exposed terminal of a spark plug, and said connector portion having an outer end provided with an integral concentric boss extending therefrom around which said second end of said conductor substantially extends for frictional engagement with an ignition wire connector, said second end of said conductor also being generally tubular in form.



3,867,002
ELECTRICAL CONNECT-DISCONNECT DEVICE

Ronald P. Bridges, Bridges Electric, Inc., 2451 Wisconsin St., Downers Grove, Ill. 60515
Filed Feb. 19, 1974, Ser. No. 443,426
Int. Cl. H01r *13/32*
U.S. Cl. 339—88 R **10 Claims**



1. A connect-disconnect device for use with high voltage electric lines comprising, in combination:

a female terminal member adapted to be electrically connected to a main conductor line, said female terminal member having an annular wall defining a socket which is open at one end and has longitudinal slots;

resilient electrical contact means in said socket,

shoulder means on said wall adjacent said slots,

and first key means on the female terminal member;

a carrier member adapted to be electrically connected to a branch conductor line, said carrier member having an annular wall defining a sleeve which is open at both ends,

resilient electrical contact means in said sleeve,

and second key means on said carrier member engageable with said first key means to prevent relative rotation between the female terminal member and the carrier member;

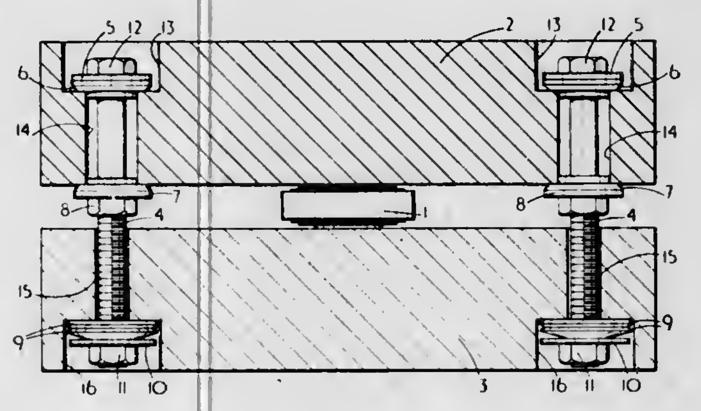
a cylindrical male terminal member rotatably mounted in said sleeve, said male terminal member having a plug portion adapted for insertion into the socket of the female terminal member,

external shoulders on said plug portion which move through the longitudinal slots of the female terminal member as the plug portion is inserted in the socket, said male terminal member being rotatable when the plug portion is fully inserted to engage said external shoulders with the shoulder means on the female terminal member and thereby releasably lock the male terminal member in the female terminal member,

and electrical contact means on the male terminal member which is in engagement with the electrical contact means in the socket and in the sleeve in the locked position of the male terminal member.

3,867,003
SEMI-CONDUCTOR CLAMPING MEANS

John Morton, Hazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Cheshire, England
Filed May 30, 1973, Ser. No. 365,150
Claims priority, application Great Britain, June 8, 1972, 26670/72
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 R **6 Claims**

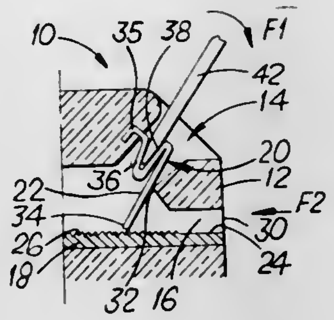


1. An insulated heat sink clamp assembly for use with a semi-conductor, comprising; a pair of opposed clamping pieces of an electrical and heat conducting material for engagement at opposite sides of the semi-conductor to be clamped therebetween; and force transmitting means positioned within the outer periphery of the clamping pieces for drawing the clamping pieces into intimate contact at opposite faces of the semi-conductor, said force transmitting means comprising a pair of bolt assemblies disposed in spaced relation within and extending transversely through the clamping pieces for flanking relation at opposite side edges of the semi-conductor, means on the bolt assemblies for exerting a predetermined pressure on the semi-conductor, said bolt assemblies including electrical-insulating means thereon for insulating said assemblies from at least one of said clamping pieces, said clamping pieces forming electrical terminals for the semi-conductor to be clamped, said means for exerting a predetermined pressure including disc-spring washer means through which force is transmitted to the clamping pieces and the semi-conductor said spring-disc washer means having deflection saturation characteristics such that a predetermined force is imposed on said semiconductors by said clamping pieces when saturation deflection is reached.

3,867,004
ELECTRICAL CONNECTION DEVICE

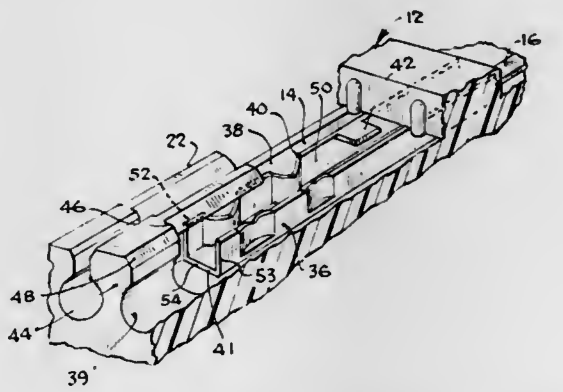
Roman J. Komorowski; Jean-C. Vernerey, and Gilles F. A. Tournier, all of Colomiers, France, assignors to ITT Industries, Inc., New York, N.Y.
Filed Dec. 7, 1973, Ser. No. 422,969
Claims priority, application France, Dec. 21, 1972, 72.45701
Int. Cl. H01r *9/08, 9/12*
U.S. Cl. 339—95 D **7 Claims**

1. In an electrical connection device comprising an insulator casing, at least one contact piece and a corresponding contact blade in said casing disposed at an acute angle with respect to said contact piece, said blade being resiliently urged toward said contact piece whereby an electrical wire slipped into the acute angle between said blade and said contact piece will be pressed against said contact piece and held in position by said blade, the improvement which comprises articulation means for said blade allowing pivotal movement of said blade toward and away from said contact piece, said articulation means including a resilient conductive strip having a generally Z-shaped configuration and a pivot point formed on said casing within the plane of said strip, the lower arm of said Z-shaped strip terminating in said contact blade and being pivotal about said pivot point, the free end of the upper arm of said Z-shaped strip being fixed to said casing, said upper arm and the slanting portion of said Z-shaped strip forming an indentation adapted to receive a tool which, when pivoted, pivots said blade about said pivot point so as to have its free end moved away from said contact piece.



3,867,005
INSULATION-PIERCING CONTACT MEMBER AND ELECTRICAL CONNECTOR

Paul Peter Hoppe, Jr., Arlington Heights, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Continuation-in-part of Ser. No. 288,998, Sept. 8, 1972,. This application Sept. 10, 1973, Ser. No. 395,746
Int. Cl. H01r *9/06*
U.S. Cl. 339—98 **9 Claims**



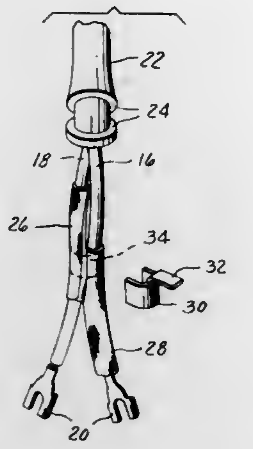
1. In an electrical contact member for electrical connection to circuit element including an insulation-covered electrical conductor, a terminal element of thin sheet metal construction including at least one notch for cutting the insulation of said conductor and electrically engaging the underlying conductor, said terminal element comprising

an elongated channel of U-shaped, cross-sectional configuration with opposite sidewalls having opposite facing portions dimpled inwardly to provide at least one pair of inner detents, the space between said detents constituting said notch, said space between said detents being less than the distance between said sidewalls, each of said detents comprising

a pair of wall sections, each of said wall sections having one end integrally joined to the adjoining sidewall, the other ends of said sections joined together by a curved portion at said notch to provide an enlarged wiping surface for said conductor, said curved portion having a free edge and a slit along said free edge, said slit including at least one tapered cutting edge to form an insulation-cutting surface.

3,867,006
APPLIANCE CORD-CONNECTING STRUCTURE

Ronald E. Jeffress, Alta Loma, Calif., assignor to General Electric Company, Bridgeport, Conn.
Filed Aug. 3, 1973, Ser. No. 385,480
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 M **8 Claims**



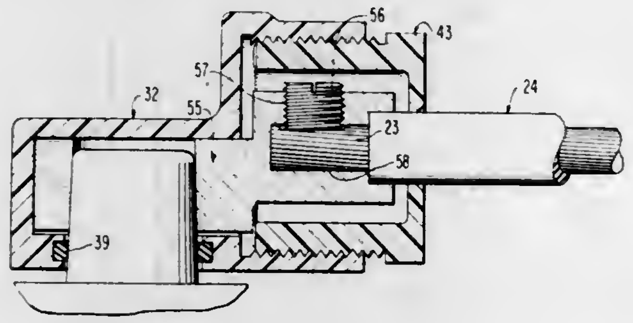
1. For use in an electric appliance having an electric cord secured to terminals therein by a cord portion having separated conductors extending outside said appliance and a strain relief means clamping said conductors and adapted to mount in said appliance to reduce stress on the terminals, the improvement in the insulating structure of said cord comprising, at least a single insulator on one conductor extending primarily only from said relief clamping means away from said terminals, and

- a second insulator on the other conductor extending primarily only from said relief clamping means toward said terminals,

said relief clamping means securing each insulator at opposite ends thereof to the conductors.

3,867,007
BATTERY TERMINAL CONNECTOR AND HOUSING ASSEMBLY

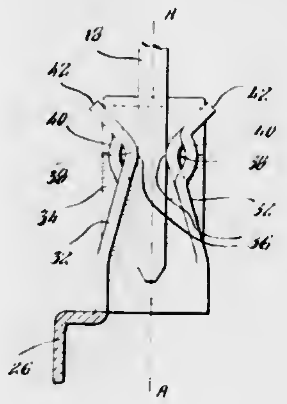
Richard R. Wening, 2113 North Eastside St., Santa Ana, Calif. 92701
Continuation-in-part of Ser. No. 293,334, Sept. 29, 1972, Pat. No. 3,790,920. This application Oct. 11, 1973, Ser. No. 405,587
Int. Cl. H01r *13/52, 13/54*
U.S. Cl. 339—236 **1 Claim**



1. A battery terminal connector and housing assembly comprising a split connector cap having a bore to receive a battery terminal post, said connector cap having a rear shank and said shank having an axial opening in its rear end adapted to receive a battery cable end, said shank having a radial threaded opening intersecting said axial opening, a clamping set screw engaged in said threaded opening and adapted to clampingly engage said battery cable end, said connector cap having a rear serrated end face at the forward end of said shank and extending around the lower end of said shank substantially in a semi-circular arc, a housing member for said connector cap and battery terminal post and shaped with relation to said cap to cause the cap to grip the post in response to forward pressure on said serrated end face, said housing member having a rear enlarged internally threaded sleeve portion surrounding said shank, and a pressure sleeve having external screw-threads engaged within the screw-threads of said sleeve portion and forming therewith an enclosure for said shank, battery cable end and set screw, said pressure sleeve having a rear end opening adapted to receive and snugly engage the insulated portion of a battery cable, said pressure sleeve having an annular forward serrated end face adapted to engage the semi-circular serrated end face of the cap when the pressure sleeve is tightened, the serrations of said faces resisting loosening of the pressure sleeve.

3,867,008
CONTACT SPRING

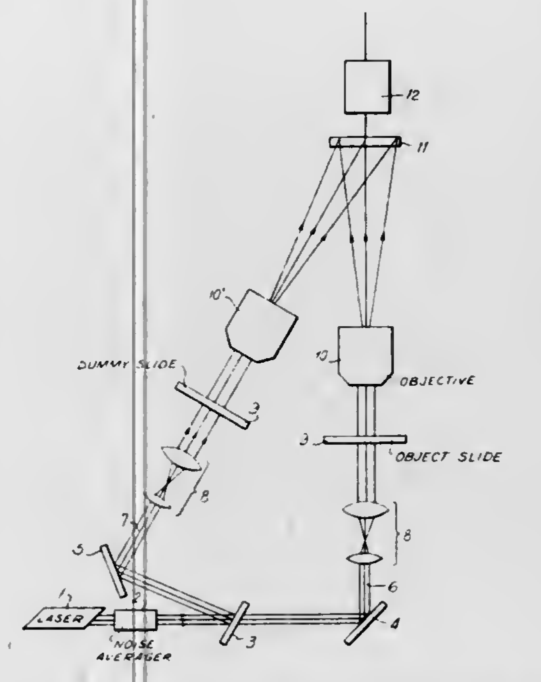
Albert J. Gartland, Jr., Trumbull, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.
Filed Aug. 25, 1972, Ser. No. 283,790
Int. Cl. H01r *13/12*
U.S. Cl. 339—258 R **7 Claims**



1. An electrical female contact comprising; spring members disposed to deflect in opposite directions away from a central plane as straight male contacts are slideably engaged therebetween, each said spring member having a contact surface and presenting an inclined tip across the full width of engagement, said inclined tips being complementarily oriented to create a guided entrance for the male contacts along said central plane, said contact surfaces being separated across the thickness of the male contacts upon engagement thereby and bearing against the male contacts under a contact pressure of proportional magnitude to the deflection incurred by said spring members, each said spring member including at least one advanced section and at least one retracted section, said advanced and retracted sections being juxtaposed on each said spring member in a direction substantially perpendicular to the direction of male contact engagement along said central plane, said advanced section of each spring member meshing across said central plane into said retracted section of said other spring member, said contact surfaces being disposed on said advanced sections at an offset distance from said central plane and deflecting thereacross through said offset distance during engagement by male contacts, whereby the total deflection at said contact surfaces of said spring members away from each other during engagement is the sum of said offset distances plus the thickness of the male contact and thereby said contact pressure is magnified proportionally to the sum of said offset distances.

3,867,009
HOLOGRAPHIC MICROSCOPE WITH SUPPRESSION OF COHERENT NOISE

Romuald Pawluczyk, Czeeniakowska Str. 18/55, Warszawa, Poland
Filed May 11, 1973, Ser. No. 360,376
Claims priority, application Poland, May 20, 1972, 155495
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **4 Claims**



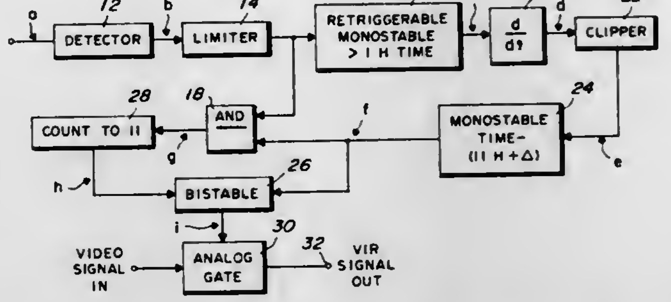
1. A holographic microscope for recording and reconstructing of holograms and for interferometric investigation comprising laser illumination means for producing a coherent laser beam, a device for suppression of coherent noise by unidirectional averaging, a member splitting the laser beam into a reference beam and an object beam, a first optical system for directing said object beam to a holographic recording material along a first path and for forming an image of an object on said recording material, and a second optical system similar to said first optical system for directing said reference beam to said recording material along a second path angularly displaced from said first path and having a length substantially equal to the length of said first path, the axes of said first and second paths lying in a plane, said device for unidirectional averaging of the coherent noise being positioned between said illuminating means and said beam splitting member and comprising a confocal pair of focusing lenses together defining an optical axis and focusing said laser beam to a spot intermediate said lenses, a mask having a slit aperture situated at said focused spot, and averaging means disposed in front of said mask for continuously deflecting said spot in one direction only along the lengthwise direction of said slit, said mask and averaging means being coupled for rotation about said optical axis so as to orient said one direction optically perpendicular to said plane containing said axes of said first and second paths:

3,867,010
VERTICAL INTERVAL REFERENCE SIGNAL EXTRACTION CIRCUIT ARRANGEMENT

Theodore S. Rzeszewski, Lombard, Ill., assignor to Motorola, Inc., Chicago, Ill.
Filed July 2, 1973, Ser. No. 375,981
Int. Cl. H04n *9/62*
U.S. Cl. 358—10 **8 Claims**

1. A signal extraction circuit arrangement suitable for extracting signal information included at a selectable interval in a base signal having, inter alia, recurrent reference pulse information, which signal extraction arrangement includes in combination:

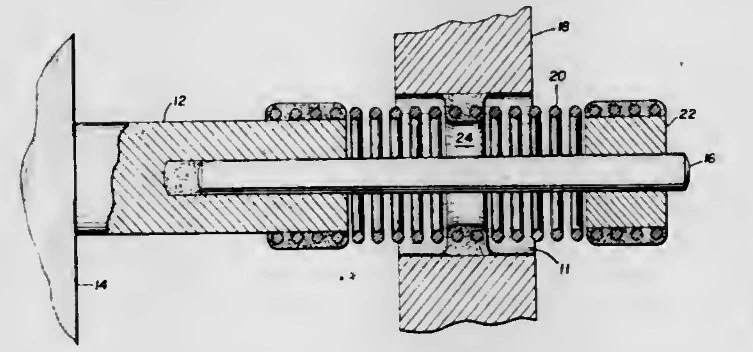
- counter means for counting a selected number of said reference pulses and producing a control signal in response thereto;
- means for responding to said reference pulse information and conditioning said counter means to initiate counting action at a prescribed time;
- gating means responsive to said control signal of said counter means to permit the extraction of the desired signal information coincident therewith; and



- timing means coupled with said gating means and responsive to said reference pulse information for selectively adjusting the response of said gating means over a predetermined time interval and thereby varying the amount of signal information being extracted.

3,867,011
CENTER ATTACHED OPTICAL MOUNT

Richard H. Burns, Webster, N.Y., assignor to Bausch & Lamb Incorporated, Rochester, N.J.
Filed Feb. 5, 19[illegible], Ser. No. 329,778
Int. Cl. G02b *23/16*
U.S. Cl. 350—16 **2 Claims**



1. A device for mounting an optical member within a chamber having at least one wall, the optical member having an aperture and being immersed in a transparent fluid contained within the chamber, comprising:

- a bushing means disposed within the chamber;
- shaft means being affixed to and extending from the wall of the chamber; and
- resilient coil means extending through the aperture of the optical member and having a first end and an opposite end, the first end being attached to a first location on said shaft means and the opposite end being affixed to a second location on said bushing means, and the optical member being connected within the aperture to said resilient coil means centrally of the first and second locations.

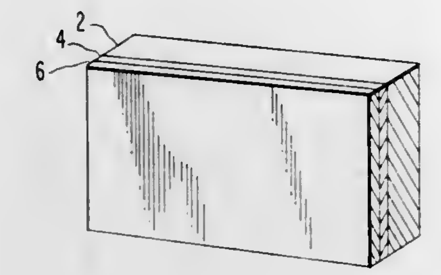
3,867,012
NOVEL LITHIUM NIOBATE SINGLE CRYSTAL FILM STRUCTURE

William Phillips, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 29, 1974, Ser. No. 464,763
Int. Cl. B44d *1/16*; **G02b** *5/14*
U.S. Cl. 350—96 WG **9 Claims**

1. An article consisting essentially of an oriented lithium tantalate crystal, a layer of platinum from about 150 to 2,500 angstroms thick thereon and an epitaxial single crystal lithium niobate film on the platinum layer.

3. A method of forming an epitaxial single crystal layer of lithium niobate on a conducting surface which comprises:

a. depositing a coating of platinum from 150 to 2,500 angstroms thick on a polished surface of a single crystal lithium tantalate substrate,



b. depositing a layer of finely divided lithium niobate onto the coated substrate, and

c. fusing the lithium niobate to form said epitaxial single crystal layer.

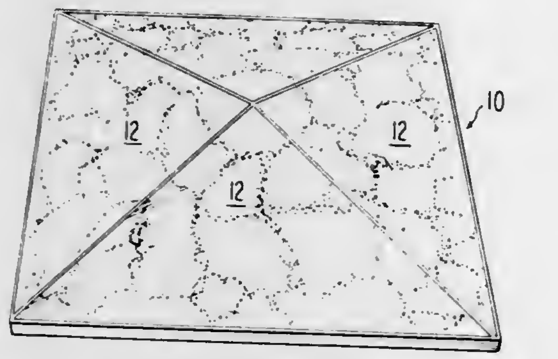
3,867,013
THREE DIMENSIONAL MIRROR TILE

Sidney Ashenfarb, Roslyn, N.Y., assignor to New Age Mirror and Tile Industries, Inc., Newark, N.J.

Filed Sept. 10, 1973, Ser. No. 396,022

Int. Cl. G02b *5/08*

U.S. Cl. 350—299 **4 Claims**



1. A decorative three-dimensional mirror tile apparatus comprising:

four side mirror segments, each side segment including a base edge and a pair of convergingly directed side edges;

a molded plastic, pyramid-shaped base including four substantially flat side surfaces and a base periphery in the form of a square;

ridge means located at the intersection of said side surfaces and also located at the periphery of said base, said ridge means completely circumscribing said side surfaces and thereby forming pockets into which said side mirror segments may be directly placed;

an adhesive means for securing said mirror segments to the side surface of each pocket, said adhesive means forming the sole attachment between said mirror and said base;

at least two L-shaped recesses located in at least two of said side surfaces, said L-shaped recesses being located adjacent to said peripheral base ridge means and intermediate the ridge means located at the intersection of said side surfaces, the location of said recess being such that said recess is completely covered by said side mirror segments when said segments are in place in said side pockets, said L-shaped recesses further including a flat pad portion lying substantially in the plane defined by the periphery of said base; and

fastening means for attaching the flat pad portion of said L-shaped recesses to a substantially flat surface.

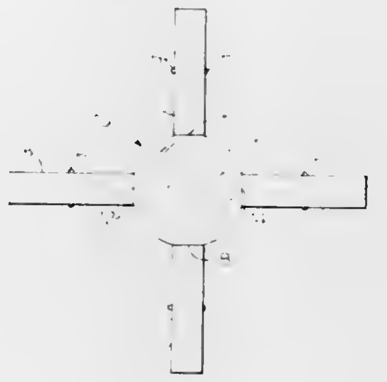
3,867,014
SYMMETRIC BIREFRINGENCE MODULATOR

James C. Kemp, 2642 Lowrey Ave., Honolulu, Hawaii 96822

Filed Feb. 7, 1973, Ser. No. 330,216

Int. Cl. G02f *1/24*

U.S. Cl. 350—149 **11 Claims**



1. Optical resonant photoelastic birefringence modulator apparatus comprising a stress-plate constructed of an isotropic material and having first and second faces through which an optical-transmission axis centrally passes and having edge means surrounding the stress-plate and peripherally interconnecting the faces, the edge means being substantially uniformly spaced from the optical-transmission axis passing through the center of the faces, and oscillation producing transducer means connected to at least one portion of the edge means for stressing the stress-plate.

3,867,015
LIQUID CRYSTAL CELL AND METHOD OF FABRICATION

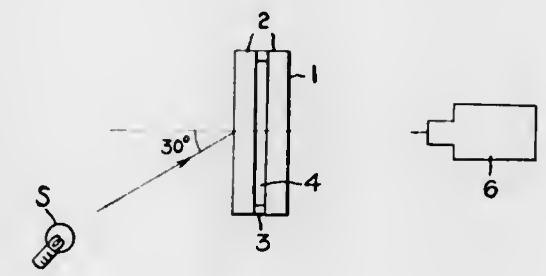
Shuichi Iida; Takao Hayashi; Satoshi Noguchi, and Shigemasa Furuuchi, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 23, 1973, Ser. No. 363,190

Claims priority, application Japan, May 25, 1972, 47-51221

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **8 Claims**



1. In a liquid crystal cell comprising a pair of substrates each covered with an electro-conductive film wherein at least one of the substrates is transparent and wherein a liquid crystal material fills the space between the substrates, the periphery of the substrates being sealed, the improvement which comprises applying to the inner surface of the cell a functional fluoroalkyl compound containing a fluoroalkyl component and a functional component which has an affinity and reactivity to the inner surface of the cell.

3,867,016
LIQUID CRYSTAL COMPOSITION FOR ELECTRIC FIELD INDICATION

Masahiko Sagane, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd., Hyogo-ken, Japan

Filed Feb. 12, 1973, Ser. No. 331,692

Claims priority, application Japan, Feb. 17, 1972, 47-16037

Int. Cl. C09k *1/00;* **G01n** *31/22*

U.S. Cl. 350—160 LC **9 Claims**

1. A liquid crystal composition for indicating the occurrence of electric field which consists essentially of from about 10 to about 60 percent by weight of cholesteryl carbamate having, as the substituent group at nitrogen atom of the carbamate an open chain hydrocarbon group, and from about 40 to about 90 percent by weight of cholesteric liquid crystal taken from the group consisting of cholesteryl halides, cholesteryl ethers, cholesteryl esters, cholesteryl carbonates, cholesteryl thiocarbonates, 24-methylcycloaltanol esters, 24,28-dihydrocyclocucanol esters and cycloaltenor esters and mixtures thereof, said open chain hydrocarbon group is an aliphatic hydrocarbon group having carbon atom number of not more than 24 selected from the group consisting of methyl group, ethyl group, n-propyl group, n-butyl group, n-pentyl group, n-hexyl group, n-heptyl group, n-octyl group, n-nonyl group, capryl group, n-undecyl group, lauryl group, myristyl group, palmityl group, stearyl group, arachidyl group, lignoceryl group, myristoleyl group, oleyl group, elaidyl group, erucyl group, linolyl group, tiglyl group and aliphatic groups having a chemical formula such that one methylene group in the alpha position is diminished from myristyl group, palmityl group, stearyl group, arachidyl group, lignoceryl group, myristoleyl group, oleyl group, elaidyl group, erucyl group, linolyl group or tiglyl group.

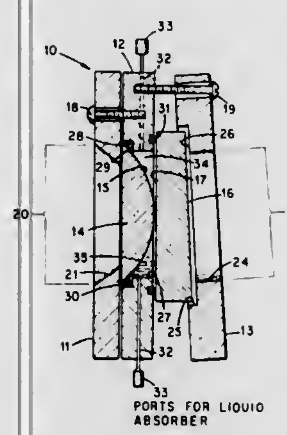
3,867,017
APODISED APERTURE ASSEMBLY FOR HIGH POWER LASERS

Erlan S. Bliss, Dublin, and David Ralph Speck, Alamo, both of Calif., assignors to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,315

Int. Cl. G02b *9/00, 9/08*

U.S. Cl. 350—205 **5 Claims**



1. An apodised aperture assembly for minimizing deleterious diffraction effects in a laser beam comprising: a support assembly having an aperture extending therethrough, a pair of window means positioned in said support assembly and in alignment with said aperture, said support assembly comprising a central section and two outer sections secured to said central section on opposite sides thereof, each of said support assembly sections being provided with a centrally located aperture having portions thereof of a cross section less than the periphery of said pair of window means, said pair of window means being substantially optically neutral and configured to define within said aperture a chamber having a thickness near zero at the center thereof and increasing thickness with increasing radius from the center thereof, one of said pair of window means comprising a lens having a convex surface, the other of said pair of window means comprising an optical element having a flat surface in abutment with said central section of said support assembly, said flat surface of said optical element being positioned closely adjacent said convex surface of said lens so as to define in cooperation with said aperture of said central section of said support assembly said radially increasing thickness chamber containing an absorbing liquid, said lens being substantially positioned in said aperture of said central section of said support assembly and retained therein by one of said two outer sections of said support assembly, said optical element being retained in abutment with said central section by the other of said outer sections, said chamber being substantially defined within said aperture of said central section of said support assembly, sealing means positioned about said chamber intermediate said window means and said support assembly comprising a first seal located intermediate said lens and said central section of said support assembly and a second seal located intermediate said optical element and said central section of said support assembly, and absorber material positioned in said chamber, said absorber material having a thickness near zero in the center and increasing in thickness with increasing radius, whereby a smoothly varying transmission profile is provided as a laser light beam passes through said aperture assembly minimizing diffraction effects.

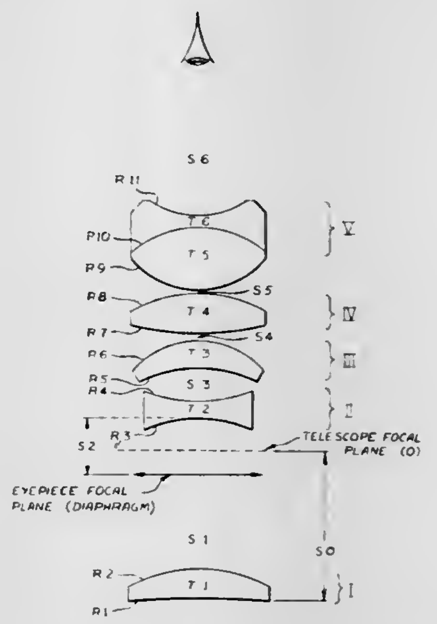
3,867,018
FIVE COMPONENT MICROSCOPE EYEPIECE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of Ser. No. 288,207, Sept. 11, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 438,974

Int. Cl. G02b *25/00*

U.S. Cl. 350—216 **3 Claims**



1. A five component microscope eyepiece having a magnification of substantially 10X consisting of the following components in optical alignment: A plano concave positive lens I; a double concave singlet II; a meniscus shaped negative singlet III; a double convex singlet IV; and a convex concavo positive doublet V.

3,867,019
PHOTOGRAPHIC REFLECTOR

J. R. Eyerman, 475 Seventeenth St., Santa Mónica, Calif. 90402

Filed June 22, 1973, Ser. No. 372,527

Int. Cl. G02b *5/10*

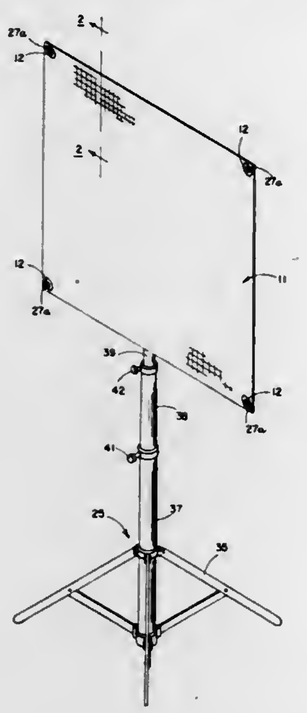
U.S. Cl. 350—295 **4 Claims**

1. A photographic reflector comprising:

a flexible reflector screen, the surface of said screen being embossed to form a plurality of separate dish shaped reflector elements, said screen having aperture means at each of the corners thereof;

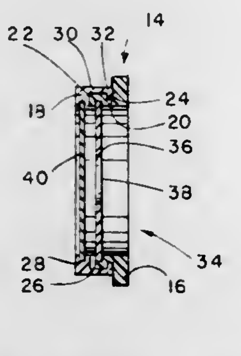
a collapsible support frame for supporting said screen, said support frame comprising a central mount in the form of a block shaped member having a plurality of apertures spaced thereabout and a plurality of rod members which are removably fitted in said apertures and extend radially outwardly from said central mount, each of said rod members having an end hook portion for engaging a separate one of the aperture means of said screen and including means for resiliently urging said hook portions outwardly whereby said screen is tautly supported on said frame to form an overall flat screen with said embossed reflection surface; and

stand means for supporting said frame for adjustment in azimuth and elevation.



3,867,020
CONTROLLED LIGHT LIMITING LENS ASSEMBLY

Harold N. Braunhut, c/o Honey Toy Industries, Inc., 200 Fifth Ave., New York, N.Y. 10010
Filed Dec. 17, 1973, Ser. No. 425,313
Int. Cl. G02c *7/16, 7/12;* **A61f** *9/04*
U.S. Cl. 351—45 **16 Claims**

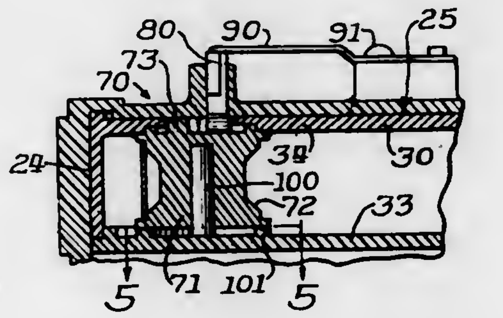


1. A light-limiting lens assembly comprising a first lens member in the form of a sheet of louvered material provided with a central aperture which defines a limited angle of light acceptance disposed along a line of sight, said louvered material preventing the passage of light having an angle of incidence greater than said angle of light acceptance relative to said first lens member; and a second lens member made of a polarized material and disposed juxtaposed in a plane substantially parallel to that defined by said first lens member along the line of sight, said central aperture and said second lens member being aligned along the line of sight, and said second lens member being rotatable relative to said first lens member, whereby the light transmitted through the lens assembly is further limited by selection of a single angle of polarization of light incident within said angle of light acceptance.

9. A pair of eyeglasses comprising a lens frame having two spaced frame member portions adapted to be placed in front of a wearer's eyes, each frame member portion including a fixed portion and a movable portion concentrically mounted on said fixed portion, said movable portion being rotatable in a plane generally normal to the direction of sight; a first lens member of polarized material mounted on said movable portion for common rotary movement with the latter for controlling the angle of polarization of light which passes therethrough; and a second lens member of louvered material mounted on said fixed portion, said louvered second lens member being provided with a central aperture and defining a limited angle of light acceptance, whereby only appropriately polarized light within said angle of light acceptance is permitted to be transmitted to the observer, the eyeglasses preventing the passage of polarized light or extraneous light the angle of incidence of which is greater than said angle of light acceptance.

3,867,021
MOTION PICTURE CAMERA SYSTEM

Arthur C. Mueller, Niles, and Kenyon A. Hapke, Libertyville, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Aug. 24, 1972, Ser. No. 283,631
Int. Cl. G03b *23/02*
U.S. Cl. 352—72 **11 Claims**



1. A film-handling system comprising:

a film cassette having spaced walls for housing a supply of film including a film gate portion and film take-up means; a film-handling apparatus having a film chamber for receiving said cassette and including a light aperture;

positioning means within said film chamber engageable with said cassette to maintain said film gate aligned with said aperture during the operation of said apparatus;

film shuttle means for incrementally positioning segments of film in said gate to align the film with said aperture;

drive means for rotating said take-up means to accumulate said film onto said take-up means;

rotatable film snubbing means mounted for rotation about a selected axis within said cassette between said film gate and take-up means and being engageable with said film segments advancing to said take-up means and further including a locking portion on one end of said snubbing means accessible from the exterior of said cassette;

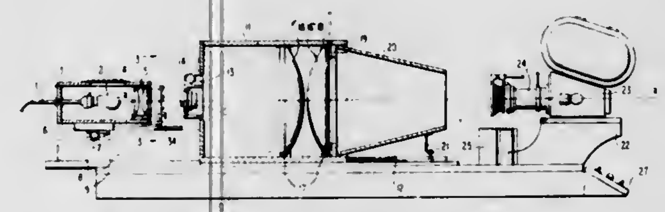
positive locking means provided on said apparatus and rigidly engageable with said locking portion of said snubbing means within said film chamber to firmly and positively lock said snubbing means from rotation within said cassette so that said locked snubbing means engages said advancing film segments and isolates the film segments at said gate from the film-moving force of said drive means during the operation of said apparatus;

means biasing said locking means inwardly into said film chamber; and

braking means axially aligned with said film snubbing means and arranged to frictionally retard the rotation of said snubbing means as said snubbing means is urged inwardly by the force of said biasing means, said braking means comprising an arcuate friction surface spaced adjacent the periphery of said snubbing means and having a substantial surface area so that the frictional force of said braking means creates a substantial braking moment which resists the rotation of said snubbing means within said cassette during the operation of said apparatus.

3,867,022
CINECONVERSION MACHINE

Thomas Jefferson Whatley, Washington, D.C., and William Miller Drennen, Jr., Great Falls, Va., assignors to Communication Corps. Inc., Washington, D.C.
Continuation-in-part of Ser. No. 92,315, Nov. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 866,240, Oct. 14, 1969, abandoned. This application Oct. 13, 1972, Ser. No. 297,241
Int. Cl. G03b *21/32*
U.S. Cl. 352—87 **4 Claims**



1. An optical system for reproducing a picture with a variable rate of magnification, comprising:

support means for a picture to be reproduced on a distant receiving surface;

condensing lens means interposed between said support means and said receiving surface;

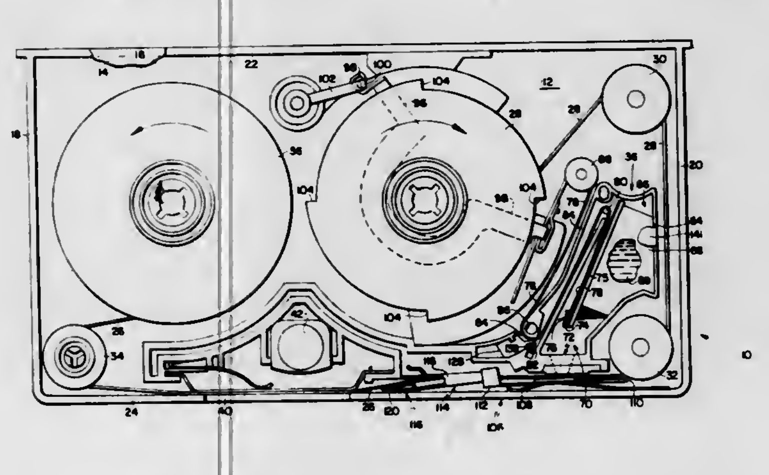
a first objective coaxial with said lens means movably disposed on the side of said lens means remote from said receiving surface for projecting an aerial image of said picture via said lens means in a transverse plane;

a second objective coaxial with said lens means focused upon said transverse plane and movably disposed on the side of said lens means opposite said first objective for projecting upon said receiving surface a replica of said aerial image; and

mechanism for jointly displacing said objectives with concurrent refocusing of said second objective to vary the relative proportions of said replica and said picture.

3,867,023
SEALING APPARATUS FOR A SELF-PROCESSING CASSETTE

Robert J. Ell, Malden, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Feb. 22, 1974, Ser. No. 444,970
Int. Cl. G03c *11/00*
U.S. Cl. 352—130 **27 Claims**



1. A film handling cassette comprising:

a cassette housing configured to retain a strip of photographic film; and

processing means for treating said film strip with processing fluid, said processing means including:

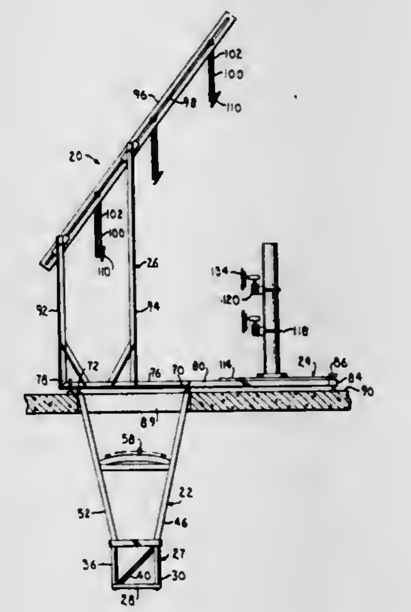
a processor housing, said housing including means defining an aperture in an outer wall thereof;

a reservoir located within said processor housing for retaining a quantity of processing fluid;

selectively operable means for releasing such processing fluid from said reservoir for deposit on said film strip, said selectively operable means including an elongated member extending through said aperture and exteriorly of said processor housing, said elongated member being configured for displacement relative to said aperture to release such processing fluid within said processing housing; and sealing means mounted proximate said aperture, said sealing means including means movable into a fluid sealing position relative to said aperture responsive to displacement of said elongated member to release such fluid so as to prevent exiting of such fluid through said aperture following release of such fluid.

3,867,024
RACK ASSEMBLY

Tom F. Smith, Urbana, Mo., assignor to United States T.R.A.D. Corporation, Springfield, Mo.
Filed Mar. 5, 1973, Ser. No. 338,318
Int. Cl. G03b *21/14, 21/28, 3/00*
U.S. Cl. 353—82 **8 Claims**



1. An apparatus for use with a film projector wherein said apparatus operates to project a plurality of images from an image emanating from said projector to a corresponding plurality of viewing locations, said apparatus comprising:

a lens support adapted to support a plurality of lenses at respective positions wherein each lens receives said image from said projector and directs a discrete image therefrom, said lens support including means for independently adjusting the position of each lens with respect to said projector to permit individual focusing of each lens,

a plurality of spaced mirrors, each mirror operable to reflect a grouping of said discrete images to an intermediate location,

a frame supporting said mirrors in spaced relation from said lens support and from one another, said frame including means for positioning said mirrors to independently align each mirror for reflecting said grouping of said images to said intermediate location, and

means for directing said images from their respective intermediate locations to said viewing locations.

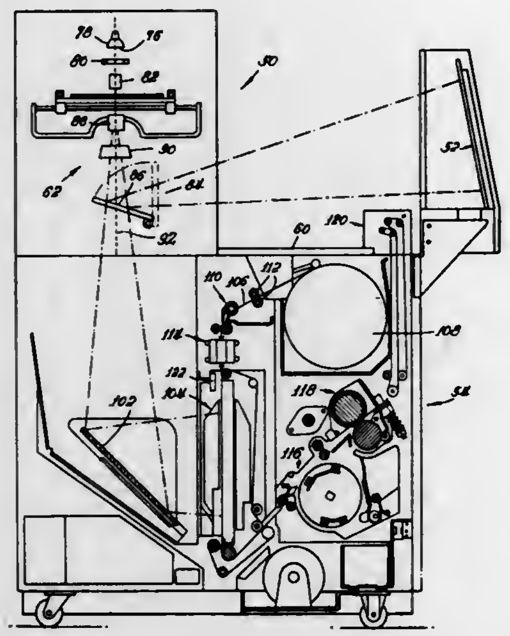
3,867,025
MICROFICHE VIEWER-PRINTER MACHINE

Donald E. Raterman, Hollywood, Fla., and Joseph Goebel, The Hague, Netherlands, assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Aug. 16, 1973, Ser. No. 389,026

Int. Cl. G03g *15/00*

U.S. Cl. 355—5 **12 Claims**



1. A device for selectively displaying or reproducing images disposed on a microfiche comprising

an illumination path,

means for automatically transporting said microfiche through said device, said transporting means including first and second independently actuable motive means for automatically positioning one of said images in said illumination path for display or reproduction by said device, said first motive means comprising a first movable slide or carriage, a first pair of drive pins positioned on a first pin disc connected to a rotatable output shaft of a first motor and a first rack having a plurality of slots for releasably, engageably receiving said first pair of drive pins, wherein the relative movement between said first pair of drive pins and first rack causes the movement of said first slide along a first path of travel,

means disposed in said illumination path for illuminating said one of said images to form a projected image of said one of said images,

a viewing screen for receiving said projected image and for visually displaying said projected image,

an exposure station for receiving said projected image to form a latent image of said projected image and

means for alternately directing said projected image to said viewing screen or to said exposure station.

3,867,026
ELECTROPHOTOGRAPHIC COPIER OF TRANSFER TYPE

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 167,398, July 29, 1971, abandoned. This application Dec. 27, 1972, Ser. No. 319,096

Int. Cl. G03g *15/22*

U.S. Cl. 355—8 **6 Claims**

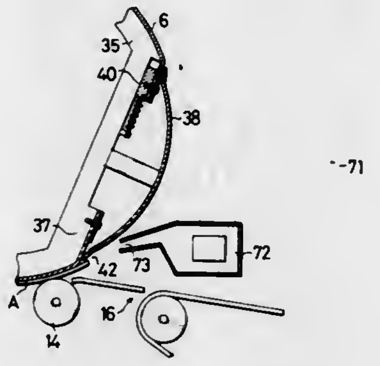
1. An electrophotographic copier of the transfer type comprising:

a document table fixed to the top of said copier and made of a transparent plate;

an exposure optical system of the slit scanning type including a projecting lens and having means for scanning the surface of an original document, said optical system being disposed below said document table;

an endless support disposed below said exposure optical system and movable at a constant peripheral speed, said support being detachably provided with a flexible photoreceptor having a size appproximately equal to the size of the image to be projected and said endless support having an entire peripheral length slightly greater than the length of said photoreceptor;

an image forming and copying assembly disposed around said endless support including means for charging said photoreceptor composed of a corona discharger, and followed by an exposure station at the terminal end of the light path of said exposure optical system where said charged photoreceptor is exposed to light projected through said optical system, developing means for visualizing with a toner an electrostatic latent image formed on said photoreceptor at the exposure station to produce a powder image, transfer means for applying a sheet of copy paper to said photoreceptor and transferring the powder image onto said sheet of paper, cleaner means for cleaning the surface of said photoreceptor after the paper has been peeled off said photoreceptor, and peeling means following said transfer means for peeling the paper sheet off the surface of said photoreceptor;



a paper supply station including paper supply roller means for dispensing sheets of said paper disposed adjacent to said developing means;

paper feed means for feeding said dispensed sheets of paper to said transfer means;

conveyor means disposed below said cleaner means for advancing said paper from said copier;

means disposed proximate the transport path of said conveyor means for heat-fixing the transferred image on said paper;

said photoreceptor support comprising a cylindrical drum having a depressed longitudinally extending portion and said peeling means comprising an arcuate cover member with a curvature of a smaller radius than said drum and an air duct for injecting a weak blast of air onto the outer periphery of said drum approximately in a tangential direction opposite to the direction of transport of the paper sheet, said cover defining a recess in the outer peripheral surface of said support and means for controlling said transfer means to apply a sheet of copy paper supplied by said transfer means to said photoreceptor with the leading edge of said paper overlapping said recess and leaving a part of said recess exposed.

3,867,027
TRANSPORT ARRANGEMENT FOR THIN SHEET MATERIAL

John W. Weigl, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 213,613, Dec. 29, 1971, Pat. No. 3,765,757. This application Apr. 19, 1973, Ser. No. 352,763

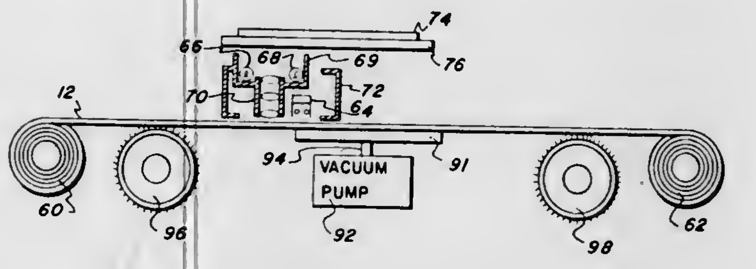
Int. Cl. G03g *15/22*

U.S. Cl. 355—8 **6 Claims**

1. An apparatus for image formation comprising:

a photoreceptor surface upon which a latent electrostatic image is to be formed;

means for transporting said photoreceptor surface, said transporting means comprising a transport body, means for imparting motion to said body, said body having secured thereon an electrically conductive mat and a plurality of electrically conductive contact members secured to and in electrical contact with the mat and extending from said mat for supporting and transporting said photoreceptor surface near distal segments of said contact members at a spaced-apart location from said body for advancing said photoreceptor upon motion of said transport body;



means for transporting in sequence along a path spaced apart from and adjacent to said photoreceptor surface a corona source for establishing a uniform electrostatic charge upon said photoreceptor surface, and a projection means for projecting activating electromagnetic radiation at said photoreceptor surface in image configuration; and means for developing said image by contacting said image with a developer material.

3,867,028
DIAPOSITIVE COPYING APPARATUS FOR PHOTOGRAPHIC CAMERAS

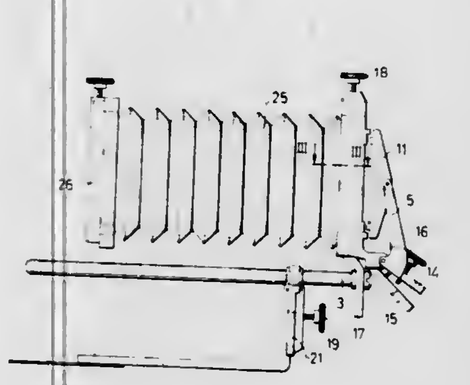
Ferdinand Kellner, 8941 Hart 14 near Memmingen, Germany

Filed June 5, 1973, Ser. No. 367,212

Claims priority, application Germany, June 28, 1972, 2231552

Int. Cl. G03b *27/32, 27/62*

U.S. Cl. 355—18 **7 Claims**



1. In a diapositive copying apparatus for photographic cameras comprising a first mounting connectible to an objective of a camera, a second mounting holding a diapositive and film carrier, a bellows connected between said first and second mountings for forming an adjustable light-tight housing and a rail guide on which said second mounting is mounted for movement therealong, the improvement wherein the said carrier and said second mounting are interengaged in the operative condition of the apparatus by one of the carrier and second mounting embracing the other, the said carrier having guide means embracing the second mounting from the exterior thereof, and these two parts are at least partially applied directly against one another and a spring disposed between the carrier and the diapositive for eliminating play therebetween.

3,867,029
PHOTOGRAPHIC COPYING ARRANGEMENT WITH IMPROVED COLOR COMPENSATION

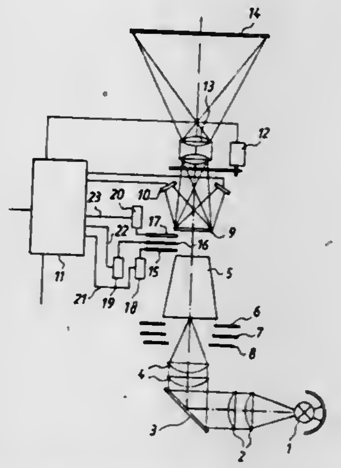
Volker Weinert, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Munich, Germany

Filed Sept. 20, 1973, Ser. No. 399,184

Claims priority, application Germany, Sept. 22, 1972, 2246466

Int. Cl. G03b *27/76*

U.S. Cl. 355—38 **14 Claims**



1. In photographic apparatus for making at least one color copy of a photo original on photosensitive material, in combination, light source means for illuminating said photosensitive material through said original in a first, second and third color; a first, second and third color channel including, respectively, first, second and third photoreceiver means for receiving light corresponding to light falling on said photosensitive material in said first, second and third color and furnishing, respectively, a first, second and third total color signal corresponding to the total quantity of light received respectively in said first, second and third color; first second and third comparing means comparing said first, second and third color signals, respectively, to a reference signal and furnishing, respectively, a first, second and third terminating signal when the so compared total color signal has a predetermined relationship to said reference signal; terminating means for terminating the exposure and the corresponding color in response to each of said terminating signals; means furnishing a density signal corresponding to the density of said original in a selected one of said colors; and means for connecting said means for furnishing a density signal to the corresponding one of said comparing means, whereby the furnishing of the corresponding one of said terminating signals depends at least in part upon said density signal.

3,867,030
FILM CONTROL SYSTEM BY PICTURE FRAME EDGE SIGNALS OF A FILM

Atsuyuki Tanaka, 2-1-Sonenishi-machi, Toyonaka-shi, Osaka-fu, Japan

Continuation-in-part of Ser. No. 44,730, June 9, 1970, Pat. No. 3,721,495. This application Mar. 19, 1973, Ser. No. 342,493

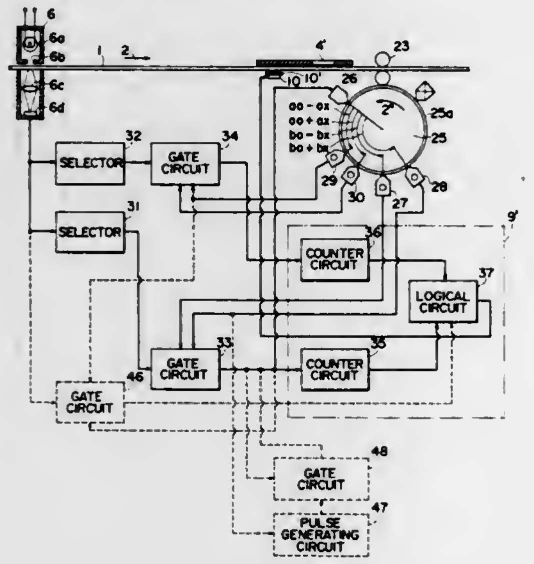
Int. Cl. G03b *27/46*

U.S. Cl. 355—41 **4 Claims**

1. A system for controlling a mechanism for transporting a film along a first path, said film having a number of picture frames surrounded by black frames and successively disposed on said film in the direction of said first path, where each frame has a length of $a_o \pm a_x$, where a_o is the mean value and a_x is the tolerance and between neighboring picture frames there is an interval of $b_o \pm b_x$, where b_o is the mean value and b_x is the tolerance, said system including detecting means positioned along said first path for generating output signals in response to the density of said film, a first recording medium driven along a second path in synchronism with said transporting mechanism, first recording means for recording signals which include signals indicative of fore and aft edges of the

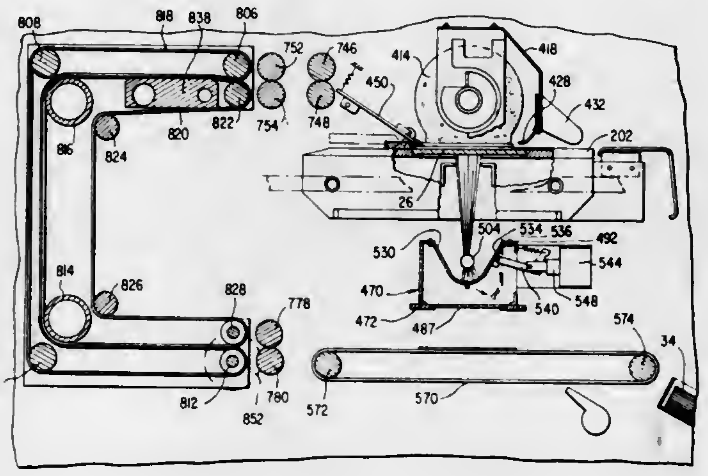
picture frames on said first recording medium in response to the output signals from said detecting means, first means for discriminating said recorded signals on said first recording medium to determine true fore and aft edge signals of one of said picture frames, an exposure station positioned along said first path, means for stopping actuated by an output from said first means for discriminating to stop the transportation of said film for positioning said picture frame having at least one of said detected fore and aft edge signals at said exposure station, said system comprising:

- a second recording medium driven along a third path in synchronization with said transporting mechanism;
- second recording means having its input coupled to the output of said detecting means and disposed on said third path for recording signals on said second recording medium;
- second means for discriminating whether a respective signal of two kinds of output signals from said detecting means is a true fore or aft signal;
- first means coupled between said detecting means and said second recording means for supplying first of said two kinds of output signals which change from a higher level of an output signal of said detecting means to a lower level only when it is determined that the fore edge of one of the picture frames passes through said detecting means, to said second recording means and said second means for discriminating through the use of signals recorded on said second recording medium and on the basis of a mean value (b_o) of intervals between neighboring picture frames with each other disposed on the film and the tolerance (b_x) thereof;
- second means supplying second of said two kinds of output signals which change from a lower level of an output signal of said detecting means to a higher level only when it is determined that the aft edge of one of the picture frames passes through said detecting means, to said second means for discriminating through the use of signals recorded on said recording medium and on the basis of a mean value (a_o) of length picture frames disposed on the film and the tolerance (a_x) thereof; and
- said second means for discriminating generating an output for abruptly stopping said film transportation by rapidly actuating said means for stopping when neither of said two kinds of output signals is discriminated to be a true fore or aft signal.



3,867,031
METHOD AND APPARATUS FOR ASSURING CONTACT BETWEEN THIN SHEETS OF MATERIAL

Nils L. Hakanson, West Springfield, Mass., assignor to Scott Paper Company, Delaware County, Pa.
Filed Feb. 7, 1974, Ser. No. 440,364
Int. Cl. G03b *27/02*
U.S. Cl. 355—78 10 Claims

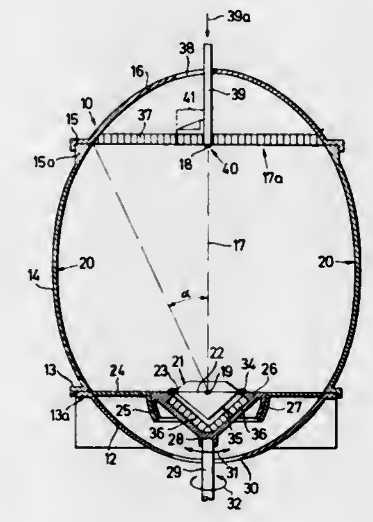


1. Apparatus for establishing firm contact between superposed thin sheets of material, comprising:

- a frame;
- a support carriage mounted on said frame for carrying said superposed thin sheets of material; and
- a freely rotatable, resilient roll disposed above said carriage at a spacing therefrom less than the roll radius, said roll being engaged by said carriage as the same transports said superposed sheets past said roll such that the roll is flattened and pressed against said superposed sheets on the carriage, said roll being journalled for free rotation on said frame whereby said roll is rotated by said carriage in synchronism therewith to preclude relative movement between said sheets.

3,867,032
ARRANGEMENT FOR OBJECTIVELY EVALUATING CHARACTERISTICS OF GEMS, PARTICULARLY DIAMONDS

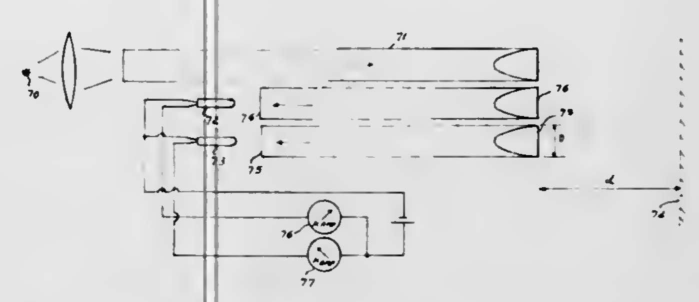
Gernot Klaus Bruck, Bornheim-Widdig, Germany, assignor to Diharo Diamanten Handels Compagnie Establishment, Mauren, Liechtenstein
Filed Mar. 8, 1974, Ser. No. 449,553
Claims priority, application Germany, Mar. 20, 1973, 2313783; Sept. 1, 1973, 2344144
Int. Cl. G01n *21/22*
U.S. Cl. 356—30 20 Claims



1. An arrangement for evaluating the optical characteristics of gems, especially diamonds, comprising, in combination, an ellipsoidal mirror having a first focal point and a second focal point; light-emitting means for emitting light from said first focal point; gem support means for holding a gem at said second focal point with such an orientation that light emitted from said first focal point and reaching and entering the gem will be reflected by the gem towards a plane containing said first focal point and oriented normal to a line joining said focal points, said gem support means including means surrounding and engaging the gem and blocking off the passage of light past such gem around the outermost portions of the gem; and light-measuring means for measuring the light emitted from said first focal point and reflected by such gem towards said plane.

3,867,033
MULTI-COMPONENT FLOW PROBE

Siegfried H. Hasinger, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed June 4, 1973, Ser. No. 366,908
Int. Cl. G01n *21/00*
U.S. Cl. 356—103 2 Claims



1. A multi-component flow probe for examination of multi-component particle flows having a direction of flow through a confined space comprising:

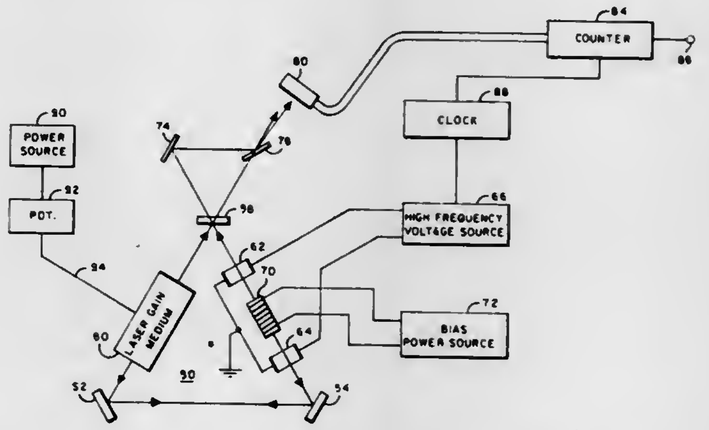
- a. a first fiber optic rod, a second fiber optic rod, and a third fiber optic rod having a first end of each of the said rods positioned in line parallel light insulating relationship and formed in a common wedge, the said wedge having an included angle within the range of 25° to 35°, the said point of the said common wedge having a radius from two to four times the average particle radius, and the second ends of the said first, second, and third fiber optic rods having flat polished surfaces substantially perpendicular respectively to their rod axes;
- b. means for positioning the said common wedge of the said first ends of the said first, second, and third fiber optic rods in the said multi-component flow with the said wedge pointing substantially against the said direction of particle flow, and with the second ends of the said first, second, and third fiber rods exterior to the said confined space;
- c. a light source communicating with the said second end of the said first fiber optic rod directing light into the said multi-component flow; and
- d. means cooperating with the said second ends of the said second and third fiber optic rods for detecting the reflected light from the said multi-component flow.

3,867,034
LASER ANGULAR RATE SENSOR BIASING APPARATUS

Frederick Aronowitz, Roseville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 16, 1973, Ser. No. 416,518
Int. Cl. G01b *9/02*; G02f *1/26*
U.S. Cl. 356—106 LR 3 Claims

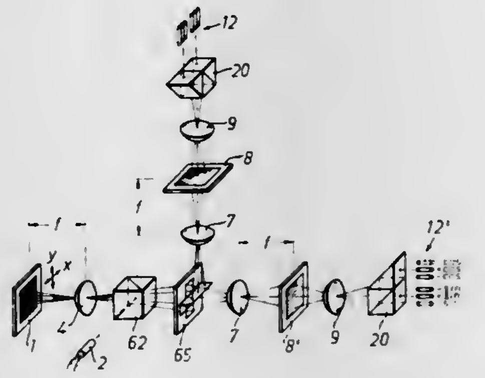
1. Apparatus for use in the optical ring path of a ring laser to prevent mode locking, which comprises:

- a. a Faraday material adapted to be placed in said optical ring path;
- b. a first wave plate exhibiting electric field dependent birefringence and being characterized by a first index ellipse, said first wave plate in the optical ring path adjacent said Faraday material;
- c. a second wave plate exhibiting electric field dependent birefringence, being constructed of the same material as said first wave plate and being characterized by a second index ellipse, said second wave plate placed in the optical ring path adjacent said Faraday material at the opposite end from said first wave plate, with the second index ellipse oriented so that its principal axes are not parallel with the correspondent principal axes of the first index ellipse; and
- d. means for applying an electric field which varies cyclically in magnitude and polarity to said first and second wave plates, to achieve cyclic variations in the optical path length around the laser in each direction.



3,867,035
PHOTOELECTRIC STEP MARKER

Dietmar Kaul, Wetzlar, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany
Filed Dec. 17, 1973, Ser. No. 425,077
Claims priority, application Germany, Dec. 19, 1972, 2262065
Int. Cl. G01b *9/02*
U.S. Cl. 356—110 4 Claims



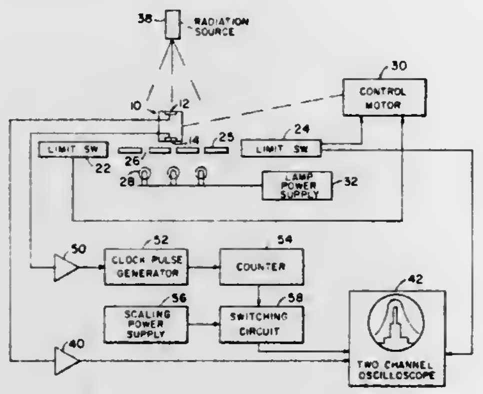
1. A photoelectric step marker for the measurement of the amplitude and sign of object displacements in two coordinates, comprising:

- a. a measuring grating, which is divided in two mutually orthogonal directions and which is displaceable with the object;
- b. two separate linear gratings each associated with a respective one of the two directions;
- c. a spatial frequency filter, which for each of the two directions filters out the light resulting from diffraction at the measuring grating and which is arranged within an optical system disposed between the measuring grating and the linear gratings, the spatial frequency filter comprising light-deflecting optical components for the separation of the ray paths associated with each of the two directions;
- d. optical means to produce an optical path difference of λ/4 between two mutually orthogonal directions of polarisation in the filtered-out light; and

e. an individual polarising splitter with associated photoelectric receivers in the ray path associated with each of the two directions.

3,867,036
LIMIT DISPLAY CIRCUIT FOR RADIATION SOURCE ANALYSIS

Grant R. Detwiler, Orange, and Ronald E. Chastain, Tustin, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 30, 1974, Ser. No. 465,722
Int. Cl. G01j *1/00, 1/42;* **H01j** *3/14*
U.S. Cl. 356—121 **3 Claims**

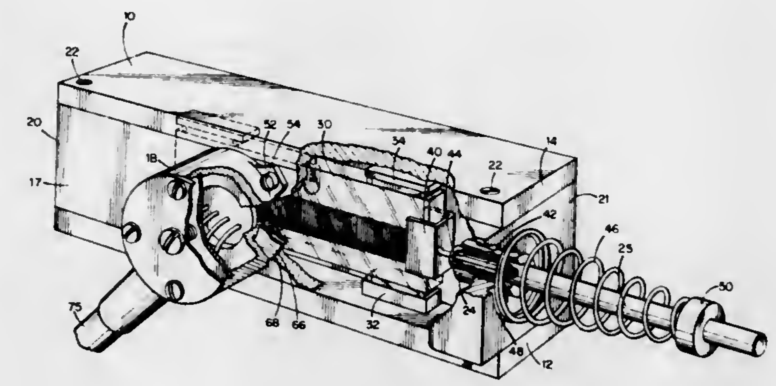


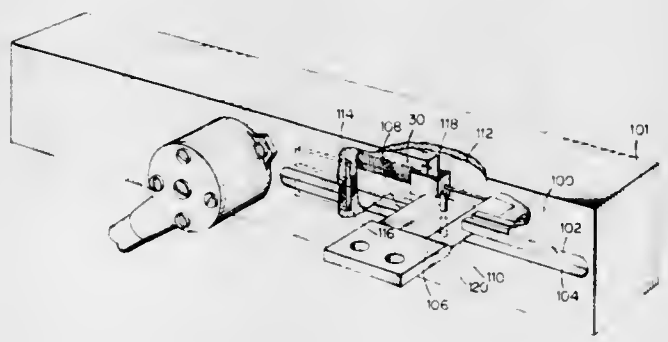
1. A limit display circuit for comparing optical radiated energy with a precise limit function, comprising: a radiation source, an apertured plate having respective apertures selectively disposed along a straight line, detector means disposed for controlled movement adjacent said plate and between said source and said plate, said detector means having a first sensor responsive to radiant energy from said source and a second sensor responsive to radiant energy impinging on the opposite surface of said plate when precisely positioned adjacent respective apertures therein for providing first and second electrical output signals, and an oscilloscope coupled to said first and second sensors and responsive thereto for simultaneously indicating signals coupled therefrom.

3,867,037
LINEAR MOTION ENCODER

E. David Litke, Andover, Mass., assignor to Dynamics Research Corporation, Wilmington, Mass.
Filed Aug. 29, 1973, Ser. No. 392,816
Int. Cl. G01b *11/04*
U.S. Cl. 356—169 **13 Claims**

1. An electro-optical linear encoder comprising:
- an elongated housing having a defined linear travel path therealong;
- an elongated rigid scale within said housing and having a plurality of alternately light responsive and non-responsive segments in parallel array along the longitudinal axis of one surface thereof, said scale being movable longitudinally within said housing;
- reticle means including a reticle fixed within said housing and having a plurality of alternately light responsive and non-responsive segments formed in a parallel array along a longitudinal axis of one surface thereof, the length of said reticle means along said longitudinal axis being less than the length of said elongated scale;
- sealing means affixed to said housing for substantially isolating the interior of said housing from the external environment;
- means for mounting said scale and reticle means for relative motion therebetween and along a longitudinal travel path within said housing and including:
- a drive member extending through said sealing means into said housing and arranged for bidirectional movement therethrough and for longitudinal motion relative to said reticle means; and
- means operative to couple said scale to said drive member in rigid relationship along the longitudinal axis of relative motion of said scale and in resilient relationship in at least one plane transverse to said longitudinal axis;
- means in said housing for directing light onto said scale and said reticle to provide a sensible fringe pattern; and
- sensor means within said housing for detecting said fringe pattern and for providing electrical signals in response thereto.

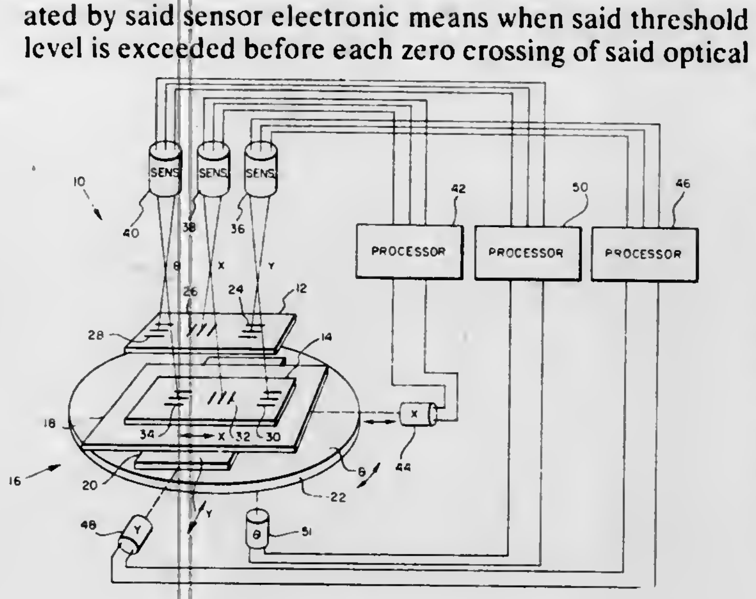


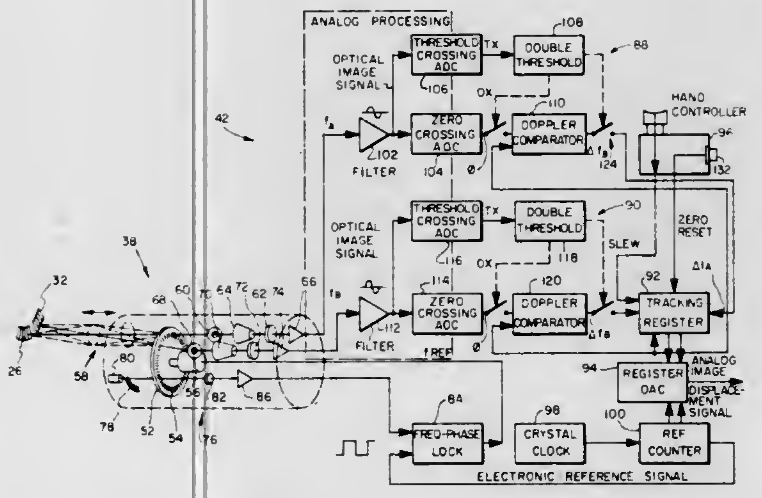


3,867,038
OPTICAL ALIGNMENT SYSTEM

William Westell, Weston, Mass., assignor to Baird-Atomic, Inc., Bedford, Mass.
Continuation-in-part of Ser. No. 309,625, Nov. 27, 1972,. This application Aug. 29, 1973, Ser. No. 392,804
Int. Cl. G01b *11/26*
U.S. Cl. 356—172 **13 Claims**

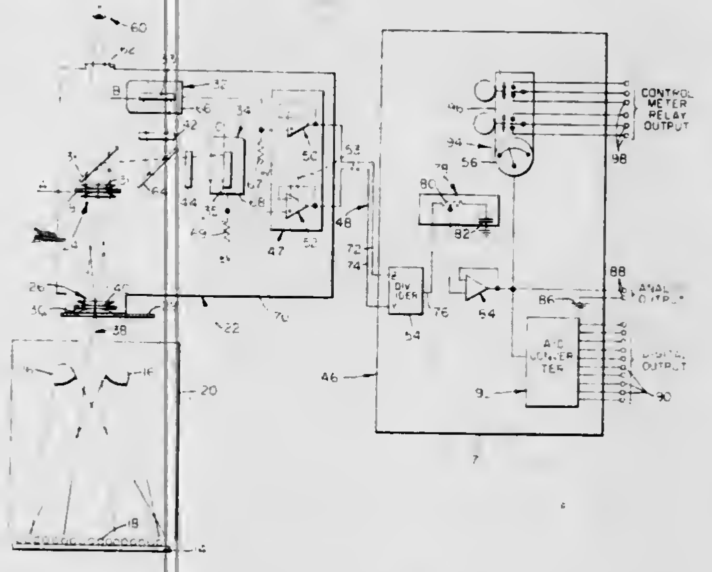
8. A system for aligning a pair of objects, each said object having reticle bars, said system comprising:
- a. movable platform means on which at least one of the objects is mounted;
- b. sensor means including rotating reticle means communicating with an optical path along which light flux of images of the reticle bars propogates, said rotating reticle means imaging fields of view of the reticle bars of the objects at a focal surface and for generating an optical image signal functionally related to the displacement of said fields of view in said focal surface, said optical image signal being a periodic electrical signal which is characterized by zero crossings; and
- c. sensor electronic means operatively connected to said sensor means and said movable platform means, said sensor electronic means generating alignment signals related to said optical image signal, said sensor electronic means including threshold decision logic means having an established threshold level, said alignment signals generated by said sensor electronic means when said threshold level is exceeded before each zero crossing of said optical image signal, said alignment signals related to the relative displacement between the objects.





3,867,039
COLOR MONITOR FOR CONTINUOUS PROCESS CONTROL

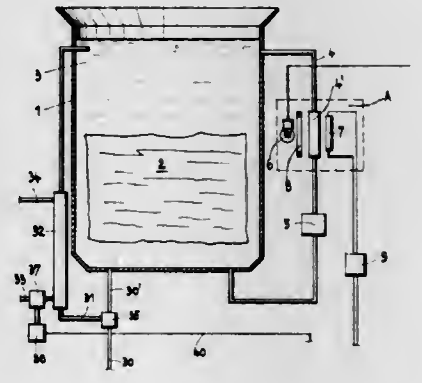
John R. Nelson, Houston, Tex., assignor to Petty-Ray Geophysical, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 134,366, April 15, 1971, abandoned. This application Oct. 25, 1973, Ser. No. 409,670
Int. Cl. G01j *3/50*
U.S. Cl. 356—178 **15 Claims**



1. A system for continuously monitoring the color of a product, comprising means for viewing a selected illuminated area through which a stream of the product is passed, said means for viewing including first optical means for forming a diffuse image representative of the average color of the product passing through the selected area, transducer means including photosensitive elements, and second optical means for simultaneously imaging said diffuse image on said photosensitive elements via first and second light beam paths, said second optical means including means for filtering said first and second light beams at respective wavelengths selected from the optical frequency spectrum, the light energy level of each filtered beam being representative of the average color at the respective wavelength of the product passing through the selected area, said transducer means including means and for continuously generating a pair of electrical color signals representative of the light energy of the respective filtered light beams at said photosensitive elements, and electrical analog dividing means operatively coupled to the transducer means for dividing one of the electrical color signals by the other electrical color signal to provide a continuous color ratio signal functionally related to the instantaneous average color of the product passing through the selected area irrespective of variations in the brightness of the illumination.

3,867,040
METHOD AND APPARATUS FOR CONTROLLING THE DYEING OF TEXTILE MATERIALS

Oskar Loffler, Loimanns 7, 3874 Litschau; Rudolf Schlosser, Waidhofnerstrasse 88, and Gunther Dornheim, Otto-Frankegasse 110, both of Heidenreichstein, all of Austria
Continuation-in-part of Ser. No. 178,594, Sept. 8, 1971, abandoned. This application July 25, 1973, Ser. No. 382,497
Int. Cl. G01j *3/46, 3/48*
U.S. Cl. 356—181 **7 Claims**



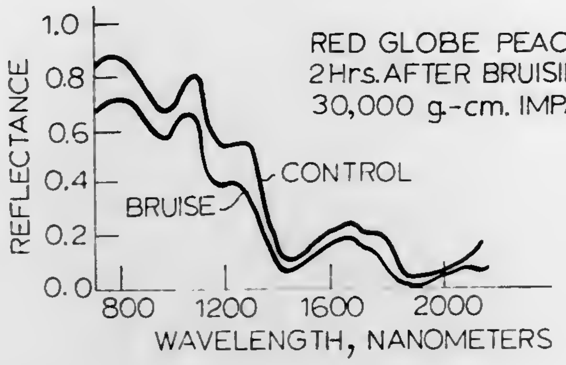
1. A method of controlling the absorption of dye from a dye liquor by a textile material, comprising raising the temperature of the dye liquor while its light transparency remains substantially constant, and maintaining the temperature of the dye liquor substantially constant while its light transparency changes as dye is absorbed by the material, until the dye is at least substantially absorbed.

3,867,041
METHOD FOR DETECTING BRUISES IN FRUIT

Galen K. Brown, Ashley, Ohio, and Larry J. Segerlind, East Lansing, Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Dec. 3, 1973, Ser. No. 421,379
Int. Cl. G01j *3/48*
U.S. Cl. 356—209 **6 Claims**

1. A method of detecting bruises in apples, peaches, pears, and the like comprising the steps of:
- a. illuminating the outer surface of a fruit, said surface being unbroken, with diffuse light at wavelengths of from 700 to 2,200 nm.;

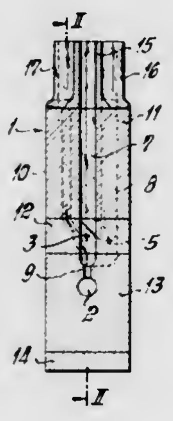
b. detecting the light reflected from the fruit surface with a photoemissive detector;
c. determining the amount of light reflected from the surface of an unbruised portion of said fruit;
d. determining the amount of light reflected from each portion of the entire fruit surface having an area equal to the area of the portion disclosed in (c);



e. comparing the amount of light determined in (c) to the amount of light determined in (d); and
f. detecting a bruise in the fruit when the amount of light determined in (d) is significantly lower than the amount of light determined in (c).

3,867,042
CUVETTE CONSTRUCTION

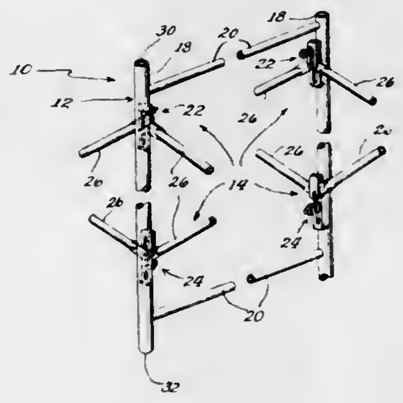
Peter Mayer, Mullheim/Baden, and Anton Heinz Sutor, Freiburg, both of Germany, assignors to Hellma GmbH & Co., Mullheim/Baden, Germany
Filed June 7, 1973, Ser. No. 367,972
Claims priority, application Germany, June 19, 1972, 2229723
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **14 Claims**



1. A cuvette for measuring the properties of incremental qualities of liquids, comprising inlet means for receiving the incremental quantities of liquids to be measured, which are separated by gas bubbles; outlet means for withdrawing the liquids and the gas; and wall means defining a measuring channel having an input end and an output end communicating with said outlet means, and a separation chamber having an inlet end communicating with said inlet means, and an outlet end spaced from said inlet end, the latter wall means including a substantially horizontal bottom wall provided with an aperture communicating said outlet end of said chamber with said input end of said channel, and a top wall diverging from said bottom wall in direction from said inlet end to said outlet end, said top wall being provided in the region of said outlet end with an outlet communicating with said outlet means, whereby said bubbles upon entering said chamber through said inlet means follow a path along said top wall and through said outlet into said outlet means due to their buoyancy, while at least a substantial portion of any rspective incremental quantity of liquid follows a liquid path from said inlet end to said outlet end of said chamber and through said aperture into said measuring channel.

3,867,043
BRACE LOCK ASSEMBLY FOR SCAFFOLDING

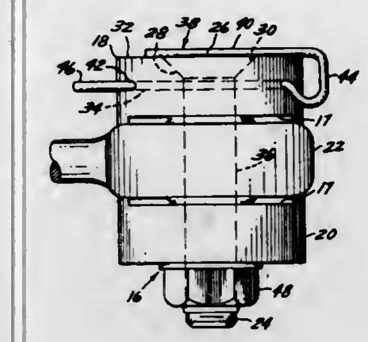
Russell H. Plough, Chicago, Ill., assignor to Symons Corporation, Des Plaines, Ill.
Filed Nov. 29, 1973, Ser. No. 419,921
Int. Cl. E04g *7/22*
U.S. Cl. 403—49 **7 Claims**



1. In a scaffolding system, in combination:
a post mounted in normal use with its longitudinal axis extending vertically; and
a brace lock assembly comprising:
a stud fixedly secured to said post and projecting radially outwardly therefrom, said stud being adapted to receive thereover the apertured end of an elongated cross-brace, a threaded bolt fixedly secured to said post in longitudinally spaced relation to said stud and projecting radially outwardly from said post in alignment with said stud,
a locking member mounted on said stud and said bolt for longitudinal reciprocal movement relative to said post,
said locking member having inner and outer legs each having means defining a slot therein and said slots being aligned for inserting said stud through both of them and for inserting said bolt through at least the slot in the inner leg, said stud and said bolt cooperating with said slot means in said inner leg to guide said locking member in said movement,
said legs being spaced apart a distance sufficient to receive the end of at least one cross-brace over said stud and between said legs, said slot in said outer leg having an open end which enables reciprocation of said locking member between an unlocking position wherein the outer leg clears said stud to enable a cross-brace end to be received on or removed from the stud, and a locking position wherein the outer leg receives the stud in the slot thereof to prevent a cross-brace end received on the stud from being removed,
seating means on said post adapted for sliding movement of said inner leg thereon during said locking member movement,
spring means mounted on said bolt and arranged for applying a radially inward force to one of said legs when constrained, and
nut means threadedly engaging said bolt for constraining said spring means to apply said force, whereby said locking member is secured to said post for longitudinal reciprocal sliding movement relative to the post while being constrained against free movement by frictional drag.

3,867,044
SECONDARY SAFETY DEVICE AND JOINT

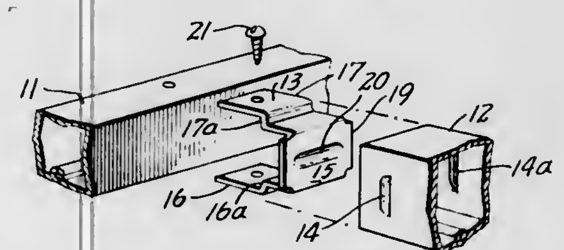
James W. Downing, Buena Park, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Aug. 6, 1973, Ser. No. 386,090
Int. Cl. F16c *11/00*
U.S. Cl. 403—155 **2 Claims**



1. A safetied joint, the joint including a flush head connector which is retained in a member defining a countersunk hole therein, said member having a surface from which said countersunk hole extends, the improvement comprising:
an inner surface of said member defining a safety hole therethrough parallel to said member surface and spaced from said countersunk hole; and
a safety member constructed from spring wire, said safety member having an end portion, a first portion at an angle to said end portion which is retained in said safety hole by said end portion, a second portion which engages said flush head of said bolt and said member adjacent said countersink and a central coil portion between said first and second portions, said first and second portions being parallel and defining a plane therebetween, and a portion of the flush head of said connector intersecting the plane defined between said first and second portions of said safety member.

3,867,045
TUBE CONNECTOR

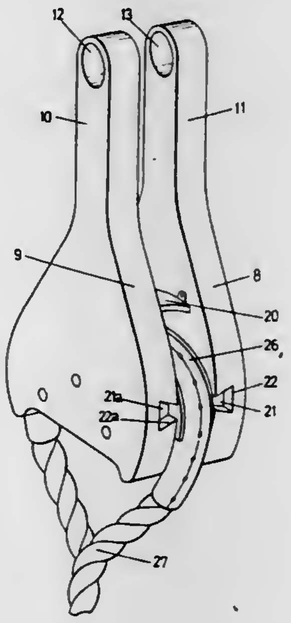
Max D. Beals, Riverside, Calif., assignor to Amax Aluminum Company, Inc., San Mateo, Calif.
Filed Mar. 25, 1974, Ser. No. 454,288
Int. Cl. F16b *9/00*
U.S. Cl. 403—190 **7 Claims**



1. A mechanical joint comprising one rectangular tube joined at an angle to another, said joint comprising,
a first hollow tube portion of rectangular configuration,
a U-shaped tube-connecting clip having a pair of legs which embraces transversely said first tube portion with the legs fastened thereto,
said U-shaped tube-connecting clip being of substantially rectangular configuration and having a substantially flat platform or web at its bight with said pair of legs depending from opposite edges of said bight, the free edges of said bight between the legs being in the form of extending ledges,
each of said legs having indexing shoulders laterally formed therein at a predetermined distance from said bight,
a second rectangular hollow tube portion having an open end into which the bight end of said clip is inserted in interference engagement therewith having inwardly projecting snap-retention means which provide spring-biased engagement with the free ledges of said clip following the insertion thereof, said snap-retention means being located a predetermined distance in from the open end of the tube corresponding substantially to the said predetermined distance between the indexing shoulders of the U-shaped clip and the bight thereof,
such that a substantially rigid mechanical joint is formed in which the indexing shoulders of the clip are held firmly against the end of said second tube with the ledges of the bight in engagement with the snap-retention means of the tube by virtue of the spring-biased action of said snap-retention means.

3,867,046
ROPE FITTING

Cyril Fox, Clayworth, near Doncaster, England, assignor to British Ropes Limited, Doncaster, Yorkshire, England
Filed Sept. 24, 1973, Ser. No. 400,031
Claims priority, application Great Britain, Oct. 20, 1972, 48483/72
Int. Cl. F16g *11/14*
U.S. Cl. 403—210 **6 Claims**



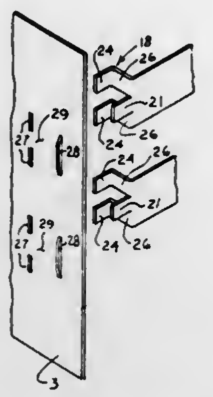
1. A rope fitting comprising a pair of spaced walls facing one another, and a load bearing member mounted between and rigidly interconnecting the walls, at least one of the walls being releasable from the load bearing member, the load bearing member having an arcuate groove of rounded cross-section adapted to receive the crown of an eye formed at the end of a rope, the arcuate groove running generally parallel to the walls and being unobstructedly accessible to the crown of the eye when the said at least one wall is released from the load-bearing member.

3,867,047
JOINT CONSTRUCTION

Lawrance W. Wightman, St. Louis; Howard C. Gebhart, Chesterfield, and Nick Tichy, Affton, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 12, 1973, Ser. No. 415,008
Int. Cl. F16b *9/00*
U.S. Cl. 403—242 **10 Claims**

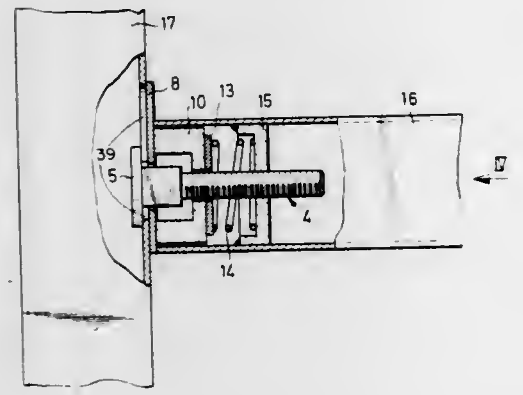
1. A structure, comprising:
a first structural member having at least two spaced openings in it, the area between said openings defining a spring web; and
a second structural member having at least two tabs and a spring lever formed in it, said tabs being inserted through the openings in said first member and folded against said first member with a first applied force, said spring web and said spring lever having a second force applied to them in a direction opposite to said first applied force so

that said spring web is sprung in a direction opposite to the direction of said first applied force, said spring web abutting said spring lever so that the elasticity of the web material causes said spring web to exert a residual force against said spring lever, establishing a tight joint.



3,867,048
PLUG CONNECTIONS FOR VERTICALLY ABUTTING FRAME SECTIONS

Abraham Endzweig, Brandlburgerstrasse 104, Regensburg, Germany
Filed Feb. 20, 1973, Ser. No. 333,466
Int. Cl. F16b *7/18*, *7/20*
U.S. Cl. 403—252 **9 Claims**

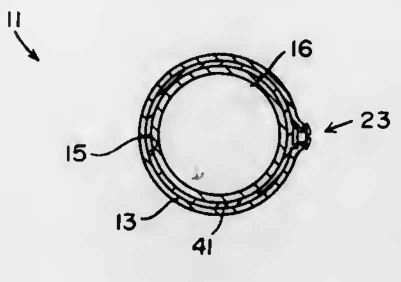


1. A plug connection for frame sections comprising a bar having a recess at one end thereof; a cross wall member inside the recess and spaced from the end of the bar, an auxiliary pusher member located at the end of the bar, said cross wall member being provided with a threaded hole; a screw bolt having an enlarged head, a threaded end portion being threaded into said cross wall member, and a portion intermediate said head and threaded portion being square in cross section and the width thereof being at least equal to the diameter of the threaded portion; a biasing means about the screw bolt and positioned between the cross wall and the auxiliary pusher means; and a guide plate being non-rotatably mounted on the intermediate portion of the screw bolt, with the pusher means biasing the guide plate towards the head; the head of the screw bolt being beyond the end of the bar and adapted to fit into a hole and slot means in a member being connected.

3,867,049
PRESTRESSED SHAFT GRIPPING ELEMENT

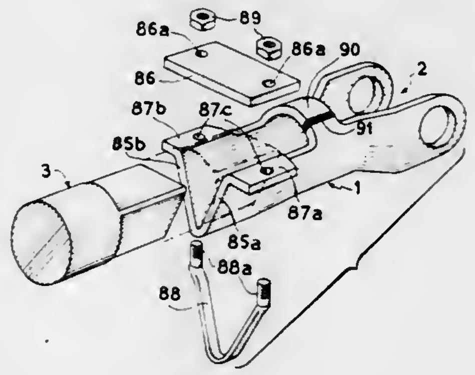
Delong Rice, Jr., 2140 Victoria Ave., Memphis, Tenn. 38116
Filed Apr. 16, 1973, Ser. No. 351,775
Int. Cl. B60b *27/06*
U.S. Cl. 403—344 **11 Claims**

1. A gripping element for gripping a shaft, said gripping element formed of resilient sheet metal and being formed into a circular configuration, said element being prestressed into a first position in which the inside diameter of said circle is normally slightly smaller than the diameter of the shaft over which it is intended to circumferentially extend and grip, and said gripping element being provided with a slit establishing confrontingly arranged end portions, camming means coacting with said end portions for yieldably expanding said element into a second position in which the diameter of said circle is expanded to selectively permit said gripping element to be freely passed circumjacent about the shaft whereby it may be moved to and fro along the length of the shaft while extending circumferentially thereabout and for permitting said gripping element a third more relaxed condition than when in said second position wherein said element grips the shaft firmly at the desired location thereon, said camming means being rotatable about an axis which extends radially outwardly from the shaft, and retaining means for holding said camming means against substantial radial outward movement.



3,867,050
ASSEMBLY OF A CONNECTING ELEMENT AND A TORQUE TRANSMITTING ELEMENT

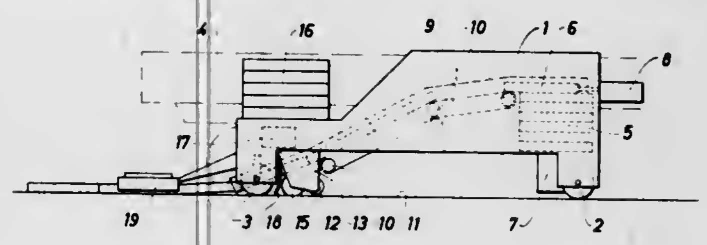
Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest
Continuation-in-part of Ser. No. 77,911, Oct. 5, 1970, Pat. No. 3,804,541. This application Apr. 21, 1972, Ser. No. 246,229
Claims priority, application France, Nov. 17, 1969, 69.39423
Int. Cl. F16b *2/02*
U.S. Cl. 403—373 **11 Claims**



1. An assembly of a shaft having an axis and a face with a connecting element constituted by a cold-formed sheet metal member having a portion defining a collar which is coaxial with and encompasses the shaft and comprises two longitudinally extending edge portions defining a throughway split in the collar and two ear portions which extend from said edge portions and have surfaces, said surfaces being spaced apart from each other such distance and said split having such width as to allow the collar to be mounted on the shaft by a relative radial displacement of the shaft and collar, tightening means extending through the ear portions and having a surface, an intermediate holding member located between the ear portions and having a face which engages said face of the shaft and having at least one other face which co-operates with at least one of said surfaces, whereby a relative displacement between the ear portions, the intermediate member and the tightening means causes the shaft to be gripped inside the collar, said shaft having a portion defining a non-circular keying face and one of two component parts of the assembly consisting of said intermediate member and said collar having a portion defining a non-circular keying face keyingly engaged with the keying face of said shaft, and means defining a bridge which is axially adjacent said ear portions and rigidly interconnects said edge portions and closes one end of said split.

3,867,051
STONE SETTING MACHINE

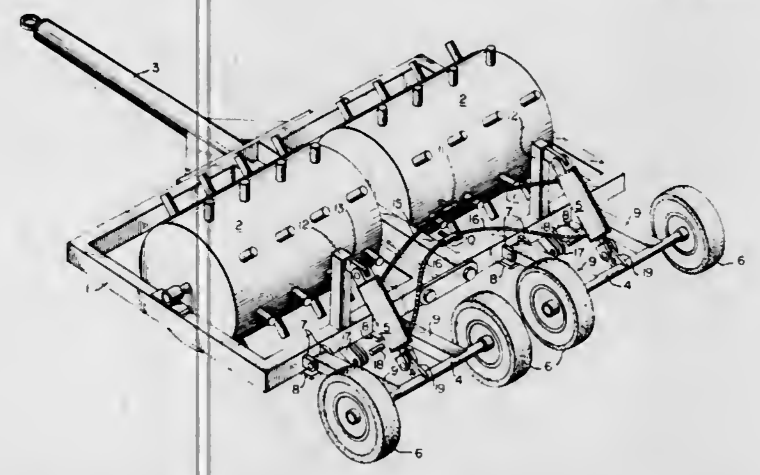
Georg Bjorhaag, Karlbergvagen 21, 66200 Amal, Sweden
Filed Aug. 1, 1972, Ser. No. 277,140
Claims priority, application Sweden, Aug. 2, 1971, 9860/71
Int. Cl. E01c *19/14*
U.S. Cl. 404—99 **3 Claims**



1. Machine for the setting of curbstones, sidewalk slabs and similar elements comprising a chassis of a vehicle capable of travelling on a bed on which elements are to be deposited, a magazine being supported by said chassis and capable of storing a plurality of said elements, an ejector mechanism connected to said magazine, an even and driven belt conveyor being arranged for receiving and transporting said elements from said ejector mechanism of said magazine to a delivery zone, in which said elements extend longitudinally of said chassis, when the setting operation is going on, or leaving said chassis, the direction of transportation of said conveyor belt at least in the setting zone being opposed to the intended direction of travel of said chassis and having a greater speed than the speed for which said chassis is arranged to be driven during the setting operation, whereby said elements in the setting zone with those of their edges which are perpendicular to the direction of travel of said belt conveyor, are pressed against each other at the same time as they are dragging against said belt conveyor, a feeler device arranged on said chassis which feeler device is positioned to follow said bed, a magazine equipped with a feeding out device for aggregate, said feeding device connected with said feeler device in such a manner that aggregate is automatically fed out at such spots, where said feeler device feels cavatives in said bed, a magazine and a feeding out device for a binding agent such as asphalt, being carried by said chassis and positioned for binding said bed material or pasting of said elements, said feeding out device for aggregate is located between two discharge openings of said feeding out device for the binding agent.

3,867,052
SHEEP'S FOOT ROLLER WITH LIFTING MECHANISM

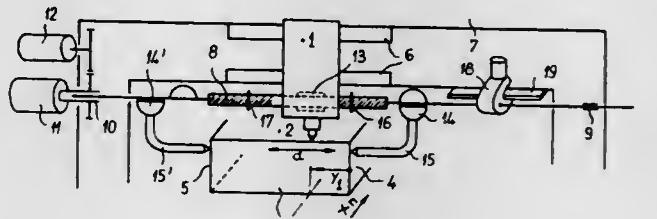
Harvey Durham, P.O. Box 164, Manila, Ark. 72442
Filed Nov. 13, 1973, Ser. No. 415,420
Int. Cl. E01c *19/26*
U.S. Cl. 404—121 **8 Claims**



1. In combination with a roller adapted to be attached to a towing tractor having a fluid power circuit, said roller having an open rectangular frame in which a compaction roll is mounted, a lift mechanism mounted on the rear end of the frame behind said roll and comprising an axle of less length than said roll; ground wheel means journaled on said axle; arm means fixed at one end on said axle and pivotally connected at the other end to the rear end of the frame; a lug fixed on said axle; an hydraulic cylinder pivoted at its upper end on said frame above and to the rear of the pivoted connection of the arms means to the frame; a double-acting piston in said cylinder having a piston rod extending through the lower end of the cylinder and pivotally connected to the said lug at a point thereon which is always located to the rear of the pivotal connection of the arm means to the frame; ducts connecting the upper and lower ends of said cylinder through suitable valve arrangement with the fluid power circuit of the towing tractor; means on the frame limiting to vertical position the downward and forward swinging movement of the axle arm means; and means on the frame for locking the arm means at its lower limit of downward swing.

3,867,053
DEVICES FOR POSITIONING MOVABLE MEMBERS OF NUMERICALLY CONTROLLED MACHINES

Pierre Lecailtel, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Jan. 12, 1973, Ser. No. 323,120
Claims priority, application France, Jan. 20, 1972, 72.01891
Int. Cl. B23b *39/04;* **B26d** *5/02*
U.S. Cl. 408—13 **7 Claims**



1. A device for controlling the position of movable elements of machines for machining elongated workpieces with the lateral side faces of the workpiece to be machined being reference sides, said device comprising:

a support disposed to surround a workpiece to be machined, a vertical machining unit for machining a workpiece, means for guiding said unit to cause said unit to be movable and positionable in a direction transverse to the longitudinal axis of the workpiece to be machined, and

means for changing the position of said unit from a position relative to one reference side to a position relative to the other reference side for performing a machining operation on a selected portion of the workpiece,

said means for changing comprising:

a centering device adjacent each lateral side of a workpiece to be machined for producing an accurate position of the unit relative to the respective side face and a feeler connected to each centering device adapted to abut a respective side face of the workpiece to be machined,

each centering device comprising two portions movable relative to each other, one portion of each centering device being connected to its respective feeler and the other portion of each centering device being connected to the machining unit so that when the machining unit is desired to be positioned relative to one of the reference sides the two movable portions of the centering device on that side are positioned in a specific orientation relative to each other.

3,867,054

UNIVERSAL DRILLING AND MILLING MACHINE WITH SEVERAL EXCHANGEABLE TOOLHEADS

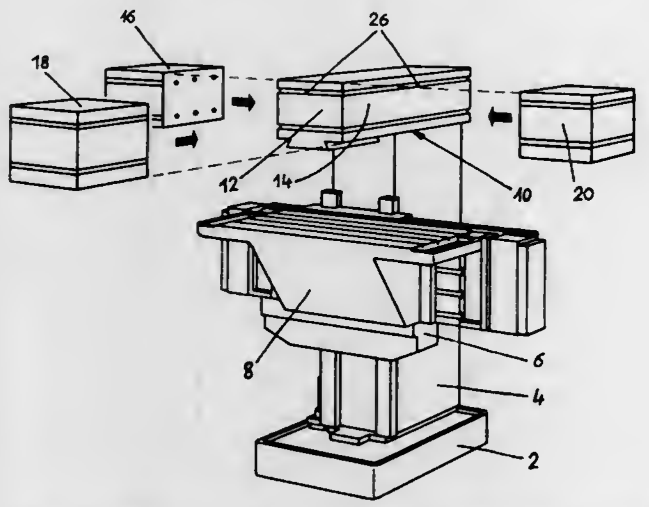
Johann Muller, deceased, late of Unterhaching, Germany (by Katharina Muller, legal representative), assignor to Friedrich Deckel Atiengesellschaft, Munich, Germany

Filed Mar. 26, 1973, Ser. No. 344,847

Claims priority, application Germany, Apr. 5, 1972, 2216401

Int. Cl. B23b *47/00;* **B23c** *1/12*

U.S. Cl. 408—234 R **4 Claims**



1. The combination of a universal drilling and milling machine having a base and a plurality of toolheads each being readily movable by a machine operator and equipped with self-contained drive means and first securement means adapted to secure said toolheads to means defining a rectangular-shaped horizontal cross slide having end faces and side faces, said horizontal cross slide means comprising means defining a plurality of first fastening means on at least one of said end faces and on at least one of said side faces, said first securement means being adapted to cooperate with said first fastening means to secure said toolheads thereto whereby said machine operator can select and interchange said toolheads to vary the location of said toolheads relative to said base.

3,867,055

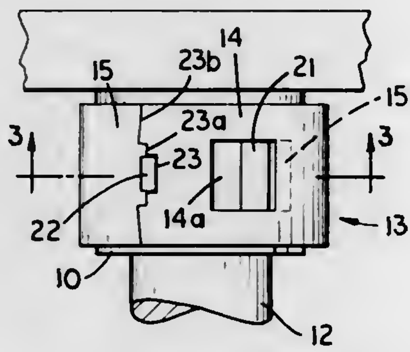
CIRCULAR CLAMP FOR TUBES

John A. Wooden, Indianapolis, Ind., assignor to Brookside Corporation, McCordsville, Ind.

Filed Nov. 12, 1973, Ser. No. 414,823

Int. Cl. F16b *2/08*

U.S. Cl. 403—373 **8 Claims**



1. A circular clamp adapted to join a tubular member and a concentric central member extending into the tubular member, said clamp comprising a one-piece, circularly formed resilient band having overlapping end portions, said band having a free inside diameter somewhat less than the outside diameter of the tubular member so that when in place on the tubular member the band exerts a compressive force thereon locking it to the central member, said overlapping band end portions each having apertures therethrough which are in register over a portion only of their area, and interfitting abutment surfaces on said overlapping band end portions, said interfitting abutments comprising a central notch cut in the tip of one of said overlapping band end portions and an upwardly directed tab fitting within the notch and struck from the surface of the other of said overlapping band portions, said registering portion of said apertures being adapted to accomodate a tool which when twisted in one direction enlarges said registering aperture portion to disengage said interfitting abutment surfaces and release a substantial portion of said compressive force on the tubular member, said overlapping band end portions being skewed in relation to each other by the twisting motion of the tool thereby removing said abutment surfaces from interfitting engagement and permitting said overlapping band end portions to bear against each other to prop said band in coompressive force releasing position, twisting of the tool in reverse direction permitting the overlapping band end portions to return from their skewed relation to locking position on the central member with said interfitting abutment surfaces again engaged.

3,867,056

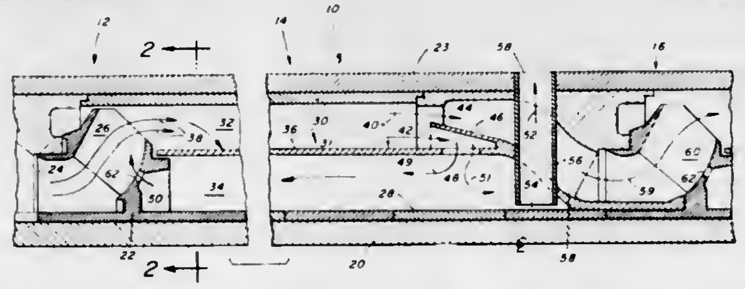
RECIRCULATING GAS SEPARATION MEANS FOR SUBMERSIBLE OIL WELL PUMPS

Joseph T. Carle, and Michael R. Brown, both of Tulsa, Okla., assignors to Oil Dynamics, Inc., Tulsa, Okla.

Filed Sept. 27, 1973, Ser. No. 401,398

Int. Cl. F04d *29/70, 29/00*

U.S. Cl. 415—53 **4 Claims**



1. In an electric motor-driven rotary submersible well fluid pump, said pump having an impeller, said impeller having one or more shrouded fluid passageways, each passageway having an inlet and outlet, the improvement in means to separate gas from said fluid to be pumped, comprising:

a. essentially co-axial annular separation chamber and recycle chamber formed above and within the diametrical dimensions of said pump, said recycle chambers being inside said separation chamber;

b. said impeller having at least one opening in at least one wall thereof which opening provides communication between said passageway and the lower end of said annular recycle chamber;

c. means to direct fluid from the outlet of said impeller passageways into the lower end of said annular separation chamber;

d. means at the upper end of said separation chamber to by-pass a first part of said fluid from said annular separation chamber into the upper end of said recycle chamber, the remaining second part of said fluid being produced from said pump and said well;

e. gas relief means communicating the upper part of said recycle chamber to the well space of the well in which said pump is installed; and

f. whereby said by-passed fluids in said lower end of said recycle chamber are directed into said impeller opening.

3,867,057

SCREW PUMP

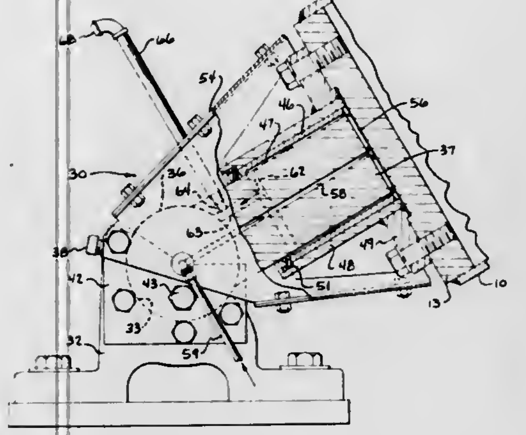
Peter Grujanac, Bartlett, and Clyde L. Huntington, Elgin, both of Ill., assignors to Lakeside Equipment Corporation, Bartlett, Ill.

Filed Sept. 13, 1973, Ser. No. 397,065

Int. Cl. F03b *3/12, 11/06*

U.S. Cl. 415—72 **11 Claims**

1. A screw pump including an elongate shaft inclined to the horizontal and having upper and lower ends, an upper bearing and a lower bearing supporting the shaft for rotation, and a spiral flight extending along the elongate shaft for raising a liquid as the elongate shaft is rotated; characterized in that the lower bearing comprises a stub shaft coaxial with the elongate shaft; a bush circumjacent the stub shaft and connected to the elongate shaft for rotation therewith; means providing a lubrication channel between the bush and stub shaft; means including an inlet passageway through the stub shaft for providing an inlet connection to the lubrication channel; a pump operatively connected to the inlet passageway for feeding a lubricant under pressure to the lubrication channel; an outlet passageway through the stub shaft providing an outlet connection to the lubrication channel; an outlet conduit connected to the outlet passageway; a pressure switch responsive to the pressure on the lubricant in the outlet conduit for starting and stopping the pump to maintain the pressure on the lubricant without preselected limits.



3,867,058

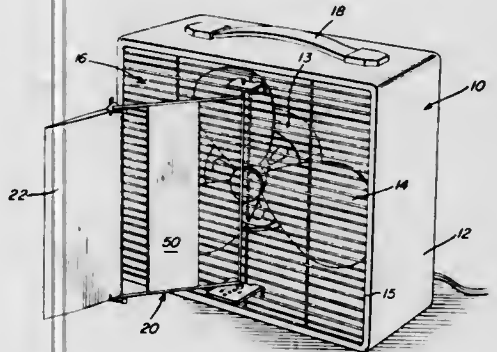
MOTION IMPARTING APPARATUS

Ray V. Hendrickson, 816 Dogwood Rd., North Palm Beach, Fla. 33403

Filed Dec. 1, 1972, Ser. No. 311,141

Int. Cl. F01d *7/00;* **F03d** *5/06;* **F01d** *9/00*

U.S. Cl. 415—125 **9 Claims**



1. Apparatus for imparting motion, comprising a pivotally mounted member arranged in a fluid stream, the member including:

a. an arm having a pair of spaced ends, and pivotally mounted at a one of the ends;

b. an airfoil pivotally connected to the other of the ends, the arm and airfoil arranged for pivoting about substantially vertical axes between two extreme end positions and the airfoil arranged for swinging the other of the ends, and the airfoil being arranged for changing positions relative to the arm and the fluid stream as the arm approaches each end position for changing the direction of swinging movement of the airfoil; and

c. stop means for causing the other of the ends and the airfoil to engage one another and determine the angle of the airfoil relative to the arm and the fluid stream in each position of the airfoil.

3,867,059

REVERSIBLE MULTI-STAGE HYDRAULIC MACHINE

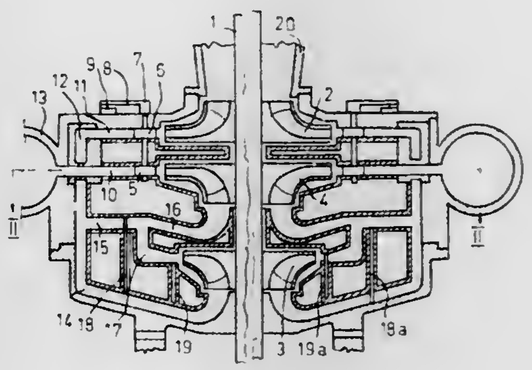
Michel Fauconnet, Geneva, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Oct. 29, 1973, Ser. No. 410,898

Claims priority, application Switzerland, Oct. 31, 1973, 15846/73

Int. Cl. F01d *13/02, 1/30, 1/00*

U.S. Cl. 415—153 **5 Claims**



1. A reversible hydraulic machine including

a. a pump-turbine part having at least two stages, and a pump part having at least one stage,

b. each stage including an impeller, and the impellers being coupled to a common shaft,

c. the impellers of said two stages of the pump-turbine part being arranged in juxtaposition and back-to-back with their suction apertures facing in opposite directions;

d. two sets of distributors with adjustable stator blades, one being associated with each of said two stages of the pump-turbine part;

e. common regulating means for simultaneously adjusting the setting of both sets of blades; and

f. passage means interconnecting the stages and containing obturator means for selectively putting out of action the pump part,

g. the obturator means having a first setting in which it causes water being pumped to flow from a suction tube to a spiral casing of the machine through a path which leads serially through one stage of the pump-turbine, the pump, and the other stage of the pump-turbine, and a second setting in which it causes water acting as power medium to flow from the spiral casing to the suction tube of the machine through a part which leads serially through said two stages of the pump-turbine part and is isolated from the pump part.

3,867,060

SHROUD ASSEMBLY

Thomas R. Huber, Waterford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,455

Int. Cl. F01d *5/20*

U.S. Cl. 415—172 A **3 Claims**

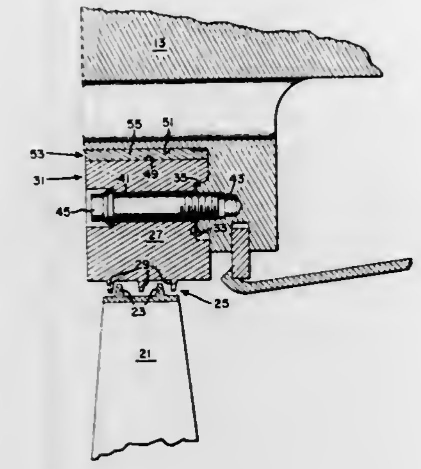
1. In a turbomachine, including a rotor axially disposed within a unitary outer casing, said rotor formed with a plurality of radially extending rotor blades, each blade having at least one radially extending seal tooth; and, said outer casing being formed with an open end annular recess circumferentially adjacent said rotor blades seal teeth; a shroud assembly comprising:

a plurality of shroud segments disposed in said open end annular recess;

at least one shroud seal tooth radially dependent from each shroud segment and overlapping a blade seal tooth in the axial direction to form an axial seal therewith; and,

a clearance defined between a radially outer surface of each shroud segment and a radially inner surface of said outer casing whereby each shroud segment may be moved

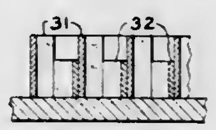
- radially outward to unlap respective blade and shroud teeth prior to axial removal from the outer casing;
- an annular stop formed on said outer casing extending axially into said annular recess; and,

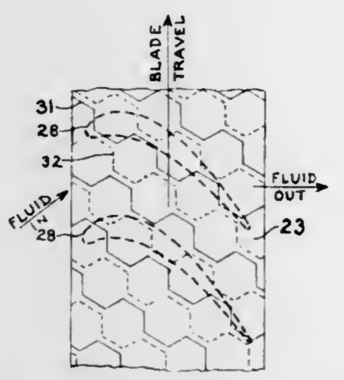


- a recess formed in each shroud segment for engaging a portion of said annular stop.

3,867,061
SHROUD STRUCTURE FOR TURBINE ROTOR BLADES AND THE LIKE

Seymour Moskowitz, Fort Lee, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Filed Dec. 26, 1973, Ser. No. 427,652
Int. Cl. F01d *11/08, 11/00*
U.S. Cl. 415—174 **6 Claims**



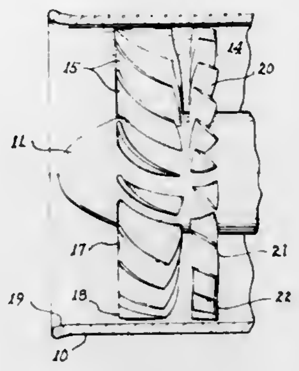


1. In a fluid flow device having a rotor with generally radially extending blades coacting with fluid flowing between the blades, a shroud structure circumferentially surrounding the tips of the rotor blades in close proximity thereto to minimize leakage of fluid across the blade tips, the gap between the blade tips and the apposed surface of the shroud structure having in the cold state of the device a radial dimension which may diminish during operation sufficiently to cause rubbing contact between the blade tips and the shroud, the improvement comprising:

- a. the shroud having a plurality of strips convoluted in a semi-hexagonal configuration in their longitudinal direction, each of the strips having one edge affixed to a rigid backing element and its opposite edge freestanding in the radial direction and apposed to the blade tips,
- b. the strips being disposed with their convoluted length approximately parallel to the chordal centerline of the rotating blade tips,
- c. the freestanding edges of the strips being resilient to rubbing contact with the blade tips in the generally circumferential direction of the shroud and generally transversely to the convoluted longitude of the strips.

3,867,062
HIGH ENERGY AXIAL FLOW TRANSFER STAGE

Theodor H. Troller, Ava Banch, Portal, Ariz. 85632
Continuation-in-part of Ser. No. 183,413, Sept. 24, 1971, abandoned. This application Sept. 19, 1973, Ser. No. 398,654
Int. Cl. F04d *29/32*
U.S. Cl. 415—194 **3 Claims**



1. In a fluid flow apparatus including a rotor, the axis of which extends along the direction of fluid flow, and having a housing surrounding said rotor, said housing extending along said rotor and radially spaced therefrom to define a fluid passageway between said rotor and housing a fluid energy boosting stage comprising:

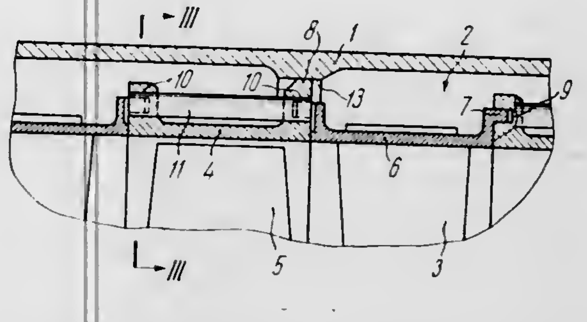
- a first plurality of circumferentially spaced energy adding blades secured to said rotor for movement in a plane of rotation, each having a leading edge and a trailing edge and each extending radially therefrom to adjacent said housing;
  - each of said first plurality of blades having substantially airfoil sections with the section at the blade root positioned relative to the plane of rotation of said blades such that a line extending from the leading to the trailing edge forms an angle with the plane of rotation that becomes progressively less at cross sections further from the blade root;
- a second plurality of circumferentially spaced energy adding blades secured to said rotor for movement in a plane of rotation, each having a leading edge and a trailing edge and each extending radially therefrom for rotation with said first plurality of blades said second plurality of blades being substantially circumferentially displaced from said first plurality of blades;
  - each of said second plurality of blades shaped and positioned independently from said first plurality of blades and having substantially airfoil sections, said sections at any given radial distance from the rotor axis cooperating with corresponding sections of the first plurality of blades to deflect the fluid flowing through the apparatus, the section of each of said second plurality of blades at the blade root adjacent said rotor positioned relative to the plane of rotation of said blades such that a cord line extending from the leading to the trailing edge forms an angle of greater than 90° with the plane, with the trailing edge pointing toward the direction of rotation of the blade, said angle becoming progressively less at sections further from the blade root.
- the trailing edges of said first plurality of blades being angled with respect to the leading edges of said second plurality of blades.

3,867,063
STATOR OF MULTISTAGE TURBOMACHINE

Eduard Grigorievich Bulavin, Prospekt Lenina, 21, Kv. 11, and Jury Evgenievich Sljusarev, Ulista 8 Mauta, 66, Kv. 23, both of Zaporozhie, U.S.S.R.
Filed Oct. 18, 1972, Ser. No. 298,631
Int. Cl. F01d *1/02, 9/00*
U.S. Cl. 415—198 **4 Claims**

1. A stator of a multistage turbo-machine comprising:

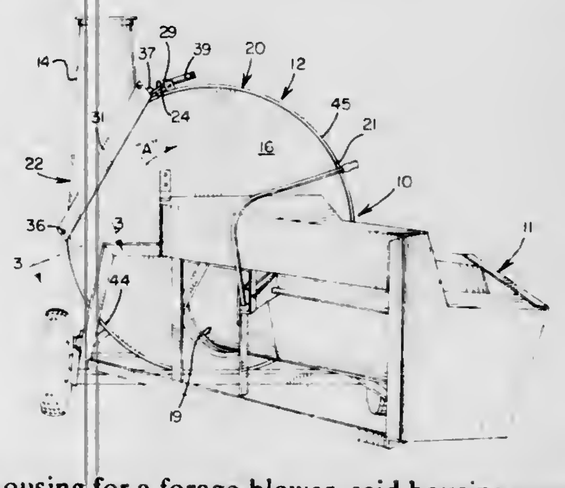
- a housing of a turbo-machine;
- a guiding device of each stage of the turbo-machine accommodated in said housing and including an external ring and fixed blades secured to said external ring;
- a working ring of each stage fixed in said housing;
- annular shoulders for limiting radial displacement of said working ring relative to said external ring, one shoulder being made at each end face of said external ring;
- an annular groove at each end face of said working ring, said groove enclosing said shoulder of said external ring; and



- limiting means for limiting the circumferential displacement of said working ring relative to said external ring, said limiting means comprising:
  - a plurality of studs spaced along a circle, rigidly secured in each said working ring and extending substantially axially through said working ring, opposite ends of each stud being substantially located in correspondence annular grooves at opposite faces of said working ring;
  - a plurality of axial slots in said shoulders of said external ring, each of said slots receiving one end of one of said studs and the longitudinal axis of said stud extending within each said slot.

3,867,064
FORAGE BLOWER OUTLET

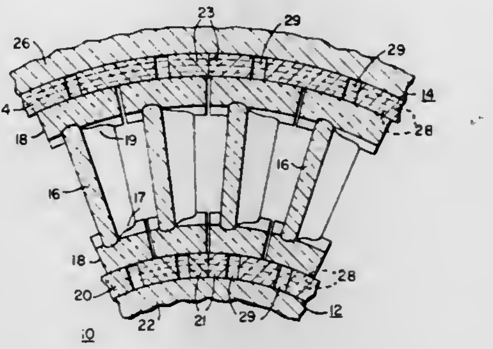
Robert Sorensen, Glen Ellyn; Thomas J. Scarnato, Barrington, and N. Donald Patterson, Downers Grove, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Aug. 27, 1973, Ser. No. 392,155
Int. Cl. F04d *29/40*
U.S. Cl. 415—201 **5 Claims**



1. In a housing for a forage blower, said housing comprising a pair of laterally spaced side sheets, one of said side sheets having a crop inlet, and an annular peripheral wall adapted to be clamped against said side sheets, said peripheral wall comprising outlet means and a circumferential band, the improvement wherein said outlet means comprises a base member connected in end to end relationship with said band, said base member, side sheets, and circumferential band defining an opening in said peripheral wall adjacent the periphery of said side sheets, and a blower outlet having a portion removably attached to said base member, said blower outlet being displaceable from said base member to permit access to the interior of said housing while said peripheral wall remains clamped against said side sheets.

3,867,065
CERAMIC INSULATOR FOR A GAS TURBINE BLADE STRUCTURE

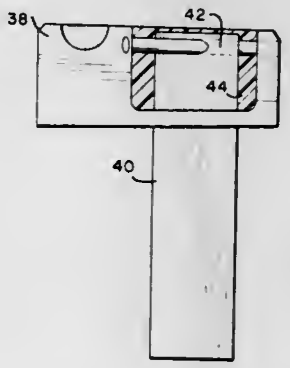
Richard J. Schaller, Ambler, Pa.; Thomas J. Rahaim, Claymont, Del., and Claude R. Booher, Jr., West Chester, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 16, 1973, Ser. No. 379,677
Int. Cl. F01d *9/02*
U.S. Cl. 415—214 **2 Claims**



1. A hot elastic fluid stator blade construction for a gas turbine, comprising a plurality of radially directed stationary ceramic blades disposed across an annularly shaped hot fluid flow path, each of said stationary ceramic blades being supported on their radially inner ends by a ceramic inner end cap, each of said stationary ceramic blades being supported on their radially outer ends by a ceramic outer end cap, said ceramic outer end caps defining a portion of the radially outer surface of said annularly shaped hot fluid flow path, said inner ceramic end caps defining a portion of the radially inner surface of said annularly shaped hot fluid flow path, and an arcuately shaped ceramic insulator disposed on the radially outer side of said outer ceramic end caps, and an arcuately shaped ceramic insulator disposed on the radially inner side of the inner ceramic end caps, said ceramic insulators preventing damage to said end caps from thermal distortion caused by uneven temperature distribution therein, said ceramic insulators having a woven fibrous ceramic material disposed therein.

3,867,066
GAS COMPRESSOR

Fred Canova, Phillipsburg; Leroy M. Krouse, and Hanns Hornschuch, both of Easton, all of Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.
Division of Ser. No. 235,501, March 17, 1972, Pat. No. 3,773,430. This application Aug. 1, 1973, Ser. No. 384,450
Int. Cl. F01d *1/02, 5/00, 25/04*
U.S. Cl. 415—217 **3 Claims**

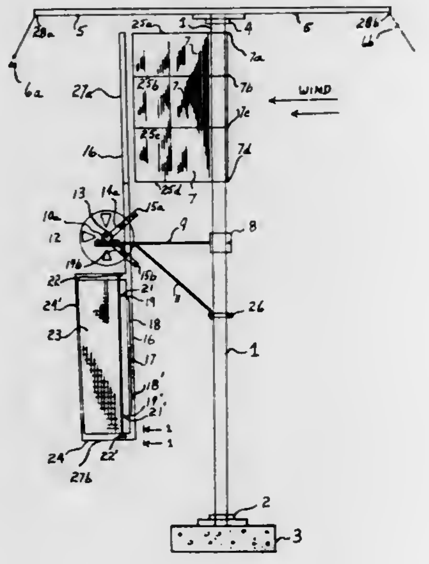


1. An arrangement for mounting stator vanes in a stator housing, for use in a gas compressor, comprising:

- a vane mounting ring, said ring having a recess formed therein for receiving a vane therewithin;
- a vane having an end thereof disposed within said recess, with a pin therethrough securing said vane end to said ring and in said recess; and
- resilient means enveloping said vane end in said recess and dampening said vane against vibration.

3,867,067
WIND POWERED MOTIVE APPARATUS

Edwin K. Hillman, 907 W. Desert Cove Rd., Phoenix, Ariz. 85029
Filed Sept. 6, 1973, Ser. No. 394,786
Int. Cl. F03b *7/00*
U.S. Cl. 416—10 **8 Claims**



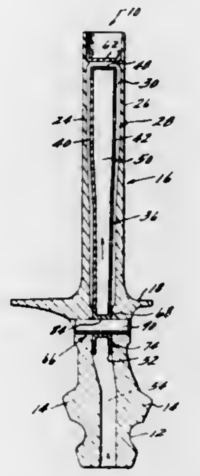
1. A wind operated apparatus having a rotatable output shaft, said apparatus comprising:

- a. a mast, said mast being pivotally mounted;
- b. a triangular shaped deflector, said deflector being rigidly attached to said mast, said deflector in combination with said mast being pivotally responsive to any changes in the direction of the wind to orient an apex of said deflector into the wind, whereby the lateral sides extending from the apex laterally deflect the wind;
- c. support means attached to said mast and extending laterally therefrom;
- d. said output shaft being rotatably mounted upon said support means normal to a plane bisecting the apex of said deflector, said output shaft extending beyond opposed sides of said deflector; and
- e. a plurality of vane means displaced from one another and extending from said shaft, each said vane means including:
  - 1. a common pipe affixed at its center to said shaft and extending laterally therefrom;
  - 2. a pair of vanes having one vane secured to each extending part of said common pipe, one vane of said pair of vanes being oriented at right angles to the other vane;
  - 3. bearing means disposed at the junction of said shaft and said common pipe to rotatably journal said common pipe; and
  - 4. means for limiting rotational movement of said pair of vanes within a 180° arc facing away from said deflector;
- f. power take off means attached to said output shaft;

whereby, said deflector aligns said vane means for rotation within a plane parallel to the wind, each said vane means presenting an asymmetrical surface area to the wind to induce rotation of said output shaft, said deflector further producing a lateral component to a part of the wind acting upon said vane means to prevent a stalled condition of said vane means.

3,867,068
TURBOMACHINERY BLADE COOLING INSERT RETAINERS

Robert J. Corsmeier; Charles E. Corrigan, and Ronald E. Dennis, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Mar. 30, 1973, Ser. No. 346,422
Int. Cl. F01d *5/18*
U.S. Cl. 416—97 **15 Claims**

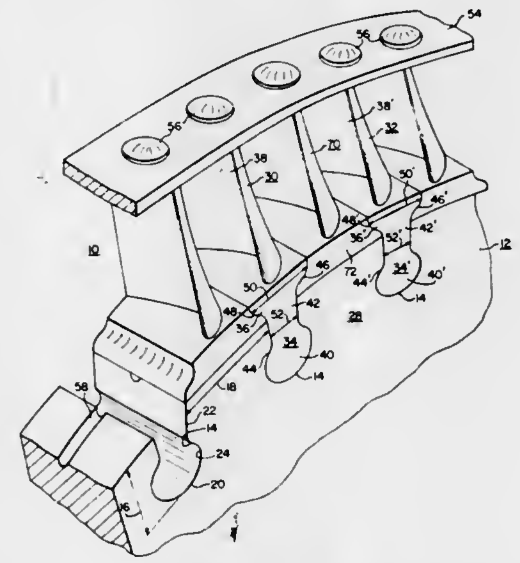


1. In a turbomachinery blade of the type including a root portion, a blade platform, a hollow body portion defining an internal cavity, at least one thin-walled, hollow insert adapted to be positioned within said hollow body portion, and means for delivering a coolant to the interior of said insert, the improvement comprising:

means for mechanically securing said insert to said hollow body portion, said securing means including a bushing adapted to be secured to said insert, and pin means adapted to be secured to both said bushing and to said blade.

3,867,069
ALTERNATE ROOT TURBINE BLADING

Kenneth J. Bussell, San Jose, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 4, 1973, Ser. No. 357,436
Int. Cl. F01d *5/30*
U.S. Cl. 416—212 **8 Claims**

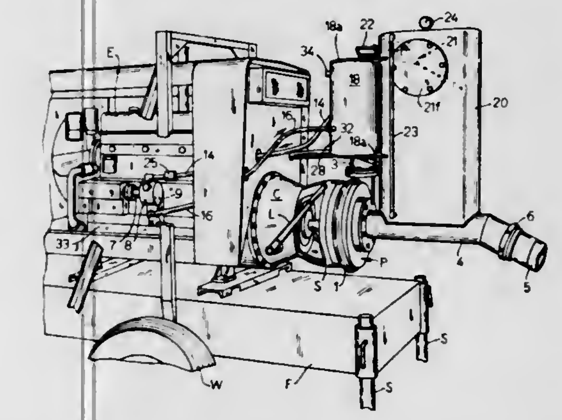


1. A rotor for axial flow elastic fluid turbine apparatus comprising:

- a shaft member having a plurality of axial grooves disposed circumferentially about the periphery thereof and having a surface area thereon, said grooves being a predetermined circumferential distance from each other,
- a first rooted blade disposed in one of said plurality of axial grooves, said first rooted blade having a platform portion thereon;
- a second rooted blade disposed in an adjacent axial groove, said second rooted blade having a platform portion thereon,;
- a rootless blade having a platform portion thereon, said platform portion having an underside surface thereon, said underside surface of said platform portion of said rootless blade directly abutting said surface area on said shaft member, said platform portion of said first rooted blade and said platform portion of said second rooted blade contacting said platform portion of said rootless blade to radially secure said rootless blade in position against said shaft member and,
- means for damping relative motion between said rooted blades and said rootless blade, said means comprising said contacting platform portions adapted so that relative motion between said rooted blades and said rootless blade generates a friction force therebetween to dampen said relative motion.

3,867,070
JET WATER PUMP APPARATUS

Albert H. Sloan, 4201 Kean Rd., Ft. Lauderdale, Fla. 33314
Filed June 28, 1973, Ser. No. 374,343
Int. Cl. F04b *49/04*; **F04d** *9/00*
U.S. Cl. 417—34 **10 Claims**

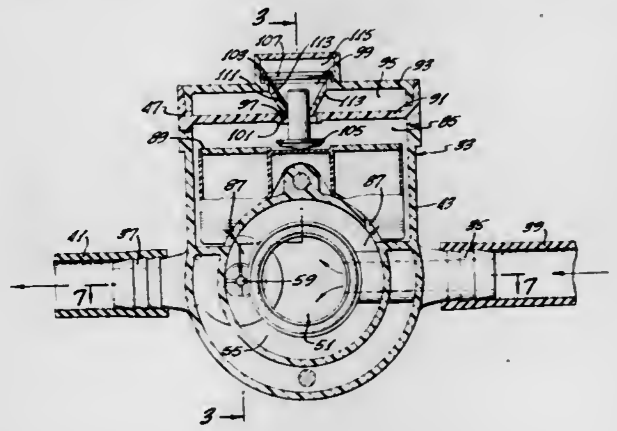


1. Self-priming jet type water pump apparatus comprising a power source, a water pump connected to and driven by said power source, water inlet means for said pump, a priming tank in fluid receiving communication with said water inlet water means, a safety chamber, an air line placing said priming tank in communication with said safety chamber; a vacuum pump driven by said power source and having an air inlet conduit connected to said safety chamber whereby said vacuum pump can draw a vacuum from said safety chamber, said airline and consequently from said priming tank to thereby create a vacuum in said priming tank which causes water to be drawn up into said priming tank from said water inlet means; a float type valve mounted in said priming tank and actuated by water level of a predetermined height in said priming tank to close said air line to said safety chamber and consequently shut off the vacuum in said priming tank, a float switch in said safety chamber and having a connection to said power source for shutting off said power source when water enters said safety chamber from said priming tank and rises in said safety chamber to a predetermined level, a separator tank, a conduit connecting said vacuum pump with said separator tank whereby said vacuum pump can deliver a mixture of air and oil to said separator tank for separating air from said oil.

8. A mobile self-priming jet type water pump apparatus comprising a mobile frame having ground wheels for transporting said apparatus, an internal combustion engine, said engine having a fuel valve, a disengagable clutch connected directly to said engine, said clutch having an output shaft, a water pump connected directly to and driven by said clutch output shaft, a water inlet pipe extending rigidly from said pump and for conducting water to said pump, said pump having a discharge end and a check valve in said discharge end for sealing the latter against entry of air when said pump is inoperative, a priming tank rigidly mounted on and in fluid communication with said water inlet pipe, a safety chamber rigidly mounted on said priming tank, an air line between and in communication with the upper end of said priming tank and the upper end of said safety chamber, a vacuum pump mounted on and driven directly by said engine and having an air inlet conduit connected to and in communication with the upper end of said safety chamber whereby said vacuum pump draws a vacuum in said safety chamber through said air line and consequently in said priming tank to thereby create a vacuum in said priming tank which causes water to be sucked up into said priming tank from said inlet pipe, a float type valve mounted in the upper portion of said priming tank and actuated by water level of a predetermined height in said priming tank to close said air line to said safety chamber and consequently shut off the vacuum in said priming tank, a float switch in said safety chamber and having an electrical connection to said fuel valve for shutting off said fuel valve and consequently said engine when water enters said safety chamber from said priming tank and rises in said safety chamber to a predetermined level, a separator tank, said vacuum pump having an outlet, a conduit connection between said outlet of said vacuum pump and separator tank for delivering a mixture of air and oil to said separator tank, said separator tank being mounted on said priming tank.

3,867,071
PUMPING SYSTEM WITH AIR VENT

Ezra D. Hartley, 2700 Jaemia Dr., Los Angeles, Calif. 90046
Filed Sept. 22, 1972, Ser. No. 291,284
Int. Cl. F04b *49/00*; **B01d** *19/00*
U.S. Cl. 417—211.5 **4 Claims**



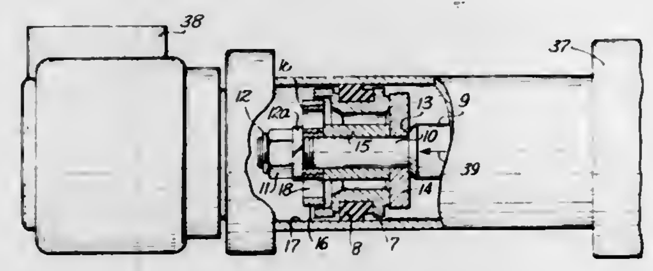
1. A pumping system for pumping liquid comprising:

- a housing having an inlet and an outlet, said inlet being connectible to a source of liquid;
- a pump having a suction opening and a discharge opening, said pump being mounted in said housing for pumping liquid through said housing from said inlet to said outlet;
- wall means on said housing defining a float chamber in communication with the discharge opening of said pump, said wall means having a vent opening therein in communication with the exterior of said housing;
- means for blocking said float chamber from direct communication with the suction opening of said pump whereby the only flow path between said float chamber and the suction opening is through the discharge opening;
- a float in said float chamber movable in response to the liquid level in said float chamber;
- a valve including a valve element movable between a closed position in which the valve element closes the vent opening and an open position in which the valve element allows flow through the vent opening;
- said valve element being drivable toward at least one of said positions thereof by said float, said valve element closing said vent opening in response to a relatively high liquid level in said chamber and opening said vent opening in response to a lower liquid level in said chamber; and

said vent opening being a first vent opening, said valve including a first valve element and a stem, said stem projecting through said first vent opening in both the open and closed positions, means defining a second vent opening in series with the first vent opening, a second valve element disconnected from said stem for closing the second vent opening, said second valve element including a disc.

3,867,072
VALVE DISTRIBUTOR PISTON ASSEMBLY FOR HIGH PRESSURE PUMP

Homer K. Brenneman, Delphi, Ind., assignor to Bremco Industries, Lafayette, Ind.
Filed Feb. 19, 1974, Ser. No. 443,693
Int. Cl. F04b *7/00*
U.S. Cl. 417—511 **3 Claims**

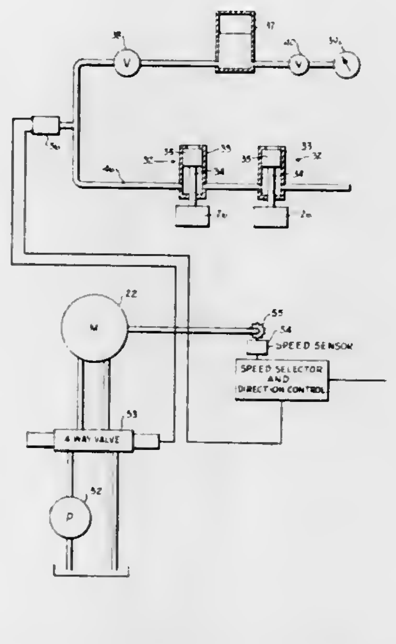


1. In a high pressure pump having a reciprocating piston rod, a cylinder having an internal diameter, forward and rear stop plates fixedly mounted in spaced apart relationship on said rod, said plates having outside diameters less than said cylindrical internal diameter, said forward stop plate being apertured and having a generally radially extending rear piston stop surface, and said rearward stop plate having a generally radially extending forward piston stop surface; an improved piston assembly mounted on said rod for slidable motion in said cylinder between said plates, comprising:

- a. an inner rigid piston element having forward and rear body portions,
  - 1. said rear body portion including inner front and rear generally radially extending stop surfaces axially spaced apart a distance less than the distance between said stop plates;
  - 2. said rear body portion also having an inner diameter less than the diameter of said stop plates between the said inner piston front and rear stop surfaces;
  - 3. said inner piston further having a forward portion extending forwardly of said piston front stop surface;
  - 4. said inner piston forward portion extending between the outer diameter of said forward stop plate and said cylinder internal diameter when said inner piston rear stop surface abuts said rearward stop plate forward stop surface;
  - 5. said inner piston forward portion also having an internal diameter slightly greater than said outer diameter of said forward stop plate and an outside diameter slightly less than said cylindrical internal diameter;
  - 6. said rear body portion of said inner piston having an outer circumferential channel;
- b. an outer piston element mounted in said inner piston channel, said outer piston element being resilient, and extending between said channel and said cylinder in a compressed state to effect piston sealing and centering functions during operation of said pump.

3,867,073
CONTROL FOR FLUID MOTOR

John C. Barrett, Minneapolis, and Roger L. Larson, Waconia, both of Minn., assignors to Raygo, Inc., Minneapolis, Minn.
Division of Ser. No. 290,531, Sept. 20, 1972, Pat. No. 3,814,532. This application Jan. 3, 1974, Ser. No. 430,503
Int. Cl. F01c *21/12;* F03c *3/00;* F04c *15/02*
U.S. Cl. 418—40 **2 Claims**



1. A control for a fluid motor, comprising:

- A. motor speed selecting means for effecting connection of the motor with a fluid pressure source for operation of the motor at a predetermined speed;
- B. a motor speed sensing device coacting with the motor speed selecting means to regulate the speed of the motor and maintain the same at its selected value;
- C. means driven by the motor for producing fluid pressure of a magnitude that varies with the speed of the motor, said means comprising
  - 1. eccentric mass means driven by the motor for rotation about an axis; and
  - 2. a hydraulic system including means to resist centrifugal force acting on said eccentric mass means during rotation thereof, and in which hydraulic pressure is developed by the response of the eccentric mass means to centrifugal force; and
- D. means rendered operative in consequence of rise in said pressure beyond a predetermined magnitude for effecting cessation of fluid flow to the motor so that in the event of failure of any portion of said motor speed regulating means the motor stops.

3,867,074
SIDE SEAL MECHANISM FOR ROTARY PISTON ENGINE

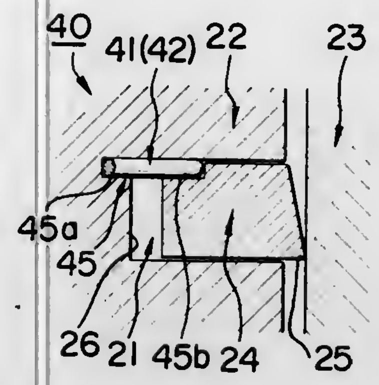
Yoshio Uchiyama, Nuriyuki, Kurio, both of Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Aki-gun, Hiroshima-ken, Japan
Filed May 8, 1973, Ser. No. 358,269
Claims priority, application Japan, May 11, 1972, 47-55422
Int. Cl. F01c *19/00;* F04c *15/00, 27/00*
U.S. Cl. 418—142 **9 Claims**

1. A side seal mechanism for use in a side seal groove which is formed in a side surface of a rotor rotatably received within an engine housing of a rotary piston engine, comprising:

a side seal member sized and shaped to be slidably received in the side seal groove of said rotor and having its axially outer end slidably contacting an axially inner side wall of said engine housing to provide sealing inbetween;

a guide groove formed in at least one of the bottom wall of said seal groove and said side seal member, said guide groove being located at one of the radial extremities of

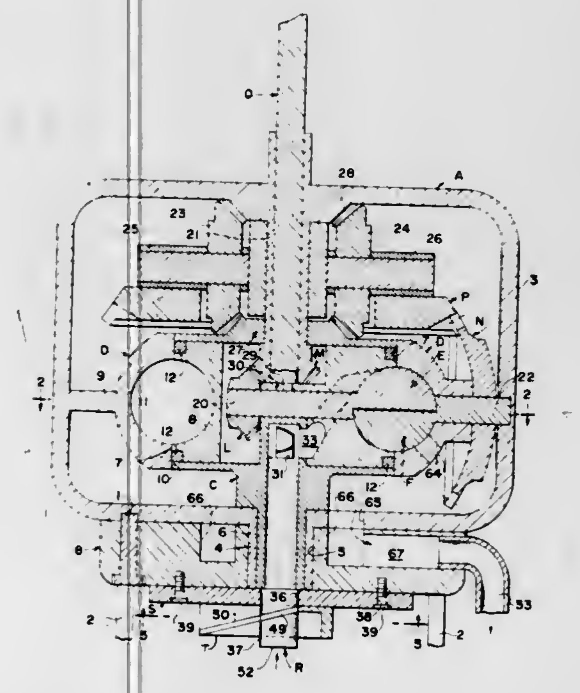
said side seal groove and being rectangular in shape; and a wire spring received in said guide groove for biasing said seal member toward said axially inner side wall of said



engine housing, said wire spring having a plurality of alternate axial projections lying only in the axial direction with respect to said rotor.

3,867,075
ROTARY ENGINE WITH ROTATABLE THRUST HEADS IN A TOROIDAL CHAMBER

Tallmon E. Horst, Saratoga, Calif., assignor to Horst Power Systems, Inc., Saratoga, Calif.
Filed July 22, 1974, Ser. No. 490,400
Int. Cl. F01c *1/00;* F03c *3/00;* F04c *17/00*
U.S. Cl. 418—172 **14 Claims**

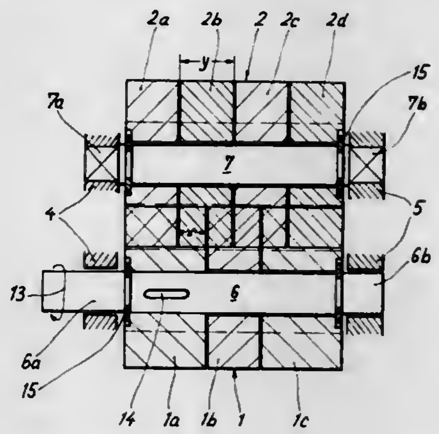


1. A rotary engine comprising:

- a. a pair of inner and outer members, at least one of which is rotatable with respect to the other about a common axis;
- b. the inner member having an outer circular periphery and the outer member having an inner circular periphery that slidably contacts the outer periphery of the inner member, the inner member having a semi-toroidal groove formed in its outer periphery and the outer member having a complementary semi-toroidal groove formed in its inner periphery and facing the semi-toroidal groove in the inner member to form a complete toroidal chamber therewith;
- c. a first thrust head carried by the inner member and receivable in the toroidal chamber, the first thrust head having a shaft which is rotatable in the inner member;
- d. a second thrust head carried by the outer member and receivable in the toroidal chamber, the second thrust head having a shaft which is rotatable in the outer member;
- e. a first pair of arcuate-shaped inserts, one insert being disposed on each side of the first thrust head to form a first pocket and each being secured to the inner member, the inserts having contoured surfaces extending from the first pocket and terminating in feathered edges that merge into the surface of the toroidal chamber, the first thrust head being rotatable receivable in the first pocket;
- f. a second pair of arcuate-shaped inserts, one insert being diposed on each side of the second thrust head to form a second pocket and each being secured to the outer member, the second pair of inserts having contoured surfaces extending from the second pocket and terminating in feathered edges that merge into the surface of the toroidal chamber, the second thrust head being rotatably receivable in the second pocket;
- g. means for operatively connecting the inner and outer members together so that at least one of them is rotatable with respect to the other and for rotating the thrust heads so as to continuously close the cross-sectional area of the toroidal chamber and the restricted cross-sectional area caused by the inserts, the first and second thrust heads being rotated on their own axes so that they will pass each other during each revolution of the inner member relative to the outer member;
- h. means for delivering an expansion fluid into the chamber portion lying between the first and second thrust heads for moving them apart;
- i. means for exhausting the expansion fluid from that portion of the toroidal chamber lying between the first and second thrust heads in the direction in whcih they are moving relatively toward each other; and
- j. output shaft means operatively connected to produce a driving torque from the relative rotational movement between the inner and outer members.

3,867,076
SCREW COMPRESSOR WITH ROTOR SECTIONS

Walter Spindler, Munich, Germany, assignor to H & H Licensing Corporation, Miami, Fla.
Filed Jan. 17, 1974, Ser. No. 434,300
Claims priority, application Germany, Jan. 22, 1973, 2302902
Int. Cl. F04c *1/10*
U.S. Cl. 418—201 **10 Claims**



1. Screw compressor, screw pump, or the like, including a casing with spaced shaft means mounted therein and carrying cooperating rotors with intermeshing helical screw thread formations; each rotor comprising a group of individual rotor sections arranged in series axially along a corresponding shaft and presenting the intermeshing thread formations, the rotor sections of one group being axially offset relative to adjacent rotor sections of another group to provide axially lapping and meshing surface areas therebetween, a rotor section of one group being fixed to its associated shaft which is adapted to be driven from a drive mechanism for rotating the same, and the remaining rotor sections of each group being mounted for rotation independently of the associated shafts for transmission of torque from the shaft-fixed rotor section continuously through the next succeeding lapping and meshing sections of each group.

3,867,077

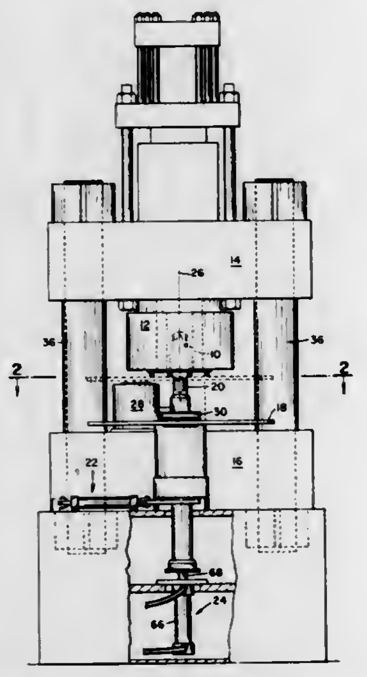
COMPACTING APPARATUS HAVING IMPROVED ROTATING TABLE MEANS FOR INDEXING MOLDS TO AND FROM A COMPACTING CHAMBER

Thomas A. Deprez, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed May 15, 1974, Ser. No. 469,980

Int. Cl. B30b *5/02, 11/00*

U.S. Cl. 425—405 A **10 Claims**



1. In a powder compacting apparatus of the type which includes (a) a chamber for receiving a charge of powder material so that an isostatic force can be applied thereto, (b) a plurality of molds for containing the powder material while it is advanced into the chamber and subjected to an isostatic force, (c) a table means having a plurality of openings formed therethrough for receiving and supporting said plurality of molds, and (d) rotating means for indexing the table means about an axis of rotation, the improvements comprising:

lifting and lowering means operatively associated with said table means for moving the table means, along its axis of rotation, toward and away from said chamber so as to provide for an insertion and removal of said molds, one at a time, into and out of said chamber, and

blocking means for restraining movement of a mold out of said chamber after the mold is inserted into the chamber and when an isostatic force is applied to the mold, said blocking means being arranged to operate through said openings in the table means so that the table means and said lifting and lowering means can be moved out of supporting contact with a mold after the mold has been inserted into said chamber.

3,867,078

APPARATUS FOR FORMING A GOLF BALL MOLD

Carl D. Porter, El Monte, Calif., assignor to E. Victor Fried, Monrovia, Calif.

Division of Ser. No. 187,967, Oct. 12, 1971, Pat. No. 3,772,008. This application May 7, 1973, Ser. No. 357,944

Int. Cl. B22f *3/00;* **B29c** *1/00*

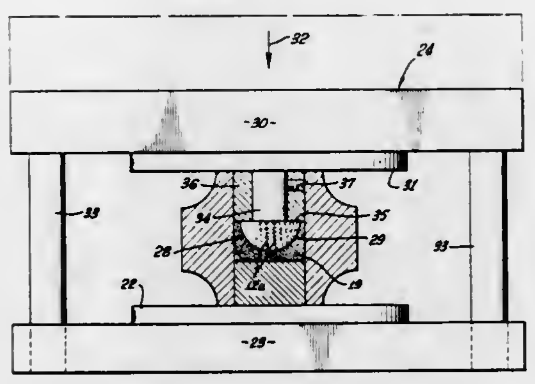
U.S. Cl. 425—78 **3 Claims**

1. Apparatus for forming a concavely hemispherical mold for use in molding one-half of a golf ball, and so that the mold interior surface is accurately dimpled, said apparatus including:

a. a forming die cylinder to receive a mass of powdered mold metal, the cylinder having a cylindrical bore and an axis,

b. a hemispherical punch having a convex one-half spherical exterior surface which contains multiple recesses corresponding to the mold surface dimples, the punch having an axis and being received coaxially endwise in the cylinder bore for advancement axially therein to urge said surface against the mass of powdered metal to consolidate that metal into mold shape with said surface dimpling,

c. structure in the cylinder to confine the mass during said consolidation, said structure including a plug removably and slidably received in said bore to face endwise toward said punch surface so as to receive pressure application transmitted through the metal mass during mold consolidation, and including a stem integral with the punch to extend coaxially at the rear thereof, and a sleeve on the stem, the sleeve diameter exceeding the diameter of the punch base.



3,867,079

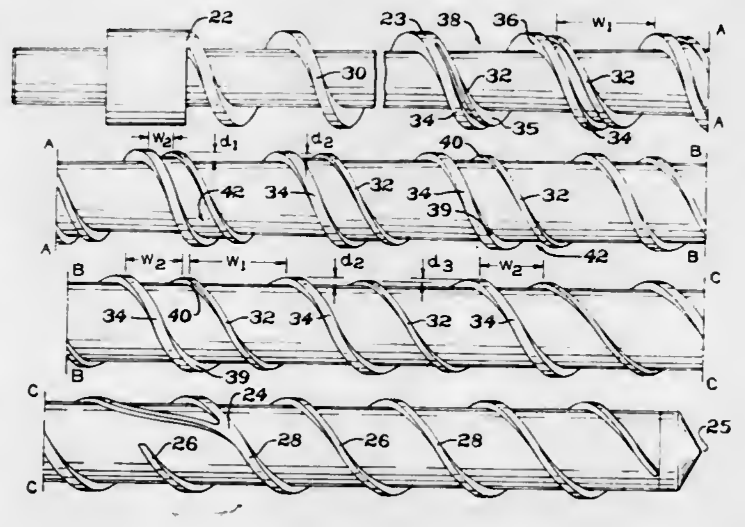
APPARATUS FOR EXTRUDING POLYMERIC MATERIAL

Heung T. Kim, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,697

Int. Cl. B29f *3/02*

U.S. Cl. 425—208 **6 Claims**



1. In a machine for processing polymeric material comprising a cylinder; said cylinder having die means at one end thereof; a feed screw rotatably mounted in said cylinder and extending longitudinally therethrough for moving plastic material therethrough to progressively change said plastic material from the solid phase to a fluent phase for extrusion therefrom; said feed screw having first means for operatively exerting continuous pressure on said plastic material for moving said plastic material; second means integral with said feed screw for continuously leading off the fluent phase progressively from said first means as the plastic material is changed from the solid phase by contact with said cylinder, said fluent phase being directed away from and not through the remaining solid phase; and said first means defines a groove having a constant axial width with decreasing radial depth in the direction of said die means providing a constant amount of surface area exposed to said cylinder for material carried by said groove.

3,867,080

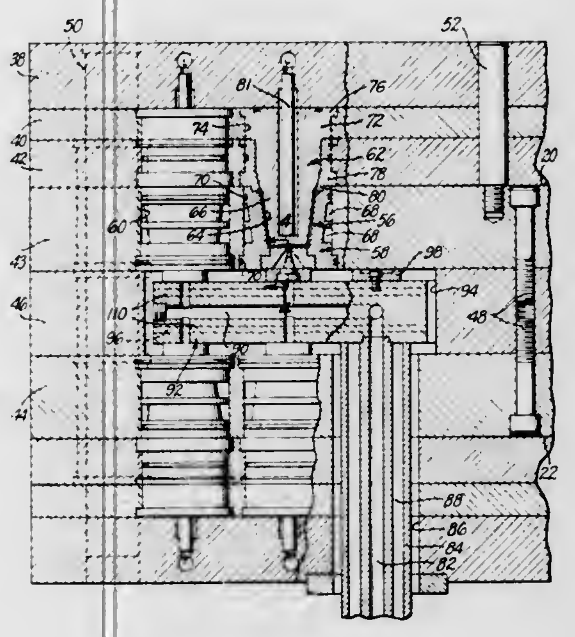
INJECTION MOLD

Robert G. Bruder, 20160 E. Juanita St., Glendora, Calif. 91740

Filed Oct. 31, 1972, Ser. No. 302,493

Int. Cl. B29f *1/022*

U.S. Cl. 425—247 **16 Claims**



1. An injection mold comprising:

a mold body containing a mold cavity and a nozzle chamber opening at one end into said cavity through a gate opening in the cavity wall and including separable mold body sections movable relative to one another between closed positions for molding a part in said cavity and open positions for removing the molded part from the cavity and having a parting plane intersecting said cavity,

an injection nozzle in said chamber having a tip positioned within and smaller in diameter than said gate opening so as to define an annular injection orifice between said tip and the edge of said gate opening,

said nozzle containing passages opening to said chamber through which a molten molding medium is adapted to be injected into said chamber,

said molding medium flowing from said chamber into said mold cavity through said annular orifice, and

means movably supporting said nozzle on one mold body section for relatively free centering movement of the nozzle laterally of the axis of said gate opening by the pressure of the molding medium passing through said orifice to permit centering of said nozzle tip in said gate opening by said molding medium.

3,867,081

APPARATUS FOR DISPENSING PREDETERMINED QUANTITIES OF PLASTIC MATERIAL BY BLADE MEANS HAVING ROTATIONAL AND TRANSLATIONAL MOVEMENT

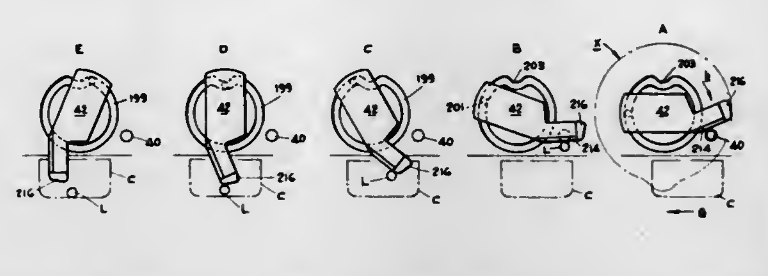
George Everett, Unionville, Conn., assignor to Gros-Ite Industries, Inc., Farmington, Conn.

Division of Ser. No. 224,757, Feb. 9, 1972, Pat. No. 3,782,329, which is a continuation-in-part of Ser. No. 91,665, Nov. 23, 1970, abandoned. This application Apr. 27, 1973, Ser. No. 355,163

Int. Cl. B29f *3/00;* **B29d** *31/00*

U.S. Cl. 425—295 **7 Claims**

1. Apparatus for dispensing predetermined quantities of plastic material or the like comprising a block having a discharge passage, means for feeding plastic material through the discharge passage, a blade mounted for rotational and translational movement in a plane perpendicular to and adjacent the exit end of the discharge passage, means for rotating the blade across the exit end of the discharge passage and for imparting coordinated translational movement to the blade so as to shear and direct the plastic material away from said exit end and means for biasing the blade against said block.



3,867,082

A GRANULATING DEVICE FOR GRANULATING SYNTHETIC PLASTICS MATERIAL IN A FLOWABLE STAGE

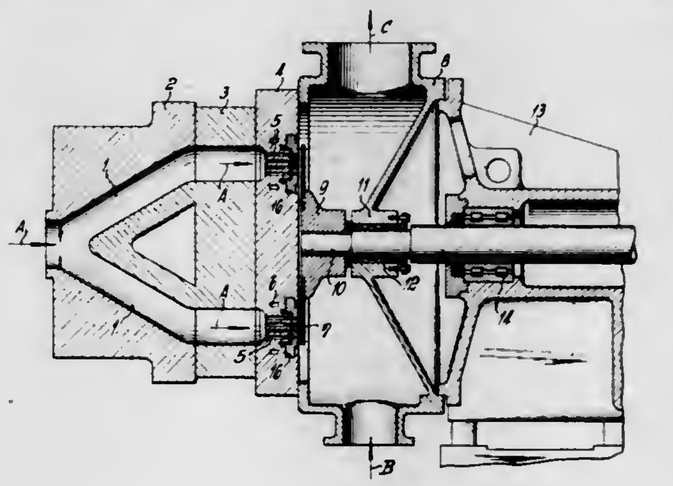
Friedrich Lambertus, Stuttgart, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

Filed July 23, 1973, Ser. No. 381,763

Claims priority, application Germany, July 27, 1972, 2236823

Int. Cl. B29b *1/03;* **B29f** *3/04*

U.S. Cl. 424—313 **9 Claims**



1. A granulating device for granulating synthetic plastic material in a flowable stage, said device comprising:

a generally plate-shaped extrusion die having an inlet side and an extrusion side, said die including a plurality of nozzle bores extending crosswise through the die and an insulation layer interposed between the inlet side and the extrusion side of the die, said insulation layer being constituted by a coherent gap extending lengthwise substantially parallel to said bores encompassing the same and also parallel to the extrusion side of the die;

cooling means for cooling the extrusion side of said die;

cutting means movable parallel and adjacent to the extrusion side of the die for cutting material emanating from the extrusion side of the die to effect granulation of the material; and

feed means for pressure feeding material to be granulated to the inlet side of the die.

3,867,083

SHAPE IMPOSITION APPARATUS FOR THE EXTRUSION OF TUBULAR THERMOPLASTIC FILM

F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

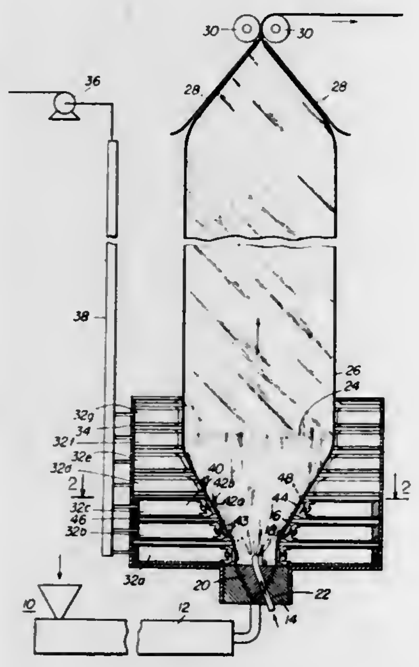
Filed June 4, 1973, Ser. No. 366,388

Int. Cl. B29d *7/22*

U.S. Cl. 425—326 R **5 Claims**

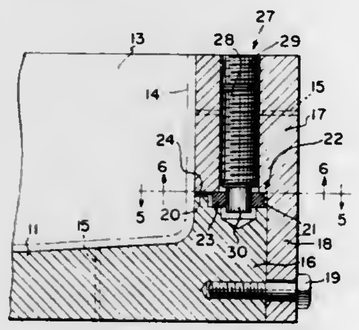
1. In an apparatus for forming tubular thermoplastic film comprising extruder means; annular extrusion die means, adopted in combination to extrude a single tube of thermo-

plastic film; pinch rollers spaced downstream from said annular extrusion die adopted to flatten said tube; and means for introducing a fluid under pressure into said tube whereby to biaxially expand said tube and reduce the wall thickness thereof; the improvement, whereby reducing gauge nonuniformity in said film, which comprises a configuration imposition assembly comprising a diverging housing member, disposed concentric to said extruded tube downstream of, and adjacent to, said annular die, said tubular thermoplastic film passing through said diverging housing member upon exiting from said die, said assembly being further characterized by



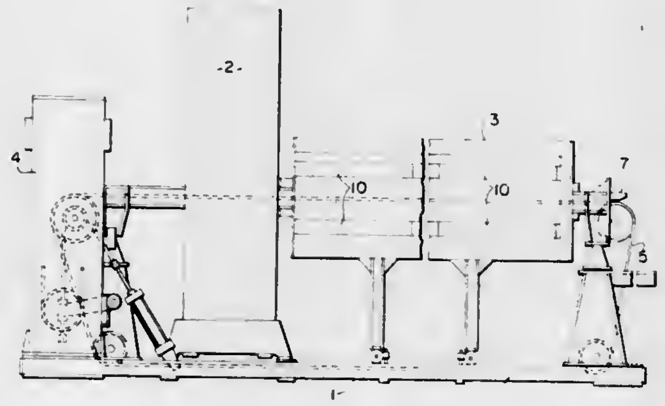
having multiple rows of channels therethrough, each of said channels terminating in an aperture on the inner surface of said housing, said apertures being arranged in a series of streamwisedly spaced pairs of diverging aperture rows adjacent to and directed towards said extruded tubing in an overall diverging shape, said streamwisedly spaced pairs of aperture rolls having individual apertures in one row of the pair which diverge from the adjacent apertures in the second row of the pair, means for forcing a fluid through said apertures towards said extruded tubing and then away from such tubing, whereby creating a suction and thus drawing said extruded tubing toward said assembly.

3,867,084
ADJUSTABLE MOLD
Frederick O. Miller, Saginaw, Mich., assignor to Miller Mold Company, Saginaw, Mich.
Filed July 30, 1973, Ser. No. 383,979
Int. Cl. B29d *7/22*
U.S. Cl. 425—383 **13 Claims**



1. A mold construction comprising a mold member having a cavity therein defined by a wall, said wall having an elongate groove therein opening into said cavity; flexible means having a length corresponding substantially to that of said groove and accommodated in said groove for movement inwardly and outwardly of said cavity; and a plurality of independently operable adjusting means engageable with said flexible means at longitudinally spaced apart intervals for adjusting selected portions of said flexible means inwardly and outwardly of said cavity.

3,867,085
THERMOFORMING APPARATUS WITH WEB SUPPORT MEANS
John R. Lynch, Hartville, Ohio, assignor to NRM Corporation, Akron, Ohio
Filed Jan. 3, 1974, Ser. No. 430,408
Int. Cl. B29b *3/00, 5/04*
U.S. Cl. 425—384 **6 Claims**

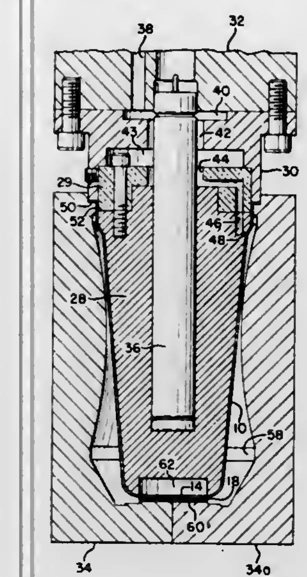


1. Thermoforming apparatus comprising an elongated heating oven into one end of which a thermoplastic web is introduced for transport therethrough for heating said web to forming temperature; a thermoformer adjacent the other end of said oven into which the heated web is transported for forming therein; a conveyor operative to grip the opposite longitudinal edge portions of said web to convey said web through said oven and thermoformer for respectively heating said web to forming temperature and forming the web; sag inhibiting web support means in said oven extending longitudinally from such other end of said oven toward such one end and disposed underneath said web to support the latter between its longitudinal edge portions, said means comprising at least one elongated tube laterally spaced between said edge portions and having a series of openings through the wall thereof juxtaposed to the bottom surface of the web; and a fluid pressure source to supply gaseous medium into said tube for flow upwardly through said openings to impinge on the web thereabove thus to define a gas bearing to facilitate transport of the web through said oven while inhibiting sagging thereof.

3,867,086
APPARATUS FOR MOLDING A PLASTIC CONTAINER
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 7, 1973, Ser. No. 338,774
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 B **6 Claims**

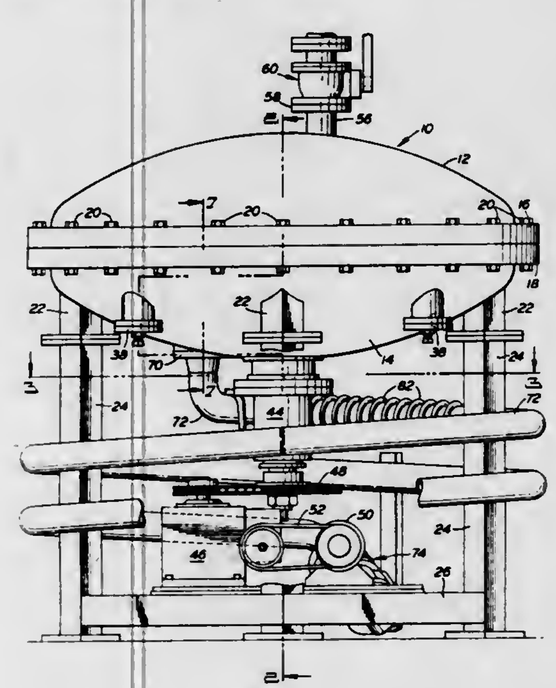
1. Apparatus for molding a plastic container from a preform shaped to nest with others for shipment and storage with each preform having an open end portion of predetermined peripheral configuration and an opposite smaller end portion of predetermined configuration; and comprising a sectional female mold internally shaped according to the finished container to be reformed therein, a heated mandrel externally shaped substantially in accordance with the interior shape of the preform and insertable therewith into the female mold, means shielding both preform end portions against direct heat of the mandrel, means supporting the preform end portions against deformation during the reform shaping of the preform, and differential pressure means for reform shaping of the wall

of the preform between the shielded and supported end portions thereof to the reformed container configuration with



maintained integrity of the initial predetermined configurations of the said end portions.

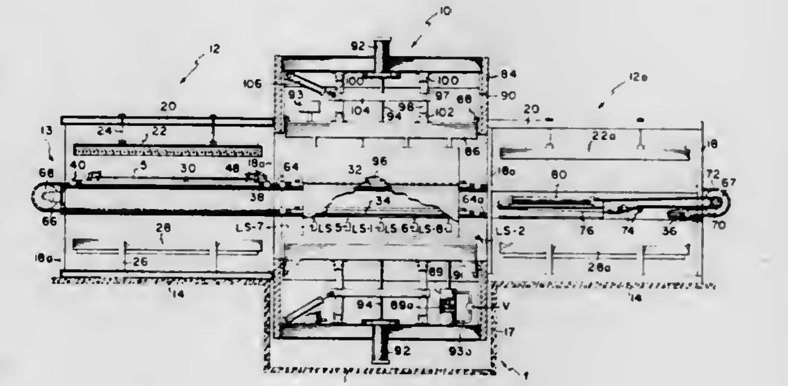
3,867,087
GAME BALL HEAT CURING APPARATUS
Douglas W. Bulson, Sylvania, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Division of Ser. No. 405,601, Oct. 11, 1973,. This application Aug. 9, 1974, Ser. No. 495,972
Int. Cl. B29h *5/28*
U.S. Cl. 425—405 R **21 Claims**



1. Apparatus for heat curing a continuous series of spherical balls such as tennis balls, comprising:

A. a closed chamber adapted to provide a curing environment having a selected curing pressure;
B. circular molding means mounted within said chamber and defining a continuous molding groove of semicircular cross-sectional contour disposed in a spiral configuration across a flat surface from near the center to the edge of said molding means;
C. heating means disposed within said chamber and adapted to provide a selected curing temperature within said chamber for said molding means;
D. drive turntable means defining a circular flat drive surface disposed in parallel with and in selected proximity to said molding groove;
E. said turntable means being adapted when rotated to roll a series of said balls through said molding groove with said balls being in intimate contact with the semicircular contour of said molding groove;
F. means for rotating said turntable means;
G. inlet airlock means connected into communication with one end of said molding groove and adapted to transfer respective balls of a series of said balls from outside said chamber into rolling engagement within said molding groove;
H. cooling means connected in communication with the other end of said molding groove and adapted to receive said balls as are rolled out of said molding groove; and
K. an outlet airlock means connected in communication with said cooling means and adapted to transfer respective balls of a succession of said balls from said cooling means to outside said apparatus.

3,867,088
APPARATUS FOR FABRICATING A HOLLOW ARTICLE
Gaylord W. Brown, and George L. Pickard, both of Beaverton, Mich., assignors to Koehring Company, Milwaukee, Wis.
Continuation-in-part of Ser. No. 268,883, July 3, 1972, Pat. No. 3,787,158. This application Mar. 16, 1973, Ser. No. 342,094
Int. Cl. B29c *17/04, 27/12*
U.S. Cl. 425—504 **14 Claims**



1. Apparatus for forming a hollow article from sheets of deformable thermoplastic material comprising:

frame means with a forming station and a sheet heating station;
sheet heating means at said sheet heating station for heating sheets of deformable thermoplastic material;
carriage means on said frame supporting a pair of sheets of thermoplastic material for movement from said sheet heating station to said forming station;
mold assembly means at said forming station including a differential pressure mold member having a mold cavity for forming a shape in at least one of said sheets and an opposed member at least one of said members being mounted on said frame for movement toward and away from the other between a removed position and a sheet engaging position, and means for applying a differential pressure to opposite sides of said one sheet when said differential pressure mold member is in said sheet engaging position;
carrier means for moving article reinforcing means to a position between said members when said one member is in said removed position and depositing it on said one sheet;
means for moving said one member toward the other member to fuse said sheets together and sandwich said reinforcing means between said sheets; and
means for separating said members.

3,867,089

APPARATUS FOR THE ELECTRICAL IGNITING OF LIQUID PROPELLENTS

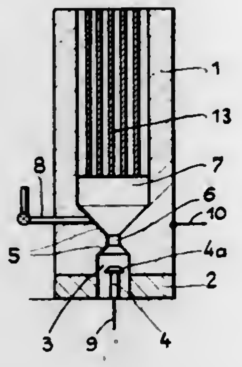
Raimund Germershausen, Kaarst; Jochen Schmitt, Schiefbahn, and Wolfram Witt, Dusseldorf, all of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Dec. 20, 1973, Ser. No. 426,914

Claims priority, application Germany, Dec. 30, 1972, 2264332

Int. Cl. F23g *3/00*

U.S. Cl. 431—263 **5 Claims**



1. A device for electrical ignition of liquid propellents comprising
   - an ignition charge housing defining an ignition charge space having at least two chambers of different size arranged in said ignition charge housing,
   - an electrode traversing centrally a smaller of said chambers constituting an electrode chamber and being connected with the adjacent of said chambers being of a larger volume and diameter, by means of an opening defining a housing constriction, and
   - a system of channels extending in the larger of said chambers.

3,867,090

REFILLABLE GAS CIGARETTE LIGHTER

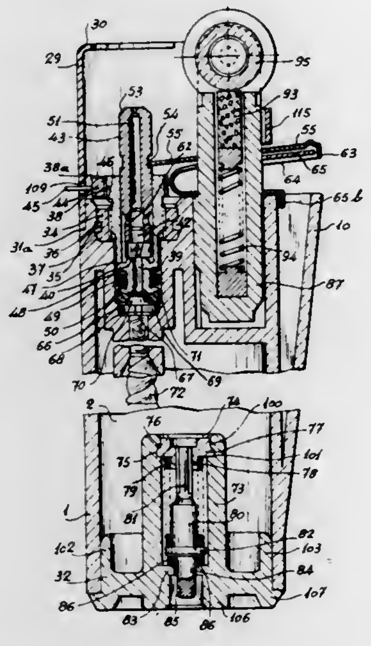
Ricardo Aguirre Gili, Barcelona, Spain, assignor to Flamagas, S.A., Barcelona, Spain

Filed Oct. 26, 1972, Ser. No. 301,244

Claims priority, application Spain, Dec. 11, 1971, 175088

Int. Cl. F23q *1/02*

U.S. Cl. 431—277 **15 Claims**



1. A refillable gas lighter, comprising:
   - a hollow main body;
   - said body supporting the following elements of which the lighter is comprised:
   - two spaced apart upstanding rises extending above and supported on said main body; each said rise having a respective vertical edge, and said rises being shaped and oriented such that said vertical edges face in the same direction as a lever extending out of said body; in each said rise is defined a pocket in the form of an open sided notch extending into said rise from its said vertical edge; said notches being of a width to permit swiveling of lever appendages held therein;
   - a reservoir in said body for holding fuel to be released; a fuel release valve in said body communicating with said reservoir and being operable to control release of fuel; said release valve including a labyrinth through which the fuel passes and which causes gasification of the fuel;
   - said lever engaging said release valve and extending out of said body; said lever extending between and passing between said rises; from opposite sides of said lever project said appendages which extend into and across said rise pockets and said appendages and said pockets being cooperatively shaped to enable said lever to be rocked around said appendages in said pockets; said release valve being shiftable by rocking of said lever to open said release valve;
   - a return spring engaging said lever and applying force thereto for returning said lever and said release valve to the closed position;
   - an ignition mechanism in said body including means which enables said ignition mechanism to be readily mounted in said body; a pyrophoric flint held in said ignition mechanism; a knurled wheel for striking said flint; means for mounting said knurled wheel in said ignition mechanism; means in said body for establishing a leak-proof closing of said reservoir in said body.

3,867,091

LIGHTERS

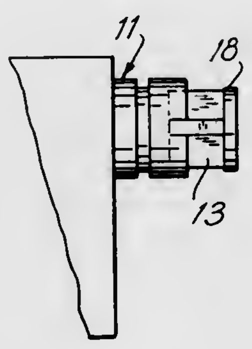
Jean Gaston Malamoud, 61, Avenue de Novel, 74000 Annecy, France

Division of Ser. No. 291,830, Sept. 25, 1972, Pat. No. 3,807,941. This application Jan. 4, 1974, Ser. No. 430,611

Claims priority, application France, Sept. 13, 1971, 71.32944

Int. Cl. F23d *13/24*

U.S. Cl. 431—350 **2 Claims**



1. A gas lighter comprising a burner having a head with a single gas outlet, and a windshield mounted on said head and including radial partitions dividing the gas outlet into individual segments and a cover on said partitions extending perpendicular thereto at the top thereof.

3,867,092

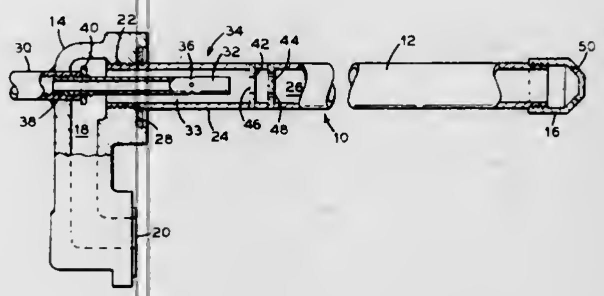
IGNITOR

Warnie L. Sage, Louisville, and Edwin D. Scott, Alliance, both of Ohio, assignors to The Babcock and Wilcox Company, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,187

Int. Cl. A62c *31/00;* **F23d** *11/00*

U.S. Cl. 431—354 **5 Claims**



1. A liquid fuel fired ignition system comprising at least one ignitor, a device for atomizing the fuel preparatory to firing from the ignitor, said device including a nozzle having an inlet and an outlet end, a coupling connected to the inlet end, an inner tube disposed in said coupling and projecting into the nozzle through the inlet end thereof, said tube cooperating with the nozzle to define therebetween an annular passage of uniform dimension throughout, said tube having an outlet formed of at least one port opening into the passage and an inlet formed with a threaded portion, a sleeve mounted in the coupling, said sleeve having a threaded portion engaging the threaded portion of the tube while permitting rotatable and axial adjustment of said tube, means for supplying a liquid fuel to the passage and an atomizing fluid to the tube, the fuel being atomized by the fluid discharging from said port, and a pair of spaced perforated disks disposed within the nozzle downstream fuel flow-wise of said tube, the fuel being further atomized while passing through said disks.

3,867,093

HEAT TREATING APPARATUS

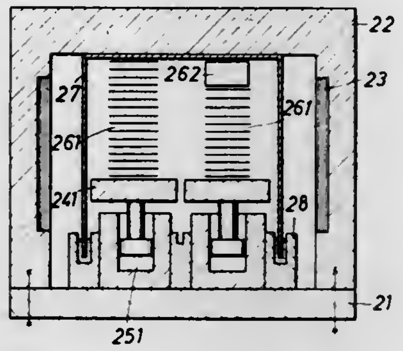
Bernhard Huttermann, Glinde, Germany, assignor to Jurid Werke GmbH, Glinde, Germany

Filed Oct. 1, 1973, Ser. No. 402,046

Claims priority, application Germany, Oct. 5, 1972, 2249194

Int. Cl. F27b *9/06, 3/04*

U.S. Cl. 432—125 **5 Claims**



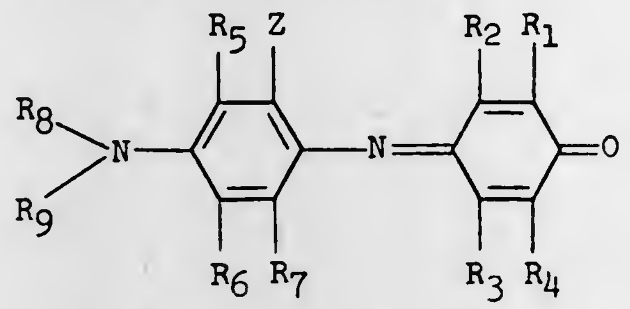
1. An apparatus for simultaneously treating substantially plate-shaped workpieces with heat and pressure comprising:
   - a hearth having surface means for the reception of workpieces to be treated, and cover means defining together with said surface means a treatment chamber;
   - said cover means having a portion extending substantially in parallel to, but spaced apart from said surface means;
   - heat generating means within said chamber;
   - ram means in cooperating relation with said surface means for moving said surface means under pressure in a direction towards said portion of said cover means and into said chamber to press the workpieces thereon against said cover means;
   - said surface means comprising a plurality of component surfaces and said ram means having an equal plurality of ram members;
   - each of said component surfaces being mounted in said hearth for independent movement by an associated one of said ram members; and
   - coupling means for releasably interconnecting at least two component surfaces of said plurality of component surfaces, said interconnected component surfaces being uniformly movable by their associated members.

3,867,094
DYEING KERATINOUS FIBERS WITH DYE COMPOSITIONS CONTAINING INDOANILINES

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
Filed Dec. 29, 1971, Ser. No. 213,750
Claims priority, application Luxembourg, Dec. 30, 1970, 62348
Int. Cl. D06p *3/04*
U.S. Cl. 8—10 **8 Claims**

1. A dye composition for keratinous fibers comprising an aqueous solution of an indoaniline selected from the group consisting of

a. an indoaniline having the formula



wherein R_1, R_2, R_3 and R_4 each independently represent a member selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and halogen with the proviso that 1–2 of R_1, R_2, R_3 and R_4 are other than hydrogen; R_5, R_6 and R_7 each independently represent a member selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and lower alkoxy having 1–6 carbon atoms; R_8 represents a member selected from the group consisting of hydrogen and lower alkyl having 1–6 carbon atoms; R_9 represents a member selected from the group consisting of hydrogen and lower alkyl having 1–6 carbon atoms and together with R_8 and the nitrogen atom to which R_9 is attached form dihydro-oxazine; and Z represents a member selected from the group consisting of amino, acetylamino and hydroxy,

b. the hydrochloride of said indoaniline in (a) and

c. a double chloride of zinc and said indoaniline in (a), said indoaniline being present in amounts of 0.002–2 percent by weight of said composition.

3,867,095
SHRINKPROOFING OF WOOL WITH CYCLIC ACID ANHYDRIDES AND ZINC ACETATE

Nathan H. Koenig, Albany, and Mendel Friedman, Moraga, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Mar. 16, 1973, Ser. No. 342,135
Int. Cl. D06m *3/02, 13/00*
U.S. Cl. 8—128 R **5 Claims**

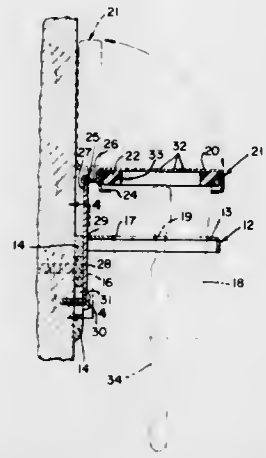
1. A process for chemically modifying wool, thereby increasing its resistance to shrinkage, which comprises

a. reacting wool under essentially anhydrous conditions, in the presence of N,N-dimethylformamide, with a cyclic acid anhydride, at a temperature about from 25° to 135°C. until the wool combines with about from 1 to 35% of its weight of the acid anhydride, and

b. reacting the so-modified wool, in the presence of N,N-dimethylformamide, with a compound selected from the group consisting of zinc acetate and cadmium acetate at a temperature about from 25° to 135°C. until there is attained a weight increase by the wool of about from 5 to 35%.

3,867,096
GLASS AND TOOTHBRUSH STERILIZATION AND SUPPORTING ATTACHMENT

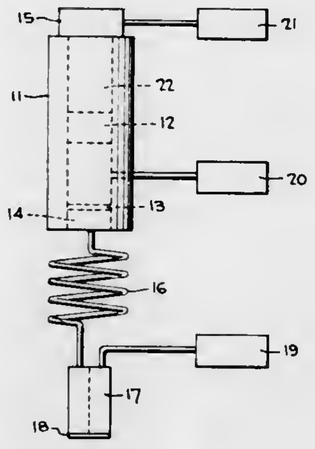
Carl J. Doucette, 1649 Sarah Dr., Pinole, Calif. 94564
Filed Dec. 21, 1973, Ser. No. 427,112
Int. Cl. A61l *1/00, 3/00, 9/04*
U.S. Cl. 21—78 **5 Claims**



1. A device for sanitizing a drinking glass and the like comprising: a support for releasably retaining a drinking glass in a fixed position with the rim uppermost and above said support; a cover member movable from a lower position over the rim of the drinking glass to a raised position removed therefrom and permitting removal of the drinking glass from said support; hinge means having a hinge pin and a pair of hinge leaves pivotally connected by said pin, one of said leaves being secured to the cover member, said support having a socket for releasable reception of the other leaf of the hinge; means for simultaneously retaining said other leaf in a selected vertical position in said socket and for fixing the distance between said support and said cover member wherein various sized drinking glasses are held in the device and a disinfecting cartridge releasably carried by said cover member and having a portion thereof positioned to engage the rim of the drinking glass when said cover member is in its lower position.

3,867,097
MEASUREMENT OF CARBON DIOXIDE

Gerald G. Vurek, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.
Filed May 4, 1973, Ser. No. 357,272
Int. Cl. G01k *17/00;* **G01n** *25/20, 33/16*
U.S. Cl. 23—254 E **4 Claims**



1. Apparatus for quantitatively determining the carbon dioxide content in a gas comprising:

a. a sampling and separating means for selectively separating the carbon dioxide from any other components in said gas,

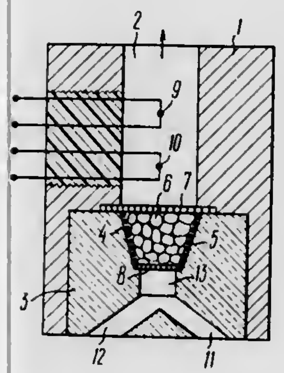
b. a reactor vessel containing a basic material which is reactive with the separated carbon dioxide,

c. a thermopile for measuring the heat generated by the reaction of the carbon dioxide with the basic material, said thermopile being in thermal contact with the basic material, and

d. means for transporting the separated carbon dioxide from the sampling and separating means to the reactor vessel.

3,867,098
GAS ANALYZER DETECTOR

Boris Konstantinovich Gorkovenko, Peremyshelsky, Pereulok, 6, kv. 15; Alexandr Mikhailovich Mikhailovsky, Peremyshelsky, pereulok, 6, kv. 16; Valentina Dmitrievna Churilova, ulitsa Gogolevskaya, 43a, kv. 34, and Olga Georgievna Kirillova, ulitsa Saxagonskogo, 15, kv. 16, all of Kiev, U.S.S.R.
Filed Apr. 11, 1973, Ser. No. 350,159
Int. Cl. G01n *25/20, 31/12, 27/16*
U.S. Cl. 23—254 E **1 Claim**



1. A gas analyzer detector comprising a sorption chamber widening in the direction of the flow of a gas mixture to be analyzed fed to the inlet thereof; a heating coil arranged in immediate proximity to the wall of said sorption chamber, covering almost all of its length; a sorbent which fills said sorption chamber; a reaction chamber placed at the outlet of said sorption chamber; a pair of thermal elements, the first of said elements being catalytic, whereon combustible components are burnt, and the second of said elements being non-catalytic with respect to combustible components of the gas mixture to be analyzed and so connected in the measuring circuit to compensate for changes in resistance in said first element not caused by the heat of the catalytic oxidation of combustible components, both elements being placed in said reaction chamber and connected to a circuit for measuring the concentration of combustible components in the gas mixture being analyzed.

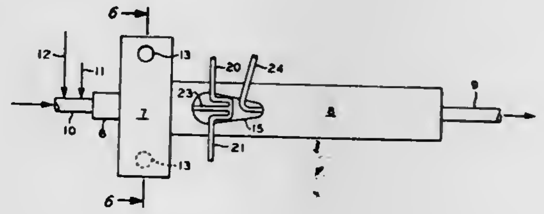
3,867,099
BREATH SAMPLE TUBE AND METHOD OF MAKING IT

Macquorn R. Forrester, St. Louis, Mo., assignor to Intoximeters, Inc., St. Louis, Mo.
Filed Feb. 5, 1973, Ser. No. 329,656
Int. Cl. B01l *3/00*
U.S. Cl. 23—259 **6 Claims**

1. A capsule for receiving breath samples, comprising an indium tube, the inner wall of which is passivated with polyethylene glycol.

3,867,100
CARBON BLACK PRODUCTION APPARATUS

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Continuation-in-part of Ser. No. 223,543, Jan. 28, 1972, abandoned. This application Jan. 29, 1974, Ser. No. 437,654
Int. Cl. C09c *1/48;* **F23c** *5/06*
U.S. Cl. 23—259.5 **8 Claims**



1. A carbon black reactor comprising:

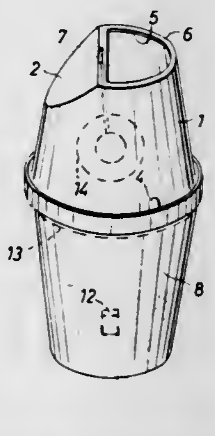
a. a mixing section adapted with an upstream closing wall and with conduit means for the introduction of reactants thereinto;

b. a reaction section positioned downstream of and in open communication with said mixing section and adapted with conduit means for the recovery of carbon black from said reactor;

c. a choke positioned in said reaction section, said choke having a "teardrop" configuration, said choke being adapted with a plurality of conduit means extending into said choke, at least one of said conduit means discharging upstream of said choke and at least one of said conduit means discharging downstream of said choke.

3,867,101
TOILET CLEANSING DEVICE

Desmond Edward Herring, Ipswich, England, assignor to American Home Products Corporation, New York, N.Y.
Filed Sept. 6, 1973, Ser. No. 394,700
Claims priority, application Great Britain, Sept. 13, 1972, 42423/72
Int. Cl. B01d *11/02*
U.S. Cl. 23—267 A **9 Claims**



1. A device for dispensing a quantity of water-soluble material to a flushing cistern comprising:

A. A container for immersion in the water of a flushing cistern said container being comprised of an upper part and a lower non-permeable part;

B. At least one aperture defined in the top of said upper part;

C. At least one aperture defined in the side of said upper part;

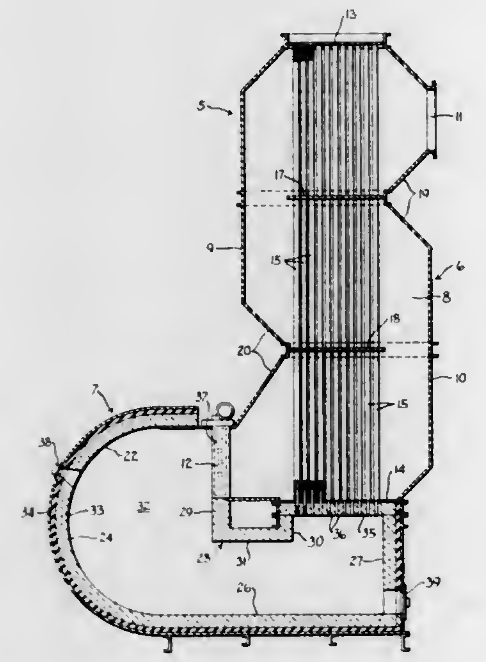
D. A water soluble tablet containing a dyestuff supported at the bottom of said lower part; said tablet being adapted to permit rapid solution of the said dyestuff upon contact with water;

E. A water-soluble material selected from the group consisting of solid and pasty disinfecting and cleaning materials supported in said lower part covering said tablet;

whereby in use water passing through said apertures first dissolves and carries away said water soluble material and then dissolves and carries away the material of said tablet whereby the exhaustion of said water soluble material is evidenced.

3,867,102
FUME INCINERATOR

Denis G. Csathy, Minneapolis, Minn., assignor to Deltak Corporation, Minneapolis, Minn.
Continuation of Ser. No. 236,361, March 20, 1972, abandoned. This application May 28, 1974, Ser. No. 474,093
Int. Cl. F01n *3/12*; **F23g** *7/06*
U.S. Cl. 23—277 C **3 Claims**



1. An incinerator by which fumes and particulate matter carried in gas to be treated can be rendered inoffensive, and which comprises a combustion chamber in which gas to be treated is subjected to a high temperature, and a preheater in which gas to be treated, flowing towards the combustion chamber, is passed in indirect heat exchange relation with hot gas issuing from the combustion chamber, said incinerator being characterized by:

A. the preheater comprising
  1. means defining an elongated passage having opposite end walls and having near one of its end walls a laterally opening inlet for gas to be treated and having near its other end wall a laterally opening outlet for preheated gas to be treated, and
  2. a plurality of substantially straight tubes extending lengthwise in said passage and through said end walls, through which tubes heated gas from the combustion chamber can flow for heat exchange with gas flowing from said inlet to said outlet across the exterior of the tubes;

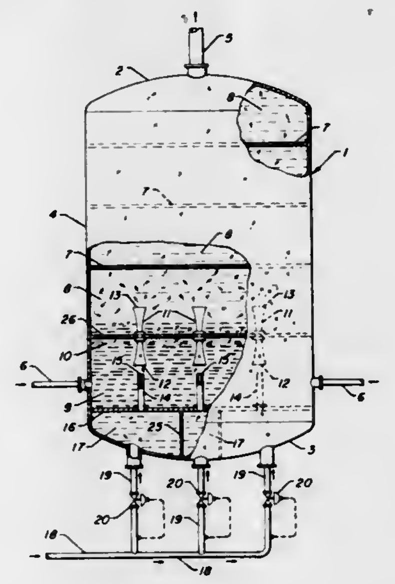
B. means defining an axially short burner zone through which said outlet is substantially directly communicated with the combustion chamber;

C. a plurality of spaced apart nozzles for combustion gas mounted in said burner zone, said nozzles having the axes of their outlets lying substantially in a common plane and their outlets so oriented that combusting gas issues from them in a sheet of flame across substantially the entire area of said zone whereby all portions of gas flowing from the preheater into the combustion chamber are exposed to combusting gas to be intensely heated thereby; and

D. the combustion chamber having a substantially J-shaped wall,
  1. the straight long leg of said J-shaped wall being spaced from said burner zone and being in spaced substantially parallel relation to said other end wall of preheater, and
  2. the rounded portion of said J-shaped wall being inwardly concave, curved on a substantially uniform radius through about 180°, and joined to an edge of the burner zone that is remote from said straight long leg so that a substantial part of said rounded wall portion is in opposing, spaced relation to the burner zone to compel gas flowing out of the burner zone to undergo a reversal of direction in flowing through the combustion chamber and to reflect heat from the burner zone into substantial portions of the interior of the combustion chamber, thus subjecting substantially all portions of gas flowing through said chamber to reflected heat.

3,867,103
ALKYLATION APPARATUS

William G. Boney, Arlington Heights, and Paul J. Kuchar, Hinsdale, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed June 25, 1973, Ser. No. 373,544
Int. Cl. B01j *1/00*; **C07c** *3/12, 3/54*
U.S. Cl. 23—288 E **4 Claims**

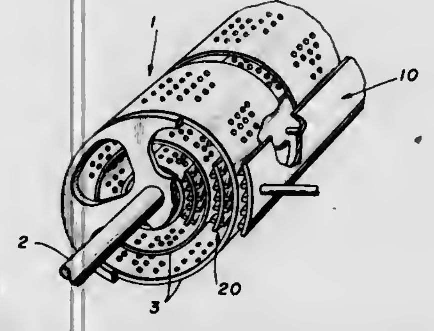


1. An apparatus for contacting a hydrocarbon stream with a mineral acid-catalyst which comprises:

a. an enclosed receiving vessel having an upper and lower chamber;
b. hydrocarbon inlet means located in said lower chamber of said receiving vessel;
c. acid-catalyst inlet means located in said upper chamber of said receiving vessel;
d. an imperforate plate across the width of said vessel, said imperforate plate dividing said vessel into said upper and lower chambers, a plurality of standpipe means connected to said imperforate plate and positioned immediately above said hydrocarbon inlet means, said standpipe means being positioned vertically within the receiving vessel and each standpipe means having a hydrocarbon outlet;
e. a perforated plate above said imperforate plate and above the acid-catalyst inlets means and positioned across the width of said vessel, flow guide conduits located within the receiving vessel, said flow guide conduits being axially aligned above each of said standpipe means and affixed to said perforated plate, said flow guide conduits serving to promote eduction of acid-catalyst into the flow guide conduits by a high velocity hydrocarbon stream emitted from the openings in said standpipe means, and to contain and confine the hydrocarbon stream and prevent contact of a resulting acid-hydrocarbon emulsion with previously formed emulsion until the hydrocarbons and acid are thoroughly mixed and the hydrocarbons at least partially reacted; and,
f. an emulsion outlet means located in said upper chamber of said receiving vessel.

3,867,104
POLYMERIZER REACTOR

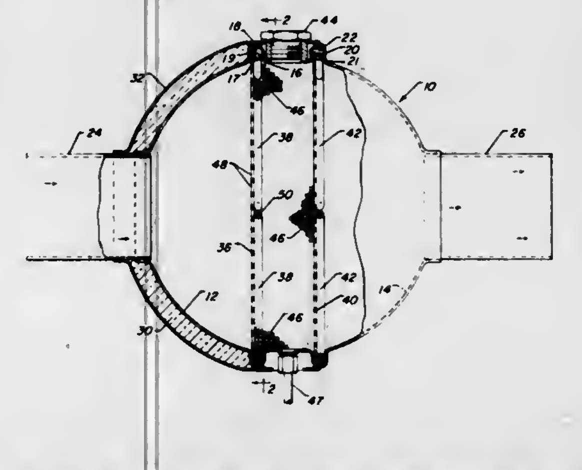
Allen E. Leybourne, III, and Terry H. Baker, both of New Bern, N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed Apr. 12, 1973, Ser. No. 350,460
Int. Cl. B01f *15/00*; **B01j** *1/00*; **B65g** *33/00*
U.S. Cl. 23—285 **1 Claim**



1. A polymerizer reactor comprising in combination: (A) a shaft rotating about its axis, (B) at least one rotor member comprising at least a segment each of a plurality of perforated hollow core cylinders being concentric with and surrounding a portion of said shaft, (C) means for coaxially supporting said perforated cylinders on said shaft, (D) a conveyor stator member comprising at least a portion of a cylindrical member having helical projections protruding radially and extending generally diagonally across at least one surface thereof, forming segmented helical channels, said helical channels being in working juxtaposition with at least one surface of at least one of said perforated hollow core cylinders, (E) a generally cylindrical vessel including the wall surrounding the outermost of said rotor and stator members, (F) means for introducing polymerizable material into said vessel, and (G) means for recovering polymerized material from said vessel.

3,867,105
DAMPED SUPPORT SCREEN FOR CATALYTIC CONVERTER

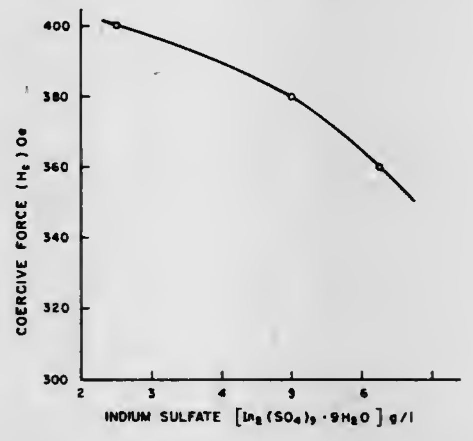
Melvin H. Wagner, Bartlett, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of Ser. No. 386,804, Aug. 8, 1973, abandoned. This application Oct. 29, 1973, Ser. No. 410,670
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 F **14 Claims**



1. In a catalytic converter having a metal housing and a pair of catalyst retaining support screens retained against axial movement by radially extending portions of the inner wall of the housing, the improvement comprising rib support means including a plurality of rib portions extending outwardly from the central portion of at least one of said support screens and generally parallel to said support screen for strengthening said support screen, said rib support means being integrally attached to said at least one support screen only at said central portion thereof, the radially outermost portions of said rib support means being retained against axial movement by said radially extending portions of the inner wall of the housing, said radially outermost portions of said rib support means being free to move radially relative to said at least one screen as the temperature of said screen and rib support means changes.

3,867,106
MAGNETIC THIN FILM DATA STORAGE DEVICE AND METHOD OF MAKING

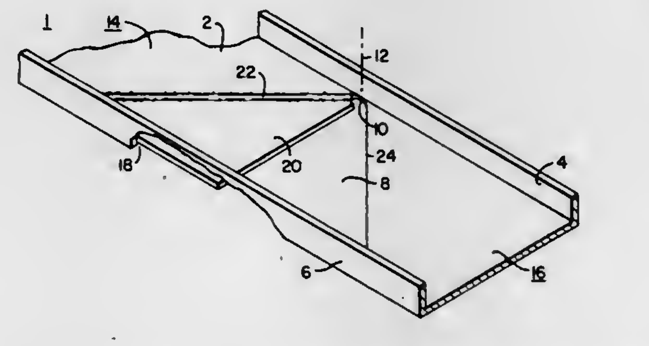
Hanumanthaya V. Venkatasetty, Burnsville, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Dec. 26, 1973, Ser. No. 428,462
Int. Cl. B23p *3/00*; **C23b** *5/32*; **G11c** *11/02*
U.S. Cl. 29—183.5 **9 Claims**



1. In a magnetic thin film data storage device having a non-magnetic metallic substrate and magnetic thin film for data storage overlaying said substrate, the improvement wherein said magnetic thin film is a ternery alloy containing from about 40 per cent to about 43 per cent nickel, from about 52 per cent to about 56 per cent cobalt and from about 2 per cent to about 6 per cent indium.

3,867,107
INTEGRAL CORNER FABRICATION

Olan L. Long, and Richard W. Sayward, both of Columbus, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 27, 1973, Ser. No. 336,398
Int. Cl. B21c *1/00*
U.S. Cl. 29—190 **1 Claim**



1. A corner formed by manipulating a single member having a cross-sectional shape including opposite flanges and an intervening web, said member having a cutout portion of its web with one boundary of the cutout portion located adjacent the flange forming the outer side of the corner after bending, and the opposite boundary of the cutout portion providing an extended length of separation between said web and the flange forming the inner side of the corner after bending, said member in the completed manipulated form of said corner having the portion of said inner flange free of said web displaced

toward the outer flange and crimped back upon itself and flattened against the inner face of said inner flange to secure said corner as formed; and,

said web having a section thereof contiguous with one side of said cutout portion and offset from the general plane of said web sufficiently to accommodate overlapping of said web contiguous to the opposite side of said cutout portion to form a double layer of material thereat when said corner is formed.

3,867,108
ACOUSTO-OPTIC DEVICES AND PROCESS FOR MAKING SAME

Gerard Argant Alphonse, Hightstown, and George Edward Bodeep, Wall Twp., both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 295,975, Oct. 10, 1973, Pat. No. 3,798,746. This application Dec. 3, 1973, Ser. No. 420,781

Int. Cl. B32b *15/04;* **H03h** *7/30*

U.S. Cl. 29—195 **5 Claims**

1. An acousto-optic device which comprises an acousto-optic medium having one roughened surface, a layer of a primer metal on said surface, which primer metal is the metal which is chemically bonded to oxygen in the acousto-optic medium, a layer of a conductive metal, a layer of indium, a second layer of said conductive metal and a transducer having a roughened surface in contact with said conductive metal.

3,867,109
PROCESS FOR IMPROVING THE BUNKERABILITY OF COAL

Edward J. Wasp, San Rafael, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 248,026, April 27, 1972, abandoned. This application Mar. 14, 1973, Ser. No. 341,132

Int. Cl. C10l *9/00*

U.S. Cl. 44—1 R **3 Claims**

1. A process for improving the bunkerability of coal which has been transported as a coal slurry, comprising the steps of heating the slurry to a temperature of about 190°F, mechanically dewatering the slurry to produce a heated cake, adiabatically flashing the heated cake to reduce the temperature thereof to about 100°F, contacting the cake with a purge gas and reducing the surface moisture of the cake to between about 5% and about 8%.

3,867,110
METHOD OF COAL PRETREATMENT

Frank C. Schora, Palatine, and Charles W. Matthews, Darien, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

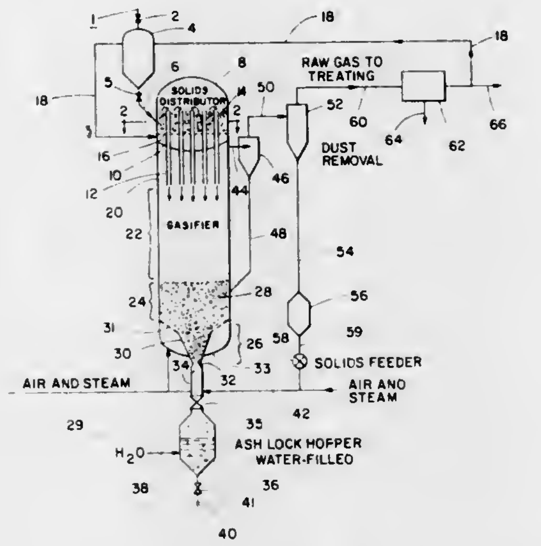
Filed Dec. 17, 1973, Ser. No. 425,269

Int. Cl. C10j *3/06*

U.S. Cl. 48—210 **4 Claims**

1. In a process for the gasification of a finely divided solid carbonaceous feed material to produce a hot gaseous product by a gasification reaction in a fluidized gasification reaction bed wherein the carbonaceous feed material must be pretreated before passage to the fluidized reaction bed, to prevent caking of the feed material during the gasification reaction the improvement which comprises

- i. passing the finely divided feed material and a fluidizing gas into a solid distribution zone maintained at a temperature below about 500°F to produce a fluidized bed of feed material;
- ii. said distribution zone positioned superjacent to the fluidized reaction bed said zone comprising a chamber having a solids inlet, a fluidizing gas inlet and a plurality of spaced apart distribution conduits passing through the bottom of said chamber and terminating within said chamber at a point above the solids inlet and fluidizing gas inlet;
- iii. withdrawing a fluidized mixture of feed material and fluidizing gas from the fluizcd bed of feed material;
- iv. passing the withdrawn fluidized mixture of feed material and fluidizing gas down through the distribution conduits;
- v. discharging the fluidized mixture of feed material and fluidizing gas from each conduit a substantial distance above the fluidized gasification bed and into a pretreatment zone positioned above said gasification bed wherein the feed material from each conduit, as it is discharged, is permitted to settle downward together to the fluidized gasification bed;



- vi. heating the settling feed material with the hot gaseous product emanating from the gasification reaction zone, in the pretreatment zone, to substantially instantaneously heat the feed material to a temperature sufficient to char the feed material; and
- vii. maintaining the settling feed material within said pretreatment zone for a time sufficient to devolatilize the coal and destroy its caking properties before it reaches the fluidized gasification bed.

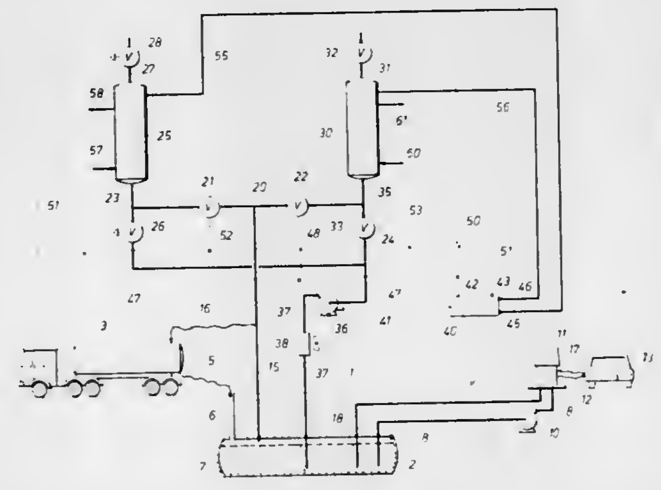
3,867,111
VAPOR RECOVERY SYSTEM

William T. Knowles, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1973, Ser. No. 392,578

Int. Cl. B01d *53/04*

U.S. Cl. 55—21 **5 Claims**



1. A system to recover gasoline from gasoline vapor-laden air that is vented while filling a first gasoline storage tank from the gasoline contained in a second gasoline storage tank, comprising:

- A. a conduit for delivering liquid from the second storage tank to the first storage tank,
- B. a conduit connecting the vapor space of the second storage tank to the vapor space of the first storage tank,
- C. at least one vessel containing a bed of solid adsorbent capable of selectively adsorbing gasoline from said vapor-laden air,
- D. a valved vent to the atmosphere positioned to vent said vessel,
- E. a valved inlet into said vessel on the other side of said bed from said vent, said inlet connected to said conduit connecting the vapor space of said second storage tank to the vapor space of said first storage tank,
- F. a valved conduit from said vessel connecting the inlet side of said bed to the suction side of a vacuum pump,
- G. a conduit for passing gasoline essentially at atmospheric pressure from the discharge side of said vacuum pump to a point below the surface of liquid in said first storage tank or said second storage tank,
- H. means are provided to simultaneously close the valve in said valved vent and the valve in said valved inlet, and to open the valve in said valved conduit, and to actuate said vacuum pump, and
- I. means are provided to stop said vacuum pump (1) when a predetermined subatmospheric pressure of about 0.5 psia or less is reached, or (2) after a predetermined time period has elapsed from the time said pump started.

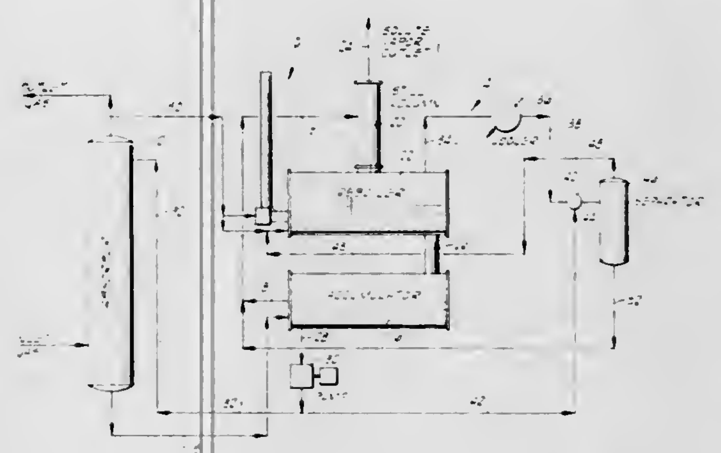
3,867,112
RECONCENTRATING SOLUTE-RICH LIQUID ABSORBENT

Joseph D. Honerkamp, and Paul M. Tournoux, both of Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Filed Mar. 26, 1973, Ser. No. 344,840

Int. Cl. B01d *53/14*

U.S. Cl. 55—32 **18 Claims**



1. A method of reconcentrating a stream of solute-rich liquid absorbent which comprises:

- a. heating the stream of rich liquid absorbent to vaporize a portion of the solute contained therein;
- b. separating the vaporized solute from the liquid absorbent;
- c. intimately contacting the resultant stream of partially reconcentrated liquid absorbent with a stream of stripping gas so that additional solute is vaporized and stripped therefrom to further reconcentrate the liquid absorbent;
- d. separating the resulting mixture of stripping gas and vaporized solute from the reconcentrated liquid absorbent;
- e. withdrawing the resulting stream of reconcentrated liquid absorbent;
- f. intimately contacting said mixture of stripping gas and solute with a stream of lean liquid absorbent so that at least a portion of the solute is removed therefrom;
- g. separating the resulting rich liquid absorbent from said stream of stripping gas and solute; and
- h. recycling said stream of stripping gas and solute into intimate contact with the partially reconcentrated liquid absorbent of step (c).

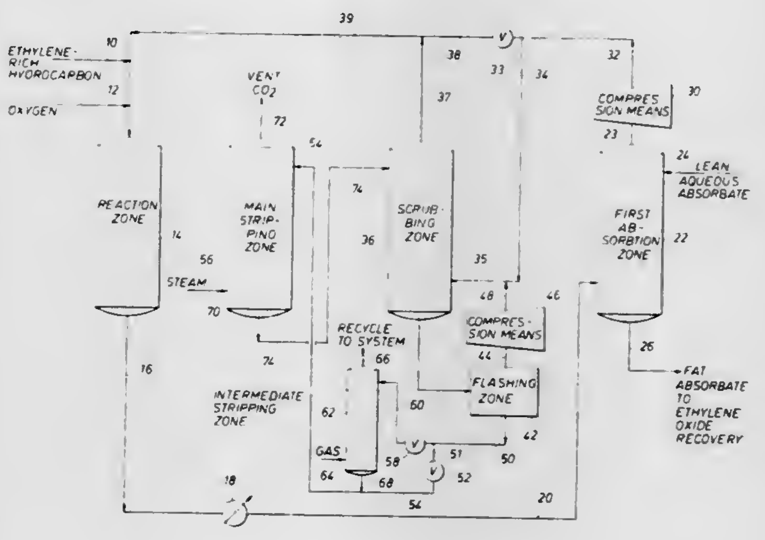
3,867,113
ETHYLENE OXIDE PROCESS

E. Gordon Foster; Paul F. Russell, and Robert G. Vanderwater, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed July 16, 1973, Ser. No. 379,276

Int. Cl. B01d *53/14*

U.S. Cl. 55—44 **4 Claims**



1. A process for separating an essentially hydrocarbon-free carbon dioxide stream from a recycle stream containing C_{1-2} hydrocarbons in the partial oxidation of ethylene to ethylene oxide, wherein the hydrocarbons entrained and/or dissolved with the carbon dioxide stream are recovered which process comprises

- a. contacting at least a portion of the total recycle hydrocarbon stream with a carbon dioxide absorbing aqueous liquid in a scrubbing zone, thereby producing a hydrocarbon-rich overhead and a carbon dioxide-fat absorbate containing some hydrocarbon,
- b. flashing said fat absorbate in a flashing zone to produce a hydrocarbon-containing vapor stream and a hydrocarbon-lean, carbon dioxide-fat absorbate,
- c. contacting at least a portion of the hydrocarbon-lean, carbon dioxide-fat absorbate in an intermediate stripping zone with steam or an inert gas to produce a hydrocarbon-containing overhead vapor stream and a substantially hydrocarbon-free, carbon dioxide-fat absorbate, and
- d. combining any hydrocarbon-lean, carbon dioxide fat absorbate and the substantially hydrocarbon-free absorbate streams in a stripping zone to produce a carbon dioxide overhead steam substantially free of hydrocarbons.

3,867,114
DEVICES WHEREBY THE LOCAL FLUID RATES IN A FLUIDISED BED ARE MADE TO FLUCTUATE

Ian Dracup Doig, Roseville Chase, New South Wales, Australia, assignor to Unisearch Limited, Kensington, Wales

Filed Apr. 23, 1973, Ser. No. 353,888

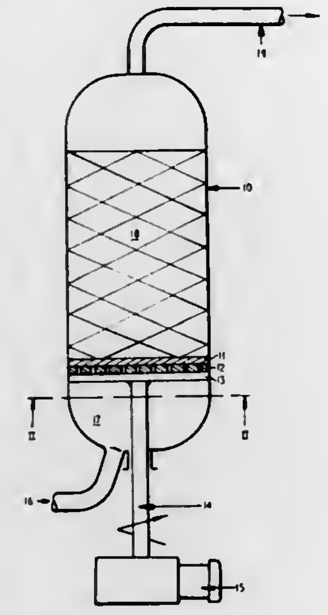
Claims priority, application Australia, Apr. 27, 1972, 8768/72

Int. Cl. B01d *53/06*

U.S. Cl. 55—77 **4 Claims**

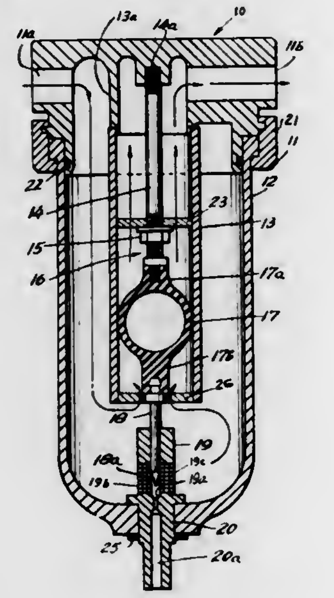
1. A method of operating a fluidized bed comprising:

varying the effective resistance of the grid of the bed to the flow of fluid in a programmed manner, by selectively opening a portion of some holes while simultaneously closing an equivalent portion of other holes elsewhere in the grid, and continuously changing the holes being opened and closed, whereby gross fluid flow is maintained substantially invariant and preferred channels are avoided.



3,867,115
AIR WATER SEPARATOR

Leo A. Heintzelman, 4990 Burlingame S.W., Wyoming, Mich. 49509
Filed Jan. 14, 1974, Ser. No. 432,887
Int. Cl. B01d *45/06*
U.S. Cl. 55—218 **15 Claims**

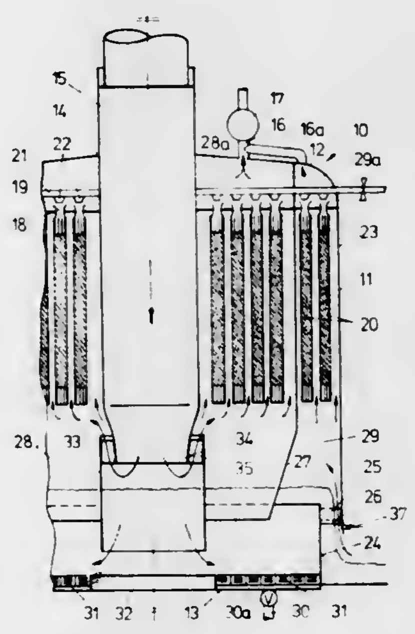


1. A gas-liquid separator for separating liquids and other contaminants from a pressurized gas comprising:

a housing having an open interior;
gas inlet means in said housing for receiving gas containing liquid and other contaminants;
drain means in a bottom portion of said housing for draining the liquid and other contaminants therefrom;
gas outlet means in said housing for exhausting gas from the separator;
a hollow conduit having an inlet in communication with the housing inlet and an outlet in communication with the housing outlet such that the gas must flow through the conduit in order to leave the separator by the housing outlet;
contaminant removal means fitted in the hollow conduit and adapted to constrict the flow of gas to the space between said means and the interior surface of the hollow conduit in passing through the conduit, said contaminant removal means comprising resilient wiper means at the outer periphery thereof adapted to resiliently engage the interior surface of the hollow conduit at least when gas is flowing through the separator, said wiper means being resiliently urged outwardly against the interior surface of the conduit with sufficient force to impair the passage of estrained liquids and particulate contaminates in said gas past the wiper means, while permitting pressurized gas to pass through the conduit between the wiper means and the interior of the hollow conduit;
valve means in the separator for opening and closing the drain means; and
valve control means in the separator adapted to open the valve means when gas is passing through the separator and close the valve means when gas is not passing through the separator.

3,867,116
SEPARATOR

Horst Muller, Forch, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland
Filed Dec. 6, 1972, Ser. No. 312,697
Claims priority, application Switzerland, Dec. 10, 1971, 18027/71
Int. Cl. B01d *50/00*
U.S. Cl. 55—319 **12 Claims**

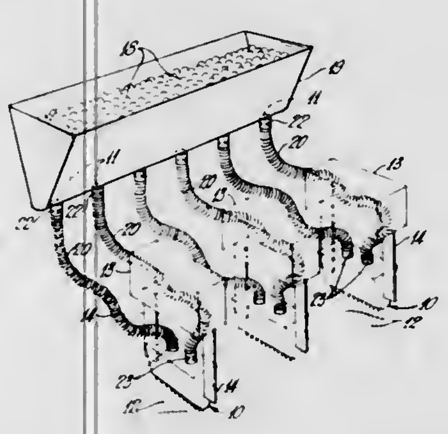


1. An apparatus for separating fine-grained material out of an air stream in which the material is suspended, comprising means defining a housing structure including a first enclosure wall having a floor, and

fluidizing means located above the floor,
a conveyor pipe having an open outlet end and extending therewith into said housing for introducing said stream downwardly into said housing,
an expansion pipe open at both ends surrounding the open outlet end of the conveyor pipe and spaced above said fluidizing means,
an air outlet defined in the upper part of said housing to discharge the air from the stream,
suction means connected to said air outlet operable to establish and maintain a reduced pressure within the housing,
filter means disposed upstream of said air outlet operable for restraining the exiting of the fine-grained material through said air outlet,
at least one discharge opening defined in said housing above the fluidizing means and operable for discharging said fine-grained material,
a second wall within the housing spaced from the first wall and extending downwardly from the upper portion of the housing at least to a level below the discharge opening, and
inlet means associated with the floor operable for admitting fluidizing air to said fluidizing means thereby to convey the fine-grained material to the discharge opening.

3,867,117
METHOD AND APPARATUS FOR FORMING GLASS FIBERS AND MARBLE DELIVERY MEANS THEREFOR

James A. Bebart, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation-in-part of Ser. No. 274,781, July 24, 1972, abandoned. This application Jan. 4, 1974, Ser. No. 430,845
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **2 Claims**



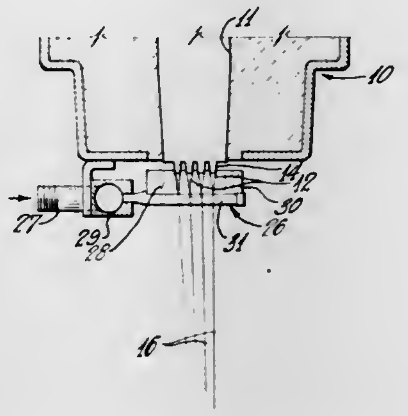
2. A method of preventing marble jamming in a flexible convoluted curvilinear configured spring conduit conveying glass marbles from an elevated supply hopper to a lower elevation glass melting chamber comprising the steps of:

a. providing a continuous flexible convoluted curvilinear configured spring conduit form said elevated supply hopper to the glass melting chamber having a substantial portion thereof extending down steeply sloped vertical drop sections,
b. feeding glass marbles into said spring conduit at the hopper end totally filling said spring conduit and thereby causing said steeply sloped sections to be spring loaded to the extent that the increased spacing between convolutions is small with respect to the diameter of the marbles contained therein,
c. intermittently dispensing glass marbles into the melting chamber thereby inducing random vibrational modes throughout the spring conduit agitating the marbles therein preventing marble jams,
d. resupplying glass marbles at the hopper end of said conduit thereby maintaining a full head of marbles throughout the total length of the spring conduit.

3,867,118
APPARATUS FOR PRODUCTION OF GLASS FIBERS

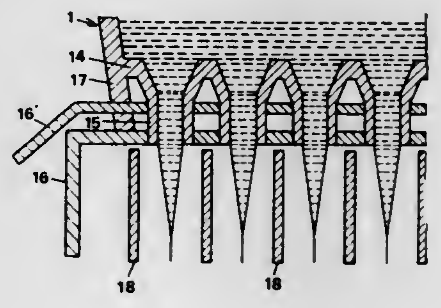
Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Continuation of Ser. No. 14,708, Feb. 9, 1970, abandoned, which is a continuation of Ser. No. 636,112, May 4, 1967, abandoned. This application Mar. 19, 1971, Ser. No. 126,306
Int. Cl. C03b *37/02*
U.S. Cl. 65—12 **6 Claims**

2. Apparatus for producing filaments of heat-softenable material comprising a feeder for feeding such material in molten form having orifices from which streams of such material flow, means for continuously attenuating the streams to filaments in an attenuating zone immediately adjacent said feeder, and environmental control means in said attenuating zone disposed between said streams subdividing the total number of streams emitted from said orifices into smaller groups so that each stream has a portion of said control means in adjacent heat absorbing and liquid vaporizing relationship therewith, said portion adjacent each stream including a wick element of deformable fibrous material to prevent feeder damage and means for continuously supplying a liquid to the external surface in response to heat absorbed from said adjacent stream, said liquid supplying means supplying liquid to said surface at a rate sufficient to replenish the liquid on said surface as the liquid vaporizes to maintain the temperature of said surface of said wick element at the vaporization temperature of said liquid to maintain a uniform surface temperature adjacent said stream and including a liquid carrying conduit for each wick, each wick extending from its conduit.



3,867,119
APPARATUS FOR MANUFACTURING GLASS FIBERS

Kesaharu Kasuga, Tokyo; Takeo Abe, and Tsunehiro Haga, both of Koriyama, all of Japan, assignors to Paramount Glass Mfg. Co. Ltd., Koriyama City, Fukushima-ken, Japan
Continuation of Ser. No. 163,578, July 19, 1971, abandoned. This application Sept. 25, 1973, Ser. No. 400,696
Claims priority, application Japan, July 20, 1970, 45-63420
Int. Cl. C03b *37/02*
U.S. Cl. 65—12 **5 Claims**



1. Apparatus for manufacturing glass filaments comprising means for holding a body of molten glass to be formed into said filaments, said means having an inner rectangularly-shaped bushing plate for supporting said body, a plurality of tubes extending below said inner plate each communicating with said holding means through an orifice in said inner plate whereby molten glass may flow out of said holding means, an outer rectangularly-shaped bushing plate spaced from said innder bushing plate spaced from said inner bushing plate, the space between said outer bushing plate and said inner bushing plate being filled with air and enclosed, said outer bushing plate being provided with a plurality of equally spaced apertures corresponding in number and arrangement to the said orifices also equally spaced, to receive the lower ends of said tubes, said lower ends being disposed without extending downward below said outer bushing plate, said outer plate being made of electrically-conductive material providing electrical resistive heating zones therein, and means for supplying an electric current to said outer plate and a third plate located between and parallel to the inner and outer plates in heat conductive relation to the tubes extending therethrough.

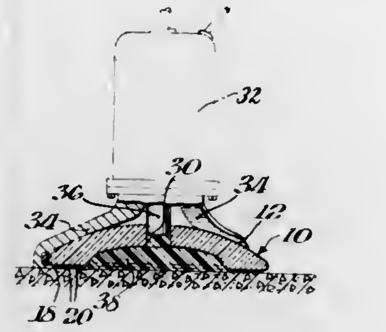
3,867,120
ROADWAY MARKER AND METHOD OF MAKING IT

Howard A. Schaefer, c/o Anchor Hocking Corporation, Lancaster, Ohio 43130

Continuation-in-part of Ser. No. 296,947, Oct. 12, 1972,. This application Nov. 9, 1972, Ser. No. 305,167

Int. Cl. C03b *27/00*

U.S. Cl. 65—62 **13 Claims**



1. A roadway marker comprising a body member, said body member being made of tempered glass capable of disintegrating into small particles with minimal sharp fracture edges upon failure and breakage of said body member, said body member having an impact strength of at least 10,000 psi, said body member being concave with an internal cavity exposed at its lower surface, said internal cavity being filled with a sealing compound, said body member having securing means on its bottom surface including the exposed surface of said compound for securement of said marker to a roadway, and the external surfaces of said body member above said securing means being of smooth contour.

12. The method of claim 11 including applying a ceramic coloring to the interior of the body prior to the heating step.

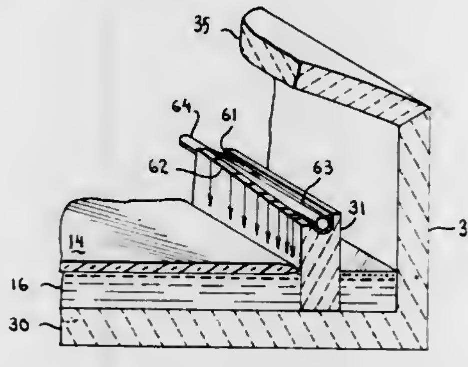
3,867,121
METHOD AND APPARATUS FOR THE MANUFACTURE OF THIN GLASS ON MOLTEN METAL

Thomas R. Trevorrow, Ford City, and Kenneth R. Graff, Cabot, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1973, Ser. No. 338,474

Int. Cl. C03b *18/02*

U.S. Cl. 65—65 A **4 Claims**



1. In the method of manufacturing glass comprising the steps of delivering a stream of molten glass onto a pool of molten metal, conveying the glass along the surface of the pool of molten metal cooling the glass to form a dimensionally stable, continuous sheet of glass and withdrawing the continuous sheet of glass from the pool of molten metal, the improvement comprising:

a. flowing the molten glass onto the pool of molten metal between a spaced pair of restraining members comprising material that is at least partially wettable by molten glass;

b. providing a lubricant between the marginal edges of the glass and the restraining members with more lubricant being provided near the downstream ends of the restraining members, farthest from the location of glass delivery onto the pool of molten metal, than near their upstream ends, closest the location of glass delivery onto the pool of molten metal; and

c. cooling the glass between the pair of restraining members while applying a sufficient longitudinal force to it to convey it in the direction of glass withdrawal from the pool of molten metal.

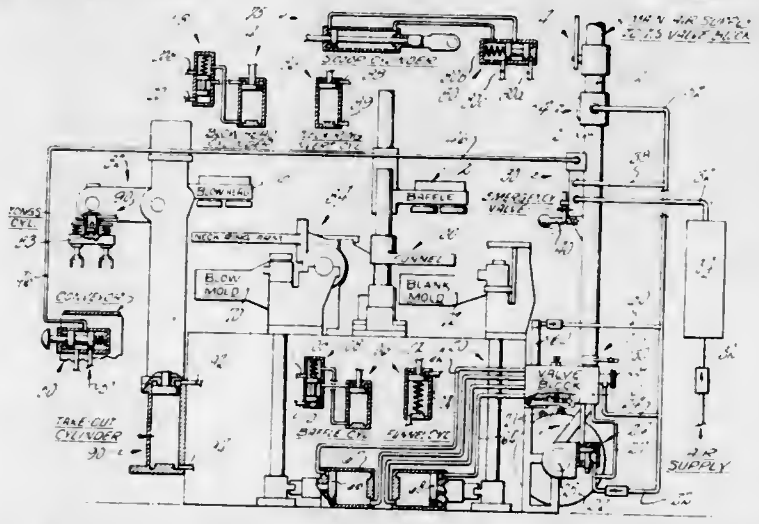
3,867,122
SHUT OFF SYSTEM FOR GLASSWARE FORMING MACHINE

Joseph P. Miller, Tariffville, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Feb. 20, 1973, Ser. No. 333,655

Int. Cl. C03b *9/40*

U.S. Cl. 65—159 **9 Claims**



1. In a pneumatically operated mechanically controlled glassware forming machine wherein a rotating drum is associated with a system of levers and latches to actuate tappet valves in a valve block to selectively direct air to the various pneumatically operated components of the machine; the improvement comprising:

a. main air supply means including a supply manifold in said valve block,

b. a shut off valve in said air supply means, said shut off valve being normally open and pneumatically closed,

c. a pneumatically controlled clutch for said rotating drum, said clutch being normally engaged to rotate the drum and pneumatically disengage to stop its rotation,

d. a secondary air pressure manifold for said pneumatically closable shut off valve and said pneumatically disengageable clutch,

e. a normally closed manually openable emergency valve for selectively connecting said shut off valve and said clutch to said secondary manifold

f. a manually operable member associated with the pneumatic clutch for said rotating drum to permit the drum to be manually disengaged without use of said emergency valve, spring biasing means for urging said member toward its disengaged position, a spring loaded plunger for engaging a detent in said member to hold the member in its engaged position, pilot valve means for said plunger, and a branch line of said secondary pressure manifold communicating with said pilot valve to automatically release said plunger from its detent and to let said member move toward its disengaged position when said emergency valve is opened.

3,867,123
MOLD OPERATING MECHANISM

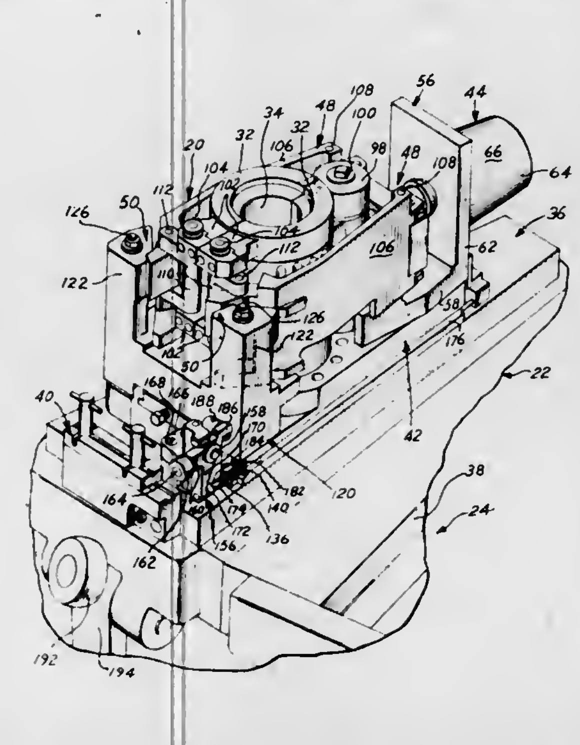
Joseph R. Hamilton, Anderson, Ind., assignor to Lynch Corporation, Anderson, Ind.

Filed Aug. 13, 1973, Ser. No. 387,694

Int. Cl. C03b *9/00*

U.S. Cl. 65—359 **12 Claims**

1. A mold operating mechanism for opening and closing a mold for forming articles therein under relatively high molding pressures between a pair of molds and a ram, said mechanism comprising, in combination, a support member having first and second rigid portions, a pair of mating mold members, movably mounted on said support member, fluid pressure drive means operated by relatively low pressures for moving said mold members between a closed, article molding position, and an open position for releasing the molded article from the mold, first and second link means for operatively interconnecting each of said mold members with said drive means, and cooperating means on each of said link means and on each rigid portion for locking each of said mold members in the closed position for resisting relatively large external forces from said molding pressures normally tending to open said mold, said drive means and said cooperating means holding said mold members in the closed molding position, said cooperating means also being constructed and arranged to facilitate release of said mold members from the locked and closed position, in response to relatively low opening pressures from said drive means.



3,867,124
WATER SOLUBLE FERTILIZER

John W. Church, deceased, late of 292 Fern Palm Rd., Boca Raton, Fla. 33432 (First Bank and Trust Company of Boco Raton and Dorothy M. Church, co-executors)

Filed Oct. 26, 1970, Ser. No. 84,148

Int. Cl. C05c *9/00*

U.S. Cl. 71—1 **7 Claims**

1. A granular, water soluble fertilizer comprising ammonium nitrate particles with a water soluble coating thereon which comprises the reaction product of urea and one or more of the following water soluble mineral element salts: ferrous sulfate ($FeSO_4$. $7H_2O$), magnesium sulfate ($MgSO_4$. $7H_2O$), and copper sulfate ($CuSO_4$. $5H_2O$).

3,867,125
COMPOSITION FOR AND METHOD OF DEFOLIATION

John William Jenney, Montebello; Dennis Ambrose Donaghu, Pleasant Hill, both of Calif.; Louis Peter Cartsunis, Oklahoma City, and Donald Sylvester Batchelor, Norman, both of Okla., assignors to Ken-Mcgee Chemical Corp., Okalhoma City, Okla.

Filed Feb. 8, 1973, Ser. No. 330,691

Int. Cl. A01n *11/00*

U.S. Cl. 71—69 **10 Claims**

1. A defoliant comprising an aqueous solution containing an alkali metal chlorate in an amount of from about 1 to about 30 percent by weight, an alkali metal carbonate and urea, said carbonate and urea being present in an amount sufficient to provide a ratio of carbonate and urea to chlorate within the range of from about 0.2:1 to 1.2:1 and a ratio of carbonate to urea within the range of from about 1:4 to 4:1.

3,867,126
COLD AND FROST TOLERANCE IN LIVING PLANTS WITH 3,6-DIOXO-4-PYRIDAZINE ACETIC ACID DERIVATIVES

Robert Howard Kupelian, Yardley, Pa., assignor to American Cyanamid Company, Stamford, Conn.

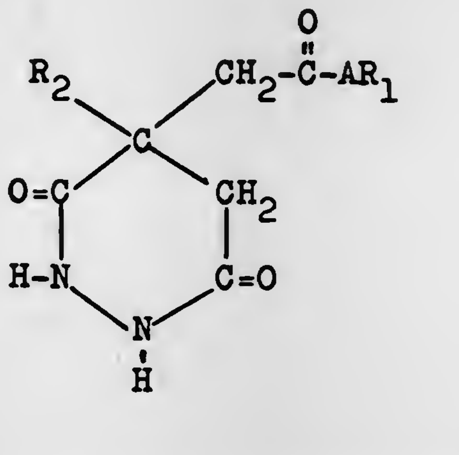
Filed Sept. 15, 1972, Ser. No. 289,525

Int. Cl. A01n *9/22*

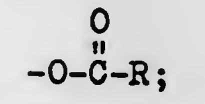
U.S. Cl. 71—92 **9 Claims**

1. A method for improving cold and frost tolerance in living plants, comprising:

applying to the surfaces of the plants before the plants are subjected to cold temperatures and frost and prior to and during the budding, flowering and fruiting stages of the plants, an effective amount for protecting the plants against injury due to cold and frost of a compound, a tautomer of a compound or a mixture of compounds having the structure:



wherein A is oxygen of -NH-; R_1 is hydrogen or alkyl C_1–C_6; R_2 is hydrogen, hydroxyl or



$$-O-\overset{\overset{\displaystyle O}{\|}}{C}-R;$$

R is alkyl C_1–C_6, alkenyl C_1–C_6 or phenylene, and R_1 and R_2 taken together form a methylenoxy bridge.

3,867,127
AMINE FRUIT ABSCISSION AGENTS

Hanspeter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,273

Claims priority, application Switzerland, Apr. 19, 1972, 5774/72

Int. Cl. A01n *9/20*

U.S. Cl. 71—121 **2 Claims**

1. A method for the promotion of citrus fruit abscission which comprises applying to the citrus fruit-bearing plants an effective amount of nonylamine.

2. A method for the promotion of citrus fruit abscission which comprises applying to the citrus fruit-bearing plants an effective amount of decylamine.

3,867,128
PROCESS FOR PRODUCING HIGH SPECIFIC GRAVITY MATERIAL FROM LOW GRADE IRON ORE

James Thomas Hancock, Jr., 11602 Applewood, Houston, Tex. 77024

Filed Dec. 18, 1972, Ser. No. 316,232

Int. Cl. C22b *1/00*

U.S. Cl. 75—1 **12 Claims**

1. A process for preparing a non-magnetic iron oxide-containing material having a specific gravity of at least 4.2 from an iron ore having a specific gravity of about 3.6 to about 3.9 which comprises the steps of:

- a. calcining said iron ore under oxidizing conditions at a residence time sufficient to maintain the ore at between about 1700°F. to less than about 2050°F. for at least 20 minutes;
- b. quenching the calcined ore; and
- c. recovering the quenched iron oxide-containing materials; wherein,

the recovered material is non-magnetic and has a specific gravity of at least 4.2.

3,867,129
ANODICALLY OXIDIZABLE METAL POWDER

Gerard S. Ronneau, Edegen; Pierre D. Debacker, Hoboken, and Hugo L. Carpentier, Aartselaar, all of Belgium, assignors to Metallurgie Hoboken-Overpelt

Filed Feb. 5, 1974, Ser. No. 439,805
Int. Cl. B22f *9/00;* C22c *27/00*

U.S. Cl. 75—0.5 BB **6 Claims**

1. A valve-metal base powder for use in electronics, the grains of which powder are made up of the said valve-metal containing between about 0.06 and about 2 percent by weight of at least one additive metal chosen in the group consisting of Mo, V, W, and Hf.

3,867,130
METHOD FOR ELECTROSLAG REMELTING OF CONSUMABLE ELECTRODES

Boris Evgenievich Paton, ul. Kotsjubinskogo, II/13, kv. 21; Vladimir Konstantinovich Lebedev, ul. Engelsa, 25, kv. 12; Boris Izrailevich Medovar, bulvar L. Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukheflotsky prospekt, 61, kv. 14; Nikolai Vasilievich Podola, Pushkinskaya ul., 8, kv. 12; Oleg Petrovich Bondarenko, Kreschatik, 15, kv. 34, all of Kiev; Semen Abramovich Leibenzon, prosp. Lenina, 185, kv. 36, Zaporozhie; Gary Petrovich Kaganovsky, Patrioticheskaya ul. 48, kv. 71, Zaporozhie; Vadim Filimonovich Smolyakov, pr. Lenina, 155 kv. 60, Zaporozhie; Konstantin Sergeevich Eltsov, ul. 40 letia Sovetskoi Ukrainy, 6, kv. 1, Zaporozhie; Georgy Kharitonovich Gabuev, Prospekt Lenina, 228, kv. 17, Zaporozhie, and Dmitry Fedorovich Gladky, Prospekt Metallurgov, 3, kv. 33, Zaporozhie, all of U.S.S.R.

Division of Ser. No. 56,141, July 6, 1970, Pat. No. 3,693,700, which is a continuation of Ser. No. 641,605, May 26, 1967, abandoned. This application Feb. 17, 1972, Ser. No. 227,638
Int. Cl. C22d *7/00;* H05b *7/18*

U.S. Cl. 75—10 R **8 Claims**

1. A method of electroslag remelting of a consumable electrode comprising preparing a bath of molten slag in a mold, immersing said consumable electrode in said bath of molten slag, passing alternating current through said electrode to melt and form a liquid metal bath in said mold, and modulating the amplitude of said alternating current at a predetermined frequency substantially below the frequency of said alternating current.

3,867,131
METALLURGICAL PRODUCTION METHOD

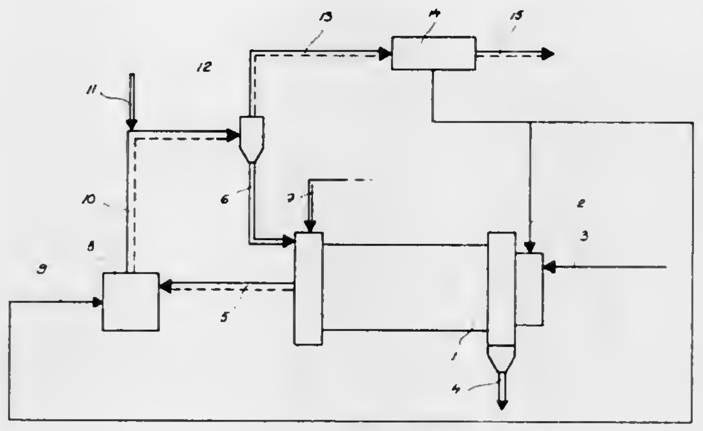
Folk Engstrom, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed May 31, 1973, Ser. No. 365,522
Claims priority, application Finland, June 12, 1972, 1668/72
Int. Cl. C21b *3/04, 11/06*

U.S. Cl. 75—25 **5 Claims**

1. A process for pre-reducing an ore concentrate in a metallurgical process in a rotating cylinder furnace in which the ore and the reducing gas are introduced in opposite directions, the ore is preheated and exhaust gases containing unburnt material are removed, which comprises

- a. burning in an after-combustion chamber the still unburnt components in the exhaust gases emerging from the cylinder furnace to generate combustion gases,
- b. adding a ground concentrate to the combustion gases from said after-combustion chamber,
- c. feeding said ground concentrate and combustion gases into a pre-heater
- d. separating the pre-heated concentrate and the dust contained in said exhaust gases from the combustion gases,



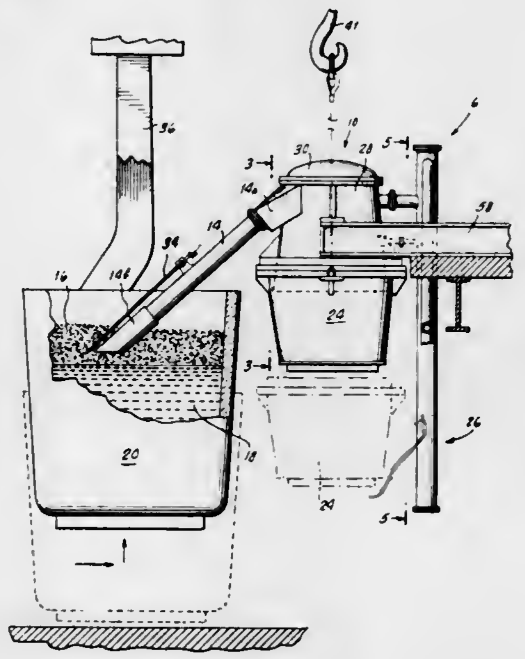
- e. feeding said separated components into the cylinder furnace,
- f. feeding the pure combustion gases into an air pre-heater, and
- g. using the heated air from the pre-heater in the cylinder furnace and the after-combustion chamber.

3,867,132
METHOD OF DESLAGGING MOLTEN METAL

Thomas E. Perry, Chagrin Falls, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 841,026, July 11, 1969, Pat. No. 3,632,096. This application June 25, 1971, Ser. No. 156,961
Int. Cl. C21c *7/10;* C21b *3/04, 3/04*

U.S. Cl. 75—49 **1 Claim**



1. A method of deslagging molten metal, comprising;

- a. locating a ladle means containing molten metal and a layer of slag beneath uptake tube means coupled to a chamber means including a vacuum source such that said uptake tube means is disposed substantially entirely about the upper surface of said slag and molten metal and is substantially immersed within said slag and molten metal; and
- b. applying a vacuum to the slag and the molten metal contained in said ladle means through said uptake tube means to cause substantially all of said slag and a portion of said molten metal to rise in said uptake tube means to transfer said slag to said chamber means, the pressure difference between said chamber means and the surface of said slag outside said uptake tube means being sufficient to support a column filling said uptake tube means of slag or slag and molten metal but not molten metal alone.

3,867,133
REFINING PROCESS FOR REMOVING MO FROM HIGH-NI AND/OR HIGH-CO, MO-CONTAINING ALLOY STEELS

Kazutaka Naguro, and Takao Seya, both of Tokyo, Japan, assignors to Kawaguchi Seiko Kabushiki Kaisha, Kawaguchi, Japan

Filed Sept. 17, 1973, Ser. No. 398,157
Claims priority, application Japan, Mar. 23, 1973, 48-32736
Int. Cl. C21c *7/04;* C22c *33/00*

U.S. Cl. 75—53 **5 Claims**

1. A refining process for removing Mo from a Mo-containing alloy steel having a high content of at least one of Ni and Co, which comprises:

subjecting said Mo-containing alloy steel to oxidation melting refining at a temperature of from about 1500℃. to about 1650℃. to form a peroxidized molten steel containing Mo oxides and having the following approximate elemental analysis in percent

	by weight [.]
Cr	<1
C	<0.1
P	<0.1
Mn	<0.1
Si	<0.1
O	>0.02.

contacting said peroxidized molten steel at a temperature of from about 1400℃. to about 1550℃. with a basic double oxide comprising (i) at least one basic oxide selected from the group consisting of an alkali metal oxide and an alkaline earth metal oxide and (ii) at least one acid oxide, and with at least one oxidizer selected from the group consisting of a solid oxidizer, oxygen gas, an oxygen-enriched gas and a mixture thereof, to form a double salt of said double oxide and said Mo oxides, and

discharging a slag containing said double salt.

3,867,134
METHOD FOR PRODUCING STAINLESS STEEL IN A BASIC OXYGEN FURNACE

Richard B. Shaw, Natrona Heights, and Richard F. Carlson, Tarentum, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 267,340, June 29, 1972, abandoned. This application Sept. 21, 1973, Ser. No. 399,570
Int. Cl. C21c *5/32*

U.S. Cl. 75—60 **11 Claims**

1. In the manufacture of stainless steel having a carbon content of under 0.03 percent, the steps of:

charging into a vessel molten ferrous metal and cold chromium-containing materials with the cold material constituting at least 10 percent by weight of the total charge and the mixture of molten and cold materials containing at least 3.5 percent by weight of carbon,

top blowing essentially pure oxygen onto the surface of the molten ferrous metal through a nozzle positioned above said surface until at least 50 percent of the total oxygen required for refining has been blown onto the surface of the bath, and

thereafter blowing a mixture of oxygen and a non-oxidizing gas onto the surface of the molten metal through said nozzle until the carbon content thereof has been reduced to below 0.03 percent.

3,867,135
METALLURGICAL PROCESS

Hans Klas Olof Johnsson, and Lars Anders Eriksson, both of Hagfors, Sweden, assignors to Uddeholms Aktiebolag, Uddeholm, Sweden

Filed Oct. 5, 1972, Ser. No. 295,355
Claims priority, application Great Britain, Oct. 6, 1971, 46507/71; Feb. 28, 1972, 9162/72; Sweden, June 9, 1972, 7583/72
Int. Cl. C21c *5/34*

U.S. Cl. 75—60 **14 Claims**

1. A method of reducing the carbon content of a carbon-containing alloy, said alloy containing at least 10 percent by weight of chromium and, as the major component thereof, at least one metal selected from the group consisting of iron, cobalt and nickel, said method comprising:

- a. first melting the alloy and bringing the molten alloy substantially up to the decarburization temperature essentially by oxidising substantially completely any silicon present in the alloy and also, if necessary, at least part of any other readily oxidisable component present in the alloy
- b. thereafter, decarburizing the alloy at a decarburization temperature of about 1,550° to about 1,800°C by introducing a mixture consisting essentially of oxygen and at least one hydrogen containing compound selected from the group consisting of steam and ammonia into the molten alloy at least about 20 cms. below the surface thereof, said oxygen oxidizing carbon in the alloy to carbon monoxide, the volume ratio of the introduced oxygen to hydrogen-containing compound in said mixture during at least part of the main decarburization period being below 3:1, said hydrogen containing compound liberating elementary hydrogen in the molten alloy, the amount of hydrogen and carbon monoxide in the molten alloy being such that the partial pressure of carbon monoxide in the molten alloy is below 0.5 atmospheres and lower than that partial pressure which corresponds to the equilibrium pressure for the carbon/chromium oxidation
- c. maintaining the molten alloy at a decarburization temperature of at least about 1,550°C essentially by oxidizing chromium in the alloy, wherein the decarburization temperature is at least partly controlled by varying the volume ratio of introduced oxygen to hydrogen-containing compound, said ratio being decreased during the course of the decarburization to below 1:1, using amounts and concentrations such that the decarburization temperature is essentially maintained at no greater than about 1,800°C and
- d. thereafter removing at least part of the hydrogen remaining in the molten alloy.

3,867,136
DECARBURISATION OF CHROMIUM CONTAINING IRON, COBALT OR NICKEL BASED ALLOYS

Lars Anders Eriksson, and Karl-Erik Oberg, both of Hagfors, Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Oct. 5, 1973, Ser. No. 403,854
Claims priority, application Sweden, Oct. 6, 1972, 12907/72
Int. Cl. C21c *5/32*

U.S. Cl. 75—60 **11 Claims**

1. A method of reducing the carbon content of an iron, cobalt or nickel based alloy containing carbon and at least 10 percent by weight chromium by introducing into the molten alloy oxygen and at least one hydrogen yielding gas selected from the group consisting of steam and ammonia wherein a first mixture consisting essentially of a minor proportion by volume of oxygen and a major proportion by volume of the hydrogen yielding gas is introduced into the molten alloy through an inner section of a tuyere comprising at least two coaxial pipes and having at least one inner section and an outermost section, the amount of hydrogen yielding gas being sufficient to bring about an endothermal reaction when the hydrogen yielding gas meets the molten alloy, and introducing through the outermost section of the tuyere a second mixture which is a gas which undergoes an exothermal reaction when it meets the molten alloy and which second mixture consists essentially of oxygen and a cooling gas.

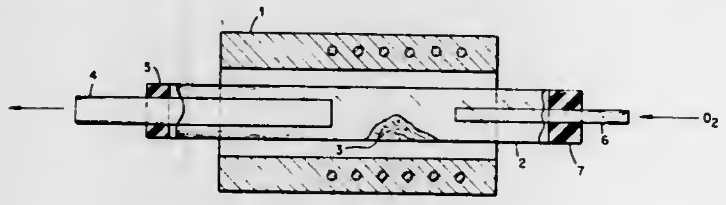
3,867,137
PURIFICATION OF IRIDIUM

Henry Inouye, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 22, 1973, Ser. No. 372,886

Int. Cl. C22b *11/02*

U.S. Cl. 75—83 **8 Claims**



1. A method for purifying iridium comprising the steps of oxidizing impure iridium to form volatile IrO_3, decomposing the IrO_3 to condense IrO_2 as a solid at a point away from said oxidizing step, and reducing the IrO_2 to iridium metal.

3,867,138
SELECTIVELY BLEACHING DYES AND PIGMENTS IN DEVELOPED ELECTROPHOTOGRAPHIC LAYERS

Masaaki Takimoto, and Satoru Honjo, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 197,493, Nov. 10, 1971,. This application Sept. 6, 1973, Ser. No. 394,808

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **21 Claims**

1. A process for toning an electrophotographic layer comprising the steps of

forming a developed image on an electrographic layer comprising a photoconductive powdered material, a resinous binder, and at least two coloring materials selected from the group consisting of sensitizing dyes and pigments and mixtures thereof at least one of said coloring materials being a sensitizing dye or sensitizing pigment, said two coloring materials having different fading rates and being further selected from at least two of the following groups: group (a) comprising coloring materials having an absorption rate variation greater than 15%; group (b) comprising coloring materials having an absorption rate variation less than 3%; and group (c) comprising coloring materials having an absorption rate variation from 3 to 15%; and

selectively bleaching at least one of said coloring materials so that at least one of said coloring materials remains in said electrophotographic layer to thereby tone said layer.

3,867,139
PROCESS OF MAKING A PHOTOCONDUCTIVE MATERIAL OF CADMIUM SULFIDE AND CADMIUM CARBONATE

Yoshihiko Yamada, and Katsuo Makino, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1972, Ser. No. 245,811

Claims priority, application Japan, Apr. 20, 1971, 46-24968

Int. Cl. G03g *5/04*

U.S. Cl. 96—1 PC **20 Claims**

1. A process for making a photoconductive material which comprises preparing a photoconductive material of fine powder particles principally of cadmium sulfide and cadmium carbonate in physico-chemical combination, washing said photoconductive material with water to remove water soluble matter, and subsequently adsorbing a silicon compound on said washed photoconductive material so that said photoconductive material contains about 0.1 to 5% weight of said silicon compound whereby a clear image of high density and little background fog may be obtained on said photoconductive material even in an atmosphere of high temperature and humidity.

3,867,140
ORGANIC PHOTOCONDUCTOR-(MONONITRO-2-AZA-FLUORENYLIDENE)MALONONITRILE CHARGE TRANSFER COMPLEX

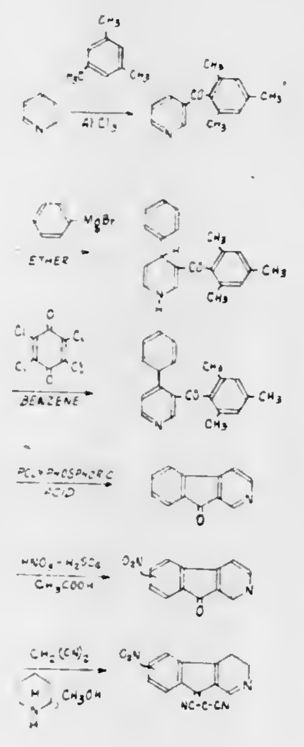
Mitsuru Hashimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,563

Claims priority, application Japan, Jan. 24, 1972, 47-9293

Int. Cl. G03g *5/00*

U.S. Cl. 96—1.5 **1 Claim**



1. A photosensitive material for use in electrophotography which is a charge transfer complex comprising 100 parts by weight of an organic photoconductor and 1 to 150 parts by weight of (mononitro-2-aza-9-fluorenylidene) malononitrile.

3,867,141
PHOTOELECTRIC AND ELECTROPHOTOGRAPHIC PIGMENTS COMPRISING DERIVATIVES OF CONDENSED POLYCYCLIC AROMATIC HYDROCARBON ALDEHYDES

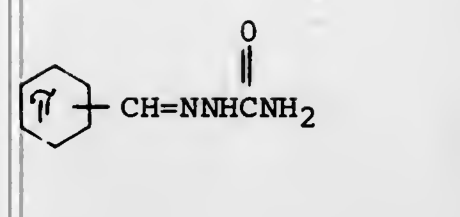
John Alf Bergfjord, Macedon; Steven James Grammatica, Webster, and Richard William Radler, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1973, Ser. No. 337,786

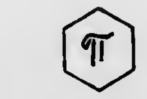
Int. Cl. G03g *5/02*

U.S. Cl. 96—1.5 **10 Claims**

1. A photoelectrophoretic imaging suspension comprising a substantially insulating liquid carrier medium having dispersed therein an electrically photosensitive pigment composition comprising a pigment having the formula:



wherein



represents a condensed polycyclic aromatic group having from about 14 to about 20 carbon atoms.

3,867,142
PHOTOSENSITIVE MATERIALS FOR PRODUCING PRINTING PLATES

Willy Krause, Am Rottland, Germany, assignor to Krause Offset System KG, Bielefeld, Germany

Filed Apr. 16, 1973, Ser. No. 351,506

Int. Cl. G03c *5/08*

U.S. Cl. 96—35.1 **6 Claims**

1. A supported photosensitive film which consists essentially of a polymer of an aldol-condensation product of terephthalaldehyde and diacetone alcohol having a molecular weight between 5000 and 15,000 and a sensitizer therefor.

6. A process for the production of a printable image on a printing plate coated with a film of the photosensitive film-forming substance defined in claim **2**, which comprises exposing to light the film on the plate to produce a latent image therein, and thereafter developing the exposed film by treating it with a liquid containing N,N-dimethylformamide or other dialkyl-substituted acid amide or a low-molecular-weight aliphatic acid and subsequently treating the film with a natural or synthetic colloid, or phosphoric acid or a phosphate, or both, to increase its water-absorbability.

3,867,143
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Hiroshi Tanaka, and Takashi Saito, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 256,198, May 23, 1972, abandoned, which is a continuation of Ser. No. 1,867, Jan. 9, 1970, abandoned. This application Nov. 12, 1973, Ser. No. 414,820

Claims priority, application Japan, Jan. 17, 1969, 44-3262

Int. Cl. G03g *5/04*

U.S. Cl. 96—1.5 **3 Claims**

1. An electrophotographic photosensitive member comprising a support layer, a photoconductive layer overlying the support layer and an insulating overlying the photoconductive layer and at least one of the layers adjacent to the photoconductive layer being transparent to a radiation to which the photoconductive layer is sensitive, characterized in that the photoconductive layer comprises an amorphous glassy alloy containing about 72 – 85% by weight of selenium, about 10 – 20% by weight of antimony and about 5% by weight of germanium and has a resistivity at dark place of not less than 1×10^{11} ohm-cm.

3,867,144
SPECTRALLY SENSITIZED ELECTROPHOTOGRAPHIC MATERIALS

Wendell Maurice Lee, Lawrence Township, Mercer County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,573

Int. Cl. G03g *5/06, 5/08*

U.S. Cl. 96—1.7 **6 Claims**

1. Spectrally sensitized light-sensitive material comprising a photoconductor and at least one azomethine dye having an o,o′dihydroxy or an o-hydroxy-o′-mercapto azomethine structure.

2. Spectrally sensitized light-sensitive material as described in claim **1**, wherein:

said photoconductor is zinc oxide and said azomethine dye is a zinc azomethine dye complex.

3,867,145
METHANOL AND HEAT TREATED ZINC OXIDE

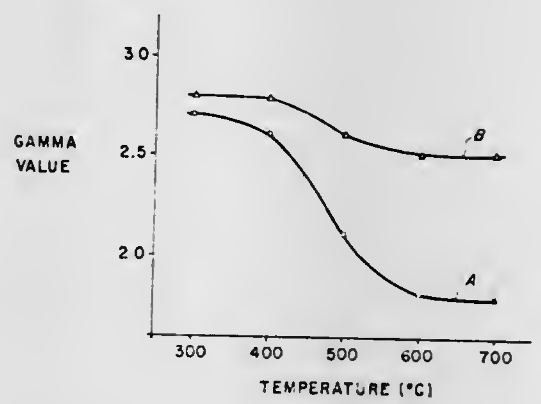
Satoru Honjo, and Hajime Miyazuka, both of Asaka, Japan, assignors to Rank Xerox, Ltd., London, England

Filed Mar. 19, 1970, Ser. No. 21,007

Claims priority, application Japan, Apr. 5, 1969, 44-26295

Int. Cl. G03g *5/02, 5/08*

U.S. Cl. 96—1.8 **1 Claim**



1. A process for treating photoconductive zinc oxide powder comprising the steps of wetting zinc oxide powder with methanol and thereafter heat treating said zinc oxide at a temperature between about 400°C and about 700°C in an oxidative atmosphere.

3,867,146
HOLOGRAPHIC REPRODUCTION USING CARBOCYANINE DYE SENSITIZED, FINE-GRAIN SILVER HALIDE EMULSIONS AND NEON-HELIUM LASERS

Yoshiyuki Nakazawa; Yasuharu Nakamura; Tohru Sueyoshi; Shigenori Moriuchi; Akira Sato, and Tadashi Ikeda, all of Minami Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 14, 1971, Ser. No. 207,857

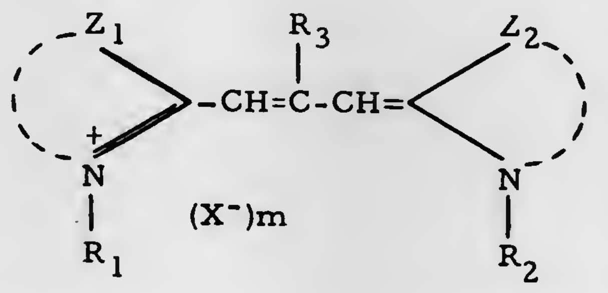
Claims priority, application Japan, Dec. 14, 1970, 45-111585

Int. Cl. G03c *5/04*

U.S. Cl. 96—27 H **6 Claims**

1. In a process of making photographic images by exposing a light-sensitive silver halide photographic emulsion to light from a neon-helium laser to produce a latent image, and developing said latent image to form a silver image,

the improvement which comprises said silver halide photographic emulsion being a silver halide photographic emulsion containing silver halide particles having adsorbed thereon at least one sensitizing dye represented by the following general formula (I):



in which Z_1 and Z_2 each represent a benzothiazole nucleus, the benzene ring of said heterocyclic nucleus having at least one substituent selected from the group consisting of alkoxy, alkyl, phenyl, alkoxycarbonyl, hydroxy and halogen; R_1 (or R_2) represents an alkyl group and R_2 (or R_1) represents a sulfo alkyl group, respectively; R_3 represents a lower alkyl group or an aryl group; X represents an anion; m represents an integer of 0 or 1; and when the dye forms an intramolecular salt, *m* is 0; said dye being present in said silver halide photographic emulsion in an amount sufficient to effectively increase the sensitivity of said silver halide photographic emulsion to light from a neon-helium laser, wherein said silver halide particles have an average particle diameter of not more than 0.18 micron, or wherein at least 95 percent of the total silver halide particles have diameters of not more than 0.2 micron.

3,867,147

LIGHT-SENSITIVE DIAZO COMPOUNDS AND REPRODUCTION MATERIAL EMPLOYING THE SAME

Leon A. Teuscher, Webster, N.Y., assignor to American Hoeschst Corporation, Bridgewater, N.J.

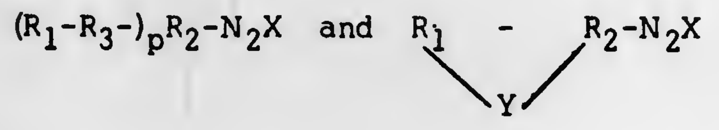
Continuation of Ser. No. 826,297, May 20, 1969, abandoned. This application Oct. 29, 1973, Ser. No. 410,324

Int. Cl. G03f *7/08, 7/12;* **G03c** *1/54*

U.S. Cl. 96—33 **62 Claims**

1. An aromatic diazonium compound comprising repeating units of each of the general types

A - N_2X and B which are linked by methylene groups, in which A-N_2X is a radical of a compound of one of the general formulae



$$(R_1{-}R_3{-})_pR_2{-}N_2X \quad \text{and} \quad R_1 \underset{Y}{-} R_2{-}N_2X$$

wherein

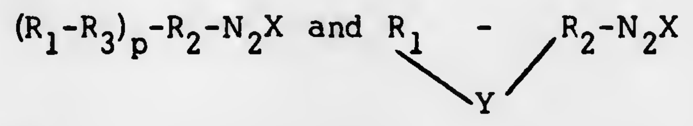
R_1 is an arylene group of the benzene or naphthalene series
  R_2 is a phenylene group
R_3 is a single bond or one of the groups
  $—(CH_2)_q\text{-}NR_4—$
  $—O\text{-}(CH_2)_r\text{-}NR_4—$
  $—S\text{-}(CH_2)_r\text{-}NR_4—$
  $—S\text{-}CH_2\text{-}CO\text{-}NR_4—$
  $—O\text{-}R_5\text{-}O—$
  —O-
  —S- or
  $—CO\text{-}NR_4—$
  the left-hand free valence of the specified groups is attached to R_1 and the right-hand free valence is attached to R_2
  wherein
  q is a number from 0 to 5
  r is a number from 2 to 5
R_4 is selected from the group consisting of hydrogen, alkyl with 1 to 5 carbon atoms, aralkyl with 7 to 12 carbon atoms, and aryl with 6 to 12 carbon atoms,
R_5 is an arylene group having 6 to 12 carbon atoms
—Y— is one of the groups
  —NH—, and —O—
X is the anion of the diazonium compound, and
p is a number from 1 to 3, and
B is a radical of a compound selected from the group consisting of aromatic amines, phenols, thiophenols, phenol ethers, aromatic thioethers, aromatic heterocyclic compounds, aromatic hydrocarbons and organic acid amides, in which the aromatic nuclei are unsubstituted or substituted by at least one substituent activating condensation and selected from the group consisting of $—NR_7R_8$, $—N(R_8)_2$, $—OR_7$, $—OR_8$, $—R_8$, and $—SR_8$,

wherein

R_7 is -H, -CO-alkyl, -CO-aryl, $\text{-}SO_2\text{-alkyl}$, $\text{-}SO_2\text{-aryl}$, $CONH_2$, or $\text{-}CSNH_2$, and
R_8 -H, -alkyl, -aryl or -aralkyl, the alkyl groups having 1 to 10, the aryl groups 6 to 20,
and the aralkyl groups 7 to 20 carbon atoms,

which diazonium compound contains, on the average, about 0.01 to 50 B units per unit of A-N_2X.

30. A process for the preparation of an aromatic diazonium compound which comprises reacting one molar part of at least one compound of one of the general formulae



$$(R_1{-}R_3)_p{-}R_2{-}N_2X \quad \text{and} \quad R_1 \underset{Y}{-} R_2{-}N_2X$$

in which

R_1 is an arylene group of the benzene or naphthalene series
  R_2 is a phenylene group
R_3 is a single bond or one of the groups
  $—(CH_2)_q\text{-}NR_4—$
  $—O\text{-}(CH_2)_r\text{-}NR_4—$
  $—S\text{-}(CH_2)_r\text{-}NR_4—$
  $—S\text{-}CH_2\text{-}CO\text{-}NR_4—$
  $—O\text{-}R_5\text{-}O—$
  —O—
  —S— or
  $—CO\text{-}NR_4—$
  the left-hand free valence of the specified groups is attached to R_1 and the right-hand free valence is attached to R_2
  wherein
  q is a number from 0 to 5
  r is a number from 2 to 5
R_4 is selected from the group consisting of hydrogen, alkyl with 1 to 5 carbon atoms, aralkyl with 7 to 12 carbon atoms, and aryl with 6 to 12 carbon atoms,
R_5 is an arylene group having 6 to 12 carbon atoms,
-Y- is one of the groups -NH-, and -O-
X is an anion, and
p is a number from 1 to 3,

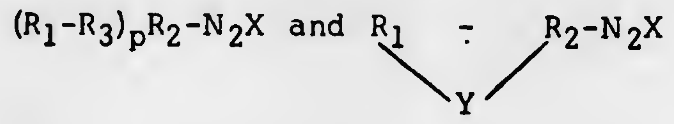
and from 0.01 to 50 molar parts of at least one compound free of diazonium groups selected from the group consisting of aromatic amines, phenols, thiophenols, phenol ethers, aromatic thioethers, aromatic heterocyclic compounds, aromatic hydrocarbons and organic acid amides, in which the aromatic nuclei are unsubstituted or substituted by at least one substituent activating condensation and selected from the group consisting of $\text{-}NR_7R_8$, $\text{-}N(R_8)_2$, $\text{-}OR_7$, $\text{-}OR_8$, $\text{-}R_8$ and $\text{-}SR_8$,

wherein

R_7 is -H, -CO-alkyl, -CO-aryl, $\text{-}SO_2\text{-alkyl}$, $\text{-}SO_2\text{-aryl}$, $\text{-}CONH_2$, or $\text{-}CSNH_2$, and
R_8 is -H, -alkyl, -aryl or -aralkyl,
the alkyl groups having 1 to 10, the aryl groups 6 to 20, and the aralkyl groups 7 to 20 carbon atoms, with at least 0.5 molar part of formaldehyde in a strongly acid medium.

35. Light-sensitive material comprising a base material having a layer thereon including an aromatic diazonium compound comprising repeating units of each of the general types A-N_2X and B

which are linked by methylene groups, in which A-N_2X is a radical of a compound of one of the general formulae



$$(R_1{-}R_3)_pR_2{-}N_2X \quad \text{and} \quad R_1 \underset{Y}{-} R_2{-}N_2X$$

wherein

R_1 is an arylene group of the benzene or naphthalene series
  R_2 is a phenylene group
R_3 is a single bond or one of the groups
  $—(CH_2)_q\text{-}NR_4—$
  $—O\text{-}(CH_2)_r\text{-}NR_4—$
  $—S\text{-}(CH_2)_r\text{-}NR_4—$
  $—S\text{-}CH_2\text{-}CO\text{-}NR_4—$
  $—O\text{-}R_5\text{-}O—$
  —O—
  —S— or
  $—CO\text{-}NR_4—$
  the left-hand free valence of the specified groups is attached to R_1 and the right-hand free valence is attached to R_2
  wherein
  q is a number from 0 to 5
  r is a number from 2 to 5
R_4 is selected from the group consisting of hydrogen, alkyl with 1 to 5 carbon atoms, aralkyl with 7 to 12 carbon atoms, and aryl with 6 to 12 carbon atoms,
R_5 is an arylene group having 6 to 12 carbon atoms
-Y- is one of the groups -NH-, and -O-
X is the anion of the diazonium compound, and
p is a number from 1 to 3, and
B is a radical of a compound selected from the group consisting of aromatic amines, phenols, thiophenols, phenol ethers, aromatic thioethers, aromatic heterocyclic compounds, aromatic hydrocarbons and organic acid amides, in which the aromatic nuclei are unsubstituted or substituted by at least one substituent activating condensation and selected from the group consisting of $\text{-}NR_7R_8$, $\text{-}N(R_8)_2$, $\text{-}OR_7$, $\text{-}OR_8$, $\text{-}R_8$ and $\text{-}SR_8$,

wherein

R_7 is -H, -CO-alkyl, -CO-aryl, $\text{-}SO_2\text{alkyl}$, $—SO_2\text{-aryl}$, $\text{-}CONH_2$, or $\text{-}CSNH_2$, and
R_8 is -H, -alkyl, -aryl, or -aralkyl,
the alkyl groups having 1 to 10, the aryl groups 6 to 20, and the aralkyl groups 7 to 20 carbon atoms,

which diazonium compound contains, on the average, about 0.01 to 50 B units per unit of A-N_2X.

3,867,148

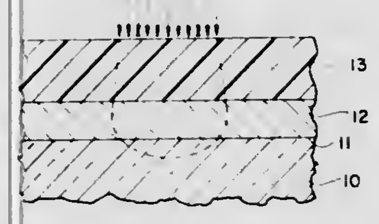
MAKING OF MICRO-MINIATURE ELECTRONIC COMPONENTS BY SELECTIVE OXIDATION

Terence W. O'Keeffe, Pittsburgh, and Alan J. Simon, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 8, 1974, Ser. No. 431,656

Int. Cl. C23f *1/02;* **G03c** *5/00*

U.S. Cl. 96—36.2 **5 Claims**



1. A method of making a micro-miniature electronic component comprising the steps of:

A. forming on a major surface of a substrate a layer of metal capable of being etched at a relatively high rate by an etchant and capable of becoming relatively etchant resistant to an etchant on oxidation;
B. applying over the metal layer a resist layer sensitive at least to one type of radiation selected from the group consisting of photons and electrons;
C. defining a desired component pattern in the resist layer by selectively exposing portions of the resist layer to a radiation to which the layer is sensitive to define the component pattern by difference in solubility between the exposed and unexposed portions of the layer;
D. removing the more soluble portions of the resist layer to expose first portions of the metal layer and to leave remaining portions of the resist layer defining the desired component pattern;
E. applying over the exposed first portions of the metal layer and the remaining portions of the resist layer an oxidation masking layer of a thickness less than about 80 percent of the rersist layer thickness, said masking layer being relatively oxidation resistant compared to the metal layer and being relatively etchable compared to the metal layer when oxidized;
F. removing the remaining portions of the resist layer and oxidation masking layer thereover to expose second portions of the metal layer defining the desired component pattern;
G. selectively oxidizing the exposed second portions of the metal layer to form a relatively etchant resistant portion in the metal layer corresponding to the second portions, while the first portions of the metal layer are masked against oxidation by the masking layer; and
H. removing remaining portions of the oxidation masking layer and the underlying unoxidized first portions of the metal layer with an etchant to which the oxidized portions of the metal layer are resistant to leave the oxidized second portions of the metal layer in the desired component pattern defined originally in the resist layer.

3,867,149

FOGGED, DIRECT-POSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING A RHODIUM SALT DESENSITIZER AND A BISPYRAZOLONE DYE STABILIZER

Tetsuo Furuya, Ashigara; Hidehiko Ishikawa, and Hideo Kanisawa, both of Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1973, Ser. No. 354,842

Claims priority, application Japan, May 4, 1972, 47-43679

Int. Cl. G03c *1/28, 1/34, 1/36*

U.S. Cl. 96—101 **2 Claims**

1. A direct-positive light-sensitive silver halide material containing fogged silver halide grains and a rhodium salt as a desensitizer to increase the reversal speed, which material comprises a bis-pyrazolone dye having an absorption maximum in the range from 590 to 690 mμ, which dye is present in an amount of 1 to 500 mg. per 100 cm^2 of the effective area of said sensitive material, said bis-pyrazolone dye having a methine chain connecting two pyrazolone nuclei thereof, said methine chain consisting of 5 unsubstituted methine groups.

3,867,150

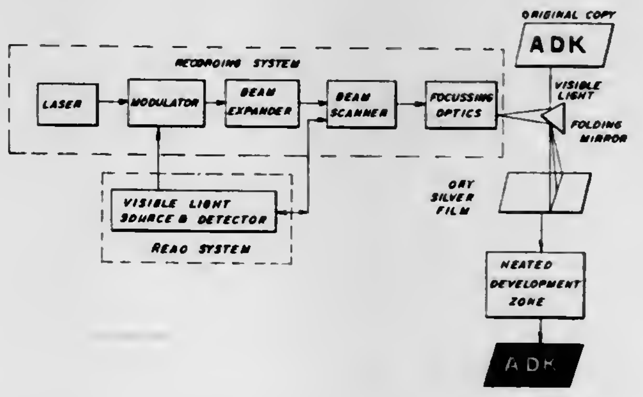
PRINTING PLATE PROCESS AND APPARATUS USING A LASER SCANNED SILVER NEGATIVE

Arthur D. Ketley, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 8, 1973, Ser. No. 368,170

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.3 **2 Claims**



1. A process for making a photopolymer plate which comprises:

generating a latent image on an optical mask surface by scanning the mask surface with a focussed beam of modulated coherent radiation having a wavelength of about

3,000 A to 8,000 A, said optical mask consisting essentially of a U-V transmissive substrate having coated thereon a photographic emulsion containing silver halide and chemical developing material separated by a heat-releasing encapsulant, to expose the photographic emulsion with said radiation;

thermally developing the latent image on the optical mask by heating the optical mask; and

exposing a photocurable liquid layer on a plate substrate imagewise through said optical mask with U-V light having a wavelength of about 2,000 A to 4,000 A to produce a polymer relief surface corresponding to the developed image.

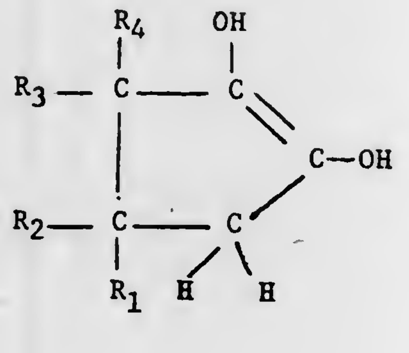
3,867,151
GENERAL PURPOSE MONOBATH

Jerome Katz, Rochester, N.Y., assignor to Delaware Photographic Products, Inc., Buffalo, N.Y.
Filed May 10, 1973, Ser. No. 358,935
Int. Cl. G03c *5/38, 5/30*
U.S. Cl. 96—61 M **32 Claims**

1. An aqueous composition for the combined developing and fixing of exposed silver halide photographic emulsions, having a pH in the range 9.5 – 10.75, comprising the following ingredients in the weight proportion ranges indicated per liter of composition:

3-pyrazolidone developer	1 to 5 grams
dihydroxybenzene developer selected from the group consisting of hydroquinone, resorcinol and pyrocatechol	8 to 14 grams
aminophenol developer selected from the group consisting of p-aminophenol, N-methyl-p-aminophenol, 2,4-diaminophenol, 2,4-diaminoresorcinol, 6-methyl-2,4-diaminophenol, 5-methyl-2,4-diaminophenol, 4-amino-6-methyl-2-methylaminophenol, 6-amino-4-methyl-2-methylaminophenol, 5-dimethylamino-2-methylaminophenol, 1,2,4,-triaminobenzene, 5-methyl-1,2,4-triaminobenzene, 4-hydroxy,2′,4′-diaminodiphenylamine, 4,2′,4′-triaminodiphenylamine, 1,3-diamino-4,7-dihydroxybenzene, and the acid salts thereof	½ to 3 grams

enediol developer selected from the group consisting of ascorbic acid, d-arabo-ascorbic acid, reductic acid, 2-oxytetronic acid, 4-aryl-2-oxytetronic acid, 4-aryl-2-oxytetronimide, isoascorbic acid and enediols having the chemical structure represented by the formula



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of hydrogen and the radical $-CH_2R_5$, R_5 is selected from hydrogen and a monovalent radical selected from the group consisting of amino, cyano, halo, hydroxyl, carboxyl, sulfonyl, alkyl, cycloalkyl, aryl of the benzene or naphthalene series and alkaryl of the benzene or naphthalene series, at least one of said R_1, R_2, R_3 and R_4 being the radical $-CH_2R_5$ ..... 1 to 10 grams

inorganic sulfite preservative	20 to 75 grams
alkaline agent	3 to 7 grams
restrainer	¼ to 2 grams
fixing agent selected from sodium, potassium and ammonium thiosulfates and thiocyanates	60 to 110 grams.

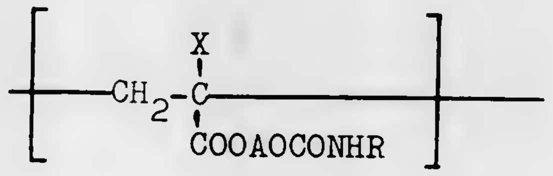
8. A composition, as claimed in claim **7**, wherein said inorganic sulfite preservative is selected from sodium and potassium sulfite.

9. A composition, as claimed in claim **7**, wherein said alkaline agent is selected from sodium and potassium hydroxide.

3,867,152
PHOTOGRAPHIC SILVER HALIDE MATERIAL

Jan Jozef Priem, Mortsel; Walter Frans De Winter, Berchem, and Jan Bernard Lambrechts, Antwerpen, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium
Filed May 29, 1973, Ser. No. 364,327
Claims priority, application Great Britain, June 22, 1972, 29386/72
Int. Cl. G03c *1/04, 5/26*
U.S. Cl. 96—63 **13 Claims**

1. Photographic silver halide material to be further processed comprising a support and at least one silver halide emulsion layer wherein the said emulsion layer or a hydrophilic colloid layer in water-permeable relationship with the said emulsion layer comprises a polymeric compound comprising recurring units of the formula:



$$\left[-CH_2-\overset{X}{\underset{COOAOCONHR}{C}}- \right]$$

wherein:

X is hydrogen or methyl,
A is a straight-chain or branched-chain C_1–C_5 alkylene group, and
R is an alkyl or aryl group.

3,867,153
PHOTOHARDENABLE ELEMENT

Alexander MacLachlan, Middletown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sept. 11, 1972, Ser. No. 287,666
Int. Cl. G03c *1/76, 1/68*
U.S. Cl. 96—79 **8 Claims**

1. In a photohardenable element, comprising a support, a highly plasticized photohardenable layer and a protective cover sheet, the improvement wherein said photohardenable layer has been hardened to provide narrow continuous regions of hardened material along its edges and wherein the major portion of said photohardenable layer is between said narrow continuous regions and is substantially unhardened and unexposed to actinic radiation, said narrow continuous regions

being at least 0.00005 inches wide and of sufficient width to prevent excessive laminar flow of the photohardenable layer caused by pressure and temperature when the element is stacked sheet or roll form.

3,867,154
DESALINATION OF SILVER HALIDE PHOTOGRAPHIC EMULSIONS UTILIZING SULFATED POLYVINYL ALCOHOL

Joseph Lukeian, Millburn, N.J., assignor to Keuffel & Esses Company, Morristown, N.J.
Filed July 23, 1973, Ser. No. 381,650
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 R **4 Claims**

1. In the process of preparing a photographic silver halide composition which comprises forming a fluid emulsion comprising silver halide and gelatin, treating said emulsion to form a coagulate of silver halide and gelatin components thereof, separating said coagulate and the supernatant fluid vehicle of said emulsion, washing said coagulate, and redispersing said silver halide and gelatin components in a fluid vehicle, the improvement wherein said treating comprises the steps, in either order, of:

a. acidifying said emulsion to a pH of about 3.0; and
b. dissolving in said emulsion a sufficient amount of a sulfated polyvinyl alcohol to effect said coagulate formation.

3,867,155
SMOKELESS EXOTHERMIC HOT TOPPING COMPOSITIONS

James A. Davis, Worthington, and Arthur R. Elsea, Columbus, both of Ohio, assignors to Consolidated Ceramic Products, Inc., Blanchester, Ohio
Filed Oct. 31, 1973, Ser. No. 411,401
Int. Cl. B28b *7/36*
U.S. Cl. 106—38.27 **23 Claims**

1. A smokeless exothermic hot topping composition consisting essentially of

an effective exothermic amount of an oxide of iron in finely divided form up to about 50% by weight,

an effective exothermic amount of fuel in finely divided form selected from the group consisting of aluminum and alloys thereof, said amount providing up to about 15% by weight aluminum, with the proviso that as the amount of iron oxide is increased above about 40% by weight towards about 50% by weight said amount of provided aluminum is decreased towards about 10% by weight and when about 50% by weight of iron oxide is reached then the amount of aluminum is no more than about 10% by weight, and

the balance being predominantly composed of inert finely divided filler material, said oxide, fuel and inert material components proportioned to provide said smokeless composition.

3,867,156
PROCESS FOR MANUFACTURING GRANULAR FOAMED PRODUCTS OF SILICA

Kenichi Fukumoto, and Ryuji Nakamura, both of Osaka, Japan, assignors to Shikoku Kaken Kogyo Kabushiki Kaisha, Osaka-fu, Japan
Filed Feb. 16, 1973, Ser. No. 333,365
Claims priority, application Japan, Feb. 21, 1972, 47-18332
Int. Cl. C04b *21/00, 35/14*
U.S. Cl. 106—40 V **11 Claims**

1. A process for manufacturing lightweight, non-hygroscopic foamed product of silica having a high order of mechanical strength and excellent chemical resistance which comprises adding to a silica sol at least one water-insoluble inorganic powder of ceramic raw material, metal oxides other than alkali metal oxides and compound oxides of metal other than alkali metal having a particle size of 0.05 to 100 μ to produce a uniform mixture, gelling the resulting mixture at a pH of not higher than 7 to produce hydrosilica gel, drying the gel obtained to remove sorbed water and firing the dried silica gel at 1000° to 1600°C to effect foaming, said water-insoluble inorganic powder being added to the silica sol in an amouont of 0.1 to 20% by weight, based on the weight of SiO_2 in the sol.

3,867,157
PROCESS AND COMPOSITIONS FOR PORCELAIN ENAMELING

John E. Peeling, Jr., Reisterstown, Md., assignor to SCM Corporation, Cleveland, Ohio
Filed Apr. 17, 1972, Ser. No. 244,901
Int. Cl. C03c *5/02*
U.S. Cl. 106—48 **4 Claims**

1. A porcelain enameling composition comprising coated ceramic frit particles which contain at least about 10 weight percent crystallizable TiO_2 and which have a surface layer containing per 100 weight parts of said frit particles an amount equivalent to at least about 0.001 weight parts of hydrous titania of a titanium compound which will form hydrous titania when heated to a temperature lower than the fusion temperature of said frit particles.

3,867,158
SILICATE GLASS FROM BLAST FURNACE SLAG

John O. Hopkins, Pennington, N.J., assignor to The Calumite Company, Trenton, N.J.
Continuation-in-part of Ser. No. 288,382, Sept. 12, 1972,. This application Feb. 14, 1973, Ser. No. 332,254
Int. Cl. C03c *3/04*
U.S. Cl. 106—51 **9 Claims**

1. The method of producing a transparent glass which consists melting a mixture of glass forming materials consisting essentially of sand, from about 20% to 500% of refined slag based upon the weight of the sand in the mixture, and from about 16 to 100% based on the weight of the sand in the mixture of an agent selected from the group consisting of the sulfates and carbonates of sodium and calcium and mixtures thereof, said refined slag being a blast furnace slag containing less than 0.3% by weight of sulfur.

3,867,159
FOAMED CONCRETE STRUCTURES

Mehmet T. Ergene, Hartford, Conn., assignor to The Stanley Works, New Britain, Conn.

Division of Ser. No. 83,043, Oct. 22, 1970, Pat. No. 3,758,319. This application Sept. 10, 1973, Ser. No. 395,983

Int. Cl. C04b *31/10*

U.S. Cl. 106—88 **4 Claims**

1. A cellular concrete structure comprising a concrete matrix having substantially homogeneously dispersed therethrough a multiplicity of spherical voids of about 0.005 to 0.050 inch average diameter and of relatively narrow size distribution, said concrete matrix comprising cement, a foaming agent, and a chloride cure accelerator, said structure having a uniform density of about 25–75 pounds per cubic foot said structure having been produced by a process comprising the steps:

a. admixing water and cement under conditions sufficient to produce a high degree of hydration of the cement particles;
b. introducing into the hydrated cement admixture a foam formed under pressure from a mixture of water, air, foaming agent and a chloride accelerator in a weight ratio to cement of 0.0035 to 0.01:1.0;
c. blending said cement admixture and said foam mixture sufficiently to produce a substantially homogeneous foamed cement slurry;
d. casting said cement slurry into a mold; and
e. curing said cement slurry to form said lightweight cellular concrete structure with said chloride accelerator being concentrated at the surfaces of the concrete matrix about the voids.

3,867,160
N-HETEROCYCLIC COMPOUNDS AS ADDITIVES TO CEMENT SYSTEMS

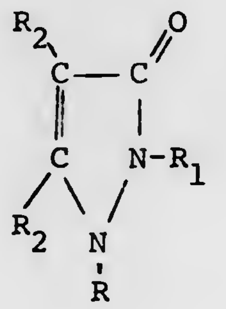
Ronald H. Cooper, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 26, 1973, Ser. No. 345,227

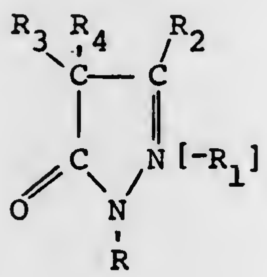
Int. Cl. C04b *7/02*

U.S. Cl. 106—90 **5 Claims**

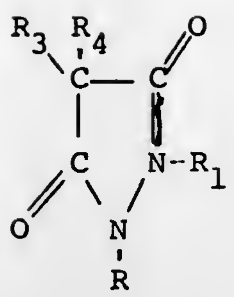
1. A method of producing improved cement mortar, concrete, soil-cement and soil-lime systems which comprises admixing into the system a N-heterocyclic compound selected from the group consisting of a pyrazolone having the formula



or



or a 3,5 pyrazolidindione having the formula



wherein R and R_1 independently may be hydrogen or an organic substituent with at least one of said R and R_1 being organic substituent; R_2 may be hydrogen or an organic substituent; and R_3 and R_4 independently may be hydrogen or an organic substituent or R_3 and R_4 may be one organic substituent connected to the carbon atom by a double bond or IV the enol form of any of the above compounds.

3,867,161
CEMENT ASPHALT BALLAST GROUT COMPOSITION FOR TRACK

Okihiko Torii, Tokyo; Tsutomu Mizunuma, Ohmi; Iwao Mino, Kamakura, and Tetsuya Ando, Tokyo, all of Japan, assignors to Japanese National Railways and Donki Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sept. 26, 1973, Ser. No. 400,992

Claims priority, application Japan, Sept. 26, 1972, 47-95790

Int. Cl. C04b *7/02*

U.S. Cl. 106—96 **6 Claims**

1. A cement asphalt ballast grout composition for directly joining-type track, which comprises 100 parts by weight of cement, 20 – 400 parts by weight of an asphalt emulsion, 5 – 20 parts by weight of a calcium sulfoaluminate hydrate-forming mineral, 0.1 – 5.0 parts by weight of an electrolyte, 0.01 – 5.0 parts by weight of a thickener and 0.01 – 0.03 part by weight of a foaming agent.

3,867,162
BITUMINOUS EMULSIONS USEFUL WITH MIXTURES OF SILICEOUS AND LIMESTONE AGGREGATE

Edward G. Elste, Jr., Lutherville, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 17, 1970, Ser. No. 99,259

Int. Cl. C08h *13/00;* **C08k** *1/62;* **C09d** *3/24*

U.S. Cl. 106—277 **11 Claims**

1. A modified emulsion consisting essentially of,

1. from about 60 to about 100 parts by weight of a base emulsion having a pH of from about 5 to about 8, said base emulsion comprised of,
   a. from about 50 to about 80 parts by weight bitumen,
   b. from about 0.05 to about 2.0 parts by weight of a cationic emulsifier,
   c. from 0 to about 0.5 part by weight of an acid selected from the group consisting of acetic, phosphoric, hydrochloric, hydrobromic, and sulfamic, and
   d. sufficient water to make the total of (a), (b), (c), and (d) equal 100 parts by weight, and
2. from about 0.25 to about 3.0 parts of an adhesion promoter selected from the class consisting of tall oil, crude tall oil, tall oil heads, and tall oil pitch in from 0 to about 30 parts of solvent.

3,867,163
PROCESS FOR REGULATING SETTING TIME OF HYDRAULIC CEMENT

Hiroshi Uchikawa, Funabashi, and Shunichiro Uchida, Chiba, both of Japan, assignors to Onoda Cement Company, Limited, Onoda-shi, Yamaguchi, Japan

Division of Ser. No. 253,352, May 15, 1972,. This application July 6, 1973, Ser. No. 377,111

Int. Cl. C04b *7/02, 13/24*

U.S. Cl. 106—315 **9 Claims**

1. A process for regulating the setting time of a hydraulic cement, which comprises the step of:

admixing the retarders of anhydrite and 0.01 – 0.2 weight percent of a monosaccharide, 0.01 – 0.7 weight percent of a disaccharide or 0.05 – 1.00 weight percent of a polysaccharide with a clinker consisting essentially of 5 – 60 weight percent of 11 $CaO.7Al_2O_3.CaX_2$, wherein X represents a halogen atom, and more than 5 weight percent of 3 $CaO.SiO_2$ solid solution, 2 $CaO.SiO_2$ solid solution and 4 $CaO.Al_2O_3.FeO_3$; wherein the anhydrite is present in an amount such that the weight ratio of Al_2O_3 in the clinker to SO_3 in the anhydrite is 0.7 to 1.8.

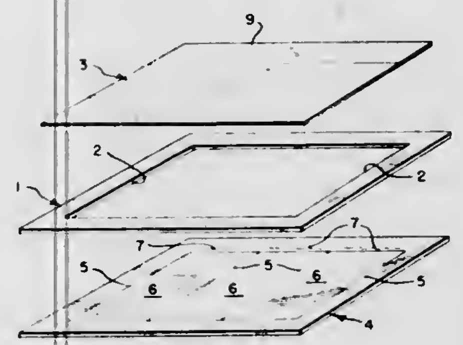
3,867,164
IMPRINTING DEVICE HAVING CONFORMABLE FILM WITH WET APPLIED INK FOR THE FORMATION OF FINGER AND FOOTPRINTS

Joseph M. Orlando, Parsippany; Harry S. Katz, West Orange, and Jack W. Rainford, Closter, all of N.J., assignors to Identimation Corporation, Northvale, N.J.

Continuation of Ser. No. 225,648, Feb. 11, 9172, abandoned, which is a continuation of Ser. No. 854,700, Sept. 2, 1969, abandoned. This application Aug. 6, 1973, Ser. No. 385,659

Int. Cl. B41m *3/00*

U.S. Cl. 117—.5 **6 Claims**



1. In an imprinting device, the improvement comprising:

a. a thin flat film of impression conforming material which is sufficiently thin and flexible to conform to the impressions and ridges of a relief pattern, such as a fingerprint and the like, when placed in pressure contact with the pattern whereby the surface of the film facing away from the pattern presents a representation of the pattern, said film having smooth and even surfaces and having a generally uniform thickness in a range of about 0.0001 to 0.0010 of an inch, said material comprising:
   1. a resinous elastomer, and
   2. a filler having the ink-absorbing and film-flattening properties of diatomaceous earth, uniformly dispersed throughout the resinous elastomer, the surface of the film having less irregularities than would be present without the filler, said filler comprising about 5 to 40 parts per hundred by weight of the resinous elastomer, and
b. a wet, slow drying ink coating adhered to the surface of said film adapted to face away from the pattern upon light pressure contact, with a finger or the like, of said surface with a pattern receiving surface.

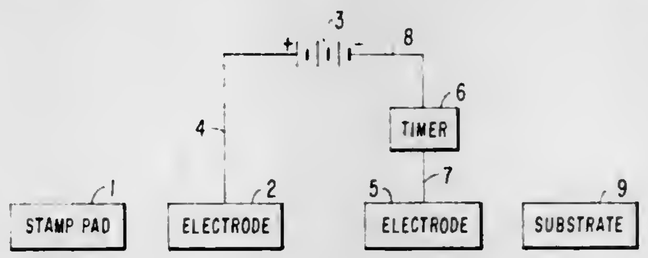
3,867,165
METHOD FOR RECORDING FINGERPRINTS

Richard Williams, Princeton, N.J., and Alfred Henry Willis, deceased, late of Princeton, N.J. (by Princeton Bank and Trust Co., executor), assignors to RCA Corporation, New York, N.Y.

Filed Sept. 21, 1973, Ser. No. 399,482

Int. Cl. A61b *5/10*

U.S. Cl. 117—0.5 **6 Claims**



1. A method of recording prints of the body extremities which comprises

a. coating the extremity to be recorded with a reducing agent,
b. passing a current through the reducing agent coating so as to generate electro-oxidation products on the coated extremity and
c. contacting the extremity with a recording medium containing an indicator for the electro-oxidation products to form a permanent image of said extremity on said recording medium.

4. A method of recording fingerprints which comprises

a. coating one or more fingers to be printed with a solution containing potassium iodide,
b. pressing the coated finger or fingers onto a conductive substrate connected to the positive side of a direct current power source,
c. placing another finger or fingers on a second conductive substrate connected to the negative side of the power source, thereby generating free iodine on the surface of the finger or fingers to be printed, and
d. contacting the finger or fingers to be printed onto a starch-containing recording medium to form a permanent fingerprint on said recording medium.

3,867,166
COATED METAL ARTICLE AND METHOD OF MAKING THE SAME

James D. Sullivan, Delafield, Wis., assignor to Tycon, S.p.A., Venice, Italy

Continuation-in-part of Ser. No. 794,403, Jan. 27, 1969, abandoned. This application July 10, 1972, Ser. No. 270,528

Int. Cl. B32b *15/00*

U.S. Cl. 117—23 **12 Claims**

1. A composite structure to be subsequently fired at an elevated temperature, comprising a metal base, and a mixed frit composition disposed on a surface of the base, said composition comprising a mixture of (a) a substantially fully devitrified glass frit composed of an amorphous glass matrix and containing a substantial portion of devitrified crystalline silicate particles and being substantially free of crystobalite particles, and (b) a corrosion resistant substantially nondevitrifiable glass frit containing from 63% to 80% by weight of silica, said mixed frit composition being subsequently fired at an elevated temperature to fuse the composition to the metal, said amorphous glass matrix tending to dissolve in said corrosion resistant glass frit during said firing while retaining the identity of the devitrified crystalline particles to provide a resulting crystalline-glass coating having improved abrasion resistance, impact resistance, and toughness and excellent corrosion resistance.

7. A method of coating a metal article, comprising the step of substantially fully devitrifying a devitrifiable glass frit to produce a devitrified frit composed of an amorphous glass

matrix and a plurality of devitrified crystalline silicate particles dispersed within said matrix, said devitrified glass being substantially free of crystobalite particles, mixing said devitrified glass frit with a corrosion resistant substantially non-devitrifiable glass frit to provide a mixture, applying said mixture to the metal article as a coating, and firing said article at a temperature sufficiently high to fuse said mixture to said metal article, said amorphous glass matrix tending to dissolve in said corrosion resistant glass frit during firing.

3,867,167
METHOD FOR PRODUCTION OF PHOTOGRAPHIC MATERIAL

Sumitaka Tatsuta; Wataru Ueno, and Nobuhiko Minagawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1971, Ser. No. 187,507

Claims priority, application Japan, Oct. 7, 1970, 45-88134

Int. Cl. B44d *1/12;* **G03c** *1/80*

U.S. Cl. 117—34 **5 Claims**

1. A method for the production of a photographic material, which comprises, in combination, the steps of
   a. roughening a biaxially stretched polystyrene film support,
   b. irradiating said support with ultraviolet ray,
   c. applying to the surface of said film an undercoat layer comprising at least one solvent capable of dissolving or swelling polystyrene and a resin having an affinity to gelatin, and thereafter
   d. providing on the undercoat layer a photographic layer comprising an emulsion or suspension containing gelatin as a binder.

3,867,168
TRANSPARENCY

Alptekin Akman, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 6, 1973, Ser. No. 377,167

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.1 **1 Claim**

1. A process of making transparencies comprising:
   a. providing a pressure sensitive ink transfer element;
   b. sandwiching the transfer element with a transparent substrate having a copolymer of vinyl toluene and alpha methyl styrene coated thereon;
   c. pressure sensitizing the sandwiched member in response to telecommunciated signals; and
   d. separating the two elements of the sandwich whereby a fixed image is formed on the coated transparency support.

3,867,169
NON-CARBON COPYING UPPER PAPER

Hideo Shimizu, Takasago, Japan, assignor to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

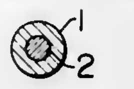
Filed Aug. 14, 1972, Ser. No. 280,163

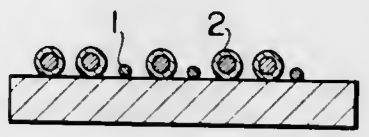
Claims priority, application Japan, Aug. 30, 1971, 46-66412

Int. Cl. B41c *1/06;* **B41m** *5/00*

U.S. Cl. 117—36.2 **10 Claims**

1. A method of producing non-carbon paper comprising coating a paper substrate with a mixture containing therein microcapsules containing an encapsulated dye-oil and microspheres containing a foaming hydrocarbon, said microspheres having a particle size of about 5 microns, and heating said coated paper thus expanding said microspheres to a particle size of 10–70 microns.





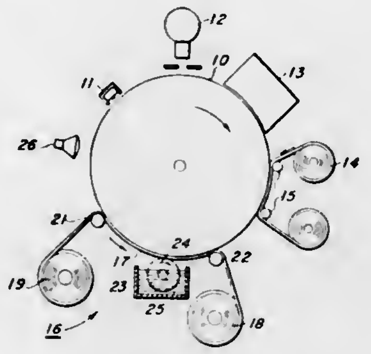
3,867,170
METHOD FOR CLEANING LIQUID DEVELOPERS

Robert M. Ferguson, Penfield, N.Y., and Richard J. Komp, Bowling Green, Ky., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 886,633, Dec. 19, 1969, abandoned. This application Aug. 14, 1972, Ser. No. 280,289

Int. Cl. G03g *13/22;* **B08b** *3/08*

U.S. Cl. 117—37 LE **10 Claims**



1. The method of cyclically developing electrostatic latent images on a reusable electrostatographic imaging surface comprising the steps of forming an electrostatic latent image on the imaging surface, developing the image with an aqueous liquid developer, transferring the developer from the imaging surface to a receiving surface in image configuration, contacting said imaging surface with a cleaning liquid which is miscible with said aqueous liquid developer, distributing said cleaning liquid over said imaging surface to dissolve residual developer liquid and disperse residual developer solids in said cleaning liquid and substantially completely removing the cleaning liquid and residual developer from said imaging surface by moving contact with a dry absorbent fibrous material.

3,867,171
ADHESIVE COLOR PRINTING SYSTEM FOR FLOOR COVERINGS AND OTHER HOME FURNISHINGS FABRICS

Robert Edgewood Ellsworth, Wayne, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,032

Int. Cl. D06p *1/56*

U.S. Cl. 117—38 **8 Claims**

1. A process for coloring textile substrate materials of carpeting, yarns, interlinings and battings of natural and synthetic fibers comprising:

dispersing a pigment in an aqueous dispersion of self-dispersible or emulsifiable polyurethane polymer adhesive containing an aminoplast resin of melamine-formaldehyde, urea, or cyclicurea-formaldehyde condensates and a catalyst for curing the aminoplast resin wherein the polyurethane polymer is obtained by adding an isocyanate-terminated polyurethane prepolymer having pendant carboxyl groups to water containing a tertiary aliphatic amine and allowing chain extension to proceed until all the isocyanate groups have been reacted,

applying the dispersion to the textile substrate, and drying the treated substrate.

3,867,172
PRODUCTION OF FLAT MATERIALS PRINTED WITH PIGMENTS

Guenter Uhl, Worms; Karl Dachs; Herbert Helfert, both of Frankenthal, and Rolf Fikentscher, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed May 29, 1973, Ser. No. 364,942

Claims priority, application Germany, June 2, 1972, 2226938

Int. Cl. C09d *7/08*

U.S. Cl. 117—38 **7 Claims**

1. In a process for the printing of a flat porous material in bright and deep shades with a print paste containing a pigment dye, the improvement which comprises printing said material with a print paste consisting essentially of at least one pigment dye, a binder, a thickener, water and from 1 to 6 percent by weight, based on the whole paste, of an ester of an aliphatic, saturated or monounsaturated, linear monocarboxylic acid of 10 to 20 carbon atoms and a saturated, branched or linear monohydric alcohol of 4 to 30 carbon atoms or a mixture or such esters which is present in the paste at 40°C as an emulsified liquid.

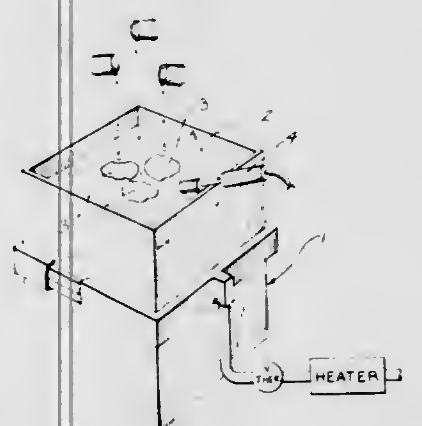
3,867,173
METHOD OF DECORATING OBJECTS WITH WAX

Raymond M. Putzer, Racine, Wis., assignor to Lenox Candles, Inc., Oshkosh, Wis.

Filed May 21, 1973, Ser. No. 362,180

Int. Cl. B44d *1/04, 1/06*

U.S. Cl. 117—39 **9 Claims**



1. A method of decorating an object with wax, comprising immersing the object in a water bath in contact with a molten film of multi-colored wax floating on said bath while maintaining the bulk water temperature of said bath substantially below the melting point of the wax, and supplying heat to the film of wax to maintain the same at a temperature substantially above its melting point.

3,867,174
BATHS FOR ACTIVATING THE SURFACE OF PLASTICS TO BE CHEMICALLY METAL-PLATED

Hiroshi Maekawa, Osaka, and Choji Yamauchi, Fuse, both of Japan, assignors to Giichi Okuno, Osaka-shi, Japan

Filed Feb. 13, 1970, Ser. No. 14,900

Claims priority, application Japan, Aug. 6, 1965, 40-47912

Int. Cl. B44d *1/092;* **C23c** *3/02*

U.S. Cl. 117—47 A **6 Claims**

1. A process for preparing an activated polymer surface which consists essentially of contacting a clean non-active unconditioned polymer surface with a liquid activating composition containing at least one reactive conditioning agent in combination with at least one ion of a metal selected from the group consisting of platinum, palladium, silver and gold, wherein the reactive conditioning agent contains sulfuric acid and chromic acid and wherein the polymer surface contains acrylonitrile-butadiene-styrene terpolymer.

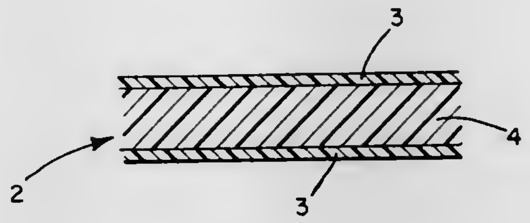
3,867,175
NON-FOGGING MATERIAL

Ralph William Dornte, Lower Southampton Township, Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Continuation-in-part of Ser. Nos. 86,883, Nov. 4, 1970, Pat. No. 3,726,703, and Ser. No. 174,135, Sept. 30, 1971, Pat. No. 3,766,299. This application Sept. 28, 1972, Ser. No. 292,939The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.

Int. Cl. C09k *3/18;* **C03c** *17/32*

U.S. Cl. 117—47 A **13 Claims**



1. A non-fogging material comprising a normally fogging substrate having on at least one surface thereof a non-fogging, water insoluble, hydrophilic polymeric coating comprising a polyalkylene imine having substantially all of its nitrogen atoms attached to a plurality of reactive compounds, at least one of said reactive compounds being a cross-linking compound having at least two functional groups capable of reacting with the polyalkylene imine selected from a nonaromatic ethylenic unsaturated group, an epoxy group, a halo group, a carboxylic acid or anhydride group, an aldehyde group, a ketonic group, an isocyanato or isothiocyanato group and a phenolic hydroxy group and another polyfunctional reactive compound containing a polar functional group to promote adhesion to the substrate selected from a cyano group, an amido group, an acetyl group and an aryl group and having at least two functional groups selected from a nonaromatic ethylenic unsaturated group, an epoxy group, a halo group, a carboxylic acid or anhydride group, an aldehyde group, a ketonic group, an isocyanato group or isothiocyanato group and a phenolic hydroxy group, said reactive compounds being reacted with the polyalkylene imine in an amount of at least one reactive equivalent per equivalent weight of the polyalkylene imine.

3,867,176
METHOD FOR PLATING RACE-TYPE ASSEMBLIES

James T. Dalton, Knoxville, and Ralph R. Wright, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,050
Int. Cl. C23c *3/02*; C23f *1/04*
U.S. Cl. 117—50 **6 Claims**

1. The method of converting an assembled, low-carbon-steel bearing of the type having inner and outer races to a nickel-plated assembly having substantially the same dimensions throughout as said bearing comprising:

a. degreasing the surfaces of said bearing in the assembled state;
b. chemically etching the surfaces of the resulting degreased assembly;
c. chemically milling the resulting etched assembly to remove from the surface thereof a selected amount of metal;
d. chemically etching the surfaces of the resulting milled assembly;
e. chemically nickel plating the resulting milled and etched assembly to replace with deposited nickel the amount of metal removed by said milling; and
f. providing relative movement between said inner and outer races in the course of operations (a), (b), (c), and (e).

3,867,177
IMPREGNATION OF POROUS BODY WITH METAL

Jack J. Ott, Hemlock; Russell E. Matthews, Midland, and Garth D. Lawrence, Laingsburg, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1972, Ser. No. 215,685
Int. Cl. B22d *27/16*; C23c *17/00*
U.S. Cl. 117—51 **19 Claims**

1. A process for impregnating a solid porous body having interconnecting pores comprising:

a. contacting the porous body with a molten activator metal, the activator metal characterized as being inert to the porous body,
b. solidifying the activator metal within the porous body,
c. at least partially immersing the porous body of step (b) in a molten filler metal for a sufficient time for the filler metal to at least partially replace the activator metal within the porous body, the activator metal being at least partially soluble in the filler metal,
d. removing the porous body from the molten filler metal, and
e. solidifying the metal within the porous body.

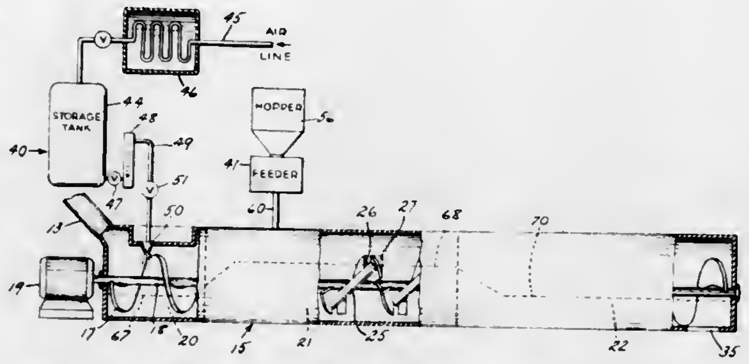
3,867,178
METHOD FOR COATING DISCRETE PARTICLES

James R. Ritter, Ridgewood, and Otto R. Strauch, Wyckoff, both of N.J., assignors to Potters Industries Inc., Carlstadt, N.J.

Filed Sept. 5, 1972, Ser. No. 286,059
Int. Cl. B44d *1/14*
U.S. Cl. 117—69 **11 Claims**

1. A continuous method for coating discrete particles which comprises, in combination:

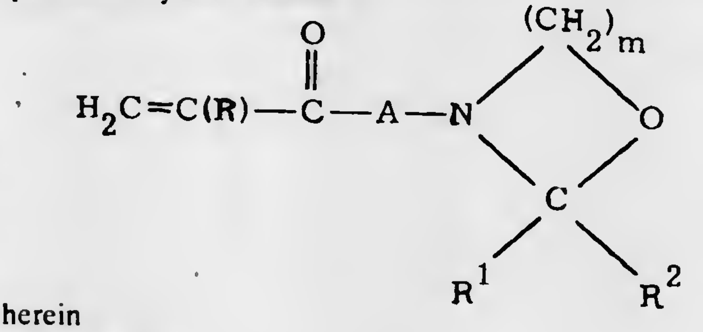
continuously advancing a mass of discrete particles to be coated along a feed path;
applying an amino type coupling agent to the particles at a first predetermined point along the feed path to provide an uncured coating on the surface of each particle;
initiating the curing of the coupling agent coating by the application of heat thereto as the particles continue their movement along the feed path;
adding an anti-caking agent to the coated particles at a second predetermined point along the feed path; and
completing the curing of the coupling agent coating by continuing the application of heat thereto as the particles move along the feed path downstream of said second predetermined point.



3,867,179
COATED POLYMERIC FIBERS

William H. Page, 1830 Palisades Dr., Appleton, Wis. 54911
Continuation-in-part of Ser. No. 295,620, Oct. 6, 1972, abandoned. This application Apr. 9, 1973, Ser. No. 349,508
Int. Cl. B44d *1/16*
U.S. Cl. 117—76 F **10 Claims**

1. A sheet of polymeric material coated with two coatings of a mixture of a clay material and a polymer of an oxazolidine represented by the formula



wherein
R is H or CH_3,
m is an integer having a value of 2 to 3,
R^1, when not directly joined to R^2, is selected from the group consisting of hydrogen, phenyl, benzyl, and (C_1–C_{12}) alkyl groups,
R^2, when not directly joined to R^1, is selected from the group consisting of hydrogen and (C_1–C_4) alkyl groups,
R^1 and R^2, when joined together, are selected from the group consisting of pentamethylene and tetramethylene, and A is $—O(CH_2)_m—$ or $(O\text{-alkylene})_n$ in which $(O\text{-alkylene})_n$ is a poly(oxyalkylene) group, having a molecular weight in the range from 88 to 348, in which the individual alkylene radicals are the same or different and are either ethylene or propylene, wherein the mixture is used in a tie-coat, as the first coating, and in an overcoat, as the second coating, wherein the tie-coat has a ratio, by weight, of the clay to the polymer of oxazolidine ranging up to 1 to 1, and wherein the overcoat has a ratio, by weight, of the clay to the polymer of oxazolidine greater than 1 to 1.

3,867,180
PRODUCT AND PROCESS

Mary Margaret Schick, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington, Del.

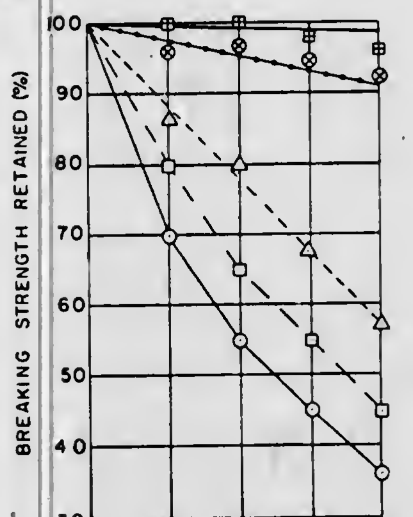
Filed May 24, 1973, Ser. No. 363,664
Int. Cl. B44d *1/08*, *1/16*
U.S. Cl. 117—76 FB **5 Claims**

1. A process for reducing the noise in compressible fibrous structures when flexed under stress, which comprises:

spraying a reticulated batt of randomly arranged, microcellular, inflated closed-cell, pneumatic fibers of a synthetic organic polymer with between about 0.03 to about 5 percent by weight based on the weight of the fibers of an anti-adhesive comprising an aqueous dispersion of a compound selected from the group consisting of a polyoxyethylene polyoxypropylene polymethylsiloxane containing about 51% polyoxyethylene, a sodium alkylsulfonate of 22 to 24 carbon atoms and a polyoxyethylene polyoxypropylene glycol containing about 80% polyoxyethylene; coating said sprayed batt with an adhesive binder comprising an aqueous emulsion of at least 40% by weight of an ethylene/vinyl acetate copolymer wherein the vinyl acetate comprises 18–40% by weight of the polymer; and drying the coated batt.

3,867,181
STABILIZED POLYESTER YARN HAVING A CARBODIIMIDE COATING AND PROCESS OF MAKING

Luis R. Vizurraga, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.
Continuation of Ser. No. 628,031, April 3, 1967, abandoned. This application Dec. 21, 1970, Ser. No. 100,490
Int. Cl. B32b *25/02*, *27/36*
U.S. Cl. 117—80 **6 Claims**



1. An industrial yarn of a linear polymeric terephthalic acid ester of a glycol of the series $HO(CH_2)_nOH$ where *n* is greater than 1 but not exceeding 10; said ester having free carboxyl end groups and said yarn being stabilized against hydrolytic and thermal degradation by having a carbodiimide coating disposed thereon in amounts sufficient to produce a pickup in the range from 1% to about 2.5% by weight; said carbodiimide being a compound represented by the following general formula

$$R'—N{=}C{=}N—R$$

wherein R and R′ are radicals independently selected from the group consisting of aryl, alkyl, aralkyl and alkoxy radicals.

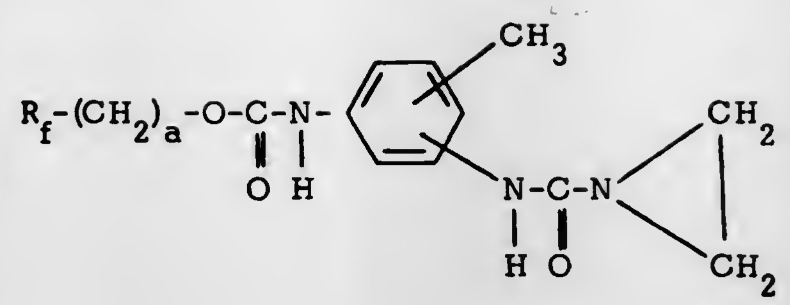
3,867,182
TUBULAR CASING OF CELLULOSE HYDRATE WITH A FAT AND WATER REPELLENT INNER SURFACE AND PROCESS FOR THE MANUFACTURE THEREOF

Klaus-Dieter Hammer, Finthen; Wolfgang Klendauer, Wiesbaden, and Erich Schuierer, Altoetting, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

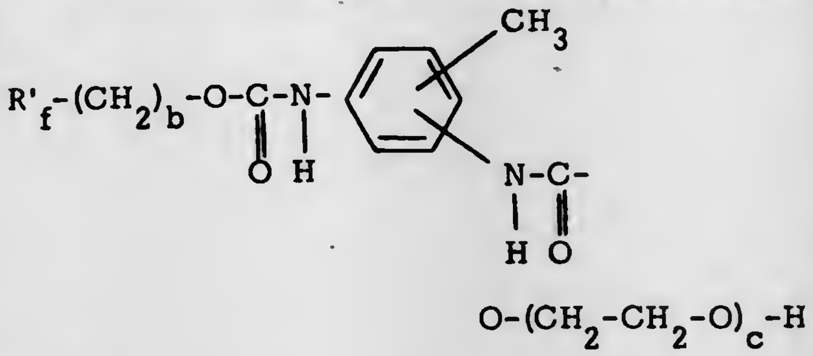
Filed Dec. 3, 1973, Ser. No. 420,965
Claims priority, application Germany, Dec. 6, 1972, 2259671
Int. Cl. B44d *1/02*
U.S. Cl. 117—95 **18 Claims**

1. A tubular casing of cellulose hydrate having a coating on its inner side composed of a mixture of substances cross-linked by chemical reaction, which mixture is obtained when an aqueous liquid containing

A. 1 to 10 per cent by weight, calculated on the total weight of the liquid, of a water-soluble aminoplast precondensate,
B. 1 to 4 per cent by weight, calculated on the total weight of the liquid, of a fluorine-containing two-component system from
β_1. polymers of fluorine-containing ethylene imines of the general formula



wherein
R_f is a straight or branched, saturated perfluorinated carbon chain with 6 to 10 carbon atoms,
and a = 1 or 2, or polymers from mixtures of the said ethylene imines, dispersed in
β_2. fluorine-containing compounds of the general formula

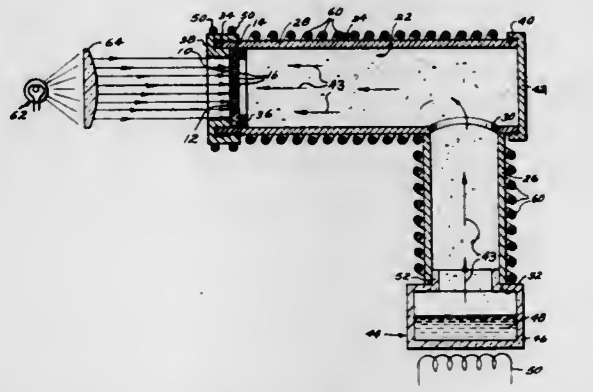


wherein
R'_f is a straight or branched, saturated perfluorinated carbon chain with 5 to 7 carbon atoms,
b = 1 or 2,
and c = 18 to 50 (corresponding to polyethylene glycol groups with an average molecular weight of about 800 to 2,000),
or in mixtures of the above compounds, provided that, in the component B of the liquid, the ratio β_1 to β_2 is in the range from 40 : 60 to 60 : 40 per cent by weight, calculated on the total weight of the liquid, and
C. a water-soluble cross-linking catalyst is heated sufficiently to remove the portion of the liquid consisting of water and sufficiently to effect cross-linking, whereby the aminoplast precondensate and/or reaction products of the aminoplast precondensate and the constituents β_1 and β_2 of the component B are chemically bonded with the OH groups of the cellulose hydrate forming the tubular casing.

3,867,183
METHOD OF COATING CHANNELED ENERGY-CONDUCTING PLATES

Henry B. Cole, East Woodstock, Conn., assignor to American Optical Company, Southbridge, Mass.

Filed Apr. 8, 1966, Ser. No. 541,940
Int. Cl. C23c *11/02*
U.S. Cl. 117—107.2 R **2 Claims**



1. In a method of gas plating the walls of channels of a multi-channeled electron amplifying element by thermal decomposition of a metal plating vapor continually directed

through said channels, the improvement comprising the steps of:

- preheating said plating vapor to nearly its decomposition temperature prior to entrance thereof into said channels of said element; and
- intermittently heating said element to a temperature at least equal to that of the decomposition temperature of said plating vapor and allowing said element to cool to a temperature below said decomposition temperature during intervals between said intermittent heating to effect flushing of residue gases of said vapor in said channels by said continuous flow thereof during said intervals.

3,867,184
COATING

Alfonso L. Baldi, Drexel Hill, Pa., and Victor V. Damiano, Pennsauken, N.J., assignors to Alloy Surfaces Co., Inc., Wilmington, Del.

Filed Jan. 31, 1973, Ser. No. 328,378
Int. Cl. C23c *9/00*
U.S. Cl. 117—107.2 P **4 Claims**

1. In the process of diffusion coating a metal article, the improvement according to which a single diffusion coating heat is arranged to coat different portions of the article in different ways by maintaining the different portions in contact with different diffusion coating packs.

3,867,185
METHOD OF PRODUCING A LITHIUM-DEPLETED PATTERNED SURFACE ON A LITHIUM NIOBATE CRYSTAL

William L. Primak, Hinsdale, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 17, 1973, Ser. No. 398,266
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 **2 Claims**

1. A method of producing a lithium-depleted surface layer on a lithium niobate crystal comprising bombarding the crystal surface with H^+, D^+, He^+, or Ne^+ ions, exposing the bombarded crystal to an atmosphere containing water vapor whereby lithium hydroxide forms as a decoration on the surface, repeatedly washing the surface with water as the decoration phenomena occurs, and heating the washed crystal to about 320°C., thereby immobilizing the remaining lithium to prevent further lithium migration to the bombarded areas.

3,867,186
METHOD OF TREATING CELLULOSIC MATERIAL WITH N-METHYLOL PHOSPHAZENE COMPOUNDS AND PRODUCT OBTAINED

Edwin O. Hook, Marshfield; George R. Berbeco, Chestnut Hill, and Arthur S. Obermayer, West Newton, all of Mass., assignors to Moleculon Research Corporation, Cambridge, Mass.

Division of Ser. No. 886,329, Dec. 18, 1969, Pat. No. 3,711,542. This application Dec. 19, 1972, Ser. No. 312,234
Int. Cl. C09d *1/00*
U.S. Cl. 117—136 **18 Claims**

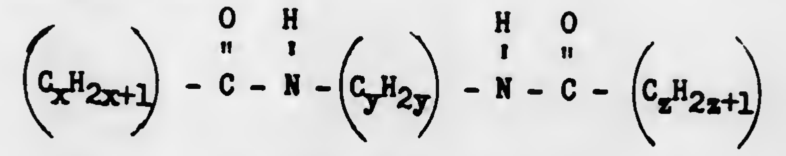
1. A process for the treatment of cellulosic material to impart crease-resistant and/or flame-retardant properties thereto, which process comprises contacting the cellulosic material with an N-methylol phosphazene compound and an acid catalyst at a pH of between about 4.0 and 6.5, and at a temperature sufficient to effect a condensation reaction between the hydroxyl groups of the cellulosic material and the N-methylol groups of the phosphazene compound.

3,867,187
POLYPROPYLENE FILAMENTS HAVING IMPROVED SOILING AND CROCKING CHARACTERISTICS

David E. Borenstein, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 26, 1973, Ser. No. 344,878
Int. Cl. B44d *1/098*
U.S. Cl. 117—138.8 E **18 Claims**

1. A filament melt spun from an admixture of a filament forming polymer of propylene and at least one wax compound having the formula



$$(C_xH_{2x+1})-\overset{O}{\overset{\|}{C}}-\overset{H}{\overset{|}{N}}-(C_yH_{2y})-\overset{H}{\overset{|}{N}}-\overset{O}{\overset{\|}{C}}-(C_zH_{2z+1})$$

wherein x and z are integers in the range of 10 to 25 and y is an integer in the range of 2 to 10; said polymer of propylene being selected from the group consisting of fiber forming homopolymers of propylene, fiber forming copolymers of propylene and at least one other monoolefin having up to 8 carbon atoms, and admixtures thereof; said filament having a finish coating thereon of at least one quaternary ammonium salt compound having the formula

$$R_2R'_2N^+X^-$$

wherein each R is individually selected from saturated hydrocarbyl radicals having from 10 to 25 carbon atoms, each R′ is individually selected from saturated hydrocarbyl radicals having from 1 to 8 carbon atoms, and X is a halogen radical.

3,867,188
SPUNBONDED NONWOVEN FABRIC

Paul E. Campbell, Greensboro, N.C., and John G. Kokoszka, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed July 25, 1973, Ser. No. 382,601
Int. Cl. B44d *5/08;* **C08g** *31/18*
U.S. Cl. 117—138.8 F **13 Claims**

1. A spunbonded nonwoven fabric having thereon a silicone-glycol copolymer having the general formula

$$(CH_3)_3SiO\ (CH_3)_2SiO\ _x\ (CH_3)GSiO\ _ySi(CH_3)_3$$

wherein

- G is a radical of the structure $-R(OC_3H_6)_zOH$,
- R is an alkylene radical containing from 1 to 18 carbon atoms,
- x has an average value of from 40 to 90,
- y has an average value of from 1 to 10, and
- z has an average value of from 1 to 10.

3,867,189
IMPERMEABLE, NONPOROUS POLYARYLENE SULFIDE LAMINATE AND PROCESS THEREFOR

James T. Edmonds, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1973, Ser. No. 327,733
Int. Cl. C08d *13/24;* **B28b** *7/28*
U.S. Cl. 117—138.8 UA **16 Claims**

1. An impermeable laminate structure comprising a molded porous arylene sulfide polymer composition having applied to the surface thereof a cross-linked nonporous arylene sulfide polymer coating.

7. A laminate structure according to claim 1 wherein said laminate is in the form of a conduit.

9. A process of making a laminate structure which comprises

a. forming a slurry of a porous arylene sulfide polymer in a volatilizable liquid;
b. compressing the resulting slurry so as to form a molded article containing therein at least 0.1 weight percent residual volatilizable liquid;
c. heating the resulting molded article at a first temperature so as to substantially volatilize the residual liquid therein;

d. thereafter, further heating the resulting substantially liquid-free molded article at a second temperature so as to substantially cure the polymer;
e. thereafter applying a continuous layer of a nonporous arylene sulfide polymer to at least one surface of said molded article;
f. thereafter, further heating the resulting coated article at a third temperature so as to substantially cure the coating polymer; and
g. thereafter recovering the resulting laminate structure containing poly(arylene sulfide) composition as a product of the process.

3,867,190
REDUCING CAPILLARITY OF POLYGLYCOLIC ACID SUTURES

Edward Emil Schmitt, and Martin Epstein, both of Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

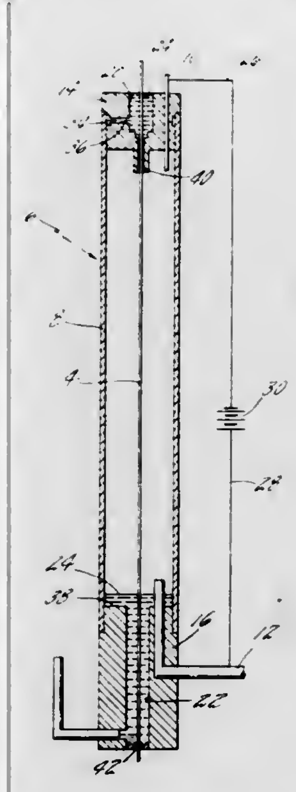
Continuation-in-part of Ser. No. 190,290, Oct. 18, 1971, Pat. No. 3,736,646. This application Apr. 24, 1973, Ser. No. 354,043
Int. Cl. B44d *1/098;* **A61l** *17/00*
U.S. Cl. 117—138.8 A **4 Claims**

1. A process for reducing the capillarity of a multifilament polyglycolic acid surgical suture comprising contacting a multifilament polyglycolic acid strand with an organic solvent solution of a copolymer of 15 to 85 mole percent glycolic acid and 85 to 15 mole percent lactic acid, thereby filling the interstices of said multifilament polyglycolic acid strand with the said solution, evaporating off the solvent, and thereby leaving a stiffening and capillarity reducing quantity of said copolymer on the multifilament polyglycolic acid strand, thus forming a surgical suture, said multifilament polyglycolic acid strand being insoluble in said organic solvent and said copolymer being soluble in said organic solvent.

3,867,191
CARBON-BORON SURFACED CARBON FILAMENT

Francis S. Galasso, Manchester, and Richard D. Veltri, Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 24, 1972, Ser. No. 228,953
Int. Cl. C23c *11/08*
U.S. Cl. 117—169 R **6 Claims**



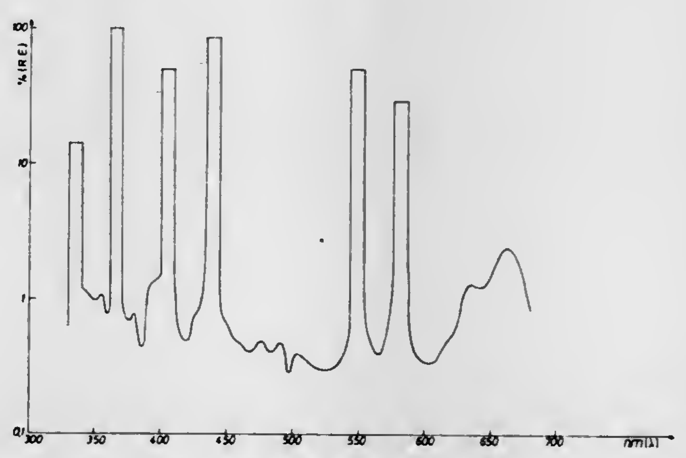
1. A composite filament at least two mils in diameter having a tensile strength of at least 150,000 psi for use as reinforcement in metal matrix composite articles comprising:

- a substrate consisting essentially of carbon filament;
- a continuous coating adhered to said substrate consisting essentially of carbon-boron alloy, said coating consisting essentially of approximately 43–60 atomic percent carbon, remainder boron.

3,867,192
ELECTRON BEAM RECORDING

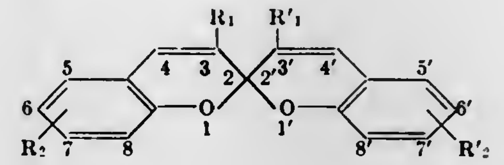
Theofiel Eveline Hermans, Boechout, and Gerard Albert Delzenne, S-Gravenwezel, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

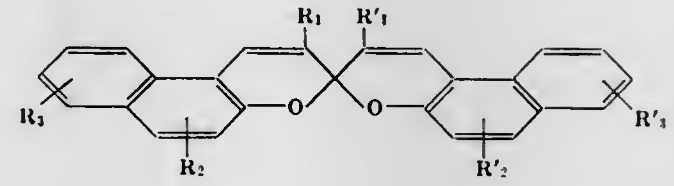
Filed Feb. 26, 1973, Ser. No. 335,671
Claims priority, application Great Britain, Feb. 29, 1972, 9398/72
Int. Cl. G01d *15/14, 15/34*
U.S. Cl. 117—201 **5 Claims**

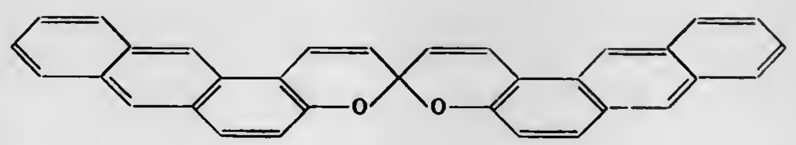


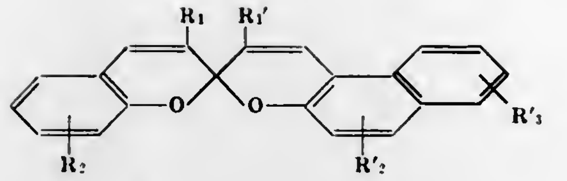
1. An electron beam-sensitive recording material which comprises an electrically conductive substrate and superposed thereon a layer that has a sensitivity to ultra-violet radiation not high enough to provide an optical density result in the visible spectrum range of more than 0.2 when tested under the standard test conditions described in the specification, said layer comprising:

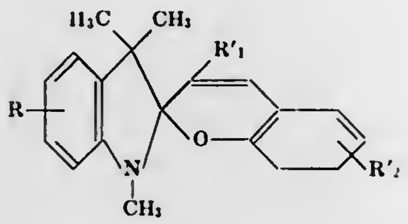
A. at least one dye precursor compound corresponding to one of the following general formulae:

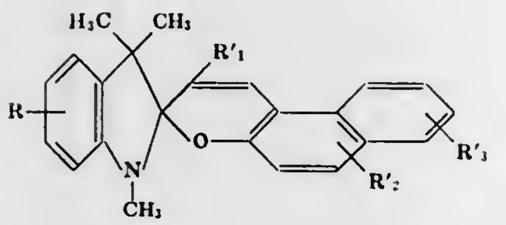


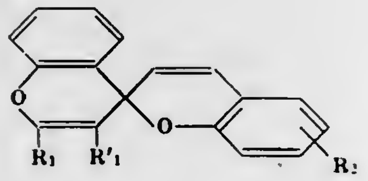






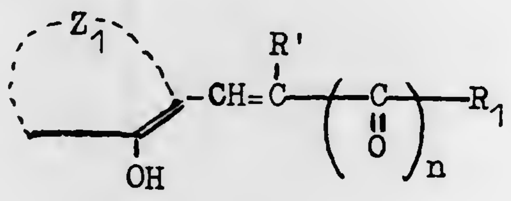


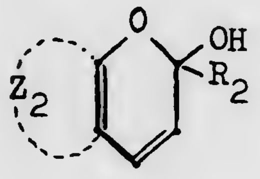




wherein:

R, R_1, R'_1, R_2, R'_2, R_3 and R'_3 each represent hydrogen, alkyl, alkyl substituted with halogen, alkyl substituted with an ester group, alkyl substituted with a carboxyl group, alkyl substituted with a N-phenylcarbamyl group, a hydroxy group, an alkoxy group, an aryloxy group, a phenyl group, piperidyl, acetyl, halogen, nitro, or R_1 and R'_1 together represent a —$(CH_2)_n$— chain wherein $n=2$ or 3 to link the carbon atoms in the 3 and 3′ positions together or





wherein:

R_1 represents an alkyl group, a phenyl group, a naphthyl group, or together with R′ the necessary atoms to close a cyclohexyl ring,

R′ represents hydrogen, a C_1–C_5 alkyl group, a phenyl group or a phenoxy group,

Z_1 represents the necessary atoms to close a phenyl or naphthyl nucleus,

Z_2 represents the necessary atoms to close a benzene or naphthalene nucleus,

R_2 represents a C_1–C_5 alkyl group, and

n represents 1 or 2, and

B. at least one organic compound of the group consisting of:

1. an organic compound containing one or two halogen atoms linked to the same carbon atom that is further linked to at least one electron-withdrawing group selected from the group consisting of a

$$>C{=}O,\ >SO_2,\ -C{\equiv}N,\ -N_3,\ -NO_2$$

or phenyl group,

2. an organic compound containing at least one nonhalogen carrying carbon atom bound to at least one hydrogen atom and at least two electron-withdrawing groups selected from the group consisting of

$$>C{=}O,\ >SO_2,\ -C{\equiv}N,\ -N_3 \text{ and } -O-\underset{\underset{O}{\|}}{C}-R$$

in which R is an organic group, and

3. a polyhalogenated aromatic hydroxy compound.

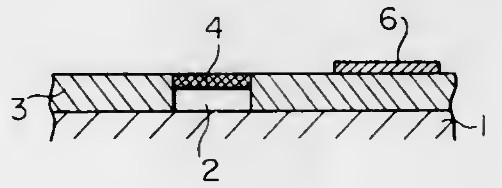
3,867,193
PROCESS OF PRODUCING A THIN FILM CIRCUIT
Norio Sumi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 195,937

Claims priority, application Japan, Dec. 28, 1970, 45-19262; Dec. 28, 1970, 45-19263; Dec. 28, 1970, 45-19264

Int. Cl. B44d ***1/18***

U.S. Cl. 117—212 **3 Claims**



1. A process of producing a C-R thin film circuit which comprises the steps of:

a. depositing an electrically conductive thin film on an insulating substrate, said thin conductive film being selected from the group consisting of tantalum nitride, tantalum, niobium, and hafnium;

b. coating onto said conductive film an oxidation preventing mask, said mask coating having a pattern corresponding to the contour of a thin film element desired to be formed on said conductive thin film;

c. oxidizing portions of said conductive thin film not coated with said oxidation preventing mask to product an insulating oxide film layer which has a thickness larger than that of said conductive thin film and insulates the mask-coated portions of said conductive thin film at side surfaces thereof;

d. removing said oxidation preventing mask to expose the portions of said conductive thin film at upper surfaces thereof, said exposed portions of said conductive thin film which have not been oxidized being insulated at said side surfaces with said insulating oxide film layer;

e. anodizing the upper surface of said nonoxidized conductive film to form a thin film dielectric layer over the remaining non-oxidized conductive film; and,

f. depositing a metal film in a predetermined pattern on said dielectric layer to form a thin film capacitor element.

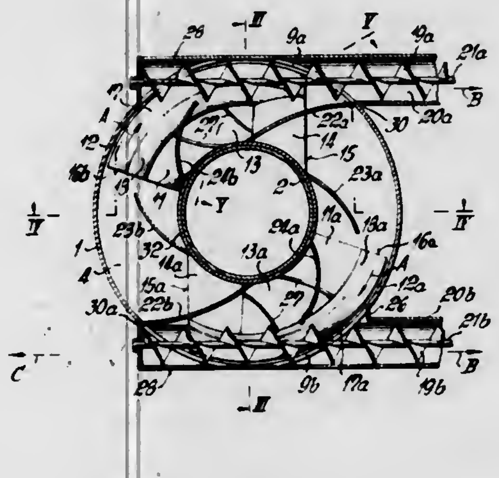
3,867,194
DIFFUSION TOWER CONSTRUCTION
Elmar Straube, Bedburg, Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed May 10, 1973, Ser. No. 359,027

Claims priority, application Germany, May 18, 1972, 2224209

Int. Cl. C13d ***1/12***

U.S. Cl. 127—5 **16 Claims**



1. In a diffusion tower, a combination comprising a stationary outer conduit and a coaxial rotatable inner conduit defining with said outer conduit an annular diffusion chamber having an upper region; agitating means for agitating a stream of material which moves upwardly in said chamber in a direction towards said upper region; outlet means in said outer conduit in said upper region; screw conveyor means in said upper region and extending through said outlet means from the interior to the exterior of said outer conduit, tangentially of the latter; expelling means mounted on said inner conduit for rotation therewith in said upper region, so as to expel material towards said outlet means, said expelling means comprising an expelling member extending transversely of said chamber and having a circumferentially leading and a circumferentially trailing edge, a radially outer marginal portion which extends from one to the other of said edges, and an upper surface having a major portion which is inclined from said leading toward said trailing edge except for said marginal portion where said surface slopes down to a planar surface portion which is located in the plane of said leading edge and closely beneath said screw conveyor means; and guide baffles arranged in said upper region and having lower edges which are located above said expelling member, extending transversely of said chamber and being contoured to correspond to the contour of said upper surface.

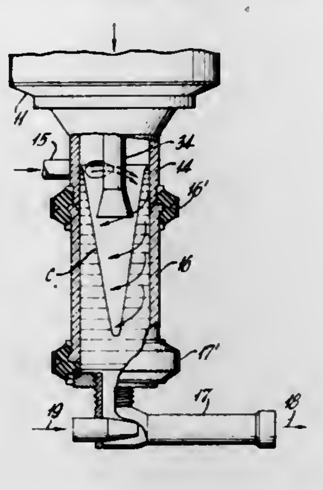
3,867,195
APPARATUS FOR CONTINUOUS PRODUCTION OF SYRUP
Anton Pfeuffer, 301 E. 78th St., New York, N.Y. 10021

Filed Aug. 25, 1972, Ser. No. 283,675

Int. Cl. B01f ***1/00***

U.S. Cl. 127—22 **7 Claims**

1. Apparatus for continuously producing sugar syrup comprising a mixing chamber, vortex means for establishing an aqueous vortex in said mixing chamber, means delivering sugar crystals to said vortex whereby said mixing chamber is constituted as means within which a syrup is formed, an outlet from said mixing chamber leading to a suction inlet of an ejector whereby syrup from said outlet is delivered to a remote location and means recirculating at least a portion of said syrup from the remote location to a motive fluid inlet of said ejector.

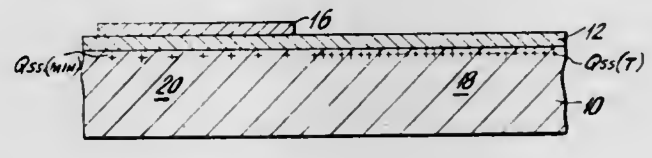


3,867,196
METHOD FOR SELECTIVELY ESTABLISHING REGIONS OF DIFFERENT SURFACE CHARGE DENSITIES IN A SILICON WAFER
Paul Richman, Saint James, N.Y., assignor to SMC Microsystems Corporation, Hauppauge, L.I., N.Y.

Filed Mar. 11, 1974, Ser. No. 450,178

Int. Cl. H01l ***7/34***

U.S. Cl. 148—1.5 **6 Claims**



1. A process for fabricating a semiconductor integrated circuit comprising the steps of providing a silicon substrate, forming a silicon dioxide layer over said silicon substrate, forming a film of a material having the characteristic of acting as a barrier to oxygen over a selected portion of said oxidized silicon substrate, and thereafter subjecting said silicon substrate to an anneal in an oxygen-containing atmosphere, whereby a minimum value of Qss is established in said portion of said silicon substrate underlying said oxygen-barrier film and a higher value of Qss is established in the remaining portion of said silicon substrate.

3,867,197
PROCESS FOR THE RELEASING OF MATERIALS FROM VOLUMINOUS PRECIPITATES OR SUSPENSIONS
Helmut Reinhardt, Rodenkirchen; Karl Trebinger, and Gottfried Kallrath, both of Wesseling, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt/Main, Germany

Filed Mar. 20, 1973, Ser. No. 343,170

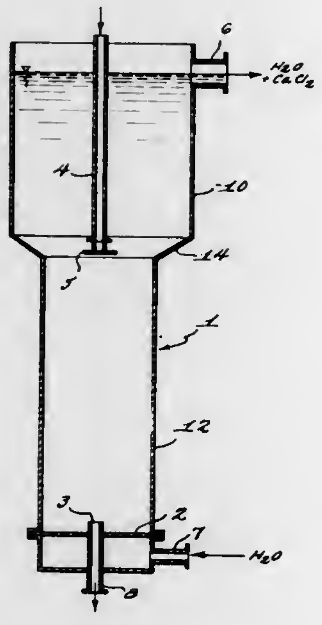
Claims priority, application Germany, Mar. 27, 1972, 2214826

Int. Cl. B01d ***12/00;*** **C01b** ***33/18;*** **C01c** ***3/12***

U.S. Cl. 134—25 R **8 Claims**

1. A process for removing water soluble material from a voluminous suspension of solid material in water in an apparatus comprising a vertical column, said column having an upper widened portion, a lower narrow portion, and a frustoconical portion connecting said upper and lower portions, the cross-section of the upper portion being approximately twice that of the lower portion, first conduit means for introducing said suspension extending from above through said upper portion and terminating near the bottom of the frustoconical portion, second conduit means near the bottom of the column for introduction of wash water, substantially horizontal distributing means in the bottom of the column above the second

conduit means, first discharge conduit means at the bottom of said column for discharging purified suspension, said first discharge conduit means extending from slightly above the distributing means through said distributing means to a point below the introduction of the wash water, and second discharge exit in the upper portion of the column for removing wash water containing solubles released from the voluminous suspension, said upper discharge exit being at a point above the introduction of the suspension into the column, said process comprising introducing said suspension through said first conduit means, introducing wash water through said second conduit means, continuously passing the suspension downwardly through said column in countercurrent flow to upwardly flowing wash water and thereby transferring the water soluble material to the upwardly flowing wash water, the velocity of upward flow being lower in the upper widened portion of the column than in the lower narrowed portion, separating the thus purified suspension from the wash water, discharging the purified suspension from the bottom of the column downwardly through said first discharge conduit means and discharging the wash water containing solubles released from the voluminous suspension through said second discharge exit.



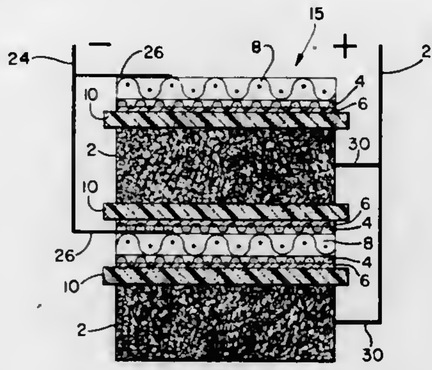
3,867,198
METHOD OF CLEANING THE SURFACE OF A DECORATIVE PLASTIC LAMINATE

Dennis Ronald Lovitt; Gene Edward Grosheim, both of Cincinnati, and Richard Frederick Jaisle, Harrison, all of Ohio, assignors to Formica Corporation, Cincinnati, Ohio
Filed June 13, 1973, Ser. No. 369,661
Int. Cl. B08b *3/10*
U.S. Cl. 134—29 **6 Claims**

1. A process for removing contaminants imparted to the melamine/formaldehyde resin containing surface of a decorative laminate by an aluminum release sheet used during the manufacture of the laminate, which comprises contacting the contaminated decorative laminate surface, for from about 1 second to about 15 seconds, with a cleaner consisting essentially of a solution of from about 2.5% to about 50.0%, by weight, based on the total weight of the solution, of an alkali metal hydroxide, said solution having a temperature of from about 30°C. to about 90°C.

3,867,199
NICKEL HYDROGEN CELL

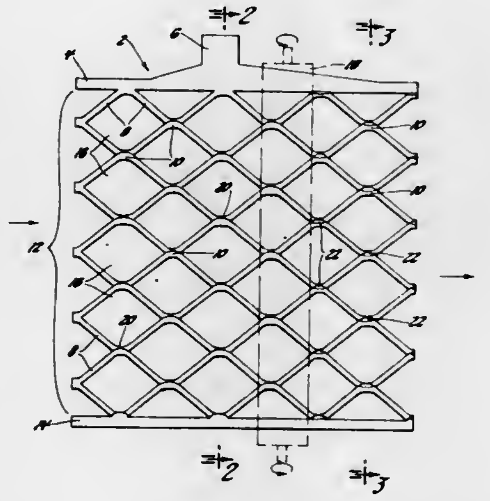
James D. Dunlop, Gaithersburg, Md.; Jose Giner, Sudbury, Mass.; Gerrit Van Ommering, Adelphi, and Joseph F. Stockel, Gaithersburg, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.
Filed June 5, 1972, Ser. No. 259,524
Int. Cl. H01m *43/04, 27/00*
U.S. Cl. 136—28 **12 Claims**



1. A rechargeable Ni/H_2 power cell essentially including a case, a plurality of positive electrodes in said case each positive electrode comprising $Ni(OH)_2$ in the discharged state, at least one dual porosity negative electrode in said case comprising two conductive supports having a catalyst disposed in a hydrophobic non-conducting matrix mounted on each of said supports and means between said supports for providing passages for diffusion of gas to said catalyst, said catalyst being a material capable of dissociating molecular hydrogen to monatomic hydrogen, a plurality of porus matrices in said case, each porus matrix separating one of said positive electrodes and one of said conductive supports of said dual porosity negative electrode, an alkaline electrolyte in the pores of said matrix, a supply of hydrogen in said case surrounding said electrodes and matrix, said case being hermetically sealed to prevent inflow and outflow of gas during charging and discharging of said cell.

3,867,200
METHOD AND APPARATUS FOR MAKING OXIDIZED EXPANDED LEAD BATTERY GRIDS

Elon Daniels, Jr., Frankton, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 20, 1973, Ser. No. 398,976
Int. Cl. H01m *35/04*
U.S. Cl. 136—36 **3 Claims**



1. A method of making lead-acid storage battery plates comprising:

advancing a narrow lead strip having a predetermined thickness, longitudinally between two rows of progressive dies and cutters, said strip having a central, longitudinal lug-forming portion and two expandable grid-forming portions flanking the lug-forming portion and extending to both longitudinal edges of the strip, and said rows comprising a plurality of dies and cutters having low drag surfaces and which converge in incremental steps on the central lug-forming portion of the strip passing between them;

while bathing said strip, dies and cutters in water, expanding the grid-forming portions along the longitudinal edges thereof by periodically shearing rectangular wire-like segments from said edges into a plurality of tiers of undulatory skeletal elements extending at acute angles to the plane of said lug-forming portions and such that successive tiers are offset one from the other and joined one to the other by a plurality of nodes which join the ends of successive segments in one tier to the centers of like segments in successive tiers, said nodes having rectangular, vertically transverse cross-sections and widths significantly greater than said predetermined thickness and equal to the sum of the widths of the adjoining skeletal elements, whereby two reticulated portions comprising a plurality of polygonal paste-retaining cells bounded by said skeletal elements and nodes are formed, extend at acute angles from the central portion in gull-wing fashion when viewed head-on, and are surface-oxidized to promote better adhesion with the subsequently applied paste;

leveling the thusly expanded strip by folding said reticulated portions down into nearly the same plane as said central portion;

uniformly stretching the reticulated portions in directions substantially perpendicular to the direction the strip is fed through the dies by urging each tier of skeletal elements in those directions independently of the other tiers to uniformly size the cells, stretch the reticulated portions to a predetermined width and slightly rotate the rectangular nodes such that diagonally opposed edges of the nodes become salient in the principal planes of the reticulated portions;

flattening the reticulated portions by further rotating said nodes and compressing said salient edges into plateaus and thereby convert the rectangular cross-sections of said nodes to polygonal cross-sections having two opposing sides thereof laying in planes substantially parallel to the faces of the pasted plate and spaced one from the other by a distance greater than said predetermined thickness but substantially less than twice said predetermined thickness;

substantially engulfing the reticulated portions in a leady active material paste and sandwiching same between strips of paper which are substantially coextensive`with said reticulated portions;

drying the paper-bound pasted strip; and

finally segmenting the pasted strip into individual battery plates.

3,867,201
HERMETICALLY SEALED ELECTROLYTE BATTERY AND METHOD OF FILLING WITHOUT BREAKING HERMETIC SEAL

Robert W. Holmes, Boston, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Aug. 11, 1971, Ser. No. 170,888
Int. Cl. H01m *21/10*
U.S. Cl. 136—114 **7 Claims**

1. An organic electrolyte battery, comprising

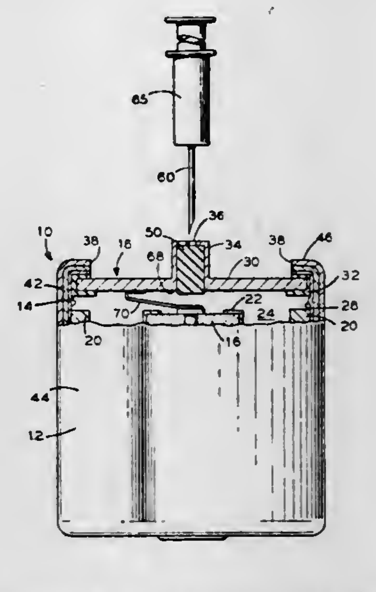
a metallic can-shaped container;

electrode elements of opposite polarities disposed therein; a fluid organic electrolyte immersing said electrode elements;

a top closure for said container comprising an electrode terminal for said battery, said closure comprising a metallic disc having a central portion shaped in the form of an axially rising hollow concentric boss, the top surface of said boss having a coaxial opening;

means electrically connecting said closure to an electrode element within said container;

and a sealing element supported by said closure and contained within said hollow boss, said sealing element comprising a septum plug of rubber-like material penetrable by a needle and self-restoring and self-resealing upon removal of said needle, said sealing element serving as an inlet for said electrolyte during the filling operation, and then serving as an hermetic seal for said container.



3,867,202
CHEMICAL VAPOR DEPOSITION FOR EPITAXIAL GROWTH

Eiichi Ichiki; Kazuo Iida; Masato Ogura, all of Niihama; Yasuo Seki, and Sizuo Asanabe, both of Kawasaki, all of Japan, assignors to Sumitamo Chemical Company, Limited, Osaka and Nippon Electric Company, Limited, Tokyo, both of, Japan
Filed Mar. 13, 1974, Ser. No. 450,682
Claims priority, application Japan, Mar. 15, 1973, 48-30664
Int. Cl. H01i *7/36*
U.S. Cl. 148—175 **13 Claims**

1. In a method for producing an epitaxial layer of a group III*a* – V*a* element compound on surface of a substrate which comprises reacting an alkyl compound of a group III*a* element with a group V*a* element or a volatile compound thereof in vapor phase and contacting the reaction product with the substrate, the improvement which comprises reacting triethylaluminum which contains at most 4 ppm of silicon with a gallium halilde or an indium halide to produce triethylgallium or triethylindium and contacting thus obtained triethylgallium or triethylindium alone, a mixture of them or a mixture of them and an alkyl compound of aluminum with a group V*a* element, a hydride of said element or an alkyl compound of said element.

3,867,203
METHOD FOR PRODUCING SEMICONDUCTOR DEVICES

Horst Gesing; Rigobert Schimmer, and Manfred Streit, all of Belecke, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed June 25, 1973, Ser. No. 373,274
Claims priority, application Germany, June 23, 1972, 2230749
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 **25 Claims**

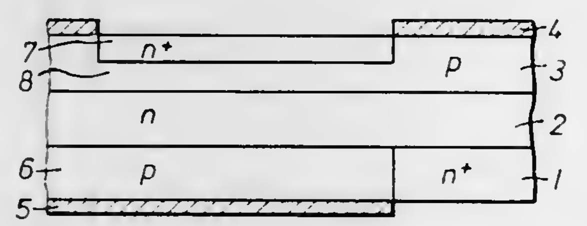
1. A method for producing a semiconductor device comprising the steps of:

providing a wafer of semiconductor material;

providing first and second diffusible doping substances which have different diffusion speeds and which produce one conductivity type and the opposite conductivity type, respectively, and with said second doping substance being a substance which inhibits the diffusion of said first doping substance into the material of said wafer;

applying a masking layer which has a different permeability for each of said first and second diffusible doping substances to a portion of the surface of said wafer;

simultaneously forming a region of only said one conductivity type beneath said masking layer and a region of only said opposite conductivity beneath the unmasked portion of the surface of said wafer by exposing said masked wafer simultaneously to said first and second diffusible doping substances under an elevated temperature and for a time sufficient to diffuse said first doping substances into said wafer through said masking layer, and to diffuse said second doping substance into said wafer at unmasked portions thereof, whereby said masking layer acts as an effective diffusion mask for said second doping substance and said second doping substance serves as a masking substance to inhibit diffusion of said first doping substance into said wafer at said unmasked portions.



3,867,204

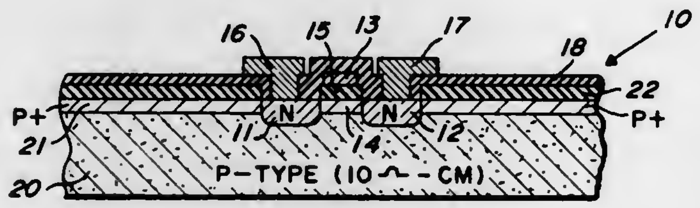
MANUFACTURE OF SEMICONDUCTOR DEVICES

James L. Rutledge, Saratoga, Calif., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1973, Ser. No. 342,926

Int. Cl. H01l *7/34*

U.S. Cl. 148—188 **7 Claims**



1. A method of manufacturing an MOS transistor in the surface of a semiconductor substrate comprising the steps of: providing a semiconductor substrate which is lightly doped with an impurity of a first conductivity type;

coating the entire surface of said substrate with a glass containing a dopant which is of said one conductivity type;

opening at least two windows in said doped glass to define a source and a drain for the MOS transistor;

depositing a dopant of the other conductivity type in said windows; and

heating the substrate to diffuse dopant of said one conductivity type into the surface of the substrate and the dopant of the other conductivity type in the area underlying the windows.

3,867,205

REFRACTORY METAL HOT-JUNCTION THERMOCOUPLE

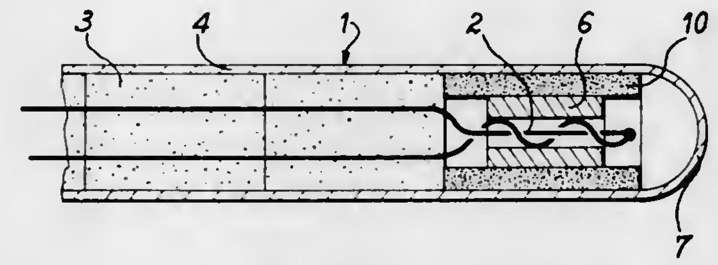
Robert Schley, Orly, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 16, 1973, Ser. No. 351,270

Claims priority, application France, Apr. 20, 1972, 72.13896

Int. Cl. H01r *1/04*

U.S. Cl. 136—232 **6 Claims**



1. A hot-junction thermocouple comprising two conducting wires insulated by ceramic beads and surrounded and protected by a hermetically sealed gas filled metal sheath, one wire being straight and the other wire coiled about and spaced from the straight wire, the wires being connected to their ends and a noble-metal crimping element on the twisted hot junction isolated in the metal sheath.

3,867,206

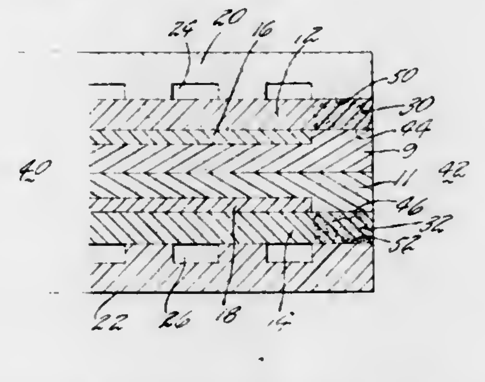
WET SEAL FOR LIQUID ELECTROLYTE FUEL CELLS

John C. Trocciola, Glastonbury; Craig R. Schroll, West Hartford, and Dan E. Elmore, South Windsor, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 21, 1973, Ser. No. 427,210

Int. Cl. H01m *27/04, 27/02*

U.S. Cl. 136—86 D **3 Claims**



1. A fuel cell electrode comprising an electrically-conductive material having a peripheral sealing portion and a central active portion, said active portion including a catalytic surface and being porous to the transmission of gas and substantially hydrophobic, said sealing portion being hydrophilic and having the capability of retaining electrolyte therein through its thickness by capillary action, thereby providing a wet seal capability in said sealing portion.

3,867,207

METHOD OF BLACKENING A STEEL COMPONENT FOR A COLOR CATHODE RAY TUBE

John J. Decker, and Susan V. Zito, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,975

Int. Cl. C23f *5/02*

U.S. Cl. 148—6.14 R **4 Claims**

1. A method of blackening a steel component which comprises the steps of: degreasing said component; immersing said component in a 50% hydrochloric acid bath for about 1 minute; rinsing said component in deionized water; immersing said component in an electroless plating bath selected from the group consisting of nickel or cobalt for about 15 minutes, said plating bath including an effective amount of a reducing agent including a hypophosphite compound; rinsing said component in deionized water; immersing said component in a strong oxidizing acid bath for 30 to 45 seconds; rinsing said component in warm tap water; rerinsing said component in deionized water; rerinsing said component in anhydrol; drying said component; and firing said component in air for about 1 hour at about 450°C.

3,867,208

METHOD FOR PRODUCING ANNULAR FORGINGS

Nikolai Alexandrovich Grekov, Tikhoretsky prospekt, 9, korpus 7, kv. 83; Galina Ivanovna Arkovenko, prospekt Metallistov, 113, kv. 49; Elena Petrovna Silina, ulitsa Shatelena, 8, kv. 66; Natalia Petrovna Shifrina, Varshavskaya ulitsa, 22, kv. 4, all of Leningrad; Tamara Nikolaevna Sazonova, Srednaya Pervomaiskaya ulitsa, 19, kv. 13; Vasily Yakovlevich Kleimenov, Srednaya Pervomaiskaya ulitsa, 12, kv. 10, both of Moscow; Josif Sholomovich Kvater, ulitsa Krasnykh partizan, 3, kv. 5; Moisei Grigorievich Zlatkin, ulitsa Yakova Severdlova, 34, kv. 22; Valdislav Alexandrovich Mirmelshtein, ulitsa Pushkinskaya, 14, kv. 15, and Alexei Ivanovich Potapov, prospekt Crdzhonikidze, 24, kv. 1, Sverdlovsk, all of U.S.S.R.

Continuation of Ser. No. 92,525, Nov. 24, 1970, abandoned. This application May 21, 1973, Ser. No. 362,345

Int. Cl. C21d

U.S. Cl. 148—11.5 R **4 Claims**

1. A method for producing large annular forgings of more than about 500 kg. by freely forging an ingot made of titanium-based alloys with a double-phase $\alpha + \beta$ structure, the amount of β phase being up to 30 percent, which comprises the steps of heating the ingot before successive forging steps, the first heating exceeding by 50°–80°C the temperature of phase transformation from β to $\alpha + \beta$ structure; subjecting said ingot to successive multiple plastic deformations in the axial, radial, and tangential directions of the ingot with an overall degree of deformation being not less than 60 percent to form a blank; decreasing each heating step during said deformation from said first heating temperature to a temperature 20°–30°C below the temperature of said phase transformation before the last mentioned deformation, the temperature of each heating step being between 950° and 1050°C; and annealing the blank on completion of said plastic deformation, the annealing being performed at a temperature somewhat below said temperature of phase transformation whereby a large annular blank having solely a uniform equiaxial microstructure is produced.

3,867,209

METHOD OF TREATING Ti-Nb-Zr-Ta SUPERCONDUCTING ALLOYS

Takefumi Horiuchi, Kobe; Yoshiyiki Monju, Nishinomiya; Isamu Tatara, Kobe; Nobuyuki Nagai, Kobe; Manabu Hisata, Kobe, and Kiyoshi Matsumoto, Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe City, Japan

Filed Sept. 17, 1973, Ser. No. 397,866

Int. Cl. C22f *1/18*

U.S. Cl. 148—12.7 **1 Claim**

1. A method of working and treating Ti-Nb-Zr-Ta superconducting alloy consisting of 10–50at%Ti, 20–50at%Nb, 10–40at%Zr and 5–12at%Ta to achieve a fine and nonhomogeneous structure which comprises the steps of:

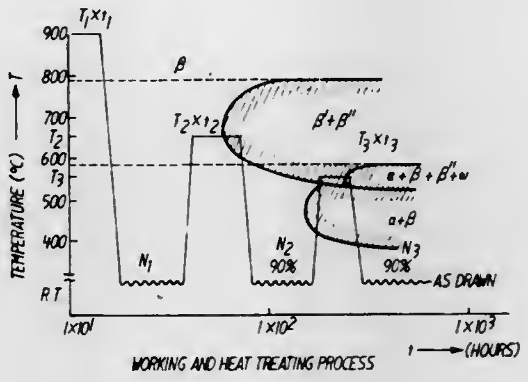
forming a β solid solution of said Ti-Nb-Zr-Ta alloy by heating the alloy to a temperature within the β solid solution range;

cooling and cold working said heated Ti-Nb-Zr-Ta alloy;

heating said cold worked alloy to a temperature within the $(\beta'+\beta'')$ phase region and then cooling said heated $(\beta'+\beta'')$ alloy to maintain the peritectoid structure;

cold working the peritectoid alloy;

forming a multi-phase $\beta'+\beta''+\alpha$ (ω) eutectoid alloy structure by heating said peritectoid alloy to a temperature



within the $(\beta'+\beta''$ $\beta'+\beta''+\alpha$ $(+\omega)$ eutectoid structure range and then cooling said eutectoid alloy; and

cold working the eutectoid alloy.

3,867,210

PROCESS FOR THE PRODUCTION OF MILD STEEL TUBES

Carl Bertil Bengt Lagercrantz, and Carl Johan Staffan Finden, both of Virsbo, Sweden, assignors to Virsbo Bruks AB, Virsbo, Sweden

Continuation of Ser. No. 65,671, Aug. 19, 1970, abandoned. This application Mar. 1, 1973, Ser. No. 337,114

Claims priority, application Sweden, Aug. 25, 1969, 11746/69

Int. Cl. C21d *3/04, 1/74*

U.S. Cl. 148—16 **10 Claims**

1. A process for the production of mild steel tubes comprising:

a. heating steel tubes in the absence of a protective gas in a heating zone containing air to a temperature in the range of from about 640° to about 900°C;

b. supplying wet hydrogen having a dew point of between 30° and 50°C to said heating zone when the temperature range is reached and maintaining the hydrogen supply in that temperature range until a substantial lowering of the carbon and nitrogen content of the tubes and an increase in the grain size of the tubes has been effected; and then

c. cooling the tubes.

3,867,211

LOW-OXYGEN, SILICON-BEARING LAMINATION STEEL

Robert W. Easton, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 16, 1973, Ser. No. 388,732

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 **17 Claims**

7. A process of making a fully-processed grade steel of the carbon steel type comprising the steps of providing a carbon steel melt having a carbon content up to 0.1% maximum, reducing the nitrogen content of said melt to 0.008% maximum and reducing the oxygen content of said melt to 0.01% maximum, adding to said melt from about 0.05% to about 1.0% manganese and from about 0.05% to about 0.15% phosphorus and up to 0.6% silicon, casting said steel melt, hot rolling said steel to hot band, pickling said steel, cold rolling said steel to cold band, subjecting said steel to a heat treatment and reducing said carbon content to 0.010% maximum in at least one of said melt, said hot band and said cold band during said process thereby providing said fully-processed grade steel with a 60 hertz core loss of about 4.5 watts per pound at 15 kilogausses at a thickness of 0.025 inch.

3,867,212

COMPOSITE MATERIAL, TUBING MADE FROM THE MATERIAL, AND METHODS FOR MAKING THE MATERIAL AND TUBING

John A. Dromsky, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 235,297, March 16, 1972, Pat. No. 3,775,194. This application Aug. 31, 1973, Ser. No. 393,389

Int. Cl. C22c *41/02*

U.S. Cl. 148—127 4 Claims

1. A method for treating a composite metal laminate material embodying a thin inner layer of austenitic stainless steel sandwiched between and metallurgically bonded to two relatively thicker outer layers of low carbon steel for enhancing formability of said laminate material, said method comprising the steps of heating said laminate material to a temperature in the range from about 1850°F. to about 2050°F. for a period of time in the range from about one-half to two minutes for annealing said stainless steel material and heating said laminate material to a temperature in the range from about 1050°F. to about 1100°F. for a period of at least about three hours for removing carbon from solid solution and for precipitating carbon is said low carbon steel to enhance formability of said laminate material while permitting some intergranular carbide precipitation in said stainless steel layer of said laminate material.

3,867,213

FERROCENE-CONTAINING MONOMERS AND COPOLYMERS

Trevis E. Stevens, and Samuel F. Reed, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 849,254, July 31, 1969,. This application May 18, 1971, Ser. No. 144,280

Int. Cl. C06d *5/06*

U.S. Cl. 149—19.2 2 Claims

1. A propellant composition comprising ammonium perchlorate in an amount from about 50 to about 70 weight percent; aluminum metal in an amount from about 5 to about 20 weight percent; a plasticizer selected from diisooctyl azelate, di-2-ethylhexyl azelate, dipropylene glycol dipelargonate, and isodecyl pelargonate in an amount from about 5 to about 25 weight percent of the propellant composition; and copolymers in an amount from about 5 to about 30 weight percent, said copolymers being formed from butadiene reacted with a polymerizable monomer selected from pentaerythritol metacrylate tris(ferrocenoate) and pentaerythritol acrylate tris(-ferrocenoate), said butadiene and said monomer being reacted in a mole ratio of butadiene to monomer from about 40 to 1 to about 80 to 1 while in the presence of a suitable initiator contained in a suitable organic solvent for a predetermined period of time and at a predetermined temperature to form said copolymers; said suitable initiator being azo-bis-(2-methyl-5-hydroxy-valeronitrile); said suitable organic solvent being toluene; said predetermined period of time being about 72 hours; said predetermined temperature being from about 66°C to about 67°C; said copolymers being characterized by a molecular weight in the range from about 3,500 to about 4,700, OH end groups from about 0.8 to 1.2 weight percent, and Fe content from about 3.9 to about 6.9 weight percent.

3,867,214

NITROCELLULOSE DOUBLEBASE PROPELLANT CONTAINING TERNARY MIXTURE OF NITRATE ESTERS

Jonas Zucker, West Orange; Russell Trask, Morris Plains, both of N.J., and Edward Costa, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 18, 1967, Ser. No. 669,359

Int. Cl. C06b *5/00*

U.S. Cl. 149—100 9 Claims

1. In a double base propellant composition containing nitrocellulose, the improvement consisting of the incorporation in said propellant composition of one of the ternary mixtures of nitrate esters selected from the group consisting of:

Trimethylolethane trinitrate, triethyleneglycol dinitrate and diethyleneglycol dinitrate;

Trimethylolethane trinitrate, triethyleneglycol dinitrate and glycol dinitrate;

Trimethylolethane trinitrate, glycerol monolactate trinitrate and diethyleneglycol dinitrate;

Trimethylolethane trinitrate, glycerol monolactate trinitrate and glycol dinitrate;

Nitroisobutylglycerol trinitrate, glycerol monolactate trinitrate, and diethyleneglycol dinitrate;

Nitroisobutylglycerol trinitrate, glycerol monolactate trinitrate, and glycol dinitrate;

Nitroisobutylglycerol trinitrate, triethyleneglycol dinitrate and diethyleneglycol dinitrate;

Nitroisobutylglycerol trinitrate, triethyleneglycol dinitrate, and glycol dinitrate.

3,867,215

NITROCELLULOSE DOUBLE-BASE PROPELLANT CONTAINING BUTANETRIOLTRINITRATE

Jonas Zucker, West Orange; Russell L. Trask, Morris Plains, both of N.J., and Edward Costa, Brooklyn, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1968, Ser. No. 717,487

Int. Cl. C06b *5/00*

U.S. Cl. 149—100 4 Claims

1. In a double based propellant containing nitrocellulose and the mixed nitrate esters of trimethylolethanetrinitrate and triethylene glycol dinitrate, the improvement consisting of the incorporation therein of butanetrioltrinitrate to achieve a propellant having a force of at least 380,000 foot pounds per pound of propellant and an isochoric flame temperature below about 3,350°K.

3,867,216

PROCESS AND MATERIAL FOR MANUFACTURING SEMICONDUCTOR DEVICES

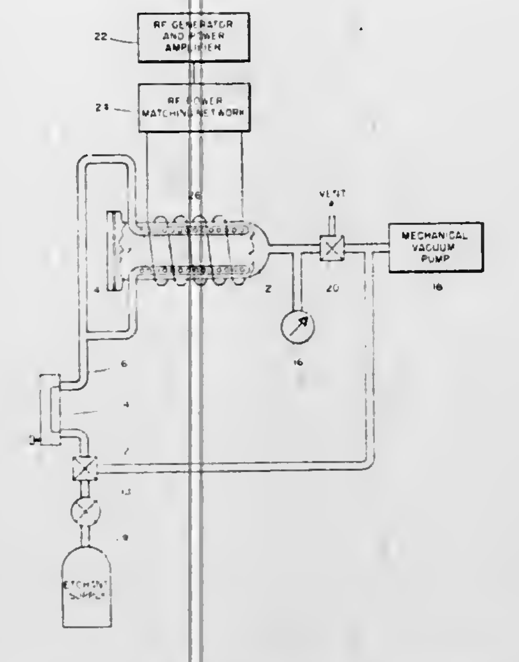
Adir Jacob, 20 Knight Rd., Framingham, Mass. 01701

Continuation-in-part of Ser. No. 252,863, May 12, 1972, Pat. No. 3,795,557. This application Nov. 16, 1973, Ser. No. 416,422

Int. Cl. B44c *1/22;* **C73f** *1/02*

U.S. Cl. 156—2 7 Claims

1. A process for removing organic photoresist material from a substrate in a plasma environment, comprising the step of: exposing the material to a gaseous plasma formed from a binary mixture of oxygen and a halocarbon having no more than two carbon atoms per molecule, wherein at least one carbon atom in said molecule is linked to a predominance of fluorine atoms, and wherein oxygen constitutes at least 25% by volume of said binary mixture.



3,867,217

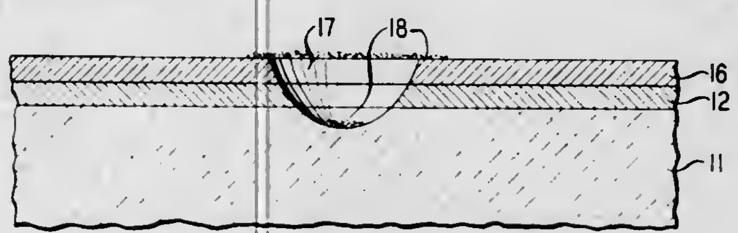
METHODS FOR MAKING ELECTRONIC CIRCUITS

Charles Maggs, Florham Park, and Walter Werner Weick, Somerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 29, 1973, Ser. No. 410,619

Int. Cl. C23f *1/02*

U.S. Cl. 156—3 10 Claims



1. In a method for making electronic circuits, the improvement comprising the steps of:

forming a first metal layer on a surface of a substrate;

forming a second metal layer over the first layer, the second layer being of a different metal from that of the first layer;

defining a circuit comprising the step of evaporating with a laser beam a portion of the first and second layers thereby to expose at least one area of the substrate surface;

cleaning the exposed substrate surface area comprising the step of directing a fluid stream containing abrasive particles against the second layer and said area, the fluid stream being sufficiently abrasive to clean the substrate surface area and to erode part of the second layer, but not sufficiently abrasive to penetrate through the second layer;

and selectively dissolving the second layer by exposing it to a metal etchant which does not significantly affect the metal of the first layer.

3,867,218

METHOD OF ETCHING A PATTERN IN A SILICON NITRIDE LAYER

Loic Henry, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,394

Int. Cl. B29c *17/08;* **C09k** *3/00*

U.S. Cl. 156—8 14 Claims

1. A method of etching a pattern in a silicon nitride layer provided on a substrate, in particular for use in the manufacture of semiconductor devices in which the substrate contains semiconductor material, said method comprising applying to desired portions of the silicon nitride layer an etching bath which contains hydrofluoric acid, ammonium fluoride, phosphoric acid, and water in quantities in which the bath forms a dilute acid solution with high ammonium fluoride content.

3,867,219

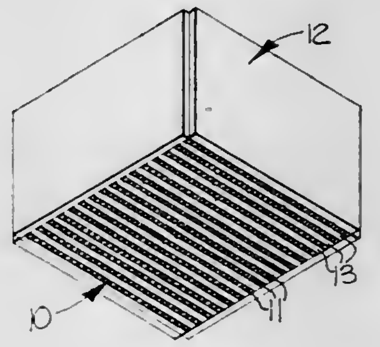
METHOD OF MAKING PILE FABRICS FROM A BLOCK OF PILE MATERIAL

Emanuele Bondi, Milan, Italy, assignor to Fieldcrest Mills, Inc., Eden, N.C.

Continuation-in-part of Ser. No. 316,740, Dec. 20, 1972, Pat. No. 3,831,232, and a continuation-in-part of Ser. No. 363,832, May 25, 1973,. This application Sept. 18, 1973, Ser. No. 398,560

Int. Cl. B32b *5/00, 31/12, 31/18*

U.S. Cl. 156—72 33 Claims



1. A method of making pile fabrics, such as carpets, rugs and the like which comprises providing a pile strand block of rows of substantially parallel strands of pile forming material in an open-ended container with the block having dividers of sheet material therein separating adjacent rows of the strands, incrementally feeding from the container the pile strand block parallel to the axes of the pile strands in successive increments of an amount equal to the desired length of pile, treating the ends of the dividers in the block to cause them to foreshorten relative to the adjacent ends of the pile strands so that relatively short lengths of the pile strands are exposed and project beyond the adjacent ends of the dividers, and severing each fed increment of pile strands and the foreshortened dividers transversely of the pile strand axes while bringing the projecting ends of the severed pile strands into contact with a layer of adhesive for securement thereto and to form spaced rows of cut pile tufts thereon.

3,867,220

DECORATION OF CERAMIC WARE

William Gratty, Stoke-on-Trent, England, assignor to William Boulton Limited, Stoke-on-Trent, England

Filed May 24, 1972, Ser. No. 256,229

Claims priority, application Great Britain, May 25, 1971, 16816/71

Int. Cl. B32b *31/20*

U.S. Cl. 156—73.6 9 Claims

1. A method for decorating ware comprising applying a transfer or print to a portion of the surface of the ware to be decorated, immersing the ware in a mass of particulate treatment media, and vibrating the ware and media whereby the latter act on the print in a manner effective to transfer the desired design or decoration to the surface of the ware.

3,867,221
PREPARING AN ARTICLE OF THERMOSETTING RESIN

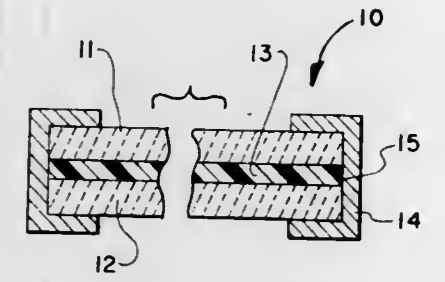
Peter R. Chant, Delft, Netherlands
Filed Apr. 16, 1973, Ser. No. 351,734
Claims priority, application Great Britain, Apr. 19, 1972, 18108/72
Int. Cl. B32b *5/18*
U.S. Cl. 156—77 **4 Claims**

1. In the process of producing an article of thermosetting resin which comprises:

a. impregnating a flexible, compressible sheet having an open-cell foam structure with a curable thermosetting resin,
b. applying a layer of fibrous reinforcing layer to at least one side of the impregnated sheet,
c. compressing the impregnated sheet and reinforcing layer to the extent that resin is expelled from the sheet into the fibrous reinforcing layer to impregnate this layer with resin throughout its thickness, and
d. heating the resin in the sheet and layer to cure while maintaining the compression, the improvement comprising;
e. wherein the heating in (d) is greater in the reinforcing layer and the resin passes through a more advanced state of cure than the resin in the impregnated sheet,
f. reducing the compression on the partially cured resin impregnated foam sheet and reinforcing layer to expand the same, and
g. heating the foam sheet and reinforcing layer to completely cure the resin.

3,867,222
METHOD OF MAKING MULTIPLE LAYER LIGHT TRANSMISSIVE LAMINATES

William J. Plant, Glenshaw, Pa., and John J. Szwarc, Fredonia, Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.
Filed Dec. 12, 1972, Ser. No. 314,387
Int. Cl. B32b *17/10, 3/02;* **B29c** *27/02;* **C03c** *27/00;* **H01j** *29/06*
U.S. Cl. 156—107 **4 Claims**

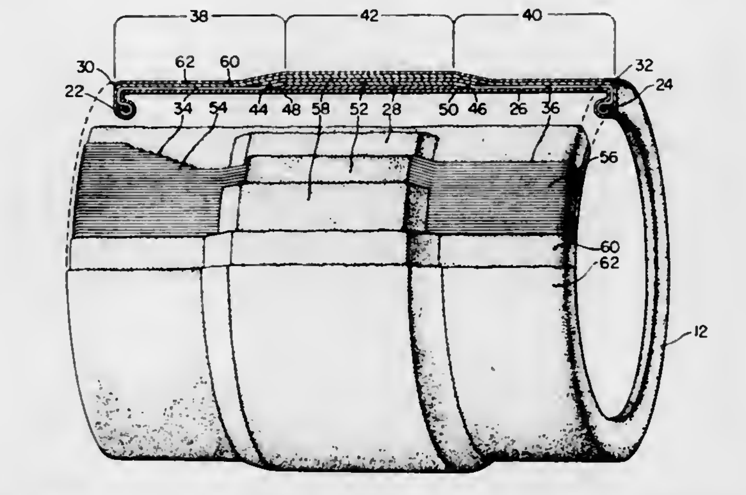


1. The method for preparing multiple layer light transmissive laminates resistant to discoloration at elevated temperatures comprising:

applying a coating of light transmissive polymerizable thermosetting resin to the confronting surfaces of at least two light transmissive sheets;
sealing the edges of said sheets to preclude exposure of the said resin to air;
said resin being susceptible to curing on exposure to radiation in the absence of free oxygen;
passing radiation energy through one of the said sheets into the said resin until the said resin is cured; and
recovering a cured light transmissive laminate.

3,867,223
METHOD FOR SHAPING PNEUMATIC TIRE

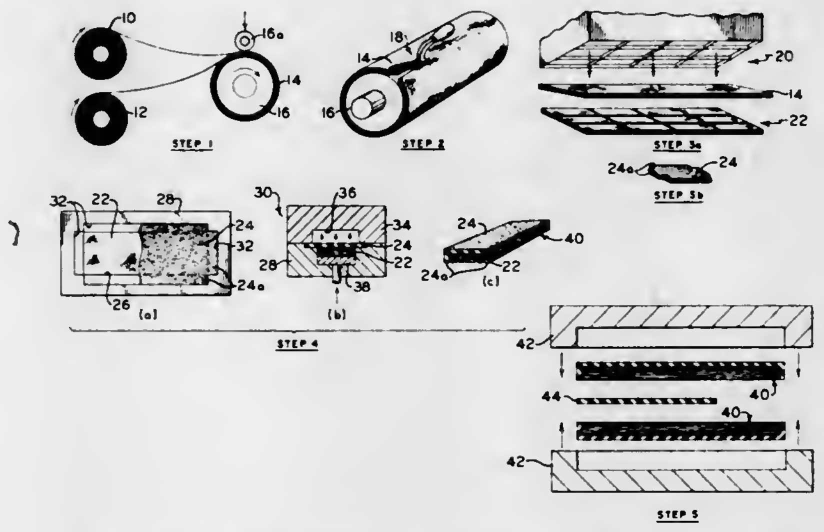
Paul E. Appleby, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 28, 1972, Ser. No. 266,886
Int. Cl. B29h *17/26*
U.S. Cl. 156—123 **8 Claims**



5. In a method of manufacturing a pneumatic tire including the steps of shaping an unvulcanized tire from the generally cylindrical configuration to a general configuration of a torus the improvement comprising; during the expansion of said tire, exerting first tangential forces which are isotropic to the inner surface of a central portion of the tire and applying second tangential forces which are non-isotropic to the inner surfaces of a pair of portions extending circumferentially about the tire and disposed on axially outer sides of said central portion.

3,867,224
METHOD OF MANUFACTURING SCRAPPER BELTS

Fred L. Jacobs, Wapakoneta, and Leroy Nagel, St. Marys, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 26, 1973, Ser. No. 427,885
Int. Cl. B32b *31/02, 31/20*
U.S. Cl. 156—182 **8 Claims**

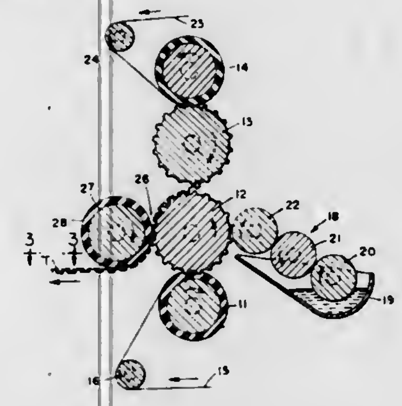


1. The method of manufacturing belts for scrapper paddles used in dehairing apparatus comprising the steps of:

A. assembling a layup of alternate reinforcing and flexible fabric plies;
B. cutting belt sized units from the fabric layup;
C. providing uncured rubber stock having a square area greater than that of the fabric layup;
D. applying the rubber to one side of the fabric and cold forming the rubber around all edges of the fabric to form one-half of a belt unit;
E. inserting two half belt units into a mold in fabric-faced-opposed relation separated by an interlayer of rubber stock; and
F. applying heat and pressure to form an integrally molded belt unit.

3,867,225
METHOD FOR PRODUCING LAMINATED EMBOSSED WEBS

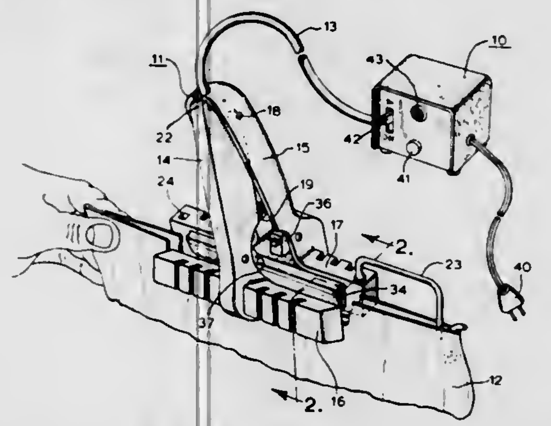
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.
Continuation of Ser. No. 24,980, March 19, 1970, abandoned, which is a division of Ser. No. 793,430, Jan. 23, 1969, Pat. No. 3,556,907. This application Apr. 30, 1973, Ser. No. 355,565
Int. Cl. B31f *1/20*
U.S. Cl. 156—209 **2 Claims**



1. A method for producing laminated embossed webs comprising separately embossing two webs each with a pattern of projections of about 10 to about 200 per square inch and a height of about 0.01 to about 0.05 inches, applying adhesive to at least some of the projections of one of said webs while the same is supported on an embossing roll, orienting said webs so that the projections face each other and interlace with each other so as to provide air spacing in the interlacing, and applying a linear laminating pressure by passing said webs through the nip defined by a marrying roll and the embossing roll which provided the projections on said one web to join said webs while said one web has the projections thereon supported and while maintaining the hardness of said marrying roll and the pressure in said nip to prevent distortion of the projections of the other said webs.

3,867,226
METHOD FOR SEALING PLASTIC BAGS

Joseph J. Guido, 351 Forest Rd., Hensdale, Ill. 60521, and James R. Anderson, 130 N. Bassford Ave., La Grange, Ill. 60525
Division of Ser. No. 201,830, Nov. 24, 1971, Pat. No. 3,822,164. This application May 23, 1974, Ser. No. 472,551
Int. Cl. B32b *31/00*
U.S. Cl. 156—229 **1 Claim**

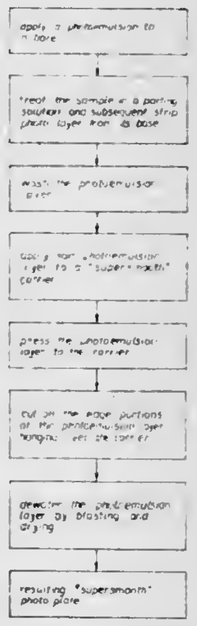


1. A method for sealing the open end of a plastic bag or the like at one or more locations on its rim to provide an integral carrying handle for the bag, the method utilizing a hand-held impulse-sealing tool comprising a head portion having a pair of heating platens operatively connected to come together in a pressure and heat-applying closed position and further having a spacer depending from one of the platens to engage the rim of the bag opening at a predetermined distance from said closed position of said heating platens, comprising the steps of:

grasping the sealer head in one hand;
engaging the spacer with the inside of the rim of the bag opening;
grasping the rim of the bag with the other hand at a location approximately opposite that of the point of engagement of the spacer;
pulling the bag taut between the point of spacer engagement and the point of grasp, thereby drawing opposite sides of the rim together;
positioning the taut sides of the rim between the heating platens;
applying pressure to the platens to activate the heating elements and accomplish the seal;
and removing the sealing head and its depending spacer from the now sealed end of the bag.

3,867,227
METHOD FOR PRODUCING SUPER SMOOTH PHOTO PLATES

Franz Klapper, Jena, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, District of Gera, Germany
Filed Jan. 12, 1973, Ser. No. 323,200
Int. Cl. B32b *31/20, 31/18, 31/12*
U.S. Cl. 156—249 **3 Claims**


apply a photoemulsion to a base
treat the sample in a parting solution and subsequent strip photo layer from its base
wash the photoemulsion
apply the photoemulsion layer to a "super-smooth" carrier
press the photoemulsion layer to the carrier
cut off the edge portions of the photoemulsion layer hanging over the carrier
dewater the photoemulsion layer by blasting and drying
resulting "supersmooth" photo plate

1. A method for producing a super-smooth photo-plate comprising the steps of

severing the photo-emulsion layer from a carrier after submitting a prefabricated photographic film to an aqueous hydro-fluoric acid bath containing 0.1 to 0.4 volume percent hydro-fluoric acid,
washing the stripped off photo-emulsion layer in distilled water in order to remove impurities and residual hydrofluoric acid,
subsequent applying said photo-emulsion layer on a clean and very smooth carrier,
said photo-emulsion layer projecting over the edge of said clean and very smooth carrier,
and
cutting off the portions of the photo-emulsion layer projecting over the carrier edge,
removing the residual water from said photo-emulsion layer by means of a pressure-gas stream and finally
drying the resulting very smooth photo-plate at a temperature of about 30°C.

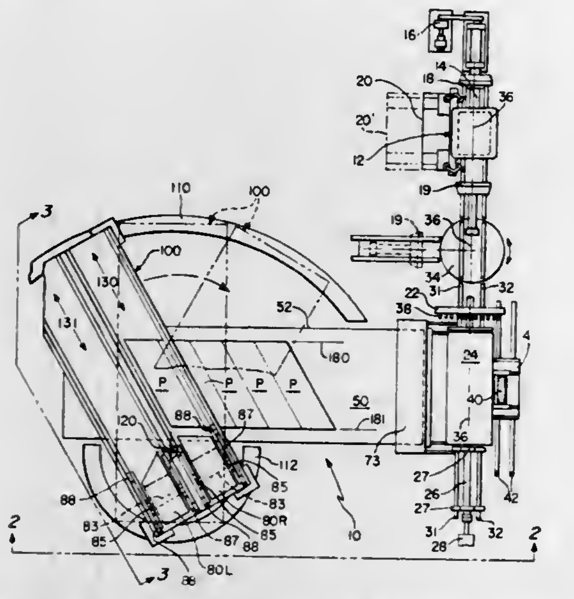
3,867,228
TIRE BUILDING MACHINE

Max D. Brinkley, North Canton, and Robert I. Griffiths, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 12, 1973, Ser. No. 323,030
Int. Cl. B29h *17/02, 17/14*
U.S. Cl. 156—405 **17 Claims**

1. Apparatus for building a giant tire; comprising band building means on which a running length ply is formed to endless cylindrical band form of predetermined circumferential length;

endless belt means for receiving a plurality of successive individual panels of ply stock thereon to form said run-

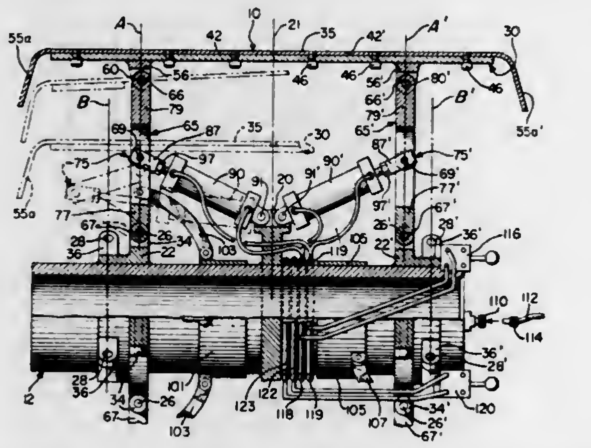
ning length ply and for transferring directly said ply to said band building means;
bridge means spanning said belt means;
at least one supply roll truck mounted on said bridge means for to and fro movement longitudinally thereof across said belt means;
means for dispensing from a supply roll carried by said truck a single panel of said ply stock during said movement of said truck across said belt means; and



means for advancing said belt means stepwise toward said band building means a distance determined according to the width of said single panel after such panel is received on said belt means whereby successive such panels can be spliced.

3,867,229
TIRE BUILDING DRUM

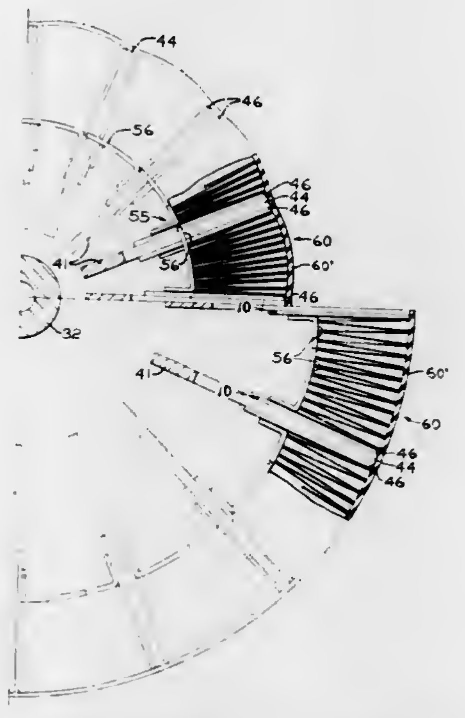
Theodore Marra, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 1, 1974, Ser. No. 438,811
Int. Cl. B29h *17/16, 17/26*
U.S. Cl. 156—417 **10 Claims**



1. A collapsible tire building drum for mounting telescopically on a tire building machine center shaft and for corotation therewith about a common longitudinal axis, comprising a hollow tubular central member slidable longitudinally on said shaft, a pair of spiders each fixed coaxially on the central member and spaced equally axially from a mid-circumferential plane of said drum, each spider accommodating a plurality of pivot pins equiangularly spaced about the central member in two planes perpendicular to said axis, the pins lying in the first such plane being disposed angularly about the axis respectively intermediate the pins lying in the second such plane, a plurality of drum surface support sections cooperable to support a rigid cylindrical building surface extending circumferentially continuously about said central member and longitudinally parallel to said axis, said plurality of sections including at least two major sections and at least two minor sections, a pair of pivot pin lugs secured to each of said support sections each accommodating a pivot pin extending in a plane perpendicular to said axis, a plurality of articulated links each pivotally connected at its radially outer end to one of said lugs and at its radially inner end to one of said spiders, and each such link having between its inner and outer ends an articulating hinge, a plurality of air cylinders, one of said cylinders being connected to each said link to move said hinge and to articulate such link in an axial plane so as to move each respectively associated support section between a drum collapsed and a drum expanded condition.

3,867,230
TIRE BUILDING MACHINE

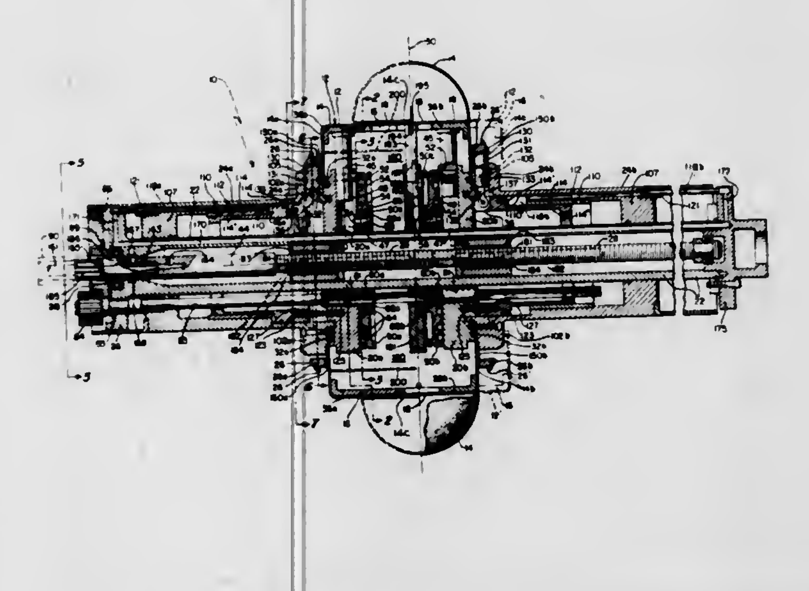
Russell F. Van Horn, Tipp City; Lowell D. Bok, Anna; Albert C. King, Jr., Troy; Ronald R. Suerdieck, Tipp City, and Arthur J. Thrower, Troy, all of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Continuation-in-part of Ser. No. 330,721, Feb. 8, 1973, abandoned. This application Apr. 30, 1974, Ser. No. 465,696
Int. Cl. B29h *12/16, 17/28*
U.S. Cl. 156—417 **20 Claims**



1. A tire shaping and building drum comprising: a base; a shaft supported on said base for rotation about a center line; a sleeve journaled on said shaft for rotation therewith, drive means operatively connected to said shaft and said sleeve for selectively moving one end of said shaft and one end of said sleeve axially toward or away from each other; a first set of circumferentially spaced lever members having one end pivotally mounted on said one end of said shaft; a second set of circumferentially spaced lever members having one end pivotally mounted on said one end of said sleeve; means operatively connected to said shaft and said sleeve for rotating said shaft and said sleeve about a common axis; the other ends of all of said levers having gear sectors, said second set of lever members being in paired axial alignment with said first set of lever members; said gear sectors of said first set of lever members being in meshing engagement with said gear sectors of said second set of lever members; said drive means operatively upon actuation to meshingly engage and rotate said gear sector to raise and lower said other ends of said levers respectively through selective movement of said shaft and said sleeve; each pair of said intermeshing gear sectors having a support member pivotally supported thereby; each pair of circumferentially spaced adjacent support members having a plurality of plate members positioned therebetween, defining a group of plate members; the respective end plate member of each of said group of plate members is secured to the closest adjacent support member; adjacent ones of said plate members of each of said group of plate members being interconnected to adjacent plate members to form an accordian pleated support means which expands radially upon movement of said lever members upwardly and outwardly away from said center line.

3,867,231
TIRE BUILDING MACHINE

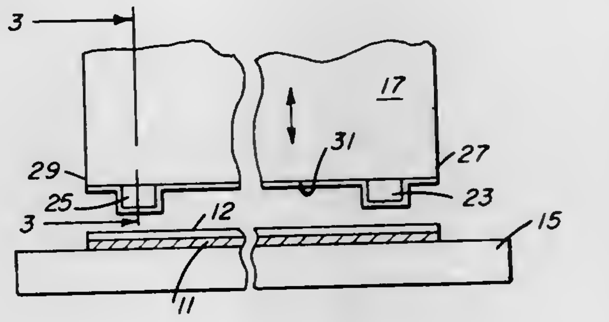
William R. Casey, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 28, 1972, Ser. No. 266,885
Int. Cl. B29h *17/16, 17/26*
U.S. Cl. 156—415 **28 Claims**



5. In tire building apparatus for building a tire having therein a circumferentially inextensible belt:
a building drum comprising an expansible sleeve providing a continuous exterior surface for contiguously supporting said tire and terminating in radially fixed inwardly turned ends;
a hollow continuous cylindrical center shaft disposed coaxially within said sleeve and extending axially outwardly of said ends;
a pair of rigid end bodies mounted coaxially on and corotatably with said shaft for sliding movement toward and away from each other on said shaft, said ends being secured in radially fixed relation respectively to said end bodies;
a plurality of rigid interior support segments, including a first set of greater arcuate width and a second set of lesser arcuate width disposed in alternating sequence circumferentially about each said end body and mounted within said sleeve on each of said bodies for movement radially of the drum rotation axis and cooperable to provide in one condition of said drum firm continuous cylindrical support to said sleeve between said ends;
means for moving said segments radially comprising a scroll plate carried by each of said end bodies for coaxial movement respectively therewith and for rotation relative to said end bodies about said axis;
each of said end bodies comprising a plurality of guideways extending radially of the axis, each of said interior support segments having a guide member extending radially of the axis slidable radially in the respectively associated guideway;
groove follower means on each said guide member and cam groove means on each said scroll plate cooperably interengaging to move said segments radially of the axis in response to rotation of said scroll plate; and
means on each said scroll plate comprising an annular groove concentric therewith and a plurality of wheels mounted on each respectively associated end body, said wheels having peripheral rims interengaging said annular groove and cooperable to move said scroll plate axially of the drum together with such end body and to accommodate relative rotation of said scroll plate with respect to said end body.

3,867,232
ULTRASONIC SPLICING APPARATUS

David L. Thompson, West Henrietta, and Everett B. Wardell, LeRoy, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 22, 1972, Ser. No. 255,353
Int. Cl. B31f *5/00;* **B32b** *31/20*
U.S. Cl. 156—502 **8 Claims**



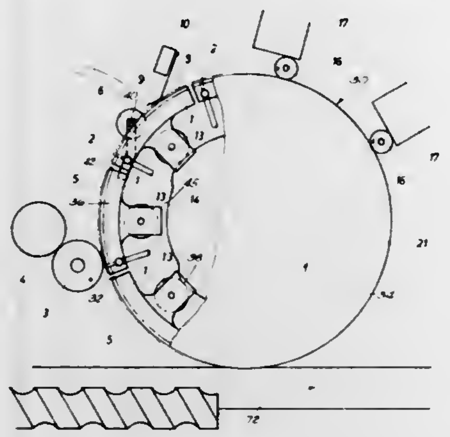
1. An ultrasonic horn for ultrasonically splicing two webs with thermoplastic resin surfaces, said horn having a planar end surface rectangular in shape for engaging a surface of said webs, said rectangular end surface having two parallel long edges and two parallel shorter edges having thereon a pair of spaced bosses positioned so as to extend in a direction parallel to the shorter edges of said rectangular end surface, said spaced parallel bosses projecting a distance of up to about 0.005 inch from said rectangular end surface, said distance being sufficiently small that, when said horn is brought into contact with said webs, ultrasonic splicing occurs over the entire area of said rectangular end surface.

2. Ultrasonic splicing apparatus for splicing two webs with thermoplastic resin surfaces, said apparatus comprising an anvil having a planar surface and an ultrasonic horn having a planar end surface rectangular in shape for engaging a surface of said webs and having two parallel long edges and two parallel shorter edges; said anvil and said horn being relatively movable toward and away from one another into and out of splicing position and said rectangular end surface being adapted to cooperate with the planar surface of said anvil; said horn being oriented with respect to said anvil such that the longer edges of said rectangular end surface lie in a direction parallel to the joint formed by said splicing apparatus; one of either the planar surface of said anvil or the rectangular end surface of said horn having thereon a pair of spaced bosses positioned so as to extend in a direction parallel to the shorter edges of said rectangular end surface or said bosses being located one on each of said surfaces; each of said spaced parallel bosses projecting a distance of up to about 0.005 inch from the surface on which it is located; said distance being sufficiently small that, when said horn is brought into contact with said webs, ultrasonic splicing occurs over the entire area of said rectangular end surface.

3,867,233
LABELING MACHINE WITH RETRACTABLE LABEL SUPPORTS

Erich Eder, Neutraubling, and Josef Brey, Strucken, both of Germany, assignors to Herman Kronseder, Berliner, Germany
Continuation of Ser. No. 872,686, Oct. 30, 1969, abandoned. This application Jan. 21, 1972, Ser. No. 219,904
Claims priority, application Germany, Oct. 30, 1968, 1806037
Int. Cl. B65c *9/20, 9/22*
U.S. Cl. 156—571 **11 Claims**

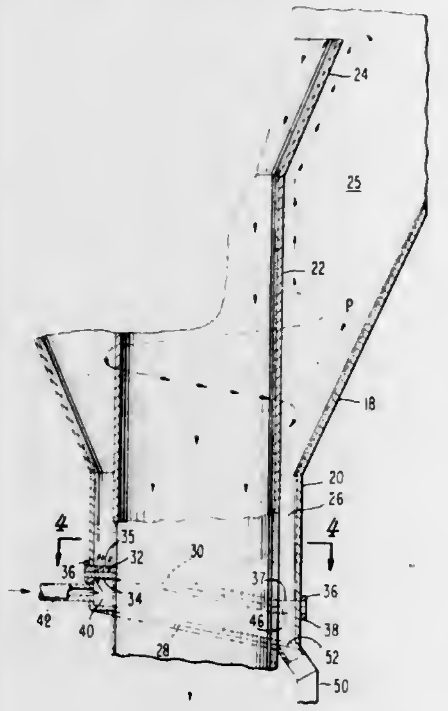
1. In a labeling machine which includes a rotatable label turret, a label magazine for supplying labels to the turret, and a glue applicator roller located adjacent the periphery of said turret, the improvement comprising a plurality of label supports around the peripnery of said turret, means for mounting said label supports on said turret for radial movement with respect to the axis of said turret, means for radially moving said label supports between extended and retracted positions, said means for radially moving said label supports including rollers on each of said label supports, a fixed cam surface and springs biasing said rollers against said cam surface, said cam surface being contoured adjacent said glue applicator roller,



and means operable in response to the absence of a label on said label supports to afford inward movement of said label supports to the retracted position to provide clearance between said label supports and said glue applicator roller, and operable in response to the presence of a label on said label supports to lock label supports carrying labels against movement to the retracted position when said label support is adjacent said relieved cam surface.

3,867,234
SPRAY DRYER CHAMBER COLLECTION SYSTEM EMBODYING A FLUIDIZED BED

Dexter A. Smith, Pittstown, N.J., and Richard Lang, Kent, England, assignors to Bowen Engineering, Inc., North Branch, N.J.
Filed Dec. 27, 1972, Ser. No. 318,779
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 D **15 Claims**

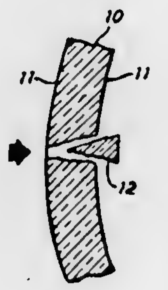


1. In a spray drier of the type that includes a drying chamber having a lower, inverted-frusto-conical product outlet portion, means for introducing dissolved or suspended solids into the chamber in a carrier liquid, means within the chamber for atomizing said liquid, and means for introducing a first gaseous drying medium into the upper part of the chamber for drying the atomized solids-containing liquid to provide dried solids, the improvement comprising:

a. exhaust means for said first gaseous medium extending axially of said product outlet portion, said exhaust means having its inlet intermediate the ends of the outlet portion;
b. a bedplate pervious to the passage of a second gaseous medium introduced for fluidizing said dried solids, said bedplate providing a declining path for flow of the dried solids therealong, said bedplate extending about said gaseous exhaust means at the lower end of the chamber and having along said path a low point, said bedplate having at said low point a product discharge outlet through which to discharge said dried solids from the chamber; and
c. said perforate bedplate providing means including a plenum below the bedplate for directing said second gaseous medium through the bedplate into fluidizing relation to the dried solids in flow therealong toward said product discharge outlet.

3,867,235
OPTICAL VIEWPOINT

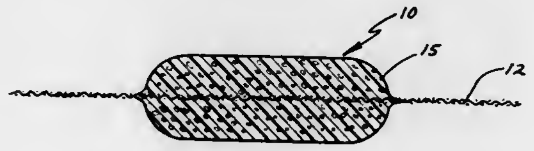
Hollis E. French, North Chelmsford, Mass.; Stanley C. Herbine, Reading, Pa., and Gerald L. McLeod, Lexington, Mass., assignors to Itek Corporation, Lexington, Mass.
Continuation-in-part of Ser. No. 724,832, April 29, 1968, abandoned. This application Nov. 2, 1972, Ser. No. 303,169
Int. Cl. B44f *1/00*
U.S. Cl. 161—2 **10 Claims**



1. An optical viewport consisting essentially of an optically clear, relatively brittle, glass layer which is susceptible to fragmentation upon the receipt of a substantial impact force at its outer surface and an optically clear, flexible, tough polymeric film sufficient to prevent rearward projection of glass fragments upon fragmentation of said brittle layer, said film being bonded to the inner surface of said brittle layer by a bond weak enough to cause partial delamination of the film from the brittle layer when said brittle layer receives an impact force sufficient to cause fragmentation thereof, such delamination helping to dissipate impact force.

3,867,236
BUOYANT PELLETED MATERIAL AND METHOD

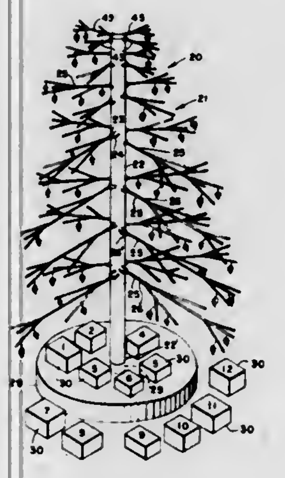
Maurice H. O'Link, St. Cloud, Minn., assignor to Stearns Manufacturing Company, Sauk Rapids, Minn.
Filed July 13, 1973, Ser. No. 379,122
Int. Cl. A41d *13/00;* **B32b** *3/00, 5/18*
U.S. Cl. 161—145 **1 Claim**



1. A buoyant pelleted sheet material, having in combination a sheet of fabric,
a buoyant pellet underlying said fabric,
a buoyant pellet overlying said fabric in register with said underlying pellet, and
said pellets being integrally joined together through said fabric.

3,867,237
PEAR TREE DECORATION

Patricia A. Kearney, R.R. No. 1, Box 13, Bradley, S. Dak. 57217
Filed Dec. 1, 1972, Ser. No. 311,144
Int. Cl. A47g *33/06*
U.S. Cl. 161—24 **1 Claim**



1. An artificial topless pear tree, said tree comprising a flat base, an upright pole mounted into said base and projecting vertically upward, a relatively broad branchlike platform at the top of the tree, said platform comprising at least three elongated branch poles each having its inner ends detachably engaging the top of the pole and projecting radially outward with each one having portions at least slightly inclined upward from horizontal to form a flat branch-like platform at the top of the pole, so that a relatively flat-topless tree is formed at the upper end of the tree, an artificial partridge resting centrally on the topless branch-like platform at the top of the tree, a plurality of branch poles beneath said top branch poles projecting radially outward, at spaced intervals toward the bottom of the tree, and progressively larger, in relation to one another, in a direction toward the bottom of the tree.

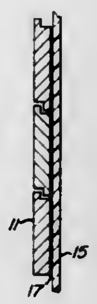
3,867,238
FLEXILE CORE MATERIAL FOR LAMINATED STRUCTURES AND METHOD OF PRODUCING THE SAME

Thomas J. Johannsen, Toronto, Ontario, Canada, assignor to Chemacryl Plastics Limited, Toronto, Ontario, Canada
Filed Mar. 6, 1973, Ser. No. 338,538
Claims priority, application Canada, Apr. 18, 1972, 140061
Int. Cl. B32b *3/16*
U.S. Cl. 161—37 **13 Claims**

1. A flexile core material for laminated structures comprising a sheet of rigid elastic foam plastic material, said sheet being provided with a plurality of intersecting, rectilinear, slots defining an array of contiguous discrete, polygonal blocklike elements, each element being articulately connected to its adjacent elements by hingepieces constituted by unslotted portions of said material, each slot extending for the full thickness of the sheet save at regularly spaced locations at which it extends for less than the full thickness to define said unslotted portions.

3,867,239
BODY ARMOR CONSTRUCTION

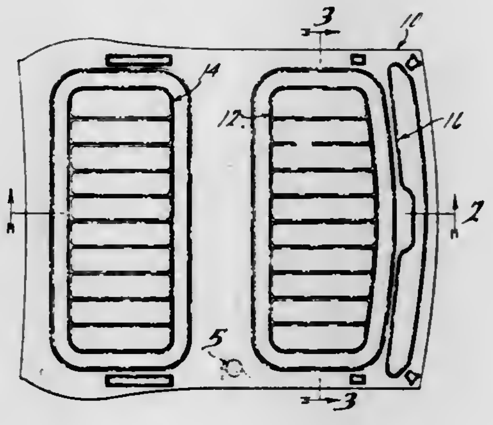
Anthony L. Alesi, Wayland; Verne E. Stimpert, Abington, and Roger A. Gagne, Natick, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 11, 1973, Ser. No. 368,905
Int. Cl. B32b *3/16*
U.S. Cl. 161—37 **5 Claims**



1. A flexible personnel armor material adapted to be compatible with the contours of a human body, said armor material comprising:
a flexible membrane material;
an array of platelets overlaying said membrane, said platelets having a stepped joint configuration so that the platelets lay in substantially one plane while the joints overlap each other, and;
means affixing said platelets to said flexible membrane.

3,867,240
DECORATIVE RESILIENT LAMINAR PANEL

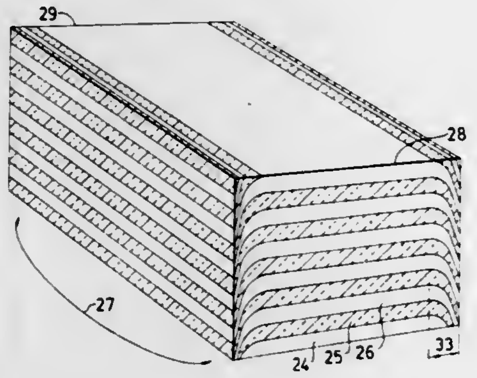
Ralph G. Doerfling, Walled Lake, Mich., assignor to Detroit Gasket & Manufacturing Company, Detroit, Mich.
Continuation-in-part of Ser. No. 255,524, May 22, 1972, abandoned. This application Mar. 26, 1973, Ser. No. 344,629
Int. Cl. G10k *11/04;* **E04b** *1/99;* **B32b** *3/26*
U.S. Cl. 161—41 **10 Claims**



1. A trim panel comprising a resilient laminar panel of a preselected shape-retaining contour including a thermoplastic resin foam core, a cover sheet overlying each face surface of said foam core and bonded thereto over substantially the entire surface thereof, each said cover sheet and said foam core formed with a plurality of perforations extending therethrough from one face to the opposite face of said panel and distributed at spaced intervals over substantially the entire area of said panel, said foam core being of a greater density in the region adjacent to said perforations therethrough than in the region spaced from said perforations, a sealer coating overlying substantially the entire exterior surfaces of the cover sheets and the inner surfaces of said perforations, and a pervious decorative coating extending over substantially the entire face surface of one of said cover sheets and secured thereto.

3,867,241
LAMINAR DISC OF MINERAL WOOL

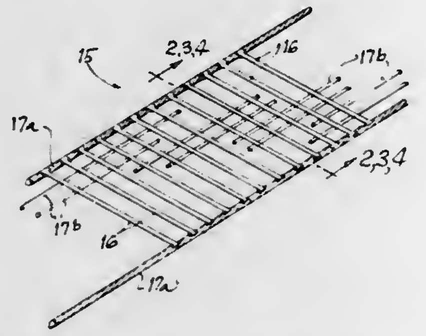
Ulf Karl Henrik Haglund, Skovde, Sweden, assignor to Rockwool Aktiebolaget, Skovde, Sweden
Filed Apr. 23, 1973, Ser. No. 353,535
Claims priority, application Sweden, Apr. 24, 1972, 5381/72
Int. Cl. B32b *3/04, 19/02*
U.S. Cl. 161—42 **7 Claims**



7. An article according to claim 5, in which the wave length of the laminated product is at least equal to the amplitude up to four-fold the amplitude.

3,867,242
SIMULATED WOVEN FABRICS

Samuel E. Miller, Winnetka, Ill., assignor to Quick Service Textiles, Inc., Chicago, Ill.
Filed Dec. 26, 1973, Ser. No. 428,324
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **17 Claims**



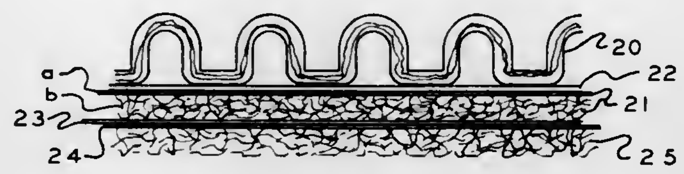
1. In a fabric simulating woven fabric comprising a plurality of parallel threads disposed in one direction to constitute a warp including a selvage warp thread at each edge of the fabric and a plurality of parallel filaments of plastic material disposed in a direction intersecting said threads to constitute a filling, said respective pluralities being joined at their points of intersection, the improvement wherein the juncture of the filling filaments with the selvage warp threads are constituted as a butt joint and are smoothly merged into the selvage warp threads whereby the selvages are substantially free of irregularities.

3,867,243
LAMINATE STRUCTURE SUITABLE FOR CARPET USE AND METHOD OF MAKING

Frederick L. Stoller, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 100,702, Dec. 22, 1970, Pat. No. 3,733,226. This application Feb. 9, 1973, Ser. No. 330,905
Int. Cl. B32b *5/00*
U.S. Cl. 161—65 **13 Claims**

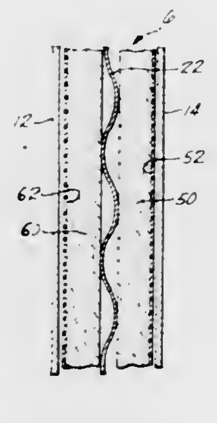
1. A structure composed of a facing yarn and a heat sealable, non-woven fabric heat sealed on at least one surface thereof, the facing yarn being fixed onto said surface of the non-woven fabric.

12. A structure according to claim 1 suitable for non-slip carpeting use composed of non-woven thermoplastic fabric heat sealed on at least one surface thereof, the facing yarn being fixed onto said heat sealed surface under adhesion producing conditions.



3,867,244
INSULATION AND CONDENSATION CONTROL BLANKET

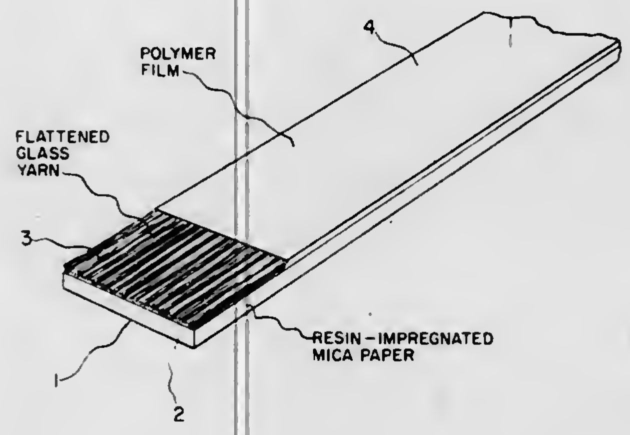
Clarence R. Adams, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.
Division of Ser. No. 210,882, Dec. 22, 1971, Pat. No. 3,740,905. This application Feb. 5, 1973, Ser. No. 329,769
Int. Cl. B32b *3/28*
U.S. Cl. 161—133 **4 Claims**



1. An insulation blanket for use within a climate controlled chamber having cold exterior walls; said blanket having a sandwich construction comprising: a corrugated metallic foil member centrally located between an inner layer and an outer layer of insulating material and oriented such that the corrugations extend from one end to an opposite end of said blanket; said inner layer of insulating material comprising a non-wicking glass fiber mat having relatively flat sides with one side pressed against raised portions of the corrugations of said foil member to thereby cooperate with the valleys of said corrugations to form open passageways extending from one end to the opposite end of said blanket; said inner layer of insulating material being capped with a water permeable cover; each of said inner and outer layers having predetermined thicknesses to provide means to normally maintain the temperature of said metallic foil member within a range suitable for condensation of water vapors and draining of condensate out of said blanket along said open passageways and wherein said outer layer of insulating material comprises a closed cell foam adhering to the foil member, and said water permeable cover on said inner layer of insulating material includes a reflective coating for minimizing radiant heat losses.

3,867,245
ELECTRICAL INSULATION

Clairmont J. Herman, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed June 12, 1972, Ser. No. 262,113
Int. Cl. B32b *3/18, 19/06*
U.S. Cl. 161—143 **4 Claims**



1. Electrical insulating tape having a layer of resin impregnated micaceous paper, superimposed thereon a plurality of flattened glass yarns disposed in spaced, generally lengthwise parallel fashion and superimposed thereon a layer of polymer film.

3,867,246
CHLORINE-FREE MULTIPLE STEP BLEACHING OF CELLULOSE

Gerhard Hebbel, Traisa, and Horst Kruger, Darmstadt, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Filed Apr. 16, 1973, Ser. No. 351,783
Claims priority, application Germany, Apr. 21, 1972, 2219505
Int. Cl. D21c *1/04, 3/04, 9/16*
U.S. Cl. 162—76 **20 Claims**

1. A plural step process for the chlorine free bleaching of cellulose in an aqueous medium comprising bleaching in a first step with a peroxide or hydroperoxide under alkaline conditions wherein the pH is 8–13, then in a second step with a percarboxylic acid or water soluble salt thereof under acid conditions wherein the pH is 4.5–6.5 and then in a third step again with a peroxide or hydroperoxide under alkaline conditions wherein the pH is 8–13.

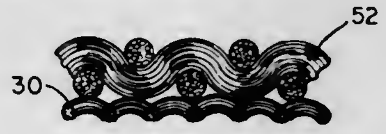
3,867,247
ADHESIVE CEMENTS CONTAINING A SULFONATED DERIVATIVE OF BUTYL RUBBER AND LAMINATES THEREFROM

Charles P. O'Farrell, Clark, and John J. Higgins, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.
Filed Dec. 17, 1971, Ser. No. 209,414
Int. Cl. C08d *9/16*
U.S. Cl. 161—88 **13 Claims**

1. A laminate containing at least two substrates bonded together with an adhesive elastomeric solvent based cement of a sulfonated derivative of a butyl rubber having a viscosity average molecular weight of about 100,000 to about 450,000 containing between about 0.1 and about 5.0 mol % of sulfo groups, and as a tackifier, between about 5 and about 90 parts by weight of at least one organo thermoplastic resin having a sotening or melting point above 50°C per 100 parts by weight of elastomers wherein said substrates are independently selected from the group consisting of porous and non-porous materials, wherein said non-porous materials are independently selected from the group consisting of strips or sheetings of polystyrene, polyurethane, cellophane, polypropylene, polyethylene, Mylar, cellulose acetate and metals.

3,867,248
COMPACTED COMPOSITE FABRICS USING THERMOPLASTIC ADHESIVES

Jackson Bauer, Croydon, Pa., assignor to Collins and Aikman Corporation, New York, N.Y.
Division of Ser. No. 863,966, Oct., 1969, Pat. No. 3,666,595. This application Feb. 24, 1972, Ser. No. 229,194
Int. Cl. B32b *15/02*
U.S. Cl. 161—88 **4 Claims**



1. The composite textile fabric dimensionally stabilized against shrinkage comprised of a plurality of plies, at least one of which is a textile fabric, and wherein said plies are in the form of relatively flexible and compactable continuous sheets, said plies being compacted into a mating curved fan folded configuration with adjacent plies being bonded together at their interface with a hot melt adhesive, said adhesive being substantially disposed between said plies and becoming flowable above 160°F. and below the softening temperature of said plies, said hot melt adhesive in its flowable state forming a viscous bond between said plies of sufficient strength to prevent delamination of the plies during compaction and wherein the hot melt adhesive in its flowable state configures to the mating curved fan folded configuration of said plies.

3,867,249
PLASTIC COOKING FILM

Peter T. Vitale, Clifton, and Leonel M. Paixao, Trenton, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Sept. 25, 1972, Ser. No. 291,611
Int. Cl. B32b *3/30*
U.S. Cl. 161—116 **5 Claims**

1. A wrapping material for surrounding a food article during oven cooking said wrapping material comprising a plastic, heat resistant, film material having a thickness from about 0.25 to about 1.0 mil, means for maintaining said film material in close proximity to said food article, said film material having an inner surface and an outer surface, said inner surface including a pattern of irregularities having a density from about 100 to 1,000 per square inch and including rounded projections extending from said inner surface from about 20 to about 100 mils whereby said wrapping material is resistant to bumping when a liquid oil-water component is present in a ratio of oil to water of from about 1:4 to 40:1.

3,867,250
STRAW MATS FOR SOIL EROSION CONTROL

Erwin M. Jankowiak, Sanford, and Gerald H. Brandt, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 19, 1973, Ser. No. 417,310
Int. Cl. C08f *45/18*
U.S. Cl. 161—271 **8 Claims**

1. A coherent air and moisture permeable straw mat for covering soil to prevent wind and rain erosion thereof, said mat comprising straw stalks distributed randomly into a layer with the stalks adhered together at their points of contact with each other with at least 75 pounds per ton of straw of a water resistant adhesive consisting essentially of (1) an interpolymer of less than 60 weight percent of an alkenyl aromatic monomer, wherein an alkenyl group is attached directly to an aromatic nucleus, at least 40 weight percent of an open chain

conjugated diolefin having from 4 to about 9 carbon atoms, and an unsaturated carboxylic acid or anhydride, (2) from about 0.5 to 2.5 weight percent based on polymer solids of a water soluble cellulose ether and (3) from about 0.7 to 2.5 weight percent of a water-soluble organo sulfonate having at least one sulfonate group attached to an aromatic ring and represented by the formula:

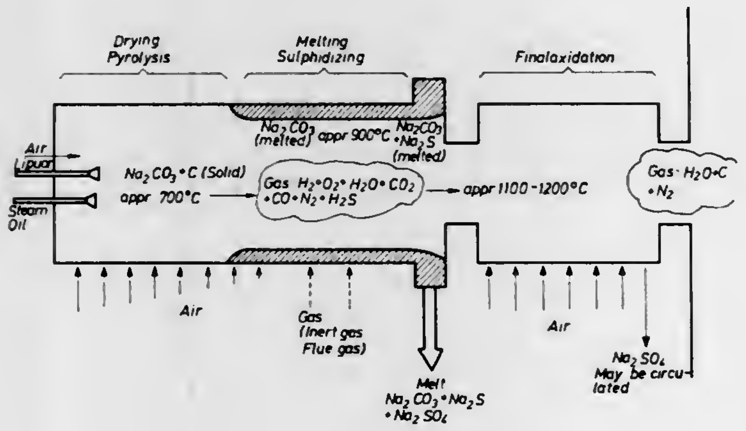
$$R—[Ar\ SO_3]\ M$$

wherein R is an alkyl chain having from about 8 to 20 carbon atoms and combinations of said chains with ethoxy chains, phenyl, phenoxy and alkyl or alkoxy substituted phenyl or phenoxy: Ar is phenyl or naphthyl and M is an alkali metal or ammonia.

3,867,251
COMBUSTION OF ALKALINE COOKING LIQUOR

Gunnar K. Holme, Djursholm, Sweden, assignor to Angpanneforeningen, Stockholm, Sweden

Filed Mar. 26, 1973, Ser. No. 344,652
Claims priority, application Sweden, Apr. 4, 1972, 4304/72
Int. Cl. D21c *11/12*
U.S. Cl. 162—30 12 Claims

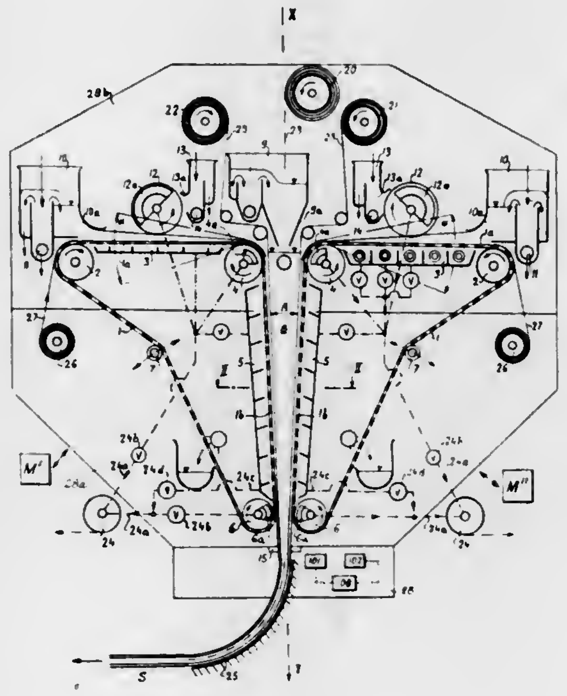


1. A method of treating evaporated alkaline cooking liquor obtained from pulp production in order to recover alkali carbonate and alkali sulphide, comprising introducing a plurality of streams of hot oxygen-containing gas tangentially into a cylindrical reaction chamber to obtain a first area of tangential gas supply extending substantially from one end of said chamber in the axial direction thereof, injecting evaporated liquor of the aforesaid type into said end of the chamber and into contact with said tangential gas supply, controlling the reaction conditions within said first area to obtain a temperature level in a first zone sufficient to dry and pyrolize the injected liquor into alkali carbonate and carbon, and also causing the formation of combustion gas containing the sulphur in the injected liquor in the form of H_2S, controlling the reaction conditions in a second zone following said first zone in the axial direction of the cylindrical chamber to obtain in said second zone a temperature level sufficient to smelt said alkali carbonate and cause a sulphidizing reaction so that a smelt containing alkali carbonate and alkali sulphide is obtained which is removed by tapping from said second zone, introducing a plurality of streams of hot oxygen-containing gas tangentially into said cylindrical chamber to obtain a second area of tangential gas supply extending substantially from said second zone in the axial direction of said chamber, controlling the reaction conditions within said second area to obtain a temperature level in at least one additional zone therein sufficient to oxidize the combustion gases from the preceding zones.

3,867,252
TWIN-WIRE MULTI-PLY PAPER MAKING MACHINE

Michal Skrabak, 5 Urbankova; Ernest Vavrik, 35 Budovatelska; Juraj Jadubik, 77 Olbrachtova, and Stanislav Kolarik, 6 Fucikova, all of Bratislava, Czechoslovakia

Division of Ser. No. 164,060, July 19, 1971, abandoned, which is a division of Ser. No. 858,899, Nov. 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 630,605, April 13, 1967, abandoned. This application June 12, 1973, Ser. No. 369,252
Claims priority, application Czechoslovakia, Apr. 20, 1966, 2632-66
Int. Cl. D21f *1/00, 11/04;* D21h *1/08*
U.S. Cl. 162—268 8 Claims

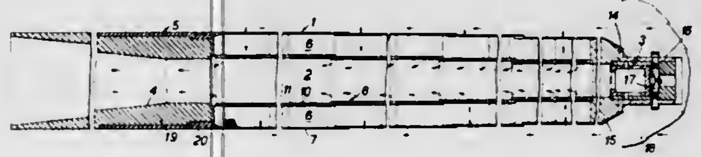


1. Apparatus for making paper products composed of multiple interfelted fibrous plies, comprising a pair of travelling forming wires; means supporting each of said forming wires to provide a substantially horizontal run followed by a downwardly inclined run, said downwardly inclined runs of said forming wires being juxtaposed and defining between themselves a downwardly converging narrow gap; means depositing stock on each of said horizontal runs for forming thereon respective first fibrous plies of deposited fibers which travel to the respective inclined runs; travelling forming means for forming from fibrous stock a pair of second fibrous plies each having a first side facing said travelling forming means, and for depositing each of said second plies on one of said horizontal runs so that the second side faces the first ply on the respective horizontal run; means for depositing fibrous stock on said travelling forming means for forming thereon said second fibrous plies which are deposited on said horizontal runs and travel to the respective inclined runs, so that said first sides become juxtaposed in said gap; headbox means for admitting into said gap and between the formed second fibrous plies a fibrous dispersion in a liquid phase; and means for withdrawing the liquid phase of said fibrous dispersion from said gap through the respective formed first and second fibrous plies so that the deposited fibers of said plies are first released again due to the filtration of the liquid phase through said first and second fibrous plies, and thereupon become interfelted with the fibers of said dispersion which are retained within said gap and form between said second fibrous plies an additional ply which is interfelted with and bonds said first and second fibrous plies together.

3,867,253
NUCLEAR REACTORS

Charles Peter Gratton, Dorchester; Alan Thomas Hoper, Weymouth, and Alan Kenward, Dorchester, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 796,988, Feb. 6, 1968, abandoned. This application Oct. 6, 1971, Ser. No. 187,182
Int. Cl. G21c *3/04*
U.S. Cl. 176—40 5 Claims

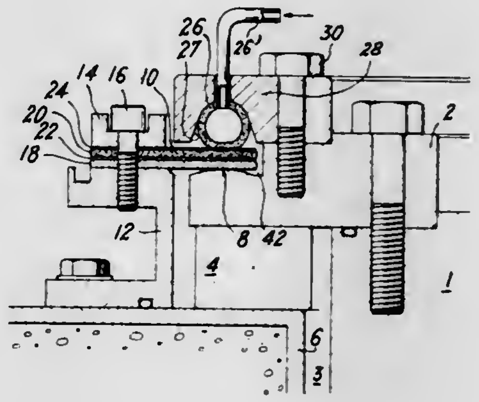


1. A gas cooled fast nuclear reactor having a pair of generally parallel first and second grid plates, a plurality of elongated tubular coolant permeable fuel assemblies extending between said grid plates from one to the other, the sides of the grid plates facing away from each other defining inlet and outlet areas, each assembly including, inner and outer generally parallel perforated tubular elements and a porous fuel bed of fission product retaining fuel particles contained between the tubular elements along a major part of the length of the assembly, an elongated coolant outlet face formed by the bore wall of the inner tubular element of the tubular assembly, an elongated coolant inlet face formed by the outer wall of the outer tubular wall of the tubular assembly; elongated coolant supply channels adjacent and bounded in part by said inlet faces and extending along the length of said inlet faces, the supply channels including means for constraining all of the gas entering the supply channel to flow through the fuel bed, means for introducing coolant to the supply channels from the inlet area through said first grid, said supply channels thus defining a coolant flow path for coolant entering the supply channels to flow in series along the inlet faces and in parallel flow relation into and through the porous fuel beds and through the outlet faces, elongated coolant delivery channels adjacent and formed in part by said outlet faces and extending along the length of said outlet faces to receive gas from said coolant flow path, the delivery channels including means for contraining all of the gas entering the delivery channels through the fuel bed to flow outwardly through discharge oepnings, the coolant delivery channels terminating at said discharge openings which open into the outlet area beyond the said second grid, said delivery channels thus defining a path for the coolant to flow along the outlet faces to said discharge openings, the flow area of the delivery channels into the outlet area being substantially as large as the flow area of the delivery channels at the downstream end thereof, the increasing size of the coolant delivery channels from the upstream end thereof to the discharge opening constituting a means for decreasing the velocity of the coolant and hence increasing the pressure of the coolant along the length of the coolant delivery channels in the flow direction, and thus reducing the difference in the pressure drop across the porous fuel bed along the length of the elongated fuel assembly.

3,867,254
DEVICE FOR SEALING A ROTATING PLUG IN A NUCLEAR REACTOR

Robert Brandstetter, Meschers, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 234,013, March 13, 1972, abandoned. This application Sept. 11, 1973, Ser. No. 396,178
Claims priority, application France, Mar. 17, 1971, 71.09254
Int. Cl. G21c *19/00*
U.S. Cl. 176—87 4 Claims



1. A device for sealing a nuclear reactor plug rotating in a stationary bearing and secured to a ring disposed above the stationary bearing and resting on an annular track positioned on the bearing comprising a second annular friction track on the entire periphery of the top part of the ring, an annular base coaxial with the plug and secured in sealing-tight manner to the stationary bearing around the ring and the track, an annular seal mounted on the annular base and bearing on the friction track of the ring, said seal comprising at least one friction ring, an annular spring ring above and engaging said friction ring, a resilient annular ring above and engaging said spring ring and an annular clamping spring ring above and engaging said resilient ring, and retractable means for clamping said seal against said friction track mounted above said seal and disposed in a second ring secured to said first ring.

3,867,255
PROCESS OF MAKING YEAST PROTEIN ISOLATE HAVING REDUCED NUCLEIC ACID CONTENT

Jon Albert Newell, Webster Groves; Robert Dudley Seeley, Crestwood, and Ernest Aleck Robbins, High Ridge, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Nov. 29, 1972, Ser. No. 310,468
Int. Cl. A23j *1/18;* A23l *1/28*
U.S. Cl. 195—5 17 Claims

1. A process for producing a yeast protein product comprising the steps of:

a. Rupturing yeast cells,
b. Separating a solubles fraction containing nucleic acid and protein from an insoluble cell wall debris fraction,
c. Adding nuclease to the solubles fraction,
d. Hydrolyzing the nucleic acid with the added nuclease at a pH of about 5 to about 10 and a temperature of about 30° to about 60°C. for up to four hours, and
e. Separating an insoluble fraction containing said protein from a soluble fraction containing said nucleic acid.

3,867,256
METHOD FOR PRODUCTION OF ALPHA-GALACTOSIDASE BY MICROORGANISM

Shigeyoshi Narita, Kitami; Hirosuke Naganishi, Hiroshima; Chikashi Izumi; Akiyoshi Yokouchi, both of Kitami, and Masaru Yamada, Tokyo, all of Japan, assignors to Hokkaido Sugar Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1974, Ser. No. 437,536
Int. Cl. C12d *13/10*

U.S. Cl. 195—11 2 Claims

2. A method for the hydrolysis of raffinose contained in beet molasses or beet juice, which comprises culturing the mold of *Circinella muscae* (Berlese et de Toni) nova typica coreanus (ATCC 20394) in a medium containing substances capable of inducing α-galactosidase, adding the mold containing the α-galactosidase thus produced to beet molasses or beet juice, and maintaining said beet molasses or beet juice under conditions permitting hydrolysis of raffinose contained in said beet molasses or beet juice.

3,867,257
BLEOMYCINIC ACID AND PROCESS FOR PREPARING THEREOF

Hamao Umezawa; Yasushi Takahashi; Tadashi Shirai, and Akio Fujii, all of Tokyo, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 252,252, May 11, 1972,. This application Sept. 21, 1972, Ser. No. 290,986
Claims priority, application Japan, May 15, 1971, 46-32232
Int. Cl. C12d *9/00*

U.S. Cl. 195—81 6 Claims

1. A process for preparing a bleomycin which comprises hydrolyzing bleomycin in the presence of a strain of a Fusarium genus or Helminthosporium genus enzyme system and then reacting with an amine.

3,867,258
LACTATE DEHYDROGENASE TEST MATERIAL

Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 8, 1973, Ser. No. 414,034
Int. Cl. G01n *31/14, 33/16*

U.S. Cl. 195—99 14 Claims

1. A diagnostic test indicator for the determination of the concentration of lactate dehydrogenase in sera comprising a bibulous material having diaphorase covalently bound to a hydrophilic, cross-linked, sulfited aldehyde or ketone polymer dispersed throughout the interstices thereof which contains therein the dried residue resulting from the impregnation thereof with

1. an alkali lactate salt,
2. nicotinamide-adenine-dinucleotide and
3. a tetrazolium salt.

3,867,259
LACTATE DEHYDROGENASE TEST MATERIAL

Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 8, 1973, Ser. No. 414,035
Int. Cl. G01n *31/14, 33/10*

U.S. Cl. 195—99 17 Claims

1. A diagnostic test indicator for the determination of the concentration of lactate dehydrogenase in sera comprising a bibulous material which contains therein the dried residue resulting from the impregnation thereof with

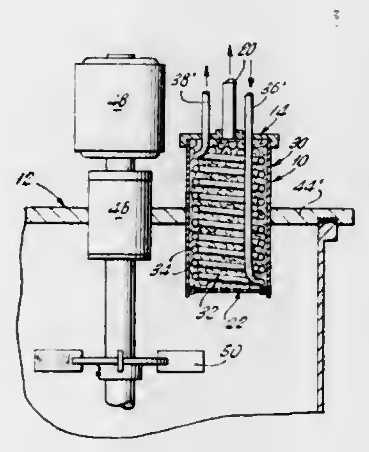
1. a tetrazolium salt,
2. a chromatographic effect preventor,
3. an anti-oxidant,
4. diaphorase and
5. a nicotinamide-adenine-dinucleotide-alkali lactate salt mixture.

3,867,260
MASS TRANSFER CONDENSER, PARTICULARLY FOR USE WITH FERMENTING VESSELS

David Freedman, and Richardo Sadir, both of Highland Park, N.J., assignors to New Brunswick Scientific Co., Inc., New Brunswick, N.J.

Continuation of Ser. No. 827,280, May 23, 1969, abandoned. This application Mar. 13, 1972, Ser. No. 234,273
Int. Cl. B01d *3/00;* **F28b**

U.S. Cl. 202—185 E 1 Claim



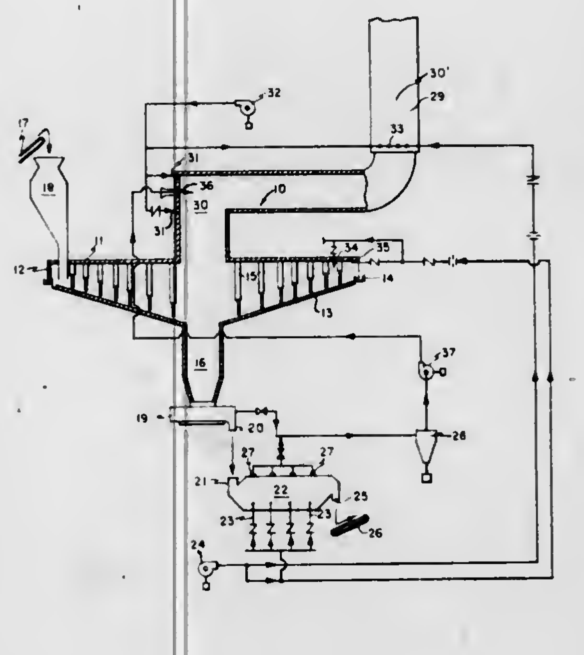
1. In a condenser, upper wall means for discharging out of an enclosure defined in part by said upper wall means for the gaseous phase of a moisture-carrying gas, lower wall means situated beneath and spaced from said upper wall means for admitting the moisture-carrying gas into said enclosure and for discharging the liquid phase of the moisture-carrying gas out of said enclosure, said lower wall means also defining part of said enclosure, uninsulated side wall means extending between said upper and lower wall means and surrounding said enclosure to define the latter together with said upper and lower wall means, tubular means situated within said enclosure for conducting a coolant along a predetermined path in said enclosure, said tubular means being in the form of a coil situated within said enclosure, spaced inwardly from said side wall means thereof, and extending substantially throughout the entire depth between said upper and lower wall means, said upper and lower wall means forming a pair of end wall means through at least one of which said tubular means extends into said enclosure while remaining entirely out of engagement with said side wall means, and mass transfer means packed in said enclosure around said tubular means and in engagement with all of said wall means, said tubular means extending through only one of said end wall means, and said tubular means including elongated supply and discharge portions extending through said one end wall means into said enclosure and respectively communicating with opposite ends of said coil, said supply portion of said tubular means extending along the interior of said enclosure from said one end wall means to the region of the other of said end wall means before communicating with one end of said coil while said discharge portion of said tubular means extends through only a relatively short distance beyond said one end wall means into said enclosure into communication with an adjoining end of said coil, so that coolant will first flow through substantially the entire depth of said enclosure along said supply portion of said tubular means before reaching one end of said coil and will then return along said coil toward said one end wall means before reaching said discharge portion of said tubular means, a fermenting vessel having a top wall formed with an opening through which said side wall means extends with said top wall being situated between said upper and lower wall means so that said lower wall means is situated within said fermenting vessel to receive directly therefrom a moisture-carrying gas from which liquid is to be condensed, whereby the condensed liquid will flow through said lower wall means directly back into said fermenting vessel.

3,867,261
FUEL INCINERATION SYSTEM FOR CALCINER

William E. Solano, Monroeville, Pa., assignor to Salem Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1973, Ser. No. 387,474
Int. Cl. C10b *27/04, 1/10, 21/00*

U.S. Cl. 202—263 14 Claims



1. A fuel incineration system for a calciner comprising heat treating volatile evolving materials within a substantially air tight enclosure having a flue stack for directing gases fed thereto from said enclosure into the atmosphere, a substantially air tight passageway for the feed of hot processed products from said enclosure to a substantially air tight quenching area, subjecting said processed products to a cooling operation while in said quenching area, a substantially air tight conduit extending from said quenching area to an incinerator area positioned intermediate the said enclosure and said flue, combusting in said incinerator area unburned volatiles and carbonaceous particulates emanating from said enclosure and from said quenching area to thereby exit from said flue a gas substantially free of any air contaminants.

3,867,262
PRODUCTION OF TERPENELESS ESSENTIAL OILS

Louis B. Rockland, Orinda, and Charles R. Debenedict, Glendale, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 21, 1973, Ser. No. 362,620
Int. Cl. C07g *17/00;* **B01d** *3/12*

U.S. Cl. 203—41 5 Claims

1. A process for preparing a terpeneless essential oil, which comprises

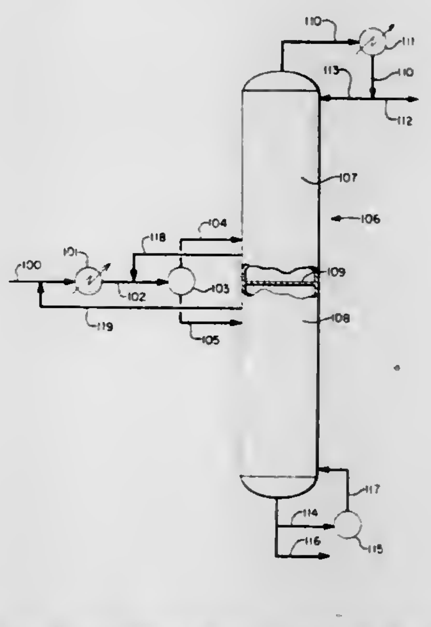
- a. molecularly distilling the essential oil to separate the volatile fraction as the distillate from non-volatile components,
- b. adsorbing said distillate on neutral alumina which has been pre-treated with ethyl acetate,
- c. eluting the alumina with a terpenophilic solvent to remove the terpene constituents of the essential oil,
- d. eluting the alumina with an oxygenated organic solvent to remove the oxygenated constituents of the essential oil, and
- e. recovering a substantially terpeneless essential oil from the oxygenated organic solvent eluate.

3,867,263
PRODUCTION AND PURIFICATION OF VINYL CHLORIDE

Henry H. Wall, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 95,972, Dec. 7, 1970, abandoned, which is a division of Ser. No. 632,002, April 19, 1967, abandoned. This application Mar. 11, 1974, Ser. No. 449,769
Int. Cl. B01d *3/14, 3/32*

U.S. Cl. 203—81 9 Claims



1. A method for distilling a multi-component stream having a gaseous phase and a liquid phase comprising:

- A. separating the gaseous phase from the liquid phase;
- B. passing the separated gaseous phase and liquid phase to a distillation column divided into a separate upper zonule and a separate lower zonule by a blind plate wherein the separated gaseous phase is passed to the upper zonule for separate distillation thereof and the separated liquid phase is passed to the lower zonule for separate distillation thereof;
- C. distilling the gaseous phase and the liquid phase in their respective zonules while,
  - 1. withdrawing from the upper zonule,
    - a. as a substantially pure gaseous distillate, one of the components of said gaseous phase, and
    - b. as a liquid distillate, at least one other component of said gaseous phase other than the component in the gaseous distillate, and
  - 2. withdrawing from the lower zonule,
    - a. as a liquid effluent, components of said liquid phase, and
    - b. as a gaseous effluent, at least one other component of said liquid phase other than the components in the liquid effluent; and
- D. recombining at least part of the liquid distillate and at least part of the gaseous effluent with the multi-component stream.

3,867,264
ELECTROFORMING PROCESS

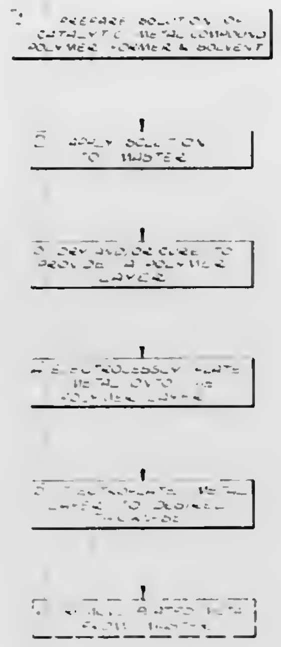
Bradley A. Carson, Monrovia, Calif., assignor to Bell & Howell Co., Chicago, Ill.

Filed Mar. 30, 1973, Ser. No. 346,564
Int. Cl. C23b *7/00, 5/60*

U.S. Cl. 204—4 11 Claims

1. An electroforming process for duplicating the surface contour of a form comprising the steps of:

coating the surface of a plastic form having a surface contour to be duplicated with a mixture comprising the combination of a metal compound capable of being reduced to its active metal constituent so as to form catalytic bonding sites for a further metal plating process, binder material comprising one or more polymers and/or polymer formers, and at least one solvent for said binder material and metal compound, said binder material forming a polymeric substance having poor adhesion for said form surface;


PREPARE SOLUTION OF CATALYTIC METAL COMPOUND POLYMER FORMER & SOLVENT
APPLY SOLUTION TO MASTER
DRY AND/OR CURE TO PROVIDE A POLYMER LAYER
ELECTROLESSLY PLATE METAL ONTO THE POLYMER LAYER
ELECTROPLATE METAL LAYER TO DESIRED THICKNESS

drying said binder to a polymer layer on said form;
electrolessly plating a conductive metal layer on said polymer layer;
electroplating metal onto said electrolessly plated metal to a thickness of at least 0.5 mil; and
removing said plated metal from said form.

3,867,265
PROCESS FOR ELECTROPLATING AN ALUMINUM WIRE

Hans Olof Hansson, Sollentuna, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Continuation of Ser. No. 128,742, March 29, 1971, abandoned. This application Feb. 27, 1973, Ser. No. 336,171
Int. Cl. C23b *5/58*
U.S. Cl. 204—28 **3 Claims**

1. In a process for electroplating an aluminum wire with a metal selected from the group consisting of nickel, copper, tin, zinc and cadmium which comprises the steps:

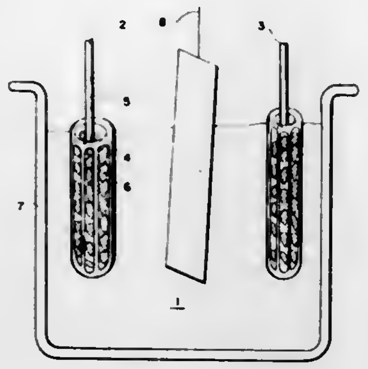
i. etching the wire through an acid bath,
ii. rinsing the wire by passing it through water, and
iii. electroplating the wire with at least one of said metals by passing the wire through an electrolyte which contains at least one of a fluoroborate or sulfamate salt of at least one of said metals, the aluminum wire being the cathode and the selected metal the anode,

said acid bath consisting of 4 percent by weight of 48 percent hydrofluoric acid, 30 percent by weight of 37.9 percent of hydrochloric acid, and 66 percent by weight of water, and being at a temperature of about 60° C, said wire being in contact with the acid bath for about 13 seconds.

3,867,266
METHOD OF PLATING ALUMINUM-CHROMIUM ALLOYS

Akira Miyata; Hideyo Okubo; Chikayoshi Tomita; Akio Suzuki, and Hidenobu Ito, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa, Japan
Filed May 5, 1972, Ser. No. 250,525
Claims priority, application Japan, May 14, 1971, 46-32700
Int. Cl. C23b *5/32*
U.S. Cl. 204—39 **6 Claims**

1. A method of electroplating a chromium-containing aluminum coating on the surface of a metal article by immersing said metal article in a molten aluminum salt bath comprising aluminum chloride and containing at least one alkali metal chloride and chromium ions in an amount of 1 to 5.5 g/l and electrodepositing a coating of an aluminum-chromium alloy onto the surface of said metal article.



3,867,267
CHROMIUM PLATING

Henry Brown, Huntington Woods, Mich., and William A. Boycott, Ontario, Canada, assignors to Oxy Metal Finishing Corporation, Warren, Mich.
Filed Nov. 15, 1973, Ser. No. 416,124
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **7 Claims**

1. An aqueous acidic hexavalent chromium electroplating bath containing dissolved therein an organic compound selected from the class of carbonyl substituted benzene sulfonamides and their organic hydrolytic products in concentrations of about 0.1 to about 10 grams per liter to cause an increase in craze-cracking tendency of the chromium plate derived from the bath.

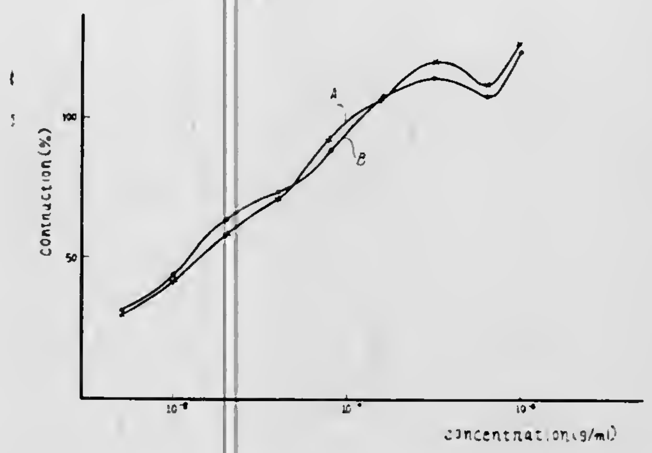
3,867,268
RECOVERY OF ZINC FROM ZINC SULPHIDES BY DIRECT PRESSURE LEACHING

Paul Kawulka; Walter J. Haffenden, both of Alberta, and Vladimir N. Mackiw, Islington, Ontario, all of Canada, assignors to Gordon Sherritt Mines Limited, Toronto, Ontario, Canada
Filed Aug. 21, 1973, Ser. No. 387,833
Claims priority, application Canada, Nov. 20, 1972, 157147
Int. Cl. C22d *1/22;* **C22b** *19/22*
U.S. Cl. 204—119 **14 Claims**

1. The process for extracting zinc from iron containing zinciferous mineral sulphides which comprises the steps of dispersing finely divided iron containing zinciferous sulphides in an aqueous sulphur acid solution to form a slurry; adjusting the relative amounts of acid and said sulphides in the slurry such that there is at least sufficient acid present to combine with the zinc content of said sulphides as zinc sulphate, providing in said slurry an effective amount of a surface active compound compatible with the acid sulphate leach solution which is operative, under the reaction conditions of the following oxygen reaction step, to render said sulphides wettable by aqueous acid solution in preference to molten sulphur, reacting the slurry with free oxygen bearing gas in a closed reaction vessel at a temperature above the melting point of sulphur but below that temperature at which any substantial portion of the sulphide sulphur is oxidized to sulphate form, continuing said reaction with active agitation to effect substantially complete extraction of zinc values from said sulphides as soluble zinc sulphate with concurrent conversion of sulphide sulphur associated with said zinc values to elemental form, and separating product leach solution containing dissolved zinc values from the undissolved residue.

3,867,269
PROCESS FOR PRODUCING PEPTIDES

Yasutsugu Shimonishi, Nishinomiya, and Satomi Takahashi, Osaka, both of Japan, assignors to The President of Osaka University, the Ministry of Education, Japanese Government, Osaka-shi, Japan
Filed Mar. 5, 1974, Ser. No. 448,237
Claims priority, application Japan, Mar. 7, 1973, 48-27438
Int. Cl. B01j *1/12*
U.S. Cl. 204—158 S **7 Claims**



1. In producing a peptide by coupling an amino acid or oligomer thereof with an amino acid or its oligomer bound to a resin to form a peptide on the resin, cleaving the peptide from the resin and thereafter extracting the peptide, a process which is characterized in that said peptide forming reaction is conducted under the irradiation of ultrasonic waves.

3,867,270
UV CURING OF CONJUGATED DIENE-CONTAINING BUTYL RUBBER

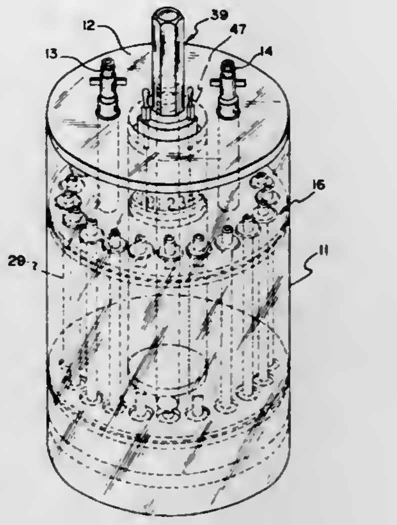
Alberto Malatesta, Brussels, Belgium, and Francis P. Baldwin, Summit, N.J., assignors to Esso Research and Engineering Company
Filed Sept. 13, 1973, Ser. No. 397,084
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.18 **10 Claims**

1. A method of vulcanizing a copolymer consisting of 85 to 99.5% by weight of an isoolefin having about 4 to about 7 carbon atoms combined with 15 to about 0.5% by weight of a conjugated diolefin having about 4 to about 14 carbon atoms containing in the linear backbone conjugated diene unsaturation which comprises blending with said rubber from 0.01 to 5.0 parts of an ultraviolet light-responsive photosensitizer per 100 parts of said rubber (phr) wherein said photosensitizer is selected from the group consisting of benzophenone, propiophenone, cyclopropyl phenyl ketone, acetophenone, 1,3,5-triacetyl benzene, benzaldehyde, thioxanthane, authraquinone, β-naphthyl phenyl ketone, β-naphthaldehyde, β-acetonaphthone, 2,3-pentanedione, benzil, fluorenone, pyrene, benzanthrone, and anthracene, and subsequently exposing said blend to ultraviolet radiation for a time sufficient to crosslink at least 70 percent of said rubber.

3,867,271
GEL ELECTROPHORESIS APPARATUS AND METHOD

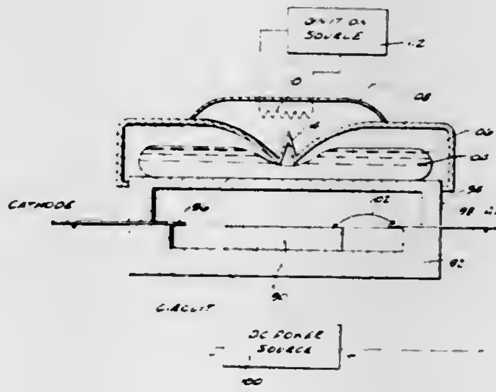
Stanton Albert Hoefer, San Francisco, Calif., assignor to Hoefer Scientific Instruments, San Francisco, Calif.
Filed Aug. 13, 1973, Ser. No. 387,693
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **16 Claims**

1. A gel electrophoresis apparatus comprising a container having an open end, a gel tube holder removably fitted in said container, sealing means cooperating between said container and said gel tube holder to define an upper and lower buffer chamber within said container and a cooling chamber disposed therebetween, means in communication with said cooling chamber for providing an inlet and an outlet path therefore, a plurality of gel tubes extending through said cooling chamber having internal bores communicating with said first and second buffer chambers, and means mounted within said container for providing an electrical potential between said upper and lower buffer chambers.



3,867,272
ELECTROLYTIC ANTICOMPROMISE APPARATUS

John B. Rust, Malibu, and Gary S. Smolker, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 51,312, June 30, 1970, Pat. No. 3,775,274. This application Jan. 23, 1973, Ser. No. 325,984
Int. Cl. B01k *3/00;* **C23b** *3/12*
U.S. Cl. 204—194 **14 Claims**



1. An anticompromise apparatus for destruction of the identity and usefulness of an otherwise operable electronic microcircuit comprising:

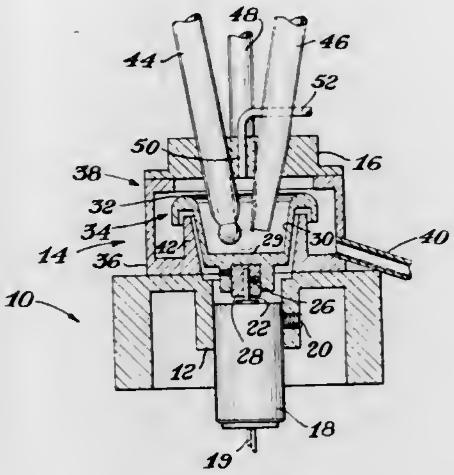
a source of direct current electrical power having an anode and a cathode, said anode coupled to the microcircuit;
means coupled to the microcircuit for containing a solution of electrolyte in isolation from the microcircuit and from said cathode, said solution including a composition capable of electro-de-plating at least portions of the microcircuit upon supply of the power from said source to said solution; and
means coupled to said containing means for placing said solution in contact with the microcircuit and for effecting an electrical circuit including said source, said solution and the microcircuit for the destruction of at least the portions of the microcircuit in a nonselective uncontrolled manner whereby identification and recognition of at least the portions is frustrated.

3,867,273

AUTOMATIC ELECTROMETRIC ANALYSIS

Jack J. Gilbert, Suffern, N.Y., assignor to Photovolt Corporation, New York, N.Y.

Filed July 26, 1972, Ser. No. 275,298
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R **8 Claims**



1. In a device for electrometric analyses of liquids comprising an analysis cell for containing a liquid to be analyzed, an electrometric sensing electrode adapted to contact liquid in said cell, means connected to the electrode for carrying out the electrometric analysis, means for introducing liquid into said cell and means for removing liquid therefrom, the improvement wherein the cell comprises:

a cell housing;

a cup having an open end, the cup being mounted for rotation with its open end uppermost, the open upper end of said cup being disposed within said housing in air communication therewith but spaced therefrom to provide an air gap between the open end of the cup and the housing;

means on the housing for introducing liquid into the cup across the air gap; including a liquid inlet port in the housing disposed above the open end of the cup and spaced therefrom;

means on the housing mounting the electrometric sensing electrode so that the electrode extends into said cup and is spaced therefrom; and

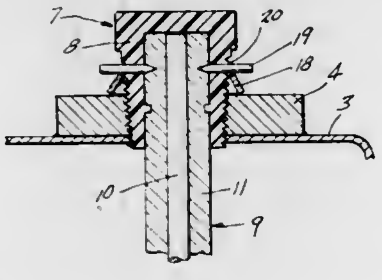
means for selectively rotating the cup at a first speed sufficient to mix liquid in the cup and at a second speed sufficient to expel the liquid from the cup by centrifugal force.

3,867,274

NOVEL ANODE FITTING

Roger Samuel Herman, Guilford, Conn., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 24, 1973, Ser. No. 409,034
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **13 Claims**



1. An anode fitting for use in the prevention of the corrosion of a metallic structure containing a corrosive liquid which comprises:

A. a non-metallic plug member comprising a threaded outer portion adapted to be threadedly received within an opening in the structure and a hollow cylindrical inner portion;

B. a cylindrical anode telescoped to said inner portion and secured thereto; and

C. means for electrically connecting said anode and said structure which comprises several metal pins in perpendicular relation to the long axis of said anode and partially embedded therein and extending beyond said plug member, and a metallic cup-shaped washer placed over the threaded portion of said member and adapted to be compressed between said pins and the exterior wall of said structure.

3,867,275

COAL LIQUEFACTION PROCESS

William K. T. Gleim, Island Lake, and Mark J. O'Hara, Mt. Prospect, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 9, 1973, Ser. No. 349,344
Int. Cl. C10g *1/04*
U.S. Cl. 208—8 **6 Claims**

1. A process for the liquefaction of coal which comprises the steps of:

a. contacting the coal, at a temperature of from about 600°F. to about 850°F., a pressure of at least about 100 atmospheres and a time period of from about ½ to about 24 hours, with a liquefaction solvent comprising a partially hydrogenated condensed ring aromatic hydrocarbon boiling above about 400°F. and having from 1 to 4 adjacent CH_2 groups in which the carbon atom of the CH_2 group forms part of the condensed ring structure, said solvent further comprising an alkane or cycloalkane C_{12} and heavier having a boiling point above about 400°F., the weight ratio of the first-mentioned solvent component to the second-mentioned solvent component being from about 1:2 to about 2:1;

b. separating the resultant mixture into a solids phase and a liquids phase;

c. recovering a first hydrocarbonaceous product from said liquids phase;

d. contacting said solids phase with a benzene or alkylbenzene solvent, the alkylbenzene having an alkyl group of from 1 to 4 carbon atoms, at a temperature of from about 50°F. to about 300°F., a pressure of from about 1 to about 10 atmospheres and a time period of from about ½ to about 24 hours; and e. recovering a second hydrocarbonaceous product from the mixture resulting from step (d).

3,867,276

HIGH OCTANE MOTOR FUEL PRODUCTION

Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

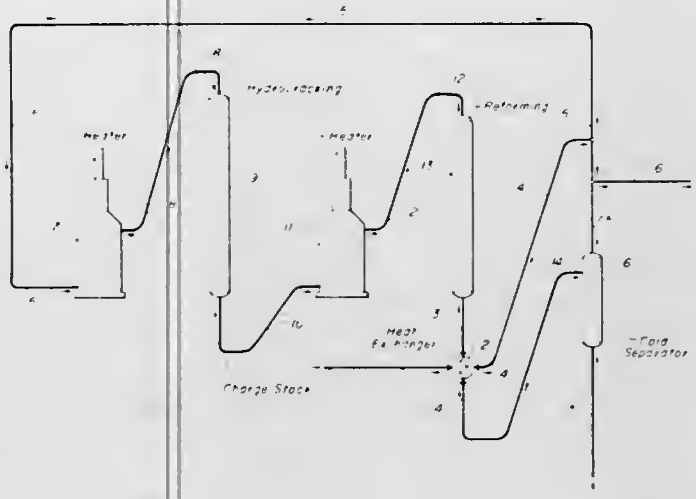
Continuation-in-part of Ser. No. 237,776, March 24, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 405,251
Int. Cl. C10g *37/10*
U.S. Cl. 208—60 **7 Claims**

1. In a process for the production of a high octane motor fuel which comprises the steps of:

a. reacting naphtha boiling range hydrocarbons containing cyclic components, with hydrogen, in a first reaction zone, in contact with a first catalytic composite of a Group VIII noble metal component and a zeolitic aluminosilicate carrier material and at a temperature in the range of about 350° F. to about 800° F. and a pressure from about 100 to about 400 psig.;

b. reacting the resulting first reaction zone effluent, without intermediate separation thereof, in a second reaction zone, in contact with a second catalytic composite comprising platinum and alumina, at a temperature in the range of about 800° F. to about 1,100° F. and at a pressure of from 100 to about 400 psig.; and

c. recovering said high octane motor fuel from the resulting second reaction zone effluent;



the method of maintaining the over-all exothermic temperature increase in said first reaction zone at a relatively high value while preventing a runaway exothermic reaction, which method comprises increasing said first reaction zone pressure within said range of from about 100 to about 400 psig. in response to catalyst deactivation.

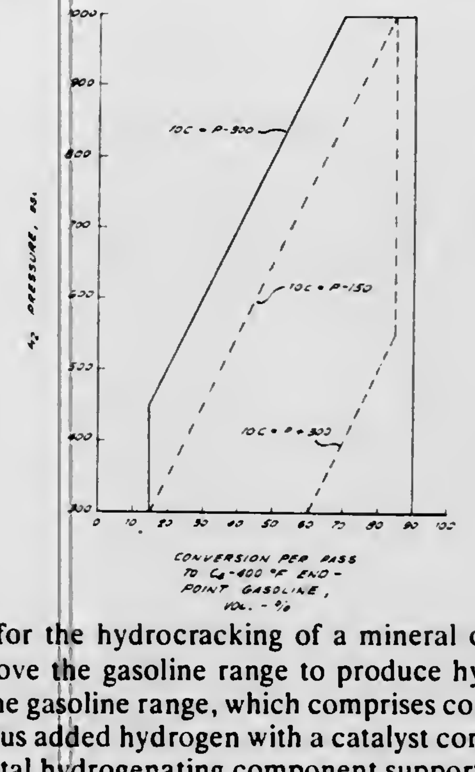
3,867,277
LOW PRESSURE HYDROCRACKING PROCESS

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 23, 1973, Ser. No. 363,246

Int. Cl. C10g *13/02*

U.S. Cl. 208—111 **17 Claims**



1. A process for the hydrocracking of a mineral oil feedstock boiling above the gasoline range to produce hydrocarbons boiling in the gasoline range, which comprises contacting said feedstock plus added hydrogen with a catalyst comprising a Group VIII metal hydrogenating component supported on a metal-cation-deficient Y zeolite base containing less than about 1 weight-percent sodium as Na_2O, said Y zeolite base having been stabilized by calcining an ammonium form thereof for a time and at a temperature sufficient to reduce the unit cell size thereof by at least about 0.2 percent, said contacting being carried out at a space velocity above about 0.5 and at a temperature correlated with hydrogen pressure (P), in psi, so as to give a volume-percent conversion per pass (C) to C_4–400°F end point gasoline falling, as does (P), within the polygon shown in the drawing and defined by the lines, $P = 300$, $P = 1000$, $C = 15$, $C = 90$, and $10C = P–300$.

3,867,278
HYDROCRACKING PROCESS USING IMPROVED PD-ON-SILICA-ALUMINA CATALYST

Lloyd J. Olson, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 250,400, May 4, 1972, Pat. No. 3,801,515. This application Oct. 23, 1973, Ser. No. 408,875

Int. Cl. C10g *13/02;* B01j *11/12, 11/40*

U.S. Cl. 208—111 **13 Claims**

1. A hydrocracking process comprising contacting a hydrocarbon feedstock and hydrogen with a catalyst under hydrocracking conditions, said catalyst being prepared by a method which comprises:

A. forming in an aqueous medium a gelatinous precipitate and a finely divided catalytically active metal, said precipitate comprising an inorganic oxide or precursor thereof and said metal being formed by reduction in said medium of a metal compound dissolved therein, and said precipitate comprising on a water-free basis from 40 to 95 weight percent alumina and 60 to 5 weight percent silica, and said metal being palladium, and wherein ascorbic acid is used as a reducing agent for said reduction;

B. intimately admixing said precipitate and said metal within 2 hours of formation of said precipitate, thereby forming a catalyst precursor;

C. converting said precursor to a catalyst, said converting including at least a step of heating said precursor at 500°–1,800°F for 1 to 48 hours.

3,867,279
HYDROCARBON CRACKING WITH CATALYTIC PHOSPHATE-SILICA-ALUMINOSILICATE COMPOSITIONS OF IMPROVED CRUSHING STRENGTH

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 273,418, July 20, 1972,. This application Feb. 4, 1974, Ser. No. 439,446

Int. Cl. C10g *11/18;* B01j *11/82;* C01b *33/28*

U.S. Cl. 208—114 **6 Claims**

1. The hydrocarbon conversion process comprising the steps of passing a fluid hydrocarbon stream having an initial boiling point of at least about 400° F over the particulate catalyst composition hereinafter detailed under hydrocarbon conversion conditions including a temperature of at least about 500° F, a pressure of at least about 500 psig. and a flow rate sufficient to convert said hydrocarbons in the presence of said catalyst particles and cause the physical attrition of said catalyst particles, wherein said catalyst comprises a structurally stable silica-bonded aggregate containing at least about 2 weight percent of a particulate silicate selected from the group consisting of silica gels, physical mixtures and cogels of silica and another refractory oxide, and crystalline aluminosilicate zeolites, and an amount of phosphorus corresponding to about 1 to about 30 weight percent of P_2O_5, formed by the method consisting essentially of the steps of reacting a mixture of said silicate and a colloidal hydrous silica sol in the presence of water and at a temperature of at least about 40° F for a period of at least about 10 minutes sufficient to react said silica sol with said silicate wherein said silica sol has an average particle diameter below about 1 micron and constitutes at least about 5 weight percent of said aggregate on a dry weight basis, admixing with the resultant combination of said silicate and silica sol about 1 to about 30 weight percent determined as P_2O_5 of a polyphosphate or polyphosphate precursor convertible to a polyphosphate at elevated temperatures selected from the group consisting of phosphoric acids, ammonium salts of phosphoric acids, and hydrogen and ammonium phosphates of polyvalent metal cations having ionic radii less than about 1 angstrom, forming particle-form aggregates of the resultant combination of said silicate particles, silica sol and polyphosphate or polyphosphate precursor, and drying the resultant combination at a temperature of at least about 200° F for at least about 30 minutes.

3,867,280
REFORMING WITH PT-IR CATALYSTS PROMOTED BY EITHER BI OR FE

John D. Paynter, Louisville, Ky., and William M. Bunting, Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 16, 1973, Ser. No. 388,907

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **5 Claims**

1. A process for improving the octane quality of naphtha which comprises contacting said naphtha in an on-oil portion of an operating cycle at reforming conditions with a catalyst composite including a porous inorganic oxide support, halogen in concentration ranging from about 0.1 to about 2 percent, platinum in concentration ranging from about 0.05 to about 3 percent, iridium in concentration ranging from about 0.05 to about 3 percent, and iron or bismuth in concentration ranging from about 0.5 to about 5 percent, based on the total weight of the catalyst, and in a subsequent portion of an operating cycle, burning off deposited coke with an oxygen-containing gas, and activating the catalyst by contact with halogen.

3,867,281
HYDROCONVERSION PROCESS

Barry S. Morgan, Concord, and Joseph Jaffe, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 196,205, Nov. 5, 1971, Pat. No. 3,795,632. This application Aug. 1, 1973, Ser. No. 384,854

Int. Cl. C10g *23/02*; B01j *11/40*

U.S. Cl. 208—213 **5 Claims**

1. In a hydroconversion process wherein a hydrocarbon feedstock is contacted with solid catalyst particles prepared by forming a hydrogel and then shaping the hydrogel into a pellet, and wherein said contacting is carried out at a temperature between 400° and 900°F., and a hydrogen partial pressure between 100 and 10,000 psig, the improvement which comprises using as said catalyst a catalyst prepared by steps comprising adding to said hydrogel a catalyst fines-water mixture containing at least 10 weight percent free water and at least 80 percent total water, before the hydrogel is shaped into a pellet.

3,867,282
PROCESS FOR OIL DEMETALATION AND DESULFURIZATION WITH COBALT-MOLYBDENUM IMPREGNATED MAGNESIUM ALUMINATE SPINEL

Ronald H. Fischer, Cherry Hill; Julius Ciric, Pitman, and Thaddeus E. Whyte, Jr., Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,442

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **14 Claims**

1. A process for demetalation and desulfurization of an oil stock which comprises contacting said oil stock with hydrogen and with a cobalt-molybdenum impregnated magnesium aluminate spinel at a temperature of from about 600°F to about 1,000°F, a pressure of from about 1,000 psig to about 3,000 psig and a liquid hourly space velocity of from about 0.1 to about 2, said spinel having a surface area of greater than about 50 m^2/g and a pore volume of greater than about 0.3 cc/g.

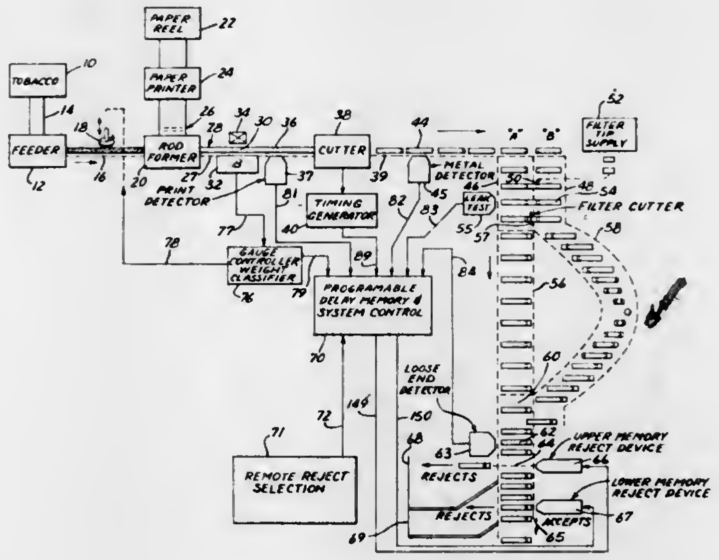
3,867,283
ARTICLE CLASSIFYING SYSTEM AND METHOD

James N. Horn, Hilliard, and David C. Hoffman, Columbus, both of Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Mar. 22, 1974, Ser. No. 453,790

Int. Cl. B07c *5/02*

U.S. Cl. 209—74 M **11 Claims**



1. In a system for classifying a plurality of articles into either of two categories according to sensed characteristics of each article, which articles are moved successively along at least one prescribed path past at least one sensing station and first and second operating stations, said system having

- sensing means disposed along said path responsive to a plurality of given characteristics of each article by providing respective information signals indicative of said given characteristics,
- categorizing means responsive to each of said information signals for providing a category signal indicative of the category of the respective article,
- first and second operating means at the respective first and second operating stations for acting on an article according to the category of the respective article,
- and memory means having a plurality of addressable memory cells in first and second sets, with each cell in one set having an address corresponding to the address of a respective cell in the other set, input means by which signals may be written into the memory cells of one or the other of said sets for storage, output means by which the stored signals may be read out, and address selection means for selecting the cells into which the signals are written and from which the stored signals are read,

apparatus comprising

- selectively operable selection means for directing the writing of said category signals corresponding to a respective selected given characteristic of the articles into respective cells of a selected one of said first and second sets of cells selected at the election of the operator, which cells have addresses corresponding to respective ones of said articles,
- means for utilizing the signals read from said cells of said first set to actuate said first operating means when the respective articles are at said first operating station, and means for utilizing signals read from said cells of said second set of cells to actuate said second operating means when the respective articles are at said second operating station,
- whereby at the respective operating stations the articles are acted upon according to their categories in respect to the respective particular given characteristics selected by the operator.

3,867,284
WATER TREATMENT WITH NITROGEN DIOXIDE

Stanley E. Kappe, Washington, D.C., and David S. Kappe, Elkridge, Md., assignors to Kappe Associates, Inc., Rockville, Md.

Continuation of Ser. No. 259,034, June 2, 1972, abandoned. This application Oct. 18, 1973, Ser. No. 407,587

Int. Cl. C02b *3/08*

U.S. Cl. 210—15 **4 Claims**

1. A method of treating domestic sewage waste water, comprising dissolving an effective amount of nitrogen dioxide in domestic sewage waste water containing as organic materials: bacteria, other microorganisms, fats, alcohols, aldehydes, ketones, carbohydrates with aldehyde ends, organic acids, ammonia, ammonium compounds, cellulose, primary amines, amino acids and urea, said effective amount being from 1 milligram to 50 grams of nitrogen dioxide per gram of organic material, and then discharging the treated domestic sewage waste water into a waterway, said amount being effective to serve as a source of oxygen for microorganisms present in the waste water, and as an oxidizing agent for aerobic-anaerobic bacterial processes in the waste water, and as a hydrogen acceptor for biochemical reactions in the waste water, and as a chemical reagent that bacteria in the waste water can use as a source of nutrient nitrogen, and as an oxidizing agent that will oxidize fats, alcohols, aldehydes, ketones, carbohydrates with aldehyde ends and organic acids present in the waste water to molecular nitrogen, and as a chemical reagent to convert cellulose and fats present in the waste water to more biodegradable compounds, and as a chemical reagent that will react with primary amines and amino acids which contain an amino group present in the waste water to yield nitrogen and alcohol as degradation products, and as a chemical reagent that will react with urea present in the waste water to yield carbon dioxide and nitrogen as degradation products, and as a chemical reagent for lysis or disintegration of the cell walls of microorganisms present in the waste water so that the material of which the organisms are made can be destroyed by serving as a source of food and energy for other living organisms present in the waste water.

3,867,285
OIL-WATER SEPARATION PROCESS

Howard F. Keller, Jr., 17532 Amaganset Ln., Tustin, Calif. 92680

Continuation-in-part of Ser. No. 228,307, Feb. 22, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,253

Int. Cl. B01d *15/06*

U.S. Cl. 210—32 **12 Claims**

1. A method for treating a fluid system containing oil having an API Gravity value from about 11 to about 70, water and particulate solids to produce clarified water, solids-free oil and oil-free solids which comprises:

A. filtering said fluid system through a finely divided oil and water insoluble filter media containing from about 2 to about 8 cubic feet of filter material for each square foot of filter media surface area, at a flow rate from about 10 to about 35 gallons per minute per square foot of filter media surface area to retain particulate solids and oil within the filter media and pass an effluent selected from the group consisting of:
  clarified water and
  a mixture of solids-free oil and water which separates into defined layers of solids-free oil and clarified water, said mixture being attained when the oil content of the fluid system is in excess of about 1% by weight,

said filter media having:

  i. a minimum particle mesh size within the range from about 3 to about 30 and a maximum particle mesh size within the range from about 30 to about 100 with the range between said minimum and maximum particle mesh sizes being at least 20 mesh,
  ii. a median particle mesh size, by weight, which is a function of the API Gravity value of the oil, said median particle mesh size falling within the range defined by maximum and minimum linear values which vary directly with the linear value of said API Gravity, said median mesh size maximum linear value varying from about 18 to 62 and said median mesh size minimum linear value varying from about 10 to 54 as said API Gravity value varies from about 11 to 70, and
  iii. a particle size distribution pattern extending from the minimum particle mesh size to the maximum particle mesh size characterized in that the weight of the filter media substantially uniformly and progressively increases from:
    a. about 0 to 50 percent as the filter media particle mesh size varies from the minimum particle mesh size to the median particle mesh size, and
    b. about 0 to 50 weight percent as the filter media particle mesh size varies from the maximum particle mesh size to the median particle mesh size; and

B. periodically regenerating the filter media by:
  passing an oil stripping composition through said filter media in the same direction of flow as that of the fluid system to remove solids-free oil from said filter media, and
  thereafter backwashing said filter media in a direction countercurrent to the flow of said fluid system at a rate from about 10 to about 35 gallons per minute per square foot of filter media surface area to remove oil-free particulate solids from said filter media.

3,867,286
USE OF POLYQUATERNARY AMMONIUM METHYLENE PHOSPHONATES TO CHELATE OR INHIBIT FORMATION OF SCALE

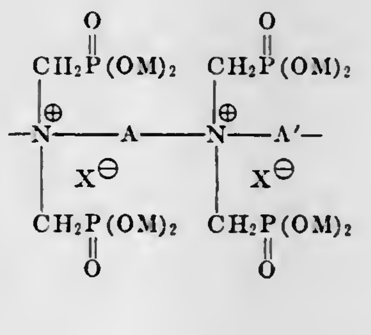
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Division of Ser. No. 237,883, March 24, 1972, Pat. No. 3,792,084. This application Oct. 29, 1973, Ser. No. 410,714

Int. Cl. C02b *5/06*

U.S. Cl. 210—58 **3 Claims**

1. The process of chelating or inhibiting the formation of scale in an aqueous system which tends to form scale which comprises adding to said system a polyquaternary compound having repeating units of the general formula

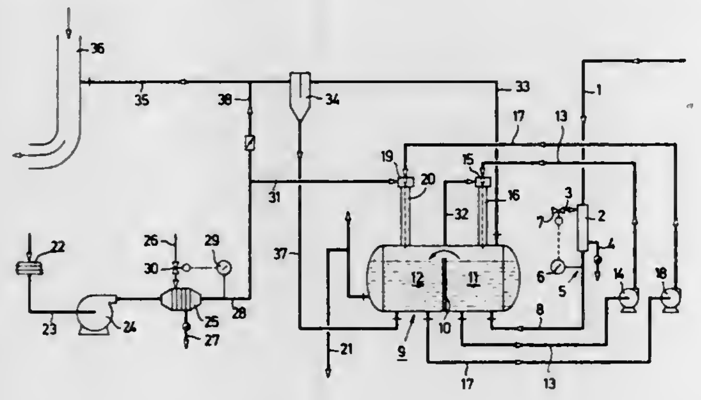


$$\begin{array}{ccccc} \mathrm{CH_2\overset{\overset{O}{\|}}{P}(OM)_2} & & \mathrm{CH_2\overset{\overset{O}{\|}}{P}(OM)_2} & & \\ |\oplus & & |\oplus & & \\ -\mathrm{N}- & \mathrm{A} & -\mathrm{N}- & \mathrm{A'}- & \\ | & X^{\ominus} & | & X^{\ominus} & \\ \mathrm{CH_2\underset{\underset{O}{\|}}{P}(OM)_2} & & \mathrm{CH_2\underset{\underset{O}{\|}}{P}(OM)_2} & & \end{array}$$

where A is alkylene having 2 to 10 carbon atoms; A′ is alkylene having 2 to 25 carbon atoms, aralkylene having 8 to 10 carbons, alkylene ether —B(OB′)$_n$— wherein B and B′ are alkylene having 1 to 10 carbons and n is 1 to 10, alkenylene or alkinylene; M is hydrogen, ammonium, an alkali metal or an alkaline earth metal; and X is Br, I or Cl.

3,867,287
PROCESS RM FOR PURIFYING INDUSTRIAL WASTE WATERS CONTAINING DIISOPROPYL AMINE

Harald Jakob, Frankfurt, Germany, assignor to Zimmer Aktiengesellschaft, Frankfurt am Main, Germany
Filed July 5, 1973, Ser. No. 376,471
Claims priority, application Germany, July 7, 1972, 2233377
Int. Cl. C02b *1/10*
U.S. Cl. 210—59 **11 Claims**



1. A process for purifying industrial waste water containing undesired amounts of diisopropyl amine by the removal of the amine from the waste water which comprises contacting the waste water, in a contacting zone, in finely divided form, with a continuously renewed stream of air, subsequently separating the resultant air and liquid mixture in a separation zone to produce a purified waste water containing a lesser amount of diisopropyl amine and an air stream containing the removed diisopropyl amine, and removing said purified waste water and air containing amine from said separation zone.

3,867,288
PROCESS FOR TREATING CUTTING AND COOLING OILS

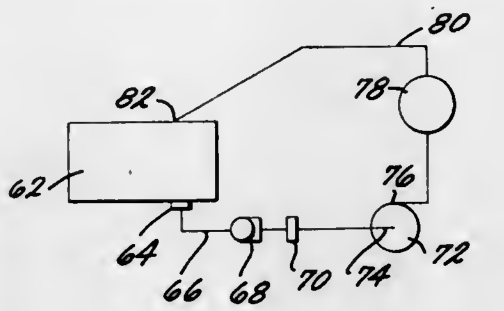
Richard J. Schaefer, 16852 Murray Hill Ave., Detroit, Mich. 48235
Continuation-in-part of Ser. No. 123,145, March 11, 1971, Pat. No. 3,685,656. This application Aug. 21, 1972, Ser. No. 282,271
Int. Cl. C02b *3/08*
U.S. Cl. 210—60 **24 Claims**

1. A process for retarding the growth of bacteria in a mixture of water and soluble oil used in industrial operations as a coolant and/or lubricant for workpieces comprising repeatedly circulating the mixture over the workpieces and repeatedly contacting the mixture with sufficient ozone to maintain the bacteria level in the mixture below a predetermined maximum bacteria level.

3,867,289
CHECK VALVE AND CHECK INDICATOR

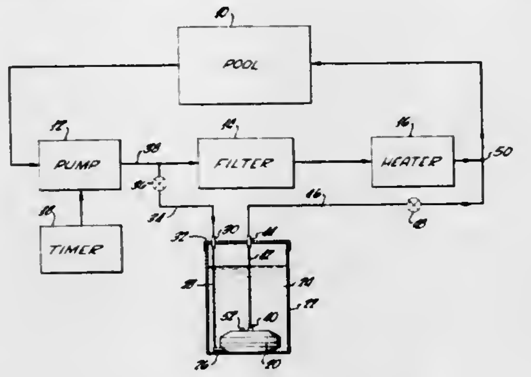
Robert Ortega, 18194 Aztec Ct., Fountain Valley, Calif. 92708
Filed Nov. 8, 1973, Ser. No. 413,938
Int. Cl. B01d *35/14*
U.S. Cl. 210—95 **7 Claims**

1. In a swimming pool system, the combination comprising:
a swimming pool having a pool inlet and a pool outlet;
a pump having a pump inlet and a pump outlet;
said pump outlet positioned above said pump inlet and said pump inlet in flow communication with said pool outlet;
a filter;
said filter positioned between said pump outlet and said pool inlet such that water discharged from the pump passes through the filter before reaching the pool inlet;
a check valve positioned between the pool outlet and the pump inlet;
said check valve permitting the flow of water from the pool outlet to the pump inlet when the pump is operating and said valve preventing the back flow of water through the pump to the pool outlet when the pump is not operating: said check valve including a valve member with the position of the valve member determined by the flow rate of water through said check valve, and
means to determine the position of said valve member when the pump is operating,
whereby the flow rate of water through the check valve and the position of the valve member indicate the presence of obstructions in the swimming pool system.



3,867,290
APPARATUS FOR CHEMICAL TREATMENT OF SWIMMING POOLS

Charles A. Mackey, 10337 Florence Ave., Buena Park, Calif. 90620
Filed June 4, 1973, Ser. No. 366,984
Int. Cl. E04h *3/16;* **B01d** *35/00*
U.S. Cl. 210—138 **12 Claims**

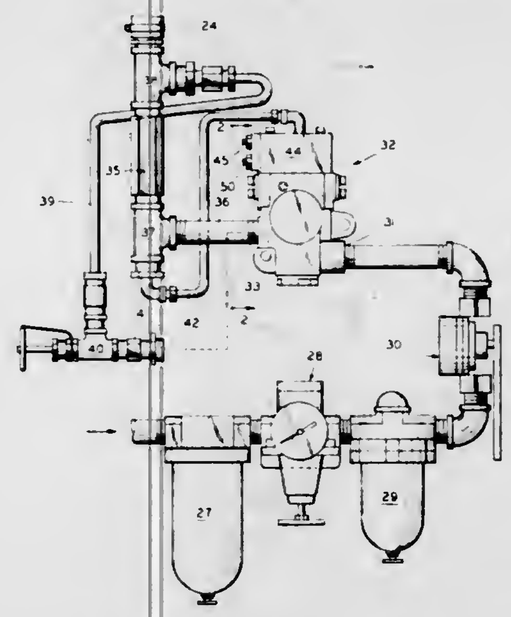


1. In combination with a swimming pool having water recirculating means including a first intermittently operable pump for recirculating the water of the pool, a positive displacement pump for dispensing a metered amount of chlorine in response to operation of said first pump comprising
a chamber adapted to be filled with chlorine,
piston means mounted within the chamber and movable between first and second positions,
means responsive to said first pump for driving said piston means to said first position when said first pump is in operation and for driving said piston means to said second position when said first pump is not in operation,
means for filling said chamber with chlorine as said piston means moves to said second position, and
means for flowing chlorine from said chamber to said swimming pool as said piston means moves to said first position.

7. Water treatment apparatus comprising a positive displacement pump for dispensing a metered amount of a treatment chemical in response to operation of a recirculating pump, said positive displacement pump comprising
a sealed housing defining a chamber therein,
a flexible diaphragm separating the chamber into drive and feed compartments, said diaphragm extending substantially horizontally across said chamber and said chamber having a horizontal dimension considerably greater than its vertical dimension, whereby said diaphragm may be displaced through a relatively small distance to effect a relatively large change in the volume of said feed compartment,
a recirculating water system including a water treatment device having an input line and an output line, said water system including an intermittently operating recirculating pump,
a first conduit connecting said drive compartment to the input line of said treatment device,
a second conduit connecting said feed compartment to the output line of said treatment device, and
a third conduit connecting said feed compartment to a supply of liquid chemical.

3,867,291
APPARATUS FOR CLEANING FILTERS

Henry Schmidt, Jr., Hinsdale, and Bruce Durham, Berwyn, both of Ill., assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.
Filed Jan. 12, 1973, Ser. No. 323,329
Int. Cl. B01d *35/16*
U.S. Cl. 210—139 **9 Claims**

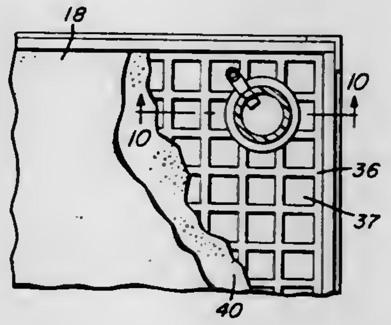


1. Apparatus for vibrating a filter element, comprising
vibrator means for vibrating at a first frequency in response to the application thereto of fluid at a first pressure, and for vibrating at a second frequency in response to the application thereto of fluid at a second pressure,
means connecting said vibrator means to said filter elements,
first and second conduits connected between a source of fluid under pressure and said vibrator,
a restrictive orifice in one of said conduits and
means for alternately closing said conduits including,
a valve having an inlet connected to said source of fluid, first and second outlets respectively connected to said first and second conduits, and a valve element movable between a first position wherein said inlet is connected to said first outlet and a second position wherein said inlet is connected to said second outlet.

5. In combination with a pressure filter having a plurality of filter elements mounted in a filter tank,
vibrator means having a frequency of vibration which varies with the pressure of an operating fluid supplied thereto,
means connecting said vibrator means to said filter elements to vibrate said elements,
conduit means for supplying operating fluid to said vibrator means at substantially different pressures, and
presettable means for alternately supplying said operating fluid to said conduit means at two substantially different pressure valves,
said presettable means including an adjustable timer for presetting the rate of alternation between said pressure values of the operating fluid supplied to said conduit means and thus to said vibrator means.

3,867,292
AQUARIUM FILTER SYSTEM

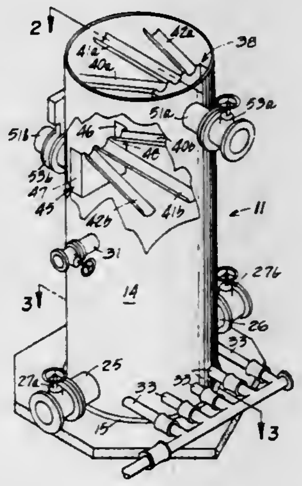
James H. Cornell, Eugene, Oreg., assignor to Darrel Michael Whitsell and Darrell Melvin, both of Springfield, Oreg.
Filed Apr. 10, 1973, Ser. No. 349,757
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **2 Claims**



1. In combination with an aquarium, a filter system comprising: an open-pore polyurethane filter element of generally planar configuration positioned in the bottom region of the aquarium, a plurality of liquid passageways formed as a plurality of regularly spaced openings in a supporting member underlying said filter element, a layer of sand of at least as fine as No. 30 grain size overlying said filter element, pump means for drawing a liquid through said layer of sand and subsequently through said filter element into said passageways, said passageways being in direct communication with said pump means which includes a tubular housing disposed vertically within said aquarium, having an inlet opening at the lower end thereof in fluid communication with said liquid passageways to draw liquid therefrom, and an outlet opening at the top end thereof for returning liquid to the aquarium proper, said sand layer further defining a nitrifying bed containing aerobic bacteria, said filter system further including a generally planar base member spaced above the bottom of the aquarium and comprising vertical baffle members intersecting one another to define a gridwork of openings throughout the entire area of the planar base member.

3,867,293
ADSORPTION SYSTEM

Mathew M. Zuckerman, Palo Alto, Calif., assignor to Envirotech Corporation, Menlo Park, Calif.
Filed July 23, 1973, Ser. No. 381,961
Int. Cl. B01d *15/06*
U.S. Cl. 210—252 **5 Claims**



1. A system for removing impurities, such as dissolved organic materials, from water comprising:

1. A pair of treatment devices for use in reversible series, each of which comprises:
   a. a vertically arranged housing;
   b. inlet means connected in flow communication with the lower interior of the housing for conveying influent liquid into the housing;
   c. a bed of adsorption material supported and arranged in said housing at least partly above said inlet means for adsorbing dissolved organic matter from the influent liquid;
   d. first filtrate collection means mounted in said housing above said adsorption bed to collect filtrate therefrom, said first filtrate collection means comprising: collection launders which horizontally extend across the interior of said housing, first discharge means connected in flow communication with said launders for discharging the collected filtrate outside said housing and valve means cooperative with said discharge means for selectively stopping the flow of liquid therethrough; and
   e. second filtrate collection means mounted in said housing and spaced above said first collection means to collect filtrate from said adsorption bed when said valve in said first collection means is closed to prevent discharge from said first collection means, said second filtrate collection means comprising: collection launders which horizontally extend across the interior of said housing and second discharge means connected in flow communication with said launders for discharging the collected filtrate outside said housing;
2. A common influent conveying means connected in fluid flow communication with said inlet means of both of said treatment devices and valve means interposed in said influent means to selectively block the fluid flow to either of said treatment devices;
3. Means connecting said second-discharge means of respective ones of said treatment devices to the inlet means of the other one of said treatment devices;
4. Liquid discharge conveying means connected in fluid flow communication with said first discharge means of both of said treatment devices downstream of their respective said valve means for carrying liquid to remote discharge from a selected one of said treatment devices; whereby, in operation, influent is admitted to a selected one of said treatment devices, liquid is discharged from that filtration device via the second discharge means and conveyed, via the associated one of said connecting means, to the other one of said treatment device and then liquid is discharged from this other treatment device, via its first discharge means, into said common discharge conveying means.

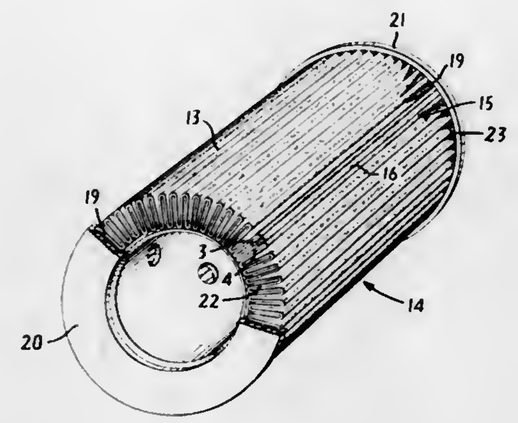
3,867,294
CYLINDRICAL FILTER ELEMENTS WITH IMPROVED SIDE SEAM SEAL

David B. Pall, Roslyn Estates, and Tadas K. Jasaitis, Great Neck, both of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed May 9, 1973, Ser. No. 358,567
Int. Cl. B01d ***27/06***

U.S. Cl. 210—489 **10 Claims**

1. A filter element comprising filter sheet material formed in a substantially cylindrical shape, and having opposite sheet end portions folded over with outer and inner end surfaces in adjacent relation and joined together in a side seam seal, wherein portions of the sheet adjacent the sheet ends have one surface in face-to-face closely-abutting contact, extending to the end edges of the sheet, and the next-adjacent portions have the other surface opposite each other, extending beyond the end edges of the end portions of the sheet, and spaced apart by the folded-over abutting sheet ends, the opposed surfaces of the sheet ends and the end edges of the sheet ends defining a space therebetween, with a bonding agent in the space bonding the sheets together at the end edges and the opposed surfaces of the sheet substantially without penetrating the face-to-face end portions of the sheet at the seam to the outer surface of the filter sheet.



3,867,295
BLOCK COPOLYMERS AND LUBRICANT COMPOSITIONS CONTAINING THE SAME

Frederick C. Schwab, Metuchen, and Israel J. Heilweil, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 13, 1973, Ser. No. 387,845
Int. Cl. C10m ***1/40, 1/38, 1/28***

U.S. Cl. 252—33.4 **12 Claims**

1. An organic fluid composition comprising a major amount of a lubricating oil and a minor amount sufficient to provide viscosity index improvement or detergent properties thereto of an oil soluble block copolymer having within its molecular structure an oil soluble segment and a polar segment said oil soluble segment having a molecular weight of about 1,000 to 300,000 and selected from the group consisting of a polymerized alkylstyrene having at least one alkyl group attached to the aromatic nucleus of at least 3 carbon atoms and a hydrogenated diene-styrene copolymer and the polar segment is selected from the group consisting of a polymerized alkylene oxide and alkylene sulfide which polar segment is from 1 percent to about 50 percent by weight of the total copolymer.

3,867,296
PROCESS FOR PREPARING CLEAR BRIGHT OLEAGINOUS ALUMINUM DISPERSIONS

Mack W. Hunt, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 230,065, Feb. 28, 1972, abandoned. This application June 25, 1973, Ser. No. 373,564
Claims priority, application Canada, Oct. 26, 1972, 155062
Int. Cl. C10m ***1/40***

U.S. Cl. 252—33.4 **13 Claims**

1. A process for preparing clear, bright aluminum-containing dispersions containing at least 6 weight percent aluminum, said process comprising:
   a. admixing an oil soluble dispersing agent, selected from the group consisting of oil soluble sulfonic acids in which the hydrocarbon portion has a molecular weight between about 350 and 1000 and hydrocarbyl carboxylic acids containing at least 8 carbon atoms, an oleaginous carrier selected from the group consisting of mineral lubricating oils, synthetic lubricating oils, vegetable oils and animal oils and a volatile hydrocarbon solvent having a boiling point at atmospheric pressure below about 300°F. with alumina prepared by the water hydrolysis of aluminum alkoxides and having the following properties:

(1)	Crystal structure - alpha alumina monohydrate	
(2)	Crystal structure after calcining to 900°F - gamma alumina	
(3)	Ultimate crystal size (x-ray diffraction)	
	020 reflection	30–70 A
	021 relfection	60–110 A
(4)	Pore volume	0.35–0.65 cc/g
(5)	Loose bulk density	35–70 lb/ft^3
(6)	Particle size (sieve)	
	45 micron - 20%	
	45 micron - 80%	
(7)	Al_2O_3 content	65–85 wt. %
(8)	Loss on Ignition	15–35 wt. %
(9)	Surface Area	150–350 m^2/g

to form a mixture of uniform consistency;
   b. heating said mixture to remove substantially all of said volatile hydrocarbon solvent; and
   c. recovering said clear bright aluminum-containing dispersion.

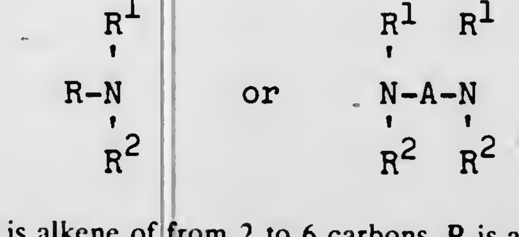
3,867,297
LUBE CONTAINING ALKYL AMMONIUM THIOCYANATE

John W. Nebzydoski, Fishkill; Harry Brockway, Beacon; Edwin L. Patmore, Fishkill, and Frederick G. Oberender, Wappingers Falls, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,505
Int. Cl. C10m ***1/38***

U.S. Cl. 252—47.5 **6 Claims**

1. A synthetic ester lubricating oil composition of improved load-carrying properties comprising a major portion of an aliphatic ester base oil formed from the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid having from 2 to 18 carbons per molecule and between about 0.01 and 5 wt. % of an alkyl ammonium thiocyanate salt product, said salt product prepared by the method of forming a mixture of a thiocyanate reactant of the formula MSCN where M is a member selected from the group consisting of ammonium and monoalkyl ammonium of from 2 to 7 carbons and an alkyl amine of from 6 to 30 carbons of the formula:



$$\begin{array}{c} R^1 \\ | \\ R-N \\ | \\ R^2 \end{array} \quad \text{or} \quad \begin{array}{ccc} R^1 & & R^1 \\ | & & | \\ N & -A- & N \\ | & & | \\ R^2 & & R^2 \end{array}$$

where A is alkene of from 2 to 6 carbons, R is alkyl of from 6 to 30 carbons, R^1 and R^2 are hydrogen or alkyl of from 1 to 10 carbons utilizing a ratio of equivalent weight of said amine to mole ratio of said thiocyanate reactant of between about 1:1.2 and 0.9:1, heating the resultant mixture to a temperature of between about 90° and 130°C. while continuously introducing into said mixture an oxygen containing gas at a gas rate of between about 40 and 200 volumes gas per hour per volume said mixture and maintaining said temperature and gas introduction until between about 5 and 0.2 mole oxygen per equivalent weight of initial amine has been introduced.

3,867,298
LUBRICANT

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 117,095, Feb. 19, 1971, Pat. No. 3,780,145. This application Sept. 19, 1973, Ser. No. 398,645
Int. Cl. C10m ***1/46***

U.S. Cl. 252—49.8 **1 Claim**

1. A synthetic carboxylic acid ester lubricant in major amounts containing a wear-inhibiting amount of diphenyl-(1-methyl-n-nonylphenyl) phosphate.

3,867,299
METHOD OF MAKING SYNTHETIC RESIN COMPOSITES WITH MAGNETIC FILLERS

Pradeep Kumar Rohatgi, Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 11, 1971, Ser. No. 172,340
Int. Cl. Holf ***1/24***

U.S. Cl. 252—62.54 **6 Claims**

1. A method of improving the mechanical properties including tensile and flexure strengths and tensile and flexure modulus in synthetic resin, magnetic particle reinforced, composites comprising:
   a. providing synthetic resin selected from the group consisting of thermosetting polyester polymers and thermoplastic acrylonitrile-butadiene-styrene polymers in a low viscosity fluid state, combining with said fluid synthetic resin particulate magnetic fume material derived from a steelmaking operation of an average particle size no greater than about 20 microns and in amounts by volume not to exceed about 80% of the total volume of the composite,
   b. applying to said fluid synthetic resin and said particulate magnetic fume material a magnetic force in substantially the direction in which improvement in the properties of the final plastic composite is desired of sufficient strength, and maintaining said magnetic force for a time sufficient to magnetically align the magnetic fume material in said resin in planes parallel to said magnetic force; and
   c. converting said resin from a fluid to a rigid state while maintaining the particle alignment to form an integral rigid composite wherein said tensile and flexure strength and tensile and flexure modulus of said composite are increased.

3,867,300
BACTERICIDAL COMPOSITION

Joseph V. Karabinos, Orange, and Vincent T. Andriole, Lordship, both of Conn., assignors to Carbolabs, Inc., Bethany, Conn.

Filed Aug. 10, 1972, Ser. No. 279,524
Int. Cl. C11d ***1/04, 3/48***

U.S. Cl. 252—106 **6 Claims**

1. An aqueous composition having synergistic bactericidal activity consisting essentially of from 5 to 15 percent of an aliphatic monocarboxylic acid containing from 8 to 11 carbon atoms selected from the group consisting of pelargonic acid, octanoic acid, decanoic acid and undecylic acid, balance a material selected from the group consisting of non-ionic detergents and anionic detergents, said non-ionic detergent being selected from the group consisting of ethoxylated alkylphenols and ethoxylated fatty alcohols, and said anionic detergent being selected from the group consisting of alkyl aryl sulfonates and alkyl sulfates, wherein said composition contains at least 25 percent of acid and detergent and the balance essentially water.

3,867,301
DETERGENT COMPOSITIONS

Yutaka Watanabe; Fumiaki Yamagishi, and Hiroshi Ueno, all of Kyoto, Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Sept. 8, 1972, Ser. No. 287,550
Claims priority, application Japan, Sept. 11, 1971, 46-70554; Sept. 13, 1971, 46-71484; Oct. 6, 1971, 46-78872
Int. Cl. C11d ***1/04, 9/26***

U.S. Cl. 252—108 **16 Claims**

1. A detergent composition consisting essentially of a mixture of 75 to 97% by weight of a soap with 25 to 3% by weight of a sucrose ester, said sucrose ester comprising at least one sucrose ester of a fatty acid having 12 to 14 carbonatoms and at least 70% by weight of said sucrose ester being mono-and di-esters, the degree of substitution of said sucrose ester given

by the average value of the number of esterified fatty and molecules per one sucrose molecule being within the range of 1.5 to 3.5.

8. A detergent composition consisting essentially of 70 to 90% by weight of a mixture of a soap with a sucrose ester of fatty acid and 30 to 10% by weight of a saccharide, said mixture of a soap of sucrose ester of fatty acid consisting essentially of 75 to 97% by weight of a soap with 25 to 3% by weight of a sucrose ester of fatty acid having 12 to 14 carbon atoms, at least 70% by weight of said sucrose ester being mono-and di-esters, and the degree of substitution of said sucrose ester given by the average value of the number of esterfied fatty acid molecules per sucrose molecule being within the range of 1.5 to 3.5.

3,867,302
ORGANIC PHOSPHORS AND PROCESS FOR PRODUCTION THEREOF

Ryoshiro Takano, Kamakura, and Sadayasu Miyahara, Fujisawa, both of Japan, assignors to Sinloihi Co., Osaka-shi, Japan

Filed Dec. 26, 1972, Ser. No. 318,036
Claims priority, application Japan, Dec. 24, 1971, 46-3609
Int. Cl. C09k *1/02*
U.S. Cl. 252—301.2 R **3 Claims**

1. An aqueous organic phosphorescent printing ink for giving a phosphorescent print capable of emitting phosphorescence upon exposure to ultra-violet radiation, comprising an aqueous solution of at least one water-soluble, polymer substance selected from the group consisting of gelatin, polyvinyl alcohol, gum arabic, tragacanth gum, sodium alginate, carboxymethyl cellulose, carboxyethyl cellulose, and starch and at least one water-soluble, organic phosphorescent activating substance selected from the group consisting of para-aminobenzoic acid, para-methyl-benzoic acid, para-methoxy-benzoic acid, para-hydroxy-benzoic acid, para-hydroxy-diphenyl, salicylic acid, 1-naphthol-4-sulfonic acid, 2-napththol-6,8 -disulfonic acid, 2-napthylamine-5,7 -disulfonic acid, 2-naphthylamine-6,8 -disulfonic acid, 1-naphthylamine-6-(7)-sulfonic acid, 2-naphthol-1-sulfonic acid, 2-naphthol-3,6,8-trisulfonic acid, and 1-naphthylamine-3,6,8-trisulfonic acid wherein said phosphorescent activating substance is present in an amount of 0.5 to 5 percent by weight of said water-soluble polymer substance, said water-soluble, organic phosphorescent activating substance being uniformly distributed in and combined with said polymer in said solution so as to emit intense phosphorescence by ultral-violet radiation after printing.

3,867,303
NEODYMIUM DOPED BORATE GLASS EXHIBITING FLUORESCENCE AT 1.06 MICROMETERS

Robert R. Shaw, Sturbridge, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

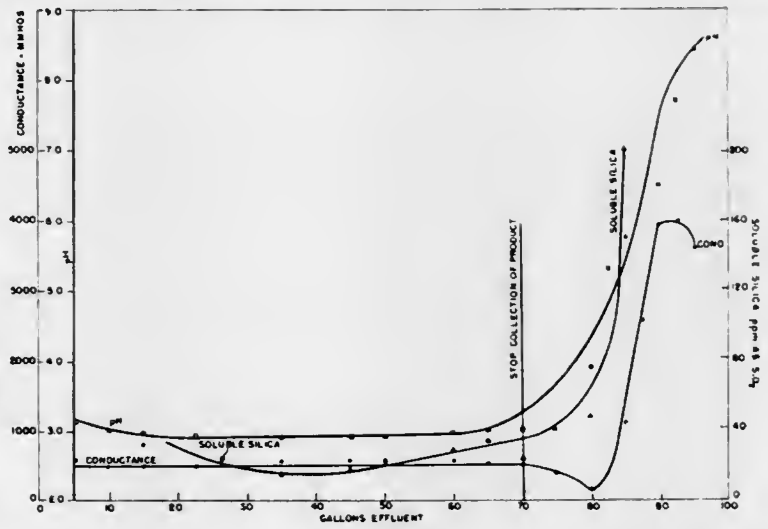
Filed Jan. 11, 1973, Ser. No. 322,672
Int. Cl. C09k *1/66;* **C03c** *3/28, 3/14*
U.S. Cl. 252—301.6 P **9 Claims**

1. A borate glass which exhibits fluorescence at a wavelength of 1.06 um consisting essentially of about 98 weight percent of a host glass consisting essentially of 20 to 80 mol percent of B_2O_3 and 20 to 80 mol percent of a glass modifier selected from the group consisting of Bi_2O_3 and a combination of ZnO and P_2O_5, and approximately 2 weight percent Nd_2O_3 contributing trivalent neodymium ions to the glass.

3,867,304
ACIDIC STABLE SALT-FREE SILICA SOLS

Morris Mindick, Tyler, Tex., and Lewis E. Reven, La Grange Park, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation of Ser. No. 645,176, June 12, 1967, abandoned, which is a continuation-in-part of Ser. No. 103,425, April 17, 1961, Pat. No. 3,342,747. This application Feb. 28, 1972, Ser. No. 230,075The portion of the term of this patent subsequent to Sept. 19, 1984, has been disclaimed.
Int. Cl. B01j *13/00;* **C01b** *33/14*
U.S. Cl. 252—313 S **2 Claims**



1. An acidic stable salt-free silica sol consisting essentially of an aqueous liquid having colloidally dispersed therein from 3% to 50% by weight of substantially discrete, dense, nonagglomerated particles of silica, which particles have a specific surface area of from 50–800 m^2/g, said silica sol having a pH ranging between 2.6 to 3.8 and a specific conductivity not greater than 1,000 micromhos/cm. at 77°F., with the pH and conductivity being derived primarily from the dissociation of the acidic groups on the surfaces of the silica particles, said sol being further characterized by its substantial freedom from occluded sodium ions, said sol being formed by placing a sol containing from about 3% to about 50% SiO_2 in ion exchange relationship with a strong acid cation exchange resin in the hydrogen form; removing said sol from contact with said cation exchange resin; aging said sol out of contact with said cation exchange resin for a period of at least about 4 hours at a temperature of from about 34°F. to about the boiling point of said sol; and again placing the said sol in ion exchange relationship with a strong acid cation exchange resin in the hydrogen form, said sol also having been placed at least once in ion exchange relationship with an anion exchange resin.

3,867,305
AMORPHOUS HYDROCARBON CONVERSION CATALYSTS AND PROCESS FOR PREPARING SAME

Edith Marie Flanigen, White Plains, and Robert William Grose, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 192,344, Oct. 26, 1971, abandoned, which is a continuation of Ser. No. 775,189, Nov. 12, 1968, abandoned. This application July 24, 1973, Ser. No. 382,151
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **2 Claims**

1. Process for preparing catalyst compositions which comprises providing an aqueous reaction mixture having a composition expressed in terms of mole ratios of oxides as

$$qG_2O \cdot fFe_2O_3 \cdot gL_2O_3 \cdot hSO_4 \cdot iXO_4 \cdot jH_2O$$

wherein G represents at least one cation selected from the group consisting of NH_4^+, H^+, Ag^+, and alkali metal ions, wherein L_2O_3 represents at least one oxide selected from the group consisting of Al_2O_3, Cr_2O_3, V_2O_3, La_2O_3, and Ce_2O_3: XO_4 represents at least one oxide selected from the group consisting of PO_4, MoO_4, VO_4, SiO_4 and TlO_4; q has a value of from 0.5 to 6.0: f has a value of from 1.5 to 4.0: g has a value of from 0 to 1.0: h has a value of from 8.0 to 10.0; i has a value of from 0 to 2.0; j has a value of from 100 to 1,000; the sum of $f + g$ has a value not exceeding 4.0; establishing the pH of said reaction mixture in the range of 1.5 to 4.5, digesting said aqueous reaction mixture within a temperature range of from about 80 to about 200°C. for a period of from at least 4 hours to a period sufficient to complete crystallization, recovering the crystalline reaction product, and calcining the crystalline reaction product at a temperature of from 650°C. to 900°C.

3,867,306
OLEFIN POLYMERIZATION COMPOSITION

Donald R. Witt, and Benny E. Nasser, both of Bartlesville, Okla., assignors to Philips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 237,880, March 24, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 398,081
Int. Cl. B01j *11/34, 11/06, 11/32*
U.S. Cl. 252—452 **8 Claims**

1. A method of preparing a chromium-containing silica composition comprising:

a. adding an alkali metal silicate to an acid to form a hydrogel;
b. aging the hydrogel for greater than one hour;
c. washing the aged hydrogel to produce a substantially alkali metal-free hydrogel;
d. incorporating an aqueous solution of said chromium-containing compound into said thus washed hydrogel;
e. forming a mixture comprising said washed hydrogel and a normally liquid, oxygen-containing, water-soluble organic compound capable of aiding in removing water;
f. thereafter separating said organic compound and said water from said mixture to form a xerogel; and
g. recovering said xerogel as said chromium-containing silica composition.

3,867,307
EXCHANGED FAUJASITE

Julius Scherzer, Baltimore, and Edwin W. Albers, Annapolis, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. Nos. 67,284, Aug. 26, 1970, Pat. No. 3,676,368, and Ser. No. 884,693, Dec. 12, 1969, abandoned. This application Jan. 5, 1972, Ser. No. 215,652
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **3 Claims**

1. A mixed rare earth-transition metal exchanged faujasite which contains 10 to 13% by weight rare earth ion expressed as RE_2O_3; 0.5 to 5% by weight transition metal ion expressed as $M_{2/n}O$ wherein M is selected from the group consisting of zinc, cadmium, thallium, zirconium, manganese, cobalt, nickel, and copper and n is the valence of M; and less than 3% by weight alkali metal measured as Na_2O prepared by the process which comprises:

a. exchanging a sodium faujasite with rare earth metal ion solution to impart the RE_2O_3 content;
b. calcining the faujasite at a temperature of from about 400° to 600°C;
c. exchanging the faujasite with ammonium ion solution to lower the Na_2O content; and
d. exchanging the faujasite with a solution of transition metal ion to impart the M_2O content.

3,867,308
PROCESS FOR PREPARING A PETROLEUM CRACKING CATALYST

Curtis Homer Elliott, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,637
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **7 Claims**

1. A process for preparing a petroleum cracking catalyst having high activity and high density which comprises:

a. preparing a silica sol by rapidly decreasing the pH of a sodium silicate solution to pH 1.8 to 3.0,
b. adding clay before, during or after sol formation,
c. preparing a water slurry of a crystalline zeolitic alumino-silicate and adjusting the pH to about 3 to 4.5,
d. mixing said slurry with the silica sol-clay slurry prepared in step (b), to prepare a spray drier feed slurry having a pH of 2.8 to 4.0.
e. spray drying before gellation occurs,
f. washing with water, drying and recovering the product.

3,867,309
CATALYST COMPOSITION FOR REMOVING NOXIOUS COMPONENTS FROM A GASEOUS STREAM

Stephen M. Oleck, Moorestown, and William A. Stover, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,593
Int. Cl. B01j *11/40, 11/08*
U.S. Cl. 252—455 R **17 Claims**

1. A catalyst composition which comprises a refractory support material selected from the group consisting of (1) an alumina having a particle density of from about 0.3 to about 1.5 g/cc, a packed density of from about 0.2 to about 0.8 g/cc and a surface area of from about 10 to about 300 m^2/g and (2) a monolithic ceramic having an external surface area of from about 100 to about 900 ft^2/ft^3, a bulk density of from about 10 to about 50 lb/ft^3 and from about 2 to about 500 channels per square inch, said refractory support material having deposited thereon from about 0.01 to about 10 weight percent palladium and from about 0.05 to about 20 weight percent of a metal selected from the group consisting of rare earth, iron, manganese and zinc.

3,867,310
CATALYST COMPOSITIONS

Curtis H. Elliott, Jr., Baltimore, and Hanson Lee Guidry, Bel Air, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed May 8, 1972, Ser. No. 251,073
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **5 Claims**

1. A method for preparing a hydrocarbon conversion catalyst which comprises:

a. preparing a mixture of sililca, alumina, alkali metal hydroxide, and water in ratios required to produce synthetic faujasite,
b. reacting said mixture for a period sufficient to produce from about 5 to 70 percent of the crystalline synthetic faujasite which may be theoretically produced from said reaction mixture,
c. combining the product of step (b) with a member selected from the group consisting of silica, alumina, silica-alumina hydrogel, clay and mixtures thereof;
d. forming said mixture into a particulate catalyst composite, and
e. washing said catalyst composite to lower the soda content thereof to less than about 1 percent by weight.

3,867,311
METHOD OF MAKING CATALYTICALLY IMPREGNATED CERAMIC BURNING PADS

Carl E. Johnson, Brookhaven, Miss., assignor to Nalco Chemical Company, Chicago, Ill.

Filed May 21, 1973, Ser. No. 362,609
Int. Cl. B01j *11/08, 11/22*
U.S. Cl. 252—460 **6 Claims**

1. A method of treating platinum or palladium catalyzed porous ceramic burning pads of the types used in flameless gas heating and lighting devices to reduce carbon monoxide emission levels when such devices are used to burn hydrocarbon fuels which comprise the steps of impregnating said pads with an aqueous solution or dispersion of a catalytic substance containing at least one member from the group consisting of thorium, alkali metal aluminates, silica sols containing a low level of alkali metal and combinations thereof to provide a ratio of catalytic substance or substances to platinum or palladium of at least 1.5 to 1 and then heating said pads at a temperature of from 100 to 300°C for a period of time ranging from .5 to 6 hours to produce a catalytically active porous pad.

3,867,312
EXHAUST GAS CATALYST SUPPORT

Ruth E. Stephens, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 7, 1972, Ser. No. 224,240

Int. Cl. B01f *11/06, 11/22*

U.S. Cl. 252—462 **7 Claims**

1. A process for preparing a thermally stable and attrition resistant catalyst support, said process comprising

a. forming an aqueous solution of a water-soluble, decomposable salt of a lanthanide series metal and a water-soluble aluminum salt;

b. evaporating the free water from said solution to form a uniform solid solution;

c. heating the resultant solid solution of aluminum salt and lanthanide series metal salt whereby said salts are thermally decomposed to their oxides; and

d. cooling said solid solution whereby a solid thermally stable and attrition resistant support material is produced.

3,867,313
NICKEL-FREE, ALL METAL, CATALYST ELEMENT

Gerald L. Brewer, Norwalk, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 101,705, Dec. 28, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,955

Int. Cl. B01j *11/06, 11/08*

U.S. Cl. 252—465 **5 Claims**

1. An all metal oxidation catalyst element comprising a base element and a coating of a nobel metal, said coating being at least one metal from the platinum group and said base element being a nickel free alloy consisting essentially of aluminum, chromium and iron, and highly resistant to heat.

3,867,314
PROCESS FOR THE PREPARATION OF A SUPPORTED IRIDIUM CATALYST

Henry Erickson, Park Forest, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,809

Int. Cl. B01j *11/08*

U.S. Cl. 252—466 PT **10 Claims**

1. A process for the preparation of an iridium-on-alumina catalyst which comprises impregnating an alumina-containing support with a liquid medium containing a soluble iridium compound, maintaining the pH of the liquid medium during impregnation of the support in the range of from 3 to 6 with a base selected from ammonium hydroxide, a lower alkyl amine and mixtures thereof to yield an iridium alumina composite comprising from about 0.01 to about 1 weight % of iridium and subjecting the resulting iridium compositions to drying, calcination and reduction.

3,867,315
RESINOUS COMPOSITIONS HAVING HIGH ELECTROCONDUCTIVITY CONTAINING CU AND METAL SALTS

Reuben A. Tigner, Bay City, and James W. Berg, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1973, Ser. No. 331,509

Int. Cl. H01b *1/06*

U.S. Cl. 252—512 **14 Claims**

1. An electroconductive resinous composition comprising a resinous material having a volume resistivity greater than 10^6 ohm-cm as the matrix having dispersed therein a finely divided, copper metal-containing solid wherein copper metal constitutes at least 50 volume percent of the solid if copper metal is distributed throughout the solid and at least 10 volume percent if the copper metal forms an essentially continuous layer covering the particle surfaces of the solid and a salt selected from the group consisting of chlorides, bromides, bicarbonates, tetraborates and carboxylates of the alkali metals, calcium, zinc, lead, silver, and copper and the fluorides of sodium and potassium, said solid and salt being present in amounts sufficient to reduce the volume resistivity of said composition below 10^4 ohm-cm.

3,867,316
PROCESS FOR THE MANUFACTURE OF FLOWABLE PASTY DETERGENTS CAPABLE OF BEING PUMPED

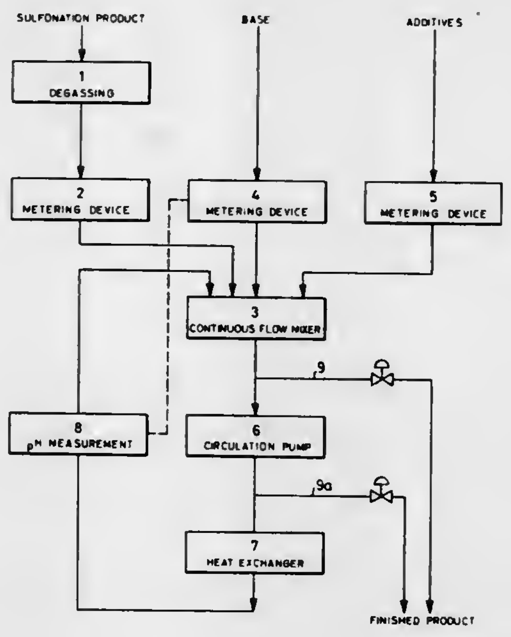
Rudolf Frank, Coventry, R.I.; Horst Reuner, Burghausen, Salzach, and Klaus Ulm, Altotting, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 795,868, Feb. 3, 1969, abandoned. This application May 3, 1972, Ser. No. 250,085

Claims priority, application Germany, Feb. 17, 1968, 1692009

Int. Cl. C11d *1/20, 11/04*

U.S. Cl. 252—545 **1 Claim**



1. In a process for the manufacture of flowable pasty detergents capable of being pumped by neutralization of organic sulfuric acid semi-esters or organic sulfonic acids selected from the group consisting of sulfuric acid semi-esters of fatty alcohols having a chain length of 12 to 18 carbon atoms, oxyethylation products thereof containing 1 to 5 moles of ethylene oxide per mole of fatty alcohol, fatty acid and fatty acid amide oxyethylation products having a chain length of 12 to 18 carbons and containing 1 to 5 moles of ethylene oxide per mole of said fatty acid or fatty acid amide as well as mixtures thereof, aryl and alkylaryl-sulfonic acids having straight-chain or branched alkyl radicals with up to 12 carbon atoms, olefin sulfonic acids having a chain length of 15 to 22 carbon atoms, and mixtures of the aforesaid classes of compounds, the improvement which comprises removing gases by application of vacuum from the organic sulfuric acid semi-esters or sulfonic acids before they are neutralized, neutralizing them with an alkali in a continuous flow mixer, withdrawing a smaller proportion of the mixture as finished product after it has left the continuous flow mixer, and recycling the larger proportion of the mixture as cycle product into the continuous flow mixer through a cooler, the ratio of said withdrawn finished product to said cycle product being in the range of from about 1:5 to 1:30, the resulting finished product having a washing active substance content of 60 to 70 percent.

3,867,317
SYNTHETIC DETERGENT BARS CONTAINING CALCIUM OLEFIN SULFONATES

Gar Lok Woo, 4 Janet Way, Apt. 105, Tiburon, Calif. 94920, and Ralph House, 3891 Linden Ln., Richmond, Calif. 94803

Filed June 29, 1970, Ser. No. 50,941

Int. Cl. C11d *1/14*

U.S. Cl. 252—555 **5 Claims**

1. Nonsoap synthetic detergent bar having improved slough loss characteristics, said bar consisting essentially of olefin sulfonates the hydrocarbon portions of which have from 8 to 20 carbon atoms and molecular weights in the range of about 165 to 200, said sulfonates being the salts of water-soluble salt-forming cations, at least 80 mol percent of said salts being calcium olefin sulfonates.

3,867,318
PHOTOSENSITIVE POLYMERIC ESTERS PRODUCED BY THE CONDENSATION OF A CHLOROMETHYL GROUPS-CONTAINING POLYMER WITH A CARBOXYL SALT

Tadatomi Nishikubo; Yoshinori Imamura; Yoshiko Tomiyama, and Kiyoshi Maki, all of Fujisawa, Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Fujisawa, Kanagawa, Japan

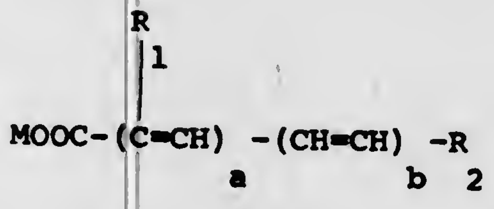
Filed Nov. 20, 1970, Ser. No. 91,525

Claims priority, application Japan, Dec. 10, 1969, 44-98651; Dec. 10, 1969, 44-98652; May 11, 1970, 45-39978

Int. Cl. C08g *23/20*

U.S. Cl. 260—2 A **4 Claims**

1. A method of preparing a polymeric ester comprising condensing a polymer having a chloromethyl group in the aliphatic side chain of its repeating unit with a carboxyl salt having the formula:



$$MOOC-(\overset{R_1}{\overset{|}{C}}=CH)_a-(CH=CH)_b-R_2$$

wherein M is selected from the group consisting of ammonium and alkali metals, R_1 is selected from the group consisting of hydrogen and a nitrile, R_2 is selected from the group consisting of a substituted and non-substituted aromatic, and *a* and *b* are selected from the group consisting of 0 and 1, the chemical equivalent of said salt being not less than 0.3 to the chemical equivalent of the chlorine of said polymer, by adding said salt to said polymer dissolved in an aprotic polar solvent.

3,867,319
PROCESS OF MAKING A FOAMED IONIC POLYMER

Robert D. Lundberg, Somerville, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 29, 1973, Ser. No. 346,093

Int. Cl. C08f *47/10;* **C08j** *1/28*

U.S. Cl. 260—2.5 R **28 Claims**

1. A process for making a foamed polymeric product which comprises foaming a mixture comprising an ionic polymer, said ionic thermoplastic polymer comprising from about 0.2 to 20 mole percent pendant acid groups, said pendant acid groups being selected from the group consisting of carboxylic, sulfonic, and phosphonic fgroups, and said acid groups being neutralized to a degree of at least 90 percent, to form an ionic polymer and a volatile polar compound which is a preferential plasticizer for said ionic polymer said volatile polar compound being present in said mixture at from about 0.1 to 50 moles per mole of ionic groups.

3,867,320
FLAME RETARDANT DENSIFIED POLYURETHANE FOAM

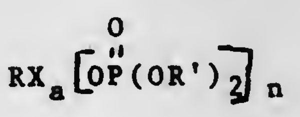
Mario A. Gambardella, Milford, and Frank S. Natoli, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 310,369, Nov. 29, 1972, abandoned. This application Feb. 4, 1972, Ser. No. 439,462

Int. Cl. C08g *22/44, 51/58, 53/20*

U.S. Cl. 260—2.5 AJ **11 Claims**

1. A permanently compression-densified, flame retardant, substantially open-cell, flexible polyurethane foam prepared from a foam forming reaction mixture comprised of a polyol, an organic polyisocyanate, a foaming agent, a reaction catalyst, and, per every 100 parts by weight of said polyol, from about 2 to about 4.5 parts of a flame retardant additive having the formula



$$RX_a[O\overset{O}{\overset{\|}{P}}(OR')_2]_n$$

wherein

R is an aliphatic hydrocarbon radical having 1–8 carbon atoms or phenylene;

X is chlorine, bromine or a mixture thereof;

a is an integer of 0–4; and

R' is a haloalkyl radical having 1–8 carbon atoms, the halogen being chlorine, bromine, or a mixture thereof.

3,867,321
PRODUCTION OF EPIHALOHYDRIN POLYMER LATEX

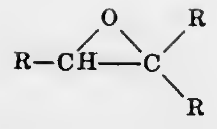
Changkiu K. Riew, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 451,927

Int. Cl. C08g *51/24*

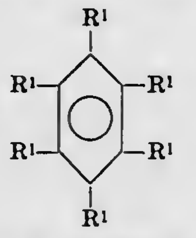
U.S. Cl. 260—17.4 ST **7 Claims**

1. A process of preparing a latex from an epihalohydrin homopolymer or copolymer, said homopolymer being a polymer of at least one epihalohydrin selected from the group consisting of epichlorohydrin, epibromohydrin, epiiodohydrin, epifluorohydrin and mixtures thereof and said copolymer containing at least one of said epihalohydrins and at least one other epoxide having the formula



where all R radicals are selected from the group consisting of hydrogen, alkyl and alkenyl radicals containing 1 to 5 carbon atoms, alkoxyalkyl radicals containing 2 to 6 carbon atoms, phenoxyalkyl radicals wherein the alkyl group contains 1 to 6 carbon atoms, and phenyl radicals, but at least one of said R radicals is hydrogen, wherein said process comprises

1. mixing said epihalohydrin homopolymer or copolymer and at least one solvent to form a cement having a viscosity from about 500 centipoises to about 200,000 centipoises, said solvent comprising at least one aromatic hydrocarbon of the formula



where R^1 is hydrogen or an alkyl radical containing 1 to 3 carbon atoms and at least two R^1s are hydrogen,

2. reducing cement viscosity by the addition thereto of at least one polymer nonsolvent, said nonsolvent being selected from the group consisting of alkanes and cycloalkanes containing from 5 to 10 carbon atoms, aliphatic and cycloaliphatic ketones containing from 3 to 10 carbon atoms, aliphatic and cycloaliphatic ethers containing from 3 to 10 carbon atoms, aliphatic and cycloaliphatic alcohols containing from 1 to 10 carbon atoms, and chlorinated aliphatic hydrocarbons containing from 1 to 10 carbon atoms, and wherein about 2 to about 25 parts by weight of said nonsolvent is used per 100 parts by weight of total solvent and nonsolvent, and from about 1 to about 30 parts by weight of polymer is used per 100 parts by weight of total polymer, solvent and nonsolvent,
3. forming a water-in-cement emulsion, and
4. inverting emulsion (3) to a cement-in-water emulsion, wherein suitable emulsifiers are anionic, cationic and nonionic types or any practical combination thereof in an amount from about 0.5 to about 15 parts by weight per 100 parts by weight of polymer, sufficient water is used to form an emulsifier solution to give a final emulsifier solution/polymer weight ratio after inversion of from about 10:1 to about 1:5, from about 10 percent to about 50 percent by weight of said emulsifier solution is used in said step (3) formation of a water-in-cement emulsion, and from about 50 to about 90 percent by weight of said emulsifier solution is used in said step (4) inversion to a cement-in-water emulsion, and
5. removing said solvent and nonsolvent.

3,867,322

EPOXYSILANE ADDITIVES FOR EPOXIDE RESIN ADHESIVES

Ernst Leumann, Arlesheim, and Hans Lehmann, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

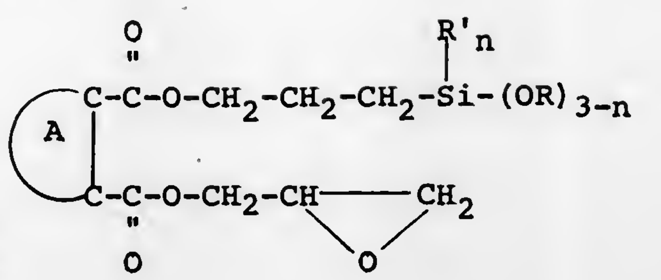
Division of Ser. No. 265,919, June 23, 1972, Pat. No. 3,787,452. This application Oct. 2, 1973, Ser. No. 402,882

Claims priority, application Switzerland, June 29, 1971, 9527/71

Int. Cl. C08g *47/10*

U.S. Cl. 260—18 S **5 Claims**

1. A method for improving the adhesive strength and water resistance of epoxide resin adhesives which comprises incorporating in said adhesive from about 0.1 to 5 percent by weight based on the weight of adhesive, an epoxy silane of the formula:



(I)

wherein A is cyclohexane, cyclohexene or benzene, R and R′ is alkyl of 1 to 4 carbon atoms, and *n* is 0, 1 or 2.

3,867,323

WATER-DILUTABLE COATING COMPOSITIONS CONTAINING MALEINIZED OIL AND RESOLE

Mahmoud R. Rifi, Kendal Park, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 6, 1973, Ser. No. 367,436

Int. Cl. C08g *45/08*

U.S. Cl. 260—19 R **18 Claims**

11. A composition thinnable with water after neutralization, and which contains free carboxyl groups, which composition is the reaction product of:

a. an adduct of (i) an alpha, beta-ethylenically unsaturated carboxylic acid anhydride, and (ii) a drying or semi-drying composition comprising at least one ethylenically unsaturated fatty acid or an ester thereof with a polyhydric alcohol, a compound having at least one vicinal epoxide group, or an epoxyalcohol, said adduct containing carboxylic anhydride moieties; and

b. a resole containing methylol groups, said adduct and said resole being chemically bonded through ester groups resulting from the reaction of said methylol groups with said anhydride moieties.

3,867,324

ENVIRONMENTALLY DEGRADABLE-BIODEGRADABLE BLEND OF AN OXYALKANOYL POLYMER AND AN ENVIRONMENTALLY DEGRADABLE ETHYLENE POLYMER

Robert A. Clendinning, New Providence; James E. Potts, Millington, and Stephen W. Cornell, Dunellen, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

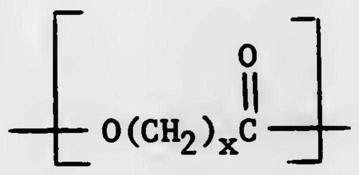
Filed July 28, 1972, Ser. No. 275,971

Int. Cl. C09f *29/12*

U.S. Cl. 260—23 H **32 Claims**

1. A biodegradable-environmentally degradable blend comprising

i. from about 5 to about 95 weight per cent of biodegradable thermoplastic polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight per cent of said biodegradable thermoplastic polymer is attributable to recurring oxyalkanoyl units of the formula



$$\left[-O(CH_2)_x\overset{\overset{O}{\parallel}}{C}- \right]$$

wherein *x* is an integer having a value of 2 to 7, with the proviso that *x* does not equal 3; and

ii. from about 95 to about 5 weight per cent of an environmentally degradable ethylene polymer based composition comprised of

A. at least about 70 weight per cent of normally-solid thermoplastic ethylene polymers of the group consisting of (a) polyethylene, (b) copolymers containing a major amount by weight of ethylene and a minor amount by weight of unsaturated monomers copolymerizable therewith, and (c) mixtures thereof, and

B. at least one polyvalent transition metal salt in which said metal has an atomic number of from 21 to 30, 39 to 48, and 57 to 71.

3,867,325

ADDITIVES FOR RESINS

Ronald Eric Hutton, Southport; Vincent Oakes, St. Helens, and Brian Rodney Iles, Liverpool, all of England, assignors to Akzo N. V., Arnhem, Netherlands

Filed Feb. 28, 1973, Ser. No. 336,830

Claims priority, application Great Britain, Mar. 3, 1972, 10020/72

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—23 XA **7 Claims**

1. A polyvinyl chloride formulation containing

precipitated calcium carbonate filler, the average particle size of which is not more than 250 mμ and

a stabilizer composition consisting essentially of a mixture of a zinc soap of a monocarboxylic acid having from 8 to 10 carbon atoms, sulfonic acid of a phenol and

at least one soap selected from sodium, calcium, magnesium, barium, aluminum and lead soaps of a monocarboxylic acid having from 6 to 11 carbon atoms, sulfonic acid or a phenol, said stabilizer composition comprising at least 1.5 percent by weight of zinc, based upon the total weight of said stabilizer composition.

3,867,326

PRECIPITATED SILICA REINFORCING AGENTS AND RUBBER COMPOSITIONS CONTAINING SAME

Donald Rivin, Natick, and George R. Cotten, Lexington, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 337,824, March 5, 1973, abandoned. This application Dec. 13, 1973, Ser. No. 424,575

Int. Cl. C08k *1/08;* **C08c** *11/10*

U.S. Cl. 260—37 N **7 Claims**

1. A siliceous rubber reinforcing composition comprising:

a. precipitated dehydrated silica having an average ultimate particle diameter of between about 10 and about 100 millimicrons; a BET-N_2 surface area of between about 40 and about 275 m^2/g and a free water content of less than about 3 percent by weight thereof, and

b. between about 0.5 and about 6 percent by weight of said precipitated silica of polyethylenimine.

3,867,327

FLAME-RESISTANT POLYBUTADIENE RESIN

David F. Lawson, and Delmar F. Lohr, Jr., both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 9, 1974, Ser. No. 486,784

Int. Cl. C08f *45/62*

U.S. Cl. 260—27 BB **9 Claims**

4. A composition curable to a hard resin which, when cured, has substantial flame resistance, which composition comprises:

	Parts by Weight
Butadiene homopolymer or copolymer resin	100
Silica	100 - 500
Vinyltriacetoxysilane	0.05 - 5.0
Calcium stearate	0.5 - 5.0
A peroxide curing agent	0.5 - 6.0
Hexa- or tetrabromobenzene or decaoromobiphenyl or decabromobiphenyl oxide	2 - 20
Chromium naphthenate	0.25 - 10

the resin being from the class consisting of homopolymers of butadiene and copolymers of butadiene and styrene containing at least 40 percent by weight of butadiene, and at least 80 percent by weight of the butadiene repeating units in the homopolymer or copolymer being in the 1,2-configuration.

3,867,328

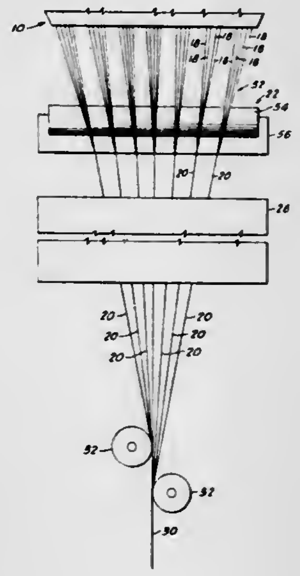
COATING COMPOSITION AND PROCESS FOR PREPARING AND APPLYING THE COATING COMPOSITION TO GLASS FIBERS

Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

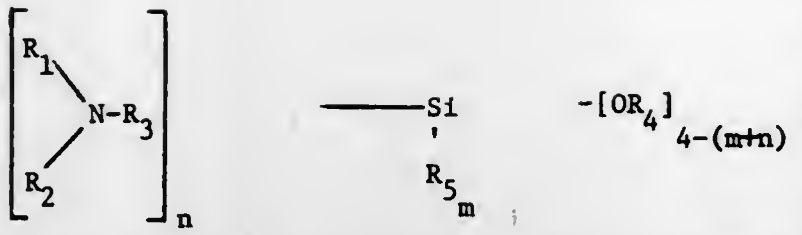
Division of Ser. No. 93,939, Dec. 1, 1970, abandoned. This application Nov. 16, 1972, Ser. No. 307,276

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **3 Claims**



1. An aqueous combined sizing and coating composition for glass fibers comprising: 3 to 15 percent by weight of a resorcinol-formaldehyde resin; 20 to 70 percent by weight of a styrene-butadiene-vinylpyridine terpolymer latex; 0.01 to 3 percent of an amino functional hydrolizable silane coupling agent selected from compounds having the structural formula



wherein R_1 is H, an alkyl radical containing 1 to 5 carbon atoms or H— $NHCH_2 — CH_2—_x$ the *x* being 1 to 5; R_2 is H or an alkyl radical containing 1 to 5 carbon atoms; R_3 is a biradical selected from lower alkyl radicals having 1 to 8 carbon atoms; R_4 and R_5 are selected from lower alkyl radicals having 1 to 5 carbon atoms; and *n* is a whole number from 1 to 3 and *m* is either 0 or 1: ammonia: and 0.1 to 6% by weight of an ammonia soluble carboxyl-containing polymer selected from the group consisting of carboxylated polyvinyl-acetate, carboxylated polystyrene, carboxylated polyethylene, and carboxylated acrylic polymers.

3,867,329

COMPOSITION FOR A HYDROGEL DILATOR ARTICLE OF MANUFACTURE AND METHOD FOR MAKING SAME

Benjamin D. Halpern, Jenkintown, and Murali Krishna Akkapeddi, Feasterville, both of Pa., assignors to Polysciences, Inc., Warrington, Pa.

Filed Aug. 25, 1972, Ser. No. 283,840

Int. Cl. C08f *15/00*

U.S. Cl. 260—29.6 H **26 Claims**

1. A hydrogel composition comprising an intimate mixture on a weight basis of: (A) about 5.0 to 30.0% of glyceryl monomethacrylate in aqueous solution, said weight percentage of said glyceryl monomethacrylate being taken with respect to said aqueous solution; (B) about 0.2 to 4.5% of at least one diacrylate cross-linker from the group consisting of diethylene glycol diacrylate, tetraethylene glycol diacrylate and polyethylene glycol diacrylate, said weight percentage of said diacrylate cross-linker being taken with respect to said aqueous solution; (C) about 0.2% of ammonium persulfate; and, (D) about 0.2% of sodium bisulfite, said weight percentages of said ammonium persulfate and said sodium bisulfite being taken with respect to said glyceryl monomethacrylate in said aqueous solution.

3,867,330

BRINES CONTAINING WATER-SOLUBLE ANIONIC VINYL ADDITION POLYMER AND WATER SOLUBLE CATIONIC POLYMER

Alvin J. Frisque, La Grange, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed July 30, 1973, Ser. No. 383,865

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR **5 Claims**

1. An aqueous brine consisting essentially of from 0.1 to 50% by weight of a stable liquid dispersion of:

A. a polymeric latex composed of a water-in-oil emulsion which contains dispersed therein a finely divided water-soluble anionic vinyl addition polymer, said polymer being selected from at least one member of the group consisting of acrylamide polymers and acrylic acid polymers, and said polymeric latex having uniformly distributed therein throughout;

B. a water-soluble cationic polymer selected from at least one member of the group consisting of alkylene polyamine/epichlorohydrin and ethylene dichloride/ammonia polymers with the weight ratio of (A):(B) being within the range of 1:10 to 10:1 and the total amount of (A)+(B) present within said dispersion being within the range of from 0.001 to 75% by weight, said dispersion being uniformly dispersed therethroughout said brine.

3,867,331

PROCESS FOR MAKING EMULSION POLYMERIZED PREPLASTICIZED VINYL RESINS

Bela K. Mikofalvy, Sheffield Lake, and Thomas J. Doyle, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of Ser. No. 392,527, Aug. 29, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 457,117

Int. Cl. C08f *45/38*

U.S. Cl. 260—31.8 R **13 Claims**

1. A process of producing preplasticized polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with one or more vinylidene monomers having at least one terminal

$$CH_2{=}C<$$

grouping comprising forming a monomer premix of the monomer or monomers to be polymerized, from about 5 parts to about 100 parts by weight of a plasticizer for the finished polymer based on 100 parts by weight of monomer or monomers being polymerized, a suitable emulsifier for the polymerization reaction, and the aqueous reaction medium, homogenizing said premix to a particle size in the range of 0.5 to 15 microns with most of the particles being less than 2 microns, passing said homogenized premix to a reaction zone, emulsion polymerizing said homogenized premix in said zone in the presence of catalytic amounts of a suitable catalyst therefor and at a temperature below the glass transition temperature of the polymer or copolymer being produced, and thereafter recovering the preplasticized polymer or copolymer.

3,867,332

PROCESS FOR THE PRODUCTION OF SHAPED ARTICLES OF A LINEAR POLYESTER

Kazuya Chimura, Otake; Kazuo Ito, Tokyo; Yasuo Nakamura, and Seiji Miyata, both of Otake, all of Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Oct. 30, 1972, Ser. No. 302,208

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 P **20 Claims**

1. A process for the production of a linear polyester shaped material having homogeneously dispersed therein an additive which comprises melt shaping a polymer mixture which is either

a. an additive/linear polyester concentrate; or

b. a linear polyester in the form of a powder, pellet or melt having added therein an additive/linear polyester concentrate

wherein said polymer mixture prior to said melt shaping is in the form of a powder having an apparent density of up to 0.3 g/ml said powder having been prepared by either abrasively scraping chips of the polyester or spray drying a solution of the polyester.

3,867,333

NATURAL GRAPHITE-REINFORCED CYCLIZED BUTADIENE ELASTOMERS

Byron M. Vanderbilt, 516 Lake Shore Ln., Chapel Hill, N.C. 27154

Filed Dec. 22, 1972, Ser. No. 317,612

Int. Cl. C08c *11/18;* C08d *11/00*

U.S. Cl. 260—42.32 **8 Claims**

1. A high modulus composite prepared by the cyclization under non-oxidizing conditions, of a substantially emulsifier-free elastomer chosen from polybutadiene and copolymers of butadiene with acrylonitrile or styrene, and having at least 10 percent 1,2-type unsaturation before cyclization, and containing 100–800 parts by weight of natural graphite of at least 85 percent purity per 100 parts of elastomer, said composite being cured with an organic peroxide or quinone prior to cyclization.

3,867,334

ANTIHARDENERS FOR POLYMERS

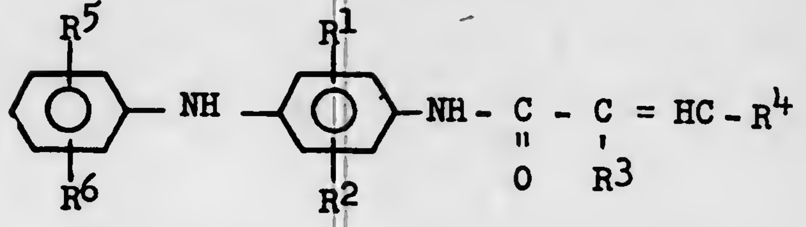
Frank S. Maxey, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 30, 1974, Ser. No. 438,055

Int. Cl. C08c *11/10, 11/18, 11/46*

U.S. Cl. 260—42.32 **10 Claims**

1. In a process of preparing an unvulcanized conjugated diene polymer containing a reinforcing agent, said polymer containing not more than 0.25 part by weight per 100 parts by weight of an anti-hardener and being capable of being vulcanized with a sulfur-type vulcanization system to form a vulcanizate, said vulcanizate having a tendency to harden, the improvement wherein an amide, in the amount of at least 0.25 part by weight per 100 parts by weight of polymer, is added to the polymer before all of the reinforcing agent has been added to the polymer with the proviso that the polymer contains less than 30 parts by weight of reinforcing agent per 100 parts by weight of polymer when the amide is added and wherein the amide has the following structural formula:



wherein R^1, R^2, R^5 and R^6 are selected from the group consisting of hydrogen and alkyl radicals having from 1 to 4 carbon atoms, wherein R^5 and R^6 can also be alkoxy radicals having 1 to 4 carbon atoms, and wherein R^3 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, aryl radicals having from 6 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms carboxymethyl radicals and carbalkoxy methyl radicals and wherein R^4 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, aryl radicals having from 6 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, carboxy radicals and carbalkoxy radicals.

3,867,335

TAPE JOINT CEMENT ADDITIVE

Delmer H. Reed, South Charleston, W. Va., and Edward C. Seltzer, Mt. Holly, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 743,306, July 9, 1968, abandoned. This application Mar. 31, 1972, Ser. No. 240,293

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.52 **4 Claims**

1. In a tape joint cement composition comprising (a) an inert filler, and (b) a binder, szid binder comprising solid poly(vinyl acetate) selected from the group consisting of vinyl acetate homopolymer and copolymers of vinyl acetate with at least one comonomer selected from the group consisting of dibutyl maleate, dibutyl fumarate, vinyl propionate, ethyl acrylate, butyl acrylate, and 2-ethylhexyl acrylate, the improvement of incorporating in said tape joint cement composition (c) from about 0.5 to about 5 weight per cent, based upon the weight of said binder, of poly(1,2-dimethyl-5-vinylpyridinium methyl sulfate) homopolymer, said poly(1,2-dimethyl-5-vinylpyridinium methyl sulfate) homopolymer having a reduced viscosity of from 0.8 to 1.5 in 0.5 M sodium bisulfite.

3,867,336

FLAME RETARDANT THERMOPLASTIC COMPOSITIONS

Daniel W. Fox, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 13, 1973, Ser. No. 351,105

Int. Cl. C08g *23/00*

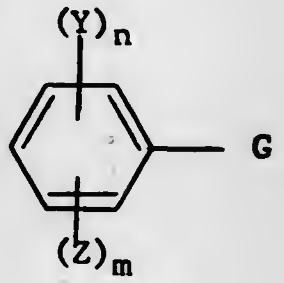
U.S. Cl. 260—45.7 R **11 Claims**

1. A flame retardant thermoplastic composition comprising:

a. a normally flammable thermoplastic resin; and

b. a flame retardant amount of either

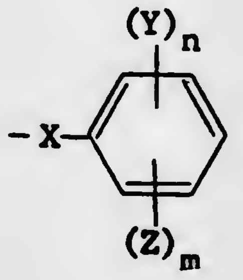
i. an additive of the general formula



wherein Y is bromine or chlorine and mixtures thereof;

Z is mono or dicarbocyclic aryloxy, and mixtures thereof:

G is bromine, chlorine or



;

X is a direct bond or —0—; and

n is 2, 3, 4 or 5 and *m* is 0, 1 or 2, at least one of the m's always being other than 0, and mixtures of the above additives or

ii. a combination of said additive (i) and an inorganic or organic antimony-containing compound.

3,867,337

TRIAZINE DERIVATIVES AS ANTIOXIDANTS

Heimo Brunetti, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

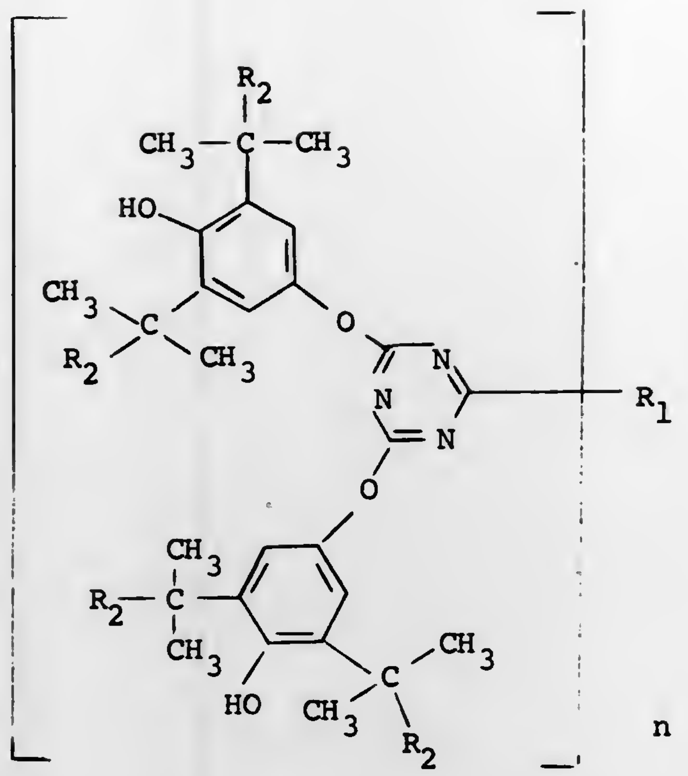
Division of Ser. No. 192,592, Oct. 26, 1971, Pat. No. 3,775,411. This application Mar. 15, 1973, Ser. No. 341,639

Claims priority, application Switzerland, Nov. 9, 1970, 16548/70

Int. Cl. C08f *45/60;* C08g *51/60*

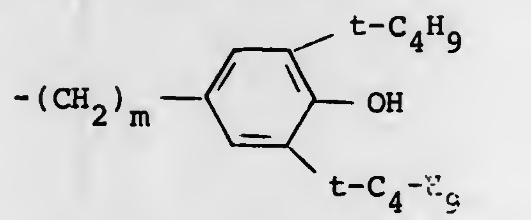
U.S. Cl. 260—45.8 NT **5 Claims**

1. A composition of matter comprising an organic polymer and, in an amount of 0.01 to 5% by weight, a compound of formula I



(I)

in which R_1 denotes thiaalkyl with 3 to 20 carbon atoms. alkylene with 4 to 8 carbon atoms or the radical



R_2 denotes methyl or ethyl and *m* and *n* denote 1 or 2.

3,867,338

THERMAL STABILIZATION OF POLYMERS

Dagobert E. Stuetz, Union, N.J., and Joseph Di Pietro, Alma, Mich., assignors to Celanese Corporation, New York, N.Y.
A continuation of Ser. No. 261,174, June 9, 1972, abandoned, which is a division of Ser. No. 551,222, May 19, 1966, Pat. No. 3,671,488
Filed Oct. 19, 1973, Ser. No. 408,134
Int. Cl. C08f *45/60;* **C08g** *51/60*
U.S. Cl. 260—45.9 P **10 Claims**

1. A composition which is stabilized against thermal degradation consisting essentially of a polymer selected from the group consisting of olefin polymers, copolymers of trioxane and formaldehyde polymers and from 0.5 to 5.0% by weight, based on the weight of said polymer, of a stabilizer selected from the group consisting of phenanthrylmethyl triethyl ammonium chloride and 9,10-dihydroanthrylmethyl triethyl ammonium chloride.

3,867,339

ALPHA CRYSTALLINE LATTICE POLYAMIDES CONTAINAING SODIUM PHOSPHINATE AND A CALCIUM SALT

Ulises Canellas Sanroma, Richmond, Va., assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed July 16, 1973, Ser. No. 379,863
Int. Cl. C08g *20/12*
U.S. Cl. 260—45.7 R **16 Claims**

1. A nylon resin comprising a nucleated alpha crystalline lattice polylactam resin formed by adding and blending sodium phenylphosphinate and a calcium salt with a polylactam polymer having from 3 to about 15 carbon atoms in the repeating unit, said sodium phenylphosphinate ranging from 0.01 to about 0.5% by weight based on said polylactam, said calcium salt ranging from 0.01 to about 0.5% by weight based on said polylactam and selected from the group consisting of calcium iodide, calcium chloride and calcium stearate, and melting and crystallizing said blended polylactam polymer.

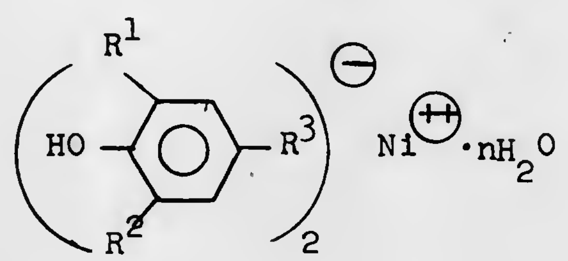
3,867,340

NICKEL STABILIZERS FOR SYNTHETIC POLYMERS

Michael Rasberger, Allschwil; Jean Rody, Basel; Paul Moser, Riehen, and Helmut Muller, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 31, 1973, Ser. No. 365,801
Claims priority, application Switzerland, June 21, 1972, 9334/72
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 N **10 Claims**

1. A composition of matter stabilised against thermal and light degradation and discoloration which comprises a polymonoolefin and a mixture of

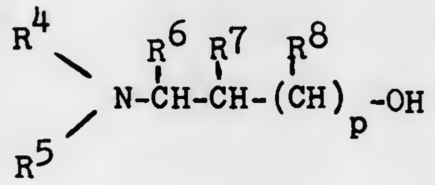
A. a nickel benzoate of the formula



wherein:

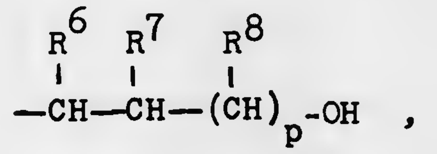
R^1 denotes hydrogen or alkyl with 1 to 5 carbon atoms,
of the substituents R^2 and R^3, one denotes an alkyl with 3 to 8 carbon atoms and the other denotes $—COO^-$, and
n denotes a value of 0 to 2,

B. an alkanolamine of the formula



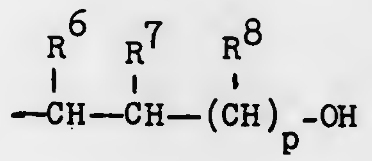
wherein:

R^4 denotes hydrogen, alkyl with 1 to 4 carbon atoms, cycloalkyl with 5 to 10 carbon atoms, aryl with 6 to 10 carbon atoms or a radical of the formula



$$\overset{R^6}{—CH}—\overset{R^7}{CH}—\overset{R^8}{(CH)}_p\text{-OH} \quad ,$$

R^5 denotes hydrogen, alkyl with 1 to 4 carbon atoms or the radical of the formula



$$\overset{R^6}{—CH}—\overset{R^7}{CH}—\overset{R^8}{(CH)}_p\text{-OH}$$

or R^4 and R^5 together with the nitrogen atom denote the radical of a 5-membered or 6-membered saturated heterocyclic structure of the pyrrolidine, piperidine or piperazine series,

R^6, R^7 and R^8 denote hydrogen or one of R^6, R^7 and R^8 denotes alkyl with 1 to 4 carbon atoms, and
p denotes 0 or 1,

such that the amount of components (A) and (B) is in the concentration of 0.01 to 5% by weight of the total composition and the molar ratio of A:B is in the range of 1:0.5 to 1:2,

C. from 0.05 to 0.1% by weight of the total composition of a hindered phenol antioxidant selected from the group consisting of tetrakis-β(3,5-di-tert-butyl-4-hydroxyphenyl)-propionic acid pentaerythritol ester and β-(3,5-di-tert-butyl-4-hydroxyphenyl)propionic acid octadecyl ester, and

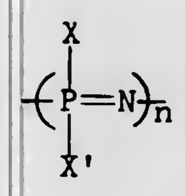
D. from 0 to 0.3% by weight of the total composition of an ester of β-thiodipropionic acid selected from the group consisting of dilauryl thiodipropionate and distearyl thiodipropionate.

3,867,341

METAL 8-HYDROXYQUINOLATE COMPLEXES AS STABILIZERS FOR POLY(PHOSPHAZENES) TO INHIBIT THERMAL DEGRADATION AT ELEVATED TEMPERATURES

Gary Stephen Kyker, Uniontown, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sept. 28, 1973, Ser. No. 401,769
Int. Cl. C08g *51/62;*
U.S. Cl. 260—45.75 R **9 Claims**

1. A polyphosphazene composition stabilized against thermal aging comprising a polyphosphazene represented by the general formula:



$$\left(\overset{X}{\underset{X'}{P}}=N\right)_n$$

wherein *n* represents an integer from 3 up to about 50,000 and X and X′ each represent a monovalent substituent selected from the group consisting of alkoxy, substituted alkoxy, aryloxy, substituted aryloxy, hydroxy and amino, and X and X′ are randomly distributed along the —P=N— backbone and the polyphosphazene includes one or two or more randomly distributed groups and an organometallic compound compatible with said polyphosphazene and present in an amount sufficient to stabilize said polyphosphazene against thermal degradation, said organometallic compound being a metal 8-hydroxyquinolate.

3,867,342

ULTRAVIOLET STABILIZED POLYOLEFINS

Jack P. Guillory, Bartlesville, Okla.; Ralph S. Becker, Houston, Tex., and William B. Hughes, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Mar. 4, 1974, Ser. No. 447,526
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 S **10 Claims**

1. A method for stabilizing an olefin polymer composition against deterioration in the presence of ultraviolet radiation which comprises the addition of a stabilizing amount of 2-hydroxy-4-alkoxythiobenzophenone or 2-mercapto-4-alkoxythiobenzophenone.

3,867,343

CATALYSTS AND USE THEREOF

William David Garden, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Oct. 30, 1973, Ser. No. 411,166
Claims priority, application Great Britain, Dec. 11, 1972, 56992/72
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 UA **8 Claims**

1. A composition comprising an organohydrogenpolysiloxane, an α-ω-dihydroxydiorganopolysiloxane and a catalyst consisting of an organic platinum complex in which the ligand or donor groups are selected from the group consisting of groups containing arsenic, phosphorus, sulphur or nitrogen and olefins, said groups being capable of donating electrons to form a bond with platinum, and a nitrogen compound selected from the group consisting of ammonia and derivatives of ammonia in which the three valences are satisfied by bonding to an atom selected from the group consisting of C, H, O, N and Si provided that not more than one O atom is bonded to the ammonia N atom, the ammonia or derivative thereof being present in amount such that the atomic ratio of *Pt* to the ammonia N atom is from 10:1 to 1:1000 and the organic platinum complex being present in amount from 1×10^{-5} to 1×10^{-2} g. atoms Pt per 1 Kg of total polysiloxanes.

3,867,344

BURN-RESISTANT PLASTIC COMPOSITIONS

Victor S. Frank, Silver Spring; Edwin W. Lard, Bowie, and Eldon E. Stahly, Ellicott City, all of Md., assignors to W. R. Grace & Co., New York, N.Y.
Division of Ser. No. 817,144, April 17, 1969, Pat. No. 3,641,193. This application Feb. 16, 1971, Ser. No. 372,701
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **2 Claims**

1. A solid polymeric fire-retardant additive consisting essentially of the reaction product of (a) a member of the group consisting of cyclic $(PNX_2)_y$ where X is a halogen atom and *y* is at least 3 and linear $X(PNX_2)_yPX_4$ where X is a halogen atom and *y* is at least 1; and (b) a compound containing at least two oxirane groups, the equivalent ratio of (a) to (b) being in the range 0.1–2.0:1.0 respectively.

3,867,345

METHOD FOR THE OXIDIZING ALPHA, BETA-UNSATURATED ALDEHYDES TO ALPHA, BETA-NSATURATED CARBOXYLIC ACIDS

Edgar Koberstein, Alzenau; Theodor Luessling, Grossauheim; Ewald Noll, Grosskrotzenburg; Hans Schaefer, Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold-Und-Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
Division of Ser. No. 118,965, Feb. 25, 1971,. This application Sept. 27, 1972, Ser. No. 292,628
Claims priority, application Germany, Feb. 27, 1970, 2009172
Int. Cl. C07c *51/26, 57/04*
U.S. Cl. 260—530 N **9 Claims**

1. A process for the production of an unsaturated aliphatic carboxylic acid of the group consisting of acrylic acid and methacrylic acid which comprises passing a mixture of air or other gas containing molecular oxygen, steam, and an unsaturated aliphatic aldehyde of the group consisting of acrolein for the production of acrylic acid, and methacrolein for the production of methacrylic acid, into contact at a temperature between 200° and 350°C and at a pressure between atmospheric and a superatmospheric pressure of 3 atmospheres with a catalyst consisting essentially of oxides or oxygen-containing compounds of the elements antimony, molybdenum, vanadium, and tungsten, supported on a carrier material, the atomic ratios of the elements of the catalyst with respect to molybdenum being respectively between 1 : 12 and 60 : 12 for antimony, between 0.5 : 12 and 25 : 12 for vanadium, and between 0.1 : 12 and 12 : 12 for tungsten, and subsequently recovering the acrylic acid or methacrylic acid from the resulting mixture.

3,867,346

PROCESS FOR THE PRODUCTION OF LIQUID EPOXY-OVOLAK RESINS AND PRODUCT THEREOF

Silvio Vargiu; Mario Pitzalis, both of Milan, and Giancarlo Crespolini, Bergamo, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy
Filed Sept. 7, 1973, Ser. No. 395,092
Claims priority, application Italy, Sept. 20, 1972, 29426/72
Int. Cl. C08g *5/18*
U.S. Cl. 260—59 EP **14 Claims**

1. A process for the production of liquid epoxy-novolak resins by reaction of novolak phenolic resins with an epihalo-

hydrin in the presence of an inorganic base, characterized in that

- a. a novolak phenolic resin having an average molecular weight of about 220 to 300 and with about 2.2 to 2.9 phenolic hydroxyl groups per molecule and an epihalohydrin are mixed and homogenized, about 5 to 10 moles of epihalohydrin being used per mole equivalent of phenolic hydroxyl groups in the novolak phenolic resin,
- b. the homogenized mixture is brought into contact with kieselguhr at temperatures of about 20° to 40° C, the kieselguhr is then separated,
- c. an inorganic base selected from the group consisting of alkali metal or alkaline earth metal hydroxides, oxides and carbonates is added to the mixture obtained in accordance with (b) in the course of at least 1 hour at temperatures of about 80° to 115° C, the total quantity of base to be used being so chosen that the ratio of the number of phenolic hydroxyl groups in the novolak resin to the number of equivalents of base is about 0.78:1 to 0.75:1, and
- d. the liquid epoxy-novolak resin is separated from the mixture obtained in accordance with (c).

3,867,347

PROCESS FOR THE MANUFACTURE OF PULVERIZABLE THERMOSETTING COATING AGENTS

Wilfried Felber, Grosswelzheim, and Gerhard Morlock, Grossauheim, both of Germany, assignors to Deutsche Gold-Und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main, Germany

Filed July 24, 1973, Ser. No. 382,227

Claims priority, application Germany, July 26, 1973, 2236514

Int. Cl. C08f *1/80*

U.S. Cl. 260—63 UY **34 Claims**

1. In a process for the preparation of a pulverizable, thermosetting coating agent based on a mixture of an acrylic resin containing hydroxyl groups prepared by substance polymerization of a resin-forming monomer mixture and a blocked isocyanate, the improvement wherein said process comprises dissolving in said monomer mixture about 0.1–0.9 equivalents of isocyanate groups based on the hydroxyl groups, said isocyanate groups derived from at least one di- or polyisocyanate blocked with at least one lactam having about 4–12 carbon atoms, said blocked isocyanate having a melting point of about 60° – 150°C, and polymerizing said monomer mixture at a temperature below about 120°C and in the presence of a catalyst.

3,867,348

CROSS-LINKING AGENT, CROSS-LINKING COMPOSITION CONTAINING SAME, THEIR PRODUCTION AND THEIR USE IN THE TEXTILE INDUSTRY

Alexandre Hirschmann, Stains, France, assignor to Novel Hoechst Chimie, Puteaux, Hauts-de-Seine, France

Filed Nov. 17, 1972, Ser. No. 307,361

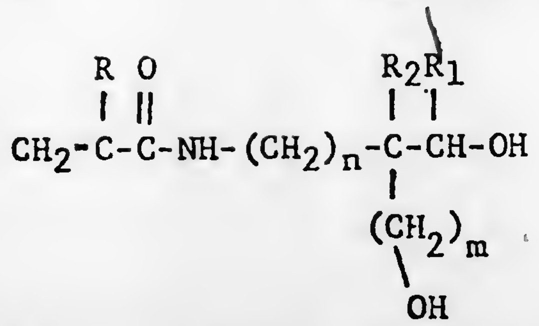
Claims priority, application France, Nov. 29, 1971, 71.42745

Int. Cl. C08g *9/10, 9/34*

U.S. Cl. 260—70 R **4 Claims**

1. A copolymer cross-linking agent comprising

at least one product obtained by reacting for a time sufficient to obtain said agent, at a temperature of 40°C. to 100°C. and in an aqueous alkaline medium at a pH on the order of about 8.6–8.8, formaldehyde with a mixture of a non-methylolable unsaturated N-substituted amide of α, β-unsaturated carboxylic acid, the substituent of which is an aliphatic moiety containing a diol-1, 2 or 1,3 group, the amide corresponding to the general formula:



$$CH_2-\underset{}{\overset{R}{C}}-\overset{O}{\overset{\|}{C}}-NH-(CH_2)_n-\overset{R_2}{C}(-(CH_2)_m-OH)-\overset{R_1}{CH}-OH$$

wherein R is hydrogen or alkyl: R_1 is hydrogen or a C_1–C_3 alkyl; R_2 is hydrogen, methyl or ethyl; *m* is an integer from 0 to 1 and *n* is an integer from 0 to 1 and

at least one nitrogen methylolable compound selected from the group consisting of urea, its substituted derivates and cyclic ureas,

the quantity of formaldehyde used being at most equal to the molecular quantity which could theoretically be fixed to said methylolable nitrogen compound and the minimum quantity of formaldehyde being 2 moles per mole of said nitrogen compound, the molecular ratio between said nitrogen compound and said unsaturated N-substituted amide being at most 5 molecules of said nitrogen compound for 1 molecule of said amide.

3,867,349

ADDITION OF DIMETHYL TEREPHTHALATE AND ETHYLENE GLYCOL TO RECYCLED BIS(HYDROXYETHYL)TEREPHTHALATE

Rudolf Heeg, Oberhochstadt, and Alfred Striebich, Bad Vibel, both of Germany, assignors to Davy-Ashmore Aktiengesellschaft, Frankfurt/Main, Germany

Filed May 3, 1973, Ser. No. 356,796

Claims priority, application Germany, June 3, 1972, 2227091

Int. Cl. C08g *17/01*

U.S. Cl. 260—75 M **14 Claims**

1. In a process for producing a high-polymer particularly a spinnable, polyester composition by ester interchange of dimethyl terephthalate with ethylene glycol as starting materials to produce bis-(2-hydroxyethyl)-terephthalate and subsequent polycondensation of the ester interchange product, in which the dimethyl terephthalate is supplied to the ester interchange stage in a finely divided state for reaction with the ethylene glycol, the improved process which comprises steadily withdrawing a part of the reaction mixture from the ester interchange stage, maintaining the withdrawn mixture at a temperature above the melting point of the dimethyl terephthalate, continuously adding the dimethyl terephthalate in solid form to the withdrawn mixture, homogenizing the added dimethyl terephthalate and withdrawn mixture in a homogenization device to form a homogenized mixture of dimethyl terephthalate and reaction mixture, and returning the resultant homogenized mixture to the ester interchange stage.

3,867,350

POLYURETHANE UREA ELASTOMERS BASED ON POLYCARBONATE MACRODIOLS

Josef Pedain; Klaus Noll, both of Cologne; Klaus Konig, Leverkusen, and Wilhelm Thoma, Bergisch-Neukirchen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

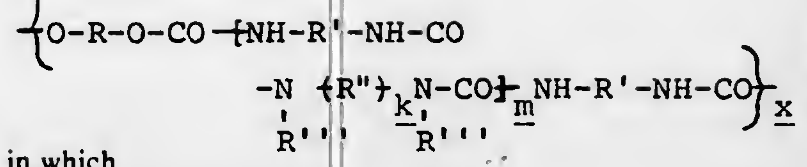
Filed Apr. 20, 1973, Ser. No. 353,036

Claims priority, application Germany, May 4, 1972, 2221751

Int. Cl. C08g *22/10*

U.S. Cl. 260—77.5 AM **2 Claims**

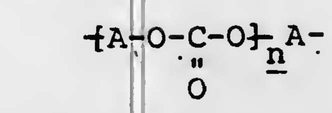
1. Polyurethane urea elastomers corresponding to the formula:



$$\left\{O-R-O-CO-\left[NH-R'-NH-CO-\underset{R'''}{N}-(R'')_k-\underset{R'''}{N}-CO\right]_m-NH-R'-NH-CO\right\}_x$$

in which

R represents the group



$$-\left[A-O-\underset{O}{\overset{\|}{C}}-O\right]_n-A-$$

where 40 to 100 percent by weight of A represents $-CH_2-CH_2-O-_p\,CH_2-CH_2-$

and 0 to 60 percent by weight of A represents $-CH_2-_q$ where

$p = 2$–7,

$q = 6$ or 7,

$n = 2$–40,

R′ represents a divalent C_6–C_{14} aromatic, C_4–C_{18} aliphatic or C_5—C_{20} — cycloaliphatic radical,

R″ represents a divalent C_6–C_{14} aromatic, C_4–C_{18} aliphatic or C_5–C_{20} — cycloaliphatic radical, which may contain nitrogen as heteroatom, or a $-NH-CO-NH-_r R^{IV}-NH-_s CO-NH-$group

where

R^{IV} is a C_1–C_{10} aliphatic or C_5–C_{20} cycloaliphatic radical, $r = 0$ or 1:

$s = 0$ or 1

R‴ represents H or a C_1—C_6 aliphatic radical,

and

$k = 0$ or 1,

$m = 0$–4,

$x = 5$–200

at least 20 mol % of R′ or R″ being cycloaliphatic radicals or at least 20 mol % of both R′ and R″ being cycloaliphatic radicals.

3,867,351

COMPOSITION FOR PREPARING ELECTROCONDUCTIVE RESIN COMPRISING AN UNSATURATED URETHANE AND PHOSPHORIC OR SULFONIC UNSATURATED ESTER

Kiyoshi Juna; Koji Ohdan; Hiroyuki Nakayama, and Kiyohiko Asada, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki-shi, Hyogo-ken, Japan

Filed Nov. 24, 1971, Ser. No. 201,991

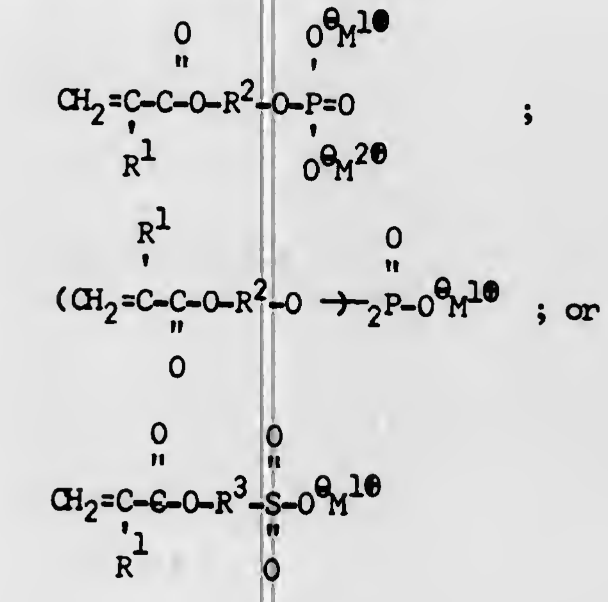
Claims priority, application Japan, Nov. 25, 1970, 45-103328; Dec. 25, 1970, 45-118132

Int. Cl. C08g *22/00, 22/06, 22/16*

U.S. Cl. 260—77.5 CR **11 Claims**

1. An electroconductive composition which comprises:

A. at least one alkylene phosphoric ester, alkylene phosphate ester, alkylene sulfonic ester or alkylene sulfonate ester of acrylic acid or methacrylic acid, represented by the following formulae:



$$CH_2=\underset{R^1}{C}-\overset{O}{\overset{\|}{C}}-O-R^2-O-\underset{O^{\ominus}M^{2\oplus}}{\overset{O^{\ominus}M^{1\oplus}}{P}}=O\quad;$$

$$\left(CH_2=\overset{R^1}{C}-\underset{O}{\underset{\|}{C}}-O-R^2-O\right)_2\overset{O}{\overset{\|}{P}}-O^{\ominus}M^{1\oplus}\quad;\ \mathrm{or}$$

$$CH_2=\underset{R^1}{C}-\overset{O}{\overset{\|}{C}}-O-R^3-\underset{O}{\underset{\|}{\overset{O}{\overset{\|}{S}}}}-O^{\ominus}M^{1\oplus}$$

in which R^1 is hydrogen or a methyl group, R^2 is an alkylene group having 1 to 4 carbon atoms, R^3 is an alkylene group having 1 to 5 carbon atoms, and each of M^1 and M^2 is hydrogen, a monovalent metal, ammonium or monoamine, and

B. urethane unsaturated compound having at least two polymerizable ethylenically unsaturated groups, wherein said urethane unsaturated compound is the reaction product of an ethylenically unsaturated compound having one hydroxyl group and a polyisocyanate having two or three isocyanate groups or a polyisocyanate having two or three isocyanate groups and a polyhydric alcohol having two to four hydroxyl groups.

3,867,352

ISOCYANATE-MODIFIED POLYMERS OF ASPARTIC AND GLUTAMIC ACID AND METHOD OF PREPARING THE SAME

Akira Akamatsu; Akira Okuaki, and Shigeo Mori, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

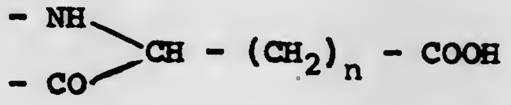
Continuation-in-part of Ser. No. 265,746, June 23, 1972, abandoned. This application Dec. 20, 1972, Ser. No. 316,711

Claims priority, application Japan, July 5, 1971, 46-49421

Int. Cl. C08g *20/00, 20/08, 41/02*

U.S. Cl. 260—77.5 R **10 Claims**

1. A process of improving the wet strength of a solid polymer having repeating units of the formula



$$\begin{matrix}-NH\\-CO\end{matrix}\Big>CH-(CH_2)_n-COOH$$

which comprises contacting said polymer in a liquid medium with an organic isocyanate having at least one reactive NCO group bound to carbon until a sufficient number of the carboxyl groups in said formula is converted to groups of the formula

$$-CO-NH-$$

substantially to increase said wet strength, *n* being 1 or 2, said medium being incapable of dissolving said polymei

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3,867,353

POLYMERIZATION OF OXIRANES AND LACTONES

Henry L. Hsieh; Ollie G. Buck, and Floyd E. Naylor, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1973, Ser. No. 324,514

Int. Cl. C08g *17/017*

U.S. Cl. 260—78.3 R **17 Claims**

1. A copolymerization process which comprises the steps:

- a. admixing at least one monohalooxirane monomer or monohalooxirane monomer and a lactone and an initiator system consisting essentially of (A) (I) an organoaluminum compound and (II) water or lower alcohol, or (B) (I) an organoaluminum compound, (II) water or lower alcohol, and (III) a beta-diketone or metal salt of a beta-diketone,
- b. commencing polymerization of the admixture of said step a) under polymerization conditions,
- c. adding thereto during at least a portion of the polymerization of said step (b) a further monomer comprising a lactone, a lactone and an oxirane, a lactone and an oxetane, or a lactone and oxirane and oxetane wherein the addition of said further monomer is delayed after the initiation of said polymerization for a time of about 0.5 to 120 minutes, thereby copolymerizing said monohalooxirane monomer and said further monomer,

wherein said (I) organoaluminum compound is represented by $R_a'AlX_b'$ wherein *a* is an integer of 1–3, *b* is an integer and is 1 or 2, such that $a + b = 3$, X′ is hydrogen or halogen, and R′ is a hydrocarbon radical.

3,867,354
CHROMIUM SALICYLATE CATALYZED EPOXIDE-CARBOXYLIC ACID ESTERIFICATION

Albert Thomas Betts, Waltham Abbey, Essex, and Norbert Uri, London, both of England, assignors to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Aug. 15, 1969, Ser. No. 851,775

Claims priority, application Great Britain, Aug. 15, 1968, 38998/68

Int. Cl. C08g *30/12*

U.S. Cl. 260—78.4 EP **21 Claims**

1. In an esterification reaction between an epoxide and a carboxylic acid to form an hydroxyester, the step of providing an esterification catalyst selected from the group consisting of bis- and tris - chromium (III) chelates of:

salicylic acid;
mono- and dialkyl-substituted salicylic acids;
alicyclic-substituted salicylic acids; and aryl and substituted-aryl substituted salicylic acids.

3,867,355
METHOD FOR SPRAY DRYING POLYSTYRENE SULFONIC ACID

Chester D. Szymanski, Martinsville, and Ronald N. Demartino, Wayne, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,287

Int. Cl. C08f *27/06;* **C08d** *11/02, 13/30*

U.S. Cl. 260—79.3 R **5 Claims**

1. In a method of drying a solution of polystyrene sulfonic acid containing free sulfuric acid, the improvement which comprises the step of selectively neutralizing free sulfuric acid present with a stoichiometric amount of barium hydroxide prior to drying of the polymer solution.

3,867,356
ARYLENE SULFIDE POLYMERS

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1973, Ser. No. 416,774

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **19 Claims**

1. A method of producing a polymer which comprises:

a. forming a composition by contacting at least one polyhalo-substituted aromatic compound wherein the halogen atoms are attached to aromatic ring carbon atoms, at least one organic amide, at least one alkali metal aminoalkanoate having the formula $R_2N(CR_2)_nCO_2M$ wherein each R is selected from the group consisting of hydrogen and hydrocarbyl radicals selected from alkyl, cycloalkyl, and aryl and combinations of said radicals, the number of carbon atoms in each of said hydrocarbyl radicals being within the range of 1 to about 12, M is an alkali metal selected from the group consisting of lithium, sodium, potassium, rubidium and cesium, *n* is an integer of 1 to about 12, and the total number of carbon atoms in each molecule of said alkali metal aminoalkanoate is within the range of 2 to about 24, and an alkali metal bisulfide selected from the group consisting of lithium bisulfide, sodium bisulfide, potassium bisulfide, rubidium bisulfide and cesium bisulfide; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,867,357
ARYLENE SULFIDE POLYMERS

Lacey E. Scoggins, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

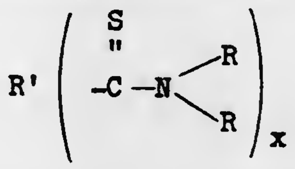
Filed Nov. 19, 1973, Ser. No. 416,778

Int. Cl. C08g *23/00*

U.S. Cl. 260—79.1 **21 Claims**

1. A method of producing a polymer which comprises:

a. forming a composition by contacting a polyhalo-substituted aromatic compound in which the halogen atoms are attached to aromatic ring carbon atoms, a thioamide, a base and an organic amide, said base being selected from hydroxides of lithium, sodium, potassium, rubidium, cesium, magnesium, calcium, strontium and barium and the carbonates of sodium, potassium, rubidium and cesium, said thioamide having the formula



wherein each R is selected from the group consisting of hydrogen and alkyl, cycloalkyl and aryl radicals and combinations of said radicals; R′ is selected from the group consisting of hydrogen and hydrocarbon radicals of valence x selected from saturated hydrocarbon radicals, aromatic hydrocarbon radicals and combinations of said radicals, and x is an integer of 1 to 4, with the proviso that when $x = 1$, R′ and one R together can represent a divalent hydrocarbon radical selected from the group consisting of unsubstituted and alkyl-, cycloalkyl- and aryl-substituted alkylene, cycloalkylene and arylene radicals, the total number of carbon atoms in said thioamide being within the range of 1 to about 20; and,

b. maintaining at least a portion of said composition at polymerization conditions to produce said polymer.

3,867,358
VULCANIZATION OF RUBBER WITH PHOSPHORO TRIAZINE SULFIDES

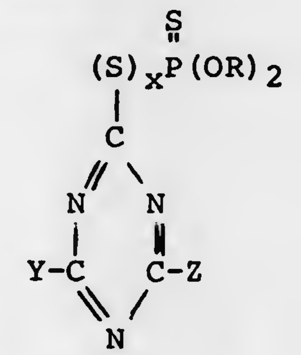
Chester D. Trivette, Jr., and Otto W. Maender, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 3, 1973, Ser. No. 421,126

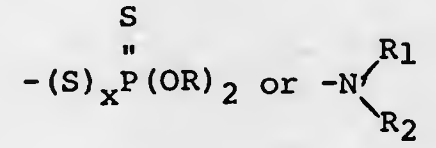
Int. Cl. C08c *11/54;* **C08f** *27/06*

U.S. Cl. 260—79.5 C **25 Claims**

1. The process of accelerating the vulcanization of rubber which comprises heating sulfur-vulcanizable diene rubber and sulfur vulcanizing agent with an accelerating amount of a compound of the formula

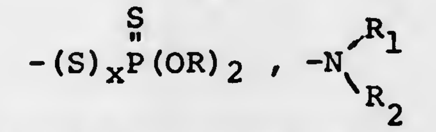


in which Y is



$$-(S)_x\overset{S}{\overset{\|}{P}}(OR)_2 \quad \text{or} \quad -N{<}^{R_1}_{R_2}$$

and Z is



$$-(S)_x\overset{S}{\overset{\|}{P}}(OR)_2 \;,\quad -N{<}^{R_1}_{R_2}$$

or Cl in which each R independently is alkyl of 1-8 carbon atoms, cycloalkyl of 5–8 carbon atoms, benzyl, phenyl or tolyl, x is 1 or 2, and R_1 and R_2 independently are hydrogen, alkyl of 1–8 carbon atoms, cycloalkyl of 5–8 carbon atoms, benzyl, phenyl or tolyl or R_1 and R_2 together with the nitrogen atom from a heterocycle of 4–8 carbon atoms which heterocycle may be interrupted by oxygen or sulfur.

3,867,359
PROCESS OF VULCANIZING NEOPRENE BY USING CERTAIN 2-HYDROXYALKYL N,N-DIALKYLDITHIOCARBAMATES AS ACCELERATORS

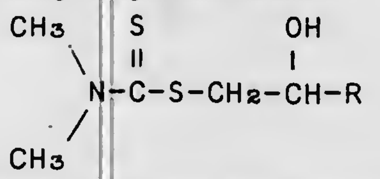
Howard C. Beadle, Norwalk, Conn., assignor to R. F. Vanderbilt Company, Inc., New York, N.Y.

Filed Nov. 16, 1973, Ser. No. 416,506

Int. Cl. C08c *11/54;* **C08f** *27/06*

U.S. Cl. 260—79.5 C **10 Claims**

1. A vulcanizable composition comprising a non-sulfur-modified neoprene rubber; an alkaline earth metal oxide; and an accelerator having the generic formula:



$$(CH_3)_2N-\overset{S}{\overset{\|}{C}}-S-CH_2-\overset{OH}{\overset{|}{C}H}-R$$

wherein R is selected from the group consisting of hydrogen and methyl.

3,867,360
NOVEL ISOTHIOCYANATE POLYMERS

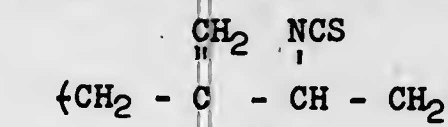
Giffin D. Jones, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 3, 1972, Ser. No. 303,646

Int. Cl. C08f *27/08, 15/00, 3/32*

U.S. Cl. 260—79.7 **8 Claims**

1. A vinyl addition polymer comprising at least 0.5 mole percent of polymerized moieties of the formula



$$\left(CH_2-\overset{CH_2}{\overset{\|}{C}}-\overset{NCS}{\overset{|}{C}H}-CH_2\right).$$

I

3,867,361
A PROCESS FOR THE POLYMERIZATION OF CYCLIC OLEFINS

Nissim Calderon, and William Allen Judy, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 28, 1966, Ser. No. 537,661

Int. Cl. C08f *5/00;* **C08g** *33/00;* **C08f** *1/56*

U.S. Cl. 260—88.2 **9 Claims**

1. A polymerization process comprising polymerizing at least one unsaturated alicyclic compound selected from the group consisting of (1) unsaturated alicyclic compounds containing 4 or 5 carbon atoms in the cyclic ring and containing 1 carbon-to-carbon double bond in the cyclic ring, and (2) unsaturated alicyclic compounds containing at least 8 carbon atoms in the cyclic ring and containing at least 1 carbon-to-carbon double bond in the cyclic ring, by subjecting said alicyclic compounds to polymerization conditions in the presence of a catalyst system comprising (a) at least one organometallic compound wherein the metal is selected from the group consisting of Ia, IIa, IIb and IIIa of the Periodic Table of Elements, (b) at least one metal salt wherein the metal is selected from the group consisting of molybdenum and tungsten and (c) at least one compound of the general formula R-S-H wherein R is a radical selected from the group consisting of (1) hydrogen, (2) alkyl, (3) aryl, (4) arylalkyl, (5) alkaryl, (6) alkenyl (7) thioalkyl, thioaryl and thioalkaryl and radicals of (2) through (6) wherein at least one hydrogen is substituted by thiol (SH) and wherein the relationship between these three catalyst components defined by (a), (b) and (c) are within a molar ratio of (b)/(c) ranging from 0.3/1 to at least 20/1 and the molar ratio of (a)/(b) is within the range from about 0.5/1 to at least about 15/1.

3,867,362
METHOD OF TELOMERIZING

Emile Trebillon, Neuilly/Seine, and Isidore Raitzyn, Paris, both of France, assignors to Rhone-Progil, Courbevoie, France

Filed June 27, 1973, Ser. No. 374,010

Claims priority, application France, June 29, 1972, 72.23498

Int. Cl. C08f *1/80*

U.S. Cl. 260—91.7 **8 Claims**

1. A method of telomerizing a monomeric composition comprising an unsaturated monomer selected from the group consisting of vinyl chloride and vinylidene chloride with a telogen which comprises heating the said composition in the presence of a ketone alcohol and a polar solvent selected from the group consisting of an alcohol and acetonitrile at a temperature within the range of 60°–200°C and at a pressure within the range of 1–200 bars, and in which the molar ratio of monomer to ketone alcohol is within the range of 20–2000.

3,867,363
CARCINOEMBRYONIC ANTIGENS

Hans John Hansen, 200 Hillside Ave., Allendale, N.J. 07401

Continuation-in-part of Ser. No. 133,404, Apr. 12, 1971, Pat. No. 3,697,638, which is a continuation-in-part of Ser. No. 110,288, Jan. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 42,526, June 1, 1970, abandoned. This application May 12, 1972, Ser. No. 252,700

Int. Cl. C07g *7/00;* **A61k** *27/04*

U.S. Cl. 260—112 R **9 Claims**

1. A process for producing human carcinoembryonic antigen component A which comprises

a. homogenizing adenocarcinoma tissue;
b. separating the solid particles from the homogenate;
c. treating the supernatant with a glycoprotein solvent in which the carcinoembryonic antigen component A is soluble;
d. separating the precipitate and clarifying the resulting solution;
e. dialyzing the clarified solution against a polyethylene glycol with an average molecular weight of about 15,000 to 20,000 and a softening point at 60°C.;
f. dissolving the retentate in an aqueous buffer of pH from about 5 to 9;
g. subjecting the resulting material to sequential chromatography on two different gel columns, the first of which is an agarose gel having about 6 percent by weight agarose and a particle size of from 40 to 210 microns and the second of which is a hydrophilic water-insoluble cross-linked dextran polymer gel;
h. collecting and concentrating the eluates which have a spectrophotometric absorption peak wave length of 280 mμ and a molecular weight of about 200,000 to 500,000;
i. subjecting the resulting eluates to chromatography on a mixed bed cellulose ion exchange column comprising microgranular diethylaminoethyl cellulose in the free base form having rod shaped particles, a capacity of 1.0 ± 0.1 meq./gm., a particle size distribution of about 20 μ to about 60 μ and a water regain of 2.3 to 2.8 gm/gm. dry exchanger and a microgranular carboxymethylcellulose with a capacity of 1.0 ± 0.1 meq/gm. having rod shaped particles, a particle size distribution of about 20 μ to about 60 μ and a water regain of 2.3 to 2.7 gm./gm. exchanger;
j. collecting the eluates resulting from eluting with ammonium acetate at pH 4 in 0.05 M sodium chloride.

3,867,364

PROCESS FOR THE SYNTHESIS OF LEUPEPTINS AND THEIR ANALOGUES

Hamao Umezawa, Tokyo; Shinichi Kondo, Yokohama; Takaaki Aoyagi, Fujisawa; Tomio Takeuchi, and Kenji Maeda, both of Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

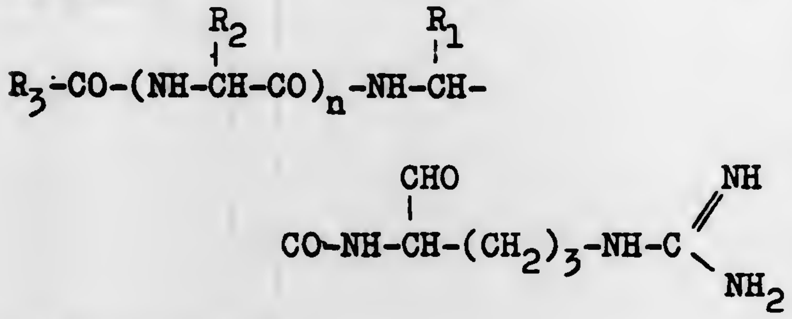
Continuation-in-part of Ser. No. 877,046, Nov. 14, 1969, abandoned. This application Nov. 30, 1972, Ser. No. 310,975

Claims priority, application Japan, Nov. 21, 1968, 43-84824; Nov. 30, 1968, 43-87292; June 11, 1969, 44-45369

Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *27/00*

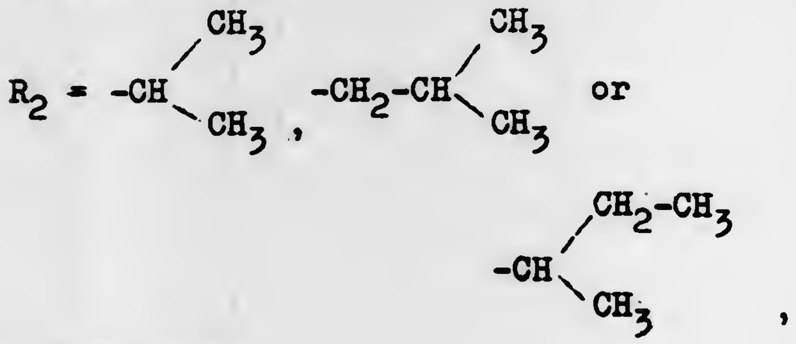
U.S. Cl. 260—112.5 **13 Claims**

1. Leupeptins and their analogues represented by the general formula:



$$R_3\text{-CO-}(\text{NH-}\overset{R_2}{\text{CH}}\text{-CO})_n\text{-NH-}\overset{R_1}{\text{CH}}\text{-CO-NH-}\overset{\text{CHO}}{\text{CH}}\text{-}(\text{CH}_2)_3\text{-NH-C}\begin{matrix}\text{NH}\\ \text{NH}_2\end{matrix}$$

wherein $n = 1$ or 0, R_1,



R_3 = alkyl radical

3,867,365

PENICILLOYL-POLYLYSINE CONJUGATES HAVING DEXTRO-ROTARY OPTICAL ACTIVITY, AND METHODS FOR THEIR PREPARATION AND USE

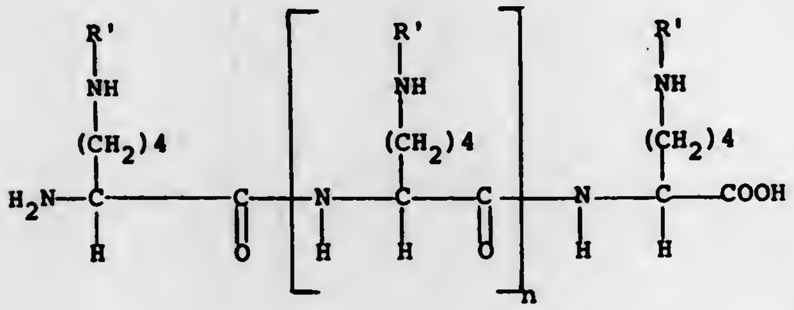
Mark A. Stahmann, Madison, and Sudhakar S. Wagle, Milwaukee, both of Wis., assignors to Kremers-Urban Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 61,514, Aug. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 656,323, July 27, 1967, abandoned. This application July 24, 1972, Ser. No. 274,325

Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*

U.S. Cl. 260—112.5 **28 Claims**

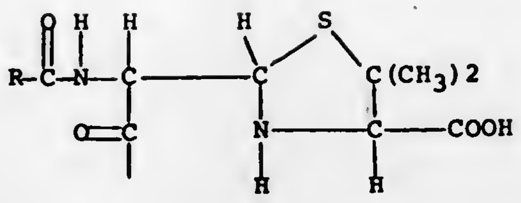
1. The optically active, dextro-rotary water soluble, penicilloyl-polylysine conjugates represented by the formula:



wherein:

n is an integer from about 10 to about 100; and

R' is selected from the class consisting of H and the penicilloyl substituents represented by the formula:



wherein R is selected from the group consisting of benzyl, allylthiomethyl, phenoxyethyl, phenoxymethyl, 2,6-dimethoxyphenyl, 5-methyl-3-phenyl-4-isoxazolyl, 2-ethoxy-1-naphthyl, and alpha-aminobenzyl, and in which at least 40% of said R′ groups are the penicilloyl substituents;

wherein said conjugates have an optical rotation corrected for the contributions of said polylysine in said conjugates yielding a specific rotation in excess of $[\alpha]_D^{25} + 100°$ for $1 + 10^{-2}$ M penicilloyl groups contained in the conjugates;

said conjugates are free from penamaldate and penicillenate groups;

said conjugates are soluble in water without succinylation.

3,867,366

OPIATE IMIDATES AND PROTEIN CONJUGATES THEREOF

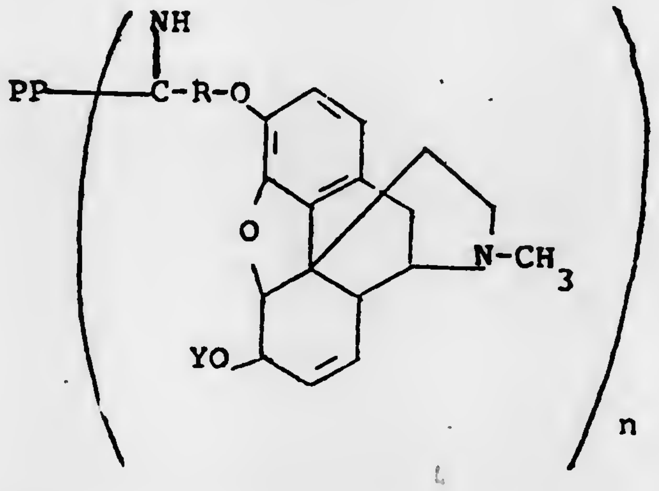
Kenneth E. Rubenstein, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Synvar Associates, a/k/a Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. Nos. 304,157, Nov. 6, 1972, , and Ser. No. 143,609, May 14, 1971, abandoned. This application May 9, 1973, Ser. No. 358,757

Int. Cl. C07g *7/00;* **A61k** *23/00*

U.S. Cl. 260—121 **5 Claims**

1. A conjugate of the formula:



wherein:

y is hydrogen or acetyl;

R is alkylene of from 1–6 carbon atoms, wherein the linkage is through an amidine group;

PP is antigenic poly(amino acid); and

.n is at least one and not greater than the molecular weight of PP divided by 500.

3,867,367

SULFURIZED OLIGOMERIC PHOSPHORODIAMIDATE

Haakon Haugen, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

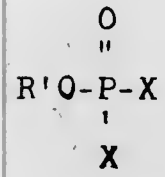
Division of Ser. No. 210,238, Dec. 20, 1971, Pat. No. 3,810,838. This application Sept. 19, 1973, Ser. No. 398,615

Int. Cl. C10m *1/48*

U.S. Cl. 260—125 **4 Claims**

1. A method of preparing a sulfurized reaction product of an oligomeric O-alkyl-N,N′-bis(alkaryl)phosphorodiamidate having an average between about 1 and 4 phosphorodiamidic groups, a sulfur content between about 2 and 8 wt. % and a phosphorus content of between about 4 and 16 wt. % comprising:

1. first contacting an amine of the formula RNH_2 where R is alkaryl of from 12 to 24 carbons with an alkyl dihalophosphate of the formula:



$$\text{R}'\text{O-}\underset{\text{X}}{\overset{\text{O}}{\text{P}}}\text{-X}$$

where R′ is alkyl of from 2 to 6 carbons and X is chlorine or bromine utilizing a mole ratio of said amine to said dihalophosphate of between about 1.7:1 and 2.3:1 at a temperature between about 170° and 200°C. in the absence of inert diluent solvent and in the absence of catalyst while continuously blowing the reaction mixture with an inert gas and recovering the oligomeric phosphorodiamidate first reaction product,

2. second contacting said first reaction product with phosphorus pentasulfide in the presence of an inert liquid diluent at a temperature between about 80° and 150°C. while continuously purging the reaction mixture with an inert gas utilizing a mole ratio of phosphorus pentasulfide to said first reaction product of between about 0.05:1 and 0.5:1 and recovering said sulfurized reaction product.

3,867,368

READ-WRITE MAGNETIC TRANSDUCER HAVING A COMPOSITE STRUCTURE COMPRISING A STACK OF THIN FILMS

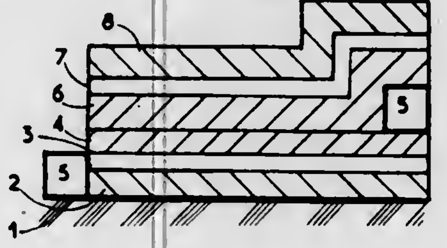
Jean-Pierre Lazzari, Villiers Saint Frederic, France, assignor to Compagnie Internationale Pour L'Informatique, Louveciennes, France

Filed Oct. 25, 1973, Ser. No. 409,613

Claims priority, application France, Nov. 7, 1972, 72.39317

Int. Cl. G11b *5/12, 5/22*

U.S. Cl. 360—126 **8 Claims**



1. A read/write transducer comprising: a pair of magnetic pole-pieces and read-write conductor means inductively coupled to said pole-pieces and passing therebetween; each pole-piece including the superposition of:

a first magnetic layer member close to said conductor means;

a magnetostatically decoupling layer means, over said first magnetic layer member; and

a second magnetic layer member of substantially lower permeability, substantially higher saturation flux density and appreciably higher value of anistropy field than said first magnetic layer member.

3,867,369

DYESTUFFS CONTAINING A (BENZENESULPHONYL)-SUBSTITUTED SULPHONAMIDE FIRST COMPONENT AND AN INDOLE FIRST COMPONENT

Richard Sommer, Leverkusen-Schlebusch, and Gerhard Wolfrum, Bergisch-Neukirchen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

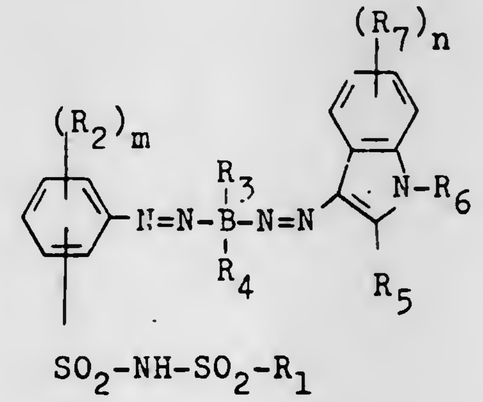
Filed Apr. 20, 1972, Ser. No. 245,923

Claims priority, application Germany, Apr. 20, 1971, 2119038

Int. Cl. C09b *31/14*

U.S. Cl. 260—165 **11 Claims**

1. Disazo dyestuff, the free-acid form of which has the formula



in which

B is 1,4-phenylene or 1,4-naphthylene;

R_1 is phenyl; phenyl substituted with C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, nitro or cyano; C_1–C_4-alkyl; or dialkylamino with 1–6 carbon atoms in the alkyl radical;

R_2 is chlorine; bromine; C_1–C_6-alkoxy; C_1–C_6-alkoxy substituted by cyano hydroxy or phenyl; C_1–C_4-alkyl; C_1–C_4-alkyl substituted by cyano, hydroxy or phenyl;

R_3 and R_4 are hydrogen; chlorine; bromine; C_1–C_6-alkoxy; C_1–C_6-alkoxy substituted by cyano, hydroxy or phenyl; C_1–C_4-alkyl; or C_1–C_4-alkyl substituted by cyano, hydroxy or phenyl;

R_5 is C_1–C_4-alkyl; phenyl; or phenyl substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, cyano or nitro;

R_6 is hydrogen, C_1–C_4-alkyl; or C_1–C_4-alkyl substituted by cyano, carbonamide or carboxy;

R_7 is C_1–C_4-alkyl; C_1–C_4-alkyl substituted by cyano, hydroxy or phenyl; C_1–C_6-alkoxy; C_1–C_6-alkoxy substituted by cyano, hydroxy or phenyl; halogen; nitro; sulfo; or cyano;

m is a number 0–2; and

n is a number 0–2.

3,867,370

2-LOWER ALKYSULFONYL-1H-1,4-BENZODIAZEPINES

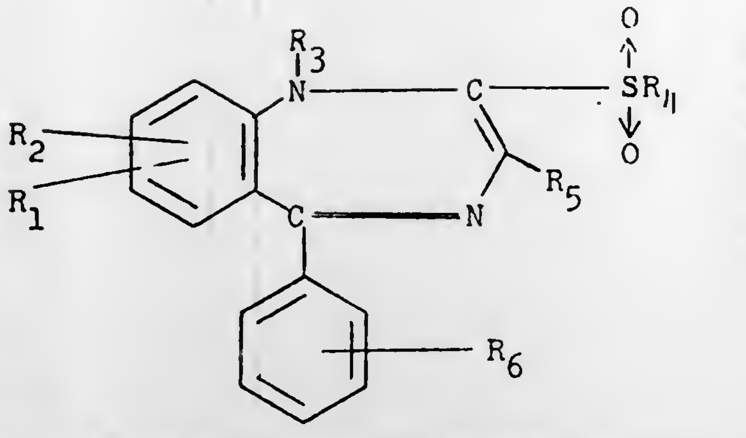
James Valentine Earley, Cedar Grove; Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffman-LaRoche, Inc., Nutley, N.J.

Division of Ser. No. 187,836, Oct. 8, 1971,. This application June 5, 1974, Ser. No. 476,639

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **1 Claim**

1. A compound of the formula



wherein R_1 and R_2 are each selected from the group consisting of hydrogen, halogen, trifluoromethyl and nitro; R_3 is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl-lower alkyl, and di-lower alkylamino-lower alkyl; R_4 is lower alkyl; R_5 is hydrogen or lower alkyl; R_6 is selected from the group consisting of hydrogen and halogen

and the pharmaceutically acceptable acid addition salts thereof.

3,867,371
PROCESS FOR PRODUCING PENICILLIN ESTERS

Toshiyasu Ishimaru, Suita, and Yutaka Kodama, Toyama, both of Japan, assignors to Toyama Chemical Co. Ltd, Tokyo, Japan

Filed June 28, 1972, Ser. No. 267,147

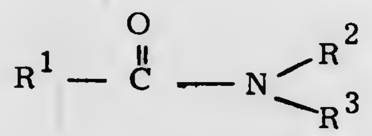
Claims priority, application Japan, July 8, 1971, 46-50447

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **6 Claims**

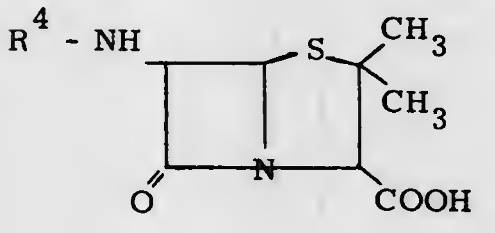
1. A process for producing penicillin or penicillin sulfoxide esters, which comprises:

reacting an N,N-disubstituted acid amide represented by the formula:

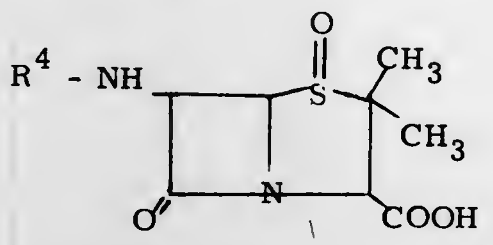


$$R^1 - \overset{\overset{O}{\|}}{C} - N\begin{matrix} R^2 \\ R^3 \end{matrix}$$

wherein R^1 represents hydrogen or lower alkyl, and R^2 and R^3, which may be the same or different, each represents a lower alkyl group, with a halogenating agent selected from the group consisting of phosphorous oxychloride, phosphorous oxybromide, phosphorous pentachloride, phosphorous pentabromide, sulfurylchloride, thionylchloride, thionylbromide, phosgene, carbonylbromide and thiophosgene, and reacting the thus obtained product with an alkali metal salt of penicillin or an alkali metal salt of penicillin sulfoxide, wherein said penicillin and said penicillin sulfoxide are selected from the group consisting of



,



wherein R^4 represents thienylacetyl, N-protected-α-aminophenylacetyl, α-aminothienylacetyl and α-aminosubstituted-phenylacetyl, and Penicillin G and V and sulfoxides thereof; and then reacting the product thus obtained with a hydroxy compound represented by the formula R—OH, wherein R represents halogeno lower alkyl, benzoyl lower alkyl, nitro or lower alkoxy substituted phenyl lower alkyl, nitro and halogen substituted phenyl, bisphenyl substituted lower alkyl or phthalimido, in the presence of an organic tertiary amine selected from the group consisting of pyridine, picoline, lutidine, collidine, quinoline, dimethylaniline, diethylaniline and triloweralkylamine.

3,867,372
BENZODIAZEPINE PROCESS

Hisao Yamamoto, Nishinomiya; Shigeho Inaba, Takarazuka; Toshiyuki Hirohashi, Ashiya; Michihiro Yamamoto, Toyonaka; Kikuo Ishizumi; Mitsuhiro Akatsu, both of Ikeda; Isamu Maruyama, Minoo; Kazuo Mori, Kobe; Yoshiharu Kume, and Takahiro Izumi, both of Takarasuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

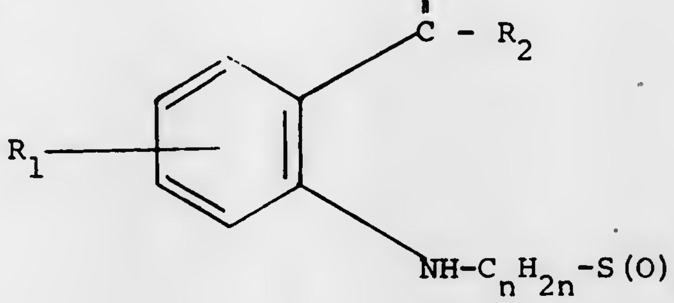
Filed Jan. 29, 1971, Ser. No. 111,141

Claims priority, application Japan, Feb. 3, 1970, 45-9691; Feb. 5, 1970, 45-10533

Int. Cl. C07d *53/06*

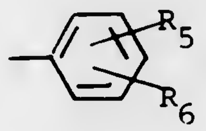
U.S. Cl. 260—239.3 D **4 Claims**

1. A process for preparing benzodiazepine derivatives and salts thereof which comprises reacting in the presence of a solvent and in the presence of an acidic catalyst an aminophenylketone derivative having the formula,

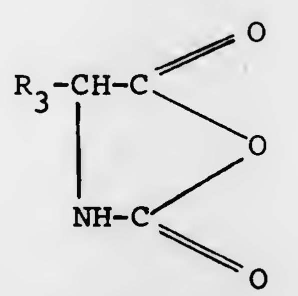


(IV)

wherein R_1 is a hydrogen atom, a halogen atom, a nitro group, a cyano group, a lower alkoxy group or a trifluoromethyl group; R_2 is a pyridyl group or a group of the formula



where R_5 and R_6 represent individually a hydrogen atom, a halogen atom, a $C_1 - C_2$ alkyl group or a trifluoromethyl group); R_4 is a $C_1 - C_4$ alkyl group; *m* is 1 or 2; and *n* is an integer of 1 to 4, with a 2,5-oxazolidinedione having the formula,



(V)

wherein R_3 is a hydrogen atom or a $C_1 - C_4$ alkyl group, wherein the reaction is carried out at a temperature ranging from −25°C to +120°C and wherein at least one mole of the 2,5-dione derivative is used per mole of the aminophenylketone derivative.

3,867,373
EXTREMELY LOW VISCOSITY ADDUCTS OF LACTAMS WITH WATER OR OXIMES

Kuno Wagner, Leverkusen-Steinbuechel, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

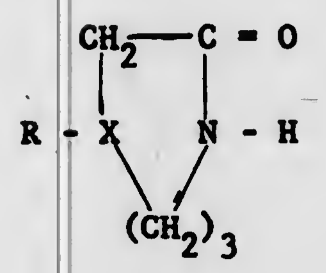
Filed Dec. 13, 1971, Ser. No. 207,560

Claims priority, application Germany, Dec. 17, 1970, 2062289

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 R **13 Claims**

1. Adduct of a lactam having the formula

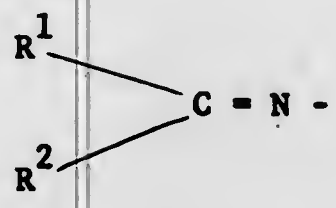


wherein
- X is —CH— and R is hydrogen; or
- X is nitrogen and
- R is selected from the group of:
  - alkyl having 1 to 4 carbon atoms;
  - cycloalkyl having 5 or 6 carbon atoms in the ring;
  - aralkyl having 1 or 2 carbon atoms in the alkyl portion and phenyl or naphthyl as the aromatic portion; pyridyl; and
  - lower alkyl-substituted pyridyl,

with a hydroxyl compound having the formula

Y—OH

wherein Y is hydrogen or



wherein
- R^1 and R^2, which can be the same or different, are selected from the group of hydrogen, C_1 to C_{12} alkyl which together optionally may form a 5- or 6-membered carbocyclic ring which optionally can contain a double bond, and benzyl,

said adduct containing from 0.3 to 4 moles of said hydroxyl compound per mol of said lactam.

3,867,374
DIAZEPINOINDOLES

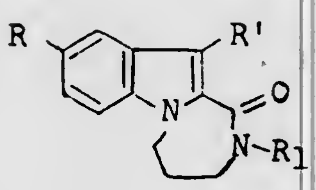
Brian E. Reynolds, Dresher, and John R. Carson, Norristown, both of Pa., assignors to McNeil Laboratories, Incorporated, Ft. Washington, Pa.

Continuation-in-part of Ser. No. 734,532, June 5, 1968,. This application May 28, 1969, Ser. No. 828,727

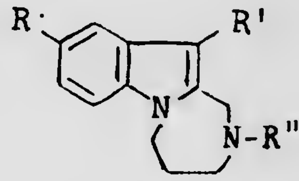
Int. Cl. C07d *53/02*

U.S. Cl. 260—239.3 T **25 Claims**

1. A member selected from the group consisting of 2,3,4,5-tetrahydro-1H-1,4-diazepino[1,2*a*]indoles having the formulas:



and



wherein R is a member selected from the group consisting of hydrogen, lower alkoxy, chloro and fluoro; R′ is a member selected from the group consisting of hydrogen, lower alkyl and phenyl;

R_1 is a member selected from the group consisting of hydrogen lower alkyl, di-(lower alkyl)-amino-lower alkyl, di-(lower alkyl)-amidomethyl, benzyl and p-tolylmethyl; and R″ is a member selected from the group consisting of hydrogen, lower alkyl, di-(lower alkyl)-amino-lower alkyl, benzyl, p-tolylmethyl and lower alkanoyl; and the therapeutically active acid addition salts of the foregoing basic nitrogen containing compounds.

2. 2,3,4,5-Tetrahydro-1H-1,4-diazepino[1,2-*a*]indol-1-one.

3,867,375
REAGENTS FOR PREPARING AND METHOD OF PREPARING PROSTAGLANDINS

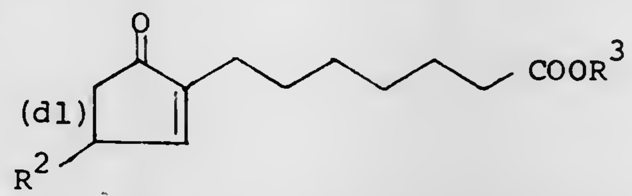
Francisco S. Alvarez, Sunnyvale; Arthur F. Kluge, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 12, 1972, Ser. No. 252,725

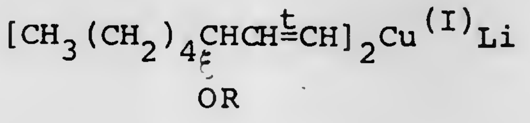
Int. Cl. C07c *61/20*

U.S. Cl. 260—240 R **15 Claims**

3. A process for preparing prostaglandins and prostaglandin derivatives which comprises treating a compound having the formula

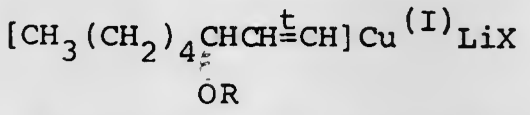


wherein R^2 is hydrogen or acid labile ether having from 3 through 10 carbon atoms; and R^3 is lower alkyl, chloroethyl, dichloroethyl, or trichloroethyl; with a freshly prepared complexed octenol ether copper$^{(I)}$ lithium reagent composition consisting essentially of a (dl) or optically active (S) isomer mixture of compounds having the formulas:



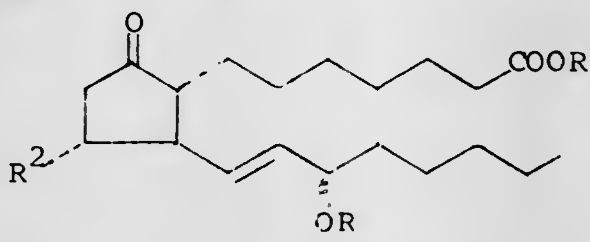
$$[CH_3(CH_2)_4\underset{\underset{OR}{\wr}}{C}HCH\overset{t}{=}CH]_2Cu^{(I)}Li$$

and

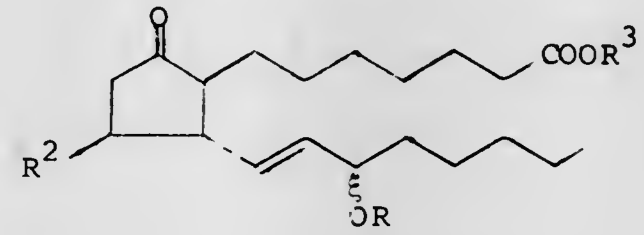


$$[CH_3(CH_2)_4\underset{\underset{OR}{\wr}}{C}HCH\overset{t}{=}CH]Cu^{(I)}LiX$$

wherein ~ OR is an acid labile ether; X is a halide; the t over the double bond indicates the trans configuration; and the wavy line indicates either a (dl) mixture with respect to this asymmetric center or the optically active (S) isomer; complexed by an electron-rich neutral complexing reagent, which coordinates with transition metals, in an inert organic solvent mixture at temperatures in the range of about from −100° to −30°C for about from five minutes to 24 hours, thereby yielding the corresponding mixture of products having the formulas:



and



wherein R^2, R^3 and ~ OR are as defined above.

3,867,376
BIS-S-TRIAZIN-YLAMINO-STILBENE-2,2′-DISULPHONIC ACIDS

Franz Guenter, Riehen; Werner Fringeli, Basel, and Peter Liechti, Binningen, all of Switzerland, assignors to Ciba-Giegy AG, Basel, Switzerland

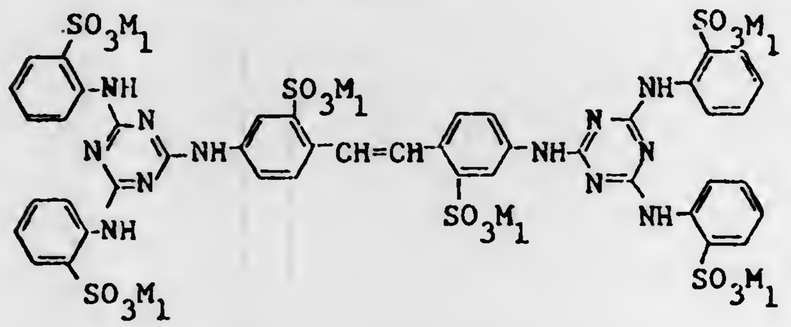
Filed June 27, 1972, Ser. No. 266,848

Claims priority, application Switzerland, July 16, 1971, 10480/71

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 B **1 Claim**

1. A compound of the formula



wherein M_1 represents a sodium, potassium or ammonium ion.

3,867,377
METHOD OF MAKING 13-CIS PROSTAGLANDIN DERIVATIVES

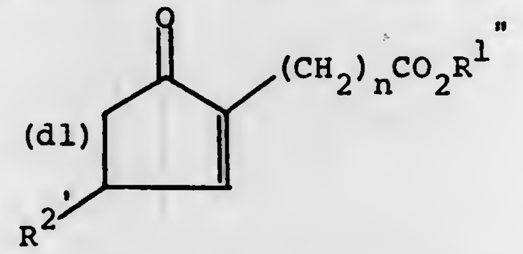
Arthur F. Kluge, Palo Alto; Karl G. Untch, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex, Inc., Palo Alto, Calif.

Filed July 18, 1972, Ser. No. 272,880

Int. Cl. C07c *61/36, 61/32*

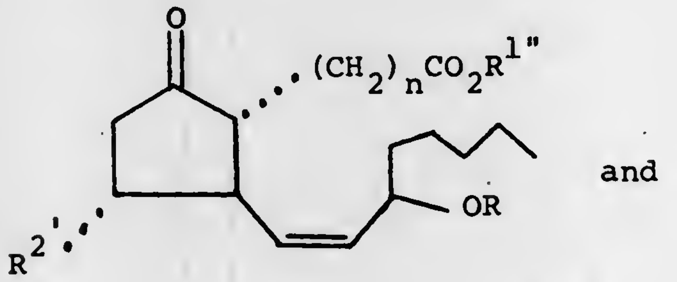
U.S. Cl. 260—240 R **14 Claims**

1. A process for preparing 13-cis prostaglandin derivatives which comprises treating a compound having the formula:



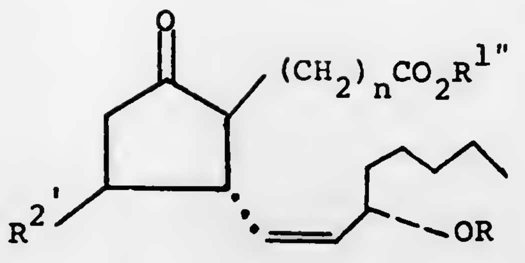
wherein R^1 is lower alkyl, chloroethyl, dichloroethyl or trichloroethyl; *n* is a whole integer of from two through eight; and R^2 is hydrogen or acid labile ether having from three through 10 carbon atoms;

with a freshly prepared complexed cis-octen-3-ol 3-acid labile ether copper$^{(I)}$ lithium reagent, in a mixed inert organic solvent at temperatures in the range of about from −100° to 20°C for about from 5 minutes to 24 hours, thereby yielding: when the said complexed cis-octen-3-ol 3-acid labile ether copper$^{(I)}$ lithium reagent has the (dl) configuration the products having the formulas



(1)

and



(1r) ;

when the said complexed cis-octen-3-ol 3-acid labile ether copper$^{(I)}$ lithium reagent has the (R) configuration the products having the Formula (1); and when the said complexed cis-octen-3-ol 3-acid labile ether copper$^{(I)}$ lithium reagent has the (S) configuration the products having the Formula (1*r*); wherein R^1, n, and R^2 are as defined herein above; and OR is an acid labile ether.

3,867,378
PREPARATION OF 7-ACYLAMIDO-7-METHOXY-3-SUBSTITUTED METHYL-3(OR 2)-CEPHEM-4-CARBOXYLIC ACID AND ITS S-OXIDES

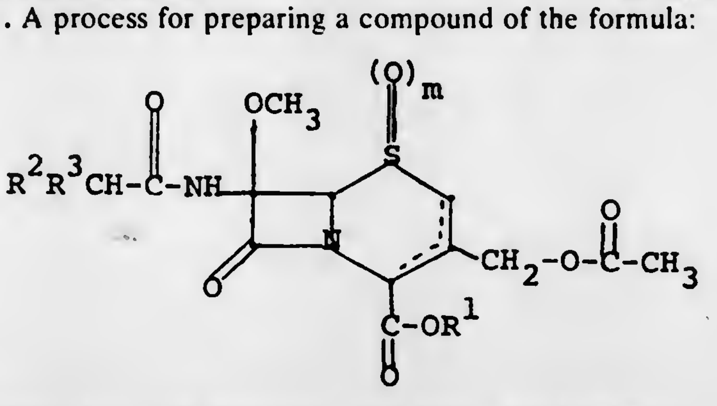
Seemon H. Pines, Murray Hill, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 14, 1971, Ser. No. 207,980

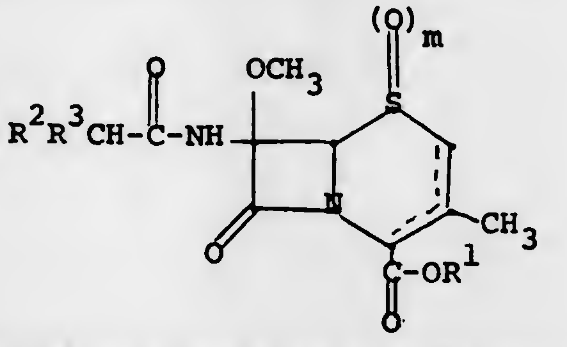
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **4 Claims**

1. A process for preparing a compound of the formula:



wherein R^1 is trichloroethyl, tert-butyl, benzoylmethyl, p-methoxybenzyl, benzyl, benzhydryl, trimethylsilyl, methoxymethyl, benzoylmethylcarbonyloxy, or tert-butylcarbonyloxy; R^2 is hydrogen, halo, amino, hydroxy, tetrazolyl or carboxy; R^3 is phenylthio, cyano, phenyl or substituted phenyl, heterocycle or substituted heterocycle, heterocyclic thio or substituted heterocyclic thio group wherein said heterocycle is selected from the group consisting of furyl, thienyl, thiazolyl, isothiazolyl, oxadizolyl and thiadiazolyl, and wherein said substituent on the phenyl, heterocycle and heterocyclic thio groups is selected from the group consisting of halo, carboxymethyl, aminomethyl, nitro, methoxy and methyl; and *m* is an integer of 0–1, which comprises the step of treating a compound of the formula:



wherein R^1, R^2 and R^3 and *m* are as defined above with a manganese III, Palladium, Mercury II, thallium III or lead acetate acetate in the presence of a potassium halide.

3,867,379
7-SUBSTITUTED CEPHALOSPORANIC ACID AND DERIVATIVES THEREOF

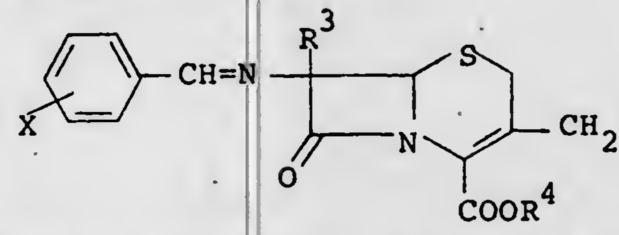
Joseph Edward Dolfini, Princeton, and Ekkehard Bohme, Hightstown, both of N.J., assignors to E.R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 119,034, Feb. 25, 1971, abandoned. This application June 7, 1972, Ser. No. 260,635

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **7 Claims**

1. A compound having the formula:



wherein R_3 is lower alkyl; R^4 is selected from the group consisting of hydrogen, lower alkyl, trichloroethyl, benzyl, methoxybenzyl, and benzhydryl; Y is selected from the group consisting of hydrogen, acetoxy, pyridinium and hydroxy; X is selected from the group consisting of hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy, nitro and amino; and pharmaceutically accptable salts thereof.

3,867,380
3-HETEROCYCLIC THIOMETHYLCEPHALOSPORINS

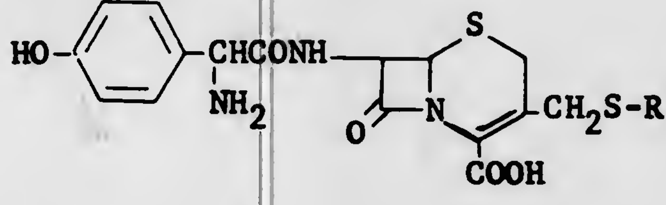
George L. Dunn, Wayne, and John R. E. Hoover, Glenside, both of Pa., assignors to Smithkline Corporation, Philadephia, Pa.

Continuation-in-part of Ser. No. 116,598, Feb. 18, 1971, , which is a continuation-in-part of Ser. No. 99,296, Dec. 17, 1970, abandoned. This application June 14, 1972, Ser. No. 262,903

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula:



in which:

R^1 is tetrazol-5-yl, 1,3,4-thiadiazol-2-yl, 1,3,4-oxadiazol-3-yl, 1,2,4-triazol-3-yl, or 1,2,3-triazol-5-yl, each of such groups being unsubstituted or substituted with one or two lower alkyl groups of one to four carbon atoms or a nontoxic, pharmaceutically acceptable salt thereof.

3,867,381
2-MORPHOLINOMETHYLBENZOPHENONE

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 23,074, March 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 877,455, Nov. 17, 1969, abandoned, which is a division of Ser. No. 581,152, Sept. 22, 1966, Pat. No. 3,497,508. This application Aug. 14, 1972, Ser. No. 280,347

Int. Cl. C07d *87/34*

U.S. Cl. 260—247.7 R **1 Claim**

1. The compound which is 2-morpholinomethylbenzophenone.

3,867,382
PROCESS FOR THE PRODUCTION OF CYANURIC CHLORIDE

Yelagondahally S. Suryanarayana, and Luther J. Reid, Jr., both of Mobile, Ala., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 142,359, May 11, 1971, abandoned. This application July 24, 1973, Ser. No. 382,245

Int. Cl. C07d *55/42*

U.S. Cl. 260—248 C **2 Claims**

1. In a process for the production of cyanuric chloride by passing cyanogen chloride in the vapor phase over an activated carbon catalyst, the improvement which comprises contacting said cyanogen chloride with a untreated carbon catalyst derived from coconut, said catalyst having an inner surface of about 1,200 to 1,500 sq. meters per gram, an internal micropore volume of at least 0.7 cc per gram and an ash content below 4.0 percent by weight.

3,867,383
MONOANTHRANILATOANILINO-s-TRIAZINES

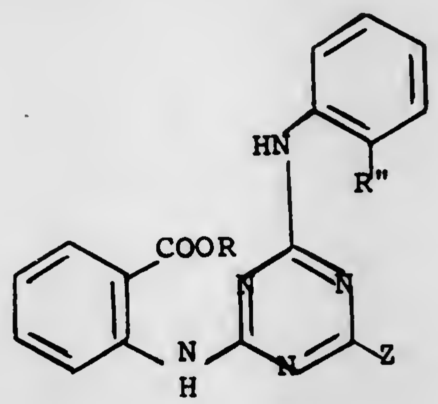
Roland A. E. Winter, Armonk, N.Y., assignor to Ciba-Giegy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 129,126, March 29, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,566

Int. Cl. C07d *55/22, 55/20*

U.S. Cl. 260—249.6 **4 Claims**

1. A compound of the formula



wherein R is hydrogen or a lower alkyl group,

Z is phenyl or —NR'_2 where R′ is a lower alkyl group, and R″ is hydrogen or —COOR.

3,867,384
2-AMINO-4(3H)-QUINAZOLINONES

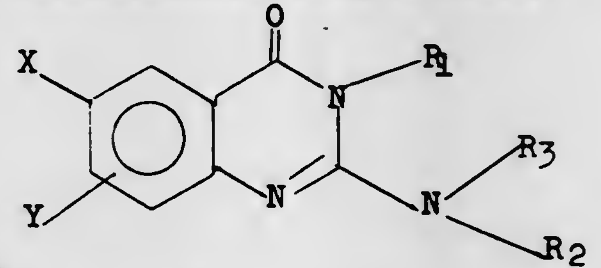
Greg A. Bullock, 2225 Patwynn Rd., and Patrick J. Sheeran, 2707 W. Lock Dr., both of Wilmington, Del. 19810

Filed Sept. 1, 1972, Ser. No. 285,616

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q **3 Claims**

1. A 2-aminoquinazolinone having the formula:



wherein

R_1 is allyl or C_1–C_3 alkyl;
R_2 is allyl, a C_1–C_6 alkyl or phenyl;
R_3 is hydrogen;
X is halogen; and
Y is hydrogen.

3,867,385

BINUCLEAR N-HETEROCYCLIC POLYGLYCIDYL COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE, AND THEIR USE

Jurgen Habermeier, Pfeffingen, and Daniel Porret, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporaton, Ardsley, N.Y.

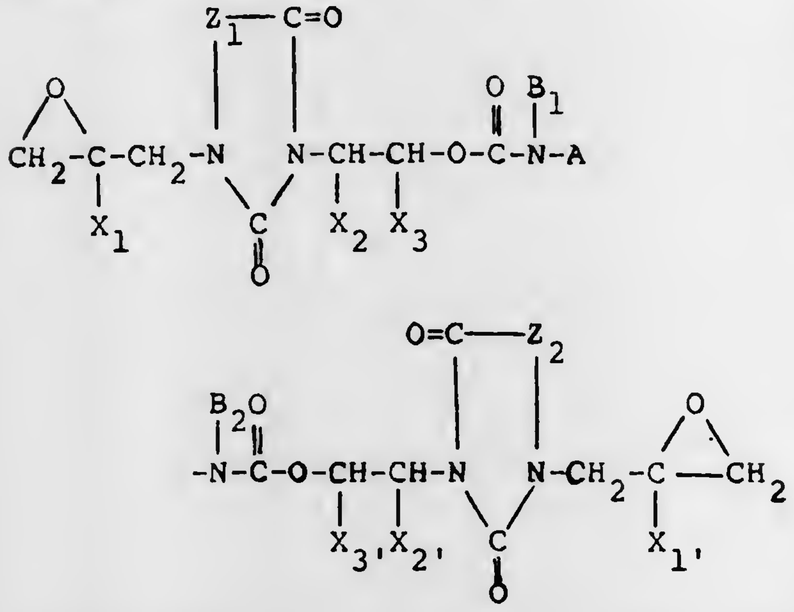
Filed Nov. 21, 1972, Ser. No. 308,625

Claims priority, application Switzerland, Nov. 24, 1971, 17126/71

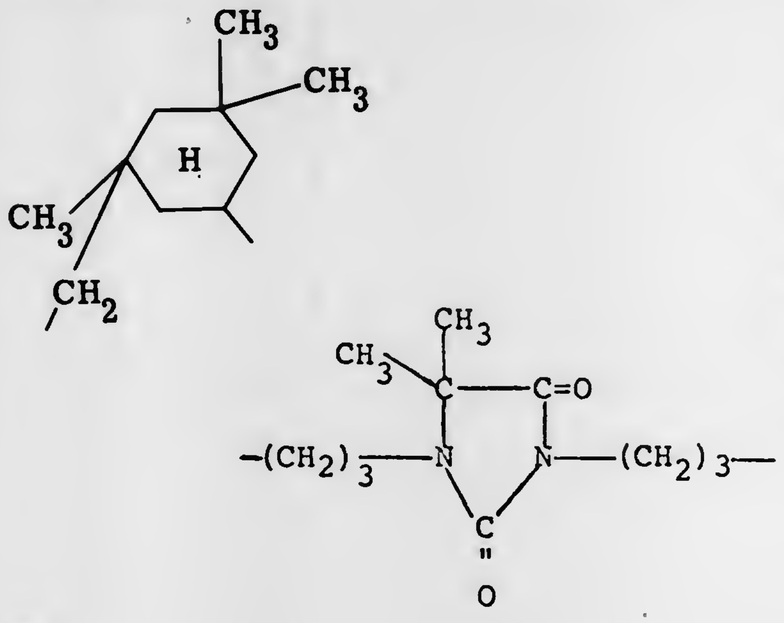
Int. Cl. C07d ***51/30***

U.S. Cl. 260—256.4 C **9 Claims**

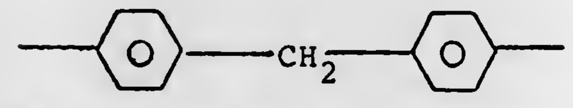
1. A binuclear N-heterocyclic polyglycidyl compound of the formula



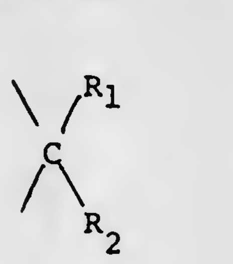
wherein A is tolylene, phenylene, alkylene containing 2 to 10 carbon atoms



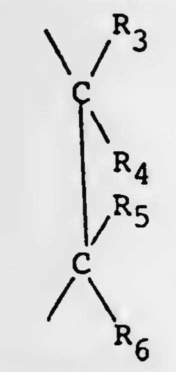
or



Z_1 and Z_2 are the same and each represents a divalent radical of the formula



or



wherein each of R_1, R_2, R_3, R_4, R_5 and R_6 independently of one another is hydrogen or alkyl of 1 to 4 carbon atoms or wherein R_1 and R_2 together is tetramethylene or pentamethylene; B_1 and B_2 are the same and each is hydrogen, glycidyl, or β-methylglycidyl; X_1 and X_1 are the same and each represents hydrogen or methyl; X_2 and X_2 are the same and each represents hydrogen or methyl; X_3 and X_3 are the same and each represents hydrogen, methyl, ethyl, or phenyl or X_2 and X_3 and X_2 and X_3 together represent trimethylene or tetramethylene.

3,867,386

5-AMINO-2,6-SUBSTITUTED-7H-PYRROLO(2,3-D)PYRIMIDINES AND RELATED COMPOUNDS

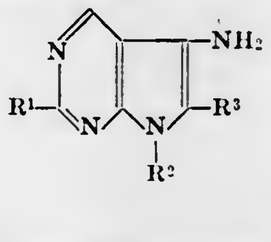
Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 126,265, March 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 874,052, Nov. 4, 1969, Pat. No. 3,631,036. This application July 5, 1973, Ser. No. 376,635

Int. Cl. C07d ***51/42***

U.S. Cl. 260—256.4 F **2 Claims**

1. A compound having the formula:



where

R^1 is lower alkyl, phenyl halophenyl, lower alkylphenyl, lower alkoxyphenyl, or lower alkythio;

R^2 is hydrogen, lower alkyl, or cycloheptylcarbamoylmethyl; and

R^3 is cyano, carbamoyl, or lower alkoxycarbonyl.

3,867,387

2-ALKYL-4-SUBSTITUTED AMINO-QUINAZOLINES AND NITRATES THEREOF

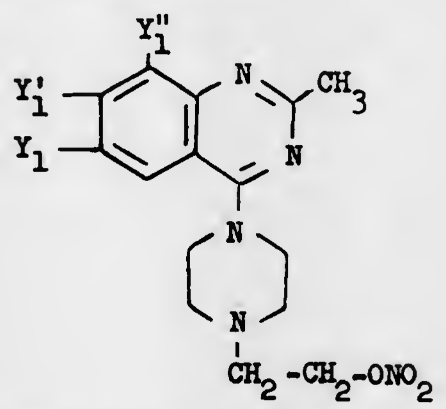
William R. Simpson, Mendham, N.J., assignor to Sandoz-Warner, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 212,784, Dec. 27, 1971, abandoned. This application Dec. 22, 1972, Ser. No. 317,545

Int. Cl. C07d ***51/48***

U.S. Cl. 260—256.4 Q **4 Claims**

1. A compound of the formula



wherein each of Y_1, Y_1' and Y_1'' is alkoxy of 1 to 3 carbon atoms.

3,867,388

3[4-(2-THIENOYL)-PIPERAZINO]-4,5-DIHYDRO-1H-2,4-ENZODIAZEPINES

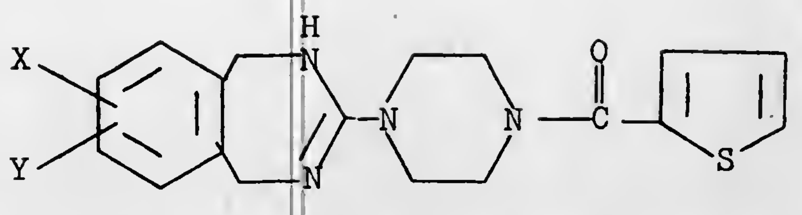
Richard A. Schnettler, 6234 W. Donges Ln., Brown Deer, Wis. 53223, and John T. Suh, 3709 W. Scenic Dr., 111 N. Mequon, Wis. 53092

Filed Dec. 22, 1972, Ser. No. 317,799

Int. Cl. C07d ***51/70***

U.S. Cl. 260—268 BC **2 Claims**

1. A compound selected from a compound of the formula:



and pharmaceutically acceptable salts thereof, in which X and Y are hydrogen, hydroxy, halogen, CF_3 or lower alkoxy of 1 to 4 carbon atoms.

3,867,389

ALPHA-(N-BENZOYLOXY AND PHENYLAMINO ALKYL-PIPERAZINO)-BETA-BENZOYL-PROPIONIC ACID DERIVATIVES

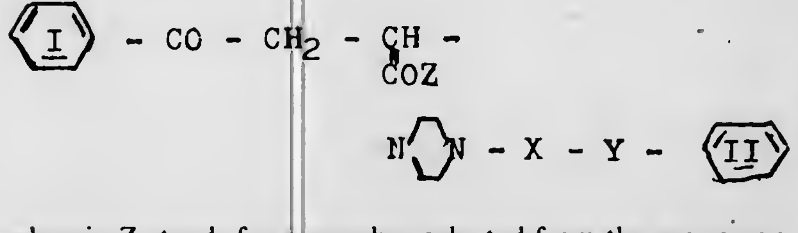
Thomas Raabe, Heusenstamm uber Offenbach, Germany; Aldolf Stachel, deceased, late of Offenbach, Germany (by Ingeburg Lydia Katharina Stachel, heiress); Josef Scholtholt, Frankfurt am (Main)-Fechenheim, and Rolf-Eberhard Nitz, Bergen-Enkheim, both of Germany, assignors to Cassela Farbwerke Mainkur Aktiengesellschaft, Frankfurt (Main), Germany

Division of Ser. No. 239,359, March 29, 1972,. This application May 11, 1973, Ser. No. 359,440

Int. Cl. C07d ***51/70***

U.S. Cl. 260—268 R **5 Claims**

1. A compound of the formula



wherein Z stands for a member selected from the group consisting of —OH, $-NH_2$ and —ONa, X stands for alkylene with 1 - 4 carbon atoms, Y stands for a member selected from the group consisting of —O—CO— and —CO—NH—, the nucleus I being selected from the group consisting of phenyl and mono-, di- and tri-methoxyphenyl, and nucleus II being selected from the group consisting of phenyl and mono-, di- and tri-methoxyphenyl, and the pharmaceutically acceptable acid addition salts of said compounds.

3,867,390

2 AND

3-SUBSTITUTED-4-(HETEROCYCLIC-AMINO-SULFONYL)BENZENE SULFONAMIDES

Peter Edward Cross, and Brian Gadsby, both of Canterbury, Kent, England, assignors to Pfizer Inc., New York, N.Y.

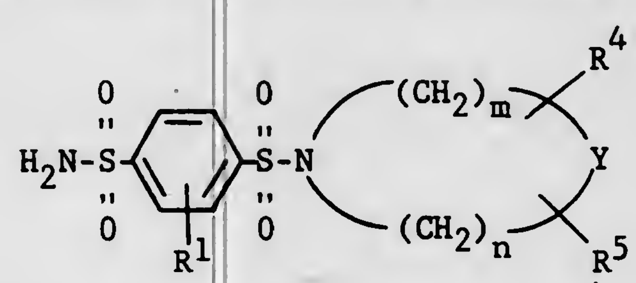
Filed Aug. 9, 1973, Ser. No. 386,854

Claims priority, application Great Britain, Aug. 12, 1972, 37720/72

Int. Cl. C07d ***29/34***

U.S. Cl. 260—293.73 **10 Claims**

1. A compound selected from the group consisting of



and the salts thereof with pharmaceutically acceptable cations wherein R^1 is 3-trifluoromethyl, chloro, bromo or fluoro; *n* and *m* are each 2 or 3; Y is methylene; R^4, when taken separately, is hydroxy or alkoxy having 1 to 4 carbon atoms; R^5, when taken separately, is hydrogen, hydroxy or alkoxy having 1 to 4 carbon atoms; and R^4 and R^5, when taken together, are oxo, each oxygen atom in R^4 and R^5, when taken separately, and in R^4 and R^5, when taken together, being separated from the nitrogen atom of the heterocyclic ring by two or more carbon atoms.

3,867,391

CYCLIC N-SUBSTITUTED DERIVATIVES OF 1,4-BENZENE DISULPHONAMIDE

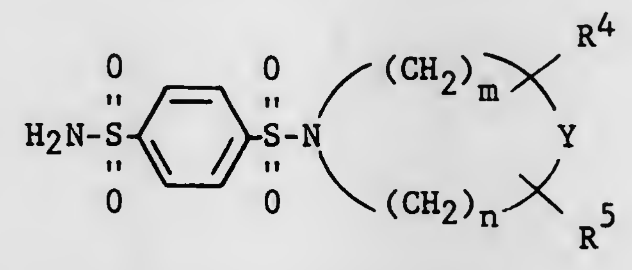
Gerald F. Holland, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 386,853

Int. Cl. C07d ***29/34***

U.S. Cl. 260—293.73 **8 Claims**

1. A compound selected from the group consisting of



and the salts thereof with pharmaceutically acceptable cations wherein *n* and *m* are each 2 or 3; Y is methylene or a single bond; R^4, when taken separately, is hydroxy or alkoxy having 1 to 5 carbon atoms; R^5, when taken separately, is hydrogen, hydroxy or alkoxy having 1 to 5 carbon atoms; and R^4 and R^5, when taken together, are oxo, each oxygen atom in R^4 and R^5, when taken separately, and in R^4 and R^5, when taken together, being separated from the nitrogen atom of the heterocyclic ring by two or more carbon atoms.

3,867,392

HYDROXY-PYRIDONE-MONOSULFONIC ACIDS

Ernst Heinrich, Frankfurt(Main)-Fechenheim, and Rolf Muller, Frankfurt(Main), both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

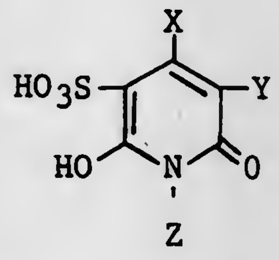
Filed Apr. 6, 1972, Ser. No. 241,845

Claims priority, application Germany, Apr. 10, 1971, 2117753

Int. Cl. C07d ***31/48***

U.S. Cl. 260—294.8 R **6 Claims**

1. Hydroxy-pyridone-monosulfonic acids of the fomrula



and the tautomers thereof wherein X is alkyl having 1 to 6 carbon atoms; substituted alkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and said substituent is selected from the group consisting of hydroxy and methoxy; cyclohexyl or substituted cyclohexyl wherein said cyclohexyl substituent is selected from the group consisting of chloro, methyl and methoxy; Y is hydrogen; alkyl having 1 to 6 carbon atoms; substituted alkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and said substituent is selected from the group consisting of hydroxy and methoxy; cyclohexyl; substituted cyclohexyl wherein said substituent is selected from the group consisting of chloro, methyl and methoxy or -COR wherein R is methoxymethyl, cyclohexyl or alkyl having 1 to 2 carbon atoms and Z is hydrogen; alkyl having 1 to 6 carbon atoms; substituted alkyl wherein the alkyl moiety has from 1 to 6 carbon atoms and said substituent is selected from the group consisting of hydroxy and methoxy; cyclohexyl and substituted cyclohexyl wherein the substituent is selected from the group consisting of chloro, methyl and methoxy.

3,867,393
2-AMINO-1,4-DIHYDROPYRIDINE DERIVATIVES

Horst Meyer; Friedrich Bossert; Wulf Vater, and Kurt Stoepel, all of c/o Bayer Aktiengesellschaft, Wuppertal-Elberfeld, Germany

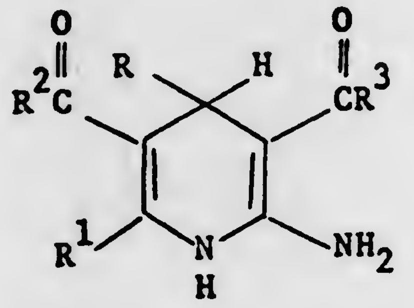
Filed Feb. 28, 1973, Ser. No. 336,639

Claims priority, application Germany, Mar. 6, 1972, 2210674

Int. Cl. C07d *31/36, 31/46*

U.S. Cl. 260—294.9 **35 Claims**

1. A compound of the formula



wherein

R is phenyl; substituted phenyl in which the substituents are one to three members selected from the group consisting of lower alkyl, lower alkoxy, halogeno, nitro, cyano, trifluoromethyl, azido, carbo(lower alkoxy), lower alkylsulfonyl, lower alkylsulfinyl, lower alkylthio or phenyl; or naphthyl;

R^1 is hydrogen, lower alkyl, phenyl;

R^2 is lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy or lower alkynyloxy; and

R^3 is lower alkoxy, lower alkoxy(lower alkoxy), lower alkenyloxy or lower alkynyloxy.

3,867,394
IMIDAZOLINYL PHENYL CARBONYL COMPOUNDS, ACID ADDITION SALTS AND RELATED COMPOUNDS

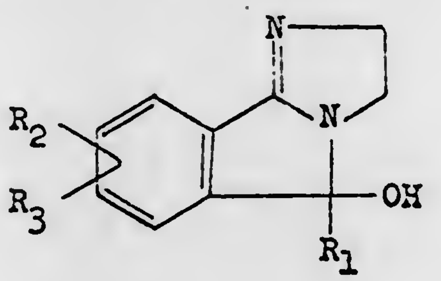
Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No. 3,763,178, which is a continuation-in-part of Ser. Nos. 622,918, March 14, 1967, abandoned, and Ser. No. 622,931, March 14, 1967, abandoned, and Ser. No. 576,833, Sept. 2, 1966, abandoned, and Ser. No. 487,587, Sept. 15, 1965, abandoned. This application Sept. 6, 1973, Ser. No. 394,706

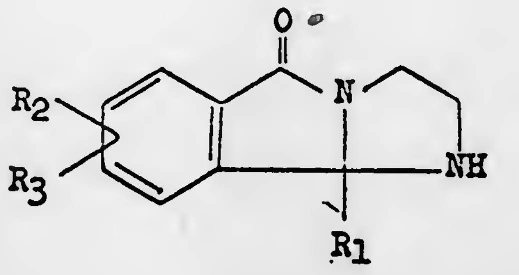
Int. Cl. C07d *49/34, 57/02*

U.S. Cl. 260—296 T **2 Claims**

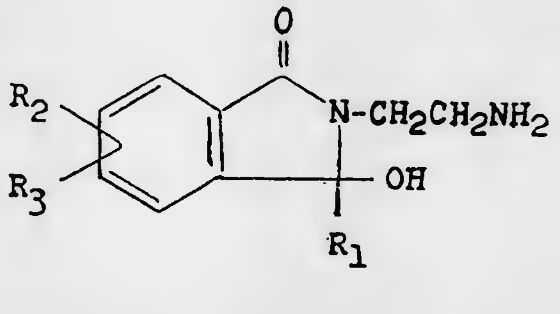
1. A process for the production of a compound having the formula:



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phen(lower)alkyl, monohalophenyl, dihalophenyl, mono(lower)alkylphenyl), di(lower) alkylpheny!, trifluoromethylphenyl, mono(lower)alkoxyphenyl, di(lower)alkoxyphenyl, thienyl, pyridyl, furyl and tetrahydro-2-naphthyl; R_2 is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl and lower alkoxy; and R_3 is hydrogen when R_2 and R_3 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy, which comprises contacting a compound of the formula:



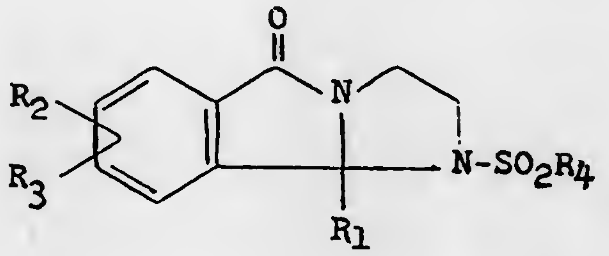
wherein R_1, R_2 and R_3 are defined as above, with a mineral acid, to form the mineral acid addition salt of a phthalimidine of the formula:



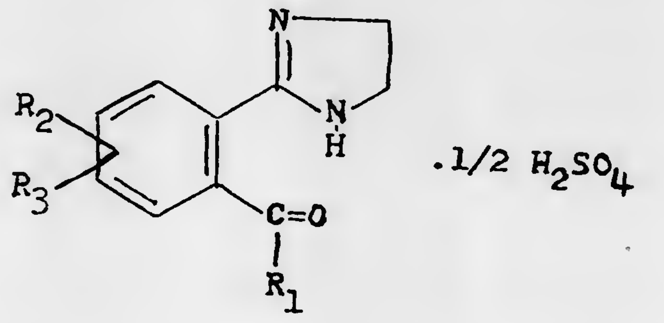
wherein R_1, R_2 and R_3 are defined as above, reacting said phthalimidine acid addition salt with a sulfonyl halide selected from the group consisting of those having the formula:

$$R_4SO_2X$$

wherein R_4 is selected from the group consisting of lower alkyl, phenyl, monohalophenyl, dihalophenyl, mono(lower) alkylphenyl, di(lower)alkylphenyl, trifluoromethylphenyl, mono(lower)alkoxyphenyl and di(lower)alkoxyphenyl and X is halogen, in pyridine at a temperature that is in the range from about 80°C. to about 115°C. for a period from about 2 hours to about 10 hours, to form a compound of the formula:



wherein R_1, R_2, R_3 and R_4 are defined as above, and hydrolyzing said sulfonylimidazoisoindolone by treatment with from about 80 to about 100 percent sulfuric acid, to form a sulfate of the formula:



wherein R_1, R_2 and R_3 are defined as above, and then contacting said sulfate with a base.

3,867,395
1,2,4-4H-TRIAZOLE DERIVATIVES

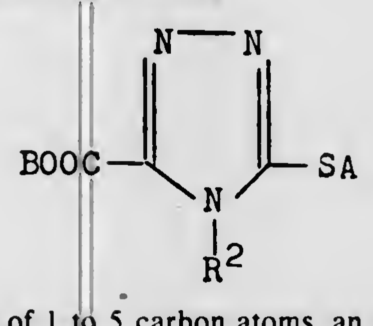
Michael C. Seidel, Levittown; William C. Von Meyer, Willow Grove, and Stanley A. Greenfield, Ambler, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 67,198, Aug. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 847,481, July 3, 1969, Pat. No. 3,701,784, which is a continuation-in-part of Ser. No. 757,490, Sept. 4, 1968, Pat. No. 3,769,411. This application June 8, 1972, Ser. No. 263,728

Int. Cl. C07d *55/06*

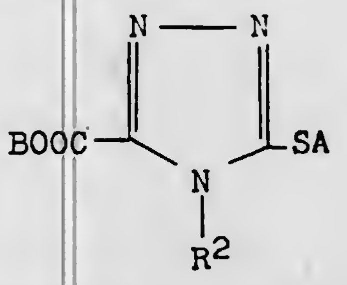
U.S. Cl. 260—308 R **6 Claims**

1. A compound of the formula



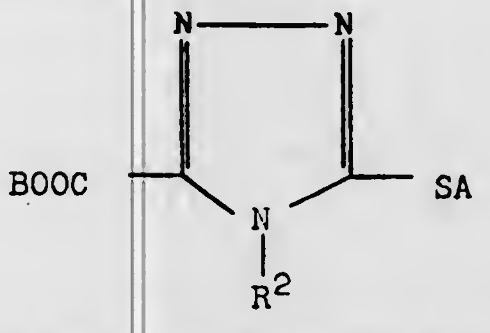
hydrogen, alkyl of 1 to 5 carbon atoms, an alkali metal ion, ammonium monosubstituted with lower alkyl or lower hydroxyalkyl, ammonium disubstituted with lower alkyl or lower hydroxyalkyl or ammonium trisubstituted with lower alkyl or lower hydroxyalkyl.

2. A compound of the formula



wherein R^2 is alkyl, straight or branched, of 1 to 12 carbon atoms; A is the $—C(O)NHCH_3$ group; and B is hydrogen, alkyl of 1 to 5 carbon atoms, an alkali metal ion, ammonium monosubstituted with lower alkyl or lower hydroxyalkyl, ammonium disubstituted with lower alkyl or lower hydroxyalkyl or ammonium trisubstituted with lower alkyl or lower hydroxyalkyl.

3. A compound of the formula



wherein R^2 is alkyl, straight or branched, of 2 to 6 carbon atoms; A is hydrogen; and B is the tri(ethanol)ammonium group.

3,867,396
TRIAZOLYL PHOSPHORUS COMPOUNDS

Dag Dawes, Pratteln, and Beat Bohner, Binningen, both of Switzerland, assignors to Ciba-Giegy Corporation, Ardsley, N.Y.

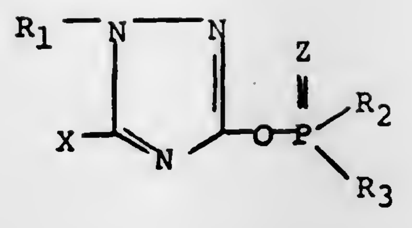
Filed Nov. 29, 1972, Ser. No. 310,530

Claims priority, application Switzerland, Dec. 10, 1971, 18065/71; Oct. 6, 1972, 14693/72

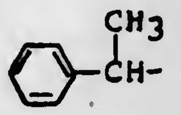
Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **7 Claims**

1. A compound of the formula



wherein X represents fluorine, chlorine or bromine; Z represents oxygen or sulphur; R_1 represents $C_1—C_{19}$ alkyl, $C_3—C_8$ cycloalkyl, or phenyl, benzyl, phenethyl, diphenylmethyl or



optionally substituted by halogen, nitro, alkyl, halogenoalkyl, alkoxy, alkylsulphinyl or alkylsulphonyl, the alkyl groups of which each have 1-6 carbon atoms; R_2 represents $C_1—C_{19}$ alkoxy, $C_1—C_{19}$ alkylthio, amino, mono- or di($C_1—C_{19}$)alkylamino; and R_3 represents $C_1—C_{19}$ alkyl, $C_1—C_{19}$ alkoxy, $C_1—C_{19}$ alkylthio, phenyl, phenoxy, amino, mono- or di($C_1—C_{19}$)alkylamino.

3,867,397
TRIAZOLYL PHOSPHORUS COMPOUNDS

Beat Bohner, Binningen; Dag Dawes, Pratteln, and Willy Meyer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

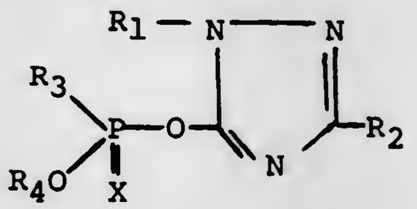
Filed Nov. 30, 1972, Ser. No. 310,727

Claims priority, application Switzerland, Dec. 10, 1971, 18064/71; Sept. 29, 1972, 14253/72

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **2 Claims**

1. A compound of the formula



wherein

R_1 represents C_1–C_5-alkyl, cyclopentyl, cyclohexyl, phenyl, benzyl or phenethyl,

R_2 represents C_1–C_5-alkylthio, C_1–C_5-alkylsulphinyl, C_1–C_5-alkylsulphonyl, phenthio, phenylsulphinyl, phenylsulphonyl, benzylthio, benzosulphinyl or benzylsulphonyl,

R_3 represents C_1–C_5-alkyl, C_1–C_5-alkoxy, C_1–C_5-alkylthio or phenyl,

R_4 represents C_1–C_5-alkyl, and

X represents oxygen or sulphur.

3,867,398
TRIAZOLYL PHOSPHORUS COMPOUNDS

Beat Bohner, Binningen; Dag Dawes, Pratteln, and Willy Meyer, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

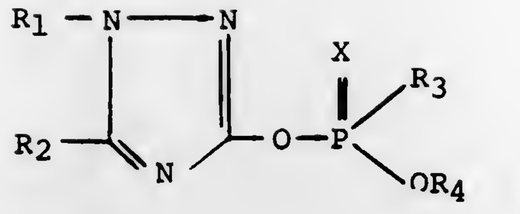
Filed Nov. 30, 1972, Ser. No. 310,728

Claims priority, application Switzerland, Dec. 10, 1971, 18064/71; Sept. 29, 1972, 14254/72

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **8 Claims**

1. A compound for the formula



(I)

wherein
- R_1 represents hydrogen, C_1–C_{12} alkyl, C_3–C_8 cycloalkyl, phenyl, phenyl substituted by methoxy, halogen or C_1–C_5 alkyl, benzyl or phenethyl,
- R_2 represents C_1–C_{12} alkylthio, C_1–C_{12} alkylsulphinyl C_1–C_{12} alkylsulphonyl, phenthio, phenylsulphinyl, phenylsulphonyl, benzylthio, benzylsulphinyl or benzylsulphonyl,
- R_3 represents C_1–C_{12} alkyl, C_1–C_{12} alkoxy, C_1–C_{12} alkylthio or phenyl,
- R_4 represents C_1–C_{12} alkyl, and
- X represents oxygen or sulphur.

3,867,399
DIBENZIMIDAZOLE-DIUREAS

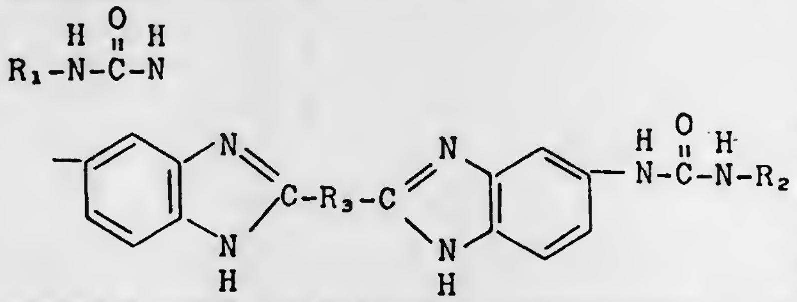
August G. Birke, Godfrey, Ill., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 169,460, Aug. 5, 1971, Pat. No. 3,752,765. This application Aug. 9, 1973, Ser. No. 386,910

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **5 Claims**

1. A dibenzimidazole-diurea compound corresponding to the formula:



wherein R_1 and R_2 are hydrocarbyl radicals having 6 to 30 carbon atoms and R_3 is a hydrocarbylene radical having from 2 to 20 carbon atoms.

3,867,400
PROCESS FOR THE MANUFACTURE OF 1,1-METHYLENE-BIS-(3-(HYDROXYLALKYL)-HYDANTOINS)

Jurgen Habermeier, Pfeffingen, and Hans Batzer, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

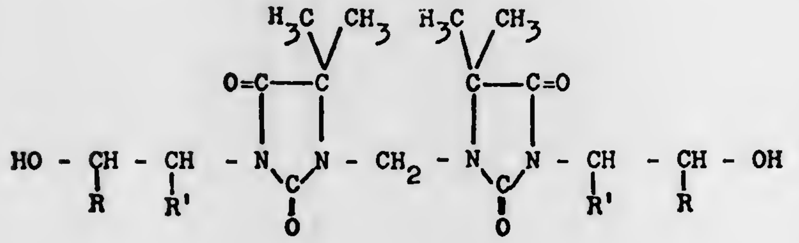
Filed Aug. 9, 1973, Ser. No. 387,061

Claims priority, application Switzerland, Aug. 25, 1972, 12653/72

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **3 Claims**

1. In the process for the manufacture of 1,1′-methylene-bis-[3-(2′-hydroxyalkyl-hydantoin] compounds of the formula



wherein R each denote a hydrogen atom, methyl, ethyl or phenyl and R′ denotes a hydrogen atom or, together with R denotes the tetramethylene radical, by catalytic addition reaction of ethylene oxide, propylene oxide, butylene oxide, cyclohexene oxide styrene oxide to 1,1′-methylene-bis-(5,5-dimethylhydantoin) in the presence of neutral or alkaline catalysts the improvement which consists in using as solvents water or 1–60 percent strength aqueous dioxane solution.

3,867,401
IMIDAZOLINYL PHENYL CARBONYL COMPOUNDS, ACID ADDITION SALTS AND RELATED COMPOUNDS

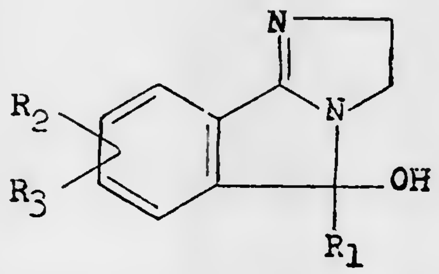
Theodore S. Sulkowski, Wayne, Pa., assignor to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 757,792, Sept. 5, 1968, Pat. No. 3,763,178, which is a continuation-in-part of Ser. Nos. 622,918, March 14, 1967, and Ser. No. 622,931, March 14, 1967, and Ser. No. 576,833, Sept. 2, 1966, and Ser. No. 487,587, Sept. 15, 1965, abandoned. This application Sept. 6, 1973, Ser. No. 394,707

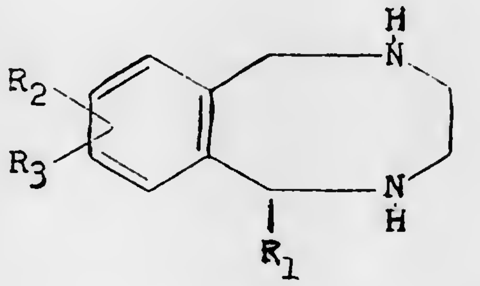
Int. Cl. C07d *49/34, 57/02*

U.S. Cl. 260—309.6 **4 Claims**

1. A process for the preparation of a compound having the formula:



wherein R_1 is selected from the group consisting of lower alkyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, di(-lower) alkylphenyl, di(lower)alkoxyphenyl, aminophenyl, trifluoromethylphenyl, monohalophenyl, dihalophenyl, furyl, thienyl and naphthyl; R_2 is selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy; R_3 is hydrogen when R_2 and R_3 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl and lower alkoxy which comprises contacting a benzodiazocine of the formula:



wherein R_1, R_2 and R_3 are defined as above, with an oxidizing agent in a reaction-inert solvent at a temperature from about 20°C. to about 60°C. for a period of about ½hour to about 4 hours.

3,867,402
1-METHYL-4,5-DI(P-METHOXYPHENYL)-6H-PYRROLO(2,3-C) PYRAZOLE

Gerard Yvon Paris, Duvernay, Quebec, Canada, and Leo Ralph Swett, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 15, 1973, Ser. No. 341,444

Int. Cl. C07d *57/02*

U.S. Cl. 260—310 R **1 Claim**

1. The compound, 1-methyl-4,5-di(p-methoxyphenyl)-6H-pyrrolo[2,3-c]pyrazole.

3,867,403
1,2-DIALKYL-3,5-DIPHENYLPYRAZOLIUM SALTS

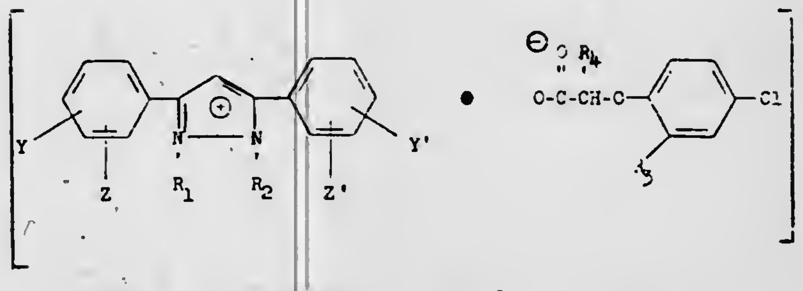
Richard William Feeny, Hightstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

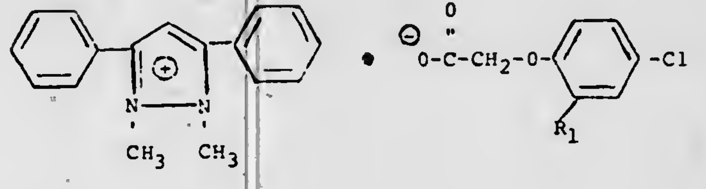
Filed Nov. 17, 1972, Ser. No. 307,670

Int. Cl. C07d *49/18*

U.S. Cl. 260—311 **3 Claims**

1. A compound of the formula:





wherein R_1 is methyl or Cl.

3,867,404
NEW ISOINDOLINONE PIGMENTS AND PROCESS FOR THEIR MANUFACTURE

Jost von der Crone, Riehen; Ernst Model, Basle, and Andre Pugin, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

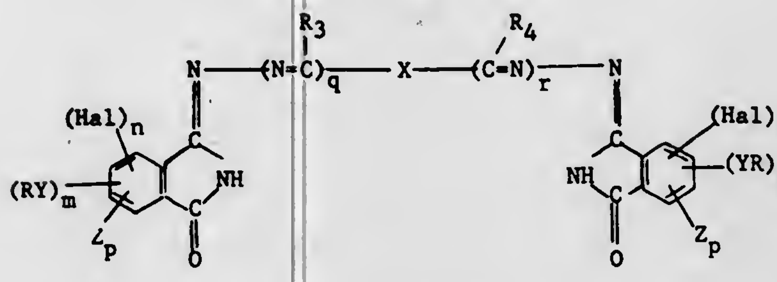
Filed Jan. 15, 1978, Ser. No. 323,685

Claims priority, application Switzerland, Jan. 17, 1972, 618/72

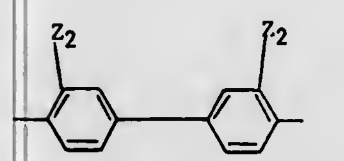
Int. Cl. C07d *27/50*

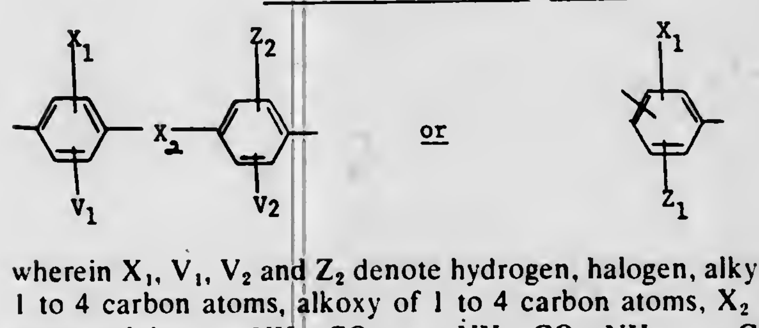
U.S. Cl. 260—325 PH **10 Claims**

1. An isoindolinone pigment of the formula

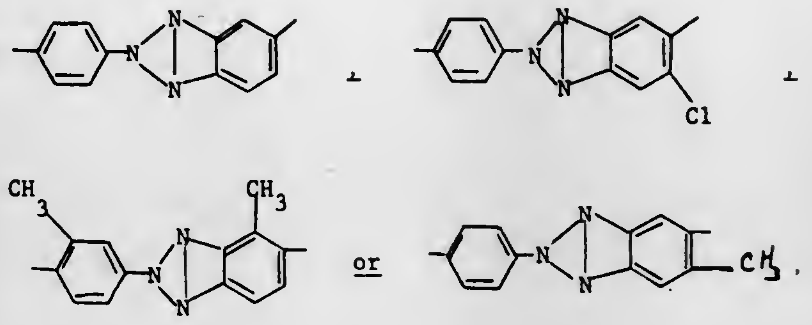


wherein Hal denotes chlorine or bromine, X denotes a direct bond, a carbocyclic radical selected from the group consisting of naphthylene, or a group having the formula





wherein X_1, V_1, V_2 and Z_2 denote hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, X_2 denotes sulphur, —NH—CO—, —NH—CO—NH—, —CH=CH—or —N=N—, Z_1 is halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, phenylazo, phenylazo substituted with methyl or acetylamino, or a heterocyclic aromatic radical, selected from the group consisting of



Y denotes oxygen or sulphur, R_3 and R_4 denote hydrogen, lower alkyl or an aryl radical selected from the group consisting of chlorophenyl, or dichlorophenyl, and R denotes hydrogen, lower alkyl, lower cycloalkyl, benzyl or aryl selected from the group consisting of phenyl, chlorophenyl, methylphenyl, dichlorophenyl, dimethyl-phenyl, methoxyphenyl or naphthyl, Z denotes hydorgen, *n* denotes the number 0 to 3, *m* denotes the number 1 to 4, *p* denotes the number 0 to 2 and *q* and *r* denote the numbers 0 or 1, with the sum of *n*+*m*+*p* being at most 4.

3,867,405
PROCESS FOR PREPARING N-(BETA-HYDROXYETHYL)-2-PYRROLIDONE

Junichi Kanetka, and Takashi Shimodaira, both of Ami-machi, Japan, assignors to Mitsubishi Petrochemimcal Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1973, Ser. No. 336,774

Claims priority, application Japan, Mar. 17, 1972, 47-27150

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.5 FL **7 Claims**

1. In a process for preparing N-(β-hydroxyethyl)-2-pyrrolidone by reacting γ-butyrolactone with monoethanolamine at a temperature of 150° – 400°C. under a pressure which is at least the pressure of water at the reaction temperature selected, the improvement which comprises:

adding water to the condensation reaction system, in an amount of more than about 3 percent by weight based on the total weight of γ-butyrolactone and monoethanolamine.

3,867,406
ANTHRAQUINOID DISPERSE DYES

Gerd Schwantje, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

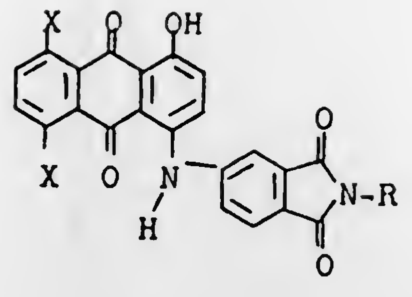
Filed June 4, 1973, Ser. No. 366,498

Claims priority, application Germany, June 6, 1972, 2227401

Int. Cl. C07d *27/00, 27/52*

U.S. Cl. 260—326 D **16 Claims**

1. An anthraquinoid dye of the formula:



in which

one X is hydroxyl;

the other X is amino; and

R is hydrogen, linear or branched alkyl of one to eight carbon atoms, hydroxyalkyl of two to six carbon atoms, alkoxyalkyl of a total of three to six carbon atoms, β-carbalkoxyethyl of a total of four to seven carbon atoms, β-(β'-hydroxyethoxy)-ethyl, β-(carbo-β'-hydroxyethoxy)-ethyl, cyclohexyl, or phenyl.

3,867,407
SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

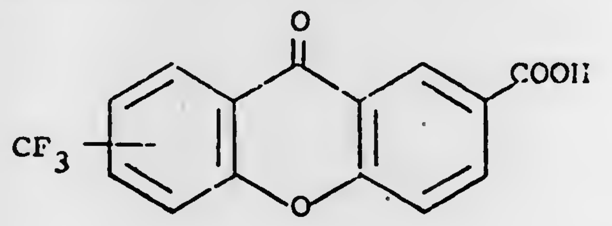
Jurg R. Pfister; Ian T. Harrison, and John H. Fried, all of Syntex Research, 3401 Hillview Ave., Palo Alto, Calif. 94304

Continuation-in-part of Ser. No. 174,260, Aug. 23, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,695

Int. Cl. C07d ***7/44***

U.S. Cl. 260—335 **6 Claims**

1. A compound selected from those represented by the following formula:



and the pharmaceutically acceptable, non-toxic lower alkyl esters, unsubstituted, mono(lower)alkyl, or di(lower)alkyl substituted amides and salts thereof.

3,867,408
1,2-EPOXY-2-METHYL-6-HEPTANONE KETALS

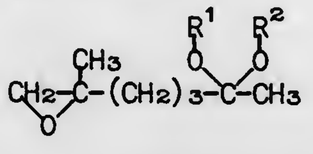
Hans K. Dietl, and Kent C. Brannock, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,111

Int. Cl. C07d ***13/04***

U.S. Cl. 260—340.9 **5 Claims**

1. A ketal having the formula



$$\underset{\diagdown O\diagup}{CH_2-\overset{CH_3}{C}}-(CH_2)_3-\overset{\overset{R^1\ \ \ R^2}{O\ \ \ \ O}}{C}-CH_3$$

wherein

R¹ and R² are the same or different alkyl having 1 to 10 carbon atoms, cycloalkyl having 5 to 7 carbon ring structure or phenyl one carbon atom of which has an alkyl having 1 to 5 carbon atoms; or

R¹ and R² taken together are —A— wherein —A— is alkylene having 2 to 4 carbon atoms or alkylene having 2 to 4 carbon atoms substituted with alkyl having 1 to 5 carbon atoms, cycloalkyl having a 5–7 carbon ring structure or phenyl one carbon of which is substituted with alkyl having 1 to 5 carbon atoms.

3,867,409
BIS-BASIC ESTERS OF DIBENZOFURAN

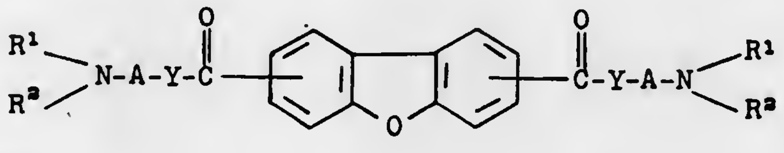
William L. Albrecht, and Robert W. Fleming, both of Cincinnati, Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

Filed June 16, 1969, Ser. No. 833,717

Int. Cl. C07c ***5/42***

U.S. Cl. 260—346.2 M **5 Claims**

1. A compound of the formula



wherein

A. each of R^1 and R^2 is hydrogen, (lower)alkyl, cycloalkyl of 3 to 6 ring carbon atoms, alkenyl of 3 to 6 carbon atoms having the vinyl unsaturation in other than the 1-position of the alkenyl group, or each set of R^1 and R^2 taken together with the nitrogen atom to which they are attached is pyrrolidino, piperidino, N-(lower)alkylpiperazino, or morpholino;

B. each A is alkylene of 3 to 8 carbon atoms and separates its adjacent Y and amino nitrogen by an alkylene chain of at least 3 carbon atoms;

C. each Y is oxygen, or a pharmaceutically acceptable acid addition salt thereof.

3,867,410
CLEANING OF THE LOWER FINNED TUBES IN THE SEPARATION OF PHTHALIC ANHYDRIDE

Erich Brand, Braunsfeld, and Helmut Saffran, Cologne, both of Germany, assignors to Chemiebau Dr. A. zieren GmbH & Co. kg., Braunsfeld, Germany

Filed Apr. 5, 1971, Ser. No. 131,371

Claims priority, application Germany, Apr. 6, 1970, 2016302

Int. Cl. C07c ***63/18***

U.S. Cl. 260—346.4 **8 Claims**

1. In a cyclical process for recovering solid phthalic anhydride in a separator from a gas containing phthalic anhydride vapor obtained by catalytic air oxidation of o-xylene or naphthalene in contact with a V_2O_5 containing catalyst, comprising continuously repeating in sequence the steps of: (a) passing said gas containing phthalic anhydride vapor over a plurality of rows of cooled heat exchange tubes superimposed on one another in a housing to precipitate solid phthalic anhydride on the surfaces thereof; (b) passing a hot fluid having a temperature of about 145°–190°C through said heat exchange tubes to heat the surfaces thereof to at least 130°C and melt off resultant precipitated phthalic anhydride; (c) flushing said heat exchange tube surfaces towards the end of at least one step (b) with externally added molten phthalic anhydride having a temperature of 130°–280°C, whereby there is substantially prevented a buildup in difficult-to-remove, firmly adhering deposits of impurities which otherwise would cause a shutdown in the process; (d) collecting resultant molten phthalic anhydride from said heat exchange tube surfaces; and (e) cooling said heat exchange tube surfaces by passing a fluid having a temperature of about 45°–55°C therethrough;

the improvement comprising: forming a pool of molten phthalic anhydride in the bottom of said housing below said heat exchange tubes and flushing said heat exchange surfaces with molten phthalic anhydride from said pool at a point above the lower rows of tubes.

3,867,411
P-V-FE CATALYST MODIFIED WITH CHROMIUM FOR PRODUCTION OF MALEIC ANHYDRIDE FROM SATURATED ALIPHATIC HYDROCARBONS

Harold Raffelson, and Michael Suda, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 27, 1971, Ser. No. 212,792

Int. Cl. C07c ***57/14***

U.S. Cl. 260—346.8 A **6 Claims**

1. In a process for producing maleic anhydride by the catalytic oxidation of a saturated aliphatic hydrocarbon having from 4 to 10 carbon atoms, wherein a stream of oxygen or oxygen-containing gas containing from about 0.5 to about 10 mole percent hydrocarbon is passed over the catalyst at a space velocity of between about 200 and about 7,000 reciprocal hours at a temperature of from about 400° to about 600°C. under a pressure ranging from about 0.5 to 10 atmospheres, the improvement which comprises conducting said oxidation in the presence of a catalyst comprising phosphorus, vanadium, iron, oxygen and chromium, wherein the atomic ratio of phosphorus to vanadium is from about 1:1 to about 15:1, the atomic ratio of iron to vanadium is from about 0.2:1 to about 6:1, and the chromium is present in the range of from about 2 to about 20 atomic percent of the active metals.

3,867,412
METHOD OF OXIDIZING BENZENE TO MALEIC ANHYDRIDE USING A VANADIUM, MOLYBDENUM, BORON CONTAINING CATALYST

Robert S. Barker, Little Ferry, N.J., assignor to Halcon International, Inc., New York, N.Y.

Division of Ser. No. 76,249, Sept. 28, 1970, Pat. No. 3,759,840. This application Dec. 27, 1972, Ser. No. 318,941

Int. Cl. C07c ***57/14***

U.S. Cl. 260—346.8 A **4 Claims**

1. A process for the preparation of maleic anhydride which comprises oxidizing benzene in the vapor-phase with molecular oxygen in the presence of a catalyst consisting essentially of oxides of vanadium, molybdenum and boron, and an oxide of at least one member of the group consisting of phosphorus, cobalt, nickel, iron and sodium, the relative amounts of said oxides, expressed as V, Mo, B, P, Co, Ni, Fe and Na being, per mol of V, 0.1 to 0.95 mol Mo, 0.005 to 0.3 mol B, up to 0.5 mol P, up to 0.05 mol Co, up to 0.05 mol Ni, up to 0.05 mol Fe and up to 0.6 mol Na.

3,867,413
FUSIDIC ACID CONJUGATES

Welf Von Daehne, Rungsted, and Wagn Ole Godtfredsen, Vaerlose, both of Denmark, assignors to Lee Pharmaceutical Products Ltd. A/S. Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

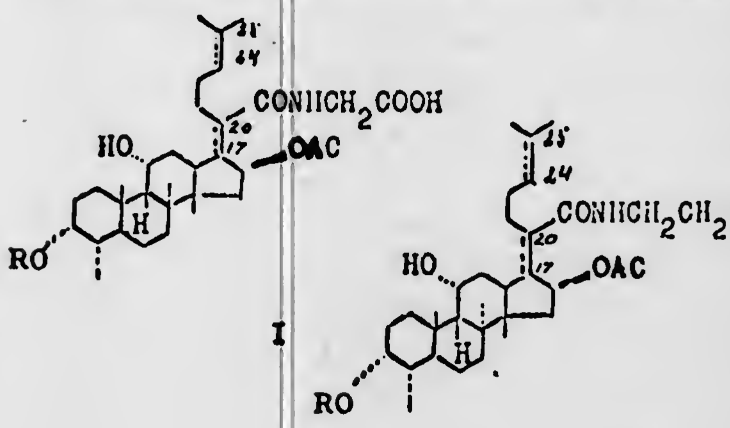
Filed Sept. 24, 1973, Ser. No. 400,348

Claims priority, application Great Britain, Oct. 6, 1972, 46351/72; Aug. 30, 1973, 40981/73

Int. Cl. C07c ***169/60***

U.S. Cl. 260—397.1 **6 Claims**

1. Compounds represented by the following formulae:



I

II

in which OAc indicates OOC.CH_3 the dotted lines between C-17 and C-20 and between C-24 and C-25 indicate that the carbon atoms in question are connected with either a single bond or a double bond, and R is hydrogen or an acetyl group, and their salts with pharmaceutically acceptable bases.

3,867,414
PROCESS FOR THE PREPARATION OF SUSPENSIONS OF MICROCRYSTALS OF CHLORAMPHENICOL PALMITATE

Masuo Murakami; Ryuichi Kawata, both of Tokyo; Shigeo Kawamura, Urawa; Shuichi Takamura, Ageo; Takayoshi Hirano, and Kouji Tomuro, both of Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 90,822, Nov. 18, 1970, abandoned. This application Apr. 6, 1973, Ser. No. 348,667

Claims priority, application Japan, Dec. 6, 1969, 44-97310

Int. Cl. A61k ***21/00***

U.S. Cl. 260—404.5 **5 Claims**

1. A process for the preparation of a microcrystalline chloramphenicol palmitate suspension comprising mix-melting 100 parts of chloramphenicol palmitate and 3–10 parts by weight, based on said chloramphenicol palmitate, of a nonionic surface active agent having an HLB value between 13.0 and 16.5 selected from the group consisting of a polyoxyethylene (n=15–30) higher fatty acid (C_{12}–C_{18}) ester, a polyoxyethylene (n=10–25) sorbitan higher fatty acid (C_{12}–C_{18}) ester, a polyoxyethylene (n=10–20) polyoxypropylene (m=1–4) higher alcohol (C_{12}–C_{18}) ether, a polyoxyethylene (n=15–30) alkyl (C_8–C_{10}) aryl ether, and a polyoxyethylene (n=50–80) hydrogenated castor oil, solidifying the molten mixture by cooling, dispersing the solidified mixture in a liquid suspension medium selected from the group consisting of water, an aqueous solution of sodium carboxymethyl cellulose and an aqueous solution of methyl cellulose, and reducing the particle size of the resulting crystalline chloramphenicol palmitate product to less than 0.5 microns.

3,867,415
PROPENYL AND PROPYNYL ESTERS OF CHLORO SUBSTITUTED 2-OCTENOIC AND 2-NONENOIC ACIDS

Madhukar Subraya Chodnekar, Basel; Albert Pfiffner, Pfaffhausen; Norbert Rigassi, Arlesheim; Ulrich Schwieter, Reinach, and Milos Suchy, Pfaffhausen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 15, 1972, Ser. No. 235,030

Claims priority, application Switzerland, Mar. 24, 1971, 4335/71

Int. Cl. C07c ***69/62;*** **A01n** ***9/24***

U.S. Cl. 260—408 **5 Claims**

1. 7-chloro-3,7-dimethyl-2-octenoic acid propynyl ester.

3,867,416
CONTINUOUS PROCESS FOR DRYING AND EXTRACTING OILS FROM SOLID MATERIALS

Roy W. Barns, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Continuation-in-part of Ser. No. 565,434, July 15, 1966, abandoned. This application Dec. 31, 1969, Ser. No. 889,712

Int. Cl. C11b ***1/10***

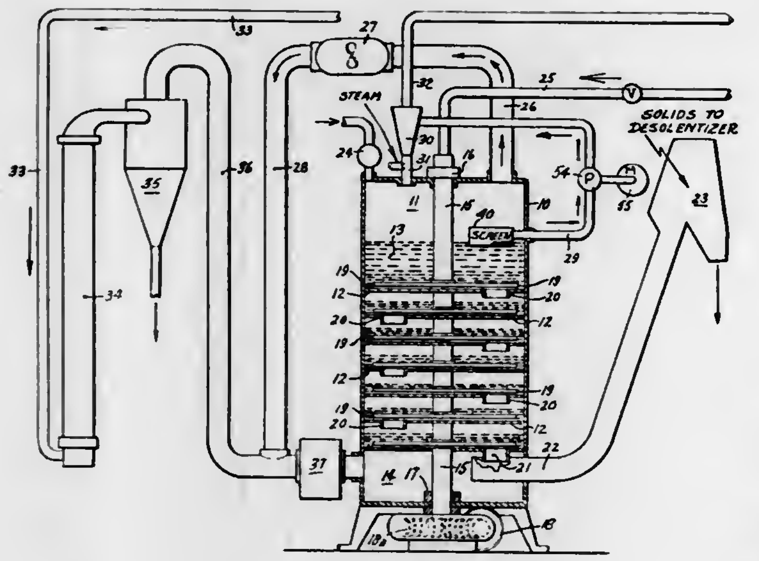
U.S. Cl. 260—412.8 **8 Claims**

1. A continuous dehydration and oil extraction process, comprising the steps of:

a. supplying finely-divided oil-bearing solid particulate material into the top of an extractor column having a plurality of successive, vertically spaced plates severally provided with a plurality of openings therethrough, said plates supporting said material in a series of vertically spaced beds,

b. introducing extraction solvent vapor into the bottom of said extractor column to pass upwardly through said openings and beds to act upon said material and to pass out of the top of said extractor column, and

c. controlling such introduction of said extraction solvent vapor so that the velocity of same rising through said extractor column is held in a range sufficient to separate individual solid particles of material in said beds to provide random particle movement throughout each of said beds, to carry liquids up through the successive beds of material to form a pool of miscella above the top bed of material, and to permit limited settling of said material downwardly from bed to bed through at least one of said openings through each of said plates, whereby the particles travel downwardly at a controlled rate while being subjected to the drying and extraction effect of said solvent vapor in its upward passage through said extractor column.



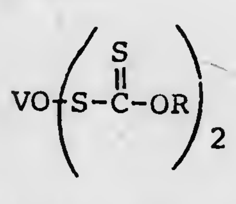
3,867,417

VANADYL XANTHATES

William K. T. Gleim, Island Lake, and Elmars Bremanis, Park Ridge, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 20, 1973, Ser. No. 353,047
Int. Cl. C07f *9/00*
U.S. Cl. 260—429 K **6 Claims**

1. A process for the preparation of a vanadyl xanthate having the following formula:



$$VO\left(S-\overset{\overset{S}{\|}}{C}-OR\right)_2$$

in which R is selected from the group consisting of methyl, ethyl, propyl, butyl, amyl, hexyl, heptyl, octyl, nonyl, decyl, cyclohexyl and benzyl radicals which comprises reacting an alkali xanthate wherein the xanthate moiety is selected from the group consisting of ethyl, propyl, butyl, amyl, hexyl, hephyl, octyl, nonyl, decyl, cyclohexyl and benzyl xanthate with a vanadyl salt in an oxygen-free atmosphere of carbon dioxide at reaction conditions and recovering the resulting vanadyl xanthate.

3,867,418

EUROPIUM COMPLEX OF 1,1,1,2,2,6,6,7,7,7-DECAFLUORO-3,5-HEPTANEDIONE

Charles A. Burgett, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 253,986, May 17, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 416,751
Int. Cl. C07f *5/00*
U.S. Cl. 260—429.2 **1 Claim**

1. A paramagnetic shift reagent, consisting of the europium (Eu) complex of 1,1,1,2,2,6,6,7,7,7-decafluoro-3,5-heptanedione [H(FHD)], said complex having the general formula $Eu(FHD)_3$.

3,867,419

PROCESS FOR THE PREPARATION OF AN AQUEOUS SOLUTION OF AN IRON (III)-AMINOPOLYCARBOXYLIC ACID COMPLEX COMPOUND

Haruhiko Iwano, and Sachio Matsushita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 29, 1973, Ser. No. 375,238
Claims priority, application Japan, July 28, 1972, 47-75761
Int. Cl. C07f *15/02*
U.S. Cl. 260—439 R **15 Claims**

1. A process for the preparation of an aqueous solution of iron(III)-aminopolycarboxylic acid complex compound characterized by mixing an aminopolycarboxylic acid capable of forming a chelate with a ferric ion or a salt thereof and metallic iron in an aqueous medium and reacting the mixture with oxygen in the presence of a water soluble iron salt.

3,867,420

PARTIALLY CROSSLINKED SILOXANE-POLYOXYALKYLENE (SIOC) BLOCK COPOLYMER COMPOSITIONS AND USE THEREOF AS SURFACTANTS IN THE PRODUCTION OF POLYURETHANE FOAMS

Edward L. Morehouse, New City, and Bela Prokai, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 19, 1970, Ser. No. 82,171
Int. Cl. C07f *7/18*
U.S. Cl. 260—448.8 R **8 Claims**

1. Composition consisting essentially of partially crosslinked siloxane-polyoxyalkylene block copolymers wherein the polyoxyalkylene blocks are linked to the siloxane blocks by silicon to oxygen to carbon linkages, the carbon of each said linkage being bonded only to the oxygen of said linkage, hydrogen and carbon, the siloxane blocks are comprised of siloxane units each having one to three monovalent hydrocarbon groups having from 1 to 18 carbon atoms bonded to the silicon thereof and have an average of at least two valences of silicon per siloxane blocks combined in said linkages, a portion of said polyoxyalkylene blocks are crosslinking blocks having at least two valences of carbon per polyoxyalkylene block combined in said linkages and comprise polyoxyalkylene units, and a portion of said polyoxyalkylene blocks comprise oxyalkylene units and contain at least one group selected from the class consisting of hydroxy, —OR, —OOCNHR, and —OOCR groups wherein R is monovalent hydrocarbon having 1 to 18 carbon atoms free of aliphatic unsaturation, the average number of said silicon valences per average siloxane block combined with said polyoxyalkylene blocks time the weight percentage of said siloxane blocks in said composition, based on the total weight of siloxane blocks and polyoxyalkylene blocks in the composition, is about 20 to about 150, and the ratio of the number of said polyoxyalkylene blocks to said siloxane blocks is about 3:1 to about 100:1.

3,867,421

BIODEGRADABLE SULFATE DETERGENTS

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 3, 1972, Ser. No. 277,836
Int. Cl. C07c *141/12*
U.S. Cl. 260—457 **4 Claims**

1. A process for the preparation of a biodegradable detergent which comprises the steps of:

a. condensing butadiene with allyl alcohol in a Diels-Alder reaction at a temperature of from about 50° to about 190°C. and a pressure of from about atmospheric to about 100 atmospheres to form hydroxymethylcyclohexene;
b. catalytically hydrogenating said hydroxymethylcyclohexene at a hydrogenating temperature of from about −25° to about 100°C. and a hydrogen pressure of from about 50 to about 2,000 pounds per square inch to form hydroxymethycyclohexane;
c. ring alkylating said hydroxymethylcyclohexane with a 1-alkene in the presence of an organic peroxy free radical catalyst and hydrogen chloride at a temperature in the range of from about 50° to about 300° and at least as high as the decomposition temperature of said peroxy catalyst to form n-alkyl substituted hydroxymethycyclohexane;
d. sulfating said n-alkyl substituted hydroxymethylcyclohexane with a sulfating agent selected from the group consisting of sulfuric acid and sulfur trioxide present in an amount of about 1.01 to about 1.1 moles of sulfating agent per mole of alkyl substituted hydroxymethylcyclohexane at a temperature of from about 0° to about 60°C. to form the sulfate ester thereof; and
e. neutralizing said ester with a neutralizing agent selected from the group consisting of alkali metal base, alkaline earth metal base, ammonia, ammonium hydroxide, lower alkyl- and alkanol-amine, and benzyl amine to form the resultant biodegradable detergent.

3,867,422

PROCESS FOR THE PURIFICATION AND STABILIZATION OF MALONODINITRILE

Werner Heimberger, Hanau; Hermann Schmitt, Rodenbach; Gerd Schreyer; Ferdinand Theissen, both of Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Dec. 7, 1973, Ser. No. 422,738
Claims priority, application Germany, Dec. 8, 1972, 2260126
Int. Cl. C07c *121/20, 121/22*
U.S. Cl. 260—465.8 R **12 Claims**

1. A process for the purification and stabilization of impure malonodinitrile prepared from a cyanogen halide selected from the group consisting of cyanogen chloride and cyanogen bromide and acetonitrile and which contains fumarodinitrile comprising providing benzonitrile in an amount sufficient to prevent the discolorizing effects of fumarodinitrile, said amount being 0.01 to 5 parts of benzonitrile per part of fumarodinitrile in the impure malonodinitrile and crystallizing said impure malonodinitrile from a solvent which is an alkanol or dialkyl ether which is liquid at a temperature of 0°C. and boils at a temperature below the boiling point of malonodinitrile.

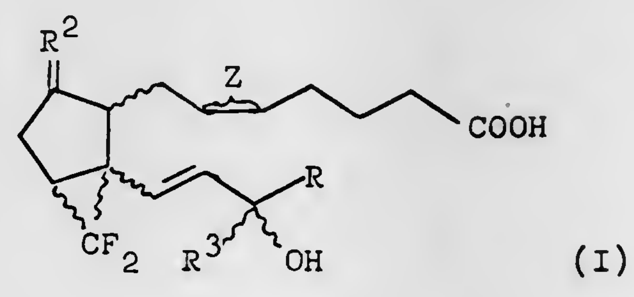
3,867,423

DIFLUOROMETHYLENE SUBSTITUTED PROSTAGLANDIN DERIVATIVES

Pierre Crabbe, Grenoble, France, assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 287,333, Sept. 8, 1972, abandoned. This application July 13, 1973, Ser. No. 379,127
Int. Cl. C07c *61/32, 61/36, 61/74*
U.S. Cl. 260—468 D **127 Claims**

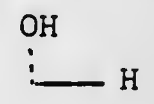
1. A compound selected from the group of antimers and racemic mixtures thereof of the formula:



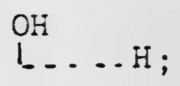
(I)

wherein

R represents alkyl of three through nine carbon atoms;
R^2 represents a keto group or the grouping



and



R^3 represents hydrogen, methyl or ethyl;
z represents a single bond or a cis double bond; and
the wavy line ( ) represents the α or β configuration or mixtures thereof, provided that

a. when the side chain attached at the 12-position is β, the difluoromethylene group at the 11,12-position is 11α,12α only; and when the side chain attached at the 12 position is α, the difluoromethylene group at the 11,12-position is 11β,12β only; and
b. when R^3 is α the hydroxyl group, attached to the same carbon as R^3, is β; and when R^3 is β the hydroxyl group, attached to the same carbon as R^3, is α; and the pharmaceutically acceptable salts or methyl esters thereof.

3,867,424

METHOD FOR PREPARING ACYLATED PRODUCTS

Yasuo Fujimoto, and Nobuhiro Nakamizo, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed June 25, 1970, Ser. No. 49,918
Claims priority, application Japan, June 30, 1969, 44-51061
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **4 Claims**

1. In the process for preparing a carboxylic acid amide wherein a primary or secondary amine selected from alkylamines, arylamines and substituted arylamines is acylated with an ester derived from aliphatic or aromatic carboxylic acid, the improvement which comprises carrying out said acylation in the presence of an alkali-metal salt, an alkaline earth metal salt of a quaternary ammonium salt of a compound containing a pyridine nucleus directly substituted by a hydroxy group, a mercapto group, or a group selected from alkyl groups having 1 to 6 carbon atoms, aryl groups, aralkyl groups, alkoxy groups having 1 to 6 carbon atoms, nitro groups, and cyano groups.

3,867,425

SUBSTITUTED BENZYL CARBAZIC ACID ESTERS

John Paul Dusza, Nanuet; Harry Lee Dindsay; Ralph Grassing Child, both of Pearl River, and Seymour Bernstein, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 9, 1974, Ser. No. 432,103

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **2 Claims**

1. The compound 3-(α-ethylveratrylidene)-carbazic acid ethyl ester.

3,867,426

HERBICIDAL META-BIFUNCTIONAL BENZENES

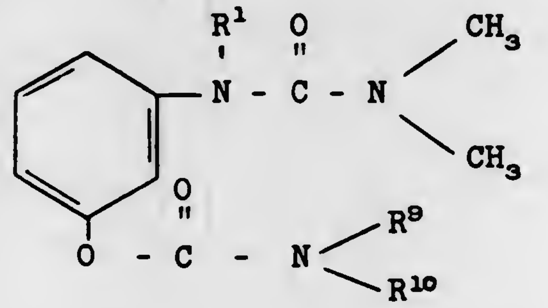
John F. Olin, Ballwin, and Philip C. Hamm, Glendale, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 2, 1970, Ser. No. 77,677

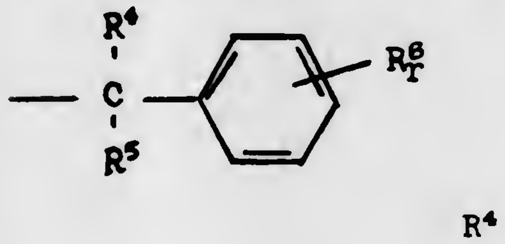
Int. Cl. C07c *127/20*

U.S. Cl. 260—472 **7 Claims**

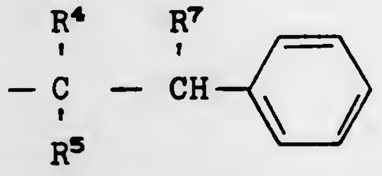
1. Meta-bifunctional substituted benzenes of the formula



wherein R^1 is hydrogen or alkyl having a maximum of 4 carbon atoms, R^9 is selected from the group consisting of $-CH_2CH_2$—O—phenyl,—CH_2CH_2—O—naphthyl, —CH_2CH=CH—phenyl and the group



and



wherein R^4 and R^5 are each independently selected from the group consisting of hydrogen, alkyl having a maximum of 4 carbon atoms, alkenyl having a maximum of 3 carbon atoms, chloroalkyl having a maximum of 3 carbon atoms and a maximum of 3 halogen atoms, chloroalkenyl having a maximum of 3 carbon atoms and 3 halogen atoms, R^6 is selected from the group consisting of halogen, alkyl having a maximum of 4 carbon atoms, chloroalkyl having a maximum of 3 carbon atoms and a maximum of 3 halogen atoms, nitro, and alkoxy having a maximum of 3 carbon atoms; and r is one of the integers zero to three, R^7 is selected from the group consisting of alkyl and alkenyl each having a maximum of 4 carbon atoms and R^{10} is selected from the group consisting of hydrogen, alkyl having a maximum of 12 carbon atoms, cycloalkyl having 5 to 7 ring carbon atoms, chloroalkyl having a maximum of 6 carbon atoms and a maximum of 3 halogen atoms and chloroalkenyl having a maximum of 4 carbon atoms and a maximum of 3 halogen atoms.

3,867,427

PREPARATION OF PHENOLIC CARBOXYLIC ACID ESTERS

Duane B. Priddy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 11, 1972, Ser. No. 288,094

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 S **6 Claims**

1. The process of making an ester of a phenolic carboxylic acid comprising reacting by contacting at about 100°– 225°C. in a polar aprotic solvent selected from the group consisting of dimethylformamide, dimethylsulfoxide and hexamethylphosphoramide under substantially anhydrous conditions an alkali metal phenate having at least one unsubstituted ortho or para position and selected from the group consisting of those derived from phenol, chlorinated phenols, brominated phenols, alkylphenols and phenylphenol with an organic carbonate of the formula ROCOOR′, wherein R and R′ are alkyl or aryl hydrocarbyl radicals.

3,867,428

SUBSTITUTED CARBAMATES

Hans Kiefer, Wachenheim; Albrecht Mueller; Karl-Heinz Koenig, both of Frankenthal; Wolfgang Rohr, Mannheim, and Heinrich Adolphi, Limburgerhof, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

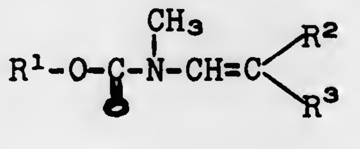
Filed Dec. 29, 1971, Ser. No. 213,746

Claims priority, application Germany, Jan. 8, 1971, 2100684

Int. Cl. C07c *125/06*

U.S. Cl. 260—479 C **3 Claims**

1. A compound of the formula



wherein:

R^1 is phenyl substituted once by lower alkoxy, lower alkenoxy, or lower alkynoxy;

R^2 is methyl or hydrogen;

R^3 is methyl or hydrogen.

3,867,429

ALKYNYLOXY)ALKYL AND (ALKENYLOXY)ALKYL CARBAMATES

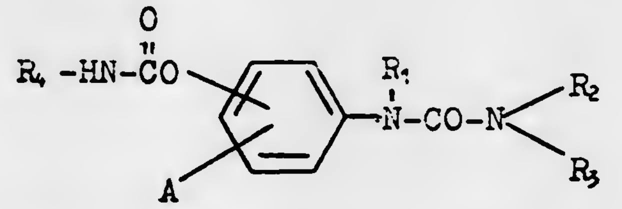
Barrington Cross, Rocky Hill, and Charles Paul Grasso, Cranbury, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 26, 1973, Ser. No. 344,667

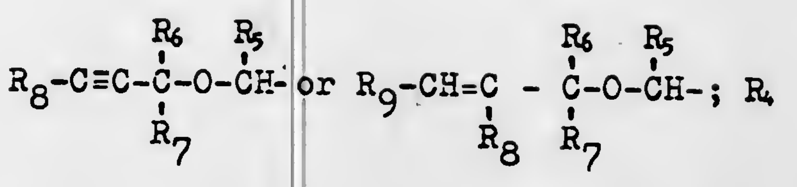
Int. Cl. C07c *127/14, 127/16, 127/18*

U.S. Cl. 260—479 C **9 Claims**

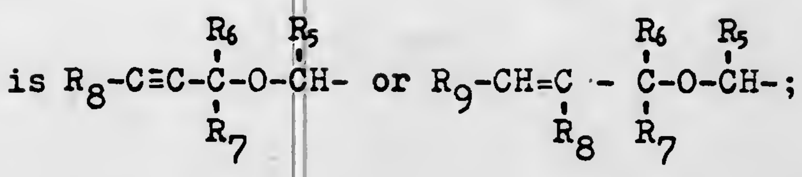
1. A compound having the formula:



wherein R_1 is hydrogen, hydroxyl or alkyl C_1-C_4; R_2 is hydrogen, alkyl C_1-C_4 or alkoxy C_1-C_4; R_3 is hydrogen, alkyl C_1-C_4, alkoxy C_1-C_4,

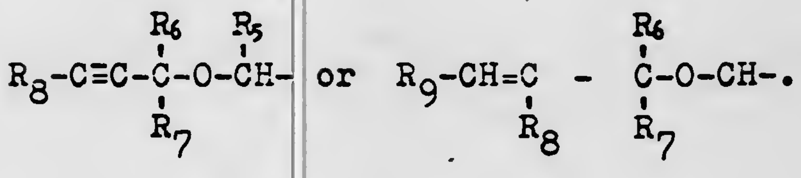


$$R_8\text{-}C{\equiv}C\text{-}\overset{R_6}{\underset{R_7}{C}}\text{-}O\text{-}\overset{R_5}{C}H\text{-} \text{ or } R_9\text{-}CH{=}\underset{R_8}{C}\ \text{-}\ \overset{R_6}{\underset{R_7}{C}}\text{-}O\text{-}\overset{R_5}{C}H\text{-};\ R_4$$



$$\text{is } R_8\text{-}C{\equiv}C\text{-}\overset{R_6}{\underset{R_7}{C}}\text{-}O\text{-}\overset{R_5}{C}H\text{-} \text{ or } R_9\text{-}CH{=}\underset{R_8}{C}\ \text{-}\ \overset{R_6}{\underset{R_7}{C}}\text{-}O\text{-}\overset{R_5}{C}H\text{-};$$

R_5 is hydrogen or n-alkyl C_1-C_4; R_6 and R_7 are hydrogen or alkyl or alkyl C_1-C_4; R_8 and R_9 are hydrogen, alkyl C_1-C_4 or halogen; and A is hydrogen, halogen or alkyl C_1-C_4; provided that A and -O-CONHR$_4$ are meta- and para-, respectively, or para- or meta-, respectively; and provided that R_2 is hydrogen when R_3 is either



$$R_8\text{-}C{\equiv}C\text{-}\overset{R_6}{\underset{R_7}{C}}\text{-}O\text{-}\overset{R_5}{C}H\text{-} \text{ or } R_9\text{-}CH{=}\underset{R_8}{C}\ \text{-}\ \overset{R_6}{\underset{R_7}{C}}\text{-}O\text{-}CH\text{-}.$$

3,867,430

METHOD OF PRODUCING ALKANOIC ACID ESTERS OF ALPHA-PHENYLETHYL ALCOHOL

Mark Markovich Grozhan, Prospekt, 31, Kv. 49; Vladimir Vasilievich Kamzolkin, Ulitsa Vavilova, 55, Kv. 25; Jury Anatolievich Lapitsky, Prospekt, 83, Kv. 226, and Andrei Nikolaevich Bashkirov, Ulitsa, 21, Korpus 1, Kv. 13, all of Moscow, U.S.S.R.

Filed June 28, 1971, Ser. No. 157,620

Claims priority, application U.S.S.R., July 9, 1970, 1454037

Int. Cl. C07c *69/02, 69/14*

U.S. Cl. 260—488 CD **3 Claims**

1. A method of producing an alkanoic acid ester of α-phenylethyl alcohol, which comprises effecting a liquid-phase oxidation of ethylbenzene with molecular oxygen at a temperature of 100°–300°C under a pressure of 1–100 atm.g. in the presence of an alkanoic acid anhydride used at a molar ratio to ethylbenzene of 1:1–12 respectively to thereby produce the ester of α-phenylethyl alcohol and of said alkanoic acid.

3,867,431

CONTRAST AGENT FOR ANGIOGRAPHY AND UROGRAPHY

Ernst Felder; Davide Pitre, both of Milan, Italy, and Hans Zutter, Schaffhausen, Switzerland, assignors to Bracco Industria Chimica Societa per Azioni, Milan, Italy

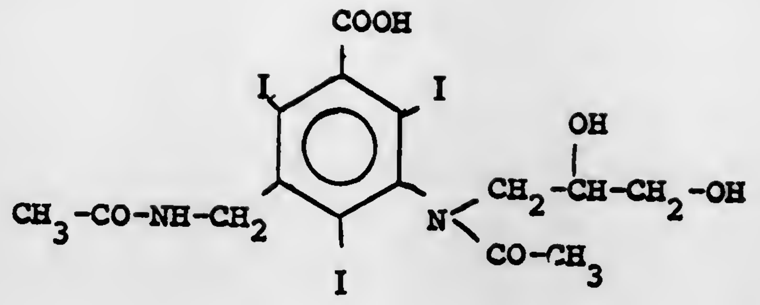
Filed July 25, 1972, Ser. No. 274,973

Claims priority, application Switzerland, Aug. 26, 1971, 12569/71

Int. Cl. C07c *103/32*

U.S. Cl. 260—501.11 **4 Claims**

1. A compound which is the 3-(N-β,γ-dihydroxypropylacetylamino)-5-acetylaminomethyl-2,4,6-triiodobenzoic acid of the formula



or a water-soluble salt of said acid with a pharmaceutically acceptable alkali metal or amine.

3,867,432

BIODEGRADABLE SULFONATE DETERGENTS

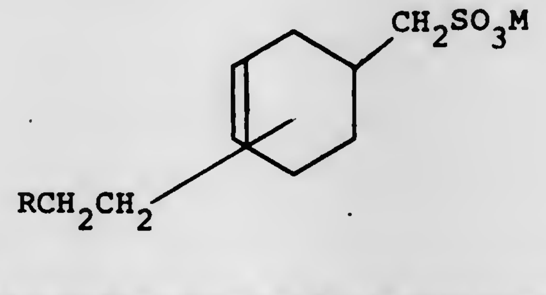
Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 3, 1972, Ser. No. 277,837

Int. Cl. C07c *143/00*

U.S. Cl. 260—503 **2 Claims**

1. A biodegradable detergent compound of the formula:



in which M is an alkali metal and R is an alkyl group of from 1 to about 14 carbon atoms.

3,867,433

CYCLOPENTA[J,K]-PHENANTHRENE-4-ACETIC ACIDS AND RELATED COMPOUNDS

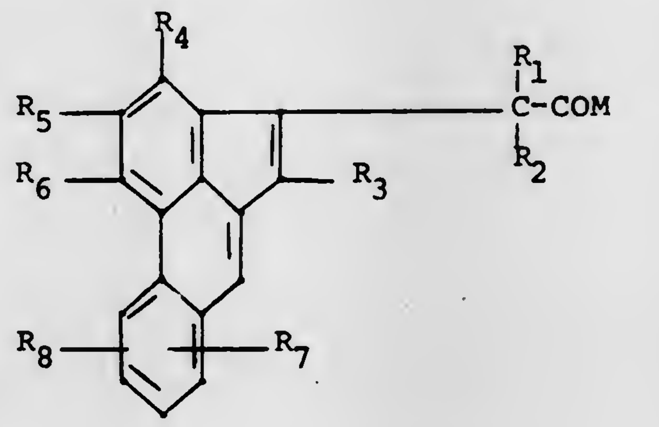
Tshung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Rahway, N.J.

Filed May 4, 1973, Ser. No. 357,314

Int. Cl. C07c *63/44, 69/76*

U.S. Cl. 260—515 A **5 Claims**

1. The compound of the formula:



wherein:

- R_1 and R_2 are each hydrogen or lower alkyl;
- R_3 is hydrogen, $C_{1\text{-}5}$ alkyl, halo, halo $C_{1\text{-}5}$ alkyl, phenyl, $C_{1\text{-}5}$ alkylthio, phenylthio, $C_{2\text{-}5}$ alkenyl, $C_{1\text{-}5}$ alkoxyphenyl, trifluoromethyl or benzyl;
- R_4 is hydrogen, trifluoromethyl, halo, $C_{1\text{-}5}$ alkyl, phenyl, benzyl;
- R_5 is hydrogen, hydroxy, halo, $C_{1\text{-}5}$ alkylthio, benzyloxy, $C_{1\text{-}5}$ alkylsulfinyl, $C_{1\text{-}5}$ dialkylsulfonyl, $C_{1\text{-}5}$ dialkylamino-$C_{1\text{-}5}$ alkyl, $C_{1\text{-}5}$ alkylbenzyloxy, benzylthio, $C_{1\text{-}5}$ dialkylamino, halobenzyloxy, $C_{1\text{-}5}$ alkoxy, $C_{1\text{-}5}$ alkyl, $C_{1\text{-}5}$ alkylsulfamyl,

$C_{2\text{-}5}$ alkanoyloxy, phenoxy, $C_{2\text{-}5}$ alkenyl, $C_{2\text{-}5}$ alkenyloxy or benzyl;

R_6 is hydrogen, $C_{2\text{-}5}$ alkenyl, halo, $C_{1\text{-}5}$ alkoxy, $C_{1\text{-}5}$ alkyl, benzyloxy or $C_{1\text{-}5}$ alkylthio; at least one of R_4, R_5 or R_6 is hydrogen at any one time;

R_7 is hydrogen, $C_{1\text{-}5}$ alkylthio, $C_{1\text{-}5}$ alkylsulfinyl or $C_{1\text{-}5}$ alkylsulfonyl;

R_8 is hydrogen, halo, hydroxy, $C_{1\text{-}5}$ alkoxy, halo $C_{1\text{-}5}$ alkyl, phenyl, $C_{1\text{-}5}$ alkanoylamino or $C_{1\text{-}5}$ alkanoyl; and

M is hydroxy, $C_{1\text{-}5}$ alkoxy or pivallyloxy.

3,867,434

PHENYL BUTYRIC ACIDS AND DERIVATIVES THEREOF

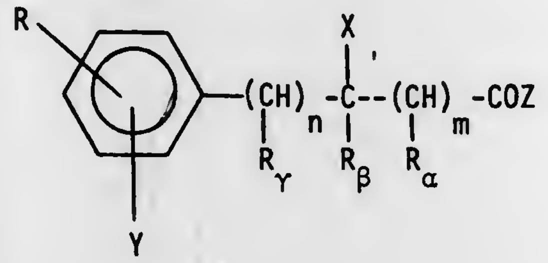
Julius Diamond, Lafayette Hills, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 4, 1971, Ser. No. 195,825

Int. Cl. C07c *63/00, 69/64*

U.S. Cl. 260—515 A **11 Claims**

1. A compound of the formula



where:

R is

phenyl or

substituted phenyl where the substituent is Y;

Y is hydrogen,

alkyl having from 1–7 carbon atoms or halo;

$n + m = 2$;

R , R and R are hydrogen or loweralkyl;

X is halo

Z is hydrogen,

—OH,

loweralkoxy,

benzyloxy or

—OM where M is an alkali, alkaline earth or aluminum metal an ammonium salt.

3,867,435

SUBSTITUTED PHENYLACETIC ACID COMPOUNDS

Julius Diamond, Lafayette Hill, and Norman J. Santora, Roslyn, both of Pa., assignors to William H. Rorer Inc., Ft. Washington, Pa.

Division of Ser. No. 34,870, May 5, 1970,. This application Mar. 10, 1972, Ser. No. 233,717

Int. Cl. C07c *63/32, 69/62*

U.S. Cl. 260—515 A **5 Claims**

1. A substituted phenylacetic acid compound selected from the group consisting of α, *m*-dihalo-*P*-lower alkylphenylacetic acid and its substantially non-toxic ester or salt, said ester being selected from the group consisting of lower alkyl, cyclolower alkyl, menthyl, phenyl, phenyl lower alkyl, lower alkyl phenyl, di-lower alkylamino lower alkyl, piperidino lower alkyl, piperazino lower alkyl, and pyrrolidino lower alkyl esters.

3,867,436

METHOD OF PREPARING PHENYLALANINE

Masao Nakamura, Kawasaki; Chieko Uchida, Yokosuka; Masanao Ozaki, Kawasaki, and Takehiko Ichikawa, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed July 9, 1973, Ser. No. 377,285

Int. Cl. C07c *101/08*

U.S. Cl. 260—518 R **7 Claims**

1. A method preparing phenylalanine which comprises:

a. Maintaining the temperature of a solution of phenylacetaldehyde, ammonium ions, cyanide ions, and free ammonia in an aqueous medium between 50°C and 150°C until one mole of said phenylacetaldehyde simultaneously reacts with one mole-equivalent each of said cyanide and ammonium ions to form an aminonitrile intermediate,
   1. said medium containing a water-miscible, organic solvent inert to said phenylacetaldehyde, said ammonia, and said cyanide ions in an amount equal to at least twice the weight of said phenylacetaldehyde,
   2. the amount of said free ammonia being at least one mole per mole of said phenylacetaldehyde; and

b. hydrolyzing said intermediate to phenylalanine.

3,867,437

N-ACYL-N′-SUBSTITUTED-2,6-DIAMINO-BENZOIC ACIDS AND PROCESS FOR MAKING THE SAME

Hajime Fujimura, Kyoto; Kenju Suzuki; Osamu Asano, both of Kasugai, and Masaru Asai, Aichi-gun, all of Japan, assignors to Sanwa Kagaku Kenkyusho Co. Ltd., Nogoya City, Japan

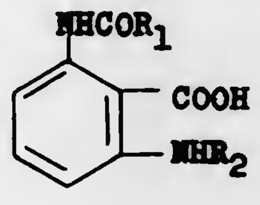
Filed May 20, 1971, Ser. No. 145,468

Claims priority, application Japan, June 9, 1970, 45-49666

Int. Cl. C07c *103/30*

U.S. Cl. 260—518 R **14 Claims**

1. An N-acyl-N′-substituted-2,6-diamino-benzoic acid having the formula



wherein R_1 is a member selected from the group consisting of lower alkyl, lower alkenyl, vinylbenzene, phenoxy-loweralkyl, phenyl, halophenyl and lower alkoxyphenyl, and R_2 is a member selected from the group consisting of lower alkyl, benzoyl, phenyl and phenyl substituted with halogen, lower alkyl, trifluoromethyl, hydroxy and lower alkoxy.

3,867,438

PROCESS FOR THE OXIDATION OF $\alpha\beta$-UNSATURATED ALDEHYDES TO $\alpha\beta$-UNSATURATED CARBOXYLIC ACIDS

Jorg Hensel; Theodor Lussling, both of Grossauheim; Ewald Noll, Grosskrotzenburg; Hans Schaefer, Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber - Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Division of Ser. No. 188,462, Oct. 12, 1971, Pat. No. 3,773,692. This application July 27, 1973, Ser. No. 383,232

Claims priority, application Germany, Oct. 13, 1970, 2050155

Int. Cl. C07c *57/04, 51/26*

U.S. Cl. 260—530 N **16 Claims**

1. A process for the production of acrylic acid or methacrylic acid by oxidizing acrolein or methacrolein in the presence of water and oxygen in a vapor phase and in the presence of a catalyst, wherein said catalyst consists of (A) a mixture of oxides of the elements Sb, Mo, V and W, and (B) at least on oxide of the elements Pb, Ag, Cu, Sn, one or Bi, said catalyst having an atomic ratio of Sb : Mo : V : W : Group (B) elements of about 1 – 60 : 12 : 0.5 – 25 : 0.1 – 12 : 0.1 – 12, and further wherein oxidation is conducted at a pressure up to about 3 atmospheres and at a temperature of about 200° – 350°C.

3,867,439

PREPARATION OF POTASSIUM BENZOATE

David J. Hills, Brantford, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 17, 1972, Ser. No. 244,898

Int. Cl. C07c *63/02, 63/08*

U.S. Cl. 260—525 **10 Claims**

1. In the process wherein liquid toluene is oxidized to benzoic acid by molecular oxygen in the presence of a heavy metal compound catalyst at about 100°–200°C., thereby producing a liquid process effluent consisting essentially of a toluene solution of benzoic acid and said metal compound, the improvement whereby benzoic acid is separated from said effluent as the substantially pure potassium salt by treating the liquid effluent to remove at least a substantial part of said heavy metal compound and to adjust the benzoic acid concentration to about 5–30 percent by weight, adding potassium hydroxide containing up to 60 percent by weight of water to the adjusted effluent at a temperature between the crystallization point of the benzoic acid solution and about 150°C., thereby forming a slurry of solid potassium benzoate in the toluene and separating said potassium benzoate from said slurry.

3,867,440

PROCESS FOR THE PREPARATION; OF GLYCOLIC ACID

Paul Kobetz, and Kenneth L. Lindsay, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,226

Int. Cl. C07c *59/06*

U.S. Cl. 260—535 R **9 Claims**

1. A process for hydrolyzing glycolonitrile to produce glycolic acid which comprises reacting glycolonitrile with an acid selected from the group consisting of maleic acid, phosphorous acid and sulfurous acid at a temperature of from about 75° to about 175°C to form glycolic acid and an ammonium salt of the acid reacted with the glycolonitrile.

3,867,441

NITRO-SUBSTITUTED PHENYLTHIO DOPAMINES

Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Riehen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

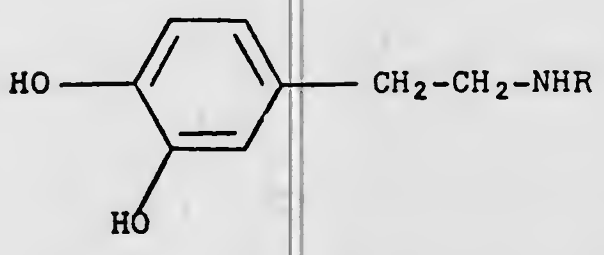
Division of Ser. No. 187,118, Oct. 6, 1971, Pat. No. 3,793,342. This application Sept. 13, 1973, Ser. No. 397,035

Claims priority, application Switzerland, Oct. 30, 1970, 16044/70

Int. Cl. C07c *145/00*

U.S. Cl. 260—551 S **2 Claims**

1. Compounds of the general formula



I

wherein R is a nitro-substituted phenylthio group, or pharmaceutically acceptable salts thereof.

3,867,442

PROCESS FOR PREPARING UREA

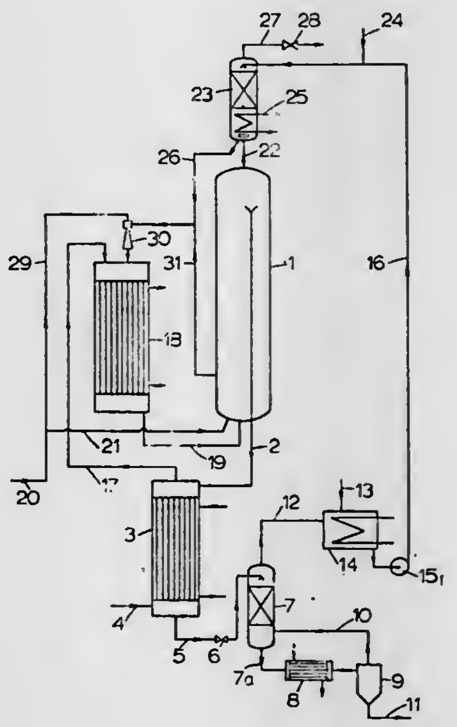
Johan D. Logemann, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Dec. 28, 1971, Ser. No. 213,115

Claims priority, application Netherlands, Dec. 31, 1970, 7019056

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 A **3 Claims**



1. In processes for the synthesis of urea by reacting ammonia and carbon dioxide in a synthesis zone, at elevated temperature and pressure and wherein the ammonium carbamate, contained in the effluent synthesis solution which is withdrawn from said synthesis zone, is decomposed at high pressure and the ammonia and carbon dioxide content of said solution is thereafter expelled therefrom firstly in a high pressure zone to generate a high pressure ammonia-carbon dioxide-water vapor mixture and secondly in a low pressure zone to generate a low pressure ammonia-carbon dioxide-water vapor mixture, fresh carbon dioxide is supplied to said high pressure zone and an aqueous urea solution substantially free of ammonium carbamate is discharged from said low pressure zone,

and wherein said high pressure mixture, together with fresh ammonia feed, is condensed in a high pressure condensation zone and then recirculated to said synthesis zone,

and said low pressure mixture is processed into a low pressure ammonium carbamate solution for recirculation, and an inert-containing overhead gas mixture is also discharged from said synthesis zone and processed through a washing zone for recovery of ammonia and carbon dioxide components therefrom into a high pressure ammonium carbamate solution, for recirculation, the improvement consisting essentially in:

a. compressing and delivering said low pressure ammonium carbamate solution to said washing zone for effecting said recovery of ammonia and carbon dioxide components from said overhead gas and to generate a wash solution;

b. withdrawing a quantity of urea-containing solution from said synthesis zone; and

c. utilizing a jet pump, driven by said fresh ammonia feed, to deliver said wash solution and said urea-containing solution to said high pressure condensation zone,

whereby, introduction of additional water in said washing zone is substantially avoided and the heat required to raise the wash solution to the temperature of the said high pressure condensation zone is obtained in said washing zone and thereby excess heat utilizable at a higher temperature is available from said high pressure condensation zone.

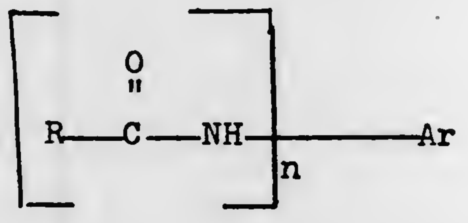
3,867,443
NUCLEAR HYDROGENATION OF N-ARYL POLYAMIDES

Russell E. Malz, Jr., Naugatuck, and Harold Greenfield, Watertown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,355
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 R **9 Claims**

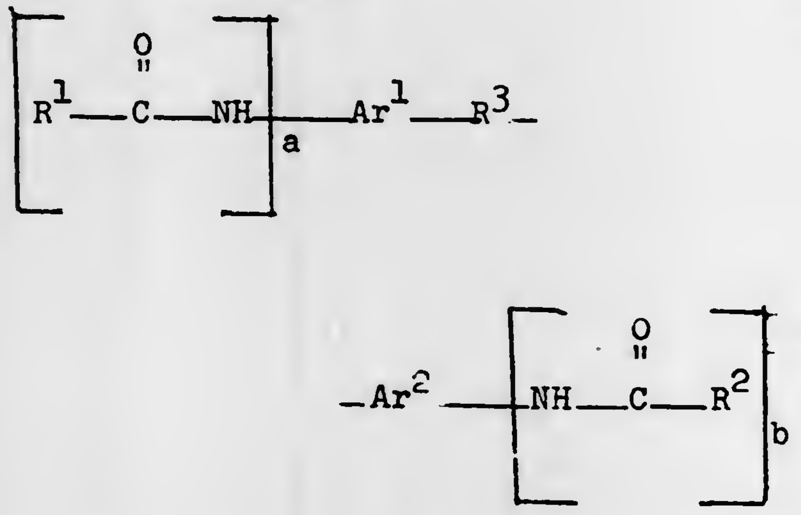
1. A method for nuclear hydrogenation of an N-aryl polyamide to an N-alicyclic polyamide comprising contacting the N-aryl polyamide with hydrogen in the prrsence of an acid-treated rhodium hydrogenation catalst at a temperature of from 5° to 250°C. and at a pressure within the range of from atmospheric pressure to 10,000 psig, the said N-aryl polyamide being selected from the group consisting of those of Formulas I and II as follows:

Formula I:



where *n* is an integer from 2 to 4; R is selected from the group consisting of hydrogen, alkyl of from 1 to 17 carbon atoms, cycloalkyl of from 5 to 8 carbon atoms, aryl of from 6 to 10 carbon atoms, aralkyl of from 7 to 14 carbon atoms, and alkaryl of from 7 to 14 carbon atoms; and Ar is an aromatic moiety of phenyl, naphthyl fluoroenyl, diphenyl, phenanthryl, or acenaphthyl origin; and

Formula II:



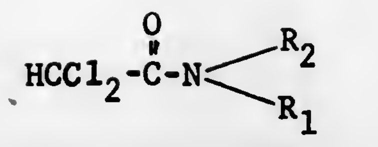
where *a* and *b* are integers having values of from 1 to 4, the sum of *a* and *b* being from 2 to 8; R^1 and R^2 are the same or different and have values as stated for R in Formula I above; R^3 is selected from the group consisting of a single bond, $C_1—C_8$ alkylene, $C_5—C_8$ cycloalkylene, $C_2—C_8$ alkylidene, $C_2—C_8$ alkenylene, and —O—; and Ar^1 and Ar^2 are the same or different and have values as stated above for Ar.

3,867,444
SCHIFF'S BASE DICHLOROACETAMIDES

Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed July 17, 1972, Ser. No. 272,271
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 HL **14 Claims**

1. A compound having the formula



in which R_1 is alkenyl having from 3 to 6 carbon atoms, inclusive, and R_2 is cyclohexenyl-1.

3,867,445
SUBSTITUTED HYDROXYLAMINE ANTI-OXIDANTS

Peter Klemchuk, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 133,700, April 13, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,447
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 A **1 Claim**

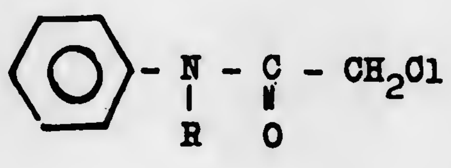
1. The compound β,β′-hydroxyimino-bis-propionamide.

3,867,446
PROCESS FOR THE PREPARATION OF SUBSTITUTED CHLOROACETANILIDES

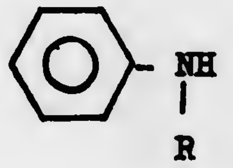
Gyorgy Matolcsy, and Barna Bordas, both of Budapest, Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

Filed May 24, 1973, Ser. No. 363,418
Int. Cl. C07c *103/34*
U.S. Cl. 260—562 B **2 Claims**

1. A process for the preparation of a substituted chloracetanilide having the formula



wherein R represents a C_{1-4} alkyl group, in which a N-alkylanilide of the formula



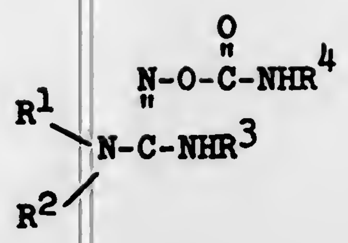
wherein R has the same meanings as defined above, is acylated with chloracetic acid in the presence of phosphorous oxychloride at a temperature above 150° C, under anhydrous conditions.

3,867,447
HYDROXYGUANIDINE O-CARBAMATES

Saul Carl Cherkofsky, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

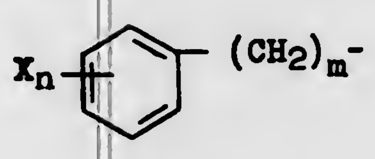
Continuation-in-part of Ser. No. 283,775, Aug. 25, 1972, abandoned. This application June 25, 1973, Ser. No. 373,147
Int. Cl. C07c *129/08*
U.S. Cl. 260—564 G **12 Claims**

1. A compound of the formula



wherein R^1, R^2 and R^3 are selected from the group consisting of

A. hydrogen,
B. an aliphatic hydrocarbon group of 1-8 carbon atoms containing up to two substituents selected from the group consisting of F, Cl, Br and alkoxy of 1–4 carbon atoms and
C. a group of the formula



wherein X is F, Cl, C_1–C_3 alkyl, C_1–C_3 alkoxy, NO_2, CF_3, R^5R^6NCO, $R^5R^6NSO_2$ or R^7SO_2;
$m = 0$–2
$n = 0$–3
R^5 and R^6 are H or C_1–C_4 alkyl;
R^7 is CF_3 or C_1–C_4 alkyl;
R^4 is hydrogen or C_1–C_3 alkyl; and with the proviss that

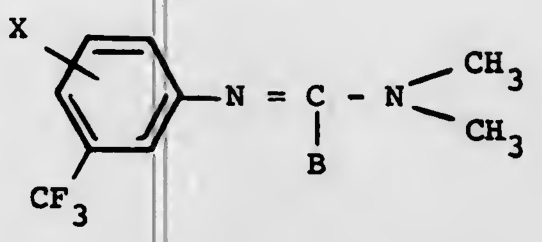
1. up to one of R^1, R^2 and R^3 is selected from (A) up to two of R^1, R^2 and R^3 is selected from (B), and up to one of R^1, R^2 and R^3 is selected from (C);
2. when R^1 is methyl and R^2 is hydrogen, R^3 is not unsubstituted phenyl or unsubstituted benzyl;
3. when R^1 is methyl and R^3 is hydrogen, R^2 is not unsubstituted phenyl; and
4. when one of R^1, R^2 and R^3 is hydrogen and the other two R groups are selected from (B), the total carbon atoms in the said other two groups is 3–9.

3,867,448
TRIFLUOROMETHYLPHENYL-FORMAMADINES AND ACETAMIDINES

Dieter Duerr, Bottmingen; Hans Aebi, Riehen, and Ludwig Ebner, Stein, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 864,244, Aug. 7, 1969, abandoned, which is a division of Ser. No. 569,828, Aug. 6, 1966, Pat. No. 3,487,156, which is a continuation-in-part of Ser. No. 515,772, Oct. 8, 1965, abandoned, which is a division of Ser. No. 262,863, March 5, 1963, Pat. No. 3,284,289. This application Feb. 22, 1972, Ser. No. 228,326
Claims priority, application Switzerland, Mar. 8, 1962, 2800/62
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R **5 Claims**

1. A compound of the formula



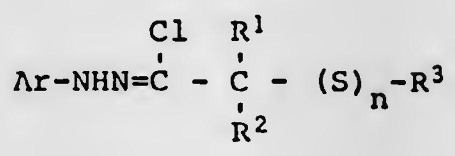
in which X is hydrogen, chlorine or CF_3, and B is hydrogen or methyl; or a salt thereof with an acid selected from the group consisting of HCl, HBr, HI, HF, H_2SO_4, H_3PO_4, HPO_3, HNO_3, $HClO_4$, HSO_3NH_2, CH_3COOH, CCl_3COOH, citric acid, lactic acid, formic acid, oxalic acid, glycolic acid, benzoic acid, oleic acid, 2,3,6-trichlorobenzoic acid, dodecylbenzenesulfonic acid, salicylic acid, nicotinic acid and CH_3CCl_2COOH.

3,867,449
INSECTICIDAL PHENYLHYDRAZONE SULFIDES

Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 16, 1974, Ser. No. 470,481
Int. Cl. C07c *109/14*
U.S. Cl. 260—566 B **11 Claims**

1. A compound of the formula:



$$Ar-NHN=\underset{}{\overset{Cl}{C}} - \underset{R^2}{\overset{R^1}{C}} - (S)_n-R^3$$

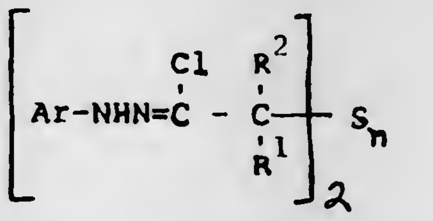
wherein R^1 is hydrogen or alkyl of 1 to 6 carbon atoms, R^2 is hydrogen or alkyl of 1 to 6 carbon atoms, R^3 is alkyl of 1 to 6 carbon atoms or haloalkyl of 1 to 6 carbon atoms containing 1 to 5 fluoro, chloro or bromo groups or phenyl substituted with up to 3 fluoro, chloro or bromo groups, Ar is phenyl substituted with up to 5 fluoro, chloro or bromo groups and n is 1, 2 or 3.

3,867,450
INSECTICIDAL BIS-PHENYLHYDRAZONE SULFIDES

Joseph E. Moore, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 16, 1974, Ser. No. 470,482
Int. Cl. C07c *109/14*
U.S. Cl. 260—566 B **8 Claims**

1. A compound of the formula



$$\left[Ar-NHN=\overset{Cl}{C} - \underset{R^1}{\overset{R^2}{C}}\right]_2 S_n$$

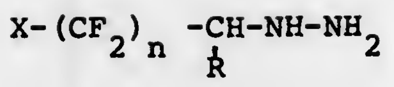
wherein R^1 and R^2 individually are hydrogen or alkyl of 1 to 6 carbon atoms, Ar is phenyl substituted with up to 5 fluoro, chloro or bromo groups or with up to 2 nitro groups, and n is 1, 2 or 3.

3,867,451
FLUORO-ALKYLHYDRAZINES

Hector Alfons Vanden Eynde, Mortsel-Antwerpen; Robert Joseph Pollet, Berchem-Antwerpen, and Arthur Henri De Cat, Mortsel-Antwerpen, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed July 12, 1965, Ser. No. 471,437
Claims priority, application Great Britain, July 24, 1964, 29739/64
Int. Cl. C07c *109/02*, *109/04*; G03c *7/100*
U.S. Cl. 260—569 **6 Claims**

1. A fluoro-alkyl hydrazine corresponding to the following formula:



$X-(CF_2)_n-\underset{R}{CH}-NH-NH_2$

wherein:

X is a member of the group consisting of a hydrogen atom and a fluorine atom,

R is a member of the group consisting of a hydrogen atom, lower alkyl or phenyl, and

n is a positive integer from 1 to 25 inclusive.

3,867,452

2-NITROPHENYLHYDRAZINES

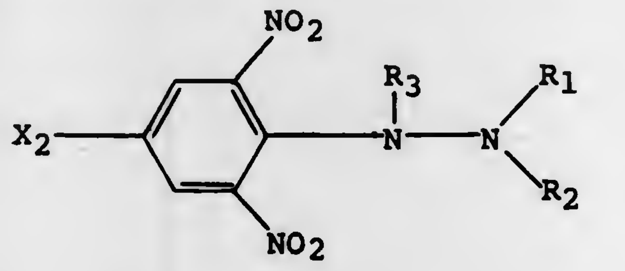
Merrill Wilcox, 2911 N.W. 30th Ter., Gainesville, Fla. 32601

Continuation-in-part of Ser. No. 102,993, Dec. 30, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,637

Int. Cl. C07c *109/04*

U.S. Cl. 260—569 **8 Claims**

1. A compound of the formula



wherein X_2 is trifluoromethyl or halogen; each of R_1 and R_2 is lower alkyl; and R_3 is hydrogen or lower alkyl.

3,867,453

PRODUCTION OF KETONE BY REACTION OF ESTER OR THIOL ESTER WITH GRIGNARD REAGENT

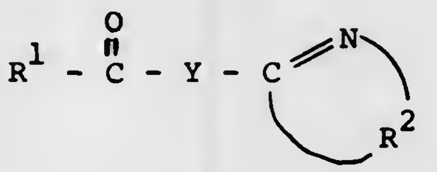
Teruaki Mukaiyama; Masashi Araki, both of Tokyo, and Hisashi Takei, Yokohama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 11, 1974, Ser. No. 449,760

Int. Cl. C07c *87/48, 87/36*

U.S. Cl. 260—570 AB **5 Claims**

1. A process for producing a ketone which comprises reacting at a temperature from −78° to +60°C in an inert solvent compound of the formula,



(I)

wherein R^1 is alkyl having 1 – 10 carbon atoms, cycloalkyl having 3 – 8 carbon atoms, alkenyl having 2 – 10 carbon atoms, alkynyl having 2 – 10 carbon atoms, phenyl, phenylalkyl having 7 – 10 carbon atoms or phenylalkenyl having 7 – 10 carbon atoms which may have at least one substitutent selected from the group consisting of alkyl having 1 – 4 carbon atoms, alkoxy having 1 – 4 carbon atoms, oxo, amino, substituted amino and halogen, or a radical in which two or more of the above-mentioned radicals are bonded through —0—; R^2 is a hydrocarbon residue which can form 5- or 6-membered heterocyclic ring together with the C and N atoms which may contain one or more hetero atoms and may be condensed with at least one benzene nucleus and further may contain at least one alkyl substituent; and Y is oxygen or sulfur, with a Grignard reagent of the formula,

$R^3 - Mg - X$ (II)

wherein R^3 is alkyl having 1–10 carbon atoms, cycloalkyl having 3–8 carbon atoms, alkenyl having 2–10 carbon atome, alkynyl having 2–10 carbon atoms, or phenyl which may have at least one substituent selected from the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms and halogen; and X is chlorine, bromine or iodine, in an inert solvent.

3,867,454

1,1-BRIDGED-BIS(N-ARALKYL-2-AMINOETHANOLS)

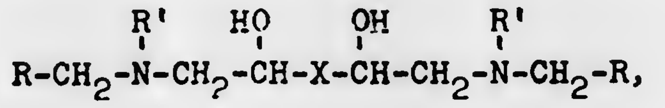
Guy D. Diana, Stephentown, and Royal A. Cutler, Sand Lake, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 123,096, March 10, 1971,. This application Aug. 20, 1973, Ser. No. 389,589

Int. Cl. C07c *91/16, 91/22*

U.S. Cl. 260—570.5 P **12 Claims**

1. 1,1′-(X)-bis[2-[(R-CH_2)(R′)amino]ethanol] of the formula



$R-CH_2-\overset{R'}{N}-CH_2-\overset{HO}{CH}-X-\overset{OH}{CH}-CH_2-\overset{R'}{N}-CH_2-R,$

wherein:

R is phenyl or phenyl substituted by one to three members selected from the group consisting of atertiary alkyl of one to four carbon atoms, hydroxy, atertiary alkoxy of one to four carbon atoms and halo or by a member selected from the group consisting of acetamido, dimethylamino, methylthio, methylsulfonyl, nitro, trifluoromethoxy and trifluoromethyl;

R′ is hydrogen or atertiary alkyl of one to four carbon atoms,

X is a direct linkage, methylene or alkylene of 2 to 12 carbon atoms with bonds to the adjacent carbon atoms at different carbon atoms; or an

acid-addition salt thereof.

3,867,455

PREPARATION OF PHENYLAMINOETHANOLS

Michael Atkinson, and David Hartley, both of London, England, assignors to Allen & Hanburys Limited, London, England

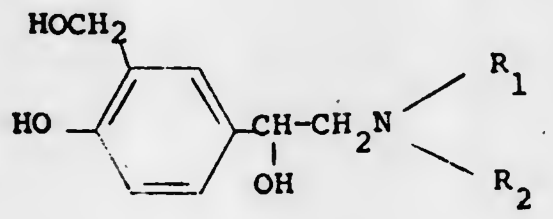
Continuation of Ser. No. 142,747, May 12, 1971,. This application Dec. 14, 1973, Ser. No. 424,711

Claims priority, application Great Britain, June 2, 1970, 26523/70

Int. Cl. C07e *91/16*

U.S. Cl. 260—570.6 **3 Claims**

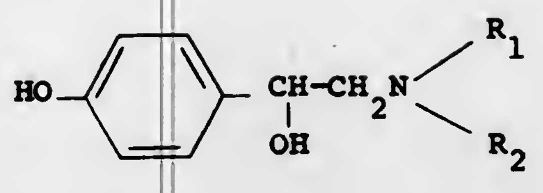
1. A process for the preparation of a phenylaminoethanol derivative of the formula:



wherein:

R_1 is a hydrogen atom or a benzyl group, and

R_2 is a hydrogen atom, a straight or branched chain alkyl radical containing from 1 to 6 carbon atoms, or an arylalkyl radical, which comprises treating a compound of the formula:



wherein:

R_1 and R_2 are as defined above with a aqueous solution of formaldehyde at ambient temperature in the presence of an alkali metal hydroxide and sodium borate.

3,867,456

MONO-OMEGA-HALOALKYL AMINES

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne sur Siene, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 798,192, Feb. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 568,148, July 27, 1966, abandoned, Ser. No. 568,118, July 27, 1966, abandoned, Ser. No. 607,898, Jan. 9, 1967, Pat. No. 3,617,163. This application Jan. 7, 1972, Ser. No. 216,282

Claims priority, application Luxembourg, Jan. 10, 1966, 50,223; June 24, 1966, 51,408; Dec. 9, 1966, 52,555; July 30, 1965, 49,214; Jan. 27, 1966, 50,348; July 4, 1966, 51,474

Int. Cl. C07c *87/58, 87/62*

U.S. Cl. 260—574 **2 Claims**

1. 1-N-β-bromoethylamino-2-nitro-4-methoxy benzene.

2. 1-N-methylamino-2-nitro-4-N′-β-bromoethylaminobenzene.

3,867,457

PREPARATION OF NINHYDRIN

Russell J. Maudsley, Llanerch-Y-Mor, near Holywell, Wales, assignor to Newton Chambers & Company Limited, Sheffield, England

Filed May 18, 1973, Ser. No. 361,738

Claims priority, application Great Britain, June 13, 1972, 27647/72

Int. Cl. C07c *49/82*

U.S. Cl. 260—590 **5 Claims**

1. A method for making Ninhydrin comprising reaction of his indan 1,3-dione, in the presence of a catalyst, with an oxidising agent at a temperature above 40°C, said catalyst being selected from the group consisting of bromine, iodine, hydrogen iodide and hydrogen bromide and compounds that form any of these during the reaction, and said oxidising agent being selected from the group consisting of organic sulphoxides, free of reducing substituents in which the sulphoxide sulphur atom carries two distinct organic radicals and organic sulphoxides, free of reducing substituents, in which the sulphoxide sulphur atom carries two organic radicals that are linked together.

3,867,458

PROCESS FOR PREPARING 2-ALKOXY-5-METHOXYBENZALDEHYDE

Shinichi Imai, and Kazuya Sano, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1972, Ser. No. 234,374

Claims priority, application Japan, Mar. 12, 1971, 46-13362

Int. Cl. C07c *45/00*

U.S. Cl. 260—600 **10 Claims**

1. A process for preparing 2-alkoxy-5-methoxybenzaldehyde, said alkoxy group being a methoxy or an ethoxy group, which comprises reacting, in the presence of potassium carbonate, 2-hydroxy-5-methoxybenzaldehyde with a dialkyl sulfate, said alkyl group being a methyl or an ethyl group.

3,867,459

PRODUCTION OF PENTA-2,4-DIEN-1-ALS AND RELATED TRIENALS

Werner Hoffmann, Ludwigshafen; Walter Himmele, Walldorf, and Werner Aquila, Ludwigshafen, all of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen/Rhein, Germany

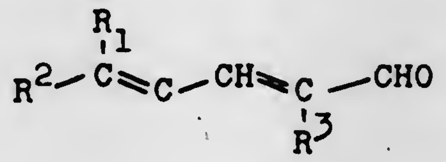
Continuation-in-part of Ser. No. 79,299, Oct. 8, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,733

Claims priority, application Germany, Oct. 15, 1969, 1951883

Int. Cl. C07c *47/20, 47/26*

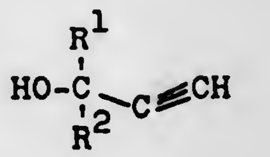
U.S. Cl. 260—601 R **6 Claims**

1. A process for the manufacture of a penta-2,4-dien-1-al of the formula



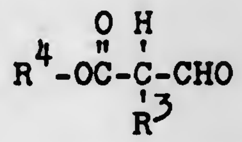
$R^2-\overset{R_1}{C}=C-CH=\underset{R^3}{C}-CHO$ (I),

in which R^1 stands for hydrogen or methyl, R^2 stands for an aliphatic hydrocarbon radical of one to nine carbon atoms, which radical may contain one or two olefinically unsaturated double bonds and which may bear from one to three substituents selected from the group consisting of methyl, ethyl and methoxy and in which R^3 stands for alkyl of one to four carbon atoms, which process comprises: contacting a propargyl alcohol of the formula



$HO-\overset{R^1}{\underset{R^2}{C}}-C\equiv CH$ (II),

in which R^1 and R^2 have the meanings given above, with an α-formylcarboxylic ester of the formula



$R^4-O\overset{O}{C}-\overset{H}{\underset{R^3}{C}}-CHO$ (III),

in which R^3 has the meaning given above and R^4 stands for alkyl of one to four carbon atoms, at a temperature of from 100° to 350° C. and from 1 to 5 moles of an α-formyl carboxylic ester are used per mole of said propargyl alcohol.

2. 2,5,9-Trimethyldeca-2,4,9-trien-1-al.

3,867,460

REAGENTS FOR THE STEREOSELECTIVE GENERATION OF THE CHIRAL SIDECHAIN CARBINOL UNIT (C-15) IN PROSTAGLANDIN SYNTHESIS

Elias J. Corey, Pfizer Inc., 235 E. 42nd St., Cambridge, Mass. 02134

Continuation-in-part of Ser. No. 117,748, Feb. 22, 1971, abandoned. This application Jan. 17, 1973, Ser. No. 324,511

Int. Cl. C07f *5/02*

U.S. Cl. 260—606.5 B **8 Claims**

1. Lithium 2-thexyl-8-methyl-2-borabicyclo [3,3,1]-nonylhydride.

3,867,461
NON-HAZARDOUS KETONE PEROXIDE COMPOSITIONS

Newton G. Leveskis, Walnut Creek, and Charles B. Abma, Oakland, both of Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.

Division of Ser. No. 702,783, Feb. 5, 1968, Pat. No. 3,702,869. This application Dec. 8, 1971, Ser. No. 206,173

Int. Cl. C07c *73/00*

U.S. Cl. 260—610 A 5 Claims

1. A storage stable ketone peroxide composition formed from at least one alkyl or cycloalkyl ketone having up to eight carbon atoms, said ketone peroxide composition containing at least about 0.5% by weight of stabilizer selected from the group consisting of vinyl pyrrolidone and polyvinyl pyrrolidone to substantially inhibit decomposition of said ketone peroxide of the type that liberates gaseous by-products or decreases effectiveness in terms of lengthened gel time of monomers initiated therewith and said ketone peroxide is present in the composition in an amount sufficient to provide up to about 12.5 percent active oxygen content to said composition.

3,867,462
COLOR INHIBITORS IN GLYCOL ETHERS

Franklin N. Keeney, Midland, and Edmund H. Sommerfield, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 24, 1972, Ser. No. 283,383

Int. Cl. C07c *43/00*

U.S. Cl. 260—611.5 3 Claims

1. A glycol ether containing a color-inhibiting amount not exceeding about 100 ppm of an alkali or alkaline earth metal borate wherein the ether has the formula,

$R(OC_nH_{2n})_xOH$

wherein R is phenyl or alkyl of up to about 6 carbon atoms, *n* is an integer 2 to 4 and *x* is an integer 1 to about 5.

3,867,463
USE OF STANNANE AS A REDUCING AGENT

Gerald H. Reifenberg, Hightstown, and William J. Considine, Somerset, both of N.J., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 59,839, June 24, 1970, Pat. No. 3,708,549, which is a division of Ser. No. 742,164, Jan. 3, 1968, Pat. No. 3,654,367. This application May 29, 1972, Ser. No. 255,198

Int. Cl. C07c *29/14*

U.S. Cl. 260—618 H 1 Claim

1. A method for reducing acetone or benzaldehyde to form isopropanol or benzyl alcohol, respectively, said method comprising the step of reacting acetone or benzaldehyde with stannane, SnH_4, maintaining the reactants together in a reaction mixture wherein the temperature is maintained at about −195° C., and subsequently separating the resultant alcohol from the reaction mixture.

3,867,464
AROMATIZATION OF CYCLOHEXENE DERIVATIVES

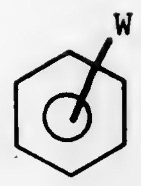
Mahmoud S. Kablaoui, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 94,995, Dec. 3, 1970, Pat. No. 3,758,589. This application Dec. 4, 1972, Ser. No. 311,995

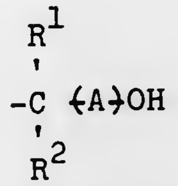
Int. Cl. C07c *33/02*

U.S. Cl. 260—618 R 6 Claims

1. A method of preparing an aromatic derivative of the formula:

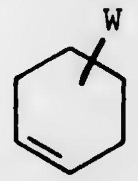


where W is a hydroxyl containing group of from 1 to 10 carbons of the formula:

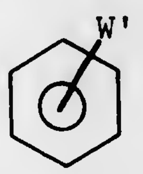


$-\underset{R^{2}}{\overset{R^{1}}{\mathrm{C}}}\,(A)\,\mathrm{OH}$

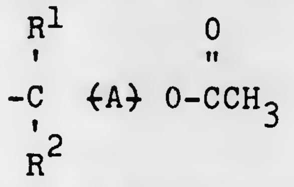
where R^1 and R^2 are hydrogen or alkyl and A is alkanediyl of from 0 to 9 carbons comprising first contacting a substituted cyclohexene of the formula:



where W is as heretofore defined with a mixture of acetic anhydride and sulfuric acid, said sulfuric acid consisting of between 95 and 100 wt. % H_2SO_4 and between 0 and 5 wt. % water, at a first temperature between about 30 and 145°C. utilizing a first mole ratio of sulfuric acid to substituted cyclohexene of between about 0.1:1 and 3:1, and a second mole ratio of acetic anhydride to cyclohexene of between about 1:1 and 10:1 to form an intermediate acetate product of the formula:



where W′ is a monovalent radical of the formula:



$-\underset{R^{2}}{\overset{R^{1}}{\mathrm{C}}}\,(A)\,\mathrm{O{-}}\overset{\mathrm{O}}{\overset{\|}{\mathrm{C}}}\mathrm{CH_3}$

where R^1 , R^2 and A are as heretofore defined, and second contacting said acetate intermediate with a hydrolyzing member selected from the group consisting of aqueous acid or base at a second temperature between about 30 and 100°C. utilizing a third mole ratio of hydrolyzing member to acetate of between about 1:1 and **100:1** and recovering said aromatic derivative from the reaction mixture.

3,867,465
SUBSTITUTED P-(1-HYDROXYALKYL) PHENETHYL ALCOHOLS

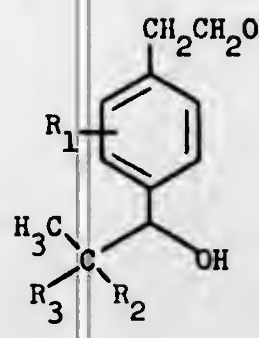
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 4, 1973, Ser. No. 366,763

Int. Cl. C07c *43/20, 33/02*

U.S. Cl. 260—618 R 4 Claims

1. A compound of the formula



where

R_1 represents hydrogen, halo having an atomic weight of about 19 to 36 or straight chain lower alkoxy, and

R_2 and R_3 each independently, represent lower alkyl having 1 to 2 carbon atoms.

3,867,466
ORTHO-METHYLATION OF A PHENOL

Akira Endou; Masao Maeda; Toshiharu Okumichi; Teruo Nakayasu, and Takao Hamada, all of Osaka, Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha, Osaka-fu, Japan

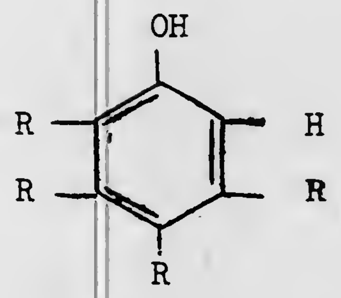
Filed May 28, 1971, Ser. No. 148,183

Claims priority, application Japan, June 2, 1970, 45-48347; July 28, 1970, 45-66224

Int. Cl. C07c *37/16*

U.S. Cl. 260—621 R 8 Claims

1. A process for the ortho-methylation of a phenol of the general formula:



wherein each R stands for hydrogen, an alkyl group of 1–12 carbon atoms, phenyl group or a lower alkyl-substituted phenyl group, which comprises reacting methanol with a phenol of the above formula in the vapor phase and in the presence of a calcined mixture consisting essentially of manganese oxide and cerium oxide having a weight ratio of manganese oxide to cerium oxide in the range 1:0.01 to 1:0.5. as the catalyst.

3,867,467
PHENOLIC ANTIOXIDANTS

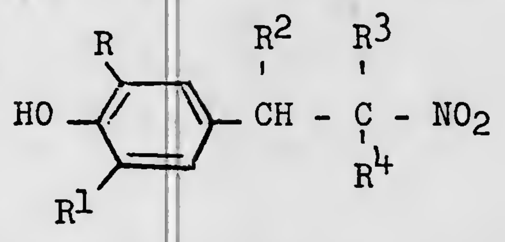
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 9, 1971, Ser. No. 206,553

Int. Cl. C07c *79/16*

U.S. Cl. 260—622 R 3 Claims

1. A compound having the following structural formula:



wherein R and R^1 are tertiary alkyl radicals having 4 to 8 carbon atoms, R^2 and R^3 are selected from the group consisting of hydrogen and alkyl radicals having 1 to 6 carbon atoms and R^4 is an alkyl radical having 1 to 6 carbon atoms.

3,867,468
PRODUCTION OF DIBROMOSTYRENE AND ALKYL BROMIDE

David Vofsi; Moshe Levy; Stephen Daren, all of Rehovot, and Ella Cohen, Tel-Aviv, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed June 12, 1972, Ser. No. 262,096

Claims priority, application Israel, June 25, 1971, 37149

Int. Cl. C07c *25/28*

U.S. Cl. 260—650 R 5 Claims

1. A process for the simultaneous production of dibromostyrene and a C_1—C_4 alkyl bromide, which comprises subjecting β-bromoethyl dibromobenzene and a C_1—C_4 alkanol to a pyrolysis reaction at a temperature of from 400° to 550° C. by passage through an empty tube.

3,867,469
OXYCHLORINATION PROCESS

Michael James Ricks, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 20, 1972, Ser. No. 236,197

Claims priority, application Great Britain, Apr. 2, 1971, 8506/71

Int. Cl. C07c *17/02*

U.S. Cl. 260—659 A 6 Claims

1. In a process for the oxychlorination of olefines by bringing into reaction an olefine, ammonium chloride and molecular oxygen the improvement comprising carrying out the reaction at a temperature of 280° to 360°C in the presence of a supported oxychlorination catalyst comprising a chloride of copper and a chloride of cesium.

3,867,470
HYDROCARBON SEPARATION PROCESS

Petrus F. A. Van Grinsven; Wim Wieldraaijer, and Rudolf J. Maas, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 10, 1973, Ser. No. 423,031

Claims priority, application Great Britain, Dec. 13, 1972, 57471/72

Int. Cl. C07c *7/12*

U.S. Cl. 260—674 SA 9 Claims

1. A process for the separation of ethylbenzene from a mixture of C_8-aromatics which comprises preferential adsorption of ethylbenzene by contacting the mixture under adsorption conditions with a faujasite in which the number of aluminum atoms per unit cell, A, ranges from 64 to 96, inclusive, and in which faujasite the fraction of equivalents of cesium cations present calculated on total equivalents of cations present in the faujasite is from 0.0119A minus 0.5 to the least of 0.15 or 0.0119A minus 0.7, the remainder of the cations present in the faujasite is selected from the group consisting of strontium, calcium and sodium, followed by desorption of the adsorbed C_8-aromatics.

3,867,471
METHOD FOR PREPARING BUTADIENE AND ISOPRENE

Vagab Safarovich Aliev, ulitsa Nizami, 66, blok. 5, kv. 40; Adilya Khanum Panakh Kyzy Kasimova, prospekt Lenina, 3, kv. 18; Mariam Efimovna Muravchik, Kommunistichesky pereulok, 4, kv. 20; Beniamin Georgievich Ter-Sarkisov, ulitsa 28 aprelya 14, kv. 2, and Shamil Kyazim Ogly Kyazimov, 4 Chernogorodskaya ulitsa, 11, ku.3, all of Baku, U.S.S.R.

Filed Feb. 2, 1973, Ser. No. 329,169

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 R 2 Claims

1. A method for preparing diolefinic hydrocarbons, selected from the group consisting of butadiene and isoprene, comprising dehydrogenating an olefinic hydrocarbon selected from the group consisting of n-butylenes and isoamylenes under isothermal conditions at a temperature from 560° to 600°C

over a catalyst consisting of 35–50 percent by weight of Cr_2O_3, 20–30 percent by weight of Fe_2O_3, 20–25 percent by weight of ZnO and 0.5–2 percent by weight of SiO_2, with dilution of the starting hydrocarbon with steam in a molar ratio of 1 :10–20, said dehydrogenation being effected in a rising current which is a mixture of the starting hydrocarbon, the catalyst and steam, the concentration of said catalyst in said current being 5–60 kg/cu.m.; continuously separating the spent catalyst from the gaseous dehydrogenation reaction products and recovering said spent catalyst in a down-flowing current in a fluidized bed of the spent catalyst with air at a temperature of 570°–590°C; continuously returning the recovered catalyst to the dehydrogenation process, the amount of the catalyst circulating in the system being 80–200 times the amount of the hydrocarbon feed; withdrawing said reaction products from the system and separating said reaction products.

3,867,472
DEHYDROGENATION PROCESS

James J. Tazuma, Stow, and Mario D. Zadra, Barberton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 2, 1973, Ser. No. 376,092

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 R **8 Claims**

1. A process for the dehydrogenation of monoolefins to diolefins which consists essentially of bringing said monoolefins into contact with a catalyst consisting essentially of at least one salt selected from the group consisting of silver chloride, silver iodide, silver fluoride, silver bromide, cadmium chloride, cadmium iodide, cadmium fluoride, cadmium bromide and copper ferricyanide deposited on an alumina support.

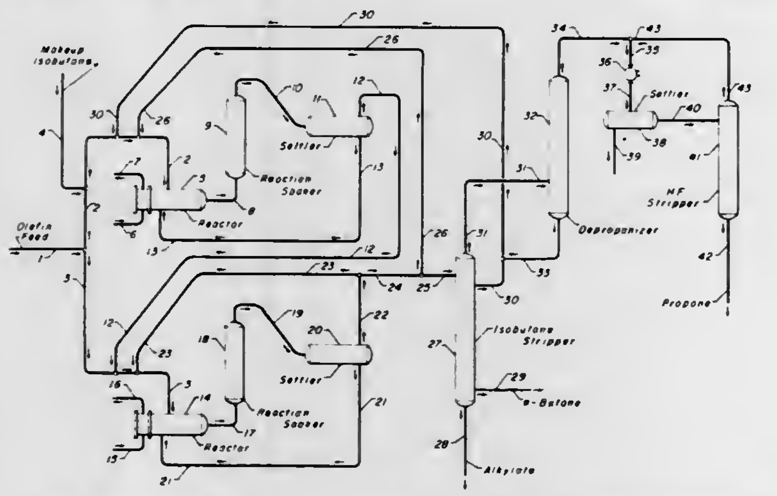
3,867,473
TWO STAGES OF ISOPARAFFIN-OLEFIN ALKYLATION WITH RECYCLE OF ALKYLATE-CONTAINING HYDROCARBON

Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 236,049, March 20, 1972, Pat. No. 3,787,518. This application Oct. 18, 1972, Ser. No. 298,709

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.45 **4 Claims**



1. A process for alkylating an isoparaffin selected from the group consisting of isobutane and isopentane with an olefin selected from the group consisting of propylene, butylenes and amylenes which comprises

a. contacting said isoparaffin with a portion of said olefin and a first hydrogen fluoride alkylation catalyst at alkylation conditions in a first reaction zone;
b. separating the reaction zone effluent into a first catalyst phase and a first liquid hydrocarbon phase;
c. supplying said liquid hydrocarbon phase, without fractionation thereof, to a second reaction zone together with the remainder of said olefin and a second hydrogen fluoride alkylation catalyst and therein subjecting the mixture to alkylation conditions;
d. separating the second reaction zone effluent into a second catalyst phase and a second liquid hydrocarbon phase;
e. dividing said second liquid hydrocarbon phase, prior to fractionation thereof, into a first portion, a second portion and a third portion;
f. recycling said first portion to said second zone and supplying said second portion to said first zone;
g. fractionating said third portion of said second liquid hydrocarbon phase to separate said isoparaffin from alkylate;
h. recycling said separated isoparaffin to said first zone; and
i. recovering said alkylate.

3,867,474
Patent Not Issued For This Number

3,867,475
ISOPARAFFIN ALKYLATION

John H. Estes, Wappingers Falls, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,322

Int. Cl. C07c *3/54*

U.S. Cl. 260—683.63 **5 Claims**

1. In an alkylation process wherein isoparaffin hydrocarbon selected from the group consisting of isobutane, isopentane and mixtures thereof is alkylated with an alkylating agent selected from the group consisting of propylene, butylenes, pentylenes, their sulfates, and mixtures thereof in the liquid phase, in the presence of an acid catalyst selected from the group consisting of sulfuric acid, fluorosulfonic acid, and mixtures thereof at a temperature in the range of about zero to about 100°F and a superatmospheric pressure; the improvement which comprises:

a. treating said acid catalyst with carbon dioxide to form an acid catalyst having a weight ratio of carbon dioxide to acid of at least 0.1/100 at a temperature in the range of about zero to about 100°F and a superatmospheric pressure in the range of from about 50 psig to about 1000 psig; and
b. alkylating said isoparaffin hydrocarbon with said alkylating agent in the presence the carbon dioxide treated acid catalyst of step (a).

3,867,476
ISOMERIZATION OF SATURATED HYDROCARBONS WITH HEXAFLUOROANTIMONIC ACID AND A METAL CATION

Bernard Torck, 86, Route de Maisons 78400, Chatou, France

Filed Oct. 13, 1972, Ser. No. 297,432

Claims priority, application France, Oct. 15, 1971, 71.37264

Int. Cl. C07c *5/28*

U.S. Cl. 260—683.68 **12 Claims**

1. A process for isomerizing a saturated hydrocarbon, said process comprising contacting the saturated hydrocarbon with an essentially liquid catalyst comprising:

a. a hexafluoroantimonic acid selected from compounds $HSbF_6$ and $RSbF_6$ in which R is a saturated cyclic hydrocarbon, and
b. a cation selected from the group consisting of lithium, sodium, potassium, cesium, beryllium, calcium, thallium, indium, copper, silver, zinc, cadmium, mercury or cerium.

3,867,477
TWO-COMPONENT SYNERGISTIC ANTIOXIDANT SYSTEM FOR POLYOLEFINS

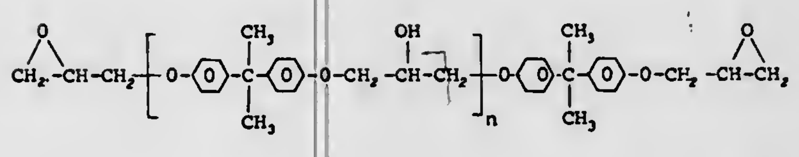
Ismat A. Abu-Isa, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 23, 1974, Ser. No. 435,720

Int. Cl. C08g *45/04*

U.S. Cl. 260—837 R **2 Claims**

1. An oxidation resistant polyolefin composition comprising a polyolefin selected from the group consisting of polyethylene, polypropylene and chlorinated polyethylene, and two to fifteen percent by weight based on said polyolefin composition of an antioxidant, said antioxidant consisting essentially of, by weight, from about 35 percent to about 50 percent of an epoxide having the general formula-



where *n* is from 0 to 18, and the balance litharge.

3,867,478
POLYESTER COMPOSITION

Kazuya Chimura; Hiroshi Iwata; Yasuo Nakamura, and Mitsuaki Shiotsuki, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

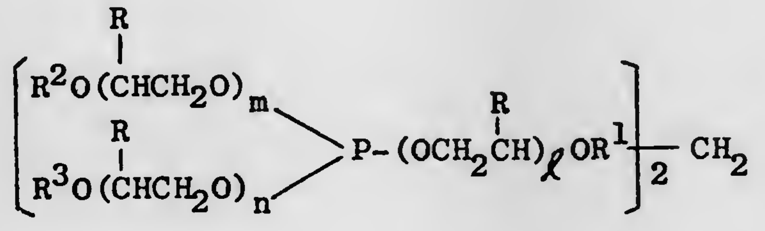
Filed Feb. 22, 1973, Ser. No. 334,709

Claims priority, application Japan, Feb. 22, 1972, 47-18353

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 PG **18 Claims**

1. In a polyester composition containing a linear fiberforming polyester and a polyamide having repeating CONH groups as in integral part of the polymeric chain and containing 1 to 10 percent by weight of nitrogen atom of tertiary amino nitrogen in the polyamide molecule, the improvement being that said composition contains additionally a compound (I) of the general formula:



$$\left[\left.\begin{matrix}R^2O(\overset{R}{C}HCH_2O)_m\\R^3O(\overset{R}{C}HCH_2O)_n\end{matrix}\right\rangle P-(OCH_2\overset{R}{C}H)_{\ell}OR^1\right]_2 CH_2$$

(wherein R is hydrogen or methyl, R^1 is phenylene having or not having hydrocarbon radical substituents, R^2 and R^3 are at least one group selected from aryl and aralkyl groups having or not having a substituent and an alkyl group of C_1 to C_{18} and *l*, *m* and *n* are integers of 1 to 200), the ratio of said linear polyester, polyamide and compound (I) being 70 – 97.5 percent : 2 – 20 percent : 0.5 – 10 percent by weight.

3,867,479
THERMOPLASTIC LINEAR FIBER FORMING POLYESTER RESINS HAVING IMPROVED ANIONIC DYEABILITY

Philip A. Spanninger, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 2, 1973, Ser. No. 376,005

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **11 Claims**

1. The process which comprises incorporating anion attractive groups in linear thermoplastic fiber forming polyester resin by adding from about 1 to about 15 mol percent of a salt of (A) a hydroxyamine selected from the group consisting of monohydroxyamines and dihydroxyamines and (B) an organic dicarboxylic acid to a polyester forming reaction mixture, said salt being formed in situ in polyester forming reaction mixture, said mol percent being based on the mols of dicarboxylic acid in the polyester exclusive of the acid added with the amine, said reaction mixture comprising (1) a dicarboxylic acid or ester forming derivative of a dicarboxylic acid selected from the group consisting of terephthalic acid, isophthalic acid and naphthalic acid and saturated aliphatic dicarboxylic acids containing from 2 to 12 carbon atoms and (2) a glycol and reacting the mixture under condensation polymerization conditions to form modified linear thermoplastic fiber forming polyester resin that can be dyed to deep shades with acid type dyes, said resin having an intrinsic viscosity of at least 0.3 measured in a 60/40 phenol/tetrachloroethane mixed solvent.

3,867,480
POLYESTER POWDER COATING COMPOSITION

Kanji Fujiyoshi; Yutaka Mizumura, and Junji Sono, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Kita-ku, Osaka-shi, Osaka-fu, Japan

Filed June 25, 1973, Ser. No. 373,219

Claims priority, application Japan, June 30, 1972, 47-65953; June 30, 1972, 47-65954; Jan. 29, 1973, 48-12202

Int. Cl. C08g *39/10*

U.S. Cl. 260—873 **8 Claims**

1. A polyester powder coating composition comprising

1. a polyester which is prepared by reacting
a. an aromatic dicarboxylic acid or its lower alkyl ester,
b. an aliphatic or alicyclic diol, and
c. at least one of the acids selected from the group consisting of
i. an organic acid having at least three carboxy groups in the molecule or its functional derivative,
ii. a hydroxyaliphatic carboxylic acid, and
iii. an aliphatic dicarboxylic acid;
2. an organic acid anhydride having at least two acid anhydride groups in the molecule; and
3. a polyacrylic acid ester.

3,867,481
LOW MOLECULAR WEIGHT ACRYLIC MODIFIERS FOR RIGID VINYL HALIDE POLYMERS

Jong Jai Whang, Southampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed June 2, 1970, Ser. No. 42,882

Int. Cl. C08f *29/22, 37/18*

U.S. Cl. 260—899 **16 Claims**

1. A polymeric composition comprising from 70 to 99 weight percent of a vinyl halide polymer, wherein the vinyl halide polymer contains a major amount of vinyl halide, and from 1 to 30 weight percent of an acrylic addition polymer of

A. at least 75 weight percent of at least one monomer chosen from the group consisting of lower alkyl methacrylates and
B. the balance comprising at least one additional material selected from the group consisting of esters of acrylic and methacrylic acid, the number average molecular weight of said acrylic polymer being in the range of 2000 to 9000.

3,867,482
2-CHLOROETHANEPHOSPHONIC ACID DERIVATIVES

Peter Beutel, Mannheim; Johann Jung, Limburgerhof, and Falk Rittig, Dubliner, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/-Rhine, Germany

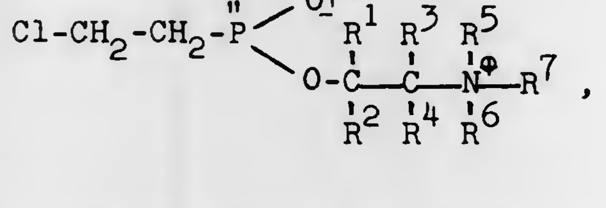
Filed July 24, 1972, Ser. No. 274,579

Claims priority, application Germany, Aug. 14, 1971, 2140842

Int. Cl. C07f *9/40*

U.S. Cl. 260—924 **6 Claims**

1. A 2-chloroethanephosphonic acid derivative of the formula



where

R^1, R^3, R^5 and R^6 each denote hydrogen or lower alkyl, R^2 and R^4 each denote hydrogen, lower alkyl, phenyl, or cyclohexyl, R^7 denotes hydrogen, phenyl, cyclohexyl, cyclooctyl or alkyl which may be substituted by $-NH_2$, $-OH$, $-CN$, $-Cl$, $-COOR$, $-CONR^2$, $-OR$ or $-SR$, R denoting lower alkyl and R^2 having the meaning given above.

3,867,483
TRIFLUOROMETHYL-NITRO-PHENYL-THIO(DITHIO)PHOSPHATES

Odd Kristiansen, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

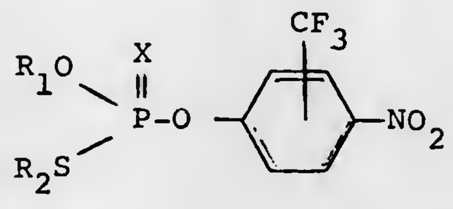
Filed June 4, 1973, Ser. No. 366,822

Claims priority, application Switzerland, June 1, 1972, 8108/72; May 10, 1973, 6719/73

Int. Cl. C07f *9/08;* **A01n** *9/36*

U.S. Cl. 260—954 **7 Claims**

1. A compound of the formula



wherein R_1 represents methyl or ethyl; R_2 represents propyl, isopropyl, n-butyl, isobutyl, sec.butyl, tert.butyl, n-pentyl or isopentyl; and X represents oxygen or sulphur.

3,867,484
S,S-BIS-BENZYL ALKYLPHOSPHONATES

Ernst Beriger, Neu-Allschwil, Switzerland, assignor to Ciba-Geigy A.G., Basel, Switzerland

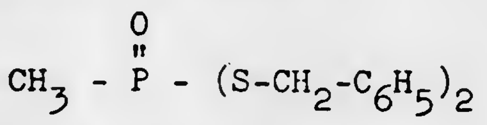
Filed Apr. 1, 1970, Ser. No. 24,855

Claims priority, application Switzerland, Apr. 2, 1969, 5107/69

Int. Cl. C07f *9/40;* **A01n** *9/36*

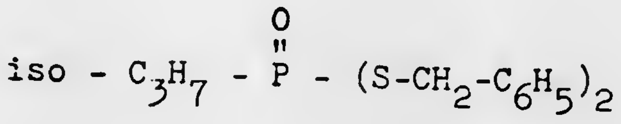
U.S. Cl. 260—961 **2 Claims**

1. The compound of the formula



$$CH_3-\overset{O}{\overset{\parallel}{P}}-(S-CH_2-C_6H_5)_2$$

2. The compound of the formula



$$iso-C_3H_7-\overset{O}{\overset{\parallel}{P}}-(S-CH_2-C_6H_5)_2$$

3,867,485
HUMIDIFIER WITH AUTOMATIC FLUSHING

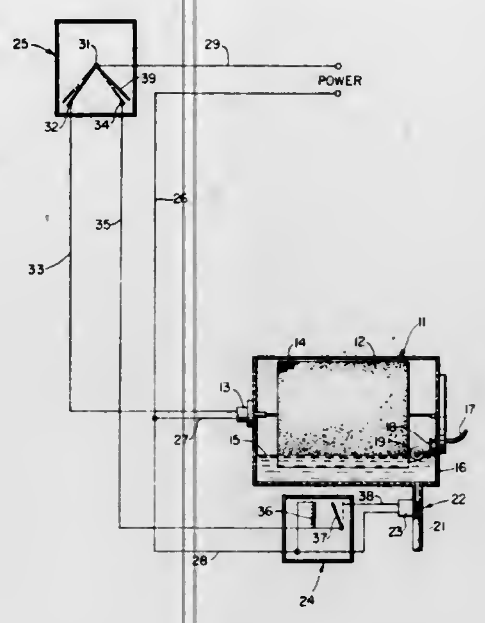
Richard J. Yeagle, Hartland, Mich., assignor to Skuttle Manufacturing Company, Milford, Mich.

Filed July 26, 1972, Ser. No. 275,274

Int. Cl. B01f *3/04*

U.S. Cl. 261—7 **9 Claims**

1. A humidifier of the type having a water reservoir wherein the water level is maintained by automatic means and water from the reservoir is conveyed to water distribution means adapted to disperse water into air to be humidified, said water distribution means having an electrical actuating unit, a control circuit for said unit including a humidistat responsive to the air being humidified, normally closed drain means for said reservoir, and means controlled by said humidistat and operative only when said electrical actuating unit is inactive for opening said reservoir drain means for a predetermined short period to flush said reservoir and then automatically reclosing said drain means to permit said water level to be regained in the reservoir.



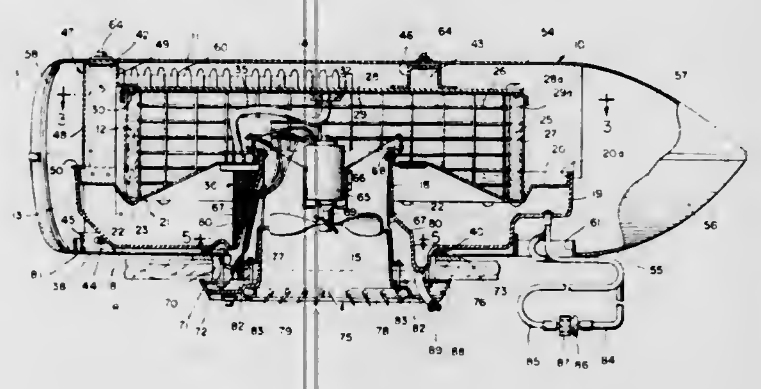
3,867,486
EVAPORATIVE AIR CONDITIONER

Immanuel P. Nagele, Valley Center, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Sept. 20, 1972, Ser. No. 290,490

Int. Cl. B01f *3/04*

U.S. Cl. 261—29 **3 Claims**



1. An evaporative air conditioner adapted to be mounted on a vehicle comprising a housing having front and rear ends, the housing having openings provided in the front end to permit inward flow of air as the vehicle moves forward, a tank within the housing providing a liquid reservoir and having a bottom wall and an upwardly extending side wall, a liquid-absorbent air filter pad supported above the tank and having an upwardly extending closed continuous shape defining a central enclosure, cover means above the filter pad for closing the top of the central enclosure so that air can enter the central enclosure only through the filter pad, air exhaust means extending through the bottom wall of the tank for permitting air to flow from the central enclosure of the filter pad, means for supplying liquid to the filter pad, the housing being spaced laterally outwardly from the filter pad around the entire periphery of the filter pad to provide a continuous air flow space between the housing and the filter pad around the entire periphery of the filter pad, and an imperforate baffle plate positioned between the front end of the housing and the filter pad and behind the openings in the front end of the housing to prevent direct impingement of air flowing through the openings on the filter pad and to deflect the air into the air flow space between the housing and the filter pad.

3,867,487
CARBURETOR FOR INTERNAL COMBUSTION ENGINES

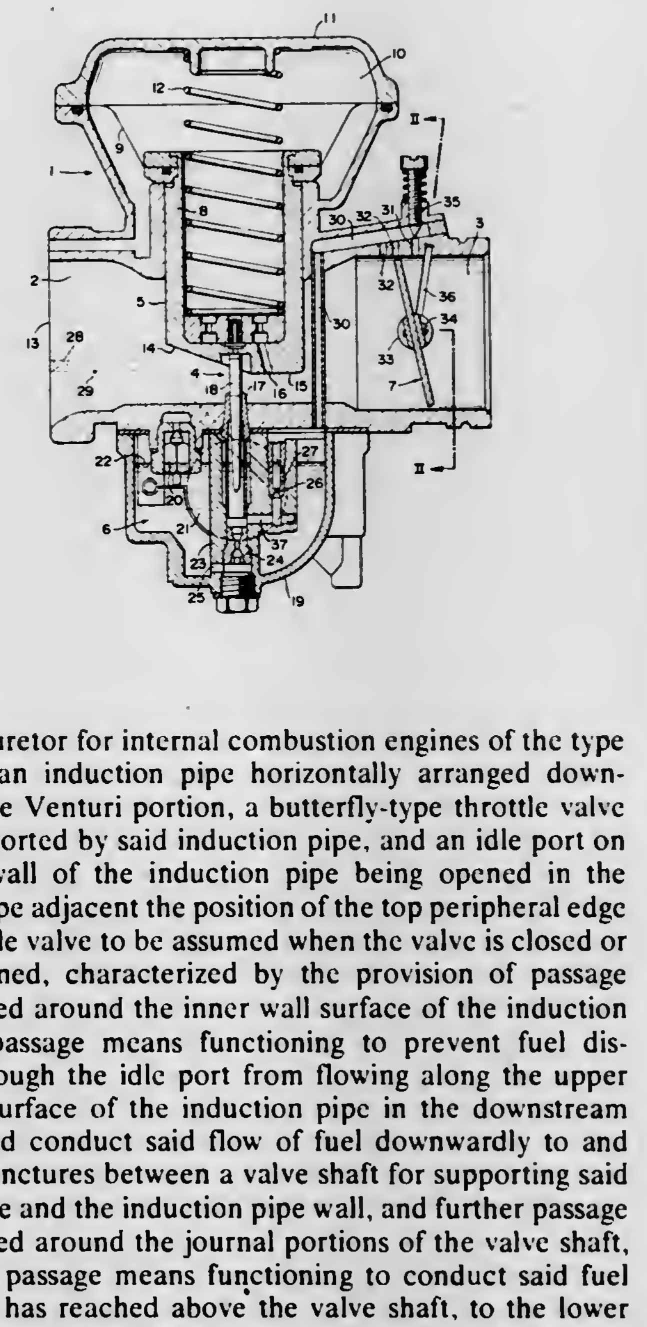
Hiromitsu Matsumoto, Shizuoka, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata Shizuoka, Japan

Filed Nov. 20, 1973, Ser. No. 417,674

Claims priority, application Japan, Nov. 24, 1972, 47-134551

Int. Cl. F02m *19/06*

U.S. Cl. 261—41 D **22 Claims**



1. A carburetor for internal combustion engines of the type comprising an induction pipe horizontally arranged downstream of the Venturi portion, a butterfly-type throttle valve journal supported by said induction pipe, and an idle port on the upper wall of the induction pipe being opened in the induction pipe adjacent the position of the top peripheral edge of the throttle valve to be assumed when the valve is closed or slightly opened, characterized by the provision of passage means formed around the inner wall surface of the induction pipe, said passage means functioning to prevent fuel discharged through the idle port from flowing along the upper inner wall surface of the induction pipe in the downstream direction and conduct said flow of fuel downwardly to and above the junctures between a valve shaft for supporting said throttle valve and the induction pipe wall, and further passage means formed around the journal portions of the valve shaft, said further passage means functioning to conduct said fuel flow, which has reached above the valve shaft, to the lower central surface area of the throttle valve, while turning the flow apart from the inner wall of the induction pipe.

3,867,488
SPARGER WASTE

Hancel W. Porterfield, 1232 Potomac St. N.W., Washington, D.C. 20007

Filed Dec. 19, 1972, Ser. No. 316,536

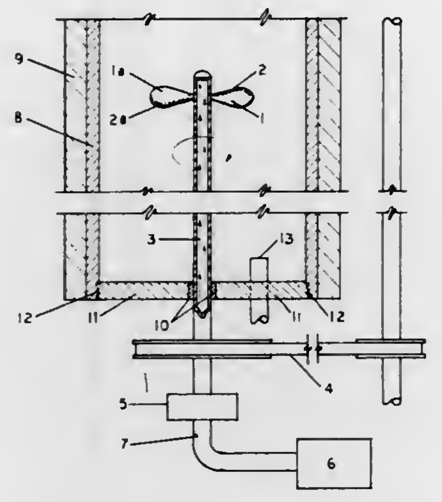
Int. Cl. B01f *3/04*

U.S. Cl. 261—87 **11 Claims**

1. Apparatus for dissolving a gas in an industrial waste water comprising:

a. a receptacle for receiving a waste water, said receptacle containing a removable screw-out plug;
b. a sparger comprising a rotatable hollow shaft and a hollow propellor mounted atop said rotatable hollow shaft, said propellor having a leading edge and a trailing edge, each of said edges containing pores through which a gas is dispersed;
c. drive means for rotating said sparger;
d. a gas source;
e. connecting means for connecting said gas source to said sparger;

f. a slip joint for connecting said rotatable hollow shaft of said sparger and said connecting means;
g. a water-tight sealing surrounding said rotatable hollow shaft of said sparger, said water tight sealing being mounted securely within said plug; and



h. means for attaching said plug to said receptacle, whereby said industrial waste water may be reused in the industrial process from where it was derived.

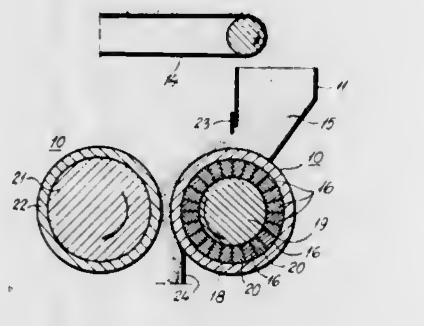
3,867,489
METHOD OF PRODUCING AN OXIDATION-RESISTANT UO$_2$ FUEL BODY

Jack A. Rubin, Encino, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed July 17, 1962, Ser. No. 210,880
Int. Cl. G21c *20/00*
U.S. Cl. 264—0.5 **9 Claims**

1. A method of forming a UO$_2$ fuel body resistive to oxidative attack, which comprises mixing UO$_2$ and a ceramic oxide of relatively low thermal neutron absorption cross section, adding to the resulting mixture a small amount of a compound selected from the class consisting of alkali metal halides and alkaline earth metal halides, and then forming a fuel body of the resulting composition.

3,867,490
METHOD OF AGGLOMERATING PARTICULATE MATERIAL

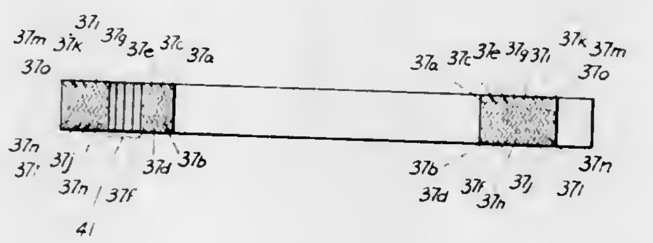
Karl Goran Gorling, Lidingo, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden
Filed Apr. 18, 1972, Ser. No. 245,173
Int. Cl. H05b *1/00*
U.S. Cl. 264—24 **4 Claims**



1. A method of agglomerating particulate material by compacting the material between co-acting rolls forming a roll nip wherein surface were on the rolls is substantially reduced, comprising:
a. coating at least a portion of at least one roll on the side of the one roll where the material passes into said nip with a layer of a first particulate magnetic material and retaining said layer on said portion of said roll by magnetic forces;
b. positively guiding a second particulate material into contact with said layer of first particulate magnetic material; and
c. passing said first and second materials through said roll nip and under pressure to compact said materials and form a coherent cake thereof, and
d. disintegrating said coherent cake after said roll nip to form said cake into agglomerates of said particulate materials.

3,867,491
PROCESS FOR REINFORCED CARBON BODIES

Glenn R. Marin, Ransomville, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Division of Ser. No. 48,063, June 22, 1970, Pat. No. 3,712,428. This application Sept. 7, 1971, Ser. No. 178,433
Int. Cl. C01b *31/07*
U.S. Cl. 264—29 **26 Claims**



1. A process for producing a reinforced carbon body having a shape comprising an outer perimeter and two opposite faces, each face adjoining the outer perimeter, comprising the steps of
1. successively circumferentially winding reinforcing carbon fibers loosely about a mandrel to form an assembly of loosely wound carbon fibers having
   an outer perimeter approximating in length the desired outer perimeter of the finished carbon body, and
   a width greater than the desired axial thickness of the finished carbon body, said carbon fibers having a width having a ratio to the desired axial thickness of the finished carbon body ranging from about 1.25:1 to about 3:1;
2. placing the assembly of loosely wound carbon fibers in a mold cavity of a mold comprising
   a. an outer perimeter conforming essentially to the desired size and shape of the outer perimeter of the desired carbon body; and
   b. a pair of compression plates having mutually opposed faces which conform essentially to the desired sizes and shapes of the faces of the desired carbon body; said plates being coaxially aligned with each other and with the mold outer perimeter, and forming, with said mold outer perimeter, a mold cavity, the distance between said plates being variable by axial movement;
3. axially moving the compression plates together until the plates are separated by approximately the desired axial thickness of the finished carbon body, whereby the circumferentially wound carbon fibers become axially compressed and radially overlapped throughout the circumference of the body in each cross-sectional plane containing the axis of the body; said body having at least one perimeter which is adapted to bear circumferential stress, the circumferentially wound reinforcing fibers adjacent to said stress-bearing perimeter conforming essentially to the shape of said stress-bearing perimeter;

4. introducing a carbonizable binder between the carbon fibers; and
5. carbonizing the carbonizable binder, whereby to form a carbon matrix binding together the reinforcing carbon fibers.

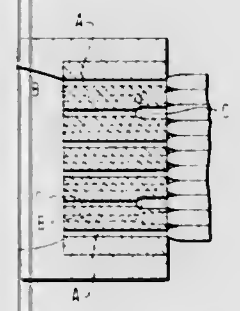
3,867,492
METHOD OF MANUFACTURING OBJECTS CONTAINING A CAVITY FILLED WITH A RIGID FOAM OF POLYURETHANE

Hilmar Frede Drostholm, Gongehusvej 106, 2950 Vedbaek, Denmark
Filed June 23, 1971, Ser. No. 156,031
Claims priority, application Denmark, June 24, 1970, 3276/70
Int. Cl. B29d *27/00*
U.S. Cl. 264—46.6 **8 Claims**

1. A method for manufacturing an object containing a cavity filled with a rigid polyurethane foam coonsisting essentially of placing a shaped piece of flexible open-celled polyurethane foam, impregnated with an organic isocyanate and having its surface protected against moisture by a moisture proof protective barrier, in a cavity of an object or in a location on said object subsequently enclosed to form a cavity, removing at least part of said barrier from said shaped piece directly before or after placement, and exposing said shaped piece to moisture whereby the flexible polyurethane foam of said shaped piece is converted into rigid polyurethane foam.

3,867,493
PROCESS OF PRODUCING SYNTHETIC WOOD HAVING A BEAUTIFUL APPEARANCE

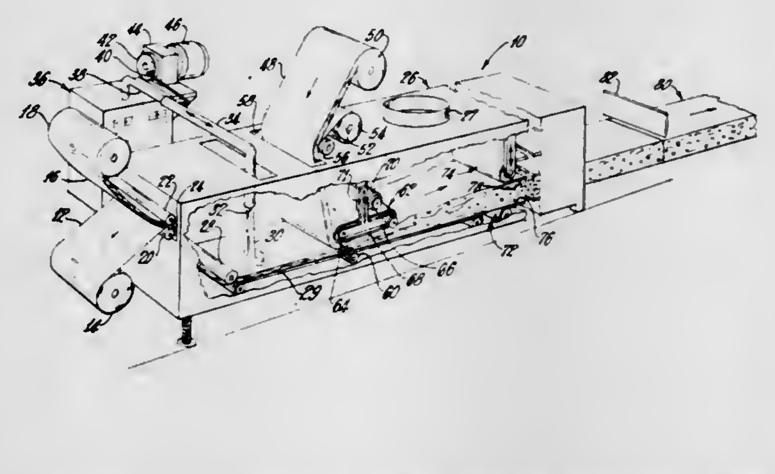
Tatsujiro Seki, Nara, Japan, assignor to Sekisui Kaseihia Kogyo Kabushiki Kaisha, Nara, Japan
Filed Nov. 16, 1972, Ser. No. 307,266
Claims priority, application Japan, Nov. 16, 1971, 46-91727
Int. Cl. B29d *27/00*
U.S. Cl. 264—45.9 **7 Claims**



1. In a process of producing a cellular synthetic wood molding having a desired cross-section by extruding a softened thermoplastic resin containing an expanding agent through the apertures of a die to form a number of expanded strands, coalescing the strands into a formed body while they are in the softened state, and forming a cellular molding therefrom, the improvement which comprises providing the apertures located at the outermost portions of the die among plural apertures formed on the said die with uniform cross-sectional areas over their whole lengths, enlarging a part of each of the apertures arranged in one line or two lines next to the apertures located at the outermost portion of the die, the cross-sectional area of said enlarged portion of the aperture being 1.1 to 3.6 times broader than the cross-sectional area of the apertures located at the outermost portion of the die, said enlarged portions being at the resin discharge side of the apertures and the length of the enlarged portions of the apertures being 10–80% of the length of the apertures, said die containing additional apertures located more inwardly than the apertures located in said first or second line next to the said apertures located at the outermost portion of the die, with all of said additional apertures having cross-sectional areas uniform throughout the whole lengths thereof, whereby the expansion of the strands extruded through said apertures arranged in said one or two lines is suppressed.

3,867,494
METHOD AND APPARATUS FOR PRODUCING FIBER REINFORCED ORGANIC FOAM

Leonard D. Rood, Columbus, and Ronald E. Kissell, Alexandria, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Mar. 6, 1973, Ser. No. 338,486
Int. Cl. B29d *27/03*
U.S. Cl. 264—45.3 **7 Claims**



1. A method for producing a body of fiber-reinforced foam comprising supplying a first layer of fibers, supplying a foamable material substantially uniformly to one surface of said layer, supplying a second layer of fibers and placing said second layer in contact with the one surface of the first layer with the foamable material therebetween, supplying a flexible outer sheet adjacent an outer surface of said first fibrous layer, supplying a second flexible sheet adjacent an outer surface of said second fibrous layer, applying compressive force to the resulting composite layer to enable the foamable material to penetrate into the fibrous layers, and limiting the maximum distance the flexible sheets can move apart to restrict the extent of the foaming of the foamable material.

3,867,495
METHOD FOR FABRICATING MOLDED ELEMENTS BY BONDING SOLID PARTICLES WITH A RESIN

Rudolf Heller, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland
Filed June 2, 1972, Ser. No. 258,998
Claims priority, application Switzerland, July 7, 1971, 10029/71
Int. Cl. B29d *27/00;* **B29h** *7/20*
U.S. Cl. 264—51 **8 Claims**

1. A method of fabricating dimensionally stable and load-carrying artificial concrete-construction elements comprising the steps of: admixing with at least 85 percent by weight of a loose mass of mineral grains from 2 to 5 percent by weight of a fine grain granulate of thermoplastic material which can expand into essentially voluminous foamed grains within a given swelling temperature range while internally developing pressure and from about 5 to 10 percent by weight of a non-hardening thermosetting resin which begins to gell within the aforementioned swelling temperature range and completely hardens at higher temperature values, until forming a homogeneous distribution of these components, filling this mixture into the hollow mold cavity of a mold, then sealing the mold in a pressure-tight fashion and initially externally heating the mold up to the swelling temperature range and thereafter to the higher hardening temperature range of the resin.

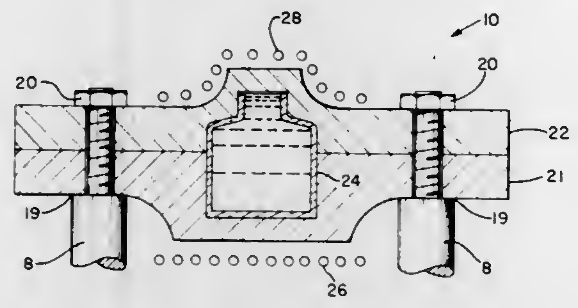
3,867,496
METHOD AND APPARATUS FOR PRODUCING FINE-GRATED POLYCRYSTALLINE BODIES

Abraham I. Mlavsky, Lincoln; Herbert E. Bates, Sudbury, and Bernard Siegel, Framingham, all of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed June 8, 1972, Ser. No. 260,979

Int. Cl. B29c *5/00;* **B29j** *1/00*

U.S. Cl. 264—71 **11 Claims**



1. Method of producing a dense, homogeneous polycrystalline body of a selected chalcogenide material having a cross-sectional dimension of at least 2 inches, said method comprising disposing a charge of said material in the solid state in a sealed heat-resistant container, mounting said container within a heat susceptor so that said container is enclosed by said susceptor and so that said susceptor and container will move as a unit, electrically heating said susceptor and thereby melting said charge and vibrating said susceptor and container and thereby the resulting melt at a sonic frequency in the range of about 500–10,000 Hz, establishing a thermal gradient across the susceptor so that the upper end of the melt is hotter than the bottom end thereof and the thermal gradient is about 30° C per centimeter of melt height, and directionally cooling said susceptor and container as they are being vibrated so as to cause the melt to solidify directionally with solidification of said melt commencing at the bottom end thereof and progressing upwardly to the top end thereof.

3,867,497
PROCESS OF MAKING HOLLOW BODIES OR TUBES OF SEMI-CONDUCTING MATERIALS

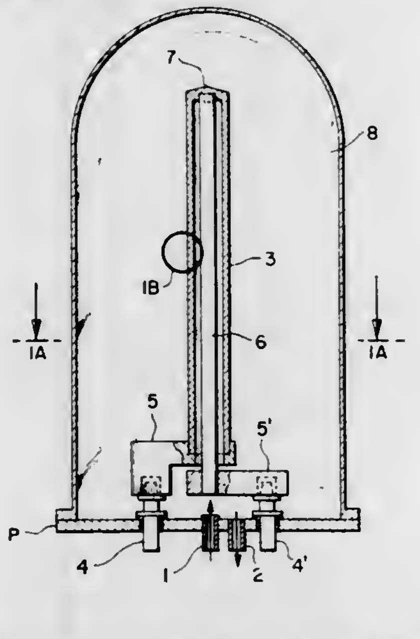
Horst Teich, and Alois Goppinger, both of Burghausen, Germany, assignors to Wacker-Chemitronic GmbH, Burghausen, Germany

Filed Mar. 28, 1973, Ser. No. 345,805

Claims priority, application Germany, Mar. 28, 1972, 2215143

Int. Cl. B01j *17/28;* **B29c** *13/04*

U.S. Cl. 264—81 **5 Claims**



1. A process for making semi-conducting hollow bodies by thermal splitting of volatile semi-conducting silicon compounds, comprising passing the volatile silicon compounds over a carbon mold and depositing thereon in three successive stages, first SiO_2 by burning trichlorosilane and hydrogen in air, then depositing amorphous silicon by passing a reaction gas consisting of 5–12% of $SiHCl_3$ in hydrogen over the deposited SiO_2 at a temperature of 600°–800° C, thereby forming an intermediate layer, next depositing polycrystalline silicon by adjustment of the temperature to 1,050°–1,250° C. and finally, after cooling lifting the polycrystalline silicon body off the mold.

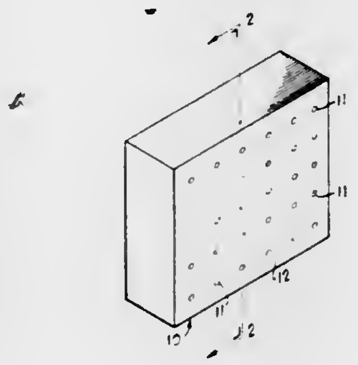
3,867,498
METHOD FOR OPENING THE CELLS OF CELLULAR CLAY BLOCKS

Ned C. Krouskop, Pittsburgh, Pa., assignor to Pittsburgh Corning Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1973, Ser. No. 395,527

Int. Cl. B29c *17/04*

U.S. Cl. 264—88 **3 Claims**



1. A method for treating blocks formed from cellular clay having predominantly closed cells, said blocks having at least two opposed surfaces, which comprises punching a plurality of bores through both of said opposed surfaces in such manner that multiple closed cells are fractured during the punching process in the region occupied by each bore, said bores having a diameter from 0.02 to 1.0″ and extending at least one third of the distance between the said opposed faces, thereafter applying fluid pressure to the punched block for a period sufficient to break passages from cell-to-cell within the said block without otherwise breaking down the structure of the block.

3,867,499
PROCESS FOR WET-SPINNING FIBERS DERIVED FROM ACRYLIC POLYMERS

Herbert S. Morgan, Apex, N.C., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 115,861, Feb. 16, 1971, abandoned. This application July 3, 1972, Ser. No. 268,356

Int. Cl. D01f *7/00*

U.S. Cl. 264—182 **3 Claims**

1. A process for producing acrylic fibers having an improved fine structure and outstanding suitability for use a graphite precursors which comprises: preparing a spinnable solution of an acrylic polymer in a solvent therefor, adding to the solution from about 0.1 percent to 5.0 percent based on polymer weight, of a polyalkoxylated fatty acid ester of sorbitol, forming fibers from said solution by extruding the solution through a spinnerette into a coagulating bath maintained at a temperature of from about 20° C to about 50° C, stretching said fibers from about one to six times their length in a boiling water bath and thereafter collecting the fibers on collecting means.

3,867,500
POLYAMIDE-IMIDE FILM INSULATION HAVING IMPROVED ELONGATION AND FOLD ENDURANCE

Edward J. Traynor, Bedford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

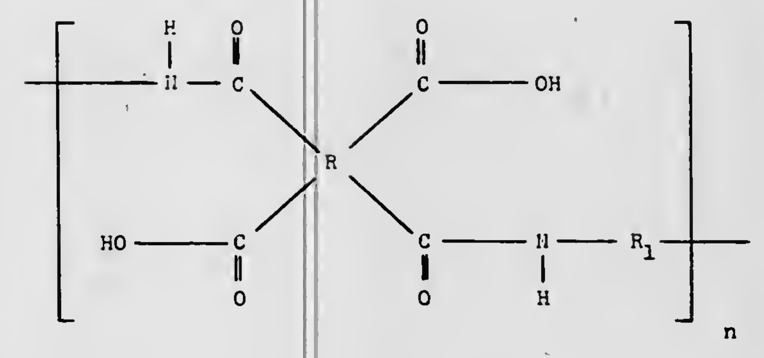
Continuation-in-part of Ser. No. 158,522, June 30, 1971, abandoned. This application June 6, 1973, Ser. No. 367,658

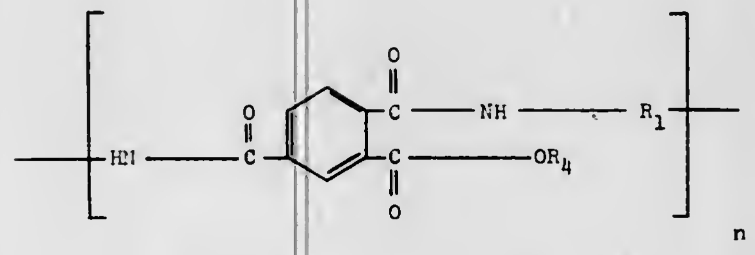
Int. Cl. C08g *20/32*

U.S. Cl. 264—216 **13 Claims**

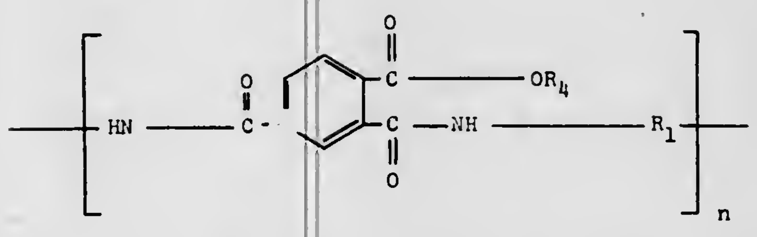
1. A method of producing a resinous insulating film in a single pass by:

I. depositing a solvent solution of a soluble polyamide precursor onto a solid substrate, the soluble polyamide precursor being selected from the group consisting of precursors having the structure:

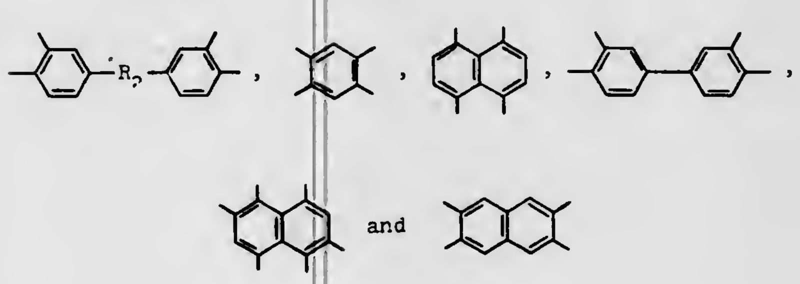




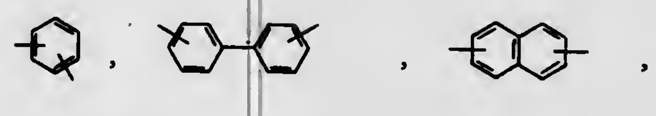
and

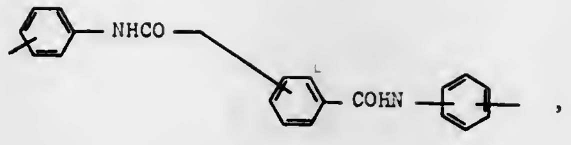


wherein *n* is at least 15, R is at least one tetravalent organic radical selected from the group consisting of:

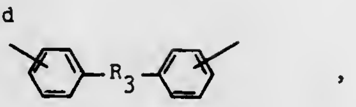


R_2 being selected from the group consisting of divalent aliphatic hydrocarbon radicals having from one to four carbon atoms and carbonyl, oxy, sulfo and sulfonyl radicals, R_1 is at least one divalent radical selected from the group consisting of:





and



in which R_3 is a divalent organic radical selected from the group consisting of R_2, silico and amido radicals and in which R_4 is selected from the group consisting of: -H, alkyl and aryl radicals, directly followed by,

II. heating the solvent solution at temperatures between about 80° and 110°C, between about 5 minutes to 3 hours, to partically remove solvent and form a film-substrate composite the substrate being effective to restrain film shrinkage in the width and length directions, directly followed by,

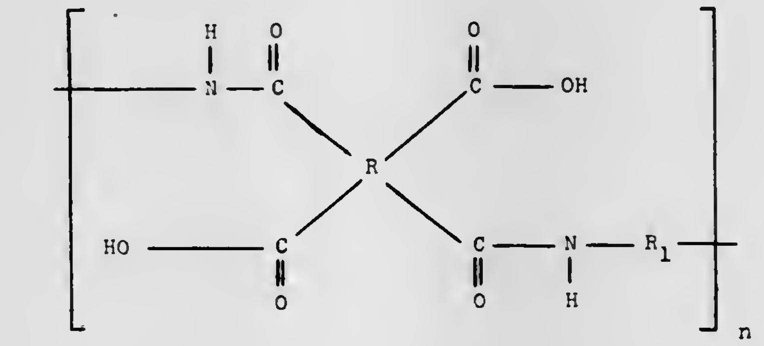
III. heating the film-substrate composite at a temperature of at least 130°C, to semi-cure the film, so that the film contains about 3 to 25 percent volatiles, directly followed by,

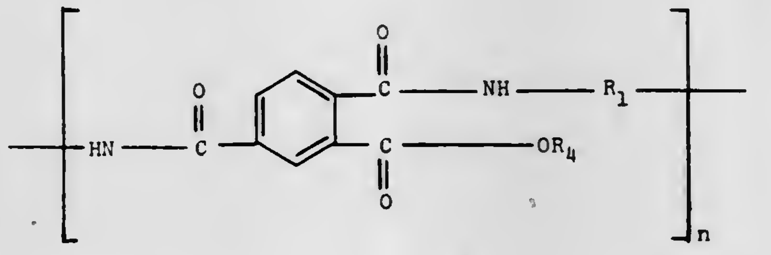
IV. stripping the semi-cured film containing about 3 to 25 percent volatiles from the substrate, directly followed by,

V. stretching the semi-cured film containing about 3 to 25 percent volatiles between about 0.5 and 150 percent at temperatures between about 200° and 350°C, to simultaneously finally cure the film to remove all of the solvent and to provide a solid, cured, stretched insulating film.

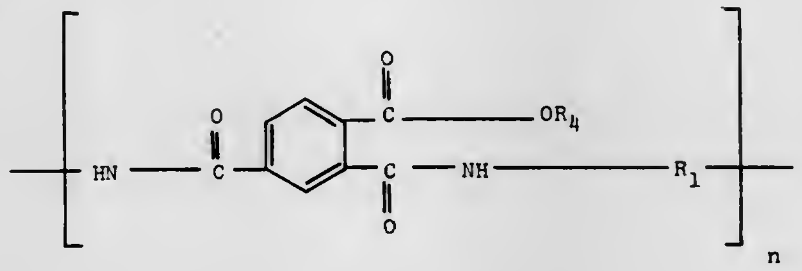
9. A method of producing a resinous insulating film in a single pass by:

I. depositing a solvent solution of a soluble polyamide precursor onto a solid substrate, the soluble polyamide precursor being selected from the group consisting of precursors having the structure:

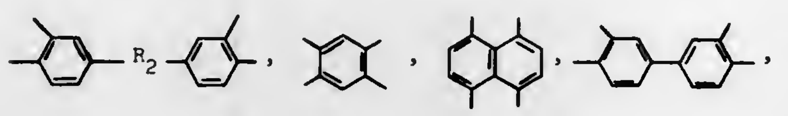


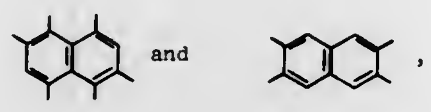


and

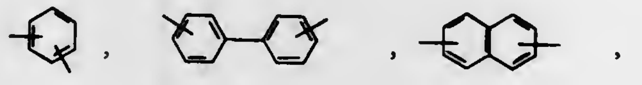


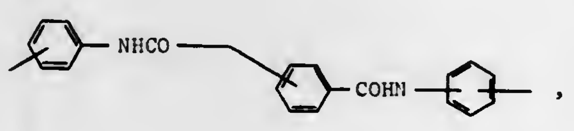
wherein n is at least 15, R is at least one tetravalent organic radical selected from the group consisting of:

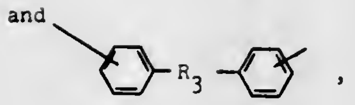




R_2 being selected from the group consisting of divalent aliphatic hydrocarbon radicals having from 1 to 4 carbon atoms and carbonyl, oxy, sulfo and sulfonyl radicals, R_1 is at least one divalent radical selected from the group consisting of:







in which R_3 is a divalent organic radical selected from the group consisting of R_2, silico and amido radicals and in which R_4 is selected from the group consisting of: —H, alkyl and aryl radicals, directly followed by,

II. heating the solvent solution at temperatures between about 80° and 110°C, between about 5 minutes to 3 hours, to partially remove solvent and form a film-substrate composite the substrate being effective to restrain film shrinkage in the width and length directions, directly followed by,

III. heating the film-substrate composite at a temperature of between about 130° to 270°C between about 5 minutes and 2 hours to semi-cure the film, so that the film contains about 3 to 25 percent volatiles, directly followed by,

IV. stripping the semi-cured film containing about 3 to 25 percent volatiles from the substrate, and finally,

V. stretching the semi-cured film containing about 3 to 25 percent volatiles between about 0.5 and 150 percent at temperatures between about 200° and 350°C, to simultaneously finally cure the film to remove all of the solvent and to provide a solid, cured, stretched insulating film.

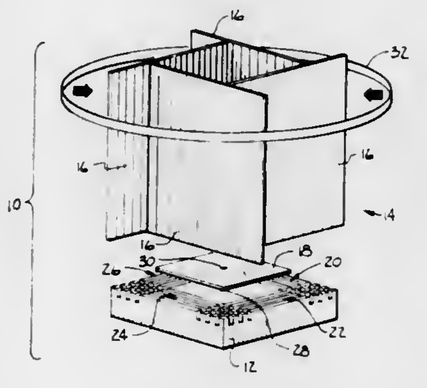
3,867,501
METHOD FOR MOLDING CANDLES OF VARYING CONFIGURATION

James W. Powers, 5010 S.E. Britton St., Milwaukie, Oreg. 97222, and Roger L. Manning, 275 N. Shore Ave., Lake Oswego, Oreg. 97034

Filed Dec. 22, 1972, Ser. No. 317,642

Int. Cl. C11c *5/02;* **B28b** *7/02, 7/20*

U.S. Cl. 264—219 **6 Claims**



1. A method of molding candles which comprises:

a. providing a base having a central aperture and a plurality of intersecting longitudinal grooves formed in the upper surface thereof, said grooves being positioned so as to form a plurality of closed geometric figures of different sizes and shapes;

b. providing a flat bottom plate having the same shape as a selected one of said geometric figures and including an aperture corresponding in location to that of said central aperture;

c. forming a mold enclosure of variable cross-sectional size and shape on said base by adjustably attaching flat upright wall panels in a pre-selected set of said grooves;

d. stretching a wick through said apertures and tautly securing same adjacent said base and centrally above said wall panels; and

e. pouring molten wax into said mold enclosure to form a candle having a pre-selected size and shape.

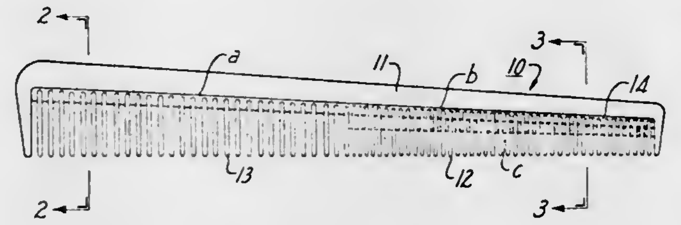
3,867,502
MAKING AND EMPLOYING HAIR TEASING COMBS

Carl A. Moody, 889 Rolling Rock Rd., Pittsburgh, Pa. 15234

Division of Ser. No. 722, Jan. 5, 1970, Pat. No. 3,628,545. This application June 29, 1971, Ser. No. 158,016

Int. Cl. B29d *3/00*

U.S. Cl. 264—263 **7 Claims**



1. In a method of the character shown and described for making an improved hair teasing comb, forming a base comb part and an integral group of spaced-apart relatively smooth-surface low friction teeth of a relatively hard material with the teeth extending forwardly in a transverse relation from the base part to define root portions at the base part, applying and securely mounting a relatively soft and resilient rubberlike material of the class consisting of latex rubber, neoprene and silicon resin between the teeth to extend as a continuous non-porous skid-resistant area from the root portions at the base part forwardly along and between inner reaches of the teeth and provide advance root portions for the teeth, and employing the rubberlike material in the form of solidified and non-porous sections between opposed side portions of the teeth to define a hair teasing area longitudinally of the base

part having the characteristic of high surface adherence without abrasiveness with respect to hair strands.

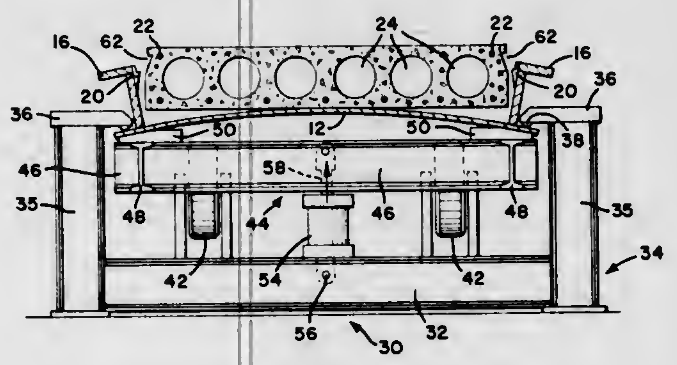
3,867,503
METHOD OF STRIPPING SLAB CASTING FORMS

Theodore W. Shoe, Fletcher, Ohio, assignor to The Flexicore Co., Inc., Dayton, Ohio

Division of Ser. No. 230,831, March 1, 1972, Pat. No. 3,770,360. This application June 27, 1973, Ser. No. 373,958

Int. Cl. B28b *7/06, 7/10*

U.S. Cl. 264—313 **8 Claims**



1. In a method of stripping from a cured structural slab a metal slab casting form having a bottom pan, opposed upstanding side walls affixed permanently to said bottom pan extending longitudinally of said form, portions extending outwardly of said longitudinally extending side walls and grout keyway forming protrusions projecting from said side walls inwardly of said form, the steps comprising:

a. engaging said outwardly extending portions of said form with first form engaging means,

b. engaging said form with second form engaging means longitudinally thereof at locations thereon spaced transversely outwardly a substantial distance from the center of said form, adjacent said opposite longitudinally extending side edges and inwardly from said first form engaging means, and

c. applying opposing forces through said first and second form engaging means to said form in sufficient magnitude to cause said bottom pan to flex inwardly of said form to a curved configuration without overstressing said bottom pan to cause said side walls to move outwardly with respect to said form a distance sufficient to clear said protrusions from grout keyways formed thereby in a cured slab cast in said form.

3,867,504
METHOD OF OPERATING A FIRE MOLD

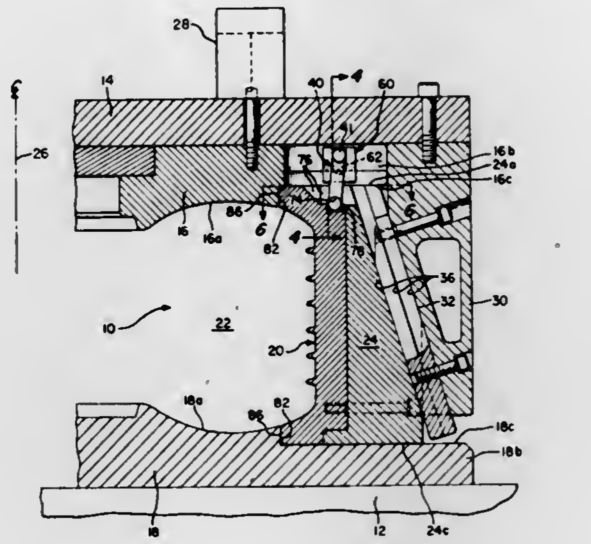
Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 183,931, Sept. 27, 1971, Pat. No. 3,779,677. This application Aug. 9, 1973, Ser. No. 387,052

Int. Cl. B29h *5/08*

U.S. Cl. 264—326 **4 Claims**

1. A method of operating a tire mold having two tire sidewall mold plates, a plurality of tread mold segments, and means for moving said segments radially while in sliding contact with and between said plates during a final phase of mold closing movement and during a first phase of mold opening movement, an improvement in said method comprising, in an additional phase of mold operation while said mold is open after said first phase of mold opening operation and before said final phase of mold closing operation, separating axially of the mold each said segment from each of said sidewall plates to prevent during said additional phase a said sliding contact therebetween, and then moving said segments radially inwardly while said segments are spaced apart from both said plates.



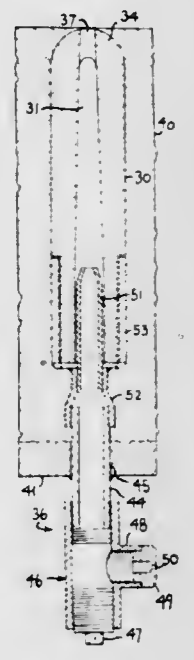
3,867,505
METHOD AND APPARATUS FOR CHLORINATING METAL BEARING MATERIALS

Bobby O. Bowers, Paden City, W. Va., and Stanley F. Brzozowski, Coraopolis, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 192,126, Oct. 26, 1971, abandoned. This application June 22, 1973, Ser. No. 372,865

Int. Cl. C01g *23/02*

U.S. Cl. 423—74 **7 Claims**



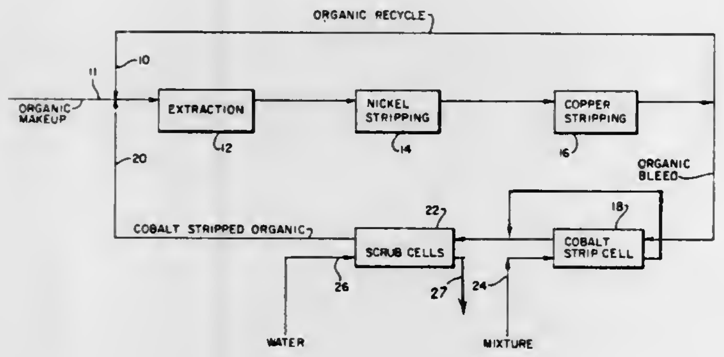
1. A method for chlorinating particulate titanium-bearing material which comprises establishing a fluidized bed of the material in a reaction zone at temperatures at which the material chlorinates, said bed comprising titanium-bearing material having particle sizes largely in the range of 75 microns to 500 microns, said bed being fluidized by a fluidizing stream comprising chlorine, supplying the chlorine to said bed through a plurality of gas conduit means having a single verticle opening at its upper end, at least one principal linear dimension of the opening measured across the opening being not greater than 7/32 inch, so that no significant back flow of solids will occur through said vertical opening upon defluidization of said bed, and which will allow unimpeded startup upon resumption of fluidization, the chlorine thereby being introduced into the bed in a substantially rectilinear direction, and withdrawing titanium tetrachloride from the reaction zone.

3,867,506

COBALT STRIPPING FROM OXIMES

Roald R. Skarbo, Lexington, Mass.; Walter E. Galin, Pawtucket, R.I., and David L. Natwig, Brighton, Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,793
Int. Cl. B01d *11/00;* C01g *51/00*
U.S. Cl. 423—139 10 Claims



1. Cobalt stripping process for removing chelated cobalt ions from oxime metal extractants in oil carrier comprising
  contacting an oxime in oil carrier with an acidic mixture in liquid form consisting essentially of:
    a. as a first component, aqueous sulfuric acid solution in a concentration of at least 90 percent by weight,
    b. and as a second component a solvent selected from the class consisting of lower alkanols and glacial acetic acid and having the characteristic of dissolving oxime out of the oil at water concentrations less than 5 percent and separating oxime out of the mixture at water concentrations above about 5 percent while retaining the cobalt therein,
  the first component to second component volume ratio being no greater than 1:5,
  and wherein said mixture has a water concentration below 5 percent, and further comprising,
  adding water to said mixture contacted oxime after the contacting step to raise water concentration above 5 percent, and
  recovering cobalt and said components from the water.

3,867,507

METHOD FOR REMOVING THE OXIDES OF NITROGEN AS AIR CONTAMINANTS

Albert L. Myerson, Mountainside, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 246,841, April 25, 1972, abandoned. This application Mar. 16, 1973, Ser. No. 341,842
Int. Cl. B01d *53/34*
U.S. Cl. 423—212 7 Claims

1. A thermal method for treating a stream of combustion effluents issuing from either a mobile or stationary source containing NO_x and other contaminants; said method comprising the step of injecting into said stream a hydrocarbon compound and oxygen in sufficient amounts to maintain the ratio of [C] to [NO_x] no greater than 32 to 1 and the ratio of oxygen molecules to carbon atoms no greater than 2.5 to 1, said hydrocarbon compound being one selected from the group consisting of hydrocarbons, oxygen-containing hydrocarbons, nitrogen-containing hydrocarbons, halogen-containing hydrocarbons, and sulfur-containing hydrocarbons at a temperature ranging from 400° to 2,700°C for a sufficient time to substantially reduce the NO_x to molecular nitrogen.

3,867,508

EXHAUST GAS CONVERSION PROCESS AND APPARATUS

Robert H. Hass, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 193,851, Oct. 29, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,808
Int. Cl. B01j *9/04;* B01d *53/00*
U.S. Cl. 423—213.7 6 Claims

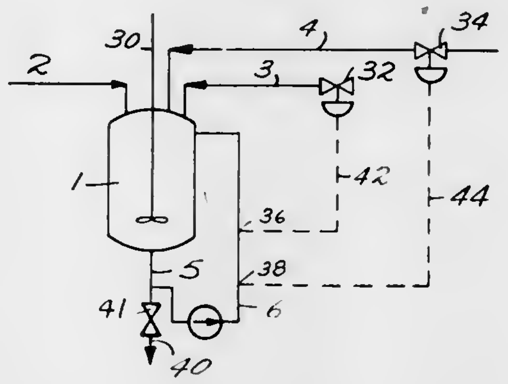
1. In a two-stage catalytic exhaust gas conversion system wherein a substantially lead-free exhaust gas containing carbon monoxide and nitrogen oxide is first passed under No_x-reducing conditions through a contacting zone containing a multivalent transitional metal oxide conversion catalyst, and then with added air through a second contacting zone containing a multivalent transitional metal oxide conversion catalyst to effect oxidation of carbon monoxide, the improved method for maintaining continuous conversion of nitrogen oxides which comprises periodically reversing the direction of flow and the sequence in which the exhaust gas contacts the respective catalysts in said conversion zones.

3,867,509

PROCESS FOR THE PURIFICATION OF SULFUR AND NITROGEN CONTAINING WASTE WATER AND WASTE GAS

Friedhelm Geiger; Theodor Lussling, both of Grossauheim, and Wolfgang Igert, Offenbach, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed May 8, 1973, Ser. No. 358,390
Claims priority, application Germany, May 16, 1972, 2223790
Int. Cl. B01d *53/34*
U.S. Cl. 423—224 14 Claims



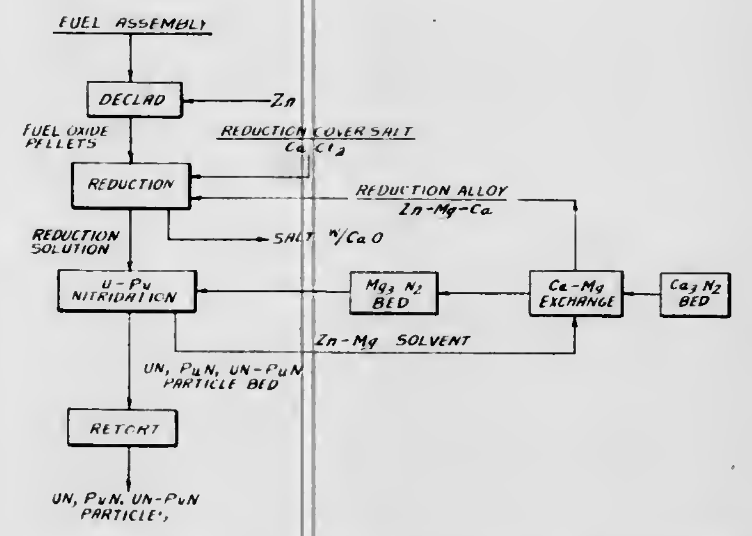
1. A process for the purification of (1) waste water or (2) waste gas containing an oxidizable compound selected from the group consisting of hydrogen sulfide, sulfurous acid, a mercaptan, a mercaptoamino carboxylic acid, a thioether, a disulfide, a sulfoxide, a phenol, allyl alcohol, toluene, anethol, cinnamyl alcohol, cinnamaldehyde, oleic acid, glyceryl trioleate, furfural, indole, β-methylindole and hydrogen cyanide comprising treating the waste water with alkali or alkaline earth chlorite in an acid medium at a pH up to 6 or passing the waste gas through an aqueous solution of alkali or alkaline earth chlorite at a pH of up to 6.

3,867,510

PROCESS FOR RECOVERING URANIUM AND PLUTONIUM FROM IRRADIATED NUCLEAR FUEL OXIDES

William E. Miller, Naperville; John F. Lenc, Westchester, and Irvin O. Winsch, Downers Grove, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 23, 1973, Ser. No. 353,255
Int. Cl. C01g *56/00*
U.S. Cl. 423—251 14 Claims



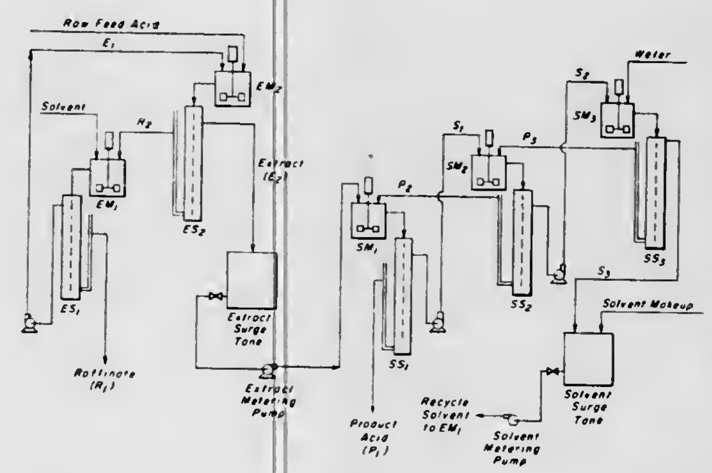
1. A process for recovering uranium and plutonium from irradiated nuclear fuel oxide comprising reducing said fuel oxide to uranium and plutonium metal by contacting said fuel oxide with a liquid-metal reducing solvent, said uranium and plutonium metal being dissolved therein; contacting said liquid-metal solvent with particulate calcium nitride or magnesium nitride to react said dissolved uranium and plutonium with the particulate nitride to form insoluble particles of uranium nitride, plutonium nitride and uranium - plutonium nitride mixtures; separating said insoluble particles from said liquid-metal solvent; and volatilizing any unreacted calcium nitride or magnesium nitride, thereby recovering said uranium and plutonium in the form of particulate uranium nitride, plutonium nitride and uranium - plutonium nitride mixtures.

3,867,511

SOLVENT EXTRACTION OF H_3PO_4

Peter T. Chiang, and John D. Nickerson, both of Atlanta, Ga., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 316,937, Dec. 20, 1972, abandoned, which is a continuation of Ser. No. 129,075, March 29, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,084
Int. Cl. C01b *25/16*
U.S. Cl. 423—321 15 Claims



1. A process for the removal of iron, aluminum, magnesium and fluorine impurities from wet-process phosphoric acid comprising:

a. digesting phosphate rock with sulfuric acid to form a slurry comprising phosphoric acid, calcium sulfate, and sulfuric acid;
b. separating the slurry into solid and aqueous liquid portions;
c. concentrating the aqueous liquid portion until it contains at least 50 weight percent phosphate, calculated as P_2O_5;
d. passing said concentrated aqueous liquid portion to a solvent extraction system employing from two to four stages of countercurrent extraction, wherein said solvent is an essentially water-immiscible alcohol selected from the group consisting of n-hexanol, n-heptanol, n-octanol, iso-octanol and mixtures thereof, said solvent being employed in a ratio of about one-half to about four parts by weight for each part of said concentrated aqueous liquid portion;
e. obtaining a phosphoric acid rich solvent extract and a raffinate by-product and passing said extract to a water stripping system employing from two to four stages of countercurrent stripping, said extract being employed in a ratio of about 1 to 10 parts by weight of extract for each part of stripping water, whereby about 90 percent of the phosphate in the solvent phase is transferred to the aqueous phase;
f. maintaining the solvent phase as the continuous phase in all the extraction stages and in all but the last of said stripping stages, while maintaining the aqueous phase as the continuous phase in the last water stripping stage;
g. recycling the water stripped solvent from the last stripping stage of step e) to the first extraction stage of step d) and recovering purified phosphoric acid from the first stripping stage.

3,867,512

METHOD OF PREPARING CRYSTALLINE "L" ZEOLITE

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 856,830, Sept. 10, 1969, abandoned. This application Sept. 14, 1972, Ser. No. 289,085
Int. Cl. C01b *33/26, 33/28*
U.S. Cl. 423—329 4 Claims

1. In a method for the preparation of crystalline zeolite L wherein reactive silica is dispersed in an alkaline reagent to form an aqueous reaction mixture having a molar composition corresponding to about 0.3 to about 1 $K_2O/(K_2O+Na_2O)$, about 0.3 to 0.6 $(K_2O+Na_2O)/SiO_2$, about 10 to 40 SiO_2/Al_2O_3, and about 15 to 140 $H_2O/(K_2O+Na_2O)$, and wherein said reaction mixture is digested at a temperature and for a period of time sufficient to produce a recoverable yield of zeolite L, the improved method for increasing the rate of formation and/or yield of L zeolite, which comprises utilizing as said reactive silica a reactive silica gel prepare by gelling a silica source selected from the group consisting of alkali metal, akaline earth metal and ammonium silicates and silicic acid in an aqueous solution having a silica concentrate corresponding to a SiO_2/H_2O mole ratio of at least about 0.005 at a pH below about 8 and a temperature between about 30° and 250°F, correlated with said pH to produce a reactive silica gel containing at least about 4.5 weight percent of chemical water.

3,867,513

METHOD FOR PRODUCING CARBON BLACK

Joseph C. Krejci, Phillips, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 8, 1970, Ser. No. 1,432
Int. Cl. C09c *1/48, 1/50*
U.S. Cl. 423—450 8 Claims

1. A method for producing carbon black in a reactor by the pyrolytic decomposition of a hydrocarbon in the presence of an oxidant and a fuel by bringing said hydrocarbon to its carbon black forming temperature in the presence of an oxidant and a fuel, and recovering the carbon black formed, which comprises introducing said hydrocarbon into said reac-

tor in a multiplicity of streams, a plurality of said streams being introduced peripherally to at least one centrally introduced stream, said centrally-introduced stream being introduced at a velocity of about two to about six times the velocity of the peripherally introduced streams.

3,867,514
RECOVERY OF SULFUR VALUES FROM MOLTEN SALT
Keith A. Moore, Staten Island, N.Y., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed May 16, 1973, Ser. No. 360,987
Int. Cl. C01b ***17/16***
U.S. Cl. 423—563 10 Claims

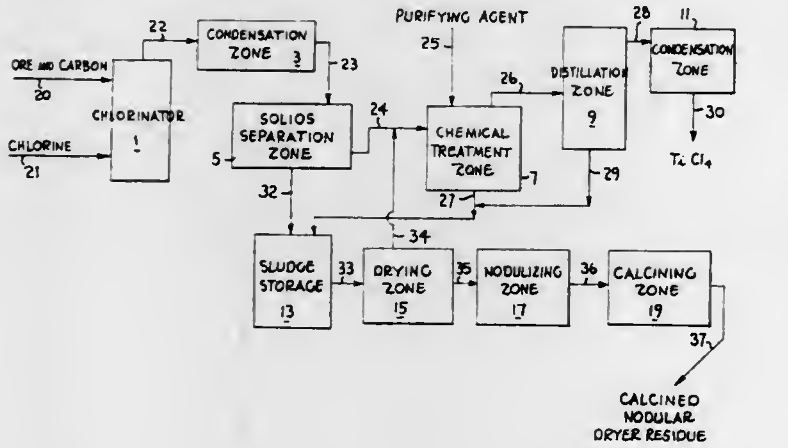
1. In a process for recovering sulfur values as hydrogen sulfide gas from alkali metal sulfides as reactive material contained in an inorganic molten salt in a reaction zone,

wherein said molten salt is contacted with a gaseous mixture containing carbon dioxide and steam at a selected reaction temperature below 600°C at which the alkali metal sulfide-containing salt is molten to form alkali metal carbonates in said molten salt and hydrogen sulfide gas as a recoverable product,

the improvement which comprises injecting water directly into said reaction zone at a plurality of reaction sites therein,

said water being converted to steam to provide at least a portion of the reactant steam for the reaction in said zone while at the same time maintaining the reaction temperature in said zone at said selected temperature.

3,867,515
TREATMENT OF TITANIUM TETRACHLORIDE DRYER RESIDUE
Lester E. Bohl, New Martinsville; Roy H. Rogerson, Moundsville, both of W. Va., and Frederick G. Stroke, McMurray, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Apr. 1, 1971, Ser. No. 130,330
Int. Cl. C01g ***31/00, 23/04;*** **C02g** ***27/22***
U.S. Cl. 423—593 15 Claims



1. Calcined nodular titanium tetrachloride dryer residue comprising metal values including titanium, iron, vanadium and chromium, said metal values being present substantially as metal oxides, said residue having been obtained from purifying titanium tetrachloride produced from titanium-bearing material containing such metal values, and said nodular residue having been calcined at temperatures in excess of 1000°F.

3,867,516
METHOD OF PREPARING A PIGMENT ON AN IRON OXIDE BASE
Fernand Jacques Joseph Bodson, Angleur, Belgium, assignor to Societe des Mines et Fonderies de Zinc de La Vieille Montagne, Societe Anonyme, B-4900 Angleur, Belgium
Filed Apr. 10, 1972, Ser. No. 242,773
Claims priority, application Belgium, May 3, 1971, 43279
Int. Cl. C01g ***9/02***
U.S. Cl. 423—632 11 Claims

1. A method of preparing an iron oxide pigment base from a sulfate solution derived from the leaching of zinc residues and containing, in particular, ferrous sulfate comprising: heating said sulfate solution to a temperature of about 90°C., adding to said solution a zinc oxide-containing material to raise the pH to a value above 2, blowing air into said solution to precipitate the hydrolyzable impurities together with about 10% of the iron, separating the filtrate, maintaining said filtrate at a temperature of about 90°C. and adding sufficient zinc oxide-containing material to obtain a pH value between 1.7 and 2.5, blowing dispersed air into said filtrate to precipitate iron in the form of goethite and treating said latter precipitate with a basic liquid medium to remove sulfate ions present in said precipitate.

3,867,517
DIRECT RADIOIMMUNOASSAY FOR ANTIGENS AND THEIR ANTIBODIES
Chung-Mei Ling, Crystal Lake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 21, 1971, Ser. No. 210,510
Int. Cl. A61k ***27/04***
U.S. Cl. 424—1 4 Claims

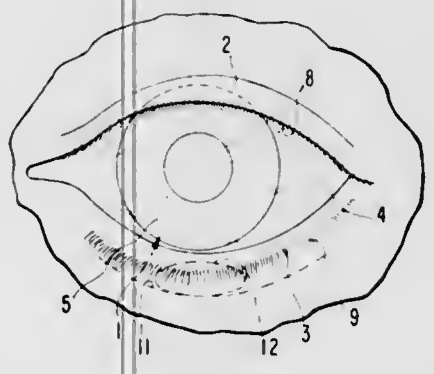
1. A method for determining the presence of a hepatitis associated antigen or its antibody capable of being bound to two hepatitis associated antigens or antibodies respectively in an unknown sample utilizing direct radioimmunoassay comprising:

a. forming a solution of said hepatitis associated antigen or antibody in a buffer mixture;
b. coating a test apparatus by contacting said test apparatus with said solution and
c. incubating said test apparatus while in contact with said solution;
d. washing said incubated coated test apparatus with a buffer mixture;
e. placing said unknown sample in contact with said incubated and washed test apparatus;
f. incubating said unknown sample while in contact with said coated test apparatus for from 0.5 to 42 hours to bond any of said hepatitis associated antigen or antibody present in said unknown sample to said incubated test apparatus;
g. washing said incubated test apparatus with a buffered solution to remove said unknown sample leaving said bonded hepatitis associated antigen or antibody on the coating of said test apparatus;
h. contacting said washed test apparatus with a purified form of said hepatitis associated antigen or antibody labeled with the radioactive isotope I-125;
i. incubating said washed test apparatus while in contact with said purified form of said hepatitis associated antigen or antibody labeled with a radioactive isotope so as to bond said purified form to said antigen or antibody bonded on said test apparatus and thereby produce a radioactively traced incubated coating;
j. washing said radioactively traced incubated coating with a buffered solution to remove any unbonded purified form;
k. counting radiation emitted from said radioactively traced incubated coating; and
l. comparing the number of counts from said coating with the number of counts from a control sample prepared by steps (a) to (k).

3,867,518
RADIOIMMUNOASSAY FOR INSULIN
John William Coffey, West Caldwell, and Hans John Hansen, Allendale, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Mar. 9, 1973, Ser. No. 339,803
Int. Cl. A61k ***27/04***
U.S. Cl. 424—1 4 Claims

1. In a liquid phase radioimmunoassay for the detection of immunoreactive insulin in blood plasma, the improvement which comprises the step of adding a slurry of zirconyl phosphate gel having a pH of from 6.0 to 6.5 to an incubation mixture of radioactive insulin and test fluid to stop incubation and adsorb antibody-bound insulin, separating the zirconyl phosphate gel-antibodyinsulin complex and measuring the radioactivity thereof.

3,867,519
BIOERODIBLE DRUG DELIVERY DEVICE
Alan S. Michaels, Atherton, Calif., assignor to Alza Corporation
Filed Apr. 27, 1972, Ser. No. 248,168
Int. Cl. A61k ***27/12***
U.S. Cl. 424—19 5 Claims



1. An ocular delivery device for the sustained administration of a predetermined dosage regimen of ophthalmic drug to the eye of a mammalian patient comprising (1) an inner reservoir comprised of a biodegradable material containing a drug formulation for the eye confined therein and permeable to the passage of drug, and (2) an outer membrane surrounding the inner reservoir, the membrane permeable to the passage of drug, but at a lower rate than through the inner reservoir, the membrane formed from drug release rate controlling bioerodible material comprising a polyvalent ion cross-linked anionic polyelectrolyte with the polyvalent ion a member selected from the group consisting of aluminum, barium, cadmium, calcium, copper, iron and zinc and the anionic polyelectrolyte, a member selected from the group consisting of pharmaceutically acceptable agar, algin, alginic acid, carrageenan, cellulose, gum arabic, gum ghatti, pectic acid, pectin, pectinic acid, and polysaccharide, with the polyelectrolyte cross-linked from two-tenths to three equivalents cross-linking agent selected solely from said polyvalent cation for each equivalent of polyelectrolyte, which material bioerodes in the eye of the patient in from four hours to thirty days into innocuous products in response to the biological environment therein by a process of polyvalent ion displacement with noncross-linking ions present in the eye with said displacement rate corresponding to the extent of polyvalent ion cross-linked, and wherein the membrane material continuously meters the flow of a therapeutically effective amount of said drug from the reservoir to the eye of the patient at a controlled rate over a prolonged period of time.

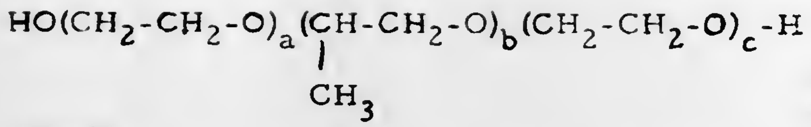
3,867,520
MEDICATED POLYAMINO ACID FILM FOR OCCLUSIVE DRESSING THERAPY
Shigeo Mori, Chagasaki; Akira Akamatsu, and Kazushi Togo, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Continuation-in-part of Ser. No. 242,754, April 10, 1972, abandoned. This application Feb. 5, 1974, Ser. No. 439,956
Claims priority, application Japan, Apr. 14, 1971, 46-23592
Int. Cl. A61k ***1/00;*** **A01n** ***11/00***
U.S. Cl. 424—36 8 Claims

1. A body-contacting solid film for an occlusive dressing essentially consisting of

a. at least one poly-α-amino acid as a solid, film-forming matrix,
    1. said acid being a homopolymer of an α-amino acid of the group consisting of glycine, alanine, phenylalanine, leucine, isoleucine, valine, norvaline, norleucine, methionine, the ω-lower-alkyl esters of glutamic acid and aspartic acid having 1 to 4 carbon atoms in the lower alkyl group thereof, the ω-N-mono-alkanoyl derivatives of lysine and ornithine having 2 to 4 carbon atoms in the alkanoyl group, or a copolymer of at least two members of said group;
b. a carrier dispersed in said matrix as a separate phase,
    1. said carrier being liquid or semi-solid at 37°C,
    2. said carrier being insoluble or poorly soluble in said matrix at 37°C, and non-toxic to the human body when in contact with human skin,
    3. the amount of said dispersed carrier being sufficient to cause a significant portion, greater than incidental traces, of said carrier to migrate to a surface of said film at 37°C; and
c. a pharmaceutically active agent dispersed in said carrier in an amount sufficient to cause migration of said agent with said carrier to said surface at 37°C in a therapeutically significant amount,
    1. the weight of said carrier in said separate phase being at least equal to the weight of said agent dispersed in said carrier, but smaller than the weight of said matrix,
    2. said carrier and said agent being substantially completely retained in said matrix for one month at temperatures below 0°C.

3,867,521
METHOD FOR ABSORPTION OF DRUGS
John J. Miskel, Bloomfield Hills, and Foo Song Hom, Saint Clair Shores, both of Mich., assignors to R. P. Scherer Corp., Detroit, Mich.
Continuation-in-part of Ser. No. 67,276, Aug. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 3,188, Jan. 15, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,300
Int. Cl. A61j ***3/07, 3/10;*** **A61k** ***9/04***
U.S. Cl. 424—37 6 Claims

1. A method for enhancing gastrointestinal absorption of a drug of the type which is preferentially absorbed in the upper part of the gastrointestinal tract, said drug also being capable of having the amount of absorption extended by having the dwell time of said drug in the upper part of the gastrointestinal tract extended by prior induction of hypomotility, said method comprising the steps of sequentially absorbing in the upper part of the gastrointestinal tract an effective oral unit dosage amount of said drug, after first commencing absorbing in the upper part of the gastrointestinal tract about 30–95 percent by weight of a material, said percentage being relative to the total weight of said drug and said material, said material being a polyoxypropylene polyoxyethylene block polymer having the formula:



$$HO(CH_2\text{-}CH_2\text{-}O)_a(\underset{\displaystyle CH_3}{\underset{|}{C}}H\text{-}CH_2\text{-}O)_b(CH_2\text{-}CH_2\text{-}O)_c\text{-}H$$

wherein

b represents a molecular weight of at least 900 and *a* and *c* represent a molecular weight of about 5–80 percent by weight of the total molecular weight of the polymer, reducing normal peristaltic action in said gastrointestinal tract with said polymer and thereby inducing a transient condition of hypomotility, particularly in the said upper part of the said gastrointestinal tract, said transient condition of hypomotility enhancing the desired gastrointestinal absorption of said drug, said polymer being the essential gastrointestinal absorption enhancing agent.

3,867,522
ACNE COMPOSITION

Albert M. Kligman, Philadelphia, Pa., assignor to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,350

Continuation-in-part of Ser. No. 197,111, Nov. 9, 1971, abandoned.

Int. Cl. A61u *27/00*

U.S. Cl. 424—153 **3 Claims**

1. A method for the treatment of acne-affected skin which comprises applying to the skin a composition consisting essentially of sodium chloride crystals in a base for topical application, followed by frictional rubbing of said composition on the affected skin to cause abrasion and debridement of the skin, said crystals being of a particle size and being present in an amount sufficient to abrade the skin.

3,867,523
STABILIZATION OF AMPICILLIN WITH SUCROSE

Surendra M. Bahal, Upper Darby, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,548

Int. Cl. A61k *21/00*

U.S. Cl. 424—176 **2 Claims**

1. A stabilized aqueous pharmaceutical suspension comprising:

a. 1.25 to 10 percent by weight per volume of an anhydrous ampicillin;

b. About 70 to 86 percent *w/v* of sucrose; and

c. A buffer adjusting pH to a range between about 5 to 6.5

3,867,524
METHOD OF TREATING PERIODONTAL DISEASE

Norbert Ebner, Radenthein, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 205,347, Dec. 6, 1971, abandoned. This application Mar. 29, 1973, Ser. No. 346,079

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **7 Claims**

1. A method of treating periodontal disease in humans suffering from said disease which method comprises administering to said humans from about 2 to 30 grams of lactulose daily.

3,867,525
INSECTICIDAL AND ACARICIDAL SUBSTITUTED PHENYL-THIOPHOSPHORIC ACID ESTERS

Jozef Drabek, Allschwil, and Denis Varsanyi, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

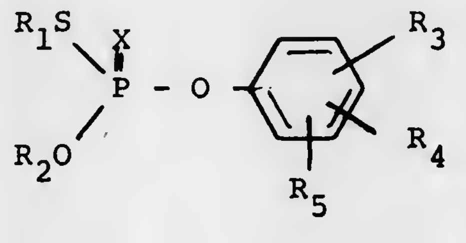
Division of Ser. No. 292,218, Sept. 25, 1972, Pat. No. 3,839,509. This application July 15, 1974, Ser. No. 488,591

Claims priority, application Switzerland, Sept. 30, 1971, 14208/71; July 27, 1972, 11229/72

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 **10 Claims**

1. An insecticidal or acaricidal composition comprising (1) an insecticidally or acaricidally effective amount of a compound of the formula



wherein

R_1 is C_3–C_5 alkyl,

R_2 is methyl or ethyl,

R_3 is aminocarbonyl, alkylaminocarbonyl or dialkylaminocarbonyl in which the alkyl groups have 1 or 2 carbon atoms,

R_4 and R_5 are each independently hydrogen, chlorine or bromine, and

X is oxygen or sulphur,

and (2) a carrier.

3,867,526
STABILIZED COMPOSITIONS CONTAINING A PHOSPHORIC ACID ESTER PESTICIDE AND AN ALCOHOLIC COMPOUND

Claude Hennart, Aubervilliers; Jean-Pierre Mandon, Paris; Georges Martin, Saint Benoit, and Bernard Rabussier, Avanton, all of France, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. Nos. 833,665, June 16, 1969, Pat. No. 3,705,941, and Ser. No. 17,918, March 9, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,509

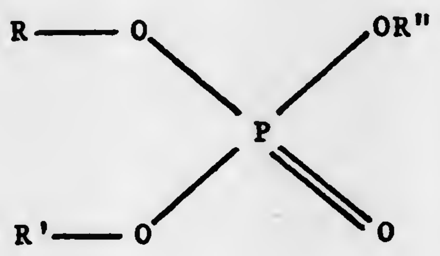
Claims priority, application France, Mar. 12, 1969, 69.06859; Mar. 12, 1969, 69.06860; Mar. 12, 1969, 69.06861; Mar. 12, 1969, 69.06862; Feb. 12, 1969, 69.03313; June 21, 1968, 68.156025; Luxembourg, Dec. 18, 1969, 60052

Int. Cl. A01n *9/36*

U.S. Cl. 424—219 **12 Claims**

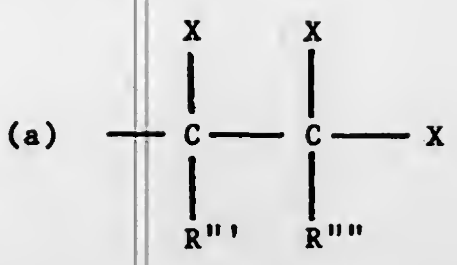
1. A stabilized insecticidal composition comprising

A. about 1 to 95 percent of at least one phosphoric acid ester insecticide defined by the general formula

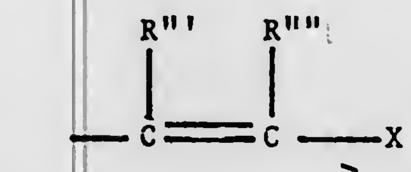


in which

R and R'' are the same or different alkyl groups containing from 1 to 3 carbon atoms, and R'' is one of the following two groups

(a) 

in which R''' and R'''' are the same or different and are each hydrogen, chlorine, bromine, or alkyl of from 1 to 3 carbon atoms, and X is chlorine or bromine;

(b) 

in which R''', R'''' and X have the meanings given above,

B. about 1 to 80 percent of a compound having at 20°C a vapor pressure between 0.01 and 30 TORR and carrying per molecule at least one alcoholic hydroxyl group and acting as solvent on (A) and which compound is selected from

1. aliphatic saturated and unsaturated primary, secondary and tertiary alcohols,
2. saturated and unsaturated alicyclic alcohols,
3. aralkanols and aralkenols, and
4. glycols and their monoesters and monoethers,

C. from about 0.1 to 20 percent of a stabilizing agent for said phosphoric ester, selected from

(α) compounds containing an epoxy group, and selected from:

an alkyloxitane,

an aryloxitane,

an epoxy cyclane and

an epoxidised ester

(β) a diazene, and

(γ) a mixture of a compound as defined under (α) with a diazene, all percentages being based on the total weight of the composition.

3,867,527
2,4-DIAMINO-5-(3-ALKOXY-4,5-METHYLENEDIOXYBENZYL)PYRIMIDINE

Emanuel Grunberg, North Caldwell, and Max Hoffer, Nutley, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Division of Ser. No. 203,869, Dec. 1, 1971, Pat. No. 3,787,409. This application Oct. 10, 1973, Ser. No. 404,953

Int. Cl. A61k *27/00*

U.S. Cl. 424—229 **4 Claims**

1. A therapeutic antibacterial composition comprising from about 1 to about 50 parts of a sulfonamide selected from the group consisting of N^1-(3,4-dimethyl-5-isoxazolyl)-sulfanilamide, 5-methyl-3-sulfanilamidoisoxazole, N^1-(2,6-dimethoxy-4-pyrimidinyl)-sulfanilamide, N^4-ethoxyacetyl)-N^1-(5-methyl-3-isoxazolyl)-sulfanilamide, N^1-(4,5-dimethyl-3-isoxazolyl)-sulfanilamide, N^1-(5,6-dimethoxy-4-pyrimidinyl)-sulfanilamide and salts thereof with pharmaceutically acceptable bases and one part of a pyrimidine of the formula ,25/13

wherein R is lower alkoxy,

or an acid addition salt thereof with a pharmaceutically acceptable acid.

3,867,528
STEROIDAL TOPICAL CREAM BASE

Lawrence Ritter, Suffern, and Robert Arnold Nash, Spring Valley, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 11, 1973, Ser. No. 405,613

Int. Cl. A61k *17/06*

U.S. Cl. 424—241 **7 Claims**

1. A new composition of matter comprising a topical cream base providing enhanced penetration of steroids of the following formulation:

	W/W
Steroid	0.005 to 5.0%
Ethoxylated stearyl alcohol	5 to 25%
Benzyl alcohol	0.9 to 4%
Isopropyl palmitate	1 to 10%
Glycerin	2 to 10%
Sorbitol solution U.S.P.	2 to 10%
Lactic or other acid q.s. to pH 3.0–7.0	
Water qs ad	100%

wherein the steroid is selected from the group consisting of triamcinolone acetonide, triamcinolone acetonide-21-valerate, 16α,17α-cyclopentylidenedioxy-9α-fluoro-11β,21-dihydroxy-1,4-pregnadiene-3,20-dione and 16α,17α-cyclopentylidenedioxy-9α-fluoro-11β,21-dihydroxy-1,4-pregnadiene-3,20-dione-21-acetate.

3,867,529
TRANQUILIZING AND ANTI-ANXIETY PHARMACEUTICAL COMPOSITIONS

Giorgio Ferrari, Milan, and Cesare Casagrande, Como, both of Italy

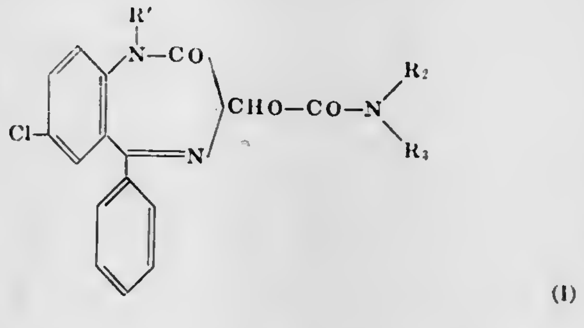
Continuation-in-part of Ser. No. 173,305, Aug. 19, 1971, Pat. No. 3,799,920. This application Apr. 18, 1973, Ser. No. 352,105

Claims priority, application Switzerland, Aug. 24, 1970, 126620/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **13 Claims**

1. A tranquilizing and anti-anxiety pharmaceutical composition including a carrier, and an effective amount of an active ingredient comprising a 1,4-benzodiazepin derivative containing a carbamic ester group having the general formula:



(I)

wherein R_1 is selected from the group consisting of hydrogen, and lower alkyls having 1 to 4 carbon atoms, and R_2 and R_3 are, each hydrogen, lower alkyl having from 1 to 4 carbon atoms, cyclohexyl or amino lower alkyl or hydroxy lower alkyl or when R_2 and R_3 are taken together with the attached nitrogen nitrogen atom to form a heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, morpholino and piperazino.

3,867,530

2-(3-AMINOPROPYL)-2,4-DIHYDRO-6-PHENYL-1H-S-TRIAZOLO[4,3-A][1,4]BENZODIAZEPIN-1-ONES AND METHOD OF TREATMENT THEREWITH

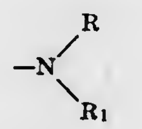
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

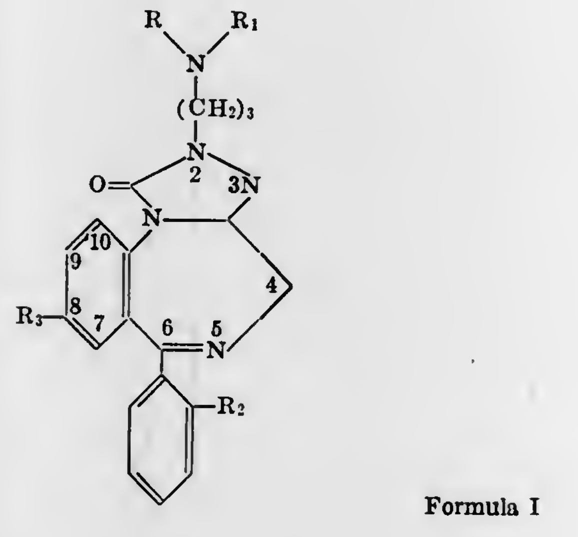
Filed Aug. 14, 1972, Ser. No. 280,158

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **9 Claims**

1. A process for treating depression and anxiety comprising the administration to a depressed or anxietar human or animal subject of from about 5 to about 300 mg. of a compound of the formula:

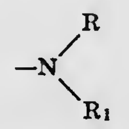




Formula I

1

wherein R and R_1 are selected from the group consisting of hydrogen and alkyl of one to three carbon atoms, inclusive; or the group



is a heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, morpholino, piperazino, 4-methylpiperazino, 4-(2-hydroxyethyl)piperazino, and 4-phenylpiperazino; wherein R_2 is selected from the group consisting of fluorine, chlorine, and bromine and wherein R_3 is selected from the group consisting of fluorine, chlorine, bromine, nitro, and trifluoromethyl, or a pharmacologically acceptable acid addition salt thereof in association with a pharmaceutical carrier.

3,867,531

METHOD OF TREATING CONDITIONS OF DELAYED HYPERSENSITIVITY EMPLOYING MORPHOLINE DERIVATIVES

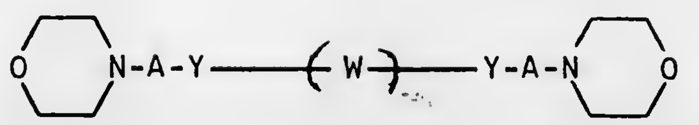
Irving Shemano, Cincinnati, Ohio, assignor to Richardson-Merrell Inc., New York, N.Y.

Filed June 15, 1973, Ser. No. 370,292

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **6 Claims**

1. A method of treating conditions of delayed hypersensitivity which comprises administering to a patient in need of such treatment an effective quantity of a compound of the formula



wherein (W) is an aromatic polycyclic nucleus selected from fluoranthene, fluorene, fluoren-9-ol, fluoren-9-one, dibenzofuran, dibenzothiophene, carbazole, N-(lower)alkyl carbazole, xanthene, xanthone, thioxanthene, phenoxathiin, or anthraquinone; Y is selected from carbonyloxy, carbonylthio, oxygen, divalent sulfur, or carbonyl with the provisos that when Y is carbonyloxy or carbonylthio, (W) is other than thioxanthene, phenoxathiin, or anthraquinone, when Y is oxygen or divalent sulfur, (W) is other than thioxanthene or phenoxathiin, and when Y is carbonyl, (W) is other than fluoren-9-ol or anthraquinone; A is selected from a straight or branched alkylene chain of from one to six carbon atoms with the proviso when y is carbonyloxy or carbonylthio, A contains from two to six carbon atoms; and pharmaceutically acceptable acid addition salts thereof.

3,867,532

DIAZABICYCLODECANES AS ANTI-ULCER AGENTS

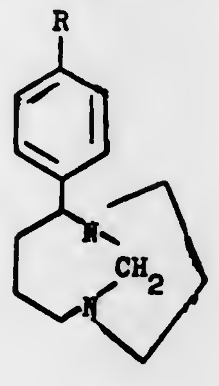
Louis D. Boyajy, Parsippany, and John H. Gogerty, Dover, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Nov. 19, 1973, Ser. No. 417,368

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **6 Claims**

1. A method of treating gastrointestinal ulcers in a mammal, which comprises administering thereto an anti-ulcer effective amount of a compound of the formula:



where R is hydrogen, fluoro, chloro or lower alkoxy or a pharmaceutically acceptable acid addition salt thereof.

3,867,533

PREPARATION OF AQUEOUS GEL COMPOSITIONS CONTAINING A WATER-INSOLUBLE ORGANIC INGREDIENT

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 785,772, Dec. 20, 1968, abandoned. This application Sept. 12, 1973, Ser. No. 396,349

Int. Cl. A01n *9/12;* **A61k** *7/00, 27/00*

U.S. Cl. 424—258 **9 Claims**

1. A method of preparing an aqueous gel composition containing a water-insoluble pharmaceutically or cosmetically active organic ingredient which comprises the following steps:

a. heating from 0.1 part to 10 parts by weight of said organic ingredient along with from 50 parts to 15 parts by weight of a polyoxyethylene polyoxypropylene block copolymer to a temperature of about 50°C. to 65°C., said copolymer having the formula:

$$HO(C_2H_4O)_b(C_3H_6O)_a(C_2H_4O)_bH$$

wherein a is an integer such that the hydrophobe represented by (C_3H_6O) has a molecular weight of from 2250 to 4000, and *b* is an integer such that the hydrophile portion represented by (C_2H_4O) constitutes from about 10 to 90 weight percent of the copolymer,

b. adding from 50 parts to 85 parts by weight of water to the mixture resulting from step (a) and cooling the resulting aqueous mixture to 5°C. to 10°C. with stirring until a homogeneous solution is obtained, and

c. allowing the homogeneous solution from step (b) to warm to ambient temperatures whereby a gel composition is obtained, with the provisos that:

1. when *a* in Formula I is an integer such that the average molecular weight of the hydrophobe is about 2250, then the ethylene oxide content is from 50 to 90 weight percent of the copolymer, the total average molecular weight of the copolymer is from 4600 to 10,750 and the gel composition comprises from 40 to 50 weight percent of the copolymer;.
2. when *a* in Formula I is an integer such that the average molecular weight of the hydrophobe is about 2750, then the ethylene oxide content is from 45 to 90 weight percent of the copolymer, the total average molecular weight of the copolymer is from 4910 to 13,500 and the gel composition comprises from 40 to 50 weight percent of the copolymer;
3. when *a* in Formula I is an integer such that the average molecular weight of the hydrophobe is about 3250, then the ethylene oxide content is from 35 to 90 weight percent of the copolymer, the total average molecular weight of the copolymer is from 4910 to 15,510 and the gel composition comprises from 30 to 50 weight percent of the copolymer;
4. when *a* in Formula I is an integer such that the average molecular weight of the hydrophobe is about 4000, then the ethylene oxide content is from 35 to 90 weight percent of the copolymer, the total average molecular weight of the copolymer is from 6150 to 2000 and the gel composition comprises from 30 to 50 weight percent of the copolymer, with the further proviso that when *a* in Formula I is an integer such that the average molecular weight of the hydrophobe is about 4000, the ethylene oxide content is from 70 to 90 weight percent, the total average molecular weight of the block polymer is from 16,000 to 20,000 and the gel composition comprises from 15 to 50 weight percent of the copolymer,

all parts by weight being based on 100 parts by weight of said gel composition.

3,867,534

DOSAGE REGIMEN

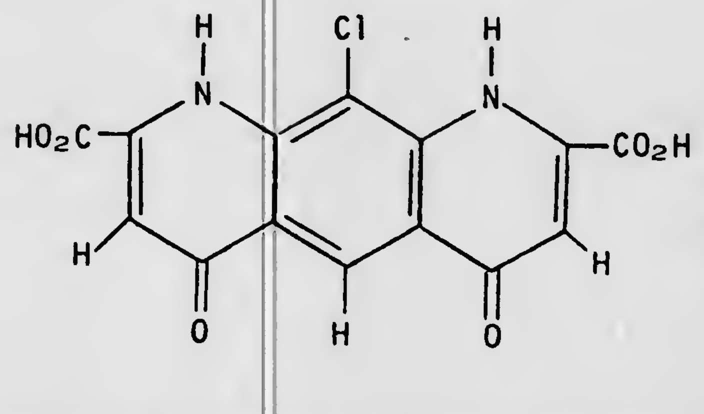
Herbert G. Johnson, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 278,292, Aug. 7, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,435

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **8 Claims**

1. An improved dosage regimen comprising the administration to a human of a priming dose of a pharmacologically acceptable salt or ester of a compound of the formula:



followed by the administration of a smaller maintenance dose consisting of one-fifth to one-thousandth the priming dose, said maintenance dose being repeated every 4 to 12 hours.

3,867,535

THIADIAZOLIUM SALTS AS ANTIHELMINTIC AGENTS

Roger Lawrence Newton Harris, Arenda, Australia, and Rudiger Spaun, Bottmingen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

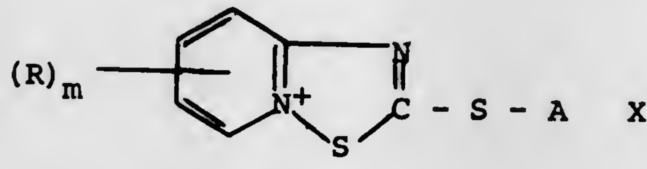
Division of Ser. No. 310,529, Nov. 29, 1972, Pat. No. 3,801,583. This application Jan. 14, 1974, Ser. No. 433,313

Claims priority, application Switzerland, Dec. 1, 1971, 17461/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **6 Claims**

1. An anthelmintic composition comprising (a) as active ingredient, an anthelmintically effective amount of a compound of the formula I



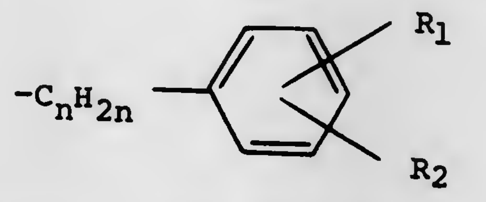
(I)

wherein

R represents hydrogen, halogen, nitro, C_1–C_4 alkyl or C_1–C_{10} alkoxy,

m is 1 or 2

A stands for a straight chain or branched alkyl radical having 1–12 carbon atoms, which can be substituted by dialkylamino, alkoxy or alkylthio, with the alkyl groups present in these radicals having in each case 1–4 carbon atoms, or for an aralkyl radical of the formula



wherein *n* denotes 1–3, and R_1 represents hydrogen, halogen, nitro, trifluoromethyl, alkyl, alkoxy, alkylthio each having 1–4 carbon atoms, phenoxy or phenylthio, and R_2 represents hydrogen, halogen, nitro or alkyl, alkoxy or alkylthio each having 1–4 carbon atoms, and X^- represents the anion of a nontoxic inorganic or organic acid, together with (b) a carrier which is tolerated by the organism of warm blood animals and compatible with said compound.

3,867,536

NEW DIAZEPINE DERIVATIVES FOR PRODUCING ANTICONVULSANT EFFECTS

Hans Allgeier, Haagen, Germany, and Andre Gagneux, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

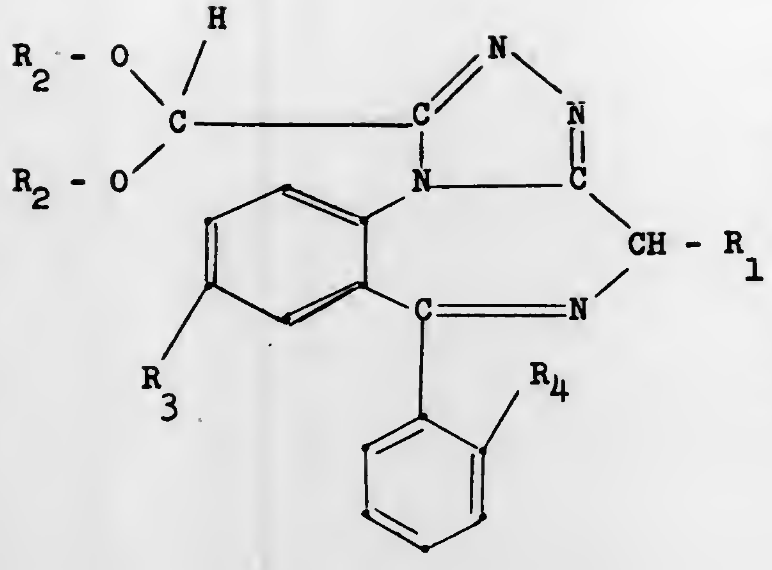
Filed Mar. 30, 1972, Ser. No. 239,780

Claims priority, application Switzerland, Apr. 8, 1971, 5233/71

Int. Cl. A61k *27/00*

U.S. Cl. 424—269 **11 Claims**

1. A therapeutic preparation for producing anticonvulsant effect comprising an anticonvulsive effective amount of a compound of the formula,



wherein R_1 represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms, each of the symbols R_2 represents a methyl or ethyl group, and R_3 and R_4, independently of each other, represents hydrogen, methyl, methoxy, a chlorine, fluorine or bromine atom, a nitro or trifluoromethyl group, at least one of the symbols R_3 and R_4 being other than hydrogen, a pharamaceutically acceptable acid addition salt thereof together with a pharmaceutically acceptable carrier.

3,867,537
METHOD OF TREATING NEISSERIA INFECTIONS WITH 6-[2-(3-AMIDINOUREIDO)-2-PHENYL ACETAMIDO]PENICILLANIC ACID

Harvey E. Alburn, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 171,367, Aug. 12, 1971, Pat. No. 3,741,960. This application Sept. 28, 1971, Ser. No. 184,590

Int. Cl. A61k *21/00*

U.S. Cl. 424—271 1 Claim

1. A method of treating Neisseria infection caused by a penicillin-resistant strain of *Neisseria Gonorrhoeae* in a human host afflicted with said infection which comprises administering to said human host an effective amount for treating said infection of 6-[D-2-(3-amidinoureido)-2-phenyl acetamido] penicillanic acid.

3,867,538
ENZYME-RESISTANT COMPOSITIONS CONTAINING PENICILLIN IN COMBINATION WITH 6-APA

Richard Donovick, Green Brook, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation of Ser. No. 613,406, Feb. 2, 1967,. This application Oct. 29, 1969, Ser. No. 872,422

Int. Cl. A61k *27/00*

U.S. Cl. 424—271 10 Claims

1. A method of protecting penicillin from the action of microorganisms which produce β-lactamase enzymes which destroy penicillin which comprises administering a standard dosage form of the penicillin together with an amount of free 6-aminopenicillanic acid or pharmaceutically acceptable salts, esters and amides thereof, the amount being effective to prevent destruction of the penicillin by β-lactamase enzymes, the amount of penicillin in the dosage form being from about 0.01 to about 1.5 grams per kilogram of body weight.

3,867,539
METHOD OF PRODUCING ANOREXIA AS A TREATMENT FOR OBESITY

Robert I. Henkin, Bethesda, Md., assignor to The United States of America as represented by the Secretary, Department of Health, Education, and Welfare, Washington, D.C.

Filed Apr. 27, 1973, Ser. No. 355,296

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 2 Claims

1. A method for suppressing the appetite of humans which consists essentially of internally administering to an obese patient an effective anorexigenic amount of histidine or a pharmaceutically acceptable non-toxic salt thereof.

3,867,540
1-(POLYHALOAKYLTHIO) INDAZOLES AS FUNGICIDAL AND BACTERICIDAL AGENTS

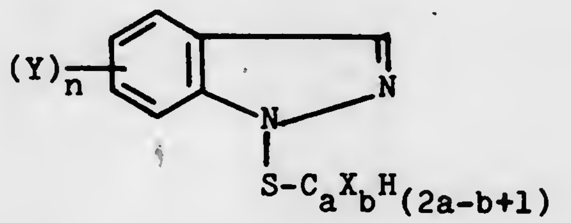
Joseph G. E. Fenyes, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 579,512, Sept. 15, 1966, Pat. No. 3,647,818. This application Dec. 21, 1967, Ser. No. 705,586

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 10 Claims

1. A fungicidal composition comprising a fungitoxic amount of an indazole of the formula



wherein *a* is 1 or 2, *b* is 3 when *a* is 1 and is from 3 to 5 when *a* is 2, X is halogen of atomic number from 17 to 35 with at least one X being bonded to the carbon atom which is bonded to the sulfur atom, Y is halogen of atomic number from 17 to 35 in positions 4 to 6 of the indazole nucleus and *n* is an integer from 0 to 1 and an inert carrier therefor.

3,867,541
COMPOSITIONS AND METHODS FOR DISAGGREGATING BLOOD CELLS

Ralph C. Robbins, 1410 N.W. 28th St., Gainesville, Fla. 32601

Filed May 3, 1972, Ser. No. 250,035

Int. Cl. A01n *9/28;* **A61k** *17/18*

U.S. Cl. 424—283 6 Claims

1. A method of disaggregating blood cells consisting essentially of introducing by intra-vascular infusion into the bloodstream a flavonoid having at least two methoxyl substituents, wherein said flavonoid is 3′, 4′, 5, 6, 7 - pentamethoxyflavone (Sinensetin), 3′, 4′, 5, 6, 7, 8 -hexamethoxyflavone (Nobiletin), 3, 3′, 4′, 5, 6, 7, 8 -heptamethoxyflavone (Heptamethoxyflavone), 4′, 5, 6, 7 -tetramethoxyflavone (Tetra-O-methylscutellarein), or 4′, 5, 7 -trimethoxyflavone (Tri - O - methylapigenin).

3,867,542
CERTAIN SUBSTITUTED CHRYSANTHEMATES AS INSECTICIDES

Kenzo Ueda, Nishinomiya; Toshio Mizutani, Hirakata; Nobushige Itaya, Minoo, and Yositosi Okuno, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

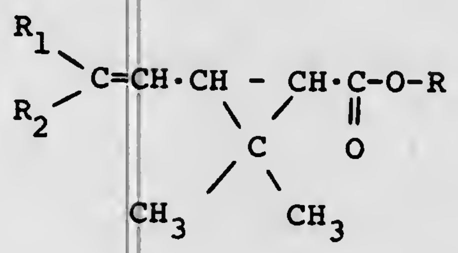
Division of Ser. No. 118,194, Feb. 23, 1971, Pat. No. 3,766,218. This application June 15, 1973, Ser. No. 370,364

Claims priority, application Japan, Feb. 26, 1970, 45-16805; Mar. 2, 1970, 45-18115; Dec. 17, 1970, 45-114364

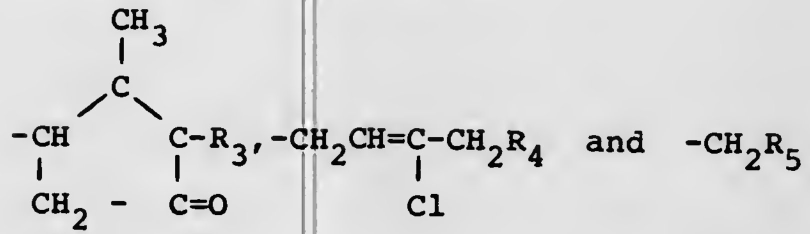
Int. Cl. A01n *9/28, 9/12, 9/22*

U.S. Cl. 424—285 7 Claims

1. An insecticidal composition comprising an inert carrier and as the active ingredient an insecticidally effective amount of a compound of the formula,



wherein R_1 is methyl, R_2 is a member selected from the group consisting of C_1–C_5 alkoxymethyl, C_3–C_5 alkenoxymethyl, C_3–C_5 alkynoxymethyl, C_1–C_5 alkylcarbonyl, C_2–C_5 alkenylcarbonyl and C_2–C_5 alkynlcarbonyl, or R_1 and R_2 are bonded at respective ends to form a cyclic ketone, R is a member selected from the group consisting of



wherein R_3 is C_3–C_5 alkenyl, C_3–C_5 alkynyl or C_5 alkadienyl, R_4 is a substituted or unsubstituted phenyl, thienyl or furyl, the substituent being selected from the group consisting of methyl, methoxy and halogen, and R_5 is a substituted or unsubstituted phenyl, thienyl or furyl, the substituent being selected from the group consisting of C_1–C_3 alkyl, C_3–C_5 alkenyl, C_5 alkadienyl, C_3–C_5 alkynyl, halogen, benzyl, thenyl, furylmethyl, phenoxy, phenylthio, polymethylene containing or not containing oxygen in the carbon chain having 3–4 carbon atoms, phthalimido, thiophthalimido, di- or tetrahydrophthalimido and substituted maleimido, the substituent being one or two C_1–c_4 alkyls or phenyls.

3,867,543
INSECT CONTROL METHODS EMPLOYING CERTAIN SUBSTITUTED BENZOATES

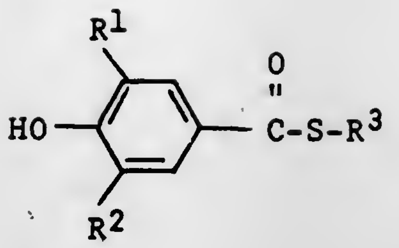
Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 16, 1972, Ser. No. 281,078

Int. Cl. A01n *9/12, 9/24*

U.S. Cl. 424—301 14 Claims

10. A method for killing mosquitos which comprises contacting pre-adult mosquitos with a metamorphosis inhibiting amount of a compound of the formula



wherein Y is sulfur or oxygen, U is sulfur or oxygen, R^1 is branched alkyl of 3 to 6 carbon atoms attached to the aromatic ring through a secondary or tertiary carbon atom, R^2 is branched alkyl of 3 to 6 carobn atoms attached to the aromatic ring through a secondary or tertiary carbon atom, and R^3 is 2-alkenyl of 3 to 6 carbons.

3,867,544
4-NITRO-4′-(TRIFLUOROMETHYL) CARBANILIDE EMPLOYED IN ANIMAL HUSBANDRY

Graham T. Stevenson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 1, 1970, Ser. No. 24,814

Int. Cl. A61k *27/00*

U.S. Cl. 424—322 6 Claims

1. In the practice of animal husbandry, the method for the control of coccidial infections which comprises orally administering to animals 4-nitro-4′-(trifluoromethyl)carbanilide said compound being employed in an amount of from about 3 to about 1,000 parts per million of the dietary intake.

3,867,545
CERTAIN 3-AMINO-2-(AMINOMETHYL) PROPIOPHENONES AS FUNGICIDES AND BACTERICIDES

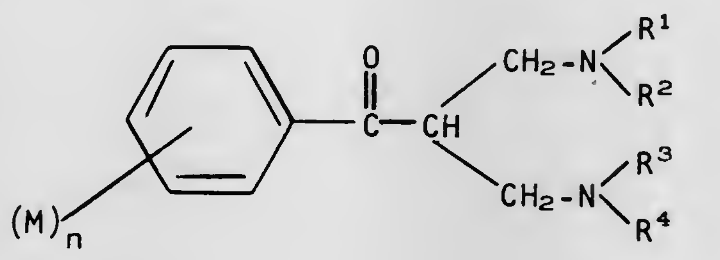
Alan J. Lemin, Plainwell; Malcolm W. Moon, and Arnolds Steinhards, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 651,110, July 5, 1967, abandoned. This application June 8, 1970, Ser. No. 44,641

Int. Cl. A01n *9/20, 9/22*

U.S. Cl. 424—325 29 Claims

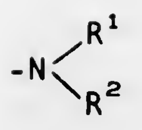
1. A method of controlling bacteria and fungi, which comprises applying to bacteria, fungi, or a situs an effective amount of a compound selected from the group consisting of free bases of the formula:



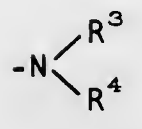
wherein M is lower-alkyl of from 1 to 4 carbon atoms, inclusive; lower-alkoxy of from 1 to 4 carbon atoms, inclusive, or halogen; *n* is an integer 0, 1, 2, or 3; and R^1, R^2, R^3, and R^4 are substituent groups more fully described as follows:

Individually, R^1, R^2, R^3, and R^4 are alkyl of from 1 to 8 carbon atoms, inclusive; alkenyl of from 3 to 8 carbon atoms, inclusive; aralkyl of from 7 to 13 carbon atoms, inclusive; cycloalkyl of from 3 to 8 carbon atoms, inclusive; cycloalkenyl of from 4 to 8 carbon atoms, inclusive; and

Collectively, the



group and (and the



group) is a saturated heterocyclic amino group of from 5 to 7 ring atoms, inclusive; having a total of not more than 15 carbon atoms,
and acid addition salts thereof.

3,867,546
NOVEL RODENTICIDES COMPOSITIONS

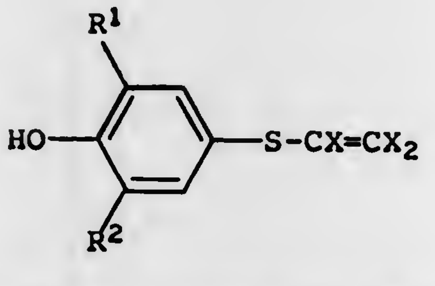
Jean-Claude Lechevin, Lyon, France, assignor to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyon, France
Filed June 7, 1972, Ser. No. 260,512
Claims priority, application France, June 10, 1971, 71.21011
Int. Cl. A01n *9/28, 17/4*
U.S. Cl. 424—331 **8 Claims**

1. A rodenticidal composition comprising a solution of 2-(α-p-chlorophenyl-α-phenylacetyl)-1,3-indandione at a concentration from 0.01 to 15 g per kg of solution in polyoxyethylene glycol 300.

3,867,547
INSECTICIDAL PHENOLS

Joseph E. Moore, Richmond, and Gustave K. Kohn, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 300,082, Oct. 24, 1972, Pat. No. 3,798,274. This application Oct. 3, 1973, Ser. No. 403,300
Int. Cl. A01n *9/12*
U.S. Cl. 424—337 **8 Claims**

1. A method for killing mosquitos which comprises contacting pre-adult mosquitos with a metamorphosis-inhibiting amount of a compound of the formula

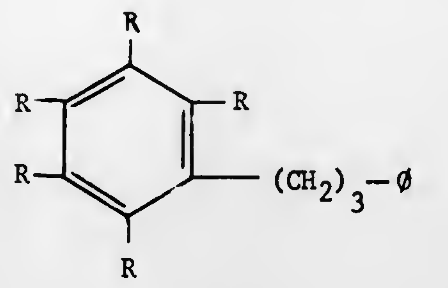


wherein R^1 and R^2 are branched alkyl of 3 to 6 carbon atoms attached to the aromatic ring through a secondary or tertiary carbon atom and X individually is chlorine or bromine.

3,867,548
DIHYDROCINNAMYL PHENOLS USEFUL AS ANTIMICROBIAL AGENTS

Leonard Jurd, Berkeley; Kenneth L. Stevens, Walnut Creek, and Alfred Douglas King, Jr., Martinez, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Division of Ser. No. 257,031, May 25, 1972, Pat. No. 3,775,541. This application Apr. 2, 1973, Ser. No. 347,084
Int. Cl. A01n *9/26*
U.S. Cl. 424—341 **2 Claims**

1. A process for inhibiting the growth of microorganisms selected from the group consisting of bacteria, yeast, and molds in a substance normally subject to spoilage by said microorganisms, which comprises applying to the substance an effective microbial-growth-inhibiting amount of a compound of the structure:



wherein 1 to 3 of the R's are hydroxy, and the remainder of the R's are each independently selected from the group consisting of lower alkoxy and hydrogen wherein at least one of the R's is lower alkoxy.

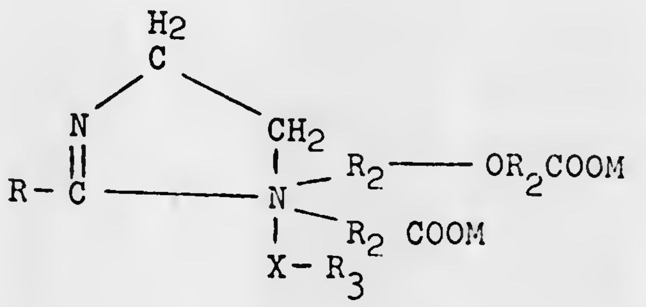
3,867,549
STABLE STARCH COMPOSITIONS

Christopher H. Costello, Summit, and William Carl Mende, Neshanic, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Continuation of Ser. No. 798,193, Feb. 10, 1969, , which is a continuation-in-part of Ser. No. 520,089, Jan. 12, 1966, abandoned. This application June 28, 1972, Ser. No. 267,194
Int. Cl. A61k *7/00, 7/02*
U.S. Cl. 424—361 **9 Claims**

1. A stable, homogeneous aqueous starch lotion for simultaneous cleansing of the skin and depositing a protective starch film on the skin, consisting essentially of from about 5 to about 40 percent by weight of starch from about 10 to about 90 percent by weight of non-irritating detergents selected from the group consisting of

a. fatty acid amides of hydrolyzed protein amino acids represented by the formula:
RCON(H)-peptide-COOM,
wherein R is an alkyl radical containing from 8 to 18 carbon atoms, and M is a cation selected from the class consisting of ammonium, magnesium, alkali metal, monoethanolamine, diethanolamine and triethanolamine.

b. cycloimidates represented by the formula:



wherein R is a hydrocarbon radical of 4 to 18 carbon atoms; R_2 is selected from the group consisting of an aliphatic hydrocarbon of 1 to 4 carbon atoms, a hydroxy substituted hydrocarbon of 1 to 4 carbon atoms, an aliphatic ether of 2 to 4 carbon atoms, a hydroxy substituted aliphatic ether of 2 to 4 carbon atoms, an aliphatic keto of 2 to 4 carbon atoms and a hydroxy substituted aliphatic keto of 2 to 4 carbon atoms; R_3 is selected from the group consisting of hydrogen, an aliphatic hydrocarbon radical of 6 to 18 carbon atoms, an aliphatic-aromatic hydrocarbon radical with the aliphatic hydrocarbon being at least 6 carbon atoms, and a fatty acid glyceride; X is selected from the group consisting of O, SO_3, and OSO_3; and M is an alkali metal,

c. alkylolamides selected from the group consisting of monoethanolamide, diethanolamide and an ethoxylated amide of a fatty acid wherein the acid portion contains at least 6 carbon atoms and mixtures thereof, and

d. mixtures of (a)-(c),

and from about 0.1 to about 5% of a non-toxic stabilizing agent selected from the group consisting of a) silicon dioxide and b) a polymer consisting essentially of about 97.5 to 99.8 percent by weight of acrylic acid and about 2.5 to 0.2 percent by weight of a monomeric polyether of sucrose in which the hydroxyls are etherified with 2 to 6 allyl groups per sucrose molecule, said aqueous lotion having a pH of 4 to 6.

3,867,550
BULK SECONDARY FERMENTATION OF WINE

Walter S. Taylor, Bully Hill Rd. No. 2, Hammondsport, N.Y. 14840
Filed Aug. 17, 1972, Ser. No. 281,330
Int. Cl. C12g *1/06*
U.S. Cl. 426—15 **7 Claims**

1. A process for bulk secondary fermenting of wine slowly and continuously to produce sparkling wine comprising the mixing of added yeast through wine in an elongated bulk tank by the steps of mechanically scooping substantially all settled yeast from the bottom of the tank by rotating means which rotate comparatively slowly whereby the wine is not unduly agitated, slowly raising the yeast along the sides of the tank on a continual basis by said rotating means to within the upper half of said tank and thereafter allowing the yeast to fall from said rotating means by gravity and settle downwardly and filter through the wine while decomposing, said process being carried out under pressure.

3,867,551
PREPARATION OF BEER

Yves Germain Jaegle, 56, Allee de la Robertsau 67, Strasbourg, France
Filed Aug. 9, 1972, Ser. No. 279,208
Claims priority, application France, Aug. 20, 1971, 71.31265
Int. Cl. C12c *11/04*
U.S. Cl. 426—16 **7 Claims**

1. A process for the fermentation of beer which comprises the steps of:

a. tunning groups of mashed batches of wort serially into a single, cylindrical, vertically disposed vat having a conical bottom, said groups of batches initially differing in temperature;

b. introducing the first group of batches into said vat through said bottom at temperatures in the range 10° – 11° Celcius, succeeding groups of batches at intermediate temperatures between said first group and a subsequent final group of batches, and the final group of batches at temperatures in the range **14° – 14.5°** Celcius; whereby the temperature of said vat contents is equalized by convection currents resulting from the temperature differential between said batch groups layered with the highest temperature batch initially at the lowest position in said vat;

c. introducing yeast into at least one of said batches and initiating fermentation by said introduced yeast;

d. maintaining the contents of said vat, during fermentation, at a temperature of about 15° Celcius and at a positive pressure of about 500 grams/cm^2;

e. maintaining the temperature equalized vat contents at about 15° Celcius until a beer of the desired degree of fermentation is formed;

f. instituting a warm keep phase for mellowing said beer, extending over a period of about 5 days during which the temperature of the fermentation products in said vat is slowly decreased from 14.5° Celcius to 6° Celcuis by cooling means in said vat;

g. upon completion of the warm keep phase, the resultant mellowed beer is rapidly cooled to a temperature of about – 1° Celcius and maintained substantially thereat to institute a cold keep phase for finishing said beer and lasting for about 5 days;

h. after which the finished beer is clarified, filtered and filled into suitable containers.

3,867,552
PROCESS OF PREPARING POULTRY FOOD PRODUCT

James Douglas Cagle, East Point, and Roger C. Stein, Lovejoy, both of Ga., assignors to Cagle's Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 149,832, June 3, 1971, abandoned. This application July 30, 1973, Ser. No. 383,663
Int. Cl. A22c *21/00*
U.S. Cl. 426—27 **1 Claim**

1. A process of using poultry meat comprising the steps of:

a. removing meat which clings to the bones of poultry;
b. comminuting said removed meat;
c. adding predetermined amounts of seasoning and binder to said meat to form a mixture;
d. adding a predetermined amount of water to said mixture to form a slurry;
e. deaerating said slurry to remove entrapped air bubbles from the slurry;
f. placing said slurry in an artificial sausage-type casing;
g. raising the temperature of the encased slurry to cook the slurry;
h. chilling said cooked product to an internal temperature of approximately 80°F.;
i. removing said cooked product from the casing;
j. slicing the cooked product to a desired size
k. encasing the sliced cooked product in a shell of yeast-rising pie dough; and
l. cooking said dough encased product for a predetermined period at a predetermined temperature.

3,867,553
PROCESS FOR REDUCING THE BOILING TIME OF DEHYDRATED PEAS

Winfried Hitze; Karla Legler, both of Heilbronn; Rolf Stute, and Hans-Ulrich Woelk, both of Flein, all of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Apr. 11, 1973, Ser. No. 350,266
Int. Cl. D23b *7/02*
U.S. Cl. 426—44 **3 Claims**

1. The process for preparing dehydrated whole peas having a reduced rehydration time comprising the steps of

suspending the peas in an aqueous solution, treating the suspended peas with pectolytic enzymes, which have a high content of polymethylgalacturonases and polygalacturonases and are largely free from cellulytic enzymes, while maintaining the solution temperature in the range from about 15°C to about 50°C,

elevating the solution temperatures to the boiling point to inactivate the enzymes and decompose the pectins contained in the husks of said peas to an extent such that the husks are sufficiently and irreversibly permeable to water and provide faster rehydration and softening of said husks,

cooking the peas in solution, and

drying the peas to a state of dehydration.

3,867,554
YEAST GLYCAN AND PROCESS OF MAKING SAME

Robert William Sucher, 4597 Towne Centre, St. Louis County, Mo. 63128; Ernest Aleck Robbins, Box 429, Rt. 1, High Ridge, Mo. 63123; Daniel Robert Sidoti, 500 Welshire Ct., Ballwin, Mo. 63128; Erich Henry Schuldt, Jr., 9830 McKenzie Rd., St. Louis County, Mo. 63126, and Robert Dudley Seeley, 8959 Larchwood Ct., Crestwood, Mo. 63011
Filed Nov. 29, 1972, Ser. No. 310,452
Int. Cl. A23j *1/18;* **A23l** *1/28*
U.S. Cl. 426—60 **16 Claims**

4. A process for the production of yeast glycan comprising the steps of:

A. Growing a food grade yeast,
B. Harvesting and washing the yeast biomass,
C. Rupturing the yeast cells,
D. Extracting the ruptured yeast cells at a pH of 5.5 to 11 for up to about 60 minutes,
E. Separating the insoluble glycan from soluble cytoplasmic materials, and
F. Recovering a yeast glycan product having a major amount of irregular cell wall fragments and a minor amount of whole cells.

3,867,555
MANUFACTURE OF YEAST PROTEIN ISOLATE HAVING A REDUCED NUCLEIC ACID CONTENT BY AN ALKALI PROCESS

Jon Albert Newell, Webster Groves; Ernest Aleck Robbins, High Ridge, and Robert Dudley Seeley, Crestwood, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.
Filed Nov. 29, 1972, Ser. No. 310,453
Int. Cl. A23j *1/18;* **A23l** *1/28*
U.S. Cl. 426—60 20 Claims

1. A process for producing a yeast protein product comprising the steps of:
a. Rupturing yeast cells,
b. Separating a solubles fraction containing the nucleic acid and protein from an insoluble cell wall debris fraction,
c. Hydrolyzing the nucleic acid with alkali at a pH of about 9.5 to about 12.5 and a temperature of about 50°C. to about 120°C. for less than 4 hours,
d. Precipitating the protein by the addition of acid to a pH of about 2 to about 6 and a temperature of 0°–100°C., and
e. Separating the insoluble protein produced from the nucleic acid containing solubles part.

3,867,556
FATS WITH ENCAPSULATED FLAVORS

Richard T. Darragh, and James L. Stone, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 21, 1972, Ser. No. 317,470
Int. Cl. A23l *1/26*
U.S. Cl. 426—98 34 Claims

28. A process for double encapsulating volatile flavors comprising the steps of:
a. combining a heat-release, water-insoluble encapsulating agent having a melting point of from about 120°F or higher and a volatile flavoring material under conditions of agitation;
b. spraying the blend resulting from step (a) into a column of chilled air or gas, thus forming single encapsulated particles;
c. separating the encapsulated flavor particles of step (b);
d. placing the encapsulated flavor paraticles of step (c) in a fluidized bed comprising a vertically mounted cylinder with a porous plate bottom;
e. agitating the encapsulated particles of step (d) with forced air causing a continuous tumbling action; and
f. spraying the agitated encapsulated particles of step (e) with a solution of water-soluble, oil-insoluble encapsulating material thereby providing double encapsulated flavor particles.

3,867,557
COMPOSITIONS OF MATTER CONTAINING PARAMETHOXYCINNAMALDEHYDE AS A FLAVORING AGENT AND SWEETENER

James Speer Neely, Liberty Township, Butler Co., and James Anthony Thompson, Hamilton, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Apr. 19, 1973, Ser. No. 352,813
Int. Cl. A23l *1/26*
U.S. Cl. 426—175 12 Claims

1. A composition in dry form containing as a flavoring agent and sweetener, from about 0.0001% to about 20.0% of paramethoxycinnamaldehyde and from about 80.0% to about 99.9999% of a dry non-toxic ingestible diluent.

3,867,558
PRESERVING RED COLOR IN FRESH RAW UNCURED RED MEATS

Kunito Sato, Chicago, and Harold K. Herring, Wheaton, both of Ill., assignors to Armour and Company, Phoenix, Ariz.
Continuation-in-part of Ser. No. 353,315, April 23, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 449,764
Int. Cl. A23b *1/00*
U.S. Cl. 426—265 8 Claims

1. In a process for treating fresh raw uncured red meat to preserve the red color of said meat during a storage period of 24 hours or more, the step of introducing into said meat from 0.01 to 0.50 percent by weight of a gamma-pyrone selected from the class consisting of 3-hydroxy-2-methyl-gamma-pyrone, 3-hydroxy-2-ethyl-gamma-pyrone, 5-hydroxy-2-methyl-gamma-pyrone and mixtures thereof, whereby said gamma-pyrone acts to substantially preserve said red color during said period.

3,867,559
METHOD FOR PRODUCING FILLED TUBULAR WAFFLES

Franz Haas, Gerstlgasse 25, A-1210 Wien, Austria
Division of Ser. No. 207,475, Dec. 13, 1971, Pat. No. 3,793,938. This application Mar. 9, 1973, Ser. No. 339,502
Int. Cl. A21d *13/00*
U.S. Cl. 426—283 4 Claims

1. In a method for producing tubular waffle shapes by winding a strip of waffle material which is still in a warm, plastic state, wherein the strip of waffle material supplied by a continuously working waffle baking machine is continuously wound helically with suitable overlapping, the resulting wound body is provided internally with a cream-like substance, hardened and divided into pieces of desired length, the improvement consisting in that the wound body is completely filled with the creamy substance and before the hardening of this substance and of the wound body, said wound body containing the creamy substance is sheared into pieces of the desired length whereby the cross section subjected to the shearing returns to the tubular shape.

3,867,560
GELLED PROTEIN PROCESS FOR THE PRODUCTION OF A GELLED PROTEIN FOODSTUFF

Robert Menzi, Geneve, and Hartmut Zeller, Grand-Lancy/Geneve, both of Switzerland, assignors to Vivil A. Muller & Co., Offenburg, Germany
Filed May 2, 1972, Ser. No. 249,494
Claims priority, application Switzerland, May 6, 1971, 6736/71; Mar. 23, 1972, 4313/72
Int. Cl. A23l *1/04*
U.S. Cl. 426—350 9 Claims

1. A process for the production of a foodstuff, comprising the steps of:
(1) mixing:

a. at least one assimilable protein material soluble or dispersible in an aqueous medium having a pH between 6.2 and 7.2,
b. at least one assimilable carbohydrate, selected from the group containing monosaccharides and oligosaccharides, and
c. water,

the proportions of these ingredients corresponding, respectively, to from 1 to 45%; from 35 to 60%, and from 4 to 25% of the total weight of the foodstuff, wherein a portion of said assimilable protein material corresponding to at least 1% of the total weight of the foodstuff is in a form capable of foaming in the presence of water;

2. stirring, during or after the mixing operation, the solution or dispersion thus obtained so as to form a foam;
3. mixing at least one gelling agent, selected from the group consisting of gelling proteins and gelling carbohydrates, containing at least 70% by weight of non-assimilable material, with said foam, the amount of said gelling agent being up to 20% of the total weight of the foodstuff; and
4. mixing at least one powdery vegetable cellulose material with the latter mixture, so as to form a homogeneous paste, the proportion of said powdery cellulose material being such that the total amount of gelling agent and cellulose material is from 12 to 40% of the total weight of the foodstuff.

ELECTRICAL

3,867,561

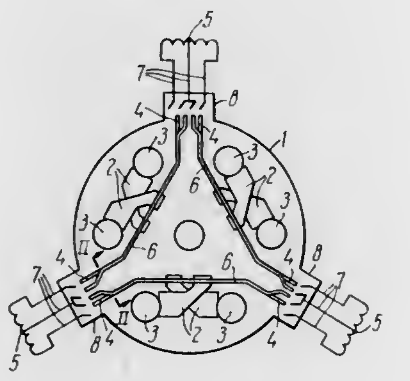
ELECTRODE HOLDER OF THREE PHASE ELECTROSLAG PLANT

Boris Evgenievich Paton, ulitsa Kotsjubinskogo 9, kv. 21; Vladimir Konstantinovich Lebedev, ulitsa Engelsa 25, kv. 12; Igor Vladimirovich Pentegov, Zadorozhny pereulok 6, kv. 14; Vitaly Mikhailovich Baglai, ulitsa Semashko 10, kv. 54/3; Oleg Petrovich Bondarenko, ulitsa Kreschatik 15, kv. 34; Nikolai Fedorovich Medvedenko, ulitsa Vernadskogo 67, kv. 86; Boris Izrailevich Medovar, bulvar Lesi Ukrainki 2, kv. 8, all of Kiev; Pavel Petrovich Loskutov, ulitsa Uritskogo 17, kv. 8, Novosibirsk; Gennady Ivanovich Orlov, ulitsa Vatutina 27, kv. 20, Novosibirsk; Kim Moiseevich Khasin, ulitsa K.Marxa 35, kv. 17, Novosibirsk; Vladimir Ivanovich Lugovsky, ulitsa Petukhova 60, kv. 70, Novosibirsk; Valery Vasilievich Salmin, ulitsa Zorge 95, kv. 69, Novosibirsk; Vilen Fedorovich Marjuschenko, ulitsa Televizionnaya 11, kv. 7, Novosibirsk; Georgy Vasilievich Tamozhnikov, ulitsa Dekabristov 20, Novosibirsk, all of U.S.S.R., and Jury Andreevich Schelkunov, deceased, late of ulitsa Akademika Komarova 19a, kv. 87, Moscow, U.S.S.R. (by Margarita Petrovna Schelkunova, administrator)

Filed Jan. 19, 1973, Ser. No. 325,126

Int. Cl. H05b *7/10*

U.S. Cl. 13—12 **2 Claims**



1. An electrode holder for a three-phase electroslag plant comprising: a support plate for carrying a plurality of consumable electrodes affixed thereto the number of which is divisible by six each one of said electrodes being located at the vertices of a regular polygon and insulated from said support plate; a plurality of current-carrying devices each for supplying power to alternately disposed pairs of said consumable electrodes and mounted on said support plate; first bus-bars for connecting phase leads of each secondary winding of a transformer means operatively associated with the electrode holder, with respective ones of said current-carrying devices supplying power to each alternately disposed pair of consumable electrodes in the polygonal array; second bus-bars for interconnecting the midpoints of the secondaries of said transformer means, said second bus-bars being connected in pairs at the points of connection to said midpoints on the transformer secondaries and running paralell with and in immediate proximity to corresponding respective ones of said first bus-bars connecting the secondary windings of said transformer means with said current-carrying devices.

3,867,562

ANCHORING FOR AN ELECTRICALLY CONDUCTIVE BAR IN A GROOVE IN AN ELECTRODE MADE OUT OF A CARBON BLOCK

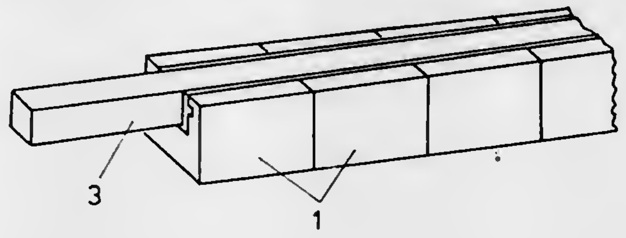
Werner K. Fischer, Venthone, and Raoul Jemec, Zollikerberg, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 4, 1974, Ser. No. 439,625

Claims priority, application Switzerland, Feb. 9, 1973, 544578/73

Int. Cl. H05b *3/06*

U.S. Cl. 13—25 **3 Claims**



1. An anchoring arrangement for a conductor bar in an electrode block, said conductor bar being provided with a cast iron mantle, said electrode block defining a groove operable for receiving said conductor bar and said mantle, at least one lateral projection provided on said mantle and at least one recess defined in a sidewall of said groove into which said projection projects, whereby said cast iron mantle and therefore said conductor bar is anchored in said groove to restrain removal in an upright direction of said conductor bar from said electrode block.

3,867,563

REFINING APPARATUS AND PROCESSES

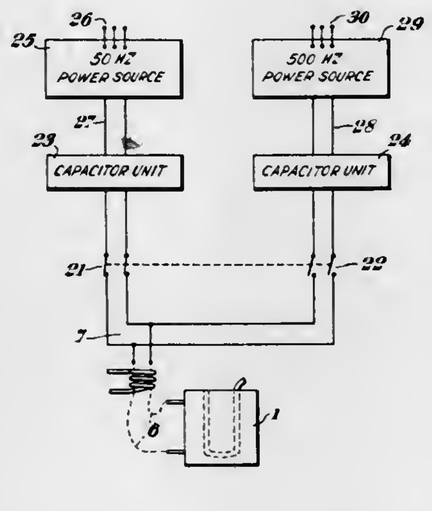
Reginald E. Laflin, Manor Royal, Crawley, Sussex, England

Filed May 24, 1973, Ser. No. 363,351

Claims priority, application Great Britain, May 26, 1972, 24928/72

Int. Cl. H05b *5/16*

U.S. Cl. 13—27 **13 Claims**



1. A coreless induction furnace comprising, in combination: a refractory lining;

a single work coil surrounding said refractory lining;

said single work coil having first and second terminals one at each end of said single work coil;

a variable frequency electric power source;

a plurality of power factor capacitor units; and

switching means for connecting said first and second terminals to a selected one of said power factor capacitor units and to the output of said variable frequency electric power source.

3,867,564

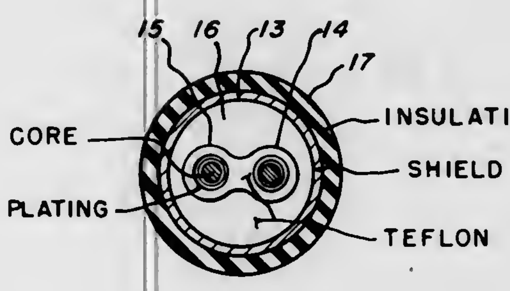
DUAL WIRE INTRUDER DETECTOR

Vahram S. Kardashian, Plymouth Village, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 371,435, June 19, 1973, Pat. No. 3,832,704, which is a continuation-in-part of Ser. No. 244,540, April 17, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,024

Int. Cl. H01b *7/18, 1/02*

U.S. Cl. 174—36 **3 Claims**



1. An improved strain sensitive thin film plated wire assembly for use in a line sensor detection system, the improved plated wire assembly comprising:

a first wire on which is plated an anisotropic thin film having a first composition of nickel-iron alloy plating which exhibits a first degree of magnetostrictive response;

a second wire on which is plated an anisotropic thin film having a different composition of nickel-iron alloy plating which exhibits a different degree of magnetostrictive response;

said first and second wires each having the same response to a magnetic field;

insulative covering means enclosing said first and second wires, and

metallic shielding means surrounding said first and second wires.

3,867,565

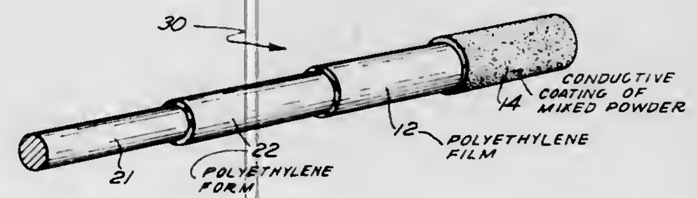
ELECTRICAL CONDUCTIVE COATED CABLE

Winslow W. Prentice, Pawcatuck, and Markay H. Malootian, Quaker Hill, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 393,534, Aug. 31, 1973,. This application Apr. 15, 1974, Ser. No. 460,854

Int. Cl. H01b *7/02*

U.S. Cl. 174—120 SC **1 Claim**



1. An electrical cable comprising:

an electrical conductor;

a first polyethylene cover enclosing said conductor;

a second polyethylene cover enclosing and bonded to said first polyethylene cover; and

an electrically conductive coating comprising a mixture of polyethylene powder, nickel powder and silver flake, said electrically conductive coating enclosing and bonded to said second polyethylene cover.

3,867,566

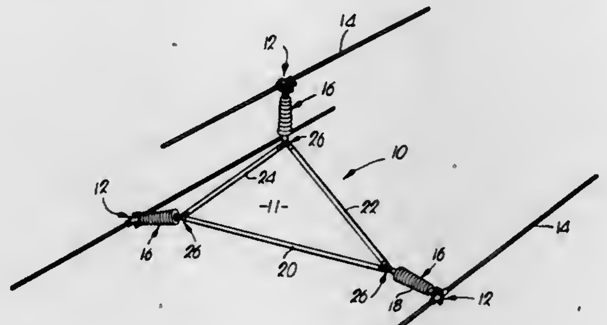
MIDSPAN ELECTRICAL CONDUCTOR SPACER

Paul E. Lewis, Mexico, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed Mar. 12, 1973, Ser. No. 340,323

Int. Cl. H02g *7/12*

U.S. Cl. 174—146 **9 Claims**



1. An adjustable midspan spacer for maintaining proximal high voltage conductors in spaced relationship, comprising:

separate attachment means corresponding in number to said conductors and operable to grippingly engage one of the latter;

a plurality of rigid insulative spacer bars interconnected to define a closed, generally planar, polygonal spacing assembly, said assembly being of dimensions permitting the positioning thereof within the space between said conductors and generally transversely of the longitudinal axes of the latter; and

means adjustably connecting each of said separate attachment means to said spacing assembly at fixed, spaced locations thereon,

said adjustable connector means permitting independent pivoting movement of each of said separate attachment means relative to said spacing assembly in the plane thereof and about said locations,

said adjustable connector means also including mechanism for releasably locking each of said separate attachment means at desired orientations relative to said assembly and in the plane thereof.

3,867,567

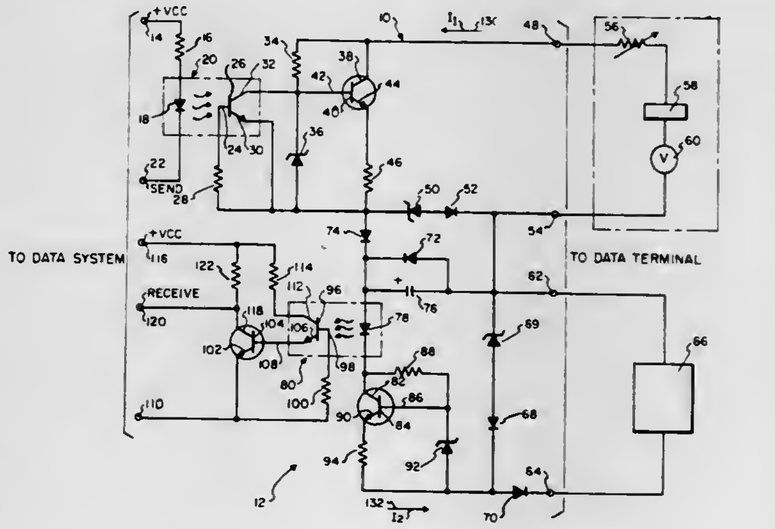
ELECTRONIC DATA TERMINAL INTERFACE

Roger G. Herron, Dunedin, Fla., and David B. Freitag, Bellevue, Wash., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 11, 1973, Ser. No. 405,374

Int. Cl. H04m *1/26*

U.S. Cl. 178—3 **7 Claims**



1. An electronic data terminal interface circuit connected between a data system and a data terminal, said data terminal

including send driver means for recognizing data pulse signals in a code format, passive receive control means for providing mark and space pulse signals in a code format, and a dc power supply; said data system including send and receive signaling paths capable of recognizing and generating data pulses in a pulse train of code format; said electronic data terminal interface circuit comprising:

send channel means for providing level shifting, ground isolation and noise rejection having an input connected to the send signaling path output of said data system and having an output connected to the series combination of the driver means and the dc power supply of said data terminal,

and separate receive channel means providing level shifting, ground isolation and noise rejection having an input connected to the receive control means and having an output connected to the receive signaling path input of said data system,

said send channel means including electronic power storage means for supplying said separate receive channel means, said electronic power storage means being charged from the dc power supply of said data terminal.

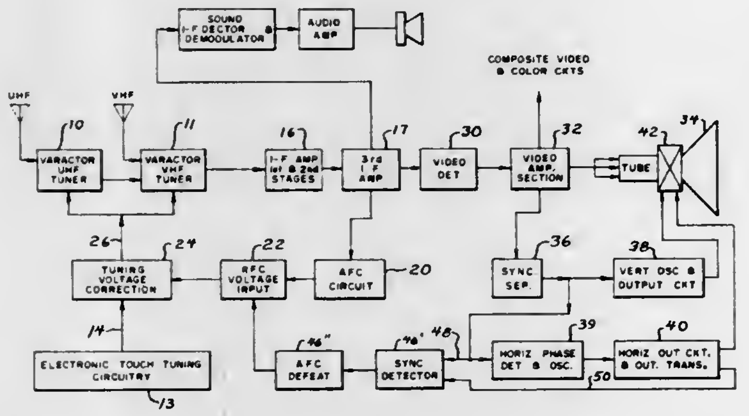
3,867,568
CONTROL CIRCUIT FOR AN AFC SYSTEM

Kenneth A. Merriweather, Evanston, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 312,082

Int. Cl. H04n *5/50*

U.S. Cl. 178—5.8 AF **11 Claims**



1. In a receiver having tuner means for selecting a carrier signal having a recurring sync pulse and an information portion located between adjacent sync pulses, said carrier signal being located within a predetermined frequency passband, and an AFC circuit for varying the tuning of said tuner means to cause the receiver to lock onto the carrier signal, a control circuit comprising:

sync separator means for detecting said recurring sync pulse,

detector means coupled to said sync separator means for detecting the absence of a sync pulse within said passband, and

AFC defeat means coupled to said detector means for effectively disabling said AFC circuit in response to the detected absence of the sync pulse.

3,867,569
COMPACT FLATBED PAGE SCANNER

Hugh Alexander Watson, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 25, 1974, Ser. No. 445,051

Int. Cl. H04n *1/10*

U.S. Cl. 178—7.1 **2 Claims**

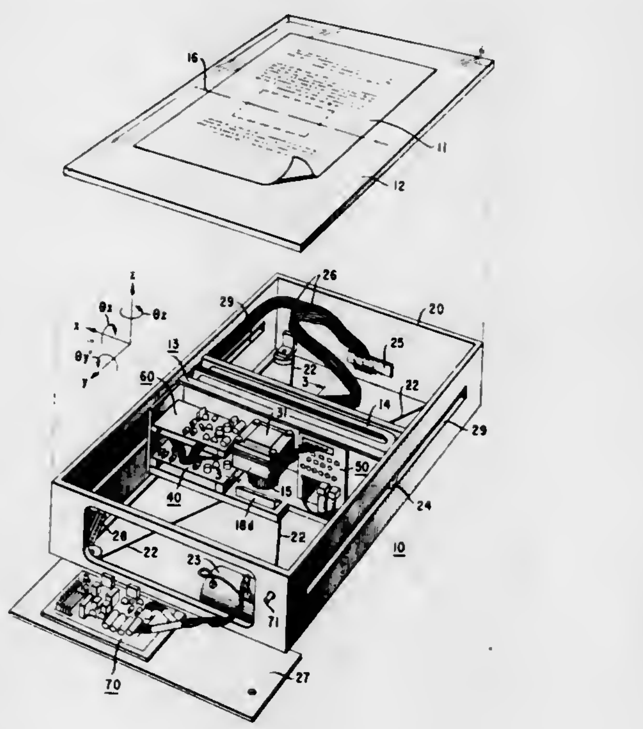
1. A compact flatbed scanner for facsimile scanning comprising:

a. a housing;

b. a transparent plate mounted on the housing for supporting material to be copied, the transparent plate defining the approximate image plane of the material to be copied;

c. a moving scanning assembly supported within the housing beneath the transparent plate, the scanning assembly comprising:

1. at least one lamp for illuminating at least a portion of the image plane,
2. a linear charge coupled imaging device for detecting variations in intensity of light reflected from a scanning line on the image plane and having electrical contacts adapted to provide electronic scanning over the length of the scanning line, and



3. an optical system for focusing the light reflected from the scanning line onto the linear charge coupled imaging device, the optical system comprising a plurality of long, narrow mirrors for folding the optical path from the scanning line to the linear charge coupled imaging device;

d. means for mechanically displacing the scanning assembly relative to the image plane in a direction parallel to the image plane and perpendicular to the scanning line to permit scanning a succession of parallel lines from one end of the image plane to the other; and

e. electrical circuitry for sequentially reading out each scanning line detected by the linear charge coupled imaging device by forming an electrical signal representative of the variations in intensity of light reflected from the image plane along a succession of scanning lines.

3,867,570
SYSTEM FOR CONVERTING CINEMATOGRAPHIC FILM IMAGES INTO TELEVISION PICTURES

Peter William Blaxtan, Welwyn; John David Millward, Hitchin, and Richard Thomas Such, Bishops Stortford, all of England, assignors to Decca Limited, London, England

Filed Mar. 12, 1973, Ser. No. 339,971

Claims priority, application Great Britain, Mar. 14, 1972, 11861/72

Int. Cl. H09n *5/24;* **H04n** *5/88*

U.S. Cl. 178—7.2 **1 Claim**

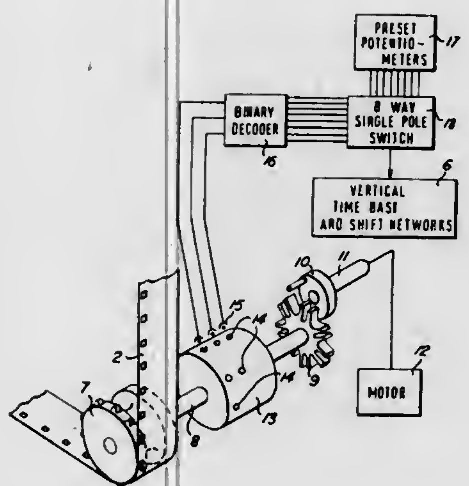
1. A system for converting cinematographic film images into television pictures, comprising:

an optical gate;

a cyclically and intermittently movable sprocket wheel for moving the frames of a cinematographic film through said optical gate;

a television camera including means for scanning a frame in said gate in a raster scan and a time base control network for shifting the position of a scanning raster in a pictorially vertical sense;

a plurality of potentiometers for storing a plurality of predetermined corrective signals, each denoting a predetermined error in the pictorially vertical positioning of a frame in the gate;



a cyclic selector means comprising a member having coded sets of indications, each indication corresponding to a tooth on the sprocket wheel; and

means for reading out said signals one at a time and feeding said signals comprising a decoder, a sensing means coupled to the decoder for detecting the indications and switch means, controlled by the decoder, for selecting the output of one of said plurality of potentiometers and for feeding the selected output to the time base network.

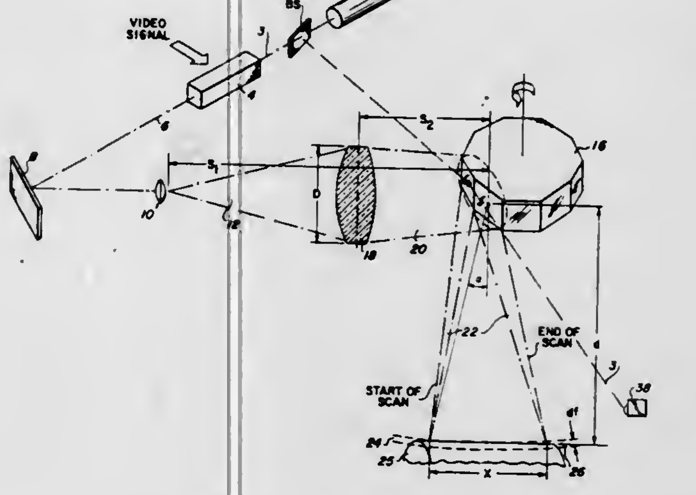
3,867,571
FLYING SPOT SCANNER

Gary K. Starkweather, Saratoga, and David E. Damouth, Menlo Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1972, Ser. No. 309,861

Int. Cl. H04n *1/02*

U.S. Cl. 178—7.6 **14 Claims**



1. An electro-optical system for recording information from an electrical signal onto a scanned medium comprising:

means for providing a beam of high intensity light,

means for modulating the light beam in accordance with the information content of an electrical signal comprising a bit stream,

first optical means for expanding said modulated beam,

second optical means in convolution with said first optical means for imaging said expanded beam to a spot in a focal plane at a predetermined distance from said second optical means,

scanning means positioned between said second means and the focal plane for scanning the spot across a light sensitive medium in said focal plane to impart the information content of said spot to said medium, and

electrical means for synchronizing the transmission rate of the electrical signal to the velocity of the spot across the medium, said electrical means varying the number of bits per second in accordance with a predetermined function.

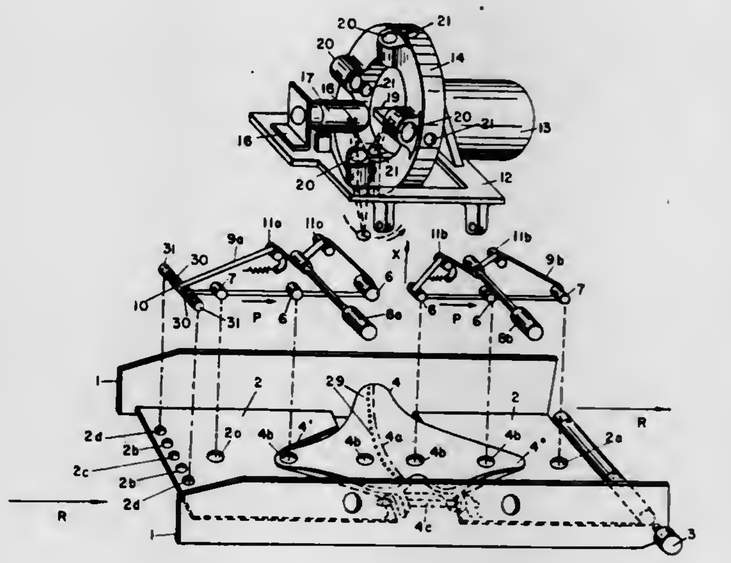
3,867,572
ELECTRO-OPTICAL READER FOR TRANSLATING PRINT INTO ELECTRIC SIGNALS

John F. Taplin, West Newton, and Richard W. Carman, Foxboro, both of Mass., assignors to Taplin Business Machines Incorporated, Burlington, Mass.

Filed June 1, 1973, Ser. No. 365,878

Int. Cl. H04n *1/24*

U.S. Cl. 178—7.6 **15 Claims**



1. An electro-optical reader for translating print on a document into electric signals including

a. arcuate means for imparting an arcuate shape to a document and means for moving the document in the direction of the axis of said arcuate means;

b. a single substantially linear stationary light source arranged in coaxial relation with the axis of said arcuate means;

c. a planar stationary array of light sensor means spaced from said linear light source in the direction of the axis of said linear light source, the plane defined by said array including said axis of said arcuate means;

d. a rotatable lens support having an axis of rotation arranged in coaxial relation with said linear light source but axially spaced from said linear light source;

e. a plurality of angularly displaced illuminating lenses fixedly mounted on said lens support for directing light emanating from said linear light source to successive points of a document;

g. a plurality of angularly displaced objective lenses fixedly mounted on said lens support for focusing images of said successive points of said document directly on said array; and

h. said plurality of illuminating lenses and said plurality of objective lenses being the only optical means interposed between said linear light source and said array determining the geometry of the path of light from said linear light source to said array.

3,867,573
TRACK TO TRAIN COMMUNICATION SYSTEMS

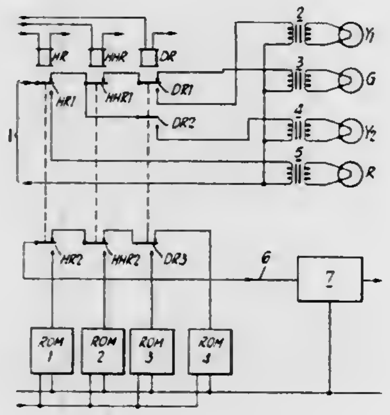
Michael Sambrook Birkin, London, England, assignor to British Railways Board, London, England

Filed Oct. 12, 1971, Ser. No. 188,065

Claims priority, application Great Britain, Oct. 23, 1970, 50520/70

Int. Cl. B61l *3/08*

U.S. Cl. 178—17.5 **2 Claims**



1. In a track-to-train communication system for transmitting information to a train related to the control of the running of the train in dependence upon the prevailing one of a plurality of signal aspects,

signal indicating means controlled to one of a plurality of conditions to indicate a prevailing one of a plurality of signal aspects,

a transmitter, having an output, for transmitting said information in digital code and comprising a plurality of nondestruct read-only memories each having stored therein information related to a respective one of a plurality of signal apsects,

and control means responsive to said indicating means for causing information stored in the one of the read-only memories related to the prevailing signal aspect to be transmitted.

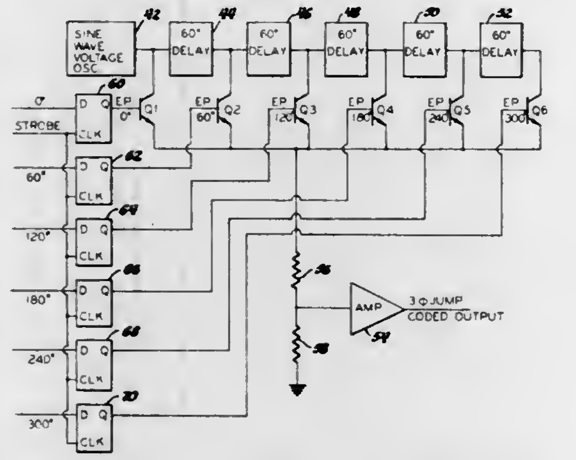
3,867,574
THREE PHASE JUMP ENCODER AND DECODER

Duane E. McIntosh, Santa Ynez, Calif., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 371,665, June 20, 1973, abandoned. This application Oct. 26, 1973, Ser. No. 410,271

Int. Cl. H04l *27/20, 27/22*

U.S. Cl. 178—67 **15 Claims**



1. Apparatus for encoding binary data comprising:

storage means for storing at least two successive bits of said data;

clock means for entering said data into said storage means and for establishing the bit time interval of the encoded data,

carrier signal generating means, means for shifting the phase of the carrier signal by a first or second predetermined phase angle,

comparator means responsive to said clock means and to the state of said successive bits of data for detecting when said successive bits of data form the two bit configuration 11 or 00,

means responsive to the detection of the two bit configuration **11** for controlling said phase shifting means to cause said carrier signal to be shifted by said first predetermined phase angle and responsive to the detection of the two bit configuration **00** for causing said phase shifting means to shift the phase of said carrier by said second predetermined phase angle,

means for inhibiting said comparator means for one bit time interval following detection of the two bit configuration 11 or 00.

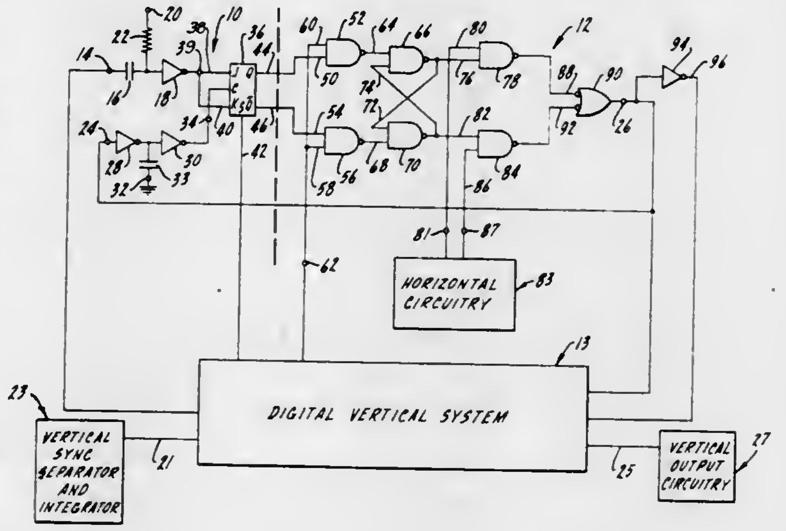
3,867,575
DIGITAL ANTI-JITTER CIRCUIT FOR VERTICAL SCANNING SYSTEM

Walter S. Ciciora, Park Ridge, and Richard G. Merrell, Darien, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed June 22, 1973, Ser. No. 372,558

Int. Cl. H04n *5/04*

U.S. Cl. 178—69.5 TV **6 Claims**



1. A digital anti-jitter circuit for a television receiver intended to utilize a telecast including horizontal and vertical synchronization information which may or may not be phase locked, said television receiver including a digital vertical scanning system comprising vertical sync means to develop a vertical sync signal and timing means for developing a timing signal related to horizontal timing, said anti-jitter circuit comprising:

phase determination means, coupled to said timing means, producing a clock signal for controlling said digital vertical scanning system;

jitter detection means, having a vertical sync input coupled to said vertical sync means having a clock input coupled to said phase determination means, for comparing the time relationship between said clock signal and said vertical sync signal to develop a control signal indicative of the occurrence of a potential vertical jitter condition;

said phase determination means having a control input coupled to said jitter detection means for receiving said control signal

and including means for reversing the phase of said clock signal whenever said control signal indicates the occurrence of a potential jitter condition.

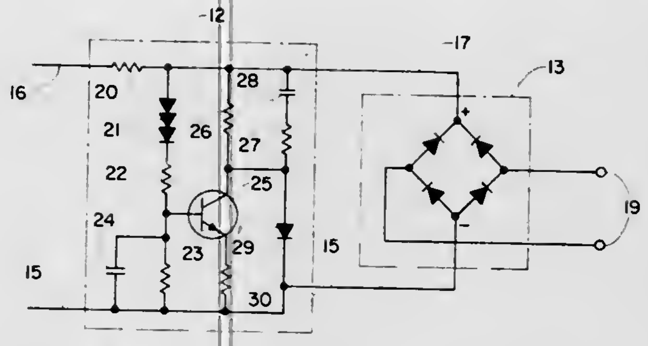
3,867,576
TELEPHONE TRANSMITTER CIRCUIT

Karlo Buchvaldt Simonsen, London, Ontario, Canada, assignor to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed Dec. 14, 1973, Ser. No. 424,850

Int. Cl. H03f *1/34*

U.S. Cl. 179—1 A **3 Claims**



1. A telephone transmitter having terminals for connection to a telephone line having a direct current voltage applied thereto remote from the terminals, comprising:

a self-polarized microphone;

a semiconductor amplifier having a substantially constant output impedance and responsive to the output of the microphone to cause fluctuations in the current carried by the telephone line;

a direct current voltage divider connected across said terminals and having a voltage tap, the voltage divider including a plurality of serially connected diodes, the forward conduction characteristics of the diodes restricting current flow through the voltage divider below a particular operating voltage at the terminals, thereby providing a control voltage at said voltage tap which is proportional to the operating voltage above said particular operating voltage;

a variable impedance alternating current shunt connected across the terminals and to the voltage tap, the impedance of the shunt being controlled by and in proportion to the control voltage;

the impedance of the shunt and the output impedance of the amplifier co-acting to substantially duplicate the acoustical to electrical conversion efficiency of a typical carbon telephone transmitter over its operating current range.

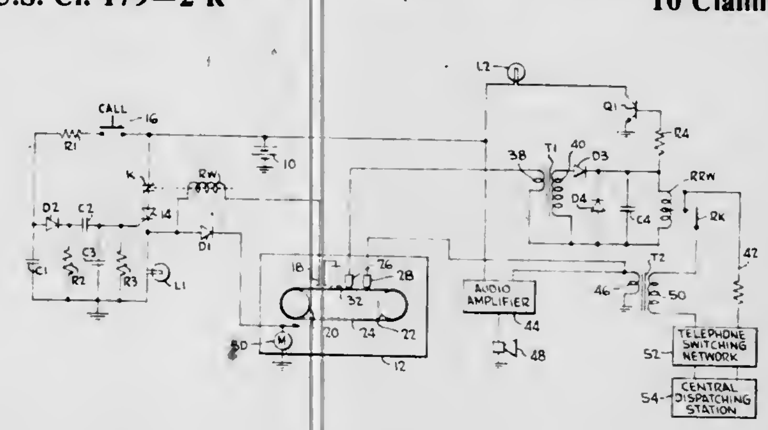
3,867,577
AUTOMATIC SYSTEM FOR DIALING A CENTRAL TAXICAB DISPATCHING STATION

Donald Herrington, 3101 College Ave., Costa Mesa, Calif. 92626

Filed June 11, 1973, Ser. No. 368,880

Int. Cl. H04m *11/00*

U.S. Cl. 179—2 R **10 Claims**



1. Apparatus for automatically dialing a central taxicab dispatching station on a telephone line comprising:

recorder means including tape means for storing a line seizing signal for seizing the telephone line, a dial signal corresponding to pulses for dialing the central taxicab dispatching station, a line holding signal and an audio message in parallel with said line holding signal, and pick-up means for supplying electrical signals corresponding to said line seizing and dial signals and said audio message;

relay circuit means coupled with said pick-up means for supplying said line seizing and dial signals to the telephone line;

transformer means coupled with said pick-up means for supplying said audio message to the telephone line and to permit audio communication between a caller and the central taxicab dispatching station;

switch means for operating said recorder means when actuated by a caller to supply said line seizing and dial signals to said relay circuit means to establish communication with the central taxicab dispatching station and to supply said audio message to said transformer means for communication to the central taxicab dispatching station; and

transducer means coupled with said transformer means to permit the caller to hear audio messages from the central taxicab dispatching station and to supply audio messages to the central taxicab dispatching station whereby actuating said switch means, the central taxicab dispatching station is automatically dialed, said audio message is automatically communicated to the central taxicab dispatching station and two-way communication between the caller and the central taxicab dispatching station is automatically established.

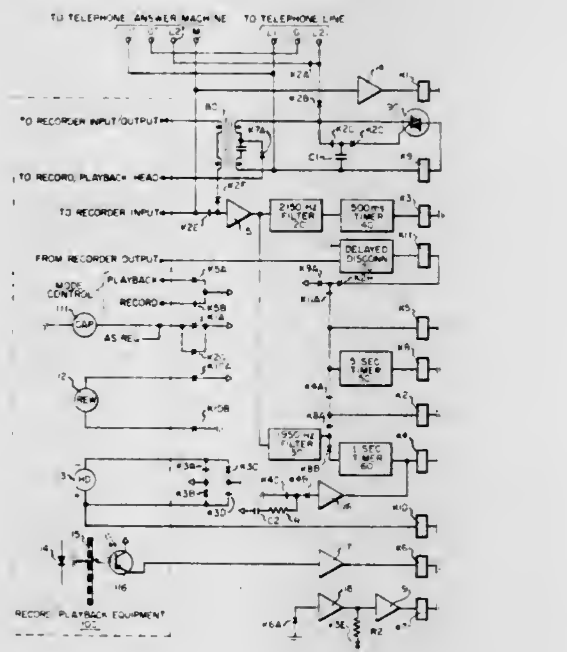
3,867,578
ADAPTER FOR AUTOMATIC TELEPHONE ANSWERING DEVICES PERMITTING REMOTE MONITORING OF RECORDED MESSAGES

Francis Y. Uechi, New Berlin, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 28, 1973, Ser. No. 401,800

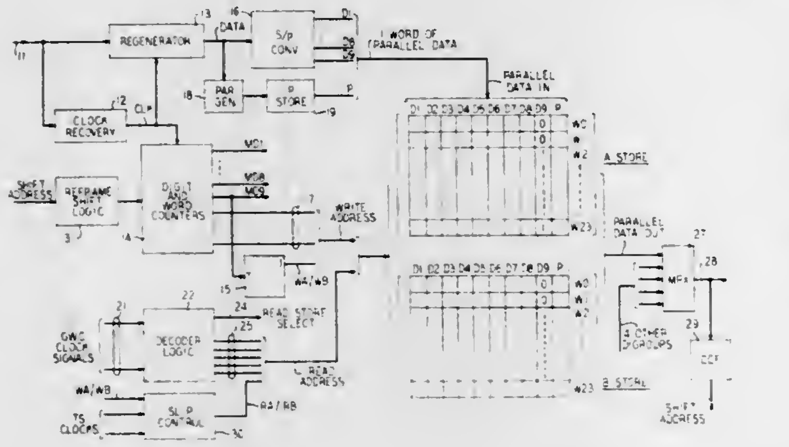
Int. Cl. H04m *11/00;* **G11b** *5/00*

U.S. Cl. 179—6 E **6 Claims**



1. In combination a telephone line, a telephone answering and recording machine, said machine initially connected to said telephone line and rendered operated in response to receipt of an incoming call over said telephone line, and an adapter, said adapter including: record and playback equipment operable in record, playback and rewind modes; monitor means connected between said machine and said record and playback equipment, operated in response to said machine receiving an incoming message over said telephone line, to operate said record and playback equipment in the record mode; first signal detection means connected between said monitor means and said record and playback equipment, initially operated in response to receipt of a first tone signal of a first predetermined frequency received over said telephone line, to disconnect said machine from said telephone line, connect said telephone line to said record and playback equipment and operate said record and playback equipment in the playback mode; second signal detection means connected between said telephone line and said record and playback equipment initially operated in response to receipt of a tone signal of a second predetermined frequency received over said telephone line to operate said record and playback equipment in the rewind mode; said second signal detection means further operated in response to termination of said tone signal of said second predetermined frequency to terminate operation of said record and playback equipment in the rewind mode and reoperate said record and playback equipment in the playback mode.

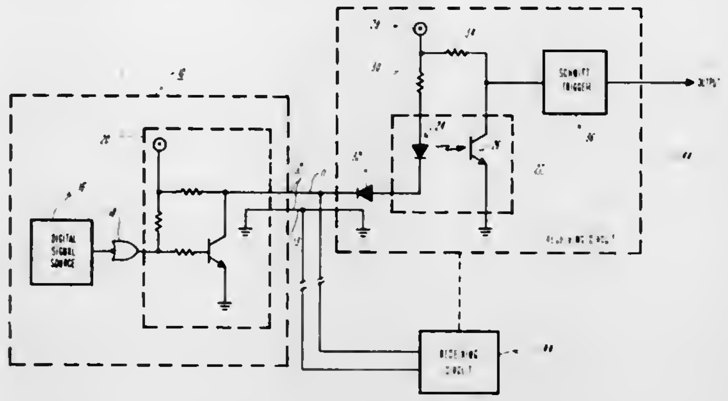
3,867,579
SYNCHRONIZATION APPARATUS FOR A TIME DIVISION SWITCHING SYSTEM
John Robert Colton, Freehold, and Henry Mann, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 21, 1973, Ser. No. 427,068
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 A **8 Claims**



1. A time division switching system comprising a plurality of incoming lines, each line serving to carry digital data signals in time division multiplexed channels, a pair of receive data stores for each line, means for alternately writing the successive frames of data on a line into said pair of data stores, means for alternately reading out the data from each store in a manner such that the read out from one store generally occurs simultaneously with the write in to the other, control means for comparing the read and write store cycles for each line and for producing a control signal when the read and write cycles drift to a predetermined extent relative to each other, and means for coupling said control signal to the store read out means to cause the same to skip a frame of stored data or double-read a frame depending upon the relative direction of said drift.

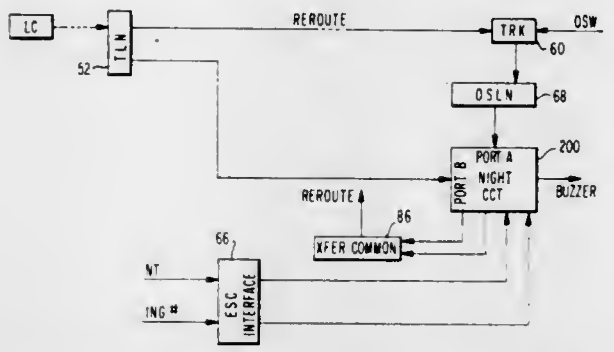
3,867,580
RECEIVING CIRCUITS FOR DIGITAL SIGNAL DISTRIBUTION SYSTEMS
Stanley L. Russell, West Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,244
Int. Cl. H04b *3/36, 15/00*
U.S. Cl. 179—16 EA **7 Claims**

6. A signal distribution system comprising:
- a cable pair;
- a source of digital signals connected to apply digital signals to said cable pair;
- a plurality of receiving circuit means, each including an optoelectronic coupler circuit having a light emitting diode and a photosensitive transistor located proximately to said diode and being optically coupled thereto, connected to said cable pair; wherein the diodes are connected in a direct current circuit between one lead of said cable pair and power supply terminals of corresponding



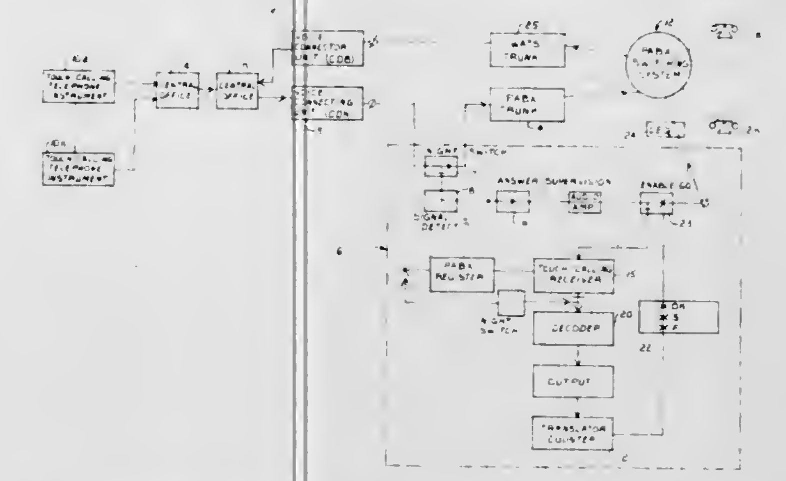
receiving circuits and the transistors are connected between said power supply terminals and the other lead of said cable pair said other lead defining a ground wire between the signal source and the plurality of receiving circuits; the arrangement being such that said transistors repeat the digital signals received from said cable pair when applied to said diodes.

3,867,581
UNIVERSAL NIGHT SERVICE CIRCUIT
Uwe A. Pommerening, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,449
Int. Cl. H04m *3/54*
U.S. Cl. 179—18 BD **26 Claims**



1. In a private automatic branch exchange including central office equipment provided with a plurality of line circuits, said central office equipment being interconnected with private branch equipment provided with a plurality of trunk circuits, an operator complex and transfer means for effecting transfer of an incoming communication connection of a trunk circuit from a first line circuit to a second line circuit in said central office equipment, a universal night service circuit comprising signal means actuating a signaling indicator, a dummy load, control means responsive to an incoming communication connection at one of said trunk circuits for connecting said dummy load to said trunk circuit including signal control means for actuating said signal means upon connection to said trunk circuit, a calling bridge relay arrangement, means in said central office equipment responsive to detection of a special dialed digit signal generated from a selected line circuit for connecting said calling bridge relay arrangement to said selected line circuit through said central office equipment, storage means for storing the identification of said selected line circuit and means responsive to connection of said calling bridge relay arrangement to said selected line circuit for actuating said transfer means to connect said trunk circuit to the line circuit whose identification is stored in said storage means through said central office equipment.

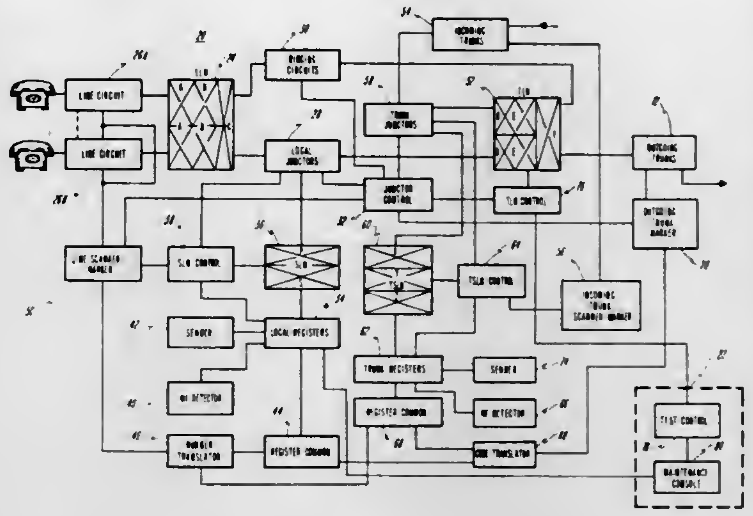
3,867,582
REMOTE CONTROL FOR PRIVATE AUTOMATIC BRANCH TELEPHONE EXCHANGE
Robert P. Weed, Prairie Village; Gary Rosenberg; Quentin Bourkland, both of Overland Park, all of Kans., and Robert E. Overby, Harrisonville, Mo., assignors to United Business Communications, Inc., Shawnee Mission, Kans.
Filed June 12, 1973, Ser. No. 369,405
Int. Cl. H04m *3/54*
U.S. Cl. 179—18 BE **5 Claims**



1. In a telephone communication system having a central switching exchange and subscriber stations equipped with telephone instruments for multi-frequency tone signaling representative of digits displayed on the instrument, the combination therewith of
- an automatic private branch exchange,
- a communication channel to said branch exchange from said central exchange,
- a tone signal receiver associated with said branch exchange and operable to translate tones keyed from said subscriber instruments to a plurality of output pulse patterns corresponding to and indicative of the discrete tones generated at said subscriber instruments, and
- control means connected with said channel and said receiver and operable upon reception of a preselected combination of output pulse patterns from said receiver to switch said channel into said branch exchange to enable route switching within the branch exchange under the control of the tone signals keyed at said subscriber instrument.

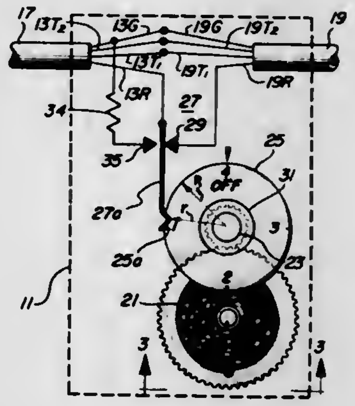
3,867,583
CONTROL SYSTEM FOR SWITCHING NETWORKS
Alton Dorazio, Jr., East Rochester; Otto Altenburger, and Gunter F. Neumeier, both of Rochester, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed July 27, 1973, Ser. No. 383,357
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 E **10 Claims**

1. In a multistage switching network of the type providing a plurality of paths through grouped links for interconnecting circuits connected to opposite ends of the network, an improved control system locating and completing free paths through said network between marked circuits at opposite ends of the network, the control system including a plurality of scanners each having a plurality of scan lines, each of the scan lines associated with a portion of the paths, the scanners including means for generating a plurality of scan pulses in succession, the generating means including means for applying the scan pulses each to a different one of the plurality of scan lines, and means for enabling the plurality of scanners in sequence to identify path portions including one of the links of a unique one of the free paths between the marked circuits, the improvement comprising:
- means associated with each of the scan lines for receiving one of the scan pulses, means connected to the receiving means and responsive to the one scan pulse for connecting the associated path portion of the network, to the scanner; and



- means connected to each of the receiving means of at least one of the scanners for selectively inhibiting all but one of the connecting means associated with the at least one scanner.

3,867,584
DO-NOT-DISTURB ADAPTER FOR TELEPHONE RECEIVERS
Wayne E. Rengren, Wood Dale, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.
Filed July 16, 1973, Ser. No. 379.280
Int. Cl. H04m *1/21*
U.S. Cl. 179—84 C **1 Claim**

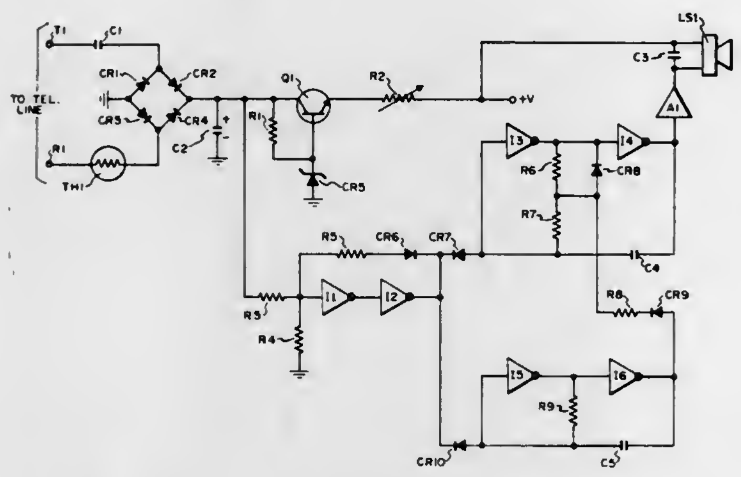


1. In a telephone system having a ring control line for conducting ringing signals to a telephone receiver, apparatus comprising:
- a switch connected to the ring control line, said switch including a first and second contacts, said switch moveable between said contact position and connecting the ring control line to the ringer of said telephone receiver in said first contact position;
- a resistor substantially equal to the telephone receiver ringer impedance connected between said second contact and ground, said resistor coupling the ringing signals to ground whenever said switch is placed in said second contact position;
- a plurality of cams having substantially circular peripheral edges, each of said peripheral edges having at least one indentation therein;
- means for rotating said cams at a predetermined rate for a selectable time interval comprising a mechanical timer, said timer including a rotatable shaft coupled to said timer, said cams being mounted on said rotatable shaft; and
- means for moving said rotatable shaft longitudinally to selectively engage one of said cams along said peripheral edge with said switch;

said cam opening and closing said switch between said first and second contact positions as said peripheral edge of said selected cam moves past said switch.

3,867,585
ELECTRONIC TONE RINGER

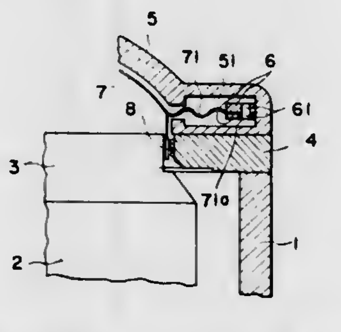
Richard A. Morstadt, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Aug. 2, 1973, Ser. No. 385,134
Int. Cl. H04m *1/00*
U.S. Cl. 179—84 T **8 Claims**



1. A tone ringer for use in a telephone subset connected to a telephone line, comprising: a rectifier circuit connected to said telephone line, operated in response to ringing signals received over said telephone line, to convert said ringing signals to direct current potential; a first oscillator circuit connected to said rectifier, and including a plurality of frequency determining components, operated in response to said d.c. potential from said rectifier to generate tone signals at a first frequency; a second oscillator circuit connected to said rectifier circuit and including a circuit connection to said first oscillator circuit, operated in response to said d.c. potential from said rectifier to periodically shunt at least one of said plurality of frequency determining components in said first oscillator; said first oscillator further operated in response to each shunting of at least one of said frequency determining components, to generate a tone at a second frequency; and a transducer connected to said first oscillator operated in response to generation by said first oscillator of tones of said first and second frequencies to audibly reproduce said tones.

3,867,586
LOUDSPEAKER WITH FLAT FREQUENCY CHARACTERISTICS

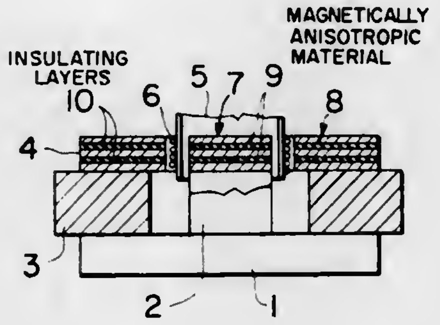
Kouji Maekawa, and Yutaka Tamura, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 19, 1972, Ser. No. 298,907
Claims priority, application Japan, Oct. 19, 1971, 46-82095
Int. Cl. H04r *1/28, 1/30, 9/06*
U.S. Cl. 179—115.5 H **3 Claims**



1. In a loudspeaker construction forming a horn type speaker or the like and including; a casing having an annular plate concentrically surrounding a circular magnet and forming an annular air gap therebetween, a diaphragm having a central portion overlying said magnet, a cylindrical voice coil support extending from the side of the diaphragm facing the magnet and concentrically carried within said annular gap, and an integral peripheral edge portion of the diaphragm overlying said annular plate, a cover overlying the side of said diaphragm not facing the magnet, the improvement comprising: means including at least said cover defining an annular cavity receiving the peripheral edge only of said diaphragm, means for fixing said diaphragm to said casing solely at its peripheral edge with said peripheral edge portion dividing said cavity into two portions on either side thereof of equal size comprising a pair of annular gaskets which sandwich the peripheral edge of the diaphragm and a plurality of holes are provided at circumferentially spaced positions within said gaskets in axial alignment with themselves and with corresponding holes within the peripheral edge of the diaphragm to form a plurality of short length sound passages within the peripheral edge of said diaphragm directly connecting said cavity portions with said passages having a length less than the half wave of the high reproduction threshhold frequency of the loudspeaker.

3,867,587
MAGNETIC CIRCUIT FOR AN ELECTRO-ACOUSTIC CONVERTER

Isao Yamamuro, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 18, 1972, Ser. No. 315,970
Claims priority, application Japan, Dec. 17, 1971, 46-102518
Int. Cl. H04r *9/02*
U.S. Cl. 179—115.5 R **2 Claims**



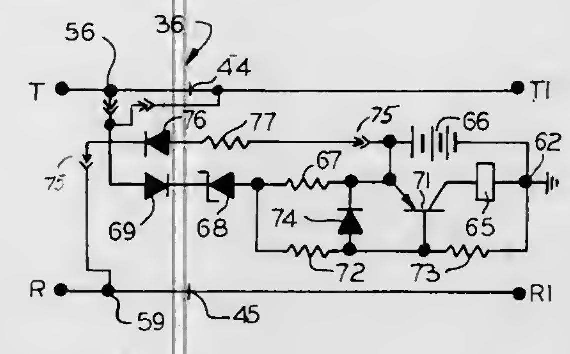
1. An electro-acoustic converter comprising:

a. a center pole;
b. voice coil means surrounding said center pole;
c. magnetic means surrounding said center pole and said voice coil means; and
d. plate means fixed to said magnetic means; the improvement comprising
e. wherein at least a portion of said center pole is a stack of layers of a magnetically anisotropic material interleaved with insulating layers;
f. wherein at least a portion of said plate means is a stack of layers of a magnetically anisotropic material interleaved with insulating layers.

3,867,588
QUICK DISCONNECT FOR TELECOMMUNICATION LINES

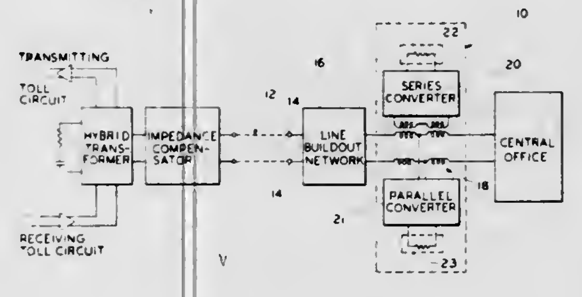
Herman Leon Pickens, and Thomas P. Miller, both of Jackson, Tenn., assignors to Terra Corporation, Jackson, Tenn.
Filed June 1, 1973, Ser. No. 365,831
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 R **17 Claims**

1. A system for operating a remote disconnect device for opening a line at a distant location and thereby removing attachments therefrom, said line extending from a central office to equipment at said distant location, said system comprising means for transmitting a signal from the central office over said line to said distant location for a selected period of time, means local to the distant location for there disconnecting said line at a point between the said central office and all of the equipment at the distant location for a period of time which is dependent upon the duration of said signals on the line, and means whereby said disconnect means is operated during said disconnect period independently of all potentials on said line whereby said line may be tested free of all potentials and all equipment not directly involved in the testing.



3,867,589
ENHANCING IMPEDANCE CHARACTERISTICS OF NEGATIVE IMPEDANCE REPEATERS OPERATING AT HIGH GAIN

Peter G. Junek, Raleigh, N.C., assignor to Astrocom Division of Q.C.P. Ltd., Walhalla, N. Dak.
Filed Sept. 4, 1973, Ser. No. 393,982
Claims priority, application Canada, Aug. 8, 1973, 178303
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.31 R **9 Claims**

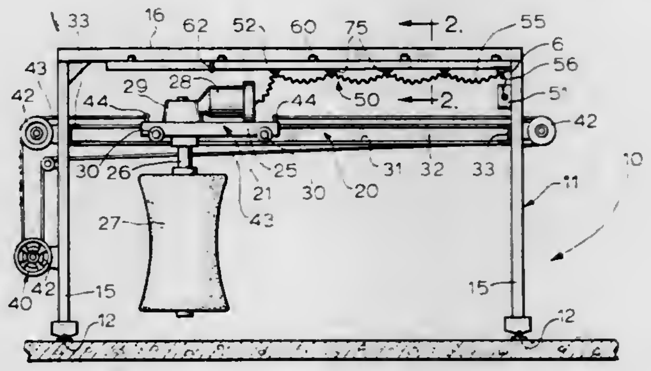


1. A process for aligning a telephone repeater of the type including both series-connected and shunt-connected negative impedance converters, each converter being provided with a strapping network of interconnectable resistors, said repeater being provided with line terminals for connecting said repeater in series with a two-wire transmission link having a predetermined nominal impedance, said process comprising, in combination, the steps of;

- connecting first and second temporary terminating resistance circuits to said series-connected and said shunt-connected converters respectively, each of said circuits having a fixed resistance component for setting the overall gain of said repeater at a predetermined level and a variable resistance component for altering the impedance characteristics of said repeater without substantially changing its gain;
- terminating said line terminals of said repeater with said predetermined nominal impedance;
- connecting a return loss measuring device to the repeater thus terminated;
- adjusting the value of said variable resistance component until the return loss as indicated by said measuring device is substantially maximized; and
- interconnecting in each of said strapping networks a permanent fixed resistor having a value substantially equal to the value of said variable component in the corresponding one of said temporary circuits at the time said measured return loss is maximized.

3,867,590
CABLE CARRIER

William James Gasser, Long Grove, Ill., assignor to Brite-O-Matic Manufacturing, Inc., Arlington Heights, Ill.
Filed Oct. 29, 1973, Ser. No. 410,601
Int. Cl. H02g *11/00*
U.S. Cl. 191—12 R **4 Claims**



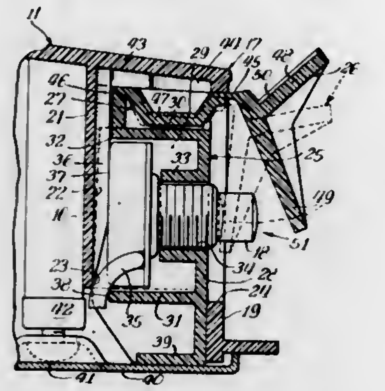
1. A cable carrier assembly for handling a power cable between a fixed power source terminal on a support frame and a carriage mounted for travel on the frame, comprising:

a. elongated track means on said frame,
b. said track means comprising an inverted channel member including depending leg flanges which are formed inwardly at their lower, free ends, to define a slot narrower than said channel member,
c. a section of said power cable being coiled and resiliently extensible from a compact, retracted length to an extended length,
d. a plurality of slide units mounted on said track means for longitudinal movement relative thereto,
e. each of said slide units extending through said slot and suspended from said inwardly formed, lower free ends of said leg flanges,
f. each of said slide units comprising a base and a cap,
g. said caps being retained within said channel member by said free ends of said leg flanges and said bases being suspended below said free end,
h. said bases and said caps having opposed, generally segmentally spherical surfaces formed thereon whereby said slide units can tilt in said slot and still slide relative thereto without binding, and
i. each of said slide units including means fastening it to said cable section whereby retraction and extension of said cable section as said carriage travels relative to said frame is accommodated while said cable section is held immediately adjacent said track means between said slide units.

3,867,591
ONE PIECE SWITCH HOLDER AND FOOT OPERATED HINGE ACTUATOR FOR VACUUM CLEANER SWITCH

Erwin E. Nordeen, St. Paul., Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jan. 16, 1974, Ser. No. 433,920
Int. Cl. H01h *3/14, 9/02*
U.S. Cl. 200—52 R **13 Claims**

1. In an electrical device having an electrical switch provided with a projecting actuator portion, the improvement comprising: wall means on said device defining a cavity having an insertion opening and exposure opening; and a one-piece combination switch holder and switch operator element inserted through said insertion opening to be removably received in said cavity, said element having a firs portion defining switch holding means carrying the electrical switch in said cavity with the actuator portion exposed through said exposure opening of the cavity, a second portion defining an engagement means for selectively engaging said exposed actuating portion of the switch, and a third portion defining hinge means hingedly connecting said engagement means to said switch holding means, said hinge means including a portion

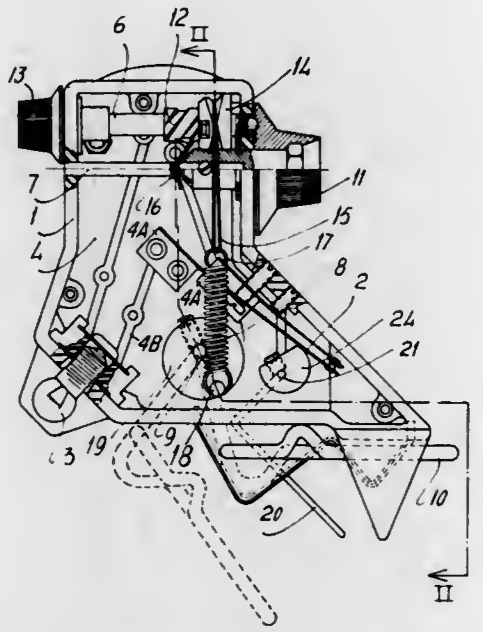


within said cavity and being arranged to dispose said engagement means adjacent said actuating portion of the switch whereby preselected movement of said engaging means causes operation of said actuating means to operate the switch.

3,867,592

STOP MOTION SWTICH FOR CONTROLLING THREAD TENSION IN A TEXTILE MACHINE

Antonio Sala Quellos, Lepanto Street No. 56, Mataro, Spain
Filed Dec. 14, 1973, Ser. No. 424,788
Claims priority, application Spain, Dec. 14, 1972, 409991
Int. Cl. B65h ***25/14***
U.S. Cl. 200—61.18 10 Claims



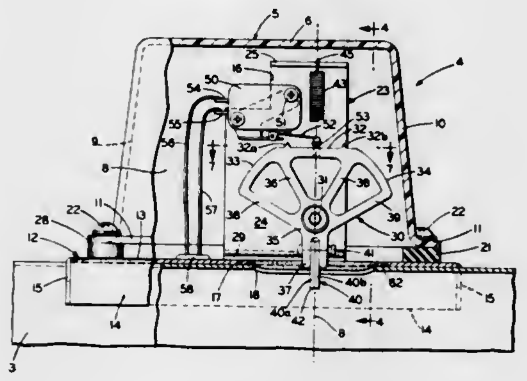
1. In an electro-mechanical stop motion device for use with a textile machine for controlling the tension in a traveling thread, including a casing, a pair of relatively movable contacts mounted in said casing and adapted when closed to complete both an operating circuit for stopping the textile machine and a supply circuit of an externally visible indicating lamp, a shaft mounted on the casing and supporting an angularly movable gravity-actuated thread feeler located externally of the casing, said thread feeler being operatively connected to the contacts for controlling the position thereof and being normally maintained in an uppermost position when supported on the thread wherein said contacts are opened, a thread tensioning arm swingably supported on said casing and movable between a first position for engaging said tensioning the thread and a second position for releasing the tension on the threads, and an over-center spring device mounted on said casing and connected to said thread tensioning arm for normally maintaining said arm in either of said first or second positions, movement of said arm between said first and second positions causing same to be moved about a center point through an intermediate unstable position, said over-center spring device including a tension spring which is subject to imposition of a maximum tension thereon when said device is in said intermediate unstable position, the improvement comprising:

- printed circuit board means mounted in said casing and defining thereon circuitry means connected to said indicating lamp and said relatively movable contacts, said circuitry means also being connected to electrical connector contacts which project externally from said casing for controlling the stopping of the textile machine;
- first means for adjusting the angular extent through which said thread tension arm must be moved in moving between said first portion and said intermediate unstable position, said first means including a first shaft movably supported on said casing and means interconnecting said shaft to said tension spring for shifting said spring relatively to said center point; and
- second means for adjusting the tension in said tension spring, said second means including a second shaft movably supported on said casing and means interconnecting said shaft to said tension spring, said second shaft being disposed substantially parallel to said first shaft.

3,867,593

PNEUMATIC TUBE CARRIER DETECTOR ASSEMBLY WITH CAM OPERATED MICROSWITCH AND RESILIENT FINGER HEELER MEANS

John C. Kryah, and Charles B. Barnett, both of Akron, Ohio, assignors to Diebold, Incorporated, Canton, Ohio
Filed Nov. 7, 1973, Ser. No. 413,612
Int. Cl. H01h ***3/16;*** **B65g** ***51/36***
U.S. Cl. 200—61.41 13 Claims

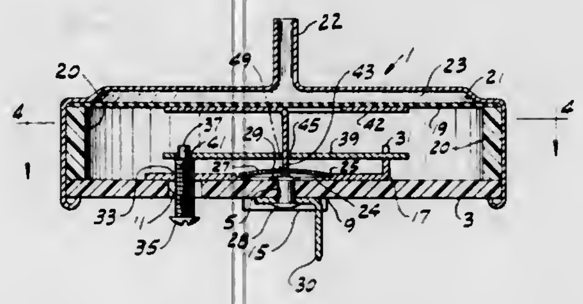


1. Detector construction for detecting the passage of a carrier moving through a pneumatic tube of a type in which a slot is formed in the tube including, generally airtight housing means mounted on the pneumatic tube covering the tube slot; cam means; pin means pivotally mounting the cam means within the housing means for rotation of the cam means from an at-rest position counterclockwise to a first deflected position and clockwise to a second deflected position; switch means mounted within the housing means and adapted to be engaged by and actuated by the cam means when the cam means is in either of said deflected positions, said switch being unactuated when said cam means is in the at-rest position; finger means mounted on the cam meanns and extending through the tube slot into the interior of the tube; a carrier moving in either direction through the tube striking the finger means thereby rotating said cam means to one of said two deflected positions for actuating the switch means; and said finger means being formed of flexible, semi-rigid wear resistant material composed of an elastomer impregnated woven fabric, whereby the finger means has sufficient flexibility to absorb carrier impact and sufficient rigidity to rotate the cam means when struck by a moving carrier.

3,867,594

PRESSURE SENSITIVE SWITCH WITH DIAPHRAGM AND DISH CONTACT MEANS

Paul E. Graf, Foxboro, and Daniel R. Pimentel, Seekonk, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 29, 1973, Ser. No. 420,024
Int. Cl. H01h ***35/34***
U.S. Cl. 200—83 P 5 Claims



3. A pressure sensitive switch comprising:
an insulative base;
a first electrical contact carried by said base;
a second electrical contact comprising a resilient deformable dish-shaped conductive elemet movable in response to selected force applied thereto to abruptly change its shape from a first curvature to a second curvature wherein it is movable in response to a selected decrease in said force applied thereto to abruptly change from its second curvature and return to its first curvature;
an electrically conductive support secured at one surface of said base, said support having a recess therein receiving and loosely holding the dish-shaped second contact element around its periphery normally supporting the element in its first curvature disposition bowed away from said first contact to be moved into electrical engagement with said first contact when said dish-shaped element is moved to its second curvature disposition in response to said selected force being applied thereto;
a resilient diaphragm deformable in response to a difference in pressures on the opposite surfaces thereof, said diaphragm being mounted with one surface thereof in spaced facing relation to said one base surface for exposing the other surface of said diaphragm to varying fluid pressures; and
a rigid stem fixedly secured to said diaphragm for coextensive movement with said diaphragm and extending from said one diaphragm surface into engagement with said dish-shaped second contact element to directly apply force to said second contact element in response to deformation of said diaphragm, whereby selected deformation of said diaphragm in response to a predetermined pressure differential applied to opposite surfaces of said diaphragm applies said selected force to said second contact and is effective to move said second contact to its second curvature disposition to engage said first contact.

3,867,595

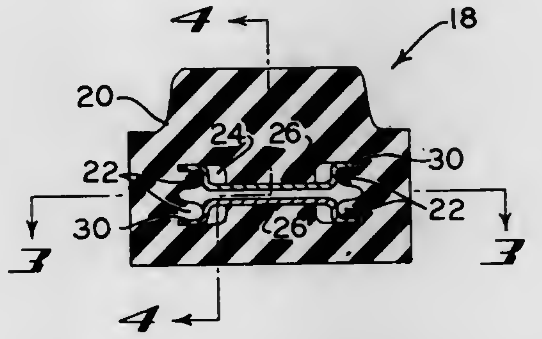
SINGLE CONTACT ACTUATOR ASSEMBLY

Ira E. Ramsey, and Byron L. Fishbaugh, both of St. Marys, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 10, 1973, Ser. No. 423,038
Int. Cl. H01h ***13/16***
U.S. Cl. 200—86 R 12 Claims

1. A contact actuator providing an on/off function in an electrical circuit, the actuator comprising:

A. an elastomeric housing member defining a chamber having an open end, said housing member having a pair of integrally formed cantilever ledges on each of opposing sides of the chamber, protruding into the chamber, and extending at least the partial length thereof;

B. a pair of U-shaped conductor plates juxtaposed within the chamber in opposed parallel position, said plates having tab extensions along the lateral edges thereof, the inner portion of the U-shape being in abutting relationship with the housing member while the outer portion provides a contact surface for close circuiting the actuator, said plates slidably received along their lateral edges



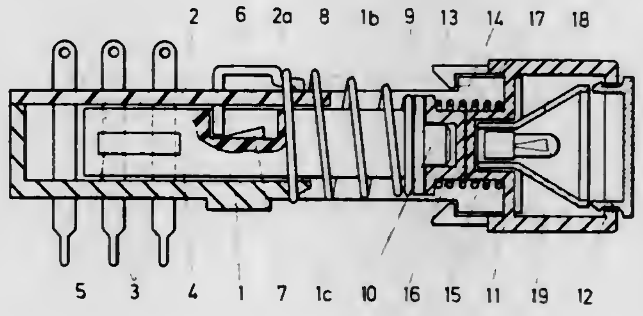
by at least one pair of opposing cantilever ledges and constrained within the chamber by their relationship with the ledges; and

C. an elastomeric plug adapted to fit securely within the open end of the housing chamber to seal the chamber, said plug providing access to the conductor plates for connection to the electrical circuit.

3,867,596

ALTERNATE MAKE-BREAK PUSHBUTTON SWITCH ASSEMBLY WITH DETENT MEANS, INDICATOR AND INDICATOR SLIDE SWITCH STRUCTURE

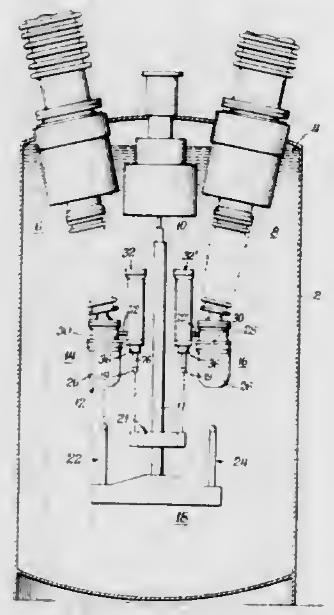
Rudolf Schadow, Konigsbacher Zeile 23, 1 Berlin 28, Germany
Filed July 27, 1973, Ser. No. 383,332
Claims priority, application Germany, Sept. 6, 1972, 2243639
Int. Cl. H01h ***13/66, 3/20, 9/18***
U.S. Cl. 200—153 J 14 Claims



1. A push button switch, comprising:
a housing; fixed contacts carried on said housing;
a switch plunger positioned in said housing; said plunger having an axis extending along said housing and said plunger being axially shiftable along said axis through said housing; bridging contacts carried on said plunger and movable therewith through said housing and positioned to be engaged with said fixed contacts;
a plunger return spring in engagement with said plunger to bias same axially in a direction toward a push button;
detent means engaging said plunger for holding same nonmovably against the biasing of said plunger spring;
a push button located and oriented to engage said plunger; said push button being shiftable axially of said plunger to shift said plunger axially in opposition to said plunger spring; said push button being supported by said housing and being separate from and movable independently of said plunger;
a push button return spring separate from said plunger return spring and connected with said push button and normally biasing said push button axially of and away from said plunger.

3,867,597
CONTACT OPENING MEANS FOR A CIRCUIT BREAKER

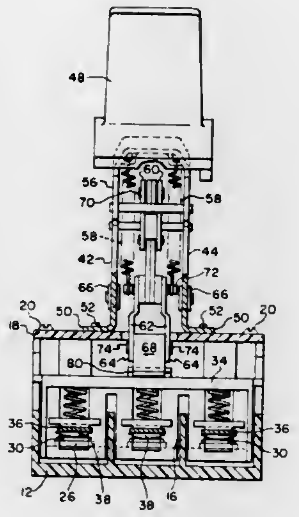
Melbourne G. Jawelak, and Richard R. Boni, both of McMurray, Pa., assignors to McGraw-Edison Company, Elgin, Ill.
Filed July 26, 1972, Ser. No. 275,332
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 R **2 Claims**



1. In a circuit breaker including main stationary and movable contact structures, the main movable contact being movable to open and closed positions relative to the main stationary contact structure, said contact structures carrying current when in said closed position and interrupting current while moving from the closed to the open position, a first housing containing dielectric fluid and enclosing said stationary and movable contacts when the contacts are in their closed position, the movement of the movable contact to the open position causing arcing of said current resulting in decomposition of the fluid and creating of gas within the first housing, a main contact opening means for moving the main contact out of engagement with the stationary contact, the combination comprising:
- an auxiliary spring for providing additional main contact opening force during the initial opening movement of the main movable contact;
- a second housing having a first chamber and a second chamber containing fluid and having an enclosed fluid connection with the first housing;
- a piston slidable in the directions of the main movable contact and being positioned within the second housing, said piston having a piston rod extending from the second housing into engagement with the main movable contact structure;
- The first chamber of the second housing being positioned on one side of the piston and the second chamber of the second housing being positioned on the other side of the piston, said auxiliary spring being positioned within the first chamber and biasing the piston and piston rod in the direction of opening movement of the main movable contact and the piston rod against the auxiliary movable contacts; and
- said gas and fluid within the first housing flowing through said fluid connection into said second chamber, said piston and piston rod moving in the direction of the first chamber against the bias force of the auxiliary spring and the piston rod moving out of engagement with the main movable contact structure in response to flow of the gas and fluid from the first housing into the second chamber whereby the opening force of the auxiliary spring provided to the main movable contact is retarded.

3,867,598
CONTROL SWITCH

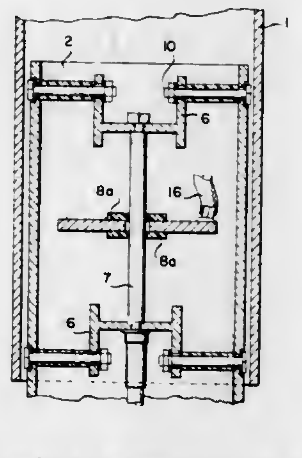
Edward L. Richards, Aliquippa, and Stephen S. Dobrosielski, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 9, 1973, Ser. No. 404,579
Int. Cl. H01h *3/46*
U.S. Cl. 200—153 G **11 Claims**



1. A switch device comprising an electrically insulating housing having housing walls, at least one of the walls having an opening, a stationary contact structure within the housing, a movable contact structure within the housing and being movable rectilinearly between open and closed positions relative to the stationary contact structure, operating mechanism for the movable contact structure external of the housing and comprising an operating lever and a switch handle thereon for manually moving the operating lever, the operating mechanism also comprising an overcenter toggle operable by the operating lever to effect movement of the movable contact structure, a connecting member operatively connected between the movable contact structure and the overcenter toggle, the connecting member extending through said opening and comprising upper and lower toggle links and the lower toggle link being pivotally connected to the connecting member, the upper and lower toggle links being movable arcuately, the overcenter toggle also comprising spring means extending between the pivotal connection to the connecting member and the lever adjacent to the switch handle.

3,867,599
DOUBLE ACTING SLIDE SWITCH ASSEMBLY WITH TELESCOPICALLY ARRANGED HOUSINGS AND NORMALLY CENTERED MOVABLE CONTACT

George A. Moen, Spenard, Anchorage, Alaska 99503
Filed Apr. 12, 1973, Ser. No. 350,541
Int. Cl. H01h *15/06, 17/00*
U.S. Cl. 200—153 K **4 Claims**

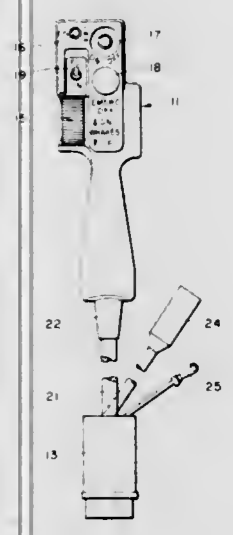


1. Double-acting switch means for an electrical warning device, comprising

a. a pair of telescopic housing sections (**1, 2**) connected for axial displacement relative to each other;
b. a conductive guide rod (**7**);
c. a pair of stationary contacts (**6**) connected with the ends of said guide rod, respectively, for supporting said guide rod in axially arranged relation within a first one of said sections;
d. a movable contact (**8**) arranged for movement between said stationary contacts;
e. hanger means (**9**) connecting said movable contact with the other of said sections, whereby as said housing sections are axially displaced between predetermined positions relative to each other, said movable contact is brought into direct electrical contact with one of said stationary contacts and into electrical connection with the other of said stationary contacts via said guide rod; and
f. spring means (**13**) biasing said sections toward a given position relative to each other.

3,867,600
HAND-HELD CONTROL MEANS

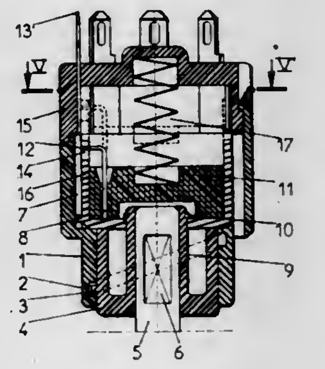
Carroll D. Phillips, Weston, Mass., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 17, 1973, Ser. No. 361,391
Int. Cl. H01h *9/02;* **H02b** *1/08*
U.S. Cl. 200—157 **3 Claims**



1. A hand-held device for controlling the operation of powered equipment by the natural movements of an operator's thumb comprising:
- a handle grip member having a lower portion contoured to be comfortably gripped by the fingers of the right hand of the operator and an angular control portion extending from the handle grip lower portion and having specific control components deployed within ready reach of the thumb of said right hand;
- said lower portion tapering from a wider base area remote from said control portion to a narrower area adjacent said control portion for more securely accomodating the operator's right index finger;
- said control components including a rotatable control knob in the lower left quadrant of said angular control portion immediately above the operator's right thumb for permitting variable control of equipment connected thereto;
- a toggle switch disposed immediately above said rotatable control knob for selecting the circuits to be thumb-controlled thereby; and
- ON-OFF recessed pushbutton controls opposite said toggle switch for starting and stopping by thumb action the operation of the equipment to which said device is connected,
- said control components being recessed within the outer configuration of the control portion so that accidental actuation of the control member either by the operator's thumb or by other means is avoided; and
- a control cable having a plurality of connectors therein removable received axially in said lower portion at the ends thereof remote from said control portion.

3,867,601
ELECTRIC MULTIPOLAR ROTATABLE SWITCH WITH HELICAL ROTOR DRIVE

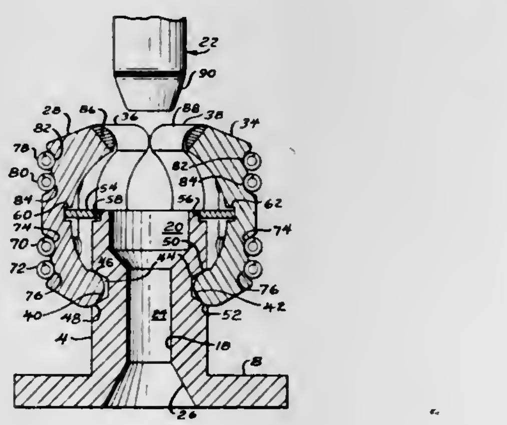
Paul Lipschutz, Croissy-Sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman, Nevilly S/Seine, France
Filed Oct. 17, 1973, Ser. No. 407,387
Claims priority, application France, Oct. 20, 1972, 72.37253
Int. Cl. H01h *3/40*
U.S. Cl. 200—158 **5 Claims**



5. Switch according to claim **4**, wherein said movable strips are made from non-resilient material.

3,867,602
CONTACT CLUSTER FOR ARCING AND CURRENT CARRYING MEANS IN A CIRCUIT BREAKER

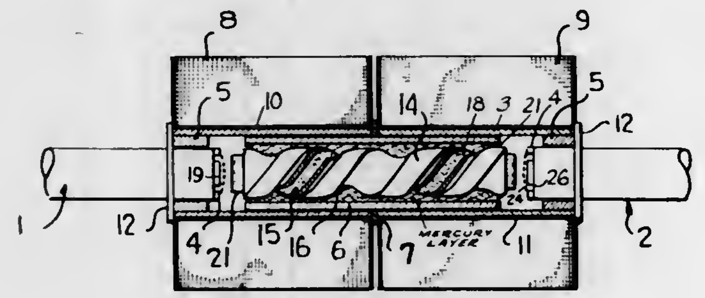
Melbourne G. Jawelak, McMurray, Pa., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Oct. 25, 1973, Ser. No. 409,598
Int. Cl. H01h *1/38*
U.S. Cl. 200—163 **3 Claims**



1. A contact cluster arrangement for a circuit interrupter having arc suppressive and continuous current carrying abilities comprising:
a. a base member having a mounting portion and a projecting contact support portion having a cylindrical external surface, with a groove formed therein,
b. a plurality of contact fingers each having a first pivotally supported end and a second movable contact engaging end, said pivotally supported ends engaging said groove formed in said projecting contact support portion of said base member at two separate points so as to provide improved current transfer therebetween,
c. a spacer means supported on said projecting contact support portion and positioned to engage said contact fingers between said pivotally supported ends and said

movable contact engaging ends to uniformally space said contact fingers about said projecting contact support portion,
d. at least one garter spring encircling said contact fingers between the point of engagement with said spacer means and said first pivotally supported end to bias said pivotally supported ends of said contact fingers into engagement with said contact support portion,
e. at least one garter spring encircling said contact fingers between the point of engagement with said spacer means and said movable contact engaging ends to bias said movable contact engaging ends into contact with a movable contact when moved therebetween, and
f. arc resistant material provide on the movable contact engaging ends of said contact fingers and said portion of said movable contact engaging said contact fingers.

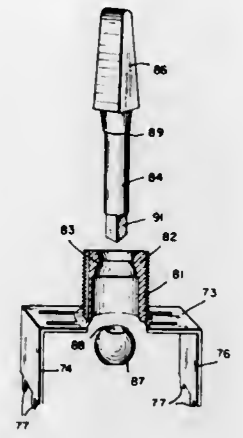
3,867,603
POSITION-INSENSITIVE MERCURY RELAY
Sheldon S. Bitko, Cherry Hill, N.J., assignor to Fifth Dimension Inc., Princeton, N.J.
Division of Ser. No. 302,677, Nov. 1, 1972, Pat. No. 3,786,217, which is a continuation-in-part of Ser. No. 880,128, Nov. 26, 1969, Pat. No. 3,644,693. This application Oct. 19, 1973, Ser. No. 407,899
Int. Cl. H01h *1/08*
U.S. Cl. 200—239 **2 Claims**



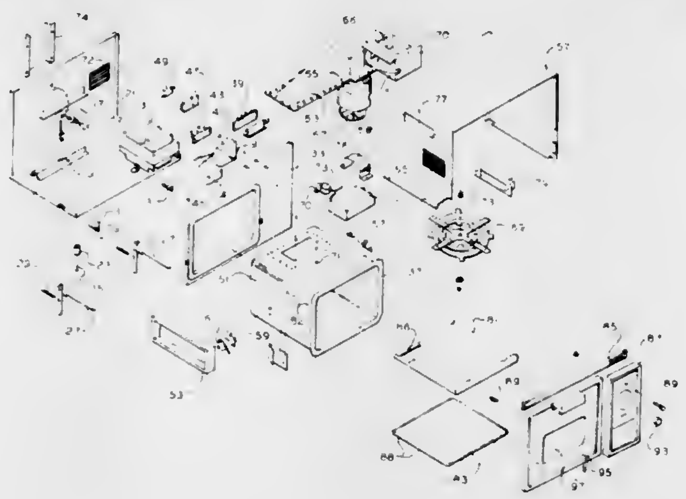
1. A mercury switch comprising:
a mercury wettable metallic tube,
a slug located internally of said tube,
a quantity of mercury located internally of said tube,
said slug floating in said mercury and movable longitudinally of said tube,
a mercury unwettable insulating ring terminating said tube at one end,
said slug being mercury wettable at its end nearest said one end, the total length of said slug being at least as great as the total internal length of said tube,
wherein said slug includes a central elongated core of mercury wettable material substantially surrounded by a layer of metal selected from the group tantalum and niobium, in turn surrounded by a layer of non-mercury wettable magnetic material, said layer of metal projecting axially beyond the confines of said core and said layer.

3,867,604
ELECTRIC SWITCH TOGGLE ASSEMBLY
Frank J. Discenza, Rocky Hill, Conn., assignor to Carling Electric, Inc., West Hartford, Conn.
Filed Dec. 18, 1973, Ser. No. 425,727
Int. Cl. H01h *3/46*
U.S. Cl. 200—329 **6 Claims**

3. An electric switch comprising an open top case, a cover element for said case, an aperture in said cover element, a bearing seat within said aperture, a toggle element operable pivotably through said cover element, the external head of said toggle element being larger than the shaft thereof and larger than said aperture through which said shaft extends freely, and a ball collar staked upon said shaft after the latter has been projected through said aperture, said collar cooperating with said seat to perform as a pivot bearing for said toggle element.



3,867,605
MICROWAVE OVEN
Allan Yee, Maspeth, N.Y., assignor to Welbuilt Corporation, Maspeth, N.Y.
Filed Aug. 6, 1973, Ser. No. 385,630
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 D **14 Claims**

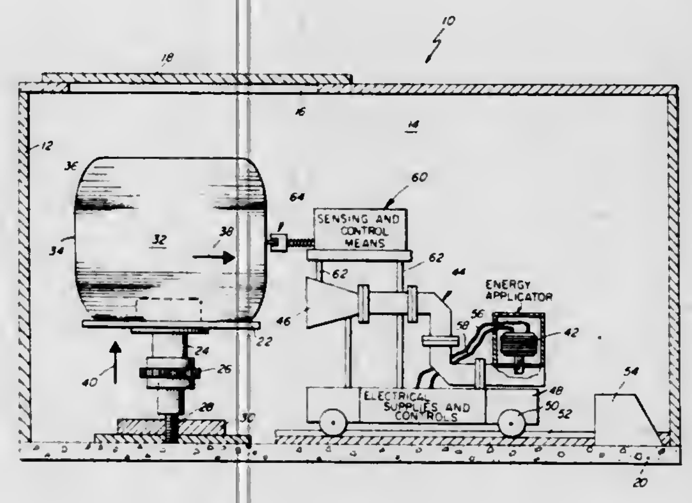


1. A portable microwave oven comprising:
a. a supporting frame;
b. an oven cavity attached to said frame and having an opening to insert a load;
c. means to generate microwave energy, said means including a magnetron which has a power rating approximately twice that required and means to cause said magnetron to operate at approximately half its rated power;
d. a wave guide coupling said microwave energy to said cavity;
e. a stirrer arranged to intercept and distribute the microwave energy within said cavity;
f. means to control operation of said generating means; and
g. means to seal off the opening of said cavity comprising:
  1. a frame hinged to said supporting frame;
  2. a backing plate securely attached to said hinged frame; and
  3. a sealing plate flexibly attached to said backing plate, so that it may effect a metal-to-metal seal with said cavity.

13. A portable microwave oven comprising:
a. a supporting frame;
b. an oven cavity attached to said frame and having an opening to insert a load;
c. means to generate microwave energy, said means including a magnetron which has a power rating approximately twice that required and means to cause said magnetron to operate at approximately half its rated power;

d. a wave guide coupling said microwave energy to said cavity;
e. a stirrer arranged to intercept and distribute the microwave energy within said cavity and comprising:
  1. a metallic center disk having a plurality of radially projecting arms;
  2. an annular metallic ring, larger than said disk, having a plurality of projections radial thereto, at least two of which are aligned with two corresponding projections on said disk; and
  3. at least two non-conductive straps coupling said disk and said ring;
f. means to control operation of said generating means; and
g. means to seal off the opening of said cavity.

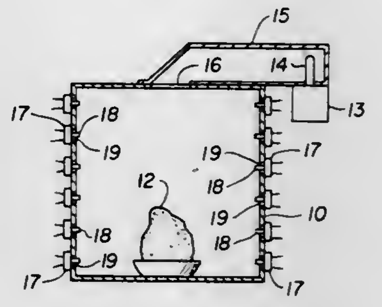
3,867,606
MICROWAVE HEATING APPARATUS FOR ROTATABLE ARTICLES
Robert A. Peterson, Canton, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 15, 1973, Ser. No. 406,770
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **2 Claims**



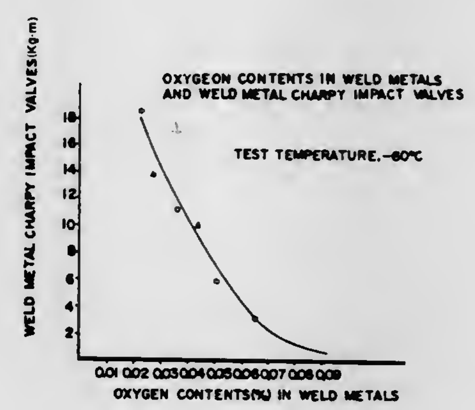
1. Microwave heating apparatus comprising:
an enclosure;
an electromagnetic energy source;
means for supporting and rotating an article having a substantially nonuniform cross-sectional contour to be heated within said enclosure;
means for radiating said article with said energy comprising waveguide feed means coupled to said source and terminating in a horn energy radiator with said waveguide and source mounted on a vehicle adapted to be moved relative to said rotating article; and
means for controlling the positioning of said radiator relative to the exterior surfaces of the rotating article comprising a freely rotatable wheel in continuous contact with said rotating article when said energy is radiated secured adjacent to the end of said radiator and means for moving said vehicle relative to said rotating article actuated by the substantially horizontal linear movement of said wheel.

3,867,607
HYBRID MICROWAVE HEATING APPARATUS
Tetsuro Ohtani, Otsu, Japan, assignor to New Nippon Electric Co., Ltd., Shiga, Japan
Filed Dec. 3, 1973, Ser. No. 420,788
Claims priority, application Japan, Dec. 13, 1972, 47-143486
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **6 Claims**

1. A microwave heating apparatus comprising an enclosure, a magnetron mounted on said enclosure for directing microwave energy into said enclosure, and a plurality of solid state oscillators mounted to direct microwave energy into said enclosure, whereby the microwave power and the distribution of temperature in said apparatus may be readily controlled.



3,867,608
SUBMERGED ARC WELDING PROCESS FOR VERY LOW-TEMPERATURE STEEL AND WELDED PRODUCT
Toshio Ohwa, Kamakura; Kosaku Taketomi; Osamu Tanaka, both of Fujisawa; Bunshiro Sakai, Fukuyama; Tadaaki Taira, Fukuyama, and Kiyoteru Hirabayashi, Fukuyama, all of Japan, assignors to Kobe Steel Ltd., and Nippon Kokan Kabushiki Kaisha, both of Tokyo, Japan
Filed Sept. 20, 1973, Ser. No. 399,280
Claims priority, application Japan, Sept. 29, 1972, 47-97208
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **11 Claims**



1. A submerged arc welding process for welding low-temperature steel comprising submerged arc welding
A. adjoining steel pieces, said steel consisting essentially of up to 0.15% carbon, less than 0.4% silicon, between 1% and 2% manganese, at least one element selected from the group consisting of nickel in an amount of from 1% to 4%, molybdenum in an amount from 0.05% to 0.3%, and niobium in an amount of from 0.01% to 0.1%, and the balance being essentially iron, with
B. a welding electrode consisting essentially of up to 0.1% carbon, less than 0.4% silicon, between 1.4% and 2.5% manganese, between 0.2% and 0.5% titanium, between 0.006% and 0.02% boron, at least one element selected from the group consisting of nickel in an amount from 0.5% to 2.5% and molybdenum in an amount of from 0.15% to 1%, and the balance being essentially iron,
C. at least one of said steel and said electrode contains molybdenum,
D. in the presence of a flux, to form a welded steel joint consisting of said steel pieces joined by weld metal having superior impact resistance at low temperatures, said weld metal consisting essentially of up to 0.1% carbon, less than 0.40% silicon, between 1.2% and 1.7% manganese, between 0.08% and 0.5% molybdenum, between 0.02% and 0.05% titanium, between 0.0012% and 0.004% boron, up to 4% nickel, and less than 0.045% oxygen.

3,867,609
METHOD OF CONNECTING TWO PARTS

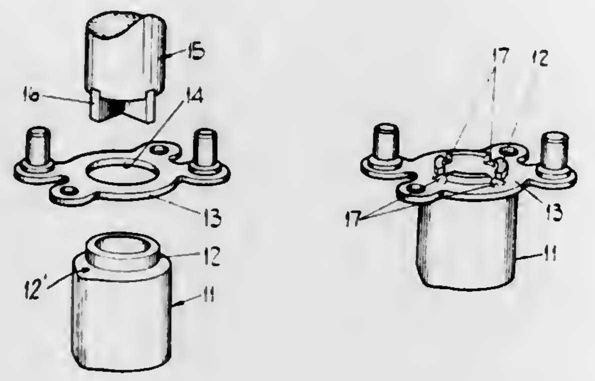
Bernard Alan Potter, Birmingham, England, assignor to The Lucas Electric Co., Ltd., Birmingham, England

Filed Jan. 31, 1974, Ser. No. 438,341

Claims priority, application Great Britain, Feb. 3, 1973, 5463/73

Int. Cl. B21j *5/08*

U.S. Cl. 219—150 V **5 Claims**



1. A method of connecting a sintered metal part including an integral sleeve having a shoulder thereon to another part having therein an aperture for receiving said sleeve, comprising the steps of interengaging the two parts with said sleeve extending through said aperture and said part having a portion resting on said shoulder and performing a hot riveting operation at a plurality of spaced locations on the projecting portion of said sleeve of said sintered part.

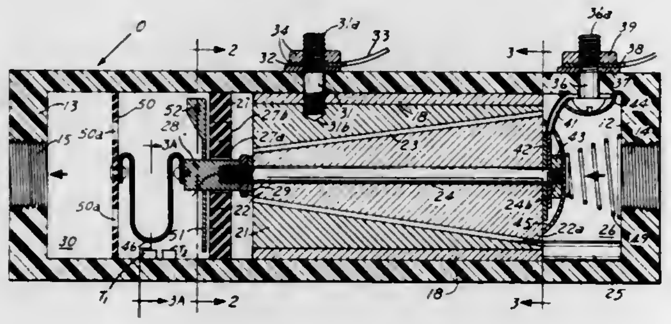
3,867,610
ELECTRIC HEATING APPARATUS FOR HEATING A LIQUID BY ELECTRICAL CONDUCTION

Laythol W. Quaintance, Tahoe, Calif., assignor to Harry M. Rubenstein, Phoenix, Ariz.

Filed Dec. 17, 1973, Ser. No. 425,078

Int. Cl. H05b *3/60*

U.S. Cl. 219—286 **3 Claims**



1. Electric heating apparatus for heating electrically conductive fluids comprising:

an outer casing of an electrically non-conductive material having end portions defining a flow inlet and flow outlet, a hollow, outer female electrode, disposed within said outer casing and having a truncated cone-shaped inner surface,

and inner male electrode having a truncated cone-shaped outer surface disposed in the outer electrode spaced from and concentric with said outer electrode surface to provide an annular flow passage therebetween having a selected gap width, said outer female and inner male electrode surfaces converging from the inlet end to the outlet end to decrease the fluid-carrying volume of said passage toward the outlet end thereby preventing the fluid from boiling away as it passes through said flow passage,

power circuit means for applying an electric voltage to at least one of said outer female and inner male electrodes using the fluid in the passage as a conductor to ground potential for the current flow of each of said electrodes to ground potential through the fluid to prevent electroplating of the electrodes,

support means at both the upstream and downstream ends of the inner male electrode for supporting said inner male electrode for axially alined movement while maintaining concentric uniformity in the annular flow passage, said support means including a plurality of circumferentially spaced guides in the upstream end of the casing engaging the periphery of the inner male electrode and a downstream support in the downstream end of the casing supporting an extension of the inner male electrode, and

axial positioning means for positioning the inner male electrode at a position of minimum spacing and axially moving the male electrode inclusive of a temperature responsive member downstream of the electrodes to automatically adjust the spacing between the inner and outer electrodes in response to the temperature of the fluid to maintain a substantially uniform heating effect for the fluid.

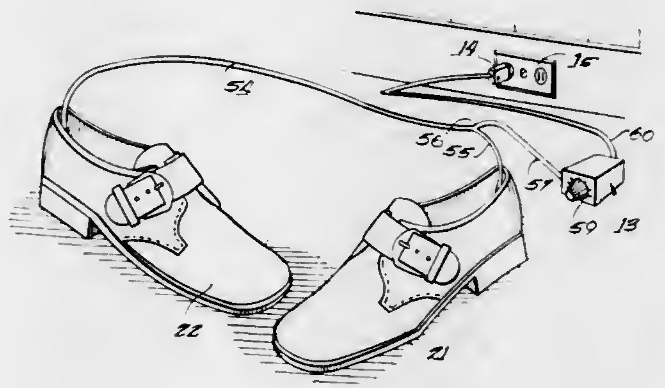
3,867,611
BOOT AND SHOE DRYING DEVICE

Raymond C. Riley, P.O. Box 489, 1520 Burnam Rd., Chillicothe, Mo. 64601

Filed Oct. 2, 1973, Ser. No. 402,715

Int. Cl. H05b *3/06*

U.S. Cl. 219—523 **3 Claims**



1. A boot and shoe drying device intended for removable insertion into boots, shoes, and the like for drying the moisture out of the same, the device comprising, in combination:

a pair of separate innersole members each of a shape and configuration adapted to be inserted into a boot, shoe and the like to be dried and conformed to the insole thereof to lay in flat juxtaposition thereover in contact therewith; each innersole being formed of a substantially flat material having a generally elliptical heel portion and a generally interconnected elliptical front portion formed contiguous therewith the heel and front portions substantially conforming to the insole of a conventional shoe, boot, and the like with it being of a width and length to substantially overlie the complete width and length of the insole, the side edges of the heel and front portions each being in the form of concave arcuate curved portions;

each innersole consisting of a substantially flat base member and a substantially flat covering member of the same size and configuration as the base member;

the base member having a bottom surface defining the bottom surface of the innersole and a substantially flat top surface;

the covering member having a bottom surface disposed in juxtaposition with the base member top surface and having a top surface defining the top surface of the innersole; a substantially concentric elongated spiral groove having a semi-circular cross-section formed integrally in the base member top surface defining a spiral type configuration conforming to the side edges of the heel and front portion of the innersole with the spiral beginning at the center of the innersole and growing continuously larger until reaching the outermost edge portions of the innersole;

a concentrically spiral groove of a semi-circular cross-section formed integrally in the bottom surface of the covering member corresponding to and in registration with the groove in the base member and cooperating with the base member groove to define therebetween a passageway having a circular cross-sectional diameter;

means securing the covering member to the base member; the base member and covering member being fabricated of an electrical non-conducting insulating material;

a length of non-insulated electrical heating resistance wire having a circular diameter extending through the passageway in each of the innersoles which extend over a substantial area of each innersole, the diameter of the heating wire being substantially equal to the diameter of the passageways for frictionally securing the heating wire in position in the innersole;

the terminal pair of ends of each of the heating wires terminating adjacent the back end edge of the heel portion of each innersole;

the ends of the heating wires of each innersole being electrically joined together in electrical parallel relationship;

a thermostat for controlling the temperature of the heating wires;

suitably insulated electrical wiring interconnecting one end of the thermostat with one set of joined ends of the electrical heating wires to place the thermostat in electrical series relationship therewith;

a suitably insulated electrical wire having one end electrically connected to the opposite end of the thermostat with the opposite end adapted to be connected to a suitable source of electrical energy;

a further suitably insulated electrical wire having one end electrically joined to the opposite joined ends of the electrical heating wires with the opposite end adapted to be connected to a source of electrical energy; and

a manually operated electrical switch connected in series relationship intermediate the thermostat and the heating wires for selectively energizing and de-energizing the heating wires from the source of electrical energy.

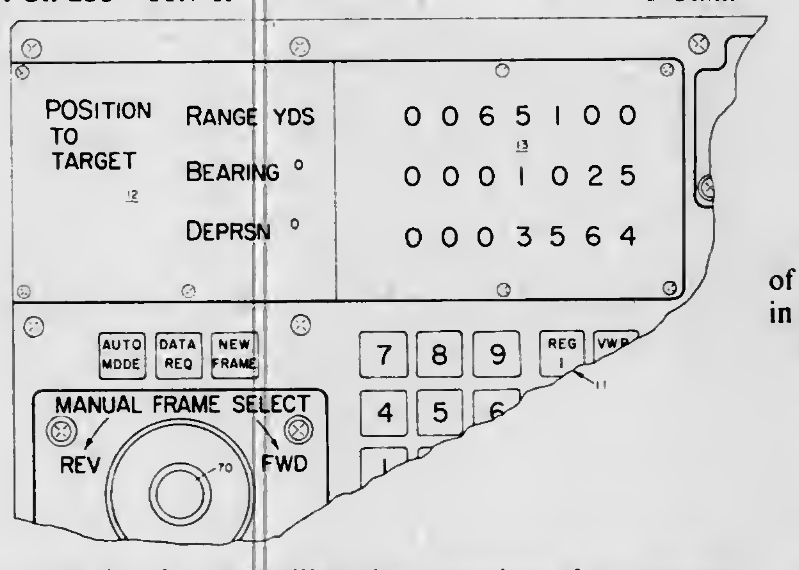
3,867,612
FILM VIEWER DISPLAY ENCODER

Samuel Maloof, Westwood, Mass., assignor to The United States of America as represented by the Department of the Navy, Washington, D.C.

Filed Nov. 8, 1972, Ser. No. 304,702

Int. Cl. G06k *5/00;* **G11b** *11/08;* **G06k** *7/10, 15/18*

U.S. Cl. 235—61.7 R **1 Claim**



1. A device for controlling the operation of a computer having a display panel comprising:

strip film means containing spaced segments of visual information and related digital control information;

means for simultaneously displaying said visual information to a viewer and said digital control information to the computer logic,

said means for displaying including a film viewer display encoder positioned behind said computer display panel so as to project a rear projection of said visual information thereon,

said encoder including an encoder lamp for projecting said control information, a photosensitive means for reading said visual information and means for conveying said control information to the computer logic;

a photodiode in said encoder, a fiber optic bundle having one end disposed opposite said photodiode, and a shutter interposed between the other end of said bundle of light pipes and said photodiode for selectively interrupting the light impinging on said photodiode; and

a stepper motor for driving said film means bi-directionally in increments,

said shutter driven by said stepper motor so as to interrupt the light of said photodiode in synchromium with film advance,

said control information presented in a matrix of discrete squares at ieast two of which are reserved one for an odd parity check and the other as a tape check,

said computer logic adapted to compare the output of said photosensitive means to said visual information and, if the two correspond, to stop said encoder and present the related computer data to the viewer in said computer display panel opposite said visual information.

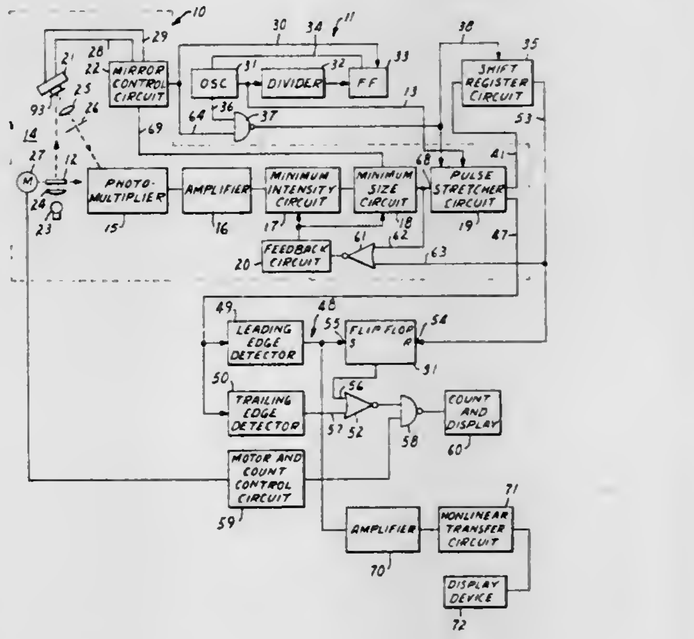
3,867,613
PARTICLE COUNTING APPARATUS

David J. Schoon, Saint Croix, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1972, Ser. No. 302,810

Int. Cl. G06m *11/04*

U.S. Cl. 235—92 PC **26 Claims**



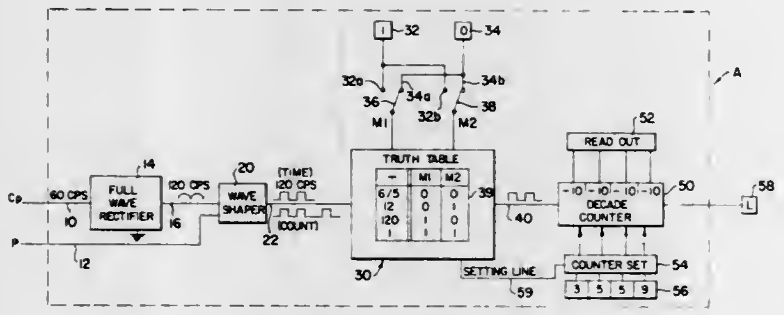
1. Particle detection apparatus for determining the number of those particles having a predetermined size that are present in a plurality of particles dispersed over a field comprising:

scanning means for scanning said field using a succession of scan cycles, each of said scan cycles moving across said field for successive scanning of each particle presented to the scan cycle, said scanning means providing a particle indicating signal each time a particle having a predetermined size is scanned and supplying a synchronizing pulse at the beginning of each scan cycle;

a clock pulse generator connected to said scanning means for receiving said synchronizing pulse and supplying a selected number of clock pulses in response to said synchronizing pulse and at a rate causing the last of said clock pulses to occur prior to completion of a scan cycle; a scan cycle memory including a shift register having a clock input, a data input and an output, said shift register requiring said selected number of clock pulses for a cycle of operation, said clock input connected to receive said clock pulses, said data input connected to serially receive each of said particle indicating signals developed by said scanning means, said shift register entering a particle indicating signal when present at said data input while one of said clock pulses is present at said clock input and shifting said entered particle indicating signal to said output upon subsequent receipt by said clock input of clock pulses equal to said selected number; and

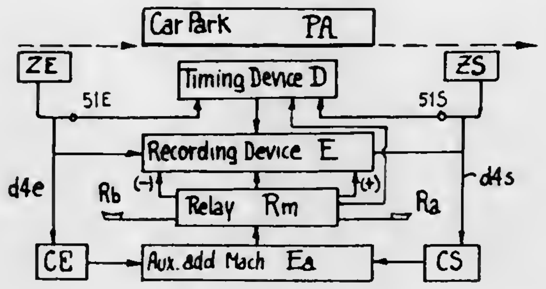
a signal coincidence circuit for presenting a count signal in response to a first signal unless a second signal is received by said signal coincidence circuit during said first signal, said signal coincidence circuit connected to said scanning means to receive said particle indicating signals from said scanning means as one of said first and second signals and connected to said output of said shift register to receive said particle indicating signals from said shift register output as the other of said first and second signals.

3,867,614
PROGRAMMABLE DIVIDER FOR COMBINED COUNTER AND TIMER
Robert R. White, Bettendorf, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.
Filed May 9, 1972, Ser. No. 251,775
Int. Cl. H03k *21/06*
U.S. Cl. 235—92 T **5 Claims**



1. In a timer comprising an input circuit adapted to be connected to a clocking signal having a frequency of substantially 60 cycles per second, a full wave rectifier converting said clocking signal to a pulsing input signal having a frequency of substantially 120 cycles per second, circuit means for changing said input signal into a pulsing driving signal having a train of input pulses, said train of pulses having a preselected time base frequency, a binary counter means for counting said input pulses and including an output means for indicating when a preselected number of input pulses has been counted by said counter means, means for directing said train of input pulses to said counter means, and means for adjusting said preselected number, the improvement comprising: said frequency changing circuit means including circuit means for passing five pulses from each six pulses of said input signal whereby said pulsing driving signal has a time base frequency of 100 cycles per second, said frequency changing circuit includes a second binary counting means driven by said input signal for counting the individual pulses of said input signal from 1 to at least 5, means for creating a counting pulse by a discrete actuation in response to a pulse from said input signal, blocking means responsive to a count of 5 on said second binary counting means for blocking the discrete actuation of said pulse creating means when a sixth pulse of said input signal is applied to said counting pulse creating means and means for resetting said second binary counting means after said blocking means has been actuated.

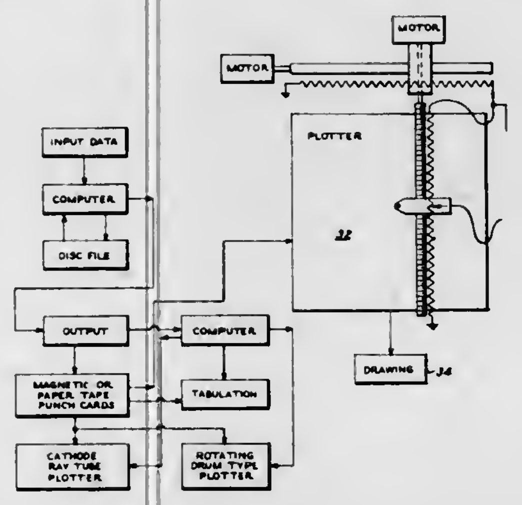
3,867,615
APPARATUS FOR DETERMINING THE TOTAL DURATION OF TRANSITORY PHENOMENA
Amedee Sioufi, Rue de Damas, Beyrouth, Lebanon
Continuation-in-part of Ser. No. 845,188, July 28, 1969,. This application July 27, 1972, Ser. No. 275,861
Int. Cl. G08g *1/065*
U.S. Cl. 235—92 TC **3 Claims**



1. An apparatus for determining the parking time of vehicles in a car park, comprising:
- a first detecting means for supplying a signal when a vehicle enters the park,
- a second detecting means for supplying a signal when a vehicle departs from the park,
- timing means for assigning said signals from said first and second detecting means in time and for attributing different algebraic signs to the assigned times of said signals depending upon which of said detecting means they come from,
- computing means for summing the assigned times of said signals in an algebraic sum, for obtaining by the computing means information corresponding to the result of the operation $\Sigma T_{si} - \Sigma T_{ei}$, in which T_{si} and T_{ei} are, respectively, the departure times and the entry times of the vehicles in order to determine the total parking time of the vehicles in the park, said apparatus being for determining the total time spent in the car park by cars in a time interval between an initial time and a final time, wherein the park is empty at the initial time and cars can remain in the park at the final time, counter means operatively responsive to said first and second detecting means for determining the number of cars still in the park at the final time, and
- a relay means for transmitting to said computing means at the final time a correction term equal to the product of said final time multiplied by the number of cars left in the park.

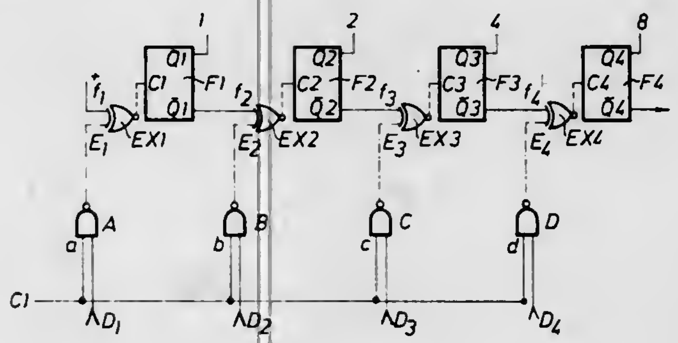
3,867,616
AUTOMATED DESIGNING
Theodore H. Korelitz, Waban, and Alvin C. Brodie, Dover, both of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.
Continuation-in-part of Ser. No. 767,891, Sept. 3, 1968, Pat. No. 3,636,328, Continuation-in-part of Ser. No. 419,466, Dec. 18, 1964, abandoned, Continuation-in-part of Ser. No. 223,324, Sept. 13, 1962, abandoned. This application Sept. 14, 1971, Ser. No. 180,318. The portion of the term of this patent subsequent to Jan. 18, 1989 has been disclaimed.
Int. Cl. G06b *15/46*
U.S. Cl. 235—151.1 **11 Claims**

1. The method of designing, interconnecting and visibly illustrating a system of linearly interconnected operating units into a composite operating system, comprising forming a plot plan consisting of a graphical diagrammatic arrangement of each of said operating units with each unit of said system graphically positioned therein in scale dimensions and arranged in three-dimensional space in design position before each unit is interconnected into the system,
- forming a table of dimensions significant of each unit and the points thereon to be linearly interconnected measured by the designer from any point in the plot plan common to said units in symbols recognizable by a draftsman,
- programming a computer to convert the said designer's measurement data of said table to coded form acceptable to a computer and orienting said data to the graphical origin of said plot plan,
- feeding the computer with said coded data,
- executing programmed steps to impose constraining limits upon said computer to compute and store data representative of said points in the memory of said computer,



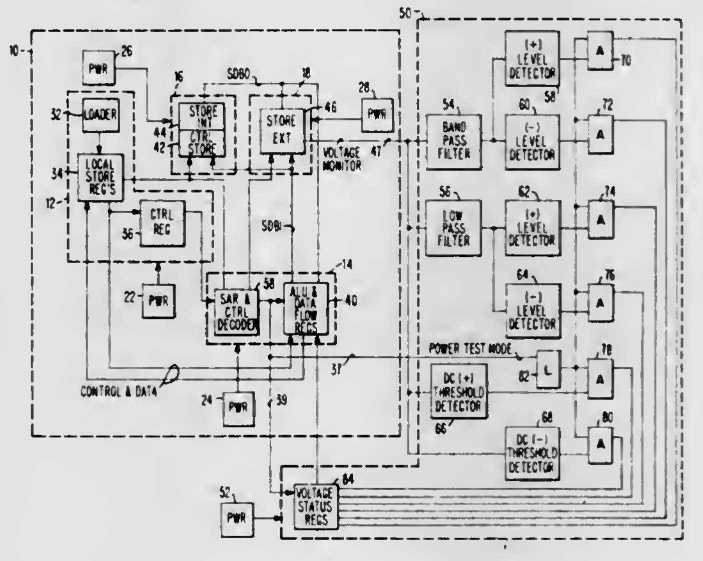
- executing programmed steps to mathematically define a path interconnecting said units to be interconnected within said constraining limits,
- whereby each line thus defined becomes a limiting exclusion upon the next succeeding lines,
- and finally converting all of the data in the memory of said computer to visible form comprising a system of said units linearly interconnected through said points.

3,867,617
CONVERSION UNIT FOR ELECTRICAL SIGNAL SEQUENCES
Carl Ib Peder Larsen, Slagelse, Denmark, assignor to Haldex Aktiebolag, Halmstad, Sweden
Filed Mar. 22, 1973, Ser. No. 343,966
Claims priority, application Sweden, Apr. 5, 1972, 4383/72
Int. Cl. G06f *7/50;* G07b *13/00*
U.S. Cl. 235—151.32 **7 Claims**



1. A conversion device comprising: programmable counting means receptive of a plurality of programming signals during use corresponding to a preselected pulse weighting function and having an input responsive to a sequential pulse train applied thereto during use for developing only successive predetermined sets of output signals wherein each set corresponds to the binary representation of an integral multiple of said preselected pulse weighting function; and means for programming said programmable counting means to effect a desired pulse weighting function, said programmable counting means comprising a first plurality of counting stages each including a flip-flop having a clock input and an inverting output and a non-inverting output from which one of said output signals of said set of output signals is taken, an Exclusive-Or gate having two inputs and one output connected to the clock input and a Nand gate having one input receptive of one of said programming signals and another input receptive of the sequential pulse train signal and having an output connected to one input of said Exclusive-Or gate, and wherein the other input of the Exclusive-Or gate in each stage after the first is connected to the inverting output of the flip-flop of the preceding stage.

3,867,618
DYNAMIC POWER SUPPLY TEST SYSTEM
Burton L. Oliver, Endicott, and Wayne R. Sitler, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 25, 1973, Ser. No. 373,539
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AC **5 Claims**

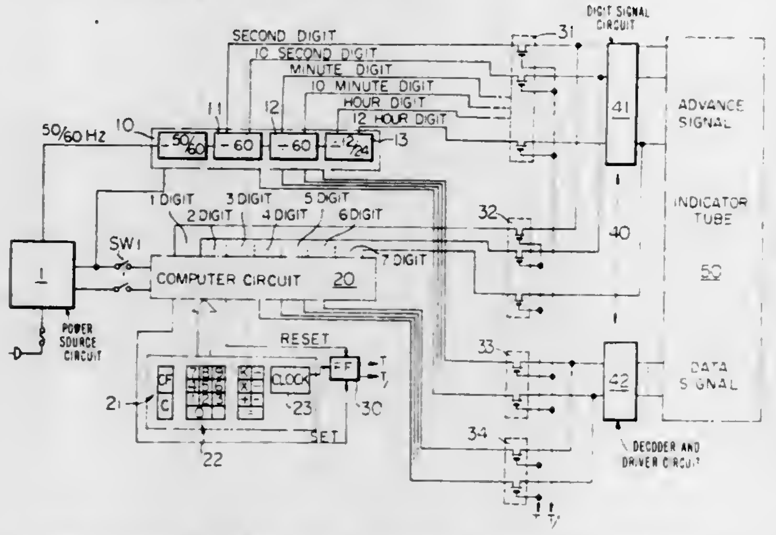


1. Apparatus for testing power supply means in a data processing system, comprising:
- a data processing system having a plurality of functional units, each said functional unit having one or more independent power supply means;
- means for operating said data processing system to exercise each of said plurality of functional units to cause a predetermined series of active power supply loading conditions followed by inactive power supply loading conditions to occur; and
- means connected to said data processing system and responsive to said active and inactive power supply loading conditions for determining the occurrence and location of faults.

3,867,619
DESK TOP ELECTRONIC COMPUTER WITH DIGITAL CLOCK
Keijiro Arauchi, Tokyo, Japan, assignor to Tobishi Pharmaceutical Co., Ltd.
Filed June 5, 1973, Ser. No. 367,289
Claims priority, application Japan, June 24, 1972, 47-63537
Int. Cl. G06f *7/48;* G04b *47/00*
U.S. Cl. 235—156 **2 Claims**

1. A desk top type electronic computer with a digital clock, comprising:
- power source circuit means;
- frequency divider circuit means of a digital clock, said frequency divider circuit means being connected at all times at its input to said power source circuit means and providing digit and data signal outputs;
- a desk computer circuit means for providing digit and data signal outputs and setting and resetting signal outputs;
- an indicating circuit means and an indicator tube controlled thereby for use in common by the computer and the clock;

- a plurality of switching devices for selectively connecting the digit and data signal outputs from said frequency divider circuit means and the digit and data signal outputs from said desk computer circuit means to said indicating circuit meanns;
- a flip-flop connected in controlling relationship to said switching devices and in controlled relationship to said desk computer circuit means;



- a keyboard for said desk computer circuit, said keyboard including calculating keys, the depression of any one of which provides a setting signal to said flip-flop from said desk computer circuit; and
- a switch connected between said power source circuit means and said desk computer circuit means for causing said desk computer circuit means to supply a setting signal to said flip-flop upon being closed and a resetting signal thereto upon being opened.

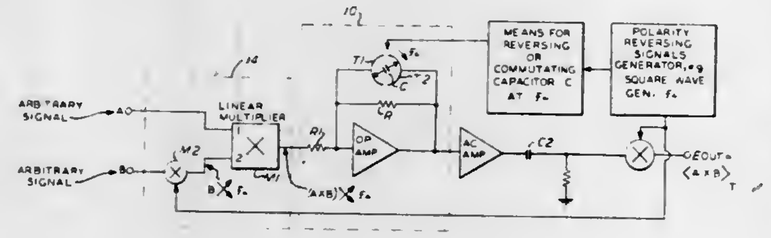
3,867,620
SIGNAL CORRELATOR WITH IMPROVED DYNAMIC RANGE

Thomas Coor, Princeton, N.J., assignor to Princeton Applied Research Corporation, Princeton, N.J.

Filed Jan. 26, 1973, Ser. No. 327,145

Int. Cl. G06g *7/19, 7/16*

U.S. Cl. 235—181 **61 Claims**


10
14
ARBITRARY SIGNAL
A
ARBITRARY SIGNAL
B
LINEAR MULTIPLIER
1
2
M1
M2
B × f₀
(A×B) × f₀
R1
T1
T2
C
CR
OP AMP
AC AMP
C2
MEANS FOR REVERSING OR COMMUTATING CAPACITOR C AT f₀
POLARITY REVERSING SIGNALS GENERATOR, e.g. SQUARE WAVE GEN. f₀
EOUT = ⟨A×B⟩T

29. Signal correlator apparatus with improved dynamic range for providing an indication of the time average of the product of two arbitrary signals, which apparatus utilizes an electronic multiplier whose output signal will include DC drift and offset due to circuit imperfections in said multiplier, comprising:

- additional multiplier means for multiplying one of said signals with a predetermined polarity reversing signal to provide said one signal repetitively reversed in polarity in accordance with the sign of said predetermined polarity reversing signal,
- said electronic multiplier for multiplying said one signal repetitively reversed in polarity times the other of said signals to provide the product of said signals in the form of a predetermined product signal repetitively polarity reversed in accordance with the sign of said predetermined polarity reversing signal, the output signal from said electronic multiplier comprised of said predetermined product signal and said DC drift and offset and wherein the peak-to-peak amplitude of said predetermined product signal is proportional substantially only to the actual product of said signals and is substantially independent of said DC drift and offset;
- synchronous filter means for filtering said output signal of said electronic multiplier in synchronism with said predetermined polarity reversing signal to attenuate said DC drift and offset thereby to provide an AC output signal; and
- means for synchronously rectifying said AC output signal in synchronism with said predetermined polarity reversing signal to provide a DC signal which is said indication of the time average of the product of said two arbitrary signals.

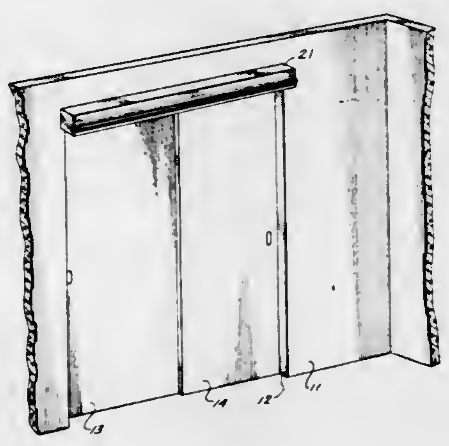
3,867,621
ILLUMINATED HEADER

Harry R. Gewfrtz, Whittier, and Kenneth K. Kellems, Costa Mesa, both of Calif., assignors to Acme General Corporation, Pasadena, Calif.

Filed Jan. 29, 1973, Ser. No. 327,729

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 R **3 Claims**



1. A closet illuminator for mounting along the top of a door frame having a movable door comprising:

- an elongated strip having a substantially uniform transverse cross section and a sufficient length for spanning a closet doorway;
- three insulated electrical conductors extending the length of the strip;
- means for connecting the strip along the top of a door frame on the exterior of a closet;
- detent means extending the length of the strip for receiving and retaining a lamp socket having complementary detent means in a position to make electrical contact with the conductors;
- means for continually applying electricity to two of the conductors; and
- means for selectively switching electricity to the third conductor comprising:
- a switch module at each end of the strip;
- means on the switch module for actuating the switch in response to movement of the door from a first position to a second position; and detent means complementary to the detent means on the strip for retaining the switch in position.

3,867,622
REVOLVING LIGHTED PAGE MAKEUP FOR GRAPHIC ARTS

Harry E. Billman, Montoursville, Pa., assignor to Raymond Lee Organization, Inc., New York, N.Y.

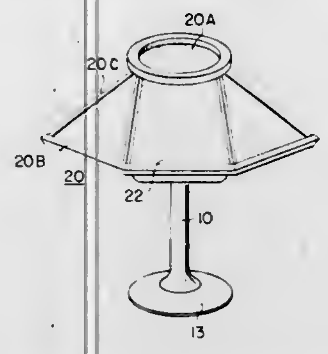
Filed Jan. 4, 1974, Ser. No. 430,633

Int. Cl. F21v *33/00*

U.S. Cl. 240—2 P **2 Claims**

1. A makeup table comprising:

- a vertical shaft;
- an inclined light source;
- means supporting said source and secured to the shaft; and a hollow casing having a flat circular top and rotatably disposed about the shaft and source, said casing having a plurality of inclined light transparent faces having the same inclination as the source, each face having an opening covered by a plate of transparent glass, said casing being rotatable to selectively index any of said faces in front of the source whereby light emitted therefrom extends through the indexed face; and
- a horizontal disc disposed above the top and separately rotatable about an axis aligned with the shaft.



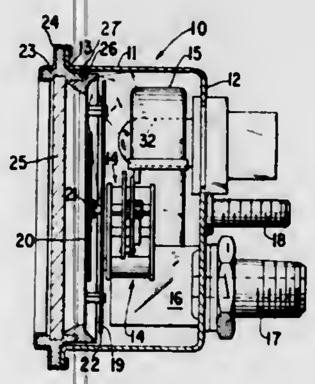
3,867,623
AUTOMOTIVE GAUGE FLOOD-LIGHTED DIAL

Charles R. Widlund, Schwenksville, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed Oct. 31, 1973, Ser. No. 411,392

Int. Cl. G01d *11/28*

U.S. Cl. 240—2.1 **5 Claims**



1. In an indicator instrument, the combination of a casing, a dial face within said casing and having its peripheral edge spaced from the casing wall, a light source mounted within said casing behind said dial face, and light reflecting ring means positioned between the front of the casing and the dial face, said ring means comprising a light reflecting surface facing the light source and a surface portion thereof extending annularly beyond said dial face at a predetermined distance therefrom for receiving light from said light source around and between the casing and dial face edge and for reflecting said light across the entire dial face to illuminate the same, the light reflecting ring means having spacer means for engaging the dial face peripheral edge for maintaining the dial face predetermined distance therefrom.

3,867,624
FLUSHED MOUNTED LIGHTED TABLE FOR USE WITH SEWING MACHINES

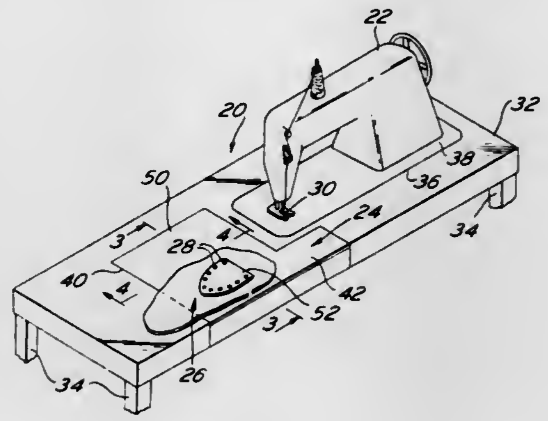
Thomas Joella, Delaboe, Bangor, Pa. 18013, and Robert Z. Mickus, R.D. 2, New Tripoli, Pa. 18066

Filed Dec. 6, 1973, Ser. No. 422,448

Int. Cl. D05b *79/00*

U.S. Cl. 240—2.14 **8 Claims**

1. A table having a top and a bottom surface and supporting a sewing machine thereon, said sewing machine including a needle, said table including illumination means comprising a surface for directing supporting a workpiece to be sewn by said machine and for illuminating from below indicia apertures in the workpiece when the workpiece is placed upon said workpiece supporting surface to facilitate the sewing of said workpiece, said workpiece supporting surface being flush with the top surface of said table and extending in front of and to the side of the needle of the sewing machine, said illumination means comprising a base, fluorescent light emitting means disposed over said base and a light transmitting cover disposed over said light emitting means, said base being flush with the bottom surface of said table, said cover forming the workpiece supporting surface of said table.



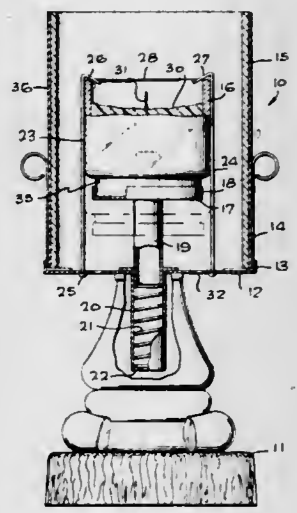
3,867,625
CANDLE LAMP

Charles C. Whalen, 941 X. Osage Ave., #301 Inglewood, Calif. 90301

Filed July 16, 1973, Ser. No. 379,717

Int. Cl. F21v *35/00*

U.S. Cl. 240—13 **1 Claim**



1. In a table lamp having a glass container holding candle wax and a wick, the combination comprising:

- a hollow stand;
- a base having a peripheral upstanding edge and fixed to said stand;
- a cylindrical shade carried on said base adjacent to and confined by said peripheral upstanding edge thereof;
- means movably carried on said base for supporting said glass container;
- resilient means axially biasing said movable means away from said base;
- hook means secured to said base and engagable with said glass container to arrest movement of said movable means;
- said cylindrical shade being of flexible material co-axially disposed about said glass container and supported on said base;

resilient clips carried on said base yieldably engagable with said shade for retaining said shade on said base;

said movable means includes a carrier plate and a downwardly extending sleeve engageable with one end of said resilient means;

said base includes a tube downwardly extending therefrom into said hollow stand slidably receiving said sleeve and for housing said resilient means;

said base is circular and includes a continuous sidewall formed on the peripheral edge thereof so as to encircle the bottom of said shade; and

said hook members include a pair of rods separated by said glass container and having one end fixed to said base and its opposite end formed with an integral hook releasably engagable with the edge of said glass container.

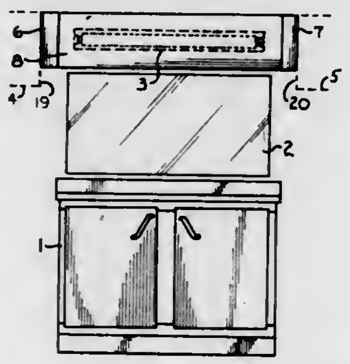
3,867,626
SOFFIT LIGHTING UNIT

Bertram A. Wilson, 507 Seminole Dr., Erie, Pa. 16505

Filed Oct. 5, 1973, Ser. No. 403,785

Int. Cl. F21s *1/02*

U.S. Cl. 240—73 R **10 Claims**



1. An adjsutable soffit lighting unit housing for a lighting fixture which has been previously mounted adjacent a wall comprising laterally spaced right and left generally rectangular end caps each with an end wall and front, back, top and bottom peripheral size flanges outstanding from corresponding edges of the end wall, means for mounting each cap by one of its flanges with the end walls of the caps outstanding from said wall and the flanges of said caps spaced from and extending toward each other, and panel means cooperating with said caps for blocking direct view of the light source from said lighting fixture and providing illumination below said light source, said panel means bridging the space between said caps and having ends extending within and concealed and supported by said caps throughout a range of widths of spacing of the caps so the caps may be positioned toward and away from each other in any desired fraction from 0 to 100 percent of said range while still supporting said panel means and said panel means may be made in standard lengths and be installed to give the appearance of a custom fit.

3,867,627
FAST DATA ACQUISITION SYSTEM

Melvin A. Nelson; Terence J. Davies, Santa Barbara, and John C. Clark, Pleasanton, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 8, 1974, Ser. No. 431,809

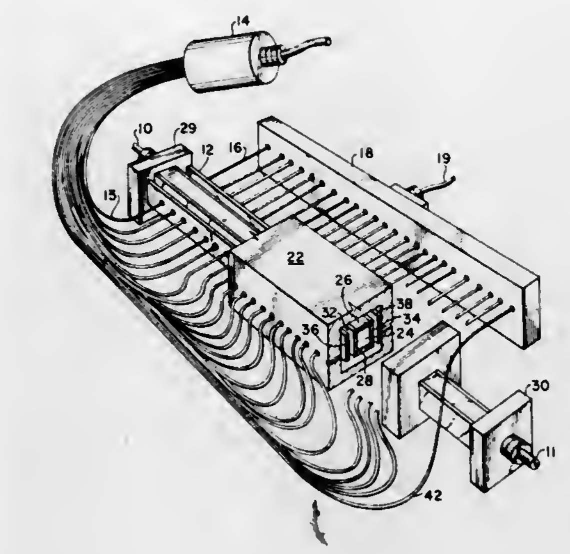
Int. Cl. H04b *9/00*

U.S. Cl. 250—199 **10 Claims**

1. A high speed data aquisition system comprising:

a. a longitudinally extending electro-optical modulator having means for transmitting an electrical signal to be recorded as a traveling wave longitudinally therewithin,

b. means for transmitting a plurality of optical pulses to a plurality of locations along one side of said longitudinally extending modulator, and



c. light detector means positioned on the opposite side of said modulator in alignment with said locations for receiving light transmitted through said modulator.

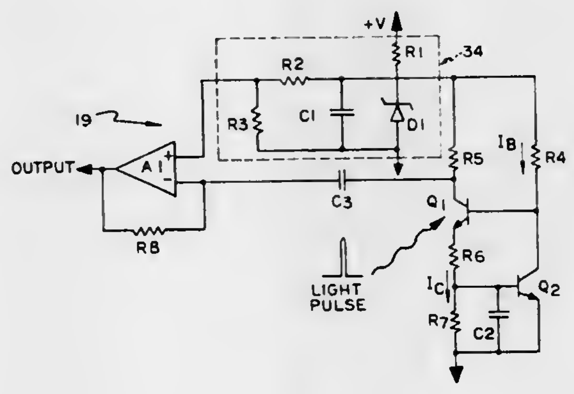
3,867,628
PULSED LIGHT RECEIVER AND METHOD

Roger M. Brown, Mountain View, Calif., assignor to Scientific Technology Incorporated, Mountain View, Calif.

Filed July 30, 1973, Ser. No. 383,786

Int. Cl. H01j *39/12*

U.S. Cl. 250—206 **23 Claims**



1. A receiver comprising means for producing an electrical output responsive to electromagnetic radiation input,

an electrical control input terminal connected to said means producing electrical output,

means connected to said electrical control input terminal for controlling said electrical output at a constant level in the absence of electromagnetic radiation input so that said means responsive to electromagnetic radiation is operated at optimum sensitivity,

means for attenuating electrical output due to ambient electromagnetic radiation pulse frequency components below a predetermined pulse frequency component connected to said electrical control input terminal, and

means for providing a low load impedance for said electrical output above said predetermined pulse frequency component so that the fastest response time of said means responsive to electromagnetic radiation may be utilized.

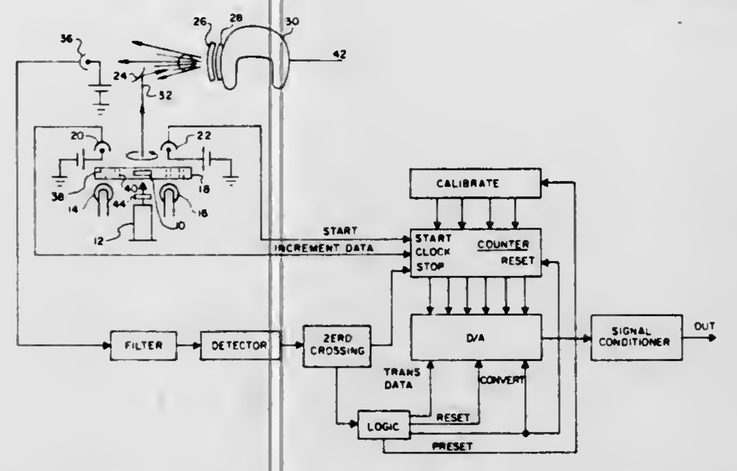
3,867,629
SYSTEM FOR MEASURING ROTATION USING POLARIZED LIGHT

Lyman F. Van Buskirk, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1974, Ser. No. 473,969

Int. Cl. G02f *1/18*

U.S. Cl. 250—225 **9 Claims**



1. A system for measuring the rotational orientation of an object by comparing its orientation with a known reference, comprising:

an object;

a reflector backed polarizer attached to said object for rotation therewith;

a source of linearly polarized light illuminating said polarizer wherein the polarization of said light rotationally varies at a constant rate, including an illumination source a rotatable quarter wave-plate in the path of said light and means for rotating said quarter wave-plate;

means for measuring the rotational orientation of said polarized light;

means for directing said polarized light onto said reflector backed polarizer; and

means for detecting the polarized light reflected by said reflector backed polarizer;

wherein the polarized light is reflected and detected by said detecting means when the rotational orientation of the linearly polarized light matches the rotational orientation of the object.

3,867,630
SENSOR FOR SUBMERSIBLE PROBES

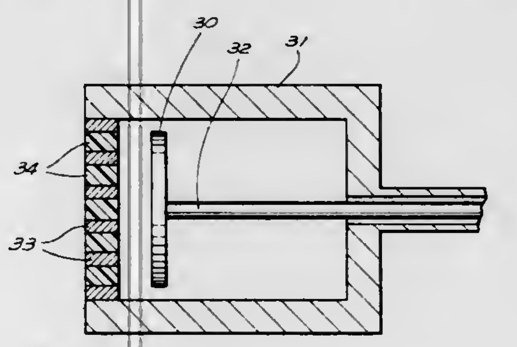
Horst Urban, Nordenham, Germany, assignor to Norddeutsche Seekabelwerke Aktiengesellschaft, Nordenham, Germany

Filed July 20, 1972, Ser. No. 273,511

Claims priority, application Germany, Jan. 26, 1972, 2203475

Int. Cl. G01n *21/22;* **G02b** *5/00*

U.S. Cl. 250—239 **6 Claims**



1. In a sensor for submersible probes to be used in a fouling environment, a combination comprising a sealed housing having a window portion and defining an enclosed space; and a sensor accommodated in said space and facing said window portion, said window portion having a surface exposable to said fouling environment, and being composed of alternating lamellae of light-transmissive substance for admitting light from said environment into said space, and of anti-fouling copper alloy for preventing fouling of said light transmissive lamellae, said copper alloy lamellae having a combined exposed surface area amounting to substantially 90 percent of said exposable surface of said window portion.

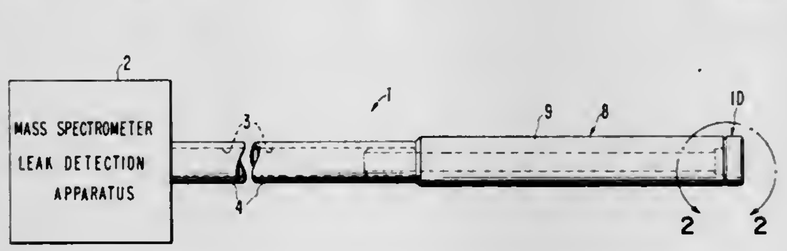
3,867,631
LEAK DETECTION APPARATUS AND INLET INTERFACE

Walton E. Briggs, Lynnfield, and Joseph C. Maliakal, Millis, both of Mass., assignors to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 293,206, Sept. 28, 1972, Pat. No. 3,828,527. This application Feb. 14, 1974, Ser. No. 442,544

Int. Cl. H01j *39/34*

U.S. Cl. 250—281 **7 Claims**



1. A vacuum leak detection system for detecting the presence of a leak-indicative helium gas signal in an atmosphere, said system comprising a mass spectrometer capable of detecting helium gas, means forming a gas inlet passage to said mass spectrometer, membrane means capable of admitting helium gas therethrough preferentially with respect to other gases in the atmosphere, said membrane means comprising a solid one-piece polytetrafluoroethylene membrane sealed across said inlet passage to form an interface between said inlet passage and the atmosphere.

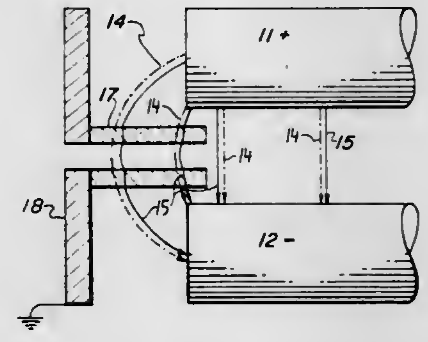
3,867,632
METHODS AND APPARATUS FOR SPATIAL SEPARATION OF AC AND DC ELECTRICAL FIELDS WITH APPLICATION TO FRINGE FIELDS IN QUADRUPOLE MASS FILTERS

Wade L. Fite, Pittsburgh, Pa., assignor to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Filed Mar. 30, 1973, Ser. No. 346,250

Int. Cl. H01j *39/34*

U.S. Cl. 250—292 **19 Claims**



1. In a method of mass analysis which utilizes a quadrupole mass filter which comprises the steps of producing ions, causing the introduction of said ions into the space between the poles of the quadrupole mass filter, and causing the transmission of only those ions of a selected mass-to-charge ratio through the space between said poles, the improvement comprising the use of a field separation means adjacent at least one of the end of said poles composed of a material which functions substantially as a high dielectric to ac electric fields and substantially as a conductor to substantially dc electric fields emanating from said pole, said separation means configured to allow said transmission of ions and to shield them during said transmission at least in part from the substantially dc electric fields.

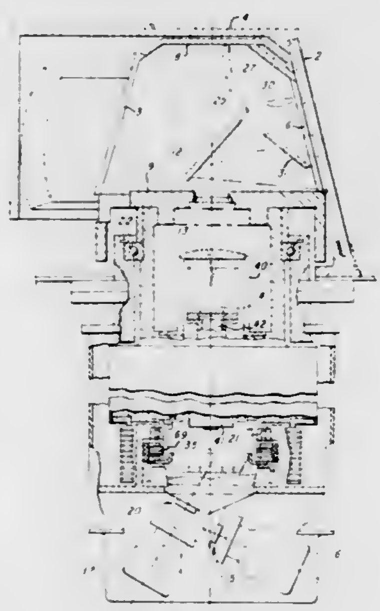
3,867,633
WIDE ANGLE VIEWING SYSTEM FOR LIMITED VISIBILITY CONDITIONS

Thomas R. Patrick, Austin, and Joe H. Keahey, Lewisville, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 209,221, Dec. 17, 1971, abandoned. This application May 15, 1973, Ser. No. 360,481

Int. Cl. G01t *1/16*

U.S. Cl. 250—334 11 Claims



1. An apparatus for detecting radiant energy from a scene and displaying an image thereof comprising:

a. a first housing rigidly attached to a support member, said housing having a radiant energy admitting window for admitting radiant energy from a field of view of a scene;
b. a second housing rotatably mounted in said first housing;
c. an optical system, a radiant energy detector means, and a transducer means mounted for synchronous rotation with said second housing, said optical system including means for selectively forming a first optical path from the window of the first housing for radiant energy emanating from a first portion of the scene of the field of view and a second optical path from the window of the first housing for radiant energy emanating from a second portion of the scene of the field of view, said radiant energy detector means positioned to receive radiant energy from the optical system and produce electrical representations thereof, and said transducer means operatively responsive to the electrical representations of the radiant energy detector means for producing a wide angle image of the field of view of the scene;
d. a means for rotating the second housing for scanning the field of view of the scene; and
e. a display means for displaying the image of the field of view of the scene.

3,867,634
BODY PORTION SUPPORT FOR USE WITH PENETRATING RADIATION EXAMINATION APPARATUS

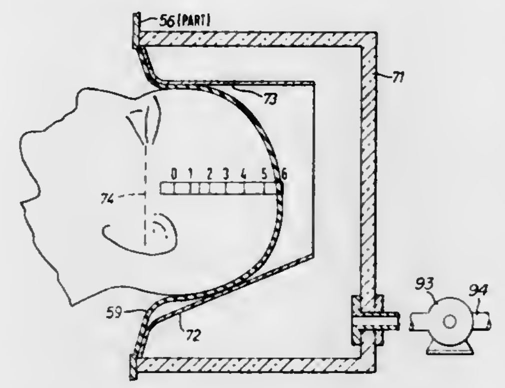
Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Limited, Hayes, Middlesex, England

Continuation-in-part of Ser. No. 212,778, Dec. 27, 1971, which is a continuation of Ser. No. 861,538, Aug. 21, 1969, abandoned. This application Apr. 9, 1973, Ser. No. 349,242

Claims priority, application Great Britain, Aug. 23, 1968, 40317/68

Int. Cl. G01n *23/00*

U.S. Cl. 250—360 6 Claims



1. Apparatus for examining part of a body by means of penetrating radiation, such as X- or γ-radiation, comprising a source of said radiation, support means, transmissive of said radiation, disposed to support said body part in a predetermined position relative to said source, detector means disposed to receive radiation emergent from said body part, and a scanning structure for causing said source and detector means to execute rotational scanning motions relative to the body part, wherein said support means includes a reservoir for a liquid medium, the wall of said reservoir facing in the direction of the axis of the rotational scanning motion being formed of pouched, flexible material so that the body part to be examined, when inserted into the pouched wall, can be surrounded by the liquid medium in the reservoir, while exposed to said radiation, and means for varying the amount of said liquid medium in said reservoir to expel air from the pouch when the body part is inserted therein.

3,867,635
ACHROMATIC MAGNETIC BEAM DEFLECTION SYSTEM

Karl L. Brown, Menlo Park, and William G. Turnbull, Cupertino, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 325,296, Jan. 22, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 456,503

Int. Cl. H01j *37/00*

U.S. Cl. 250—396 27 Claims

1. In a method for achromatic magnetic deflection of a beam of non-monoenergetic charged particles through a bending angle Ψ along a central orbital axis defined by the trajectory of a charge particle of a reference momentum P_0 is a bending plane between transverse beam entrance and beam exit planes the steps of:

subjecting the beam of charged particles to a series of magnetic deflection forces for;

focusing beam particles of the reference momentum P_0 which are initially radially displaced in the bending plane from the orbital axis at the beam entrance plane to first and second crossovers of the central orbital axis and also to trajectories with approximately zero slope relative to the orbital axis at a region along the orbital axis intermediate the beam entrance and beam exit planes;

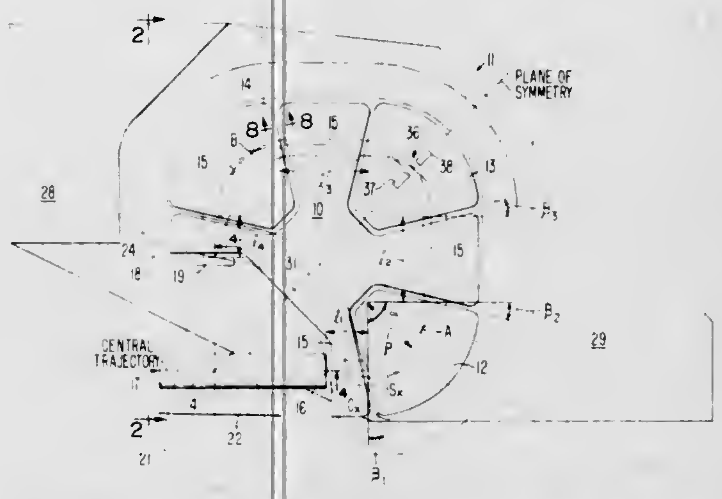
focusing beam particles of the reference momentum P_0 having trajectories which are on and angularly divergent from the orbital axis in the beam bending plane at the

beam entrance plane to a crossover of the orbital axis at a region along the orbital axis intermediate the beam entrance and beam exit planes;

focusing beam particles of the reference momentum P_0 which are initially displaced from and parallel to the orbital axis in the transverse plane at the beam entrance plane to a crossover of the central orbital axis at a region along the orbital axis intermediate the beam entrance and beam exit planes;

focusing beam particles of the reference momentum P_0 which have initial trajectories on and angularly divergent from the orbital axis in the transverse plane at the beam entrance plane to a crossover of the orbital axis at the beam exit plane and to trajectories having zero slope relative to the orbital axis at a region along the orbital axis intermediate the beam entrance and beam exit planes; and

achromatically focusing beam particles of a momentum differing from the reference momentum P_0 and having a trajectory initially coincident with the orbital axis at the beam entrance plane to the orbital axis at the beam exit plane.



3,867,636
APPARATUS FOR TAKING A CONTINUOUS X-RAY PICTURE OF THE DENTAL ARCH

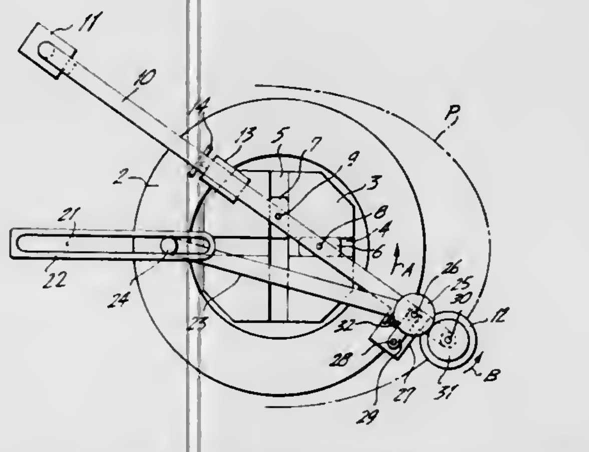
Masato Miyahara, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 327,656, Jan. 29, 1973, abandoned, and a continuation-in-part of Ser. No. 303,124, Nov. 1, 1972,. This application Mar. 15, 1974, Ser. No. 451,507

Claims priority, application Japan, May 29, 1972, 47-53166

Int. Cl. G03b *41/16*

U.S. Cl. 250—445 10 Claims



1. In apparatus for recording a continuous X-ray picture of the dental arch, a fixed base, a drive member which is mounted to rotate opposite the base, and which is equipped with an X-ray source and an X-ray film holder on opposite sides of the rotational axis thereof, means operable to rotate the drive member, means operable during the rotation of the drive member to cause the rotational axis of the drive member to shift in relation to the base such that the source and the holder trace coaxial elliptical arcs, a fixed reference, and a pair of pivotally interconnected links, a first of which is pivotally connected with the drive member, and the second of which is cam connected with the reference, said film holder being rotatably mounted on the drive member, and there being a cam fixed on one of the links, and means on the drive member yieldably biasing the cam into engagement with the film holder so that on rotation of the drive member, the film holder is caused to rotate in relation to the X-ray source.

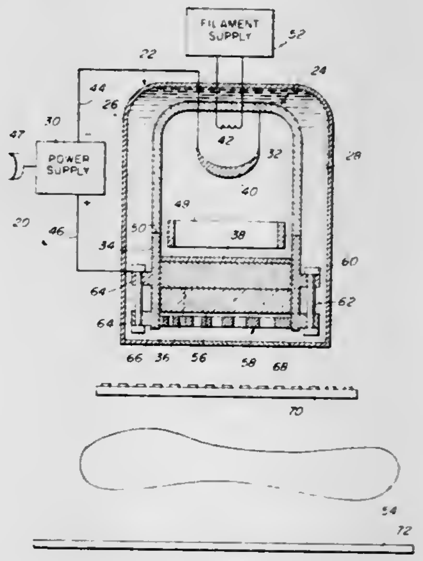
3,867,637
EXTENDED MONOCHROMATIC X-RAY SOURCE

Martin Braun; Howard D. Doolittle, both of Stamford, Conn.; Harrison H. Barrett, Lexington, Mass.; Jay P. Sage, Newton Centre, Mass., and David T. Wilson, Billerica, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sept. 4, 1973, Ser. No. 393,772

Int. Cl. H01j *35/16*

U.S. Cl. 250—503 15 Claims



1. A X-ray system comprising:

means for generating X-rays;

means for improving the monochromaticity of said X-rays, said improving means comprising a mask assembly having a first and a second mask, each of said masks having regions relatively opaque to X-radiation interspersed among regions relatively transparent to X-radiation, said second mask being spaced apart from said mask along an axis normal to a surface of said first mask, the opaque regions in one of said masks being in registration with the transparent regions of the other of said masks; and

means for spatially modulating said X-rays, said modulating means comprising regions of relative opacity to X-rays interspersed among regions having relative transparency to said X-rays, the spaces occupied by successive ones of a plurality of said opaque and said transparent regions being arranged in a monotonically decreasing order in a predetermined direction.

3,867,638
RADIATION BEAM CONSTANCY CHECK BLOCK

Robert Golden, Youngstown, Ohio

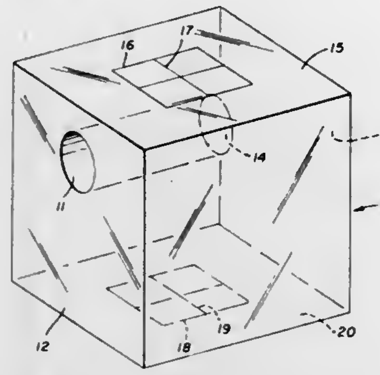
Filed Nov. 13, 1972, Ser. No. 306,357

Int. Cl. G01t *1/16*

U.S. Cl. 250—505 4 Claims

1. The combination of an X-ray beam constancy check block and an ionization test chamber, said block comprising a unitary body formed from a single piece of synthetic resin and having a known radiation transparency, said body having at least two parallel spaced surfaces and a third surface perpendicular thereto, said body being provided with a tubular cavity extending inwardly from said perpendicular surface and parallel with said parallel surfaces for removably receiving

said ionization test chamber, said tubular cavity being unequally distant from said spaced parallel surfaces of said body, target indicia on said spaced parallel surfaces on a common center line extending through said tubular cavity.



3,867,639
OPTICAL CORRELATOR

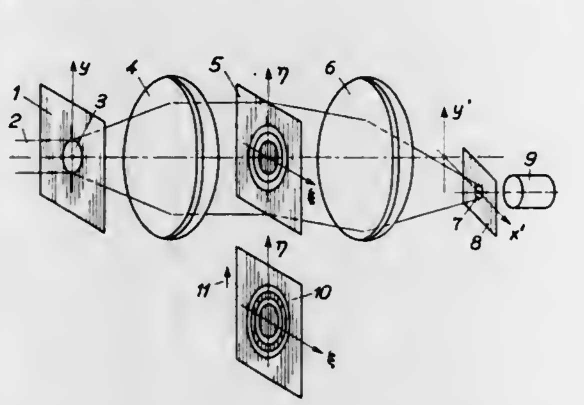
Andreas Hermann Engel, Baltimore, Md., assignor to Turlabor AG, Zumikon, Switzerland

Filed May 17, 1973, Ser. No. 361,156

Claims priority, application Switzerland, May 19, 1972, 7526/72

Int. Cl. G01n *21/30*

U.S. Cl. 250—550 **6 Claims**



1. In an optical correlator having means for producing a beam of coherent light, a test sample positioned in the path of said light beam, a hologram filter including a diffraction image of a standard object to receive a diffraction image of said test sample, light-measuring means for receiving light from said hologram filter and adapted to produce an output signal proportionate to the intensity of the light received, and diaphragm means including an aperture interposed between said hologram filter and said light-measuring means, the light from said hologram filter passing through said aperture in said diaphragm means, the improvement comprising: auxiliary filter means positioned in the path of said light beam proximate said hologram filter, said auxiliary filter means having in one half of the first, second, third et seq. diffraction order of said standard object the transmittance +1 and in the other half of said diffraction orders a transmission 0 for providing a black-white filter.

3,867,640
DUST SAMPLING SYSTEM

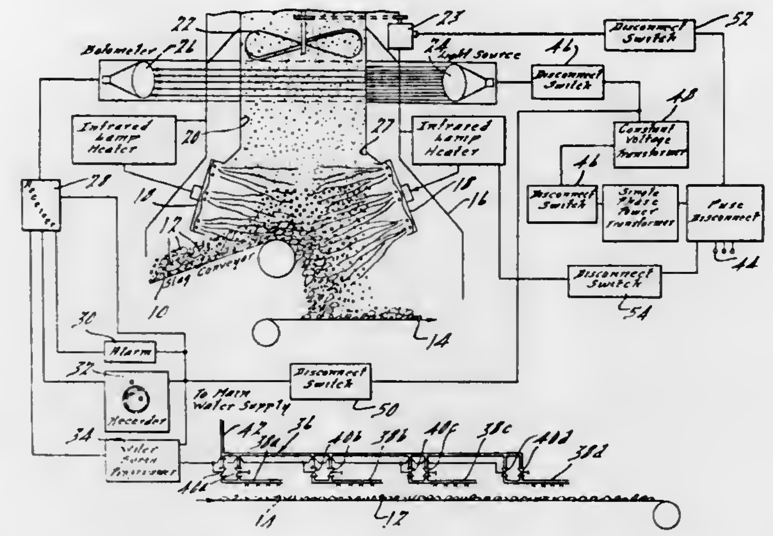
Lewis A. Paulsen, Belleville, Mich., assignor to Edward C. Levy Company, Detroit, Mich.

Filed Mar. 9, 1972, Ser. No. 233,190

Int. Cl. G01n *21/30*

U.S. Cl. 250—573 **8 Claims**

1. A dust sampling system for monitoring the dust content of moist gases including an open conduit having a gas inlet and outlet, a radiant heat source associated with said inlet and operable to vaporize moisture particles suspended in moving gases entering said inlet, a constant intensity light source directing a beam of light across said conduit downstream from said heat source, a light sensor arranged to receive light from said source and means controlled by said sensor responsive to a reduction in the amount of light received by said detector from said source resulting from an increase in the dust particles suspended in said gases.



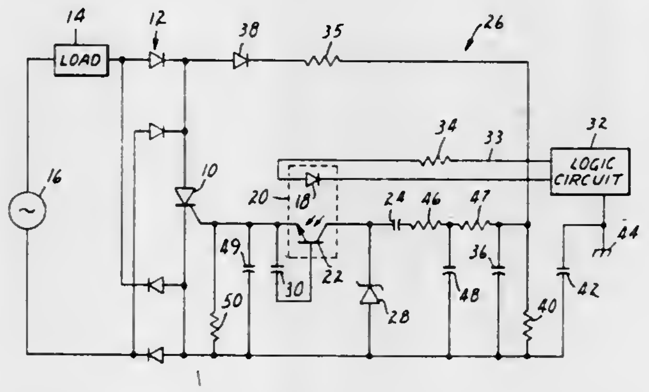
3,867,641
AC LOAD ACTUATION CIRCUIT

John E. Collins, North Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 13, 1974, Ser. No. 442,192

Int. Cl. H03k *17/16*

U.S. Cl. 307—117 **10 Claims**



1. An AC load actuation circuit comprising a thyristor load switching element for switching a load into connection with an AC source and a photon coupler for triggering the thyristor load switching element,

wherein the improvement comprises in combination;

said photon coupler comprising a light emitting element and a photosensitive triggering element which is connected to the gate of said thyristor load switching element for triggering the thyristor in response to the light emitting element being actuated by a control signal;

a capacitor connected in the load actuation circuit for providing a triggering current through the photosensitive element to the thyristor gate which leads the load voltage in phase to thereby provide a maximum level triggering current near the zero voltage crossing point for the load; and

a zener diode connected to the photosensitive element and to the capacitor for limiting the level of the voltage across the photosensitive triggering element due to current flow from the capacitor when power is first applied to the load actuation circuit thereby to protect the photosensitive triggering element and also thereby to enable triggering of the thyristor only in response to the gating of the photosensitive triggering element due to the actuation of the light emitting element.

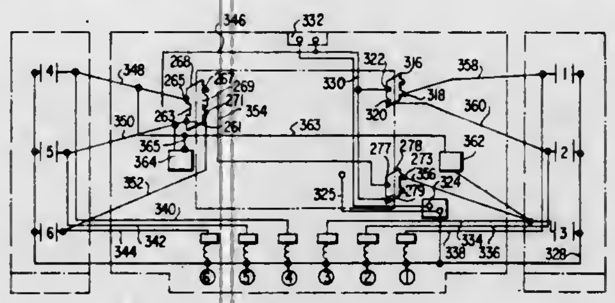
3,867,642
MULTIPLE-SWITCH CLOCK

Mamut Ajrlahi, 7308 Parkwood Ct., Falls Church, Va.

Filed Feb. 15, 1973, Ser. No. 332,662

Int. Cl. H01h *43/00;* **G04c** *23/12*

U.S. Cl. 307—141 **20 Claims**



1. In a clock having a motor, a second hand, a minute hand, an hour hand, an alarm hand, and a source of electrical power associated therewith comprising:

one electrical outlet;

circuit means for connecting said electrical outlet to said source of electrical power;

normally closed first switch means disposed within said circuit for permitting and preventing said electrical power to be conducted to said outlet;

first gear means for manually setting said alarm hand to a particular time of the day at which said first switch means will be opened and electrical power to said outlet will be terminated;

first actuating means controlled by said motor for automatically actuating said first switch means at said particular time whereby said electrical power to said outlet is automatically terminated; and

second actuating means controlled by said motor for automatically actuating said first switch means at a predetermined time subsequent to said particular time whereby said first switch means is reclosed and electrical power to said outlet is automatically resupplied.

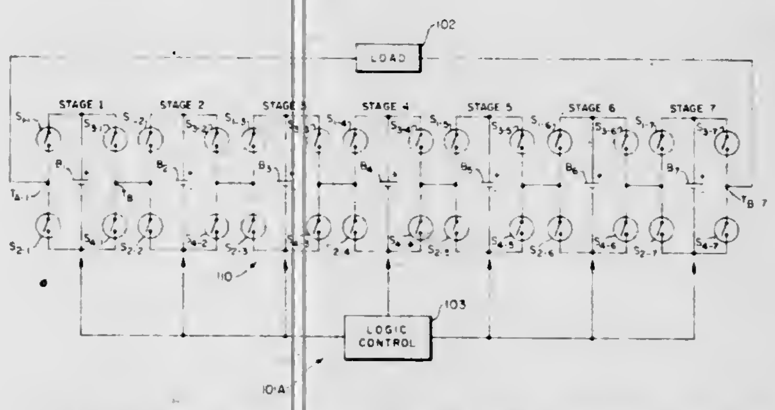
3,867,643
ELECTRIC POWER CONVERTER

Richard H. Baker, Bedford, and Lawrence H. Bannister, Dedham, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 14, 1974, Ser. No. 432,939

Int. Cl. H02m *7/00*

U.S. Cl. 307—151 **27 Claims**



1. An electric power system comprising a plurality of stages connected in cascade, each stage including, in combination: supply voltage means; first bilateral solid-state switch means connected between the supply voltage means and one terminal of the stage; and second bilateral solid-state switch means connected between the supply voltage means and another terminal of the stage, one terminal acting as input to the stage at one state of operation of the stage and the other terminal operating as output during said one state, the roles of the two terminals being reversed at another state of operation of the stage, the first switch means and the second switch means acting in combination to connect one side or the other of the supply voltage means to either terminal as alternate conditions of stage operation or to bypass the supply voltge means.

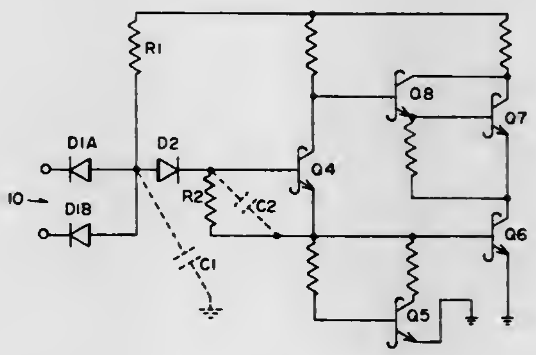
3,867,644
HIGH SPEED LOW POWER SCHOTTKY INTEGRATED LOGIC GATE CIRCUIT WITH CURRENT BOOST

Ronald L. Cline, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 7, 1974, Ser. No. 431,043

Int. Cl. H03k *19/08, 19/36*

U.S. Cl. 307—213 **3 Claims**



1. In a high speed low power Schottky integrated logic gate circuit having between input and common a $2V_{be}$ transistor voltage drop produced by first and second cascaded Schottky transistors and an opposite diode voltage drop produced by diode means coupled to said input, said voltage drops determining the threshold input voltage level, V_{TH}, at which switching occurs, an increase in ambient temperature tending to reduce said voltage drops and to reduce said V_{TH} whereby said circuit is more susceptible to noise the improvement comprising: a third transistor coupled to said first transistor in a sense to add to said V_{be} of said first transistor to raise said V_{TH}, said third transistor having its control terminal coupled to said diode means; pull out resistor means connected to said first transistor for pulling out said first transistor, current boost transistor means connected between said third transistor and a d.c. voltage source for providing a low impedance high current path for charging associated parasitic capacitances.

3,867,645
CIRCUIT FOR AMPLIFYING CHARGE

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,555

Claims priority, application Great Britain, Sept. 25, 1972, 44293/72

Int. Cl. G11c *11/24, 11/40, 19/00;* **H01l** *19/00*

U.S. Cl. 307—221 D **11 Claims**

1. The combination comprising:

a charge transfer register having a plurality of stages, said register adapted to receive a charge signal and including means for transferring said signal from stage-to-stage along said register;

a multiplicity of amplifying means spaced along said register; each amplifying means having an input coupled to a different one of said stages of said register for sensing said charge signal and having an output point for producing thereat an output signal in response to said charge signal;

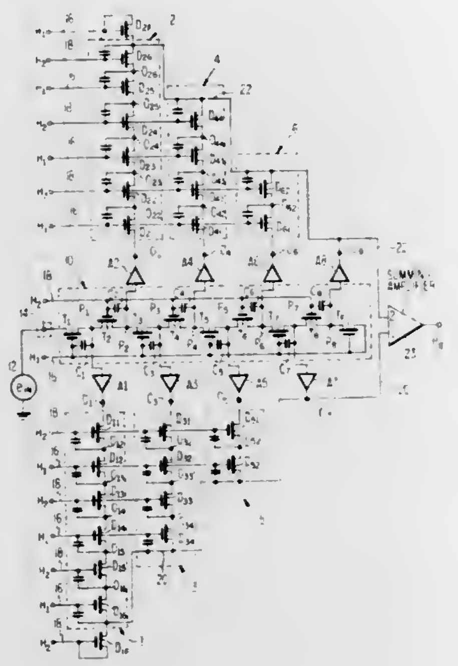
a common output point; and

means for summing the charge signals produced at the output points of said amplifying means, including charge transfer means coupled between said output points of said amplifying means and said common output point.

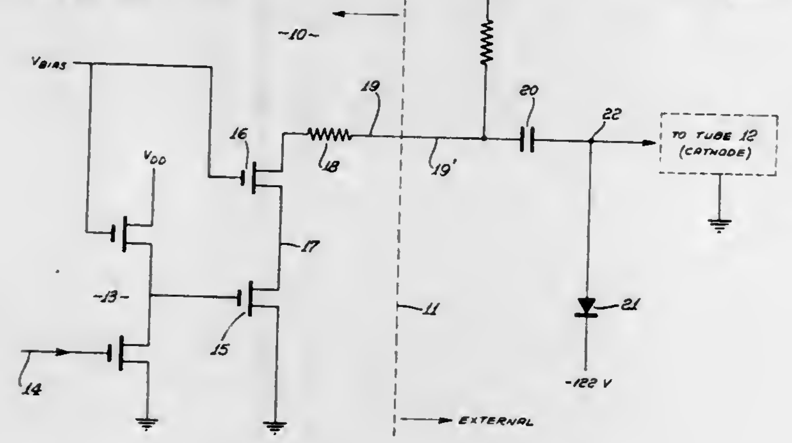
9. The combination as claimed in claim 1 wherein said summing means includes two conductors;

wherein said charge transfer means of said summing means includes charge transfer registers connected between the output points of selected ones of every other one of said amplifying means and one of said two conductors and charge transfer registers connected between the output

points of selected ones of the remaining amplifying means and the other one of said two conductors;
wherein said charge transfer registers of said summing means are of varying lengths to provide different delays between the selected output points and their respective conductors for bringing the output signals produced at said output points into time coincidence at their respective conductors; and
a summing amplifier coupled between said two conductors and said common point for combining the output signals of said two conductors at said common output point.



3,867,646
MOSFET CIRCUITRY FOR INTEGRATED CHIPS INTERFACING WITH HIGHER VOLTAGE DEVICES
Michael R. McCoy, San Jose, Calif., assignor to Electronic Arrays, Inc., Mountain View, Calif.
Filed Oct. 5, 1973, Ser. No. 403,961
Int. Cl. H05b *41/00;* **H03k** *17/60, 19/08*
U.S. Cl. 307—251 **4 Claims**

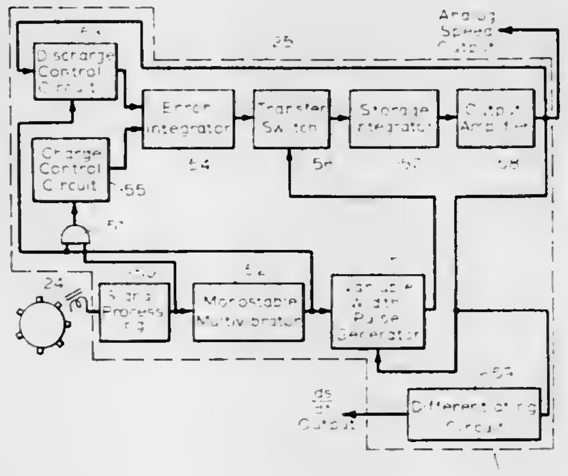


1. In an integrated circuit chip of the MOSFET variety having an output terminal to be controlled as to effective voltage potential, and to which is applied a biasing voltage having value relative to ground in excess of the MOSFET breakdown voltage the improvement of:
an output circuit in the MOSFET chip as connected between said terminal and ground in the chip, and having
a first FET-transistor having its gate controlled from internal circuitry in the chip between conduction and nonconduction, the output circuit further having
a second FET-transistor having its gate controlled by a particular voltage for being permanently biased to conduction, and serially connected to the first transistor, the common drain-to-source junction of the first and second transistors being isolated from any other non-ground external bias for maintaining the second FET nonconducting except upon drop to ground or near ground potential of the potential at said junction, so that the potential of the drain of the second MOSFET is not being applied to any other MOSFET in the chip under conditions of conduction of the second FET transistor; and
said serially connected first and second transistors being connected between ground and said terminal, so that said excess biasing voltage is applied to the drain of the second FET and for non-conductive first transistor the effective voltage across its main electrodes is composed of said biasing voltage as reduced by the gate voltage as applied to the gate of said second transistor.

2. Circuit as in claim 1, wherein a voltage breakdown device is connected to said output terminal.

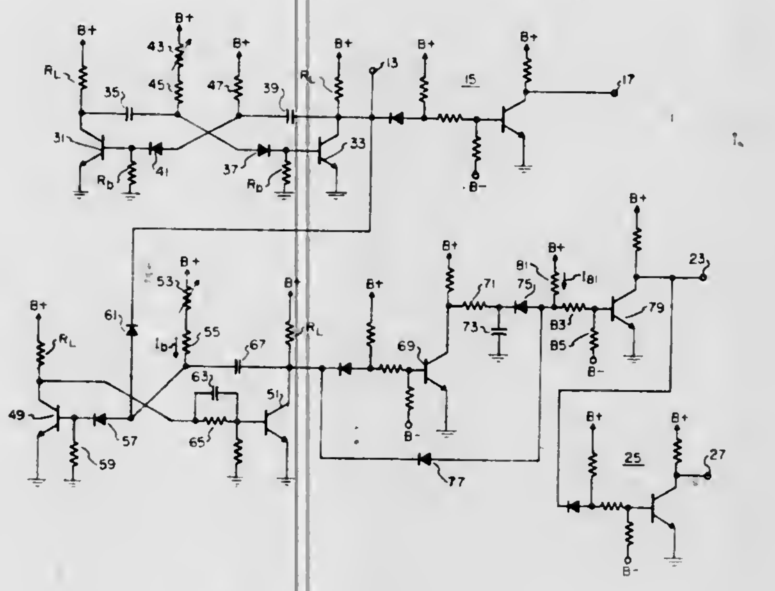
3. Circuit as in claim 2, wherein the voltage breakdown device is connected to said output terminal via a passive circuit.

3,867,647
ANALOG SPEED DETECTOR
Bernard E. Callahan, Hoffman Estates, and Philip M. Higgins, Chicago, both of Ill., assignors to Vapor Corporation, Chicago, Ill.
Filed May 29, 1973, Ser. No. 364,298
Int. Cl. H03k *5/18*
U.S. Cl. 307—233 A **16 Claims**



1. A speed detector for producing from an input signal having a repetition rate related to the actual speed of a moving vehicle an analog output signal indicative of the speed of said vehicle, comprising, in combination:
means responsive to said input signal for generating a control signal defining first and second operating periods;
error detection means for generating an error signal, said error signal progressively changing during said first operating period from a first predetermined initial voltage level to a final voltage level, said final voltage level being dependent on the duration of said first operation period and on the rate at which said error signal progressively changes, and remaining at said final voltage level during at least a portion of said second operation period;
integrator means for developing an output signal having a level dependent on the amplitude and polarity of momentarily applied signals;
means for applying said error signal at said final voltage level to said integrator means during at least a portion of said second operating period; and
means responsive to the output signal developed by said integrator means for controlling the rate at which said error signal progressively changes during said first operating period such that said output signal developed by said storage means comprises an analog signal indicative of the speed of said vehicle.

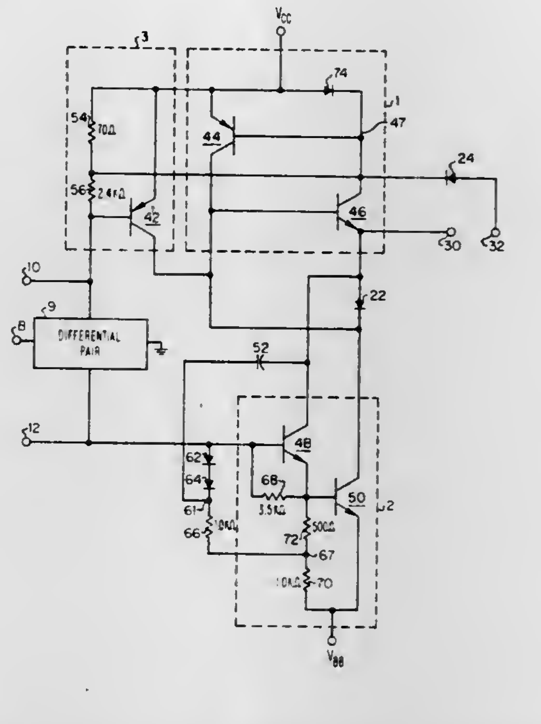
3,867,648
PULSE WIDTH SHORTENING CIRCUIT
Gerald A. Christenson, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill. Division of Ser. No. 375,253, June 29, 1973, Pat. No. 3,818,367. This application Jan. 2, 1974, Ser. No. 429,995
Int. Cl. H03k *5/04*
U.S. Cl. 307—266 **1 Claim**



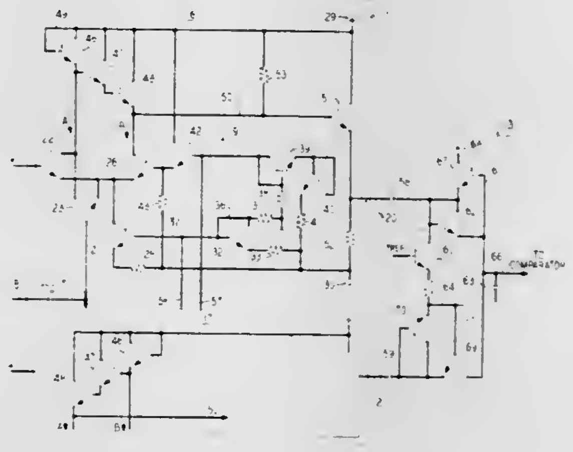
1. Apparatus for developing output pulses of reduced pulse width responsive to corresponding input pulses of larger pulse width comprising:
a capacitor developing a control potential representative of the charge stored therein responsive to the input pulse being coupled thereto,
the capacitor being charged during intervals between the input pulses and discharged at a predetermined rate during intervals coinciding with the input pulses;
an amplifier,
the amplifier having a biasing arrangement for developing a bias current to maintain the amplifier in an ON state;
first switching means coupled to the amplifier for diverting the bias current from the amplifier during intervals between the input pulses to turn the amplifier OFF; and
second switching means coupled between the capacitor and the amplifier for diverting the bias current from the amplifier to turn the amplifier OFF responsive to the control potential falling below a switching threshold.

3,867,649
DRIVER
David S. Cochran, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sept. 26, 1973, Ser. No. 400,750
Int. Cl. H03k *5/12*
U.S. Cl. 307—268 **7 Claims**

1. A driver comprising:
a first output level amplifier having an input and an output;
a second output level amplifier having an input and an output connected to the input of the first ouput level amplifier;
a first unidirectional conducting device having an anode connected to the output of the first output level amplifier and having a cathode connected to the output of the second output level amplifier;
a threshold detector;
a second unidirectional conducting device having an anode connected to the input of the second output level amplifier and having a cathode connected to the threshold detector; and
a feedback capacitance coupled in series with the threshold detector and between the threshold detector and the output of the first output level amplifier.

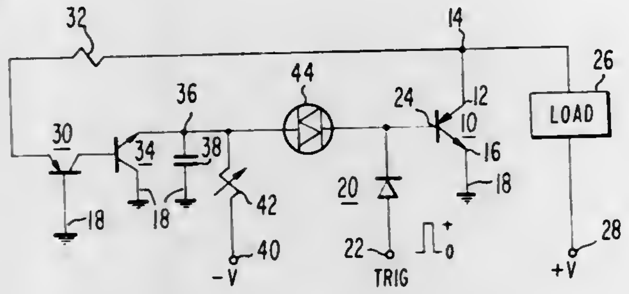


3,867,650
COMPOUND TRANSISTOR CONNECTION LOADING FOR A CURRENT
Gary Lee Baldwin, Wall Twp., Monmouth Co., N.J., assignor to Bell Telephone Laboratories Inc., Murray Hill, N.J.
Filed Dec. 3, 1973, Ser. No. 421,027
Int. Cl. H03k *5/20, 13/22, 17/62*
U.S. Cl. 307—235 **10 Claims**



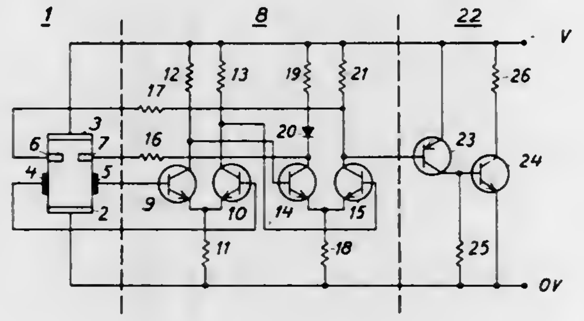
1. In combination
a differential amplifier having first and second current paths,
means for biasing said amplifier to be responsive to first and second input signal levels for routing amplifier current to one or the other of said first and second paths, respectively,
a compound transistor connection including plural cascade-connected amplifier stages, said stages including a diode-connected transistor input stage,
means for connecting said input stage in series in said first current path,
means for connecting the final one of said cascaded stages in series in only said second current path, and
means for deriving an output signal from one of said paths.

3,867,651
MONOSTABLE SWITCHING CIRCUIT
Jack Edward Wojslawowicz, Bayonne, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sept. 28, 1973, Ser. No. 401,878
Int. Cl. H03k *3/26*
U.S. Cl. 307—273 **16 Claims**



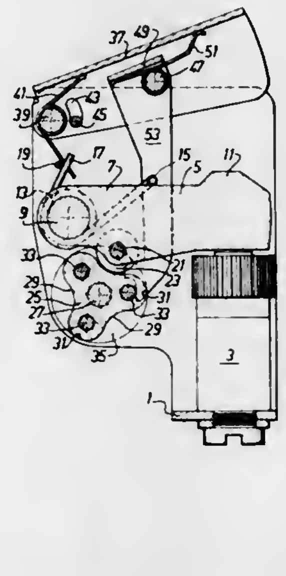
1. A monostable switching circuit for use with a load and a source of operating potential to control current flow through the load, comprising:
- a bistable electronic switch having a conduction path for connection in circuit with the load and the source of operating potential, said switch having a control terminal responsive to a first polarity trigger signal for placing the path in a first conductive state and responsive to a second polarity trigger signal for placing the path in a second conductive state;
- means for applying said first polarity trigger signal to said control terminal; and
- circuit means responsive to an externally supplied control signal and to the conductive state of said path for producing and applying said second polarity trigger signal to said control terminal a predetermined time, which is a function of the value of said externally supplied control signal and is substantially independent of said current flow through said load, after application of said first polarity trigger signal.

3,867,652
CONTACTLESS SWITCH
Fritz Lars Gumnar Bjorklund, Tyreso, and Olaf Sternbeck, Bromma, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Oct. 16, 1973, Ser. No. 406,856
Claims priority, application Sweden, Nov. 3, 1972, 14271/72
Int. Cl. H03f *15/00;* **H01v** *5/00*
U.S. Cl. 307—309 **3 Claims**



1. Contactless switch comprising a Hall-effect element that has a pair of input electrodes for applying a supply voltage to generate a current in an internal current path and at least one output electrode located adjacent the current path to derive a Hall-potential when an external magnetic field influences the current laterally, and an amplifier circuit that is controlled by the Hall-potential, the Hall-effect element being provided with at least one control electrode controlling the magnitude of said current and the amplifier circuit being provided with at least one output terminal connected to said control electrode of the Hall-effect element for feeding back an amplified Hall-potential in such a phase that the amplifier circuit is provided with positive feedback, the amplifier circuit further comprising a two-terminal device that has a voltage drop with a temperature coefficient of the same sign and at least the same magnitude as the Hall-potential of the Hall-effect element and that is connected to said output terminal of the amplifier circuit in such a way that it constitutes a load for the amplified Hall-potential.

3,867,653
PERCUSSION ARRANGEMENTS
Karl Heinz Duetze, Cessenas-Servier, Saint-Jorioz, France 74410
Filed Sept. 19, 1973, Ser. No. 398,801
Claims priority, application France, Sept. 27, 1972, 72.34166
Int. Cl. H04r *17/00;* **H03k** *3/00*
U.S. Ç1. 310—8.7 **7 Claims**

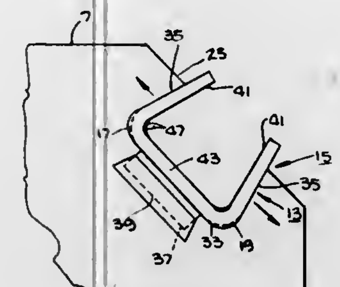


1. A percussion arrangement for piezo-electric apparatus, especially for lighters, comprising a piezo-electric element, a pivotal hammer resiliently urged into contact with the piezo-electric element, a rotatable cam in contact with the hammer and which comprises at least one sector having a first portion whose profile extends from the axis of rotation of the cam so as to move the hammer away from the piezo-electric element, and a second portion whose profile approaches the axis of rotation to allow the hammer to drop onto the piezo-electric element, a pivotal thumb piece resiliently urged away from the hammer and cam, and drive means coupled to said thumb piece for bearing against said cam to effect rotation of the cam when the thumb piece is displaced, the cam being freely rotatable and being disconnected

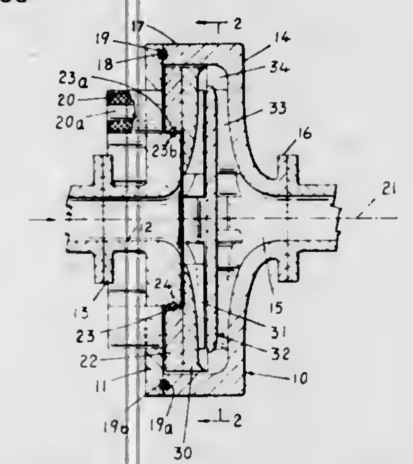
from the drive means at the instant when the hammer approaches the piezo-electric element to strike the same.

3,867,654
DYNAMOELECTRIC MACHINE STATOR
Charles W. Otto, Dekalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.
Continuation-in-part of Ser. No. 246,315, April 21, 1973, abandoned. This application Sept. 24, 1973, Ser. No. 400,050
Int. Cl. H02k *1/12*
U.S. Cl. 310—42 **23 Claims**

3. A stator for a dynamoelectric machine having at least one end frame comprising a stack of laminations having opposite end faces, a plurality of openings in the stack between the end faces thereof, means in at least some of the openings for holding the laminations generally in their stacked positions, and means mounted in the openings for supporting engagement with the one end frame including means urged into engagement with the stack within the openings for preventing displacement of the supporting means generally radially of the openings, and other means respectively engaged with at least a portion of the opposite end faces about the openings for preventing displacement of the supporting means generally axially of the openings.



3,867,655
SHAFTLESS ENERGY CONVERSION DEVICE
Rudolph F. Stengel; Linda F. Stengel, both of Woodland Hills, and Howard Assel, Laguna Beach, all of Calif., assignors to Entropy Limited, Toronto, Ontario, Canada
Filed Nov. 21, 1973, Ser. No. 417,950
Int. Cl. H02k *7/00*
U.S. Cl. 310—66 **9 Claims**

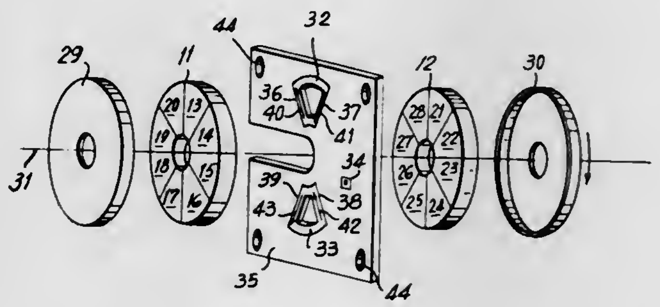


1. An energy conversion device adapted to selectively convert fluid pressure energy into electrical energy in a generator mode and electrical energy into fluid pressure energy in a pump mode, the device having a hollow toroidal body with first and second opposed openings located on a common central axis, the body enclosing the following elements located on the central axis in parallel planes extending perpendicular to the central axis in the following order between the first and second openings:
- a. a plurality of circularly spaced electromagnetic coils fixed to said body around said first opening, the coils adapted to be connected to electrical power supply means in the pump mode and to electrical energy receiving means in the generator mode;
- b. a rotatably located circular conductive rotor having a central aperture therethrough;
- c. a circular impeller having a central aperture therethrough fixed to said rotor, said impeller having a plurality of spaced narrow radial blades extending transversely away from said rotor; and
- d. a diffuser fixed to said body, said diffuser having a circular plate spaced adjacent the impeller blades and a plurality of spaced curved radial vanes secured transversely to the plate to extend away from the impeller;

the power supply means adapted to produce a travelling electromagnetic wave which rotates about said central axis adjacent said coils to cut conductive paths of said rotor when the rotor has angular motion relative to said travelling electromagnetic wave,

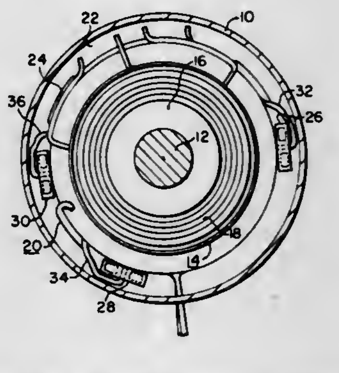
the device providing a reversible fluid flow path therethrough between the first and second openings having a first axial portion, a radial outward portion, a radial inward portion and a second axial portion.

3,867,656
BRUSHLESS DIRECT CURRENT MOTOR
Yoshihiro Mitsui, and Hiroshi Kamakura, both of Matsumoto, Japan, assignors to Kabushiki Kaisha Siwa Seikosha, Ginza and Kabushiki Kaisha Siwa Seikosha, Chuo-ku, both of, Japan
Filed Dec. 13, 1972, Ser. No. 314,626
Claims priority, application Japan, Dec. 13, 1971, 46-100244; Dec. 13, 1971, 46-100245
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 **12 Claims**



1. A brushless direct current motor comprising a rotor rotatable about a rotary axis and carrying magnetic circuit means defining a gap through which a magnetic field flows in a direction substantially parallel to said rotary axis; a flat stator plate positioned within said gap and having driving coil means and magnetic sensitive element means mounted thereon in said gap to thereby be within said magnetic field, said magnetic sensitive element means including at least one Hall element and is adapted to detect the condition of said magnetic field when said rotor is still and moving to produce a detecting signal in response thereto; and circuit means interconnecting said driving means and magnetic sensitive element means for applying a driving current to said driving coil means in response to said detecting signal.

3,867,657
GENERATOR HAVING SHIELDED CURRENT TRANSFORMERS POSITIONED THEREIN
William W. Yates, Lima, and Herman J. Braun, Cridersville, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 29, 1974, Ser. No. 456,424
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 D **5 Claims**



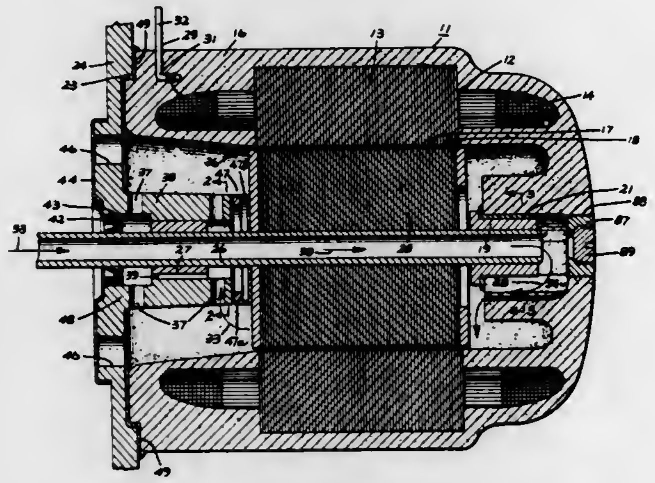
1. An electromechanical generator comprising:
- a rotor;
- a stator assembly having a magnetic core and a winding structure extending from said magnetic core, said stator assembly being disposed around said rotor;
- a flux shield constructed of a non-magnetic, electrically conductive material, said flux shield having a bottom portion and side portions extending from said bottom portion, said flux shield being disposed substantially adjacent to the winding structure which extends from said magnetic core; and,
- a closed magnetic core with a layered winding disposed thereon, said closed magnetic core and layered winding structure being positioned between the sides of said flux

shield, with substantially one-half of the layers of the layered winding progressing in one direction and the other layers progressing in the opposite direction for providing a winding which does not have any net turns which would be linked by magnetic flux which is directed perpendicular to the bottom portion of the flux shield;

said bottom portion of said flux shield having an opening therein through which a lead from said stator winding structure extends to provide inductive coupling between the lead and the layered winding on the closed magnetic core.

3,867,658
DYNAMOELECTRIC MACHINES

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.
Continuation of Ser. No. 217,604, Jan. 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 6,660, Jan. 29, 1970, abandoned. This application Feb. 14, 1973, Ser. No. 332,508
Int. Cl. H02k *11/00*
U.S. Cl. 310—71 **7 Claims**



1. A structural assembly comprising a dynamoelectric machine stator assembly; a movable assembly; at least one bearing means for mounting the assemblies for relative motion; a substantially rigid member formed for connecting the at least one bearing means and stator assembly together, for protecting the stator assembly from impact loads applied to the dynamoelectric machine, and for aiding in the effective dissipation of heat from the stator assembly generated during operation of the dynamoelectric machine; and securing means embedded in the substantially rigid member to provide for fastening together the dynamoelectric machine with another device; said substantially rigid member including an impact resistant self-supporting substantially rigid mass of inert particulate material held together and secured to the stator assembly, said substantially rigid member providing effective heat dissipation when the dynamoelectric machine is operated, and said substantially rigid member comprising from about 65 to about 80 percent by weight of inert particulate material and from about 20 to about 35 percent by weight of resinous material, and the particulate material comprises at least about 50% by weight 40 to 100 mesh size particles said securing means includes a plastic member having at least one aperture for receiving a fastening means.

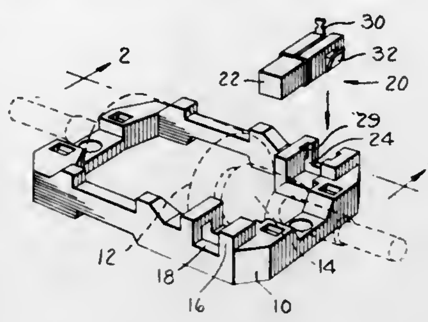
3,867,659
BRUSH HOLDER ASSEMBLY

Duane M. Seaburg, Oakfield, N.Y., assignor to General Electric Company, New York, N.Y.
Filed Aug. 6, 1973, Ser. No. 386,154
Int. Cl. H02k *13/00*
U.S. Cl. 310—242 **6 Claims**

1. For use in an electric motor frame with commutator brushes, an improved brush holder assembly comprising,

groove means having a complete open top disposed in said frame,

channel means in the side of said groove means extending towards and terminating below the top of the groove to define an overhang below said top,



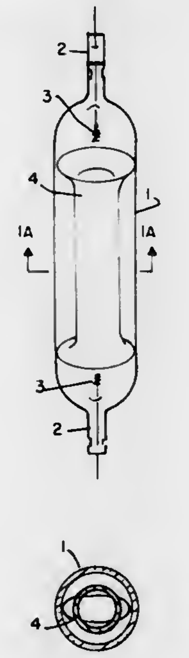
a tubular brush holder formed to fit said groove means,

flexible tab means comprising lances struck out of the sides of the brush holder and opening upwardly of the fixed position of said brush holder,

whereby said holder may be pressed down from above against the groove bottom with the tab means deflecting into the channel means and then locking below the overhang to locate and fix the holder in the groove.

3,867,660
DOUBLE CHAMBER ARC TUBE FOR HIGH INTENSITY DISCHARGE LAMP

Timothy Fohl, Carlisle, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.
Filed Aug. 13, 1973, Ser. No. 387,934
Int. Cl. H01j *1/02*
U.S. Cl. 313—12 **9 Claims**



1. A high intensity arc discharge lamp comprising an elongated, double chamber arc tube, said arc tube containing an electric-discharge-supporting fill and having electrodes at its ends, the shape of the arc tube being such that during normal operation of the lamp in a position having a vertical component, upward convection flow of the gaseous and vaporized arc tube fill occurs within one chamber of the arc tube and downward convection flow occurs within the other chamber, the arc discharge being confined in said one chamber and being excluded from said other chamber.

3,867,661
QUICK WARM-UP LAMP

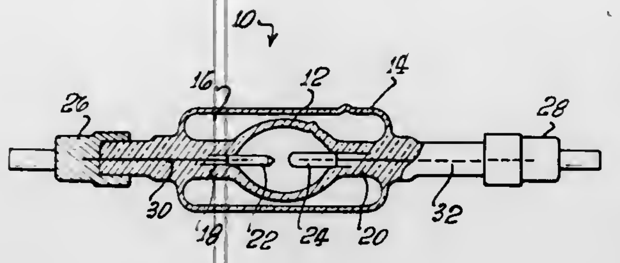
Allen R. Waltz, San Diego, and Robert A. Eckel, Cupertino, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 19, 1973, Ser. No. 408,218
Int. Cl. H01j *61/30*
U.S. Cl. 313—26 **6 Claims**

1. A quick warm-up lamp comprising:

a bulb;

a cathode and an anode mounted within and at opposite ends of the bulb in a spaced apart relationship;

a jacket disposed about the entire bulb so as to provide an insulative space between the bulb and the ambient environment;

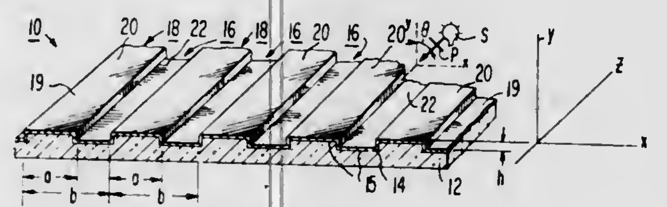


each end of the bulb being molded integrally with the jacket into a solid neck which extends from the respective end and is located within said jacket; and

a lead extending through each neck and connected to the cathode and the anode respectively.

3,867,662
GRATING TUNED PHOTOEMITTER

John Guiry Endriz, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 15, 1973, Ser. No. 406,183
Int. Cl. H01j *39/00*
U.S. Cl. 313—94 **17 Claims**



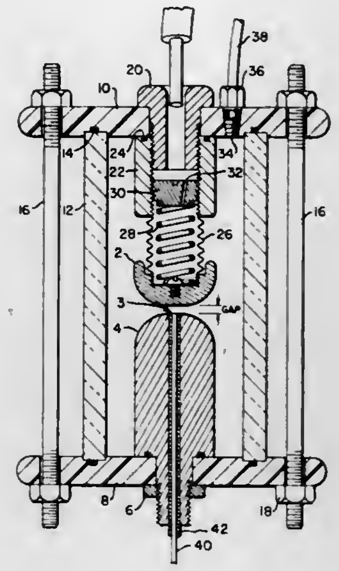
1. A photoemitter for emitting electrons in response to an incident light wave impinging thereon, comprising:

a highly reflective medium having periodic discontinuities dimensioned to achieve energy coupling from an incident light wave impinging on a surface of said medium to a surface wave confined to propagate along and be absorbed into photoemissive material of the photoemitter to excite a tuned peak of electron emission therefrom at at least one discrete and preselected wavelength of said incident light, said discontinuities having a periodicity of spacing substantially equal to the wavelength of said surface wave at at least one tuned peak of electron emission.

3,867,663
WIDE RANGE PRESSURE CONTROLLED SPARK GAP

Willard E. Spencer, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed May 14, 1973, Ser. No. 360,304
Int. Cl. H01j *1/88*
U.S. Cl. 313—146 **9 Claims**

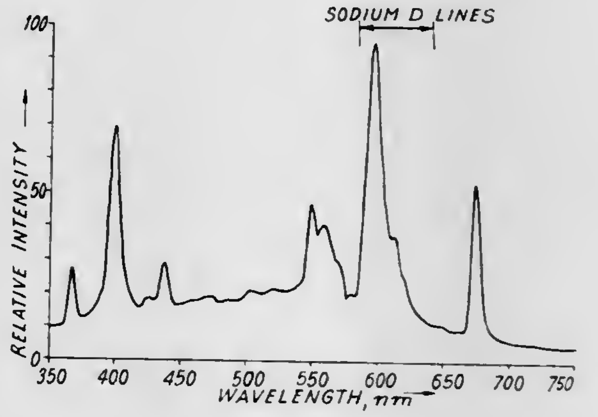
7. An adjustable spark gap device for continuous adjustment over a wide range of breakdown voltages comprising a sealed, gas-tight enclosure, a pair of electrodes in said enclosure disposed to form a spark gap therebetween, at least one of said electrodes being mounted for movement toward and away from the other electrode, a compressible bellows device in the enclosure, said one electrode being mounted on said bellows, means for maintaining substantially constant pressure within the bellows device, the bellows device including means for resiliently opposing compression of the bellows, and means for admitting gas into the enclosure at a controlled and adjust-



able pressure to simultaneously adjust said gas pressure and the spacing between said electrodes.

3,867,664
ELECTRIC DISCHARGE DEVICES

Alan George Chalmers, and David Osborn Wharmby, both of London, England, assignors to Thorn Electrical Industries Limited, London, England
Filed Jan. 21, 1974, Ser. No. 434,927
Claims priority, application Great Britain, Jan. 23, 1973, 3469/73
Int. Cl. H01j *61/18*
U.S. Cl. 313—229 **5 Claims**



1. A high-pressure electrical discharge lamp comprising:

a light-transmitting discharge vessel;

spaced electrodes in said vessel;

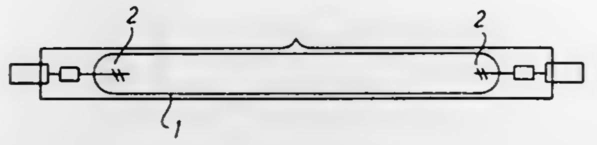
amd a gass fill in said vessel comprising mercury vapour, rare gas, aluminium halide and at least one alkali metal halide.

3,867,665
MERCURY DISCHARGE LAMP COMPRISING MAGNESIUM HALIDE

Kenneth Frederick Furmidge, and Eric John George Beeson, both of London, England, assignors to Thorn Electrical Industries Limited, London, England
Continuation-in-part of Ser. No. 256,006, May 23, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 418,122
Claims priority, application Great Britain, July 5, 1973, 32104/73
Int. Cl. H01j *1/54, 61/20*
U.S. Cl. 313—485 **30 Claims**

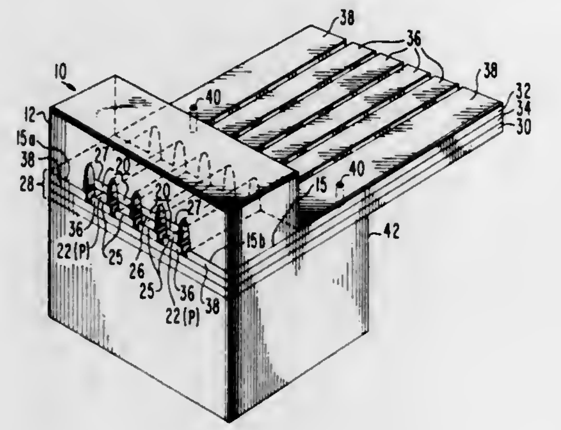
1. An ultra-violet emitting mercury vapour discharge lamp, comprising:

an ultra-violet transmitting lamp envelop;
- a discharge electrode system within said envelope; and
- an atmosphere withing said envelope, said atmosphere comprising mercury vapour and magnesium vapour in the form of a magnesium halide in such proportions as to provide enhanced ultra-violet emission, and an inert gas filling to initiate electron discharge, said magnesium being introduced into said lamp as magnesium metal together with another metal halide.



3,867,666
HIGH DENSITY LIGHT EMITTING DIODE ARRAY

Paul Nyul, New Holland, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 19, 1974, Ser. No. 452,545
Int. Cl. H05b *33/00*
U.S. Cl. 313—500 **6 Claims**

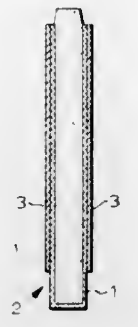


1. A high density light emitting diode array comprising:
- a conductive substrate having a recess in a surface thereof, and
- a plurality of light emitting diodes, each of said light emitting diodes having regions of opposite conductivity type which form a PN junction, each of said regions having a surface and each light emitting diode having a light emitting end surface, said light emitting diodes being mounted in spaced relation in said recess of said substrate with the surfaces of one of the regions of the same conductivity being in electrical contact with said substrate, the surfaces of the regions of the opposite conductivity being substantially coplanar with at least a portion of said surface of said substrate, and said light emitting end surfaces facing in substantially the same direction.

3,867,667
CARBON ELECTRODE FOR AN ARC LAMP

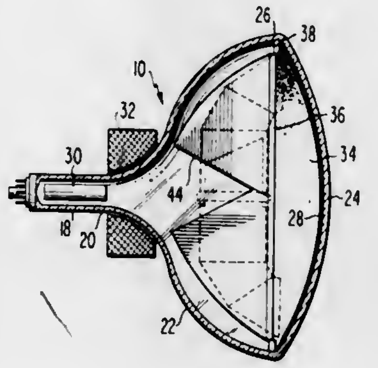
Shigeru Suga, Yoyogi 5-20-2, Shibuya-ku, Tokyo, Japan
Filed Mar. 4, 1974, Ser. No. 448,049
Int. Cl. H05b *31/06*
U.S. Cl. 314—60 **1 Claim**

1. A carbon electrode comprising:
- a carbon electrode bar having at one end thereof a discharge tip and having at the other end thereof an electrode holding section;
- a first coating on all the peripheral surfaces of said bar other than said discharge tip, said coating material being from the group consisting of aluminum and alloy consisting predominantly of aluminum; and
- a second coating of material taken from the group consisting of aluminum oxide and silicon oxide coating all the peripheral surfaces of said bar other than said discharge tip and said electrode holding section.



3,867,668
CATHODE-RAY TUBE HAVING AN INTERNAL-EXTERNAL MAGNETIC SHIELD AND DEGAUSSING COMBINATION

Terry Monroe Shrader, Leola, Pa., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 29, 1973, Ser. No. 420,324
Int. Cl. H01j *29/06*
U.S. Cl. 315—8 **7 Claims**

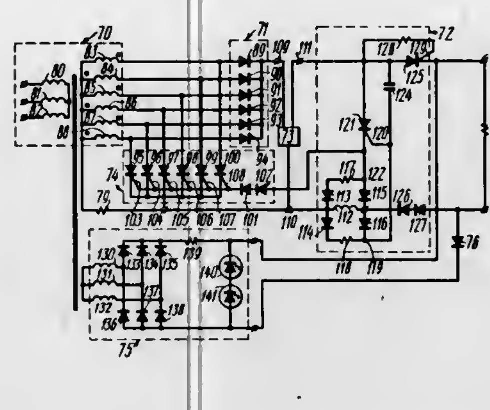


1. In a shadow mask type cathode-ray tube, the improvement comprising,
- an internal-external magnetic shield and degaussing coil combination including,
- an internal shield portion interconnected to said mask, said internal shield having an opening therein remote from said mask, the opening including two opposite gaps extending towards said mask, and
- two external shield portions overlapping said internal shield portion and covering the gaps in said internal shield portion, each of said external shield portions extending along a side of said tube and having a degaussing coil thereon.

3,867,669
POWER SOURCE WITH A SPARKPROOF OUTPUT

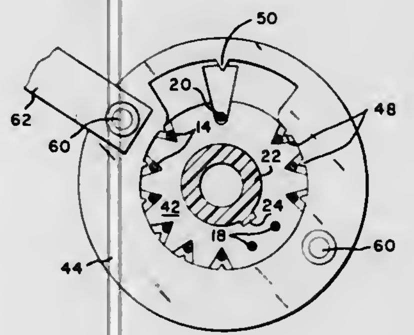
Yakov Lvovich Krasik, Universitetskaya ulitsa, 54, kv. 41; Leonid Iosifovich Rappoport, ulitsa Schorsa, 69, kv. 23; Anatoly Nikolaevvich Gelbin, ulitsa Schorsa, 61, kv. 42; Nikolai Andreevich Marsjuk, ulitsa Stadionnaya, 8, kv. 64; Anatoly Nikitovich Gura, ulitsa Kooperativnaya, 114, kv. 33, and Boris Mefodievich Kirichenko, ulitsa kapitana Ratnikova, 28, kv. 4, all of Donetsk, U.S.S.R.
Filed Jan. 11, 1974, Ser. No. 432,651
Int. Cl. H02h *7/10*
U.S. Cl. 317—16 **2 Claims**

1. A power source with a sparkproof output, comrpising: a transformer; a rectifier connected to the output of said transformer; spark proofing circuit means for limiting electric energy released in the course of commutation of an output circuit of said power source and incorporating an inductive element and thyristors; said spark proofing circuit means being connected to the output of said rectifier; and automatic reclosing circuit means for restoring output electric parameters of said power source following operation of said spark proofing circuit means and comprising additional thyristors and diodes; each of said additional thyristors being connected in parallel with a respective output winding of said transformer, the number thereof corresponding to that of the output windings of said transformer; said diodes being connected to control circuits of said additional thyristors.



3,867,670
MULTIPLE SPARK GAP PROTECTIVE DEVICE

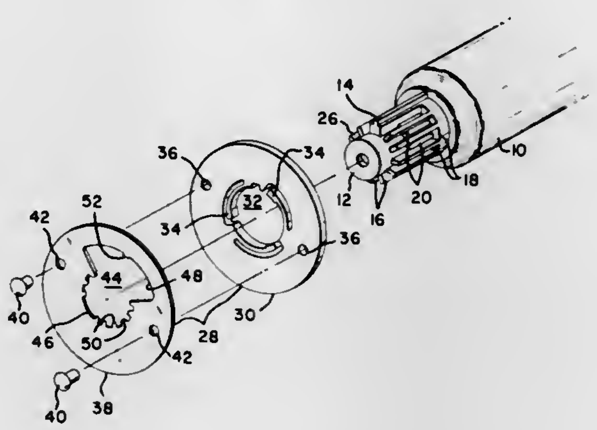
Ferdinand William Schor, Goleta, and Tore Rudolf Johnson, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 12, 1973, Ser. No. 396,944
Int. Cl. H02h *9/06*
U.S. Cl. 317—61.5 **1 Claim**



1. A multiple apark gap protective device for protecting solid state circuitry associated with cathode ray tubes from high voltage discharges, in combination with a cathode ray tube having a plurality of pins on the base thereof and an insulating socket body containing therein a plurality of contacts connected to said circuitry and adapted to engage said pins, said device comprising:
- an insulating substrate having a keyed central aperture surrounded by a circular configuration of a plurality of lesser apertures equal in number to pins on said cathode ray tube, each said lesser aperture being substantially triangular in plan view with an apex of said triangles directed radially inwardly of said substrate;
- a metallic plate fixed to said substrate and having a central aperture of larger dimension than said circular configuration of lesser apertures in said substrate and a plurality of radially inwardly directed projections aligned with at least some of said lesser apertures of said substrate and extending over said lesser apertures in cantilevered fashion; and a ground strap one end of which is fixed to said metallic plate and the other end of which is connected to ground potential,
- said device being mounted between said tube and said socket with said pins passing through said lesser apertures closely adjacent said inwardly directed apexes whereby a plurality of spark gaps are formed between said projections and the pins of a cathode ray tube.

3,867,671
SPARK GAP PROTECTIVE DEVICE FOR CATHODE RAY TUBES

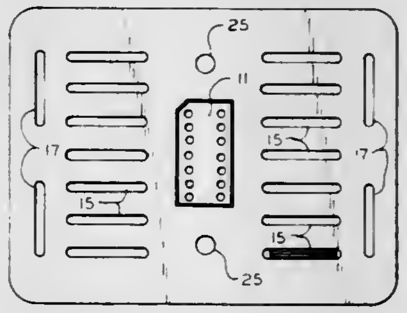
Tore Rudolf Johnson, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 19, 1973, Ser. No. 417,029
Int. Cl. H02h *9/06*
U.S. Cl. 317—61.5 **1 Claim**



1. A multiple spark gap protective device for protecting solid state circuitry associated with cathode ray tubes from high voltage discharges from such tubes comprising:
- an insulating substrate having a keyed central aperture and a plurality of resilient centering means disposed about the periphery of said aperture, said resilient centering means including a plurality of arcuate cantilevered arms integral with said substrate and disposed about the periphery of said aperture;
- a metallic plate secured to said insulating substrate including a central aperture having a plurality of radially inwardly directed projections extending over the central aperture of said substrate in cantilever fashion whereby a plurality of spark gaps are formed between said projections and pins of a cathode ray tube when said device is mounted on the base of said tube; and
- common ground means secured to said plate.

3,867,672
INTEGRATED CIRCUIT BREADBOARD MODULE

Alfred Pizzigoni, North Bergen, N.J., assignor to Stephen Horbach and Company, Lyndhurst, N.J.
Filed Aug. 9, 1973, Ser. No. 386,978
Int. Cl. H05k *5/00*
U.S. Cl. 317—101 CC **7 Claims**



1. An integrated breadboard assembly particularly useful for breadboarding linear integrated circuits comprising:
- a. a printed circuit having a plurality of conductors thereon each adapted to accept one terminal of an integrated circuit at one end and a further connection at the other end;
- b. an integrated circuit socket attached to said printed circuit board with terminals at said one ends of said conductors;
- c. a terminal clip divided into three sections to permit acceptance of different size wires attached to each of the other ends of said conductors; and

d. a solder-resistant plastic case enclosing said printed circuit board, socket and terminal clips, said case including openings in the top through which said socket and terminal clips project.

3,867,673

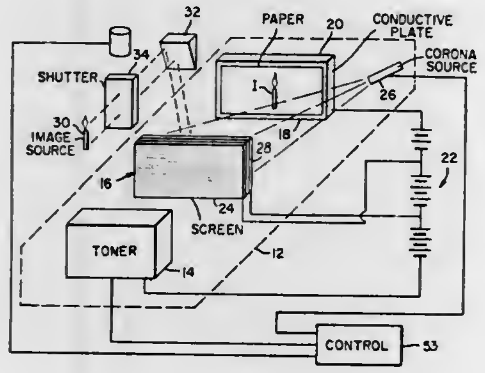
METHOD AND APPARATUS FOR FORMING A POSITIVE ELECTROSTATIC IMAGE

Hewitt D. Crane, Portola; Gerald L. Pressman, Cupertino, and George J. Eilers, Redwood City, all of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Division of Ser. No. 197,877, Nov. 11, 1971, Pat. No. 3,713,734. This application Aug. 17, 1972, Ser. No. 281,605

Int. Cl. G03g *15/00*

U.S. Cl. 317—262 R **9 Claims**



1. Apparatus for controlling the flow of electrostatically charged particles along a path comprising, in combination, means for establishing a first electric field across a first insulator layer so polarized as to prevent movement of particles along the path; and means for establishing a second electrical field across a second insulator layer in spaced superposition to said first insulator, said second electrical field selectively counteracting said first electric field in accordance with an image to be reproduced.

3,867,674

PROCESS FOR THE ELECTROGRAPHIC RECORDING OF CHARGE IMAGES

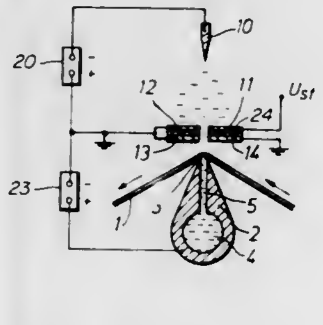
Walter Simm, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 26, 1973, Ser. No. 373,681

Claims priority, application Germany, June 28, 1972, 2231530

Int. Cl. H05

U.S. Cl. 317—262 A **19 Claims**



15. A contact electrode for helping produce an electric charge distribution on an insulating web which moves in contact relative to the electrode comprising a body, a relatively thin edge on the body contacting the web, and a channel within the thin edge for supplying a conductive liquid to the area of the web contacted by the thin edge.

3,867,675

MAGNETIC DRIVE MECHANISMS FOR PRINTING HEADS

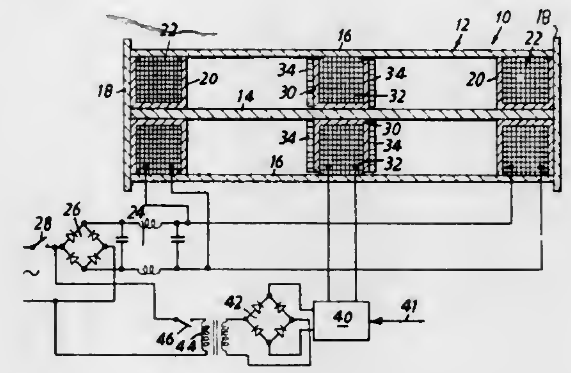
Norbert Kitz, and James John Drage, both of Uxbridge, England, assignors to Bell Punch Company Limited, Uxbridge, England

Filed Aug. 13, 1973, Ser. No. 388,664

Claims priority, application Great Britain, Aug. 18, 1972, 38759/72; Nov. 17, 1972, 53193/72

Int. Cl. H02k *33/00, 41/00*

U.S. Cl. 318—119 **5 Claims**



1. A drive mechanism for moving a print head over a longitudinal path comprising in combination, a first elongated member in the form of a length of magnetic material such as mild steel disposed parallel to said path, a second elongated member in the form of a length of magnetic material such as mild steel disposed parallel to said path and spaced from said first member, means disposed for producing a magnetic field coaxially through the length of one said member and with the two said members located in a closed magnetic path for the magnetic field, and a movable print head carriage mounted on a selected one of said members for movement over said path comprising an electromagnetic coil disposed coaxially around the selected member for control of movement of said carriage along said path by means of a magnetic field generated thereby reacting with said magnetic field through the length of said member.

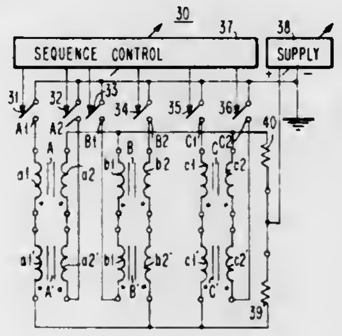
3,867,676

VARIABLE RELUCTANCE LINEAR STEPPER MOTOR

Hi D. Chai, Binghamton, and Joseph P. Pawletko, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 20, 1973, Ser. No. 399,225

U.S. Cl. 318—135 **8 Claims**



1. A linear stepper motor having a predetermined reference axis and being of the variable reluctance type, said motor comprising:

first magnetic member means having first and second surfaces disposed on first and second opposite sides, respectively, of said reference axis, said first member means having a predetermined variable reluctance characteristic at said first and second surfaces,

second magnetic member means having an odd plural number of pole pairs of electromagnetic poles with respective pole faces, the pole face of one pole of each said pole pair being disposed on said first side of said reference axis in juxtaposition with said first surface, the pole face of the other pole of each said pole pair being disposed on said second side of said reference axis in juxtaposition to said second surface,

a predetermined one of said first and second member means having first and second spaced sub-members disposed on said first and second opposite sides, respectively, of said reference axis, the other one of said first and second member means being disposed between said first and second sub-members,

means for supporting said first and second member means for relative movement therebetween along said axis,

each of said poles having first and second windings associated therewith, the said first windings of the poles of each particular pole pair being electrically interconnected in series aiding relationship, the second windings of the poles of each particular pole pair being electrically interconnected in series aiding relationship, and

means for selectively energizing in respective predetermined stepping sequences said series connected first and second windings for at least one of the operational modes of single phase, double phase and alternate single phase and double phase energizing operational modes to provide relative movement between said first and second member means, said selective energizing means being operative during each one of said operational modes to energize said series connected first windings of each particular pole pair in a direction opposite to the direction of energization of the series connected second windings of that particular pole pair, and said selective energizing means during each successive step being operative to energize the series connected windings selected during such successive step to provide a magnetic flux in the same direction through the pole pair associated with the series connected windings selected in the preceding step as the direction of the magnetic flux passing through the lastmentioned pole pair during said preceding step.

3,867,677

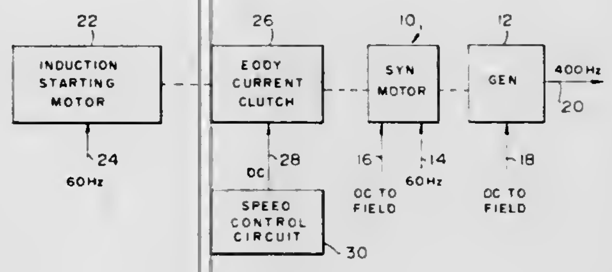
MOTOR RUN-UP SYSTEM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and John J. Daeges, 309 Fowler Dr., Monrovia, Calif. 91016

Filed Mar. 7, 1974, Ser. No. 449,118

Int. Cl. H02p *1/00*

U.S. Cl. 318—137 **8 Claims**



1. Motor apparatus comprising:

a synchronous motor having an armature and field;

a starting motor;

an eddy current clutch coupling having first and second inputs, for generating a count dependent upon the difference in pulse separations on said inputs;

first means coupling the power line to said first input of said counter;

second means for coupling the armature of the synchronous motor to the second input of said counter, so that the generated count represents the difference in frequency between current on the power line and current generated by the synchronous motor;

a first latch connected to said counter to retain the count; a digital-to-analog converter;

third means for coupling the latch to the input of said converter; and

fourth means for coupling the output of said converter to said eddy-current clutch.

3,867,678

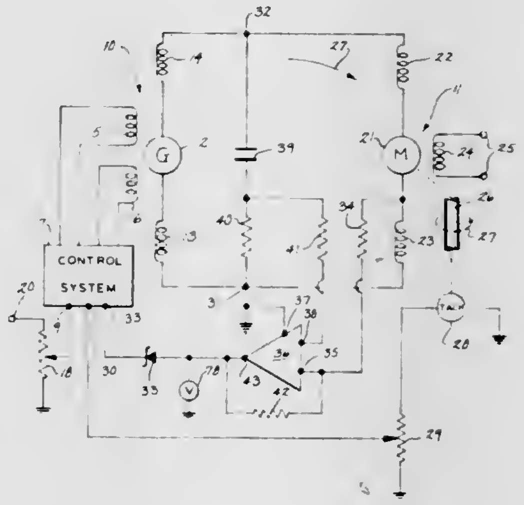
METHOD AND MEANS FOR MEASURING THE TORQUE DELIVERED BY AN ELECTRIC MOTOR

Thomas A. Stoner, Brookfield, Wis., assignor to Bucyrus-Erie Company, Milwaukee, Wis.

Filed Feb. 15, 1973, Ser. No. 332,697

Int. Cl. H02p *5/28*

U.S. Cl. 318—432 **7 Claims**



1. A method of generating a signal proportional to the force delivered to a load driven by an energy conversion machine, the steps comprising:

indirectly sensing the force induced by said energy conversion machine and generating an electrical signal proportional to said induced force;

indirectly sensing the acceleration force generated by the inertias of the energy conversion machine and load, and generating an electrical signal proportional to said acceleration force; and

arithmetically summing the electrical signals representing induced force and acceleration force to provide a signal proportional to the total force delivered to the load.

3,867,679

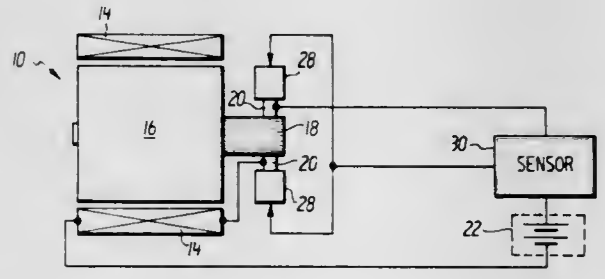
MOTOR FIELD STRENGTH VARIABLE BRUSH PRESSURE APPARATUS AND METHOD

Stephen Hagar Smith, San Pedro, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed July 11, 1973, Ser. No. 378,047

Int. Cl. H01r *39/42*

U.S. Cl. 318—542 **11 Claims**



1. In a direct current or universal electric motor having an armature and commutator brushes, a method of increasing motor efficiency while operating the motor at loads less than rated loads by (a) detecting motor load, and (b) modifying the pressure of the brushes on the commutator of the motor as a function of the detected motor load.

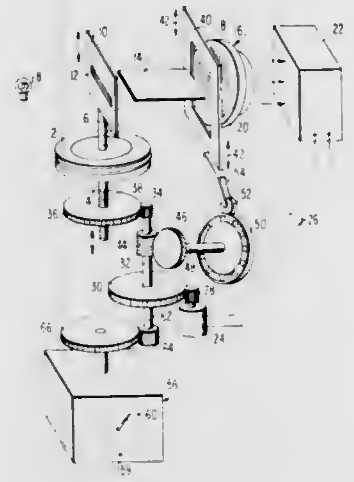
3,867,680
INSTRUMENTATION SYSTEM CONTAINING A NULL SHIFTING MEANS

Paul B. King, Mountain Lakes, N.J., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed May 22, 1973, Ser. No. 362,730

Int. Cl. B64c *13/18*

U.S. Cl. 318—584 **12 Claims**



1. An instrument for sensing and indicating a parameter, comprising:

a. a parameter-sensing means which includes:
  a first means movable in response to changes in the parameter,
  a second means for sensing changes in the position of the first means,
  said first and second means being initially positioned at a null position with respect to each other, and
  restorative means for relatively moving said first and second means to restore them to their null position;
b. a parameter-indicating means changeable in response to movement of the restorative means; and
c. shifting means for shifting the null position in response to movement of the restorative means, said shifting means producing movement of the restorative means which is proportional to changes in value of the parameter being indicated.

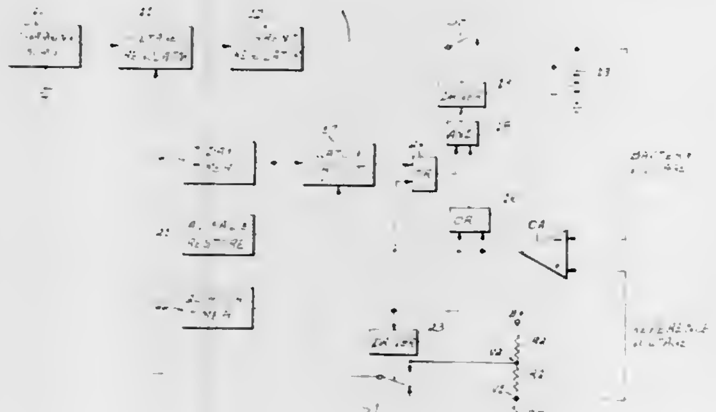
3,867,681
BATTERY CHARGING CIRCUIT

Larry D. Bishop, and William R. Smith, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Mar. 20, 1974, Ser. No. 452,804

Int. Cl. H02j *7/04*

U.S. Cl. 320—21 **5 Claims**



1. An improved circuit for charging a battery from a charging source, comprising:

a. a voltage regulator adapted to be connected to the charging source, said voltage regulator having a control input for selectively causing said voltage regulator to produce an upper regulated voltage and a lower regulated voltage at its output;
b. a current regulator connected to said voltage regulator circuit;
c. a normally open charging path having an input connected to said current regulator, having an output, and having a control input;
d. means connected to said charging path output and adapted to be connected to the battery to be charged;
e. a voltage comparator having an input adapted to be connected to said battery to be charged for producing a first charging signal in response to a battery voltage below a selected voltage reference level;
f. a first timer for producing a second charging signal at selected predetermined intervals;
g. a power fail and restore circuit for producing a third charging signal in response to failure and subsequent restoral of primary power;
h. a second timer for producing a fourth charging signal of a selected duration in response to a selected operation;
i. means connected between said voltage comparator, said first timer, said power fail and restore circuit, and said second timer and between said charging path control input for closing said charging path in response to the simultaneous presence of said first charging signal and either of said second and third charging signals, and in response to said fourth charging signal;
j. and means connected between said second timer and said voltage regulator control input for causing said voltage regulator to produce said upper regulated voltage in the presence of said fourth charging signal and for causing said voltage regulator to produce said lower regulated voltage in the absence of said fourth charging signal.

3,867,682
BATTERY CHARGER WITH MEANS FOR PREVENTING OVERCHARGING OF THE BATTERY

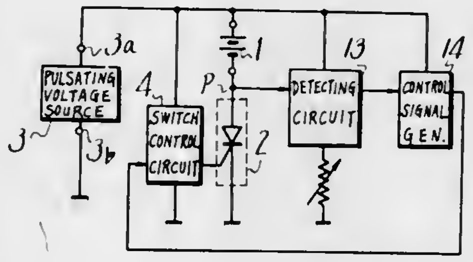
Hiroyuki Yamauchi, Tokyo, and Masahiro Ohya, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,536

Claims priority, application Japan, Nov. 20, 1972, 47-116326

Int. Cl. H02j *7/10*

U.S. Cl. 320—39 **6 Claims**



1. A battery charger for charging a rechargeable battery comprising a pulsating voltage source, a semiconductor thyristor having an anode-cathode path connected in series with said battery across said pulsating voltage source and having a gate, a thyristor control circuit connected to said gate and having means for rendering said semiconductor thyristor conductive during a portion of each pulse from said voltage source, voltage detecting means including a reference voltage producing means, said voltage detecting means connected to the connecting point between said rechargeable battery and said semiconductor thyristor for detecting the voltage at said connecting point when the pulsating voltage source becomes substantially zero and producing an output when the detected voltage reaches the reference voltage, and means for supplying a control signal in response to the output from said voltage detecting means to said thyristor control circuit to maintain said semiconductor thyristor in a continued non-conductive state, thereby to stop the charging of said rechargeable battery, said thyristor control circuit comprises a resistor connecting said gate to said pulsating voltage source for supplying said pulsating voltage to said gate as a gate signal and switch means connected to said gate for preventing said gate signal from being supplied to said gate when said control signal is supplied to said thyristor control circuit, said switch means having a control terminal supplied with said control signal, and said thyristor control circuit also including a diode connected between the anode of said semiconductor thyristor and the control terminal of said switch means.

3,867,683
DC-TO-AC-TO-DC-INVERTER

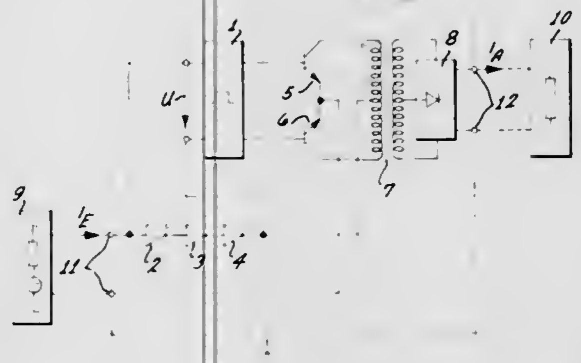
Franz Marchevka, Dortelweil, Germany, assignor to Hartmann & Braun-Mess-und Regeltechnik Aktiengesellschaft, Frankfurt, Germany

Filed Sept. 24, 1973, Ser. No. 400,270

Claims priority, application Germany, Oct. 7, 1972, 2249223

Int. Cl. H02m *3/32*

U.S. Cl. 321—2 **8 Claims**



1. DC-AC-DC inverter with galvanically separated input and output circuits by means of a transformer and having only two input terminals and two output terminals, further having a rectifier for connecting the transformer secondary to the output terminals, two switching transistors for connecting the transformer primary to the input terminals, and a self-starting - self sustaining oscillator connected for controlling the transistors, the oscillator having a pair of power input terminals and a pair of oscillator output terminals, the latter output terminals being connected to control the two switching transistors, so that these two transistors drive input current in alternating directions through the primary, the improvement comprising:

impedance means connected serially and galvanically between one of the inverter input terminals and the transformer primary and being passed through by an input current as flowing through the inverter input terminals for developing a voltage drop upon flow of the input current into the inverter, through the switching transistors and through the transformer primary; and
circuit means connecting the impedance means to the power input terminals of the oscillator for applying the said constant voltage drop to the oscillator to provide power thereto.

3,867,684
PULSE FORMING NETWORK CHARGING CONTROL SYSTEM

Howard S. Ginsberg, Baltimore, Md., and Charles K. Hooper, Inverness, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

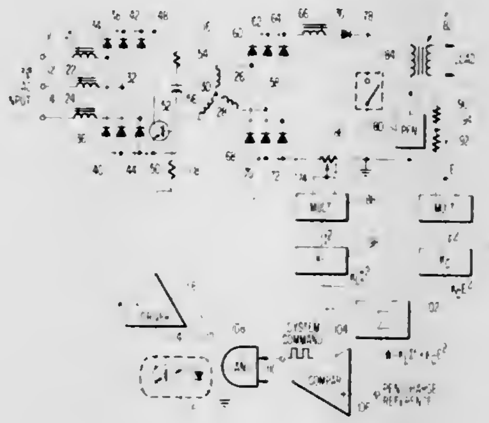
Filed Sept. 7, 1973, Ser. No. 395,315

Int. Cl. H03k *3/64;* **H02p** *13/22*

U.S. Cl. 321—19 **10 Claims**

1. Means for controlling the energy supplied to a pulse forming network in a line type modulator having a resonant charging system, comprising:

a controlled source of charging current coupled to said line type modulator for supplying a charging current thereto to charge said pulse forming network;
control means coupled to said controlled source for controlling the electrical energy supplied to said line type modulator;
first circuit means coupled to said line type modulator and being operable to provide a signal proportional to the electrical energy stored in said line type modulator; and second circuit means coupled to said first circuit means and being responsive to said signal proportional to said stored energy and being operable to generate a control signal, said control signal being coupled to said control means, said control signal operating said control means during a charging mode of operation to render said controlled source operative and couple charging current to said line type modulator when said signal proportional to the stored energy in said line type modulator is below a predetermined value and operating said control means during a second mode of operation to render said controlled source inoperative and thereby interrupt charge current flow when said stored energy reaches a predetermined value.



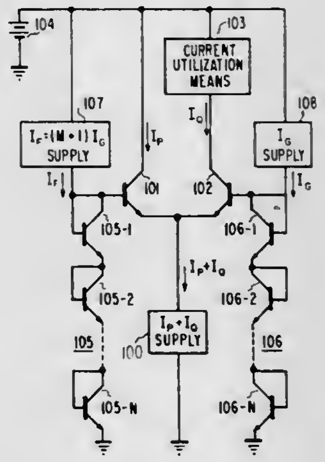
3,867,685
FRACTIONAL CURRENT SUPPLY

Adel Abdel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 365,833

Int. Cl. G05f *3/08*

U.S. Cl. 323—4 **19 Claims**



1. A fractional current supply having:

supply means for supplying an operating potential between first and second terminals thereof, one of which terminals provides a common point of interconnection;
a first and a second transistors, each having a base electrode and an emitter electrode with a base-emitter junction therebetween and each having a collector electrode, said emitter electrodes being joined to each other by direct connection;

- means for supplying a first current connected between the first terminal of said supply means and said direct connection of the emitter electrodes of said first and said second transistors, poled to forward-bias the base-emitter junctions of said first and said second transistors;
- means for direct current conductively coupling the collector electrode of said first transistor to the second terminal of said supply means;
- utilization means for a fractional current, said utilization means included in direct current conductively coupling of the collector electrode of said second transistor to the second terminal of said supply means, said fractional current comprising the collector current of said second transistor;
- a first serial combination of N diodes, connected between said first transistor base electrode and said common point of interconnection, where N is an integer greater than one;
- a second serial combination of N diodes, connected between said second transistor base electrode and said common point of interconnection;
- means for applying a second current to said first serial combination of diodes in the forward direction; and
- means for applying a third current to said second serial combination of diodes in the forward direction, which third current is in continually fixed proportion to said second current, said proportion being chosen to maintain a larger forward bias potential across the base-emitter junction of said first transistor than across the base-emitter junction of said second transistor.

3,867,686

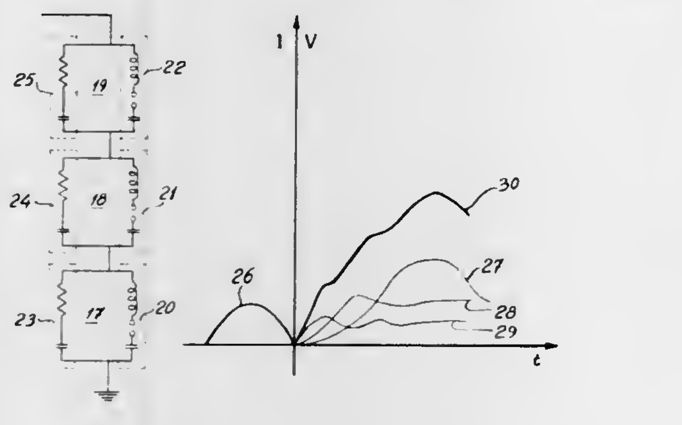
MULTI-FREQUENCY TUNED H.V. SYNTHETIC CIRCUIT FOR TESTING CIRCUIT BREAKERS

Guy St-Jean, Longueuil, Quebec, Canada, assignor to Institut de Recherche de l'Hydro-Quebec (Ireg), Quebec, Canada

Filed Nov. 12, 1973, Ser. No. 414,706

Int. Cl. 315 *191;* **G01r** *31/02;* **H03k** *3/53*

U.S. Cl. 324—28 CB **7 Claims**



1. A high voltage generator used for the synthetic testing of high voltage circuit interrupters, and more particularly for a testing circuit of the current injection type, and capable of providing successively an injection current wave-form and a transient recovery voltage wave-form, comprising:

- a. a plurality of partial circuits connected in series, said partial circuits including:
  1. an injection branch having an inductance, a pre-charged capacitor, and a spark-gap, all in series, and
  2. a regulating branch having at least a capacitance, connected in parallel with said injection branch;
- b. each partial circuit injection branch having a tuned resonant frequency equal to the product of the inductance and capacitance included therein, said product being identical to the product of the total injection branch comprising said series combination of partial circuit injection branches.
- c. at least some of said inductances in said partial circuit injection branches being unequal to other inductances therein.

3,867,687

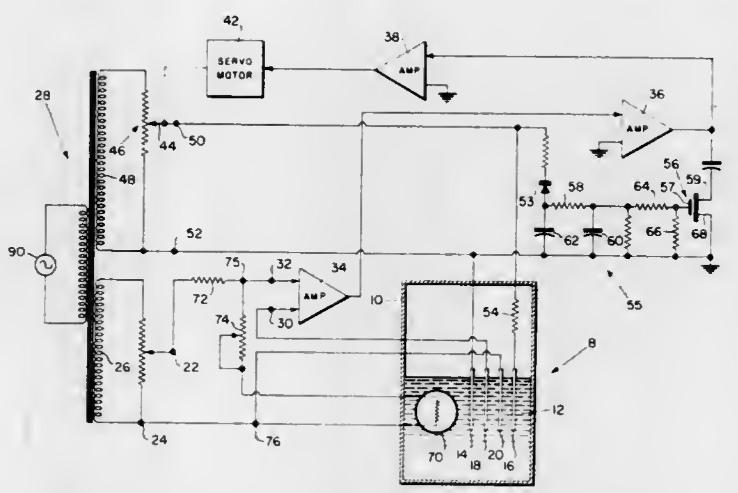
SERVO GAIN CONTROL OF LIQUID CONDUCTIVITY METER

Arthur E. Gealt, Philadelphia, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 119,795, March 1, 1971. This application Mar. 19, 1973, Ser. No. 342,774

Int. Cl. G05f *1/10*

U.S. Cl. 324—30 R **10 Claims**



1. A control circuit comprising:

- signal comparator means having an output means and a plurality of input means and being arranged to produce an output signal representative of the difference between signals applied to said input means,
- means for selectively controlling connected to said output means to control the amplitude of an output signal from said comparator means on said output means,
- variable energizing signal producing means connected to said output means of said comparator means and responsive to said output signal from said comparator means to produce a corresponding energizing signal amplitude,
- input signal means connected to said energizing signal producing means to receive said energizing signal and arranged to produce an output signal in response to said energizing signal,
- first circuit means connected between said variable energizing signal producing means and said means for selectively controlling for applying said energizing signal from said variable energizing signal producing means to said means for selectively controlling to control the amplitude of an output signal from said signal comparator means,
- second circuit means connected between said input signal means and one of said input means of said signal comparator means
- to apply said output signal from said input signal means as an input signal to said one of said input means of said comparator means,
- reference signal means, and
- third circuit means connected between said reference signal means and another one of said input means of said signal comparator means to apply an output signal from said reference signal means to said another one of said input means of said signal comparator means to be compared with said output signal from said input signal means.

3,867,688

ELECTRODELESS CONDUCTANCE MEASUREMENT DEVICE

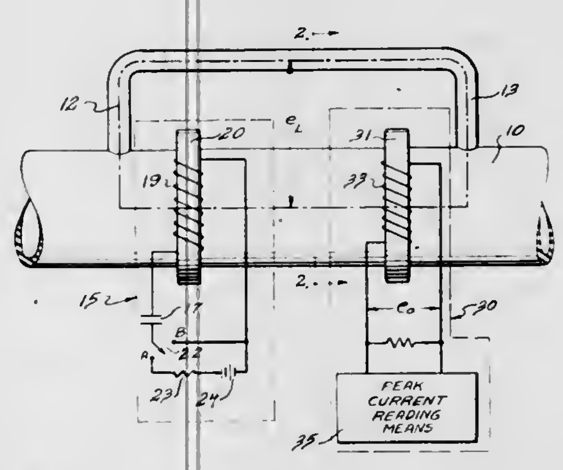
Oscar H. Koski, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 18, 1973, Ser. No. 425,919

Int. Cl. G01n *27/42*

U.S. Cl. 324—30 A **4 Claims**

1. A device for inducing a peak voltage across and a peak current in a material so that the conductance G of the material may be determined, comprising: a first transformer ring core having a primary winding of n turns thereabout, means for applying at time = 0 a first damped oscillatory voltage of peak value e_l across said primary winding of said first core, said peak value e_l occurring the instant after time = 0, a current loop including the material for at least a portion of said current loop, said current loop being positioned to pass through said first core, thereby acting as a secondary winding for said first core so that in response to said first damped oscillatory voltage a first damped oscillatory current is induced in said current loop and a second damped oscillatory voltage appears across said current loop of peak value $e_L = e_l/n$, said peak value e_L occurring the instant after time = 0, a second transformer ring core having a secondary winding thereabout, said current loop being positioned to pass through said second core, thereby acting as a primary winding for said second core so that in response to said first damped oscillatory current in said current looped a second damped oscillatory current of peak value i_P is induced in said secondary winding of said second core, and means for measuring i_P coupled to said secondary winding of said second core, with the conductance of said material being $G = i_P/e_L$.



3,867,689

MEASURING APPARATUS UTILIZING VARIABLE IMPEDANCE ELEMENTS

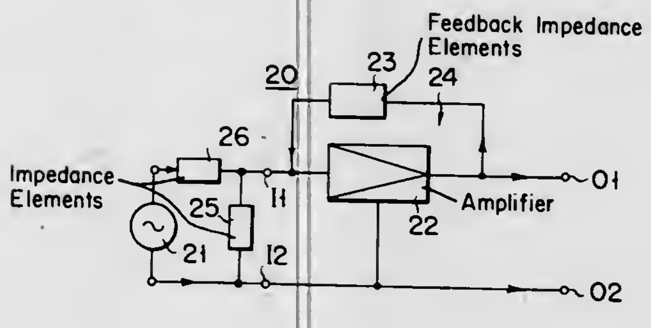
Toshihiro Mori, Yokohama, and Seigo Ando, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,763

Claims priority, application Japan, Aug. 31, 1972, 47-87435

Int. Cl. G01r *33/14*

U.S. Cl. 324—40 **9 Claims**



6. The measuring apparatus as claimed in claim 5 wherein said another negative impedance network is coupled in series with said reference impedance element.

3,867,690

HIGHLY DIRECTIONAL PARAMETRIC MAGNETIC SENSOR

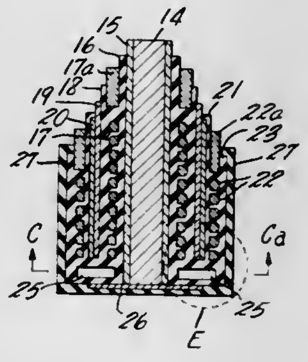
Shintaro Oshima, Tokyo; Teruji Watanabe, Niza; Takasuke Fukui, Tokyo, and Shinzuo Suzuki, Kawasaki, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed June 6, 1973, Ser. No. 367,429

Claims priority, application Japan, June 8, 1972, 47-56458

Int. Cl. G01r *33/02*

U.S. Cl. 324—43 R **6 Claims**



1. A magnetic sensor of the parametrically excited second harmonic oscillator type comprising:

- a. a conductor having a straight portion having a central longitudinal axis, said conductor having a magnetic thin film disposed on a surface of said straight portion;
- b. a pair of coils comprising an inner coil and an outer coil disposed coaxially with said central longitudinal axis and extending longitudinally of said conductor over a common portion of said straight portion of said conductor;
- c. means electrically connecting said pair of coils in series;
  - d. a hollow cylindrical conductor having a magnetic thin film disposed on an outer surface thereof, said cylindrical conductor being disposed between said inner coil and said outer coil and coaxially with said central longitudinal axis and extending longitudinally of said straight portion of said conductor over a portion common with said coils; and
- e. means electrically connecting said conductor with said cylindrical conductor to define a series input circuit, said input circuit receptive in operation of an exciting current for developing oscillations in said pair of coils, said oscillations having a phase determined by a sensed external magnetic field.

3,867,691

CAPACITIVE PROBE ROTATED BY AIR PRESSURE AND USED TO MEASURE INTERNAL DIAMETER OF A CYLINDER

Jean Max Plessis, Joue Les Tours, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Sept. 28, 1973, Ser. No. 401,989

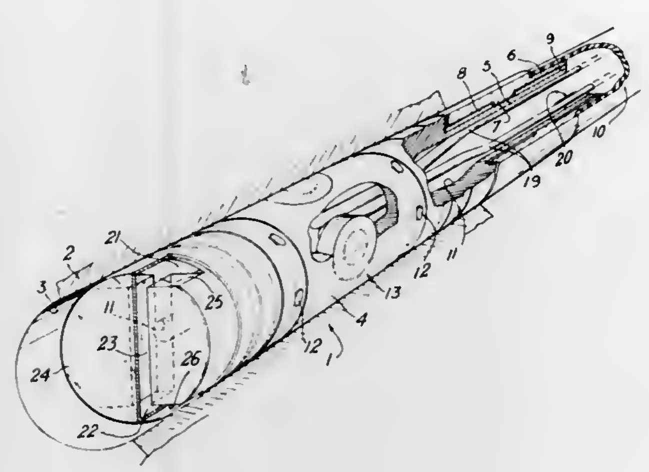
Claims priority, application France, Oct. 6, 1972, 72.35620

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **9 Claims**

1. A method for ovalization testing of a tube of small diameter and substantial length by measurement of the dimensions of the major axis and the minor axis of the ellipse constituting the transverse cross-section of said tube along a plane at right angles to its longitudinal axis by a cylindrical probe within the tube and capacitive transducers disposed on the probe along two axial reference planes located at right angles to each other, said probe being provided with pneumatic sustentation means for causing the axis of the probe to coincide with the axis of the tube, the steps of subjecting the probe to a torque about its axis, causing the two axial reference planes to coin-

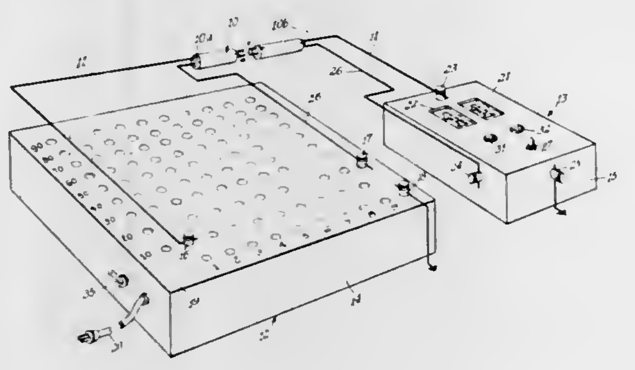
cide with the major axis and the minor axis of the transverse-section ellipse of the tube and then measuring the distance



between the wall of the tube and the transducers in the direction of the axes of the ellipse.

3,867,692
MULTIPLE CABLE CONDUCTOR IDENTIFICATION APPARATUS

Henry Esch, 5823 Satinwood Dr., Columbus, Ohio 43229
Filed Aug. 2, 1973, Ser. No. 384,931
Int. Cl. G01r *31/02, 19/16*
U.S. Cl. 324—66 5 Claims

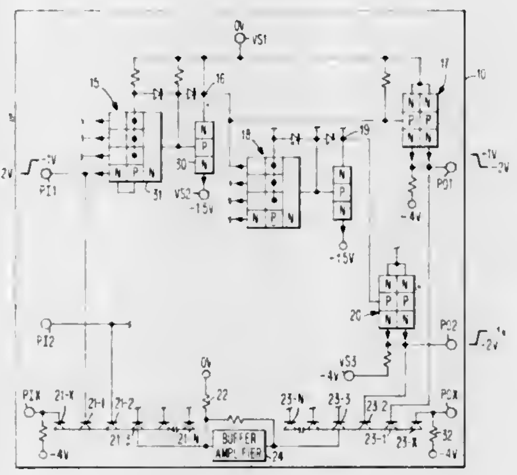


1. A conductor identification apparatus for a multi-conductor cable comprising:

an electrical power source having: a plurality of output terminals with each output terminal selectively connectable to a respective conductor of the multi-conductor cable, a voltage source, a signal generator circuit including a diode matrix having a plurality of outputs interconnected respectively with said plurality of power source output terminals to provide a discrete electrical signal at each said output terminal, said diode matrix further including at least one set of plurality of input terminals, switch means connected with each of said matrix input terminals, said switch means operable to sequentially apply an electrical signal from said voltage source to each input terminal in succession, said diode matrix cumulatively adding to the electrical signal applied to each input terminal all electrical signals applied to each preceding input terminal forming a pulse train of electrical signals at each output terminal in succession with each such pulse train related to the respective input terminal, said identification apparatus further including a readout apparatus connectable to each output terminal independent of the others through the conductors of the cable and responsive to said discrete electrical signals to form an output display indicative of the signal applied to any selected conductor thereby identifying that conductor.

3,867,693
LSI CHIP TEST PROBE CONTACT INTEGRITY CHECKING CIRCUIT

George J. Saxenmeyer, Sr., Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 20, 1974, Ser. No. 444,219
Int. Cl. G01r *31/02*
U.S. Cl. 324—73 R 7 Claims



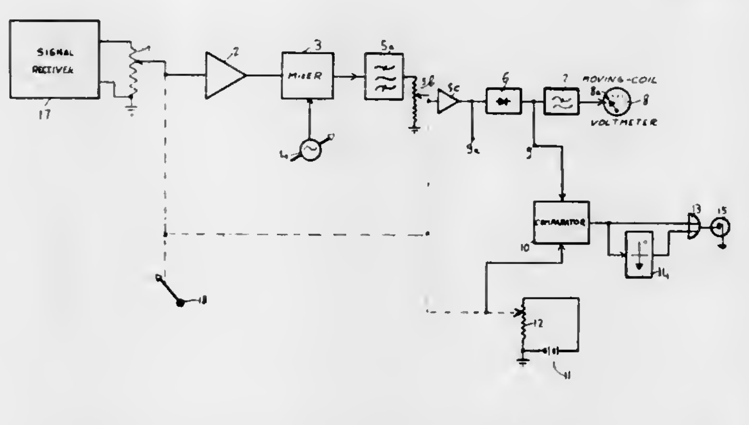
1. A method for determining contact integrity between voltage supply, input and output contacts of a semiconductor chip having logical circuits formed therein and coupled between said input and output contacts, and supply, input and output test probes adapted to be brought into electrical engagement with respective supply, input and output contacts, said method comprising the steps of applying voltage supply and input signals concurrently to the supply and input test probes,

sensing said input signals by means of a logical AND circuit on the chip having its input connected to the input contacts and producing an output signal when said input signals are sensed concurrently by all AND circuit inputs, applying said output signal concurrently to all output contacts,

sensing the output signals on the output test probes to determine whether or not all test probes are in electrical engagement with their respective chip contacts.

3,867,694
MONITORING CIRCUITRY FOR AMPLITUDE-MEASURING SYSTEM

Werner Rauscher, Reutlingen, Germany, assignor to Wandel u Goltermann, Reutlingen, Muhleweg, Germany
Filed Oct. 9, 1973, Ser. No. 404,678
Claims priority, application Germany, Oct. 12, 1972, 2249928
Int. Cl. G01r *19/16, 19/22*
U.S. Cl. 324—102 7 Claims



1. A system for monitoring the amplitude levels of signal channels located within a predetermined frequency band, comprising:

receiver means for signal frequencies within said band;

selector means for progressively tuning said receiver means to different signal frequencies and for generating output voltages proportional to the amplitudes thereof;

threshold means for providing a constant reference voltage; comparator means connected to said receiver means and to said threshold means;

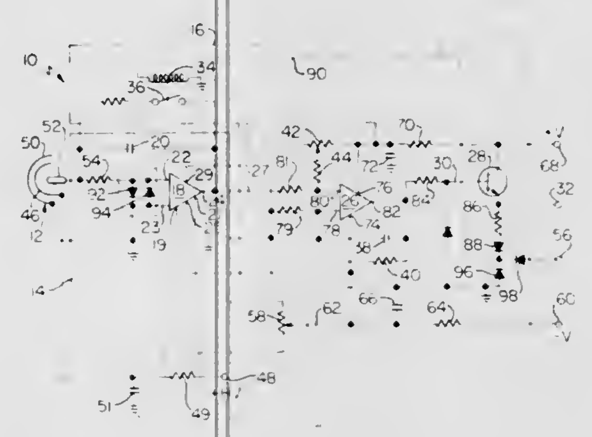
a monostable multivibrator controlled by said comparator means for producing a monitoring pulse of predetermined duration upon detection of an output voltage exceeding said reference voltage;

indicator means connected to said multivibrator for registering the presence of said monitoring pulse; and

an OR gate inserted between said monostable multivibrator and said indicator means, said OR gate having input connections to said comparator means for extending the operation of said indicator means beyond the end of said monitoring pulse upon continued presence of an output voltage exceeding said reference voltage.

3,867,695
RECYCLING ELECTROMETER

Lowell B. Lay, Jr., and Andrew A. Sanders, both of Tulsa, Okla., assignors to Avco Corporation, Tulsa, Okla.
Filed Nov. 28, 1973, Ser. No. 419,646
Int. Cl. G01r *1/30, 19/26*
U.S. Cl. 324—123 R 4 Claims



1. A recycling electrometer for providing a usable output signal pulse in response to the generation of a predetermined amount of input signal such that when said predetermined amount of input signal is exceeded the electrometer is recycled to an initial condition comprising in combination:

a signal generator for generating said signal in response to a measured condition;

an integrating operational amplifier having high input impedance, said operational amplifier having an input circuit and an output circuit, said signal being applied to said input circuit, said integrator having an initial zero condition and providing an output signal having a level proportional to the summation of the applied input signal;

a feedback circuit operationally connected between said integrating operational amplifier input and output circuits, said feedback circuit including a first capacitor connected across said integrating operational amplifier input and output circuits;

a comparator operational amplifier biased in a comparator mode and having an input circuit, the output signal from said integrating operational amplifier being applied to said input of said comparator operational amplifier, said comparator operational amplifier providing a comparator output signal when the said integrating operational amplifier output signal exceeds a predetermined level;

feedback circuitry operationally connected with said comparator operational amplifier to insure positive switching of said comparator operational amplifier;

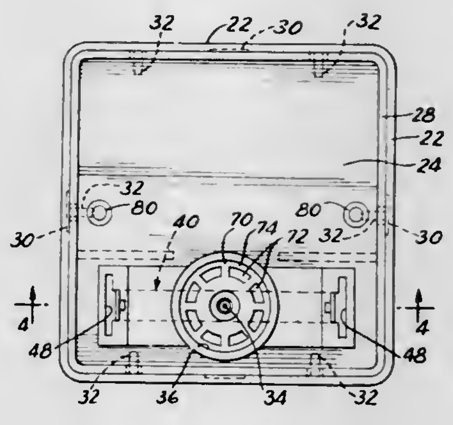
a second capacitor connected in said comparator feedback circuit to provide an AC coupling for positive feedback thereby providing a snap-on and snap-off condition for said comparator operational amplifier;

means responsive to said comparator output signal to generate the usable output signal pulse; and

a coil operated magnetic reed relay operationally connected across the first capacitor, said reed relay being normally in the open condition, said coil being responsive to the usable output signal pulse such that when said coil is engaged the reed relay is closed thereby discharging said first capacitor thereby resetting said integrator to the initial zero condition.

3,867,696
AN IMPROVED ELECTRICAL CURRENT MEASURING METER HAVING INTEGRAL CALIBRATION AND ZERO ADJUSTMENT MEANS

Eugene B. Raymond, 4041 Grove St., Skokie, Ill. 60076
Filed Jan. 4, 1974, Ser. No. 430,794
Int. Cl. G01r *1/04, 5/16*
U.S. Cl. 324—146 13 Claims



1. A meter for measuring electrical current in a circuit, comprising:

case means, having front and back sides and a visible front face for placing indicia defining a measuring scale, a shaft secured to the case means and extending toward the front thereof for supporting a pointer means, and a generally circularly shaped opening in the back located rearwardly of the shaft;

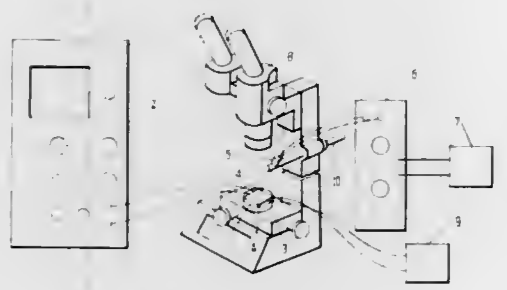
pointer means having a central portion with an aperture therein for receiving said shaft, an elongated pointer extending downwardly from the central portion, a counterweight portion opposite said pointer, and a first ferromagnetic member attached to the central portion, said pointer means being balanced and rotatable around said shaft;

an electrical current conductive member attached to the housing and having an elongated portion extending adjacent said pointer means for influencing the same in response to current flowing through the conductive member;

calibrating and zero adjustment means comprising a holder having a second ferromagnetic member secured thereto, said holder having a resilient outer periphery for frictionally engaging an inner surface of said opening of said case means, said calibrating and zero adjustment means being rotatable and spacially adjustable relative to said pointer means and said elongated portion of said current conductive means for enabling calibrating and adjustment of said meter.

3,867,697
MEASURING MEANS

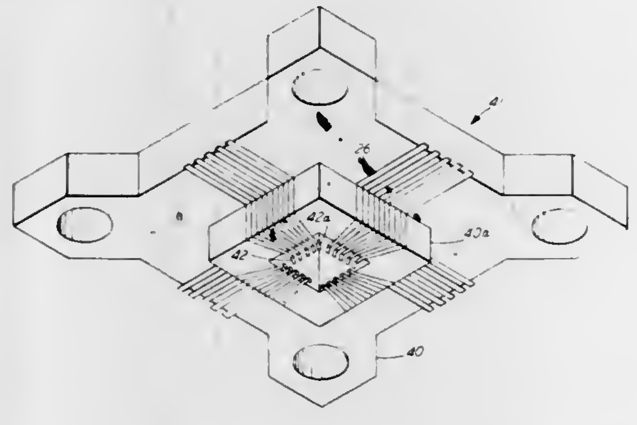
Riccardo Vanzetti, Walpole, and Ashod S. Dostoomian, Stoughton, both of Mass., assignors to Vanzetti Infrared & Computer Systems, Inc., Dedham, Mass.
Continuation of Ser. No. 847,820, July 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 796,804, Feb. 5, 1969, abandoned. This application Aug. 20, 1971, Ser. No. 173,518
Int. Cl. G01r *31/26*
U.S. Cl. 324—158 D **7 Claims**



1. A non-contact, non-destructive method of monitoring a functioning, operating semi-conductor junction in an electric circuit with known voltage and current values, comprising the steps of capturing the recombination infra-red electromagnetic energy emitted by said junction in an optical fiber means that is of such size that less than 100 percent of the junction being viewed is monitored to enable the detection of radiation emitted at different points along the semiconductor junction and that negligibly attenuates electromagnetic energy at the infra-red wave lengths, conducting said infra-red energy through said optical fiber means to an infra-red transducer, transducing said infra-red energy into an electrical signal, and processing said electrical signal to monitor the operating characteristic of said junction.

3,867,698
TEST PROBE FOR INTEGRATED CIRCUIT CHIPS

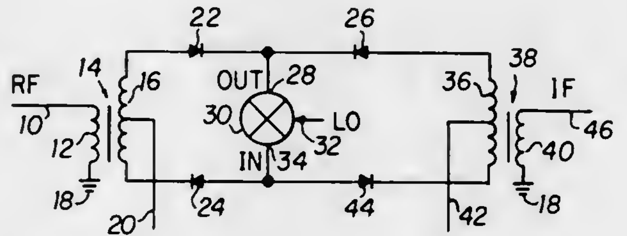
Richard K. Beltz, Hamburg, and Jerry C. Hurst, Reading, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 337,043, March 1, 1973, Pat. No. 3,810,016. This application Jan. 31, 1974, Ser. No. 438,318
Int. Cl. G01r *1/06, 31/02*
U.S. Cl. 324—158 P **6 Claims**



1. In an electrical test probe comprising:
an annular frame of thermoplastic material, said frame having opposing surfaces generally parallel to the plane defined by said frame, and
groups of electrical leads extending from the outer edge of said frame toward the inner edge along only one of said opposing surfaces, and having tip ends projecting in cantilevered fashion into the open center of the frame, each said projecting lead end having a bend therein such that the portion closest to the tip end of each lead is inclined away from said plastic frame, different ones of said lead groups being disposed around the periphery of said frame at approximately integral multiples of ninety degrees from each other, and
segments of all said leads being embedded in the one surface such that the embedded portions of the segments are contiguous with and retained by the thermoplastic material at and adjacent to said one surface, the improvement being that:
the tip ends of the leads collectively form a pyramidal protrusion from said one surface, said protrusion having been formed by bending and concomitant lengthwise displacement of said leads prior to said lead embedding so that said tip ends forming said pyramidal protrusion are longer than if said protrusion had been formed by bending of said cantilevered leads after said lead embedding.

3,867,699
TRANSCEIVER SWITCHING CIRCUIT

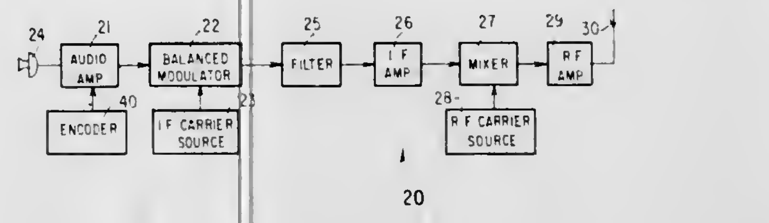
C. Daniel Stoffer, Markham, Ontario, Canada, assignor to Rockwell International Corporation, Dallas, Tex.
Filed Dec. 14, 1973, Ser. No. 424,600
Int. Cl. H04b *1/44*
U.S. Cl. 325—18 **2 Claims**



1. A transceiver switch for use with a single unidirectional mixer for both transmission and reception comprising, in combination:
RF transformer means including a first winding and a center tapped second winding;
IF transformer means including a first winding and a center tapped second winding;
first logic means comprising first and second diodes connected to a first common terminal means whereby current flow through either of said diodes goes out said first common terminal;
second logic means comprising third and fourth diodes connected to a second common terminal means whereby current flow through either of said third and fourth diodes is from said second common terminal means;
means for connecting said first and second diodes respectively of said first logic means to first ends of said second windings of said RF and IF transformers, respectively;
means for connecting said third and fourth diodes respectively of said second logic means to the other ends of said second windings of said RF and IF transformers respectively;
means for connecting said first and second common terminal means to a unidirectional mixer;
means for connecting said first winding of said RF transformer to RF signal circuitry;
means for connecting said first winding of said IF transformer to IF signal circuitry; and
means connected between the center taps of said second windings of said IF and RF transformers for supplying current therebetween in one direction for receiving signals and in the other direction for transmitting signals.

3,867,700
TONE OPERATED SINGLE SIDE-BAND COMMUNICATION SYSTEM

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr. 68850
Division of Ser. No. 306,859, Nov. 15, 1972, Pat. No. 3,828,272. This application Nov. 21, 1973, Ser. No. 417,817
Int. Cl. H04b *1/68;* **H04q** *7/02*
U.S. Cl. 325—50 **11 Claims**

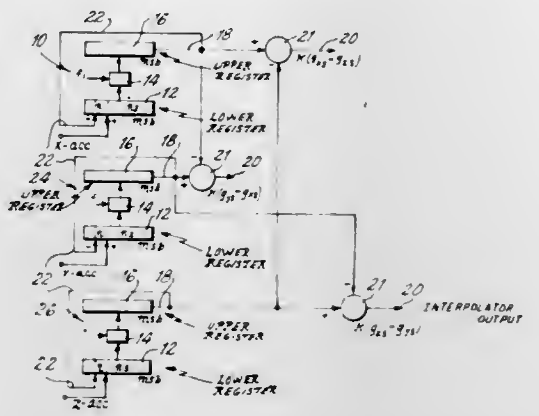


1. A communication receiver for receiving incoming single side-band signals modulated by two simultaneous tones lasting for a predetermined duration and by a subsequent intelligence message, said receiver comprising processing means for receiving the incoming signals and providing an IF signal including single side-band components corresponding to the two simultaneous tones and to the intelligence message, circuit means including an IF carrier source and product detector means coupled to said IF carrier source and to said processing means and being operative to detect the IF signal and thereby provide the intelligence message, an audio circuit coupled to said product detector and including transducer means for converting the intelligence message, AM detector means coupled to said processing means for mixing the single side-band components in the IF signal to provide a difference frequency signal having a frequency equal to the difference in frequency between the tones, a tuned circuit coupled to said AM detector means for providing an output signal when the difference frequency signal has a predetermined frequency, electronic switching means coupled to said tuned circuit and responsive to the output signal for providing an enabling signal which extends beyond termination of the tones, first means coupled to said switching means for rendering said audio circuit operative to furnish an output in accordance with the intelligence message in the presence of the enabling signal and for rendering said audio circuit inoperative in the absence of said enabling signal, and second means coupled to said switching means for rendering said circuit means operative and said AM detector means inoperative in the presence of the enabling signal and for rendering said circuit means inoperative and said AM detector means operative in the absence of the enabling signal.

3,867,701
METHOD OF CHANGING A PHASE DIFFERENCE IN AN INPUT PULSE TO A PULSE RATE

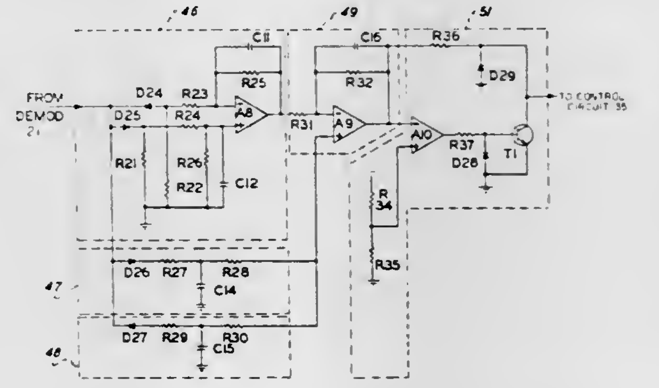
Paul R. Karmel, Hastings-on-Hudson, N.Y.; William E. Toth, Bolton, and Milton B. Trageser, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sept. 27, 1968, Ser. No. 763,420
Int. Cl. H03k *5/20, 9/06*
U.S. Cl. 328—134 **2 Claims**

1. A method of changing a phase difference in an input pulse to a pulse rate in the output comprising feeding periodically spaced pulses into the lower register of a digital differential analyser at a value which is obtained by adding the pulses at some level greater than the least significant bit of the register, accumulating a number of pulses in the lower register, periodically, at a significantly higher frequency than the frequency of the input pulse train, adding the contents of the lower register to the contents of the upper register of the digital differential analyser, when the contents of the upper register exceeds a predetermined value, simultaneously, subtracting this value from the upper register and generating an overflow pulse, and utilizing this overflow pulse both as an output to be compared with a predetermined reference and as a pulse to be fed back into a least significant bit of the lower register with a reversed sign.



3,867,702
DISTORTION MEASURING APPARATUS

John D. Torpie, Penfield; Allan J. Bell, Fairport; Michael L. Gorham, Rochester, and Walter G. Keating, Baldwinsville, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 214,146, Dec. 30, 1971, Pat. No. 3,798,576. This application June 28, 1973, Ser. No. 374,703
Int. Cl. H04b *15/00*
U.S. Cl. 328—163 **6 Claims**



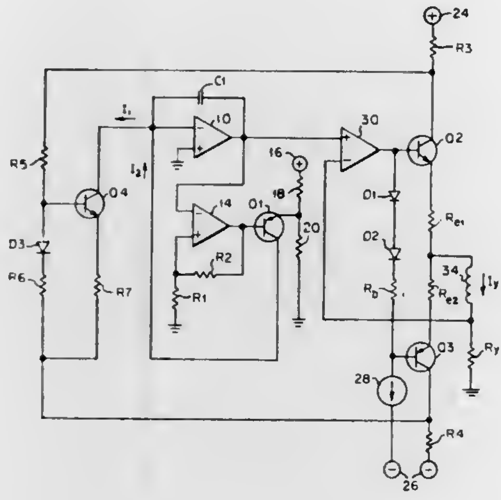
1. Apparatus for measuring the amount of distortion introduced to a rectangular wave pulse by a transmission medium and providing a signal at an output terminal thereof representative of said distortion, said apparatus comprising
means for measuring the positive peak value of the distorted pulse;
means for measuring the negative peak value of the distorted pulse;
means for measuring the DC average valve of the distorted pulse, and
means for summing the positive and the negative peak values and the DC average values to provide an output signal at said output terminal representing a measure of the delay distortion caused by the transmission medium.

3,867,703
SWEEP GENERATOR FOR LINEAR CATHODE RAY TUBE DISPLAY

George A. Cavigelli, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Aug. 6, 1973, Ser. No. 386,237
Int. Cl. H03k *4/10;* **H01j** *29/70*
U.S. Cl. 328—184 **14 Claims**

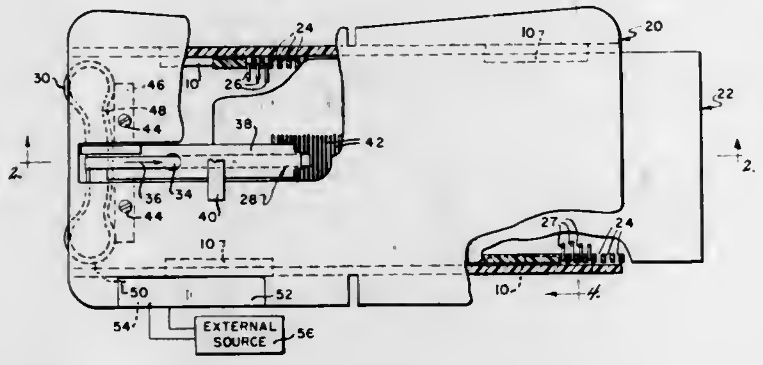
1. A sweep current generator comprising a source of current, integrating means responsive to said source current for developing a voltage which changes smoothly and continuously from a first level to a second level as a function of said source current, driver means for generating a sweep current which is a function of the voltage developed by said integrat-

ing means, switching means for resetting the voltage developed by said integrating means to said first level responsive to said voltage reaching said second level, means for sensing the sweep current generated by said driver means to develop a voltage proportional thereto, and means for controlling said source of current to be constant until the absolute magnitude of the sweep current generated by said driver means exceeds a predetermined value and thereafter for controlling said source of current to change in a direction which causes the voltage developed by said integrating means to be exponential in form.



3,867,704
MAGAZINE FOR HANDLING STRIPPING FOILS IN A PARTICLE ACCELERATOR

Andrew J. Gorka, Jr., Naperville, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed May 30, 1974, Ser. No. 474,550
Int. Cl. H05h 7/00
U.S. Cl. 328—233 12 Claims



1. A foil assembly for insertion into a beam of charged particles to effect charge exchange in said beam, said foil assembly comprising:

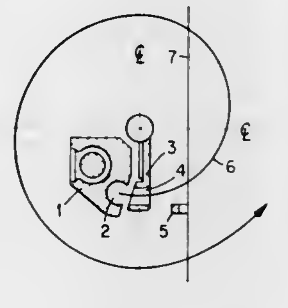
a foil formed of a thin film of an organic polymer, said foil having an area greater than the cross-sectional area of said beam;

a first rod connected to said foil at a first edge thereof, said first rod being longer than said first edge and projecting beyond said foil at each end of said first edge to form a pair of first supporting projections; and

a second rod connected to said foil at a second edge thereof opposite to said first edge, said second rod being longer than said second edge and projecting beyond said foil at each end of said second edge to form a pair of second supporting projections.

3,867,705
CYCLOTRON INTERNAL ION SOURCE WITH DC EXTRACTION

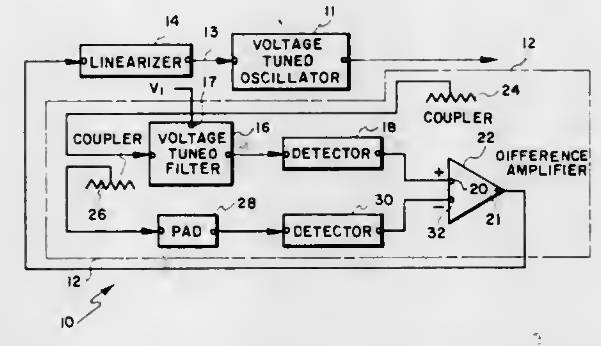
Ed D. Hudson, Knoxville; Richard S. Lord, and Merrit L. Mallory, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Mar. 29, 1974, Ser. No. 456,392
Int. Cl. H05h *7/08, 13/00*
U.S. Cl. 328—234 2 Claims



1. In an isochronous cyclotron provided with a magnetic field, an internal ion source provided with an arc chamber, a variable radio-frequency (rf) system including an rf accelerating slit for withdrawing ions from said arc chamber, said rf system effecting the acceleration of said ions through said cyclotron as guided by said magnetic field, and an ion beam extraction system for extracting a desired separated ion beam from said cyclotron, the improvement comprising a slotted dc accelerating electrode positioned between the exist of said ion source arc chamber and said rf accelerating slit, and a source of substantially large negative voltage connected to said dc accelerating electrode, whereby, during operation of said cyclotron, heavy ion beams being accelerated in said cyclotron on harmonics from the **5th** to the **11th** harmonic have their beam intensities increased from nanoamperes to microamperes by use of said dc accelerating electrode in said cyclotron.

3,867,706
FREQUENCY CONTROL AND STABILIZATION MEANS AND FREQUENCY DISCRIMINATOR

Paul E. Gili, Brookline, N.H., assignor to Frequency Sources, Inc., North Chelmsford, Mass.
Filed Nov. 8, 1973, Ser. No. 413,916
Int. Cl. H03b *3/04;* **H03d** *3/00*
U.S. Cl. 329—112 10 Claims



1. A frequency control and stabilization system comprising:

a. a tunable signal supply means for supplying a first signal at a frequency and at a power output level;

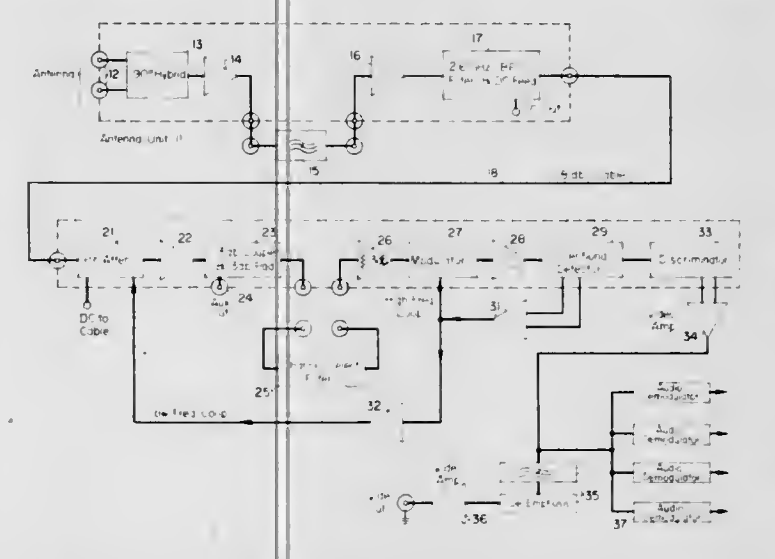
b. frequency filter means adjusted to said frequency and responsive to the frequency and power output level of said signal supply means for generating a first comparison signal having a magnitude that is a function of the frequency and power output level of said first signal;

c. means responsive to the power output level of said first signal for generating a second comparison signal having a magnitude which is a function of the said power output level; and

d. circuit means for subtracting said comparison signals for developing a tuning signal, said tuning signal being coupled to said signal supply means for tuning said signal supply means to said frequency.

3,867,707
CONTROLLED SIGNAL RECEIVER

Richard D. Pering, Palo Alto, and James A. Hall, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 19, 1973, Ser. No. 352,806
Int. Cl. H03d *3/00*
U.S. Cl. 329—132 1 Claim



1. A signal translating apparatus for suppressing amplitude variations appearing on an applied high frequency signal, the apparatus comprising:

first and second means, each having a pair of inputs and an output for producing at the output thereof a signal which is representative of the combination of signals applied to the inputs thereof;

means for coupling the output of the first means to one input of the second means;

detector means for producing an output signal representative of amplitude variations of a high frequency signal applied thereto;

means coupling the output of said second means to said detector means for applying a high frequency signal thereto from said second means;

first circuit means for applying said output signal from said detector means to another input of the second means;

second circuit means for applying said output signal from said detector means to one input of said first means, said second circuit means having a longer time constant than said first circuit means; and

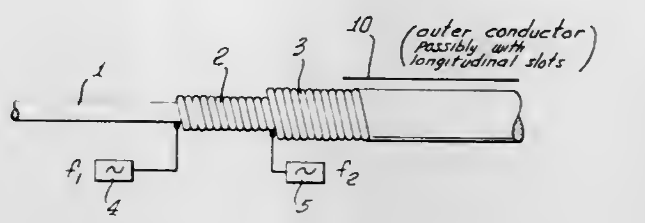
means coupled to another input of said first means for applying thereto a high frequency signal having amplitude variations which are to be suppressed.

3,867,708
TRANSMISSION SYSTEM WITH CABLE FOR TRANSMISSION OF HIGH FREQUENCY SIGNALS

Klaus Bretting, Heroldsberg, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Oct. 4, 1973, Ser. No. 403,634
Int. Cl. H03f *7/02*
U.S. Cl. 330—4.6 3 Claims

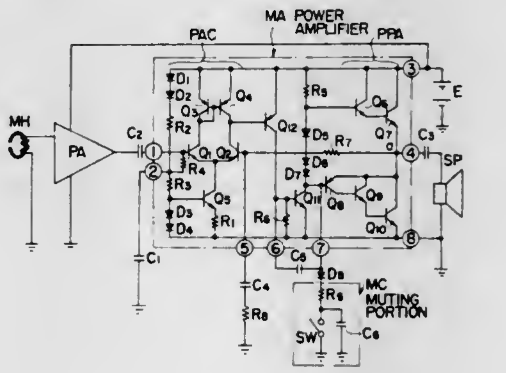
1. In a signal transmission system with a transmitter for an information signal at a first frequency and a cable for transmitting the information signal, the improvement comprising:

a magnetic core having magnetic permeability which exhibits a step; a first signal conductor wound on said core and connected to said transmitter; a second conductor wound also on said core; and a source for a control signal connected to said second conductor for magnetically biasing and controlling the core and having a d.c. biasing component and a variable component of a second frequency having amplitude and being adjusted in phase and frequency relative to the first frequency, so that the effective permeability of the core in any point thereof is reduced upon occurrence of an information signal peak and increased upon occurrence of information signal zero crossings.



3,867,709
MUTING SYSTEM FOR POWER AMPLIFIER

Kunio Seki, and Ryozo Kontani, both of Tokyo, Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Oct. 4, 1973, Ser. No. 403,407
Claims priority, application Japan, Oct. 4, 1972, 47-99006
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 8 Claims



1. A power amplifier comprising a pre-amplifier portion connected to an amplifier portion having a push-pull amplifier configuration and a voltage gain of substantially unity, a D.C. feedback path connecting the mid-point output of the push-pull amplifier portion to said pre-amplifier portion, and muting means connected to the push-pull amplifier portion for controlling the mid-point output potential of said push-pull amplifier portion to block input signals in said pre-amplifier portion via said D.C. feedback path.

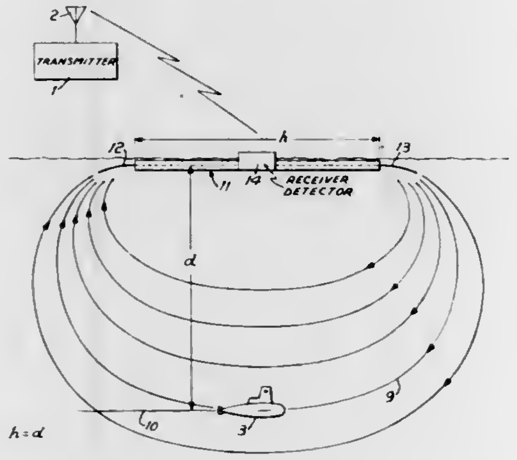
3,867,710
COMMUNICATION SYSTEM

Henri G. Busignies, Montclair, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 2, 1960, Ser. No. 26,232
Int. Cl. H04b *13/02;* **H01q** *1/04*
U.S. Cl. 340—4 R 16 Claims

1. A system for communicating electromagnetic signals between the atmosphere and an underwater object, comprising insulated conductive means carried by said object and releasable by said object to be disposed at the surface of the water adapted to detect said signals, said conductive means being disposed separate from and in the vicinity of said object and having uninsulated ends thereof in contact with said water, said received signals being radiated into said water from said ends and producing conduction currents and corresponding electromagnetic fields in the water surrounding said object.

7. A system for communicating electromagnetic signals through the atmosphere between at least two underwater

objects capable of transmitting and receiving electromagnetic signals comprising a transmitter and receiver for said signals carried by each of said objects, first conductive means carried by each said object and disposed within the water for radiating said transmitted signals into the water and producing conductive currents and corresponding fields in the water surrounding said object and capable of receiving incoming signals carried by other conductive currents in the vicinity, second conductive means carried by each said object and releasable by each said object to be disposed at the surface of the water

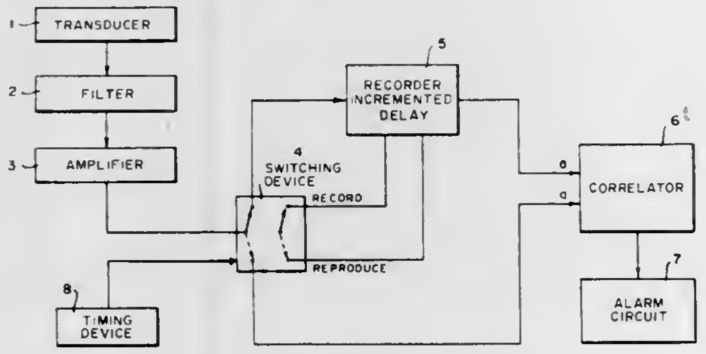


separate from said object and in the vicinity of each of said objects with the ends thereof in contact with the water and capable of receiving the transmitted signals of said conductive currents and to radiate said transmitted signals into the atmosphere for reception by the second conductive means disposed on the surface of the water separate from and in the vicinity of the other object, said second conductive means being capable of detecting said signals radiated through the atmosphere and radiating said signals through said ends into the water and producing conduction currents and corresponding fields in the water surrounding the adjacent object.

3,867,711
SWIMMER DETECTION SYSTEM FOR REMOTE OR LOCAL DEPLOYMENT

Paul V. Ruscus, 5601 Nebraska Ave., N.W., Washington, D.C. 20015

Filed June 25, 1973, Ser. No. 377,171
Int. Cl. G08b *13/00*
U.S. Cl. 340—5 R **7 Claims**

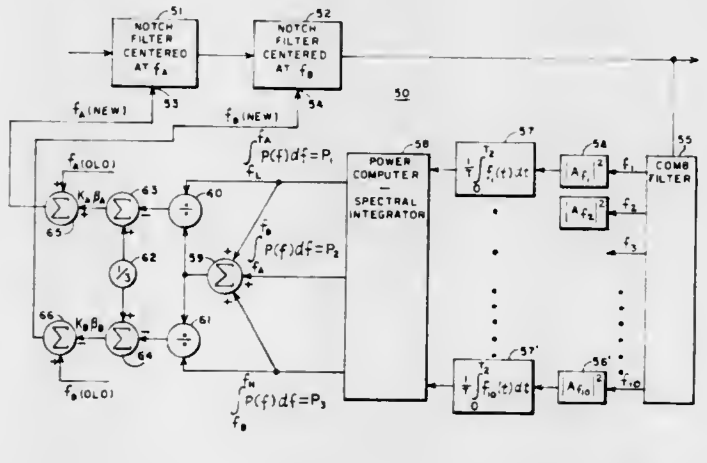


6. A method for detecting a swimmer comprising:
receiving a remotely produced acoustic signal;
recording a sample of said received signal on a recorder;
correlating the recorded sample signal with an acoustic signal received successively to said recorded sample signal;
comparing the correlated signal with a predetermined threshold level, the magnitude of said level indicating the presence of a swimmer;
incrementally delaying said recorded sample signal in the absence of a correlated signal level above said predetermined threshold;
recorrelating the incrementally delayed recorded sample with successively received acoustic signals until the correlated signal level exceeds said threshold level; and
erasing said recorded sample if said correlated signal level has a magnitude less than said predetermined threshold level.

3,867,712
ADAPTIVE FILTER

William P. Harthill, and Henry Van Calcar, both of Seattle, Wash., assignors to Honeywell Inc., Minneapolis, Ind.

Filed June 28, 1972, Ser. No. 266,906
Int. Cl. G01v *1/00*
U.S. Cl. 340—6 R **13 Claims**


51
NOTCH FILTER CENTERED AT f_A
52
NOTCH FILTER CENTERED AT f_B
50
53
54
f_A(NEW)
f_B(NEW)
f_A(OLD)
f_B(OLD)
$K_A\beta_A$
$K_B\beta_B$
65
66
63
64
62
1/3
60
61
59
$\int_{f_L}^{f_A} P(f)df=P_1$
$\int_{f_A}^{f_B} P(f)df=P_2$
$\int_{f_B}^{f_H} P(f)df=P_3$
58
POWER COMPUTER — SPECTRAL INTEGRATOR
57
57'
$\frac{1}{T}\int_0^{T_2} f_1(t)dt$
$\frac{1}{T}\int_0^{T_2} f_{10}(t)dt$
56
56'
$|A_{f_1}|^2$
$|A_{f_2}|^2$
$|A_{f_{10}}|^2$
f_1
f_2
f_3
f_{10}
55
COMB FILTER

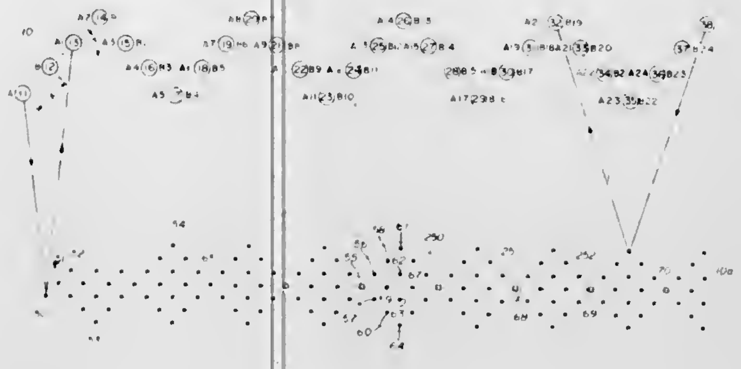
1. A filter for blocking signal components within a frequency band having independently variable band width and center frequency comprising:
first and second notch filters, each having a center frequency which is variable in response to a frequency control signal;
means for connecting said first and second notch filters in series;
means for supplying an incoming signal having frequency components between lower and upper frequency limits to said first notch filter;
computing means for accepting an input signal and determining first and second frequencies such that the powers represented by portions of the input signal in frequency bands lying between pairs of the lower frequency limit, the first frequency, the second frequency and the upper frequency limit are related in accordance with predetermined criteria;
means for supplying the output signal of said second notch filter to said computing means as the input signal; and
means for supplying signals indicative of the first and second frequencies respectively as the frequency control signals of the said first and second notch filters.

3,867,713
MULTIFOLD SEISMIC EXPLORATION OVER PURPOSEFULLY CROOKED TRAVERSES

Edward R. Tegland, Dallas, Tex., and Howard L. Viger, Metairie, La., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 22, 1973, Ser. No. 372,712
Int. Cl. G01v *1/13, 1/20, 1/38*
U.S. Cl. 340—15.5 CP **8 Claims**

1. In seismic exploration where seismic impulses are generated successively, one impulse at each of a plurality of locations spaced along purposefully crooked traverse and where seismic waves resulting from each said impulse are detected along said traverse, the method which comprises:
stacking all the detected signals which have a common

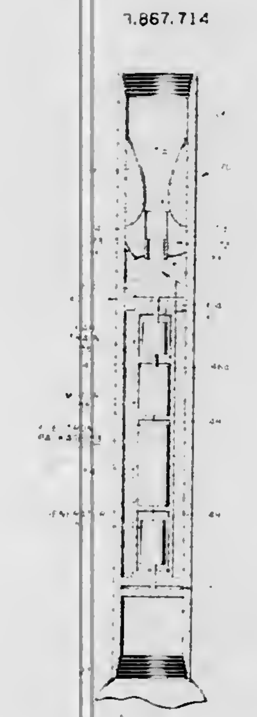


depth point to produce stacked traces portraying multifold areal subsurface structural conditions.

3,867,714
TORQUE ASSIST FOR LOGGING-WHILE-DRILLING TOOL

Bobbie Joe Patton, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,705
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 LD **5 Claims**

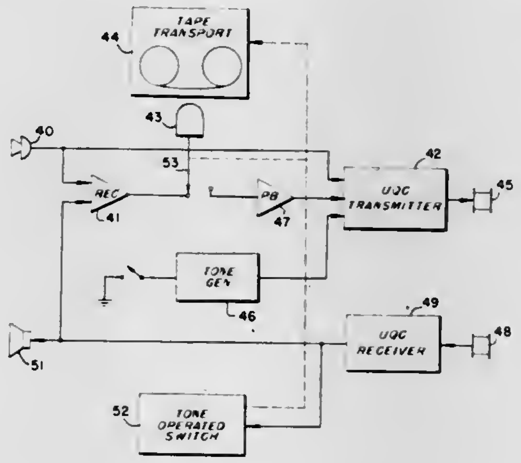


1. A logging-while-drilling apparatus for use in an earth drilling operation comprising:
a conduit adapted to be connected into a drill string of an earth drilling apparatus;
a logging-while-drilling tool positioned within said conduit, said tool having a turbinelike, signal generating valve positioned so that at least a portion of any drilling fluid flowing through said conduit will flow through said valve; and means in said conduit upstream of said valve for conditioning said drilling fluid comprising:
a jet positioned in said conduit so that said drilling fluid will pass therethrough; and
a means positioned in said conduit below said jet for imparting angular motion to at least a portion of said drilling fluid after it exits said jet and before it passes through said valve means.

3,867,715
UNDERWATER COMMUNICATIONS SYSTEM

Fred G. Geil, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 8, 1973, Ser. No. 414,012
Int. Cl. H04b *1/62, 11/00*
U.S. Cl. 340—5 T **10 Claims**



1. A method of voice communication in a reverberant environment comprising the steps of:
transmitting the voice communication over a normal communication path from a first station to a second station spaced therefrom in said reverberant environment where it is received;
simultaneously recording at a first rate the voice communication during the transmitting step at the first station;
replaying the recorded voice communication in reverse time sequence and at a slower rate than that at which it was recorded;
transmitting the replayed voice communication over the normal communication path between said first and said second stations;
rerecording said replayed voice communication at said slower rate of speed at said second station as it is received over said communication path;
replaying said rerecorded voice communication at the said first rate and in reverse time sequence than that at which it was rerecorded at said second station; and
utilizing said received voice communications to extract information therefrom.

3,867,716
RELATIVE MOVEMENT SYSTEM HAVING ALARM MEANS

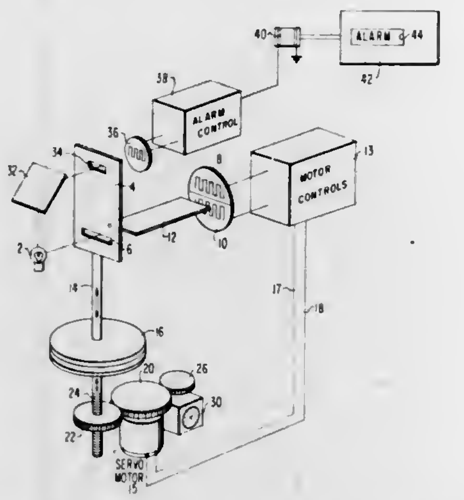
Paul B. King, Mountain Lakes, N.J., assignor to The Cessna Aircraft Company, Wichita, Kans.

Filed May 22, 1973, Ser. No. 362,729
Int. Cl. G05d *1/04;* **G01j** *1/36*
U.S. Cl. 340—27 R **8 Claims**

1. In an apparatus for sensing relative movement between a pair of bodies, said apparatus having
a pair of photosensitive elements,
means for directing a primary beam of light onto both of said photosensitive elements, said primary beam having a null position where the quantities of light striking said photosensitive elements are balanced in a given ratio,
means for moving the primary beam through small excursions in response to relative movement between said bodies to change the ratio of light striking the photosensitive elements,
restorative means responsive to signals from the photosensitive elements for moving the bodies to reestablish the balanced condition where the quantities of light striking the photosensitive element are in said given ratio,
an improvement comprising an alarm means for indicating malfunction of the apparatus,

said alarm means including a malfunction signalling means having a normal operational condition and a malfunction-indicating condition, and

alarm actuating means for shifting the alarm means to its malfunction-indicating condition in response to displacement of the primary beam beyond a predetermined limit of said small excursions, said alarm actuating means includes a circuit having an alarm-actuating photosensitive element,



means for directing a secondary beam of light on the alarm-actuating photosensitive element only when the primary beam of light is at a distance less than said predetermined limit of said small excursions from its null position, said means for moving the primary beam also moving the secondary beam.

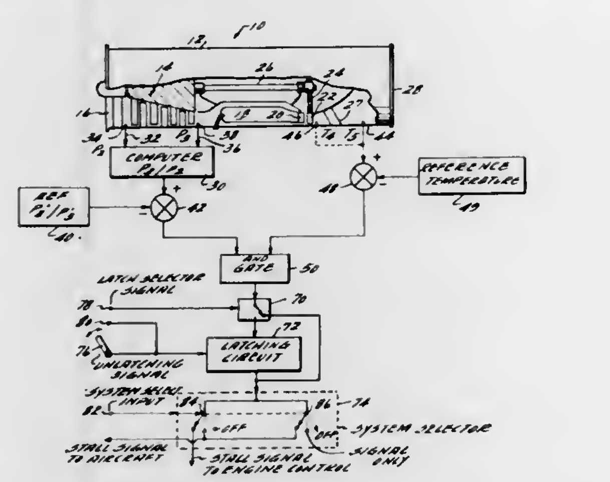
3,867,717
STALL WARNING SYSTEM FOR A GAS TURBINE ENGINE

John Theodore Moehring, and Virgil Willis Lawson, both of Cincinnati, Ohio, assignors to General Electric Company, Lynn, Mass.

Filed Apr. 25, 1973, Ser. No. 354,303

Int. Cl. G01m *15/00*

U.S. Cl. 340—27 SS **23 Claims**



1. A stall warning system for a gas turbine engine of the type having a compressor, combustor, turbine and exhaust duct in serial flow relation comprises:

means for detecting pressure in at least one location along the compressor inlet and outlet flowpaths thus providing a signal indicative of the detected pressure;

first comparator means for receiving the detected compressor pressure signal and comparing the detected signal with a reference signal to provide an output signal representative of an abnormal decrease in compressor pressure;

means for detecting a temperature representative of turbine temperature thus providing a signal indicative of the detected temperature;

second comparator means for receiving the detected temperature signal and comparing the detected signal with a reference signal to provide an output signal representative of an abnormal increase in turbine temperature; and gate means for providing an output signal indicative of engine stall upon receipt of both a signal from the first comparator means representative of an abnormal decrease in compressor pressure and a signal from the second comparator means representative of an abnormal increase in detected temperature thereby precluding the possibility of a false stall signal occurring during normal operation of the engine.

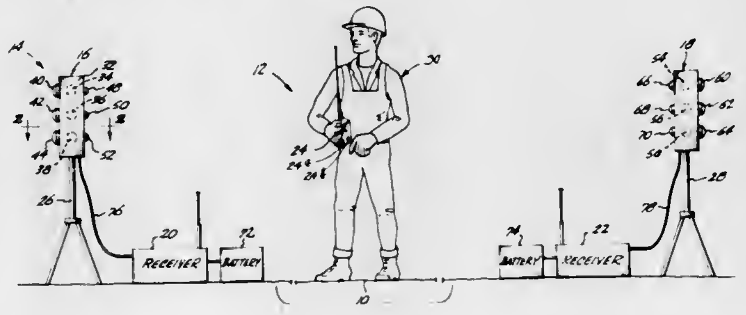
3,867,718
PORTABLE TRAFFIC CONTROL SYSTEM

Stephen S. Moe, P.O. Box 595, Springfield, Oreg. 97477

Filed May 30, 1972, Ser. No. 257,797

Int. Cl. G08g *1/07*

U.S. Cl. 340—31 R **4 Claims**



1. A portable traffic control system comprising

a pair of portable signal-display units adapted to be placed for use at spaced-apart points, each of said units including a signal-display element observable from one side of the unit and placeable selectively in signaling and nonsignaling states and means enabling monitoring of the states of said element simultaneously from the opposite side of the unit, and

signal-display actuating means including a portable remote control device operatively coupled to each of said signal-display elements of said units, said signal-display actuating means employing radio-frequency communication and comprising a radio-frequency receiver for each signal-display unit, said remote control device comprising a radio-frequency transmitter including a pair of independently actuatable means actuatable to effect communication by said transmitter from a remote location selectively and exclusively with a different one of said receivers independently of communication with the other receiver, such independent communication capability enabling the establishment from such a remote location of a plurality of different selected traffic movement conditions in the region between said units.

3,867,719
RELATIVE MOVEMENT RESPONSIVE SIREN ALERT

John W. Perrin, 3805 Harness Ln., Camp Hill, Pa. 17011

Filed Mar. 24, 1972, Ser. No. 237,642

Int. Cl. G08g *1/09*

U.S. Cl. 340—33 **8 Claims**

1. A relative movement responsive siren alert for use with a surface vehicle and comprising:

transducer means for mounting exteriorly of said vehicle and operative in response to an audio signal from a siren to produce an electrical signal;

amplifier means connected with said transducer means including demodulating means for amplifying and demodulating said electrical signal to produce an amplified demodulated signal;

frequency responsive means connected with said amplifier means and operative in response to frequency shift in one direction of said amplified signal to produce a first alert signal and to frequency shift in the direction opposite said one direction to produce a second alert signal;

alarm means connected with said frequency responsive means and responsive to said first alert signal to produce a first alarm signal detectable by human senses and to said second alert signal to produce a second alarm signal detectable by human senses, whereby convergence of said siren and said vehicle will produce a first Doppler effect detectable to said transducer to cause a first frequency shift of said amplified signal in said one direction said first frequency shift being demodulated to actuate said alarm means to produce said first alarm signal while divergence of said vehicle and siren will produce a second Doppler effect to cause a second frequency shift of said amplified signal in said direction opposite said one direction said second frequency being demodulated to actuate said alarm means to produce said second alarm signal.

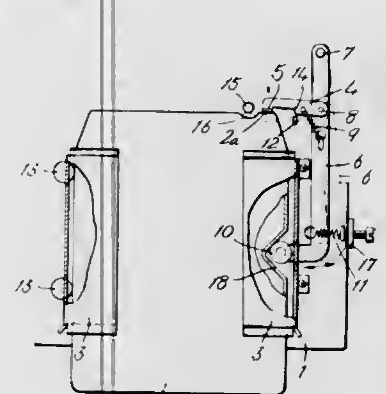
3,867,720
CARTRIDGE LOCKING DEVICE FOR TAPE PLAYERS

Yoshinobu Tanaka, No. 8-11, 2-chome, Kita-machi, Warabi-shi, Saitama-ken, Japan

Continuation-in-part of Ser. No. 93,260, Nov. 27, 1970, abandoned. This application May 21, 1973, Ser. No. 362,304

Int. Cl. G11b *5/56, 5/78*

U.S. Cl. 360—93 **3 Claims**



1. In a player, for magnetic tape cartridges, having a deck and means on said deck to define a tunnel to receive a cartridge slid longitudinally therein, the improvement which comprises in combination a first arm pivoted at one of its ends to said deck for lateral swinging movement, recess-engaging means mounted on the other end of said first arm and positioned for movement into a recess in a side of a cartridge inserted fully into said tunnel, spring-loading means secured to said deck and to said first arm to urge the first arm in the direction to move said recess-engaging means toward the cartridge, a second arm pivoted by one of its ends on said first arm, a shoulder on said second arm, a stop on said deck positioned to be contactable by said shoulder, spring-loading means secured to said first arm and to said second arm to urge said second arm into a position in which said shoulder is engaged by said stop, and abutment means on the other end of said second arm positioned to be contacted by the leading end of a cartridge inserted into and pushed towards fully inserted position in said tunnel, whereby during insertion of a cartridge into said tunnel said recess-engaging means is in a retracted condition and as the cartridge approaches a fully inserted position with its recess registering with the recess-engaging means, its leading end contacts said abutment means and shifts said second arm against its spring-loading means such that said shoulder is moved out of engagement with said stop means, to cause the first arm to be rotated about its pivot by its spring loading means to move the recess-engaging means into the recess in the side of the cartridge.

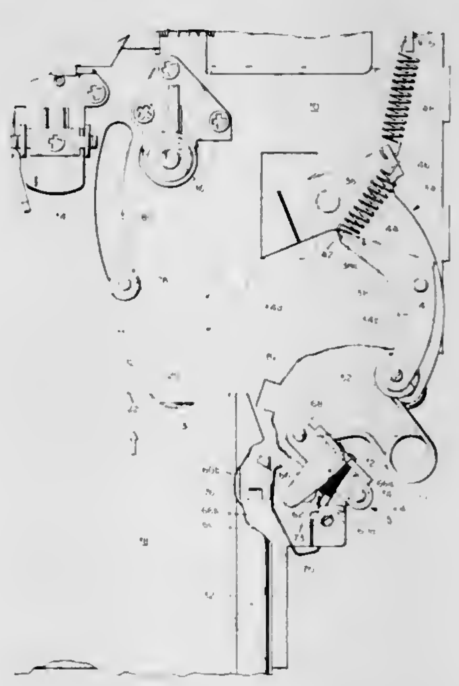
3,867,721
CARTRIDGE EJECT MECHANISM FOR TAPE PLAYERS AND THE LIKE

Allan L. Saunders, Melrose, Mass., assignor to Automatic Radio Mfg. Co., Inc., Melrose, Mass.

Filed Jan. 30, 1973, Ser. No. 327,947

Int. Cl. G11b *25/06*

U.S. Cl. 360—93 **10 Claims**



1. For use with a tape players and the like having a tunnel into which a tape cartridge is inserted, apparatus for exerting an ejecting force on the cartridge comprising: a link means connected to a cocking mechanism by a spring means, said link means being pivotally movable in one direction in response to insertion of a tape cartridge into the tunnel, the said pivotal movement in one direction being accompanied by an actuation of said cocking mechanism and a loading of said spring means, and trigger means for releasing said cocking mechanism in response to lateral movement of a tape cartridge in the tunnel, thereby allowing said spring means to unload with an accompanying pivotal movement of said link means in the opposite direction, which movement in the opposite direction causes said link means to exert an ejecting force on the tape cartridge.

3,867,722
CASSETTE EJECT MECHANISM

Keisuke Syohji, Nagoya, Japan, assignor to Shin-Shirasuna Electric Corporation, Nogoya-shi, Japan

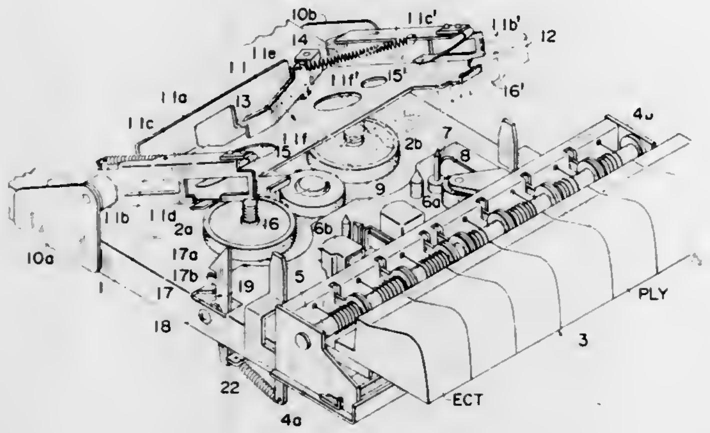
Filed June 12, 1973, Ser. No. 369,230

Claims priority, application Japan, Aug. 29, 1972, 47-101678

Int. Cl. G11b *15/00*

U.S. Cl. 360—96 **5 Claims**

1. In a magnetic recording reproducing device comprising a pair of reel spindles for removably mounting thereon a magnetic tape cassette, drive means for rotating said spindles, magnetic head means for engaging a magnetic tape in said cassette, and a plurality of depressibly operated keys, including a playback key and an eject key, which are arranged in a row along one side of said device, the improvement comprising a cassette eject mechanism for disengaging said magnetic head means from said tape and simultaneously stopping said tape at one full depression of said eject key and for discharging said cassette from said device at a second full depression of said eject key, said one full depression and said second full depression being depressibly identical.



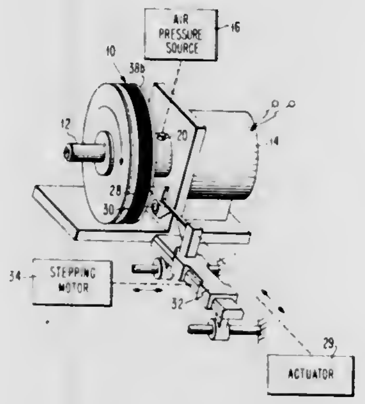
3,867,723
MULTIPLE FLEXIBLE DISK FILE

Robert J. Penfold, Santa Cruz; Frank E. Talke, Los Gatos, and Paul A. Thompson, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1973, Ser. No. 414,614

Int. Cl. G11b *5/82, 25/04*

U.S. Cl. 360—98 **11 Claims**



1. In a storage apparatus having flexible magnetic disks mounted to a spindle assembly for rotation, the combination comprising:

discrete uniformly apertured spacers concentrically seated on said spindle assembly and disposed between adjacent disks; and

means for providing a flow of fluid outwardly from said spindle assembly and through said spacers, so that a uniform air flow is provided radially relative to said disks, wherein said spacers are of smaller diameter than said disks.

3,867,724
HEAD DRIVE APPARATUS

James Dudley Bruer, Leander, and Ronald Eugene Hunt, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1973, Ser. No. 423,029

Int. Cl. G11b *17/02, 3/62;* **G01d** *15/28*

U.S. Cl. 360—97 **6 Claims**

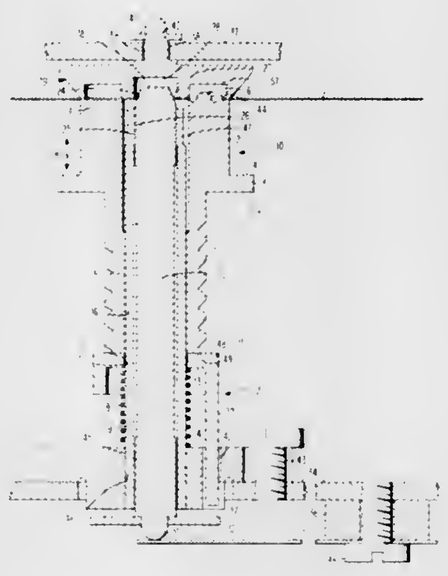
1. A recording medium spindle assembly comprising:

a. turntable means for carrying a recording medium and having an opening extending therethrough perpendicular to the plane of said recording medium;

b. spindle means positioned in said opening in said turntable means for aligning said recording medium on said turntable means;

c. support means for supporting said turntable means and biasing said turntable means toward said recording medium, said support means having an opening therein through which said spindle means extends;

d. aligning means positoned in said opening in said turntable means and said opening in said support means between said turntable means and said spindle means, and said support means and said spindle means for aligning said turntable means, said spindle means, and said support means;



e. translation means for causing said turntable means and said support means to be translated away from said recording medium, and permitting said turntable means and said support means to be translated toward said recording medium; and

f. means connected to said support means for causing said spindle means to be translated away from said recording medium after said turntable means, and permitting said spindle means to be translated toward and contact said recording medium before said turntable means.

3,867,725
ROTATING HEAD APPARATUS INCLUDING A THRUST GAS BEARING

Donovan M. Janssen, Boulder, Colo., and David Stedman, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,562

Int. Cl. G11b *5/52, 5/60*

U.S. Cl. 360—102 **4 Claims**

1. A rotating head apparatus, comprising:

first and second mandrel halves mounted in axial alignment and defining an annular cavity at the joint site thereof,

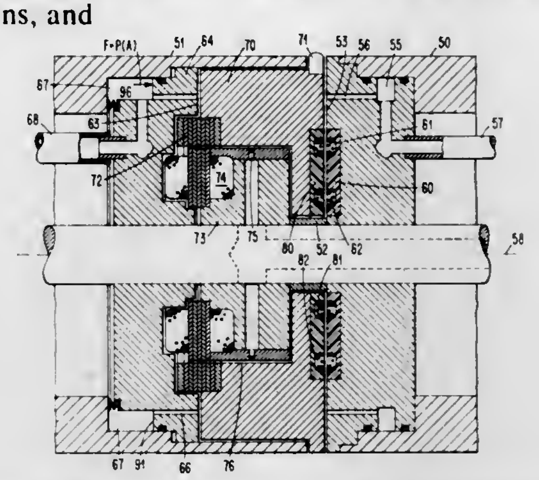
first annular rotary transformer means mounted at a fixed position in one radially extending wall of said cavity and concentric with the axis of said mandrel,

first annular hydrostatic gas bearing means mounted at a fixed position in said one cavity wall,

an axially movable piston forming the opposite axially extending wall of said cavity,

second annular hydrostatic gas bearing means carried by said piston in said opposite cavity wall,

a pressurized plenum movably supporting said piston and supplying gas under pressure to said second bearing means, and

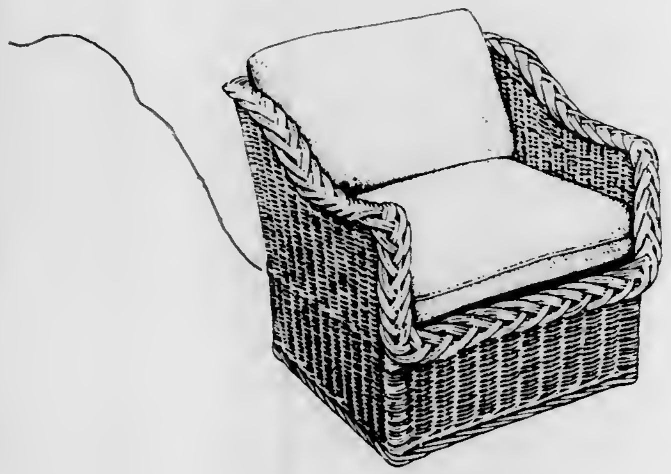


an annular head wheel supported in said cavity by said gas bearing means and carrying second annular rotary transformer means on a surface thereof which confronts said first bearing means.

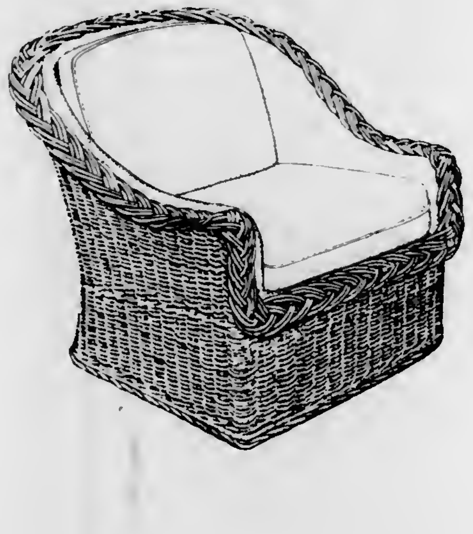
DESIGNS

FEBRUARY 18, 1975

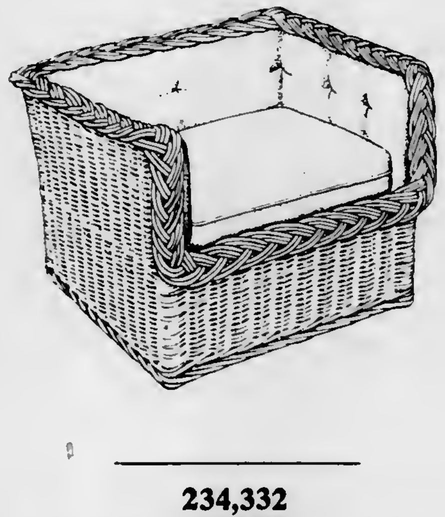
234,329
SEAT
Peter A. Rocchia, San Francisco, Calif., assignor to The Wicker Works, San Francisco, Calif.
Filed Jan. 3, 1973, Ser. No. 320,747
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



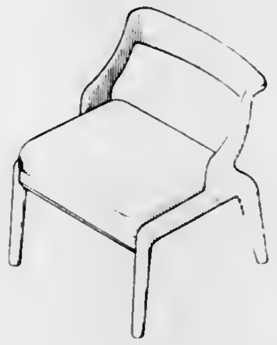
234,330
SEAT
Peter A. Rocchia, San Francisco, Calif., assignor to The Wicker Works, San Francisco, Calif.
Filed Jan. 3, 1973, Ser. No. 320,819
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



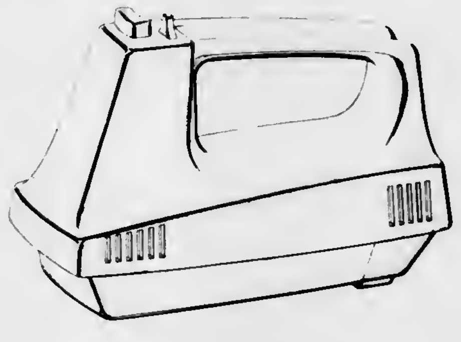
234,331
SEAT
Peter A. Rocchia, San Francisco, Calif., assignor to The Wicker Works, San Francisco, Calif.
Filed Jan. 8, 1973, Ser. No. 322,021
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



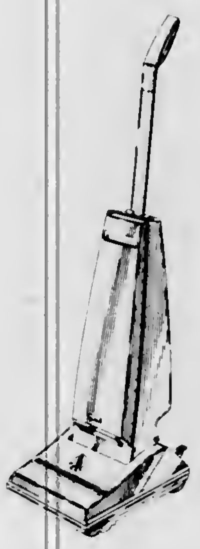
234,332
CHAIR
Satoshi Tada, Uenohara-machi, Japan, assignor to France Bed Co., Ltd., Tokyo, Japan
Filed Feb. 28, 1973, Ser. No. 336,772
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—76



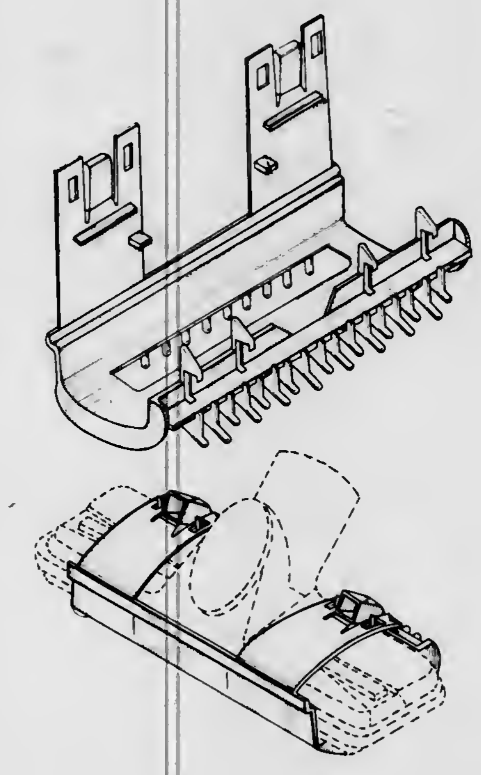
234,333
FOOD MIXER POWER UNIT
Jean Mantelet, Paris, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France
Filed June 1, 1972, Ser. No. 258,915
Claims priority, application France Dec. 3, 1971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—158



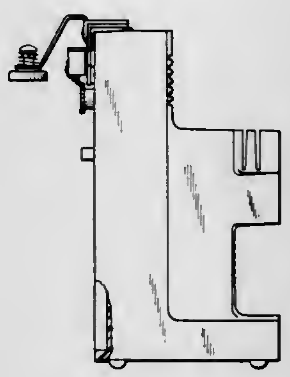
234,334
SUCTION CLEANER OR THE LIKE
Martin James Mims, London, England, assignor to The Hoover Company, North Canton, Ohio
Filed Aug. 6, 1973, Ser. No. 386,011
Claims priority, application Great Britain Mar. 1, 1973
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—165



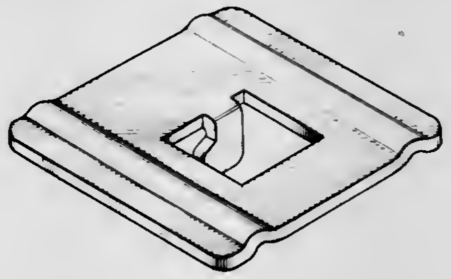
234,335
SHAG RAKE ATTACHMENT FOR VACUUM CLEANER NOZZLE
Edwin Fitzwater, Rahway, N.J., assignor to The General Signal Corporation, New York, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,213
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—173



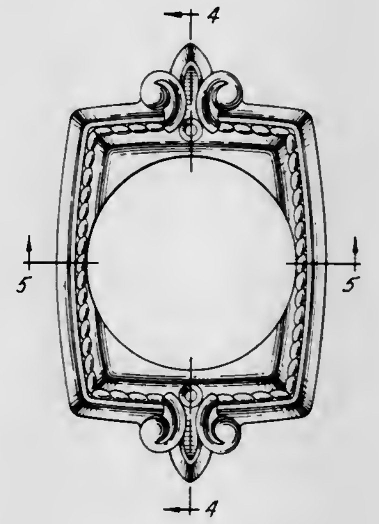
234,336
COMBINED CAN OPENER AND KNIFE SHARPENER
Melvin H. Boldt, Glenview, Ill., assignor to National Presto Industries, Inc., Eau Claire, Wis.
Filed Feb. 1, 1973, Ser. No. 328,521
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—35



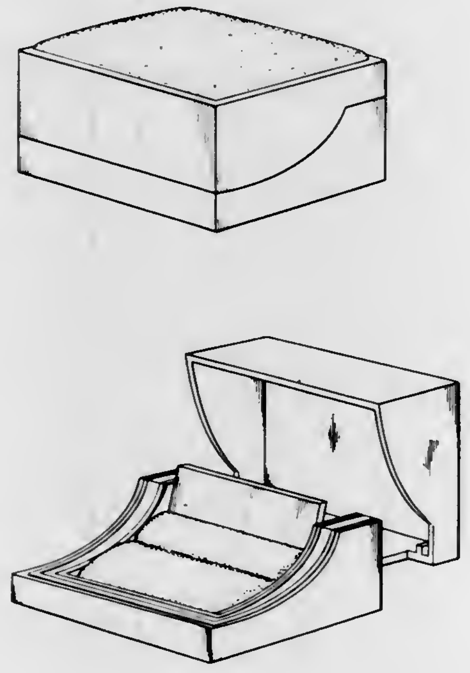
234,337
UNIVERSAL SHELF DIVIDER LOCKING DEVICE
Clarence F. Block, Barrington, Ill., assignor to Production Metal Products Co., Inc., Chicago, Ill.
Filed Oct. 16, 1973, Ser. No. 406,943
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—109



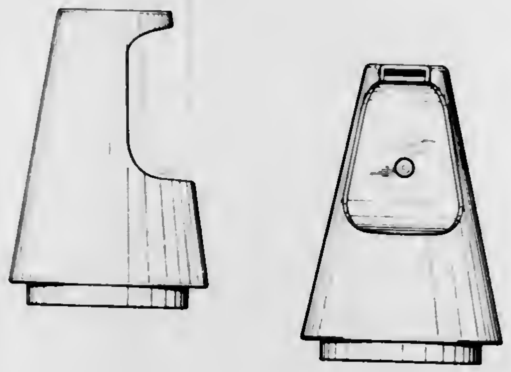
234,338
ESCUTCHEON FOR A DOOR KNOB AND THE LIKE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Feb. 27, 1974, Ser. No. 446,471
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



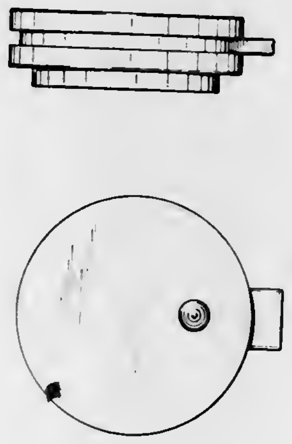
234,339
JEWELRY BOX
Jerome Shiffman, 128 Carthage Road,
Scarsdale, N.Y. 10583
Filed Mar. 26, 1973, Ser. No. 344,550
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—230



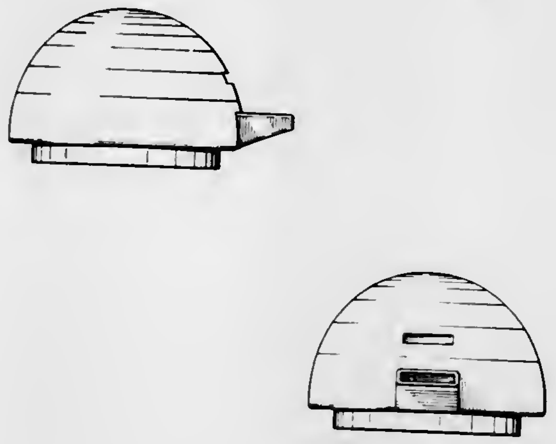
234,340
COMBINED DISPENSING CAP AND HEATER FOR A PRESSURIZED CONTAINER
George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed July 20, 1973, Ser. No. 381,185
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



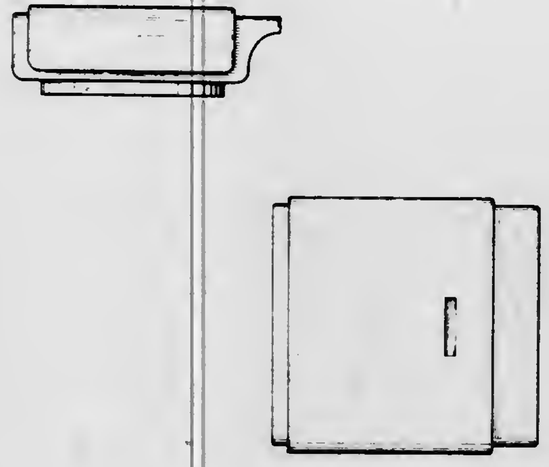
234,341
COMBINED DISPENSING CAP AND HEATER FOR A PRESSURIZED CONTAINER
George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed July 20, 1973, Ser. No. 381,186
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



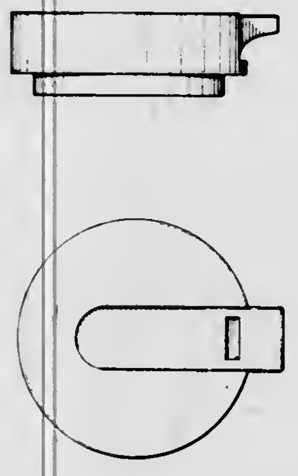
234,342
COMBINED DISPENSING CAP AND HEATER FOR A PRESSURIZED CONTAINER
George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed July 20, 1973, Ser. No. 381,187
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



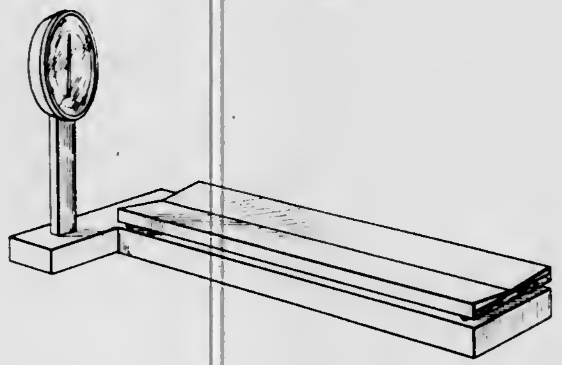
234,343
COMBINED DISPENSING CAP AND HEATER FOR A PRESSURIZED CONTAINER
George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed July 20, 1973, Ser. No. 381,188
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



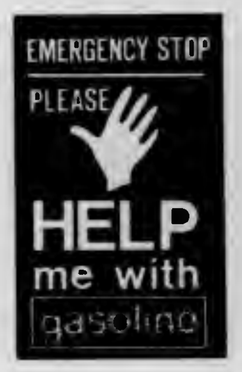
234,344
COMBINED DISPENSING CAP AND HEATER FOR A PRESSURIZED CONTAINER
George L. Schick, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed July 20, 1973, Ser. No. 381,189
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



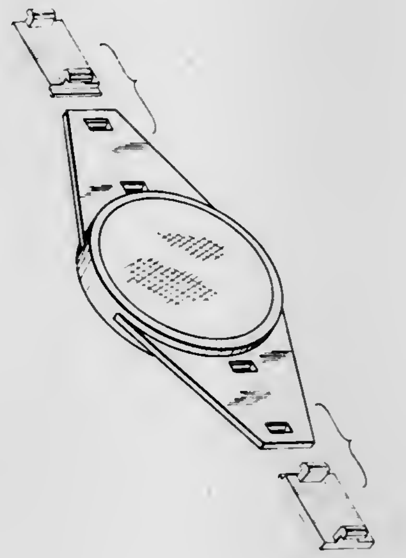
234,345
SCALE
James A. King, Sr., Greensboro, N.C., assignor to J. A. King and Company, Greensboro, N.C.
Filed Dec. 4, 1972, Ser. No. 311,454
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91



234,346
CHANGEABLE DISTRESS FLAG
Viktor Andersson, Stora Nygatan 2, S-211 37 Malmo, Sweden
Filed July 13, 1973, Ser. No. 378,960
Term of patent 7 years
Int. Cl. D29—*02;* D20—*03*
U.S. Cl. D10—109

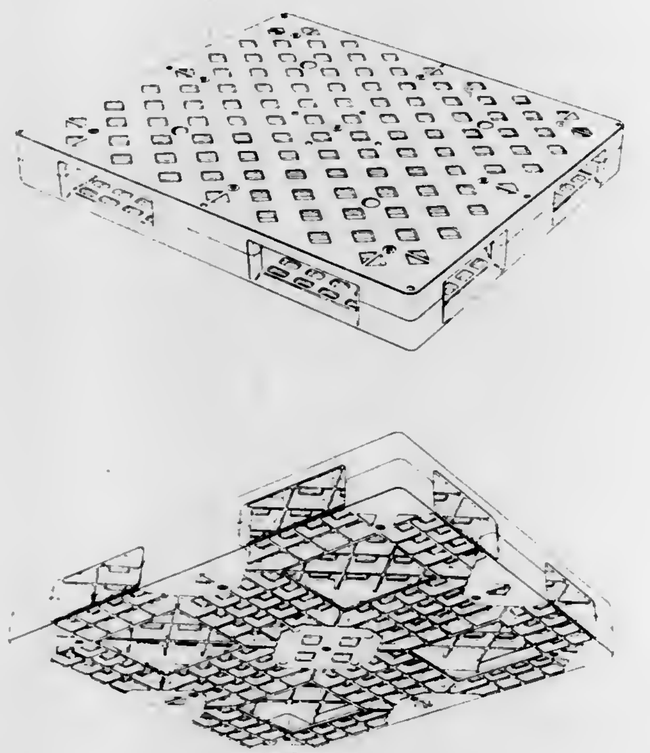


234,347
BICYCLE REFLECTOR
Nicholas A. Amoroso, Hillsdale, N.J., assignor to Bright Star Industries, Inc., Clifton, N.J.
Filed Oct. 9, 1973, Ser. No. 404,707
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—111



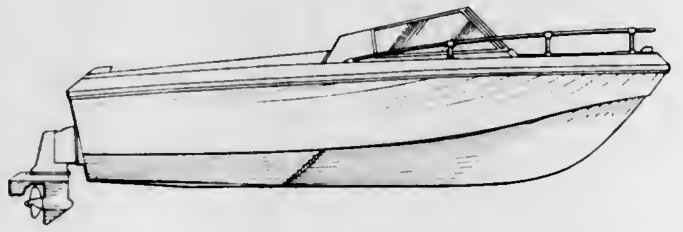
234,348
PALLET

John Edward Moses, St. Albans, England, assignor to John Dale Limited, London, England
Filed Nov. 21, 1973, Ser. No. 424,540
Claims priority, application Great Britain May 22, 1973
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53



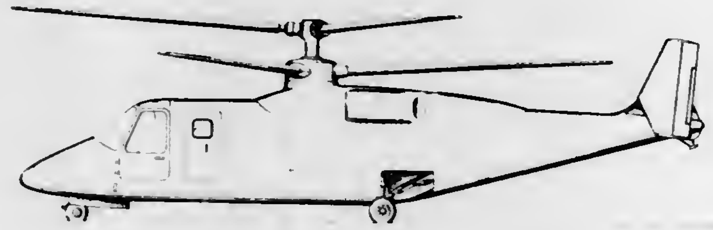
234,349
RUNABOUT POWER BOAT

Richard C. Cole, 19701 Whispering Pines Road, Miami, Fla. 33157
Filed Aug. 7, 1973, Ser. No. 386,299
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



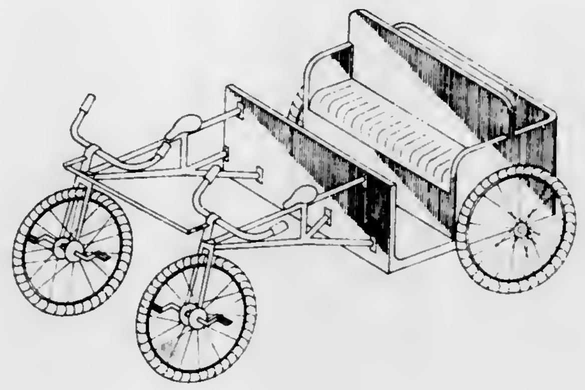
234,350
HELICOPTER WITH COAXIAL ROTORS

Rudolph W. Beckert, Jr., Bethany, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 2, 1972, Ser. No. 277,204
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—74



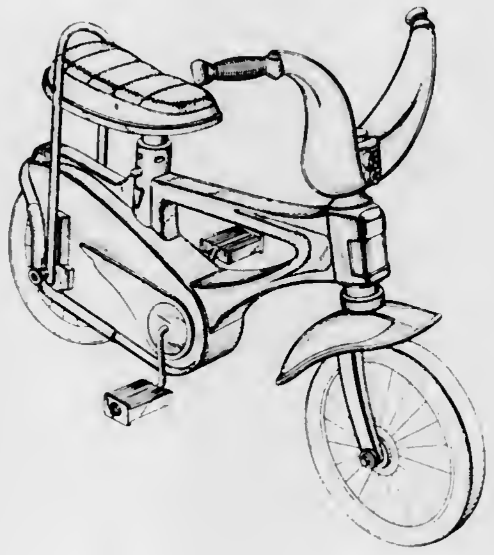
234,351
COMBINED VELOCIPEDE AND CARRIER

John A. Bingham, 84–A N. Lakeview Drive, Whispering Pines, N.C. 28389
Filed May 22, 1973, Ser. No. 362,790
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—107



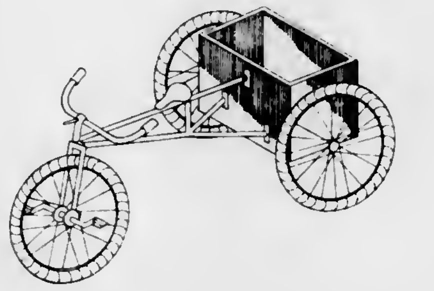
234,352
BICYCLE

Laurie J. Campbell and Calvin S. Cook, Erie, Pa., assignors to Louis Marx & Co. Inc., New York, N.Y.
Filed June 14, 1973, Ser. No. 370,101
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111



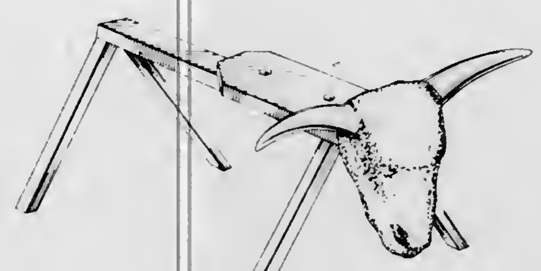
234,353
COMBINED VELOCIPEDE AND CARRIER

John A. Bingham, 84–A N. Lakeview Drive, Whispering Pines, N.C. 28389
Filed May 22, 1973, Ser. No. 362,788
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—112



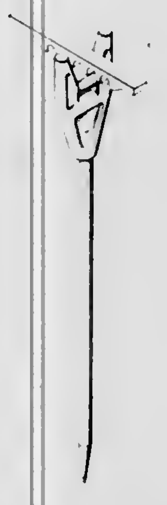
234,354
STEER ROPING TRAINER OR THE LIKE

Robert L. Kelton, 1895 Hayden Lane, Tempe, Ariz. 85281
Filed Aug. 13, 1973, Ser. No. 388,324
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



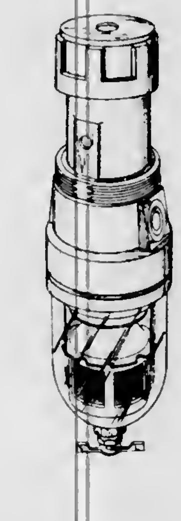
234,355
COMBINED FISHING POLE BALANCER AND PIVOT STAND THEREFOR

Robert H. West, 1720 Arvilla Drive, Sacramento, Calif. 95822
Filed Nov. 1, 1973, Ser. No. 411,782
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13



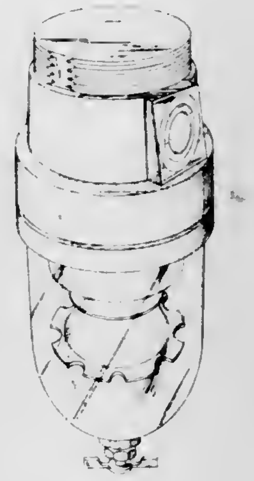
234,356
COMBINED FILTER AND REGULATOR FOR PRESSURIZED FLUID

Clair Dean Holben and John Joseph Humphrey, Denver, Colo., assignors to C. A. Norgren Co., Littleton, Colo.
Filed July 17, 1972, Ser. No. 272,162
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



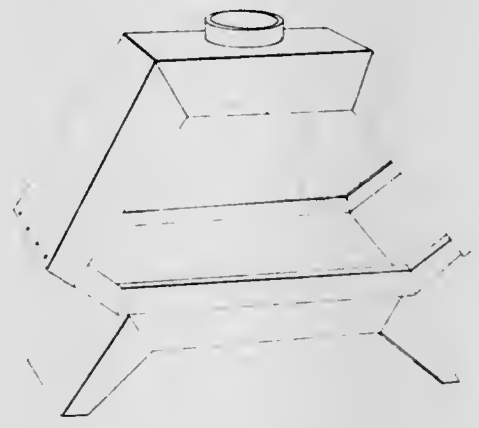
234,357
FILTER FOR PRESSURIZED FLUID

John Joseph Humphrey, Denver, Colo., assignor to C. A. Norgren Co., Littleton, Colo.
Filed July 17, 1972, Ser. No. 272,165
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



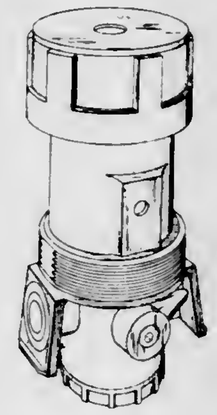
234,358
FREESTANDING FIREPLACE

Paul H. Lever, Fallbrook, Calif., assignor to Fireplace Corporation of America, Walled Lake, Mich.
Filed Dec. 6, 1973, Ser. No. 422,251
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



234,359
REGULATOR FOR PRESSURIZED FLUID

Clair Dean Holben and John Joseph Humphrey, Denver, Colo., assignors to C. A. Norgren Co., Littleton, Colo.
Filed July 17, 1972, Ser. No. 272,163
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—21

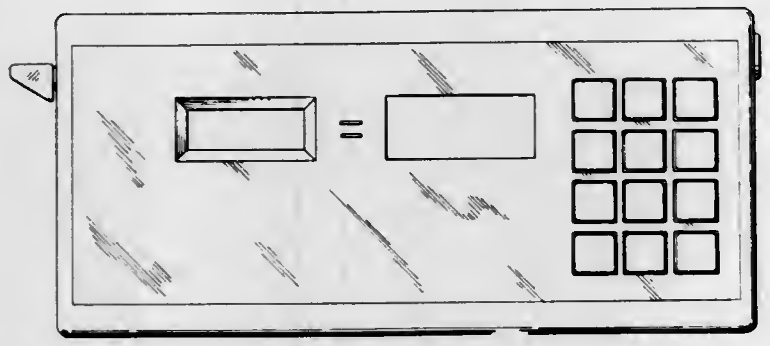


234,360

TEACHING MACHINE

Ernest R. Duncan, Harmony Hill, Mount Harmony Road,
Bernardsville, N.J. 07924
Filed June 8, 1973, Ser. No. 368,267
Term of patent 14 years
Int. Cl. D14—*01*

U.S. Cl. D25—1 R

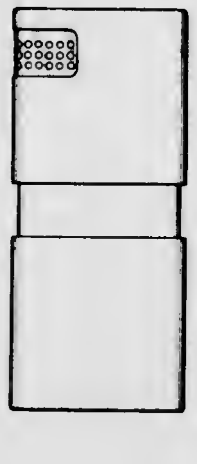


234,361

POCKET LIGHTER

Bernd Figur, Nieder-Roden, Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Germany
Filed May 2, 1973, Ser. No. 356,675
Claims priority, application Germany Nov. 2, 1972
Term of patent 14 years
Int. Cl. D27—*05*

U.S. Cl. D27—36

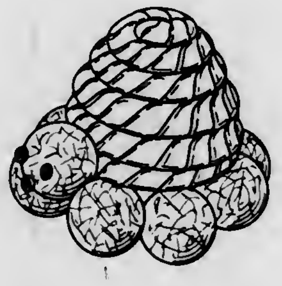


234,362

GLASS MARBLE TURTLE

Thomas R. Mueller, 3600 W. Rodgers St.,
Milwaukee, Wis. 53215
Filed July 23, 1973, Ser. No. 381,408
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—2 C

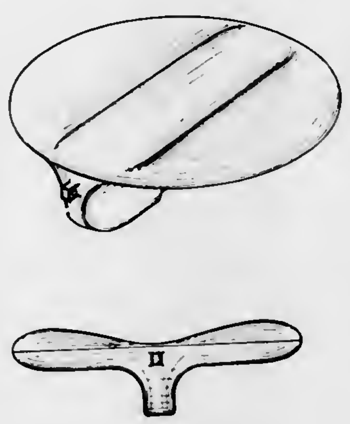


234,363

AQUATIC TOW DISC

Michael Del Vecchio, 140 Regent Ave.,
Providence, R.I. 02908
Filed Aug. 27, 1973, Ser. No. 391,986
Term of patent 14 years
Int. Cl. D21—*02*

U.S. Cl. D34—42

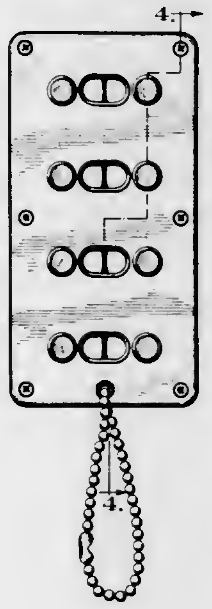


234,364

HORSE SHOE GAME SCORING DEVICE

Frank E. Plush, 7161 Chestnut Drive,
Walton Hills, Ohio 44146
Filed July 25, 1972, Ser. No. 274,916
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 MM

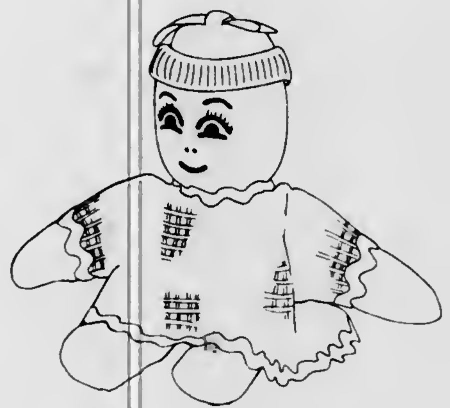


234,365

DOLL OR SIMILAR ARTICLE

Marie Leavitt, 85 Free St., Hingham, Mass. 02043
Filed Aug. 30, 1973, Ser. No. 393,057
Term of patent 14 years
Int. Cl. D21—*01*

U.S. Cl. D34—4 C

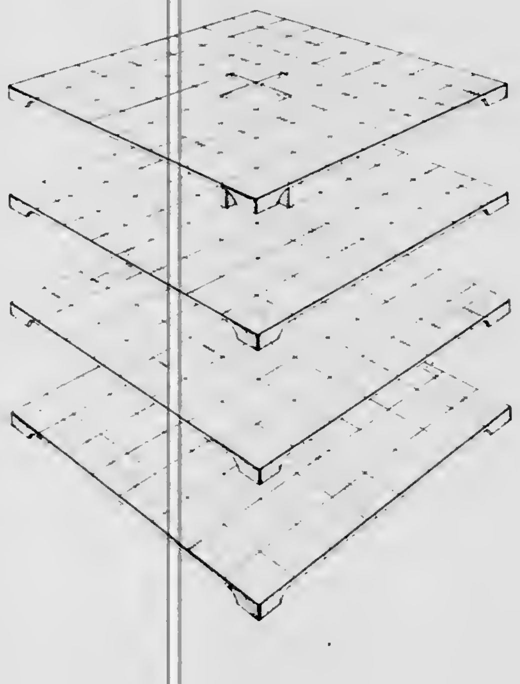


234,366

THREE-DIMENSIONAL GAME BOARD OR SIMILAR ARTICLE

Harry Zelenko, 240 E. 61st St.,
New York, N.Y. 10021
Filed July 20, 1973, Ser. No. 381,027
Term of patent 7 years
Int. Cl. D21—*01*

U.S. Cl. D34—5 SS

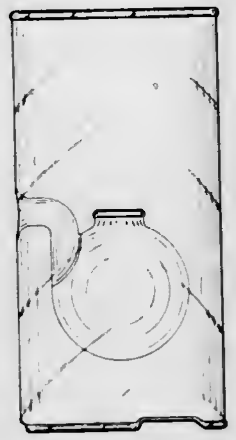


234,367

OIL LAMP

Jon Wolfard, 1553 Sonoma St.,
Albany, Calif. 94706
Filed Aug. 30, 1973, Ser. No. 392,983
Term of patent 14 years
Int. Cl. D26—*01, 02, 05*

U.S. Cl. D48—24 R

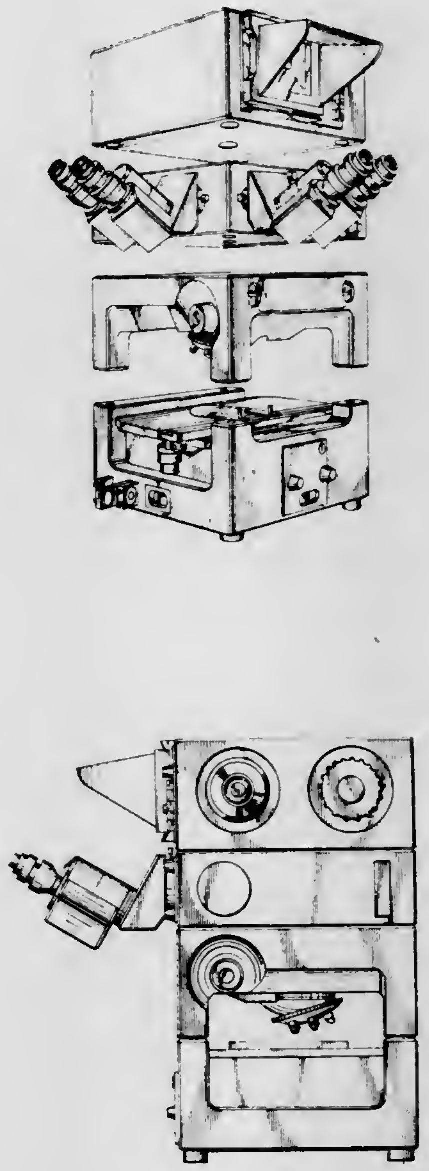


234,368

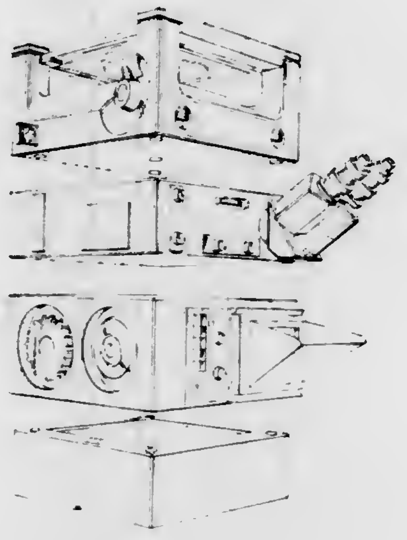
MICROSCOPE

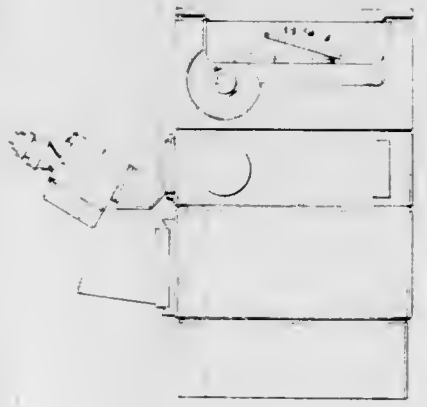
Kurt Michel, Aalen, Germany, assignor to Carl Zeiss-Stiftung, doing business as Carl Zeiss, Wurttemberg, Germany
Filed Dec. 19, 1973, Ser. No. 426,312
Claims priority, application Germany June 19, 1973
Term of patent 14 years
Int. Cl. D16—*06*

U.S. Cl. D57—1 E

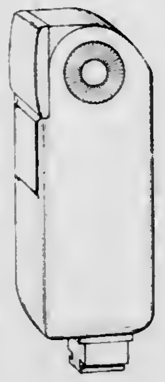


234,369
MICROSCOPE
Kurt Michel, Aalen, Germany, assignor to Carl Zeiss-Stiftung, doing business as Carl Zeiss, Wurttemberg, Germany
Filed Dec. 19, 1973, Ser. No. 426,313
Claims priority, application Germany June 19, 1973
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

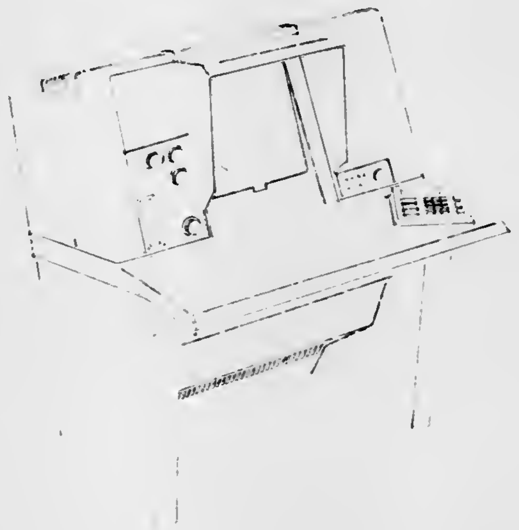




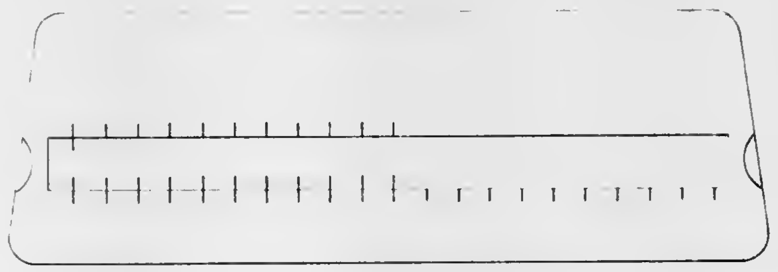
234,370
FLASH UNIT FOR A PHOTOGRAPHIC CAMERA
Robert Oberheim, Neu-Isenberg, Schoenbornring, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Sept. 13, 1972, Ser. No. 288,663
Claims priority, application Germany Mar. 17, 1972
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



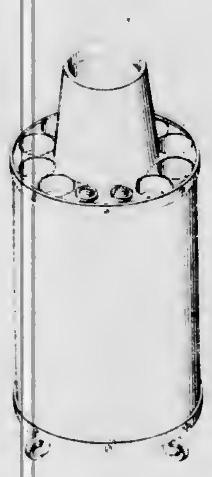
234,371
MICROFILM RETRIEVAL TERMINAL OR THE LIKE
Richard J. Olson, Pittsford, N.Y.
(901 Elmgrove Road, Rochester, N.Y. 14650)
Filed July 13, 1973, Ser. No. 379,149
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



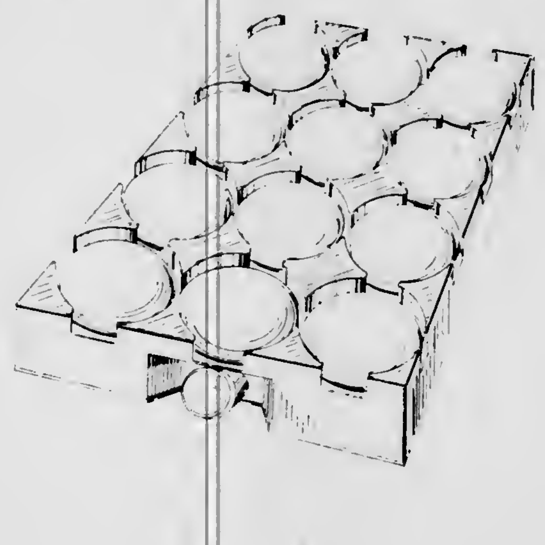
234,372
SLIDE COMPUTER
Robert E. Baldwin, 6231 SW. 8th St.,
Fort Lauderdale, Fla. 33314
Filed Dec. 27, 1971, Ser. No. 212,880
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D64—11 B



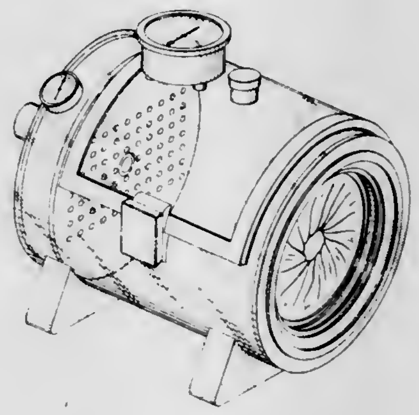
234,373
FOOD AND BEVERAGE SERVICE DEVICE FOR CHANGING THE TEMPERATURE OF FOOD AND BEVERAGE CONTAINERS AND THEIR CONTENTS
Vincent J. Gambello, Yonkers, N.Y., assignor to James I. Fisher, Orange, Conn.
Filed Jan. 28, 1974, Ser. No. 437,365
Term of patent 7 years
Int. Cl. D7—*02;* D15—*07*
U.S. Cl. D67—4



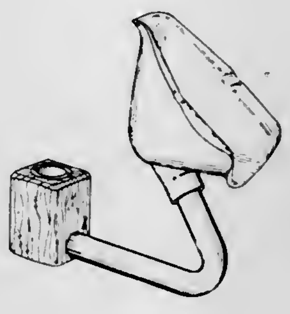
234,374
CONTACT REFRIGERATION UNIT FOR CHILLING DRINKING VESSELS
Richard F. Starrett, P.O. Box 838,
Tiburon, Calif. 94920
Filed Mar. 1, 1974, Ser. No. 447,131
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—4

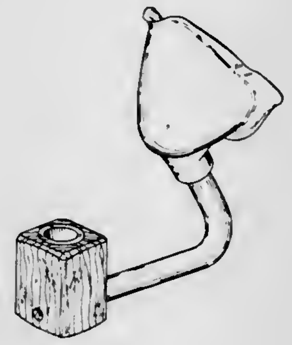


234,375
INFANT CHAMBER
Jerry L. Grimes, Pomona, Calif., assignor to The Fluorocarbon Company, Anaheim, Calif.
Filed Mar. 16, 1973, Ser. No. 342,282
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 G

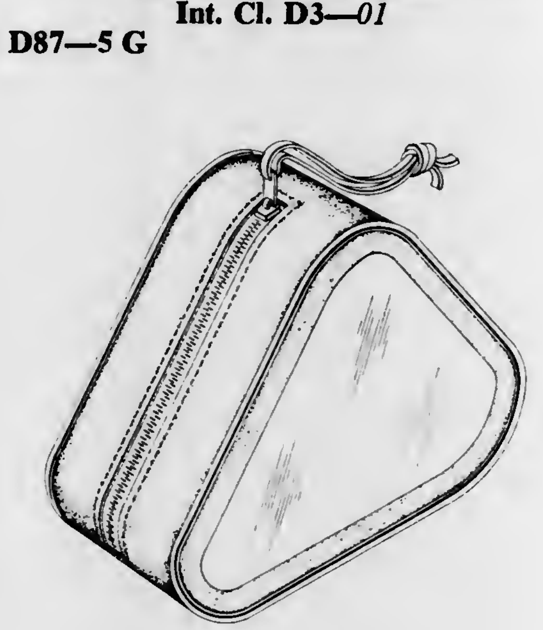


234,376
MEDICAMENT INHALANT DISPENSER
William E. Goettelman, Milwaukee, Wis.
(Rte. 1, Forestville, Wis. 54213)
Filed Nov. 24, 1972, Ser. No. 309,511
Term of patent 14 years
Int. Cl. D23—*01;* D24—*02*
U.S. Cl. D83—1 N

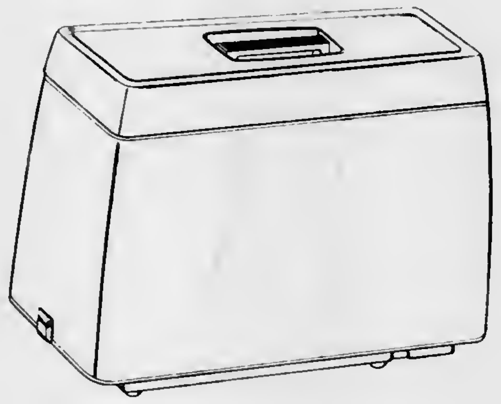




234,377
COMBINED DISPLAY CONTAINER AND TOTE BAG
Ned H. Gallasch, Milwaukee, Wis., assignor to ABC Industries, Inc., Milwaukee, Wis.
Filed Dec. 20, 1972, Ser. No. 306,360
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



234,378
CASE FOR A SEWING MACHINE
Koji Uchida, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Nov. 24, 1972, Ser. No. 309,507
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



LIST OF PATENTEES
TO WHOM
PATENTS WERE ISSUED ON THE 18TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Engstrom, Folk, 3,867,131.
A. B. Chance Company: *See—*
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A/S E. Rasmussen: *See—*
Thastrup, Ove, 3,866,953.
A/S Lovens Kemiske Fabrik Produktionsakieselskab: *See—*
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Abbott Machine Co., Inc.: *See—*
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Abbott, Samuel L., to Abbott Machine Co., Inc. End finding nozzle. 3,866,848, Cl. 242-35.60E.
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Abma, Charles B.: *See—*
Leveskis, Newton G.; and Abma, Charles B., 3,867,461.
Abu-isa, Ismat A., to General Motors Corporation. Two-component synergistic antioxidant system for polyolefins. 3,867,477, Cl. 260-837.00R.
ACF Industries Incorporated: *See—*
Malo, Lowell L., 3,866,546.
Acme General Corporation: *See—*
Gewfrtz, Harry R.; and Kellems, Kenneth K., 3,867,621.
Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaishi. Ensemble effect imparting device using a bucket brigade device for an electric musical instrument. 3,866,505, Cl. 84-1.240.
Adams, Albert John, to A. W. Chapman Limited. Seat slide mechanism. 3,866,876, Cl. 248-429.000.
Adams, Clarence R., to Boeing Company, The. Insulation and condensation control blanket. 3,867,244, Cl. 161-133.000.
Adams, Kenneth D.; and King, Walter F., to Singer Company, The. Sewing machine frame construction. 3,866,553, Cl. 112-258.000.
Addressograph Multigraph Corporation: *See—*
Raterman, Donald E.; and Goebel, Joseph, 3,867,025.
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Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,867,448.
Afanasiev, Alexandr Dmitrievich; and Mogilevsky, Alexandr Moiseevich. Device for trueing piece articles of variable section. 3,866,453, Cl. 72-214.000.
Agfa-Gevaert Aktiengesellschaft: *See—*
Eppe, Rudolf; Hartwig, Karl; and Vossnacke, Juergen, 3,866,903.
Gotze, Christian; and Hujer, Friedrich, 3,866,864.
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Agfa-Gevaert N.V.: *See—*
Hermans, Theofiel Eveline; and Delzenne, Gerard Albert, 3,867,192.
Priem, Jan Jozef; De Winter, Walter Frans; and Lambrechts, Jan Bernard, 3,867,152.
Vanden Eynde, Hector Alfons; Pollet, Robert Joseph; and De Cat, Arthur Henri, 3,867,451.
Ahmad, Shamim, to B. F. Goodrich Company, The. Tire and wheel combination. 3,866,652, Cl. 152-317.000.
Ahmed, Adel Abdel Aziz, to RCA Corporation. Fractional current supply. 3,867,685, Cl. 323-4.000.
Aisin Seiki Co., Ltd.: *See—*
Miyao, Takayaki; Maeda, Hiroaki; and Sato, Masanori, 3,866,519.
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Nakamura, Masao; Uchida, Chieko; Ozaki, Masanao; and Ichikawa, Takehiko, 3,867,436.
AJM Research Corporation: *See—*
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Ajrlahi, Mamut. Multiple-switch clock. 3,867,642, Cl. 307-141.000.
Akahane, Masahiro: *See—*
Egawa, Mitsuru; Akahane, Masahiro; and Sanada, Tomohiro, 3,866,829.
Akamatsu, Akira; Okuaki, Akira; and Mori, Shigeo, to Ajinomoto Co., Inc. Isocyanate-modified polymers of aspartic and glutamic acid and method of preparing the same. 3,867,352, Cl. 260-77.50R.
Akamatsu, Akira: *See—*
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Akatsu, Mitsuhiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Mori, Kazuo; Kume, Yoshiharu; and Izumi, Takahiro, 3,867,372.
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  - Pfahl, Robert Christian, Jr.; and Ammann, Hans Hugo, 3,866,307.
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  - Goldfarb, Adolph E.; and Benkoe, Erwin, 3,866,920.
- Benson, Henry, to Warren Industries. Connector for window spacer assembly. 3,866,380, Cl. 52-656.000.
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  - Peberdy, Roland, 3,866,441.
- Berbeco, George R.: *See—*
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  - Dusza, John Paul; Dindsay, Harry Lee; Child, Ralph Grassing; and Bernstein, Seymour, 3,867,425.
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- Bertellotti, Ansano: *See—*
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  - Rohatgi, Pradeep Kumar, 3,867,299.
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  - Vofsi, David; Levy, Moshe; Daren, Stephen; and Cohen, Ella, 3,867,468.
- Darragh, Richard T.; and Stone, James L., to Procter & Gamble Company, The. Fats with encapsulated flavors. 3,867,556, Cl. 426-98.000.
- Dascaloff, Stanley Nicholas: *See—*
  - Cruzado, Santos; Dascaloff, Stanley Nicholas; Tolls, John George; and Torvend, Eugene Fraley, 3,866,570.
- Dauben, Dwight L., to Amoco Production Company. Miscible flood process. 3,866,680, Cl. 166-273.000.
- Davies, Terence J.: *See—*
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- Davis, James A.; and Elsea, Arthur R., to Consolidated Ceramic Products, Inc. Smokeless exothermic hot topping compositions. 3,867,155, Cl. 106-38.270.
- Davis, Raymond A., to Grant, Frank A. Tray wrapping apparatus and method. 3,866,387, Cl. 53-42.000.
- Davy-Ashmore Aktiengesellschaft: *See—*
  - Heeg, Rudolf; and Striebich, Alfred, 3,867,349.
- Dawes, Dag; and Bohner, Beat, to Ciba-Geigy Corporation. Triazolyl phosphorus compounds. 3,867,396, Cl. 260-308.00R.
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  - Bohner, Beat; Dawes, Dag; and Meyer, Willy, 3,867,397.
  - Bohner, Beat; Dawes, Dag; and Meyer, Willy, 3,867,398.
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- Dean, Carl J.; Wright, David M.; and Cournoyer, Bernard T., to Barry Wright Corporation. Cabinet interlock mechanism. 3,866,993, Cl. 312-216.000.

- Debacker, Pierre D.: *See—*
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- Debenedict, Charles R.: *See—*
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- Decca Limited: *See—*
  - Blaxtan, Peter William; Millward, John David; and Such, Richard Thomas, 3,867,570.
- Decker, Herbert, to Triumph Werke Neurnberg A.G. Rotational positioning mechanism for single element printer. 3,866,735, Cl. 197-55.000.
- Decker, John J., and Zito, Susan V., to GTE Sylvania Incorporated. Method of blackening a steel component for a color cathode ray tube. 3,867,207, Cl. 148-6.14R.
- Deering Milliken Research Corporation: *See—*
  - Eschenbach, Paul W., 3,866,849.
- DeGraw, Frank B. Wiper assembly for side-mounted rear view mirror. 3,866,258, Cl. 15-250.290.
- De Haas, Klaus: *See—*
  - Halasz, Istvan; Asshauer, Jurgen; Endele, Richard; and De Haas, Klaus, 3,866,308.
- Dekan, Howard L.: *See—*
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- Delaware Photographic Products, Inc.: *See—*
  - Katz, Jerome, 3,867,151.
- Della Rosa, Robert, to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies. Device for passing tubes through a heat treatment installation. 3,866,761, Cl. 214-1.00P.
- DeLoach, Wells D. Combination skid and coupling assembly. 3,866,951, Cl. 285-5.000.
- Deltak Corporation: *See—*
  - Csathy, Denis G., 3,867,102.
- Delzenne, Gerard Albert: *See—*
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- Demartino, Ronald N.: *See—*
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  - Roby, John H.; and Denlinger, Roger R., 3,866,348.
- Dennis, Ronald E.; and Treece, William D., to General Electric Company. Apparatus for constructing air cooled turbomachinery blading. 3,866,448, Cl. 72-30.000.
- Dennis, Ronald E.: *See—*
  - Corsmeier, Robert J.; Corrigan, Charles E.; and Dennis, Ronald E., 3,867,068.
- Denton, Medona Bonner, to Research Corporation. Pulsed ultrasonic nebulization system and method for flame spectroscopy. 3,866,831, Cl. 239-4.000.
- Deprez, Thomas A., to Gleason Works, The. Compacting apparatus having improved rotating table means for indexing molds to and from a compacting chamber. 3,867,077, Cl. 425-405.00A.
- DeSantis, Nino M., to Militana, Salvatore G., a part interest. Protective garment for karate with force indicating members thereon. 3,866,909, Cl. 272-76.000.
- De Schutter, Camiel R., to Perfect Module Systems, Inc. Wall panel spacer. 3,866,377, Cl. 52-508.000.
- Desmond, John D., to Container Corporation of America. Carton with decorative feature. 3,866,815, Cl. 229-8.000.
- Detroit Gasket & Manufacturing Company: *See—*
  - Doerfling, Ralph G., 3,867,240.
- Detwiler, Grant R.; and Chastain, Ronald E., to United States of America, Army. Limit display circuit for radiation source analysis. 3,867,036, Cl. 356-121.000.
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  - Geiger, Friedhelm; Lussling, Theodor; and Igert, Wolfgang, 3,867,509.
  - Hebbel, Gerhard; and Kruger, Horst, 3,867,246.
  - Heimberger, Werner; Schmitt, Hermann; Schreyer, Gerd; Theissen, Ferdinand; and Weigert, Wolfgang, 3,867,422.
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  - Koberstein, Edgar; Luessling, Theodor; Noll, Ewald; Schaefer, Hans; and Weigert, Wolfgang, 3,867,345.
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- Dezelan, Joseph E., to Caterpillar Tractor Company. Dual check valve arrangement. 3,866,627, Cl. 137-512.500.
- Diamond, Julius, to William H. Rorer, Inc. Phenyl butyric acids and derivatives thereof. 3,867,434, Cl. 260-515.00A.
- Diamond, Julius; and Santora, Norman J., to William H. Rorer, Inc. Substituted phenylacetic acid compounds. 3,867,435, Cl. 260-515.00A.
- Diana, Guy D.; and Cutler, Royal A., to Sterling Drug Inc. 1,1-bridged-bis(N-aralkyl-2-aminoethanols). 3,867,454, Cl. 260-570.50P.
- Dickersbach, Irmgard: *See—*
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- Diebold, Incorporated: *See—*
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- Diem, Rudolf, to SKF Kugellagerfabriken GmbH. Fluid support and drive arrangement for roller testing devices. 3,866,775, Cl. 214-340.000.
- Diermayer, Alphons; Kutzner, Luitpold; Postenrieder, Erwin; and Diermayer, Werner, to Kutzner, Luitpold; and Diermayer, Werner, part interest to each. Gas fired heating installation. 3,866,594, Cl. 126-112.000.
- Diermayer, Werner: *See—*
  - Diermayer, Alphons; Kutzner, Luitpold; Postenrieder, Erwin; and Diermayer, Werner, 3,866,594.
- Dietl, Hans K.; and Brannock, Kent C., to Eastman Kodak Company. 1,2-Epoxy-2-methyl-6-heptanone ketals. 3,867,408, Cl. 260-340.900.
- Diharo Diamanten Handels Compagnie Establishment: *See—*
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  - Dusza, John Paul; Dindsay, Harry Lee; Child, Ralph Grassing; and Bernstein, Seymour, 3,867,425.
- DiPietro, Joseph: *See—*
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- Discenza, Frank J., to Carling Electric, Inc. Electric switch toggle assembly. 3,867,604, Cl. 200-329.000.
- Dlugopolski, Joseph J., to Inland Container Corporation. Fiberboard container for packaging an article. 3,866,745, Cl. 206-45.140.
- Dobeus, William J.; Cheetham, James V.; Pacheco, Daniel; Keyzer, Carl A.; and Sandrock, Don G., to Allis-Chalmers Construction Machinery Inc. Rollover protection apparatus. 3,866,942, Cl. 280-150.00C.
- Dobrosielski, Stephen S.: *See—*
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- Dochterman, Richard W., to General Electric Company. Dynamoelectric machines and methods of making the same. 3,867,658, Cl. 310-71.000.
- Dr. Carl Hahn GmbH: *See—*
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- Doerfling, Ralph G., to Detroit Gasket & Manufacturing Company. Decorative resilient laminar panel. 3,867,240, Cl. 161-41.000.
- Doerner, William A., to du Pont de Nemours, E. I., and Company. Method of heat exchange using rotary heat exchanger. 3,866,668, Cl. 165-1.000.
- Doherty, John Joseph, Jr., to IFE Division of Plastic Mold & Engineering Company. Electronic microelement assembly. 3,866,999, Cl. 339-17.0CF.
- Doig, Ian Dracup, to Unisearch Limited. Devices whereby the local fluid rates in a fluidised bed are made to fluctuate. 3,867,114, Cl. 55-77.000.
- Doleman, Jack; and Hills, William H., to Monsanto Company. Ring assembly. 3,866,404, Cl. 57-119.000.
- Dolfini, Joseph Edward; and Bohme, Ekkehard, to E. R. Squibb & Sons, Inc. 7-Substituted cephalosporanic acid and derivatives thereof. 3,867,379, Cl. 260-243.00C.
- Domestic Fabrics Corporation: *See—*
  - Hunneke, Fred E.; and Traumuller, Martin, 3,866,443.
- Donaghu, Dennis Ambrose: *See—*
  - Jenney, John William; Donaghu, Dennis Ambrose; Cartsunis, Louis Peter; and Batchelor, Donald Sylvester, 3,867,125.
- Donahue, Jack R. Drag reducing apparatus for a trailer. 3,866,968, Cl. 296-1.00S.
- Dongelmans, Anthony A., to Allied Chemical Corporation. Automatic pick-up device for holding a carrier. 3,866,779, Cl. 214-621.000.
- Donki Kagaku Kogyo Kabushiki Kaisha: *See—*
  - Torii, Okihiko; Mizunuma, Tsutomu; Mino, Iwao; and Ando, Tetsuya, 3,867,161.
- Donovick, Richard, to E. R. Squibb & Sons, Inc. Enzyme-resistant compositions containing penicillin in combination with 6-apa. 3,867,538, Cl. 424-271.000.
- Doolittle, Howard D.: *See—*
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- Dorazio, Alton, Jr.; Altenburger, Otto; and Neumeier, Gunter F. Control system for switching networks. 3,867,583, Cl. 179-18.00E.
- Dornheim, Gunther: *See—*
  - Loffler, Oskar; Schlosser, Rudolf; and Dornheim, Gunther, 3,867,040.
- Dornte, Ralph William, to ESB Incorporated. Non-fogging material. 3,867,175, Cl. 117-47.00A.
- Dorsey, Ted C. Wire wrap tool. 3,866,846, Cl. 242-7.060.
- Dostoomian, Ashod S.: *See—*
  - Vanzetti, Riccardo; and Dostoomian, Ashod S., 3,867,697.
- Dotson and Evans Inc.: *See—*
  - Dotson, George, 3,866,494.
- Dotson, George, to Dotson and Evans Inc. Ring gripping tool. 3,866,494, Cl. 81-72.000.
- Doucette, Carl J. Glass and toothbrush sterilization and supporting attachment. 3,867,096, Cl. 21-78.000.
- Dover Corporation: *See—*
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- Dow Chemical Company, The: *See—*
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  - Hills, David J., 3,867,439.

- Jankowiak, Erwin M.; and Brandt, Gerald H., 3,867,250.
- Jones, Giffin D., 3,867,360.
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- Ott, Jack J.; Matthews, Russell E.; and Lawrence, Garth D., 3,867,177.
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- Clark, Harold A., 3,866,285.

Dowd, Leo J. Propelling shoe for use in an irrigation system. 3,866,835, Cl. 239-177.000.

Dowd, Leo J. Self propelled irrigation system with clutch. 3,866,836, Cl. 239-177.000.

Downing, George W., to Lake Geneva Metal Spinning Company, Inc. Small animal and poultry feeder. 3,866,576, Cl. 119-18.000.

Downing, James W., to McDonnell Douglas Corporation. Secondary safety device and joint. 3,867,044, Cl. 403-155.000.

Dowty Hydraulic Units Limited: *See—*
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Doyle, Thomas J.: *See—*
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Drabek, Jozef; and Varsanyi, Denis, to Ciba-Geigy Corporation. Insecticidal and acaricidal substituted phenyl-thiophosphoric acid esters. 3,867,525, Cl. 424-211.000.

Drage, James John: *See—*
- Kitz, Norbert; and Drage, James John, 3,867,675.

Drennen, William Miller, Jr.: *See—*
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Dreshman, Roy H., to R. H. Dreshman & Sons, Inc. Rock and pinion actuated machine. 3,866,484, Cl. 74-422.000.

Dresser Industries, Inc.: *See—*
- Jackson, Robert Allen, 3,866,695.
- Marsh, Barry T., 3,866,798.

Drill-Au-Mation, Inc.: *See—*
- Smith, Hubert Irvin; and Ott, Fred L., 3,866,468.

Driver, Michael C.; and Geisler, Martin J., to Westinghouse Electric Corporation. Method for making the self-aligned gate contact of a semiconductor device. 3,866,310, Cl. 29-571.000.

Droll, Hans. Apparatus for winding coils for stators of electrical machines. 3,866,847, Cl. 242-7.090.

Dromsky, John A., to Texas Instruments Incorporated. Composite material, tubing made from the material, and methods for making the material and tubing. 3,867,212, Cl. 148-127.000.

Drostholm, Hilmar Frede. Method of manufacturing objects containing a cavity filled with a rigid foam of polyurethane. 3,867,492, Cl. 264-46.600.

Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, to Ciba-Geigy AG. Trifluoromethylphenyl-formamadines and acetamidines. 3,867,448, Cl. 260-564.00R.

Duetze, Karl Heinz. Percussion arrangements. 3,867,653, Cl. 310-8.700.

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Dulude, Donald O.; and Winbigler, Paul H., to Kuhlman Corporation. Methods for the manufacture of spring assemblies. 3,866,287, Cl. 29-173.000.

Dunlap, Harold E., to Lodding Engineering Corporation. Self-adjusting doctor blades. 3,866,266, Cl. 15-256.510.

Dunlap, Jerald V., to Intercompressor, Inc. System for supporting and aligning drive motors. 3,866,865, Cl. 248-2.000.

Dunlop, James D.; Giner, Jose; Van Ommering, Gerrit; and Stockel, Joseph F., to Communications Satellite Corporation. Nickel hydrogen cell. 3,867,199, Cl. 136-28.000.

Dunn, George L.; and Hoover, John R. E., to SmithKline Corporation. 3-Heterocyclic thiomethylcephalosporins. 3,867,380, Cl. 260-243.00C.

du Pont de Nemours, E. I., and Company: *See—*
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- Doerner, William A., 3,866,668.
- MacLachlan, Alexander, 3,867,153.
- Schick, Mary Margaret, 3,867,180.

Dupuy, Robert S., Sr. Pipe hanger. 3,866,871, Cl. 248-59.000.

Duquesne, Victor. Device for inflating tubeless automobile tires. 3,866,654, Cl. 157-1.100.

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Durham, Harvey. Sheep's foot roller with lifting mechanism. 3,867,052, Cl. 404-121.000.

Dusza, John Paul; Dindsay, Harry Lee; Child, Ralph Grassing; and Bernstein, Seymour, to American Cyanamid Company. Substituted benzyl carbazic acid esters. 3,867,425, Cl. 260-471.00C.

Dydzyk, Michael, to Baldwin, Thomas I.; Baldwin, William E.; and Scrivener, Frank P., a part interest to each. Apparatus for making hot asphalt paving material 3,866,888, Cl. 259-158.000.

Dynamics Research Corporation: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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E. R. Squibb & Sons, Inc.: *See—*
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- Donovick, Richard, 3,867,538.

Eajardo, Raoul J. Noncircular head joint for a concert flute and method of manufacture. 3,866,507, Cl. 84-384.000.

Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, to Hoffman-La Roche Inc. 2-lower alkysulfonyl-1H-1,4-benzodiazepines. 3,867,370, Cl. 260-239.0BD.

East Penn Manufacturing Company, Inc.: *See—*
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Eastham, John Frederick, to K. G. Engineering Laboratories Limited. Accelerator for car transmission system. 3,866,702, Cl. 180-65.00R.

Eastham, John Frederick, to K. G. Engineering Laboratories Limited. Electric drive transmission systems 3,866,703, Cl. 180-65.00R.

Eastman Kodak Company: *See—*
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- Thompson, David L.; and Wardell, Everett B., 3,867,232.

Easton, Robert W., to Armco Steel Corporation Low-oxygen, silicon-bearing lamination steel. 3,867,211, Cl. 148-31.550

Ebner, Ludwig: *See—*
- Duerr, Dieter; Aebi, Hans; and Ebner, Ludwig, 3,867,448

Ebner, Norbert, to U.S. Philips Corporation. Method of treating periodontal disease. 3,867,524, Cl. 424-180.000.

Eckel, Robert A.: *See—*
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Eder, Erich; and Brey, Josef, to Kronseder, Herman. Labeling machine with retractable label supports. 3,867,233, Cl. 156-571.000.

Edmonds, James T., Jr., to Phillips Petroleum Company. Impermeable, nonporous polyarylene sulfide laminate and process therefor. 3,867,189, Cl. 117-138.8UA.

Edward C. Levy Company: *See—*
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Edwards, Bryant, to Illinois Tool Works Inc. Apparatus for molding a plastic container. 3,867,086, Cl. 425-387.00B.

Egawa, Mitsuru; Akahane, Masahiro; and Sanada, Tomohiro, to Tokyo Seimitsu Co., Ltd. Method and apparatus for measuring concentricity. 3,866,829, Cl. 235-151.300.

Eibes, Carl B. H., deceased (by Eibes, Ursula, nee Waschau); Eibes, Christian; Eibes, Carl-Herwig; and Wagner, Maria-Theresia, nee Eibes. Self-tapping threaded bushings 3,866,510, Cl. 85-47.000

Eibes, Carl-Herwig: *See—*
- Eibes, Carl B. H., deceased; Eibes, Christian, Eibes, Carl-Herwig, and Wagner, Maria-Theresia, nee Eibes, 3,866,510

Eibes, Christian: *See—*
- Eibes, Carl B. H., deceased, Eibes, Christian; Eibes, Carl-Herwig; and Wagner, Maria-Theresia, nee Eibes, 3,866,510.

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Eisele, Hermann; Kizler, Harald, Gualco, Ardelio, Rabus, Friedrich, Schmidt, Peter Jurgen; Locher, Johannes; and Misch, Wolfgang, to Robert Bosch G.m.b.H. Brace anti-lock test system. 3,866,980, Cl. 303-21.0AF.

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Elepon Technical Center Kabushiky Kaisha: *See—*
- Iwahara, Masakuni, 3,866,841.

Elizondo, David Villarreal; Rendon, Armando Reyna; and Murphy, Patrick W. MacKay. Water leak valve. 3,866,879, Cl. 251-145.000.

Elkins, Luejene, to Bunker Ramo Corporation. Multi-conductor connector apparatus for telephone and other data transmission systems. 3,866,996, Cl. 339-99.00R.

Elkins, Paul A.; Miller, Ralph A.; and Scheer, Lawrence E., to Garrett Corporation, The. Double check valve between separable inflatable units. 3,866,734, Cl. 193-25.00B.

Ell, Robert J., to Polaroid Corporation. Sealing apparatus for a self-processing cassette. 3,867,023, Cl. 352-130.000.

Elliott, Curtis H., Jr.; and Guidry, Hanson Lee, to W. R. Grace & Co. Catalyst compositions. 3,867,310, Cl. 252-455.00Z.

Elliott, Curtis Homer, Jr. Process for preparing a petroleum cracking catalyst. 3,867,308, Cl. 252-455.00Z.

Ellis, Carleton, Jr.: *See—*
- Keeler, Frederick D.; and Ellis, Carleton, Jr., 3,866,845.

Elliston, Thomas L., to Martin Concrete Engineering Company. Orbital vibrator. 3,866,480, Cl. 74-87.000.

Ellsworth, Robert Edgewood, to American Cyanamid Company. Adhesive color printing system for floor coverings and other home furnishings fabrics. 3,867,171, Cl. 117-38.000.

Elm Design, Inc.: *See—*
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Elsner, Bertram F.; and Elsner, Frank, Jr., to Elsner Engineering Works, Inc. Roll wrapping machine. 3,866,389, Cl. 53-76.000.

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- Elsner, Bertram F.; and Elsner, Frank, Jr., 3,866,389.

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Endele, Richard: *See—*
- Halasz, Istvan, Asshauer, Jurgen; Endele, Richard; and De Haas, Klaus, 3,866,308.

Endou, Akira; Maeda, Masao; Okumichi, Toshiharu; Nakayasu, Teruo; and Hamada, Takao, to Arakawa Rinsan Kagaku Kogyo Kabushiki Kaisha. Ortho-methylation of a phenol. 3,867,466, Cl. 260-621.00R.

Endress, James W., to Carrier Corporation. Motor cooling apparatus utilizing a refrigerant flow circuit. 3,866,438, Cl. 62-468.000.

Endriz, John Guiry, to RCA Corporation. Grating tuned photoemitter. 3,867,662, Cl. 313-94.000.

Endzweig, Abraham. Plug connections for vertically abutting frame sections. 3,867,048, Cl. 403-252.000.

Eng, Yat L. Barbecue pan structure. 3,866,526, Cl. 99-357.000.

Engel, Andreas Hermann, to Turlabor AG. Optical correlator 3,867,639, Cl. 250-550.000.

Engler Instrument Company: *See—*
- Lechner, Walter L., 3,866,486.

Engquist, Jan-Eric, to Forenade Fabriksverken. Cleaning device. 3,866,264, Cl. 15-421.000.

Engstrom, Folk, to A. Ahlstrom Osakeyhtio. Metallurgical production method. 3,867,131, Cl. 75-25.000.

Ensmann, Burt; Ieda, Michael; and Joshi, Madhusudan, to Ideal Toy Corporation. Gunfight game. 3,866,917, Cl. 273-120.00R.

Entropy Limited: *See—*
- Stengel, Rudolph F.; Stengel, Linda F.; and Assel, Howard, 3,867,655.

Environmental Sciences Corporation: *See—*
- Forsythe, Alan K., and Green, Charles J., 3,866,607.

Envirotech Corporation: *See—*
- Zuckerman, Mathew M., 3,867,293.

Eppe, Rudolf; Hartwig, Karl; and Vossnacke, Juergen, to Agfa-Gevaert Aktiengesellschaft. Sheet feeding apparatus. 3,866,903, Cl. 271-119.000.

Epstein, Martin: *See—*
- Schmitt, Edward Emil; and Epstein, Martin, 3,867,190.

Ergene, Mehmet T., to Stanley Works, The. Foamed concrete structures. 3,867,159, Cl. 106-88.000.

Erickson, Henry, to Atlantic Richfield Company. Process for the preparation of a supported iridium catalyst. 3,867,314, Cl. 252-466.0PT

Eriksson, Lars Anders; and Oberg, Karl-Erik, to Uddeholms Aktiebolag. Decarburisation of chromium containing iron, cobalt or nickel based alloys. 3,867,136, Cl. 75-60.000.

Eriksson, Lars Anders: *See—*
- Johnsson, Hans Klas Olof; and Eriksson, Lars Anders, 3,867,135.

Ernst Leitz GmbH: *See—*
- Kaul, Dietmar, 3,867,035.

Erwin, Warren L. Auto ignition lock. 3,866,445, Cl. 70-428.000

ESB Incorporated. *See—*
- Dornte, Ralph William, 3,867,175.

Esch, Henry. Multiple cable conductor identification apparatus. 3,867,692, Cl. 324-66.000.

Eschbach, Robert C.; and Colligan, John B., to Aztec Manufacturing Company. Extruded columnar frame for partitions, walls and enclosures. 3,866,381, Cl. 52-731.000.

Eschenbach, Paul W., to Deering Milliken Research Corporation. Apparatus for producing a novel yarn package. 3,866,849, Cl. 242-47.000.

Escher Wyss Limited: *See—*
- Fauconnet, Michel, 3,867,059.

Eshelman, Cheston Lee. Lateral motion bumper system. 3,866,962, Cl. 293-19.000.

Esso Research and Engineering Company: *See—*
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Establissement Wanderfield & Go.: *See—*
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Estes, John H.; and Cole, Edward L., to Texaco Inc. Isoparaffin alkylation. 3,867,475, Cl. 260-683.630.

Estradier, Francoise: *See—*
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Eszakmagyarorszagi Vegyimuvek: *See—*
- Matolcsy, Gyorgy; and Bordas, Barna, 3,867,446.

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- Kobetz, Paul; and Lindsay, Kenneth L., 3,867,440.
- Malec, Robert E., 3,867,298.
- Stephens, Ruth E., 3,867,312.
- Wall, Henry H., Jr., 3,867,263.

Evans, David, to International Nickel Company, Inc, The. Pellet segregation and apparatus therefor. 3,866,754, Cl. 209-73.000.

Evans, Stephen M., Jr., to ITP Corporation. Flow control shrink wrap tunnel. 3,866,331, Cl. 34-216.000.

Everett, George, to Gros-Tte Industries, Inc. Apparatus for dispensing predetermined quantities of plastic material by blade means having rotational and translational movement. 3,867,081, Cl. 425-295.000.

Evulich, Barris J.: *See—*
- Claxton, Gerald L.; and Evulich, Barris J., 3,866,401.

Extranuclear Laboratories, Inc.: *See—*
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Exxon Production Research Company: *See—*
- Mifsud, Joseph F., 3,866,709.
- Weber, Ronald A.; and Rains, John K., 3,866,628.

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- Myerson, Albert L., 3,867,507.
- O'Farrell, Charles P.; and Higgins, John J., 3,867,247.
- Paynter, John D.; and Bunting, William M., 3,867,280.

Eyerman, J. R. Photographic reflector. 3,867,019, Cl. 350-295.000.

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Fabenco Incorporated: *See—*
- La Cook, Hardy L.; and Conklin, John H., 3,866,356.

Fabrygel, Joe H. Scraper bucket with tiltable axle assembly. 3,866,341, Cl. 37-129.000.

Fahey, Dennis M., to PPG Industries, Inc. Coating composition and process for preparing and applying the coating composition to glass fibers. 3,867,328, Cl. 260-29.300.

Falconer, John Paul Rutherford, to Midwest Housing Research Corporation. Structural framing system. 3,866,371, Cl. 52-281.000.

Faltin, Hans G.; and Faltin, William G. Envelope mailing piece. 3,866,822, Cl. 229-69.000.

Faltin, William G.: *See—*
- Faltin, Hans G.; and Faltin, William G., 3,866,822.

Fanslow, Ronald J., to International Harvester Company. Mounting blocks in vehicle frame and method of installation therein. 3,866,939, Cl. 280-106.00R.

Farrand, James A., administrator: *See—*
- Balazer, Richard J., deceased; and Farrand, James A., administrator, 3,866,825.

Fauconnet, Michel, to Escher Wyss Limited. Reversible multi-stage hydraulic machine. 3,867,059, Cl. 415-153.000.

Federico, Armando: *See—*
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Feeny, Richard William, to American Cyanamid Company. 1,2-Dialkyl-3,5-diphenylpyrazolium salts. 3,867,403, Cl. 260-311.000

Felber, Wilfried; and Morlock, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the manufacture of pulverizable thermosetting coating agents 3,867,347, Cl. 260-63.0UY

Felder, Ernst; Pitre, Davide; and Zutter, Hans, to Bracco Industria Chimica Societa per Azioni. Contrast agent for angiography and urography. 3,867,431, Cl. 260-501.110.

Feldkamper, Richard, to Windmolier & Holscher Actuating apparatus for a diverter for sheet articles. 3,866,902, Cl. 271-64.000.

Fell, Ferol S.; Long, William D.; and McMillen Kenneth R., to Hesston Corporation. Severed crop handling mechanism for harvesters. 3,866,399, Cl. 56-98.000.

Fenyes, Joseph G. E., to Chevron Research Company. 1-(Polyhaloakylthio) indazoles as fungicidal and bactericidal agents. 3,867,540, Cl. 424-273.000.

Ferguson, Robert M.; and Komp, Richard J., to Xerox Corporation. Method for cleaning liquid developers. 3,867,170, Cl. 117-37.0LE.

Ferrari, Giorgio; and Casagrande, Cesare. Tranquilizing and anti-anxiety pharmaceutical compositions. 3,867,529, Cl. 424-244.000.

Fett, Gunter: *See—*
- Herveling, Wilhelm; Birker, Alfred; Langefeld, Siegfried; Daimler, Berthold H.; Fett, Gunter; and Dickersbach, Irmgard, 3,866,352.

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Fieldcrest Mills, Inc.: *See—*
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Fifth Dimension Inc.: *See—*
- Bitko, Sheldon S., 3,867,603.

- Fikentscher, Rolf: *See—*
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- Filter, Walther, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft; and Establissement Wanderfield & Co. Drive system for reed roller of weaving machine. 3,866,482, Cl. 74-128.000.
- Finden, Carl Johan Staffan: *See—*
  - Lagercrantz, Carl Bertil Bengt; and Finden, Carl Johan Staffan, 3,867,210.
- Fine, Maynard W. Auxiliary wheel. 3,866,978, Cl. 301-39.00T.
- Firestone Tire & Rubber Company, The: *See—*
  - Kyker, Gary Stephen, 3,867,341.
  - Lawson, David F.; and Lohr, Delmar F., Jr., 3,867,327.
  - Sanroma, Ulises Canellas, 3,867,339.
- Fischer, Hanspeter, to Ciba-Geigy Corporation. Amine fruit abscission agents. 3,867,127, Cl. 71-121.000.
- Fischer, Paul W.: *See—*
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- Fischer, Ronald H.; Ciric, Julius; and Whyte, Thaddeus E., Jr., to Mobil Oil Corporation. Process for oil demetalation and desulfurization with cobalt-molybdenum impregnated magnesium aluminate spinel. 3,867,282, Cl. 208-216.000.
- Fischer, Werner K.; and Jemec, Raoul, to Swiss Aluminium Ltd. Anchoring for an electrically conductive bar in a groove in an electrode made out of a carbon block. 3,867,562, Cl. 13-25.000.
- Fish, Warren; and Sundquist, Arman, to Whirlpool Corporation. Vacuum cleaner switch mounting means. 3,866,868, Cl. 248-27.000.
- Fishbaugh, Byron L.: *See—*
  - Ramsey, Ira E.; and Fishbaugh, Byron L., 3,867,595.
- Fite, Wade L., to Extranuclear Laboratories, Inc. Methods and apparatus for spatial separation of AC and DC electrical fields with application to fringe fields in quadrupole mass filters. 3,867,632, Cl. 250-292.000.
- Flamegas, S.A.: *See—*
  - Gili, Ricardo Aguirre, 3,867,090.
- Flanigen, Edith Marie; and Grose, Robert William, to Union Carbide Corporation. Amorphous hydrocarbon conversion catalysts and process for preparing same. 3,867,305, Cl. 252-437.000.
- Fleming, Robert W.: *See—*
  - Albrecht, William L.; and Fleming, Robert W., 3,867,409.
- Flexicore Co., Inc., The: *See—*
  - Shoe, Theodore W., 3,867,503.
- Flinchum, Harold C.: *See—*
  - Reid, Lloyd W.; Rayle, Billy D.; and Flinchum, Harold C., 3,866,771.
- Flom, Leonard. Posterior chamber artificial intraocular lens. 3,866,249, Cl. 3-13.000.
- Florian, John, to Mobil Oil Corporation. Garment shaper. 3,866,810, Cl. 223-98.000.
- FMC Corporation: *See—*
  - Aterianus, John S., 3,866,738.
  - Block, Donald P., 3,866,402.
  - Knopka, William N., 3,866,405.
  - Weir, Stanley M., 3,866,768.
- Fohl, Timothy, to GTE Sylvania Incorporated. Double chamber arc tube for high intensity discharge lamp. 3,867,660, Cl. 313-12.000.
- Folds, Donald L., to United States of America, Navy. Solid ultrasonic lens doublet. 3,866,711, Cl. 181-176.000.
- Food Automation Service Techniques, Inc.: *See—*
  - Witt, Allan E., 3,866,472.
- Forbes, Hampton E., Jr. Vehicle window ventilator. 3,866,524, Cl. 98-2.130.
- Fordyce, Gary L.: *See—*
  - Hein, Richard D.; and Fordyce, Gary L., 3,866,830.
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  - Engquist, Jan-Eric, 3,866,264.
- Forgione, Peter Salvatore, to American Cyanamid Company. Lactate dehydrogenase test material. 3,867,258, Cl. 195-99.000.
- Forgione, Peter Salvatore, to American Cyanamid Company. Lactate dehydrogenase test material. 3,867,259, Cl. 195-99.000.
- Formax, Inc.: *See—*
  - Carbon, Thomas J.; Zeisberger, Josef T.; Richards, Louis R.; and Lekan, Henry N., 3,866,741.
- Formica Corporation: *See—*
  - Lovitt, Dennis Ronald; Grosheim, Gene Edward; and Jaisle, Richard Frederick, 3,867,198.
- Forrester, Macquorn R., to Intoximeters, Inc. Breath sample tube and method of making it. 3,867,099, Cl. 23-259.000.
- Forsey, Thomas, Jr., to Goodyear Tire & Rubber Company, The. Passenger conveyor. 3,866,538, Cl. 104-167.000.
- Forsheda Ideutveckling AB: *See—*
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- Forsythe, Alan K.; and Green, Charles J., to Environmental Sciences Corporation. Bone fracture compression device and method of usage. 3,866,607, Cl. 128-92.00R.
- Foster, E. Gordon; Russell, Paul F.; and Vanderwater, Robert G., to Shell Oil Company. Ethylene oxide process. 3,867,113, Cl. 55-44.000.
- Foulk, Frank M. Adjustable roofing platform. 3,866,715, Cl. 182-45.000.
- Fournier, Yves, to Saint-Gobain Industries. Method and apparatus for support of sheet material. 3,866,875, Cl. 248-363.000.
- Fowler, Knobbe & Martens: *See—*
  - Webb, Albert A.; and Tullis, James Paul, 3,866,630.
- Fox, Cyril, to British Ropes Limited. Rope fitting. 3,867,046, Cl. 403-210.000.
- Fox, Daniel W., to General Electric Company. Flame retardant thermoplastic compositions. 3,867,336, Cl. 260-45.70R.
- Frank, Karl; Frank, Martin A.; and Tschentscher, Dieter, to Burger Eisenwerke Aktiengesellschaft, Firma. Cooling container. 3,866,435, Cl. 62-382.000.
- Frank, Karl; and Frank, Martin A., to Burger Eisenwerke Aktiengesellschaft, Firma. Cooling container. 3,866,436, Cl. 62-382.000.
- Frank, Martin A.: *See—*
  - Frank, Karl; Frank, Martin A.; and Tschentscher, Dieter, 3,866,435.
  - Frank, Karl; and Frank, Martin A., 3,866,436.
- Frank, Rudolf; Reuner, Horst; and Ulm, Klaus, to Hoechst Aktiengesellschaft. Process for the manufacture of flowable pasty detergents capable of being pumped. 3,867,316, Cl. 252-545.000.
- Frank, Victor S.; Lard, Edwin W.; and Stahly, Eldon E., to W. R. Grace & Co. Burn-resistant plastic compositions. 3,867,344, Cl. 260-47.0EN.
- Franklin, Samuel H. Hydraulic load indicator. 3,866,464, Cl. 73-141.00R.
- Fraudin, Claude J., to Centre d'Etudes et de Recherches de la Machine Outil. Surface stress measuring apparatus. 3,866,462, Cl. 73-88.50R.
- Freedman, David; and Sadir, Richardo, to New Brunswick Scientific Co., Inc. Mass transfer condenser, particularly for use with fermenting vessels. 3,867,260, Cl. 202-185.00E.
- Freeman Chemical Corporation: *See—*
  - Plant, William J.; and Szwarc, John J., 3,867,222.
- Freeman, Richard, to Coleco Industries, Inc. Automatic pinsetting bowling game. 3,866,691, Cl. 273-44.000.
- Freese, Gary P.; and Sarff, Ronald E., to Caterpillar Tractor Company. Anti-kink and rollback device for elevating scrapers. 3,866,742, Cl. 198-175.000.
- Freitag, David B.: *See—*
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- French, Hollis E.; Herbine, Stanley C.; and McLeod, Gerald L., to Itek Corporation. Optical viewpoint. 3,867,235, Cl. 161-2.000.
- French, Joseph W., to United States Steel Corporation. Wiper and diaphragm seal device. 3,866,924, Cl. 277-59.000.
- French Oil Mill Machinery Company, The: *See—*
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- Frequency Sources, Inc.: *See—*
  - Gili, Paul E., 3,867,706.
- Fricke, Hans-Jurgen: *See—*
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- Fricko, John J., to General Motors Corporation. Vehicle occupant restraint belt system with comfort clip assembly. 3,866,975, Cl. 297-388.000.
- Fried, E. Victor: *See—*
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  - Alvarez, Francisco S.; Kluge, Arthur F.; and Fried, John H., 3,867,375.
  - Kluge, Arthur F.; Untch, Karl G.; and Fried, John H., 3,867,377.
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- Friedman, Mendel: *See—*
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- Friedman, Robert H., to Getty Oil Company. Methods for selective plugging. 3,866,684, Cl. 166-294.000.
- Friedman, Robert H., to Getty Oil Company. Methods for selective plugging. 3,866,685, Cl. 166-294.000.
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- Frisoli, David M. Semi-automatic piston employing a pivotally, slideable member. 3,866,516, Cl. 89-190.000.
- Frisque, Alvin J., to Nalco Chemical Company. Brines containing water-soluble anionic vinyl addition polymer and water soluble cationic polymer. 3,867,330, Cl. 260-29.6NR.
- Fritzschz, Harold L., to General Electric Company. Masking apparatus for use in coating an article of manufacture. 3,866,567, Cl. 118-69.000.
- Frost, William B.; and Cooper, Edward N. K. Indicia display panel. 3,866,343, Cl. 40-64.00R.
- Fryer, Rodney Ian: *See—*
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- Fuchs, John R., to General Motors Corporation. Torque-loading device. 3,866,481, Cl. 74-89.150.
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  - Iwano, Haruhiko; and Matsushita, Sachio, 3,867,419.
  - Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Sueyoshi, Tohru; Moriuchi, Shigenori; Sato, Akira; and Ikeda, Tadashi, 3,867,146.
  - Takimoto, Masaaki; and Honjo, Satoru, 3,867,138.
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- Fujimura, Hajime; Suzuki, Kenju; Asano, Osamu; and Asai, Masaru, to Sanwa Kagaku Kenkyusho Co. Ltd. N-acyl-N'-substituted-2,6-diamino-benzoic acids and process for making the same. 3,867,437, Cl. 260-518.00R.
- Fujiyoshi, Kanji; Mizumura, Yutaka; and Sono, Junji, to Toyo Boseki Kabushiki Kaisha. Polyester powder coating composition. 3,867,480, Cl. 260-873.000.
- Fukui, Takasuke: *See—*
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- Fukumoto, Kenichi; and Nakamura, Ryuji, to Shikoku Kaken Kogyo Kabushiki Kaisha. Process for manufacturing granular foamed products of silica. 3,867,156, Cl. 106-40.00V.
- Fukumoto, Ryoichi: *See—*
  - Suzuki, Toshio; Terada, Takami; Fukumoto, Ryoichi; and Matsumoto, Hisao, 3,866,270.
- Fuller, Richard Buckminster. Non-symmetrical tension-integrity structures. 3,866,366, Cl. 52-81.000.
- Furihata, Hiroyuki, to Olympus Optical Co., Ltd. Endoscope camera with orientation indicator. 3,866,602, Cl. 128-6.000.
- Furmidge, Kenneth Frederick; and Beeson, Eric John George, to Thorn Electrical Industries Limited. Mercury discharge lamp comprising magnesium halide. 3,867,665, Cl. 313-485.000.
- Furuuchi, Shigemasa: *See—*
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- Furuya, Tetsuo; Ishikawa, Hidehiko; and Kanisawa, Hideo, to Konishiroku Photo Industry Co., Ltd. Fogged, direct-positive silver halide photographic material containing a rhodium salt desensitizer and a bispyrazolone dye stabilizer. 3,867,149, Cl. 96-101.000.
- G & D Tool Company, Inc.: *See—*
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- G. L. Rexroth GmbH: *See—*
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- Gagnon, David P., to Sippican Corporation, The. Fishing tackle. 3,866,345, Cl. 43-4.000.
- Gal, Carl G., to G. T. Schjeldahl Company. Reciprocatory drive means for treatment of movable webs. 3,866,503, Cl. 83-626.000.
- Galasso, Francis S.; and Veltri, Richard D., to United Aircraft Corporation. Carbon-boron surfaced carbon filament. 3,867,191, Cl. 117-169.00R.
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  - Skarbo, Roald R.; Galin, Walter E.; and Natwig, David L., 3,867,506.
- Gambardella, Mario A.; and Natoli, Frank S., to Olin Corporation. Flame retardant densified polyurethane foam. 3,867,320, Cl. 260-2.5AJ.
- Ganz, Robert H. Method and apparatus for making a shrink pack. 3,866,386, Cl. 53-14.000.
- Garden, William David, to Imperial Chemical Industries Limited. Catalysts and use thereof. 3,867,343, Cl. 260-46.5UA.
- Gardiner, Robert A., to Crompton & Knowles Corporation. Extruder and temperature control apparatus therefor. 3,866,669, Cl. 165-27.000.
- Gardner, Dan J. Two deck sport trailer. 3,866,772, Cl. 214-85.100.
- Garner, Lloyd L., to Smith International, Inc. Drill bit with laminated friction bearing. 3,866,987, Cl. 308-8.200.
- Garrett Corporation, The: *See—*
  - Elkins, Paul A.; Miller, Ralph A.; and Scheer, Lawrence E., 3,866,734.
- Garrett, Roy Peter; Parkins, Derek Ray; and Kiener, Heinz, to SKF Industrial Trading and Development Company B.V. Hydraulic release mechanism for clutches. 3,866,732, Cl. 192-110.00B.
- Garrison, Jerome R.: *See—*
  - Staranick, Steve; and Garrison, Jerome R., 3,866,777.
- Gartland, Albert J., Jr., to Harvey Hubbell Incorporated. Contact spring. 3,867,008, Cl. 339-258.00R.
- Gasser, William James, to Brite-O-Matic Manufacturing Inc. Wheel guard and travel stop arrangement. 3,866,539, Cl. 104-249.000.
- Gasser, William James, to Brite-O-Matic Manufacturing Inc. Cable carrier. 3,867,590, Cl. 191-12.00R.
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  - Schaffer, William G., 3,866,632.
- Gealt, Arthur E., to Honeywell Inc. Servo gain control of liquid conductivity meter. 3,867,687, Cl. 324-30.00R.
- Gebelius, Sven Runo Vilhelm. Convectors and to system employing same. 3,866,671, Cl. 165-50.000.
- Gebhart, Howard C.: *See—*
  - Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, 3,867,047.
- Gebr. Bohler & Co. AG: *See—*
  - Marchard, Gustav, 3,866,491.
- Gebrueder Buehler AG: *See—*
  - Linzberger, Robert, 3,866,842.
- Geier, Georg; and Klatt, Alfred, to WABCO Westinghouse GmbH. Failsafe antiskid control for fluid pressure brake system. 3,866,982, Cl. 303-21.00F.
- Geiger, Friedhelm; Lussling, Theodor; and Igert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the purification of sulfur and nitrogen containing waste water and waste gas. 3,867,509, Cl. 423-224.000.
- Geil, Fred G., to United States of America, Navy. Underwater communications system. 3,867,715, Cl. 340-5.00T.
- Geisler, Martin J.: *See—*
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- Herman, Clairmont J., to General Electric Company. Electrical insulation. 3,867,245, Cl. 161-143.000.
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- Holladay, Jimmie L., to Coats Company, Inc., The. Tire changer with improved tire changing tool. 3,866,655, Cl. 157-1.240.
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- Hollnagel, Harold S. Variable two-way shock absorber. 3,866,724, Cl. 188-129.000.
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- Holme, Gunnar K., to Angpanneforeningen. Combustion of alkaline cooking liquor. 3,867,251, Cl. 162-30.000.
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- Holper, Frank, to Original Equipment Motors Inc. Resilient spheroidal bearing supports. 3,866,986, Cl. 308-72.000.
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- Johnson, Herbert G., to Upjohn Company, The. Dosage regimen. 3,867,534, Cl. 424-258.000.
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- Kardashian, Vahram S., to Honeywell Inc. Dual wire intruder detector. 3,867,564, Cl. 174-36.000.
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- Kaul, Dietmar, to Ernst Leitz GmbH. Photoelectric step marker. 3,867,035, Cl. 356-110.000.
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- Keeler, Frederick D.; and Ellis, Carleton, Jr., to KLM Company, The. Container closure with liner and methods of making the same. 3,866,845, Cl. 215-341.000.
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- Kemp, James C. Symmetric birefringence modulator. 3,867,014, Cl. 350-149.000.
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- Kerr, Raymond W. Readily re-closeable and re-usable container of the lid and openhead drum type. 3,866,794, Cl. 220-320.000.
- Kersten, Gunter; Fricke, Hans-Jurgen; and Veil, Karl, to Robert Bosch G.m.b.H. Fluidic circuit for a hydrostatic transmission. 3,866,421, Cl. 60-456.000.
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- Ketley, Arthur D., to W. R. Grace & Co. Printing plate process and apparatus using a laser scanned silver negative. 3,867,150, Cl. 96-36.300.
- Keuffel & Esses Company: *See—*
  - Lukeian, Joseph, 3,867,154.
- Kewanee Machinery & Conveyor Co.: *See—*
  - Anderson, Charles W., 3,866,689.
- Key, Grahame Russell, to Hoover Company, The. Pulley drive system. 3,866,487, Cl. 74-230.17E.
- Keyzer, Carl A.: *See—*
  - Dobeus, William J.; Cheetham, James V.; Pacheco, Daniel; Keyzer, Carl A.; and Sandrock, Don G., 3,866,942.
- Khasin, Kim Moiseevich: *See—*
  - Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Pentegov, Igor Vladimirovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medvedenko, Nikolai Fedorovich; Medovar, Boris Izrailevich; Loskutov, Pavel Petrovich; Orlov, Gennady Ivanovich; Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Tamozhnikov, Georgy Vasilievich; and Schelkunov, Jury Andreevich, deceased, 3,867,561. .
- Kiefer, Hans; Mueller, Albrecht; Koenig, Karl-Heinz; Rohr, Wolfgang; and Adolphi, Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted carbamates. 3,867,428, Cl. 260-479.00C.
- Kiener, Heinz: *See—*
  - Garrett, Roy Peter; Parkins, Derck Ray; and Kiener, Heinz, 3,866,732.
- Kikuchi, Makoto, to Toyoda-Koki Kabushiki-Kaisha. Surface grinding apparatus. 3,866,359, Cl. 51-120.000.
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- Kim, Heung T., to B. F. Goodrich Company, The. Apparatus for extruding polymeric material. 3,867,079, Cl. 425-208.000.
- Kimmelaar, Rudolf Johan, to Cincinnati Milacron Inc. Dynamic balancing apparatus. 3,866,489, Cl. 74-573.000.
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  - Wakabayashi, Senzo; Kusaba, Akira; Koyano, Takayuki; Nakano, Sukenori; Kimura, Jin-Ichi; and Oyamada, Akira, 3,866,449.
- King, Albert C., Jr.: *See—*
  - Van Horn, Russell F.; Bok, Lowell D.; King, Albert C., Jr.; Suerdieck, Ronald R.; and Thrower, Arthur J., 3,867,230.
- King, Alfred Douglas, Jr.: *See—*
  - Jurd, Leonard; Stevens, Kenneth L.; and King, Alfred Douglas, Jr., 3,867,548.
- King, James R. High energy wind dissipation adjacent buildings. 3,866,363, Cl. 52-29.000.
- King, Paul B., to Cessna Aircraft Company, The. Instrumentation system containing a null shifting means. 3,867,680, Cl. 318-584.000.
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- King, Robert, III: *See—*
  - Peterson, Harry S., Jr.; Peterson, Charles M.; and King, Robert, III, 3,866,384.
- King, Walter F.: *See—*
  - Adams, Kenneth D.; and King, Walter F., 3,866,553.
- Kipfmueller, Max H., to American Greetings Corporation. Decorative figurine and dispenser. 3,866,803, Cl. 222-179.500.

- Kirichenko, Boris Mefodievich: *See—*
  - Krasik, Yakov Lvovich; Rappoport, Leonid Iosifovich; Gelbin, Anatoly Nikolaevvich; Marsjuk, Nikolai Andreevich; Gura, Anatoly Nikitovich; and Kirichenko, Boris Mefodievich, 3,867,669.
- Kirillova, Olga Georgievna: *See—*
  - Gorkovenko, Boris Konstantinovich; Mikhailovsky, Alexandr Mikhailovich; Churilova, Valentina Dmitrievna; and Kirillova, Olga Georgievna, 3,867,098.
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- Kitajima, Tadayuki; and Katayama, Hajime, to Canon Kabushiki Kaisha. Magnet roll developing device. 3,866,575, Cl. 118-637.000.
- Kitani, Koichi: *See—*
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- Kitz, Norbert; and Drage, James John, to Bell Punch Company Limited. Magnetic drive mechanisms for printing heads. 3,867,675, Cl. 318-119.000.
- Kizler, Harald: *See—*
  - Eisele, Hermann; Kizler, Harald; Gualco, Ardelio; Rabus, Friedrich; Schmidt, Peter Jurgen; Locher, Johannes; and Misch, Wolfgang, 3,866,980.
- Kjos, Magne J., to Burroughs Corporation. Mechanical drag brake assembly. 3,866,722, Cl. 188-75.000.
- Klages, Robert; and Kleeschulte, Heinrich, to Hoesch Aktiengesellschaft. Method of casting quiet steel in molds. 3,866,662, Cl. 164-123.000.
- Klapper, Franz, to Jenoptik Jena G.m.b.H. Method for producing super smooth photo plates. 3,867,227, Cl. 156-249.000.
- Klatt, Alfred, to WABCO Westinghouse GmbH. Antiskid vehicle brake system for individual wheel control. 3,866,981, Cl. 303-21.00A.
- Klatt, Alfred: *See—*
  - Geier, Georg; and Klatt, Alfred, 3,866,982.
- Klaus, Kaspar. Multi-level parking apparatus. 3,866,766, Cl. 214-16.10E.
- Kleeschulte, Heinrich: *See—*
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- Kleimenov, Vasily Yakovlevich: *See—*
  - Grekov, Nikolai Alexandrovich; Arkovenko, Galina Ivanovna; Silina, Elena Petrovna; Shifrina, Natalia Petrovna; Sazonova, Tamara Nikolaevna; Kleimenov, Vasily Yakovlevich; Kvater, Josif Sholomovich; Zlatkin, Moisei Grigorievich; Mirmelshtein, Valdislav Alexandrovich; and Potapov, Alexei Ivanovich, 3,867,208.
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- Klemchuk, Peter, to Ciba-Geigy Corporation. Substituted hydroxylamine anti-oxidants. 3,867,445, Cl. 260-561.00A.
- Klendauer, Wolfgang: *See—*
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- Kletschka, Harold D. Cardiovascular clamps. 3,866,610, Cl. 128-322.000.
- Kligman, Albert M., to Westwood Pharmaceuticals, Inc. Acne composition. 3,867,522, Cl. 424-153.000.
- Klimek, Boleslaw, to Berg Manufacturing Companay, The. Tractor protection valve. 3,866,623, Cl. 137-102.000.
- Kline, Richard H., to Goodyear Tire & Rubber Company, The. Phenolic antioxidants. 3,867,467, Cl. 260-622.00R.
- Kline, Roy E.: *See—*
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- KLM Company, The: *See—*
  - Keeler, Frederick D.; and Ellis, Carleton, Jr., 3,866,845.
- Klock, Elizabeth A. Shell game. 3,866,921, Cl. 273-138.00R.
- Klose, Klaus, to Agfa-Gevaert Aktiengesellschaft. Duct for film-containing cassettes. 3,866,744, Cl. 198-278.000.
- Kluge, Arthur F.; Untch, Karl G.; and Fried, John H., to Syntex, Inc. Method of making 13-cis prostaglandin derivatives. 3,867,377, Cl. 260-240.00R.
- Kluge, Arthur F.: *See—*
  - Alvarez, Francisco S.; Kluge, Arthur F.; and Fried, John H., 3,867,375.
- Knapp, Heinrich, to Robert Bosch G.m.b.H. Automotive fuel heating control system. 3,866,587, Cl. 123-122.00F.
- Kneile, Karl, to Robert Krause KG Zweiniederlassung Weilheim/Teck. Collapsible fitting. 3,866,866, Cl. 248-16.000.
- Knight, Lloyd F., to Textron Inc. Lens blocking device. 3,866,667, Cl. 164-334.000.
- Knoll, William A., to Jo-Line Tools, Inc. Torque multiplier. 3,866,492, Cl. 81-52.40R.
- Knopka, William N., to FMC Corporation. Blend of flame-retardant poly (ethylene-2,6-napthalene dicarboxylate) fibers and flame-retardant cellulosic fibers. 3,866,405, Cl. 57-140.0BY.
- Knourek, Jaroslav: *See—*
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- Knowles, William T., to Shell Oil Company. Vapor recovery system. 3,867,111, Cl. 55-21.000.
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  - Ohwa, Toshio; Taketomi, Kosaku; Tanaka, Osamu; Sakai, Bunshiro; Taira, Tadaaki; and Hirabayashi, Kiyoteru, 3,867,608.
- Koberstein, Edgar; Luessling, Theodor; Noll, Ewald; Schaefer, Hans; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Method for the oxidizing alpha, beta-unsaturated aldehydes to alpha, beta-unsaturated carboxylic acids. 3,867,345, Cl. 260-530.00N.
- Kobetz, Paul; and Lindsay, Kenneth L., to Ethyl Corporation. Process for the preparation; of glycolic acid. 3,867,440, Cl. 260-535.00R.
- Koch, Terry David, to Inno-Cept Corporation. Method of fending collisions. 3,866,773, Cl. 214-152.000.
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- Kodama, Yutaka: *See—*
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- Koehler, Herman J., III. Roll-boxing apparatus. 3,866,388, Cl. 53-59.00R.
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- Koenig, Nathan H.; and Friedman, Mendel, to United States of America, Agriculture. Shrinkproofing of wool with cyclic acid anhydrides and zinc acetate. 3,867,095, Cl. 8-128.00R.
- Kohn, Gustave K., to Chevron Research Company. Insect control methods employing certain substituted benzoates. 3,867,543, Cl. 424-301.000.
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- Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
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- Komorowski, Roman J.; Vernerey, Jean-C.; and Tournier, Gilles F. A., to ITT Industries, Inc. Electrical connection device. 3,867,004, Cl. 339-95.00D.
- Komp, Richard J.: *See—*
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- Kondo, Shinichi: *See—*
  - Umezawa, Hamao; Kondo, Shinichi; Aoyagi, Takaaki; Takeuchi, Tomio; and Maeda, Kenji, 3,867,364.
- Kondo, Toshiyuki, to Aisin Seiki Kabushiki Kaisha. Anti-skid device for automotive vehicles. 3,866,983, Cl. 303-21.00F.
- Konig, Klaus: *See—*
  - Pedain, Josef; Noll, Klaus; Konig, Klaus; and Thoma, Wilhelm, 3,867,350.
- Konishiroku Photo Industry Co., Ltd.: *See—*
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- Kopa, Richard D. High energy fuel atomization and a dual carburetion embodying same. 3,866,585, Cl. 123-119.00A.
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- Korelitz, Theodore H.; and Brodie, Alvin C., to Badger Company, Inc., The. Automated designing. 3,867,616, Cl. 235-151.100.
- Korkut, Mehmet D. Apparatus for mounting stem rollers in anchor planting tenders. 3,866,555, Cl. 114-0.50R.
- Korsell, Torsten; Larker, Hans; Lundblad, Erik; and Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Method of hydrostatically extruding compound material and compound billets. 3,866,306, Cl. 29-474.300.
- Koski, Oscar H., to United States of America, Atomic Energy Commission. Electrodeless conductance measurement device. 3,867,688, Cl. 324-30.00A.
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- Koyanagi, Eiji: *See—*
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- Koyano, Takayuki: *See—*
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- Koziol, Robert L. Brush eradicator. 3,866,397, Cl. 56-16.800.
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- Kraus, Peter E.; and Newton, Kenneth C., to Mite Corporation. Self-tapping and self-retaining, screw thread insert. 3,866,509, Cl. 85-32.00R.
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- Krejci, Joseph C., to Phillips Petroleum Company. Method for producing carbon black. 3,867,513, Cl. 423-450.000.
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- Kreutter, Erich; and Lindner, Hans, to ITT Industries, Inc. Printed circuit board connector and method and tool for removing contacts therefrom. 3,866,997, Cl. 339-217.00S.
- Krickovich, Eli G. Snow remover with slurry disposal. 3,866,340, Cl. 37-12.000.
- Kristiansen, Odd, to Ciba-Geigy Corporation. Trifluoromethyl-nitrophenyl-thio(dithio)phosphates. 3,867,483, Cl. 260-954.000.
- Kronsecler, Herman: *See—*
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- Krouse, Leroy M.: *See—*
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- Krouskop, Ned C., to Pittsburgh Corning Corporation. Method for opening the cells of cellular clay blocks. 3,867,498, Cl. 264-88.000.
- Krug, Lawrence M., to Jeffreys, George C. Auxiliary refrigeration power means. 3,866,433, Cl. 62-229.000.
- Kruger, Horst: *See—*
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- Kruger, Manfred: *See—*
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- Kryah, John C.; and Barnett, Charles B., to Diebold, Incorporated. Pneumatic tube carrier detector assembly with cam operated microswitch and resilient finger heeler means. 3,867,593, Cl. 200-61.410.
- Kuchar, Paul J.: *See—*
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- Kummer, Frederick J., to Abcor, Inc. Cement restrictor for total hip operations. 3,866,248, Cl. 3-1.000.
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- Kunze, Bernhard, to Wilhelm Hengenscheidt GmbH. Surface smoothing arrangement. 3,866,281, Cl. 29-90.00R.
- Kupelian, Robert Howard, to American Cyanamid Company. Cold and frost tolerance in living plants with 3,6-dioxo-4-pyridazine acetic acid derivatives. 3,867,126, Cl. 71-92.000.
- Kupershmidt, Felix Borisovich: *See—*
  - Pavlov, Anatoly Petrovich; Bogomolov, Vladimir Matveevich; Kupershmidt, Felix Borisovich; Nechitailo, Igor Afanasievich; Nosilov, Nikolai Nikolaevich; and Levin-Kogan, Isaak Zalmanovich, 3,866,673.
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- Kyker, Gary Stephen, to Firestone Tire & Rubber Company, The. Metal 8-hydroxyquinolate complexes as stabilizers for poly(phosphazenes) to inhibit thermal degration at elevated temperatures. 3,867,341, Cl. 260-45.75R.
- Kyowa Hakko Kogyo Co., Ltd.: *See—*
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- Lacroix, Daniel. Ski binding. 3,866,929, Cl. 280-11.35T.
- Laflin, Reginald E. Refining apparatus and processes. 3,867,563, Cl. 13-27.000.
- Lagarde, Francois A., to Compagnie Francois de Raffinage. Combustion engine. 3,866,582, Cl. 123-53.00A.
- Lagercrantz, Carl Bertil Bengt; and Finden, Carl Johan Staffan, to Virsbo Bruks AB. Process for the production of mild steel tubes. 3,867,210, Cl. 148-16.000.
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- Laky, Tibor, to Otis Engineering Corporation. Apparatus for inserting flexible pipe into wells. 3,866,679, Cl. 166-77.000.
- Lambert, George M., to Reliance Electric Company. Vent plug for gear case. 3,866,789, Cl. 220-44.00R.
- Lambertus, Friedrich, to Werner & Pfleiderer. A granulating device for granulating synthetic plastics material in a flowable stage. 3,867,082, Cl. 424-313.000.
- Lambrechts, Jan Bernard: *See—*
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- Lance, Raymond E.; and James, Ronald N., to Construction Technology, Inc. Hydraulically powered impact device. 3,866,690, Cl. 173-15.000.
- Landry, Robert G.; and Jenney, Sherman R. Truck air foils. 3,866,967, Cl. 296-1.00S.
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- Lang, Thomas G. Semi-submerged vessel adaptable to sailing. 3,866,557, Cl. 114-61.000.
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- Larker, Hans: *See—*
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- LaRocca, Martin, to Singer Company, The. Mount for air conditioner components. 3,866,867, Cl. 248-23.000.
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- Larsen, Carl Ib Peder, to Haldex Aktiebolog. Conversion unit for electrical signal sequences. 3,867,617, Cl. 235-151.320.
- Larson, Roger L.: *See—*
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- Lasater, Donald A., to Dover Corporation. Sealing arrangement for liquid dispensing nozzle having vapor recovery. 3,866,636, Cl. 141-59.000.
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- Latto, Nedwyn M. Shoe attachment for golfers. 3,866,339, Cl. 36-7.600.
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- Lawson, David F.; and Lohr, Delmar F., Jr., to Firestone Tire & Rubber Company, The. Flame-resistant polybutadiene resin. 3,867,327, Cl. 260-27.0BB.
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- Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique. Read-write magnetic transducer having a composite structure comprising a stack of thin films. 3,867,368, Cl. 360-126.000.
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- Lecailtel, Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Devices for positioning movable members of numerically controlled machines. 3,867,053, Cl. 408-13.000.
- Lechevin, Jean-Claude, to Lipha, Lyonnaise Industrielle Pharmaceutique. Novel rodenticides compositions. 3,867,546, Cl. 424-331.000.
- Lechner, Walter L., to Engler Instrument Company. One-way rotation control for synchronous motor shafts. 3,866,486, Cl. 74-425.000.
- Lee, Norman John, to Matburn (Holdings) Limited. Operation tables and chairs. 3,866,899, Cl. 269-322.000.
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- Lee, Wendell Maurice, to RCA Corporation. Spectrally sensitized electrophotographic materials. 3,867,144, Cl. 96-1.700.
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- Leidig, Raymond H. Roto sod seeder. 3,866,552, Cl. 111-85.000.
- Leiser, Hermann, to Strausak AG. Apparatus for the single withdrawal of articles in sheet form from a stack. 3,866,764, Cl. 214-8.50D.
- Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Flaps for tires. 3,866,653, Cl. 152-365.000.
- Lekan, Henry N.: *See—*
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- Lemin, Alan J.; Moon, Malcolm W.; and Steinhards, Arnolds, to Upjohn Company, The. Certain 3-amino-2-(aminomethyl) propiophenones as fungicides and bactericides. 3,867,545, Cl. 424-325.000.
- Lemley, Luther H., to Willem Corporation. Locking handle cock. 3,866,446, Cl. 70-176.000.
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- Leumann, Ernst; and Lehmann, Hans, to Ciba-Geigy Corporation. Epoxysilane additives for epoxide resin adhesives. 3,867,322, Cl. 260-18.00S.
- Leveskis, Newton G.; and Abma, Charles B., to Argus Chemical Corporation. Non-hazardous ketone peroxide compositions. 3,867,461, Cl. 260-610.00A.
- Levin-Kogan, Isaak Zalmanovich: *See—*
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- Lewis, Linford H. Receptacle device with advertising means. 3,866,824, Cl. 232-43.200.
- Lewis, Paul E., to A. B. Chance Company. Midspan electrical conductor spacer. 3,867,566, Cl. 174-146.000.
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- Linn, Donald F.; and Wishart, George L., to Lipe-Rollway Corporation. Self-adjusting release mechanism for friction clutches. 3,866,733, Cl. 192-111.00A.
- Linzberger, Robert, to Gebrueder Buehler AG. Grinding mill. 3,866,842, Cl. 241-47.000.
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McCabe, Francis J. Folding blade fire damper. 3,866,656, Cl. 160-84.000.
McCabe, Francis J. Fire damper. 3,866,657, Cl. 160-181.000.
McCaughey, William Stephen, to Bunker Ramo Corporation. Insertion tool for insulation piercing contact. 3,866,294, Cl. 29-203.00H.
McCord Corporation: *See—*
Traum, Robert J., 3,866,926.
Weller, Peter A., 3,866,963.
McCoy, Michael R., to Electronic Arrays, Inc. MOSFET circuitry for integrated chips interfacing with higher voltage devices. 3,867,646, Cl. 307-251.000.
McCulloch Corporation: *See—*
Smith, Stephen Hagar, 3,867,679.
McDonald, Alexander D.: *See—*
Rich, Frank D., Jr.; and McDonald, Alexander D., 3,866,672.
McDonnell Douglas Corporation: *See—*
Downing, James W., 3,867,044.
McGraw-Edison Company: *See—*
Jawelak, Melbourne G.; and Boni, Richard R., 3,867,597.
Jawelak, Melbourne G., 3,867,602.
McIntosh, Duane E., to General Motors Corporation. Three phase jump encoder and decoder. 3,867,574, Cl. 178-67.000.
McKeen, Leighton R. Reciprocating motion control device. 3,866,478, Cl. 74-40.000.
McLeod, Gerald L.: *See—*
French, Hollis E.; Herbine, Stanley C.; and McLeod, Gerald L., 3,867,235.
McMillen, Kenneth R.: *See—*
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McNeil, Gary, to Prince Corporation. Bone holding mechanism. 3,866,271, Cl. 17-1.00G.
McNeil Laboratories, Incorporated: *See—*
Reynolds, Brian E.; and Carson, John R., 3,867,374.
McRae, William P. Storage and dispensing cabinet. 3,866,990, Cl. 312-15.000.
Medlock, Dan. Floor model space heater. 3,866,593, Cl. 126-91.00A.
Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Podola, Nikolai Vasilievich; Bondarenko, Oleg Petrovich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovich; Smolyakov, Vadim Filimonovich; Eltsov, Konstantin Sergeevich; Gabuev, Georgy Kharitonovich; and Gladky, Dmitry Fedorovich, 3,867,130.
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Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., to Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer. Trap containing pheromone. 3,866,349, Cl. 43-114.000.
Melvin, Darrell: *See—*
Cornell, James H., 3,867,292.
Mende, William Carl: *See—*
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Menzi, Robert; and Zeller, Hartmut, to Vivil A. Muller & Co. Gelled protein process for the production of a gelled protein foodstuff. 3,867,560, Cl. 426-350.000.
Merck & Co., Inc.: *See—*
Pines, Seemon H., 3,867,378.
Shen, Tshung-Ying; and Jones, Howard, 3,867,433.
Merrell, Richard G.: *See—*
Ciciora, Walter S.; and Merrell, Richard G., 3,867,575.
Merriweather, Kenneth A., to Warwick Electronics Inc. Control circuit for an afc system. 3,867,568, Cl. 178-5.8AF.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Bahr, Alfred, 3,866,414.
Messner, Jakob. Apparatus to make pile fabrics in which pile threads are bonded to a base layer. 3,866,499, Cl. 83-278.000.
Mesta Machine Company: *See—*
Petros, Andrew J., 3,866,455.
Metallgesellschaft Aktiengesellschaft: *See—*
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Meyer, Dorman A. Removal of marine growths from lakes, waterways, and other bodies of water. 3,866,396, Cl. 56-9.000.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt. 2-Amino-1,4-dihydropyridine derivatives. 3,867,393, Cl. 260-294.900.
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Michalak, Bogumil M.; and Bertellotti, Ansano, to GTE Automatic Electric Laboratories Incorporated. Latching spring clip device for securing electrical cable connectors to printed wiring cards. 3,867,000, Cl. 339-17.00L.
Mickus, Robert Z.: *See—*
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Microma Incorporated: *See—*
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Microseal Corporation: *See—*
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Mifsud, Joseph F., to Exxon Production Research Company. Vibratory seismic energy generator. 3,866,709, Cl. 181-114.000.
Migneault, Maurice. Lightweight, small, combined gas and steam motor. 3,866,412, Cl. 60-39.190.
Mikhailovsky, Alexandr Mikhailovich: *See—*
Gorkovenko, Boris Konstantinovich; Mikhailovsky, Alexandr Mikhailovich; Churilova, Valentina Dmitrievna; and Kirillova, Olga Georgievna, 3,867,098.
Mikofalvy, Bela K.; and Doyle, Thomas J., to B. F. Goodrich Company, The. Process for making emulsion polymerized prepasticized vinyl resins. 3,867,331, Cl. 260-31.80R.
Miles, George N. Icing gun system for decorating confectionary articles. 3,866,838, Cl. 239-372.000.
Milicevic, Josip. Sled. 3,866,932, Cl. 280-12.00R.
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Miller, Bernard J. Self-contained float device. 3,866,470, Cl. 73-313.000.
Miller, Frederick O., to Miller Mold Company. Adjustable mold. 3,867,084, Cl. 425-383.000.
Miller, James G.: *See—*
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Miller, Joseph P., to Emhart Corporation. Shut off system for glassware forming machine. 3,867,122, Cl. 65-159.000.
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Miller, Ralph A.: *See—*
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Roper, William H.; Roper, Robert E.; and Roper, Charles R., 3,866,791.

Miller, Richard Guy; Brudi, Ronald Adair; and Brainard, Kenneth Lynley, to Weyerhaeuser Company. Material handling attachment for a forklift truck. 3,866,780, Cl. 214-655.000.

Miller, Samuel E., to Quick Service Textiles, Inc. Simulated woven fabrics. 3,867,242, Cl. 161-57.000.

Miller Steel & Supply Company, Incorporated: *See—*

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Miller, William E.; Lenc, John F.; and Winsch, Irvin O., to United States of America, Atomic Energy Commission. Process for recovering uranium and plutonium from irradiated nuclear fuel oxides. 3,867,510, Cl. 423-251.000.

Millward, John David: *See—*

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Milton, Colin. Bottle height inspection apparatus. 3,866,753, Cl. 209-73.000.

Minagawa, Nobuhiko: *See—*

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Minami, Hideo, to Taiyo Seiki Co., Ltd. Bookbinding Machine. 3,866,568, Cl. 118-238.000.

Mindick, Morris; and Reven, Lewis E., to Nalco Chemical Company. Acidic stable salt-free silica sols. 3,867,304, Cl. 252-313.00S.

Miner, Carroll R., to General Instrument Corporation. Tuner drive assembly for selecting a limited number of channels in the UHF band. 3,866,479, Cl. 74-10.850.

Mingus, Ray E.; and Stuart, Ross M., to Kaiser Aerospace and Electronics Corporation. Non-latching, dry-break fluid coupling. 3,866,638, Cl. 141-352.000.

Minke, Charles M., to Hercules Incorporated. Integral filament reinforced composite-rocket chamber/adapter. 3,866,792, Cl. 220-72.000.

Minks, Albert K.: *See—*

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Minkwitz, Joachim P. C., to Rockford Automation, Inc. Transfer mechanism. 3,866,537, Cl. 104-99.000.

Minnesota Mining and Manufacturing Company: *See—*

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Miskel, John J.; and Hom, Foo Song, to R. P. Scherer Corp. Method for absorption of drugs. 3,867,521, Cl. 424-37.000.

Missouri-Kansas-Texas Railroad Company: *See—*

Richard, James W., 3,866,543.

Mite Corporation: *See—*

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Mitsui, Yoshihiro; and Kamakura, Hiroshi, to Kabushiki Kaisha Siwa Seikosha; and Kabushiki Kaisha Siwa Seikosha. Brushless direct current motor. 3,867,656, Cl. 310-68.000.

Miyahara, Masato, to Kabushiki Kaisha Morita Seisakusho. Apparatus for taking a continuous x-ray picture of the dental arch. 3,867,636, Cl. 250-445.000.

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Miyao, Takayaki; Maeda, Hiroaki; and Sato, Masanori, to Aisin Seiki Co., Ltd. Piston of piston type fluid pump motor. 3,866,519, Cl. 91-488.000.

Miyao, Takayuki; Maeda, Hiroaki; Sato, Masanori; and Motoyama, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Fluid pressure device of the axial plunger type. 3,866,518, Cl. 91-488.000.

Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; Suzuki, Akio; and Ito, Hidenobu, to Nippon Kokan Kabushiki Kaisha. Method of plating aluminum-chromium alloys. 3,867,266, Cl. 204-39.000.

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Mizumura, Yutaka: *See—*

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Ueda, Kenzo; Mizutani, Toshio; Itaya, Nobushige; and Okuno, Yositosi, 3,867,542.

Mlavsky, Abraham I.; Bates, Herbert E.; and Siegel, Bernard, to Tyco Laboratories, Inc. Method and apparatus for producing fine-grated polycrystalline bodies. 3,867,496, Cl. 264-71.000.

Mobil Oil Corporation: *See—*

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Bardon, Melvin C.; and Bauernfeind, Norman G., 3,866,675.

Moe, Stephen S. Portable traffic control system. 3,867,718, Cl. 340-31.00R.

Moehlenpah, Walter G. Apparatus for fabricating wood structures. 3,866,530, Cl. 100-53.000.

Moehring, John Theodore; and Lawson, Virgil Willis, to General Electric Company. Stall warning system for a gas turbine engine. 3,867,717, Cl. 340-27.0SS.

Moeller, Friedrich-Wilhelm: *See—*

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Moen, George A. Double acting slide switch assembly with telescopically arranged housings and normally centered movable contact. 3,867,599, Cl. 200-153.00K.

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Monju, Yoshiyiki: *See—*

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Raffelson, Harold; and Suda, Michael, 3,867,411.

Trivette, Chester D., Jr.; and Maender, Otto W., 3,867,358.

Montagroni, Nevio. Apparatus for extracting juice from citrus fruit. 3,866,528, Cl. 99-495.000.

Montgomery Industries International Inc.: *See—*

Montgomery, W. T. S., 3,866,844.

Montgomery, W. T. S., to Montgomery Industries International Inc. Shavings making machine. 3,866,844, Cl. 241-282.200.

Moody, Carl A. Making and employing hair teasing combs. 3,867,502, Cl. 264-263.000.

Moon, Malcolm W.: *See—*

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Moore, James G.; and Oltman, Fay W., to Souvenir/Inc. Pen stand. 3,866,756, Cl. 211-69.500.

Moore, Joseph E., to Chevron Research Company. Insecticidal phenylhydrazone sulfides. 3,867,449, Cl. 260-566.00B.

Moore, Joseph E., to Chevron Research Company. Insecticidal bisphenylhydrazone sulfides. 3,867,450, Cl. 260-566.00B.

Moore, Joseph E.; and Kohn, Gustave K., to Chevron Research Company. Insecticidal phenols. 3,867,547, Cl. 424-337.000.

Moore, Keith A., to Rockwell International Corporation. Recovery of sulfur values form molten salt. 3,867,514, Cl. 423-563.000.

Moorhead, John P.: *See—*

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Morbark Industries, Inc.: *See—*

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More, George H., to Bausch & Lomb Incorporated. Strip chart holding device. 3,866,850, Cl. 242-68.400.

Morehouse, Edward L.; and Prokai, Bela, to Union Carbide Corporation. Partially crosslinked siloxane-polyoxyalkylene (sioc) block copolymer compositions and use thereof as surfactants in the production of polyurethane foams. 3,867,420, Cl. 260-448.80R.

Moreland, William C., II; and Van Dyck, Arie, to Westinghouse Electric Corporation. Apparatus for evacuating and sealing thermoplastic bags. 3,866,390, Cl. 53-79.000.

Morey, Inc.: *See—*

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Morey, Norval K.; and Smith, Leward N., to Morbark Industries, Inc. Wood chip handling system. 3,866,769, Cl. 214-44.00A.

Morgan, Barry S.; and Jaffe, Joseph, to Chevron Research Company. Hydroconversion process. 3,867,281, Cl. 208-213.000.

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Morgan, Gerard E., to Riddell Inc. Headgear with automatic sizing means. 3,866,243, Cl. 2-3.00R.

Morgan, Herbert S., to Monsanto Company. Process for wet-spinning fibers derived from acrylic polymers. 3,867,499, Cl. 264-182.000.

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Mori, Shigeo; Akamatsu, Akira; and Togo, Kazushi, to Ajinomoto Co., Inc. Medicated polyamino acid film for occlusive dressing therapy. 3,867,520, Cl. 424-36.000.

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Mori, Toshihiro; and Ando, Seigo, to Nippon Kokan Kabushiki Kaisha. Measuring apparatus utilizing variable impedance elements. 3,867,689, Cl. 324-40.000.

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Morstadt, Richard A., to GTE Automatic Electric Laboratories Incorporated. Electronic tone ringer. 3,867,585, Cl. 179-84.00T.

Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, to Cableform Limited. Semi-conductor clamping means. 3,867,003, Cl. 339-92.00R.

Morton, Robert O., to Bertea Corporation. Fluid control valve. 3,866,620, Cl. 137-83.000.

Moser, Paul: *See—*

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Moskowitz, Seymour, to Curtiss-Wright Corporation. Shroud structure for turbine rotor blades and the like. 3,867,061, Cl. 415-174.000.

Motokura, Michio, to Kabushiki Kaisha Komatsu Seisakusho. Rock drill. 3,866,694, Cl. 173-75.000.

Motorola, Inc.: *See—*

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Mroczek, Werner; and Scherber, Werner, to Licentia Patent-Verwaltungs-GmbH. Method of contacting semiconductor regions in a semiconductor body. 3,866,312, Cl. 29-578.000.

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Muller, Hubert, to SIEMAG Siegener Maschinenbau GmbH. Rolling mill. 3,866,454, Cl. 72-238.000.

Muller, Johann, deceased (by Muller, Katharina, legal representative), to Friedrich Deckel Atiengesellschaft. Universal drilling and milling machine with several exchangeable toolheads. 3,867,054, Cl. 408-234.00R.

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Murakami, Masuo; Kawata, Ryuichi; Kawamura, Shigeo; Takamura, Shuichi; Hirano, Takayoshi; and Tomuro, Kouji, to Yamanouchi Pharmaceutical Co., Ltd. Process for the preparation of suspensions of microcrystals of chloramphenicol palmitate. 3,867,414, Cl. 260-404.500.

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Murrhardter Waagenfabrik Gebr. Soehnle: *See—*

Soehnle, Karl; Scheerer, Richard; Gutzy, Klaus; Busse, Rido; and Rapp, Reinhold, 3,866,699.

Myers, Gerald L., to Dana Corporation. Fluid operated clutch and brake with dashpot. 3,866,727, Cl. 192-13.00R.

Myerson, Albert L., to Exxon Research and Engineering Company. Method for removing the oxides of nitrogen as air contaminants. 3,867,507, Cl. 423-212.000.

Mylne, John M.: *See—*

Webb, Albert A.; and Tullis, James Paul, 3,866,630.

N. V. Bekaert S. A.: *See—*

Smit, Jacobus Cornelis, 3,866,788.

Nadella: *See—*

Pitner, Alfred, 3,867,050.

Nadelson, Jeffrey: *See—*

Houlihan, William J.; and Nadelson, Jeffrey, 3,867,465.

Nagai, Nobuyuki: *See—*

Horiuchi, Takefumi; Monju, Yoshiyiki; Tatara, Isamu; Nagai, Nobuyuki; Hisata, Manabu; and Matsumoto, Kiyoshi, 3,867,209.

Naganishi, Hirosuke: *See—*

Narita, Shigeyoshi; Naganishi, Hirosuke; Izumi, Chikashi; Yokouchi, Akiyoshi; and Yamada, Masaru, 3,867,256.

Nagel, George W., to Westinghouse Electric Corporation. Speed responsive clutch. 3,866,731, Cl. 192-104.00C.

Nagel, Leroy: *See—*

Jacobs, Fred L.; and Nagel, Leroy, 3,867,224.

Nagele, Immanuel P., to Coleman Company, Inc., The. Evaporative air conditioner. 3,867,486, Cl. 261-29.000.

Naguro, Kazutaka; and Seya, Takao, to Kawaguchi Seiko Kabushiki Kaisha. Refining process for removing Mo from high-Ni and/or high-Co, Mo-containing alloy steels. 3,867,133, Cl. 75-53.000.

Nakada, Masahiko; Maekawa, Takehiko; and Matsumoto, Hirofumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for supplying secondary air to a gas engine intake manifold. 3,866,588, Cl. 123-124.00R.

Nakamata, Tsuyoshi: *See—*

Inoue, Jiro; Takatori, Ken; and Nakamata, Tsuyoshi, 3,866,952.

Nakamizo, Nobuhiro: *See—*

Fujimoto, Yasuo; and Nakamizo, Nobuhiro, 3,867,424.

Nakamura, Masao; Uchida, Chieko; Ozaki, Masanao; and Ichikawa, Takehiko, to Ajinomoto Co., Inc. Method of preparing phenylalanine. 3,867,436, Cl. 260-518.00R.

Nakamura, Ryuji: *See—*

Fukumoto, Kenichi; and Nakamura, Ryuji, 3,867,156.

Nakamura, Yasuharu: *See—*

Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Sueyoshi, Tohru; Moriuchi, Shigenori; Sato, Akira; and Ikeda, Tadashi, 3,867,146.

Nakamura, Yasuo: *See—*

Chimura, Kazuya; Ito, Kazuo; Nakamura, Yasuo; and Miyata, Seiji, 3,867,332.

Chimura, Kazuya; Iwata, Hiroshi; Nakamura, Yasuo; and Shiotsuki, Mitsuaki, 3,867,478.

Nakano, Sukenori: *See—*

Wakabayashi, Senzo; Kusaba, Akira; Koyano, Takayuki; Nakano, Sukenori; Kimura, Jin-Ichi; and Oyamada, Akira, 3,866,449.

Nakata, Tadao; Mizutani, Hideaki; Ito, Shinichi; Okada, Mitsuhiko; and Katayama, Nobuaki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Manually operated shift assembly with restraining action for shifting to reverse. 3,866,488, Cl. 74-475.000.

Nakayama, Hiroyuki: *See—*

Juna, Kiyoshi; Ohdan, Koji; Nakayama, Hiroyuki; and Asada, Kiyohiko, 3,867,351.

Nakayasu, Teruo: *See—*
Endou, Akira; Maeda, Masao; Okumichi, Toshiharu; Nakayasu, Teruo; and Hamada, Takao, 3,867,466.

Nakazawa, Yoshiyuki; Nakamura, Yasuharu; Sueyoshi, Tohru; Moriuchi, Shigenori; Sato, Akira; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Holographic reproduction using carbocyanine dye sensitized, fine-grain silver halide emulsions and neon-helium lasers. 3,867,146, Cl. 96-27.00H.

Nalco Chemical Company: *See—*
Frisque, Alvin J., 3,867,330.
Johnson, Carl E., 3,867,311.
Mindick, Morris; and Reven, Lewis E., 3,867,304.

Namikawa, Mamoru: *See—*
Obata, Atsushi; and Namikawa, Mamoru, 3,866,827.

Narita, Shigeyoshi; Naganishi, Hirosuke; Izumi, Chikashi; Yokouchi, Akiyoshi; and Yamada, Masaru, to Hokkaido Sugar Co., Ltd. Method for production of alpha-galactosidase by microorganism. 3,867,256, Cl. 195-11.000.

Nash, Robert Arnold: *See—*
Ritter, Lawrence; and Nash, Robert Arnold, 3,867,528.

Nasser, Benny E.: *See—*
Witt, Donald R.; and Nasser, Benny E., 3,867,306.

National Engineering Company: *See—*
Rikker, Leslie D.; and Suckfuell, Gerhard A., 3,866,799.

National Packaging Corporation: *See—*
Guido, Joseph J.; and Anderson, James R., 3,867,226.

National Semiconductor Corporation: *See—*
Salles, Henri J.; and Newby, David R., 3,866,311.

National Starch and Chemical Corporation: *See—*
Szymanski, Chester D.; and Demartino, Ronald N., 3,867,355.

National Steel Corporation: *See—*
Austin, Lowell W.; and Baker, James N., 3,866,571.

Natoli, Frank S.: *See—*
Gambardella, Mario A.; and Natoli, Frank S., 3,867,320.

Natwig, David L.: *See—*
Skarbo, Roald R.; Galin, Walter E.; and Natwig, David L., 3,867,506.

Naylor, Floyd E.: *See—*
Hsieh, Henry L.; Buck, Ollie G.; and Naylor, Floyd E., 3,867,353.

Nebzydoski, John W.; Brockway, Harry; Patmore, Edwin L.; and Oberender, Frederick G., to Texaco Inc. Lube containing alkyl ammonium thiocyanate. 3,867,297, Cl. 252-47.500.

Nechitailo, Igor Afanasievich: *See—*
Pavlov, Anatoly Petrovich; Bogomolov, Vladimir Matveevich; Kupershmidt, Felix Borisovich; Nechitailo, Igor Afanasievich; Nosilov, Nikolai Nikolaevich; and Levin-Kogan, Isaak Zalmanovich, 3,866,673.

Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer: *See—*
Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., 3,866,349.

Neely, James Speer; and Thompson, James Anthony, to Procter & Gamble Company, The. Compositions of matter containing paramethoxycinnamaldehyde as a flavoring agent and sweetener. 3,867,557, Cl. 426-175.000.

Neilsen, Hildaur L. Deburring device. 3,866,452, Cl. 72-211.000.

Nelson, Charles C. Suspension for utility trailer. 3,866,935, Cl. 280-43.230.

Nelson, John R., to Petty-Ray Geophysical, Inc. Color monitor for continuous process control. 3,867,039, Cl. 356-178.000.

Nelson, Melvin A.; Davies, Terence J.; and Clark, John C., to United States of America, Atomic Energy Commission. Fast data acquisition system. 3,867,627, Cl. 250-199.000.

Nelson, Raymond A.: *See—*
O'Connor, James M.; Nelson, Raymond A.; and Hunter, Gary L., 3,866,541.

Nelsson, Nels, to United States Gypsum Company. Metal clad gypsum walls. 3,866,376, Cl. 52-493.000.

Neumeier, Gunter F.: *See—*
Dorazio, Alton, Jr.; Altenburger, Otto; and Neumeier, Gunter F., 3,867,583.

Nevard, William Kenningale. Golf club carrier. 3,866,646, Cl. 150-1.500.

Neville, Richard E. G., to AMF Incorporated. Gas heated rotary drier. 3,866,335, Cl. 34-133.000.

New Age Mirror and Tile Industries, Inc.: *See—*
Ashenfarb, Sidney, 3,867,013.

New Brunswick Scientific Co., Inc.: *See—*
Freedman, David; and Sadir, Richardo, 3,867,260.

New Nippon Electric Co., Ltd.: *See—*
Ohtani, Tetsuro, 3,867,607.

Newby, David R.: *See—*
Salles, Henri J.; and Newby, David R., 3,866,311.

Newell, Jon Albert; Seeley, Robert Dudley; and Robbins, Ernest Aleck, to Anheuser-Busch, Incorporated. Process of making yeast protein isolate having reduced nucleic acid content. 3,867,255, Cl. 195-5.000.

Newell, Jon Albert; Robbins, Ernest Aleck; and Seeley, Robert Dudley, to Anheuser-Busch, Incorporated. Manufacture of yeast protein isolate having a reduced nucleic acid content by an alkali process. 3,867,555, Cl. 426-60.000.

Newton Chambers & Company Limited: *See—*
Maudsley, Russell J., 3,867,457.

Newton, Kenneth C.: *See—*
Kraus, Peter E.; and Newton, Kenneth C., 3,866,509.

Nichols, Elton F.; Moorhead, John P.; and Wubbe, Leo J., to Anderson Company, The. Windshield wiper blade connector. 3,866,259, Cl. 15-250.320.

Nicholson, John H.; and Jemison, William, to Heyman Manufacturing Company. Cord anchorage securing device and secure cord anchorage. 3,866,870, Cl. 248-56.000.

Nicholson Manufacturing Company: *See—*
Lunn, Edward O., 3,866,843.

Nickerson, John D.: *See—*
Chiang, Peter T.; and Nickerson, John D., 3,867,511.

Nicklas, James R., to Bradley Corporation. Static pressure piston operated diverter mechanism. 3,866,629, Cl. 137-608.000.

Nijman, John Peter, to Bunker Ramo Corporation. Apparatus for electrically terminating insulated conductors in insulation-piercing contact portions of an electrical connector. 3,866,293, Cl. 29-203.0DT.

Nilsson, Jan: *See—*
Korsell, Torsten; Larker, Hans; Lundblad, Erik; and Nilsson, Jan, 3,866,306.

Nippon Electric Company, Limited: *See—*
Ichiki, Eiichi; Iida, Kazuo; Ogura, Masato; Seki, Yasuo; and Asanabe, Sizuo, 3,867,202.

Nippon Gakki Seizo Kabushiki Kaishi: *See—*
Adachi, Takeshi, 3,866,505.

Nippon Kokan Kabushiki Kaisha: *See—*
Inoue, Jiro; Takatori, Ken; and Nakamata, Tsuyoshi, 3,866,952.
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; Suzuki, Akio; and Ito, Hidenobu, 3,867,266.
Mori, Toshihiro; and Ando, Seigo, 3,867,689.
Ohwa, Toshio; Taketomi, Kosaku; Tanaka, Osamu; Sakai, Bunshiro; Taira, Tadaaki; and Hirabayashi, Kiyoteru, 3,867,608.
Wakabayashi, Senzo; Kusaba, Akira; Koyano, Takayuki; Nakano, Sukenori; Kimura, Jin-Ichi; and Oyamada, Akira, 3,866,449.

Nippon Oil Seal Industry Co., Ltd.: *See—*
Nishikubo, Tadatomi; Imamura, Yoshinori; Tomiyama, Yoshiko; and Maki, Kiyoshi, 3,867,318.

Nishikubo, Tadatomi; Imamura, Yoshinori; Tomiyama, Yoshiko; and Maki, Kiyoshi, to Nippon Oil Seal Industry Co., Ltd. Photosensitive polymeric esters produced by the condensation of a chloromethyl groups-containing polymer with a carboxyl salt. 3,867,318, Cl. 260-2.00A.

Nitz, Rolf-Eberhard: *See—*
Raabe, Thomas; Stachel, Aldolf, deceased; Scholtholt, Josef; and Nitz, Rolf-Eberhard, 3,867,389.

Noguchi Fountain and Plaza, Inc.: *See—*
Noguchi, Isamu, 3,866,832.

Noguchi, Isamu, to Noguchi Fountain and Plaza, Inc. Nozzle assembly for producing an internally illuminated water column. 3,866,832, Cl. 239-18.000.

Noguchi, Satoshi: *See—*
Iida, Shuichi; Hayashi, Takao; Noguchi, Satoshi; and Furuuchi, Shigemasa, 3,867,015.

Noll, Ewald: *See—*
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; and Weigert, Wolfgang, 3,867,438.
Koberstein, Edgar; Luessling, Theodor; Noll, Ewald; Schaefer, Hans; and Weigert, Wolfgang, 3,867,345.

Noll, Klaus: *See—*
Pedain, Josef; Noll, Klaus; Konig, Klaus; and Thoma, Wilhelm, 3,867,350.

Norcross, John L. Apparatus for inserting fibers into a surface. 3,866,290, Cl. 29-203.00V.

Norddeutsche Seekabelwerke Aktiengesellschaft: *See—*
Urban, Horst, 3,867,630.

Nordeen, Erwin E., to Whirlpool Corporation. One piece switch holder and foot operated hinge actuator for vacuum cleaner switch. 3,867,591, Cl. 200-52.00R.

Northern Electric Company, Limited: *See—*
Simonsen, Karlo Buchvaldt, 3,867,576.

Norton, James F., to Hansen Manufacturing Company, The. Plug assembly. 3,866,957, Cl. 285-316.000.

Nosilov, Nikolai Nikolaevich: *See—*
Pavlov, Anatoly Petrovich; Bogomolov, Vladimir Matveevich; Kupershmidt, Felix Borisovich; Nechitailo, Igor Afanasievich; Nosilov, Nikolai Nikolaevich; and Levin-Kogan, Isaak Zalmanovich, 3,866,673.

Novel Hoechst Chimie: *See—*
Hirschmann, Alexandre, 3,867,348.

Nowak, Herman P., to Gillette Company, The. Assembly apparatus. 3,866,298, Cl. 29-208.00F.

NRM Corporation: *See—*
Lynch, John R., 3,867,085.

Nystrand, Ernst Daniel, to Paper Converting Machine Company. Method for producing laminated embossed webs. 3,867,225, Cl. 156-209.000.

Nyul, Paul, to RCA Corporation. High density light emitting diode array. 3,867,666, Cl. 313-500.000.

Oakes, Vincent: *See—*
Hutton, Ronald Eric; Oakes, Vincent; and Iles, Brian Rodney, 3,867,325.

Obata, Atsushi; and Namikawa, Mamoru, to Tokushu Seiko Co., Ltd.; and Tokyo Magnetic Printing Co., Ltd. Magnetic card apparatus. 3,866,827, Cl. 235-61.11D.

Oberender, Frederick G.: *See—*
Nebzydoski, John W.; Brockway, Harry; Patmore, Edwin L.; and Oberender, Frederick G., 3,867,297.

Oberg, Karl-Erik: *See—*
Eriksson, Lars Anders; and Oberg, Karl-Erik, 3,867,136.

Obermayer, Arthur S.: *See—*
Hook, Edwin O.; Berbeco, George R.; and Obermayer, Arthur S., 3,867,186.

O'Connor, James M.; Nelson, Raymond A.; and Hunter, Gary L., to O'Connor, James M.; and Goodfellow, Donald M. Self-propelled floor cleaning apparatus with movable brush. 3,866,541, Cl. 15-50.00R.

Oestmann, Eldon D.: *See—*
Whitehurst, Gerald E.; and Oestmann, Eldon D., 3,866,580.

O'Farrell, Charles P.; and Higgins, John J., to Exxon Research and Engineering Company. Adhesive cements containing a sulfonated derivative of butyl rubber and laminates therefrom. 3,867,247, Cl. 161-88.000.

Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Electrophotographic copier of transfer type. 3,867,026, Cl. 355-8.000.

Ogden, Gloria F.: *See—*
Ogden, Grant M., Jr., 3,866,532.

Ogden, Grant M., Jr., to Ogden, Gloria F. Firehose retractor. 3,866,532, Cl. 100-171.000.

Ogren, Harvey D.: *See—*
Hedeen, James O.; and Ogren, Harvey D., 3,866,535.

Ogura, Masato: *See—*
Ichiki, Eiichi; Iida, Kazuo; Ogura, Masato; Seki, Yasuo; and Asanabe, Sizuo, 3,867,202.

O'Hara, Mark J.: *See—*
Gleim, William K. T.; and O'Hara, Mark J., 3,867,275.

Ohdan, Koji: *See—*
Juna, Kiyoshi; Ohdan, Koji; Nakayama, Hiroyuki; and Asada, Kiyohiko, 3,867,351.

Ohlsson, Folke E. H. Sitting furniture and structural units therefor. 3,866,976, Cl. 297-445.000.

Ohtani, Tetsuro, to New Nippon Electric Co., Ltd. Hybrid microwave heating apparatus. 3,867,607, Cl. 219-10.550.

Ohwa, Toshio; Taketomi, Kosaku; Tanaka, Osamu; Sakai, Bunshiro; Taira, Tadaaki; and Hirabayashi, Kiyoteru, to Kobe steel, Ltd.; and Nippon Kokan Kahushiki Kaisha. Submerged arc welding process for very low-temperature steel and welded product. 3,867,608, Cl. 219-73.000.

Ohya, Masahiro: *See—*
Yamauchi, Hiroyuki; and Ohya, Masahiro, 3,867,682.

Oil Dynamics, Inc.: *See—*
Carle, Joseph T.; and Brown, Michael R., 3,867,056.

Oilgear Company, The: *See—*
Bobier, Wilfred S., 3,866,520.

Okada, Mitsuhiko: *See—*
Nakata, Tadao; Mizutani, Hideaki; Ito, Shinichi; Okada, Mitsuhiko; and Katayama, Nobuaki, 3,866,488.

O'Keeffe, Terence W.; and Simon, Alan J., to Westinghouse Electric Corporation. Making of micro-miniature electronic components by selective oxidation. 3,867,148, Cl. 96-36.200.

Okuaki, Akira: *See—*
Akamatsu, Akira; Okuaki, Akira; and Mori, Shigeo, 3,867,352.

Okubo, Hideyo: *See—*
Miyata, Akira; Okubo, Hideyo; Tomita, Chikayoshi; Suzuki, Akio; and Ito, Hidenobu, 3,867,266.

Okuda, Naoki: *See—*
Arikawa, Masayasu; Kano, Motomi; and Okuda, Naoki, 3,866,284.

Okumichi, Toshiharu: *See—*
Endou, Akira; Maeda, Masao; Okumichi, Toshiharu; Nakayasu, Teruo; and Hamada, Takao, 3,867,466.

Okuno, Takeshi: *See—*
Shibata, Osamu; Kojimoto, Susumu; and Okuno, Takeshi, 3,866,833.

Okuno, Yositosi: *See—*
Ueda, Kenzo; Mizutani, Toshio; Itaya, Nobushige; and Okuno, Yositosi, 3,867,542.

Oleck, Stephen M.; and Stover, William A., to Mobil Oil Corporation. Catalyst composition for removing noxious components from a gaseous stream. 3,867,309, Cl. 252-455.00R.

Olin Corporation: *See—*
Gambardella, Mario A.; and Natoli, Frank S., 3,867,320.
Winter, Joseph; Shapiro, Eugene; and Smith, Warren F., 3,866,451.

Olin, John F.; and Hamm, Philip C., to Monsanto Company. Herbicidal meta-bifunctional benzenes. 3,867,426, Cl. 260-472.000.

O'Link, Maurice H., to Stearns Manufacturing Company. Buoyant pelleted material and method. 3,867,236, Cl. 161-145.000.

Oliver, Burton L.; and Sitler, Wayne R., to International Business Machines Corporation. Dynamic power supply test system. 3,867,618, Cl. 235-153.0AC.

Olson, Lloyd J., to Chevron Research Company. Hydrocracking process using improved Pd-on-silica-alumina catalyst. 3,867,278, Cl. 208-111.000.

Oltman, Fay W.: *See—*
Moore, James G.; and Oltman, Fay W., 3,866,756.

Olympus Optical Co., Ltd.: *See—*
Furihata, Hiroyuki, 3,866,602.

O'Neal, Cothburn M.; Mayo, Alfred M.; and Childs, George William, deceased (by Childs, Patricia M., executrix), to Riverside Press, Inc. Voting machine. 3,866,826, Cl. 235-54.00A.

Onikov, Eduard Arshakovich: *See—*
Rutkevich, Zinovy Yakovlevich; Sakharov, Boris Alexandrovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and German, Roman Anatolievich, 3,866,634.

Oolitic Ground Limestone Co., Inc.: *See—*
Potter, Howard E., 3,866,887.

Opitz, John M., Sr. Airplane wheel rotator. 3,866,860, Cl. 244-103.00S.

Original Equipment Motors Inc.: *See—*
Holper, Frank, 3,866,986.

Orlando, Joseph M.; Katz, Harry S.; and Rainford, Jack W., to Identimation Corporation. Imprinting device having conformable film with wet applied ink for the formation of finger and footprints. 3,867,164, Cl. 117-.500.

Orlov, Gennady Ivanovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Pentegov, Igor Vladimirovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medvedenko, Nikolai Fedorovich; Medovar, Boris Izrailevich; Loskutov, Pavel Petrovich; Orlov, Gennady Ivanovich; Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Tamozhnikov, Georgy Vasilievich; and Schelkunov, Jury Andreevich, deceased, 3,867,561.

Orshansky, Elias, Jr., to Orshansky Transmission Corporation. Split power transmission. 3,866,490, Cl. 74-687.000.

Orshansky Transmission Corporation: *See—*
Orshansky, Elias, Jr., 3,866,490.

Ortega, Robert. Check valve and check indicator. 3,867,289, Cl. 210-95.000.

Orwin, Olaf John Barclay, to Gib Precision Limited. Overload clutch. 3,866,728, Cl. 192-56.00R.

Osborn, James E.: *See—*
Marci, Vincent C.; Osborn, James E.; and Watkins, David F., 3,866,922.

Oshima, Shintaro; Watanabe, Teruji; Fukui, Takasuke; and Suzuki, Shinzuo, to Kokusai Denshin Denwa Kabushiki Kaisha. Highly directional parametric magnetic sensor. 3,867,690, Cl. 324-43.00R.

Oswalt, Harry L., Jr. Metal working machine. 3,866,522, Cl. 72-324.000.

Otis Engineering Corporation: *See—*
Laky, Tibor, 3,866,679.

Ott, Fred L.: *See—*
Smith, Hubert Irvin; and Ott, Fred L., 3,866,468.

Ott, Jack J.; Matthews, Russell E.; and Lawrence, Garth D., to Dow Chemical Company, The. Impregnation of porous body with metal. 3,867,177, Cl. 117-51.000.

Otto, Charles W., to General Electric Company. Dynamoelectric machine stator. 3,867,654, Cl. 310-42.000.

Outboard Marine Corporation: *See—*
Burmeister, Dennis N.; and Yourich, Adolph J., 3,866,591.

Overby, Robert E.: *See—*
Weed, Robert P.; Rosenberg, Gary; Bourkland, Quentin; and Overby, Robert E., 3,867,582.

Owens-Corning Fiberglas Corporation: *See—*
Bebart, James A., 3,867,117.
Rood, Leonard D.; and Kissell, Ronald E., 3,867,494.
Russell, Robert G., 3,867,118.

Oxel, Berton R., to Hoover Company, The. Toaster with warming rack. 3,866,525, Cl. 99-357.000.

Oxy Metal Finishing Corporation: *See—*
Brown, Henry; Tomaszewski, Thaddeus W.; and Clauss, Richard J., 3,866,289.
Brown, Henry; and Boycott, William A., 3,867,267.

Oyamada, Akira: *See—*
Wakabayashi, Senzo; Kusaba, Akira; Koyano, Takayuki; Nakano, Sukenori; Kimura, Jin-Ichi; and Oyamada, Akira, 3,866,449.

Ozaki, Masanao: *See—*
Nakamura, Masao; Uchida, Chieko; Ozaki, Masanao; and Ichikawa, Takehiko, 3,867,436.

Ozimek, Chester E.; and Eldridge, Kenneth L., Jr., to Sears, Roebuck and Co. Manual typewriter with means for error correction. 3,866,736, Cl. 197-181.000.

P. D. Springall Limited: *See—*
Riach, Allan; and Sinclair, Thomas, 3,866,362.

P. R. Mallory & Co., Inc.: *See—*
Holmes, Robert W., 3,867,201.

Pacheco, Daniel: *See—*
Dobeus, William J.; Cheetham, James V.; Pacheco, Daniel; Keyzer, Carl A.; and Sandrock, Don G., 3,866,942.

Pacini, Elmo J.; Johnson, Alford H.; and Turner, Robert B., Jr., to Deaderich and Royster Inc. Adjustable spool and spool system. 3,866,327, Cl. 33-125.00R.

Packautomatic GmbH & Co. K.G., Firma: *See—*
Timmerbeil, Karl-Ernst, 3,866,395.

Page, William H. Coated polymeric fibers. 3,867,179, Cl. 117-76.00F.

Paixao, Leonel M.: *See—*
Vitale, Peter T.; and Paixao, Leonel M., 3,867,249.

Paletzki, Hans Joachim, to Georgetown Steel Corp. Billet twister. 3,866,762, Cl. 214-1.0QG.

Pall Corporation: *See—*
Pall, David B.; and Jasaitis, Tadas K., 3,867,294.

Pall, David B.; and Jasaitis, Tadas K., to Pall Corporation. Cylindrical filter elements with improved side seam seal. 3,867,294, Cl. 210-489.000.

Palmer, Harold S. Conveying apparatus for a material handling vehicle. 3,866,770, Cl. 214-83.200.

Palomo, Manuel W. Container cap with trap dispensing means. 3,866,797, Cl. 221-263.000.

Pannier, Karl A., Jr.: *See—*
Reynolds, Gordon S.; and Pannier, Karl A., Jr., 3,866,608.

Paoli, Charles. Air cushion vehicle flexible skirt arrangement. 3,866,707, Cl. 180-127.000.
Paper Converting Machine Company: *See—*
  Nystrand, Ernst Daniel, 3,867,225.
Paramount Glass Mfg. Co. Ltd.: *See—*
  Kasuga, Kesaharu; Abe, Takeo; and Haga, Tsunehiro, 3,867,119.
Paris, Gerard Yvon; and Swett, Leo Ralph, to Abbott Laboratories. 1-Methyl-4,5-di(p-methoxyphenyl)-6h-pyrrolo(2,3-c) pyrazole. 3,867,402, Cl. 260-310.00R.
Parker-Hannifin Corporation: *See—*
  Paul, John C., 3,866,419.
  Sturgess, Geoffrey J., 3,866,413.
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Partyka, Michael J. Boat loader of the side mounting type. 3,866,776, Cl. 214-450.000.
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Pasternak, Stephen F., to Peerless of America, Incorporated. Method of making a finned tube heat exchanger having a circular cross section. 3,866,286, Cl. 29-157.30A.
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Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Pentegov, Igor Vladimirovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medvedenko, Nikolai Fedorovich; Medovar, Boris Izrailevich; Loskutov, Pavel Petrovich; Orlov, Gennady Ivanovich; Khasin, Kim Moiseevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Tamozhnikov, Georgy Vasilievich; and Schelkunov, Jury Andreevich, deceased (by Schelkunova, Margarita Petrovna, administrator). Electrode holder of three phase electroslag plant. 3,867,561, Cl. 13-12.000.
Patrick, Thomas R.; and Keahey, Joe H., to Texas Instruments Incorporated. Wide angle viewing system for limited visibility conditions. 3,867,633, Cl. 250-334.000.
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Patton, Bobbie Joe, to Mobil Oil Corporation. Torque assist for logging-while-drilling tool. 3,867,714, Cl. 340-18.0LD.
Paul, John C., to Parker-Hannifin Corporation. Integrated pressure compensated load sensing system. 3,866,419, Cl. 60-427.000.
Paulke, Heinz. Tile assembly. 3,866,379, Cl. 52-593.000.
Paull, David, to Swiss Aluminium Ltd. Reversible sill assembly with a positive fluid drain. 3,866,369, Cl. 52-209.000.
Paulsen, Lewis A., to Edward C. Levy Company. Dust sampling system. 3,867,640, Cl. 250-573.000.
Pavlov, Anatoly Petrovich; Bogomolov, Vladimir Matveevich; Kupershmidt, Felix Borisovich; Nechitailo, Igor Afanasievich; Nosilov, Nikolai Nikolaevich; and Levin-Kogan, Isaak Zalmanovich. Heat exchanger for cooling ore cinders. 3,866,673, Cl. 165-120.000.
Pawletko, Joseph P.: *See—*
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Pawluczyk, Romuald. Holographic microscope with suppression of coherent noise. 3,867,009, Cl. 350-3.500.
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Payne, Marion L.; and Payne, Marion A. Sheetboard cutting machines. 3,866,496, Cl. 83-471.300.
Paynter, John D.; and Bunting, William M., to Exxon Research and Engineering Company. Reforming with Pt-Ir catalysts promoted by either Bi or Fe. 3,867,280, Cl. 208-139.000.
Pazos, Hector V. Apparatus for raising underwater propulsion elements above a floating waterline. 3,866,562, Cl. 115-41.00R.
Pearce, Henry A., Jr., to Westinghouse Electric Corporation. Gas detector for fluid-filled electrical apparatus. 3,866,460, Cl. 73-19.000.
Pearce, Larry Neil, to Baxter Laboratories, Inc. Liquid filling apparatus. 3,866,635, Cl. 141-45.000.
Peberdy, Roland, to Bentley Engineering Company, Ltd., The. Composite sliders. 3,866,441, Cl. 66-14.000.
Pedain, Josef; Noll, Klaus; Konig, Klaus; and Thoma, Wilhelm, to Bayer Aktiengesellschaft. Polyurethane urea elastomers based on polycarbonate macrodiols. 3,867,350, Cl. 260-77.5AM.
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Pennwalt Corporation: *See—*
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Perkins, Neale A., to Safariland Leather Products. Spring-loaded belt keeper. 3,866,276, Cl. 24-259.00A.
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Peterson, Eric J. Automobile service lane with servicing pit. 3,866,624, Cl. 137-234.600.
Peterson, Harry S., Jr.; Peterson, Charles M.; and King, Robert, III, to Harry A. Peterson Company, Inc. Method of forming crack control slots. 3,866,384, Cl. 52-744.000.
Peterson, Robert A., to Raytheon Company. Microwave heating apparatus for rotatable articles. 3,867,606, Cl. 219-10.550.
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Pfeuffer, Anton. Apparatus for continuous production of syrup. 3,867,195, Cl. 127-22.000.
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  Yamamuro, Isao, 3,867,587.
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Plant, William J.; and Szwarc, John J., to Freeman Chemical Corporation. Method of making multiple layer light transmissive laminates. 3,867,222, Cl. 156-107.000.
Plessis, Jean Max, to Commissariat a l'Energie Atomique. Capacitive probe rotated by air pressure and used to measure internal diameter of a cylilnder. 3,867,691, Cl. 324-61.00R.
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- Rasberger, Michael; Rody, Jean; Moser, Paul; and Muller, Helmut, to Ciba-Geigy Corporation. Nickel stabilisers for synthetic polymers. 3,867,340, Cl. 260-45.75N.
- Ratcliff, Ronald R.; Watts, John F.; and Simonson, Alden D., to Boeing Company, The. Fire-safe aircraft refuse disposal system. 3,866,861, Cl. 244-118.00P.
- Raterman, Donald E.; and Goebel, Joseph, to Addressograph Multigraph Corporation. Microfiche viewer-printer machine. 3,867,025, Cl. 355-5.000.
- Rattenberry, John E., to Raymond Lee Organization, Inc., The, a part interest. Aerial photographic mapping apparatus. 3,866,858, Cl. 244-32.000.
- Rauscher, Werner, to Wandel u Goltermann. Monitoring circuitry for amplitude-measuring system. 3,867,694, Cl. 324-102.000.
- Raygo, Inc.: *See—*
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- Raymond, Eugene B. An improved electrical current measuring meter having integral calibration and zero adjustment means. 3,867,696, Cl. 324-146.000.
- Raymond Lee Organization, Inc., The: *See—*
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- Reich, Elmar, to Liebherr, Hans. Rotary tower crane. 3,866,760, Cl. 212-144.000.
- Reid, Lloyd W.; Rayle, Billy D.; and Flinchum, Harold C., to Reid's Trailer Inc. Vehicle loading ramp displacement apparatus. 3,866,771, Cl. 214-85.000.
- Reid, Luther J., Jr.: *See—*
  - Suryanarayana, Yelagondahally S.; and Reid, Luther J., Jr., 3,867,382.
- Reid's Trailer Inc.: *See—*
  - Reid, Lloyd W.; Rayle, Billy D.; and Flinchum, Harold C., 3,866,771.
- Reifenberg, Gerald H.; and Considine, William J., to M & T Chemicals Inc. Use of stannane as a reducing agent. 3,867,463, Cl. 260-618.00H.
- Reimer, Richard W. Rotary engine. 3,866,578, Cl. 123-8.450.
- Reinhardt, Helmut; Trebinger, Karl; and Kallrath, Gottfried, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the releasing of materials from voluminous precipitates or suspensions. 3,867,197, Cl. 134-25.00R.
- Reliance Electric Company: *See—*
  - Lambert, George M., 3,866,789.
- Rendon, Armando Reyna: *See—*
  - Elizondo, David Villarreal; Rendon, Armando Reyna; and Murphy, Patrick W. MacKay, 3,866,879.
- Rengren, Wayne E., to GTE Automatic Electric Laboratories Incorporated. Do-not-disturb adapter for telephone receivers. 3,867,584, Cl. 179-84.00C.
- Republic Steel Corporation: *See—*
  - Perry, Thomas E., 3,867,132.
- Research Corporation: *See—*
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- Reuner, Horst: *See—*
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- Rey, Jean Paul, to S.I.E.P.E.M. Diagnostic and therapeutic apparatus for cosmetically and hygienically treating skin. 3,866,600, Cl. 128-2.10R.
- Reynolds, Brian E.; and Carson, John R., to McNeil Laboratories, Incorporated. Diazepinoindoles. 3,867,374, Cl. 260-239.30T.
- Reynolds, Gordon S.; and Pannier, Karl A., Jr., to Sorenson Research Co., Inc. Aseptic suction collection system and method. 3,866,608, Cl. 128-276.000.
- Rheinmetall GmbH: *See—*
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  - Hornfeck, Josef; and Bartolles, Rolf, 3,866,513.
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  - Trebillon, Emile; and Raitzyn, Isidore, 3,867,362.
- Riach, Allan; and Sinclair, Thomas, to P. D. Springall Limited. Lawn mover sharpening attachment. 3,866,362, Cl. 51-250.000.
- Rice, Delong, Jr. Prestressed shaft gripping element. 3,867,049, Cl. 403-344.000.
- Rice, James E., to Goodyear Tire & Rubber Company, The. Suppression of vibration in rotating discs. 3,866,977, Cl. 301-5.00R.
- Rice, James E.: *See—*
  - Marshall, Richard P.; Rice, James E.; and Stokes, James D., 3,866,465.
- Rich, Frank D., Jr.; and McDonald, Alexander D., to F. D. Rich Housing Corporation. Building. 3,866,672, Cl. 165-50.000.
- Richard, James W., to Missouri-Kansas-Texas Railroad Company. Swing deck locking device. 3,866,543, Cl. 105-368.00R.
- Richards, Edward L.; and Dobrosielski, Stephen S., to Westinghouse Electric Corporation. Control switch. 3,867,598, Cl. 200-153.00G.
- Richards, Louis R.: *See—*
  - Carbon, Thomas J.; Zeisberger, Josef T.; Richards, Louis R.; and Lekan, Henry N., 3,866,741.
- Richardson-Merrell Inc.: *See—*
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  - Mulligan, Robert J., 3,866,793.
  - Shemano, Irving, 3,867,531.
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- Richman, Paul, to SMC Microsystems Corporation. Method for selectively establishing regions of different surface charge densities in a silicon wafer. 3,867,196, Cl. 148-1.500.
- Ricks, Michael James, to Imperial Chemical Industries Limited. Oxychlorination process. 3,867,469, Cl. 260-659.00A.
- Ricoh Co., Ltd.: *See—*
  - Yanagawa, Nobuyuki, 3,866,755.
- Riddell Inc.: *See—*
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- Ridder, Georg Sven Olof: *See—*
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- Ridout, David E. U. Vapor deposition apparatus with rotating drum mask. 3,866,565, Cl. 118-49.100.
- Riew, Changkiu K., to B. F. Goodrich Company, The. Production of epihalohydrin polymer latex. 3,867,321, Cl. 260-17.4ST.
- Rifi, Mahmoud R., to Union Carbide Corporation. Water-dilutable coating compositions containing maleinized oil and resole. 3,867,323, Cl. 260-19.00R.
- Rigassi, Norbert: *See—*
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- Rikker, Leslie D.; and Suckfuell, Gerhard A., to National Engineering Company. Mixer with automatically controlled discharge system. 3,866,799, Cl. 222-63.000.

- Riley, Raymond C. Boot and shoe drying device. 3,867,611, Cl. 219-523.000.
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- Ringerud, Chester A. Air-operated hand tool. 3,866,493, Cl. 81-57.110.
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- Ritchie, William Kerr, to Post Office, The. Apparatus and method for straightening tubes. 3,866,447, Cl. 72-9.000.
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  - Meijer, Geertruida M.; Ritter, Fridolin J.; Minks, Albert K.; Voerman, Simon; and Persoons, Cornelis J., 3,866,349.
- Ritter, James R.; and Strauch, Otto R., to Potters Industries Inc. Method for coating discrete particles. 3,867,178, Cl. 117-69.000.
- Ritter, Lawrence; and Nash, Robert Arnold, to American Cyanamid Company. Steroidal topical cream base. 3,867,528, Cl. 424-241.000.
- Rittig, Falk: *See—*
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- Riverside Press, Inc.: *See—*
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- Ro-Search, Incorporated: *See—*
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  - Sucher, Robert William; Robbins, Ernest Aleck; Sidoti, Daniel Robert; Schuldt, Erich Henry, Jr.; and Seeley, Robert Dudley, 3,867,554.
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- Robert Bosch G.m.b.H.: *See—*
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  - Eisele, Hermann; Kizler, Harald; Gualco, Ardelio; Rabus, Friedrich; Schmidt, Peter Jurgen; Locher, Johannes; and Misch, Wolfgang, 3,866,980.
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  - Prater, Earle F., 3,866,964.
- Roberts, Dennis A., to Time Computer, Inc. Solid state electronic wristwatch. 3,866,406, Cl. 58-4.00A.
- Robinson, Glen: *See—*
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- Robison, Gary A., to Bombardier Limited. Motorcycle steering head angle adjustment. 3,866,946, Cl. 280-279.000.
- Roby, John H.; and Denlinger, Roger R., to Kusan, Inc. Toy insect. 3,866,348, Cl. 46-22.000.
- Rockford Automation, Inc.: *See—*
  - Minkwitz, Joachim P. C., 3,866,537.
- Rockland, Louis B.; and Debenedict, Charles R., to United States of America, Agriculture. Production of terpeneless essential oils. 3,867,262, Cl. 203-41.000.
- Rockwell International Corporation: *See—*
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  - Stoffer, C. Daniel, 3,867,699.
- Rockwell Manufacturing Company: *See—*
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- Rogerson, Roy H.: *See—*
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- Rohatgi, Pradeep Kumar, to Bethlehem Steel Corporation. Method of making synthetic resin composites with magnetic fillers. 3,867,299, Cl. 252-62.540.
- Rohlfs, John H., to Jamieson Manufacturing Company. Apparatus for machining chuck jaw elements. 3,866,309, Cl. 29-563.000.
- Rohm and Haas Company: *See—*
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  - Whang, Jong Jai, 3,867,481.
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- Ronneau, Gerard S.; Debacker, Pierre D.; and Carpentier, Hugo L., to Metallurgie Hoboken-Overpelt. Anodically oxidizable metal powder. 3,867,129, Cl. 75-0.5BB.
- Rood, Leonard D.; and Kissell, Ronald E., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing fiber reinforced organic foam. 3,867,494, Cl. 264-45.300.
- Roper, Charles R.: *See—*
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- Roper, William H.; Roper, Robert E.; and Roper, Charles R., to Roper, Frank; and Miller, Ralph A., part interest to each. Container and cover including corner pouring and bail nesting features. 3,866,791, Cl. 220-95.000.
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- Rossfelder, Andre M.; and Bates, William S., to Tetra Tech, Inc. Drilling system. 3,866,697, Cl. 175-5.000.
- Rothell, Floyd W. Trailer bulkhead. 3,866,544, Cl. 105-376.000.
- Rothmayer, Noel Y.; MacKeand, James Crawford B.; and Smith, Clark W., to Allied Chemical Corporation. Refrigeration system. 3,866,427, Cl. 62-7.000.
- Rubenstein, Kenneth E.; and Ullman, Edwin F., to Synvar Associates, a/k/a Syva Company. Opiate imidates and protein conjugates thereof. 3,867,366, Cl. 260-121.000.
- Rubin, Jack A., to United States of America, Atomic Energy Commission. Method of producing an oxidation-resistant UO_2 Fuel Body. 3,867,489, Cl. 264-0.500.
- Ruck, Heinz E., to Fibre-Metal Products Co., The. Headgear structure for welding helmets and the like. 3,866,244, Cl. 2-8.000.
- Rudszinat, Willy; Baier, Anton; Heitmann, Uwe; and Brand, Peter, to Hauni-Werke Korber & Co., KG. Means for reducing noise in tobacco processing machines or the like. 3,866,708, Cl. 181-33.00R.
- Rupp, Wiktor J., to Itek Corporation. Method and apparatus for generating toroidal surfaces. 3,866,358, Cl. 51-33.00R.
- Ruscus, Paul V. Swimmer detection system for remote or local deployment. 3,867,711, Cl. 340-5.00R.
- Russell, James A. Telescopic speculum. 3,866,601, Cl. 128-4.000.
- Russell, Paul F.: *See—*
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- Russell, Robert G., to Owens-Corning Fiberglas Corporation. Apparatus for production of glass fibers. 3,867,118, Cl. 65-12.000.
- Russell, Stanley L., to Stromberg-Carlson Corporation. Receiving circuits for digital signal distribution systems. 3,867,580, Cl. 179-16.0EA.
- Rust, John B.; and Smolker, Gary S., to Hughes Aircraft Company. Electrolytic anticompromise apparatus. 3,867,272, Cl. 204-194.000.
- Rutkevich, Zinovy Yakovlevich; Sakharov, Boris Alexandrovich; Zabotin, Alexandr Alexandrovich; Onikov, Eduard Arshakovich; and German, Roman Anatolievich. Shedding motion for loom. 3,866,634, Cl. 139-79.000.
- Rutledge, James L., to Motorola, Inc. Manufacture of semiconductor devices. 3,867,204, Cl. 148-188.000.
- Rzepczyk, Henryk, to Coleco Industries, Inc. Player pieces for vibratory game apparatus. 3,866,915, Cl. 273-85.00R.
- Rzeszewski, Theodore S., to Motorola, Inc. Vertical interval reference signal extraction circuit arrangement. 3,867,010, Cl. 358-10.000.
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- St-Jean, Guy, to Institut de Recherche de l'Hydro-Quebec (Ireg). Multi-frequency tuned h.v. synthetic circuit for testing circuit breakers. 3,867,686, Cl. 324-28.0CB.
- Saito, Takashi: *See—*
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Schaefer, Karl. Knife for a wood-shaving machine. 3,866,643, Cl. 144-241.000.
Schaefer, Richard J. Process for treating cutting and cooling oils. 3,867,288, Cl. 210-60.000.
Schaerf, Henry C. Disposable portable double-bottom-lift handled carton. 3,866,821, Cl. 229-52.00B.
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Schexnayder, Lawrence F., to Caterpillar Tractor Company. Valve assembly having a pressure responsive detent mechanism. 3,866,880, Cl. 251-297.000.
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Schley, Robert, to Commissariat a l'Energie Atomique. Refractory metal hot-junction thermocouple. 3,867,205, Cl. 136-232.000.
Schlinger, Warren G.: *See—*
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Schmid, Richard G.; and Schwartz, Otto H., to Zenith Radio Corporation. Single knob, multifunction control assembly for a television receiver. 3,866,477, Cl. 74-10.450.
Schmidt, Henry, Jr.; and Durham, Bruce, to Industrial Filter & Pump Mfg. Co. Apparatus for cleaning filters. 3,867,291, Cl. 210-139.000.
Schmidt, Peter Jurgen: *See—*
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Schmitt, Edward Emil; and Epstein, Martin, to American Cyanamid Company. Reducing capillarity of polyglycolic acid sutures. 3,867,190, Cl. 117-138.80A.
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Schmolka, Irving R. Preparation of aqueous gel compositions containing a water-insoluble organic ingredient. 3,867,533, Cl. 424-258.000.
Schneider, Vernon J. Fishing float. 3,866,346, Cl. 43-44.870.
Schnettler, Richard A.; and Suh, John T. 3[4-(2-Thienoyl)-piperazino]-4,5-dihydro-1h-2,4-benzodiazepines. 3,867,388, Cl. 260-268.0BC.
Schoffmann, Rudolf, to Allis-Chalmers Corporation. Twin strand continuous casting apparatus with a tundish load balancing vessel. 3,866,665, Cl. 164-281.000.
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Scholz, William A. Cigarette case. 3,866,747, Cl. 206-94.000.
Schoom, Werner, to Deutsche Gesellschaft fur Schadlingbekampfung GmbH. Pest control unit. 3,866,347, Cl. 43-129.000.
Schoon, David J., to Minnesota Mining and Manufacturing Company. Particle counting apparatus. 3,867,613, Cl. 235-92.0PC.
Schor, Ferdinand William; and Johnson, Tore Rudolf, to AMP Incorporated. Multiple spark gap protective device. 3,867,670, Cl. 317-61.500.
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Schreyer, Gerd: *See—*
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Schultz, Forrest O. E., to Midland-Ross Corporation. Suspension system for vehicles. 3,866,895, Cl. 267-65.00D.
Schwab, Frederick C.; and Heilweil, Israel J., to Mobil Oil Corporation. Block copolymers and lubricant compositions containing the same. 3,867,295, Cl. 252-33.400.
Schwantje, Gerd, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Anthraquinoid disperse dyes. 3,867,406, Cl. 260-326.00D.
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Seip, Hermann, to ITT Industries, Inc. Load-dependent brake force distributor with a failsafe bypass valve. 3,866,984, Cl. 303-22.00R.
Seki, Kunio; and Kontani, Ryozo, to Hitachi, Ltd. Muting system for power amplifier. 3,867,709, Cl. 330-15.000.
Seki, Tatsujiro, to Sekisui Kaseihia Kogyo Kabushiki Kaisha. Process of producing synthetic wood having a beautiful appearance. 3,867,493, Cl. 264-45.900.
Seki, Yasuo: *See—*
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Shaw, Richard B.; and Carlson, Richard F., to Allegheny Ludlum Industries, Inc. Method for producing stainless steel in a basic oxygen furnace. 3,867,134, Cl. 75-60.000.
Shaw, Robert R.; and Snitzer, Elias, to American Optical Corporation. Neodymium doped borate glass exhibiting fluorescence at 1.06 micrometers. 3,867,303, Cl. 252-301.60P.
Shearer, Gordon T.: *See—*
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Shen, Tshung-Ying; and Jones, Howard, to Merck & Co., Inc. Cyclopenta[j,k]-phenanthrene-4-acetic acids and related compounds. 3,867,433, Cl. 260-515.00A.
Shepard, Richard W.; and Ashmead, Albert S., to Torrington Company, The. Felting needle. 3,866,456, Cl. 72-324.000.
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- Shirley, Billie J. Method and apparatus for establishing a packer. 3,866,681, Cl. 166-285.000.
- Shoe, Theodore W., to Flexicore Co., Inc., The. Method of stripping slab casting forms. 3,867,503, Cl. 264-313.000.
- Shoemaker, Arthur H., to American Optical Corporation. Five component microscope eyepiece. 3,867,018, Cl. 350-216.000.
- Shrader, Terry Monroe, to RCA Corporation. Cathode-ray tube having an internal-external magnetic shield and degaussing combination. 3,867,668, Cl. 315-8.000.
- Sidoti, Daniel Robert: *See—*
  - Sucher, Robert William; Robbins, Ernest Aleck; Sidoti, Daniel Robert; Schuldt, Erich Henry, Jr.; and Seeley, Robert Dudley, 3,867,554.
- Sieber, Charles W., to United States of America, Navy. Self-deploying variable float pendant. 3,866,561, Cl. 114-235.00B.
- Siegel, Bernard: *See—*
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- Siegwart, Hans-Rudolf: *See—*
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- Sikorski, Thaddeus John, to Standard Metal Products. Free flow device for container unscramblers. 3,866,739, Cl. 198-30.000.
- Silina, Elena Petrovna: *See—*
  - Grekov, Nikolai Alexandrovich; Arkovenko, Galina Ivanovna; Silina, Elena Petrovna; Shifriṇa, Natalia Petrovna; Sazonova, Tamara Nikolaevna; Kleimenov, Vasily Yakovlevich; Kvater, Josif Sholomovich; Zlatkin, Moisei Grigorievich; Mirmelshtein, Valdislav Alexandrovich; and Potapov, Alexei Ivanovich, 3,867,208.
- Simm, Walter, to Agfa-Gevaert Aktiengesellschaft. Process for the electrographic recording of charge images. 3,867,674, Cl. 317-262.00A.
- Simon, Alan J.: *See—*
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- Simon, Stefan, to Dr. Carl Hahn GmbH. Method and apparatus for the continuous transfer of longitudinally extending workpieces. 3,866,737, Cl. 198-22.00R.
- Simonet, Guy; and Pivard, Claude, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Cryogenic separation of an air feed using multi-zone adsorption units. 3,866,428, Cl. 62-18.000.
- Simonsen, Karlo Buchvaldt, to Northern Electric Company, Limited. Telephone transmitter circuit. 3,867,576, Cl. 179-1.00A.
- Simonson, Alden D.: *See—*
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- Simpson, William R., to Sandoz-Wander, Inc. 2-Alkyl-4-substituted amino-quinazolines and nitrates thereof. 3,867,387, Cl. 260-256.40Q.
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- Singer Company, The: *See—*
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- Sinks, Allen J.; Shearer, Gordon T.; and Pedersen, Vernon, to Dacor Corporation. Divers buoyancy vest. 3,866,253, Cl. 9-313.000.
- Sinloihi Co.: *See—*
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- Sippican Corporation, The: *See—*
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- Skarbo, Roald R.; Galin, Walter E.; and Natwig, David L., to Kennecott Copper Corporation. Cobalt stripping from oximes. 3,867,506, Cl. 423-139.000.
- SKF Industrial Trading and Development Company B.V.: *See—*
  - Garrett, Roy Peter; Parkins, Derek Ray; and Kiener, Heinz, 3,866,732.
- SKF Kugellagerfabriken GmbH: *See—*
  - Diem, Rudolf, 3,866,775.
- Skinner, Frank R., II. Multiple prehension manipulator. 3,866,966, Cl. 294-106.000.
- Skoch, Edward L.; Anderson, Sigfried W.; and Slogick, Ronald R., to Versatile Industries, Inc. Multi-size adapters. 3,866,950, Cl. 285-4.000.
- Skonieczny, Raymond S. Variably positionable article and support assembly therefor. 3,866,548, Cl. 108-79.000.
- Skrabak, Michal; Vavrik, Ernest; Jadubik, Juraj; and Kolarik, Stanislav. Twin-wire multi-ply paper making machine. 3,867,252, Cl. 162-268.000.
- Skuttle Manufacturing Company: *See—*
  - Yeagle, Richard J., 3,867,485.
- Slagel, Edwin C., to Goodyear Aerospace Corporation. Protective shield. 3,866,242, Cl. 2-2.500.
- Slator, Damon T.; and Peil, Archie W., to Bowen Tools, Inc. Joint locking device. 3,866,954, Cl. 285-82.000.
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- Sljusarev, Jury Evgenievich: *See—*
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- Sloan, Albert H. Jet water pump apparatus. 3,867,070, Cl. 417-34.000.
- Slogick, Ronald R.: *See—*
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- Smith, David A.; and Tollefsbol, Werner L., to SmithKline Corporation. Device for testing the torque required to release a screw cap from its tightened position. 3,866,463, Cl. 73-99.000.
- Smith, Dexter A.; and Lang, Richard, to Bowen Engineering, Inc. Spray dryer chamber collection system embodying a fluidized bed. 3,867,234, Cl. 159-4.00D.
- Smith, Elmer M. Safety device for actuating a brake. 3,866,723, Cl. 188-109.000.
- Smith, Ernest L., to Phillips Petroleum Company. Packaging tray. 3,866,818, Cl. 229-30.000.
- Smith, Hubert Irvin; and Ott, Fred L., to Drill-Au-Mation, Inc. Drill pipe monitoring systems. 3,866,468, Cl. 73-151.000.
- Smith International, Inc.: *See—*
  - Garner, Lloyd L., 3,866,987.
- Smith, Lester L. Pivotal support and guide hardware for folding doors. 3,866,658, Cl. 160-206.000.
- Smith, Leward N.: *See—*
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- Smith, Stephen Hagar, to McCulloch Corporation. Motor field strength variable brush pressure apparatus and method. 3,867,679, Cl. 318-542.000.
- Smith, Thomas R. Drive belt construction. 3,866,483, Cl. 74-231.00C.
- Smith, Tom F., to United States T.R.A.D. Corporation. Rack assembly. 3,867,024, Cl. 353-82.000.
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- Snyder, Stephen L. Riser controls for gliding parachutes. 3,866,862, Cl. 244-152.000.
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- Societa Italiana Resine S.I.R. S.p.A.: *See—*
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- Soehnle, Karl; Scheerer, Richard; Gutzy, Klaus; Busse, Rido; and Rapp, Reinhold, to Murrhardter Waagenfabrik Gebr. Soehnle. Personnel scale apparatus. 3,866,699, Cl. 177-34.000.
- Solano, William E., to Salem Corporation. Fuel incineration system for calciner. 3,867,261, Cl. 202-263.000.

- Sommer, Richard; and Wolfrum, Gerhard, to Bayer Aktiengesellschaft. Dyestuffs containing a (benzenesulphonyl)-substituted sulphonamide first component and an indole first component. 3,867,369, Cl. 260-165.000.
- Sommerfield, Edmund H.: *See—*
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- Sorensen, Robert; Scarnato, Thomas J.; and Patterson, N. Donald, to International Harvester Company. Forage blower outlet. 3,867,064, Cl. 415-201.000.
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- Souvenir/Inc.: *See—*
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- Spanninger, Philip A., to Goodyear Tire & Rubber Company, The. Thermoplastic linear fiber forming polyester resins having improved anionic dyeability. 3,867,479, Cl. 260-860.000.
- Sparks, Charles Howard, deceased (by Sparks, Margaret J., executrix). Graft tubes. 3,866,247, Cl. 3-1.000.
- Sparks, Charles Howard, deceased (Sparks, Margaret J., executrix). Apparatus for growing graft tubes in place. 3,866,609, Cl. 128-303.00R.
- Sparks, Margaret J., executrix: *See—*
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- Spencer, Donald J., to Westinghouse Electric Corporation. Adjustable damper control mechanism. 3,866,437, Cl. 62-408.000.
- Spencer, Willard E., to Boeing Company, The. Wide range pressure controlled spark gap. 3,867,663, Cl. 313-146.000.
- Spengler, Ernst. Pull down jaw. 3,866,898, Cl. 269-138.000.
- Sperry Rand Corporation: *See—*
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- Spindler, Walter, to H & H Licensing Corporation. Screw compressor with rotor sections. 3,867,076, Cl. 418-201.000.
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- Stachel, Aldolf, deceased: *See—*
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- Stahly, Eldon E.: *See—*
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- Stahmann, Mark A.; and Wagle, Sudhakar S., to Kremers-Urban Company. Penicilloyl-polylysine conjugates having dextro-rotary optical activity, and methods for their preparation and use. 3,867,365, Cl. 260-112.500.
- Stainer, Arthur Thomas, to Jack Smith (Gunmakers) Limited. Holder for golf ball position marker and a marker therefore. 3,866,749, Cl. 206-234.000.
- Stakeman, John S. Apparatus. 3,866,605, Cl. 128-70.000.
- Stamicarbon N.V.: *See—*
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- Staranick, Steve; and Garrison, Jerome R. Spare tire carrier. 3,866,777, Cl. 214-454.000.
- Starkweather, Gary K.; and Damouth, David E., to Xerox Corporation. Flying spot scanner. 3,867,571, Cl. 178-7.600.
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- Steigerwald, Carl J., to TRW Inc. Printed circuit edge connector. 3,866,319, Cl. 29-629.000.
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- Stevens, Trevis E.; and Reed, Samuel F., Jr., to United States of America, Army. Ferrocene-containing monomers and copolymers. 3,867,213, Cl. 149-19.200.
- Stevenson, Graham T., to Dow Chemical Company, The. 4-Nitro-4'-(trifluoromethyl) carbanilide employed in animal husbandry. 3,867,544, Cl. 424-322.000.
- Steward, John, to Raymond Lee Organization, Inc., The, a part interest. Emergency plug for sealing openings. 3,866,560, Cl. 114-227.000.
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- Stone, William M.; and Braunschwig, John M., to General Electric Company. Dynamoelectric machine rotor assembly device and method. 3,866,314, Cl. 29-598.000.
- Stoner, Thomas A., to Bucyrus-Erie Company. Method and means for measuring the torque delivered by an electric motor. 3,867,678, Cl. 318-432.000.
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Sulkowski, Theodore S., to American Home Products Corporation. Imidazolinyl phenyl carbonyl compounds, acid addition salts and related compounds. 3,867,401, Cl. 260-309.600.
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von der Crone, Jost; Model, Ernst; and Pugin, Andre, to Ciba-Geigy Corporation. New isoindolinone pigments and process for their manufacture. 3,867,404, Cl. 260-325.0PH.
Von Meyer, William C.: *See—*
  Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,867,395.
von Pragenau, George L., to United States of America, National Aeronautics and Space Administration. Space vehicle. 3,866,863, Cl. 244-162.000.
Vorkapich, Theodore: *See—*
  Goodsell, Earl M., Jr.; and Vorkapich, Theodore, 3,866,686.
Vossnacke, Juergen: *See—*
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Vurek, Gerald G., to United States of America, Health, Education and Welfare. Measurement of carbon dioxide. 3,867,097, Cl. 23-254.00E.
Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See—*
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W. R. Grace & Co.: *See—*
  Elliott, Curtis H., Jr.; and Guidry, Hanson Lee, 3,867,310.
  Frank, Victor S.; Lard, Edwin W.; and Stahly, Eldon E., 3,867,344.
  Ketley, Arthur D., 3,867,150.
  Scherzer, Julius; and Albers, Edwin W., 3,867,307.
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  Kemner, Axel; and Conradt, Rudi, 3,866,625.
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Wagle, Sudhakar S.: *See—*
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Wagner, Kuno, to Bayer Aktiengesellschaft. Extremely low viscosity adducts of lactams with water or oximes. 3,867,373, Cl. 260-239.30R.
Wagner, Maria-Theresia, nee Eibes: *See—*
  Eibes, Carl B. H., deceased; Eibes, Christian; Eibes, Carl-Herwig; and Wagner, Maria-Theresia, nee Eibes, 3,866,510.
Wagner, Melvin H., to Universal Oil Products Company. Damped support screen for catalytic converter. 3,867,105, Cl. 23-288.00F.
Wagner, Richard F. Bender for contouring surgical implants. 3,866,458, Cl. 72-459.000.
Wakabayashi, Senzo; Kusaba, Akira; Koyano, Takayuki; Nakano, Sukenori; Kimura, Jin-Ichi; and Oyamada, Akira, to Nippon Kokan Kabushiki Kaisha. Method for dividing an elongated body into separate pieces. 3,866,449, Cl. 72-70.000.
Waldron, Noel E. Convertible ladder. 3,866,714, Cl. 182-22.000.
Wall, Henry H., Jr., to Ethyl Corporation. Production and purification of vinyl chloride. 3,867,263, Cl. 203-81.000.
Wallace-Murray Corporation: *See—*
  Benisek, Edward F., 3,866,423.
Wallerstein, Leon, Jr., to Lord Corporation. Friction damper. 3,866,720, Cl. 188-67.000.
Walser, Armin: *See—*
  Earley, James Valentine; Fryer, Rodney Ian; and Walser, Armin, 3,867,370.
Walser, Donald C., to Canadian Patents and Development Limited. Veneer peeling with fluid injection. 3,866,642, Cl. 144-212.000.
Walser, Julius. Dental forceps. 3,866,324, Cl. 32-66.000.
Walter Rose KG: *See—*
  Heuser, Helmut; Stupp, Winfried; Penz, Heinz; Rose, Walter; and Muller, Siegfried, 3,866,291.
Waltz, Allen R.; and Eckel, Robert A., to United States of America, Navy. Quick warm-up lamp. 3,867,661, Cl. 313-26.000.
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Wangco Incorporated: *See—*
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Ward, John W., to Union Oil Company of California. Low pressure hydrocracking process. 3,867,277, Cl. 208-111.000.
Wardell, Everett B.: *See—*
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Warwick Electronics Inc.: *See—*
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Watanabe, Yutaka; Yamagishi, Fumiaki; and Ueno, Hiroshi, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Detergent compositions. 3,867,301, Cl. 252-108.000.
Waters, John Henry, to Dowty Hydraulic Units Limited. Hydraulic apparatus. 3,866,418, Cl. 60-420.000.
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Webb, Albert A.; and Tullis, James Paul, to Fowler, Knobbe & Martens; Hanson, Fred H.; Tullis, Paul J.; Massey, Robert M.; Mylne, John M.; and Webb, Albert A., a part interest to each. Ball canister and system for controlling cavitation in liquids. 3,866,630, Cl. 137-583.000.
Webber, Robert C. Method and apparatus for controlling refrigerant flow in cryogenic systems. 3,866,430, Cl. 62-115.000.
Weber, Ernesto Juan. Control device. 3,866,521, Cl. 92-95.000.
Weber, Ronald A.; and Rains, John K., to Exxon Production Research Company. Detent diverter. 3,866,628, Cl. 137-625.440.
Weed, Robert P.; Rosenberg, Gary; Bourkland, Quentin; and Overby, Robert E., to United Business Communications, Inc. Remote control for private automatic branch telephone exchange. 3,867,582, Cl. 179-18.0BE.
Weeks, Reginald Arthur; and Cowling, Derek Stanley, to Dufaylite Developments Limited. Packaging apparatus. 3,866,392, Cl. 53-160.000.
Wehner, William C., to International Engineering Service, Inc. Seat belt locking mechanism and alarm system. 3,866,854, Cl. 242-107.400.
Wehner, William C., to Crawford, Howard E.; and Hauke, Robert C. Resilient coil spring adjuster and method of fabrication. 3,866,896, Cl. 267-61.00S.
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  Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; and Weigert, Wolfgang, 3,867,438.
  Koberstein, Edgar; Luessling, Theodor; Noll, Ewald; Schaefer, Hans; and Weigert, Wolfgang, 3,867,345.
Weigl, John W., to Xerox Corporation. Transport arrangement for thin sheet material. 3,867,027, Cl. 355-8.000.
Weimer, Paul Kessler, to RCA Corporation. Circuit for amplifying charge. 3,867,645, Cl. 307-221.00D.
Weinert, Volker, to Agfa-Gevaert Aktiengesellschaft. Photographic copying arrangement with improved color compensation. 3,867,029, Cl. 355-38.000.
Weinhold, Karl. Device for the releasable fastening of hose or pipe ends. 3,866,956, Cl. 285-243.000.
Weir, Stanley M., to FMC Corporation. Loading and unloading conveyor. 3,866,768, Cl. 214-38.00B.
Welbergen, Gerald: *See—*
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Welbuilt Corporation: *See—*
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Weller, Peter A., to McCord Corporation. Energy absorbing bumper assembly. 3,866,963, Cl. 293-88.000.
Wemyss, William Alexander, to B. Rhodes & Son Limited. Rectangular flowmeter. 3,866,469, Cl. 73-229.000.
Wener, Harry, to International Education Sewing Manual, Inc. Cantilever sewing machine table. 3,866,991, Cl. 312-29.000.
Wening, Richard R. Battery terminal connector and housing assembly. 3,867,007, Cl. 339-236.000.
Werner & Pfleiderer: *See—*
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West, Robert F., to Stanley Works, The. Combination vertical and horizontal plumb bob. 3,866,329, Cl. 33-392.000.
Westell, William, to Baird-Atomic, Inc. Optical alignment system. 3,867,038, Cl. 356-172.000.
Western Electric Company, Incorporated: *See—*
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  Pfahl, Robert Christian, Jr.; and Ammann, Hans Hugo, 3,866,307.

Western Kraft Corporation: *See—*
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Westfall, James E., to Continental Can Company, Inc. Composite closure. 3,866,782, Cl. 215-253.000.
Westinghouse Electric Corporation: *See—*
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  Driver, Michael C.; and Geisler, Martin J., 3,866,310.
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  Nagel, George W., 3,866,731.
  O'Keeffe, Terence W.; and Simon, Alan J., 3,867,148.
  Pearce, Henry A., Jr., 3,866,460.
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Weyerhaeuser Company: *See—*
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Whalen, Charles C. Candle lamp. 3,867,625, Cl. 240-13.000.
Whalen, Raymond Stephen, Jr. Combined vice and saw guide. 3,866,897, Cl. 269-87.200.
Whang, Jong Jai, to Rohm and Haas Company. Low molecular weight acrylic modifiers for rigid vinyl halide polymers. 3,867,481, Cl. 260-899.000.
Wharmby, David Osborn: *See—*
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White, Robert R., to Gulf & Western Industries, Inc. Programmable divider for combined counter and timer. 3,867,614, Cl. 235-92.00T.
Whitehead & Kales Company: *See—*
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Whitehurst, Gerald E.; and Oestmann, Eldon D., to Caterpillar Tractor Company. Air-cooled enclosure for an engine. 3,866,580, Cl. 123-41.700.
Whitehurst, Gerald E., to Caterpillar Tractor Company. Track roller. 3,866,985, Cl. 308-20.000.
Whitsell, Darrel Michael: *See—*
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Whyte, Thaddeus E., Jr.: *See—*
  Fischer, Ronald H.; Ciric, Julius; and Whyte, Thaddeus E., Jr., 3,867,282.
Widlund, Charles R., to Ametek, Inc. Automotive gauge flood-lighted dial. 3,867,623, Cl. 240-2.100.
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Wightman, Lawrance W.; Gebhart, Howard C.; and Tichy, Nick, to Emerson Electric Co. Joint construction. 3,867,047, Cl. 403-242.000.
Wilcox, Merrill. 2-Nitrophenylhydrazines. 3,867,452, Cl. 260-569.000.
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William Boulton Limited: *See—*
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William H. Rorer, Inc.: *See—*
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Williams, Richard; and Willis, Alfred Henry, deceased (by Princeton Bank and Trust Co., executor), to RCA Corporation. Method for recording fingerprints. 3,867,165, Cl. 117-0.500.
Willis, Alfred Henry, deceased: *See—*
  Williams, Richard; and Willis, Alfred Henry, deceased, 3,867,165.
Willm, Yves; Thiery, Jean; Chatard, Michel; and Grolet, Pierre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Device for continuously pulling an elongated member. 3,866,882, Cl. 254-29.00R.
Wilpers, Dale J., to Shell Oil Company. Method of quench hardening with oil comprising mono (polyisobutenyl) succinimide. 3,866,603, Cl. 148-29.000.
Wilson, Bertram A. Soffit lighting unit. 3,867,626, Cl. 240-73.00R.
Wilson, Charles D., to Xerox Corporation. Magnetic brush developing apparatus for copiers. 3,866,564, Cl. 118-10.000.
Wilson, David T.: *See—*
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Winter, Joseph; Shapiro, Eugene; and Smith, Warren F., to Olin Corporation. Method for producing multiple gauge strip. 3,866,451, Cl. 72-199.000.
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Witt, Wolfram: *See—*
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Woelk, Hans-Ulrich: *See—*
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Wojslawowicz, Jack Edward, to RCA Corporation. Monostable switching circuit. 3,867,651, Cl. 307-273.000.
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Wolfberg, Larry B.; and Harper, John. Cross-perforating of continuously moving, superimposed leaves. 3,866,497, Cl. 83-30.000.
Wolfberg, Larry B.; and Harper, John, to Service Business Forms, Inc. Cross-perforating of continuously moving, superimposed leaves. 3,866,500, Cl. 83-300.000.
Wolfrum, Gerhard: *See—*
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Womble, John M.: *See—*
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Woo, Gar Lok; and House, Ralph. Synthetic detergent bars containing calcium olefin sulfonates. 3,867,317, Cl. 252-555.000.
Wooden, John A., to Brookside Corporation. Circular clamp for tubes. 3,867,055, Cl. 403-373.000.
Woods, Carroll E. Cord retractor for electric iron. 3,866,869, Cl. 248-51.000.
Woods, Gary W.: *See—*
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Wunder, William G., to Prince Corporation. Die casting apparatus. 3,866,666, Cl. 164-327.000.
Wuthrich, Paul, to Timex Corporation. Stem locking mechanism for electric calendar watches. 3,866,407, Cl. 58-58.000.
Wycoff, Keith H. Tone operated single side-band communication system. 3,867,700, Cl. 325-50.000.
Wynn, Lawrence V. Cloth measuring device. 3,866,325, Cl. 33-129.000.
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  Bergfjord, John Alf; Grammatica, Steven James; and Radler, Richard William, 3,867,141.
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Yamagishi, Fumiaki: *See—*
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Yamamoto, Albert K., to Tridair Industries. Unitary lock nut assembly. 3,866,878, Cl. 248-500.000.

Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Mori, Kazuo; Kume, Yoshiharu; and Izumi, Takahiro, to Sumitomo Chemical Company, Limited. Benzodiazepine process. 3,867,372, Cl. 260-239.30D.

Yamamoto, Michihiro: *See—*
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Mori, Kazuo; Kume, Yoshiharu; and Izumi, Takahiro, 3,867,372.

Yamamuro, Isao, to Pioneer Electronic Corporation. Magnetic circuit for an electro-acoustic converter. 3,867,587, Cl. 179-115.50R.

Yamanouchi Pharmaceutical Co., Ltd.: *See—*
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Yamauchi, Hiroyuki; and Ohya, Masahiro, to Sony Corporation. Battery charger with means for preventing overcharging of the battery. 3,867,682, Cl. 320-39.000.

Yanagawa, Nobuyuki, to Ricoh Co., Ltd. Information card selection and retrieval method and apparatus. 3,866,755, Cl. 209-80.500.

Yates, William W.; and Braun, Herman J., to Westinghouse Electric Corporation. Generator having shielded current transformers positioned therein. 3,867,657, Cl. 310-68.00D.

Yeagle, Richard J., to Skuttle Manufacturing Company. Humidifier with automatic flushing. 3,867,485, Cl. 261-7.000.

Yeda Research and Development Co., Ltd.: *See—*
Vofsi, David; Levy, Moshe; Daren, Stephen; and Cohen, Ella, 3,867,468.

Yee, Allan, to Welbuilt Corporation. Microwave oven. 3,867,605, Cl. 219-10.55D.

Yih, James, to Microma Incorporated. Method of manufacturing liquid crystal display. 3,866,313, Cl. 29-592.000.

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Young, Dean Arthur, to Union Oil Company of California. Hydrocarbon cracking with catalytic phosphate-silica-aluminosilicate compositions of improved crushing strength. 3,867,279, Cl. 208-114.000.

Young, Dean Arthur, to Union Oil Company of California. Method of preparing crystalline "I" zeolite. 3,867,512, Cl. 423-329.000.

Young, Robert D., to Canyon Research Corporation. Counting devices. 3,866,828, Cl. 235-98.00R.

Yourich, Adolph J.: *See—*
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Zabotin, Alexandr Alexandrovich: *See—*
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Zenith Radio Corporation: *See—*
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Zenith Time S.A.: *See—*
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Zepp, Philip H.; and Mancini, Lawrence R., to Hoover Company, The. Top die shoe auxiliary restraint. 3,866,459, Cl. 72-462.000.

Ziegler, William H.; and Woods, Gary W., to United States of America, Army. Adjustable rotary sensors for a self-restoring fluidic mortar support system. 3,866,515, Cl. 89-37.00C.

Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of making a stabilized super-conductor. 3,866,315, Cl. 29-599.000.

Zimdahl, Walter: *See—*
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Zimmer Aktiengesellschaft: *See—*
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Zimmermann, Ernest H., Jr., to Brunswick Corporation. Untwisting mechanism. 3,866,403, Cl. 57-1.0UN.

Zimmers, Melvin; and Gerber, Gary A., to Coleco Industries, Inc. Convertible table tennis table assembly. 3,866,913, Cl. 273-30.000.

Zito, Susan V.: *See—*
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Zollinger, Howard A.; and Lubbers, Le Roy, to Rapistan Incorporated. Mobile tier picking apparatus for a warehousing system. 3,866,767, Cl. 214-16.40B.

Zucker, Jonas; Trask, Russell; and Costa, Edward, to United States of America, Army. Nitrocellulose doublebase propellant containing ternary mixture of nitrate esters. 3,867,214, Cl. 149-100.000.

Zucker, Jonas; Trask, Russell L.; and Costa, Edward, to United States of America, Army. Nitrocellulose double-base propellant containing butanetrioltrinitrate. 3,867,215, Cl. 149-100.000.

Zuckerman, Mathew M., to Envirotech Corporation. Adsorption system. 3,867,293, Cl. 210-252.000.

Zukowski, Raymond Lewis: *See—*
Goudie, John Willard; and Zukowski, Raymond Lewis, 3,866,907.

Zumsteg, Horst, to Swiss Aluminium Ltd. Multi-compartment container. 3,866,820, Cl. 229-43.000.

Zutter, Hans: *See—*
Felder, Ernst; Pitre, Davide; and Zutter, Hans, 3,867,431.

Zwinge, Kurt, to Emil Linde, Firma. Apparatus for assembling roller chain elements. 3,866,410, Cl. 59-4.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Automated Analyzers, Inc.: *See—*
Maxon, Theodore. Re. 28,339.

Foulks, William S., Jr.: *See—*
Stewart, Elmer C., and Foulks. Re. 28,340.

Kerr, George T.: *See—*
Wadlinger, Robert L., Kerr, and Rosinski. Re. 28,341.

Kewanee Oil Co.: *See—*
Stewart, Elmer C., and Foulks. Re. 28,340.

Lasswell, Tull C., and J. L. Monier. Precoated plug. Re. 28,342, 2–18–75, Cl. 220—358.

Maxon, Theodore, to Automated Analyzers, Inc. Analysis arrangement for multiple analyses of a single sample. Re. 28,339, 2–18–75, Cl. 23—253.

Mobil Oil Corp.: *See—*
Wadlinger, Robert L., Kerr, and Rosinski. Re. 28,341.

Monier, John L.: *See—*
Lasswell, Tull C., and Monier. Re. 28,342.

Rosinski, Edward J.: *See—*
Kerr, George T., Wadlinger, and Rosinski. Re. 28,341.

Stewart, Elmer C., and W. S. Foulks, Jr., to Kewanee Oil Co. Thermoluminescent radiation pellets. Re. 28,340, 2–18–75, Cl. 264—21.

Wadlinger, Robert L., G. T. Kerr, and E. J. Rosinski, to Mobil Oil Co. Catalytic composition of a crystalline zeolite. Re. 28,341, 2–18–75, Cl. 208—120.

LIST OF DESIGN PATENTEES

ABC Industries, Inc.: *See—*
Gallasch, Ned H. 234,377.

Amerock Corp.: *See—*
Tegner, Raymond U. H. 234,338.

Amoroso, Nicholas A., to Bright Star Industries, Inc. Bicycle reflector. 234,347, 2–18–75, Cl. D10—111.

Andersson, Viktor. Changeable distress flag. 234,346, 2–18–75, Cl. D10—109.

Baldwin, Robert E. Computing device. 234,372, 2–18–75, Cl. D64—11.

Beckert, Rudolph W., Jr., to United Aircraft Corp. Helicopter with coaxial rotors. 234,350, 2–18–75, Cl. D12—74.

Bingham, John A. Combined velocipede and carrier. 234,353, 2–18–75, Cl. D12—112.

Bingham, John A. Combined velocipede and carrier. 234,351, 2–18–75, Cl. D12—107.

Block, Clarence F., to Production Metal Products Co., Inc. Universal sheld divider locking device. 234,337, 2–18–75, Cl. D8—109.

Boldt, Melvin H., to National Presto Industries, Inc. Combined can opener and knife sharpener. 234,336, 2–18–75, Cl. D8—35.

Braun Aktiengesellschaft: *See—*
Oberheim, Robert. 234,370.

Bright Star Industries, Inc.: *See—*
Amoroso, Nicholas A. 234,347.

Campbell, Laurie J., and C. S. Cook, to Louis Marx, & Co. Inc. Bicycle. 234,352, 2–18–75, Cl. D12—111.

Cambello, Vincent J., to James I. Fisher. Food and beverage service device for changing the temperature of food and beverage containers and their contents. 234,373, 2–18–75, Cl. D67—4.

Cole, Richard C. Runabout power boat. 234,349, 2–18–75, Cl. D12—62.

Cook, Calvin S.: *See—*
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Del Vecchio, Michael. Aquatic tow disc. 234,363, 2–18–75, Cl. D34—42.

Duncan, Ernest R. Teaching machine. 234,360, 2–18–75, Cl. D25—1.

Figur, Bernd, to Rowenta-Werke GmbH. Pocket lighter. 234,361, 2–18–75, Cl. D27—36.

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Holben, Clair D., and J. J. Humphrey, to C. A. Norgren, Co. Regulator for pressurized fluid. 234,359, 2–18–75, Cl. D23—21.

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Holben, Clair D., and Humphrey. 234,359.

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Janome Sewing Machine Co., Ltd.: *See—*
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Kelton, Robert L. Steer roping trainer or the like. 234,354, 2–18–75, Cl. D19—59.

King, James A., Sr., to J. A. King, & Co. Scale. 234,345, 2–18–75, Cl. D10—91.

King, J. A., & Co.: *See—*
King, James A., Sr. 234,345.

Lever, Paul H., to Fireplace Corp. of America. Freestanding fireplace. 234,358, 2–18–75, Cl. D23—97.

Leavitt, Marie. Doll or similar article. 234,365, 2–18–75, Cl. D34—4.

Mantelet, Jean, to Societe Anonyme Maulinex. Food mixer power unit. 234,333, 2–18–75, Cl. D7—158.

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Mims, Martin J., to The Hoover Co. Cleaner or the like. 234,334, 2–18–75, Cl. D7—165.

Moses, John E., to John Dale, Ltd. Pallet. 234,348, 2–18–75, Cl. D12—53.

Mueller, Thomas R. Glass marble turtle. 234,362, 2-18-75, Cl. D34—2.

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Oberheim, Robert, to Braun Aktiengesellschaft. Flash unit for a photographic camera. 234,370, 2–18–75, Cl. D61—1.

Olson, Richard J. Microfilm retrieval terminal. 234,371, 2–18–75, Cl. D61—1.

Plush, Frank E. Horse shoe game scoring device. 234,364, 2–18–75, Cl. D34—5.

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Schick, George L., to Warner-Lambert Co. Combined dispensing cap and heater for a pressurized container. 234,340. 2–18–75. Cl. D9—258.

Schick, George L., to Warner-Lambert Co. Combined dispensing cap and heater for a pressurized container. 234,341, 2–18–75, Cl. D9—258.

Schick, George L., to Warner-Lambert Co. Combined dispensing cap and heater for a pressurized container. 234,342, 2-18-75, Cl. D9—258.
Schick, George L., to Warner-Lambert Co. Combined dispensing cap and heater for a pressurized container. 234,343, 2-18-75, Cl. D9—258.
Schick, George L., to Warner-Lambert Co. Combined dispensing cap and heater for a pressurized container. 234,344, 2-18-75, Cl. D9—258.
Shiffman, Jerome. Jewelry box. 234,339, 2-18-75, Cl. D9—230.
Starrett, Richard F. Contact refrigeration unit for chilling drinking vessels. 234,374, 2-18-75, Cl. D67—4.
Tada, Satoshi, to France Bed Co., Ltd. Chair. 234,332, 2-18-75, Cl. D6—76.
Tegner, Raymond U. H., to Amerock Corp. Escutcheon for a door knob and the like. 234,338, 2-18-75, Cl. D8—179.
Uchida, Koji, to Janome Sewing Machine Co., Ltd. Case for sewing machine. 234,378, 2-18-75, Cl. D87—1.

United Aircraft Corp.: *See*—
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Warner-Lambert Co.: *See*—
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Wicker Works, The: *See*—
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Rocchia, Peter A. 234,330.
Rocchia, Peter A. 234,331.

Wolfard, Jon. Oil lamp. 234,367, 2-18-75, Cl. D48—24.

Zelenko, Harry. Three-dimensional game board or similar article. 234,366, 2-18-75, Cl. D34—5.

Zeiss-Stiftung, Carl: *See*—
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 18, 1975

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60	3,867,134
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CLASS 123	
8.45	3,866,578
25A	3,866,579
41.7	3,866,580
51B	3,866,581
53A	3,866,582
97B	3,866,583
	3,866,584
119A	3,866,585
	3,866,586
122F	3,866,587
124R	3,866,588
148OR	3,866,590
148R	3,866,589
179K	3,866,591
CLASS 124	
24R	3,866,592
CLASS 126	
91A	3,866,593
112	3,866,594
121	3,866,595
208	3,866,596
CLASS 127	
5	3,867,194
22	3,867,195
CLASS 128	
1R	3,866,597
	3,866,598
2L	3,866,599
2.1R	3,866,600
4	3,866,601
6	3,866,602
64	3,866,604
70	3,866,605
71	3,866,606
92R	3,866,607
276	3,866,608
303R	3,866,609
322	3,866,610
346	3,866,611
401	3,866,612
408	3,866,613
419D	3,866,615
419P	3,866,614
	3,866,616
484	3,866,617
CLASS 132	
76.4	3,866,618
CLASS 134	
25R	3,867,197
29	3,867,198
CLASS 135	
15PQ	3,866,619
CLASS 136	
28	3,867,199
36	3,867,200
86D	3,867,206
114	3,867,201
232	3,867,205
CLASS 137	
83	3,866,620
99	3,866,621
102	3,866,622
	3,866,623
234.6	3,866,624
269	3,866,625
322	3,866,626
512.5	3,866,627
583	3,866,630
608	3,866,629
625.44	3,866,628
CLASS 138	
125	3,866,631
130	3,866,632
	3,866,633
CLASS 139	
79	3,866,634
CLASS 141	
45	3,866,635
59	3,866,636
226	3,866,637
352	3,866,638
CLASS 144	
2Z	3,866,639
3R	3,866,640
32	3,866,641
212	3,866,642
241	3,866,643
288C	3,866,644
326C	3,866,645
CLASS 148	
1.5	3,867,196
6.14R	3,867,207
11.5R	3,867,208
12.7	3,867,209
16	3,867,210
20.6	3,866,603
31.55	3,867,211
127	3,867,212
175	3,867,202
187	3,867,203
188	3,867,204
CLASS 149	
19.2	3,867,213
100	3,867,214
	3,867,215
CLASS 150	
1.5	3,866,646
30	3,866,647
39	3,866,648
52R	3,866,649
CLASS 151	
21C	3,866,650
CLASS 152	
313	3,866,651
317	3,866,652
365	3,866,653
CLASS 156	
2	3,867,216
3	3,867,217
8	3,867,218
17	3,866,398
72	3,867,219
73.6	3,867,220
77	3,867,221
107	3,867,222
123	3,867,223
182	3,867,224
209	3,867,225
229	3,867,226
249	3,867,227
405	3,867,228
415	3,867,231
417	3,867,229
	3,867,230
502	3,867,232
571	3,867,233
CLASS 157	
1.1	3,866,654
1.24	3,866,655
CLASS 159	
4D	3,867,234
CLASS 160	
84	3,866,656
181	3,866,657
206	3,866,658
349D	3,866,659
CLASS 161	
2	3,867,235
24	3,867,237
37	3,867,238
	3,867,239
41	3,867,240
42	3,867,241
57	3,867,242
65	3,867,243
88	3,867,247
	3,867,248
116	3,867,249
133	3,867,244
143	3,867,245
145	3,867,236
271	3,867,250
CLASS 162	
30	3,867,251
76	3,867,246
268	3,867,252
CLASS 164	
108	3,866,660
114	3,866,661
123	3,866,662
155	3,866,663
281	3,866,665
283M	3,866,664
327	3,866,666
334	3,866,667
CLASS 165	
1	3,866,668
27	3,866,669
47	3,866,670
50	3,866,671
	3,866,672
120	3,866,673
166	3,866,674
173	3,866,675
CLASS 166	
.5	3,866,676
.6	3,866,677
66	3,866,678
77	3,866,679
273	3,866,680
285	3,866,681
	3,866,682
292	3,866,683
294	3,866,684
	3,866,685
CLASS 169	
39	3,866,686
61	3,866,687
CLASS 172	
311	3,866,688
	3,866,689
CLASS 173	
15	3,866,690
48	3,866,692
49	3,866,693
73	3,866,746
75	3,866,694
CLASS 174	
36	3,867,564
120SC	3,867,565
146	3,867,566
CLASS 175	
5	3,866,696
	3,866,697
53	3,866,698
228	3,866,695
CLASS 176	
40	3,867,253
87	3,867,254
CLASS 177	
34	3,866,699
CLASS 178	
3	3,867,567
5.8AF	3,867,568
7.1	3,867,569
7.2	3,867,570
7.6	3,867,571
	3,867,572
17.5	3,867,573
67	3,867,574
69.5TV	3,867,575
CLASS 179	
1A	3,867,576
2R	3,867,577
6E	3,867,578
15A	3,867,579
16EA	3,867,580
18BD	3,867,581
18BE	3,867,582
18E	3,867,583
84C	3,867,584
84T	3,867,585
115.5H	3,867,586
115.5R	3,867,587
175.3R	3,867,588
175.31R	3,867,589
CLASS 180	
6.48	3,866,700
14C	3,866,701
65R	3,866,702
	3,866,703
68.5	3,866,704
79.2B	3,866,705
79.2R	3,866,706
127	3,866,707
CLASS 181	
33R	3,866,708
114	3,866,709
159	3,866,710
176	3,866,711
178	3,866,712
CLASS 182	
2	3,866,713
22	3,866,714
45	3,866,715
CLASS 184	
14	3,866,716
CLASS 187	
19	3,866,717
27	3,866,718
CLASS 188	
3R	3,866,719
67	3,866,720
72.6	3,866,721
75	3,866,722
109	3,866,723
129	3,866,724
134	3,866,725
CLASS 191	
12R	3,867,590
CLASS 192	
6R	3,866,726
13R	3,866,727
56R	3,866,728
84C	3,866,729
104C	3,866,731
111A	3,866,733
CLASS 193	
25B	3,866,734
CLASS 195	
5	3,867,255
11	3,867,256
81	3,867,257
99	3,867,258
	3,867,259
CLASS 197	
55	3,866,735
181	3,866,736
CLASS 198	
22R	3,866,737
27	3,866,738
30	3,866,739
34	3,866,740
35	3,866,741
175	3,866,742
195	3,866,743
278	3,866,744
CLASS 200	
52R	3,867,591
61.18	3,867,592
61.41	3,867,593
83P	3,867,594
86R	3,867,595
150R	3,867,597
153G	3,867,598
153J	3,867,596
153K	3,867,599
157	3,867,600
158	3,867,601
163	3,867,602
239	3,867,603
329	3,867,604
CLASS 202	
185E	3,867,260
263	3,867,261
CLASS 203	
41	3,867,262
81	3,867,263
CLASS 204	
4	3,867,264
28	3,867,265
39	3,867,266
51	3,867,267
119	3,867,268
158S	3,867,269
159.018	3,867,270
180G	3,867,271
194	3,867,272
195R	3,867,273
197	3,867,274
CLASS 206	
45.14	3,866,745
94	3,866,747
111	3,866,748
234	3,866,749
290	3,866,750
387	3,866,751
CLASS 208	
8	3,867,275
60	3,867,276
111	3,867,277
	3,867,278
114	3,867,279
120	Re.28,341
139	3,867,280
213	3,867,281
216	3,867,282
CLASS 209	
12	3,866,752
73	3,866,753
	3,866,754
74M	3,867,283
80.5	3,866,755
CLASS 210	
15	3,867,284
32	3,867,285
58	3,867,286
59	3,867,287
60	3,867,288
95	3,867,289
138	3,867,290
139	3,867,291
169	3,867,292
252	3,867,293
489	3,867,294
CLASS 211	
69.5	3,866,756
	3,866,992
105.1	3,866,757
107	3,866,758
CLASS 212	
8R	3,866,759
144	3,866,760
CLASS 214	
1QG	3,866,762
1P	3,866,761
6BA	3,866,763
8.5SS	3,866,765
8.5D	3,866,764
16.1E	3,866,766
16.4B	3,866,767
38B	3,866,768
44A	3,866,769
83.2	3,866,770
85	3,866,771
85.1	3,866,772
152	3,866,773
	3,866,774
340	3,866,775
450	3,866,776
454	3,866,777
508	3,866,778
621	3,866,779
655	3,866,780
778	3,866,781
CLASS 215	
253	3,866,782
254	3,866,783
321	3,866,784
341	3,866,845
CLASS 219	
10.55	3,867,605
	3,867,606
	3,867,607
73	3,867,608
137	3,866,284
150V	3,867,609
286	3,867,610
523	3,867,611
CLASS 220	
9D	3,866,785
10	3,866,786
19	3,866,787
	3,866,788
31S	3,866,793
44R	3,866,789
67	3,866,790
72	3,866,792
95	3,866,791
320	3,866,794
358	Re.28,342
CLASS 221	
150HC	3,866,795
152	3,866,796
263	3,866,797
CLASS 222	
52	3,866,798
63	3,866,799
94	3,866,800
146C	3,866,801
153	3,866,802
170.5	3,866,803
396	3,866,804
427	3,866,805
504	3,866,806
CLASS 223	
68	3,866,807
73	3,866,808
88	3,866,809
98	3,866,810
CLASS 224	
2B	3,866,811
CLASS 226	
50	3,866,812
CLASS 229	
8	3,866,814
	3,866,815
14B	3,866,816
15	3,866,817
30	3,866,818
	3,866,819
43	3,866,820
52B	3,866,821
69	3,866,822
CLASS 232	
35	3,866,823
43.2	3,866,824
CLASS 233	
1B	3,866,825
CLASS 235	
54A	3,866,826
61.11D	3,866,827
61.7R	3,867,612
92PC	3,867,613
92TC	3,867,615
92T	3,867,614
98R	3,866,828
151.1	3,867,616
151.3	3,866,829
151.32	3,867,617
153AC	3,867,618
156	3,867,619
181	3,867,620
CLASS 238	
8	3,866,830
CLASS 239	
4	3,866,831
18	3,866,832
76	3,866,833
167	3,866,834
177	3,866,835
	3,866,836
261	3,866,837
372	3,866,838
416.5	3,866,839
CLASS 240	
2P	3,867,622
2R	3,867,621
2.1	3,867,623
2.14	3,867,624
7.1R	3,866,840
13	3,867,625
73R	3,867,626
CLASS 241	
46.11	3,866,841
47	3,866,842
55	3,866,843
282.2	3,866,844
CLASS 242	
7.06	3,866,846
7.09	3,866,847
35.6E	3,866,848
47	3,866,849
65	3,866,853
68.4	3,866,850
75.43	3,866,851
82	3,866,852
107.4	3,866,854
184	3,866,855
188	3,866,856
CLASS 244	
17.25	3,866,857
32	3,866,858
77R	3,866,859
103S	3,866,860
118P	3,866,861
152	3,866,862
162	3,866,863
CLASS 248	
1	3,866,864
2	3,866,865
16	3,866,866
23	3,866,867
27	3,866,868
51	3,866,869
56	3,866,870
59	3,866,871
97	3,866,872
205A	3,866,873
251	3,866,874
359	3,866,877
363	3,866,875
429	3,866,876
500	3,866,878
CLASS 250	
199	3,867,627
206	3,867,628
225	3,867,629
239	3,867,630
281	3,867,631
292	3,867,632
334	3,867,633
360	3,867,634
396	3,867,635
445	3,867,636
503	3,867,637
505	3,867,638
550	3,867,639
573	3,867,640
CLASS 251	
145	3,866,879
297	3,866,880
CLASS 252	
33.4	3,867,295
	3,867,296
47.5	3,867,297
49.8	3,867,298
62.54	3,867,299
106	3,867,300
108	3,867,301
301.2R	3,867,302
301.6P	3,867,303
313S	3,867,304
437	3,867,305
452	3,867,306
455R	3,867,309
455Z	3,867,307
	3,867,308
	3,867,310
460	3,867,311
462	3,867,312
465	3,867,313
466PT	3,867,314
512	3,867,315
545	3,867,316
555	3,867,317
CLASS 254	
1	3,866,881
29R	3,866,882
93R	3,866,883
CLASS 256	
59	3,866,884
CLASS 259	
3	3,866,885
4	3,866,886
154	3,866,887

158	3,866,888
161	3,866,889
191	3,866,890
CLASS 260	
2A	3,867,318
2.5AJ	3,867,320
2.5R	3,867,319
17.4ST	3,867,321
18S	3,867,322
19R	3,867,323
23XA	3,867,325
23H	3,867,324
27BB	3,867,327
29.3	3,867,328
29.6NR	3,867,330
29.6H	3,867,329
31.8R	3,867,331
37N	3,867,326
40P	3,867,332
42.32	3,867,333
	3,867,334
42.52	3,867,335
45.7R	3,867,336
	3,867,339
45.75N	3,867,340
45.75R	3,867,341
45.8NT	3,867,337
45.85S	3,867,342
45.9P	3,867,338
46.5UA	3,867,343
47EN	3,867,344
59EP	3,867,346
63UY	3,867,347
70R	3,867,348
75M	3,867,349
77.5AM	3,867,350
77.5CR	3,867,351
77.5R	3,867,352
78.3R	3,867,353
78.4EP	3,867,354
79.1	3,867,356
	3,867,357
79.3R	3,867,355
79.5C	3,867,358
	3,867,359
79.7	3,867,360
88.2	3,867,361
91.7	3,867,362
112R	3,867,363
112.5	3,867,364
	3,867,365
121	3,867,366
125	3,867,367
165	3,867,369
239BD	3,867,370
239.1	3,867,371
239.3D	3,867,372
239.3R	3,867,373
239.3T	3,867,374
240B	3,867,376
240R	3,867,375
	3,867,377
243C	3,867,378
	3,867,379
	3,867,380
247.7R	3,867,381
248C	3,867,382
249.6	3,867,383
256.4C	3,867,385
256.4F	3,867,386
256.4Q	3,867,384
	3,867,387
268BC	3,867,388
268R	3,867,389
293.73	3,867,390
	3,867,391
294.8R	3,867,392
294.9	3,867,393
296T	3,867,394
308R	3,867,395
	3,867,396
	3,867,397
	3,867,398
309.2	3,867,399
309.5	3,867,400
309.6	3,867,401
310R	3,867,402
311	3,867,403
325PH	3,867,404
326D	3,867,406
326.5FL	3,867,405
335	3,867,407
340.9	3,867,408
346.2M	3,867,409
346.4	3,867,410
346.8A	3,867,411
	3,867,412
397.1	3,867,413
404.5	3,867,414
408	3,867,415
412.8	3,867,416
429K	3,867,417
429.2	3,867,418
439R	3,867,419
448.3R	3,867,420
457	3,867,421
465.8R	3,867,422
468D	3,867,423
471C	3,867,424
	3,867,425
472	3,867,426
473S	3,867,427
479C	3,867,428
	3,867,429
488CD	3,867,430
501.11	3,867,431
503	3,867,432
515A	3,867,433
	3,867,434
	3,867,435
518R	3,867,436
	3,867,437
525	3,867,439
530N	3,867,345
	3,867,438
535R	3,867,440
551S	3,867,441
555A	3,867,442
561HL	3,867,444
561A	3,867,445
561R	3,867,443
562B	3,867,446
564G	3,867,447
564R	3,867,448
566B	3,867,449
	3,867,450
569	3,867,451
	3,867,452
570AB	3,867,453
570.5P	3,867,454
570.6	3,867,455
574	3,867,456
590	3,867,457
600	3,867,458
601	3,867,459
606.5B	3,867,460
610A	3,867,461
611.5	3,867,462
618H	3,867,463
618R	3,867,464
	3,867,465
621R	3,867,466
622R	3,867,467
650R	3,867,468
659A	3,867,469
674SA	3,867,470
680R	3,867,471
	3,867,472
683.45	3,867,473
683.48	3,867,474
683.63	3,867,475
683.68	3,867,476
837R	3,867,477
857PG	3,867,478
860	3,867,479
873	3,867,480
899	3,867,481
924	3,867,482
954	3,867,483
961	3,867,484
CLASS 261	
7	3,867,485
29	3,867,486
41D	3,867,487
87	3,867,488
CLASS 264	
5	3,867,489
21	Re.28,340
24	3,867,490
29	3,867,491
45.3	3,867,494
45.9	3,867,493
46.6	3,867,492
51	3,867,495
71	3,867,496
81	3,867,497
88	3,867,498
182	3,867,499
216	3,867,500
219	3,867,501
263	3,867,502
313	3,867,503
326	3,867,504
CLASS 266	
5E	3,866,891
23K	3,866,892
33S	3,866,893
CLASS 267	
31	3,866,894
61S	3,866,896
65D	3,866,895
CLASS 269	
87.2	3,866,897
138	3,866,898
322	3,866,899
CLASS 270	
5	3,866,900
CLASS 271	
21	3,866,901
64	3,866,902
119	3,866,903
173	3,866,904
181	3,866,905
227	3,866,906
CLASS 272	
8R	3,866,907
73	3,866,908
76	3,866,909
80	3,866,910
CLASS 273	
1R	3,866,911
29A	3,866,912
30	3,866,913
44	3,866,691
55R	3,866,914
85R	3,866,915
105.2	3,866,916
120R	3,866,917
135AC	3,866,918
	3,866,919
138A	3,866,920
138R	3,866,921
164	3,866,922
CLASS 277	
9	3,866,813
24	3,866,923
59	3,866,924
164	3,866,925
166	3,866,926
CLASS 280	
11.12	3,866,927
11.35K	3,866,928
11.35T	3,866,929
	3,866,930
11.37B	3,866,931
12R	3,866,932
28	3,866,933
36C	3,866,934
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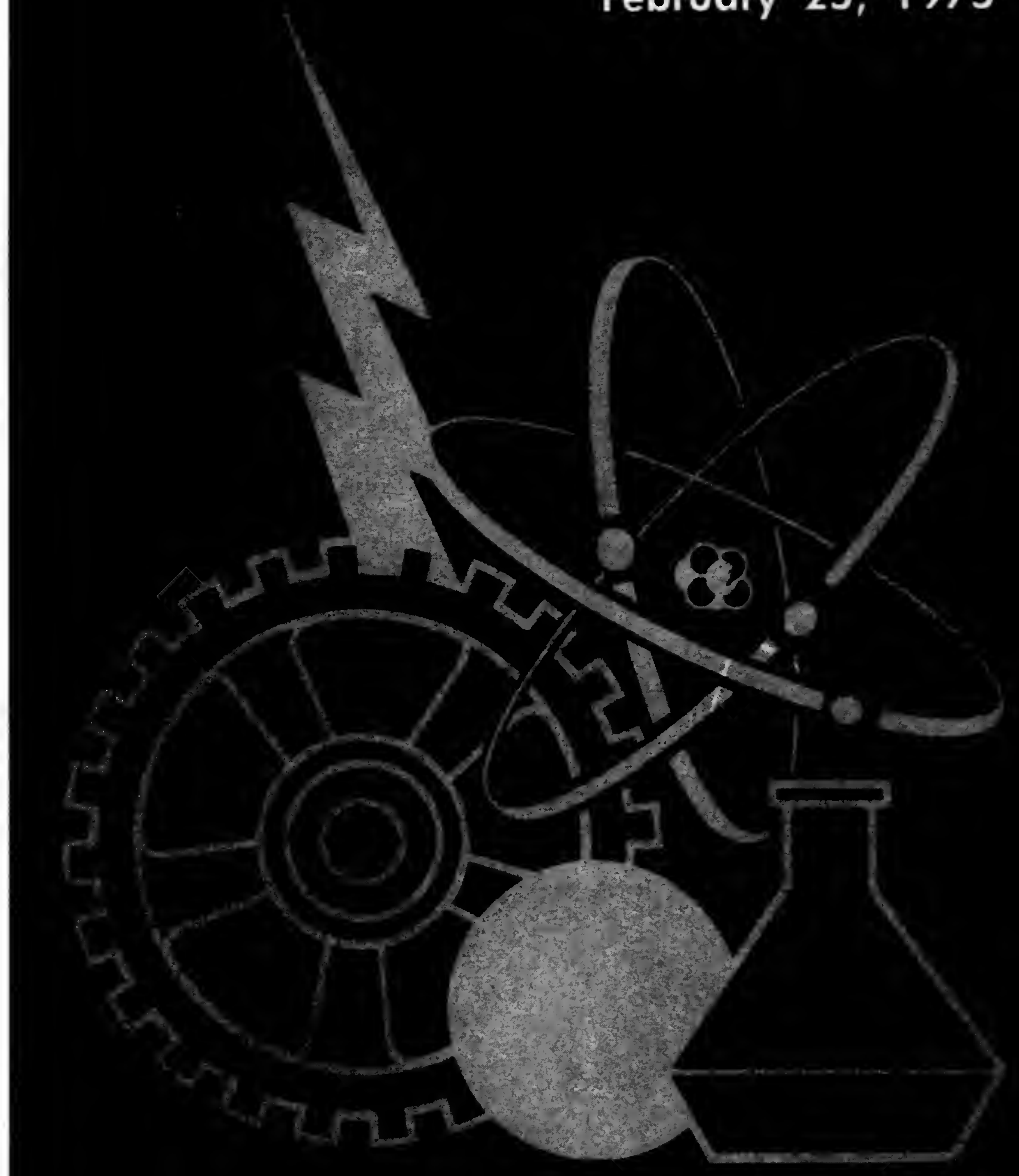
Vol. 931 Number 4

OFFICIAL GAZETTE

of the UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 25, 1975



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,975,330, Bell and Bloom, ELECTRODELESS DISCHARGE METHOD AND APPARATUS; **3,071,721,** H. G. Dehmelt, OPTICAL ABSORPTION MONITORING OF ORIENTED OR ALIGNED QUANTUM SYSTEMS; **3,150,313,** same, MODULATION OF A LIGHT BEAM BY ABSORBING QUANTUM SYSTEMS EXHIBITING A PERIODICALLY VARYING ALIGNMENT; **3,187,251,** W. E. Bell, QUANTUM OSCILLATORS; **3,246,254,** Bell and Bloom, ATOMIC STABILIZED FREQUENCY SOURCE; **3,256,500,** J. T. Arnold, OPTICAL MAGNETOMETERS; **3,267,360,** H. G. Dehmelt, OPTICAL ABSORPTION MONITORING OF ALIGNED ALKALI ATOMS; **3,363,193,** same, ADJUSTABLE FREQUENCY ATOMIC FREQUENCY STANDARD; **3,382,452,** Rempel, Swartz, Packard and Rorden, FREQUENCY STABILIZATION APPARATUS; **3,408,591,** A. L. Helgesson, TIME SCALE CHANGER FOR ATOMIC STABILIZED FREQUENCY SOURCES; **3,575,655,** H. G. Dehmelt, APPARATUS FOR OPTICALLY MONITORING THE GYROMAGNETIC RESONANCE OF QUANTUM SYSTEMS; **3,584,292,** same; **Re. 23,950,** Bloch and Hansen, METHOD AND MEANS FOR CHEMICAL ANALYSIS BY NUCLEAR INDUCTIONS, **filed** July 9, 1974, Court of Claims (District of Columbia), Doc. 250–74, *Varian Associates* v. *The United States.*

3,045,922, A. E. Jensen, SELF-ERECTING SPRINKLER HEAD FOR IRRIGATION PIPELINES, **filed** Aug. 5, 1974, D.C. Oreg. (Portland), Doc. C–74–616, *Arthur E. Jensen* v. *Western Irrigation and Manufacturing, Inc. et al.*

3,071,721. (See 2,975,330.)

3,150,313. (See 2,975,330.)

3,168,130, E. W. Turpin, WHEEL SUPPORTING AND TIRE DISMOUNTING APPARATUS; **3,267,977,** same, SUPPORT DEVICE FOR VEHICLE WHEELS, **filed** Feb. 3, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–121, *Big Four Automotive Equipment Corp.* v. *George Michael Jordan, doing business as Tire Service Equipment Representatives and Tire Handling Equipment Representatives.* Judgment—Claim 2 of 3,168,130 is valid and infringed by defendant; Claims 3 and 7 of 3,267,977 are infringed by defendant and are invalid. Defendant is enjoined, Aug. 16, 1974.

3,187,251. (See 2,975,330.)

3,246,254. (See 2,975,330.)

3,256,500. (See 2,975,330.)

3,267,360. (See 2,975,330.)

3,267,977. (See 3,168,130.)

3,319,384, E. T. Berg, CONSTRUCTION FOR EXTRUDED REGLETS, **filed** Sept. 10, 1974, D.C., N.D. Tex. (Dallas), Doc. CA3–74–881–B, *Edward T. Berg and Superior Concrete Accessories, Inc.* v. *Memco, Inc.*

3,358,658, M. V. Dadd, LUBRICANT FLOW METERING MEANS FOR ENGINE ROCKER ARM LUBRICATION SYSTEM; **Re. 25,154,** P. F. Bergmann, MEANS FOR METERING LUBRICATING OIL FROM AN HYDRAULIC TAPPET TO A HOLLOW PUSH ROD; **Re. 25,974,** M. V. Dadd, ROCKER ARM OIL CONTROL MEANS, **filed** Mar. 9, 1973, D.C.N.J. (Newark), Doc. C–330–73, *Johnson Products Inc.* v. *Welles Manufacturing Corp.* Consent judgment for permanent injunction as to Wells Mfg. Corp. on June 17, 1974.

3,363,193. (See 2,975,330.)

3,382,452. (See 2,975,330.)

3,408,591. (See 2,975,330.)

3,486,495, H. W. Allen, ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENTS, **filed** Sept. 10, 1974, D.C., E.D. Wash. (Spokane), Doc. C–74–210, *Allen Archery, Inc.* v. *Martin Archery, Inc. et al.*

3,515,779, R. L. Jones, MOLD AND METHOD FOR CASTING CONCRETE PANELS; **3,702,180,** same, MOLD FOR CASTING CONCRETE PANELS, **filed** Aug. 23, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–2469–JWC, *Robert L. Jones, Labr Ado, Inc.* v. *Vefo, Inc., Superior Concrete Accessories et al.*

3,524,680, L. T. White, MINING MACHINE HAVING SPIRAL CUTTERS WITH SCAVENGER BOARD; **3,640,580,** same, DUST ELIMINATING COAL-MINING APPARATUS, **filed** Aug. 16, 1974, D.C., E.D. Ky. (Lexington), Doc. 74–228, *Letcher T. White* v. *Jeffrey Mining Machinery Co., Jeffrey Galion, Inc. and Dresser Industries, Inc.*

3,575,655. (See 2,975,330.)

3,584,292. (See 2,975,330.)

3,594,255, W. D. Budinger, HICKEY ROLLER AND METHOD; **3,635,158,** same, ROLLER FOR PRINTING PRESS, **filed** June 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1372, *Rodel, Inc. and William D. Budinger* v. *American Roller Co.* Dismissed on plaintiff's motion 41 A(1)(i), Oct. 25, 1974.

3,635,158. (See 3,594,255.)

3,640,580. (See 3,524,680.)

3,658,589, R. E. Shaddock, CATCH BASIN AND SEWER PIPE CLEANER, **filed** May 2, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1143, *Myers-Sherman Company* v. *Bruce Municipal Equipment Inc.* Enter final consent decree, Dec. 17, 1973.

3,687,128, G. H. Williams, INSTANT WATER HEATER, **filed** Sept. 20, 1974, D.C. Utah (Salt Lake City), Doc. C–74–302, *Garold H. Williams* v. *Litton Systems, Inc. et al.*

3,702,180. (See 3,515,779.

3,722,399(*a*), J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS; **Re. 27,920,** same, **filed** Mar. 21, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c793, *Scovill Manufacturing Co.* v. *McGraw-Edison Company.* **Same, filed** Mar. 21, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c794, *Scovill Manufacturing Co. etc.* v. *K Mart Enterprises of Illinois, Inc.*

3,722,399(*b*), J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, **filed** Mar. 21, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c795, *Scovill Manufacturing Co.* v. *Wieboldt Stores, Inc.* Pursuant to stipulation between parties, cause is hereby dismissed, June 6, 1974. **Same, filed** June 6, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1539, *Scovill Manufacturing Company* v. *The Mostow Company.*

3,732,633, Margolis and Saunders, SLIDING PANEL DISPLAY, **filed** Sept. 17, 1974, D.C.N.J. (Trenton), Doc. 74–1453, *Ply-Gem Industries, Inc.* v. *Hunterdon Home Center Inc. and Robert Fischer.*

Re. 23,950. (See 2,975,330.)

Re. 25,154. (See 3,358,658.)

Re. 25,974. (See 3,358,658.)

Re. 27,920, J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, **filed** Apr. 25, 1974, D.C., S.D.N.Y., Doc. 74–C–1819, *Van Wyck International Corp.* v. *Scovill Manufacturing Co.*

Re. 27,920. (See 3,722,399(*a*).)

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3,860,302

PATENT AND TRADEMARK OFFICE

Board of Appeals

Present Vacancies To Be Filled by Appointment Under the Classified Civil Service

Notice is hereby given that, pursuant to the amendment of sections 3 and 7 of title 35, United States Code, by Public Law 93–601 (88 Stat. 1956), effective January 2, 1975, examiners-in-chief will no longer be appointed by the President, by and with the consent of the Senate, to serve on the Board of Appeals of the Patent and Trademark Office. In accordance with the provisions of section 7, as amended by Public Law 93–601, present (and future) vacancies on the Board of Appeals will be filled by appointment of examiners-in-chief under the classified civil service. These appointments will be made at a salary in the range from $34,607 to $36,000 per annum.

Persons interested in being considered for these vacancies are invited to submit their applications to the address given below, or on or before March 21, 1975. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as a member of the Board of Appeals of the Patent and Trademark Office. As an Examiner-in-Chief, Participates in its appellate and administrative responsibilities and exercises independent judgment on all matters before him on appeal subject to administrative and policy direction of the Commissioner. Appeals filed in accordance with 35 U.S.C. 134 and Rules 191 through 198 of the Rules of Practice of the United States Patent and Trademark Office in Patent Cases involve complex legal and technical questions. The Board of Appeals has the sole power to hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patents and for reissue of patents. Final decisions of the Board, if unfavorable to an applicant, may be appealed to the United States Court of Customs and Patent Appeals or civil action may be taken in accordance with 35 U.S.C. 145.

Qualifications: Candidates must possess (1) a minimum of five years of patent experience of which at least two years involved the exercise of independent judgment in a responsible position as typified by the exercise of full signatory authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office; (2) a law degree or be a member in good standing of the bar in any state, D.C., Puerto Rico, or any territorial court under the constitution; (3) a high degree of demonstrated competence in chemistry, engineering, physics or other major scientific discipline; (4) ability to write clearly and logically; (5) comprehensive experience in patent prosecution. examination or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

Factors Which Will Be Considered in Evaluating the Candidates: Candidates will be evaluated on the total range of their education, training and experience as well as supervisory appraisals of past performance and potential. *Note*: The qualifications of the proposed incumbent will have to be reviewed and approved by the Department of Commerce and by the U.S. Civil Service Commission before an appointment can be made effective.

Employees of the Department of Commerce may apply by submitting a completed Merit Promotion Interest Statement, Form CD 261, and a completed SF 171, Personal Qualifications Statement, if one is not already on file at the address given below. Persons who are not employees of the Department of Commerce should submit only a completed SF 171. Copies of Form SF 171 may be obtained at local post offices. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Building 2, Room 9C05
Crystal Plaza
Arlington, Virginia 22202

Questions concerning this notice should be directed to Ms. Margaret M. Mazza, Office of Personnel, Room 2-9C05, Telephone (703) 557–3631.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

February, 1975.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 2, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-6-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-2-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-6-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	6-26-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-30-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director Industrial Arts; Household, Personal and Fine Arts.	9-10-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-20-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-23-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-25-74

Expiration of patents: The patents within the range of numbers indicated below expire during February 1975, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 2,821,713 to 2,825,063, inclusive
Plant Patents	Numbers 1,677 to 1,685, inclusive

REISSUE PATENTS

GRANTED FEBRUARY 25, 1975

ERRATA

For CLASS	See PATENT NO.
165-019	28,343
308-003	28,344
083-157	28,345
296-137	28,346
250-562	28,347
423-325	28,348
033-344	28,349

REISSUES

FEBRUARY 25, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,343

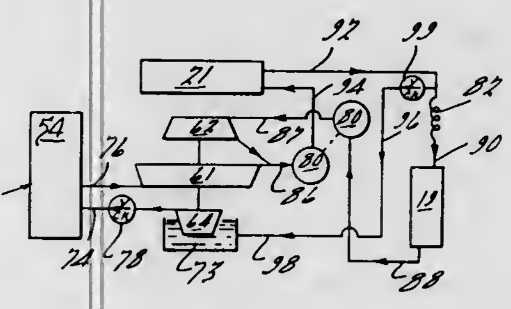
LIQUID-VAPOR CYCLE AIR-CONDITION SYSTEM

Herman B. Castillo, Clawson, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Original No. 3,799,243, dated Mar. 26, 1974, Ser. No. 312,012, Dec. 4, 1972. Application for reissue June 27, 1974, Ser. No. 478,153

Int. Cl. F24f *3/14*

U.S. Cl. 165—19 **31 Claims**



1. A liquid-vapor cycle air conditioning system for maintaining the air of an enclosure in a predetermined condition, said system comprising:

A. a vapor generator;

B. means for supplying a liquid to said generator;

C. means directing hot gases to said vapor generator to vaporize said liquid;

D. means receiving vapor from said generator and operative to transform heat energy of said vapor to mechanical energy;

E. means directing discharge fluid from said energy transforming means to said supplying means;

F [E]. a compressor driven by said mechanical energy;

G [F]. a first heat exchanger receiving a discharge fluid from said compressor;

H [G]. means directing enclosure air to said first heat exchanger;

I [H]. expansion means receiving discharge fluid from said first heat exchanger;

J [I]. a second heat exchanger receiving discharge fluid from said expansion means;

K [J]. means directing outside air to said second heat exchanger;

L [K]. means directing discharge fluid from said second heat exchanger to said compressor; and

M [L]. means for directing at least a portion of said hot gases into a heat exchange relation with said second heat exchanger.

28,344

SLIDE ASSEMBLY

Anthony T. Monaco, Skokie, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Original No. 3,527,508, dated Sept. 8, 1970, Ser. No. 773,522, Nov. 5, 1968. Application for reissue Jan. 31, 1972, Ser. No. 222,351, which is a continuation of abandoned reissue application Ser. No. 80,512, Oct. 13, 1970

Int. Cl. F16c *29/00*

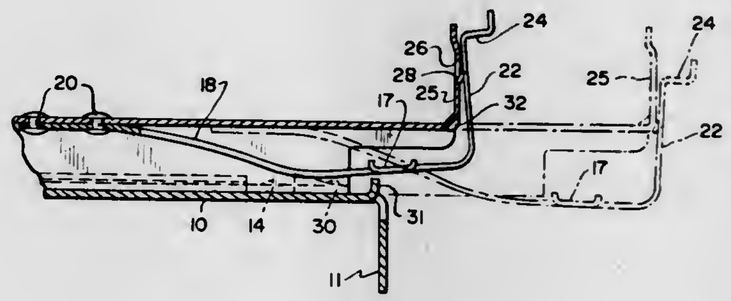
U.S. Cl. 308—3.6 **17 Claims**

1. An assembly for slidably supporting two components relative to one another including in combination:

first and second channel members, said second member being guided for longitudinal sliding movement relative to the first channel member, one of said channel members carrying guiding means and the other of said channel [member in] *members* carrying corrresponding guide engaging means, said first channel member having at least one slot therein;

a slot engaging means carried by the second channel member and resiliently biased toward the first channel member for engaging the slot on the first channel member when the two channel members are in a substantially closed position wherein the first and second channel members generally overlie one another throughout the major portion of the length; and

means for locking the slot engaging means out of engagement with the slot.



28,345

GUILLOTINES AND LIKE SHEARING MACHINES

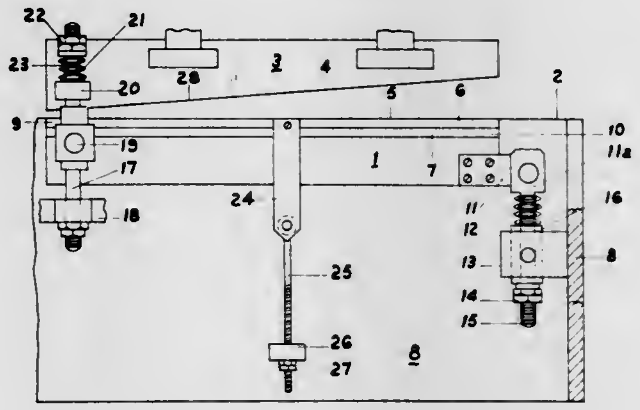
Emile Breetvelt, Johannesburg, Transvaal, Republic of South Africa, assignor to Intermenua (Proprietary) Limited, Johannesburg, Transvaal, Republic of South Africa

Original No. 3,757,621, dated Sept. 11, 1973, Ser. No. 116,041, Feb. 17, 1971. Application for reissue Mar. 19, 1974, Ser. No. 452,570

Claims priority, application Republic of South Africa, Feb. 20, 1970, 70/1,132; Sept. 15, 1970, 70/6,300; Oct. 5, 1970, 70/6,732

Int. Cl. B26d *1/00*

U.S. Cl. 83—157 **8 Claims**

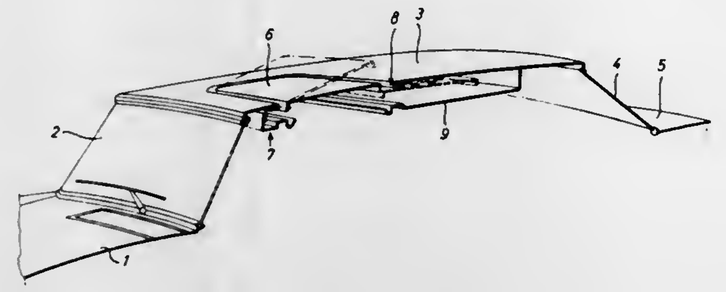


1. A shearing machine including a first fixed blade and a second blade movable over the first blade to set up a shearing action along their leading edges, a continuous yieldable work support comprising a resilient member which is located in a resting position adjacent and along substantially the length of the leading edge of the

first fixed blade in the path of the second blade and biasing means acting to resist displacement of the resilient member from its resting position as the second blade is advanced over the first blade.

28,346
SLIDING COVER FOR ROOF OPENING IN A MOTOR VEHICLE

Herbert Kouth Kilianstadten, and Albert Schlapp, Sprendlingen, Germany, assignors to H. T. Golde G.m.b.H., Frankfurt am Main, Germany
Original No. 3,507,537, dated Apr. 21, 1970, Ser. No. 746,616, July 22, 1968. Application for reissue Apr. 20, 1972, Ser. No. 246,076
Claims priority, application Germany, July 22, 1967, 1,605,960; Apr. 2, 1968, 1,755,128
Int. Cl. B60j *7/04*
U.S. Cl. 296—137 F **25 Claims**

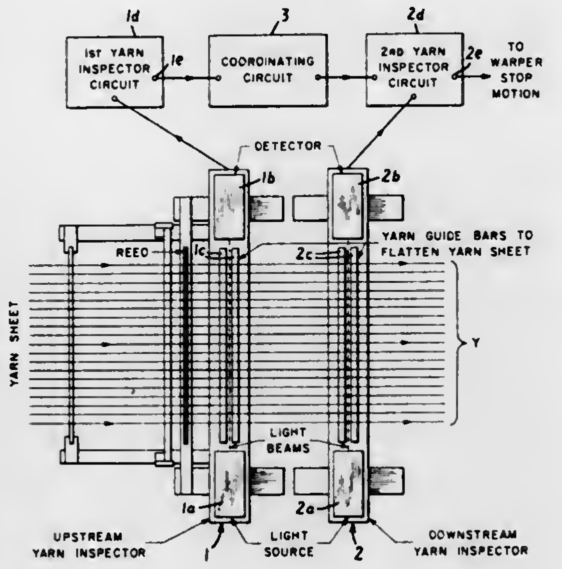


1. A motor vehicle body construction comprising a roof having an opening therein, a frame being secured to said roof and extending about and downwardly from the opening in said roof, said frame having a pair of oppositely disposed longitudinally extending sides, a pair of guide rails being supported by said frame and each of said guide rails extending along one of said longitudinally extending sides, a cover being mounted on and slidably positionable along said frame in the direction of said longitudinally extending sides, first means being located on each said longitudinally extending side of said frame and mounted on said guide rails, said first means being attached to said cover for sliding said cover along said guide rail and for pivoting said cover about an axis extending through said first means on the oppositely disposed longitudinally extending sides of said frame, second means being located on each said longitudinally extending side of said frame and mounted on said guide rails in spaced relationship with said first means, a pair of slides each being fixed to and extending along one of the sides of said cover disposed in parallel relationship with the longitudinally extending sides of said frame, said second means being slidably engageable in said slides for cooperating in positioning said cover relative to said opening.

28,347
SYSTEM FOR DETECTING DEFECTS IN CONTINUOUS TRAVELING MATERIAL

Solomon Abilock, Brooklyn, and Richard Shottenfeld, Jamaica, N.Y., and Thomas Brown, Taylors, S.C., assignors to Lindly & Company, Inc., Mineola, N.Y.
Original No. 3,717,771, dated Feb. 20, 1973, Ser. No. 130,700, Apr. 2, 1971. Application for reissue Mar. 22, 1974, Ser. No. 453,999
Int. Cl. G01n *21/32*
U.S. Cl. 250—562 **30 Claims**

54. An inspecting system for detecting yarn defects in a yarn sheet travelling lengthwise along a selected path comprising a first inspecting unit located on the path of travel of said yarn sheet and a second inspecting unit located on the path of travel of said yarn sheet at a selected distance downstream of the first inspecting unit, each of said inspecting units comprising means for guiding the yarn to flatten said yarn sheet, a light source positioned at one side of said flattened yarn sheet, a photodetector positioned at the opposite side edge of said sheet and having a light sensitive element, and means for directing a beam of light across the flattened yarn sheet from said light source onto the light sensitive element of said photodetector so that variations in the light beam caused by yarn defects or by transient disturbances in the yarn sheet such as "jumping yarn" produce variations in the light received by the light sensitive element of said photodetector, said photodetector sensing variations in light caused by such yarn defects or disturbances in the yarn sheet to produce an electrical signal upon predetermined change in the light sensed by said photodetector, said first inspecting unit operating continuously to inspect said yarn sheet as it passes said first unit, and means for coordinating the operation of said first inspecting unit and said second inspecting unit, said coordinating means comprising means for measuring the linear travel of said yarn sheet past said inspecting units, means connecting said measuring means with said first inspecting unit to start measurement of said travel of said yarn sheet past said inspecting units upon production of a said signal by the photodetector of said first inspecting unit, continuing the measurement of linear travel of said yarn sheet only until the length measured is slightly greater than the distance between said inspecting units, and means controlled by said measuring means to produce an output signal only when a signal is produced by the photodetector of said second inspecting unit in the interval between the time said length of travel measured by said measuring means is slightly less than the distance between said units and the time said length measured by said measuring means is slightly greater than said distance, whereby an output signal is produced when a yarn defect of predetermined magnitude is detected successively by both of said inspecting units in predetermined sequence but not by transient disturbances in the yarn sheet.



28,348
PROCESS FOR PRODUCING SILICON OXYNITRIDE

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.
No Drawing. Original No. 3,639,101, dated Feb. 1, 1972, Ser. No. 50,939, June 29, 1970. Application for reissue Jan. 18, 1973, Ser. No. 324,831
Int. Cl. C01b *21/06*
U.S. Cl. 423—325 **7 Claims**

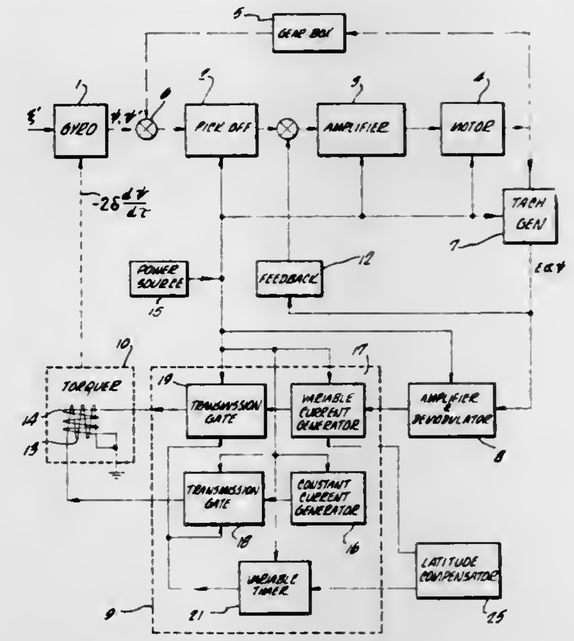
1. In a method whereby Si_2ON_2 is produced from a reaction mix including a source of Si, a source of N and

a source of O, the improvement consisting of maintaining the reaction rate below R percent per hour, where $R=53.118/w^{0.308}$ and w is the furnace charge in pounds by [control of] *measuring said rate and controlling* the amount of gaseous nitrogen available to the reaction *in accordance with the measured rate.*

28,349
METHOD OF DAMPING DEVICES HAVING OSCILLATORY MOTION

Harry Nils Eklund, Pacific Palisades, Calif., assignor to Lear Seigler, Inc., Santa Monica, Calif.
Original No. 3,577,646, dated May 4, 1971, Ser. No. 687,049, Nov. 30, 1967. Application for reissue May 4, 1973, Ser. No. 357,355
Int. Cl. G01c *19/38*
U.S. Cl. 33—344 **10 Claims**

1. A method of damping the motion of a mechanical system element which is oscillating about an equilibrium position, the motion of the element having a substantially undamped natural period of oscillation, the method comprising the step of applying supercritical damping force to the element for a selected interval of time commencing from when the ratio of the instantaneous velocity of the element toward its equilibrium position to the instantaneous displacement of the element from its equilibruim position is approximately equal to the [ratio of π to the product of the undamped natural period of oscillation and the damping ratio] *product of 4π and the damping ratio divided by the undamped natural period of oscillation.*



PATENTS

GRANTED FEBRUARY 25, 1975

ERRATA

For CLASS	See PATENT NO.
085-021	3,867,864
085-062	3,867,865
105-366	3,868,083
277-134	3,868,105
277-030	3,868,104
277-237	3,868,106
210-522	3,868,335
330-130	3,868,598

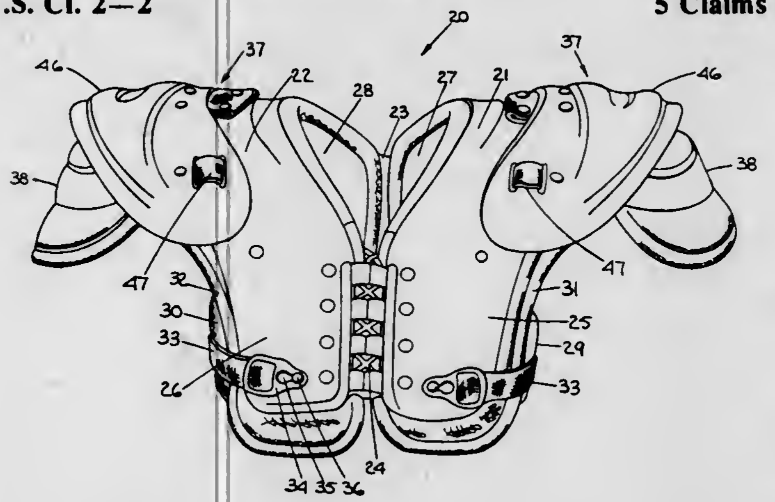
PATENTS

GRANTED FEBRUARY 25, 1975

GENERAL AND MECHANICAL

3,867,726
SHOULDER GUARD

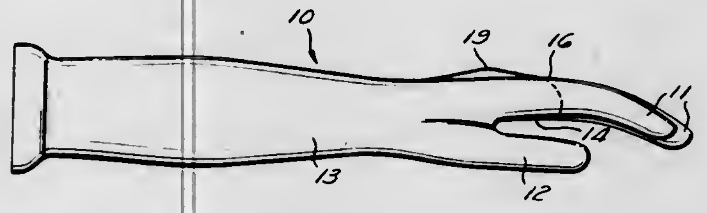
Laurance J. Owl, Hastings, Minn.; Jimmy H. Cody, Grand Prairie, and Bill Kelley, Arlington, both of Tex., assignors to Becton, Dickinson and Company, East Rutherford, N.J.
Filed May 17, 1974, Ser. No. 470,723
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **5 Claims**



1. A semi-rigid protective shield device for athletes comprising:
- a pair of opposingly formed and flexibly joined sections;
- each section having an arcuate shoulder portion adapted to conformably embrace a shoulder and having front portions adapted to depend over the clavicular area and breast of the wearer and rear portions for depending over the shoulder blades;
- the rear portions having integral lateral radial extensions for embracing the rib cage and terminating forwardly thereof;
- flexible means on each of said lateral extensions for detachably and adjustably joining the same to said depending front portions;
- a shoulder cap hingedly attached to the shoulder portion of each section;
- means hingedly connecting each shoulder cap to the respective shoulder portion of each section, and
- means on the cap and shoulder portion positioned so as to form a flange pocket for the edge of cap to seat in when force is applied from the top or sides and restrain the cap from pressuring the athlete's shoulder while not restricting upward movement.

3,867,727
SURGEON'S GLOVE

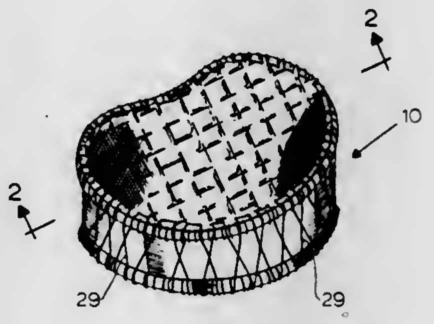
Lawrence J. Povlacs, Dothan, Ala., assignor to Akwell Industries Incorporated, Dothan, Ala.
Filed Dec. 28, 1973, Ser. No. 429,178
Int. Cl. A41d *19/00*
U.S. Cl. 2—167 **2 Claims**



1. In a thin gauge elastomeric glove comprising a wrist portion, four finger portions, a thumb portion, a palm portion joining said finger, thumb, and wrist portions to form a front face area of the glove, a back portion joining said finger, thumb, and wrist portions to form a back face area of the glove, said glove having a central axis, said back portion including a knuckle area extending from said finger portions toward said wrist portion, said back portion being defined by a substantially straight line generatrix in substantial alignment with the central axis of said glove, the improvement wherein an outwardly directed bulge is provided on said back portion between said wrist portion and said knuckle area, wherein the finger, thumb and knuckle areas snugly fit the wearer's hand, and wherein all portions of the glove are of substantially uniform thickness.

3,867,728
PROSTHESIS FOR SPINAL REPAIR

James A. Stubstad, Lafayette, Calif.; James R. Urbaniak, Durham, N.C., and Paul Kahn, San Francisco, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.
Continuation-in-part of Ser. No. 214,344, Dec. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 109,101, Jan. 25, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,140
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **40 Claims**



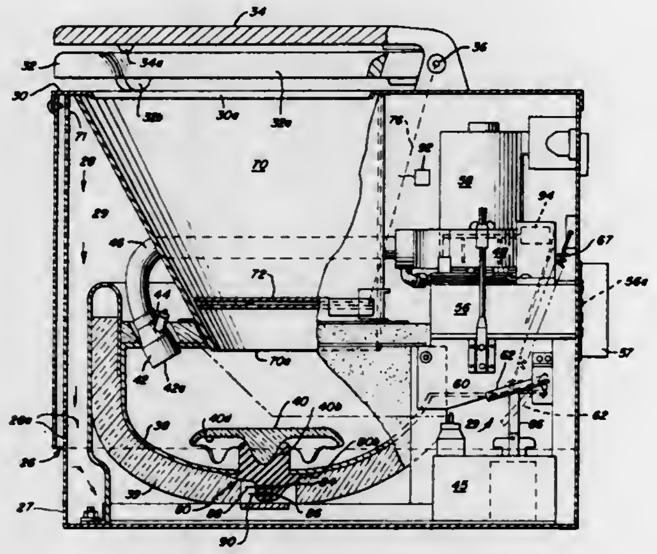
1. A resilient shaped prosthesis for replacement of a damaged or degenerated spinal disc, comprising:
- a spinal-disc-shaped element having two generally flat faces, and
- wherein said element is a laminated sandwich of horizontal shaped sheets of elastomer and horizontal shaped sheets of fabric-reinforced elastomer, all outer surfaces consisting of elastomer.

3,867,729
INCINERATOR

Robert C. Helke, Walworth, Wis., assignor to La Mere Industries Inc., Walworth, Wis.
Filed Aug. 17, 1973, Ser. No. 389,140
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 **19 Claims**

1. An incinerator comprising a casing, wall means defining a combustion chamber in said casing having an outlet exhaust duct extending to the exterior of said casing, inlet means in said casing for delivering waste material to be burned to said combustion chamber, a fuel burner for burning the waste material during a burning cycle in said combustion chamber, means for cooling the combustion chamber during a cooling cycle, and control means for activating both said burner and said cooling means and for deactivating said burner means including a temperature sensor for sensing a predetermined

elevated temperature of said combustion chamber and fuel valve means for deactivating said burning means responsive to



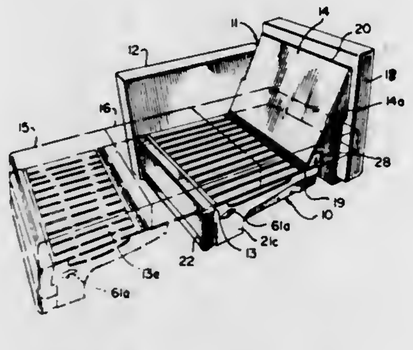
said elevated temperature without deactivating said cooling means at said temperature.

3,867,730
SOFA-BED

Jerauld George Wright, 10 Wren Rd., Ottawa, Ontario, Canada

Filed Sept. 13, 1973, Ser. No. 396,772
Claims priority, application Canada, Sept. 18, 1972, 151957
Int. Cl. A47c *17/14*

U.S. Cl. 5—37 C **44 Claims**

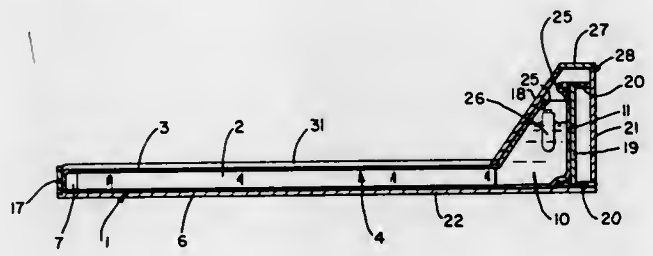


1. A sofa-bed comprising a base, and convertible seating and bedding means including three generally planar sections supported on said base and comprising a back-rest section pivotally connected at opposite transverse edges to a seat section and rear section respectively, a support member mounted on the underside of said seat section and slidable upon said base, said support member having a rear end which extends rearwardly of said seat section, said convertible means being movable on said base between a seating configuration, in which the seat section is generally horizontal, the back-rest section extends upwardly at a slight rearward inclination and the rear section is generally upright, and a bedding configuration in which the three sections are generally horizontal and said seat section extends forwardly of said base, said seat section support member resting upon said base in both configurations wherein said seat section includes foot means to support the front portion thereof upon a floor when in the bedding configuration, said rear section being pivotally supported intermediate its length on said base such that in the seating configuration a portion of said rear section extends downwardly beyond said pivotal support.

3,867,731
LIQUID SUPPORTING FURNITURE

Earl J. Isaac, 5 Capilano Dr., Novato, Calif. 94947
Filed June 12, 1972, Ser. No. 262,112
Int. Cl. A47c *27/08*

U.S. Cl. 5—348 WB **1 Claim**



1. In a support for floatingly supporting at least one human body;

a single substantially stationary bladder of flexible substantially inelastic material defining a load supporting chamber, said bladder having an upper wall of sufficient size to support the human body and being constrained in the vertical direction, the height of said load supporting chamber being sufficient that a human body on said upper wall conforms the wall to the lower body surfaces and is floatingly supported above the bottom of said bladder;

a body of liquid enclosed within and filling said bladder so there is substantially no air therein;

a head tank forming an end portion of said bladder and carrying a head of liquid in communication with said body of liquid and extending at all times upwardly from the upper wall of said bladder; and

a single rigid circumscribing framework enclosing said single bladder and being separable therefrom;

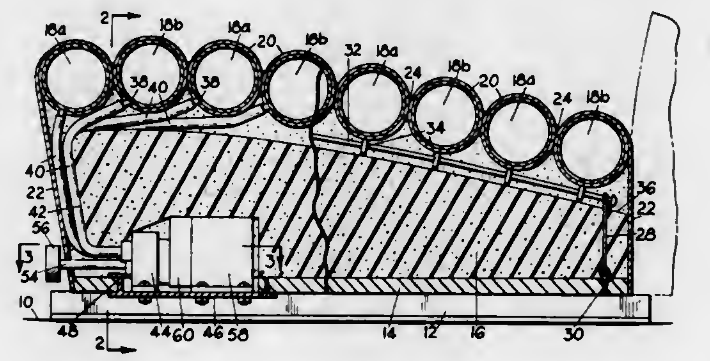
said end portion of said bladder having opposite walls respectively secured to opposed members of said single rigid framework, one of said opposed members being adjustably positioned with respect to the other to selectively vary the distance therebetween;

whereby the liquid pressure in said load supporting member is adjusted by means of movement of said adjustably positioned framework member with respect to said opposed member.

3,867,732
SEAT CUSHION

William C. Morrell, 7028 S.E. Morrison, Portland, Oreg. 97215
Filed Feb. 23, 1973, Ser. No. 335,322
Int. Cl. A47c *27/10*

U.S. Cl. 5—349 **1 Claim**



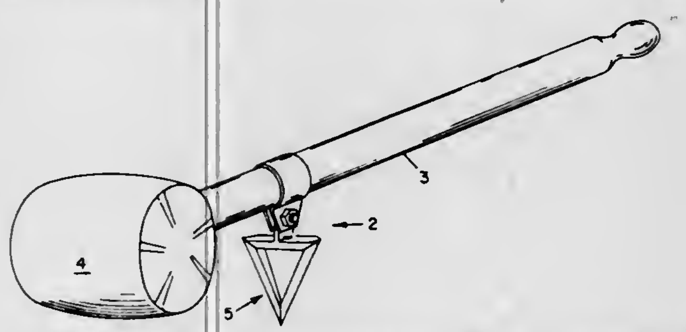
1. A seat cushion comprising
a. a flexible support member,
b. an upholstery cover for said flexible support member having an upper surface,
c. means in said upholstery cover defining a plurality of transverse individual parallel pockets extending from side to side of the seat cushion,

d. each of said pockets having a bottom opening disposed approximately centrally between the two sides,
e. a first set of fillable flexible tubes supported on said flexible support member and being confined within alternate one of said pockets,
f. a second set of fillable flexible tubes supported on said flexible support member and confined in pockets alternately spaced between said first pockets,
g. said tubes having inlet connections substantially centrally thereof for projection from said openings in the pockets,
h. continuous powered fluid supply means having hoses secured to said inlet connections and being arranged to feed and discharge fluid in said tubes,
i. a center groove in the front and upper surface of said flexible support member receiving said hoses, the upper surface of said upholstery assuming the contour of the upper portion of the individual tubes,
j. and cycle control means for said fluid supply means arranged to admit fluid to said first set of tubes while discharging fluid to atmosphere from the second set of tubes and vice versa whereby to vary points of support for a person seated on the seat.

3,867,733
STAKE PULLER

Donald M. Verlander, 314 Saipan, San Antonio, Tex. 78221
Filed Aug. 31, 1973, Ser. No. 393,453
Int. Cl. B25f *1/00;* **B66f** *15/00*

U.S. Cl. 7—8.1 R **4 Claims**



1. An apparatus for removing tent stakes from the ground consisting of a hook member with means for connecting the hook member to a tent stake, said hook member also having connecting means to connect the hook member to a lever arm, said hook member having an opening therethrough, said opening being of generally triangular configuration and large enough for a tent stake to extend therethrough, said hook member having a generally wedge shaped external configuartion with downwardly converging knife edged sides terminating in a pointed tip.

3,867,734
SWIMMING FLIPPER

Huguette Fernande Fery Courageux, 5 rue de Verdun, Massy, France
Continuation-in-part of Ser. No. 354,354, April 25, 1973, abandoned. This application Nov. 14, 1973, Ser. No. 415,817
Claims priority, application France, Nov. 20, 1972, 72.41165
Int. Cl. A63b *31/10*

U.S. Cl. 9—309 **7 Claims**

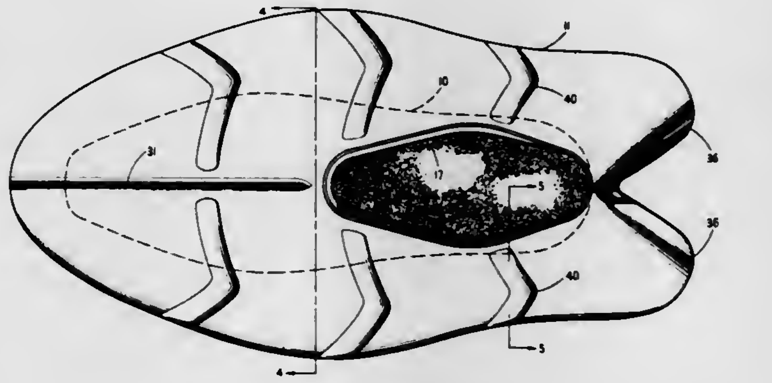
7. A swimming fin to be worn on the foot as a swimming aid comprising:

a shoe having an upper and a sole, said upper having a periphery defining an opening adapted to receive and fit about the ankle of the wearer, said shoe being integrally molded in one piece from a rubber-like flexible material;

a skirt formed integrally with and in one piece with said shoe, said skirt surrounding said upper and having an upper continuous edge and a lower continuous edge at least twice as long as said upper continuous edge, said skirt being integrally connected, at its upper edge to the periphery defining the opening of said upper;

a web connecting the heel portion of the upper with the heel portion of the skirt, said web extending from the bottom of the heel upwardly to the juncture between the skirt and periphery of the opening of the shoe upper;

a web connecting the toe region of the skirt and shoe upper and extending from the bottom of the toe region substantially along the longitudinal center line of the shoe and upwardly toward said periphery of said opening in said upper;



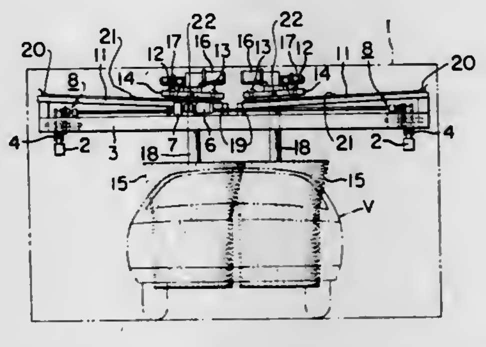
said webs being integrally molded in one piece with said shoe and said skirt;

said upper, skirt and webs defining a plurality of water receiving compartments on opposite sides of the longitudinal center line of the shoe.

3,867,735
SIDE BRUSH OPERATING MEANS FOR A VEHICLE CLEANING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Aichi-ken, Japan
Filed Mar. 22, 1973, Ser. No. 344,038
Claims priority, application Japan, May 25, 1972, 47-51191
Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **2 Claims**



1. A vehicle cleaning apparatus of the type including a portal frame through which a vehicle to be cleaned progresses, said apparatus comprising: a pair of fixed guide rails arranged on the opposite sides of said portal frame in spaced parallel relation to each other and extending forwardly downwardly in the direction of travel of the vehicle, a trolley mounted on said fixed guide rails, a motor for driving said trolley along said pair of fixed guide rails, said motor being capable of operating continuously to exert a constant torque even when forced to stop rotation under a predetermined load above a predetermined level, and a pair of side brush units mounted on said trolley for movement toward and away from each other lengthwise thereof.

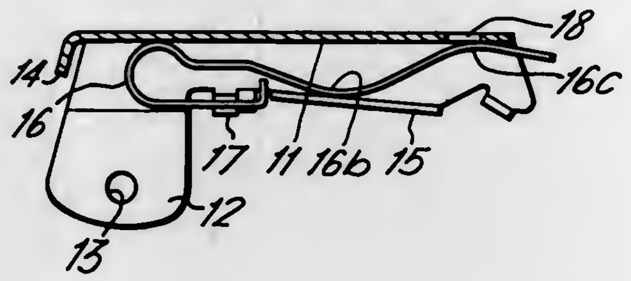
3,867,736
CONNECTING MEMBER FOR WINDSHIELD WIPER BLADE

Dario Arman, Piazza Adriano 15, Turin, Italy
Filed July 19, 1973, Ser. No. 380,637
Claims priority, application Italy, July 24, 1972, 69398/72
Int. Cl. B60s *1/40*

U.S. Cl. 15—250.32 **4 Claims**

1. A connecting member for securing windshield wiper blades to the end of a swinging arm, comprising a channel-

shaped element provided at one end with means for articulating the member to a wiper blade, stop teeth near the other end of said element, and a hole in said element defining a seat, and a leaf spring within said element and secured at one end to said element, said leaf spring having two oppositely curved portions along its length, one of said curved portions being



arranged to urge the end of a swinging arm coupled to said element toward said stop teeth so that the latter engages notches in the lateral edges of the swinging arm, and the second of said curved portions being arranged to urge the end of another type of swinging arm coupled to said element toward said hole seat so that a pin carried by the arm is pushed into said hole seat.

3,867,737
MOLDED PLASTIC SUPPORT FOR WIPER BLADES OF WINDSCREEN WIPER EQUIPMENT ON MOTOR VEHICLE

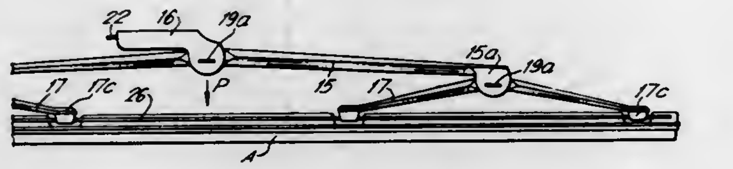
Dario Arman, Piazza Adriani 15, Turin, Italy

Filed May 10, 1973, Ser. No. 358,883

Claims priority, application Italy, May 12, 1972, 68487/72

Int. Cl. B60s *1/38, 1/40*

U.S. Cl. 15—250.42 **4 Claims**



1. Support made of molded plastic, for wiper blades of windscreen wiper equipments on motor vehicles, characterized in that the articulate coupling between the connecting member and the main bar of the support as well as between the ends of the bar and the central point of each rocker arm, is provided by metal plates engaging corresponding transversal seats which are coinciding and formed in the articulation points.

3,867,738
REMOVABLE HANDLE FOR BEVERAGE CONTAINING CANS AND METHOD OF MOUNTING SAME

David L. Garner, Evergreen, Colo., assignor to Duane Burton, Boulder; Ralph F. Crandell and Gary M. Polumbus, both of Denver, all of, Colo., part interest to each

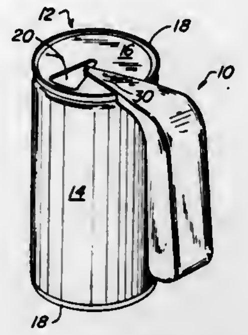
Filed Jan. 30, 1974, Ser. No. 437,827

Int. Cl. A47b *95/02*

U.S. Cl. 16—114 **12 Claims**

1. A removable handle for beverage containing cans which has a slotted opening in one end, said handle comprising:

a grip portion adapted to extend along a side of the can, and a connecting arm portion connected to the grip portion and extending across at least a portion of said one end of the can, said connecting arm portion having spaced retention means thereon, one of said retention means being adapted to extend into said slotted opening in the one end of the can and be releasably retained in the slot by a side edge of said opening and the other of said retention means being adapted to be compressively engaged with a



side of the can effecting a tension in the connecting arm to securely attach the handle to the can.

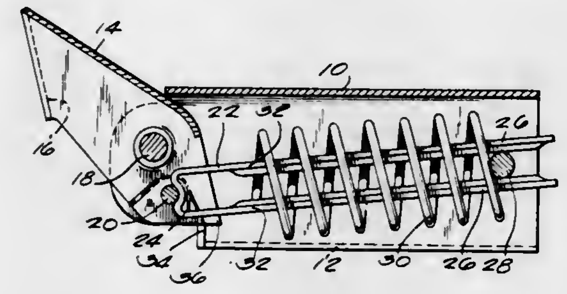
3,867,739
HINGE FOR COVER LID ON CHESTS

Henry A. Schnuell, Milwaukee, Wis., assignor to E. R. Wagner Manufacturing Company, Milwaukee, Wis.

Continuation of Ser. No. 356,736, May 3, 1973, abandoned. This application June 3, 1974, Ser. No. 475,454

Int. Cl. E05f *1/12*

U.S. Cl. 16—190 **4 Claims**



1. A hinge for the cover of a freezer cabinet or the like comprising:

a. a spring housing secured to said freezer cabinet;

b. a lid for said cabinet;

c. a mounting bracket secured to said lid;

d. a pivot pin interconnecting said spring housing and said mounting bracket;

e. said mounting bracket having a spring follower pin radially offset from said pivot pin;

f. a spring engaging pin on said spring housing remote from said pivot pin;

g. a coiled compression spring in said spring housing reacting between said spring follower pin and said spring engaging pin; and

h. a U-shaped spring guide member having (1) an enlarged bearing portion, and (2) spaced elongated legs located partly within said compression spring, said bearing portion extending for the length of said spring follower pin and rotatably seated on and swinging with said spring follower pin; said coiled compression spring reacting between said spring follower pin and said enlarged bearing portion.

3,867,740
METHOD AND APPARATUS FOR PROCESSING SHRIMP

Robert L. Lapine, Wells, and Bernard C. Brower, Gladstone, both of Mich., assignors to Harry H. Bell & Sons, Inc., St. Petersburg, Fla.

Filed Jan. 24, 1973, Ser. No. 326,158

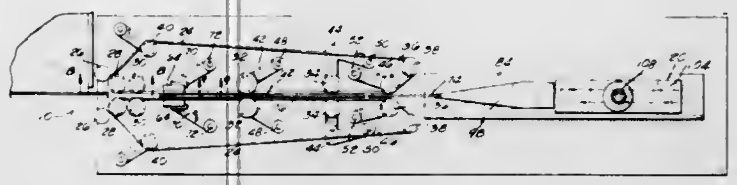
Int. Cl. A22c *29/00*

U.S. Cl. 17—72 **28 Claims**

1. Shrimp processing apparatus for processing a deheaded and unshelled shrimp comprising:

a cutter station having a cutter means mounted thereat for cutting through the belly of a shrimp to the alimentary canal of the shrimp, said cut starting at the tail of said shrimp and leaving the shell uncut;

a spreader station having a spreader means mounted thereat for spreading the portions of the shrimp on opposite sides



of the cut therein to thereby cause the shrimp to assume a substantially flat position with the shell attached to the shrimp; and

a conveyor means for conveying a shrimp first through said cutter station and then through said spreader station.

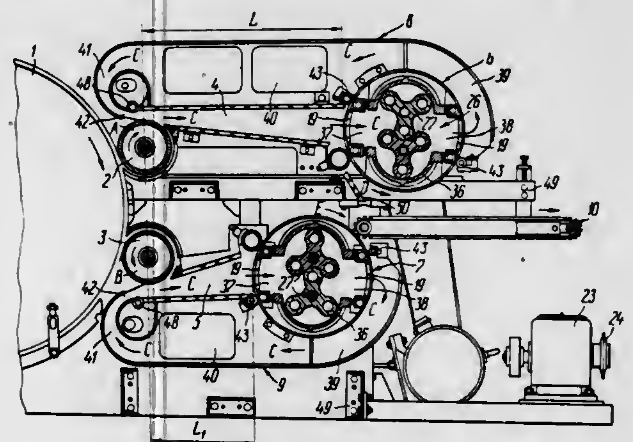
3,867,741
METHOD OF AERODYNAMIC FORMATION FOR A FIBROUS LAYER FROM FIBERS TREATED ON A CARDING MACHINE AND APPARATUS FOR PERFORMING THIS METHOD

Veniamin Dmitrievich Frolov, ulitsa 2 Lagernaya, 55, kv. 57; Fedot Evdokimovich Yatsenko, ulitsa 2 Lagernaya, 50, kv. 39; Viktor Vladimirovich Pertsev, ulitsa 2 Lagernaya 50, kv. 12; Valery Dmitrievich Rubtsov, ulitsa 2 Lagernaya, 53, kv. 46; Vitaly Alexandrovich Belyankin, ulitsa 2 Lagernaya, 46, kv. 15, all of Ivanovo; Viktor Vasilievich Matveev, Michurinsky prospekt, 30, kv. 55, and Max Khatskelevich Bernshtein, Michurinsky prospekt, 16, kv. 26, both of Moscow, all of U.S.S.R.

Continuation of Ser. No. 351,005, April 13, 1973, abandoned. This application Mar. 11, 1974, Ser. No. 450,153

Int. Cl. D01g *15/46, 25/00*

U.S. Cl. 19—106 R **7 Claims**



1. A method of aerodynamic formation of a fibrous layer from fibres treated on a carding machine, comprising the steps of doffing the fibres from the main drum of said carding machine in at least two different points, the speed and the direction of doffing in said at least two points being different; conveying said fibres doffed in each one of said points in an individual air stream over paths of different lengths from the respective ones of said points toward rotating condensers, forming on said condensers upon rotation thereof respective fibrous layers from said doffed fibres conveyed over said different lengths, so that said fibres acquire in one of said layers an orientation which is different from the orientation of the fibres in the other one of said layers, combining said layers into a single common layer; delivering said layer for further treatment.

3,867,742
FASTENINGS FOR ROOF AND WALL SHEETING

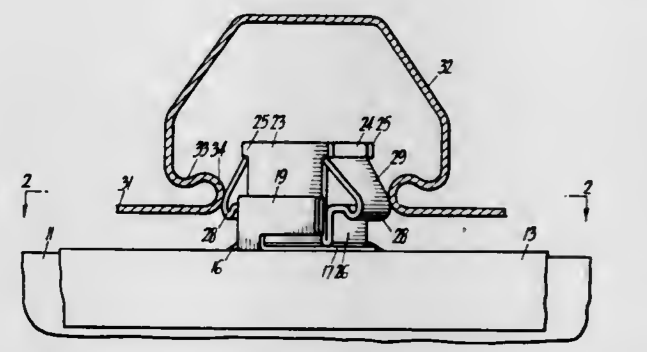
George Alfred Braisby Austin, 3 Prior Rd., Noble Park, Victoria, Australia

Filed Oct. 1, 1973, Ser. No. 400,587

Claims priority, application Australia, Sept. 25, 1972, 563/72

Int. Cl. A44b *21/00*

U.S. Cl. 24—73 **5 Claims**



1. Means for fastening ribbed sheeting on a support member comprising an anchor strap for mounting on the support member, several fastening members mounted pivotally on the anchor strap in linearly spaced relationship, and for each of the fastening members a spring mounted on the anchor strap in operable rotative engagement with the associated fastening member, each of the fastening members having at least one cam shaped part for engagement by the sheeting and operable under axial pressure applied to the cam shaped part by the sheeting to turn the fastening member against the pressure of the spring from an operative position to an inoperative position whereat the sheeting may be moved into its mounted position, the spring being operable to rotatively move the fastening member to its operative position in holding engagement with the ribbed portion of the sheeting.

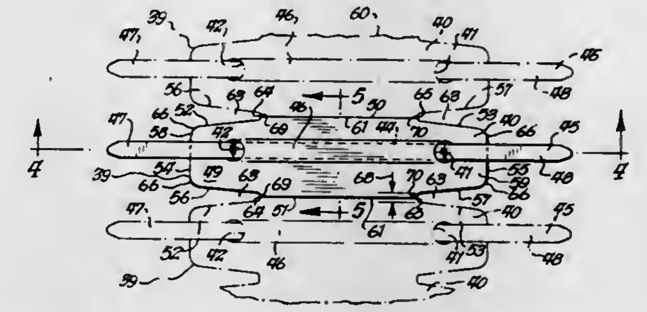
3,867,743
FASTENER DEVICE

Joseph T. Corey, Williamsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Division of Ser. No. 225,207, March 25, 1970, Pat. No. 3,741,385, which is a continuation-in-part of Ser. No. 22,519, Feb. 10, 1972, Pat. No. 3,641,632. This application May 29, 1973, Ser. No. 364,962

Int. Cl. A44b *9/00*

U.S. Cl. 24—153 BP **8 Claims**

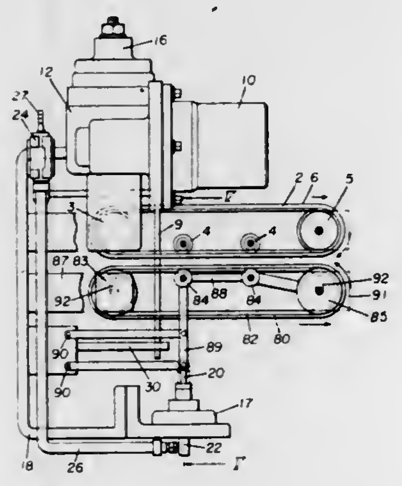


1. A unitary assembled fastener device adapted to be secured to a backing member for fastening papers or the like comprising an overlay member having opposite end portions and a central portion and an upper surface and an undersurface, a pair of spaced apertures in said opposite end portions, said apertures being substantially completely surrounded by adjacent portions of said overlay member, an elongated prong member having a central portion and opposite prong end portions, said opposite prong end portions extending through said spaced apertures and overlying said upper surface on said end portions, said central portion of said prong member lying in contiguous relationship to said central portion of said undersurface whereby said apertures maintain said overlay member and said prong member in assembled condition, and adhe-

sive means on said undersurface sufficiently proximate said central portion of said elongated prong member for securing said undersurface to said backing member to hold said central portion of said elongated prong member against said backing member.

3,867,744
APPARATUS FOR UNFOLDING, SPREADING AND GUIDING A TRAVELLING KNITTED FABRIC

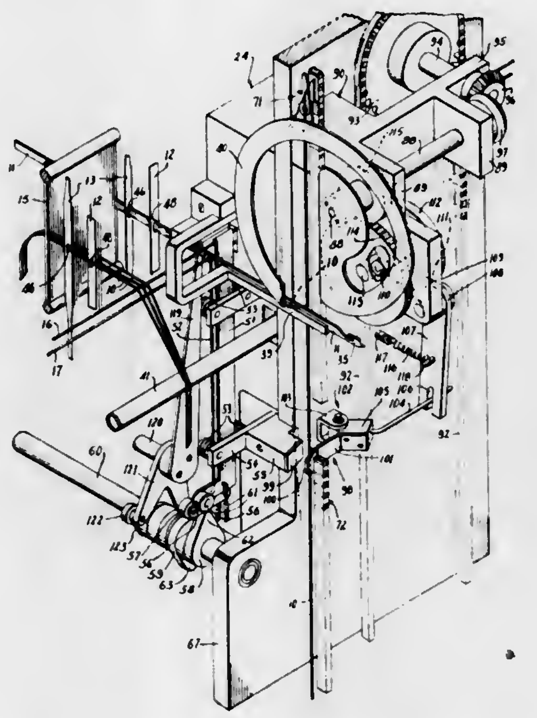
Isamu Tsuchida, No. 29, 6-chome, Zuiko-dori, Higashiyodogawa-ku, Osaka, Japan
Filed May 31, 1973, Ser. No. 365,450
Claims priority, application Japan, Aug. 21, 1972, 47-97957; Jan. 18, 1973, 48-8043
Int. Cl. D06c *3/06*
U.S. Cl. 26—54 **2 Claims**



1. An apparatus for unfolding, spreading and guiding a travelling knitted fabric comprising travellable endless belts disposed at the opposite edges of the travelling knitted fabric respectively on one face of the fabric and positioned transversely of the fabric, each of the travellable endless belts having an engageable working surface including projections extending in the direction of travel of the endless belt, push members opposing the travellable endless belts respectively positioned at the side of the other face of the fabric and transversely thereof, each of the push members comprising an endless belt having a working surface engageable with the working surface of the associated travellable endless belt and including projections extending in the same direction as the projections of the travellable endless belt so as to interpose the travelling fabric between the working surface of the travellable endless belt and the working surface of the endless belt push member, means for driving the travellable endless belts and the endless belts serving as push members at variable speeds individually whereby the endless belt member of each pair of opposed such members at each edge of the fabric at the side thereof wherein the selvage is turned-up may be driven at a higher speed than the opposing endless belt member in directions to spread the fabric and to unfold turned-up selvages of the same, selvage sensing means disposed adjacent the travellable endless belts, and means for moving each of the endless belt push members toward or away from the associated travellable endless belt in accordance with the positions of the selvages in response to the operation of said selvage sensing means.

3,867,745
METHOD FOR DRAWING IN WARP THREADS

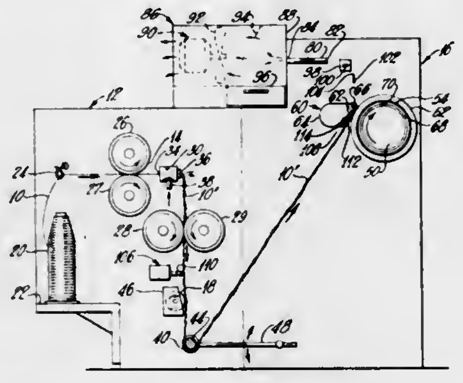
Charles B. Crandall, and Frederick L. Wieneke, both of Rockford, Ill., assignors to Barber-Colman Company, Rockford, Ill.
Division of Ser. No. 262,105, June 12, 1972, Pat. No. 3,787,938. This application Sept. 20, 1973, Ser. No. 398,970
Int. Cl. D03j *1/16*
U.S. Cl. 28—72.5 **4 Claims**



1. In a method of initially drawing threads of yarn from a warp beam through the successive sets of the weaving elements of a loom, the steps of, drawing a short pilot length of yarn through the first set of weaving elements separated from the loom and warp beam while leaving an end portion of the yarn exposed in front of said elements, and similarly threading a short pilot length of yarn through each of the other sets of weaving elements.

3,867,746
METHOD OF TREATING AND COLLECTING YARN

Gustav E. Benson, Edgewood, and Everett W. Taylor, Cumberland, both of R.I., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio
Division of Ser. No. 241,173, April 5, 1972, Pat. No. 3,776,183. This application June 6, 1973, Ser. No. 367,592
Int. Cl. D02g *1/16;* **B65h** *55/04*
U.S. Cl. 28—72 SP **3 Claims**



1. The method of treating yarn at the start-up of a rotary collector upon which the treated yarn is collected as a wound package comprising:

advancing yarn to an auxiliary collection zone as the rotary collector is brought up to speed;

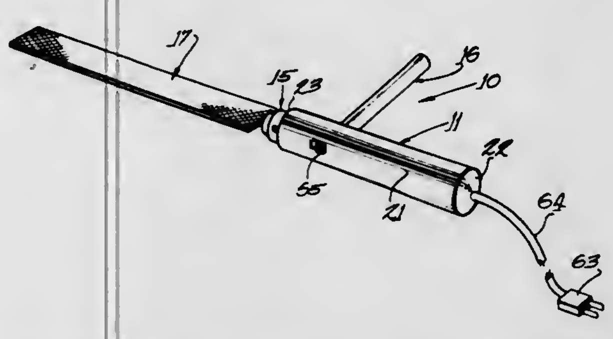
transferring collection of the yarn from the auxiliary collection zone to a temporary collection location on the rotary collector when the rotary collector is at a selected speed;

applying a coating to the yarn in its path to the collector; and

moving collection of the yarn from the temporary collection location to a package formation located on the collector after arrival of liquid treated yarn to the collector.

3,867,747
POWER DRIVEN FILE

Robert E. Lee, 627 N. 20th, Escanaba, Mich. 49829
Filed Feb. 22, 1974, Ser. No. 444,795
Int. Cl. B23d *69/00*
U.S. Cl. 29—76 A **1 Claim**



1. A power driven file comprising, in combination:

an elongated hollow cylindrically shaped housing having a closed back end, an open front end, and cylindrical side wall surfaces;

an elongated file member having a reduced width longitudinally extending flattened shank;

an elongated cylindrically shaped compartment defined interiorly of said housing and opening out of said open front end thereof;

a chuck disposed in said front end of said housing compartment projecting outwardly of said front end and guided for reciprocal movement along the interior front end portion of the side walls of said compartment in a back-and-forth manner along the longitudinal axis of said housing, said chuck comprising:

an elongated cylindrical body member having a flat front end, a flat back end, and cylindrical side walls of a diameter adapted to be slidingly received in said front end of said housing;

a diametrically extending slot extending longitudinally into said chuck through said chuck front end and adapted to receive therein said reduced width shank of said file blade member therein;

a threaded opening disposed in said chuck side wall surfaces axially aligned with the diametric axis of said slot and extending radially outwardly from an interior portion of said slot to a position projecting through said side walls of said chuck body member;

a threaded set screw having an allen head type drive socket at an exterior end thereof adapted to be threadedly received in said threaded opening and having an inner end adapted to frictionally engage an edge of said file blade shank inserted into said slot to removably retain said blade affixed to said chuck for simultaneous movement therewith;

an electrically powered motor means disposed in said housing compartment adjacent said back end thereof and having its longitudinal axis disposed parallel to the longitudinal axis of said housing compartment;

a flexible electrical cord having one end electrically connected to said motor with the opposite end thereof projecting outwardly of said housing back end and terminating in an electrical plug adapted to be pluggeed into a conventional source of household electrical energy to energize said motor from said electrical energy source;

an electrical switch mounted in said housing compartment and having an actuating member projecting exteriorly of said compartment side walls, said electrical switch being electrically wired in series relationship between said electrical cord and said electric motor for controlling the selective energization and de-energization of said electric motor from said source of electrical energy;

a shaft extending axially from a front end surface of said motor pointing in the direction of said housing open front end and rotatively driven by said motor;

a first bevel gear having its base portion disposed concentric and affixed to the projecting end of said electric motor shaft;

a second bevel gear disposed at a ninety degree angle to the axis of said first bevel gear and rotatively affixed to said housing for rotation interiorly of said housing compartment, said second bevel gear disposed in meshing engagement with the teeth of said first bevel gear;

said second bevel gear having a flattened top surface disposed concentric with the top edges of the teeth of said gear;

a cylindrical rod shaped pin member having one end affixed to a peripheral edge of said second bevel gear top flat surface with said pin member projecting outwardly therefrom in a direction parallel to the axis of rotation of said second bevel gear, said direction of projection being normal to the plane of said second bevel gear;

a link member of an elongated flat configuration having an aperture extending through each end thereof;

the aperture at one end of said link member rotatively receiving said pin member projecting therethrough;

a U-shaped yoke having a bight portion and opposed parallel leg portions, said yoke bight portion affixed to said back end of said chuck with said leg portions projecting outwardly therefrom straddling the axis of said chuck;

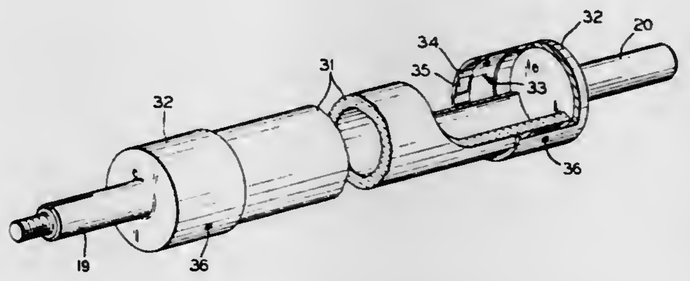
a connecting pin extending between said leg members of said yoke adjacent the outermost ends thereof;

said connecting pin passing through said other aperture of said link member to pivotally secure said link member thereto;

whereby rotational movement of said motor is translated by said first and second bevel gears, said pin member, said link member, and said yoke to translational motion of said chuck relative to said housing to drive said chuck in a reciprocal manner inwardly and outwardly of said housing to effect reciprocal back-and-forth movement of said file blade member affixed to said chuck.

3,867,748
SUPPORTING AND DRIVING FRANGIBLE ROLLERS

Alfred H. Miller, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Mar. 7, 1974, Ser. No. 449,192
Int. Cl. B60b *15/16*
U.S. Cl. 29—115 **10 Claims**



1. In a conveyor roller usable in the heat treatment of glass sheets and which includes a ceramic cylinder, shafts located at and in alignment with the ends of said cylinder, and means for drivingly connecting said cylinder with at least one of said shafts; the improvement in which said connecting means comprises a cylindrical member rotatable with said one of said shafts and that is in circumferential contact with said ceramic cylinder adjacent an end thereof and partially encloses a cavity between said cylindrical member and said ceramic cylinder; and a supply of a heat expandable adhesive in said cavity.

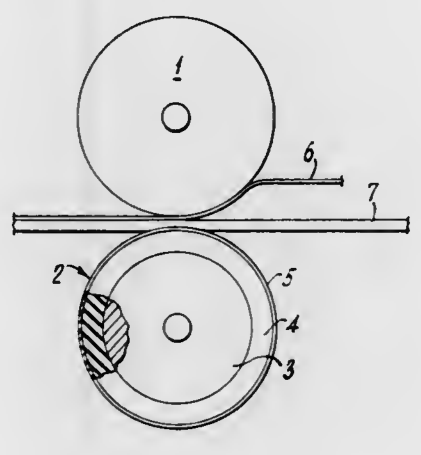
3,867,749
PRESS DEVICE FOR PRESSING LIQUID FROM A FIBROUS BODY

Erich Betz, Worms, Germany, assignor to DLW Aktiengesellschaft, Bietigheim/Wurtt., Germany

Continuation of Ser. No. 197,846, Nov. 1, 1971, abandoned. This application Nov. 19, 1973, Ser. No. 416,915

Int. Cl. B21b *27/02*

U.S. Cl. 29—121 R **6 Claims**



1. In a press drum having a wrapping for use in the process of dewatering a loose wet fibrous body such as wet paper pulp, the improvement comprising:

a. an envelope of yieldable material to cover said drum, and
b. a linear wire wrapped about said envelope, said wire consisting of predrawn synthetic material having a linear body alternately provided in sequence with attenuations and concentrations along said body's length, whereby said wire as a result of said shape induces a pumping action which improves the function of dewatering said paper pulp during processing.

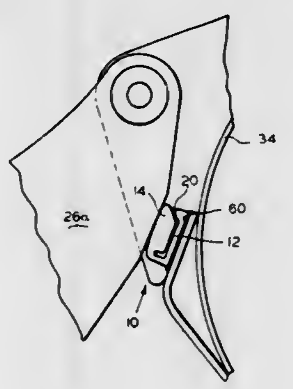
3,867,750
MACHINERY STOP AND METHOD OF INSTALLATION

Joseph R. Den Bleyker, Stevensville, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Sept. 27, 1973, Ser. No. 401,462

Int. Cl. B21k *19/00*

U.S. Cl. 29—148.3 **6 Claims**



1. A machinery stop for the handling of very large dynamic forces in the form of heavy blows comprising a weldable base portion, a weldable adjustment portion overlying the said base portion and resiliently joined thereto in an uninstalled condition, and a weld joining the said adjustment and base portions in the installed condition of the stop member.

5. The method of locating an adjustable stop between two abutable machine members which comprises securing to one of the abutable members a stop having a resilient adjustable portion arranged to be contacted by the other abutable member, moving the other abutable member to contact and flex the said adjustable portion thereof until the desired limit is reached, and at least partially welding the said adjustable portion to a base portion of the said stop while the other abutable member remains in contact with the said adjustable portion.

3,867,751
SINTERED BLANKS

Gordon Sidney Connell, Cheltenham, and Paul Egan, Harescombe, both of England, assignors to Formflo Limited, Gloucestershire, England

Filed Oct. 5, 1972, Ser. No. 296,368

Int. Cl. B21h *1/12*

U.S. Cl. 29—148.4 R **11 Claims**

1. A method of preparing an inner or outer bearing ring comprising the steps of:

a. forming a substantially cylindrical sintered powder metal blank having a density of at least 96 percent of the density of the solid metal, and
b. roll forming said blank to the shape of said required inner or outer bearing ring.

3,867,752
TUBE-INSERTING APPARATUS

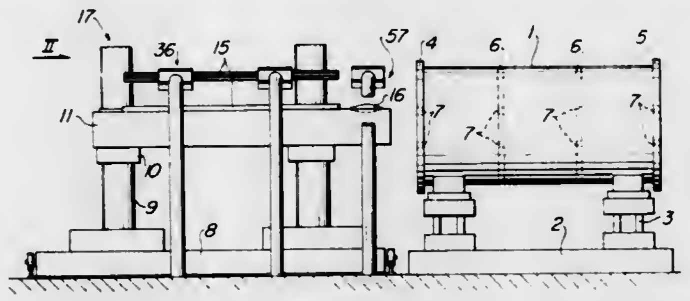
Keiji Tachibana, Tokyo; Toru Watanabe, Ebina, and Hisao Tamura, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 2, 1973, Ser. No. 375,819

Claims priority, application Japan, July 3, 1972, 47-59522; July 3, 1972, 47-59524

Int. Cl. B23p *15/26*

U.S. Cl. 29—202 R **4 Claims**



1. A tube-inserting apparatus comprising a tube bed which is laterally and vertically movable relative to the direction in which tubes are inserted into a mating shell, a plurality of tube-guiding means arranged in parallel on the tube bed along the direction of tube insertion, tube-pushing means provided reciprocably on the tube bed for cooperation with the tube-guiding means, and means for automatically feeding tubes to the tubeguiding means.

3,867,753
UNIVERSAL CARD EXTRACTOR TOOL

Ellison C. Urban, II, San Diego, and Carl L. McKee, El Cajon, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 18, 1974, Ser. No. 452,109

Int. Cl. B25b *27/14*

U.S. Cl. 29—203 H **10 Claims**

1. A universal hand extractor tool for lifting and removing components of various sizes from their housing comprising:

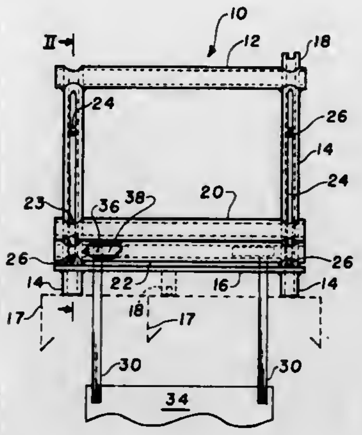
a fixed handle;

a pair of leg members, each member fixedly secured at one end to the fixed handle in spaced parallel relation, each leg member terminating at another end adapted to engage the top of said housing;

a movable handle member supported on said leg members in substantially parallel relation to said fixed handle member, both handles being adapted to be spanned by the hand of the user;

a pair of fingers suspended at their upper ends from said movable handle, and being transversely movable independently thereon between said leg members;

the lower ends of said fingers having means for engaging the component to be extracted;



whereby the lateral spacing between the fingers may be adjusted for lifting components of various widths.

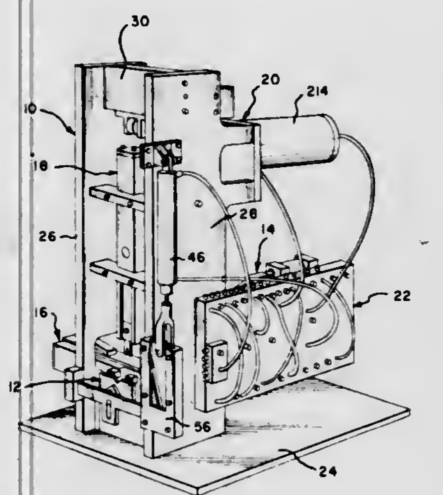
3,867,754
STRIPPER CRIMPER MACHINE

Robert Milton Koch, and Donald Andrew Wion, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 22, 1974, Ser. No. 445,035

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 DS **16 Claims**



1. A fluid actuated semi-automatic stripper crimper apparatus for stripping insulation from the free end of a wire and crimp connecting an electrical terminal from a continuous strip of terminals onto the free end of said wire, said apparatus comprising:

frame means,

wire clamping means mounted on said frame means including a pair of normally spaced clamping blocks and means adapted to drive said blocks together to clampingly secure a wire between said blocks,

a stripper assembly including means mounting said assembly in said frame means for horizontal reciprocating motion, wire insulation cutting means, means adapted to drive said cutting means into cutting engagement with the insulation of said wire, and means to drive said assembly axially of said wire to strip a severed slug of insulation therefrom,

a bottom tooling assembly disposed behind said wire clamping means and beneath said stripper assembly, said tooling assembly including a fixed anvil and vertically moveable terminal shear means,

terminal strip feed means adapted to feed a continuous strip of terminals through said shear means to a position above said anvil,

ram means mounted in said frame for vertical reciprocable motion, said ram means including a crimping ram, means adapted to drive said ram into contact with said terminal and at least one die means depending from said ram, and a force cam assembly disposed to drive between an upper portion of said ram and a fixed abutment, after said ram has made initial contact with said terminal, to apply a crimping force to said ram whereby said terminal is severed from its associated carrier strip and crimped to the stripped end of said wire.

3,867,755
METHOD OF AND APPARATUS FOR APPLYING SLIDERS TO A SLIDE FASTENER CHAIN

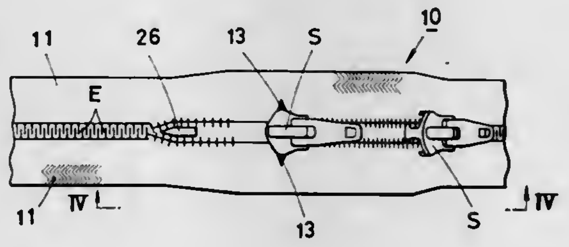
Ikuo Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1973, Ser. No. 426,927

Claims priority, application Japan, Dec. 27, 1972, 48-1526

Int. Cl. B23p *11/00*

U.S. Cl. 29—408 **2 Claims**



1. A method of applying sliders to a slide fastener chain having a pair of opposed stringer tapes carrying rows of fastener elements along their respective inner longitudinal edges, which method comprises the steps of:

a. providing transverse slits across the inner longitudinal edges of the stringer tapes at spaced locations along the fastener chain;
b. moving the fastener chain intermittently along a first or horizontal path of travel and a second path extending at an angle downwardly inclined relative to said first path, said first and second paths merging at a cornering point in a slider assembling station;
c. separating the opposed stringer tapes along their inner longitudinal edges prior to the mounting of sliders thereon;
d. deflecting the fastener chain downwardly around said cornering point, whereupon said transverse slit is split open with its upper edge aligned with an entrance end of the slider;
e. mounting the slider on the fastener chain through said slit positioned at said cornering point; and
f. advancing the fastener chain a distance corresponding to a length of individual product fastener to which the chain is to be cut.

3,867,756
ARRANGEMENT FOR CHANGING TOOL-SUPPORTING TOOL HOLDERS ON A MACHINE TOOL ASSEMBLY

Hans Joachim Koch, Hannover-Buchholz, and Wolfgang Schaefer, Langenhagen, both of Germany, assignors to Werkzeumaschinenfabrik Gildemeister & Comp. A.G., Bielefeld, Germany

Filed July 13, 1973, Ser. No. 378,981

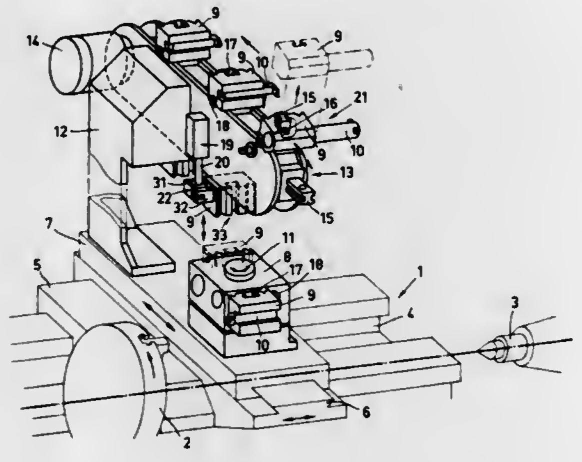
Claims priority, application Germany, July 14, 1972, 2234676

Int. Cl. B23q *3/155*

U.S. Cl. 29—568 **3 Claims**

1. Arrangement for changing tool-supporting tool holders on a machine tool assembly, such as a lathe, comprising at least one workpiece holder; a tool turret having at least two tool holder clamping means and being displaceable relative to said workpiece holder; a tool holder magazine positioned above said turret and displaceable in directions corresponding to said turret displacement; a tool holder transfer means for transferring said tool holders back and forth between the magazine and the turret, said tool holder transfer means in-

cluding gripper means for the tool holders to be transferred and being adapted to, on changing being effected, transferring a particular tool holder out of a clamping position in said magazine in a single rectilinear linear movement into a clamping position on said turret and conversely; each said clamping means on said turret being provided with at least one rib extending in the direction of the liner movement thereof and each tool holder being provided with a complementary longitudinal recess, said longitudinal recess and said rib, and the direction of said linear movement being at a small acute angle with respect to each other, so that the ribs and the longitudinal recess are separated from each other perpendicular to the longitudinal direction of the rib and the longitudinal recess when the particular tool post is displaced by said tool holder transfer means from a change position identical with the clamping position on said turret to the magazine, thereby performing said linear movement.

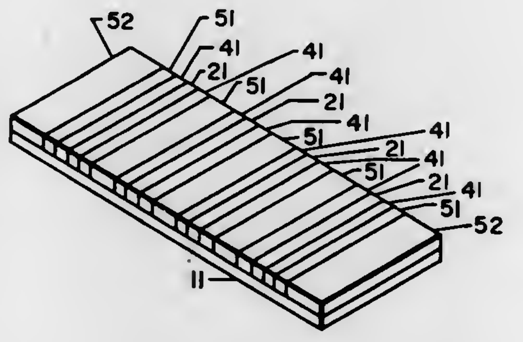


3,867,757

METHOD OF FABRICATION OF A PHOTON SENSOR

Reinhard D. Ennulat, Alexandria; Paul LoVecchio, Reston; Wolfgang Elser, Alexandria, all of Va., and Philip R. Boyd, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 11, 1973, Ser. No. 350,286
Int. Cl. H01c *7/10*
U.S. Cl. 29—574 5 Claims



1. a method for the fabrication of an IR sensing element comprising the steps of:

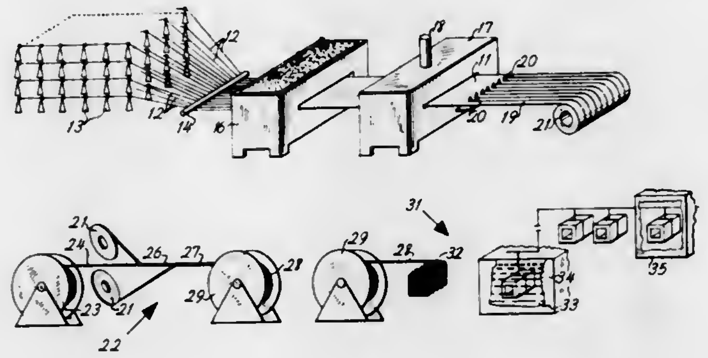
depositing a first continuous layer of photoconductive materials having an exposed outer-surface on a nonconductive substrate;
applying uniform spaced parallel stripes of photoresist material to said planar surface, the width of the spaces between said stripes being many times the width of said stripes;
applying an etchant to the unprotected photoconductive material to expose the portions of the substrate covered thereby;
removing the photoresist to expose the remaining channels of said photoconductive material;
oxidizing the exposed surface of the photoconductive material remaining to increase its interface resistance;
depositing a subsequent layer of said photoconductive material on said nonconductive substrate and channels remaining from preceding steps;
applying a subsequent set of uniform parallel stripes of photoresist material over said channels and at least a portion of exposed substrate adjoining the long edges thereof;
etching away exposed portions of said subsequent layer;
removing the photoresist from said subsequent layer;
oxidizing said subsequent layer;
repeating the above steps involved in forming said subsequent layer using progressively wider stripes of photoresist material on each subsequent layer of photoconductive material until their width approximates their initial spacing;
attaching a pair of ohmic contacts to the opposite edges of said substrate parallel to but spaced from said channels: depositing a final continuous layer of photoconductive material over the last subsequent layer and at least a portion of the surface of said contacts providing a final exposed surface; and
alternately etching said final exposed surface and measuring the resistance between said ohmic contacts until the resistance of the sensing element increases to at least several megohms.

3,867,758

METHOD OF MAKING GLASS INSULATED ELECTRICAL COILS

Daniel B. Johnson, Muskegon, Mich., assignor to The Anaconda Company, New York, N.Y.

Division of Ser. No. 377,163, July 6, 1973, Pat. No. 3,842,193. This application May 15, 1974, Ser. No. 470,085
Int. Cl. H01f *7/06*
U.S. Cl. 29—605 4 Claims



1. The method of making an electrical coil comprising the steps of;

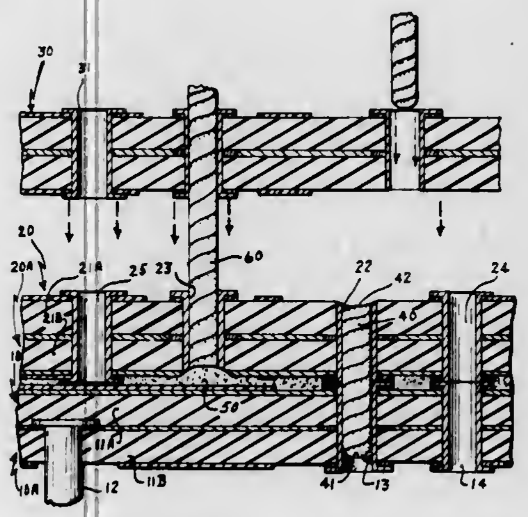
A. drawing a length of wire to a preselected cross-sectional area and shape,
B. supporting a large plurality of continuous glass fibers adjacently positioned in substantially planar configuration and advancing said fibers through enamel-coating apparatus, thereby coating said fibers with a continuous film of said enamel,
C. passing said fibers through a baking zone, thereby drying said enamel and forming a wide band of longitudinally glass-fiber-reinforced enamel insulation,
D. dividing said band into a plurality of individual tapes,
E. helically wrapping said tapes around a continuous bare length of said wire to form insulated conductor,
F. winding said conductor into an electrical coil,
G. saturating said coil with insulating enamel,
H. baking said coil being coated with said enamel.

3,867,759

METHOD OF MANUFACTURING A MULTI-LAYERED STRIP TRANSMISSION LINE PRINTED CIRCUIT BOARD INTEGRATED PACKAGE

Robert G. Siefker, Cincinnati, Ohio, assignor to The United States of America as represented by the Secretary of United States Air Force, Washington, D.C.

Filed June 13, 1973, Ser. No. 369,654
Int. Cl. H05k *3/36*
U.S. Cl. 29—628 2 Claims



1. A method of manufacturing a multi-layered strip transmission line printed circuit board integrated package, as adapted for use as a strip transmission line manifold assembly, wherein at least a first strip transmission line printed circuit board and a second strip transmission line printed circuit board are to be fixedly joined and positioned in stacked relationship and in electrical interconnection, to form the multi-layered integrated package, comprising the steps of:

a. fabricating a first plurality of segments which collectively constitute and define the first strip transmission line printed circuit board;
b. joining the first plurality of segments in coplaner relationship, whereby the first strip transmission line printed circuit board is formed, and whereby the first layer of the multi-layered integrated package also is formed;
c. fabricating a second plurality of segments which collectively constitute and define the second strip transmission line printed circuit board;
d. joining the second plurality of segments in coplaner relationship, whereby the second strip transmission line printed circuit board is formed, and whereby the second layer of the multi-layered integrated package is also formed;
e. drilling a first plurality of signal path holes in and through each of the first plurality of segments which form the first strip transmission line printed circuit board;
f. drilling a second plurality of signal path holes in and through each of the second plurality of segments which form the second strip transmission line printed circuit board;
g. plating, with an electrically conductive material, each signal path hole drilled through each of the first plurality of segments which form the first strip transmission line printed circuit board;
h. plating, with an electrically conductive material, each signal path hole drilled through each of the second plurality of segments which form the second strip transmission line printed circuit board;
i. inserting a different electrically conductive stranded wire having a first end and a second end into each plated signal path hole in each of the first plurality of segments which form the first strip transmission line printed circuit board, with each said electrically conductive stranded wire inserted into its particular and individual signal path hole in first-end-first position;
j. soldering, in place, said first end of each of said different electrically conductive stranded wires, thereby providing electrical contact by and between each first end of each of said conductive wires and the plated hole in which said first end is located;
k. feeding the second end of each different electrically conductive wire into a different one of the plated signal path holes in each of the second plurality of segments which form the second strip transmission line printed circuit board;
l. soldering, in place, said second end of each of said different electrically conductive stranded wires, thereby providing electrical contact by and between each second end of each of said conductive wires and the plates hole in the second printed circuit board in which said second end is located, and also thereby providing electrical conductivity between said first and said second strip transmission line printed circuit boards;
m. and, bonding said second strip transmission line printed circuit board to said first strip transmission line printed circuit board in stacked relationship;

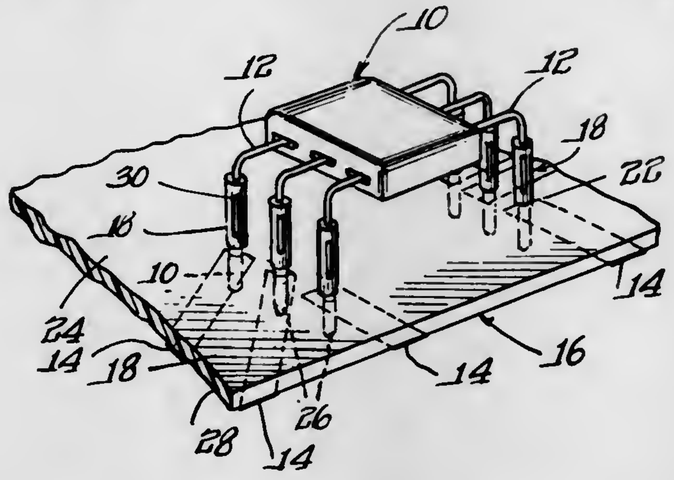
whereby the desired multi-layered strip transmission line printed circuit board integrated package is formed; and, whereby by cascading the interconnection, an integrated package of as many layers as desired may be formed without having to penetrate more than two adjacent layers of circuit boards at any one time.

3,867,760

PRINTED CIRCUIT BOARD LEAD WIRE RECEPTACLE

Stanley V. Horecky, Oak Park, and Cletus McDonough, Elmurst, both of Ill., assignors to Molex Products Company, Downers Grove, Ill.

Continuation of Ser. No. 141,523, May 10, 1971, abandoned, Division of Ser. No. 798,936, Feb. 13, 1969, Pat. No. 3,621,445. This application June 29, 1973, Ser. No. 375,237
Int. Cl. H01r *9/00*; H05k *3/32*
U.S. Cl. 29—628 3 Claims



1. A process for making electrical connections between a plurality of lead wires and a printed circuit board support surface having aligned apertures of predetermined diameter, said method comprising the steps of: forming a series of spaced apart tubular terminal connector members from flat strip material each said terminal being attached at spaced intervals to a linking strip; providing each tubular terminal connector with a longitudinal seam the edges of which are spaced apart along at least a portion of said connector; and further providing said connector with a tubular leading end portion and a tubular trailing end portion and with there being an axially presented positive stop shoulder at the junction of said end portions of minimum diameter greater than the predetermined diameter of the support surface apertures and with the trailing end portion having a resilient restriction in the bore thereof; and providing that the linking strip is attached to the trailing end portion only of each member, opposite to the longitudinal seam thereof, such that each leading end portion is free for insertion into a supporting surface whereby the respective connector members are joined entirely through said linking strip; simultaneously inserting the leading end portions of said terminal connector members into corre-

sponding apertures in said support surface, while resilient compressing said connector member thereof to a degree permitting insertion thereof in said aperture to obtain a friction fit, while maintaining the diameter of said shoulders greater than the predetermined diameter of the support surface apertures and engaging said shoulder with said support surface to locate accurately the leading and trailing end portions of the tubular body from opposite sides of the support surface; connecting said terminal connector members to said support surface; severing said terminal connector members from said linking strip; and inserting a plurality of said lead wires respectively into said terminal connector members through the trailing end portions thereof an amount sufficient such that electrical connections are made between said terminal connector members and said lead wires at said resilient restrictions.

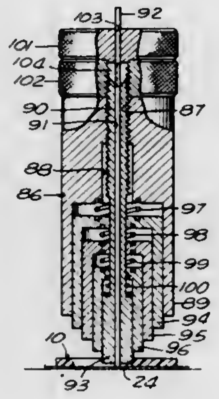
3,867,761
INSTRUMENT FOR INSCRIBING PARALLEL LINES

Bill A. Abad, 1423 N. Fuller Ave., West Hollywood, Calif. 90046

Filed Aug. 10, 1973, Ser. No. 387,469

Int. Cl. B43l *13/02*

U.S. Cl. 33—41 F **6 Claims**



1. An instrument for inscribing on a surface a line which is uniformly spaced from either a straight or curved edge at a selected distance therefrom, comprising: a barrel part; an inscribing point projecting axially from one end of said barrel part and having a longitudinal axis, the instrument having means through which the inscribing point extends in a position so that said means engages the edge surface adjacent to which a parallel line is to be inscribed, said means having a curved surface parallel to said axis so that it has only line contact with said edge whereby said means can be guided along said edge, whether straight or curved so as to inscribe a line parallel to it, said barrel part comprising a plurality of telescoping tube parts which are relatively adjustable axially so that an end of a selected tube can be positioned to be guided by said edge.

3,867,762
DRAWING INSTRUMENT

Akira Hirano, 178 Kashira-machi, Sin Karasuma, Kamigyo-ku, Kyoto, Japan

Filed July 14, 1972, Ser. No. 271,646

Claims priority, application Japan, July 14, 1971, 46-52340; July 14, 1971, 46-52337; July 14, 1971, 46-52338; July 14, 1971, 46-52339

Int. Cl. B43l *13/14*

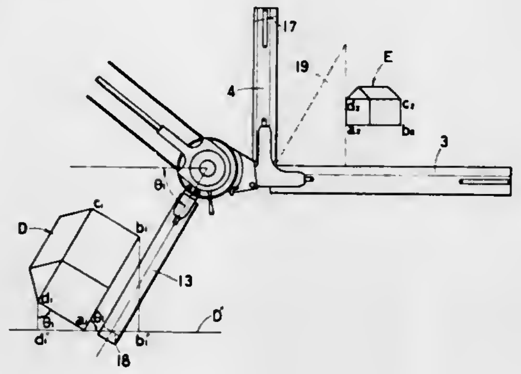
U.S. Cl. 33—77 **3 Claims**

1. A drawing instrument for use in drafting the anonometric projection drawing from the multiview projection drawing, comprised of the following components;

a. a parallel transferring mechanism with which a ruler orienting and arranging means is transferred parallel to itself and the angle changing mechanism with which the ruler arranging means angle is altered;

b. a horizontal ruler attached to the arranging means of the drawing instrument;

c. a vertical ruler attached to the arranging means of the drawing instrument at a right angle to the horizontal ruler and provided with the standard line extending traversely thereof near the free end and making an angle of inclination of 75° to the ruler edge face, said vertical ruler having a stopper member located thereon near the arranging means;



d. an auxiliary ruler pivotally mounted on an end of said arranging means for independent rotation relative to said vertical and horizontal rulers, the position of said pivotal mounting being at a location on said arranging means remote from said attachment of said horizontal and vertical rulers such that they extend in substantially opposite directions;

e. an angular ruler arranged to sliding engage said horizontal ruler and said stopper for drawing a line at a certain angle from a definite point on the ruler face and located adjacent to said auxiliary ruler and slidable therealong.

3,867,763
SETTING FIXTURE FOR MACHINE TOOLS

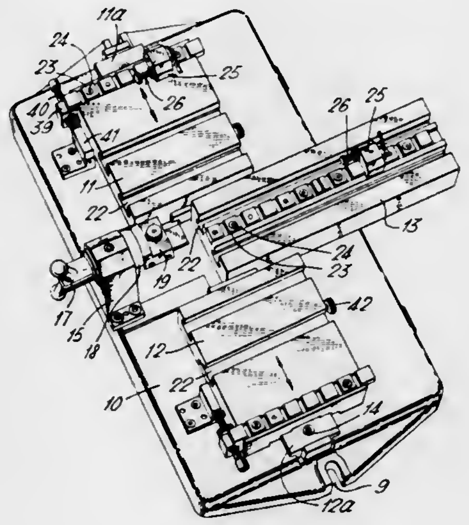
Albert Arthur Wilkins, Coventry, England, assignor to Wickman Machine Tool Sales Limited, Coventry, Warwickshire, England

Continuation-in-part of Ser. No. 52,849, July 7, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 300,582

Claims priority, application Great Britain, July 7, 1969, 34135/69

Int. Cl. B27g *23/00*

U.S. Cl. 33—185 R **6 Claims**



1. A setting fixture for a machine, said fixture comprising a support, at least two slide-representing parts mounted on the support, means on the support for carrying a workpiece, said slide-representing parts having respective sets of spaced mounting means, a setting block detachably securable to any one of said mounting means, and an adjustable stop detachably securable to the setting block, and means for mounting tool holders from a machine on the respective slide-representing parts, in equivalent relationship to the workpiece to their positions on the machine, and adjustable stops mounted on each part by means of respective setting blocks, said adjustable stops being adjustable to engage the tool holders respectively.

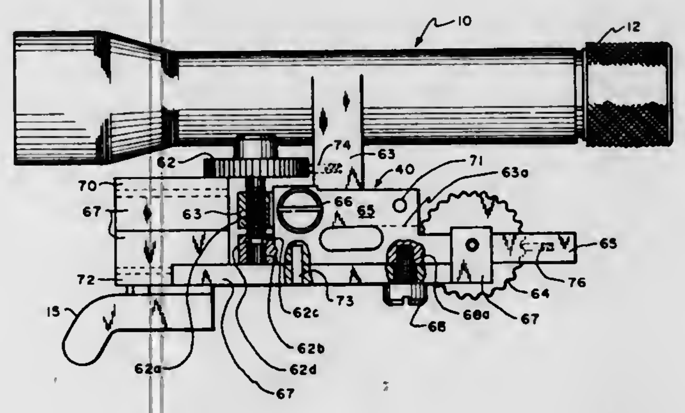
3,867,764
AIMING LIGHT AND AIMING LIGHT ADAPTER FOR USE ON A WEAPON

Howard L. Dunmire, Woodbridge, and Michael Hacskaylo, Falls Church, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 24, 1973, Ser. No. 354,034

Int. Cl. F41g *1/34*

U.S. Cl. 33—241 **5 Claims**



1. An aiming light for aiming a small caliber weapon comprising:

an aiming light housing comprising a projecting lens held in the forward end of said housing by a transparent window lens retainer and a screw threaded end cap threadably connected on the back end of said housing;

a light emitting means within said housing wherein said light emitting means comprises a dry cell battery positioned adjacent said cap, a canister containing an electronic pulser circuit having a beveled outer edge at an output end which fits snugly against a beveled canister retainer connected to said housing adjacent said projecting lens and an input end adjacent to and in electrical contract with one terminal of said battery, and circuit means including an electrical contact mounted on said cap for electrically connecting the other terminal of said battery with the input end of said canister retainer, with said output end having a light emitting diode therein whereby tightening of said cap on said housing completes the circuit between said battery and said input end of said canister, causing a pulsing light beam to be emitted from said light emitting diode; and

an aiming light adapter attached between said weapon and said aiming light housing, said adapter comprising a vertical adjusting means and a horizontal adjusting means wherein said vertical adjusting means is connected to a moulded portion of said aiming light housing and positions said pulsing light beam in the vertical direction and wherein said horizontal adjusting means is connected to said vertical adjusting means and positions said pulsing light beam in the horizontal direction.

3,867,765
POLE KILN AND METHOD FOR DRYING LOGS

Anthony Foster, Paradise, Calif., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 8, 1974, Ser. No. 459,011

Int. Cl. F26b *7/00*

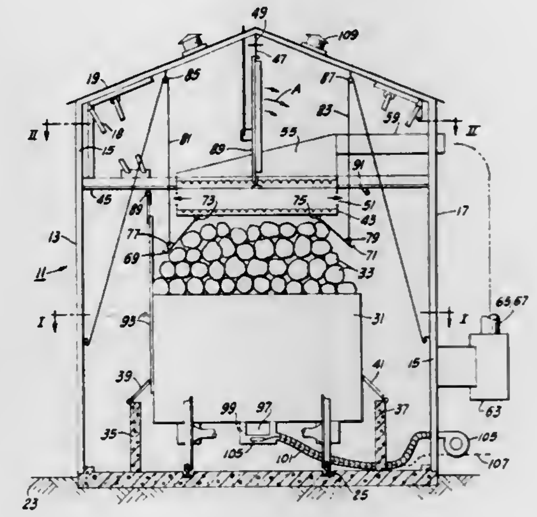
U.S. Cl. 34—13.8 **16 Claims**

1. A drying kiln comprising:

a. a shed covering one or more carriers of articles to be dried;

b. end closures on said shed;

c. means for introducing heat into said shed at a location above said articles;



d. baffles that coact with said one or more carriers and prevent said heat from flowing beneath said carriers; and

e. means for circulating said heat within said shed.

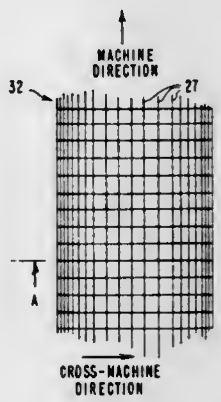
3,867,766
DRYER FABRIC FOR A PAPERMAKING MACHINE

Joseph Robert Wagner, Leeds, England, assignor to Huyck Corporation, Stamford, Conn.

Continuation of Ser. No. 692,806, Dec. 22, 1967, abandoned. This application Mar. 19, 1973, Ser. No. 342,806

Int. Cl. F26b *13/26*

U.S. Cl. 34—95 **18 Claims**



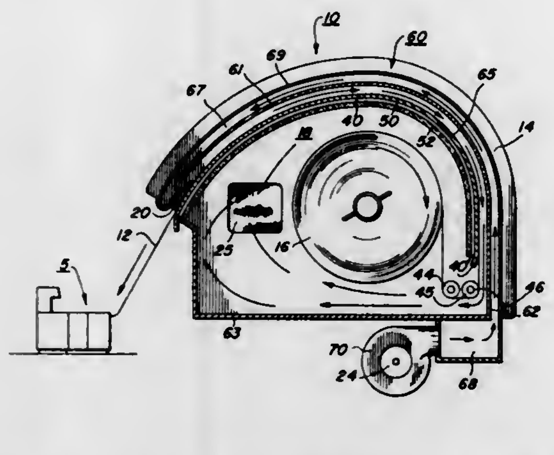
1. A papermaking machine including,

a. An array of heated, generally cylindrical rolls for drying a continuous web of material passing at least a portion of the surface thereof; and,

b. An endless, fluid permeable backing fabric associated with said array of dryer rolls and arranged to maintain the web in intimate contact with at least a portion of the surface of each of said dryer rolls, the permeability to fluids of said fabric varying selectively at selected points across its width dimension, said areas of said fabric having a high permeability lying adjacent those areas of the paper web having a high moisture content and said areas of said fabric having a low permeability lying adjacent those areas of the paper web having a low moisture content.

3,867,767
PRECONDITIONER FOR PAPER STOCK

John S. Wright, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed June 25, 1973, Ser. No. 373,080
Int. Cl. F26b *13/10*
U.S. Cl. 34—155 **4 Claims**

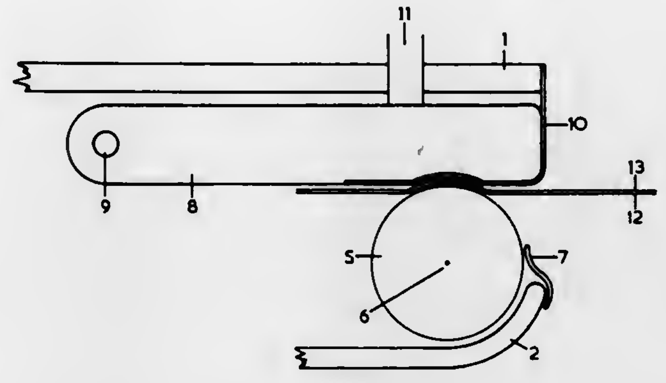


1. In an apparatus for supplying paper, the combination of: a substantially closed housing having at least a discharge opening for said paper;
- a supply of said paper in said housing;
- means presenting a platen surface across which said paper is adapted to move as the paper is withdrawn from said housing through said discharge opening;
- means for heating said platen surface to dry said paper as the paper is withdrawn from said housing;
- means to circulate air through said housing, said air circulating means including at least one air inlet opening, and fan means adapted when energized to circulate said air; and
- baffle means for routing said circulating air first into juxtaposition with said platen surface whereby to prevent overheating of said paper while assuring uniform heating thereof and then into juxtaposition with said paper supply whereby to precondition said paper supply preparatory to movement of said paper across said platen, said baffle means include a baffling member disposed opposite to and spaced from said platen surface, said baffling member cooperating with said housing to form a first air passage paralleling the direction of movement of said paper and communicating with said fan means through which air from said fan means circulates; said baffling member cooper with said platen surface to form a second air passage between said first air passage and said platen surface, said second air passage paralleling the direction of movement of said paper, said second air passage receiving air from said first passage and circulating said air into juxtaposition with said platen in reverse flow with respect to the movement of said paper, said paper moving through said second passage and across said platen surface as the paper is withdrawn from said housing and means to discharge said air from said housing.

3,867,768
SEAL

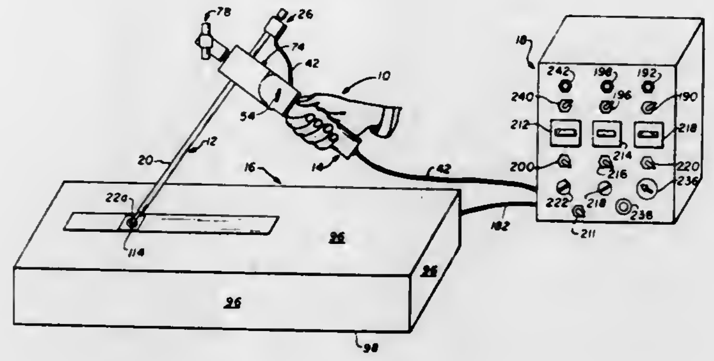
Guillaume Ward Jamin, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Jan. 30, 1974, Ser. No. 437,879
Claims priority, application Great Britain, Mar. 2, 1973, 10235/73
Int. Cl. F26b *25/00*
U.S. Cl. 34—242 **4 Claims**

1. A sealing means for permitting continuous pasage of a web material through a gap in a wall separating two zones at different pressures whilst minimising the flow of air from one zone to the other, comprising, built into the gap, two bearing members between which the web material passes, the first bearing member comprising a series of parallel, closely abutting, fingers which extend the full length of the gap, said fingers being pivoted on an axle which is parallel to a longitudinal edge of the gap, and each of the fingers being pressure loaded towards the second bearing member so as to maintain firm contact with either the web material or with the second bearing member, seals being provided between the fingers and the adjacent edges of the gap and also between the second bearing member and the adjacent edges of the gap.



3,867,769
ARC WELDING SIMULATOR TRAINER

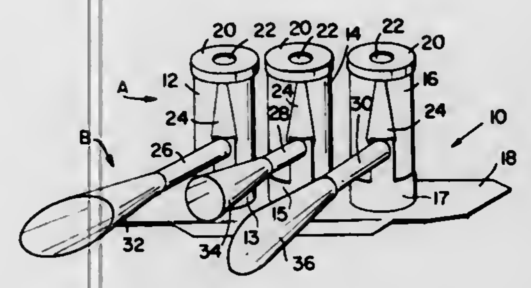
Harvey B. Schow, 2320 1/2 Brant St., San Diego, Calif. 92101, and Macy L. Abrams, 4717 Baylor Dr., San Diego, Calif. 92115
Filed Aug. 6, 1973, Ser. No. 385,947
Int. Cl. G09b *25/02*
U.S. Cl. 35—13 **17 Claims**



1. An arc welding simulator for teaching an operator the various motor skills comprising:
- a work surface componet including a movable simulated welding puddle;
- means for moving said puddle with a predetermined movement simulating a weld path;
- a welding rod holder component to be manually manipulated by the operator relative to the work surface component;
- a simulated welding rod component movably supported by said holder for following said movable puddle;
- means for moving said welding rod relative to the holder at a rate simulating consumption of the welding rod;
- means on the welding rod for sensing the distance between the end of the welding rod and the puddle which distance comprises a simulated arc length;
- said components providing practice for the behavior skills involved in the welding process; and
- sensor circuits operatively connected to selected components for providing immediate feedback signals to the operator indicative as to his proficiency in the various behavior skills during his simulated welding pass.

3,867,770
SPEECH THERAPY DEVICE

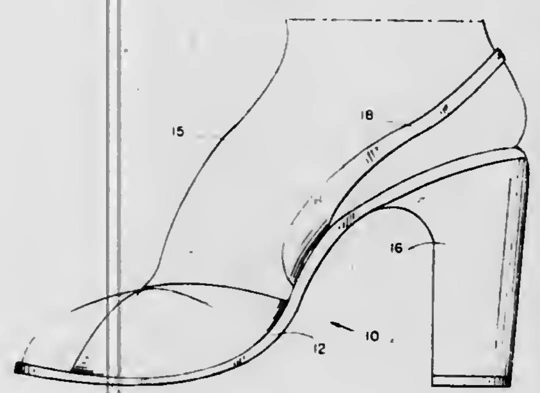
Michael S. Davis, 730 Boris Ct., Rohnert Park, Calif. 94928
Filed Nov. 14, 1973, Ser. No. 415,571
Int. Cl. G09b *19/04*
U.S. Cl. 35—35 R **17 Claims**



1. Apparatus for indicating and teaching proper tongue formation for speaking, said apparatus comprising:
- means for at least partially capturing the air expelled from the mouth of an individual, said capture means including means for isolating the respective air expelled from different parts of the mouth; and means for visually indicating the magnitude of air expelled from each said different part of the mouth.

3,867,771
RESILIENT RETAINER FOR HEEL STRAP OF A SHOE

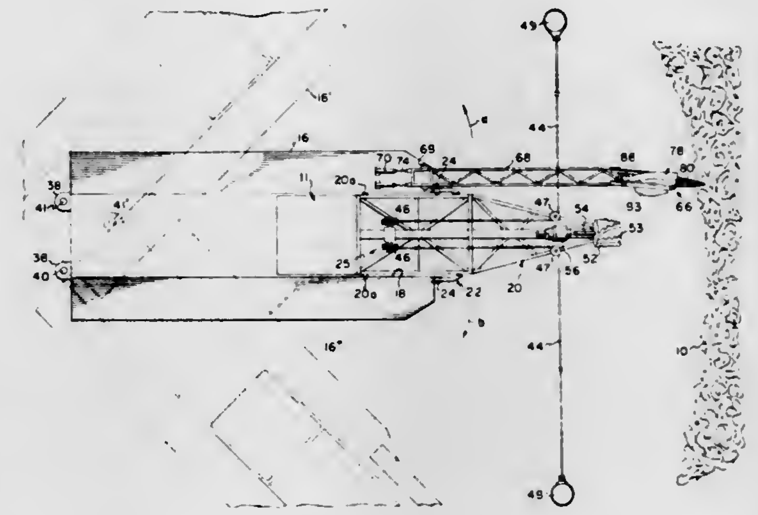
Beth Levine, c/o Herbert Levine, Inc., 161 Sixth Ave., New York, N.Y. 10013
Filed Mar. 13, 1974, Ser. No. 450,891
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **10 Claims**



1. In a shoe, an insole; elastic means fixed to said insole in the region adapted to support the lower arch of a human foot; said elastic means including free end portions substantially directed in respective opposing lateral sides of said insole; a substantially inelastic heel strap having each free end thereof connected to a respective end portion of said elastic means and suitable for extending behind and resiliently engaging the arch of the foot above the heel when the foot is fully received in the shoe, the free ends of said heel strap being orientable and disposable in selective positions relative to said insole in response to stretching and deformation of said elastic means, whereby the effective length of said heel strap can be changed and the latter can accommodate itself to feet of different sizes and shapes and changing positions of the foot during walking while maintaining a comfortable fit for the wearer.

3,867,772
METHOD OF EXCAVATING TO FORM OR ENLARGE A WATERWAY

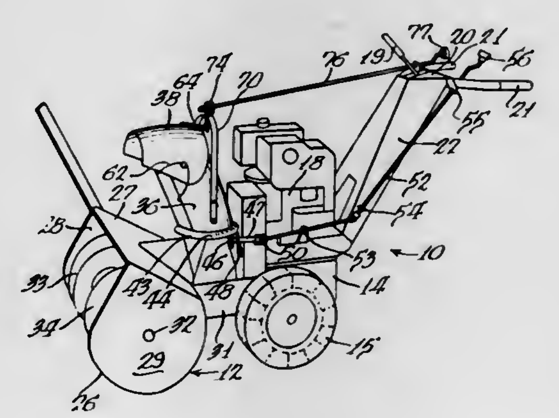
Leward N. Smith, 491 Somerset Saginaw, Remus, Mich. 48603
Division of Ser. No. 221,538, Jan. 28, 1972, Pat. No. 3,777,375. This application July 23, 1973, Ser. No. 381,705
Int. Cl. E02f *5/28*
U.S. Cl. 37—195 **5 Claims**



1. A method of enlarging an underwater basin or body of water having an earth bank with chippable material such as brush, trees, roots and the like growing at the bank comprising the steps of:
- breaking up and collecting earth material and mixing it with liquid to form a slurry, and then applying forces to the collected earth slurry to remove it to a remote location; simultaneously forcing the above ground chippable material, such as brush, forwardly toward the above ground material behind it to bunch the chippable material; and
- reducing the bunched chippable material to chips and fragments and mixing them with said liquid so that said chippable material is removed with said slurry to said remote location.

3,867,773
ADJUSTABLE DEFLECTOR FOR SNOW REMOVAL MACHINE

Ralph R. Gunderson, 8212 S. Homan, Chicago, Ill. 60652
Filed May 21, 1973, Ser. No. 362,386
Int. Cl. E01h *5/00*
U.S. Cl. 37—43 R **10 Claims**



1. A snow removal machine, comprising,
- a. a wheeled chassis having a prime mover and a control station,
- b. a snow removal frame on the chassis including a snow gathering housing,
- c. snow removal blades rotatable in the housing,
- d. an upwardly directed snow discharge chute rotatable on the housing about an upright axis,
- e. a deflector pivotally mounted on the upper end of the chute for movement between an upper position and a

lower position and means for normally urging said deflector toward said upper position, and

f. means for pivotally adjusting the deflector from the control station, including
  F-1. a support bracket having a cable guide,
  F-2. means mounting the bracket with the cable guide in line with the axis of rotation of the chute,
  F-3. a single cable having one end secured to the deflector for moving said deflector toward said lower position, and
  (f-4)
  A roatable shaft mounted on the bracket and having an end portion positoned above the cable guide and being connected to the other end of the cable, an intermediate portion of the cable bearing on the cable guide whereby rotation of the end portion of the shaft advances the cable past the guide and about the end portion to move the deflector toward said lower position.

3,867,774
PICTURE FRAME

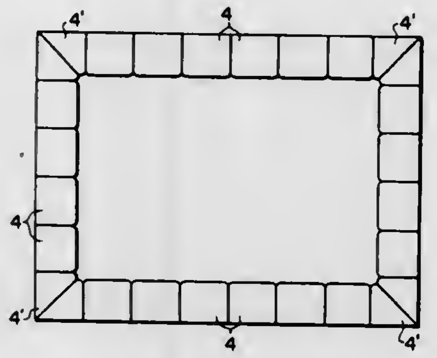
Katsuko Kise, 35-10, Asakusabashi 1-chome, Daito-ku, Tokyo, Japan

Filed June 4, 1973, Ser. No. 366,573

Claims priority, application Japan, June 7, 1972, 47-67198 [U]; Oct. 31, 1972, 47-125890 [U]

Int. Cl. G09f *1/12*

U.S. Cl. 40—155 **2 Claims**



1. A picture-frame assembly for mounting within a decorative peripheral frame a work, such as a picture, photograph or the like, said assembly comprising a planar board having a front and a back face and generally sized to approximate the size of said work upon which said work is adapted to be placed, a plurality of relatively small individual clips adapted to be releasably placed about the edges of said work and of said board to extend from engagement against the face of said work to engagement against the rear face of said board, said clips being formed of resilient material and configured to hold said work and said board together by a spring force created therebetween by said clips, said board and said clips being sized relative to each other so that each individual clip occupies only a relatively small fraction of the periphery of said assembly and so that when said clips are placed immediately adjacent each other along the edges of said board and of said work they substantially occupy the entire periphery of said assembly without gaps between said clips, with said clips extending a distance over the face of said work to form a continuous decorative border therefor, said board including spaced horizontal and spaced vertical graduation means, said graduation means being spaced a distance substantially equal to the width of one or more of said clips, whereby said board may be separated at selected graduation means to thereby adapt the board to the size of the work with the number of clips utilized to form said frame being variable depending on the selected size of said board.

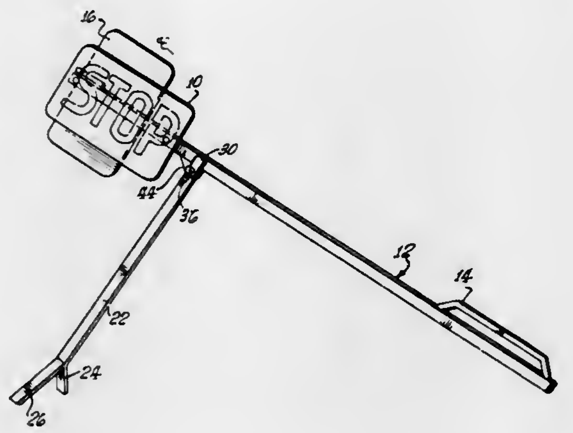
3,867,775
FLAGMAN SIGNAL DEVICE

James O. Lapham, San Dimas, and Richard C. Atha, Hacienda Heights, both of Calif., assignors to James O Lapham, Covina, Calif.

Filed Nov. 30, 1973, Ser. No. 420,450

Int. Cl. G09f *7/18;* **E01f** *9/10*

U.S. Cl. 40—125 H **3 Claims**



1. A highway flagman signal device comprising:
a warning signal bearing a warning legend,
a long bar rigidly fixed at one end to said sign with the longitudinal axis of the bar substantially parallel to the plane of the sign and having a handle at the other end adapted to be manually held,
a support leg having a ground engaging end,
means pivotally joining the other end of said leg to said bar at a position between said sign and handle and close to said sign on a pivot axis substantially normal to said sign plane and bar axis for selective swinging of said leg between an extended position wherein the leg is extending transversely of said bar to provide a pivotal ground support for supporting said signal device held in a position of use wherein said bar is generally horizontal and a retracted position wherein said leg rests against said bar with its ground engaging end adjacent said handle, and
said legend being disposed in a normal reading position for oncoming motorists when said signal device occupies said position of use.

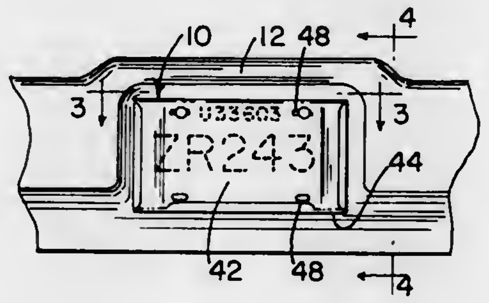
3,867,776
LICENSE PLATE HOLDER

Carl W. Drummond, Rt. 3, Box 216, and Donald L. Weber, 171 Ash St., both of Lake Zurich, Ill. 60047

Filed July 9, 1973, Ser. No. 377,511

Int. Cl. G09f *7/00*

U.S. Cl. 40—209 **3 Claims**



1. A license plate holder for mounting a rectangular license plate therein on a vehicle and for protecting the license plate against damage caused by vehicle-wash vertical axis rotary brushes, said license plate having a first pair of fastener openings positioned along a line parallel and adjacent a first elongated edge, said holder comprising: an integral sheet of stiffly resilient material having overall dimensions at least slightly greater than said license plate, said sheet material having vertical edges folded at the lateral extremes thereof to provide a single lock fold, at each of said lateral vertical edges; said holder having each lateral bent-back marginal portion thereof bent rearwardly along vertical bend regions located between the respective lateral edges of the holder and respective adjacent fastener openings; said vertical bend region defining a raised offset central panel in said holder, and wherein each of said bent-back portions form an obtuse angle with the rear face of said raised offset central portion; said holder also having an elongated single lock fold extending along that edge of said offset central panel opposite the first edge for securing an opposing portion of said plate thereunder, said elongated single lock fold extending between said bend lines, and being positioned to receive the corresponding edge of said license plate thereunder when said fastener openings of said plate and said holder are in register; said holder having a second pair of openings in the central portion thereof adjacent said elongated single lock fold for passage of fasteners therethrough, said openings being in register with said fastener openings on said license plate when said license plate is mounted in said holder; said lateral vertical single lock folds being spaced-apart from each other a sufficient distance to receive the lateral edges of said license plate therein, and for said holder to receive said plate parallel therewith.

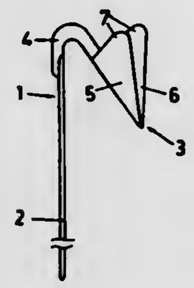
3,867,777
IDENTIFICATION TAG FOR ANIMALS AND/OR AN APPLICATOR FOR IDENTIFICATION TAGS

Douglas John Potter, Kelso No. 5 R.D. Gore, Southland, New Zealand

Filed Sept. 26, 1973, Ser. No. 400,913

Int. Cl. G09f *3/04*

U.S. Cl. 40—301 **4 Claims**



2. The combination comprising an animal identification ear tag applicator comprising an elongated member having a pointed end substantially C-shaped for forming a slit in an ear of an animal to which an ear tag is to be applied, said member having a hollow interior at said pointed end and a closed slot along the longitudinal axis of said member near said pointed end; and a resilient one piece animal identification ear tag comprising a holding head, an indicia bearing panel and a thickened angular neck portion connecting said head to said indicia bearing panel and defining an acute angle therebetween, the holding head consisting of three abutment shoulders extending away from the thickened neck portion, each of said shoulders including a triangular wing of thin cross section, the first and second wings being in one plane and the third wing extending normal to said plane and centrally disposed between said first and second wings, said first and second wings being characterized by resiliently folding substantially parallel to the third wing for insertion in said closed slot so that the three abutment shoulders of the head are juxtaposable in parallel in the closed slot of the elongated member;
  said slot being substantially near said pointed end of said applicator so that when the front of the ear of the animal is slit by the end of the pointed member the holding head retained within said slot of the applicator is carried substantially through the slit whereupon the holding head is angled to abut the slit and the abutment shoulders are adapted to engage the rear end of the closed slot to eject the holding head from the closed slot, thereby allowing the resilient folded first and second wings to open and assume an extended position with the head abutment shoulders engaging the rear side of the animal's ear.

3,867,778
AUTOMATIC CHOKE FOR HUNTING RIFLES

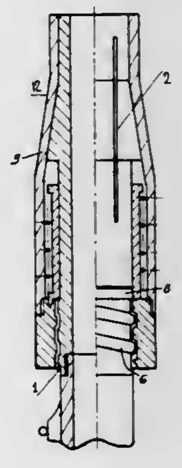
Giuliano Preda, Via Mezzofanti 77, and Romolo Marchi, Via Pellegrino Matteucci 10, both of Bologna, Italy

Filed May 2, 1973, Ser. No. 356,436

Claims priority, application Italy, May 4, 1972, 3413/72; Dec. 7, 1972, 3609/72

Int. Cl. F41c *21/00*

U.S. Cl. 42—79 **17 Claims**



1. A progressive automatic choke for a buckshot rifle having a rifle barrel, said choke comprising a tubular element screwed to the extremity of the rifle barrel and having longitudinal slots spaced at equal distances from one another and also having a median part with a longitudinal truncated cross section, a release tooth carried by said tubular element, a slidable external sleeve having a plurality of notches in its terminal part, said release tooth engaging said notches to determine the extent of back sliding of said sleeve, and a coil spring engaging said sleeve and causing the back sliding of said sleeve, said back sliding causing a reduction of the diameter of said tubular element, said release tooth operating by the recoil of the barrel at each discharge.

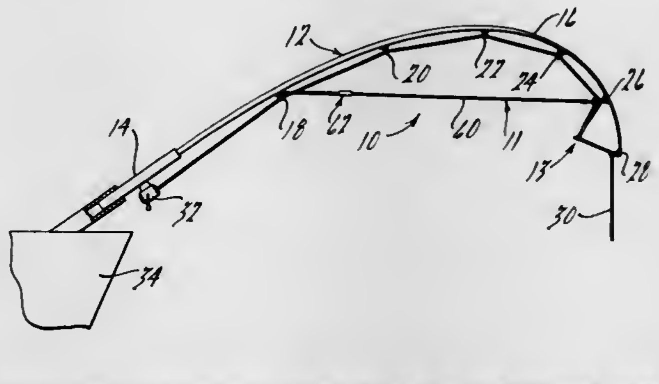
3,867,779
HOOK SETTING APPARATUS

Emery D. McMaster, 1309 Highland Dr., Petoskey, Mich. 49770

Filed Nov. 5, 1973, Ser. No. 412,686

Int. Cl. A01k *97/00*

U.S. Cl. 43—15 **5 Claims**

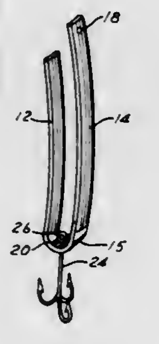


1. Apparatus for setting a fish hook on the fishing line of a fishing rod which rod includes a handle and a series of eyelets mounted along the rod for supporting and guiding the fishing line and including an eyelet at the distal end of the rod, an eyelet proximate to said distal end eyelet and an eyelet proximate the handle, said apparatus being independent of the support for said rod and comprising a flexible line, means on one end of said flexible line for detachably connecting said flexible line to said eyelet proximate the handle, and means on the other end of said flexible line for releasably engaging said

eyelet proximate the distal end of the rod for holding the rod in a desired bowed condition and releasing said eyelet proximate the distal end of the rod in response to a predetermined pull on the fishing line, said last named means comprising a hook member connected to said other end of said flexible line and adapted to releasably hook into said eyelet proximate the distal end of the rod and an arm on said hook member having an outer end adapted to be disposed between said eyelet proximate to the distal end of the rod and said eyelet at the distal end of the rod and in spaced relation to the rod and adapted to have the portion of the fishing line intermediate the distal end eyelet and the eyelet proximate the distal end trained over it so that a predetermined pull on the fishing line moves the arm and the hook to unhook the latter from said eyelet proximate the distal end of the rod.

3,867,780
SLOW TROLL FISHING LURE

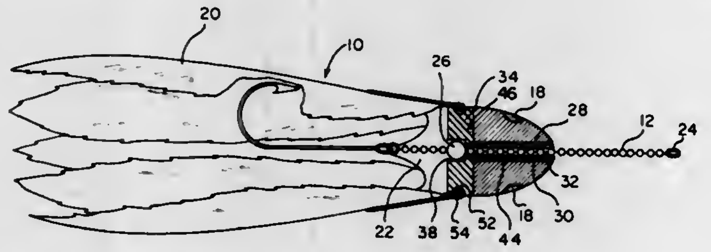
Charles H. Litzinger, 440 W. Caley Dr., Littleton, Colo. 80120
Filed Sept. 6, 1973, Ser. No. 394,921
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.5 **2 Claims**



1. In a fishing lure for slow travel through water having a general U-shape with one leg thereof longer than the other and both legs being arcuate along a radius of curvature in a longitudinal direction, line attaching means to the longer leg thereof and hook attaching means to the bight between said legs, the improvement in which said legs are laterally arcuate along their length, each said leg having approximately the same lateral radius of curvature to provide an approximately parallel lateral extent of said legs and wherein said lateral radius of curvature of said legs to the width of said legs is in a ratio of from 0.6–1.0 providing a high side to side action of said lure at slow travel.

3,867,781
TROLLING FEATHER

Henry S. Wolfe, Beaver Hill Bldg. (South), Jenkintown, Pa. 19046
Filed Jan. 18, 1973, Ser. No. 324,565
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.09 **8 Claims**



1. In a trolling feather construction including a hook which is attached to a fishing line for trolling through water, the combination of

A. flexible means connected to the hook to permit substantially unrestricted movement of the trolling feather through water,
  1. said flexible means haaving a first end and a second end,
  2. said first end affixing to the hook,
  3. said second end affixing to the fishing line;

B. catch means medially carried by the flexible means to serve as a stop,
  1. said catch means having a cross-sectional configuration which is larger than the cross-sectional configuration of the flexible means;

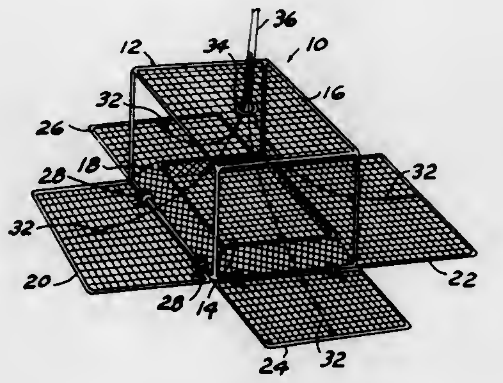
C. a weighted head removably associated with the said flexible means,
  1. said head being provided with a first axial bore,
  2. a portion of the flexible means being insertable forwardly into the first axial bore,
  3. the catch means limiting the forward travel of the flexible means relative to the head;

D. head stop means removably associated with the flexible means to maintain the head in a predetermined position;
  1. said head stop means including a head stop which has a second axial bore,
  2. the said flexible means inserting through the second axial bore,
  3. the said head stop means having axial motion relative to the flexible means,
  4. the head stop including a radially extending flange;

E. and colored feathers attached to the head stop at the flange thereof,
  1. said colored feathers extending rearwardly and covering the said hook.

3,867,782
CRAB TRAP

Nilson V. Ortiz, 1064 S. Vanness Ave. Apt. 4, San Francisco, Calif. 94110
Filed Feb. 19, 1974, Ser. No. 443,897
Int. Cl. A01k *69/10*
U.S. Cl. 43—105 **2 Claims**

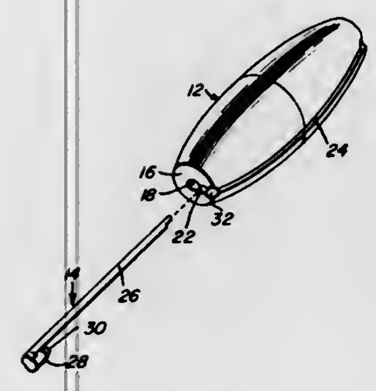


1. A crab trap, comprising:

a right rectangular open wire frame having a section of wire mesh secured to its bottom and top for forming a bottom panel and a top panel in vertically spaced relation;
an endless wall secured at its depending limit to the perimeter of said bottom panel and terminating at its upper limit intermediate the height of said frame for forming an enclosure within said frame,
said endless wall being inclined inwardly and upwardly from said bottom panel for forming a ramp permitting entry of crabs to the enclosure;
side and end wall wire mesh panels hingedly connected respectively to the respective marginal side and end of said bottom panel; and,
a flexible hoist strand connected, at one end, with each side and end panel, respectively, and extending at its other end portion through the central portion of said top panel.

3,867,783
QUICK CHANGE FISHING FLOAT

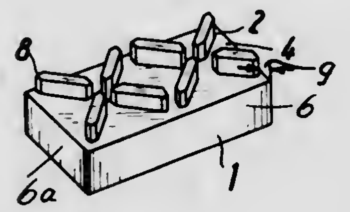
Roger J. Simpson, P.O. Box 1078, Merritt Island, Fla. 32952
Filed Sept. 13, 1973, Ser. No. 396,693
Int. Cl. A01k *97/02*
U.S. Cl. 43—44.91 **4 Claims**



1. A float comprising a buoyant body, a line passage through said body for free sliding movement of the float on a passage received line, a line retaining member selectively received within one end of said line passage in wedged relation to said line passage and a passage received line to preclude movement of the float relative to a passage received line, a pin bore within said body parallel and adjacent to said line passage, and an elongated pin slidably and rotatably received within said pin passage, said line retaining member comprising a lateral projection on said pin selectively insertable within said one end of the line passage upon a rotation of the pin to align the projection with said one end of the line passage and an inward sliding of the pin into the pin passage and the projection into said one end.

3,867,784
TOY BRICK AND COMBINATION OF TOY BRICKS

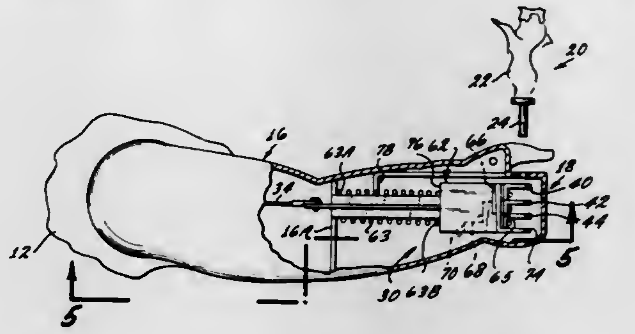
Helmut Lange, Bez. Hamburg 1, Industrie-str. 5, 2 Schenefeld, Germany
Filed Oct. 9, 1973, Ser. No. 404,763
Claims priority, application Germany, Oct. 7, 1972, 368548
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **12 Claims**



1. A toy brick comprising a box-shaped part with side and end walls and with a top wall while being open at the bottom, and a plurality of elastically deformable holding means connected to the outside of said top wall in a symmetrically paired arrangement, at least some of said holding means being fin-shaped, said fin-shaped holding means being arranged crosswise with regard to each other with a gap between each two holding means facing each other with their adjacent ends, one end of two holding means in crosswise arrangement respectively pointing to two adjacent corners of said box-shaped part.

3,867,785
OBJECT IDENTIFYING DOLL

John W. Ryan, Los Angeles; Melvin R. Kennedy, Harbor City, and James E. Marshall, Santa Ana, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 26, 1973, Ser. No. 335,852
Int. Cl. A63h *5/00*
U.S. Cl. 46—117 **3 Claims**



3. In a toy, the combination comprising:

housing means including a wall having an aperture provided therein;
a carrier mechanism slidably mounted in said housing means, said carrier mechanism including first wall means; a plurality of elements mounted in said carrier mechanism, each of said elements having a stop provided thereon and an opening provided therein;
means normally biasing said first wall means into engagement with said stops for urging each of said elements to a position where its opening is aligned with said aperture; animating means for producing a plurality of output animations corresponding to different objects;
cable means connecting said animating means to said carrier mechanism for conditioning said animating means to produce a different output animation for each of several positions of said carrier mechanism;
a plurality of objects each having a post different in length from any other said posts, each of said posts being insertable in said aperture and being adapted to pass through one or more of said openings, depending upon the length of the particular post inserted into said aperture, whereby each post will block movement, relative to said housing wall, of any said element having an opening through which a post passes; and
second wall means provided on said carrier mechanism for engaging said stops on said elements, said second wall means and said stops on said elements being constructed and arranged relative to each other so that said carrier mechanism will be stopped at a different predetermined position for each blocked element.

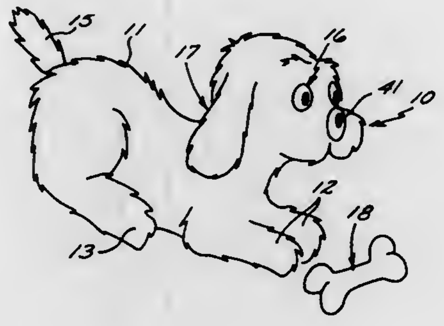
3,867,786
MAGNETICALLY-CONTROLLED ANIMATED TOY

Abe Greenblatt, Dallas, Tex., assignor to Peter Tseng, Monterey Park, Calif.
Filed Sept. 27, 1973, Ser. No. 401,135
Int. Cl. A63h *29/22*
U.S. Cl. 46—236 **6 Claims**

1. In combination with an animated dog-toy adapted to be energized by an electric battery-operated motor through an electrical circuit, the invention comprising:

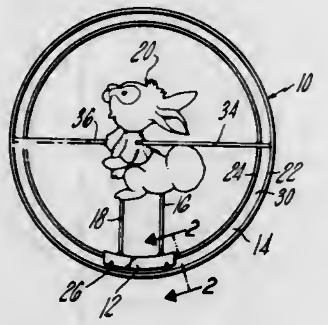
a magnetic reed switch, incorporated into the nose/mouth area of said dog-toy, for controlling the energization of said dog-toy by said motor coupled to ground engaging wheels;
a permanent magnet incorporated into a dog bone, for activating said magnetic switch when said dog bone is manually placed in close proximity with said nose/mouth area of said dog-toy;
means for causing the magnetic field of said permanent magnet in said bone to close said magnetic switch in said dog-toy, to complete an electrical circuit to said battery/-

motor, to permit energization of said dog-toy by said motor;
a pair of spherical eye sockets fixedly mounted within said dog-toy;
an eyeball having a pupil thereon, said eyeball being freely disposed within said spherical eye socket, said eye socket having an inner diameter larger than the outer diameter of said eyeball, whereby space therebetween is provided;
said eyeball having at least one pupil secured thereto;
a permanent magnet positioned within said eyeball; and
a support liquid disposed in said space between said eyeball and said eye socket, whereby said eyeball is allowed to freely rotate within said spherical eye socket in a floating relationship thereto.



3,867,787
HOOP TOY

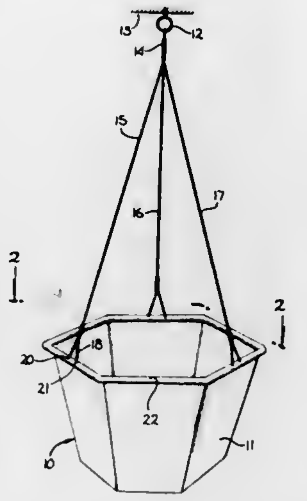
Siegfried Weinger, 11 Vernon Ct., Woodbridge, Conn. 06525
Filed July 25, 1973, Ser. No. 382,478
Int. Cl. A63h *11/10*
U.S. Cl. 46—100 **5 Claims**



1. A hoop toy including:
a hoop member having a modified I-beam shape in crosssection with an outer flange, an inner flange and a web connecting said flanges, said inner flange being narrower than said outer flange and said flanges defining a track therebetween;
carriage means mounted for rolling movement about said hoop, said carriage means including a U-shaped member with the closed end thereof bridging said inner flange and the sides thereof extending past said inner flange toward said outer flange;
a pair of wheels at each side of said connecting web between the ends of said carriage, said wheels being in rolling contact with the inner surface of said outer flange;
a pair of support struts extending from said carriage means within said hoop; and
figure means mounted on said support struts.

3,867,788
PLANT CARRIER

Richard C. Mickelson, 623 F. West Stoeker, Los Angeles, Calif. 91202
Filed May 29, 1973, Ser. No. 364,673
Int. Cl. A47g *7/00*
U.S. Cl. 47—35 **2 Claims**



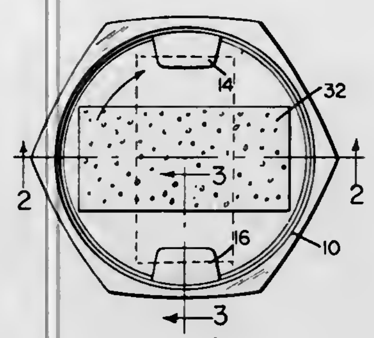
1. A plant carrier for holding a growing plant
and its supporting soil comprising:
an enclosure having a flat bottom and an integral sidewall projecting upward and outward from the peripheral edge of said bottom;
said sidewall terminating at its free end in a reverse curled lip having a rounded peripheral edge defining a central opening leading into the interior of said enclosure;
said sidewall further having a predetermined geometric shape in horizontal cross section;
reinforcement means integrally formed in said bottom so as to radiate outwardly to said sidewall for rigidizing said enclosure;
attachment means for said enclosure comprising at least three pairs of openings arranged in fixed spaced apart relationship about said lip and a hanging wire system comprising at least three wires having loops trained through said holes for hanging said enclosure in a hanging mode of utilization;
said attachment means is disposed within the inner curve of said reverse curled lip comprising a stiffening rib extending transversely across said lip and further being disposed between each pair of said attachment means openings;
a plurality of stand-offs integrally formed in said bottom for supporting said enclosure in a standing mode of utilization;
a drainage means for said enclosure comprising a plurality of bottom portions of reduced thickness adapted to be severed from said bottom to leave a plurality of drainage holes therein.

3,867,789
SELF-LOCKING FLORIST PLANTER

Benjamin D. Jacobson, c/o Craftsman Products Co., 13 E. Worcester St., Worcester, Mass.
Filed Mar. 5, 1973, Ser. No. 338,346
Int. Cl. A01b *5/00;* A47g *7/00*
U.S. Cl. 47—41.12 **1 Claim**

1. The combination of a florists' planter including a bottom and side walls with a block of water-absorbing cellular flower stem holding material,
including a horizontal material slicing fin on a side wall of the planter, the fin being integral with the side wall of the planter, and extending only part way into the planter above the bottom thereof, leaving a void in a vertical direction in the planter into which void the block of cellular material may be freely inserted to rest on the bottom of the planter, the block being of a size to enter the void,

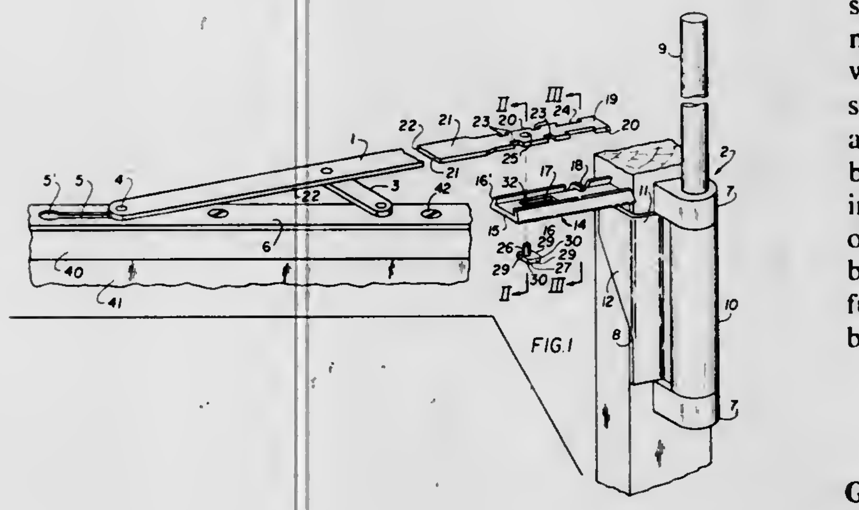
whereby a twist of the block on a vertical axis may cause the fin to slice into the block and become lodged therein,



the block of cellular material having a thickness greater than the height of the fin above the bottom of the planter.

3,867,790
STAY ARRANGEMENT FOR A WINDOW OR DOOR OF THE TURN-AND-TILT TYPE

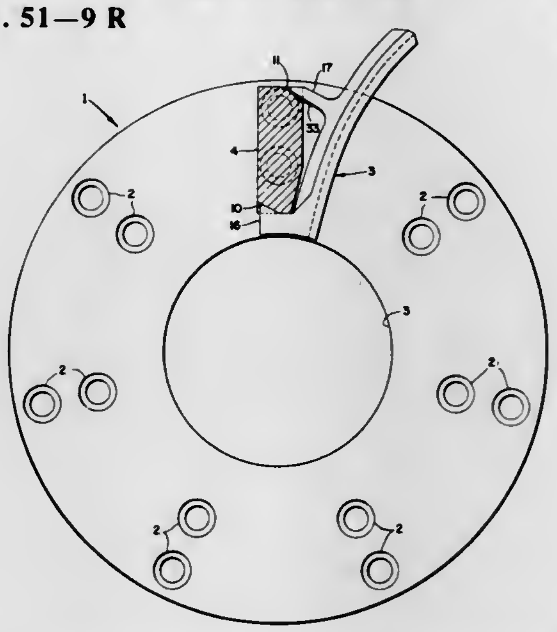
Wilhelm Frank, Leinfelden, Germany, assignor to Frank Wilh. GmbH, Leinfelden, Germany
Filed Dec. 14, 1973, Ser. No. 424,908
Claims priority, application Germany, Dec. 20, 1972, 2262341
Int. Cl. E05d *15/04*
U.S. Cl. 49—381 **9 Claims**



1. A stay arrangement for a window or door panel pivotally movable relative to an associated frame comprising:
- a. a pivot assembly having a stationary part adapted to be attached to said frame, and a movable part connected to said stationary part for relative movement about an axis;
- b. a connector member fixedly attached to said movable part and elongated radially relative to said axis, said connector member being channel-shaped and having a web portion and two flange portions sloping away from said web portion at respective acute angles and toward each other;
- c. an elongated arm member, one longitudinally terminal portion of said arm member being received in said connector member in conforming, longitudinally slidable engagement with said web and flange portions;
- d. securing means for securing the other longitudinally terminal portion of said arm member to said panel; and
- e. limiting means for limiting relative longitudinal movement of said arm member in said connector member.

3,867,791
ABRASIVE BLASTING MACHINE

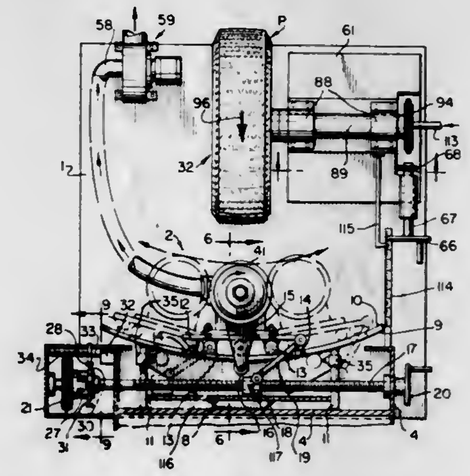
James R. Goff, 6601 Shawnee Dr., Oklahoma City, Okla. 73116
Filed May 13, 1974, Ser. No. 469,567
Int. Cl. B24c *5/06*
U.S. Cl. 51—9 R **10 Claims**



1. In a rotatable centrifugal abrasive blasting device comprising a driven wheel; a plurality of circumferentially spaced radially extending blades mounted on said wheel, said blades having inner and outer ends and front and rear surfaces; said inner ends of said blades defining a central opening; a hollow, vaned, driven impeller mounted in said central opening rotatable with said wheel; a stationary control cage around said impeller, said control cage having an opening therein for the passage of abrasive material from said impeller onto said blades; and means for feeding particulate, abrasive material to said impeller; the improvement wherein said blades are mounted on said wheel by means of blade blocks on said wheel; said blade blocks having inner and outer ends; each of said blade blocks having a first groove proximate its inner end and a second groove proximate its outer end; each of said blades having a first lug on its inner, rear surface for insertion in said first groove of said block, and a second lug on the rear of each blade, said second lug intermediate the ends of the blade for insertion in said second groove of said block; and further wherein said impeller obstructs movement of said blades in a direction radially inward.

3,867,792
APPARATUS FOR BUFFING WORN TIRES

Guy Pelletier, Ville D'Anjou, Quebec, Canada, assignor to Rockland Industries Ltd., Quebec, Canada
Filed Apr. 16, 1973, Ser. No. 351,548
Claims priority, application Canada, May 8, 1972, 141613
Int. Cl. B29h *21/01*
U.S. Cl. 51—33 W **3 Claims**



1. Apparatus for buffing the tread portion of tires to be retreaded comprising: a frame, buffer guide means secured to

said frame and extending essentailly parallel to the axis of rotation of said tire, a carrier movable along said buffer guide means, a buffer assembly mounted to said carrier for moving therewith, a mounting structure adapted to support a tire whose tread is to be ground by said buffer assembly, and positioning means adapted to vary the distance between the axis of rotation of said tire and said buffer guide means along a line extending essentially radially of said tire thereby to determine the depth of the buffing taking place upon rotation of said tire around its axis of rotation and rotation of the grinding wheel of said buffer assembly,

said buffer guide means comprising as a principal component a rigid member forming an arcuate surface facing said tire, said arcuate surface being concave and having its imaginary chord extending essentially parallel to the axis of rotation of said tire, said carrier comprising guide rollers bearing against said arcuate surface and causing said buffer assembly to follow said arcuate surface when moved along said buffer guide means transversely of the tread portion of said tire,

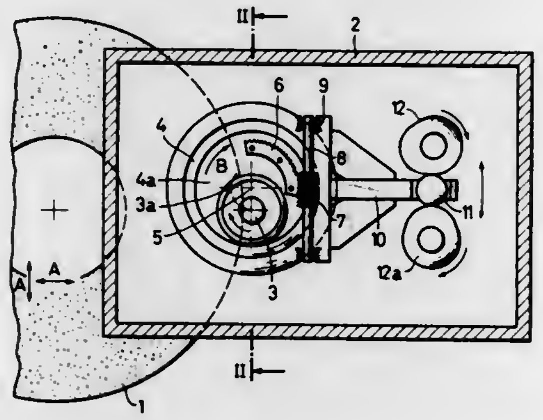
said buffer assembly further comprising a buffer motor secured to said carrier, an output shaft rotatable by said motor and supporting said grinding wheel, and brake means operable to stop rotation of said output shaft, suction means operatively associated to said grinding wheel and adapted to aspirate the ground particles detached from said tire during buffing of its tread portion by said grinding wheel, said suction means comprising a dust collecting cover partly enclosing said grinding wheel, an aspirator and a vacuum tube coupling said dust collecting cover to said aspirator, and

said buffer motor being adapted to selectively rotate said grinding wheel in either direction, and wherein said dust collecting cover includes vane means pivoted within said dust collecting cover and adapted to prevent the escape of dust accepted through said vacuum tube, said vane means being pivotable between two extreme positions, each extreme position corresponding to a sense of rotation of said grinding wheel.

3,867,793

RELIEF GRINDING ATTACHMENT FOR SCREW TAP GRINDING MACHINES AND POLYGON GRINDING

Erwin Junker, Talstrasse 78, Nordrach/Baden, Germany
Continuation of Ser. No. 336,698, Feb. 28, 1973, abandoned. This application Nov. 8, 1973, Ser. No. 413,881
Int. Cl. B24b *3/22*
U.S. Cl. 51—97 R **9 Claims**



1. A relief grinding machine suitable for performing relief grinding and polygon grinding operations comprising:

grinding wheel means;

spindle shaft means displaceable toward and away from said grinding wheel means and adapted to carry a clamping chuck for holding a workpiece;

control lever means comprising:

means rotatable about a central axis, and

lever arm means rigidly connected to said rotatable means;

means mounting said spindle shaft means relative to said control lever means such that the longitudinal axis of said spindle shaft means is disposed eccentrically relative to said central axis;

means for transmitting rotary motion between said control lever means and said spindle shaft mounting means such that rotation of said control lever means produces movement of said spindle shaft axis relative to said grinding wheel means; and

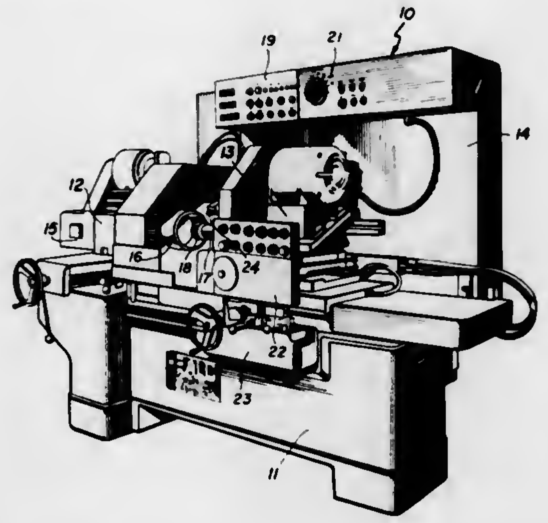
a plurality of lead cams engaging the free end of said lever arm means such that movement of the cams produces rotation of said control lever means to move said spindle shaft axis relative to said grinding wheel means;

said spindle shaft mounting means being selectively shiftable relative to said control lever means for changing the location of the longitudinal axis of said spindle shaft means relative to said central axis independently of rotation of said lever arm means so as to concurrently change the position of said spindle shaft means relative to said grinding wheel means for a given orientation of said lever arm means.

3,867,794

GRINDING MACHINE

Edward G. Robillard, Cherry Valley, Mass., assignor to Cincinnati Milacron-Heald Corporation, Worcester, Mass.
Filed Mar. 8, 1974, Ser. No. 449,224
Int. Cl. B24b *49/16*
U.S. Cl. 51—165.77 **10 Claims**



1. A grinding machine for the finishing of a surface of revolution on a workpiece, comprising

a. a base,

b. a workhead mounted on the base for supporting the workpiece,

c. a wheelhead mounted on the base for carrying a spindle with an abrasive wheel,

d. a dressing apparatus,

e. control means bringing about relative movement between the wheelhead and workhead longitudinally and transversely of the axis of the said surface of revolution to produce a grinding cycle between the wheel and the workpiece, the cycle consisting of a rough grind, a dress, and a finish grind,

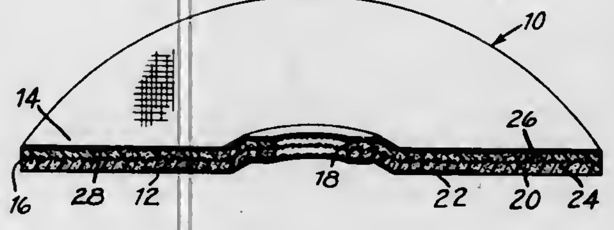
f. means connected to the control means to determine a point of termination of the rough grind when the surface reaches a predetermined size, and

g. means measuring the distance from a predetermined point to the point of termination of the rough grind, backing the wheel that same distance for the dressing operation, and later returning the wheel that same distance minus a preset distance, so that the finish grind can start without loss of time and without striking the workpiece prematurely.

3,867,795

COMPOSITE RESINOID BONDED ABRASIVE WHEELS

William C. Howard, Worcester, Mass., assignor to Norton Company, Worcester, Mass.
Filed Oct. 16, 1973, Ser. No. 406,918
Int. Cl. B24d *7/04*
U.S. Cl. 51—209 R **9 Claims**



1. A reinforced resin bonded abrasive grinding wheel of predetermined thickness having a relatively narrow peripheral grinding face usually presented and worn at an angle during grinding, extending between a top and a bottom side, reinforcing material bonded thereto and means for mounting the wheel for rotstion about its axis, wherein the improvement comprises:

a primary abrading portion extending along the bottom side to the peripheral grinding face and occupying a portion of the predetermined thickness of the wheel, and having resin bonded primary abrasive particles of co-fused alumina-zirconia abrasive material containing from 10% to 60% by weight of zirconia; and

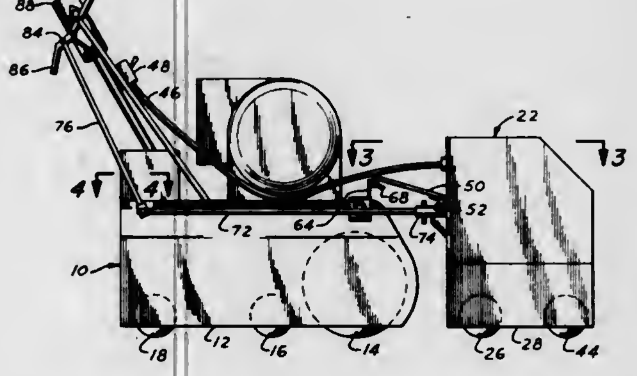
a secondary abrading portion bonded to and extending from the primary abrading portion to the top side and peripheral grinding face of the wheel and having

resin bonded secondary abrasive particles of a secondary abrasive material which differs from and of less durability than the alumina-zirconia abrasive material.

3,867,796

PROPELLING MEANS FOR FLOOR FINISHING MACHINES

Darwin D. Sonnenberg, Route 1, Hamler, Ohio 43524
Filed Feb. 25, 1974, Ser. No. 445,552
Int. Cl. B24b *23/00*
U.S. Cl. 51—176 **7 Claims**

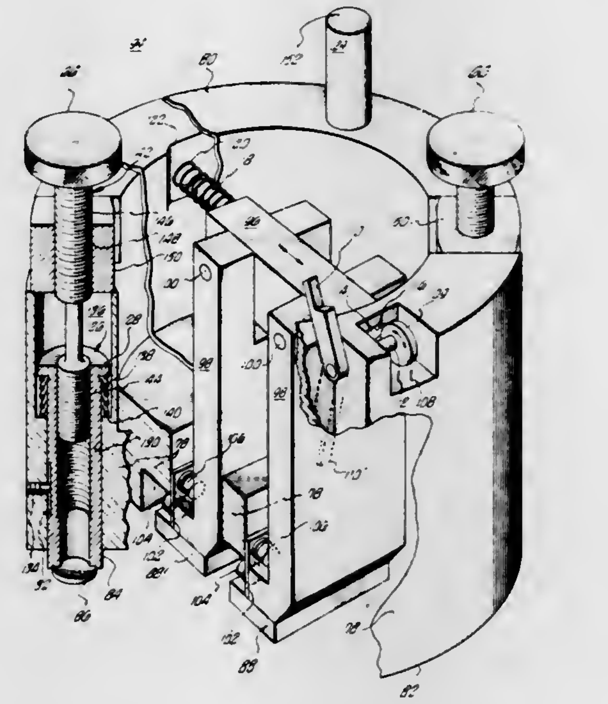


1. A power driving unit for a floor sander of the type having a pair of coaxial non-swivetable main support wheels and a swivetable support wheel spaced longitudinally thereof, said power driving unit comprising: a chassis, a pair of coaxial non-swivetable main floor engaging wheels for said chassis, a swivetale support wheel for said chassis spaced longitudinally of its main wheels, a motor on said chassis, drive means connecting said motor with one of said main support wheels of said unit, a draw frame, first hinge means connecting said draw frame to said chassis, second hinge means for connecting said draw frame to the floor sander, said hinge means being constructed and arranged to prevent turning motion between said driving unit and the floor sander but to permit vertical rocking action of the driving unit relative to the floor sander, a lever fastened to said chassis in a position to extend rearwardly externally of one side of the sander, and means adapted to be secured to the rear of the sander for raising or lowering said lever to lift the weight of said driving unit off of its drive wheels and onto its swivetable support wheel, and whereby the sander is automatically held in a straight line by the driving unit when the lever is moved to bring the power unit into its driving condition and the sander and power unit can be pivoted about the main support wheels of the sander when the lever is moved to bring the driving unit into its non-driving condition.

3,867,797

LAPPING FIXTURE

Markus B. Meier, Newbury Park, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 3, 1973, Ser. No. 421,327
Int. Cl. B24b *37/04*
U.S. Cl. 51—216 A **23 Claims**



1. In a lapping fixture for holding a workpiece to be lapped, the lapping fixture being adapted for urging a workpiece against a substantially flat lapping surface for grinding away portions of the workpiece extending beyond a lapping plane associated with the lapping fixture and polishing portions of the workpiece lying substantially in the lapping plane, the combination which comprises:

a. spacing means having a substantially flat contact surface adapted to be urged against the lapping surface, the contact surface defining the lapping plane;

b. a fixture body mounted to said spacing means at a fixed angular orientation with respect to the lapping plane;

c. means for holding a plurality of workpieces along a line of disposition substantially parallel to an axis of rotation for said holding means; and

d. means for rotatably mounting said holding means to said fixture body.

3,867,798

METHOD OF PRODUCING VARIABLE PROFILE BI-FOCAL LENS

Alan A. Masucci, 1230 Leland Ave., Bronx, N.Y. 10472
Filed May 15, 1973, Ser. No. 360,463
Int. Cl. B24b *13/02*
U.S. Cl. 51—284 **5 Claims**

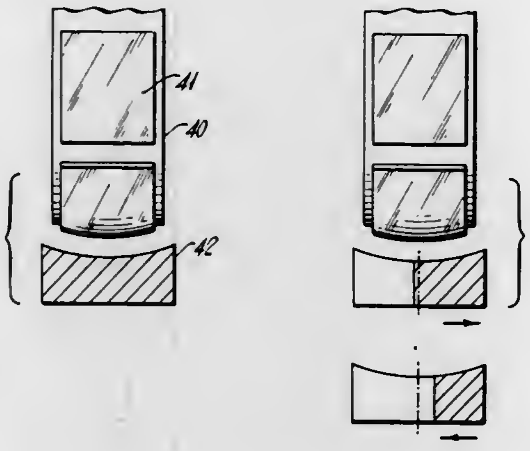
1. In a system for producing bi-focal lens of constant optical centering from semi-finished blanks having reading and distance portions separated by a dividing line, the method comprising,

a. the pre-selection of one or more diopter series having pre-determined distances,

b. establishing a pair of equal terminal lines from a central point equal to said diopter distance to finite positions above and below said dividing line representing the optical centering of the lens,

c. developing a plurality of radii from each of said terminal lines to each of the distance and reading portions, each of said radii being comparable to the prescriptive powers of the respective distance and reading portions of the lens,

d. placing each of a plurality of lens blanks of each series on a lens blocking wheel whose radius is comparable to the radius of curvature of the distance portion of said bi-focals in one direction,



e. grinding the lens on said wheel with a first shiftable grinding tool having a preselected radius of curvature to effect grinding of the lens according to selected distance optical powers, and capable of being shifted in a direction equal to the selected variation of said distance optic powers,

f. de-blocking lens blanks from said wheel and placing same on a second blocking wheel whose radius is comparable to the reading portion of said bi-focals in one direction, and

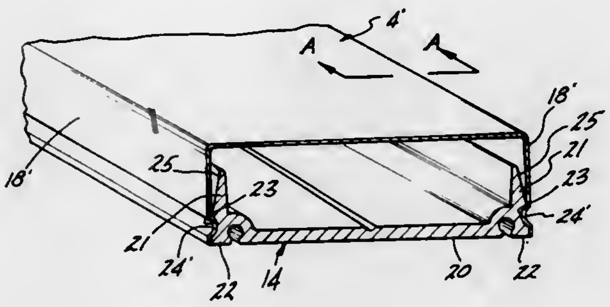
g. subjecting said wheel to the grinding action of a second partially sectioned grinding tool having a radius of curvature in another direction to said blocking wheel and disposed to being shifted in a direction equal to the variations of reading optic powers, the completed blanks of each selective series having constant optical centering for the minimization of vertical imbalance.

3,867,799
ARCHITECTURAL PRODUCTS FORMED OF GLASS OR CERAMIC-TO-METAL COMPOSITES

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

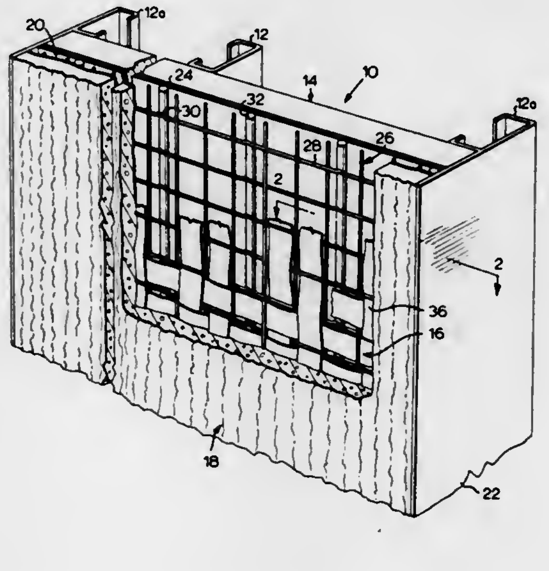
Division of Ser. No. 254,666, May 18, 1972, , which is a continuation-in-part of Ser. Nos. 78,899, Oct. 7, 1970, Pat. No. 3,676,292, and Ser. No. 231,834, March 6, 1972, Pat. No. 3,826,627. This application Feb. 11, 1974, Ser. No. 440,982
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 **16 Claims**

1. In a building curtain wall comprising a plurality of substantilly vertically and horizontally disposed structural members affixed to the outside of a building, a plurality of decorative panels and windows supported by said structural members, a plurality of retaining members secured to said structural members for retaining said panels and said windows in place and a plurality of facing members covering said retaining members and being supported by said retaining members, the improvement wherein said facing members are formed of a glass or ceramic-to-metal composite comprising a glass or ceramic component bonded to a copper base alloy component comprising from about 2 to about 12% aluminum and the balance essentially copper, said copper base alloy component adapted to contact said retaining members.



3,867,800
PRECAST RAIN-SCREEN WALL

Robert Gordon Elliott, Rexdale, Ontario, Canada, assignor to Gazelle Systems Ltd., Weston, Ontario, Canada
Filed Jan. 22, 1973, Ser. No. 325,935
Int. Cl. E04b *2/28, 2/14*
U.S. Cl. 52—347 **7 Claims**



1. A precast concrete wall panel comprising:

a panel having a plurality of spaced end studs and a rigid sheet of insulating material fixed to the studs;

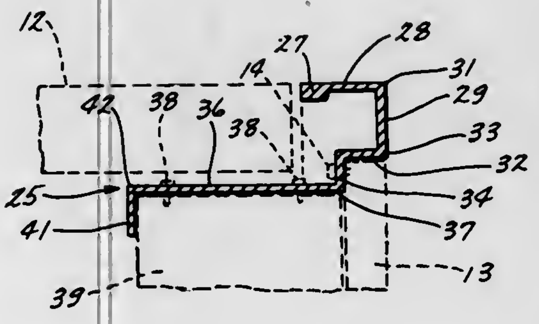
a rigid screen located on that side of the sheet of insulating material opposite the studs, said screen comprising a grid of intersecting strands, a web of flexible material interengaging the strands, vertically oriented laterally spaced means fixed to the screen and bearing against the sheet of insulating material whereby the screen is spaced from the sheet of insulating material and parallel thereto and providing an air space between the grid and the rigid sheet of insulating material, and means fixing the screen to the sheet of insulating material, and to the studs and

a concrete facing overlying the screen remote from the sheet of insulating material and bonded to the grid of intersecting strands.

3,867,801
EXTRUDED ALUMINUM DOOR FRAME

Duane A. Hoefling, 8708 Carole Circle, Des Moines, Iowa 50310

Filed Feb. 25, 1974, Ser. No. 445,077
Int. Cl. E04c *2/38*
U.S. Cl. 52—475 7 Claims



1. A vending machine door comprising:

a first extruded aluminum elongated member;

a second extruded aluminum elongated member having one end thereof secured to one end of said first extruded aluminum elongated member;

a third extruded aluminum elongated member having one end thereof secured to the other end of said second extruded elongated member;

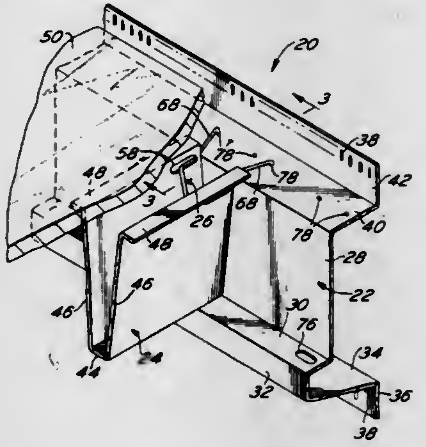
a fourth extruded aluminum elongated member having one end thereof secured to the other end of said third extruded aluminum elongated member, and the other end of said fourth extruded aluminum elongated member being secured to the other end of said first extruded aluminum elongated member;

said first, second, third and fourth extruded aluminum elongated members having an identical shape in cross-section, said cross-sectional shape comprising an outer perimeter wall portion having a substantially thickened reinforcement portion on the rear side thereof, a front wall portion connected at one side to the front side of the outer perimeter wall portion and extending at a right angle thereto, a first rearwardly extending wall portion connected to the other side of said front wall portion at a right angle thereto, a first inwardly extending wall portion connected at one side to the other side of said first rearwardly extending wall portion, a second rearwardly extending wall portion connected at one side to the other side of said first inwardly extending wall portion and a second inwardly extending wall portion connected at one side to the other side of said second rearwardly extending wall portion.

3,867,802
FLOOR SUPPORT ASSEMBLY FOR BUILDING STRUCTURES

Wesley T. Murphy, Auburn, N.Y., assignor to Vercon Products, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 160,018, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 85,533, Oct. 30, 1970, abandoned. This application Mar. 9, 1973, Ser. No. 339,796
Int. Cl. E04b *5/52;* **E04c** *2/42*
U.S. Cl. 52—483 10 Claims

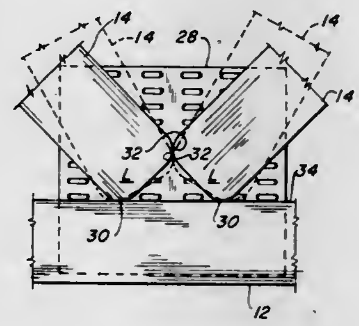


1. In a floor structure including a floor panel floor support assembly comprising a beam having an opening therein and including a first ledge, an elongated floor joist adapted for supporting said floor panel directly thereon and including a bottom wall and a pair of side walls, a portion of said bottom wall being disposed upon and supported by said first ledge and detachable, resilient locking clip means located between said floor joist and said beam and including an end portion snap fit into said opening for connecting said floor joist to said beam and for locking said floor joist in place with respect to said beam.

3,867,803
FLAT JOIST TRUSS WITH ROUNDED LOAD-TRANSFER SURFACES

Bruce W. Platt, Littleton, Colo., assignor to Richardson Lumber Company, Denver, Colo.

Filed Sept. 27, 1973, Ser. No. 401,186
Int. Cl. E04c *3/12*
U.S. Cl. 52—693 4 Claims

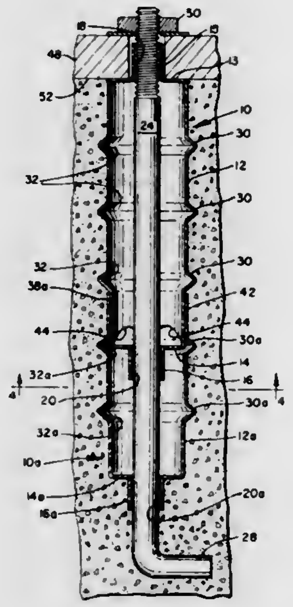


1. A plate-connected flat joist truss which comprises: a first elongate timber defining a lower chord member with an upwardly-facing planar bearing surface; a second elongate timber defining an upper chord member with a downwardly-facing planar bearing surface; a plurality of relatively shorter web-forming timbers arranged in end-to-end oppositely-inclining relation between the upper and lower chord members cooperating to define a zigzag strut subassembly, said webs each having the surfaces on both ends thereof in contact with one another and with opposed bearing surfaces of the chord members rounded to establish essentially line contact therewith irrespective of the resultant angle of inclination each assumes within the strut subassembly; and, a pair of

plates fastened on opposite sides of each joint thus formed effective to maintain same in assembled relation.

3,867,804
ANCHOR BOLT FORM

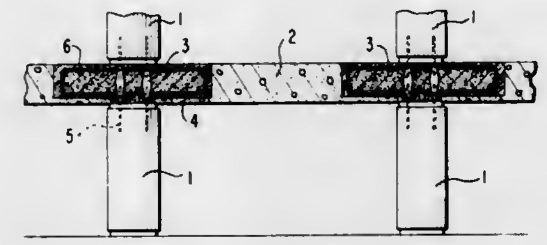
Herbert S. Wilson, 86 Woolson St., Watertown, Conn. 06795
Filed June 8, 1973, Ser. No. 368,254
Int. Cl. E04b *1/41;* **E04c** *5/12;* **E04b** *5/12*
U.S. Cl. 52—699 **1 Claim**



1. In combination with an anchor bolt of the type adapted to be embedded in a concrete foundation and having a shank of substantially uniform diameter throughout its length including a head at its lower end and a threaded portion at its upper end for securing machinery and the like in position on the concrete foundation a plurality of forms, each of said forms comprising an axially elongated hollow shell of severable plastic material including an integral axially elongated sleeve portion having a plurality of generally cylindrical sections including a lower end section and a plurality of upper sections, said lower end section having an outside diameter substantially equal to the inside diameter of each of said upper sections, said sleeve including a plurality of axially spaced coaxial annular ribs, each of said ribs being disposed intermediate an associated one and another of said sections, each of said ribs projecting radially outwardly beyond said sections, said sleeve portion having upper and lower end walls, said shell having coaxial upper and lower neck portions, each of said neck portions extending axially outwardly from an associated one of said end walls and having a coaxial bore therethrough communicating with the interior of said shell, said lower neck portion having a diameter substantially equal to the diameter of said bolt, said shell having thread engaging means on said upper neck portion for coacting with the threaded upper end portion of said bolt to permit axial adjustment of said shell relative to said bolt upon relative rotation therebetween, one of said forms receiving said bolt therethrough and having its thread engaging means in engagement with said threaded upper end portion and its lower neck portion in surrounding engagement with an associated portion of said shank, another of said forms having an upper portion severed therefrom below said upper end wall thereof and receiving said bolt therethrough, said other form having at least a portion of one of said upper sections thereof in surrounding engagement with said lower section of said one form and having its lower neck portion in surrounding engagement with an associated portion of said shank below said one form whereby to extend the effective operative length of said one form relative to said bolt.

3,867,805
METHOD OF FORMING JOINT CONSTRUCTION OF PRECAST CONCRETE COLUMNS AND BEAMS

Yuzo Mikami, Tokyo; Hideyuki Kobayashi, Saitama, and Tetsuya Sasaki, Tokyo, all of Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1973, Ser. No. 361,758
Claims priority, application Japan, May 18, 1972, 47-49467
Int. Cl. E04b *1/04*
U.S. Cl. 52—744 **2 Claims**



1. A method of constructing rigid structural joints between precast concrete columns and beams by utilizing splice sleeves of almost the same depth as the beams, said method comprising the steps of:

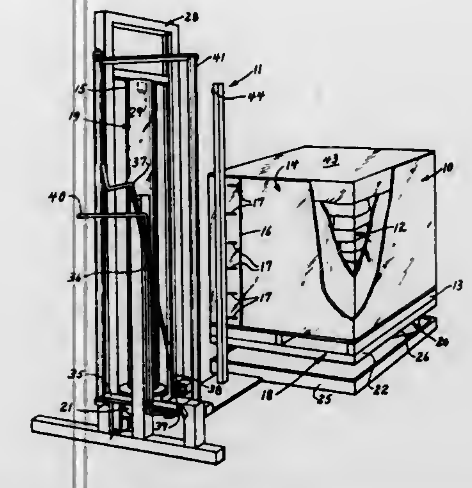
a. vertically positioning a lower column having reinforcing bars extending from the upper end thereof;
b. positioning a sleeve on the lower column in such a fashion that the opposed open ends thereof align with the reinforcing bars of the columns;
c. inserting the reinforcing bars in the sleeve;
d. positioning the end portion of a first beam formed with a groove which is U-shaped in cross section on the lower column;
e. positioning the end portion of a second beam formed with a groove which is U-shaped in cross section on the lower column;
f. placing a set of pre-assembled bars in the space formed by the two grooves in the first and second beams; then
g. placing an upper column having reinforcing bars extending from the lower end thereof on the lower column in a fashion such that the reinforcing bars extending from the lower end thereof are inserted within the sleeve; then
h. filling the interior of the sleeve with a grouting material to lock the reinforcing bars from the upper and lower columns to each other; and
i. filling the space formed by the two grooves and extending across the ends of both columns with concrete in order to make the columns and beams monolithic.

3,867,806
PROCESS OF MAKING A STRETCHED-WRAPPED PACKAGE

Patrick R. Lancaster, III, and William G. Lancaster, both of Louisville, Ky., assignors to Lantech, Inc., Louisville, Ky.
Filed Apr. 4, 1973, Ser. No. 347,873
Int. Cl. B65b *5/06*
U.S. Cl. 53—27 **10 Claims**

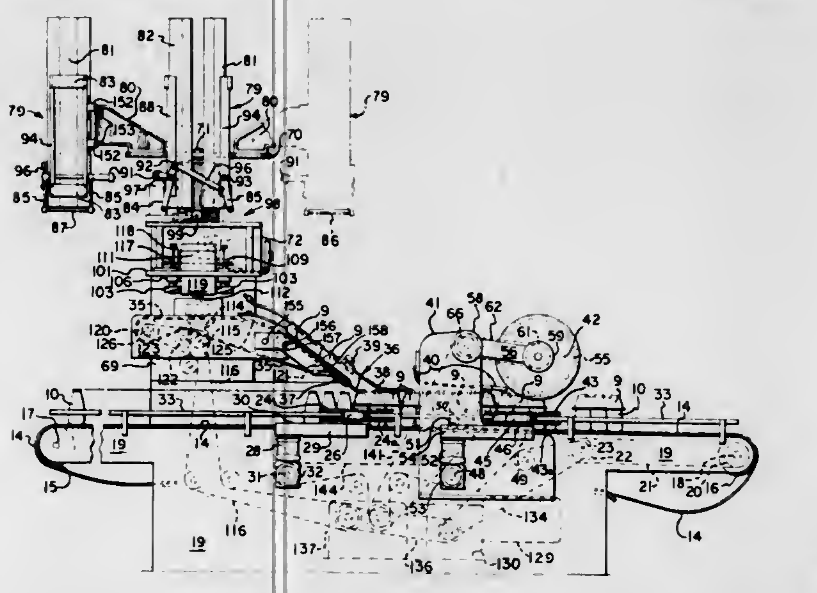
1. A process of making a unitary package, comprising the steps of:

a. placing a load on a support;
b. locating a rolled-up sheet of a stretchable material on dispenser means adjacent to said support;
c. withdrawing a leading edge of said material from said dispenser means and holding said leading edge against said load;
d. initiating substantially unrestricted relative movement between said support and said dispenser means to cause a sufficient amount of said material to be dispensed from said dispenser means to overwrap at least a part of said load;
e. subsequently continuing said relative movement but restricting it such that said material will then be stretched and causing a sufficient amount of said stretched material to be dispensed from said dispenser means to provide a band comprising plural layers of said material around said load; and
f. fastening the trailing edge of said stretched material to at least one of the previously dispensed band-forming layers.



3,867,807
CARRIER APPLICATOR MACHINE FOR BOTTLES

Eugene F. Doucette, Burlington, Mass., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 19, 1973, Ser. No. 416,733
Int. Cl. B65b *21/00, 43/44*
U.S. Cl. 53—48 **7 Claims**

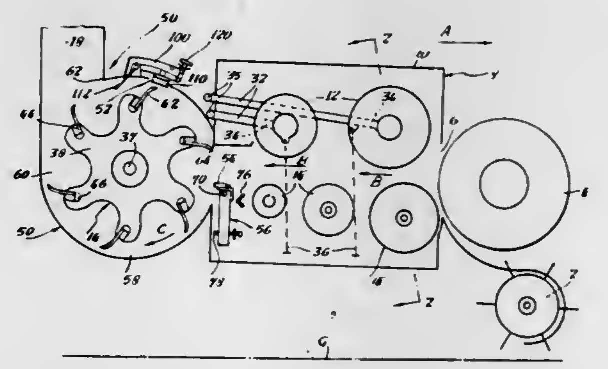


1. A machine adapted for applying a succession of molded shell-like carriers having a plurality of article receiving compartments formed therein to a procession of containers having necks and closures at the top end thereof to form carrying packs of the containers comprising, in combination

supply means supporting said carriers in a nested relation in a vertical stack,
separating and feeding means operable at the lower end of said stack for separating the lowermost carrier in succession and feeding it vertically below the stack,
carrier conveyor means below said separating and feeding means receiving said carriers and moving them horizontally to a preliminary assembly station spaced from said feeding means,
bottle conveyor means disposed beneath said conveyor means for directing a procession of containers to the preliminary assembly station,
means at the preliminary assembly station guiding the carriers serially over the top of the containers advancing by said last named means, said bottle conveyor means advancing the bottles and carriers horizontally to a final assembly station horizontally spaced from the preliminary assembly station, and
rotary assembly means mounted above said final assembly station for engagement with the top surface of said carriers,
said rotary assembly means comprising
a rotary applicator wheel mounted on an axle disposed horizontally and transversely to the movement of the containers, and
pockets in the peripheral surface of said wheel spaced around the circumference of said drum to correspond with the spacing of the tops of the compartments of said carriers, said pockets being shaped to receive a compartment top therewithin, and support means for the applicator wheel, including
a pivotal mounting arm, a pivotal connection at one end of said arm on the frame of the machine and a pivotal mounting at the other end of said arm for the applicator wheel axle, the support means permitting the applicator wheel to engage the containers at the final assembly station and relatively press the compartments and container tops into locking engagement, whereby each carrier compartment encircles a container neck and the carrier embraces the group of containers.

3,867,808
FORAGE HARVESTERS

Archibald Watson Kidd, Seend Close, Seend, Melksham, England
Filed Apr. 20, 1973, Ser. No. 352,979
Claims priority, application Great Britain, Apr. 25, 1972, 19238/72
Int. Cl. A01d *47/00*
U.S. Cl. 56—14.1 **10 Claims**



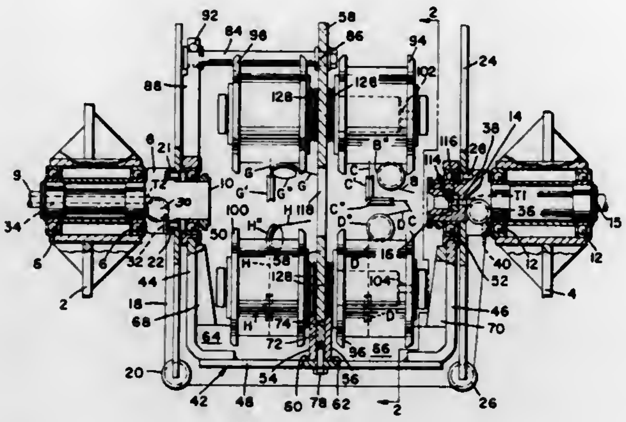
1. A forage harvester having means for picking up a crop, a feed roller assembly for comprssing the crop, and a cutting rotor for chopping up the compressed crop, the feed roller assembly comprising at least one rotatable shaft, a roller mounted fast on one end portion of said shaft with and elongate portion of said shaft projecting therefrom, said elongate portion being longer than the axial length of said roller, means for driving said shaft, and a pivotal coupling between said driving means and the end of said elongate portion of said shaft remote from the roller, said driving means being rotatably mounted to the harvester and the end of said shaft remote from said driving means being mounted for rise and fall movement so that the roller and shaft will swing together about said pivotal coupling.

3,867,809
DOUBLE TWIST WIRE STRANDING MACHINE WITH REMOVABLE CREEL ASSEMBLY

John Adams Holbrook, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Oct. 2, 1972, Ser. No. 294,303
Int. Cl. D07b *3/12;* **D01h** *7/86*
U.S. Cl. 57—58.52 **8 Claims**

8. In a double twist stranding machine, a pair of spaced axially aligned rotatable shafts having opposed cantilevered ends with passageways extending therethrough; flyer means carried on said shafts for rotation therewith, said flyer means having pulley means associated therewith; a U-shaped creel support hanging from said ends; a creel plate removably mounted on said creel support, said creel plate having means

mounted thereon for carrying a plurality of spools of wire, the arrangement of the aforesaid components being such that the



wire from said spools may be threaded through the passageway in one of said ends, thence over said pulley means, and thence through the passageway in the other of said ends.

3,867,810

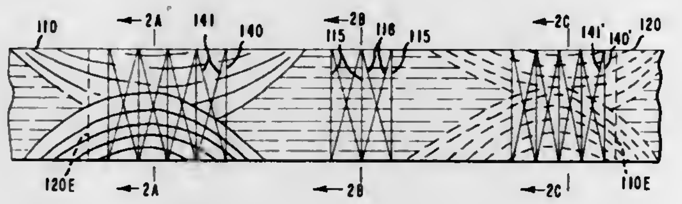
SPLICED TOW AND PROCESS FOR MAKING SPLICED TOW

Jan Meertens, Dordrecht, and Antonius H. J. Merkx, Hank, both of Netherlands, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 30, 1974, Ser. No. 437,858

Int. Cl. B65h *69/06;* **D02j** *1/08;* **D02g** *3/22*

U.S. Cl. 57—142 **3 Claims**



1. In the process for joining tows to form a continuous tow by placing the end of a tow A over the end of a tow B so that the filaments of tow A rest on top of the filaments of tow B and interentangling filaments of tow A with filaments of tow B to form a splice, the improvement for forming a strong, compact tow-splice, wherein the improvement comprises forming a preliminary splice, stretching the assembly laterally from one edge adjacent to one side of the preliminary splice, folding this stretched portion of the assembly over toward its other edge to form an overlap at one side of the preliminary splice, interentangling filaments at this overlap, similarly folding the assembly near the other side of the preliminary splice to form a second overlap at the other side of the preliminary splice, and interentangling filaments at this second overlap.

3. Tow-spliced as defined in claim 1.

3,867,811

POWER MODULATION OF A THERMAL GENERATOR

Raymond Francois Maurice Waeselynck, Paris, France, assignor to Compagnie Francaise de Raffinage, Paris, France

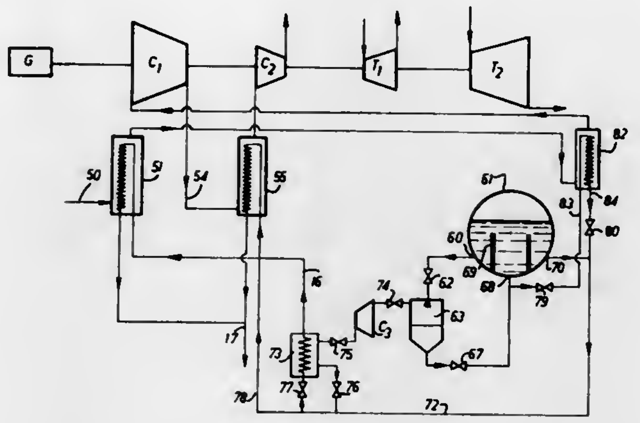
Filed Nov. 14, 1972, Ser. No. 306,557

Claims priority, application France, Nov. 22, 1971, 71.41723

Int. Cl. F02c *9/14*

U.S. Cl. 60—39.03 **9 Claims**

1. A process for modulating the power of a gas turbine by variation of the inlet temperature of the working fluid in a compressor located upstream of the gas turbine, said process comprising forming the compression and turbine steps each in a plurality of stages, cooling the working fluid before at least the last compression stage by heat exchange with liquified gas stored in a tank, producing a further refrigeration of the liquified gas stored in said tank by supplying at least a part of the liquefied gas during off-peak hours from said tank to an evaporator wherefrom are obtained a gas fraction at the top and a cooled liquefied gas fraction at the bottom, compressing the gas fraction produced in said evaporator, then condensing the thus compressed gas fraction by effecting heat exchange thereof with a flow of liquefied gas coming from said tank and going to cool the working fluid and introducing the now condensed gas fraction into said flow of liquefied gas coming from said tank and going to cool the working fluid, storing the cooled liquefied gas fraction collected in said evaporator during off-peak hours and utilizing the same during peak hours together with the liquefied gas from said tank to cool the working fluid.



3,867,812

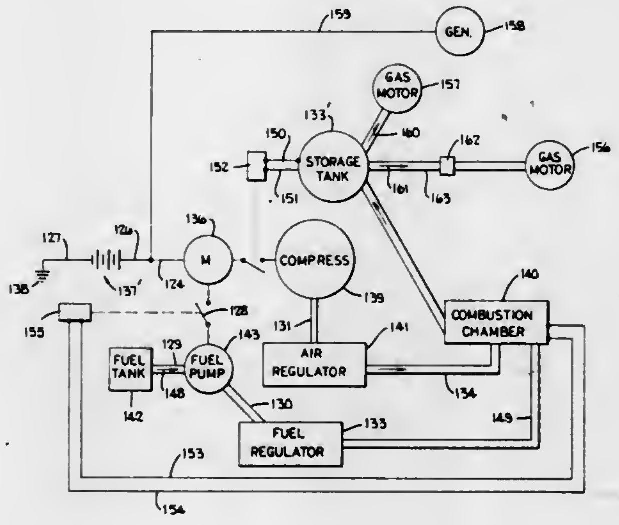
GAS MOTOR POWER SYSTEM

Thomas P. Van Arsdel, 5300 E. Rt. 29, Celina, Ohio 45822

Continuation-in-part of Ser. No. 252,364, May 11, 1972, abandoned. This application Feb. 16, 1973, Ser. No. 333,336

Int. Cl. F02g *3/00*

U.S. Cl. 60—39.15 **5 Claims**



1. A power system for providing controllable amounts of drive to a mechanical member, said system comprising in combination:

a pressurized source of air;

a source of fuel;

structure housing a combustion chamber for burning said fuel and said air therein to produce combustion products in the form of hot gas, said combustion chamber having a first inlet for said fuel, a second inlet for said air, and an outlet for said hot gas;

means coupling said fuel source and said air source to said first inlet and said second inlet of said combustion chamber for introducing said fuel and said air into said combustion chamber for the burning thereof;

fuel/air ignitor means mounted to said structure to produce burning of fuel and air mixture within said combustion chamber;

a storage means coupled to said outlet of said combustion chamber for storing under a first predetermined maximum pressure the hot gas combustion products produced by the burning of said fuel/air mixture, said storage tank having at least one outlet from which the hot gas stored therein may be controllably discharged;

regulator means being coupled to said storage means and responsive to the pressure within said storage means to terminate airflow from said pressurized source of air when pressure in said storage means exceeds said first predetermined pressure;

a first gas motor drivenly coupled to said one storage means outlet and adapted to be coupled to a mechanical member for driving the same, said gas motor being responsive to the hot gas controllably discharged from said storage means to provide controllable amounts of drive to first means coupled thereto;

valve means are interposed between said combustion chamber and storage means for permitting discharge of said hot gas into said storage means only upon the pressure produced in said combustion chamber being greater than a second predetermined pressure, said valve means includes an electrically operated valve to open and close said outlet of said combustion chamber, said valve means further includes a pressure sensor extending into said combustion chamber and being electrically connected to said electrically operated valve, said pressure sensor effects opening of said valve means when pressure within said combustion chamber is above said second predetermined pressure and effects closing of said valve means when pressure within said combustion chamber is below said second predetermined pressure;

termination means connected to said fuel pump operable to terminate fuel flow upon termination of airflow.

3,867,813

TURBOJET ENGINE FOR VERTICAL OR SHORT TAKE-OFF AND LANDING AIRPLANES

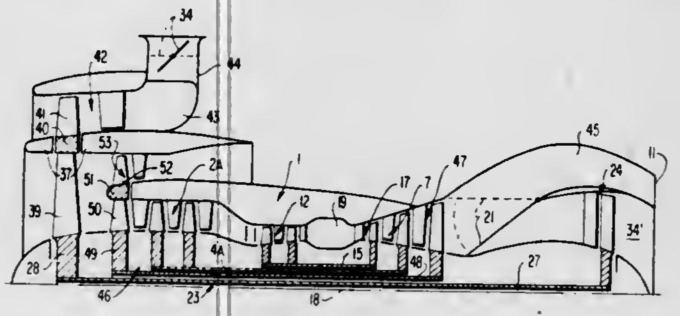
Heinrich Leibach, Grafrath-Wildenroth, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Oct. 5, 1972, Ser. No. 295,219

Claims priority, application Germany, Oct. 5, 1971, 2149619

Int. Cl. F02k *3/04;* **F02c** *3/06*

U.S. Cl. 60—225 **33 Claims**



1. A turbojet engine arrangement; especially for use with vertical or short take-off and landing airplanes of the type having jet deflector devices separate from the thrust nozzle of the basic engine for amplifying thrust and lift at least during take-off and landing of the airplane; said arrangement comprising: a basic turbojet engine for supplying an exhaust gas stream, a propulsive thrust nozzle arranged downstream of said exhaust gas stream, a first low-pressure turbine arranged downstream of said exhaust gas stream, a first low-pressure compressor drivingly connected to said low-pressure turbine by a first shaft, said first low-pressure compressor rotating coaxially with said first shaft, said first low-pressure compressor supplying a first low pressure air stream output in response to rotation of said low-pressure turbine, duct means for communicating at least a portion of said first low-pressure airstream output to jet deflector devices, and exhaust gas stream control means for selectively communicating said exhaust gas stream with one of said first low-pressure turbine and said propulsive thrust nozzle,

wherein said basic engine includes a combustion chamber, basic engine compressor means for supplying compressed air to said combustion chamber and to a bypass duct extending in bypassing relationship to said combustion chamber and separate from said duct means, basic engine turbine means driven by an exhaust gas stream from said combustion chamber and drivingly connected by basic engine shaft means to said basic engine compressor means,

wherein said basic engine shaft means are coaxial with said first shaft,

and wherein said exhaust gas stream control means is arranged downstream of said basic engine turbine means and upstream of said first low-pressure turbine means such that said engine arrangement is operable with a relatively high bypass ratio for take-off and landing operations when said exhaust gas stream is communicated with said first low-pressure turbine means and is operable with a relatively low bypass ratio for cruise conditions when said exhaust gas stream is communicated with said propulsion thrust nozzle.

3,867,814

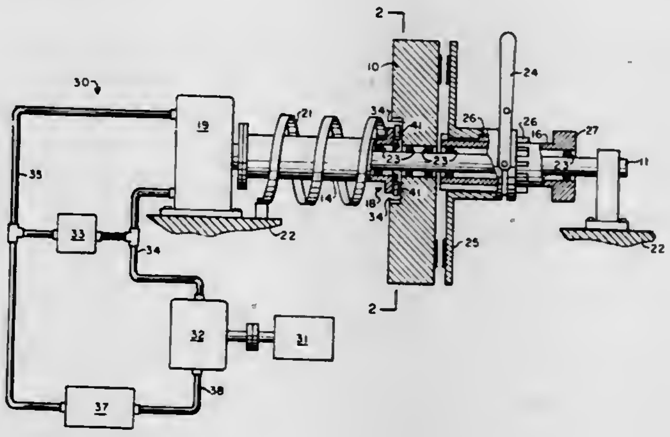
TORQUE ENERGY CONVERTER AND STORAGE DEVICE

Theodore S. Schneider, 2065 Hatch Rd., Novato, Calif. 94947

Filed Dec. 26, 1973, Ser. No. 428,226

Int. Cl. F15b *1/02;* **F03d** *1/00*

U.S. Cl. 60—413 **7 Claims**



1. A torque energy converter and storage device comprising a flywheel,

means for multiplying an input force comprising

an hydraulic pump adapted to receive an input force and apply said force to an hydraulic fluid,

an hydraulic motor adapted to exert a torsional force in proportion to the force of said hydraulic fluid, and

a conduit system fluidly interconnecting said hydraulic pump and said hydraulic motor,

means for storing said multiplied force, and

means for automatically applying forces stored in said means for storing said multiplied force to said flywheel upon reaching a predetermined level of multiplied force.

3,867,815

HEAT ENGINE

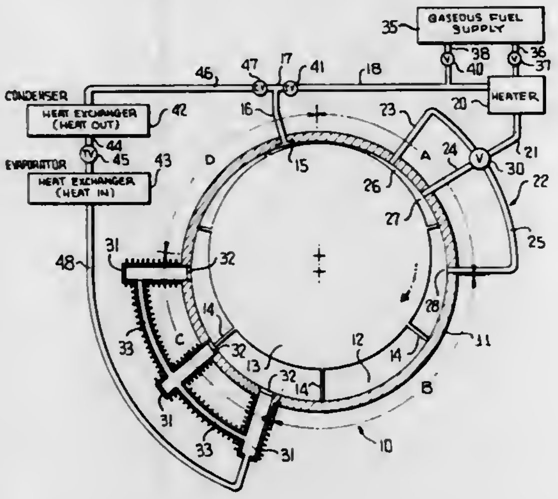
George M. Barrett, R.R. No. 5, Galt, Ontario, Canada

Continuation-in-part of Ser. No. 86,738, Nov. 4, 1970, Pat. No. 3,698,184. This application June 9, 1972, Ser. No. 261,232

Int. Cl. F01k *25/00;* **F25b** *27/00*

U.S. Cl. 60—682 **10 Claims**

1. A heat engine of the type including a housing defining a generally cylindrical chamber, a rotor mounted within said chamber in eccentric relation, and vanes carried by said rotor in sliding sealing contact with said housing, said rotor being closest to said housing at one point in said chamber and most remote from said housing at a second point in said chamber, a working gas in said chamber, and in accordance with the Carnot cycle of operation said engine and said working gas having four gaseous conditions in sequence during rotation of said rotor as follows: A-isothermal expansion, B-reversible adiabatic expansion, C-isothermal compression and D-reversible adiabatic compression; the improvement residing in a by-pass passage coupled to said chamber on opposite sides of said one point and in the areas of gaseous conditions D and A, respectively, heater means for heating gases flowing through said by-pass passage to provide said isothermal expansion, sealed external counterflow passage means connected to said chamber for receiving gases from said chamber compressed by the action of said rotor and returning such gases to said chamber in the area of lower pressure gaseous condition C, and cooling means coupled to said external flow passage means for providing said isothermal compression, and variable throttle means for varying said A-isothermal expansion to vary the output of said engine, said variable throttle means including means for varying the point in the area of gaseous condition A wherein the heated working gas is returned to said chamber.



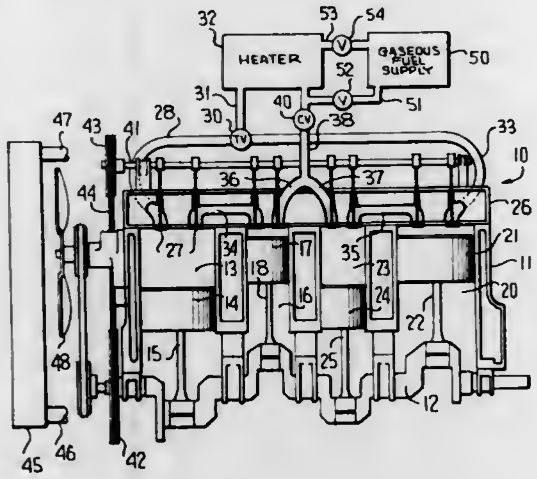
3,867,816
LOW POLLUTION RECIPROCATING HEAT ENGINE

George M. Barrett, R.R. No. 5, Galt, Ontario, Canada

Continuation-in-part of Ser. No. 86,738, Nov. 4, 1970, Pat. No. 3,698,184, and a continuation-in-part of Ser. No. 261,232, June 9, 1972,. This application Sept. 5, 1972, Ser. No. 286,351

Int. Cl. F01k *25/00*

U.S. Cl. 60—682 **8 Claims**



1. A heat engine operable generally in accordance with the Carnot cycle, said engine comprising a crankshaft, at least one large cylinder and one small cylinder each having a respective piston therein and connected to said crankshaft in out of phase relation, a closed system for recirculating a gas through said cylinders; said closed system including a heater, a check valve in advance of said heater, first flow means connecting said heater to said large cylinder, said first flow means including a throttle valve and flow controlling valve means of the positively actuated mechanical type, said closed system between said check valve and the interior of said large cylinder to a point during a work stroke of said piston of said large cylinder being means for effecting isothermal expansion of said gas, further work movement of said large cylinder piston being responsive to reversible adiabatic expansion of said gas, second flow means connecting said large cylinder to said small cylinder said second flow means including cooling means for cooling gas flowing from said large cylinder to said small cylinder and flow controlling valve means for effecting isothermal compression of said gas during the compression stroke of said large cylinder piston, and third flow means connecting said small cylinder to said heater, said third flow means including said check valve and providing for reversible adiabatic compression of said gas within said small cylinder during the compression stroke of the piston thereof.

3,867,817
OIL FENCE HAVING A LIMITED FLEXIBILITY

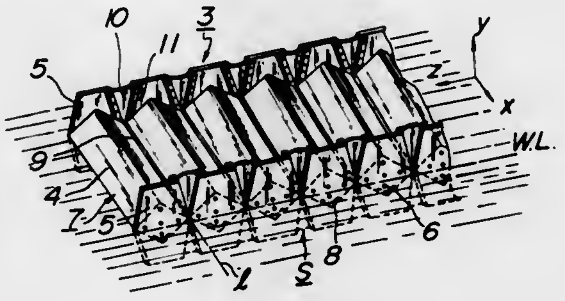
Kuninori Aramaki; Yasuharu Kawaguchi, both of Yokohama, and Hiroshi Kawakami, Kamakura, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed June 25, 1973, Ser. No. 373,222

Claims priority, application Japan, June 29, 1972, 47-64431

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **5 Claims**



1. An oil fence having a limited flexibility, said oil fence comprising:

a. a plurality of rigid floats arranged side by side in the longitudinal direction of the fence;

b. a rigid planar skirt attached to each end of each of said plurality of rigid floats along the longitudinal direction of the fence, said rigid planar skirts being dimensioned to leave a gap between each adjacent pair of said rigid planar skirts in the longitudinal direction of the fence;

c. a flexible membrane attached to each adjacent pair of said rigid planar skirts to close the gap therebetween, whereby the rigid planar skirts and the flexible membranes attached to the rigid floats will form two continuous walls capable of inhibiting floating matter from moving thereacross; and

d. hinge means for pivotally connecting each pair of adjacent floats, said hinge means including means permitting relative rotational motion about the hinge axis but substantially preventing relative rotational motion about axes perpendicular to the hinge axis, whereby each pair of adjacent floats is swingable about an axis therebetween which is substantially perpendicular to the longitudinal direction of the fence, permitting the fence to follow any variation of the wave contour on the water surface, but the fence is restricted from flexing in the longitudinal direction of the fence.

3,867,818

METHOD AND APPARATUS FOR CRYOGENIC TANK WARM-UP

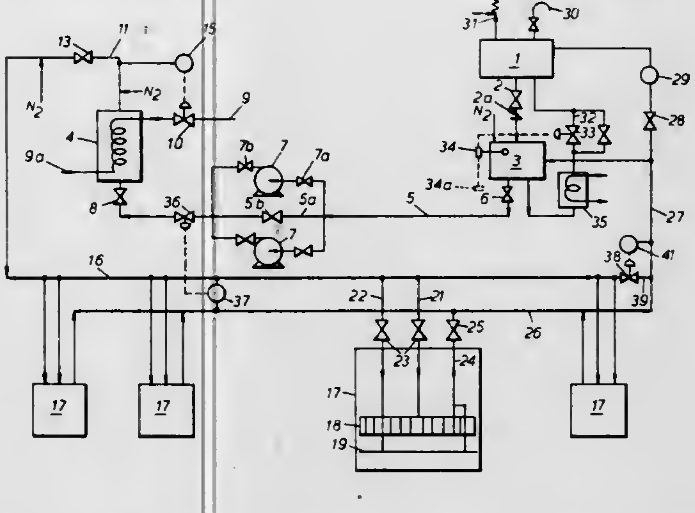
Edmund George Tornay, London, England, assignor to Conch International Methane Limited, Nassau, Bahamas

Filed Oct. 30, 1972, Ser. No. 301,847

Claims priority, application Great Britain, Nov. 17, 1971, 53481/71

Int. Cl. F17c *17/02*

U.S. Cl. 62—52 **7 Claims**



1. A method of quickly warming up an insulated liquid cryogenic storage container after removal of the liquid and while the container is still cold, comprising

a. providing a source of heat transfer medium which is in a liquid state at ambient temperature and which retains its liquid state at an appropriate working pressure over a temperature range from ambient to substantially the boiling point of the cryogenic liquid;

b. adding latent heat to the heat transfer medium whereby to vaporise said medium at an elevated pressure; and

c. feeding the vaporised medium at its elevated pressure into the storage container for indirect heat exchange with the cold interior of said container, said heat exchange causing the heat transfer medium to return to its liquid state substantially at said elevated pressure, said elevated pressure being adjusted such that it provides sufficient heat to assist in maintaining the flow of said medium through said storage container.

3,867,819

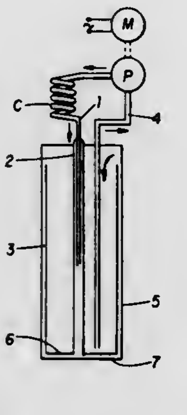
REFRIGERATION APPARATUS FOR COOLING A LIQUID

Jack Hartman; Joe W. Leard, both of Oklahoma City, and James L. Sharp, Tulsa, all of Okla., assignors to Porta-Kool, Inc., Tulsa, Okla.

Filed May 21, 1973, Ser. No. 362,372

Int. Cl. F25b *39/02*

U.S. Cl. 62—293 **5 Claims**



1. A device for effecting evaporation of compressed refrigerant input thereto consisting of a first tubing enclosure, a second concentric tubing enclosure rigidly affixed therein in closely spaced relationship and having the upper end open in communication with the interior of said first enclosure, hollow tubular means extending concentrically along the central axis of said second concentric tubing enclosure for releasing refrigerant under pressure between the lower closed ends of said first and second tubing enclosures and means for conducting the expanded refrigerant from the interior of said second tubing enclosure.

3,867,820

ELECTRONIC APPARATUS FOR CONTROLLING THE NEEDLES IN KNITTING MACHINES

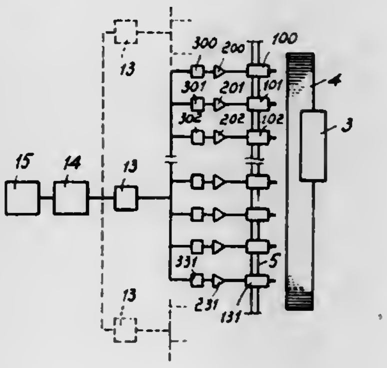
Gino Zamarco, Somma Lombardo, and Gianni Colombo, Gavirate, both of Italy, assignors to Tesalon Anstalt, Vaduz, Liechtenstein

Filed July 6, 1972, Ser. No. 269,332

Claims priority, application Switzerland, July 9, 1971, 10112/71

Int. Cl. D04b *15/66, 7/24*

U.S. Cl. 66—154 A **1 Claim**



1. In a knitting machine having a needle bed and a plurality of jacks for operating the needles, a device for the selective control of the needles comprising an elongated support member arranged near said needle bed along substantially the whole length thereof and movable therealong, means for driving said support member, a number of electromagnets arranged on said support member and equally spaced from one another along the whole length thereof by an extent corresponding to that of a group of adjacent needles, a number of actuation members each arranged on said support member proximate to a corresponding electromagnet and each having one end for cooperation with the jacks of a group of adjacent needles, each of said actuation members being operated by a corresponding one of said electromagnets for selectively operating the jacks of a corresponding group of needles and cause the selected needles of said group to move from a non working position into a working position, said support member being reciprocatingly movable for an extent at least corresponding to the distance between two electromagnets thereby causing simultaneous selective operation of the jacks and the needles of each group of needles, the device further comprising an electronic programming unit for energizing said electromagnets according to the operative program during the movement of said elongated support member.

3,867,821

TRANSMISSIONLESS WASHING MACHINE WITH MODULATED RECIRCULATION

Mathew Hurwitz, 63 Oakland Ave., Auburdale, Mass. 02166

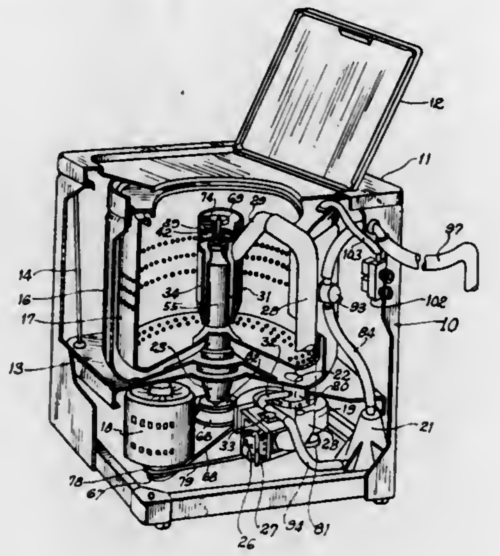
Filed July 13, 1973, Ser. No. 379,120

Int. Cl. D06f *17/04, 23/04*

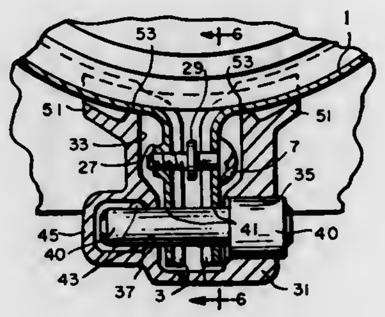
U.S. Cl. 68—184 **7 Claims**

1. In a top-loading automatic clothes washing machine, in combination, a tub adapted to contain a body of liquid, a cylindrical basket within said tub, mechanically modulated nozzle having an inlet duct and an outlet orifice, said outlet orifice being disposed below the surface of the body of liquid when the same is contained in the tub, a recirculating pump connected to said tub and said inlet duct, means for driving said pump, means for cyclically modulating the geometry of

said orifice so as to direct into said body of liquid a flow of liquid which is spatially unsteady thereby creating in the body of liquid within said basket an unsymmetrical field of turbulence which sweeps cyclically around the interior of the basket in synchronism with the frequency of modulation of the nozzle.



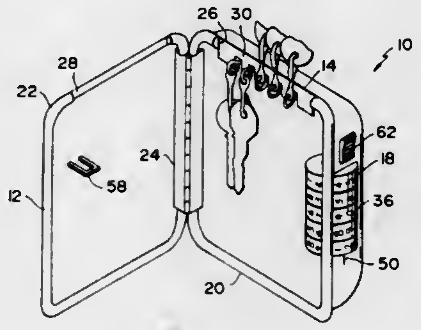
3,867,822
LOCKING MEANS FOR ELECTRIC METERS
Lynn H. Morse, Box 1505, Venice, Fla. 33595, and Anker J. Nielsen, Jr., 410 Bailey Rd., Holden, Mass. 01520
Filed Aug. 2, 1973, Ser. No. 384,920
Int. Cl. G01r *11/04;* **E05b** *73/00*
U.S. Cl. 70—164 **6 Claims**



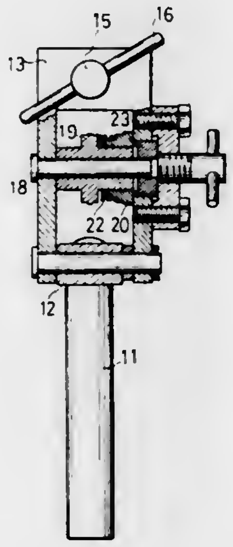
1. Locking means for electric meters having in combination a base, a receptacle holding the meter works, a U-section split ring uniting the base and the receptacle, means on the ends of the split ring to contact the ring, unbreakable means shielding the contracting means from access, and key-operated means locking the shielding means to the split ring.

3,867,823
KEY CASE
Napoleon Waltower, 12471 Grand River, Detroit, Mich. 48204
Filed Oct. 9, 1973, Ser. No. 404,168
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 B **7 Claims**

1. A key case comprising an enclosure including a cover and a body, means for securing at least one key to the key case in alternative positions extending into or out of the enclosure, and a multiple-digit combination lock on the enclosure for locking the enclosure closed with the key on the inside of the enclosure including a locking cylinder having a longitudinally extending slot therein and a plurality of circumferentially extending grooves in spaced relation along the length thereof and a plurality of annular discs supported on the body of the enclosure positioned in side by side relation over the length of the cylinder having finger portions extending into a slot in the locking cylinder and movable in predetermined grooves in the locking cylinder when the discs are in predetermined longitudinal positions on the locking cylinder to permit rotation of the discs on the locking cylinder, whereby the locking cylinder is movable longitudinally of the discs with all of the discs in only one predetermined angular position on the locking cylinder, means for locking the cover of the enclosure with the locking cylinder in one predetermined position operable between the locking cylinder and the cover, and means for urging the locking cylinder into the one predetermined position operable between the body of the enclosure and the locking cylinder whereby with an automobile key positioned within the enclosure on the key securing means and the enclosure closed and locked, use of the key to start an automobile by a person whose faculties are impaired to the point where they are unable to open the combination lock and should therefore not be driving an automobile, is prevented.



3,867,824
PIPE WORKING METHOD AND APPARATUS
Tatsuya Takagi, No. 6-10, Araebisumachi, and Teruya Takagi, No. 6-4, Araebisumachi, both of Nishinomiya-shi, Hyogo-ken, Japan
Filed Sept. 27, 1973, Ser. No. 401,395
Claims priority, application Japan, Oct. 25, 1972, 47-106192
Int. Cl. B21d *19/06*
U.S. Cl. 72—118 **5 Claims**

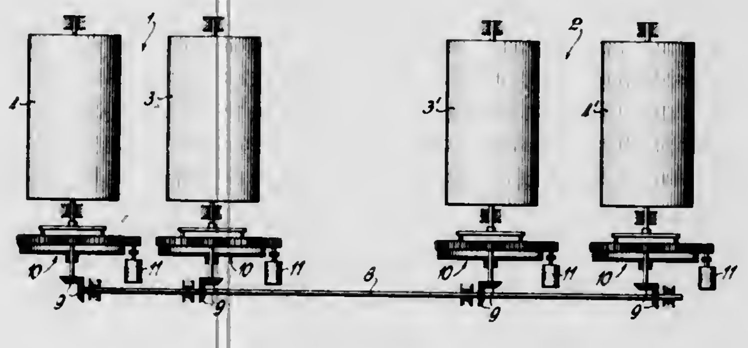


1. A method for rolling and bevelling the end portion of a pipe to be coupled with a joint, which comprises the steps of, in turn, confronting the pipe at a position spaced a predetermined distance from the end thereof with an axially restrained groove-rolling roll and at the end thereof with an axially shiftable bevelling roll, pressing said groove-rolling roll against the pipe and rotating said groove-rolling roll relative to said pipe to roll an annular groove on the surface of the pipe, shifting said bevelling roll axially to cause said bevelling roll to be thrust against the end of the pipe, and rotating said bevelling roll relative to said pipe so as to bevel the end of the pipe while said groove-rolling roll is fittingly disposed in said annular groove previously rolled.

3,867,825
METHOD AND APPARATUS FOR COLD FORMING ROLLED WIRE
Heinz Striepens, Hamm, and Horst Schulte, Hamm-Westtunnen, both of Germany, assignors to Vereinigte Drahtindustrie GmbH, Hamm, Germany
Filed Apr. 5, 1973, Ser. No. 348,078
Claims priority, application Germany, Apr. 5, 1972, 2216368
Int. Cl. B21b *1/18*
U.S. Cl. 72—161 **15 Claims**

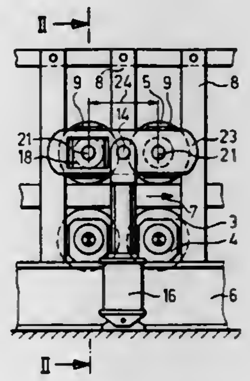
1. A method of cold forming wires for use as concrete reinforcing wires, said method comprising the steps of: unwinding a wire of predetermined diameter and advancing the same forwardly, introducing the wire into at least one set of rolls for polygonally shaping the wire and for reducing the cross section of said wire by at least 15% while shaping the wire, and thereafter repeatedly bending the wire in opposite directions to stress relief the wire to increase the elongation properties thereof, the wire being shaped and stress relieved to have a ratio between yield point and ultimate tensile strength of at least about 0.9.

3,867,826
STRETCHER FOR CONTINUOUSLY MOVING STRIP
Oskar Noe, Mulheim/Ruhr, Germany, assignor to BWG Bergwerke-und Walzwerk Maschinenbau G.m.b.H., Duisburg, Germany
Filed Apr. 30, 1973, Ser. No. 355,449
Claims priority, application Germany, July 21, 1972, 2235833; Nov. 28, 1972, 2258192
Int. Cl. B21b *39/08*
U.S. Cl. 72—205 **10 Claims**



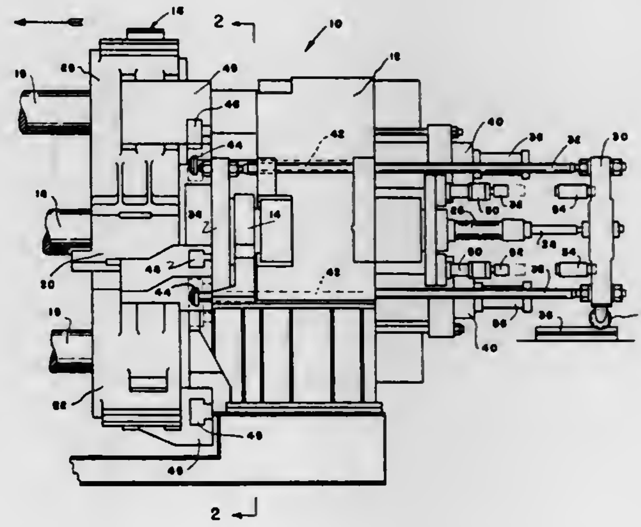
1. Apparatus for stretching strip such as sheet metal strip, comprising, in combination with two tensioning roll stands each of which comprises a plurality of strip tensioning rolls about which the strip is passed continuously for treatment under high tension between said stands and means for driving the strip through said roll stands, a common rotary shaft for coupling together all said tensioning rolls, each of said rolls being connected to said shaft through an individual gear train, each of at least all but one of said gear trains being a differential gear train comprising a central spur gear connected for rotation with said common shaft, epicyclic gears rotatable about and in mesh with said spur gear and connected for rotation with the related roll and a rotatable ring gear meshing with said epicyclic gears, and a variable torque back-up motor connected for rotation with each of said rotatable ring gears, each said back-up motor being a torque limiting motor operative at a given setting thereof to maintain a predetermined substantially constant torque on the related tensioning roll through the related differential gear train, the several back-up motors having different torque settings corresponding to the respective differential torques and strip tensions required at said rolls.

3,867,827
ROLLER APRON FOR A CONTINUOUS CASTING INSTALLATION
Karl L. Backhaus, West New York, and George Tuschak, Rego Park, both of N.Y., assignors to Concast Incorporated, New York, N.Y.
Filed Oct. 29, 1973, Ser. No. 410,529
Int. Cl. B21b *39/02*
U.S. Cl. 72—251 **6 Claims**



1. A roller apron for a continuous casting installation, especially equipped with withdrawal- and/or straightening rollers, wherein each of the rollers which follow in the direction of travel of a strand are guided transversely with respect to the strand direction of travel, the improvement comprising a common adjustment drive, support means including means providing a hinge connection for hingedly connecting two rollers which follow in the strand direction of travel with said common adjustment drive, and means for the automatic accommodation of the axial spacing of the hinge connection between said support means and rollers during their movement transversely with respect to the direction of travel of the strand.

3,867,828
APPARATUS FOR POSITIONING THE CONTAINERS OF AN EXTRUSION PRESS
Francis J. Kent, Wallingford, and Herbert Schmidt, Springfield, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.
Filed May 14, 1973, Ser. No. 361,379
Int. Cl. B21c *23/00*
U.S. Cl. 72—263 **4 Claims**



1. In a press having a number of containers adapted to be selectively brought to and from a pressing station of the press and wherein a container in said station has a number of working and non-working phases,

a first hydraulic piston cylinder means connected to said containers capable of furnishing only the force necessary to move the containers when a container in said station is in a non-working phase or phases of operation, a second hydraulic piston cylinder means connectable to said container in said station capable of furnishing the required force to move and maintain the container in said station during its working phase or phases of operation and capable of furnishing a substantially greater pressure than first said piston cylinder means,

wherein said containers are provided with registry means which are employed when the containers are in said station,

said second piston cylinder assembly means having means for registry with the container registry means when a container is in said station,

a first means for positioning said registry means of said container in a predetermined position,

a second means for positioning said registry means of said second piston cylinder assembly means in a predetermined position, and

said predetermined positions being such that a proper registry is made between said registry means of said container and of said second piston cylinder assembly means when a container is brought to said station.

3,867,829
ADJUSTABLE ARRANGEMENT FOR BENDING OF BARS OF REINFORCING STEEL MATS

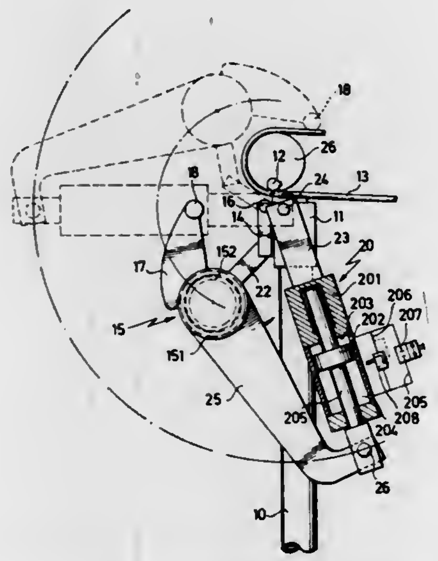
Rudolf Bock, Palmeistr. 9, 7031 Holzgerlingen, Germany

Filed July 25, 1973, Ser. No. 382,583

Claims priority, application Germany, Aug. 2, 1972, 2237895

Int. Cl. B21d *11/12*

U.S. Cl. 72—321 **6 Claims**



1. An arrangement for bending reinforcing steel mats, comprising in combination,

a fixed support bean having a bearing surface for supporting a reinforcing steel mat being formed by a plurality of rods;

a plurality of coaxial hook-like bending mandrels removably mounted on said fixed support beam over said bearing surface so that the rods of said steel mat can be inserted therebetween;

a bar engaging beam pivotally mounted in said arrangement relative to said fixed support beam about an axis which is parallel to the axes of said coaxial hook-like bending mandrels;

actuating means operatively connected to said bar engaging beam for pivoting it relative to said fixed support beam;

a bending bar adjustably mounted on said bar engaging beam so that its arcuate path relative to said fixed support beam can be selectively adjusted;

hydraulic adjusting means operatively connected, on the one hand, to said bending bar and, on the other hand, to said bar engaging beam;

said hydraulic adjusting means comprising a cylinder, a double acting piston reciprocally mounted in said cylinder and dividing it into two chambers, conduit means communicating said two chambers, and closeable valve means mounted in said conduit means;

said hydraulic adjusting means being adapted to steplessly adjust the position of said bar engaging beam relative to said bending bar and is connected to an hydraulic power source.

3,867,830
FORGING PRESS

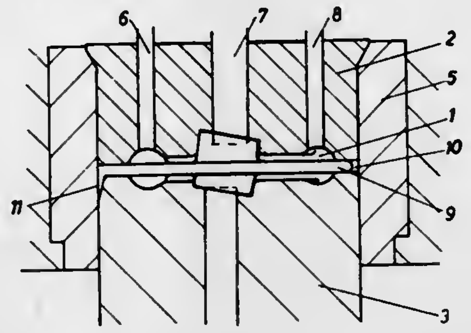
Heinz Dettwiler, Lupsingen, Switzerland, assignor to Hatebur Umformmaschinen AG, Basel, Switzerland

Filed July 25, 1973, Ser. No. 382,616

Claims priority, application Germany, Aug. 2, 1972, 2237913

Int. Cl. B21j *13/14*

U.S. Cl. 72—361 **9 Claims**



1. In a forging press including tong means for transporting a forging from the press, the invention which comprises

a. a die member; and

b. a punch member mounted for axial reciprocation relative to said die member, said punch member being adapted to co-operate with said die member in a working zone to produce a forging, the stroke of said punch member being such that said punch and die members in their operative position in the working zone are spaced apart to provide a gap therebetween so that a peripheral flash of the forging is formed in the gap;

c. at least one of the adjacent surfaces of said die and punch members containing in laterally spaced relation to said working zone a recess in communication with said gap, said recess extending axially of the press so that the flash extends into the recess to define an axial flash projection on the forging, said recess being so arranged that the flash projection produced therein is adapted for engagement by said transport tongs.

3,867,831
METHOD OF MANUFACTURING BRANCHED FITTINGS

Evgeny Nikolaevich Moshnin, ulitsa Akademika Pavlova, 50, kv. 5, Moscow; Nikolai Ivanovich Romashko, Leninsky raion, selo Molokovo, Moskovskaya Oblast; Vladimir Zakharovich Gurevich, Yasny proezd, 4, korpus 1, kv. 20, Moscow; Nikolai Stepanovich Voronov, ulitsa B. Khmelnitskogo, 68, kv. 18, and Viktor Ilich Deryabkin, ulitsa B. Khmelnitskogo, kv. 65, both of Belgorod, all of U.S.S.R.

Filed June 21, 1973, Ser. No. 372,415

Int. Cl. B21k *21/00*

U.S. Cl. 72—367 **3 Claims**

1. Method of manufacturing branched fittings from tubular metal stock, including the steps of compressing said stock in radial directions relative to its longitudinal axis with a first pair of cooperating dies having substantially cylindrical recesses of a complementary shape, one of said dies of said first pair having an opening intermediate the ends thereof for forming in said stock a bulge of a circular cross-sectional shape at the location of the branch outlet which is to be produced; subsequently upsetting said stock obtained through said compressing operation by a second pair of male dies driven towards each other longitudinally of said stock so as to impart to said stock a barrel-like shape and an oval cross-section to said bulge; and re-compressing said stock in radial directions relative to said longitudinal axis thereof after subjecting said stock to said upsetting operation through a third pair of cooperating dies having recesses of a substantially cylindrical shape, said recesses in said third pair of dies being complementary to each other, said dies of said third pair being closed in the direction of the minor axis of said oval, each die of said third pair having an additional recess of a substantially cylindrical shape, said additional recesses, respectively, of said dies of said third pair being complementary to each other and extending transversely in respect of said first-mentioned recesses in said respective dies of said third pair, said additional recesses being adapted to effect final formation of said fitting branch from said bulge.

3,867,832
METHOD OF FORGING OF VARIOUS SHAPED ELEMENTS ON ELONGATED BARS AND A DEVICE FOR THE USE OF THIS METHOD

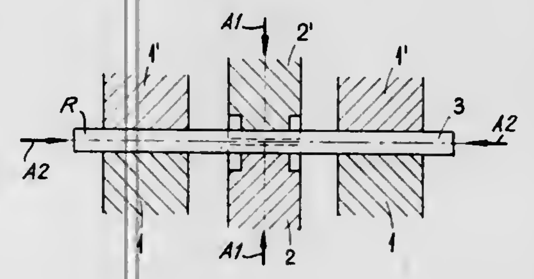
Tadeusz Rut, Poznan, Nowe Zagárze str. 14, Poland

Filed July 31, 1972, Ser. No. 276,722

Claims priority, application Poland, July 31, 1971, 149788

Int. Cl. B21j *5/08*

U.S. Cl. 72—399 **7 Claims**



1. A method of forging a predetermined shape into an elongated rod comprising upsetting the rod by applying opposed longitudinal forces on the rod and squeezing the rod perpendicularly thereof at the thusly resulting upset portion of the rod concurrently with the upsetting of the rod to apply transverse forces sufficient to deform said upset portion of the rod, the transverse forces being applied from opposite sides of the rod so that the upset and deformed portion of the rod is coaxial with the remainder of the rod, said portions of the rod to which the longitudinal forces are applied being moved towards one another in the course of upsetting of the rod, while the transverse forces are simultaneously applied and moved towards one another to progressively deform the portion of the rod being upset during the course of said longitudinal movement of the portion of the rod during upsetting.

3,867,833
METAL-WORKING MACHINE

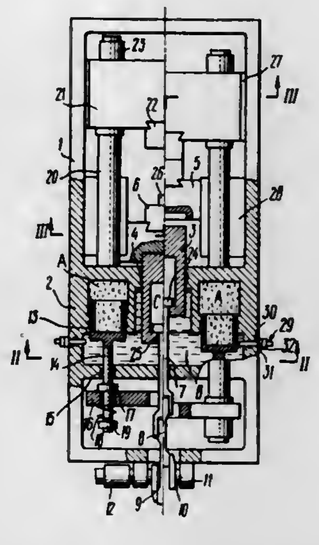
Anatoly Sergeevich Morgolenko, ulitsa Chkalova 15, kv. 434, Kharkov, U.S.S.R.

Filed May 4, 1973, Ser. No. 357,518

Int. Cl. B21d *7/06*

U.S. Cl. 72—407 **3 Claims**

1. A metal-working machine comprising a bed with a receiver having a closed cavity; a piston located on the axis of the machine and said receiver; a holder with a half of a working tool mounted on said piston; at least two lateral pistons with rods arranged symmetrically to said piston in the cavities of said receiver; a crosspiece connecting the rods of said lateral pistons, said crosspiece having at least two through holes; drawbars, one end of each of which is passed through said through holes of said crosspiece; a second holder with the other half of said working tool mounted at the other ends of said drawbars; a crank mechanism with connecting rod coupled to said piston located on the axis of said receiver, the spaces under said lateral pistons communicating with the space under said piston and being filled with liquid; the space above said lateral pistons being filled with compressed gas,



said crank mechanism serving to return said holders to the initial position after they have performed the working stroke.

3,867,834
FORGING PRESS HAVING ADJUSTABLE COLUMN GUIDES

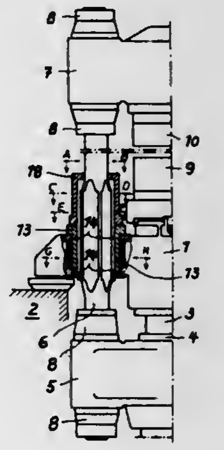
Helmut Robra, Muelheim/Ruhr, and Heinz Schmoll, Hueckeswagen, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Apr. 9, 1973, Ser. No. 349,085

Claims priority, application Germany, Apr. 8, 1972, 2217037

Int. Cl. B21j *13/04*

U.S. Cl. 72—456 **7 Claims**

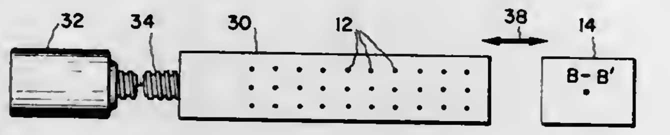


1. In a forging press comprising a frame having a top cross-member, a bottom cross-member and four columns interconnecting said top and bottom cross-members, each said column having two parallel, opposed guide surfaces which are substantially parallel to a plane containing the axis of the respective said column and the axis of the diagonally opposite column, an intermediate cross-member through which said columns pass for guided vertical sliding movement of said columns in relation to said intermediate cross-member, said opposed guide surfaces providing the only substantial guidance between said columns and said intermediate cross-member, forging tool holding means for holding upper and lower forging tools for forging a workpiece, and drive means for driving said press for forging; the provision of adjustable guide means comprising respective vertically adjustable wedge-shaped members having guide surfaces which are substantially parallel to said plane and engage and are slidable relative to respective and column guide surfaces, and multi-part bushes defining support surfaces supporting respective said wedge-shaped members with no substantial gaps between said wedge-shaped members and respective said support sur-

faces, said bushes being mounted on said intermediate cross-member.

3,867,835
CALIBRATION OF PARTICLE VELOCITY MEASURING INSTRUMENT

Roger E. Button, Rochester, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 19, 1973, Ser. No. 408,247
Int. Cl. G01p *21/00, 5/20*
U.S. Cl. 73—1 D **7 Claims**



1. A calibration apparatus for calibrating a particle velocity measuring instrument defining an optical path for optically viewing particulate matter to generate signals as a function of the velocity of the particulate matter, comprising:

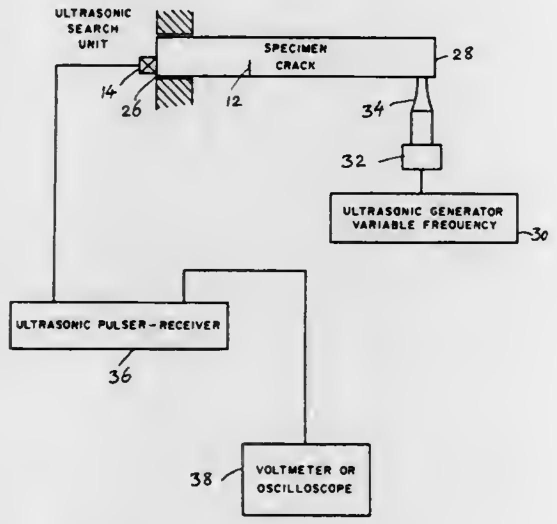
a slide disposed for receiving light emanating from along the defined optical path;

areas of contrast disposed upon the slide for receiving the light emanating from along the optical path to be optically viewed by the particle velocity measuring instrument; and

means for moving the areas of contrast disposed upon the slide in a linear path at a predetermined rate across the received light emanating from along the optical path for the generation of calibration signals as a function of the velocity of the areas of contrast traversing the received light at a predetermined rate.

3,867,836
CRACK DETECTION APPARATUS AND METHOD

John G. Sessler, and Volker Weiss, both of Syracuse, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 26, 1973, Ser. No. 345,164
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 R **6 Claims**


ULTRASONIC SEARCH UNIT
SPECIMEN
CRACK
28
14
26
12
34
32
ULTRASONIC GENERATOR VARIABLE FREQUENCY
30
ULTRASONIC PULSER-RECEIVER
36
VOLTMETER OR OSCILLOSCOPE
38

1. An apparatus for non-destructively detecting cracks comprising:

an elongated specimen having a first end and a second end, said elongated specimen being cantilevered at the second end thereof;

a first source means for generating sound waves at a first frequency;

means for coupling the sound waves from said first source to the first end of said elongated specimen;

a second source means for generating electrical pulses at a second frequency, said second frequency being significantly higher than said first frequency, said second source means being proximate the second end of said elongated specimen;

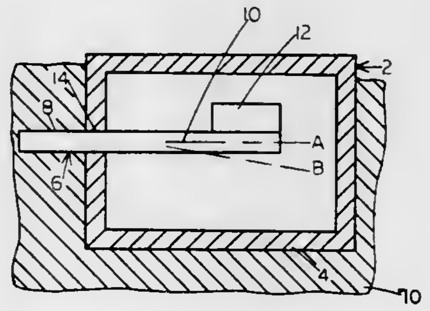
means for adjustably pulsing said second source means for transmitting said electrical pulses at said second frequency at the second end through said elongated specimen;

means for detecting electrical pulses of said second frequency reflected at a crack's position in said specimen and thus forming an echo; and

means for displaying said echo.

3,867,837
MOISTURE DETECTION

Eugene F. Malin, 1920 S. Ocean Dr., Apt. 1703, Fort Lauderdale, Fla. 33316
Continuation of Ser. No. 17.271, March 6, 1970, abandoned. This application Mar. 2, 1972, Ser. No. 231,308
Int. Cl. G01n *5/02*
U.S. Cl. 73—73 **9 Claims**



1. A porous media liquid quantity detector for detecting the quantity of liquid in adjacent porous media by transferring the liquid from the adjacent porous media to a detection area in the liquid quantity detector comprising;

a housing member to provide a capillary transfer and supporting housing cavity in the porous media when at least a portion of said housing member is placed in the porous media,

a liquid transfer and support means connected to said housing member, said liquid transfer and support means including,

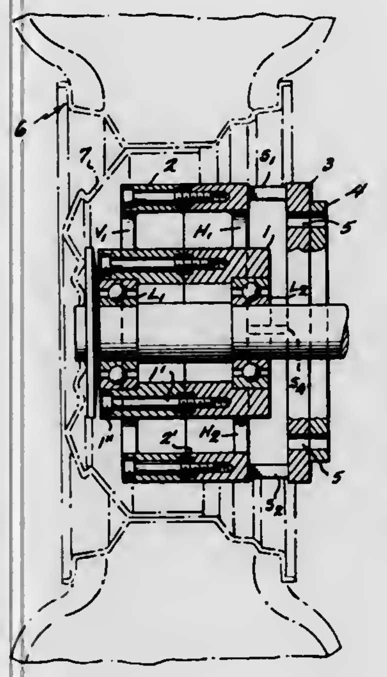
a supporting portion connected to said housing member, and

a capillary transfer portion connected to said supporting means, said capillary transfer portion includes a first portion positioned to be adjacent the edge of the housing cavity to contact at a linking area the adjacent porous media to provide a capillary link for transferring liquid from said adjacent porous media along said capillary transfer portion, said capillary transfer portion includes a second portion positioned in said housing cavity for receiving the liquid transferred from said first portion, said capillary transfer portion supported between said first portion adjacent the linking area and said second portion in said cavity by said supporting portion, and

a signal means adjacent said second portion for detecting the quantity of liquid transferred from the said first portion to said second portion to provide an electrical output signal, said signal means includes a weight sensor means for sensing the weight change in said liquid transfer and support means.

3,867,838
INSTRUMENT HUB FOR THE MEASUREMENT OF FORCES AND/OR MOMENTS

Manfred Gerresheim, Munich, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany
Continuation of Ser. No. 221,592, Jan. 28, 1972, abandoned. This application Dec. 26, 1973, Ser. No. 428,303
Claims priority, application Germany, Jan. 28, 1971, 2104003
Int. Cl. G01l *5/16, 5/20*
U.S. Cl. 73—133 R **17 Claims**



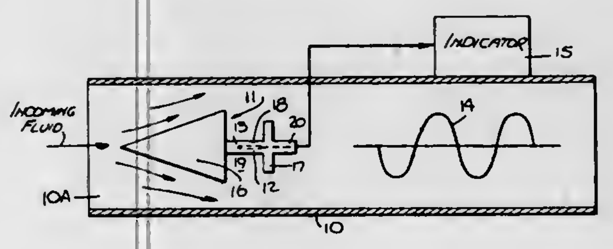
1. An apparatus for measuring forces and/or moments acting on a rotor in motion comprising:

a hub having a plurality of sets of beams with the beams in each set extending in planes forming right angles with respect to each other and resiliently deformable under the action of forces and/or moments applied to the hub, said beams extending in planes parallel to directions of individual forces applied to the hub and parallel to a plane perpendicular to the respective vector of moments produced by the hub so that the forces and moments cause only extensions and contractions of said beams, one of said sets comprising four beams extending parallel to each other and parallel to the rotational axis of the rotor, means for attaching said hub to said rotor, and

a plurality of strain gauges each attached to one of said beams so as to produce a signal varying as a function of the deformation of the beam to which it is attached.

3,867,839
VORTEX-TYPE FLOWMETER HAVING STRAIN GAUGE SENSOR IN AN ELASTIC SUSPENSION

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.
Filed Sept. 25, 1973, Ser. No. 400,641
Int. Cl. G01f *1/00;* **G01p** *5/8*
U.S. Cl. 73—194 B **8 Claims**



1. A flowmeter of the vortex type comprising:

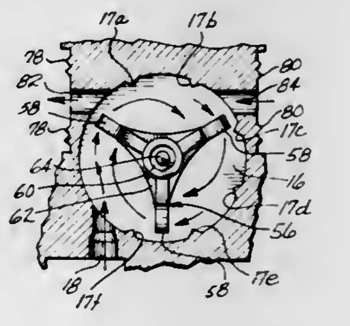
A. a flow conduit through which fluid to be measured is conducted;

B. an obstacle assembly disposed within said conduit and constituted by a front section fixedly mounted across the conduit and contoured to cause flow separation and a downstream vortex street having a periodicity which is a function of flow rate, and a rear section cantilevered behind said front section to define a gap, said rear section being shaped to interfere with said vortex street and to strengthen and stabilize said vortex street, said rear section being slightly deflectable whereby it is excited into vibration by said street; and

C. means to sense the vibrating motion of said rear section to produce a signal whose frequency is proportional to flow rate, said means being isolated from said fluid and constituted by a strain gauge suspended by an elastomeric material within an enclosed cavity formed in said assembly, the position of said cavity being such as to cause it to bend in accordance with said vibrations to effect a flow of said elastomeric material within the cavity imposing a force on said gauge.

3,867,840
AXIAL OUTLET FLOW TRANSDUCER

Wilfried Baatz, Bellevue, Wash., assignor to FloScan Instrument Company, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 223,469, Feb. 4, 1972, abandoned. This application May 29, 1973, Ser. No. 364,231
Int. Cl. G01f *1/08*
U.S. Cl. 73—229 **17 Claims**



1. A flow transducer comprising:

a. housing means defining a flow chamber having a wall, said wall being circular in cross-section;

b. a rotor having a central rotational axis and having a plurality of blades extending outwardly from said central axis, and means mounting said rotor in said chamber for rotation about said axis responsive to fluid flow in said chamber;

c. means in said housing for detecting the angular frequency of rotation of said rotor;

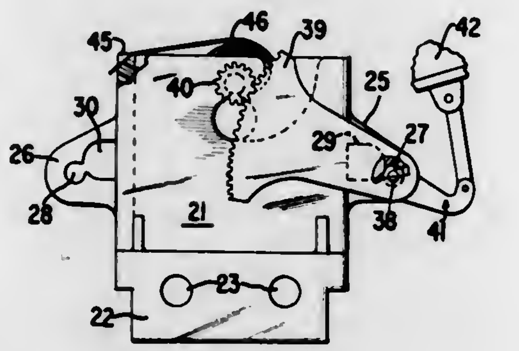
d. inlet means in said housing means for injecting fluid into said chamber substantially tangentially to the wall of said chamber to establish flow around said chamber;

e. outlet means located to discharge fluid from said chamber; and

f. flow disturbing means in said chamber comprising a plurality of projections on the wall of said chamber, said projections having at least two side walls extending inwardly relative to the wall of said chamber and intersecting each other to form an edge located adjacent the peripheral portion of the path defined by the periphery of said blades when said rotor is rotating, said projections being triangularly shaped in cross-section, said flow disturbing means causing the rotational speed of said rotor to be reduced at high rotational speeds.

3,867,841
ONE-PIECE SNAP ASSEMBLY PLASTIC MOVEMENT FOR GAUGES

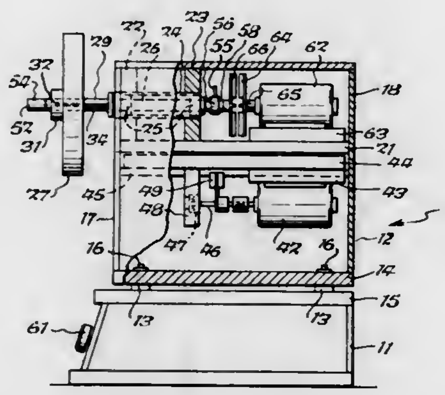
Charles R. Widlund, Schwenksville, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed May 9, 1973, Ser. No. 358,706
Int. Cl. G01l *19/00, 7/04*
U.S. Cl. 73—432 A **8 Claims**



1. In an indicator gauge or the like having a pinion, segment and arbor movement, the combination including a unitary plastic material movement bracket, shaft bearing means in said bracket for said movement, said bearing means including large and small pairs of apertures with a wall having slot means therein, movement shaft means mounted in the larger of said bearing means apertures, said slot means being dimensioned whereby said shaft means can be moved therethrough into the smaller of said bearing means apertures and will be retained therein, and condition responsive means connected to said shaft means.

3,867,842
UNBALANCE DETECTOR

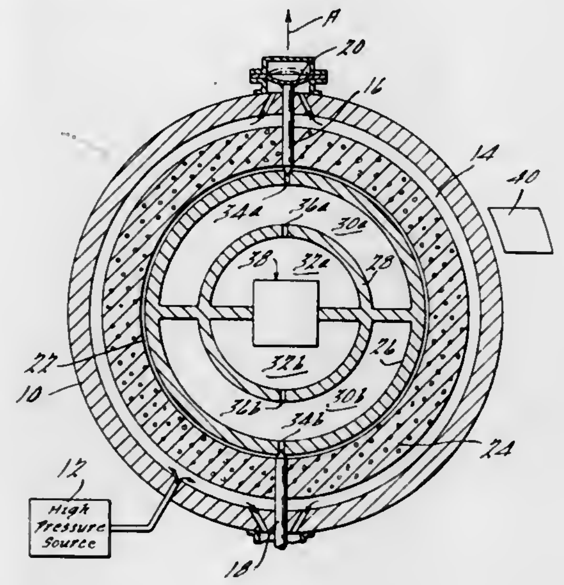
Alfred A. Reiser, 6976 Old Lake Shore Rd., Lake View, N.Y. 14085
Filed Dec. 5, 1973, Ser. No. 421,784
Int. Cl. G01m *1/12*
U.S. Cl. 73—480 **12 Claims**



1. An unbalance detector comprising base means, a shaft having first and second spaced portions, bearing means mounting said shaft on said base means, means on said first portion for mounting a workpiece to be balanced, whereby said workpiece may gravitate to a position wherein its point of effective maximum unbalance is located at bottom dead center, motor means, speed control means for said motor means, slip-coupling means effectively located between said motor means and said second portion of said shaft, whereby said point of effective maximum unbalance may be substantially maintained in a predetermined position other than bottom dead center by adjusting the speed of said motor means, and means correlated with said speed control means for indicating the value of the counterweight required to maintain said point of effective maximum unbalance in said predetermined position.

3,867,843
MISSILE ALTITUDE SENSING SYSTEM

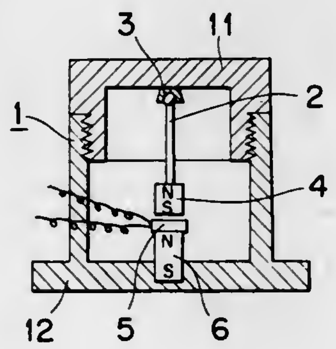
Henry F. McKenney, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 25, 1969, Ser. No. 810,389
Int. Cl. G01c *21/16*
U.S. Cl. 73—490 **6 Claims**



1. An altitude sensing system for a missile during its boost phase comprising a spherical shell, a hydrostatic perforated bearing structure enclosing said shell, a gas pressure source for providing high pressure flow through said bearing structure to support said shell on a pressurized gas film, a first integrating chamber of said shell, a second integrating chamber of said shell formed interior of said first chamber, a first pair of integrating orifices formed in said first chamber along the longitudinal axis of said missile, one at the upper and the other at the lower end of said first chamber, said first pair of orifices communicating between said gas film and the interior of said first air chamber, a second pair of integrating orifices aligned along said axis at opposite ends of said second chamber, said second pair of orifices communicating between said second chamber and said first chamber, respectively, and a differential pressure sensing means mounted in said second chamber for providing a control output signal responsive to a pressure differential representative of predetermined missile displacement.

3,867,844
ACCELERATION SENSOR

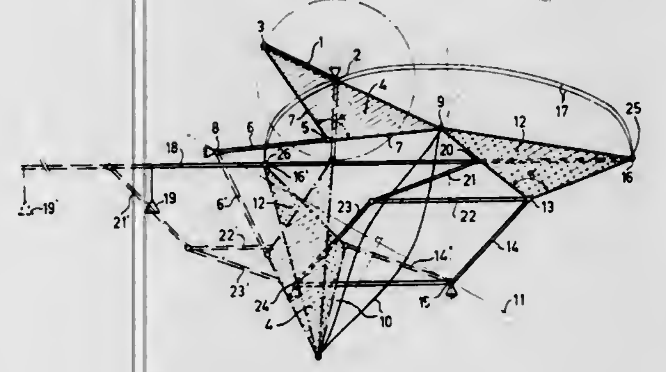
Tetsuji Shimizu, Nagoya, and Tatsuo Kato, Inazawa, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Prefecture, Japan
Filed May 18, 1973, Ser. No. 361,567
Claims priority, application Japan, May 20, 1972, 47-49556
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 R **1 Claim**



1. An acceleration sensor comprising a casing; a first magnet suspended vertically within said casing by means of a ball joint; a semiconductive magneto-electric transducer element arranged just below said magnet; and a second magnet fixed to the casing and to the lower part of said semiconductive magneto-electric transducer element in the attractive relationship with said first magnet, whereby the displacement of said first magnet due to acceleration greater than a predetermined value causes variation of an electric current flowing through said transducer element to detect the acceleration.

3,867,845
DEVICE FOR CONVERTING A ROTARY MOVEMENT INTO A SYMMETRICAL RECIPROCATING MOVEMENT

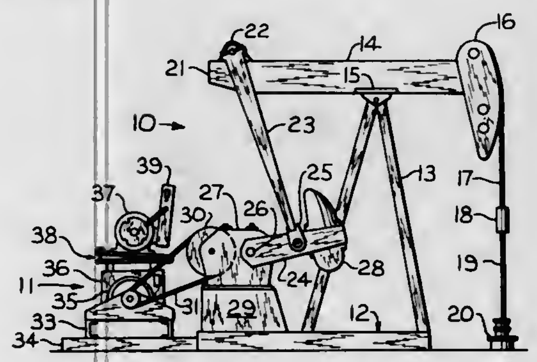
Hendrikus Jan Antuma, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 386,334, Aug. 7, 1973,. This application June 12, 1974, Ser. No. 478,574
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **6 Claims**



1. A device for converting a rotary movement into a symmetrical reciprocating movement, utilizing a bar system comprising a first isosceles coupling triangle, a first base vertex of which is connected to a rotatable crank, its top vertex being pivotably connected to a fixed point by a bar of a length which is equal to that of the legs of the triangle, with the result that the second base vertex performs a symmetrical reciprocating movement with acute reversing points, the symmetry line thereof passing through said fixed point, wherein the said second base vertex is connected to a base vertex of an isosceles second coupling triangle, the top vertex of which is pivotably connected to a fixed point by a bar having the same length as the legs of the triangle, said fixed point being situated at least substantially on said symmetry line of the movement of the second base vertex of the first triangle.

3,867,846
HIGH SLIP PRIME MOVER FOR PUMPJACK APPARATUS

Lonnie Kenneth Cambern, Odessa, Tex., assignor to Vance Industries, Inc., Odessa, Tex.
Filed June 5, 1973, Ser. No. 367,214
Int. Cl. F16h *21/18*
U.S. Cl. 74—41 **6 Claims**



1. In a pumping unit having a driving means connected to a crank, with the crank being connected to a walking beam, wherein the driving means effects rocking motion into the walking beam, the improvement comprising:

said driving means includes a reduction gear assembly, an electric induction motor, and a torque converter, a belt drive means by which said motor is connected to drive said torque converter;

said reduction gear assembly having a power output drive connected to rotate the crank and having a power input drive, said torque converter having a power output shaft connected to said power input drive;

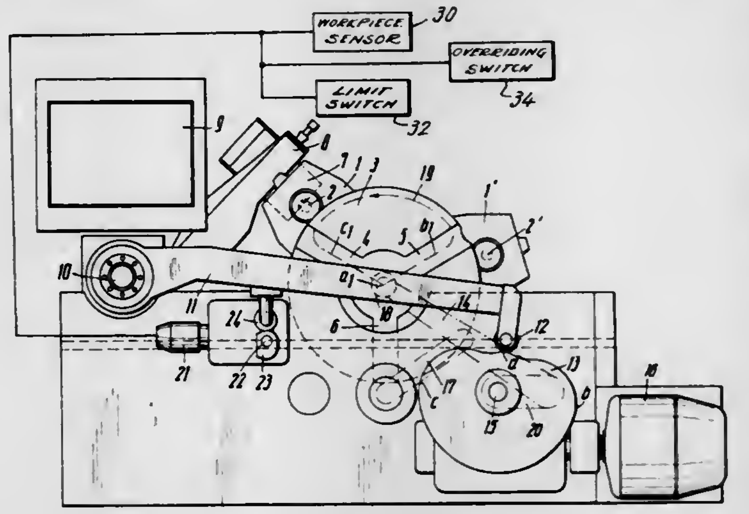
said torque converter includes a fluid reservoir, a radiator, and a converter housing; said housing being affixed to said reservoir with said torque converter shafts being received through the reservoir;

a base, hinge means by which said motor can be pivoted towards and away from said base, means for controlling the angular disposition of the motor relative to the base so that the tension of the belt drive means can be controlled;

whereby said motor delivers a relatively steady flow of power to said torque converter while said torque converter delivers a relatively unsteady flow of power to said reduction gear assembly.

3,867,847
ARRANGEMENT FOR RAISING AND LOWERING OR RETAINING THE INDUCTOR IN ITS UPPER MOST POSITION IN EQUIPMENT

Friedhelm Reinke, Renicheid, and Edgar Stengel, Wuppertal-Hahnerberg, both of Germany, assignors to AEG-Elotherm GmbH, Postfach, Germany
Filed Sept. 12, 1973, Ser. No. 396,472
Claims priority, application Germany, Sept. 13, 1972, 2244847
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 **2 Claims**



1. In apparatus for raising and lowering or retaining an inductor in its uppermost position in equipment for inductively hardening elongated workpieces which are mounted between centers on the arms of a pair of spiders indexable into several consecutive treating stations by a slotted plate which is mounted for movement with the spiders and coaxially therewith, a roller which moves on a curve generated by a four-bar linkage working in the slots, while the shaft driving one crank of the linkage carries a substantially reniform cam disc of which the peripheral cam contour cooperates with a follower roller on a lifting arm which carries the heating inductor, and which extends within range of a locking means, the improvement wherein the locking means comprises a second cam disc mounted on a drive shaft and drivable by a geared motor, the cam contour having a radius which within a predetermined angular range increases as a monotonous function of the cam angle and the cam cooperating with a second follower roller mounted on the lifting arm, means for sensing the absence of a workpiece for mounting on said spider and producing a signal responsive thereto to operate said geared motor to rotate said second cam disc, and limit switch means for stopping said geared motor at a predetermined angular position in

which said lifting arm is held out of operative contact with said reniform cam disc.

3,867,848
ARCUATELY OSCILLATING PISTON MACHINE

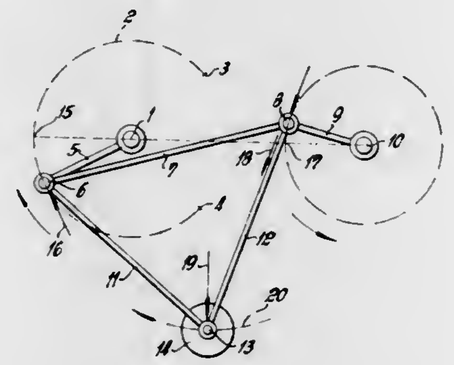
Friedrich Munzinger, Hohenrandstrasse 46, 7 Stuttgart 80, Germany

Filed Nov. 6, 1973, Ser. No. 413,217

Claims priority, application Germany, Nov. 6, 1972, 225423

Int. Cl. F16h *21/40*

U.S. Cl. 74—70 **8 Claims**



1. An oscillating engine of the type having a piston that is connected to a pivotally-mounted piston shaft such that the shaft rocks coaxially with the piston over an angular range of between 180° and 360°, said engine also having a crankshaft mounted with its axis parallel to that of the piston shaft, and said engine including a linkage transmission drivingly connecting said crankshaft to said piston shaft, wherein the linkage transmission comprises:

- a piston crank connected to and arranged to rock with the piston shaft;
- a crankshaft crank connected to and arranged to rotate with the crankshaft;
- a piston connecting rod having first and second ends hingedly connected at said first end to said piston crank and at said second end to said crankshaft crank, the length of said connecting rod and the spacing between said cranks being such that the linkage transmission passes through a position in a cycle of operation at which the mid-point of the piston in its arc of oscillation corresponds with one dead-center position of the piston crank and also with one dead-center position of the crankshaft crank; and
- a mass operatively attached to said connecting rod and disposed such that the center of gravity of the mass is remote from a line passing through the two hinge points of said piston connecting rod when the piston is at the mid-point of its arc of oscillation;

whereby the mass acts as a means resolving the driving and the driven forces which are present at the two hinge points when the piston swings through the mid-point of its arc of oscillation.

3,867,849
REVOLUTION MOVEMENT DRIVING APPARATUS

Toshiaki Onoda, Yokohama, and Yoshimasa Ito, Kawasaki, both of Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan

Filed Aug. 6, 1973, Ser. No. 386,097

Claims priority, application Japan, Aug. 9, 1972, 47-79828; Aug. 11, 1972, 47-79918

Int. Cl. F16h *21/17*

U.S. Cl. 74—109 **7 Claims**

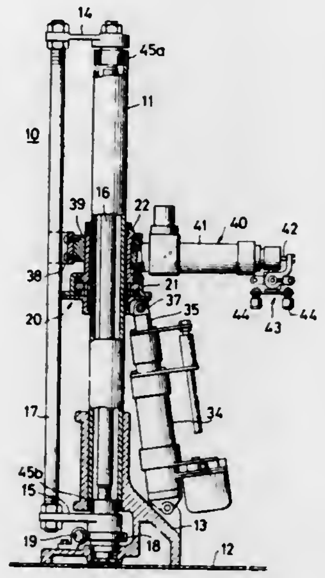
1. A revolution movement driving apparatus comprising:

- a stationary support of a hollow shape uprightly fixed on a base;
- a rotating shaft inserted through the hollow part of said fixed support;

drive means for rotating said rotating shaft;

- a rod provided in parallel with said rotating shaft on the outside of said stationary support and revolvable unitarily with said rotating shaft;

means for transmitting a revolving force by revolving about said stationary support with said rod, said means being engaged to said rod in the direction of the rotation of the rod;



- a revolving part which is unitarily revolved with said revolving force transmitting means; and
- a bearing device for supporting said revolving force transmitting means and said revolving part revolvably about the stationary support,

the load for said bearing device being carried by the stationary support.

3,867,850
SHIFTING MECHANISM AND WATCH

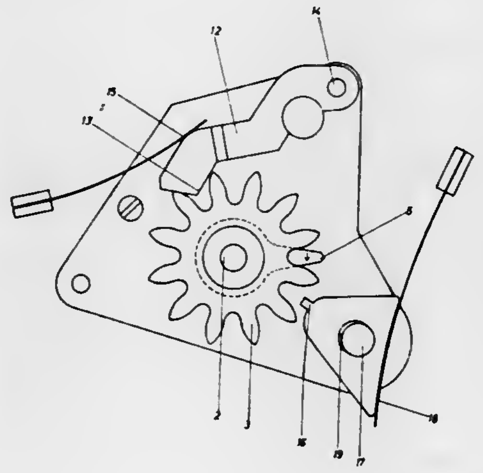
Bernd Bechtold, Bildingen, Germany, assignor to Firma Berhard Forster, Pforzheim, Germany

Filed June 21, 1973, Ser. No. 371,961

Claims priority, application Germany, Mar. 31, 1973, 2316228

Int. Cl. F16h *27/02*

U.S. Cl. 74—142 **9 Claims**



1. In a shifting mechanism comprising a locking pawl provided with a locking cone and hour shifting wheel with teeth with said locking pawl being spring biased to engage said teeth, the improvement comprising the inclusion of:

- a pivoted shifting pawl adapted to engage said teeth,
- a second spring means biasing said shifting pawl toward an initial angular position,
- a rotatably mounted shifting finger, and driving means for rotating said shifting finger, said shifting finger being arranged to temporarily

engage said shifting pawl and impart a pivotal movement thereto from said initial angular position during a rotational movement of said shifting finger through a predetermined angular range,

- said shifting pawl being arranged to engage one of said teeth during said pivotal movement,
- at least one of the parts consisting of said wheel and shifting pawl being resiliently yieldable so as to move away from the other of said parts in response to the engagement of said shifting pawl with said one tooth during said pivotal movement so that said shifting pawl can move past said one tooth during said pivotal movement,
- the arrangement being such that said shifting finger releases said shifting pawl when the same has been pivotally moved past said one tooth and that in response to the release of said shifting pawl by said shifting finger said yieldable part springs back toward the other of said two parts and said shifting pawl springs back to said initial angular position under the action of said second spring means so as to engage said one tooth and to overcome said restraining force and impart to said wheel a predetermined sudden angular movement.

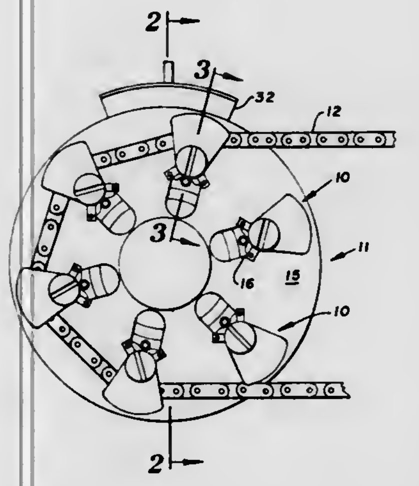
3,867,851
RADIALLY EXPANSIBLE SPROCKET WITH ROTATABLE TEETH SEGMENTS

Lawrence Gregory, St. Paul; Lloyd Murphy, and Donald H. Hagen, both of Minneapolis, all of Minn., assignors to Hagen International Inc., Minneapolis, Minn.

Filed Aug. 23, 1973, Ser. No. 390,956

Int. Cl. F16h *55/30*

U.S. Cl. 74—244 **4 Claims**



1. A sprocket unit for chain drive mechanisms, such mechanisms have a driving member and at least one such sprocket unit thereon for engaging a chain and driving the same, said sprocket including:

- a. a bearing member mounted on said driving member;
- b. a sprocket segment having at least two radially outwardly extending, chain engaging teeth thereon and a pair of radially inwardly extending arm members arranged thereon, said segment being mounted for rotation about said bearing; and,
- c. stop means for limiting the rotation of said segment about said bearing member, said stop means being arranged between said arm members whereby said segment is brought into driving engagement with the chain and upon engagement with said stop, will drive the chain.

3,867,852
FIXED OR ROTATABLE STRUCTURAL PART CONSISTING OF AN INNER AND OF AN OUTER PART

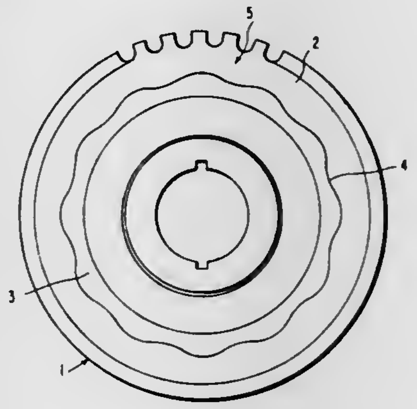
Hans-Joachim Schopf, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Nov. 23, 1973, Ser. No. 418,174

Claims priority, application Germany, Nov. 24, 1972, 2257598

Int. Cl. F16h *55/12*

U.S. Cl. 74—446 **22 Claims**



1. A structural member consisting of at least an inner part and of an outer part, whose one part forms a base body and whose other part forms a running surface, the mutual contact surface means of the two parts, which extend in the circumferential direction, being constructed undulatory, characterized in that said one part forming the base body is at least as wide within the area of the other part as the latter, and in that the undulations start at least from the end surfaces of said other part.

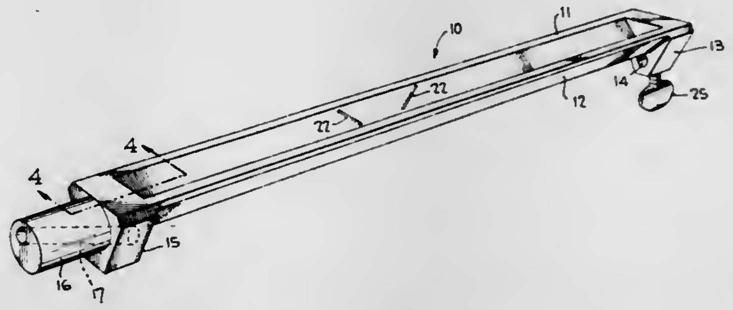
3,867,853
CHAINSAW FILE HOLDER

John Lawless, Saunderstown, R.I., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 26, 1974, Ser. No. 445,912

Int. Cl. B23d *63/08, 71/04*

U.S. Cl. 76—36 **5 Claims**



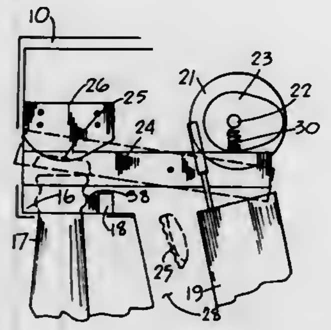
1. A chainsaw file holder comprising an elongated body portion of generally V-shaped transverse section, the legs of said V being disposed at substantially 90° to each other, transversely extending flanges at either end of said body portion and projecting beyond the bottom of said V, one said flange being formed to provide a cylindrical bore extending in a direction away from said body portion and having its axis in the central longitudinal vertical plane of said body portion, said bore inclining upwardly from an opening in that surface of said flange nearest said body portion, said opening being tangent to the apex formed by the intersection of the planes of the outer side surfaces of the V-shaped body portion, said other flange having a cylindrical hole extending therethrough and having its axis in said central longitudinal vertical plane and its circumference tangent to said apex, and means for securing a chainsaw file in said holder with the point end thereof abutting the wall of said bore and the other end extending through said hole.

3,867,854
ELECTRICAL BOTTLE OPENER

Ivan R. MacLeod, Timmins, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 6, 1974, Ser. No. 448,662
Int. Cl. B67b *7/16*

U.S. Cl. 81—3.2 **3 Claims**



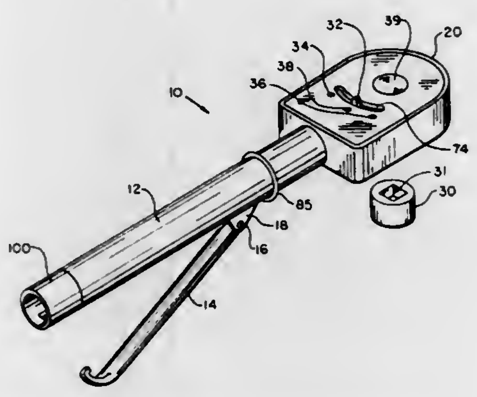
1. A bottle opener device powered by an electric motor which consists of a pivoted bar rotated by a drive powered by the electric motor so as to deform the rim and top of a bottle cap attached to a bottle and to free the cap from the bottle, said lifter bar being fitted with flanges which fit about the neck of a bottle and under the attached cap rim, with said lifter bar slotted along its mid axis, with a stationary cam fitted loosely in the slot of the lifter bar which engages and deforms the top of a bottle cap lifted by the flanges of the lifter bar.

3,867,855
LEVER ACTUATED RATCHET WRENCH

Cletus J. Siebert, 5329 W. Geddes Ave., Littleton, Colo. 80123

Filed Dec. 10, 1971, Ser. No. 206,742
Int. Cl. B25b *13/46*

U.S. Cl. 81—63.1 **18 Claims**



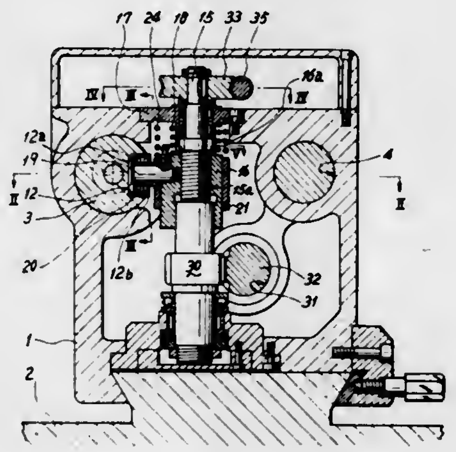
1. A ratchet wrench assembly comprising:
a. a handle;
b. a ratchet component support connected with said handle;
c. a ratchet gear mounted to said support for substantially 360° rotation in either of two opposite directions;
d. actuating means operably connectable with said ratchet gear and movable between a first point and a second point for rotating said ratchet gear;
e. a ratchet gear rotation control assembly operably positioned between said actuating means and said ratchet gear, (i) said assembly being positionable in a first position for rotating said ratchet gear in one direction in response to the movement of said actuating means from said first point to said second point, (ii) said assembly being positionable in a second position for rotating said ratchet gear in an opposite direction in response to the movement of said actuating means from said first point to said second point, and (iii) said assembly being positionable in a third position for freeing said ratchet gear for rotation in either of said opposite directions when said actuating means is at one of said first and second points; and
f. a rotation selector arrangement connected with said ratchet gear rotation control assembly for alternatively positioning said rotation control assembly in said first, second and third positions whereby said wrench assembly is adapted alternatively to rotate a work piece in opposite directions utilizing similar actuating motion and whereby the handle of said assembly may be repositioned from one point to another without effecting movement of the work piece and yet without disengaging the wrench assembly from the work piece.

3,867,856
TAIL STOCK

Takeshi Ota, Aichi-ken, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 28, 1974, Ser. No. 456,003
Claims priority, application Japan, Apr. 5, 1973, 48-41147
Int. Cl. B23d *23/00*

U.S. Cl. 82—31 **12 Claims**



1. A tail stock for compensating for tapering of a workpiece to be machined, comprising:
- a housing;
- a center sleeve slidably and rotatably mounted in said housing, said center sleeve having a bore with a predetermined eccentricity in one end thereof for holding a center and a guide way parallel to the axis thereof on the periphery thereof;
- actuating means for sliding said center sleeve in said housing;
- roller means for engaging said guide way and movable in dependence upon rotational motion of said center sleeve so as to keep engaging said guide way;
- compensating means provided on said housing and operably connected to said roller means for rotatively moving said center sleeve by allowing said roller means to move in a rotational direction of said center sleeve; and
- driving means operatively connected with said compensating means for actuating the same.

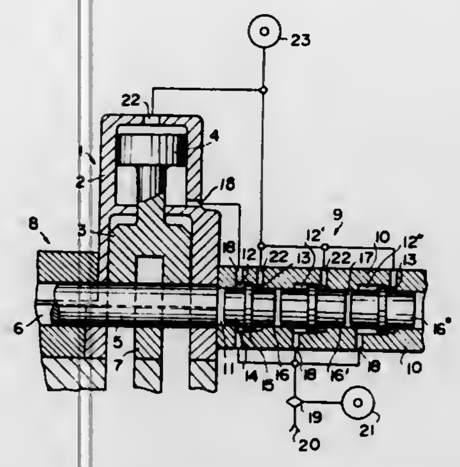
3,867,857
MATERIAL CUTTING DEVICE

Hiroshi Tominaga, Yokohama, Japan, assignor to Tokyu Sharyo Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Nov. 30, 1973, Ser. No. 420,733
Int. Cl. B23d *15/04, 15/14*

U.S. Cl. 83—9 **10 Claims**

1. A material cutting device comprising a movable tool having a cutting edge for cutting a workpiece, a holding mechanism for holding the workpiece in position, and a compression means adapted to exert impact force on said workpiece in an axial direction to facilitate high speed cutting of the workpiece, said compression means including at least two piston hammers arranged coaxially with a workpiece in end to end relation to each other with a suitable space therebetween, and means for sequentially displacing said hammers into percussive contact with each other and said workpiece to effect an axial compression of said workpiece whereby the coincident operation of said cutting edge and compression means facilitates the shearing of said workpiece.

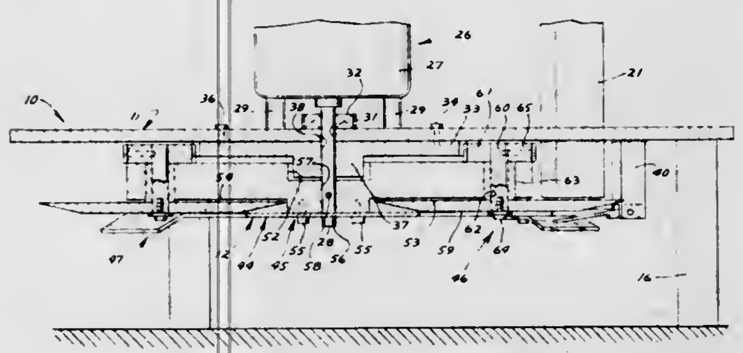


3,867,858
FROZEN FISH CUTTER

Takuzo Tsuchiya, Minneapolis; Kenneth J. Valentas, Golden Valley, both of Minn., and Donald W. Morse, Rowley, Mass., assignors to The Gorton Corporation, Gloucester, Mass.

Filed July 30, 1973, Ser. No. 384,167
Int. Cl. B26d *7/06, 4/24*

U.S. Cl. 83—113 **12 Claims**



1. Apparatus for cutting slices of meat from a column of frozen meat, said apparatus comprising:
- first support means including means for holding said column of meat in position for cutting of slices;
- at least one blade for cutting a slice from said column of meat;
- second support means including a shoe for supporting said slice during said cutting:
- means for moving said blade through said column of meat thereby cutting slices of meat from said column of meat; and
- means for removing the slice from said shoe.

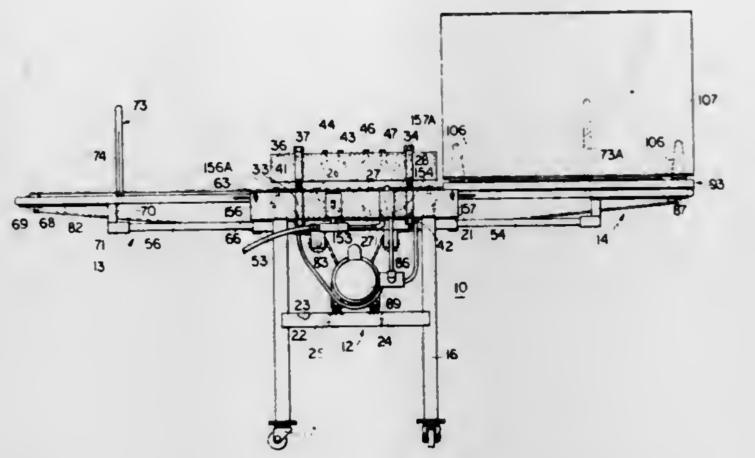
3,867,859
MACHINE FOR FORMING INDICIA FOR SAND BLASTING

John L. Hirons, Rt. 1, Box 28, Mount Orab, Ohio 45154

Filed Feb. 6, 1974, Ser. No. 439,911
Int. Cl. B26d *1/56*

U.S. Cl. 83—284 **4 Claims**

1. A machine for forming indicia from a sheet of rubber-like material which comprises a carriage including a table portion having a lower bearing face and an upper sheet supporting face and a plate of transparent material adapted to overlie the sheet supporting face, the sheet supporting face being arranged to support the sheet with cutting tools arranged thereon, a frame, vertically spaced rollers mounted on the frame, and means for advancing the carriage between the rollers to cause the plate to be urged against the cutting tools to cause the cutting tools to cut indicia from the sheet.

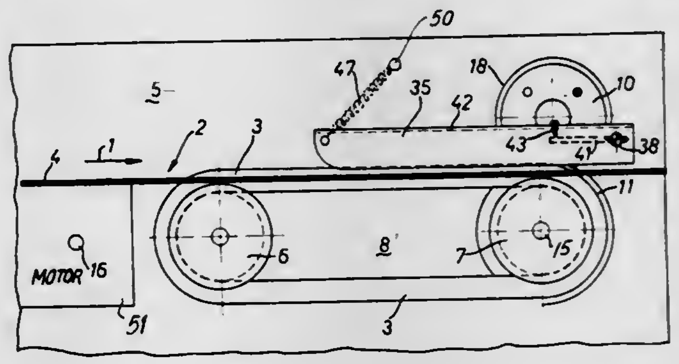


3,867,860
DEVICE FOR CUTTING OPEN LETTER ENVELOPES

Werner Haug, Langnau, Switzerland, assignor to Frama A.G., Luperswil, Switzerland

Filed Oct. 5, 1973, Ser. No. 404,012
Claims priority, application Switzerland, Oct. 9, 1972, 14749/72
Int. Cl. B43m *7/00*

U.S. Cl. 83—368 **12 Claims**



1. A device for cutting open envelopes, comprising means defining a guideway for envelopes, a motor driven conveying mechanism provided along said guideway engageable with the envelopes for moving them along said guideway, a pair of cooperative cutting blades arranged in opposition along said guideway and defining a cutting plane, said cutting plane being adjustable in respect to a side of said guideway, said guideway serving to guide the envelope edges to be cut open so that they are moved between said cutting blades, a sensing member engageable with each letter moved by said conveying mechanism along said guidway, an adjustment mechanism for the pair of cutting blades for shifting at least one of said blades laterally and being connected to said sensing member and actuated by displacement of said sensing member by the transported envelope according to the thickness thereof to vary the position of said cutting blades so that the distance of the cutting plane is changed as a function of the sensing member displacement.

3,867,861
SELECTIVE DRIVE CONNECTION FOR A CUTTING APPARATUS

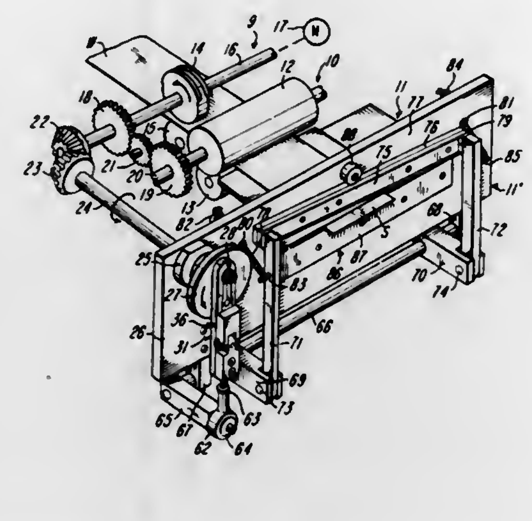
Paul H. Hamisch, Sr., Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Mar. 4, 1974, Ser. No. 448,094
Int. Cl. B26d *5/14*

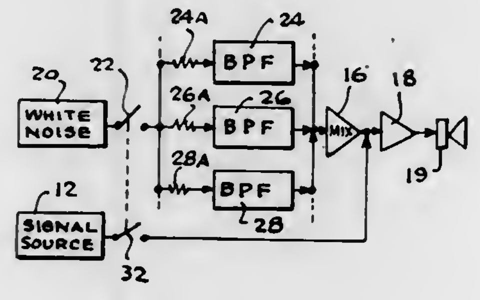
U.S. Cl. 83—571 **10 Claims**

1. Apparatus for printing and cutting sheets from a web, comprising: a cutting mechanism, drive means, a connecting

rod driven by the drive means and drivingly connected to the cutting mechanism, the drive means including a drive pin driven in a circular path, and a selective drive connection between the drive pin and the connecting rod settable in either one position in which the drive pin drives the connecting rod to in turn operate the cutting mechanism or in another position in which the drive pin is ineffective to drive the connecting rod.

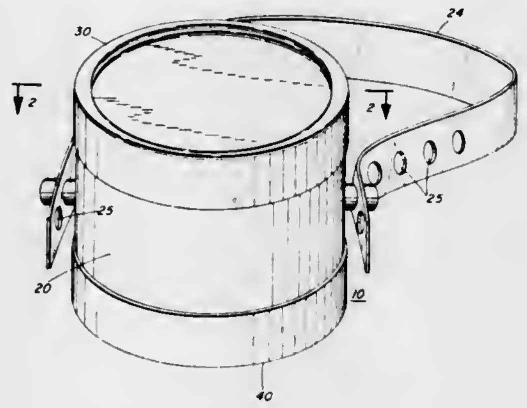


3,867,862
ELECTRICAL MUSICAL INSTRUMENT
Edward M. Jones, Cincinnati, Ohio, and William C. Wayne, Jr., South Fort Mitchell, Ky., assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed June 11, 1973, Ser. No. 368,608
Int. Cl. G10h *1/06, 5/00*
U.S. Cl. 84—1.19 **12 Claims**



1. An electrical musical instrument having a plurality of musical tones corresponding in frequency to the semi-tones of the equally tempered musical scale including an electrical tone signal source for each of the musical half-tones of said instrument, electro-acoustic output means electrically coupled to said sources of tone signals, a plurality of electrical switches, a different one of said switches being electrically coupled to each electrical tone signal source for selectively controlling excitation of the electroacoustic output means, and a source of electrical noise characterized by the improved construction wherein the source of electrical noise has means for generating a plurality of bands of electrical noise, said bands having center frequencies differing approximately by by half-tone steps from each other, and electrical circuit means responsive to each of the electrical switches for coupling a plurality of bands of electrical noise to the electro-acoustic output means, each of said plurality of bands having bands with center frequencies approximately equal to harmonics of that electrical tone signal source coupled to the same electrical switch.

3,867,863
TOY DRUM
Jorma Vennola, Princeton, and Erkki Pekka Korpijaako, Hightstown, both of N.J., assignors to Columbia Broadcasting System, Inc., New York, N.Y.
Filed Dec. 10, 1973, Ser. No. 423,000
Int. Cl. G10d *13/02*
U.S. Cl. 84—420 **3 Claims**

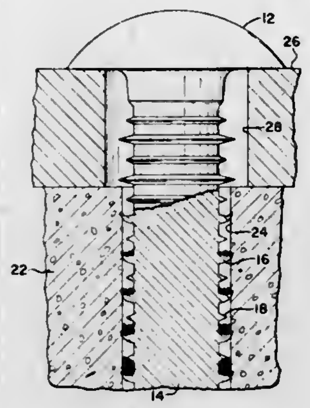


1. A toy drum comprising:
- an open-ended cylindrical shell having first and second apertures on opposite sides thereof;
- an elongated dowel fitted through said apertures so as to protrude through said shell on both sides thereof;
- an elongated strap having a plurality of apertures at each end thereof, said apertures being proportioned to fit snuggly on the protruding end of said dowel so that the effective length of said strap is adjustable by selection of which strap apertures are coupled to the dowel;
- a first drumhead formed of an integral piece of plastic, said drumhead including an annular retaining collar conforming in shape to an end of said shell, said collar having joined inner and outer rings which contact the inner and outer extremities of said shell end, and a flat circular striking surface joined to the inner ring of said collar such that said striking surface is recessed within said shell; and a second drumhead formed of an integral piece of plastic, said second drumhead including an annular retaining collar conforming in shape to the opposite end of said shell, said collar having gained inner and outer rings which contact the inner and outer extremities of said opposite end of the shell, and a flat circular striking surface joined to the inner ring of said collar such that said striking surface is recessed within said shell.

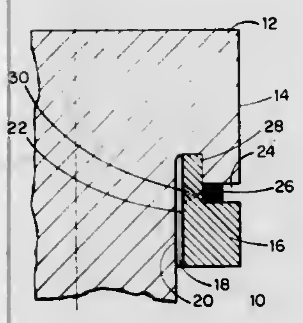
3,867,864
ANCHOR DEVICE
Friedrich Karl Knohl, Roselle, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Oct. 10, 1973, Ser. No. 405,207
Int. Cl. F16b *15/06*
U.S. Cl. 85—21 **4 Claims**

1. A drive-in anchor device including a shank and an integral head, the shank being provided throughout the major portion of its length with a plurality of sharp crested annular rings, said plurality including a plurality of rings having a first crest diameter and a plurality of rings having a second crest diameter alternately positioned along the length of the shank, the root portion of adjacent rings being spaced axially from one another to such an extent that the axial distance between adjacent crests is large enough to permit the larger rings to flex without interference from the smaller rings, the included flank angle of the larger annular rings being generally 30° and the included flank angle of the smaller annular rings geing

generally 40°–60° wherein each ring is capable of flexing and aggressively impinging an associated hole to insure securement of the anchor in a range of actual hole sizes and still allow the smaller rings to center the device within the hole.

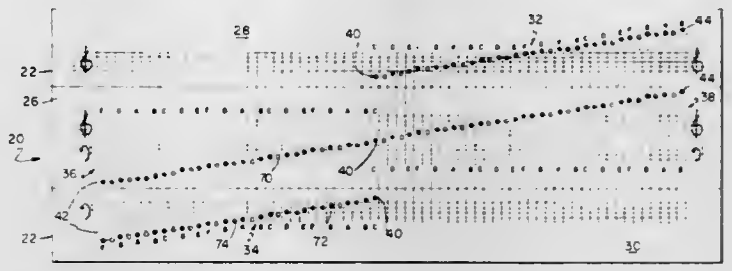


3,867,865
TWO-PART, TWO-MATERIAL FASTENING ELEMENT
Norman C. Dahl, 40 Fern St., Lexington, Mass. 02173
Continuation-in-part of Ser. No. 223,259, Feb. 3, 1972, Pat. No. 3,757,630. This application June 18, 1973, Ser. No. 370,966
Int. Cl. F16b *31/02*
U.S. Cl. 85—62 **11 Claims**



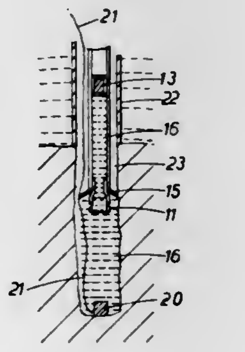
1. A two-part, two-material improved bolt, which bolt comprises in combination:
- a. a bolt head integrally secured to said bolt, said bolt head having a peripheral wrenching surface thereon and a cylindrical extension depending therefrom having an inner surface spaced apart from the outer surface of the bolt;
- b. a force ring extension element having substantially the same outer peripheral wrenching surface as the bolt head and a cylindrical sleeve extending therefrom, which, on being matingly engaged with the bolt head, forms an external groove on the outer wrenching surface, the bottom of said groove and the inner surface of the cylindrical sleeve defining an annular yielding section which plastically deforms radially inwardly when a predetermined force acts upon the bolt, with resulting reduction in the axial width of the external groove; and
- c. the bolt head and the force ring extension element formed of different materials, the force ring extension element containing the yielding section which plastically deforms radially inwardly when a predetermined force acts on the bolt being composed of a material with stress-strain characteristics which are particularly suited to obtain a small variation in the bolt force indicated by the plastic deformation, while the material of the bolt head differs in stress-strain properties from the material of the force ring extension element.

3,867,866
MUSIC TRANSPOSING RULE
Frazier Adams, 456 N. Edgemoor, Wichita, Kans. 67208
Filed July 23, 1973, Ser. No. 381,413
Int. Cl. G09b *15/02*
U.S. Cl. 84—473 **6 Claims**



1. A music transposing rule comprising a stationary member having a channel, a slidable member longitudinally slidably disposed within said channel, said stationary member including a first scale divided into an upper spaced section and a lower spaced section, said slidable member including a second scale, said first scale and said second scale bear a representation of a musical stave, said first scale comprises a first treble clef scale traversing approximately half of said upper spaced section and a first bass clef scale extending across approximately half of said lower spaced section, and said second scale comprises a second bass clef scale and a second treble clef scale longitudinally labeled in order stated across said second scale.

3,867,867
CAVITIES WITH FLUENT MATERIAL
John Sweton Duff, Adrossan, Scotland, assignor to Imperial Chemical Industries Limited, London, England and Rock Fall Company Limited, Glasgow, Scotland
Filed May 15, 1973, Ser. No. 360,456
Claims priority, application Great Britain, May 31, 1972, 25492/72
Int. Cl. F42b *3/00;* **F42d** *1/00*
U.S. Cl. 86—20 C **5 Claims**



1. In a method of underwater blasting wherein explosive fluent material is loaded into a borehole the steps of loading the fluent material from a fluent material supply into a loading tube through one end of said tube against one side of a freely-slidable double-acting piston positioned within and movable along said tube, detaching said tube from said fluent material supply, sealing the same end of said tube with an end stopper, inserting the same end of said tube into the borehole, displacing said end stopper from the same end of said tube, and expelling said fluent material through the same end of said tube into the borehole by applying a pressurized fluid through the other end of said tube against the other side of said piston to move said piston along said tube.

3,867,868

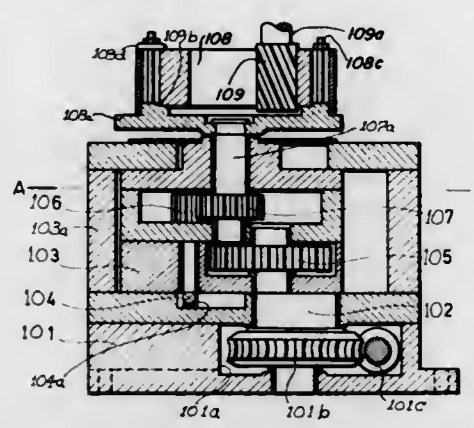
APPARATUS FOR THE MACHINING OF CYCLOIDAL SURFACES

Lajos Natkai, Budapest, and Janos Lenkefi, Nagykanizsa, both of Hungary, assignors to Orszagos Koolaj- es Gazipari Troszt, Budapest, Hungary

Filed May 14, 1973, Ser. No. 360,199

Int. Cl. B23c *3/04;* **B24b** *5/00*

U.S. Cl. 90—20 **4 Claims**



1. An apparatus for the machining of a cycloidal workpiece to impart thereto the configuration of a cycloid defined by rotating an osculating circle in contact with a base circle, said circles having respective axes and different radii and together defining a center of moments, the smaller raduis circle lying within the larger radius circle, said apparatus comprising:

a tool engageable with said workpiece at a machining location;

a pivotal member having a pivot at said center;

means for guiding said pivot in a linear path fixed with respect to said location and aligned therewith;

a crank centered on said location and articulated to said member at one of said axes;

means mounting said workpiece for rotation about the other of said axes;

meshing gear means for rotating said mounting means about said other of said axes at a fixed ratio to the pivotal displacement of said crank,

drive means operatively connected to said crank for rotating same about an axis aligned with said location, said tool being rotatable and having a radius less than the smallest radius of curvature of the cycloidal surface to be generated in said workpiece and smaller than either of said radii, and said tool being rotatable about an axis disposed upon a line connecting said path and said location but offset from said one of said axes.

3,867,869

STATIONARY GUIDE BLADE STRUCTURE FOR AXIAL-LOW TYPE TURBO-MACHINE

Ernst Nyffeler, Wettingen, and Peter Pfenicher, Gebenstorf, both of Switzerland, assignors to BBC Brown, Boveri & Co., Baden, Switzerland

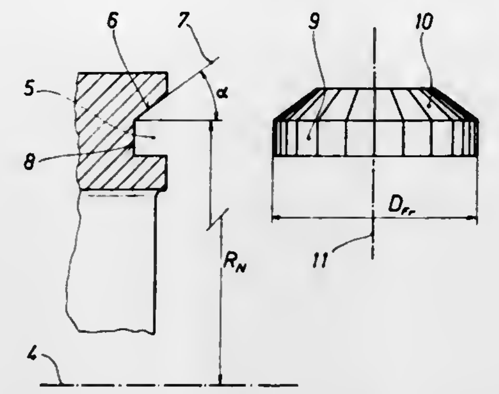
Filed Aug. 1, 1973, Ser. No. 384,509

Claims priority, application Switzerland, Aug. 16, 1972, 12118/72

Int. Cl. B23c *3/00;* **F01d** *25/24*

U.S. Cl. 90—11 C **1 Claim**

1. The method of machining an arcuate slot into a lateral surface of the root portion of a stationary guide blade lying in a meridional plane for installation in a complementary circumferentially extending slot provided in the blade carrier of a turbo-machine of the axial flow type and wherein said root slot includes a radially inner flank forming part of a cylindrical surface concentric with the axis of the rotor component of the turbo-machine and a radially outer inclined flank forming the inclined surface part of a frustum and which has an optimum minimum allowable angle of inclination α between the corresponding generatrix of the frustum and the rotor axis in order to avoid under-cutting, said method being carried out by a combined side and angle milling cutter wherein $D_{Fr}/2$ represents the radius of the side-milling surface of the cutter which machines the base and radially inner flank of said root slot, R_N represents the radial distance from the axis of the rotor to the junction between the outer inclined flank machined by the angle-milling surface of said cutter and the base of said root slot, and wherein the said optimum minimum angle of inclination α of said outer inclined flank complies with the formula $\tan \alpha = D_{Fr}/2R_N$



3,867,870

CONTROL VALVE REACTION DEVICE FOR A POWER STEERING SYSTEM

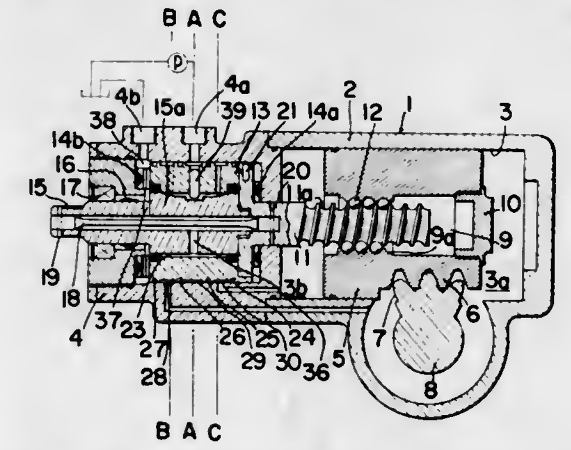
Yoshiyuki Shimoura, Matsuyama; Hideo Konishi, Yorii-machi, and Hirotetsu Sonoda, Matsuyama, all of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,298

Claims priority, application Japan, July 31, 1972, 47-75857

Int. Cl. F15b *9/10*

U.S. Cl. 91—372 **4 Claims**



1. In a power steering system having a control valve reaction device, the combination comprising: a fluid pressure motor having a piston and a cylinder slidably fitted with said piston for assisting manual steering torque; steering handle shaft means for transmitting a steering torque applied to a steering handle, and comprising a threaded shaft member threadly coupled with the piston of said fluid pressure motor and a steering shaft member; a flexible connecting member connecting relatively rotatably said two shaft members; a control valve comprising a sleeve valve member connected to said threaded shaft member and a rotor valve member formed in said steering shaft member and operating said fluid pressure motor by relative rotary movement of said two shaft members; an annular groove formed in the periphery of said sleeve valve member and connected to an inlet for pressure fluid at the periphery of said sleeve valve member; a plurality of reaction plungers slidably mounted in said sleeve valve member in a common plane with said annular groove such that one end of each plunger is exposed directly to fluid pressure in said annular groove; said rotary valve member having two rotor grooves in fluid communication with said cylinder on respectively opposite sides of said piston such that one or the other of said sides

can be fluid pressurized by relative rotary movement of said rotary valve member and sleeve valve member; different ones of said reaction plungers bearing at their other ends against said rotary valve member in respective ones of said rotor grooves so as to be exposed to the pressures in the respective grooves, whereby the one ends of said reaction plungers are exposed to pressurized inlet fluid and the other ends will be exposed to the pressure prevailing in their respective rotor grooves, and the net thrust force of said reaction plungers will be applied against said rotor valve member to oppose relative rotary movement of said two shaft members.

3,867,871

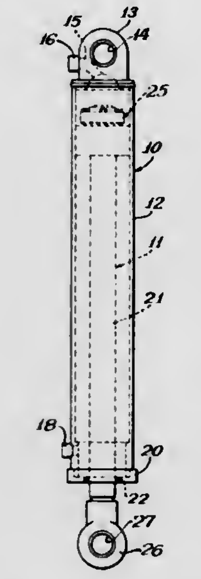
PISTON-TO-ROD DETACHABLE CONNECTION

Daniel B. Shore, Niles, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 26, 1973, Ser. No. 354,724

Int. Cl. F16j *1/12*

U.S. Cl. 92—258 **10 Claims**



1. Detachably connected assembly comprising:

a piston rod provided with a piston shoulder, and a shoulder confronting the piston shoulder with a space therebetween, and so spaced apart therefrom as to be in a position more near to the rod end; and

a piston thereon in the space between the shoulders, having carrying means and carrying thereby longitudinally adjustable hold-down means including an endless clamping ring, the plane of which ring being at least in near vicinity to the near shoulder;

said piston, clamping ring, and near shoulder having interposed split locking ring means, said means presenting at least first and second wedging surfaces wedged against the clamping ring and against the near shoulder on respective mating surfaces of the latter so that the active engagement, in response to pressure of adjustment of the hold-down means, wedges said interposed split ring means between the piston and near shoulder to a radially inward locking position locking the piston in compression on the piston shoulder.

3,867,872

PLY-BONDED, EMBOSSED PRODUCT AND APPARATUS

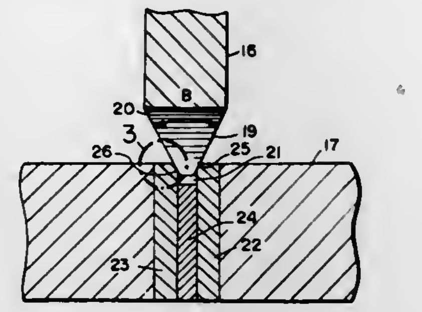
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 294,628, Oct. 3, 1972, Pat. No. 3,834,286. This application Mar. 2, 1973, Ser. No. 337,692

Int. Cl. B31f *5/00*

U.S. Cl. 93—1.1 **2 Claims**

1. In a method of producing a multi ply web especially useful for toilet tissue or toweling, the steps of separately embossing two elongated webs each with a pattern of projections of about 10 to about 200 psi and a height of about 0.01 to about 0.05 inch, orienting said webs so that the projections face each other and interlace with each other so as to provide air spacing in the interlacing, and thereafter subjecting said webs to a pair of transversely-spaced, convergently-related compressive forces along longitudinally extending lines to cause the plies to bond without application of adhesive.



3,867,873

BAG FORMING MACHINES

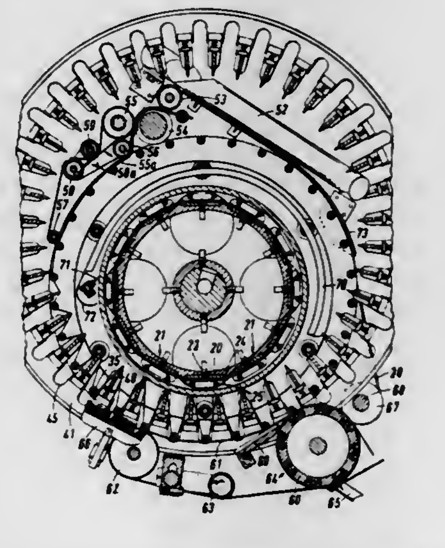
Arthur William Simpson, Hemel Hempstead, and Frank William Pocock, East Harptree, both of England, assignors to Spacials Limited, Bristol, England

Filed Oct. 29, 1973, Ser. No. 410,415

Claims priority, application Great Britain, Oct. 27, 1972, 49536/72

Int. Cl. B31b *1/64*

U.S. Cl. 93—33 H **5 Claims**



1. Apparatus for forming individual heat sealed articles, e.g. tubes or bags, from a strip of two superimposed layers of heat sealable material or of a material coated, or impregnated, with heat sealable material, said apparatus comprising:

a welding device comprising a continuous surface of heat transmitting material;

means to heat said surface; and

means for feeding a strip of material in a zig-zag configuration along a path which extends along at least a part of said continuous surface, said feeding means comprising members supporting said strip at the transverse crests located on both sides of the zig-zag to present the crests on one side of said zig-zag to said continuous surface.

3,867,874

METHOD FOR MAKING PADDED ENVELOPE

Joesph H. O'Neil, Springfield, Mass., assignor to United States Envelope Company, Springfiled, Mass.

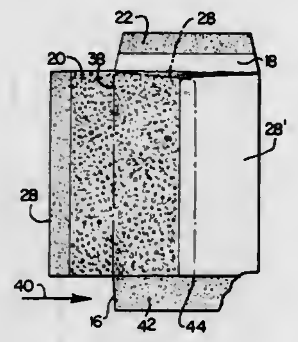
Filed Jan. 28, 1974, Ser. No. 437,601

Int. Cl. B31b *39/00*

U.S. Cl. 93—61 R **3 Claims**

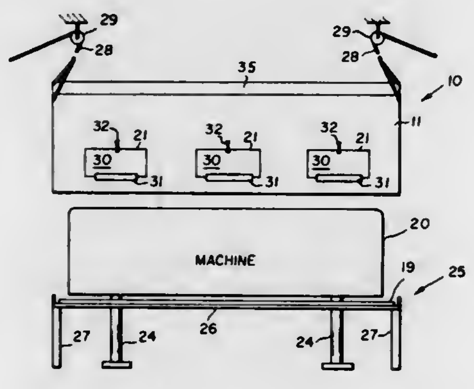
1. A method for making a padded envelope comprising the steps of providing a preprinted envelope blank having a plurality of envelope body defining panels including a front panel, a first side panel integrally connected to said front panel along one side edge of said front panel, and a second side panel integrally connected to said front panel along the other side edge of said front panel, said second side panel having a body

defining portion adjacent said other side of said front panel and a seam defining marginal portion adjacent its free edge, said blank having a bottom flap integrally connected to one of said panels along the bottom edge thereof and a closure flap integrally connected to one of said panels along the top edge thereof, continuously advancing said preprinted blank in one direction, applying a pattern of adhesive to said front panel, said first side panel and said body defining portion of said second side panel while said preprinted blank is continuously advancing in said one direction, applying adhesive to said seam defining marginal portion while said preprinted blank is continuously advancing in said one direction, cutting a patch of foamed plastic material to complement and substantially cover said front panel, said first side panel and said body defining portion of said second side panel, attaching said patch to said preprinted blank by said pattern of adhesive to substantially cover one surface of said front panel, said first side panel, and said body defining portion of said second side panel while said preprinted blank is continuously advancing in said one direction, folding said first side panel with said patch attached thereto inwardly along said one side edge and toward said second side panel while said preprinted blank is continuously advancing in said one direction, folding said second side panel with said patch attached thereto inwardly along said other side edge and toward first side panel to bring the opposite side edges of said patch into abutting engagement, adhering said seam defining portion to an associated marginal portion of said one side panel while said preprinted blank is continuously advancing in said one direction, advancing said preprinted blank in another direction, applying adhesive to said bottom flap, folding said bottom flap inwardly along said bottom edge and adhering it to said first and said second side panels while said preprinted blank is advancing in said other direction, and applying adhesive to said closure flap.



3,867,875
MACHINE NOISE REDUCTION METHOD

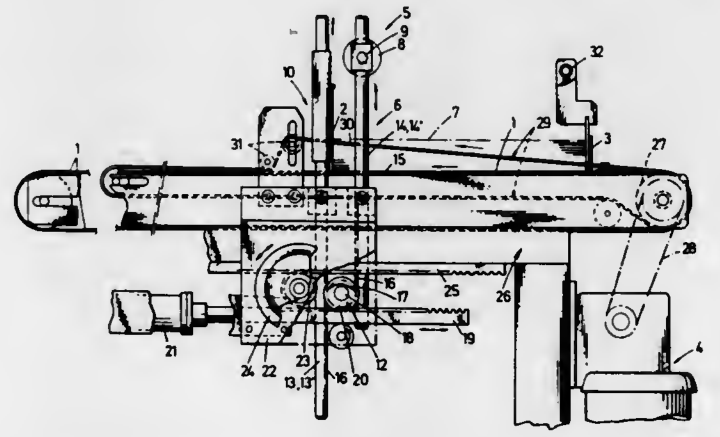
Robert J. Hesselein, Fayetteville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.
Filed Jan. 7, 1974, Ser. No. 431,014
Int. Cl. B31b *49/02*
U.S. Cl. 93—36 M **6 Claims**



1. A machine noise reduction method comprising:
   a. forming a packaging carton of corrugated cardboard for fitting around and enclosing said machine, said carton being suitable for use in shipping said machine;
   b. securing noise absorbing material to the walls of said carton so said carton walls support said noise absorbing material;
   c. marking on the outside of said carton walls the location of prospective access openings to said machine;
   d. using said carton for packaging and shipping said machine if required;
   e. cutting pieces out of said noise-absorbing walls to form said access openings;
   f. placing said carton over said machine at a work location; and
   g. using said cut out pieces of said carton wall for normally closing said access openings.

3,867,876
STACKING DEVICE

Edouard Louis Van de Gent, Meise, Belgium, assignor to Printex, Neder-Over-Heem, Belgium
Filed Sept. 15, 1972, Ser. No. 289,620
Claims Priority, application Belgium, Sept. 15, 1971, 772622
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 DP **14 Claims**



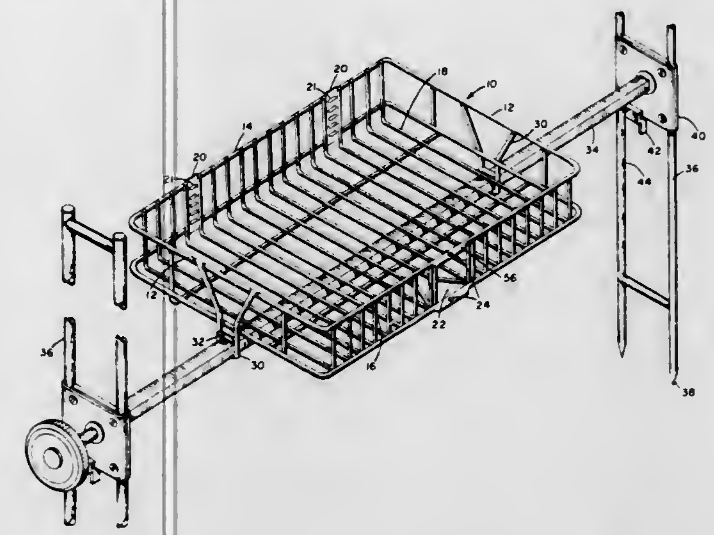
1. A device to be arranged at the outlet of a bag-shaping machine for allowing the formation of a bag stack and the removal of the formed bag stack, said device comprising and endless conveying belt on which the bags are stacked, belt control means to impart to said belt an intermittent movement through, a bag stack measuring device, a stop extending crosswise to the belt movement direction and against which the bag stack is formed, and stop control means synchronized with the belt control means for imparting to the stop an alternating motion so as to release the formed bag stack and allow the removal thereof by said belt, bearing means so arranged as to bear on the upper side of the bag stack when said stack is formed, and when said stop control means releases the formed bag stack, bearing control means being provided to impart to said bearing means an alternating motion to move same towards and away from said upper side, said bearing means being so arranged that the part thereof engaging the bag stack upper side moves with the same linear speed as the endless belt and along the same direction as said belt to prevent spreading of the bag stack on said belt.

3,867,877
SPIT BASKET AND SUPPORT THEREFOR

Ludwig J. Zajc, 3262 Royalton Rd., North Royalton, Ohio 44124
Filed Nov. 8, 1973, Ser. No. 413,769
Int. Cl. A47j *37/08*
U.S. Cl. 99—402 **11 Claims**

1. A spit basket for a barbecue grill comprising:
an open top tray having a bottom and an elevational side wall or walls extending upwardly from said bottom providing substantially continuous periphery and thereby establishing a receptacle for food;
a top closure panel within said tray fitting between said wall or walls;

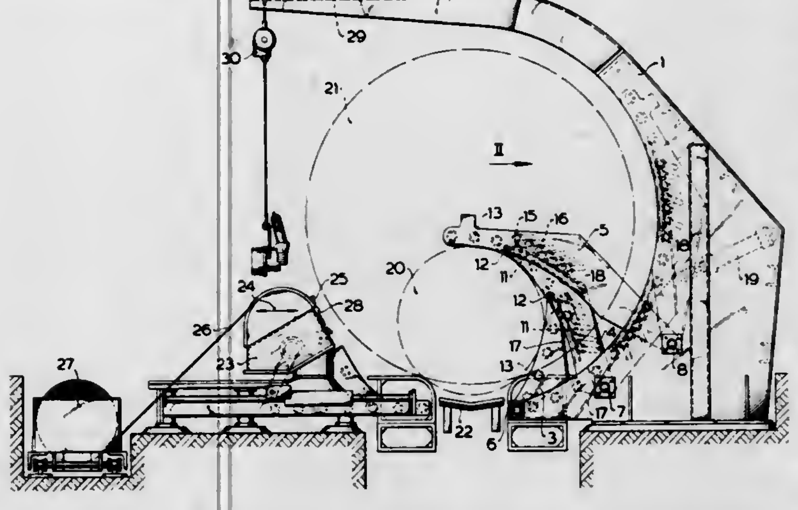
said tray and said closure panel having a grid-like wire construction;
said closure panel having one or more projections extending beyond the general periphery thereof;
one or more elongated brackets secured to said side wall or walls, each bracket having a plurality of vertically substantially aligned openings adapted for receiving one said projection for pivotably securing one end of said closure panel at a predetermined elevation within the tray;



a helical coil elevation and tension adjusting member rotatably secured generally within the side wall at a location generally opposed to said bracket(s), said coil having a plurality of loops projecting into the tray with the axis of elongation of the coil being substantially parallel to the plane of the side wall, said adjusting member being effective upon rotation thereof to carry the closure panel on the top loop and upon further rotation to force said panel downward between loops until the desired panel elevation and bias has been reached.

3,867,878
METHOD OF APPLYING STRAPPING MATERIAL TO ROUND PACKAGES OR THE LIKE

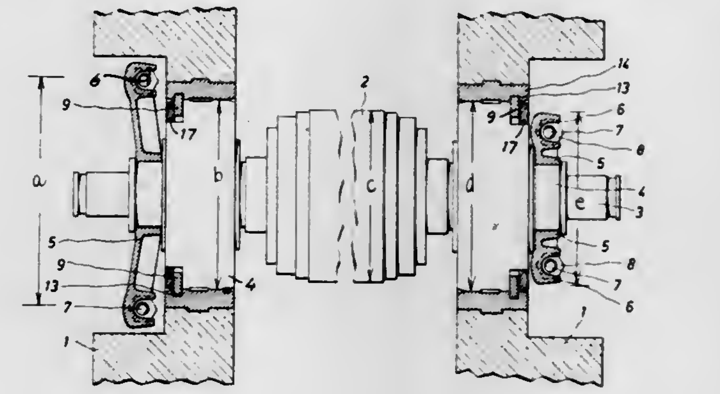
Gerd Buhne, Schwelm, Germany, assignor to Titan Verpackungs System GmbH, Schwelm, Germany
Filed Feb. 26, 1973, Ser. No. 335,828
Claims priority, application Germany, Feb. 26, 1972, 2209120
Int. Cl. B65b *13/04*
U.S. Cl. 100—2 **2 Claims**



1. A method of strapping round packages of various diameters by means of a strap guided in strap guiding means, which includes in combination the step of: withdrawing a first strap section from a strap supply roll, advancing said strap section only into a portion of said strap guiding means, adapting the path for the strap in the strap guiding means to the circular contour of the package to be strapped, thereafter advancing the strap section withdrawn from the strap supply roll further through the adapted path of said strap guiding means so as to pass said strap completely around the package to be strapped, tightening the strap around the respective package, and locking said strap on the package to be strapped.

3,867,879
HOISTING ARRANGEMENT FOR ROLLERS

Jurgen Schlunke, Krefeld, and Heinz Boixen, Huls, Krefeld, both of Germany, assignors to Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung, Krefeld, Germany
Continuation-in-part of Ser. No. 188,309, Oct. 12, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,593
Claims priority, application Germany, Oct. 10, 1970, 2049874
Int. Cl. B30b *3/04*
U.S. Cl. 100—162 **2 Claims**



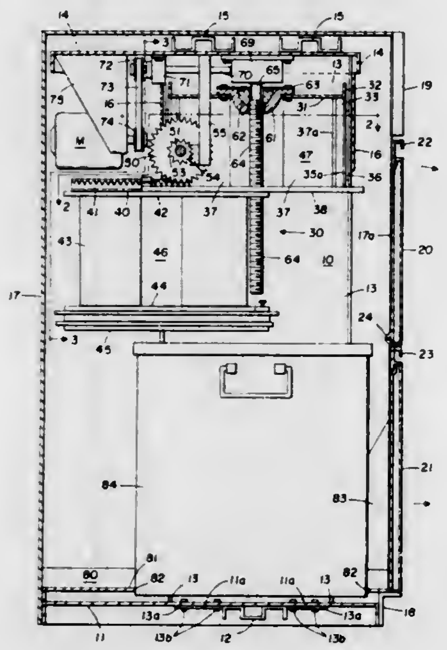
1. In combination with a closed calender stand: a plurality of rollers normally vertically superimposed upon each other so that each roller forms a bit with the respective adjacent roller, bearing means arranged at the end portions of each of said rollers for journalling the same, housing means supported by said stand and respectively supporting said bearing means, each of said housing means having two arms extending in opposite directions with regard to each other, two pairs of adjusting spindles respectively associated with opposite ends of said rollers, each of said arms of each of said housing means having its outer end portion provided with a cut-out all open toward the same direction for receiving one of said adjusting spindles and allowing the latter vertically to pass therethrough, a plurality of nuts respectively adjustably arranged on said spindles, one nut each being arranged below and being associated with one of said arms and being adjustable relative thereto, the spacing between the spindles of one of said pairs of spindles being greater than roller diameter such as clearly to permit withdrawal and insertion of said rollers individually in the direction of their longitudinal axes with the pertaining bearing means between the spindles of said last mentioned pair of spindles, one of said arms being smaller and also passing through space between the spindles along with both the roller and bearing means.

3,867,880
TRASH COMPACTOR

Joseph F. Bourgeois, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa
Filed June 18, 1973, Ser. No. 370,610
Int. Cl. B30b *1/18*, *7/00*, *15/06*
U.S. Cl. 100—226 **5 Claims**

1. In a trash compactor having a cabinet containing a chassis, a trash container and a ram assembly including a ram head, the ram assembly being linearly movable relative to the chassis in a compacting stroke from a withdrawn position above the trash container, the trash container being disposable in aligned relation closely below the ram head, downwardly to a compacting position inside the container and then in a withdrawal stroke back to its withdrawn position, the improvement wherein the ram assembly includes an upper portion and a lower portion to which the ram head is attached,

the lower ram portion being laterally movable within the confines of the cabinet relative to the upper ram portion and the container into and out of said alignment with the container when the ram head is above the container effective to expose the mouth of the container for deposit of trash therein through an access opening in the cabinet; and wherein said lateral movement is achieved by transfer means which automatically moves the lower ram portion out of said alignment near the end of the ram assembly's withdrawal stroke and moves the lower ram portion back into said alignment at the beginning of the ram assembly's compacting stroke when the ram head is above the container in each case, the transfer means being activated by said linear movement of the ram assembly and comprising driven means carried by the upper and lower ram portions and drive means carried by the chassis and operative upon the driven means only during said linear movement of the ram assembly when the ram head is above the container.



3,867,881
METHOD AND APPARATUS FOR PRINTING ON WORKPIECES WITH AN OUTER SURFACE HAVING THE FORM OF A TRUNCATED CONE

Kurt Blattner, Dietikon, Switzerland, assignor to MADAG Maschinen- und Apparatebau Dietikon AG, Dietikon, Switzerland

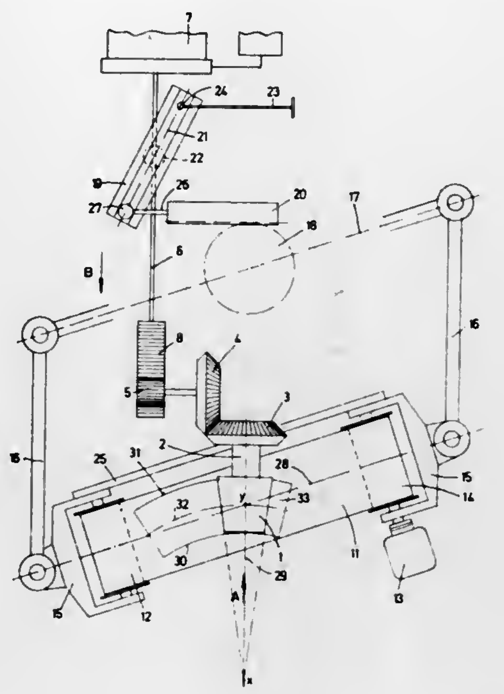
Filed June 8, 1973, Ser. No. 368,255

Claims priority, application Switzerland, June 14, 1972, 8861/72

Int. Cl. B41f *17/28*

U.S. Cl. 101—7 **10 Claims**

1. A method for printing on an object having a conical outer surface comprising the steps of providing an object having a conical outer surface, providing a printing block having a corresponding conical outer surface, providing an elongated printing tape, rotating one of said object and said printing block about its geometric axis in driving engagement with the other with the printing tape engaged therebetween to move said printing tape in a first direction parallel to its length, and imparting a pivoting movement to said printing tape in a direction at an angle to said first direction about an imaginary axis perpendicular to its surface passing through the printing block.



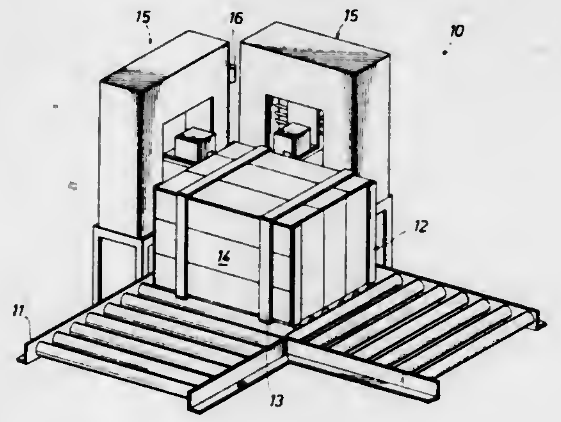
3,867,882
APPARATUS FOR PRINTING LABELS DIRECTLY ONTO PACKAGES, CONTAINERS AND THE LIKE

Erick L. Ahlgren; Arthur H. McMorris, and Joseph L. Schweppe, all of Houston, Tex., assignors to Houston Engineering Research Corporation, Houston, Tex.

Filed Apr. 19, 1973, Ser. No. 352,570

Int. Cl. B41f *17/24;* **G01d** *15/18*

U.S. Cl. 101—35 **19 Claims**



1. A label printing apparatus for printing a label directly on a package, comprising:
- probe means for finding the package on which a label is to be placed;
- said probe means being movable relative to such a package to find a side thereof and including means forming a signal indicative of finding a side of the package, and means contacting the package during printing;
- print head means including means for applying ink for forming characters which comprise a portion of a label; means for moving said print head means and said probe means in a specified pattern relative to the side of the package to enable said print head means to form the label on the package, said means for moving further including means responsive to said means contacting the package to control inward and outward movement of said print head means with respect to the package during printing; and
- control means for providing print signals to said print head means indicating the label to be printed and driving signals to said means for moving to control movement of said print head means with respect to the package.

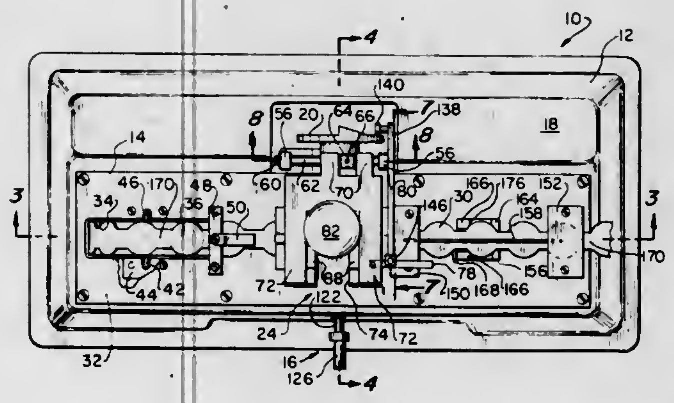
3,867,883
STRIP LABEL PRINTER

James D. Styers, 5132 W. Geddie Cir., Littleton, Colo. 80123, and Paul H. Styers, 3984 S. Pinehurst Cir., Denver, Colo. 80235

Filed Apr. 16, 1973, Ser. No. 351,802

Int. Cl. B41l *13/02, 27/26*

U.S. Cl. 101—125 **15 Claims**



1. The printing press for imprinting a plurality of labels joined together to form a chain by relatively narrower connecting portions which comprises: a base defining an upwardly facing supporting surface; a printing head adapted to carry an indicia transfer medium on the undersidde thereof mounted for rockable movement about an axis paralleling the supporting surface between an extended operative position in face-to-face contact with the latter and a retracted inoperative position raised thereabove; strip storage means located at one side of the printing head adapted to hold a supply of the labels in strip form; strip-advancing means carried by the base on the opposite side of the printing head from the strip storage means, said strip-advancing means including a shuttle mounted for reciprocal movement between an extended and a retracted position underneath the label strip as it leaves the printing head, said shuttle having a pair of transversely-spaced upstanding projections positioned and adapted to engage the trailing corners of each label alongside the connecting portion and advance same upon movement thereof from retracted into extended position; and, drive means connected to the printing head and strip-advancing means operative upon actuation to alternately shift the printing head and strip advancing means between their extended and retracted positions, said drive means including a rotatable drive shaft, cam-carrying means and crank-forming means mounted on said drive shaft for conjoint rotation therewith, link means interconnecting said crank-forming means and shuttle operative upon rotation of the shaft to reciprocate the latter, means comprising a bell crank mounted for independent rockable movement about said axis intermediate its ends interconnecting the cam-carrying disc and printing head, said bell crank being operative in rsponse to rotation of said cam-carrying disc to intermittently advance said printing head into its extended operative position whenever said strip-advancing means is retracting the shuttle; and, yieldable biasing means normally urging said printing head into retracted position while cooperating therewith to hold said bell crank against the cam-carrying disc.

3,867,884
EXPLOSIVE FUSE-CORD

Michael Anthony Langrish-Smith, Barnet, England, and Daniel Steele, Stevenston, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 28, 1974, Ser. No. 437,385

Int. Cl. C0bc *5/00*

U.S. Cl. 102—27 R **10 Claims**

1. An explosive fuse-cord comprising an inner explosive core and an outer waterproofing sheath of a copolymer of ethylene and vinyl acetate containing from 7 to 30 percent by weight of the latter.

3,867,885
ELECTRICAL PRIMER

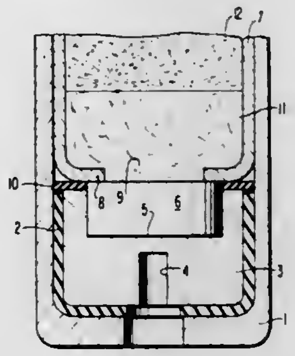
Heinz Gawlick, Furth; Hellmut Bendler, Nurnberg, and Uwe Brede, Schwaig, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 12, 1973, Ser. No. 396,438

Claims priority, application Germany, Sept. 15, 1972, 2245308

Int. Cl. F42b *19/12*

U.S. Cl. 102—28 R **20 Claims**



1. An electrical primer comprising an electrically conductive housing, a pole piece disposed within said housing and accessible from outside of said housing, plated element means disposed within said housing and having an ignition bridge on one surface thereof, an inner casing means disposed within said housing, said plated element means and said inner casing means being arranged in said housing such that said pole piece is electrically conductively connected to said housing via said plated element means and said inner casing means, and at least one ignitable charge being disposed within said housing in operative relation with said ignition bridge for ignition thereby, said pole piece including cup-shaped recess means in the end portion thereof facing said at least one ignitable charge, said plated element means being arranged in said recess means such that at least a bottom surface of said plated element means rests on and is in electrically conductive contact with said pole piece.

3,867,886
APPARATUS FOR LEVITATING AND STABILIZING A VEHICLE DRIVEN BY A LINEAR MOTOR

Naoki Maki, Ibaraki-ken, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,405

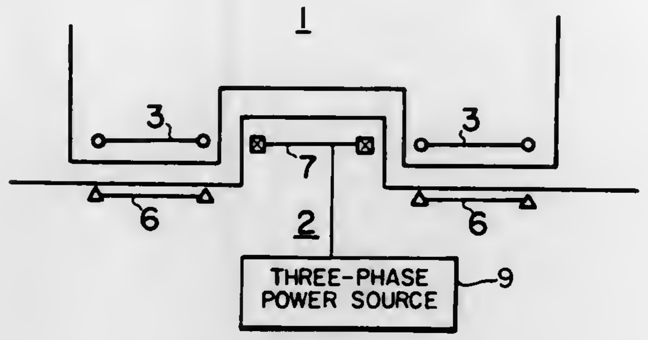
Claims priority, application Japan, June 15, 1972, 47-59688

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 SS **4 Claims**

1. An apparatus for levitating and stabilizing a vehicle driven by a linear motor, comprising ground windings disposed horizontally on the ground including a stabilizing winding and levitating windings; and super-conducting windings mounted on said vehicle, opposite to said levitating windings

and on both sides of said stabilizing winding and substantially in the same horizontal plane as contains said stabilizing winding; whereby vehicle is levitated and stabilized by means of said windings.



3,867,887

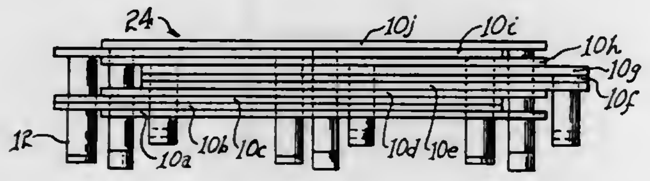
PALLET STRUCTURE AND METHOD OF FORMING THE SAME

William R. Saidel, 333 Taft Dr., Flossmoor, Ill. 60473

Continuation-in-part of Ser. No. 239,682, March 30, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,615

Int. Cl. B65d *19/00, 19/44*

U.S. Cl. 108—55 **9 Claims**



1. A pallet construction comprising; a planar member forming a load receiving support plate for the pallet, a plurality of apertures formed in said planar member, said apertures positioned in said planar member to be in a first predetermined pattern and to be predetermined distances from one another substantially throughout the entire central portion thereof and presenting a plurality of apertures within and adjacent the periphery of the planar member in a predetermined generally peripheral pattern and leaving discrete imperforate portions adjacent the periphery of the planar member, a plurality of legs secured to said planar member at the said imperforate portions in a second predetermined pattern and extending from one surface thereof, said plurality of legs positioned on said planar member in said second predetermined pattern with certain apertures in the generally peripheral pattern spaced in accordance with the spacing of certain legs allowing said pallet construction to nest with an associated similarly shaped pallet construction with said plurality of legs mating with and inserted into selected aperatures in said peripheral pattern of said associated similarly shaped pallet construction and with said planar member offset with respect to the planar member of said associated similarly shaped pallet construction, said planar member and the planar member of said associated similarly shaped pallet construction being in surface contact with one another when the pallet constructions are stacked together with all the legs projecting in the same direction from surface contacting planar members.

3,867,888

RUG HOOKING NEEDLE

Bernard Morissette, Hyacinthe, Quebec, Canada, assignor to Phentex Inc., St. Hyacinthe, Quebec, Canada

Filed July 13, 1973, Ser. No. 378,936

Int. Cl. D05c *15/06*

U.S. Cl. 112—80 **7 Claims**

1. A hooking needle comprising: an elongated bar having a handle attached at one end thereof; a needle member fixed to the opposite forward end of said bar; said needle member defining an open-ended enclosure having a yarn-receiving passage and a looper-receiving passage extending longitudinally therethrough, said needle member including a fabric-penetrating portion frontwardly extending in the longitudinal axis of said bar; a shuttle member mounted to said bar for reciprocating movement thereon between said handle and said needle member; an elongated looper member having one end attached to said shuttle member and the opposite forward end slidably received in said looper-receiving passage of said needle member; a presser member slidably mounted to said elongated bar and extending longitudinally thereof, said presser member having a forward portion adapted to rest against the fabric to be hooked; and means for adjusting the relative position of said presser member to said bar and to said shuttle member to thereby vary the relative position of said forward end of said presser member to said forward end of said looper member whereby the penetration of the yarn in the fabric may be varied, including a coupling member in abutting engagement with said presser member adjacent the rear end thereof; and releasable fastening means for fixing said coupling member to said rear portion of said presser member.

3,867,889

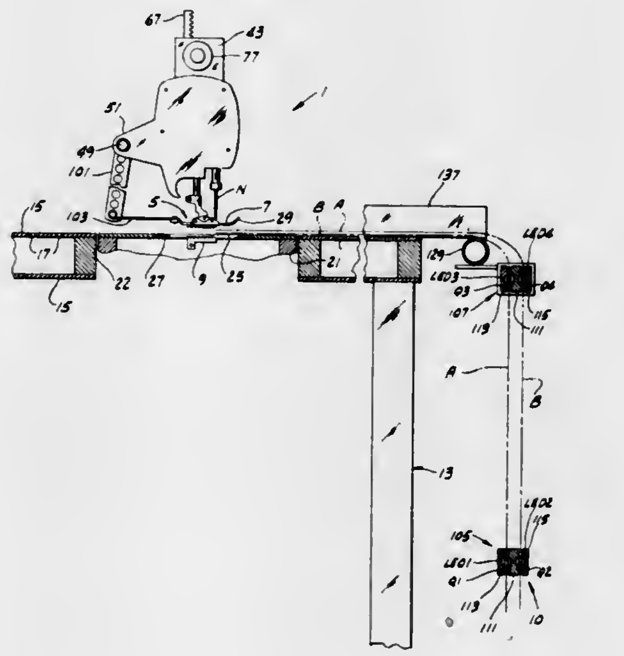
APPARATUS FOR SEAMING PIECES OF TEXTILE FABRIC OF THE LIKE

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Mass.

Filed Aug. 3, 1973, Ser. No. 385,349

Int. Cl. D05b *19/00*

U.S. Cl. 112—121.11 **27 Claims**



1. In apparatus for joining two pieces of material such as textile fabric, said apparatus comprising means for seaming the two pieces together and means for feeding the two pieces through the seaming means comprising a first feed device for one of said pieces and a second feed device for the other, the improvement comprising the provision of:

- means for sensing an out-of-registration condition of the trailing end of one of said pieces relative to the trailing end of the other piece as said pieces are fed through the seaming means;
- means for varying the relative speed of the two feed devices; and
- means responsive to the sensing means for controlling the speed-varying means to bring the trailing ends of the pieces substantially into registration one with the other.

3,867,890

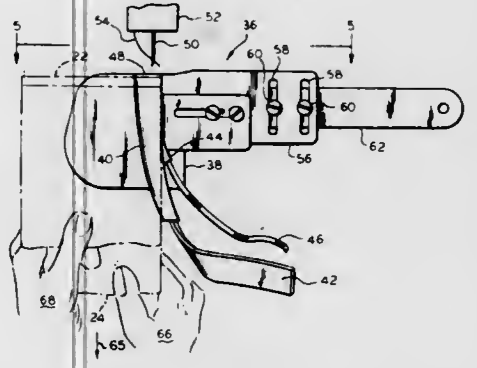
METHOD OF STITCHING A CORDED SEAM

Lillie Hamilton, 1034 W. 92 Pl., and Lorretta McCrey, 8714 S. Sangamon, both of Chicago, Ill. 60620

Filed Nov. 26, 1973, Ser. No. 419,112

Int. Cl. D05b *35/06*

U.S. Cl. 112—139 **4 Claims**



1. In a method of stitching a corded upholstery seam in an automatic sewing device, the steps of:

- surrounding a core element with a piece of material whereby the ends of said material extend adjacent one another and away from said core element;
- locating one end of a first material panel along one of said ends of said piece of material adjacent said core element; locating one end of a second material panel along the other of said ends of said piece of material adjacent said core element, and
- stitching said piece of material and said material panels together on a common seam in said automatic sewing device while applying an equal amount of tension pressure to each of said material panels.

3,867,891

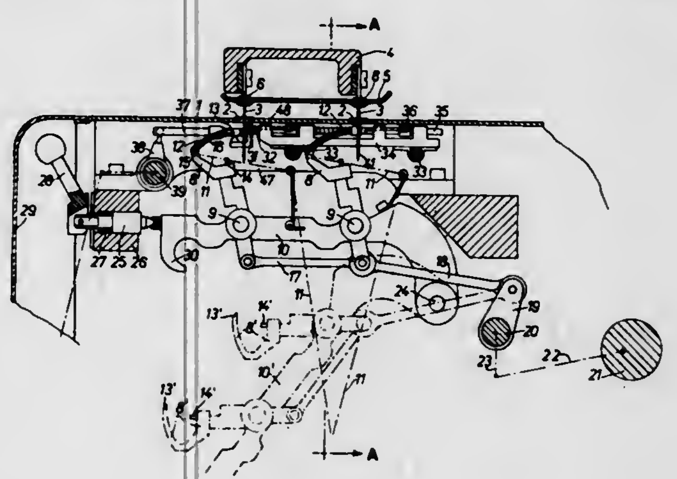
MULTI-NEEDLE DOUBLE CHAIN-STITCH QUILTING MACHINE

Gerhard Grabher, Lustenau, Austria, assignor to Oehler AG, Au, Switzerland

Filed Dec. 26, 1972, Ser. No. 318,542

Int. Cl. D05b *1/10, 61/00*

U.S. Cl. 112—166 **7 Claims**



1. A multiple needle double chain-stitch quilting machine comprising a needle plate having a plurality of transversely aligned openings therethrough, a plurality of needles each adapted to receive an upper thread therethrough and in piercing relationship with a corresponding needle plate opening, a plurality of grippers pivotally mounted below the needle plate, each one of said grippers cooperating with a corresponding needle, each gripper provided with a curved thread supplying finger adapted to receive a lower thread, means for oscillating said grippers about a transverse axis parallel to the needle plate and in close proximity to the axis of the corresponding needle, each of said thread supplying fingers being adapted to engage a loop formed by said upper thread as the corresponding needle ascends, a plurality of spreaders positioned below the needle plate, each cooperating with a corresponding needle and gripper, a first means for moving said spreaders in a direction parallel to the axis of oscillation of said grippers such that, during the descent of the corresponding needle toward the thread supplying finger, the spreader deflects a section of the lower thread extending between the point of emergence of said lower thread from said finger and a point where the lower thread, on the underside of an item to be quilted, is retained by the said loop of the upper thread, which loop was produced during the previous ascending stroke of the needle and engaged by said finger, in the direction of the axis of oscillation of the gripper toward the side of the needle axis remote from said finger, so as to position said lower thread section to permit the descending needle to pass between the lower thread section and the said loop of the upper thread engaged by the finger of said gripper, and cooperating with said first moving means, a second means for moving each spreader transversely of the axis of oscillation of said grippers for deflecting said lower thread section generally toward the needle axis, whereby said quilting machine is enabled to stitch in either direction transversely of the direction motion of said gripper as well as in the direction of motion thereof.

3,867,892

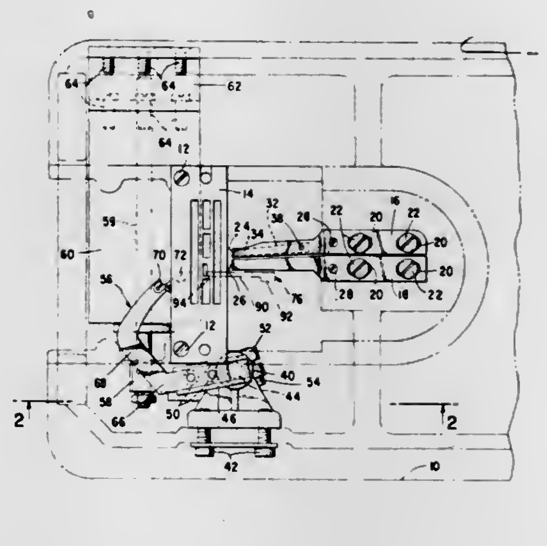
UNDERBED THREAD TRIMMER FOR CHAINSTITCH SEWING MACHINES

Heinrich Ciecior, Ettlingen, and Rolf E. Kessler, Karlsruhe, both of Germany, assignors to The Singer Company, New York, N.Y.

Filed May 9, 1974, Ser. No. 468,630

Int. Cl. D05b *65/02*

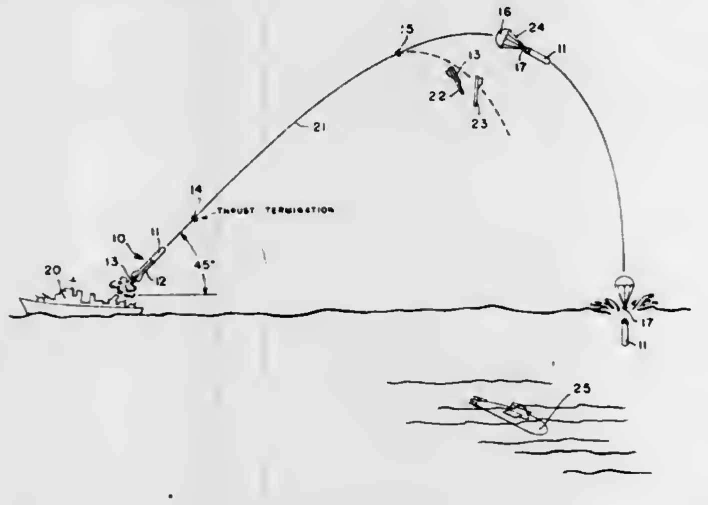
U.S. Cl. 112—252 **10 Claims**



1. An underbed thread trimmer for a chainstitch sewing machine, comprising a pair of ledger blades adjustably mounted on the bed of the machine, a thread catcher pivotably mounted on said bed having needle thread and looper thread engaging means and cutting edges cooperable with respective ones of said ledger blades, means for effecting cyclical pivotal movement of said thread catcher from an at rest position on one side of the sewing machine needle to a position on the other side of said needle where said needle and looper threads are engaged and transported in the same general direction to said ledger blades for cutting, thread retaining means being provided in association with one of said ledger blades for retaining a predetermined length of looper thread subsequent to cutting.

3,867,893
ROCKET-THROWN MISSILE

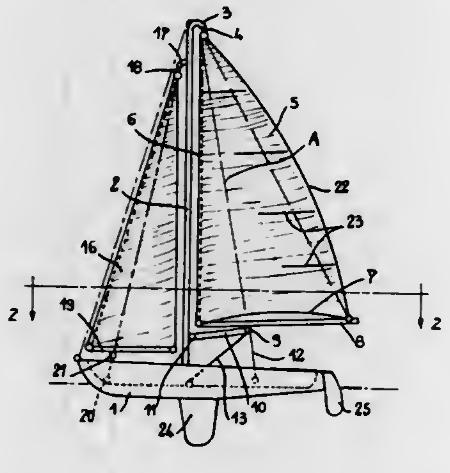
Orville J. Saholt, China Lake, and Donald Stoehr, Lancaster, both of Calif., assignors to The United States of America, as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 11, 1960, Ser. No. 8,201
Int. Cl. F42b *15/22*
U.S. Cl. 114—20 R **7 Claims**



1. An anti-submarine weapon comprising, in combination: a payload apparatus effective to operate offensively against a target submarine when delivered to a suspect target area; airframe separably joined to said payload apparatus; propulsion means carried by said airframe and operative to generate thrust to project said weapon into a ballistic airflight trajectory, said propulsion means having a characteristic maximum period of thrust generation; means including a first pre-settable control apparatus for effecting thrust termination at a first instant prior to expiration of asid characteristic maximum period; means including a second pre-settable control apparatus for effecting separation and jettisoning of the airframe from said payload apparatus at a preselected later instant during ballistic airflight of said weapon; deceleration apparatus separably secured to said payload apparatus and arranged to become operative during separation and jettisoning of the airframe; and inches +means operative to effect jettisoning of said deceleration apparatus upon water-entry of said payload apparatus.

3,867,894
BOATS AND OTHER DEVICES DRIVEN BY A SAIL

Pierre Georges Vicard, 15, Cours Eugenie, Lyon, France
Filed Sept. 4, 1973, Ser. No. 394,098
Claims priority, application France, Sept. 15, 1972, 72.33383
Int. Cl. B63h *9/04*
U.S. Cl. 114—102 **4 Claims**



1. An improved sail arrangement for sailing craft having a mast, comprising:

a sail having a leading edge extending substantially upwardly and having a lower edge extending approximately horizontally, the upper end of the sail being pivotally supported in the vicinity of the head of the mast,

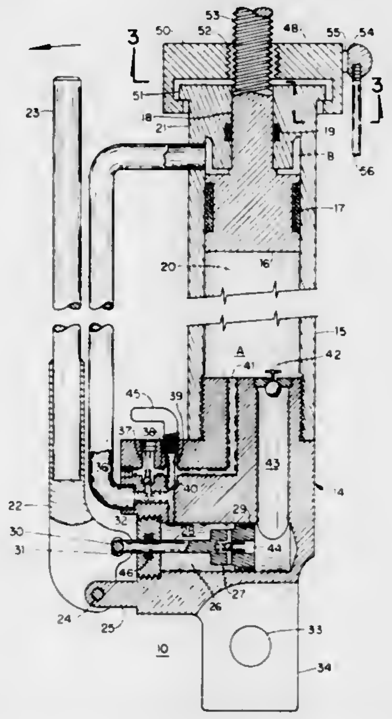
a yard underlying said lower edge of the sail and attached thereto at least at the leading and trailing corners of the sail,

a boom pivotally supported at its forward end near the base of the mast below the yard, and the boom being connected near its other end to the yard at a pivot point intermediate the ends of the yard, and

downhaul means connected between the boom and the sailing craft and operative to pivot the boom through an angle about the mast to selectively move said pivot point transversely of the craft.

3,867,895
INTEGRAL HYDRAULIC TENSIONING ASSEMBLY

Robert Larry Ameigh, 5 Duane Ln., Bayville, N.Y. 11709
Filed Jan. 22, 1973, Ser. No. 325,648
Int. Cl. B63h *9/08*
U.S. Cl. 114—109 **4 Claims**



1. An integral hydraulic tensioning assembly for applying a tensioning force to an operated member in response to a hydraulic force applied to a displaceable piston means comprising:

a housing having first and second chambers;

said piston means defining first and second zones in said first chamber, said first zone of said first chamber comprising a reservoir of hydraulic fluid;

a pump means disposed in said second chamber;

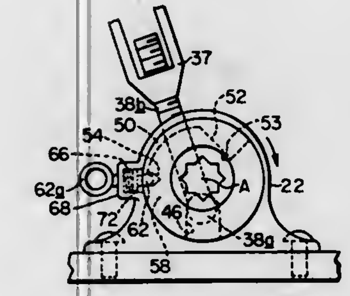
first conduit means for providing fluid communication from said second chamber to said second zone of said first chamber such that displacement of said piston means causes hydraulic fluid to flow through said first conduit means thereby applying a tensioning force to said operated member;

a second conduit means including a first valve means formed in said housing to permit hydraulic fluid to flow from said second chamber to said first zone of said first chamber should the hydraulic pressure exceed a predetermined pressure of said first valve means;

second valve means disposed in said second conduit means to permit hydraulic fluid to selectively flow from said second zone to said first zone of said first chamber; and a selectively engageable locking means for preventing relative motion between said housing and said operated member, said locking means includes a split locking nut assembly and a cam means, said cam means being mounted for revolution on said lock nut device such that revolution of said cam means selectively engages and disengages said split locking nut assembly.

3,867,896
ROTARY STAY RELEASE

Carl Alan Merry, Marion, Mass., assignor to Schaefer Marine Products, New Bedford, Mass.
Filed June 8, 1973, Ser. No. 368,013
Int. Cl. B63h *9/08*
U.S. Cl. 114—109 **3 Claims**



1. A stay release for anchoring and tensioning a stay wire on a boat comprising

A. a housing whose inside volume is generally cylindrical in shape,

B. a generally cylindrical drum whose diameter is slightly less than the diameter of the inside volume of the housing, said drum being mounted inside the housing for rotation about its axis,

C. an abutment on the drum,

D. a channel extending from the abutment diametrically through the drum,

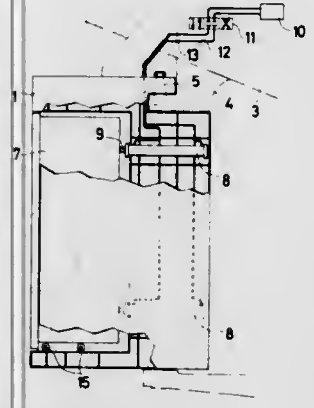
E. a circumferential slot in the top wall of the housing, said slot being aligned with the channel in the drum so that an elongated rigid fixture can be inserted through the housing to engage the abutment, and the drum can be rotated about its axis so that the abutment is moved from an upper position to a lower position within the housing with the fixture extending through the channel and projecting out of the slot,

F. means for rotating the drum around its axis between its two positions, and

G. means for stopping the drum in its lower position.

3,867,897
RUDDER FOR SHIP

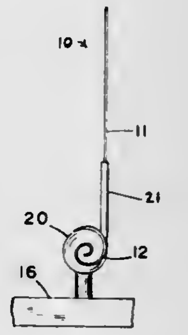
Osami Yamamoto, Tokyo, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan
Filed Sept. 10, 1973, Ser. No. 395,987
Int. Cl. B63h *25/06*
U.S. Cl. 114—167 **2 Claims**



1. A vertically-disposed rudder for a ship, comprising a main rudder portion having bearing means secured thereto, and an auxiliary rudder portion horizontally and rearwardly extensible from and retractable into said main rudder portion by translational motion on said bearing means to vary the effective rudder area without substantially changing the vertical depth to which said rudder extends, and remotely-controllable positioning means in said main rudder portion for controllably extending and retracting said auxiliary rudder portion translationally with respect to said main rudder portion independently of the speed of the ship carrying said rudder.

3,867,898
DETACHABLY MOUNTABLE VISUAL PROXIMITY AND ALIGNMENT INDICATOR FOR CONNECTABLE VEHICLES

Ernest A. Lakamp, 431 South Shore Dr., Forest Lake, Minn. 55025
Filed Nov. 21, 1973, Ser. No. 417,975
Int. Cl. B60q *1/30*
U.S. Cl. 116—28 R **1 Claim**



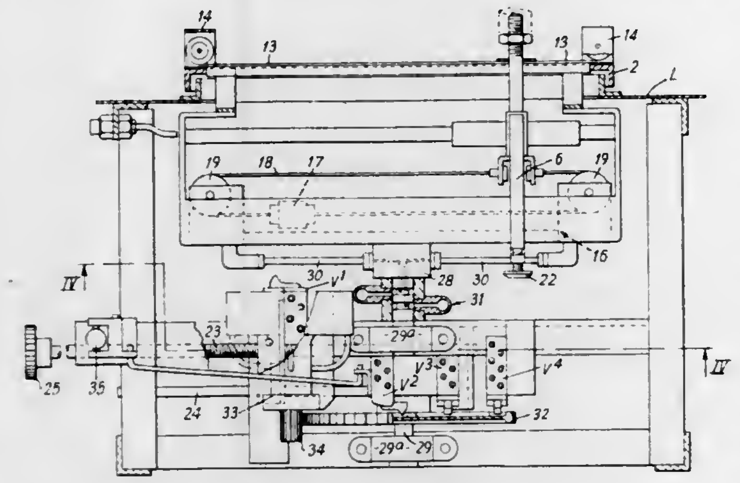
1. A set of visual indicators for mounting on a towable unit and an operator driven vehicle having a ball hitch of predetermined diameter comprising:

a first indicator for mounting on an operator driven vehicle having a ball hitch of predetermined diameter which cannot be seen when the operator is in the driver's seat of the vehicle and a second visual indicator for mounting on a towable unit which is to be attached to the hitch located on the operator driven vehicle;

said first visual indicator including a first section having pressure mounting means adaptable for detachably mounting on the ball hitch of a vehicle, said pressure mounting means comprising a resilient helical coil section adaptable for mounting contiguously on a ball hitch throughout the extent of said helical coil section, said helical coil section having a diameter less than the predetermined diameter of the ball hitch, said first visual indicator adapted to extend tangentially from the ball hitch to thereby allow the hitch on the towable unit to extend over the ball without disturbing said first visual indicator, said first visual indicator adapted to extend from the ball hitch of the vehicle a sufficient distance so as to enable the operator to see at least a portion of the visual indicator from the operator's seat of the operator driven vehicle, said first visual indicator having sufficient rigidity so as not to sway when an operator driven vehicle is moved to thereby provide a visual indicator to the operator of the vehicle as to the position of a ball hitch on an operator driven vehicle, said second visual indicator having pressure mounting means for detachably mounting to the flange of a hitch of the towable unit, said pressure mounting means comprising a resilient coil spring for wedging on the flange of the towable unit, a portion of said second visual indicator adapted to extend upward from the towable unit sufficient distance so that at least a portion of said second visual indicator can also be seen by an operator sitting in the operator's seat of a vehicle, said first visual indicator and said second visual indicator coacting to thereby provide the operator of a vehicle with the relative position of a bumper hitch and a towable vehicle so that the operator can align the hitch of a vehicle with the hitch of the towable unit.

3,867,899
AUTOMATIC SPRAYING MACHINES

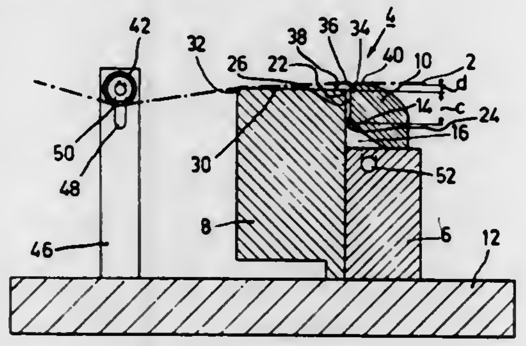
Ronald True, Leicester, England, assignor to True Brothers Conveyors Ltd., Queniborough, Leicestershire, England
Filed Sept. 24, 1973, Ser. No. 400,018
Claims priority, application Great Britain, Sept. 26, 1972, 44374/72
Int. Cl. B05c *5/00, 11/14*
U.S. Cl. 118—6 **9 Claims**



1. An automatic spraying machine comprising: a stationary spraying device; a table which is turnable with respect to said device; a support for a component to be sprayed, the support being carried by a rod which projects upwardly through a diametral slot in the table, and is connected, below the latter, to a piston and cylinder unit carried by the table and arranged to traverse the rod along the slot for movement of the support in a linear path across the table; and drive means for the table and for the support, whereby, in use, a component to be sprayed can be moved past the spraying device linearly by movement of the support and in an arcuate path by turning the table.

3,867,900
DEVICE FOR COATING A SYNTHETIC RESIN BASE WITH A LAYER OF LACQUER

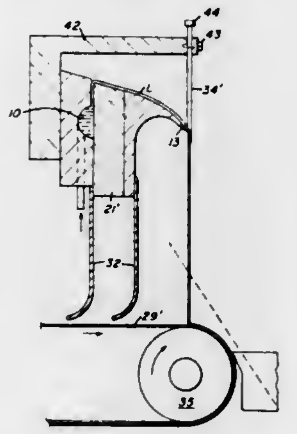
Gerard Willem Van Osterhout; Vhendrikus Johannes Lemmen, and Cornelis Johannes Klomp, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 171,395, Aug. 12, 1971, abandoned, which is a division of Ser. No. 24,674, April 1, 1970, Pat. No. 3,679,476. This application July 17, 1973, Ser. No. 380,088
Claims priority, application Netherlands, June 13, 1969, 6909118
Int. Cl. H01f *10/00;* **B05c** *5/02*
U.S. Cl. 118—33 **1 Claim**



1. A device for use in coating a support base of synthetic resin material with a layer of lacquer containing a binder, a solvent and magnetic particles to thereby form a magnetic tape comprising a nozzle for depositing the layer of lacquer on the support base, means for causing said support base to be passed over said nozzle so that said layer of lacquer is deposited thereon, means for drying the lacquer after deposition thereof on said support base, means for causing said support base to be continuously moved over the nozzle, and means for controlling the tensile stresses in said support base, said nozzle comprising means forming a pressure chamber for storing said lacquer in contact with said moving support base including a frame, a smoothing block and a supply block mounted on said frame, and a supporting block mounted on said supply block, said supporting and smoothing blocks having parallel boundary walls forming a pouring slit therebetween, said walls and said slit being arranged transverse to the direction of movement of the support base travelling over the nozzle, a lug attached to said supporting block which is located on the supply side of said pouring slit for guiding the support base over said slit, said smoothing block having a flat smoothing table arranged at right angles to said pouring slit and a smoothing side located at the end of said smoothing table remote from said slit, means for determining the angle formed by the parts of the support base approaching and leaving the smoothing side for equalizing the layer of lacquer deposits on the support base, said support base being guided from said lug past said pressure chamber at an angle to said smoothing table, said pressure chamber having a triangular cross-section being bounded on one side by said lug, on another side by said smoothing table and on the third side by said moving support base, the ends of said chamber being open, and means for supplying and forcing lacquer through said pouring slit into said pressure chamber where it is temporarily stored under pressure in contact with said moving support base so as to be coated thereon.

3,867,901
APPARATUS FOR PRODUCTION OF PHOTOGRAPHIC ELEMENTS

Jack F. Greiller, Ruislip, England, assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 24,457, March 16, 1970, abandoned, which is a division of Ser. No. 733,944, June 3, 1968, Pat. No. 3,632,374. This application Sept. 22, 1972, Ser. No. 291,440
Int. Cl. B05c *5/00*
U.S. Cl. 118—50 **8 Claims**



1. Apparatus for coating a layer of liquid photographic coating composition on a continuous web in the manufacture of a photograhic element, said apparatus comprising:

a coating hopper having a cavity for holding said coating composition and a narrow ,elongated horizontally-disposed discharge slot communicating with said cavity for discharging a substantially uniform thin layer of said coating composition,

means defining a continuous inclined slide surface which adjoins said slot and is disposed to receive on the upper surface thereof the coating composition discharged from said slot and which extends downwardly to a lip; whereby the coating composition discharged from said slot flows by gravity down said slide surface, where it is distributed by the action of gravity to provide exact thickness uniformity across the flowing layer, and over said lip to form a vertical free-falling curtain of coating composition having exact thickness uniformity,

guide means defining edge guide surfaces adjacent each edge of the path of said free-falling curtain for engaging the edges of said curtain to establish the curtain width,

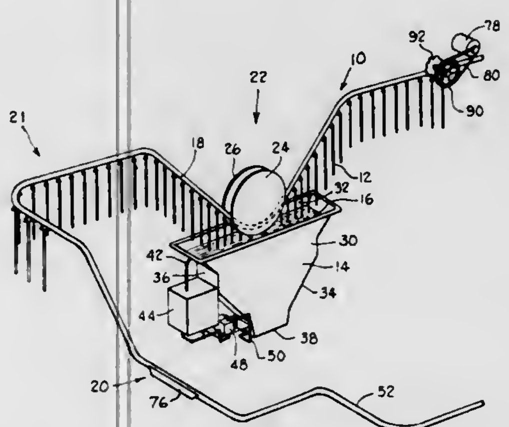
said guide means comprising a pair of rods each vertically mounted with the upper end adjacent said lip and the lower end terminating above the plane along which said web is moved and resilient extensions on the lower end of each rod for engaging said web,

means for moving said web along a predetermined path spaced below and transversely of said lip to intercept the free-falling curtain and form on said web a layer of said coating composition, and

shield means depending downwardly from said coating hopper upstream of said free-falling curtain and extending to a position above but closely adjacent the plane along which said web is moved, for protecting said free-falling curtain from air currents and reducing the resistance of the barrier layer of air on the moving web to penetration by said free-falling curtain.

3,867,902
APPARATUS FOR APPLYING PROTECTIVE COATING TO PICKER STICKS

James Earle Huffman, 42 Stone Haven Dr., Greenville, S.C. 29607
Filed Apr. 8, 1974, Ser. No. 458,757
Int. Cl. B05c *3/10*
U.S. Cl. 118—423 **5 Claims**

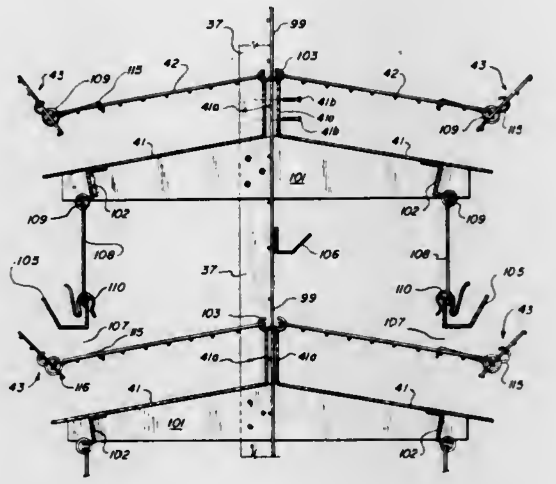


1. An apparatus for automatically applying a protective coating on elongated picker sticks comprising:

a. a conveyor means for transporting said picker sticks in succession,
b. a tank having an open top,
c. a lacquer solution carried in said tank,
d. said conveyor means having a run closely adjacent said open top of said tank,
e. pivotal clamping means carried in succession by said conveyor means,
f. said elongated picker sticks being carried by said pivotal clamping means,
g. means for driving said conveyor means for immersing said picker sticks in succession in said laquer solution carried in said tank,
h. horizontally disposed flange means extending from opposed sides of each said clamping means transversely to the direction of conveyor movement,
i. a pair of vertically extending and horizontally aligned rotatable disks straddling said conveyor and operatively associated with said tank and said flange means at said run, and
j. means guiding said conveyor through said run whereby said flange means pass beneath and in contact with said disks whereby to maintain said clamp and picker stick therewith in a vertical position in said lacquer solution.

3,867,903
EGG LAYER SYSTEM

Roger L. Fleshman, 103 60 W. 74th Pl., Arvada, Colo. 80005
Filed Sept. 11, 1973, Ser. No. 396,292
Int. Cl. A01k *31/16*
U.S. Cl. 119—17 **10 Claims**



1. A poultry cage assembly having a plurality of vertically stacked tiers and arranged in an elongated row, said cage assembly comprising:

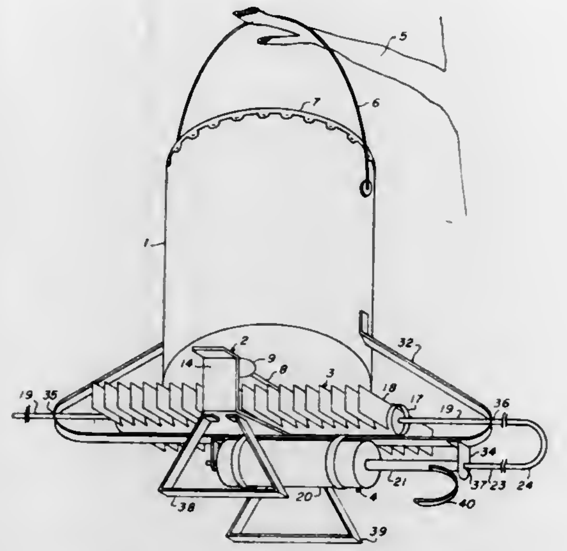
a. a plurality of vertical support columns spacedly arranged in a single longitudinal row,
b. a continuous curtain wall means extending along one side of said row of columns and secured to said columns, said wall means being formed from sheet material and arranged to substantially cover the vertical height of said row of columns,
c. cage support means having a plurality of horizontally disposed cross arms arranged to extend outwardly from said columns and normal to the plane of said curtain wall means, said cross arms being vertically spaced and secured to said support columns whereby the arms are horizontally aligned with corresponding arms to form horizontal tiers,
d. said cage support means further including cage hanger bars interconnecting the outer edges of the horizontally aligned cross arms,
e. cover means including a continuous sheet of solid material attached to the upper surfaces of said cross arms and hanger bars and arranged to extend the full length of said column row,
f. floor means being formed from open mesh wire fabric and arranged to extend the full length of said column row, said floor means being attached to said curtain wall means and said hanger bar means so as to be tilted downwardly from said curtain wall means so that eggs laid upon the floor means will roll to the outside edge of said floor means, said floor means further including egg retaining means along the outer edge of said floor means to retain said eggs,
g. partition means including a plurality of partition walls vertically arranged and attached to said support means and said floor means to divide the space along each tier between the cover means, curtain wall means and floor means into a series of individual cages, and
h. door means pivotally attached to said support means to enclose said cages and retain poultry therewithin.

3,867,904
ANIMAL FEEDER

James William Akkerman, 1902 Mermaid Ln., Houston, Tex. 77058
Filed May 9, 1973, Ser. No. 358,496
Int. Cl. A01k *05/02*
U.S. Cl. 119—51 R **9 Claims**

1. An animal feeder comprising:

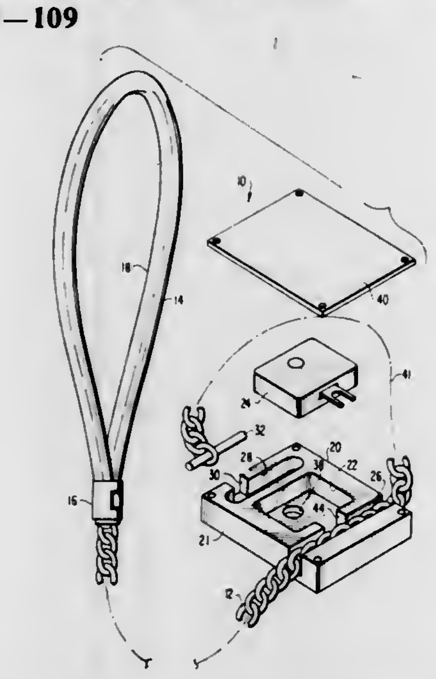
a. container means for storing animal feed therein;
b. receiver means mounted beneath said container means for receiving animal feed discharged therefrom;
c. rake means adjacent said receiver means and movable relative thereto for dispensing animal feed from said receiving means, said rake means comprising a plurality



of longitudinally spaced blades mounted transversely to the direction of movement of said rake means; and
d. drive means connected to said rake means, responsive to changing ambient temperature, to move said rake means relative to said receiver means for said dispensing of animal feed therefrom.

3,867,905
CANINE SECURITY LEASH

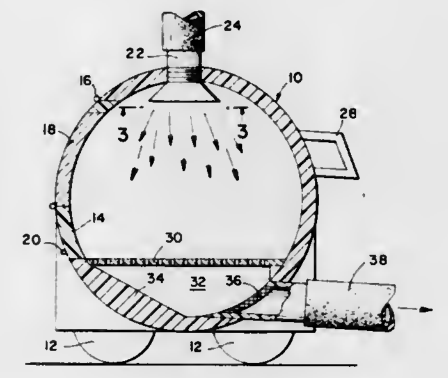
Richard W. Vail, Jr., 925-0 Fairview Ave., Arcadia, Calif. 91006
Filed Aug. 7, 1973, Ser. No. 386,370
Int. Cl. A01k *27/00*
U.S. Cl. 119—109 **9 Claims**



1. A canine security leash comprising a tether having a predetermined length, means forming and maintaining a loop at one end of said tether thereby providing a handle for said leash, a lock for preventing unauthorized removal of the canine from the leash including a lock housing, means for securing said lock housing to the opposite end of said tether, said lock housing having a passageway for slidably receiving a portion of said tether intermediate the end thereof secured to said lock housing and its opposite end thereby forming a second loop of variable size at the opposite end of said leash, the opposite end portions of the tether forming said second loop being coupled directly to said lock with the size of said second loop being determined by the distance along the tether between the intermediate tether portion in said passageway and said opposite tether end, said lock housing carrying a locking element releasably engageable with said tether in said passageway to lock said tether against movement in said passageway, thereby adapting said second loop for releasable locking engagement about the neck of a canine, said locking element when engaged with said tether in said passageway preventing unauthorized change in the size of said second loop.

3,867,906
DOG SHOWER

Phyllis Johnson, St. Albans, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y.
Filed Dec. 17, 1973, Ser. No. 425,248
Int. Cl. A01k *29/00*
U.S. Cl. 119—158 **9 Claims**

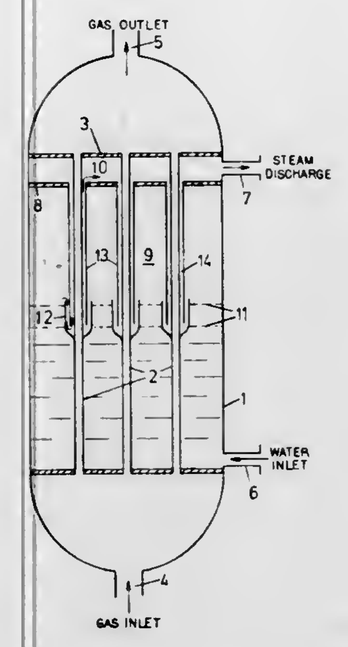


1. A device comprising an enclosure means for enclosing an object to be washed, a nozzle means disposed at the top of said enclosure for spraying said object with water, a foraminous drain floor means disposed proximate the bottom of said enclosure for supporting said object and for permitting liquid and any particles removed from said object during washing to drop to the bottom of said enclosure, said nozzle having a large central hole for purveying water independent of a detergent and a plurality of smaller holes disposed about said central hole for purveying liquid detergent independently of the purveying of said water.

3,867,907
STEAM GENERATOR

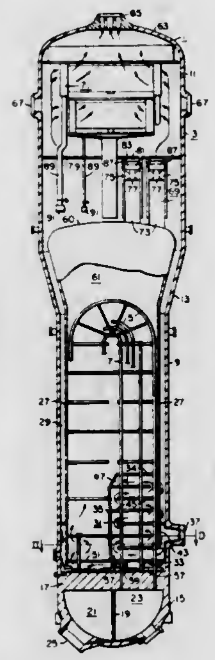
Hans-Dieter Marsch, Dortmund-Oespel, Germany, assignor to Friedrick Uhde GmbH, Dortmund, Germany
Filed June 3, 1974, Ser. No. 475,624
Claims priority, application Germany, June 16, 1973, 2330705
Int. Cl. F22b *1/06*
U.S. Cl. 122—34 **4 Claims**

1. A steam generator comprising an upright closed housing provided with a gas inlet at the lower end and a gas outlet at the upper end thereof, a lower tubesheet in the lower portion of said housing, an upper tubesheet in the upper portion of said housing, a plurality of spaced heating gas tubes fixed at their ends in said tubesheets respectively enabling gas passage from said inlet to said outlet, an intermediate tubesheet spaced a relatively short distance below said upper tubesheet to form a steam space, said intermediate tubesheet being apertured to enable said gas tubes to pass freely therethrough, a steam outlet in said housing for venting said steam space, a water inlet in said housing adjacent to and above said lower tubesheet, steam guide tubes for said heating tubes secured at their upper ends in said intermediate tubesheet, spaced from said heating tubes and extending for a substantial portion of the length thereof, and protective cups open at the top freely to receive the lower end portions of said steam guide tubes, and fitting said gas tubes in liquid tight fashion, whereby, water in the lower end portion of said housing forms steam which passes into the protective cups and upwardly through said steam guide tubes, thence to the steam space, and finally discharges through said steam outlet.



3,867,908
CROSS FLOW BAFFLE FOR A STEAM GENERATOR

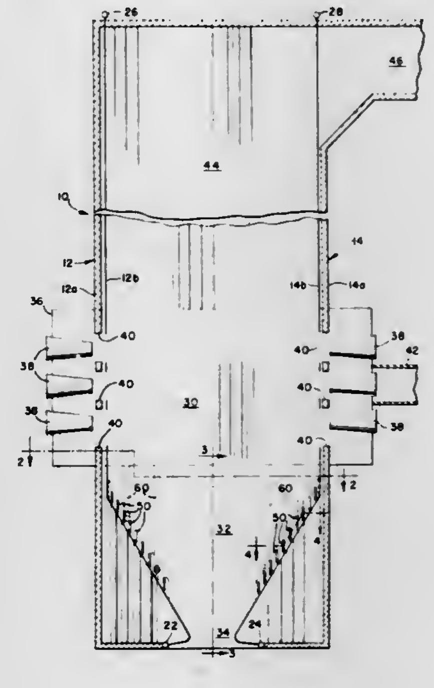
Wilbur M. Byerley, and Robert R. Bennett, both of Tampa, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 24, 1973, Ser. No. 354,031
Int. Cl. F22b *1/04*
U.S. Cl. 122—32 **6 Claims**



1. A vapor generator comprising a shell portion,
a tube bundle having a plurality of tubes disposed within said shell portion,
a wrapper disposed within said shell so as to generally enwrap said tube bundle,
a tube sheet disposed on one end of the tube bundle
a head portion cooperatively associated with said shell and tube sheet,
a primary fluid inlet nozzle for supplying primary fluid to the inside of said tube,
a secondary fluid inlet nozzle for supplying secondary fluid to the inside of said shell and the outside of said tubes,
a baffle disposed parallel to said tube sheet and cooperatively associated with said wrapper so that at least a portion of the secondary fluid sweeps across said tube sheet and flows between an area between said baffle and said tube sheet,
said baffle having a plurality of tube holes through which the tubes pass, said holes embracing said tubes and said baffle having a plurality of circulation holes through which at least a portion of the secondary fluid flows,
said circulation holes being disposed in a plurality of zones, a first zone adjacent the central portion of said baffle, said first zone generally having a maximum number and size of circulation holes to generally form a maximum amount of open area for the flow of secondary fluid therethrough, and a second zone disposed adjacent and generally encircling said first zone, said second zone having circulation holes arranged to form substantially less than the maximum amount of open area for the flow of secondary fluid through said second zone.

3,867,909
SLAG PREVENTION AIR SLOTS IN FURNACE SIDEWALLS

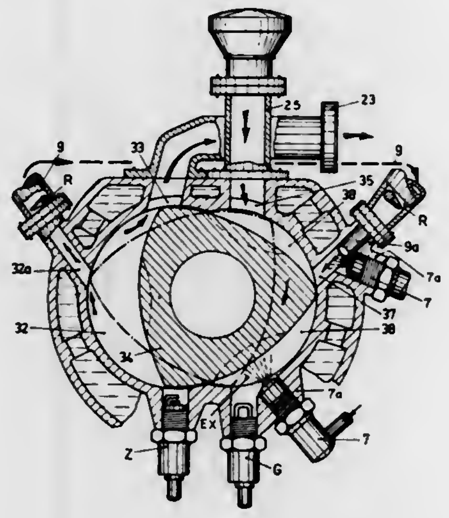
John A. Brown, Gulfport, Miss., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Nov. 19, 1973, Ser. No. 417,319
Int. Cl. F22b *15/00*
U.S. Cl. 122—235 B **7 Claims**



1. A furnace structure comprising at least four walls interconnected to form an enclosure, at least a portion of said walls defining an internal heat absorption surface, burner means associated with at least one of said walls for burning a fossil fuel within said enclosure and adjacent said heat absorption surface, said wall associated with said burner means having a vertical portion and a sloped portion, a plurality of openings extending through at least one of the walls connected to said wall associated with said burner means, and means for supplying air to said openings, said openings being located relative to said wall associated with said burner means so that said air passes substantially perpendicular to said vertical portion of said wall and across said sloped portion and across the junction between said vertical portion and said sloped portion to continuously maintain an oxidizing atmosphere at the heat absorption surface defined by said portions.

3,867,910
ENGINE CONSTRUCTION AND OPERATING METHOD UTILIZING EXHAUST GAS AS A SOURCE OF ENERGY

Walter Galonska, 164 E. 87th St., New York, N.Y. 10028
Filed Mar. 27, 1973, Ser. No. 345,321
Int. Cl. F02b *53/10*
U.S. Cl. 123—8.13 **3 Claims**

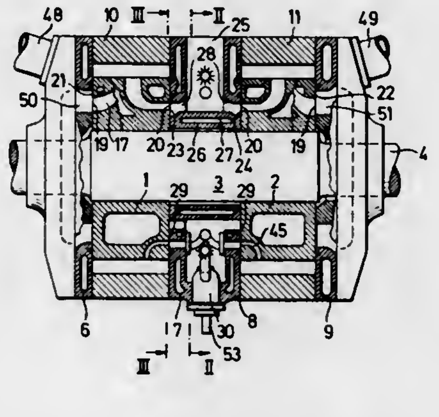


1. In a rotary type of Wankel engine, a housing having an exhaust chamber provided with a primary exhaust port as well as an exhaust port for part of the exhaust gas situated 10°–40° in advance of the primary exhaust port, said housing having also an intake chamber provided with a primary supply port and approximately 20° subsequent to the primary supply port a further supply port capable of delivering gas all the way up to an expansion chamber, the auxiliary exhaust and auxiliary supply ports being interconnected by a duct and a rotary piston being situated in the housing for controlling the exhaust and supply flows to achieve an optimal amount of exhaust gas and fresh air for fuel atomization with simultaneous charging of the intake chamber, a fuel supply mixing chamber being provided and an exhaust gas collection means being provided for special supply of fresh air and exhaust gas, to charge and treat a fuel mixture and control the flow of exhaust gas to the outer atmosphere, the said exhaust gas collection means being divided into a pair of chambers separated by a thick partition wall, and having an air supply duct and an exhaust supply duct with the exhaust gas duct functioning to supply air as well as compress and charge the air, and in addition to treat a fuel mixture in said fuel supply mixing chamber which receives gas from the exhaust gas collecting means, the latter having a valve means for automatically regulating the flow of exhaust gas to the outer atmosphere, the latter automatic valve means being situated at an outlet to the outer atmosphere and operating to automatically control the pressure of the exhaust gas to maintain an optimum amount of exhaust gas for charging and fuel treating purposes.

3,867,911
ROTARY PISTON INTERNAL COMBUSTION ENGINE

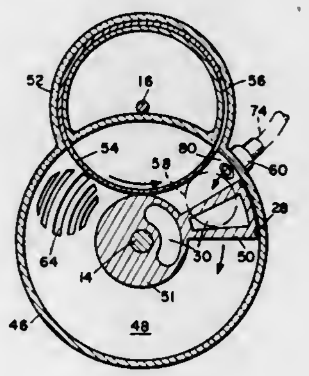
Johann Keylwert, Cologne, Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Germany
Filed Feb. 7, 1974, Ser. No. 440,353
Claims priority, application Germany, Feb. 8, 1973, 2306060
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.15 **20 Claims**

1. A rotary piston internal combustion engine, which includes: housing means having end walls and mantle means located between said end walls and connected thereto, rotary piston means eccentrically rotatable within said housing means and having outer peripheral surface means with an even number of circumferentially evenly distributed axis-near zones interconnected by radially outwardly arched zones thereby dividing said outer peripheral surface means into an even number of peripheral sections, the inner surface of said housing means being provided with a number of lobes and arcs corresponding in number to one more than the number of axis-near zones of said piston means and corresponding in shape to the arcs and axis near zones of said piston means and adapted to form working chambers therewith the size of which varies during a revolution of said piston means, inlet and outlet control openings respectively associated with every other one of said sections, inlet and outlet means respectively provided in end faces of said piston means, inlet and outlet connecting passage means arranged in said piston means and respectively connecting said inlet and outlet control openings with said inlet and outlet means, inner axial sealing means arranged radially outwardly of the path of movement of said outlet means during rotation of said piston means, combustion chamber means fixedly connected to said housing means, first and second conduit means connected to said combustion chamber means, transfer passage means located in said piston means and adapted to communicate with said working chambers, said first and second conduit means and said transfer passage means being adapted to establish communication between said combustion chamber and respective working chambers, said transfer passage means having a smaller cross section than said inlet and outlet connecting passage means and each respectively comprising a mouth opening located in the region of the piston circumference and on an end face of said piston means, the path of movement of said mouth openings being located outside said inner axial sealing means and moving successively over the mouth openings of said two conduit systems in side walls of said housing means.



3,867,912
ROTARY ENGINE

Edward L. Parr, and George T. Straza, both of El Cajon, Calif., assignors to Straza Enterprises Ltd., El Cajon, Calif.
Filed Aug. 2, 1973, Ser. No. 384,962
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.41 **4 Claims**



1. A rotary engine comprising,

a compressor unit and a power unit;

said compressor unit having a housing with a toroidal compression chamber, and a piston rotatable in the compression chamber;

said power unit having a housing with a toroidal power chamber, and a piston rotatable in the power chamber;

a common drive shaft connecting said pistons and being axially rotatably mounted in said housings;

said units each having a substantially cylindrical rotary sleeve valve with an opening to receive the respective piston, each sleeve valve intersecting and extending across the respective toroidal chamber and being synchronized with the pistons therein to seal with the piston passing through the opening;

said sleeve valves having a common axial shaft parallel to said drive shaft;

said compressor unit having an air intake opening into the compression chamber immediately after the sleeve valve in the direction of rotation, and an air outlet opening out of the compression chamber in the portion thereof enclosed by the sleeve valve;

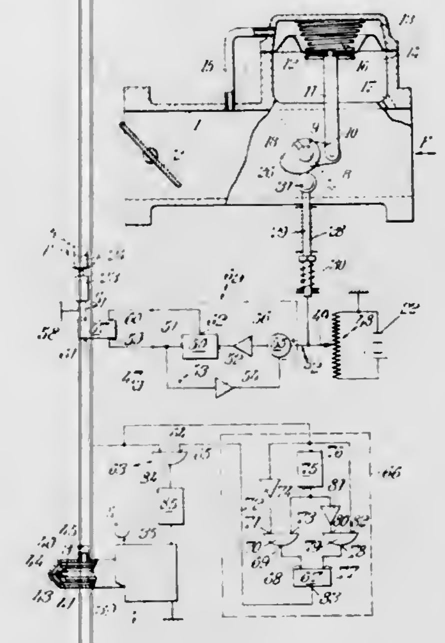
said power unit having an inlet and an exhaust outlet;

a transfer passage connecting said air outlet to said power unit inlet;

and said power unit having fuel injection and ignition means adjacent said inlet.

3,867,913
FUEL FEED DEVICES FOR INTERNAL COMBUSTION ENGINES

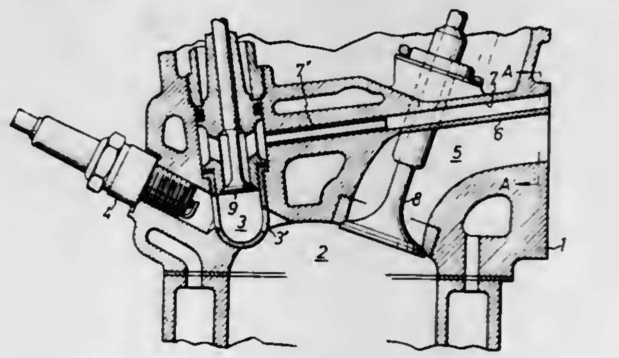
Michel Eugene Pierlot, Le Peco, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France
Continuation of Ser. No. 10,420, Feb. 11, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,767
Claims priority, application France, Feb. 14, 1969, 69.03791; Apr. 28, 1969, 69.13514
Int. Cl. F02b *3/00;* **F02m** *39/00*
U.S. Cl. 123—32 EA **15 Claims**



1. A fuel feed device for internal combustion engines comprising, in an intake pipe of the engine, a main throttle member actuated by the driver, a source of fuel under pressure, a delivery circuit in fluid communication with said fuel source and which opens into the portion of the intake pipe situated downstream of the main throttle member, at least one valve positioned to control said delivery circuit, an electromagnet in operative relationship for actuating said valve, and a metering system which comprises a rotary member rotated continuously and independently from any necessary synchronization with said engine and an auxiliary throttle member and arranged to be opened or closed automatically and progressively to a degree which is a function of the flow rate of air in said pipe as it increases or decreases respectively, said metering system being adapted to send into the electromagnet at least one energizing signal during a fraction of each turn of the rotary member, said fraction varying in proportion only as the degree of opening of auxiliary throttle member, which is governed by said flow rate of air, the metering system comprising means operatively associated with said rotary member for generating a first electrical signal on each turn of the rotary member, means sensitive to the degree of opening of the auxiliary throttle member for generating a second electrical signal representative of the degree of opening of said auxiliary throttle member, and signal forming means receiving said second signal and responsive to each said first signal for generating one of said energizing signals during a fraction of the corresponding turn of the rotary member which is a function of said second signal only.

3,867,914
DEVICE FOR ACCELERATING FUEL VAPORIZATION IN AN INTERNAL COMBUSTION ENGINE

Shoichiro Irimajiri, Kawagoe, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 29, 1973, Ser. No. 374,866
Claims priority, application Japan, June 30, 1972, 47-77417
Int. Cl. F02b *19/10*
U.S. Cl. 123—75 B **3 Claims**



1. In an internal combustion engine of the type having a cylinder head with a combustion chamber formed therein, the combination comprising:

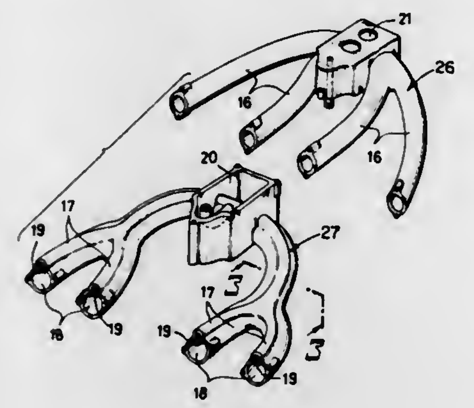
means forming an intake conduit in said cylinder nead for passing a fuel mixture to said chamber, means forming an exhaust conduit in said cylinder head for passing exhaust gases from said chamber, a first portion of said intake conduit being coextensive with a portion of said exhaust conduit, said intake conduit having a peripheral wall a substantial portion of which extends into said exhaust conduit in heat transferring relationship, a second portion of said intake conduit not being coextensive with said exhaust conduit and extending through said cylinder head, a heat insulating sleeve disposed within said second portion of said intake conduit.

3,867,915
HEATED INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Yoshitoshi Sakurai, Kawasaki, and Satoru Ohata, Oi-machi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 22, 1973, Ser. No. 372,745
Claims priority, application Japan, June 28, 1972, 47-64668
Int. Cl. F02b *19/10, 19/16*
U.S. Cl. 123—75 B **4 Claims**

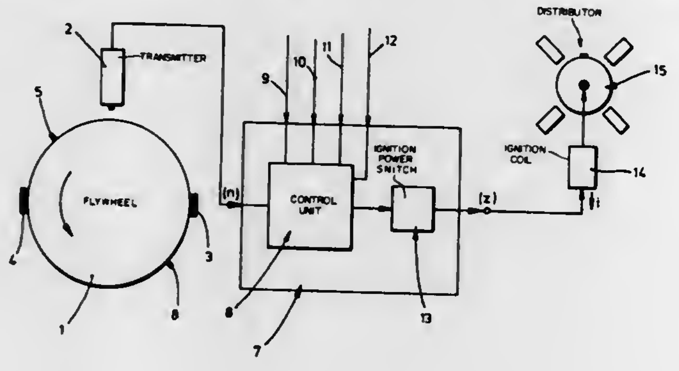
1. In an intake and exhaust manifold assembly for a multicylinder internal combustion engine, each cylinder having a main combustion chamber and an auxiliary combustion chamber connected by a torch nozzle, a spark plug associated with each auxiliary combustion chamber, a rich mixture passage communicating with the auxiliary combustion chamber, a lean mixture passage communicating with the main combustion chamber, and an exhaust passage communicating with the main combustion chamber, the improvement comprising, in combination: a main intake manifold having branch pipes

communicating with a vaporizing chamber, each pipe being connected to deliver lean mixture to one of said lean mixture passages, respectively, a second manifold having branch pipes communicating with a collection chamber and each connected to receive exhaust gases from one of said exhaust passages, respectively, each exhaust pipe having an auxiliary intake pipe formed integrally therewith and extending throughout the length thereof, a boundary wall separating each auxiliary inlet pipe from its respective exhaust pipe, said auxiliary intake pipes extending from said collection chamber to each of said auxiliary inlet pasages, respectively, means for supplying rich mixture to said auxiliary intake pipes, means for securing the chambers together whereby the vaporization chamber may receive heat from the collection chamber, and means for supplying lean mixture to the vaporization chamber.



3,867,916
INTERNAL COMBUSTION ENGINE IGNITION CONTROL SYSTEM

Erhard Bigalke, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Aug. 28, 1973, Ser. No. 392,187
Claims priority, application Germany, Dec. 15, 1972, 2261420
Int. Cl. F02p *5/08*
U.S. Cl. 123—117 R **15 Claims**



1. An ignition spark advance control system for a spark-ignited, internal combustion engine comprising, in combination;

a. integrator means for (1) producing a first increasing signal of predetermined slope during a predetermined crankshaft angle of rotation before ignition, said first increasing signal having a final value at the end of said angle of rotation and said angle of rotation having a duration that is inversely related to the engine RPM whereby a large first signal final value represents low engine RPM and a small first signal final value represents high engine RPM and (2) producing a second increasing signal of predetermined slope beginning at the end of said predetermined crankshaft angle of rotation, said second increasing signal having a slope chosen so that at a predetermined high engine RPM, said second signal equals said first signal value at a selected early ignition advance angle before TDC;

b. time-controlled potential storage means connected to said integrator means for storing said first signal final value at the end of said predetermined crankshaft angle of rotation;

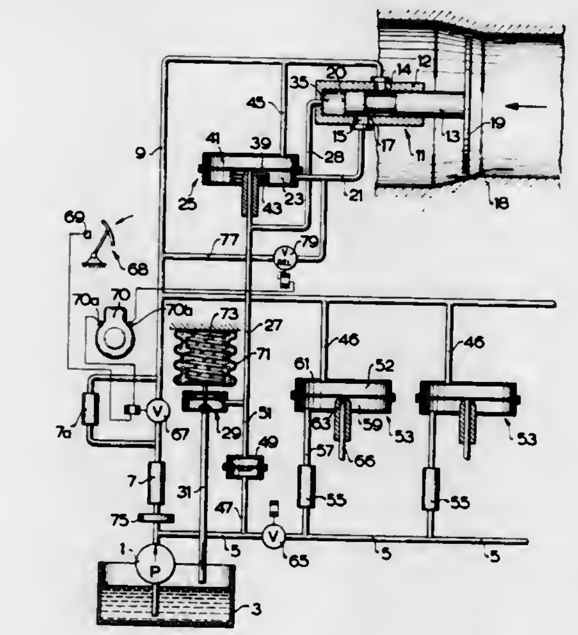
c. feedback means from said storage means to said integrator means for adjusting the slope of said second signal so that at an engine RPM below said predetermined high RPM said second signal equals said first signal final value at an ignition advance angle between said selected early angle and TDC, said ignition advance angle approaching TDC as said engine RPM decreases below said predetermined high RPM;

d. comparator means connected (1) to said time-controlled potential storage means for receiving said first signal final value and (2) to said integrator means for receiving said second signal, said comparator means producing an output pulse when said second signal equals said first signal final value; and

e. control means connected to said comparator means for triggering said engine ignition in response to said output pulse.

3,867,917
COMBUSTION MACHINES

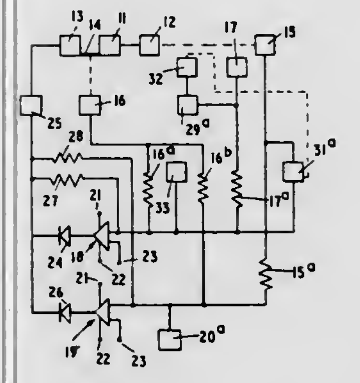
Johannes Zeyns, Krauler Elbdeich, Pappelhof, 2 Hamburg-Kirchwerder 4, and Heinz Enneking, Hegholt 32, 2 Hamburg, both of Germany
Filed July 30, 1972, Ser. No. 268,656
Claims priority, application Germany, July 9, 1971, 2134203; Dec. 15, 1971, 2162241
Int. Cl. F02d *3/00*
U.S. Cl. 123—119 R **22 Claims**



1. An apparatus on internal combustion machines with a device for continually measuring the amount of incoming combustion air and for measuring and uniformly distributing the amounts of fuel corresponding to the amount of air to a plurality of injection valves associated with a plurality of operating cylinders, wherein a measuring device exposed to the combustion air-stream is arranged in the air inlet channel which alters a throughput opening in a fuel control line in proportion to the amount of air flowing in the inlet channel, whereby, in the fuel control line connected upstream to the fuel pump via an amplifying resistance, conveying a fuel control flow and connected downstream via a difference pressure regulator back to the tank, there is produced a fuel control pressure downstream of said amplifying resistance which fuel control pressure actuates a plurality of pressure regulators connected in parallel and associated with the respective injection valves, through which the fuel passes via measuring resistances for injection and in which the outflow cross-section is adjusted in dependence upon the fuel control pressure so that the pressure drop at the measuring resistance of each pressure regulator is equal to the pressure drop at the amplifying resistance.

3,867,918
FUEL SUPPLY SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Malcolm Williams, Solihull; Geoffrey Albert Kenyon Brunt, Glastonbury; Christopher Robin Jones, Alcester, and Anthony John Adey, Slough, all of England, assignors to C.A.V. Limited, Birmingham, England
Filed Dec. 4, 1972, Ser. No. 311,638
Claims priority, application Great Britain, Mar. 12, 1971, 56188/71; Apr. 4, 1972, 15353/72; Apr. 4, 1972, 15364/72
Int. Cl. F02m *39/00;* **F02b** *3/00*
U.S. Cl. 123—139 E **21 Claims**



1. A fuel supply system for an engine, comprising in combination a pump for supplying fuel to the engine, pump control means for controlling the output of the pump, a first summing amplifier to which are fed electrical signals representing the demanded and actual values of pump output, the first summing amplifier comparing the signals and producing an output for controlling the pump control means, a second summing amplifier to which are fed electrical signals representing engine speed, pump output, and a reference, and a discriminator coupling the first and second summing amplifiers to the pump control means, the output from the discriminator at any given instant being the output from the summing amplifier which demands the least fuel, so that the second summing amplifier limits the maximum speed of the engine but varies the maximum speed of the engine in accordance with the pump output, said summing amplifiers each having a feedback path incorporating a resistor, and each of said feedback paths being taken from the input to the pump control means.

3,867,919
ANTI-DIESELING CONTROL

Emile P. Grenier, and George H. Muller, both of Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 5, 1973, Ser. No. 329,923
Int. Cl. F02b *77/00;* **F02d** *31/00*
U.S. Cl. 123—198 D **4 Claims**

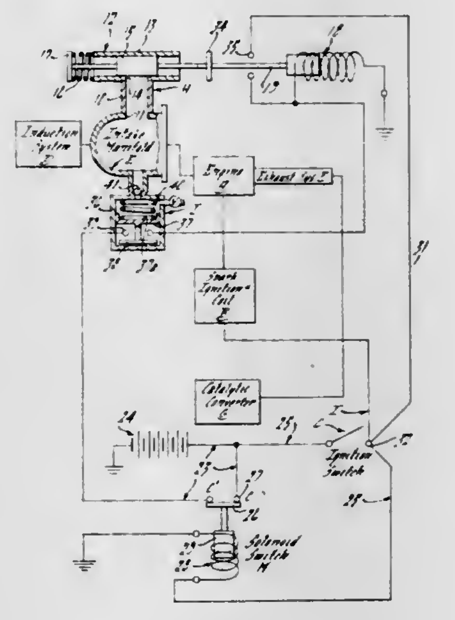
1. For use with an engine having a primary combustion zone and a selectively controllable spark ignition system which can be de-energized for shutting down said engine, the combination comprising:

a. an air-fuel induction means for supplying a combustible mixture to said engine,

b. a duct for supplying fresh air to said mixture,

c. a valve for controlling the admission of fresh air to said duct and having a housing extending across said duct and a valve member slidable in said housing for closing off said duct,

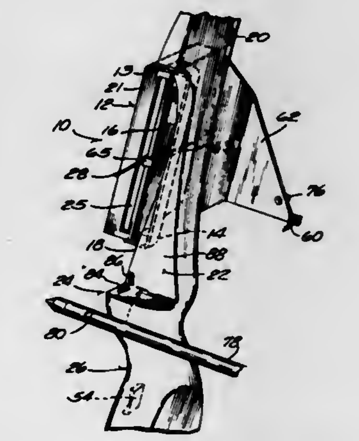
d. means for operating said valve between open and closed positions of said duct, said means normally biasing said member to a closed position and having a solenoid actuator responsive to engine shut down for overcoming said bias to move said member to an open position, said operating means providing an electrical circuit for said actuator which is responsive to selective de-energization of said spark ignition system to open said valve and delay completion of said de-energization to permit ignition of said mixture for a predetermined period, said circuit being responsive to normal energization of said spark ignition system to open said circuit, and



e. a catalytic converter having material for sustaining combustion at a predetermined temperature level, said operating means being effective to continue combustion of said mixture in said primary zone after engine shut-down in a manner to prevent uncombusted mixtures from reaching said catalytic converter that can flamingly combust in said converter at said predetermined temperature level.

3,867,920
BOW DRAWING INDICATOR

Kenneth M. Westphal, 836 N. 28 St., Milwaukee, Wis.
Division of Ser. No. 201,046, Nov. 22, 1971, Pat. No. 3,766,656. This application Aug. 3, 1973, Ser. No. 385,492
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 R **2 Claims**

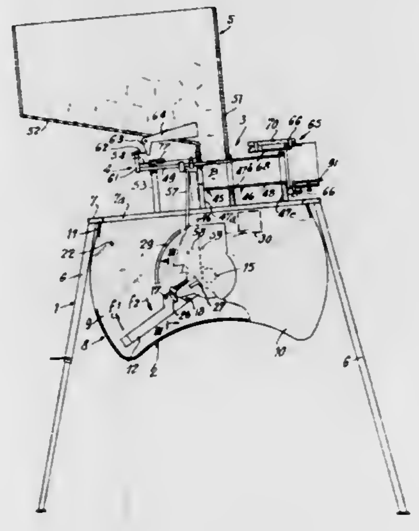


1. In combination with an archery bow having an arrow rest, an arrow with an exposed electrical conductor, spaced electrical contact means on said arrow rest for forming an electrical circuit with said conductor on said arrow, said conductor being adjustably movable longitudinally of the arrow, a signal light, a battery, and an electrical circuit means connecting said signal light to said battery and to said spaced electrical contact means on said arrow rest, whereby said contact means engages said electrical conductor on said arrow to complete the circuit

to said signal light and illuminate said signal light when said arrow is at a predetermined position on said arrow rest.

3,867,921
SPRING TYPE BALL THROWING DEVICE

Eugene Jim Politzer, 65 rue Jouffroy, Paris 17eme, France
Filed Oct. 26, 1973, Ser. No. 409,889
Claims priority, application France, Nov. 13, 1972, 72.40190
Int. Cl. F41b *7/00*
U.S. Cl. 124—26 **11 Claims**



1. In a ball throwing device including:

a frame, a driving means for providing a throwing pulse to a ball, said frame supporting said driving means; a ball magazine mounted on said frame; a barrel loading chamber mounted on said frame and spaced below said ball magazine; and ball feeding means, associated with said driving means, for intermittently feeding a ball from said ball magazine to said barrel loading chamber in response to the operation of said driving means;

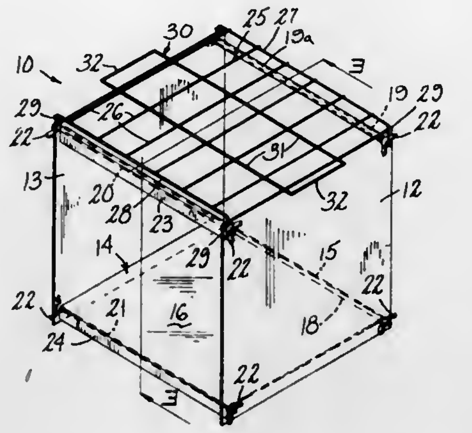
the improvement comprising: a ball guide, including a barrel connected at one end thereof to said loading chamber; a ball deflecting means positioned at the other end of said barrel, and pivotable in response to the operation of said ball feeding means for deflecting a ball through a plurality of trajectories by being alternately pivoted about an axis substantially perpendicular to the longitudinal axis of said barrel; and

a control means operatively associated with said ball feeding means for causing said driving means to gradually store up a throwing impulse force while said ball feeding means is feeding a ball into said barrel loading chamber.

3,867,922
STOVE

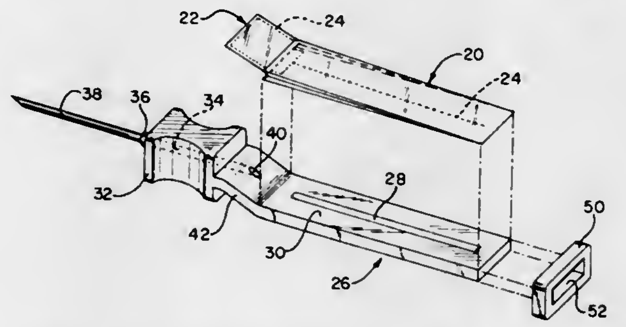
Emil F. Dahlquist, 31 Morgan Pk., Clinton, Conn. 06413
Filed Jan. 24, 1974, Ser. No. 436,189
Int. Cl. A21b *1/52*
U.S. Cl. 126—274 **6 Claims**

1. A stove adapted to receive radiant heat energy from a generally horizontal direction, comprising spaced apart sidewall members, a radiant heat energy reflecting member extending between said sidewall members, said reflecting member having reflecting surfaces on both sides thereof and extending substantially from a lower corner of said wall member extending between said sidewall members adjacent the lower edges thereof and below one of said reflecting surfaces, members above the other of said reflecting surfaces.



3,867,923
FLUID SAMPLER

Roland James West, Andover, Mass., assignor to Ronald J. Borbely, Bangor, Maine; Richard S. Burtt, Tewksbury, Mass.; Paul Newcomb, Weymouth, Mass.; James Vaughn, Seabrook Beach, N.H.; George Grant, Medford; Robert Gomes, Boxford, both of, Mass. and Inc. Andover Medical Industries, Andover, Mass., part interest to each
Filed June 14, 1973, Ser. No. 369,792
Int. Cl. A61b *5/10;* **A61m** *1/00*
U.S. Cl. 128—2 F **20 Claims**



1. A device for collecting samples from pressurized fluids comprising, in combination;

a fluid impermeable container comprising two opposing walls sealed together, except at one opening therebetween, about a common periphery so as to be substantially in face-to-face contact with one another throughout the interior portion of said container, said container being expandable when said sample is received therein through said opening;

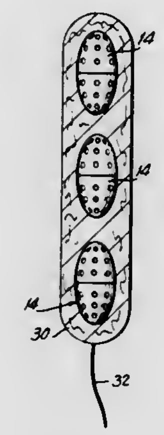
means for supporting said container along its length and including a fluid conduit, one end of said conduit defining an aperture in said supporting means, said opening of said container being releasably sealed to communicate with said aperture, and;

valve means cooperating with said container and said supporting means for releasably clamping said two opposing walls of said container together at a location substantially near said opening.

3,867,924
INTERNAL BLOOD COLLECTION

Louis Bucalo, Holbrook, N.Y., assignor to Microbyx Corporation, New York, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,671
Int. Cl. A61b *5/14;* **A61f** *13/20*
U.S. Cl. 128—2 F **13 Claims**

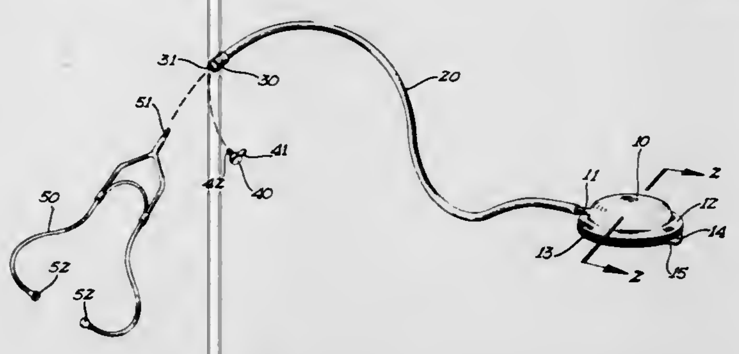
1. In a method for collecting and analyzing the blood of a living being, the steps of introducing into a body of a living being whose blood is to be analyzed, at a preexisting, accessible cavity of the body which at least temporarily contains blood of the living being, a device having an interior capable of receiving and holding blood which is present in the cavity when the entire device is introduced into and remains wholly within the cavity, said device having a blood preservative preliminarily situated in its interior prior to introduction of the device into the body cavity for preserving blood which is received and held in the interior of the device, said device being introduced into said cavity at a time which will assure presence of the device in the cavity when blood is present therein, removing the latter device from the body cavity after the device has remained therein for a period of time sufficient to receive and hold blood of the living being, so that blood is removed with the device, and testing at least part of the blood thus removed from the body cavity with the device.



5. For use in the collection of blood in a body cavity, a tampon means and at least one device carried by said tampon means for receiving and holding blood which is accessible in the device upon removal of the tampon means from the body cavity, said device including an outer holder formed with an entrance means through which blood can flow freely into the interior of the holder and retaining means situated within and held by the holder for retaining blood in the latter.

3,867,925
EXPENDABLE STETHOSCOPE

Robert A. Ersek, Minneapolis, Minn., assignor to Med General, Inc., Minneapolis, Minn.
Filed Feb. 17, 1971, Ser. No. 115,995
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **4 Claims**



1. Stethoscope bell means for removable attachment to the skin surface of the body of a patient and comprising:

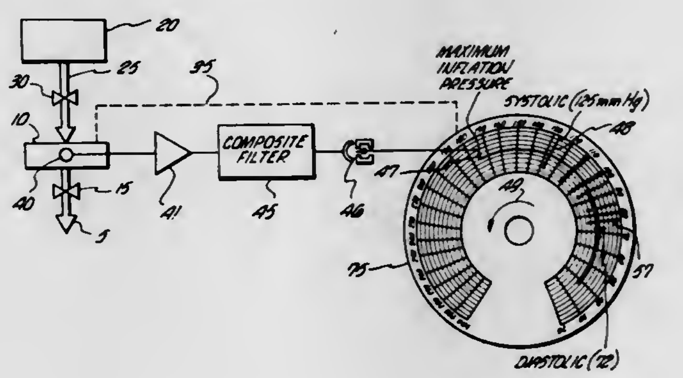
a. bell means including a substantially rigid, self-supporting generally cup-shaped housing shell with a closed bottom wall, side walls extending from said bottom wall, and flanged surface mounting means extending outwardly about the entire edge surface of said side walls, said bottom wall, side walls, and flange means forming a generally closed chamber with an open top;

b. coupling conduit means communicating with said chamber through one of said walls and having the outer periphery thereof in generally fluid-tight attachment to said chamber, said coupling conduit arranged for releasably securing an elongated sound transmitting conduit for transmission of sound waves therethrough; and

c. a film of pressure-sensitive adhesive secured to the exposed surface of said flanged surface mounting means enabling surface attachment of said stethoscope bell means to the skin of the body of a patient and formation of a closed chamber.

3,867,926
BLOOD PRESSURE MEASURING DEVICE UTILIZING SUB-AUDIBLE FREQUENCY FOR DETECTION

Sidney Lee Friedlander, Tarzana, Calif., assignor to Sphygmetrics, Inc., Woodland Hills, Calif.
Filed Oct. 24, 1972, Ser. No. 300,077
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 **6 Claims**



5. A system for detecting a subject's blood pressure wherein means are employed for momentarily occluding and slowly releasing the blood's flow in an artery which is accessible for indirect sensing, said artery having a blood pulse present which creates a high energy composite signal in a frequency range of d.c. to about 5 Hz, said system having a transducer for converting the arterial wall movement into an electrical signal, and an indicating means connected to the occluding means and responsive to an electrical input signal for registering a subject's blood pressure, the improvement comprising: said transducer exhibiting a first filter characteristic selected to emit an electrical signal which possess a fundamental subaudible frequency that may be detected and used as an indication of the subject's blood pressure;

said indicating means exhibiting a second filter characteristic to pass an electrical signal indicative of a subject's blood pressure to be recorded; and

means connected between the transducer and the indicating means, to form a combined filter characteristic therewith for blocking passage of the blood pulse signal and isolating the fundamental frequency from other frequencies in the transducer output signal, said combined filter characteristic characterized by:

- a center frequency f_c selected at about 17 Hz,
- a bandwidth of approximately 10 to 30 Hz measured at the 3 to 6 db points, and
- a sharp low frequency cut-off to essentially infinite db at about 5 to 7 Hz.

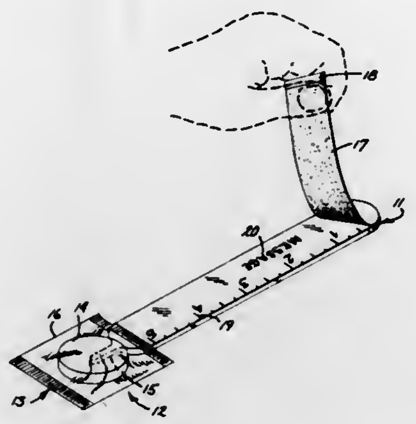
3,867,927
TONGUE BLADE SUCKER

Patrick F. Hergott, 211 9th St. N.E., Waseca, Minn. 56093
Filed June 13, 1974, Ser. No. 478,836
Int. Cl. A61b *1/24*
U.S. Cl. 128—15 **8 Claims**

1. Apparatus for motivating the cooperation of youthful patients in oral examinations comprising, in combination:

a blade having a first end for manipulating the patient's tongue and a second end for simultaneously retaining the patient's attention;

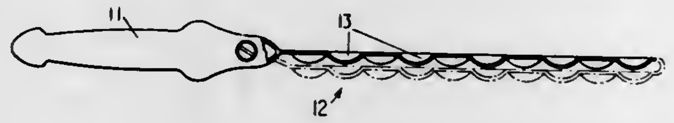
a waterproof protecting strip removably adhered to the face of the first end of the blade to engage the patient's tongue and prevent it from substantial contact with the blade;



and a reward element carried by the second end of the blade to remain in the patient's field of vision during use of the appliance in an oral examination.

3,867,928
MASSAGE DEVICE

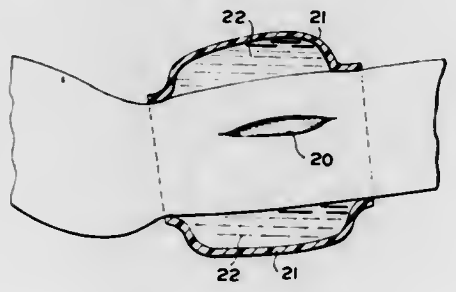
Earl Silas Tupper, Nassau, New Providence, Bahamas, assignor to Tup! (Panama) S.A. Via Espana, Panama City, Panama
Filed June 6, 1972, Ser. No. 260,204
Claims priority, application Great Britain, June 9, 1971, 19748/71; June 9, 1971, 19749/71
Int. Cl. A61h *29/00*
U.S. Cl. 128—24.1 **4 Claims**



1. A massage device consisting of a handle; a unitary resilient blade having a generally flat massage surface, said blade being connected directly to said handle; a plurality of rounded depressions in said generally flat massage surface thereon to provide massage elements and form an operative massage surface.

3,867,929
ULTRASONIC TREATMENT DEVICE AND METHODS FOR USING THE SAME

Bobby L. Joyner, Spring Mills; Betty L. Yearick, Howard; Harold S. Kaiser, and James W. Anderson, both of State College, all of Pa., assignors to Linden Laboratories, Inc., State College, Pa.
Filed Mar. 20, 1970, Ser. No. 21,235
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **8 Claims**

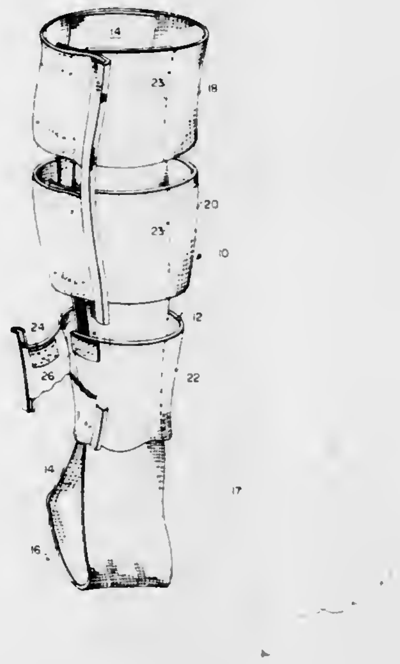


1. A therapeutic treatment device comprising a bath adapted to contain a therapeutic liquid; at least one acoustic transducer means attached to said bath for conveying uniform acoustic energy through said liquid at a uniform ultrasonic frequency; means operatively connected to said transducer means to selectively adjust the power of said energy to a uniform level up to 1.0 Watt/square centimeter of surface being treated within said liquid; and an acoustically transparent container adapted to contain a medication and surround an open wound, and adapted to be immersed in said liquid.

6. A method for the simultaneous treatment and cleaning of an open wound of a patient comprising placing said wound in a solution containing a medication within an acoustically transparent container surrounding said wound; placing said container in an ultrasonically oscillating bath; conveying uniform acoustic energy at a uniform ultrasonic frequency from said ultrasonically oscillating bath through said container and to said solution; and selectively adjusting the power of said energy up to the maximum comfort level of said patient while maintaining said uniform frequency, said level being no higher than 1.0 Watt/square centimeter of surface being treated in said bath.

3,867,930
TRACTION BAND WITH INTEGRAL FASTENERS

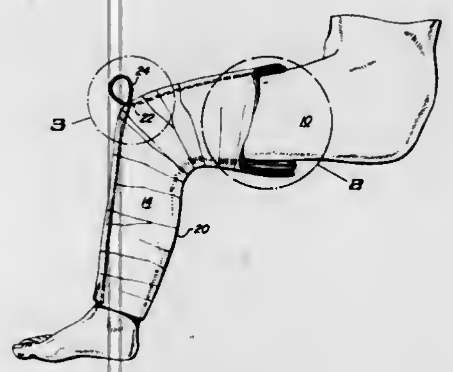
Dora Brown, 509 E. Parkway, Fulton, Miss. 38843
Filed May 8, 1973, Ser. No. 358,413
Int. Cl. A61f *5/04*
U.S. Cl. 128—83 **2 Claims**



2. Apparatus for use in placing a limb in traction comprising a traction band having a central loop portion and having a pair of longitudinally extending soft, flexible portions intended to be positioned along opposite sides of the limb, said traction band being comprised of a multiple ply fabric material, a plurality of transversely extending securing bands made of elastic material and of a length to extend around the limb, said securing bands being sewn to said longitudinally extending portions of said traction band at spaced points along said securing bands to provide intermediate portions of said securing bands disposed between and connecting said longitudinally extending portions of said traction band to each other, the opposite ends of said securing bands extending beyond the respective longitudinally extending portions of said traction band, said securing bands being of progressively decreasing length in a direction towards the loop portion of said traction band, and cooperating hook and loop type fasteners located adjacent the ends of each securing band on opposite sides thereof and detachably engageable with each other upon the respective securing band being fastened around the limb.

3,867,931
METHOD FOR REMOVING AN ORTHOPEDIC CAST UTILIZING AN EMBEDDED WIRE

Joseph A. Babka, 414 E. Roeser, Apt. 175, Phoenix, Ariz. 85040
Filed Dec. 19, 1973, Ser. No. 426,305
Int. Cl. A61f *5/04*
U.S. Cl. 128—91 A **4 Claims**

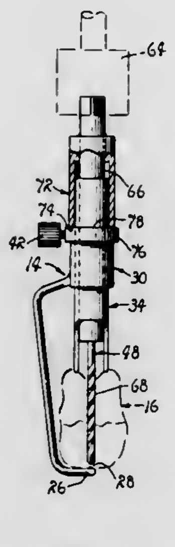


1. The method for removing a cast, comprising the steps of: placing a wire along a limb;

making a loop in the wire intermediate the ends of the wire;
embedding the wire under the cast with the loop extending outwardly of the cast and with the ends of the wire secured within the cast;
cutting the wire into two portions by cutting the loop;
securing a first portion of the wire onto a spool; and
imparting rotary motion to the spool to draw the wire through the cast to fracture the cast.

3,867,932
ASSEMBLY FOR INSERTING RIGID SHAFTS INTO FRACTURED BONES

Donald R. Huene, 6540 N. Roosevelt, Fresno, Calif. 93704
Filed Jan. 18, 1974, Ser. No. 434,423
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 E **12 Claims**

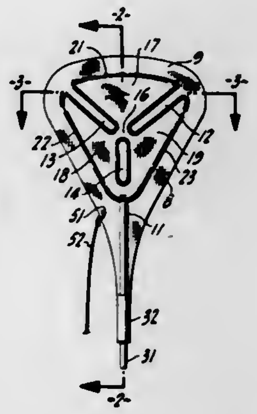


1. In an assembly for inserting rigid shafts into opposed segments of a fractured bone, the improvement comprising:

a clamp including an elongated body having a fixed jaw projected laterally therefrom adapted to engage a fractured bone at a first surface thereof, a bearing sleeve fixed to said body in spaced relation to said fixed jaw, an axially movable jaw including a body of a tubular configuration supported by said bearing sleeve and having a distal end of a bifurcated configuration for engaging the fractured bone at a second surface thereof, oppositely related to said first surface, and means for securing said movable jaw in a fixed relationship with said fixed jaw.

3,867,933
INTRAUTERINE DEVICE AND PROCESS OF MAKING THE SAME

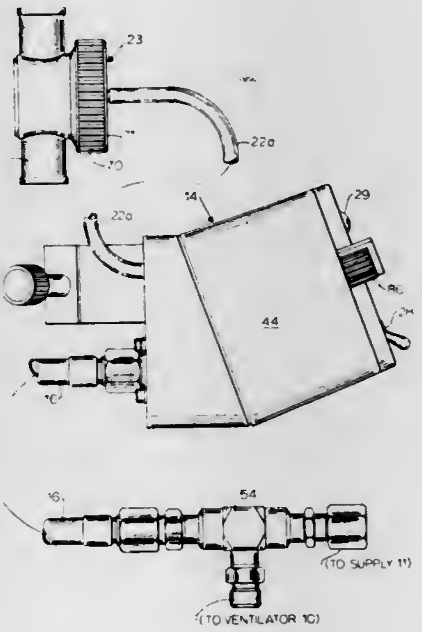
Sotiris Kitrilakis, Berkeley, Calif., assignor to Tecna Corporation, Emeryville, Calif.
Filed Mar. 6, 1973, Ser. No. 338,560
Int. Cl. A61f *5/46*
U.S. Cl. 128—129 **8 Claims**



1. An intrauterine device comprising a pair of sheets of soft, rubber-like, substantially liquid-impervious, non-toxic material, said sheets having the approximate shape in plan of a triangle and being arranged in registry with each other, said sheets having about the same dimensions as the undistorted human uterine cavity, a non-stretchable mat of pliable fibers united with said sheets to prevent stretching thereof, means securing said sheets together in a planar band all around the edges of said sheets except for a gap at one apex thereof, and means securing said sheets together along areas bisecting the apices of said triangle except at said gap and except at a region at the center of said triangle leaving three unsecured zones communicating with each other and with said gap and extending approximately parallel to the sides of said triangle.

3,867,934
PRESSURE MONITOR FOR A LUNG VENTILATOR

Louis A. Ollivier, Menlo Park, Calif., assignor to Veriflo Corporation, Richmond, Calif.
Filed May 4, 1973, Ser. No. 357,323
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 **16 Claims**

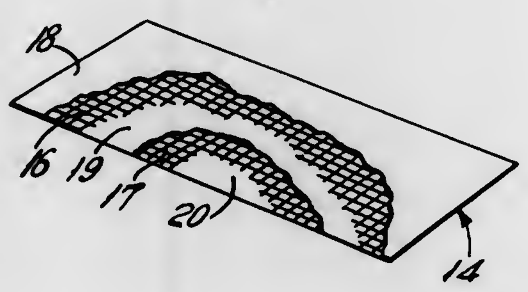


1. A fully pneumatic pressure monitor for a lung ventilator having a supply of breathing gas under pressure and an airway conduit for connection to a patient, including in combination:

a pressure regulator adapted to be connected to said supply,
pneumatically-operated warning means,
- pneumatic airway pressure sensing means adapted to be connected to a said airway conduit for sensing the pressure therein,
- a low-limit detector pneumatically connected to said airway pressure sensing means and having a valve that it opens when said airway pressure is above a predetermined low limit, as it should be during the inspiratory phase of the ventilator's breathing cycle,
- gas flow metering means connected to said regulator for supplying gas at a predetermined flow rate,
- pneumatically-operated timing means connected to said gas flow metering means and having a control valve connected to said pressure regulator and that opens when the gas from said metering means builds up to a predetermined pressure level within said timing means, said timing means having means for sending a flow signal from said pressure regulator to said warning means when said control valve is opened,
- said timing means being connected to said valve of said low-limit detector, whereby if said valve of said low-limit detector opens before said control valve is opened, the pressure buildup from said metering means is bled off through said valve of said low-limit detector and said control valve does not open,
- a high-limit detector pneumatically connected to said airway pressure sensing means and having a valve that opens when the airway pressure exceeds a predetermined high limit,
- high-limit pneumatic switch means pneumatically connected to said regulator and having an open position wherein actuating gas from said regulator is sent to said warning means and having a closed position wherein no such gas under pressure is sent, and
- pneumatic means connected to said regulator, to said switch means and to said valve of said high-limit detector, for normally holding said switch means closed except when the valve of said high-limit detector is open to bleed said pneumatic means.

3,867,935
PLIED ABSORBENT STRUCTURES

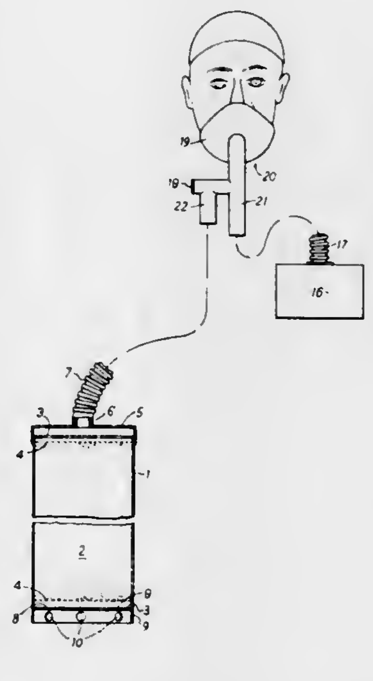
Norman R. Eisdorfer, East Brunswick; John M. Lesniak, Englishtown, and Bernard M. Lichstein, Elizabeth, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed May 14, 1973, Ser. No. 359,802
Int. Cl. A61f *13/00*
U.S. Cl. 128—156 **8 Claims**



1. A surgical dressing comprising a plurality of plies of a textile-like nonwoven fabric of essentially unbonded, mechanically entangled fibers randomly entangled with each other in a pattern of localized entangled regions interconnected by fibers extending between adjacent entangled regions, said fabric having a Tensile Energy Absorption value of at least 1.0 foot - pounds per foot square, in both the machine and cross directions and said dressing having an absorption capacity per gram of total fabric at least equal to the absorption capacity per gram of a single ply of said fabric.

3,867,936
ANAESTHETIC GAS SAFETY EQUIPMENT

Donald Walter Kelley, Worksop, England, assignor to Shirley Aldred & Co. Ltd., Worksop, Nottinghamshire, England
Filed Jan. 11, 1974, Ser. No. 432,445
Claims priority, application Great Britain, Jan. 16, 1973, 2523/73
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 **3 Claims**

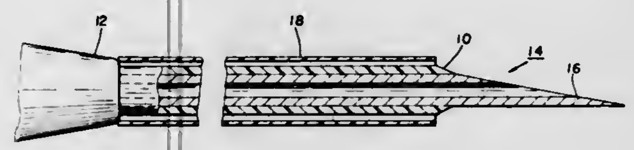


1. Anaesthetic gas safety equipment comprising
- i. delivery means to administer anaesthetic gas to a patient, said delivery means having a gas inlet and a gas outlet,
- ii. a first flexible conduit having one end connected to said gas inlet,
- iii. anaesthetic gas supply means connected to the other end of said first flexible conduit,
- iv. a second flexible conduit having one end connected to said gas outlet, and
- v. a man-portable anaesthetic gas absorber unit comprising:
  - a. a cylindrically walled hollow drum having radial end walls,
  - b. a central inlet in one end wall releasably coupled to the other end of said second flexible conduit, the other end wall being provided with a plurality of angularly spaced apertures,
  - c. a first perforated retainer sheet spaced inwardly from said one end wall,
  - d. a second perforated retainer sheet adjacent said other end wall and between it and the first perforated retainer sheet, and
  - e. a predetermined fixed quantity of absorber material between said first and second perforated retainer sheet and retained thereby, said material comprising carbon activated to absorb anaesthetic gas exhaled by the patient.

3,867,937
FLEXIBLE PROTECTIVE SHEATH FOR CATHETER

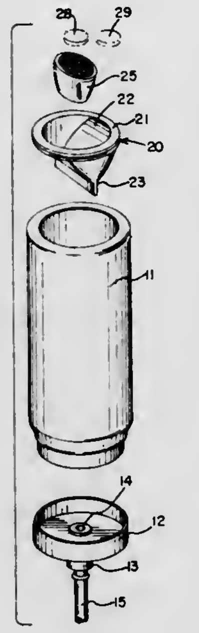
Boris Schwartz, 400 Park Ave., Paterson, N.J. 07504
Continuation-in-part of Ser. No. 312,952, Dec. 7, 1972, abandoned. This application May 30, 1974, Ser. No. 474,303
Int. Cl. A61m *5/32*
U.S. Cl. 128—221 **3 Claims**

1. In combination with a flexible catheter for percutaneous use with a patient there is provided a flexible protective sheath slidably mounted on the midshaft portion, said combination including: (a) a flexible catheter of determined length and having an entering end and a hub end and with that midshaft portion of said catheter forwardly of the hub having a selected outside relatively constant bore; (b) a stiff bore puncturing member slidably carried in the bore of the catheter and removable through the hub end after the desired penetration of the skin of a patient has been achieved, and (c) a very thin flexible plastic sheath of tube-like form whose wall thickness is less than two-thousandths of an inch in thickness and formed and sized so as to provide a sliding fit on the outer diameter of the midshaft of the catheter which it is to protect, the tube size being about one-third larger than the midshaft portion of the catheter for which it provides the protection, said sheath in an unmounted condition being open at both ends and when mounted having a length sufficient to extend from the skin-entering end of said catheter to a determined larger stop portion such as the hub of the catheter, said mounted sheath particularly adapted to engage the skin at the point of penetration and to be engaged by the skin at this opening to prevent further forward progress of the sheath whereat said sheath slides on the midshaft of the catheter and to the extent of shortening the sheath length progressively collapses into accordion-like folds as the catheter is caused to enter the entrance into and through the skin, the sheath providing a sliding guard continuously protecting against accidental contact of the outer surface diameter of the uninserted portion of the midshaft of the catheter by the user of the instrument during both the initial and progressive insertion through the skin, said sheath in its folded and unfolded portion remaining on the uninserted portion of the midshaft of the catheter during inserted use in a patient.



3,867,938
HYGIENIC SYRINGE

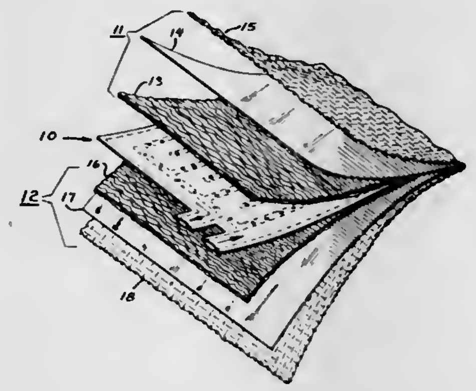
Remington Radcliffe, Lancaster, Pa., assignor to Schick Incorporated, Lancaster, Pa.
Filed Aug. 1, 1973, Ser. No. 384,593
Int. Cl. A61m *3/00*
U.S. Cl. 128—225 **6 Claims**



1. A hygienic syringe operable from a gas-producing chemical for applying a jet of fluid to a desired body area, comprising, in combination:
- a reservoir housing defining a reservoir for containing said fluid;
- a nozzle and hose assembly in communication with said reservoir for conveying fluid from said reservoir to said body area;
- a chemical carrier including a carrier housing defining a compartment for containing a predetermined quantity of said chemical, said carrier being separate and removable from said reservoir housing and including at least one aperture in said carrier housing for admitting fluid from outside said carrier into said compartment; and
- means including an apertured inwardly-convex resilient diaphragm in said reservoir housing dimensioned to facilitate insertion of said chemical carrier through said reservoir housing into said reservoir, said valve providing a substantially vapor tight seal following insertion of said carrier whereby the pressure produced in said reservoir by said chemical in said carrier reacting with said fluid in said reservoir forces said fluid through said nozzle and hose assembly to said body area.

3,867,939
DISPOSABLE, STERILE TEMPERATURE CONTROL APPLICATOR PAD FOR MEDICAL APPLICATION

Francis C. Moore, and Leon R. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.
Continuation-in-part of Ser. No. 254,715, May 18, 1972, abandoned. This application July 23, 1973, Ser. No. 381,733
Int. Cl. A61f *7/00*
U.S. Cl. 128—254 **20 Claims**



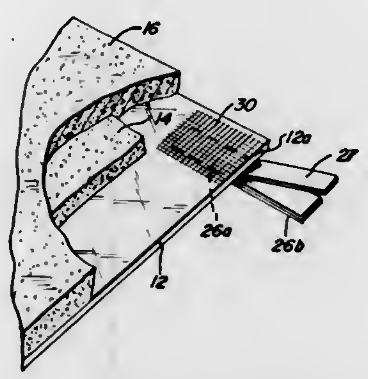
1. An article for applying heat or cold to a human body comprising: a flexible, liquid-tight conduit adapted to pass a hot or a cold fluid between an inlet and an outlet therein, said conduit being conformable to an area of application of the human body to overlie the same; and a covering engaging at least one side of said conduit including a core of soft, flexible absorbent material, an exterior layer of flexible tear-resistant grid material providing a plurality of closed boundaries each defining an aperture, said grid material overlying said core material, and means bonding said grid material to the exterior surface of said core material, said covering being characterized in being substantially free of lint and loose threads, in providing a nonsticking, non-sliding surface when applied to open wounds, and in quickly absorbing liquid with which it is brought into contact; and means holding said covering in engagement with said conduit.

3,867,940
SCRIM REINFORCED DISPOSABLE DIAPER

Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Aug. 6, 1973, Ser. No. 386,113
Int. Cl. A41b *13/02;* **A61f** *13/16*
U.S. Cl. 128—287 **6 Claims**

1. A multi-layer diaper comprising: a porous facing layer; a highly porous absorbent batt in face-to-face juxtaposition with said facing layer; a water-impervious backing sheet adhered to said batt; means comprising adhesive tabs attached to said backing sheet for attaching locations at the sides of said backing sheet to other locations on said backing sheet to secure said diaper about the thighs and waist of an infant, said adhe-

sive tabs being located at anchoring locations at the sides and near one end of the backing sheet and adaptable to be attached at securing areas near the other end of the backing sheet; said water-impervious backing sheet being reinforced against stretching and rupture by having adhered to a minor portion of the surface thereof a flexible structural material having a higher modulus of elasticity than said backing sheet, said minor surface portion being located in at least the vicinity of said anchoring locations.



3,867,941
INSUFFLATION APPARATUS FOR INTRODUCING LIMITED QUANTITIES OF CARBON DIOXIDE INTO THE HUMAN BODY FOR OPERATIVE PURPOSES

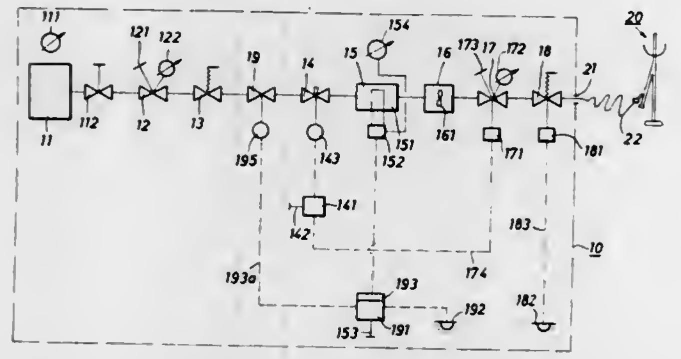
Hans Joachim Lindemann, Kleiner Schaferkamp 43, 2000 Hamburg 6, Germany

Filed Sept. 21, 1973, Ser. No. 399,380

Claims priority, application Germany, Aug. 29, 1973, 7331305

Int. Cl. A61b *17/00;* **F16r** *17/34*

U.S. Cl. 128—303 **3 Claims**



1. In insufflation apparatus for introducing limited quantities of carbon dioxide into the human body for surgical purposes, said apparatus including a housing, a carbon dioxide container (**11**) disposed in said housing, a manometer and a shut-off valve (**19**) for said container, pressure regulating means (**17**), flow measuring means (**15**), a warning signal device (**192**), outlet means for connecting said apparatus to a hysteroscope (**20**), and flow path means extending between said carbon dioxide container and said outlet means, the improvement wherein said flow measuring means (**15**) includes a measured value pickup means (**151**) and is connected within said flow path means between said carbon dioxide container and said outlet means at a location upstream from said pressure regulating means taken in the direction of flow through said flow path means, and wherein said apparatus includes a control device (**191**) comprising a measured value comparator (**152**), a time switch mechanism **193** and a nominal value setting device (**153**) which, together with said shut-off valve, are connected with said warning signal device.

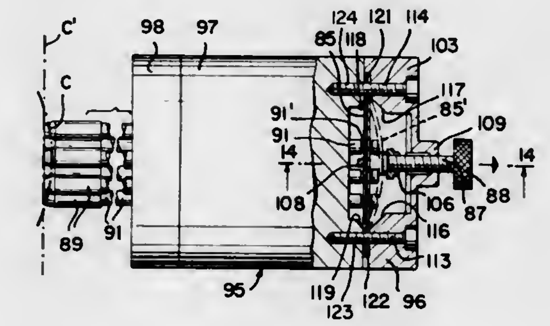
3,867,942
MOTOR-OPERATED MULTIPLE HAIR TRANSPLANT CUTTER TOOL

Frank A. Bellantoni, deceased, late of Yonkers, N.Y. (by Clare Bellantoni, administratrix), and John Walter Tucciarone, Harrison, N.Y., assignors to Taman M. Aseff, Jr., New York and John Walter Tucciarone, Harrison, both of, N.Y., part interest to each

Filed June 8, 1972, Ser. No. 260,853

Int. Cl. A61b *17/32;* **B23b** *45/02, 47/00*

U.S. Cl. 128—305 **9 Claims**



1. A motor-operated multiple hair transplant patch cutter tool comprising a handle part and a cutter tool head part having a top and a bottom, and the head part being carried upon the handle part, a plurality of cutter tool element drive shanks extending in a parallel relationship with one another and fully through and from the top and bottom of the cutter tool head part, said cutter tool element drive shanks each having its longitudinal axis extending about vertically to the top and bottom of the cutter tool head part, means for securing each shank alternately in each of extended and retracted positions and axially adjustable in the cutter tool head part between the extended and retracted positions, hair patch tissue circular cutter tool elements being carried respectively upon the respective journaled cutter tool element drive shanks, a gear train including drive gears meshed in succession with one another and respectively carried by the respective cutter tool element drive shanks, an electric motor carried in one of the parts and having pinion and drive gear means connected with one of the drive gears of the cutter tool element drive shafts, whereby all of the cutter tool elements may be driven in unison upon operation of the electric motor, each of said cutter tool elements being in the form of a sleeve with a circular cutting edge adapted to cut a patch of hair tissue from the scalp and means on the head part operable for connection to the drive shanks to secure them in either their extended or retracted positions whereby one or more patches of hair may be taken from a hair area of the scalp for the purpose of being transplanted into openings that may have been provided by the cutter tool element in a bald area of a person's head, said means for securing the cutter tool element shanks including curvature-adjusting mechanism for adjusting the cutting tool elements in unison so that the cutting edges of the cutter tool elements can be aligned with one another to provide more or less contour curvature for adapting the cutting edges of the cutting tool elements to the curved rounded portions of the head part, said curvature adjusting mechanism including a bendable plate slidably secured at ends thereof to the cutting tool head part and rotatably receiving the respective cutter tool element shanks and an adjustable member connected to the bendable plate intermediate its length and carried on the cutting tool head to bow the bendable plate from a flat transversely extendable shape, said cutter tool head part including a transversely extending box member, said bendable plate underlying the box member and said cutter tool head part having a main body, said bendable plate having open slots on the ends thereof, said transverse box member being recessed to receive the slotted ends of the bendable plate to permit the working of its ends within the box member while the bendable plate is being bowed or returned to its straightened condition, fastening screws for securing the box member to the body member extendable through the recesses of the box member and through the slots of the bendable plate to secure the box member in place upon the body member.

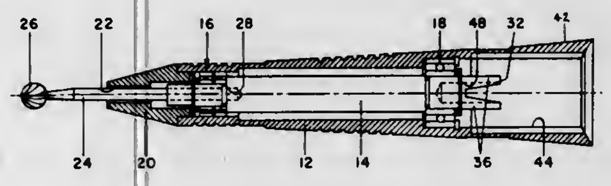
3,867,943
SURGICAL DRILL WITH DETACHABLE HAND-PIECE

Harald Nordin, Villeneuve, Switzerland, assignor to Edward Weck & Company, Inc., Long Island City, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,628

Int. Cl. A61b *17/32*

U.S. Cl. 128—305 **3 Claims**



1. In a surgical drill of the type comprising:
- a. a drive housing;
- b. drive means including a drive shaft in said housing;
- c. a detachable hand-piece comprising a housing, a driven shaft rotatably mounted in said housing, and a cutting element connectable to said driven shaft; and,
- d. means to exchangeably and operatively couple the drive and driven shafts;
- e. the improvement which comprises a clutch member attached to said drive shaft, said clutch member being generally cylindrical, having notches thereon and having a central guide member protruding outwardly therefrom; and
- f. a claw member attached to said driven shaft having cooperating arm members extending therefrom toward said clutch member, said arm members adapted to fit into said notches, said claw member having a central guide bore to receive said guide member, said claw and clutch member adapted to mate in operative driving relation when said hand-piece housing is connected to said drive housing while the drive shaft is rotating.

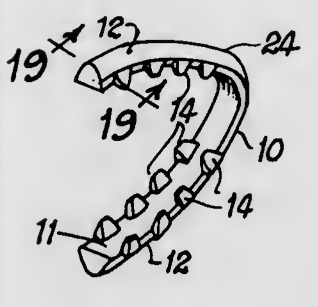
3,867,944
HEMOSTATIC CLIP AND APPLICATOR THEREFOR

Peter B. Samuels, Sherman Oaks, Calif., assignor to Ernest C. Wood and Rene G. Le Vaux, both of Beverly Hills, Calif.; part interest to each

Filed Oct. 27, 1972, Ser. No. 301,609

Int. Cl. A61b *17/12, 17/08*

U.S. Cl. 128—325 **4 Claims**



1. A hemostatic clip formed of an elongate, substantially flat strip of a non-toxic material defining a generally V-shaped clip, said clip having spaced aims and being formed of a bail end and open opposite the bail end, said arms having opposing faces providing longitudinally continuous, smoothly curved surfaces a plurality of teeth members on said faces, said teeth members being spaced along the lateral edges of said faces, with a portion of said surfaces extending between the teeth on opposite lateral edges, and a rib extending longitudinally along the strip opposite the faces.

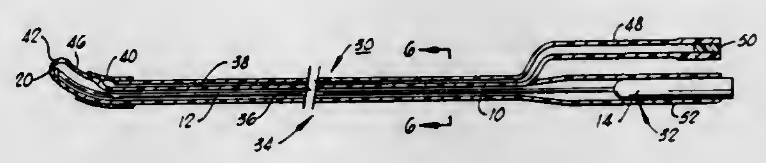
3,867,945
CATHETER STYLETS

Wendell M. Long, 528 N.W. 12, Suite 17, Oklahoma City, Okla. 73103

Filed May 14, 1973, Ser. No. 359,984

Int. Cl. A61m *25/00*

U.S. Cl. 128—349 R **8 Claims**



1. An improvement for use in combination with urethral catheters of the type having a drainage lumen and a reduced diameter inflation lumen disposed in parallel through the length thereof, a proximal end for insertion in the urinary bladder, and a distal end including an enlarged diameter drainage outlet communicating with the drainage lumen and an inflation control outlet communicating with said inflation lumen, the improvement consisting of a stiffener and former device comprising:
- rod means of uniform cross-sectional configuration and reduced length relative to said drainage lumen and extending from proximal to distal ends and having a diameter which is substantially less than that of said drainage lumen for insertion therein throughout the length thereof, said proximal end being formed with an optimal curvature;
- a handle portion secured to the distal end of said rod means, said handle portion being formed with uniform cross-section slightly larger than said drainage outlet;
- whereby said rod means may be inserted throughout the entire length of said drainage lumen with said handle means tightly received within the drainage outlet of said urethral catheter to stiffen the catheter while reducing its overall circumference for urethral insertion.

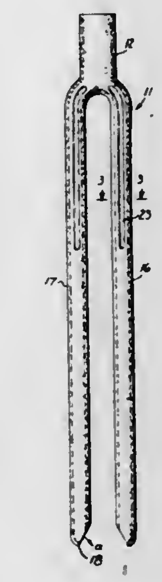
3,867,946
BINASOPHARYNGEAL AIRWAY

Robert A. Huddy, 1044 Balboa Dr., Arcadia, Calif. 91006

Filed Oct. 29, 1973, Ser. No. 410,960

Int. Cl. A61m *31/00*

U.S. Cl. 128—351 **1 Claim**



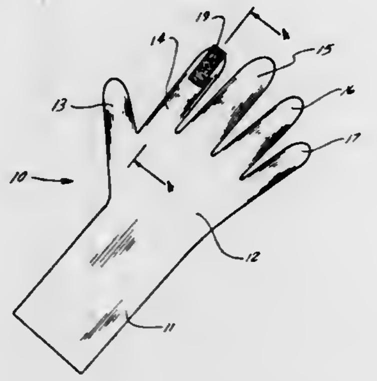
1. A pharyngeal airway comprising
- a one-piece tubular member of elastomeric material,
- said member having a tubular portion open at one end to receive a gas supply device, and
- a pair of spaced nasopharyngeal tube sections communicating with said tubular portion at the opposite end of said tubular portion,

the ends of said tubular sections remote from said tubular portion being inclined oppositely to each other, and

the passages of said tube sections adjacent the apices of said inclined ends curving inwardly toward each other whereby to deflect the respective gas streams into impingement with each other.

3,867,947
AMNIOTOMY GLOVE

Colin B. Schack, 207 S. 94th St., Omaha, Nebr. 68114
Filed Jan. 26, 1973, Ser. No. 327,616
Int. Cl. A61b *17/42*
U.S. Cl. 128—361 **7 Claims**



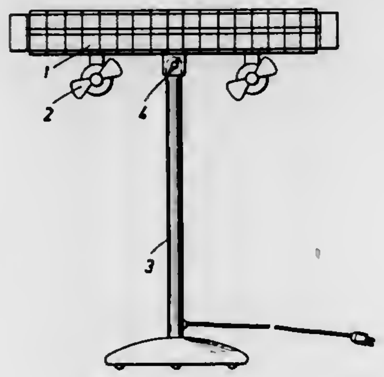
1. An amniotomy glove for use in rupturing the amniotic membranes comprising:

a sterilizable surgical glove having a palm, a back, a thumb and four fingers; and

an abrasive strip secured over a portion of the end of one of said fingers with a first portion of said strip secured to the back of said one finger, a second portion of said strip secured to the tip of said one finger and a third portion of said strip secured to the front of said one finger, thus having a portion of said one finger front and tip on both sides of said strip free for permitting tactile sense to the finger of the wearer of said glove.

3,867,948
INFRA RED RADIATION MEANS WITH FAN MEANS

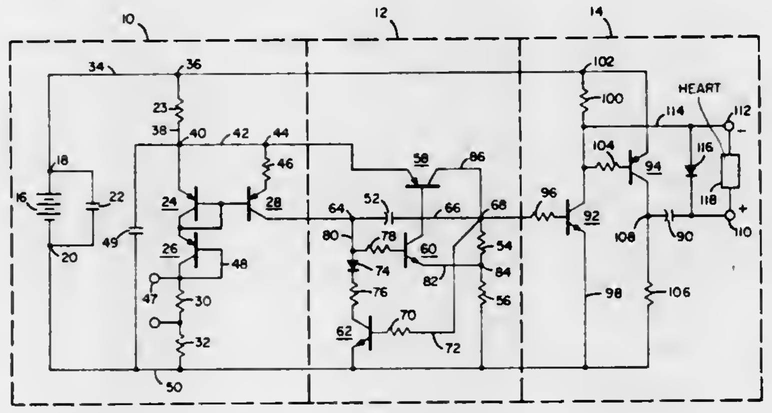
Adolf Kallenborn, Tholeyerstrasse 7, Lebach/Saar, Germany
Continuation-in-part of Ser. No. 139,987, May 3, 1971, abandoned, which is a continuation of Ser. No. 845,673, July 11, 1969, abandoned, which is a continuation of Ser. No. 670,679, Sept. 26, 1967, abandoned. This application Feb. 13, 1973, Ser. No. 332,095
Int. Cl. A61n *5/06*
U.S. Cl. 128—395 **2 Claims**



1. Apparatus for skin treatment comprising means for emitting infra-red radiation forwardly towards an area of skin; fan means for directing a current of cooler ambient air forwardly towards said area of skin; a common support upon which said radiation and fan means are mounted, the fan means comprising at least two fans spaced apart along said common support, each of said fans being spaced from said radiation means and the path of the radiation emitted therefrom and directed so as to enable simultaneous action of said radiation and fan means on said area of skin of a living organism of the kind having a dermis, epidermis and a blood circulating system, to heat said area of the dermis and epidermis with the infra-red radiation from said radiation means while cooling the epidermis in said area with the current of cooler ambient air from said fan means to establish a temperature difference therebetween.

3,867,949
CARDIAC PACER WITH VOLTAGE DOUBLER OUTPUT CIRCUIT

Arthur W. Schwalm, Minneapolis, and Jon A. Anderson, White Bear Lake, both of Minn., assignors to Cardiac Pacemakers, Inc., Roseville, Minn.
Filed Apr. 27, 1973, Ser. No. 355,035
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **1 Claim**



1. A cardiac pacer circuit comprising in combination:

a. a constant current source including

(1) a source of direct current potential of a predetermined voltage value having first and second terminals,

2. a series circuit connected between said first and second terminals including first and second resistors and first and second transistors, each having an emitter electrode, a collector electrode and a base electrode, the emitter electrode of said first transistor being connected to the collector and base electrode of said second transistor, the base and collector electrodes of said first transistor being coupled through said first resistor of said first terminal of said source and the emitter electrode of said second transistor being coupled through said second resistor to said second terminal of said source,

3. a third transistor having an emitter, a collector and a base electrode, the base electrode of said third transistor being connected to the emitter electrode of said first transistor and the emitter electrode of said third transistor being coupled to the emitter electrode of said second transistor,

b. an astable multivibrator including:

1. a third resistor and a first capacitor connected in series between said collector electrode of said third transistor and said first terminal of said source,

2. fourth, fifth and sixth transistors each having a base, emitter and collector electrodes, the emitter electrode of said fourth transistor being connected to the emitter electrode of said second transistor, the collector electrode of said fourth transistor being connected to the junction between said third resistor and first capacitor and coupled to the base electrode of said fifth transistor, the emitter electrode of said fifth transistor being connected to the first terminal of said source and the collector electrode of said fifth transistor being coupled through fourth resistor means to the collector electrode of said third transistor and the base electrode of said sixth transistor, said collector electrode of said sixth transistor being connected to the base electrode of said fourth transistor, said emitter electrode of said sixth transistor being coupled to said first terminal of said source,

c. a voltage doubler circuit including:

1. seventh and eighth transistors, each having an emitter electrode, a collector electrode a base electrode, said base electrode of said seventh transistor being coupled to said junction, the emitter electrode of said seventh transistor being connected to said first terminal of said source, said collector electrode of said seventh transistor being coupled to said second terminal of said source by means of a fifth resistor and coupled to said base electrode of said eighth transistor,

2. said emitter terminal of said eighth transistor being coupled to said second terminal of said source, a sixth resistor coupling said collector terminal of said eighth transistor to said first terminal of said source, and

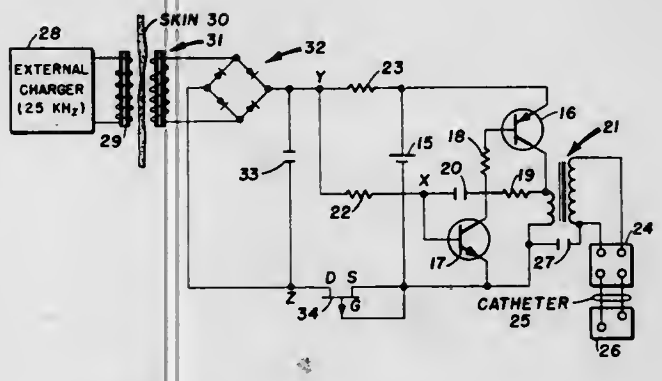
d. a pair of output electrodes

1. a first of said pair of electrodes being connected to the collector electrode of said seventh transistor,

2. the second of said pair of output electrodes being connected in series with second capacitor means of said collector electrode of said eighth transistor.

3,867,950
FIXED RATE RECHARGEABLE CARDIAC PACEMAKER

Robert E. Fischell, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed June 18, 1971, Ser. No. 154,492
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **15 Claims**



1. A cardiac pacer adapted to be implanted in the body of a patient and comprising, in combination

a D.C. voltage supply,

pulse generating circuit means connected to said voltage supply for generating output heart stimulating pulses at a predetermined rate,

catheter means equipped with electrode means for applying said output heart stimulating pulses to the patient's heart, an output transformer having primary and secondary windings which are D.C. isolated from one another,

said primary winding being connected to receive the output heart stimulating pulses generated by said pulse generating circuit means,

said secondary winding being connected to apply said output heart stimulating pulses to said catheter means, and filter capacitor means connected between the primary and secondary windings of said output transformer for preventing periodic signal noise from appearing at said catheter means.

3,867,951
TOBACCO SUBSTITUTE

Paul Buchmann, Basel, Switzerland, and Monique Beringer, Saint Louis, France, assignors to Tamag Basel AG, Basel, Switzerland
Continuation of Ser. No. 232,222, March 6, 1972, abandoned. This application June 11, 1973, Ser. No. 368,587
Int. Cl. A24b *15/00*
U.S. Cl. 131—2 **4 Claims**

1. A tobacco substitute having low cellulose, fat and chlorophyll content which is comprised of a homogeneous mixture of

a. a non-tobacco plant material comprising chaff or bran of cereal plants in an amount of at least ⅔ of said tobacco substitute;

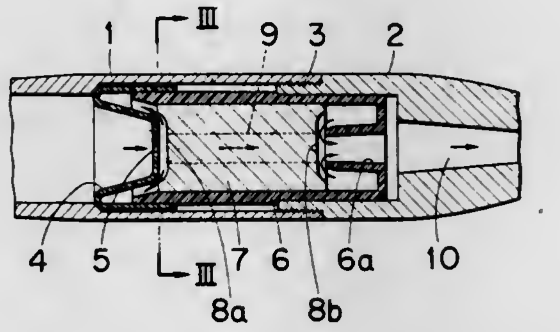
b. fruit extract sufficient to bring the pectin content of the tobacco substitute to about 7.5–10 percent;

c. molasses or fruit extract sufficient to bring thesugar content of the tobacco substitute to at least 10 percent and

d. hydrolyzed natural material of high albumin content sufficient to bring the amino acid content of the tobacco substitute to about 2–4 percent.

3,867,952
CIGARETTE HOLDER STRUCTURE

Noboru Fujimura, No. 2007, Go, Aga-machi, Kure, Japan
Filed Feb. 1, 1973, Ser. No 328,638
Claims priority, application Japan, Feb. 2, 1972, 47-14430; Mar. 25, 1972, 47-35297; Aug. 26, 1972, 47-99886
Int. Cl. A24f *7/04*
U.S. Cl. 131—262 B **8 Claims**



1. A cigarette holder structure comprising a body including a cigarette holding member connected to a mouthpiece member and including a chamber at an intermediate portion of said body, a support member disposed in said chamber, said support member having a central circular shaped portion smaller than said chamber and a peripheral wall extending from the periphery of said central portion in the direction of said cigarette holding member and said peripheral wall diverging outwardly to engage the inner wall of said chamber therefore forming a space between the peripheral wall and the inner wall of said chamber, said peripheral wall being disposed in a manner to provide a space between said central portion and the end of a cigarette held in said cigarette holding member, an opening in said central portion communicating with said chamber , an elongated permanent magnet having a periphery which substantially conforms to the interior of said chamber disposed in said chamber and having disposed in said chamber and having an elongated recess at each end thereof and longitudinal passage means formed between the inner wall of said chamber and the periphery of said magnet, said magnet and said central portion of said support member positioned within the chamber so that the central portion abuts one end of said magnet forming a passage between the associated elongated recess of the magnet and the space between said peripheral wall of the support member and the inner wall of said chamber, said space communicating with the elongated recess at the other end of the magnet through said longitudinal passage means, and said elongated recess at the other end of the mag-

net communicating with a mouth portion of said mouthpiece member.

3,867,953
ARTICLE WITH SPIKES OR BRISTLES MADE OF THERMOPLASTICS

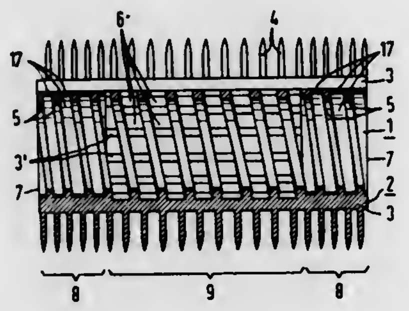
Arno Stohr, 8641 Neuses, Bamberger Strasse 6, Bavaria, Germany

Filed Aug. 10, 1973, Ser. No. 387,365

Claims priority, application Germany, Aug. 11, 1972, 2239560

Int. Cl. A45d *2/02*

U.S. Cl. 132—39 **2 Claims**



1. An article with bristles or spikes in the form of an extruded tube-like carrier profile, the outer surface of which bearing a plurality of longitudinal ribs cut at their outer ends into bristles or spikes, while said tube-like carrier profile is cut from the inside up to the foot-level of said ribs to form a continuous helix, said tube-like carrier having rim zones with closed inner surfaces and smooth end faces, and the pitch of said helix being less at the rim zones than in the center portion of said tube-like carrier.

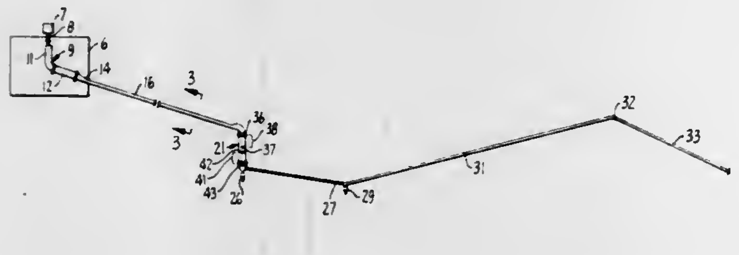
3,867,954
CORROSION INHIBITION IN SLURRY PIPELINES OPERATED BY GRAVITY

Robert J. Frey, Pleasant Hill, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed June 6, 1973, Ser. No. 367,630

Int. Cl. B65g *53/30*

U.S. Cl. 137—1 **8 Claims**



1. A method of transporting a slurry in a pipeline to maintain the pipeline substantially free of corrosion, comprising the steps of introducing a slurry from a source of slurry into a pipeline, flowing the slurry through the pipeline under the action of gravity, deaerating the slurry by maintaining a first downwardly extending portion of the pipeline only partially full of slurry and at a constant slope, and passing the slurry through an air lock and to a point of slurry discharge at a level lower than the source of slurry and while maintaining the slurry substantially free of air, thus substantially eliminating corrosion of the pipeline due to the presence of air therein.

3,867,955
AIR AND/OR VAPOUR SEPARATION DEVICE

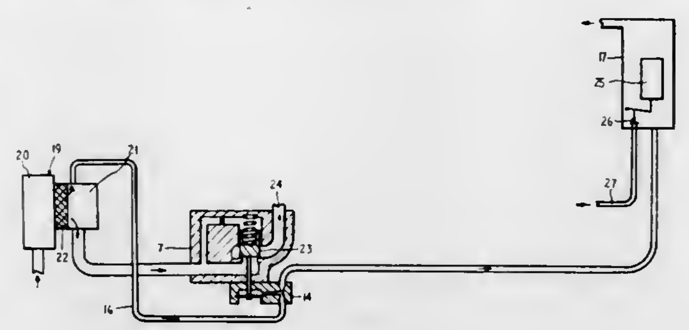
Ian John Scott, West Pennant Hills, New South Wales, and Froie Edwin Tessier, North Rocks, New South Wales, both of Australia, assignors to Gilbarco Aust. Ltd., North Ryde, New South Wales, Australia

Filed Nov. 7, 1972, Ser. No. 304,450

Claims priority, application Australia, Nov. 17, 1971, 7072/71; May 10, 1972, 8912/72

Int. Cl. B01d *19/00*

U.S. Cl. 137—179 **1 Claim**



1. A device for purging fouling gas or vapour from a main liquid flow line comprising a main valve located in said flow line said valve including a pressure sensitive valve actuating means; a pilot flow line with an inlet in communication with a gas detection point upstream in the main line flow and a discharge end, said pilot line further including a venturi located between said inlet and discharge; and a further communication between said venturi and said pressure sensitive valve actuating means; whereby presence of air or vapour increases the pressure in the said further communication causing said valve actuating means to close off said main valve and subsequently discharge the air or vapour via said pilot line such that when no air or gas remains in said further communication the reduced pressure therein allows said valve actuating means to re-open said main valve to permit purged liquid therethrough, and wherein the discharge from the said pilot line is to a gas separation means including a vent to atmosphere and a float operated liquid discharge for recycling through said purging device.

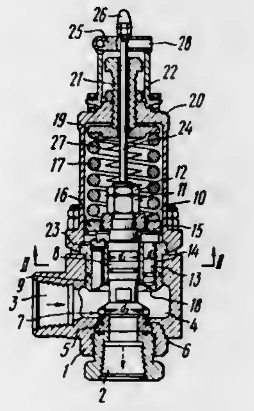
3,867,956
SAFETY VALVE

Enver Seifullaevich Ibragimov, 14 Zavokzalneya ulitsa 18, kv. 68, blok 7, and Rudolf Ervandovich Gazarov, ulitsa Gorkogo 5, kv. 6, both of Baku, U.S.S.R.

Filed Apr. 30, 1973, Ser. No. 355,537

Int. Cl. F16k *11/00*

U.S. Cl. 137—269 **3 Claims**



1. A safety valve designed for use in pipelines conveying fluid under pressure, comprising a hollow valve body provided with an inlet and an outlet; means defining a fluid passage via which said inlet and outlet communicate; a valve seat incorporated in said fluid passage; a shut-off member closing said valve seat; a quantitatively variable set of plungers, the axes of which are spaced apart and positioned parallel with and equidistantly from the axis of the shut-off member; a single spring means loading said set of plungers; guides for said plungers to allow said plungers to reciprocate therein; a set of said plungers serving as a movable element kinematically connected with said shut-off member; and the total area of the end faces of a set of said plungers constituting the active area of the movable element.

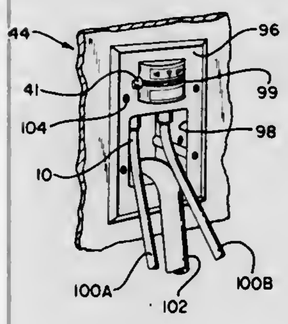
3,867,957
WASHING MACHINE WATER SUPPLY AND DRAIN FIXTURE

Albert G. Fehrm, Scituate, Mass., assignor to Symmons Industries, Inc., Braintree, Mass.

Filed Dec. 14, 1974, Ser. No. 442,408

Int. Cl. F16k *11/10;* **F16l** *5/00*

U.S. Cl. 137—360 **8 Claims**



1. An assembly for effecting connection of a washing machine to hot and cold water supply lines and a drain, said assembly comprising a housing dimensioned to be recessed in a building wall, said housing having top, bottom, rear and side walls and a hole in each of said side walls for admitting hot and cold water supply lines to said housing for connection to a duplex valve mounted in said housing, a pan in said housing overlying and supported by said bottom wall, said pan and said bottom wall having aligned openings for admitting a drain pipe to said pan through said bottom wall, means attached to said side walls for mounting said housing to structural parts of said building wall, and a cover plate removably secured to the front of said housing, said cover plate being dimensioned to project laterally beyond said top, bottom and side walls and overlap the building wall in which said housing is recessed, said cover plate having a relatively large opening for providing access to said pan and also to the outlet ports of said duplex valve and an elongate relatively small opening for permitting operation of said valve.

3,867,958
CRYOGENIC VALVE

Ernst Turnwald, Altenmarkt, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

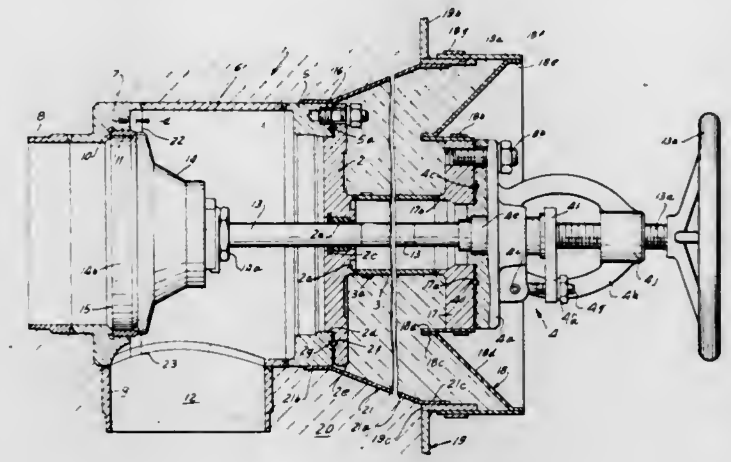
Filed June 13, 1973, Ser. No. 369,732

Claims priority, application Germany, Dec. 22, 1972, 2263064

Int. Cl. F16k *1/04*

U.S. Cl. 137—375 **2 Claims**

1. A valve for a cryogenic installation having a body of thermal insulation, said valve comprising a valve housing forming a valve chamber and provided with a pair of ports connectible in a fluid duct; a sleeve fixed to said housing and extending through said body of thermal insulation toward the exterior thereof; a valve spindle support external of said body of thermal insulation and fixed to said sleeve; a valve spindle extending axially through said sleeve and displaceable at said valve spindle support; a valve member mounted on said spindle and displaceable thereby toward and away from one of said ports; and a cylindrical smooth wall valve seat mounted in said housing around said one of said ports and engageable by said valve member, said housing being formed with a cylindrical smooth wall recess different from that of said seat whereby said recess shrinks to a greater extent than said seat and said seat is anchored into said recess by shrink fitting, said housing including a cover plate removable to afford access to said valve seat through said chamber, said sleeve being affixed to said cover plate and surrounding said spindle while being formed with a flange perpendicular to said spindle and external of said body of thermal insulation, a wall forming part of said installation and confining said body of thermal insulation, a flexible annular member connecting said flange to said wall, said valve spindle support being bolted to said flange, and an insulating cartridge received in said sleeve and interposed between said sleeve and said spindle, said annular valve seat being anchored in said recess by shrink fitting, said ports being circular and having axes lying perpendicularly to one another, said valve seat projecting annularly beyond said housing into said chamber at said one of said ports so as to lie in the axial projection of the other of said ports.



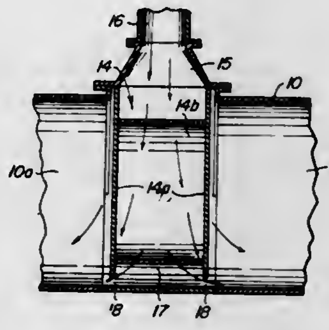
3,867,959
DOUBLE-ACTING PRESSURIZED SLIDE GATE

Bertus Moret, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 18, 1974, Ser. No. 434,432

Int. Cl. F16l *41/00*

U.S. Cl. 137—602 **5 Claims**



1. In a duct system for carrying noxious gases to one or more outlets, the combination of a duct leading to said one or more outlets and having a gateway extending transversely across said duct upstream from said one or more outlets and defining an entryway for receiving a gate; a gate sufficiently less in area than the cross-sectonal area of the interior flow passage through said duct to provide peripheral passages between said gate and the inner wall face of said duct at opposite sides, respectively, of said gateway; and means for connecting a source of pressurized air over said entryway for supplying a flow of air into said gateway and through said passages, so as to both block the flow of noxious gas past the gate and to supply air to said one or more outlets of the system.

3,867,960
FIVE-WAY REVERSING VALVE

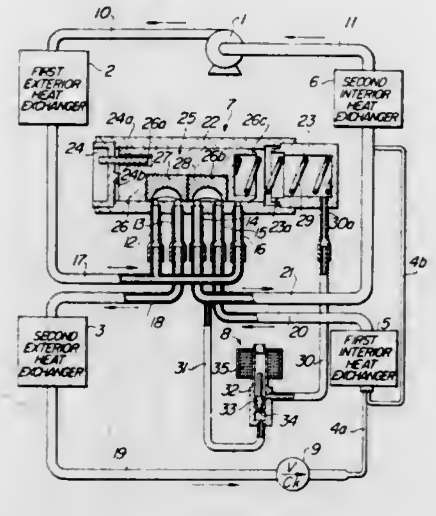
Taisei Hosoda; Hideo Uzuhashi; Nobuyuki Kobayashi, and Masaaki Tanaka, all of Tochigi-ken, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed June 19, 1973, Ser. No. 371,570

Claims priority, application Japan, Nov. 15, 1972, 47-113885

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.6 4 Claims


10
1
11
FIRST EXTERIOR HEAT EXCHANGER
2
6
SECOND INTERIOR HEAT EXCHANGER
7
24a
26a
25
22
26c
23
24
27
28
26b
24b
26
13
12
14
15
16
23a
29
30a
17
21
4b
18
20
5
SECOND EXTERIOR HEAT EXCHANGER
3
8
31
35
30
FIRST INTERIOR HEAT EXCHANGER
32
33
34
4a
19
9
V
Ck

1. A five-way reversing valve comprising:

a cylindrical body;

a cover secured to said body in a fluid-tight manner to close one end of said body;

a spring casing secured to said body in a fluid-right manner to close another end of said body;

five pipes connected to said body and being axially aligned along said body, said pipes communicating with the interior of said body;

a first of said pipes being disposed nearest said cover and the fifth of said pipes being disposed nearest said spring casing, the remaining three of said pipes being disposed between the first and fifth pipes;

plunger means slidably received within said body and provided with a concave portion formed thereon, the ends of said plunger means and said cover and spring casing defining tubular chambers in said body;

a clearance being defined between said plunger means and said body through which high pressure fluid leaks into the tubular chambers provided at both ends of said plunger means;

spring means provided in said spring casing for biasing said plunger means toward said cover;

a pipe connected to said spring casing and communicating with the interior of said spring casing and, through passage means, with the low pressure side of said valve;

a valve controlling mechanism located between said passage means for opening and closing said passage means; and

auxiliary valves loosely and independently received in said concave portion in said plunger means in such manner that each of said five pipes can be in change-over communication with an adjacent pipe of said five pipes by means of said auxiliary valves.

3,867,961
CONTROL VALVE FOR WATER CONDITIONERS

John Rudelick, Milwaukee, Wis., assignor to Calgon Corporation, Pittsburgh, Pa.

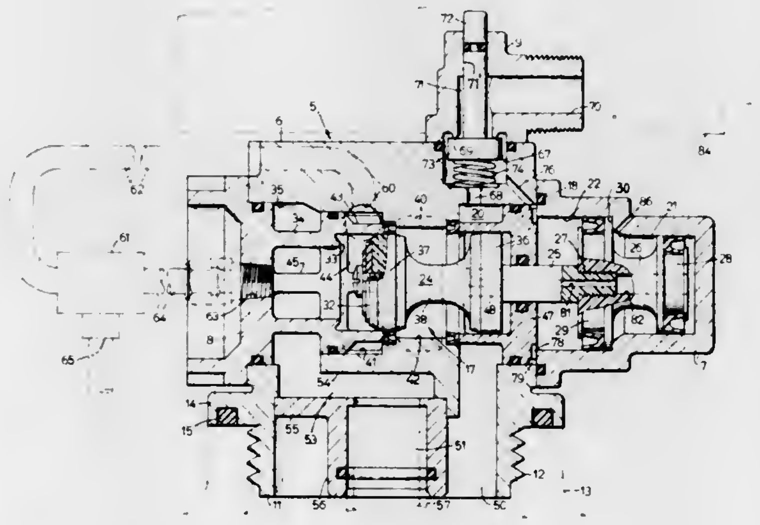
Filed Nov. 16, 1973, Ser. No. 416,613

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.29 9 Claims

1. A service and regeneration flow control valve for water conditioning apparatus, having a body with a chamber to receive a reciprocable valve spool, and wherein land means on the spool is operable to direct untreated water from an inlet port through said chamber to a first tank port in a service position of the spool at which said land means also directs treated water through said chamber to a service outlet port from a second tank port, characterized by:

- A. said body further having a drain port, an injector port communicating with the service outlet, and a brine inlet port at all times communicating with the second tank port;
- B. drain passage means in the body having one end portion communicated with the drain port and its other end portion at all times in communication with said first tank port through said chamber;
- C. said land means on the spool being operable upon movement thereof to a regenerating position spaced axially from its service position to communicate the inlet port with the injector and service outlet ports but to close it off from the first tank port and from said other end portion of said drain passage means, and to also close off the service outlet from the second tank port;
- D. hydraulic actuating means for the valve spool operable to hold the same in its service position except upon venting of a pressure chamber comprising a portion of said actuating means;
- E. a venting passage for said pressure chamber comprising a branch of said drain passage means at all times communicating with said other end portion of said drain passage means;
- F. and valve means independent of the valve spool normally closing off communication between the drain port and said one end portion of said drain passage means, but movable to an open position to effect venting of said pressure chamber and said first tank port to the drain port.



3,867,962
BEVERAGE DISPENSING VALVE

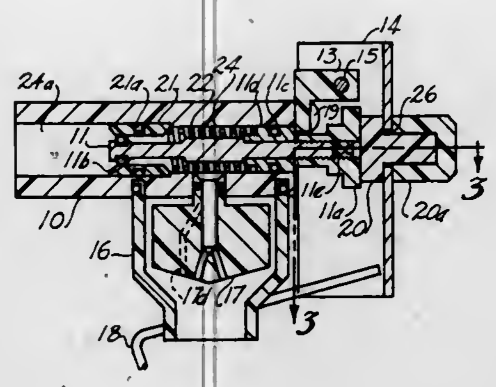
Bruce Gerrard, 126 Montgomery Ferry Dr. N.E., Atlanta, Ga. 30309

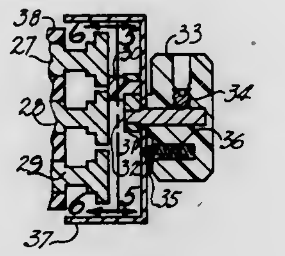
Filed Apr. 24, 1973, Ser. No. 354,084

Int. Cl. F16k *19/00*

U.S. Cl. 137—635 11 Claims

8. A beverage dispensing valve comprising a valve body, first, second and third plungers operable in said valve body, and an actuating handle, said handle comprising a main body pivotally mounted to said valve body and a selector member mounted to said main body for movement to first and second positions prior to actuation of said handle, said selector member moving integrally with said main body to contact and actuate said first and second plungers together and to contact and actuate said second and third plungers together upon respective actuations of said handle when said selector member is respectively in said first and second positions.





3,867,963
PULSATION REDUCER

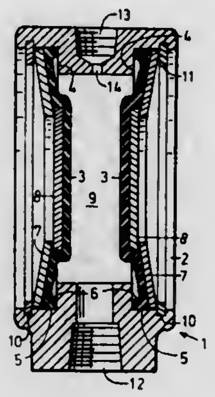
Allan Ballard, 1552 Balena Ave., Ottawa, Ontario, Canada (KIG OX3)

Filed Feb. 6, 1973, Ser. No. 330,020

Claims priority, application Canada, Nov. 14, 1972, 156304

Int. Cl. F15d *1/02*; F17d *1/10*

U.S. Cl. 138—46 11 Claims



1. A resilient wall structure means for use in an apertured housing for reducing the intensity of pressure variations in a fluid system which is subject to pulsating fluid pressure comprising;

at least one generally resilient frusto-conically shaped apertured spring washer having its peripheral edge resiliently mounted in said apertured housing and having a convex side toward an internal portion of the housing, a plate means supported in aperture covering load bearing relation by inner portions of the convex side of said at least one apertured spring washer, and

means operatively, interconnecting said at least one apertured spring washer and said plate means to retain said plate means generally concentric in said aperture covering relation against said at least one apertured spring washer, and to permit relative pivotal and radial movement therebetween on initial axial displacement and oscillation of said plate means under the influence of the pulsating fluid pressure and with respect to said peripheral edge of said at least one apertured spring washer.

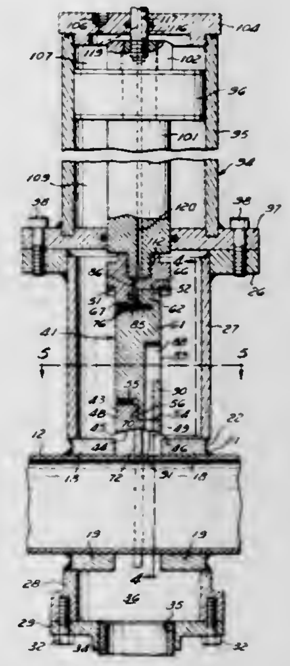
3,867,964
APPARATUS FOR PLUGGING PIPE

Ronald D. Gardner, Brunswick, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Filed Feb. 1, 1973, Ser. No. 328,740

Int. Cl. F16k *43/00*; F16l *55/10*

U.S. Cl. 138—89 14 Claims



1. Apparatus for altering fluid flow in a conduit comprising a fluid tight housing adapted to be secured to the exterior of the conduit, cutter means within said housing, actuator means operable externally of said housing for moving said cutter means from a first position external of said conduit radially through a wall of said conduit to a second position external of said conduit and diametrically opposite said first position, conduit plugging means, said cutter means carrying said plugging means into said conduit when said cutter means moves from said first position to said second position, said plugging means including an annular sealing ring having inside and outside diameters substantially equal in size to the inside and outside diameters respectively of the conduit wall, hydraulic means for moving said annular sealing ring, independently of a force developed by pressure in a section of conduit being sealed by said ring on an area defined by the interior of the ring, axially into engagement with a severed end face of said conduit wall formed by said cutter means as it is moved from said first position to said second position.

10. Apparatus for altering the flow of fluid in a conduit comprising a fluid tight housing adapted to be secured to the exterior of the conduit, means in the housing for cutting through the conduit wall to divide the conduit into two sections, said cutting means carrying selectively movable seal means to seal one section of the conduit from fluid communication with the interior of the housing, and flow passage means in said cutting means defining a flow path from the other conduit section into the interior of the housing while said one section is sealed by said sealing means.

3,867,965
LOOM

James E. Hanson, Anoka, Minn., assignor to Trend Development Corporation, Minneapolis, Minn.

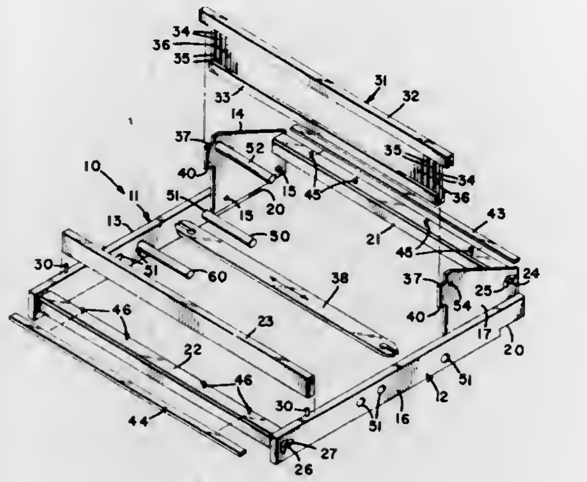
Filed Aug. 26, 1974, Ser. No. 590,249

Int. Cl. D03d *29/00*

U.S. Cl. 139—33 4 Claims

1. In a loom:

a side assembly;
means in said side assembly for pivotally mounting a warp beam and a cloth beam;
means in said assembly for receiving a cross beam so that a line between said cross beam and said warp beam defines a neutral shed for the loom;
means in said assembly for receiving a string heddle support;

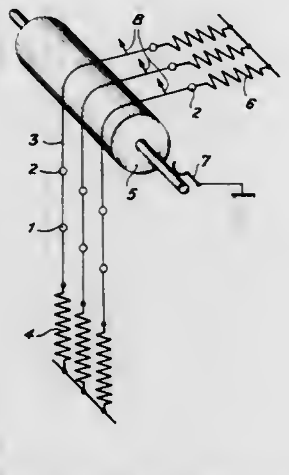


means in said assembly for maintaining a rigid heddle in both an up shed position and a down shed position, the neutral shed of said loom being the same for string heddles and for the rigid heddles;
and means in said assembly for receiving a guide for warp threads passing out of said neutral shed between the string heddles and the warp beam.

3,867,966

ELECTRO-MECHANICAL DEVICE FOR FORMING A SHED IN A WEAVING MACHINE

Dietrich Wieland, Wendelstein, Germany, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed Oct. 16, 1972, Ser. No. 297,697
Claims priority, application Germany, Oct. 16, 1971, 2151280; Nov. 13, 1971, 2156534; Nov. 13, 1971, 2156533
Int. Cl. D03c *13/00, 19/00*
U.S. Cl. 139—55 **7 Claims**

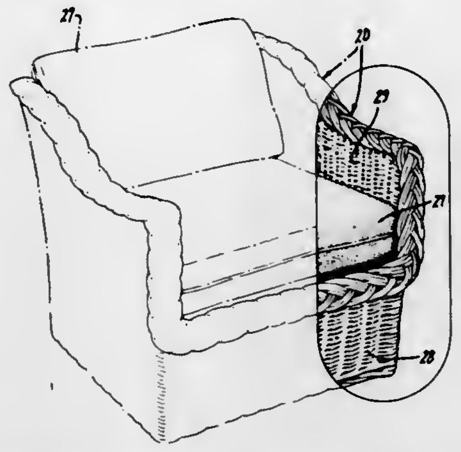


1. In combination with a plurality of heddles for forming a shed in a weaving machine; at least one rotatable drum, a plurality of electrically conductive harness cords disposed over said drum, each respective cord being connected to at least one respective heddle, [and] means for creating an electrically attractive force between selected cords of said harness cords and said drum for movement of said selected cords with said drum to displace said heddles connected thereto into a predetermined position, and means for retaining the displaced heddles in said predetermined position during deactivation of said means for creating an electrically attractive force.

3,867,967

METHOD OF FURNITURE MANUFACTURE

Peter A. Rocchia, and Robert M. Steffy, both of San Francisco, Calif., assignors to The Wicker Works, San Francisco, Calif.
Division of Ser. No. 319,553, Dec. 29, 1972, Pat. No. 3,792,899. This application Oct. 17, 1973, Ser. No. 407,101
Int. Cl. A47c *5/00*
U.S. Cl. 139—424 **8 Claims**



1. A method for forming a portion of a woven piece of furniture having a braided periphery integral with the warp of the weave and generally transverse thereto to provide structural strength to the furniture comprising the steps of
a. mounting one end of each of a plurality of flexible strands in spaced-apart, side-by-side relationship extending in a line to form the warp of the weave,
b. weaving a plurality of adjacent flexible strands on alternate sides of said warp to form the woof of the weave, extending only partially along said warp strands away from the mounted ends thereof so that a substantial portion of said warp strands extend beyond said weave, said warp and weave defining a woven surface,
c. bending a first warp strand extension toward said woven surface and in a selected direction on alternate sides of subsequent ones of said warp strand extensions in said line,
d. bending a second one of said warp strand extensions generally in said selected direction across said bent first warp strand portion on alternate sides of subsequent ones of said warp strand extensions in said line,
e. repeating steps (d) and (e) in sequence with third and subsequent warp strands to form an integral braided periphery generally transverse to the warp of the weave including the extending portions of said warp strands along said line thereacross,
f. severing warp strand portions projecting from said braided periphery, the majority of said warp strand portions changing directions in the braid at least twice to form crossing generally S-shaped curved portions before severing.

3,867,968

APPARATUS FOR BINDING MESH MATS IN STACKS

Klaus Ritter, and Hans Gott, both of Graz, Austria, assignors to Firma Evg Entwicklungs-u Verwertungsgesellschaft, Graz, Austria
Filed June 22, 1973, Ser. No. 372,591
Claims priority, application Austria, June 27, 1972, 5553/72
Int. Cl. B21f *45/00*
U.S. Cl. 140—93 D **8 Claims**

1. Apparatus for binding together aligned and stacked wire-mesh mats, wherein the improvement comprises
a binding wire feeder having an elongated slot, arranged to receive a length of binding wire bent into hairpin shape with the ends thereof protruding from said elongated slot and to push said hairpin shaped wire over aligned wires in said stack of wire-mesh mats; and
a binding head movable into alignment with said slot of said binding wire feeder and adapted to bend over the two protruding ends of said hairpin wire, thus preventing

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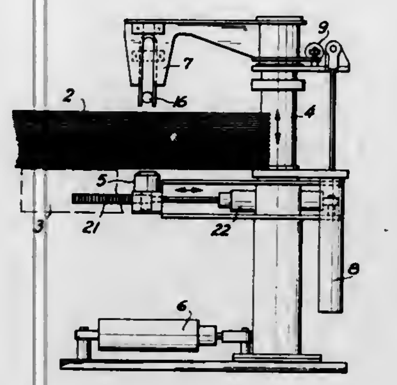
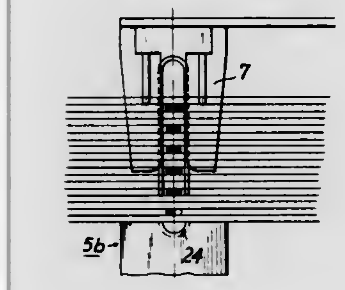
withdrawal of said hairpin wire and binding said stacked mats together,
wherein a supporting arm is provided to support said stack of mats to be bound, and



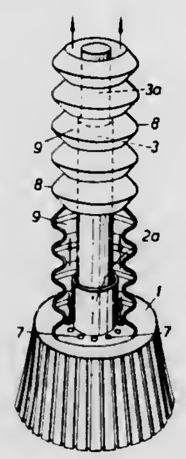


said binding-wire feeder, said binding head and said supporting arm are pivotable about an axis perpendicular to the plane of said stacked mats.

3,867,969

CONTROL OF DUST DURING HANDLING OF MATERIALS

George William Garnett, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Sept. 10, 1973, Ser. No. 395,597
Claims priority, application Great Britain, Sept. 19, 1972, 43285/72
Int. Cl. B65b *1/28*
U.S. Cl. 141—59 **8 Claims**

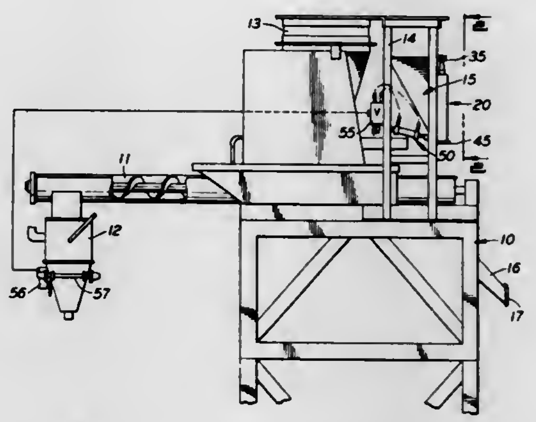


1. Apparatus for controlling dust clouds caused by the loading into containers of bulk solid material falling by gravity through a chute, comprising a base plate, an aperture substantially centrally located in the base plate and adapted to engage the lower end of the chute, a flared skirt depending from the base plate and adapted to cover the heap of material formed as the material falls from the chute, a tubular cover secured by its lower end to the base plate and which completely surrounds the aperture and encloses the chute with an annular space between the chute and the tubular cover, and a plurality of openings in the base plate, between the aperture and the tubular cover, providing access for air and dust from below the base plate into the annular space.

3,867,970

MIXING AND BAGGING MACHINE FOR DRY MIXES

James E. Winchester, Sr., 2651 MacVey, Worthington, Ohio 43085
Filed Dec. 14, 1973, Ser. No. 424,878
Int. Cl. B65b *1/12*
U.S. Cl. 141—67 **9 Claims**



1. A compartment for receiving material to be fed therefrom in preselected amounts having a substantially upright vertical wall with a vertically-extending outlet leading laterally therefrom and other wall structure cooperating therewith to feed the material by gravity into contact with said upright wall and continuously through said vertically-extending outlet, and means for controlling the flow of material through said vertically-extending outlet, said means comprising a substantially vertically disposed flow control chute extending vertically along said upright vertical wall and in lateral communication with said compartment through said vertically-extending outlet, said vertically-extending flow control chute having a downwardly-opening exit opening at its lower end through which the material which flows into and through said chute can drop, a substantially horizontally-extending gate normally located below said exit opening to close it, and means for retracting said gate to expose said opening to drop the material accumulated in said chute.

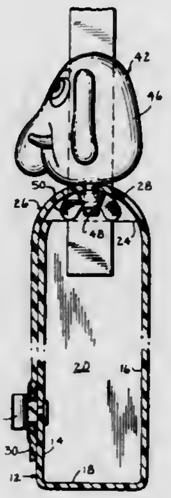
3,867,971

COMBINATION HANDBAG AND TOY, CONTAINER AND FIGURINE, OR THE LIKE

Isaac Hazan, Brooklyn, N.Y., assignor to Trissa Industries, Inc., New York, N.Y.
Filed July 19, 1973, Ser. No. 380,657
Int. Cl. A45c *1/00*
U.S. Cl. 150—28 R **8 Claims**

1. A combined support and toy or figurine carried thereby, comprising container means for containing articles, said container means having front and rear walls and an open top, and closure means operatively connected with said container means for movement between a closed position closing said container means and an open position giving access to the interior of said container means, said closure means being hinged to a top edge of said rear wall and having an upper portion extending across and closing said open top of said container means and a front portion overlapping said front wall of said container means when said closure means is in said closed position thereof, and simulating means for rendering said container means and closure means connected thereto additionally useful, said simulating means having a configuration simulating that of a living being which has a body and a head, and said simulating means including a sheet material portion carried by said front portion of said closure means and simulating said body, and said simulating means including a block portion which simulates said head and being carried by

said upper portion of said closure means at an end of said body representing a neck of the living being where the head is connected to the body, said sheet material portion of said simulating means being situated at an exterior surface area of said front portion of said closure means and said block portion of said simulating means extending outwardly from said upper portion of said closure means so that said simulating means is visible at the exterior of said container means, and fastening means fastening said block portion to said upper portion of said closure means, said closure means being made of a flexible sheet material with said front portion being swung approximately through 180° while said upper portion of said closure means is swung approximately through only 90° when said closure means is displaced from said closed to said open position thereof, so that in the open position of said closure means said block portion has with respect to said sheet material portion of said simulating means a position which is different from the relative position between said block portion and sheet material portion when said closure means is in said closed position thereof.



3,867,972

NUTS AND LOCKNUTS HELICOIDALLY COUPLED IN ONE SINGLE UNIT FOR TIGHTENING AT A CONTROLLED TORSION

Cesar Fernandez Veraud Gonzalez, Av. Unidad Modelo No. 10, Colonia Unidad Modelo, Mexico

Filed Mar. 7, 1973, Ser. No. 338,918
Int. Cl. F16b *31/02*

U.S. Cl. 151—15 **4 Claims**

1. An improved locking nut forming a single unit to exercise a determinate and controlled torque including:

a torque nut having an internal bore, top and bottom surfaces and an even number of polygonal faces of substantially equal width;

said torque nut containing first and second protuberances extending from said bottom surface of said torque nut and spaced opposite each other, each of said first and second protuberances having a width substantially no greater than the width of said faces of said torque nut;

said protuberances of said torque nut each having a bottom surface;

said torque nut having an internal threaded surface along said internal bore of said torque nut and the interior of said protuberances of said torque nut;

said bottom surfaces of said torque nut and said protuberances of said torque nut being helicoidal and inclined to the same degree, and being inclined oppositely to the inclination of said threaded surface;

a lock nut having an internal bore, top and bottom surfaces and having the same number of polygonal faces of substantially equal width as said torque nut;

said lock nut containing first and second protuberances extending from said top surface of said lock nut and spaced opposite each other, each of said first and second protuberances of said lock nut having a width substantially no greater than the width of said faces of said lock nut;

said protuberances of said lock nut each having a top surface;

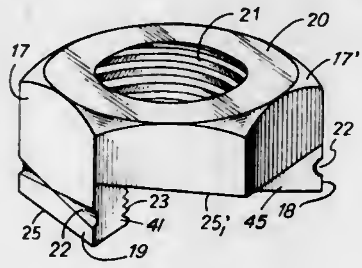
said lock nut having an internal threaded surface along said internal bore of said lock nut and the interior of said protuberances of said lock nut;

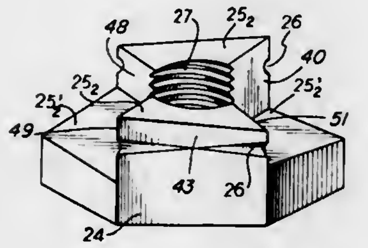
said top surfaces of said lock nut and said protuberances of said lock nut being helicoidal with the same degree of inclination as the degree of inclination of the bottom surfaces of said torque nut and its protuberances, and said top surface of said lock nut and its protuberances being inclined oppositely to the inclination of said threaded surface;

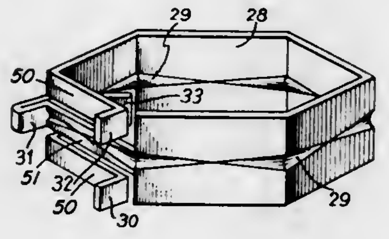
said bottom surfaces of said protuberances of said torque nut engaging said top surface of said lock nut and said top surfaces of said protuberances of said lock nut engaging said bottom surface of said torque nut when said torque nut and said lock nut are joined;

said first and second protuberances of said torque nut and said lock nut having grooves outer surfaces; and

spring means, comprising a band with said even number of polygonal sides of equal width and including inner protuberances which engage said grooved outer surfaces, for preventing slipping of the engagement between said torque nut and said lock nut.







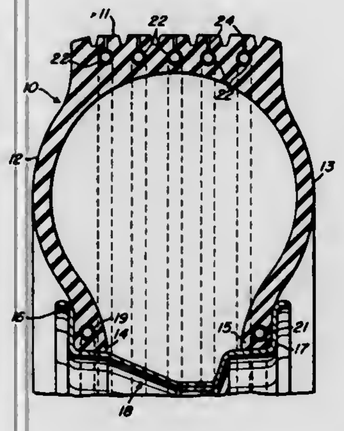
3,867,973

PNEUMATIC TIRE WITH EMBEDDED RING MEANS

Henry Cozzolino, and Robert L. Gastineau, both of Dayton, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Jan. 30, 1973, Ser. No. 328,070
Int. Cl. B60c *9/00*

U.S. Cl. 152—153 **11 Claims**



1. In a pneumatic tire having tread, side wall and bead portions, ring-like means unitarily contained in one or more portions circumferentially of the tire for reinforcement and/or cooling purposes, said ring-like means including one or more hollow ring elements in the body of the tire near the tread portion, each of said elements having vent holes therein some of which define a means providing for a flow of tire material into said ring element for anchoring purposes and others thereof providing for air flow to and from the ring element interior, said tire having its tread portion perforated to provide continuing air flow passages from the tread surface to and from the interior of said ring element.

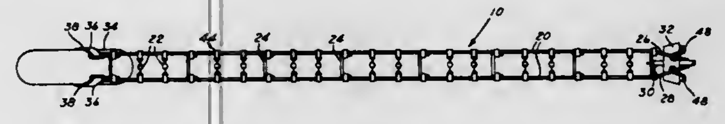
3,867,974

EMERGENCY TIRE CHAIN

Aulton E. Crockett, Rt. 2, P.O. Box 1032, Cheyenne, Wyo. 82001

Filed Sept. 6, 1973, Ser. No. 394,566
Int. Cl. B60c *27/06*

U.S. Cl. 152—213 R **6 Claims**



1. In a traction device for use with a power-driven wheel of a vehicle in which a pair of flexible, longitudinally inextensible side members have flexible cross members interconnecting the side members at longitudinally spaced locations, connection means secured to one end of the side members and adapted to be releasably connected to the vehicle wheel, and anchor means are disposed at the ends of the side members opposite to the connection means adapted to be anchored to the ground, the improvement comprising:

spacer members of limited flexibility interconnecting the side members at longitudinally spaced locations spaced between and parallel to said cross members, said spacer members being adapted to maintain a predetermined spacing between the side members and a substantially straight orientation of said flexible cross members so that the cross members are substantially perpendicular to said side members, said spacer members being formed of metal rods each having a substantially semi-circular body portion, said semi-circular body portion extending substantially normal to and downwardly from the side members, and fastening means at opposite ends of each spacer member rigidly attaching each said spacer member to said side members.

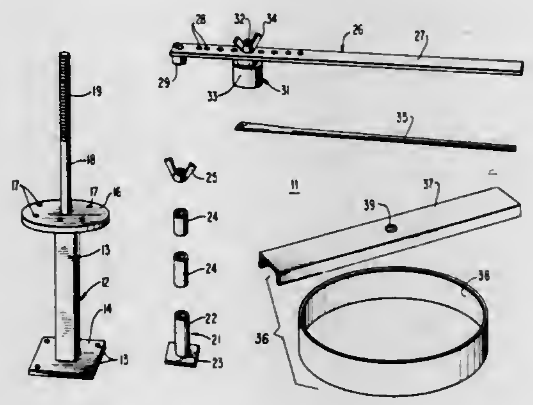
3,867,975

TIRE CHANGING TOOL

George Howard Johnson, 1045 Red Bird Rd., Augusta, Ga. 30904

Filed Feb. 23, 1973, Ser. No. 335,066
Int. Cl. B60c *25/06*

U.S. Cl. 157—1.2 **2 Claims**



1. A tool for mounting and dismounting a tire upon small diameter wheel rims having center openings therein comprising; a changer stand having a center post to which a base plate is affixed at one end and a hub plate to the other end, the hub plate being affixed perpendicularly to the center post and having lug bolt locating apertures disposed in such a pattern as to fit a variety of wheel rims, a center bolt assembly secured to the hub plate along the longitudinal axis of the changer stand, a roll bar assembly comprising an elongated roll bar with proximal and distal ends wherein a bushing is located adjacent the proximal end and is rotatively disposed upon the center bolt assembly, the elongated roll bar having a plurality of locating apertures at predetermined points along the roll bar for adjustably mounting a bead roll assembly thereon, the bead roll assembly comprising a through bolt and a cylindrical roller rotatively mounted upon the through bolt, said bead roll assembly being selectively positioned between the distal and proximal ends of the roll bar assembly to operatively engage the bead portion of the tire engaging the wheel rim, reinforcing means removably associated with the center bolt assembly, said means including an adaptor having an elongated tubular portion which is capable of being placed about the center bolt assembly and located in close juxtaposition with the hub plate, an apertured base portion fixedly attached to one end of the tubular portion so that it lies adjacent to the hub plate whereby the elongated tubular portion of the adaptor cooperates with the base portion to reinforce the center bolt assembly.

3,867,976

ELECTROFLUX MELTING METHOD AND APPARATUS

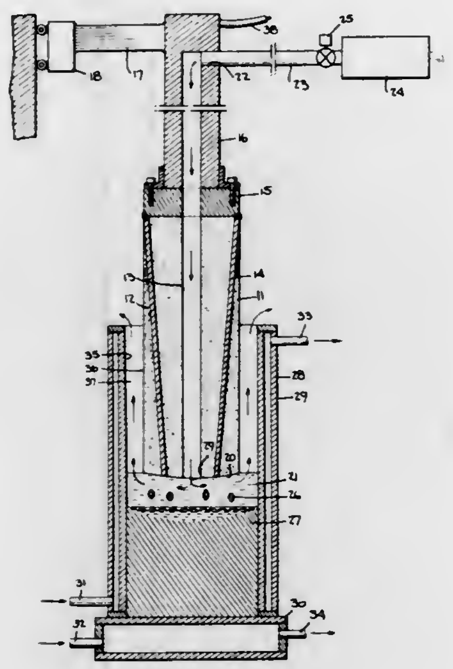
Francis Sardovia Suarez; William Lawrence Mankins, both of Huntington, W. Va., and James Earl Roberts, Proctorville, Ohio, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,235
Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **8 Claims**

1. In an electroflux melting process wherein metal is melted in a container by heat from an electric current passing be-

tween an electrode and a bath of molten flux in the container and in contact with the electrode, the improvement comprising passing a flow of inert gas through the molten flux in a metal-melting zone of the flux bath.



3,867,977
METHOD OF CASTING COPPER ANODES USING A PREHEATED MOLD COATING

Ramon C. Cruz, Hayden; Clyde L. Light, Winkleman, and Donald J. Nelson, Kearny, all of Ariz., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 4, 1974, Ser. No. 430,740

Int. Cl. B22c *3/00*

U.S. Cl. 164—72 **4 Claims**

1. In the casting of copper anodes wherein copper molds are successfully filled with molten copper and the solidified anodes are successively removed therefrom on a cyclic basis, and coatings of a release material are applied as a slurry thereof in a liquid medium to the internal surfaces of the respective molds prior to the introduction of the molten copper thereinto, the improvement wherein the slurry is heated and applied to the interior surfaces of said molds at a temperature of from about 150° to about 200°F.

3,867,978
METHOD AND APPARATUS FOR INTRODUCTION OF STEEL INTO A CONTINUOUS CASTING MOLD

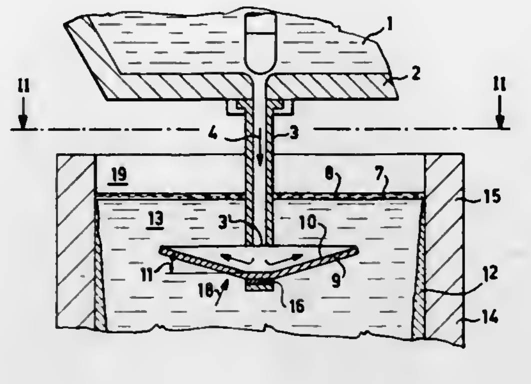
Nils Erik Johansson, Bedford Hills, N.Y., and Michael Cygler, Colonia, N.J., assignors to Concast Incorporated, New York, N.Y.

Filed Apr. 12, 1973, Ser. No. 350,597

Int. Cl. B22d *11/10*

U.S. Cl. 164—82 **27 Claims**

1. A method for the introduction of steel into the liquid metal pool of a continuous casting mold of a continuous casting installation, wherein a casting jet which is enclosed at its periphery at all sides for casting of slabs or blooms is guided beneath the level of the molten bath of the liquid metal pool in the continuous casting mold and thereafter deflected out of its original position, the improvement comprising the steps of guiding the casting jet substantially immediately after its deflection substantially only at its underside to impart thereto an upwardly directed flow component and freely exposing the upper surface of the casting jet, and permitting the freely exposed upper surface of the casting jet to freely admix with the steel of the liquid metal pool.



3,867,979
AIR-CONDITIONING METHOD AND APPARATUS WITH HEAT PUMP

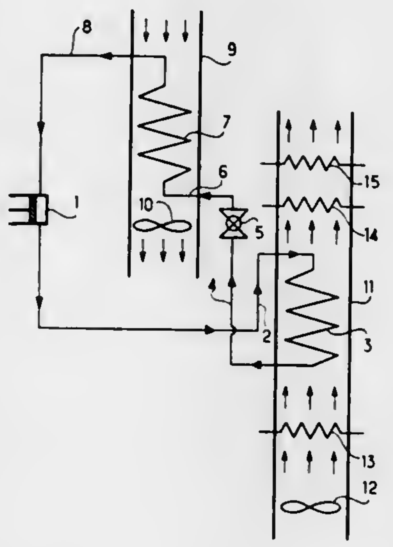
Jean Carrasse, Antony, and Denise Desbrosses, Villemoisson s/Orge, both of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed July 6, 1971, Ser. No. 159,681

Claims priority, application France, July 7, 1970, 70.25409

Int. Cl. F25b *29/00*

U.S. Cl. 165—29 **5 Claims**



1. Air-conditioning apparatus employing a heat pump of the kind continuously circulating air between a space to be conditioned and external ambient air and continuously performing inverse heat exchange operations relative to a refrigerant respectively on the intake air to said space and on the exhaust air therefrom, comprising

- a compressor, a condenser, and an evaporator c onnected in a closed circuit to form a heat pump and providing for the circulation of a refrigerant;
- means included in said circuit between said condenser and said evaporator for the expansion of said refrigerant;
- a first duct including air moving means for drawing exterior air over said condenser into an enclosed space;
- a second duct including air moving means for the exhaust of interior air over said evaporator from said enclosed space;
- and means included in said first duct for raising the temperature of condensation of said refrigerant within said condenser by reducing the cooling effect of the flow of exterior air over said condenser.

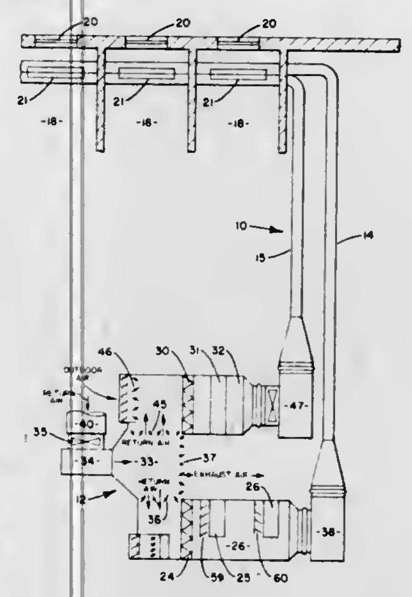
3,867,980
AIR CONDITIONING SYSTEM

Darwin G. Traver, DeWitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,076

Int. Cl. F24f *13/06*

U.S. Cl. 165—54 **2 Claims**



1. An air conditioning system for conditioning the air in a plurality of enclosed areas in a building, each of the enclosed areas having a peripheral portion requiring conditioned air having a variable temperature and an interior portion requiring conditioned air at a constant temperature, said system comprising:

- a. conditioned air supply terminal disposed in the ceiling of an individual enclosed area;
- b. first central station conditioning apparatus to provide conditioned air at a varying temperature level;
- c. means to supply said varying temperature conditioned air to a first portion of said air terminal;
- d. second central station conditioning apparatus to provide conditioned air at a predetermined temperature level;
- e. means to supply said conditioned air from said second central station apparatus to a second portion of said air terminal, said terminal including means to maintain the conditioned air in said first portion separate from said conditioned air in said second portion; and
- f. said terminal further comprising discharge means, a first section thereof being in communication with said first portion of said terminal, said first section directing the varying temperature conditioned air across the ceiling towards the peripheral wall of said area, said conditioned air compensating for transmission gains or losses caused by heat being transmitted through said peripheral wall, a second section of said discharge means being in communication with said second portion of said terminal to discharge the conditioned air from said second portion across the ceiling towards the interior portion of said area.

3,867,981
HEAT EXCHANGE STRUCTURE

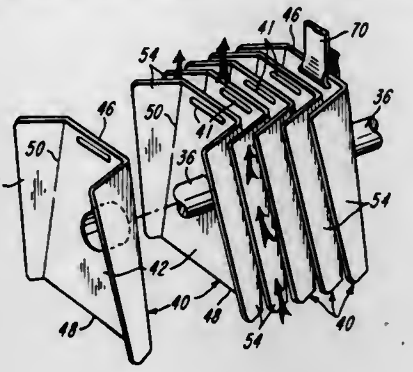
Thomas D. Monroe, Memphis, Tenn., assignor to Robbins & Myers, Inc., Springfield, Ohio

Filed Sept. 29, 1972, Ser. No. 293,476

Int. Cl. F24h *3/00;* **F28f** *1/30*

U.S. Cl. 165—55 **4 Claims**

1. In a heat exchanger including an elongated housing adapted to be mounted adjacent a baseboard, an elongated heating member extending longitudinally within said housing, and a plurality of horizontally spaced vertical fins each having an opening for receiving said heating member and in heat conducting relation therewith, the improvement wherein each of said fins includes a trapezoid-shaped base wall integrally connecting a pair of inclined downwardly facing flanges each projecting outwardly from said base wall to form an obtuse angle therewith, each of said fins being positioned in interfitting relation with each adjacent fin and with the corresponding adjacent said flanges disposed in overlapping parallel spaced relation, and the cross-section area between each pair of adjacent fins progressively decreasing from the bottom of the fins towards the top of the fins to provide for scrubbing of the air with said downwardly facing inclined flanges of each fin and a progressively increasing velocity of the heated air flowing upwardly between said fins.



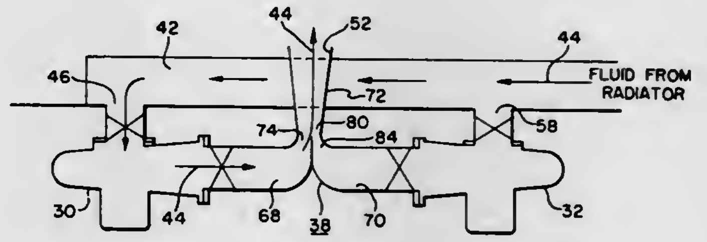
3,867,982
ELECTRICAL APPARATUS HAVING A STATIC VALVE SYSTEM

Dale White, Muncie, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 31, 1973, Ser. No. 411,498

Int. Cl. F28d *15/00;* **H01f** *27/10*

U.S. Cl. 165—107 **8 Claims**

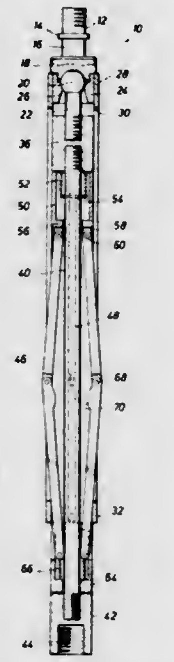


1. An enclosure for electrical apparatus, comprising:

- a tank containing a fluid coolant;
- radiator means which is attached to said tank and through which the coolant flows;
- header means into which the coolant which flows through said radiator means is directed;
- first and second pumps each having an intake opening and a discharge opening, with the intake opening of each pump connected in flow communication relationship with an opening in said header means; and
- a discharge tube having a first opening connected in flow communication relationship with the discharge opening of said first pump, a second opening connected in flow communication relationship with the discharge opening of said second pump, and a third opening located in flow communication relationship with the coolant in said tank; said discharge tube having a first restriction located between the first opening and the third opening, and a second restriction located between the second opening and the third opening, with the size of the first restriction having adequate dimensions to provide a pressure head at the second restriction, due to fluid which flows through the first restriction when the first pump is operating, which is substantially equal to the pressure head of the fluid at the intake opening of the second pump, and with the size of the second restriction having adequate dimensions to provide a pressure head at the first restriction, due to fluid which flows through the second restriction when the second pump is operating, which is substantially equal to the pressure head of the fluid at the intake opening of the first pump.

3,867,983
KICK-OVER TOOL

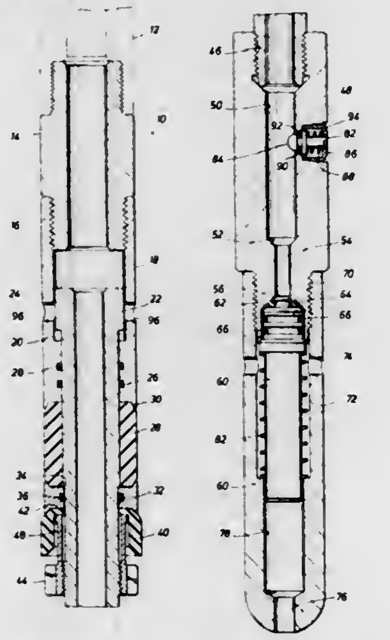
William C. Neal, Rt. 2 Box 23-B, Cut Off, La. 70345
Continuation-in-part of Ser. No. 338,105, March 5, 1973, Pat. No. 3,828,853. This application Feb. 4, 1974, Ser. No. 439,082
Int. Cl. E21b *7/06*
U.S. Cl. 166—117.5 10 Claims



1. A kick-over tool for installing or removing apparatus in side pockets in wells, comprising:
an elongate body;
swivel means at the top of said elongate body; lock means immobilizing said swivel means, said lock means incorporating a telescoping sleeve about said body which has one position locking said swivel means;
centering arm means on said body at multiple locations about the circumference thereof;
said sleeve means having openings through which said arm means extend, said openings selectively maintaining said arm means in withdrawn and extended positions;
means at the lower end of said elongate body adapted to be connected to an installation or retrieval tool; and,
said lock means and said sleeve means enabling selected extension of said arm means to cause said elongate body to move about said swivel means.

3,867,984
TUBING PLUG

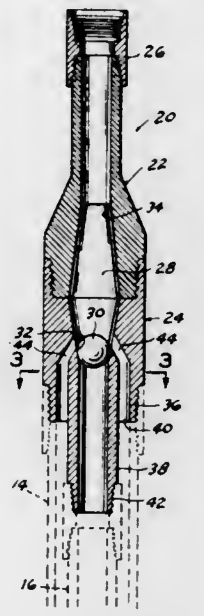
Alex Dufrene, P.O. Box 194, Des Allemands, La. 70030
Continuation-in-part of Ser. No. 308,327, Nov. 21, 1972, Pat. No. 3,809,157. This application Sept. 10, 1973, Ser. No. 396,091
Int. Cl. E21b *33/128*
U.S. Cl. 166—188 8 Claims



1. A plug for use in a tubing string comprising:
a hollow, elongate outer mandrel;
an elongate, hollow inner mandrel telescoped within said outer mandrel and movable relatively upwardly and downwardly thereof and having a portion extending therebelow;
an annular, radially outwardly expandable member received in telescoping arrangement about the lower portion of said inner mandrel and abutting the lower end of said outer mandrel;
means received on the exterior of the lower portion of said inner mandrel below said expandable member for abutting the lower portions thereof and capturing said expandable member for radial expansion on upward movement of said inner mandrel;
means for selectively closing the lower portion of said outer mandrel against the upward flow of fluid through the tubing string;
an axial passage communicating through said inner mandrel;
a valve cage of elongate external configuration connected with said passage;
check valve means in said valve cage including a valve element and a cooperative valve seat;
opening means in said valve cage to the exterior from said passage means with said valve means interposed therebetween to limit flow in one direction through said passage means; and,
a compressible spring operable between said outer and inner mandrels selectively moving them relatively to expand said expandable member.

3,867,985
APPARATUS FOR AND METHOD OF PREVENTING BLOW-OUT WHILE REMOVING A FISH WITHIN WASH PIPE FROM A BOREHOLE

Thelton E. Wilkinson, P.O. Box 320, Houma, La. 70091
Filed Jan. 11, 1974, Ser. No. 432,787
Int. Cl. E21b *31/00;* **F16k** *17/24*
U.S. Cl. 166—224 A 2 Claims



2. A blow-out control tool for a well containing a pair of concentric well strings, comprising:
an elongated sleeve bushing including a top sub coaxially joined with a bottom sub and adapted to be connected, at its depending end, with said well strings,
the bores of said top sub and said bottom sub being divergently tapered from a point intermediate their respective ends toward their juncture to define a valve containing chamber intermediate the ends of said sleeve bushing and a valve seat at the respective end limit of the valve containing chamber,

said bottom sub having at least one port in its wall forming a fluid passageway between its depending end and the valve chamber above the lowermost valve seat; and,
fluid flow direction control including a valve within said sleeve bushing.

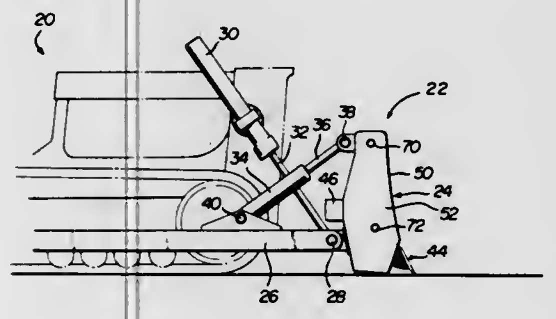
3,867,986
METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A SUBTERRANEAN FORMATION

Claude T. Copeland, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 28, 1974, Ser. No. 437,443
Int. Cl. E21b *43/04, 33/138*
U.S. Cl. 166—276 10 Claims

1. A method of forming a permeably consolidated particulate mass in communication with a permeable subterranean formation which comprises:
a. forming a pumpable slurry by mixing together a particulate material, an epoxy resin-solvent mixture, a curing agent, a coupling agent, a carrier liquid and from about 0.1 to about 1 percent by volume based on the volume of said carrier liquid of an organic anionic surfactant, said particulate material is present in an amount ranging from 7 to about 20 pounds per gallon of liquid in said slurry, said resin-solvent mixture comprises an epoxy resin and an organic solvent for said resin which in conjunction with the resin is only partially miscible in the carrier liquid at ambient temperatures, said resin being present in an amount ranging from about 2 to about 10 pounds per 100 pounds of particulate material, and said resin solvent mixture containing from about 55 to about 85 per cent by weight of said resin,
b. introducing said slurry through a well bore and into communication with said permeable formation, and
c. curing said slurry in place to form a consolidated permeable mass.

3,867,987
VIBRATORY BULLDOZER BLADE

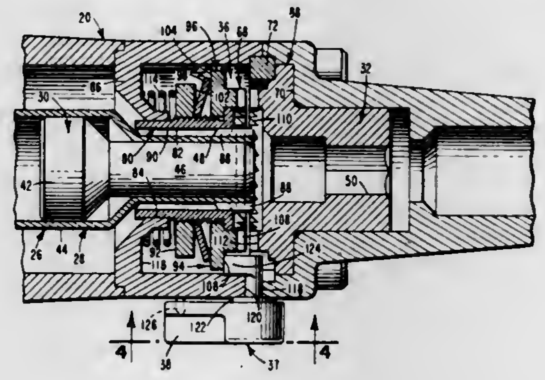
David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.
Filed July 13, 1973, Ser. No. 378,869
Int. Cl. A01b *35/32*
U.S. Cl. 172—40 25 Claims



1. A vibratory plow, comprising, in combination, a plow blade having a relatively rigid lower cutting edge portion and a plurality of separate, upwardly extending resilient arms integral with said lower edge portion, a structural support on opposed sides of said blade pivotally supporting said arms on first and second common fixed pivot axes, said first common fixed pivot axis located adjacent the upper distal ends of said arms and said second common fixed pivot axis spaced between said first pivot axis and said lower blade edge portion, and a vibrator means connected to said blade between said first and second blade pivot axes adapted to vibrate said arms and said lower cutting edge portion about said common axes.

3,867,988
POWER TOOLS

Heinrich P. Koehler, 212 Robinhood La., Camillus, N.Y. 13031, assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Feb. 2, 1973, Ser. No. 328,914
Int. Cl. B25d *11/00*
U.S. Cl. 173—48 5 Claims



1. A power driven device, comprising: a casing; a tool holder rotatably mounted in said casing; means which can be cycled through impacting and return strokes for imparting axial impacts to a tool mounted in said tool holder; means including a driving member and a driven member having means providing a drive connection therebetween for so connecting said impact imparting mechanism to said tool holder that said mechanism rotatably indexes said tool holder and the tool mounted therein during one of the strokes in each cycle thereof but does not effect rotation of the tool holder in the other of said strokes; and means selectively operable to effect a relative displacement between said driving and driven members which will interrupt the drive connection therebetween so that said tool can be axially impacted without rotating it, the last-mentioned means including a shaft rotatable in said casing about an axis normal to the path of relative movement between the driving member and the driven member, cam means extending from said shaft which is engageable with one of said driving and driven members, and an actuator located externally of the casing and rotatable with said shaft for turning said shaft and causing the cam means to displace the member engageable thereby relative to the other of said driving and driven members.

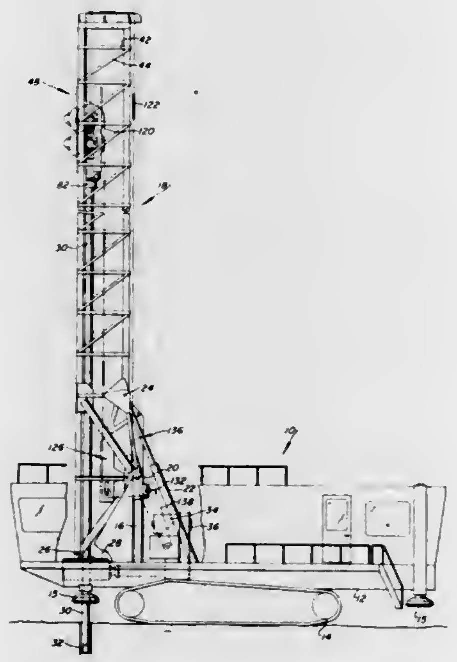
3,867,989
PULLDOWN MECHANISM FOR ROTARY DRILL APPARATUS

Robert W. Hisey, Richardson, and Ray M. Mitchhart, Dallas, both of Tex., assignors to Gardner-Denver Company, Quincy, Ill.
Filed May 21, 1973, Ser. No. 362,576
Int. Cl. E21b *15/00, 19/08*
U.S. Cl. 173—147 12 Claims

1. In an earth drilling apparatus:
an elongated upstanding mast;
a rotatable drill string including at least one elongated drill pipe section;
rotary drive means engaged with said drill pipe for rotating said drill string;
a frame including coupling means mounted thereon and connected to one end of said drill pipe and mounted on said mast for linear movement therealong to transmit pulldown and hoisting forces to said drill string, first and second rotatable shafts independently mounted on said frame in spaced apart and parallel relationship and including means positively engaged with means mounted on said mast for effecting movement of said frame along said mast to exert a pulldown force on said drill string in response to rotation of said shafts;
a pair of elongated flexible chains forming closed loops and respectively drivingly engaged with sprockets fixed on

said shafts and on a drive shaft mounted on said apparatus;

a pair of tensioning devices, one engaged with each chain of said pair, each tensioning device including chain engaging means mounted for movement on a frame and a pressure fluid cylinder connected for biasing said chain engaging means to apply tensioning forces to said chain, and said cylinders are interconnected so that the fluid pressure in said cylinders provides equal biasing forces on said chain engaging means to thereby apply substantially equal tensioning forces to each of said chains and substantially equal driving torque on said shafts; and



a second pair of tensioning devices, one tensioning device engaged with each chain of said pair, each tensioning device of said second pair including rotatable chain engaging means disposed for movement on a frame and pressure fluid cylinder means for engaging said rotatable chain engaging means to apply chain tensioning forces thereto and adapted to permit movement of said rotatable chain engaging means in response to a change in chain path length between said drive shaft and said chain engaging means on said tensioning devices.

3,867,990
WEIGHING APPARATUS FOR TRUCK AND VEHICLE LOADS

Malcolm Anthony Askew, 64 Moonshine Rd., Upper Hutt, New Zealand

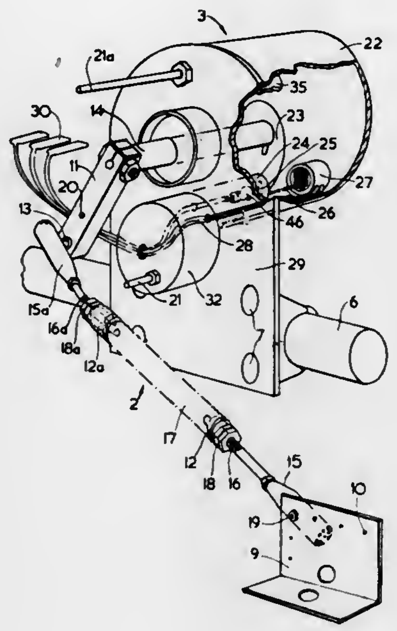
Filed May 23, 1974, Ser. No. 472,769

Claims priority, application New Zealand, June 1, 1973, 170913

Int. Cl. G01g *19/08*

U.S. Cl. 177—137 **12 Claims**

1. An apparatus for providing an indication of the weight of a load on a vehicle or on any part of the vehicle comprising a sensing means operable between a moving part and a stationary part of the vehicle and sensing the distance between the stationary part and the moving part, a transducer unit converting any alteration of the said distance detected by the sensing means into a proportional electric property and an electrical gauge receiving the output from said transducer unit characterised in that the transducer unit includes a spindle associated with a light beam, a shutter for the light beam and a photoelectric cell receiving the light beam, the arrangement being such that alteration of the said distance detected by the sensing means is followed by proportional rotation of the spindle which causes the light beam to be proportionately modified by the shutter in a manner which is detectable by the photoelectric cell and converted into a proportional electric property.



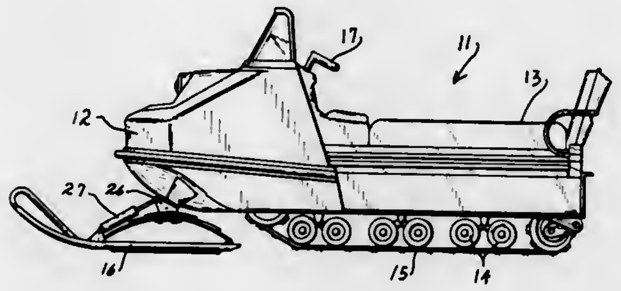
3,867,991
SHOCK ABSORBING SUSPENSION SYSTEM FOR A SNOWMOBILE

Ronald I. Brandli, Roseau, Minn., assignor to Textron Inc., Providence, R.I.

Filed Nov. 19, 1969, Ser. No. 877,943

Int. Cl. B62m *27/00*

U.S. Cl. 180—5 R **8 Claims**



1. A snowmobile having at least one relatively rigid front end supporting ski connected by suspension apparatus to a rotatable steering rod, said suspension apparatus comprising a curved leaf spring having opposite ends connected to said ski,

bracket means secured to a central portion of said leaf spring and connected to said rotatable steering rod for movements of said ski in an essentially horizontal plane to guide the snowmobile and in an essentially vertical plane to compensate for irregularities in the terrain,

a first mount rigidly attached to said ski and a second mount operatively connected to said curved leaf spring and,

shock absorber means, which restricts motion in at least one direction, having one portion pivotally attached to said first mount and another portion pivotally attached to said second mount whereby vertical movement between said leaf spring and said ski is damped.

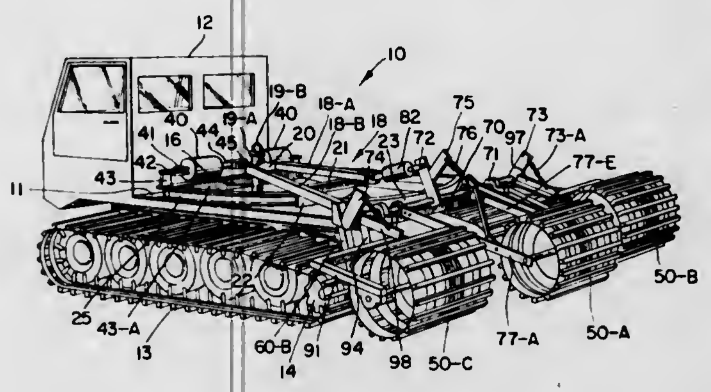
3,867,992
LOAD TRANSFERRING HITCH FOR A VEHICLE

Donald H. Waterman, Poland, Maine, assignor to Valley Engineering, Inc., Gray, Maine

Continuation-in-part of Ser. No. 190,362, Oct. 18, 1971, Pat. No. 3,768,583, which is a division of Ser. No. 859,945, Sept. 22, 1969, Pat. No. 3,652,106. This application Mar. 7, 1973, Ser. No. 338,827

Int. Cl. B62d *53/00*

U.S. Cl. 180—14 B **3 Claims**



1. In apparatus of the character described, a vehicle, a device to be drawn thereby, a frame member for connecting the vehicle and the device to be drawn, said vehicle comprising means for propelling it which includes means for rotation in contact with the surface upon which it is moved and means for driving said propelling means, hollow substantially vertical pivot means attached to said vehicle without universal joints and located substantially at its center of draft, said device to be drawn comprising elongate means rotatable about an axis with its arcuate periphery in contact with the surface upon which it is moved, means for mounting the forward end of said frame member for rotation about the axis of said substantially vertical pivot means, substantially vertical drive means rotatably positioned in said substantially vertical pivot means, means for driving said substantially vertical drive means from said means for driving the vehicle propelling means, power output means connected to the upper end of said substantially vertical drive means and means for rotating the device to be drawn connected to said power output means, said means for rotating the device to be drawn comprising a first drive shaft connected to said power output means and extending longitudinally of the frame member, a second drive shaft extending transversely of the frame member, means for rotating the second drive shaft from the first drive shaft and means for rotating said elongate means from said second drive shaft, said means for rotating said elongate means comprising rod means extending transversely of the vehicle, idler sprocket means rotatably mounted on said rod means and means for driving said elongate means operatively connnected to said idler sprocket means.

3,867,993
COLLAPSIBLE AND MOTORIZED CART

Kozaburo Iizuka, Yokohama, Japan, assignor to J. Osawa & Co., Ltd., Tokyo, Japan

Filed May 24, 1973, Ser. No. 363,572

Claims priority, application Japan, June 5, 1972, 47/65427

Int. Cl. A63b *55/08*; B62d *51/04*

U.S. Cl. 180—19 R **5 Claims**

1. A collapsible motorized cart comprising:

a hollow main column;

a handle having one end pivotally coupled to an uppor portion of said main column for movement of said handle to a collapsed position adjacent said main column;

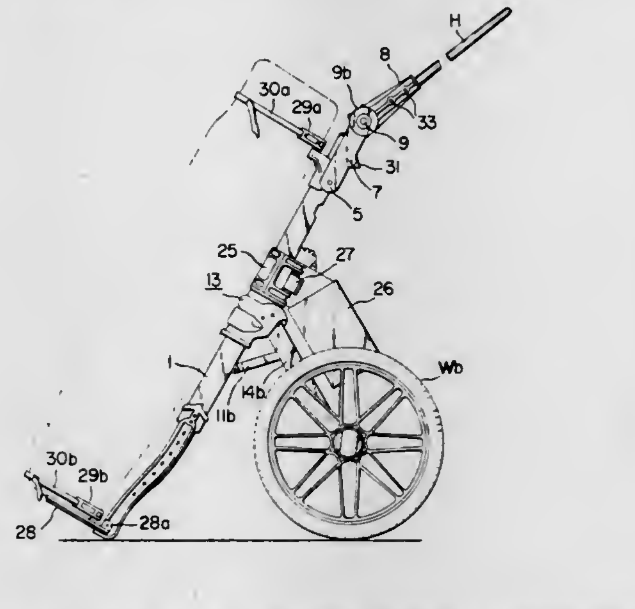
an elongated sliding link positioned within said main column;

a driving link having one end pivotally coupled to an upper end of said sliding link, and another end pivotally coupled to said handle at a location spaced from said one end of said handle;

a pair of cart wheels;

a pair of DC motors, one of said motors coupled to one of said wheels and the other of said motors coupled to the other of said wheels, whereby each of said wheels is driven by an independent motor;

a pair of hollow legs, each having one end pivotally coupled to a corresponding one of said wheels, and another end pivotally coupled to a lower portion of said main column so that both legs extend outwardly from one side of said main column;



a pair of leg links, each positioned within a corresponding one of said hollow legs and having one end pivotally coupled to a corresponding one of said wheels and another end pivotally coupled to said lower portion of said main column;

a pair of supporting arms, each having one end pivotally coupled to a lower end of said sliding link, and another end pivotally coupled to a corresponding leg at a position between the ends of said leg, whereby movement of said handle from an extended position to said collapsed position moves said legs from a spread to a closed position.

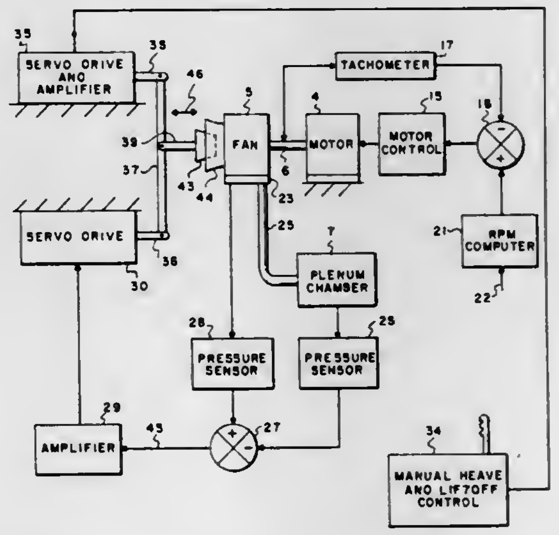
3,867,994
SURFACE EFFECT VEHICLE CONTROL SYSTEM

Joseph E. Zupanick, Richardson, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Sept. 10, 1973, Ser. No. 395,670

Int. Cl. B60v *1/04*

U.S. Cl. 180—118 **14 Claims**



1. A surface effect vehicle control system which comprises: means for blowing air; means connected to the air blowing means for communicating air; means connected to the air communicating means for containing air on the underside of the vehicle; first pressure sensing means in the air containing means; second pressure sensing means in the air blowing means; and means for regulating the amount of air entering

the air blowing means in response to the first and second pressure sensing means.

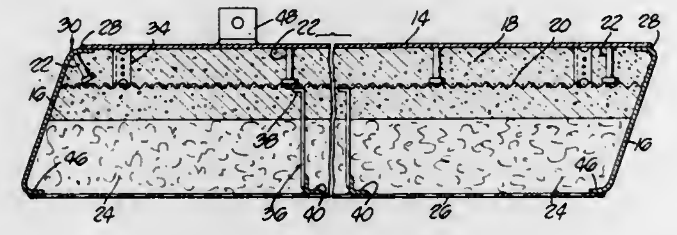
3,867,995
HIGH DENSITY SOUND TRANSMISSION LOSS SYSTEM

Guy J. Sanders, Rolling Hills Estate, Calif., assignor to Fair Company, El Segundo, Calif.

Filed Mar. 1, 1974, Ser. No. 447,136

Int. Cl. E04b *1/84*

U.S. Cl. 181—33 G **18 Claims**



1. A high density sound transmission loss panel comprising a steel housing, a layer of concrete disposed within said housing, a layer of sound absorbing material disposed within said housing inwadly of said concrete, an inner perforated sheet, said sheet extending across said housing and being affixed thereto theeby defining the inner facing od said panel.

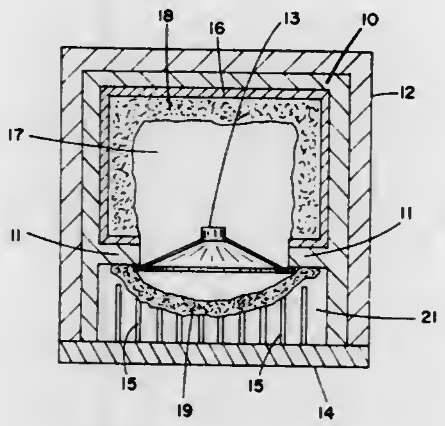
3,867,996
SPEAKER ENCLOSURE

Nils Lou, Saint Paul, Minn., assignor to Modular Sound Systems, Inc., Burnsville, Minn.

Filed Nov. 21, 1973, Ser. No. 418,092

Int. Cl. G10k *13/00;* **H04r** *1/28*

U.S. Cl. 181—148 **10 Claims**



1. A high fidelity speaker enclosure for the production of lower frequencies comprising a speaker and a closed housing having first and second compartments therein with support means between said two compartments to hold the speaker between the said two compartments, the first compartment adjoining the back side of the speaker and being sealed and acoustically damped, and the second compartment being in communication with the front of the speaker and having a plurality of narrow slots therein to allow passage of predominently low frequency acoustical energy from the speaker, and including a dome shaped acoustical filtering pad positioned in front of the speaker in said second compartment.

3,867,997
GUARD RAIL SUPPORT FOR SCAFFOLD

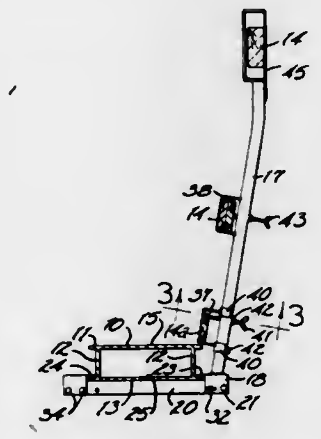
Thomas Hyslop, Jr., 414 N. Sycamore, Spokane, Wash. 99202

Filed Dec. 26, 1973, Ser. No. 427,833

Int. Cl. E04h *17/14;* **E04g** *1/16*

U.S. Cl. 182—113 **5 Claims**

1. A removable guard rail support for an elongated scaffolding platform having horizontal first and second upwardly facing surface areas adjacent transversely opposed sides and a downwardly facing area spaced elevationally below said first and second upwardly facing surfaces, said guard rail support comprising:
- an upright post;
- first bracket means fixed to one end of the post for engaging said platform along a portion of the first upwardly facing surface area;
- a crossbar having one end thereof mounted to the first bracket means for pivotal movement about a pivot axis to an operative position wherein said crossbar engages the downwardly facing surface;



- second bracket means provided at the remaining end of the crossbar for engaging said platform along a portion of the second upwardly facing surface area with said crossbar in said operative position;
- locking means interconnecting the first bracket and the crossbar for selectively locking the crossbar in the operative position against relative angular movement about the pivot axis; and
- guard rail mounting means on said upright post for releasably receiving and supporting a horizontal guard rail.

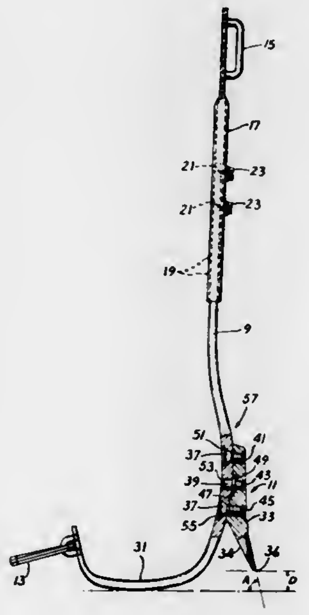
3,867,998
REPLACEABLE GAFF CLIMBER

Alexander J. Joseph, Glenview, Ill., assignor to Mathias Klein and Sons, Inc., Chicago, Ill.

Filed Nov. 9, 1973, Ser. No. 414,263

Int. Cl. A63b *27/00*

U.S. Cl. 182—221 **9 Claims**



1. A climber comprising a leg iron formed generally for attachment alongside a portion of a human leg, the portion extending from one side of the calf down and under the instep of the foot to the other side of the foot; a sleeve movably attached to the calf end of the leg iron and adapted for adjustment to extend the length of said iron; a strap and means for retaining said strap at either end of said leg iron, said strap adapted to encircle and tighten against the portion of the leg adjacent the respective ends of said leg iron; a gaff removably attached to said leg iron in a three point mounting arrangement, said arrangement providing a secure footing and safety for a person using said climber while affording the loss of one of said three mounting points, said gaff being located on a portion of said iron adjacent the position of the foot and disposed so as to point generally downwardly when said climber is attached to the leg, said gaff having a body and a mounting face on one side of said body at the point of attachment conforming to the shape of the complementary portion of said leg iron and three openings in the face, said three openings being aligned and the alignment being longitudinal of the body of said gaff, the walls defining two of said three openings being threaded internally and the walls defining the third opening being smooth; screw means disposed in said two threaded openings and through said leg iron for securely attaching said gaff to said iron; a pin disposed in said third opening of said gaff and extending into said leg iron; and means for retaining said pin in said gaff, said retaining means including a counter-bore adjacent the mounting face in said third opening of said gaff and a shoulder on said pin, the shoulder being disposed in the counter-bore and adjacent the surface of said leg iron so that said pin is captured by the interrelated structures of the shoulder, the walls defining the counter-bore and the adjacent mounting surface of the leg iron when the gaff is mounted to said leg iron.

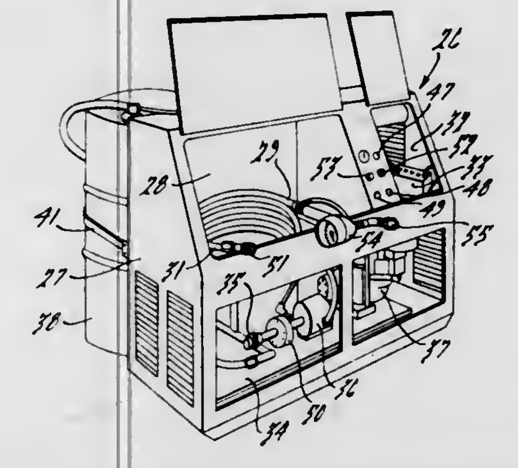
3,867,999
METHOD AND APPARATUS FOR CHANGING LUBE OIL

Robert G. Cox, Rives Junction, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Mar. 15, 1972, Ser. No. 234,944

Int. Cl. F01m *11/04*

U.S. Cl. 184—1.5 **3 Claims**



1. In an apparatus for changing the lube oil of an engine having a dipstick and a crankcase oil pan with a bottom drain hole, an assembly comprising an oil change hose having a connector at one end mounted in said drain hole and a self-sealing coupling half at the other end, means securing said other end adjacent said engine, a container for old oil, evacuation hose and pump means comprising an evacuation pump and an evacuation hose, the hose having a self-sealing coupling half connectable to said assembly for drawing off the old oil from said pan to said container, a closed new oil container, dispensing hose and pump means comprising a dispensing pump and a dispensing hose separate from said evacuation hose and pump means, connections between said evacuation and dispensing pumps and said old and new oil containers respectively, said dispensing hose having a self-sealing coupling half connectable to said assembly for delivering new oil from said closed container to said pan, an oil metering device connected to said self-sealing coupling half of the dispensing hose and adapted to shut off oil flow from said dispensing hose when the proper amount of oil has been dispensed, cabinet means adjacent said oil container, prime moved means mounted in said cabinet means and driving said evacuation and dispensing pumps, a starting switch for causing said prime mover means to drive said evacuation pump, a timing switch responsive to activation of said starting switch for maintaining said driving condition between the prime mover means and the evacuation pump for a predetermined time, and a flow switch connected to said evacuation hose and responsive to flow of oil therein to maintain said driving condition after said timing switch has timed out, said flow switch being responsive to lack of old oil in said evacuation hose to terminate said driving condition.

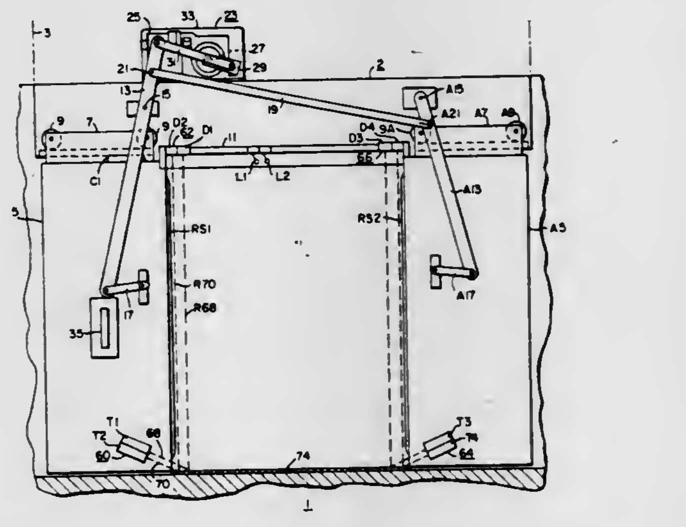
3,868,000
CLOSURE SYSTEM

Richard M. Spear, Jersey City, and Louis M. Capuano, Westfield, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 425,920

Int. Cl. B66b *13/26*

U.S. Cl. 187—52 **3 Claims**



1. An elevator system, comprising:
- a structure having a hoistway, and a landing having an opening to the hoistway,
- an elevator car mounted for movement in the hoistway of said structure to serve said landing,
- said elevator car having an opening therein which is in registry with the opening to the hoistway when said elevator car is at said landing,
- a car door mounted for movement to open and close the opening of said elevator car,
- a hoistway door mounted for movement with said car door to open and close the opening of the hoistway,
- first object detector means including transmitter means providing at least one beam of radiant energy, and detector means responsive to such energy,
- a sill at the landing adjacent the opening to the landing, said sill having a non-specular surface,
- said transmitter means being mounted on the car door for movement therewith and positioned to direct a beam of radiant energy at said non-specular surface of the sill,
- said detector means being mounted on said car door for movement therewith and aimed to intersect the beam of radiant energy at said sill,
- said detector means being responsive to an interruption of the reflected radiant energy from said sill for controlling the operation of the car and hoistway doors,
- and second object detector means including a source of electrical potential, translating means, and ribbon switch means, said ribbon switch means being mounted on an edge of at least one of said doors, which is the leading edge upon closure thereof, said translating means being energized by said source of electrical potential via said ribbon switch means until an object actuates the ribbon switch means, which deenergizes said translating means, said translating means being connected to control the

operation of said car and hoistway doors when it is in its deenergized condition.

3,868,001
WHEEL CYLINDER IN A HYDRAULIC BRAKE SYSTEM OF A VEHICLE

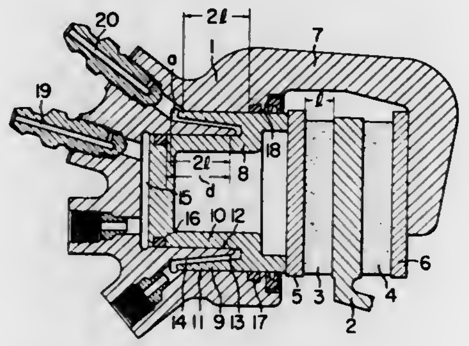
Masatada Yokoi, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi and Aichi-ken, both of Japan

Filed Dec. 8, 1970, Ser. No. 96,166

Claims priority, application Japan, Dec. 12, 1969, 44-00464

Int. Cl. B60t *11/10*

U.S. Cl. 188—345 **6 Claims**



1. A wheel cylinder in a hydraulic brake system of a vehicle, including a cylinder member having an inner wall and, an annular portion to define large and small diameter bores, at least one movable member slidably mounted within said bores, said at least one movable member being provided with a ring-shaped part having an outer wall slidably fitted in said larger diameter bore and a cylindrical part slidably fitted in said smaller diameter bore, a ring-shaped hydraulic pressure chamber being defined between said annular portion of said cylinder member and said ring-shaped part of said movable member and connected to one of dual master cylinders, a cylindrical hydraulic pressure chamber being defined between said cylindrical part of said movable member and said annular portion of said cylinder member and connected to the other of said dual master cylinders, a first sealing member disposed between said annular portion of said cylinder member and said cylindrical part of said movable member, and a second sealing member disposed between the inner wall of said cylinder member defining said large diameter bore and the outer wall of said ring-shaped part of said movable member, said annular portion of said cylinder member and said ring-shaped part of said movable member constituting said ring-shaped hydraulic pressure chamber being shaped and arranged so as to be mutually entered from one to the other of said annular portion and said ring-shaped part, said hydraulic pressure chambers enveloping the total cross-sectional area of the bores.

3,868,002
BRAKE MEMBERS AND SHOES AND SHOE SUPPORTS FOR SUCH MEMBERS, ESPECIALLY FOR TWO-WHEELED VEHICLES

Raymond Babled, 72 Avenue d'Orgeval, 95 Saint-Gratien, France

Filed Oct. 1, 1973, Ser. No. 402,309

Claims priority, application France, Oct. 3, 1972, 72.34987

Int. Cl. F16d *69/04*

U.S. Cl. 188—73.1 **7 Claims**

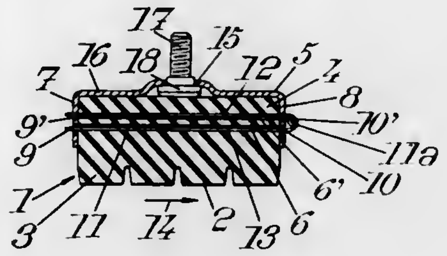
1. A brake member for a bicycle, said member comprising:

a shoe support rigidly fixed to brake actuating means, said support having at least two lateral surfaces which are facing each other,

a brake shoe comprising a head adapted to be introduced into said support so as to be immobilized therein, the active surface of the brake shoe being adapted to be applied against the rim of the wheel equipped with said brake member,

a generally U-shaped pin comprising two arms,

each lateral surface of the support comprising two openings bounded by a complete perimeter, the area of each opening being only slightly greater than the cross section of each arm of the pin,



the head of said shoe including two through-openings which face the corresponding openings of the lateral surfaces for receiving the arms of the pin,

the length of each arm of the pin being greater than the distance separating the two lateral surfaces and said pin being arranged so that its arms have a tendency to separate from one another when said arms are introduced into the corresponding openings of the head of the shoe.

3,868,003
BRAKE ACTUATED RETURN TO NEUTRAL MECHANISM

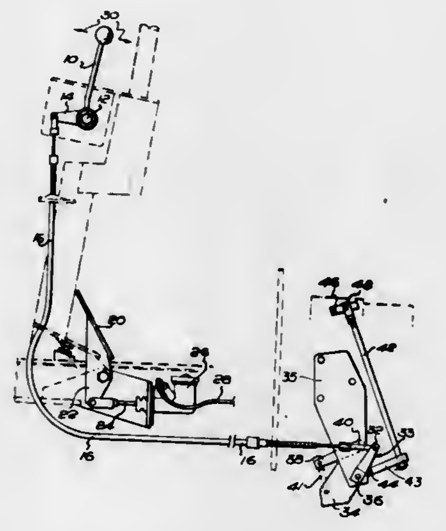
Kenneth Smith, Batley, England, assignor to Joshua Shaw & Sons Limited, Batley, England

Filed May 9, 1973, Ser. No. 358,683

Claims priority, application Great Britain, Feb. 23, 1973, 8925/73

Int. Cl. G05g *11/00;* **B60k** *29/02*

U.S. Cl. 192—4 B **2 Claims**



1. In a wheeled vehicle of the type having
- a. a pedal for applying brakes to the vehicle;
- b. a hydrostatic transmission employing a variable swash plate pump whose swash plate is selectively positionable to a forward driving inclination, a neutral position where the pump has no output, and a reverse drive inclination;
- c. a pivot lever for moving the swash plate to the selected position;
- d. a manually operated handle for placing the swash plate in a selected position; and
- e. means for causing the swash plate to move to the neutral position when the pedal is activated to apply the brakes, the improvement wherein activation of the pedal causes the swash plate to be brought to its neutral position without altering the position of the manually operated handle, the improvement comprising:

1. a first assembly mounted to pivot about a stationary first axis;

2. a second assembly having a crank mounted to pivot on the first assembly about a second axis spaced from and parallel to the first axis, the second assembly having means responsive to activation of the brake pedal for causing the crank to pivot relative to the first assembly about the second axis;
3. means connecting the manually operated handle to the first assembly whereby movement of the handle causes movement of the first and second assemblies as a unit about the first axis;
4. a link pivotally connected to the crank at a third axis parallel to and spaced from the second axis, the link being pivotally connected to the pivot lever at a fourth axis parallel to and spaced from the third axis; and
5. the third axis and the first axis being spaced equidistantly from the second axis whereby activation of the brake pedal causes the crank to pivot and bring the third axis into alignment with the first axis without altering the position of the manually operated handle.

3,868,004
SYNCHRONOUS SELF-SHIFTING CLUTCH

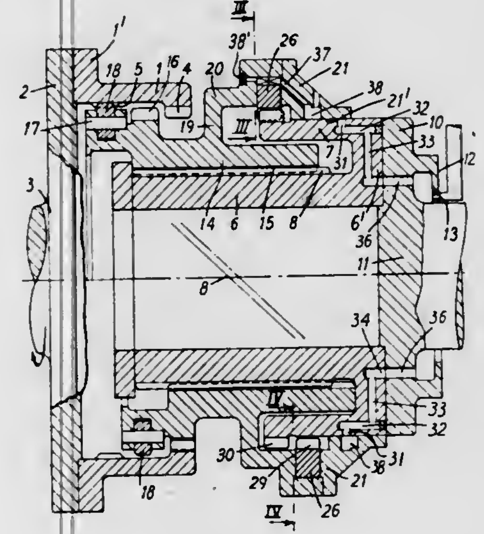
Herbert Arthur Clements, Weybridge, and Robert Howard Heybourne, Molesey, both of England, assignors to S.S.S. Patents Limited, London, England

Filed Oct. 29, 1973, Ser. No. 410,453

Claims priority, application Great Britain, Oct. 31, 1972, 50203/72

Int. Cl. F16d *23/02*

U.S. Cl. 192—67 A **5 Claims**



1. A synchronous self-shifting toothed clutch comprising first and second rotary clutch parts, coacting clutch teeth with clutch actuating mechanism operative upon passage of said first and second rotary clutch parts through synchronism in one direction of relative rotation, the said mechanism including an intermediate member constrained for movement relative to one of said first and second rotary clutch parts to effect at least partial interengagement of the coacting clutch teeth, the clutch including means operable to prevent disengagement of the clutch teeth when interengaged, characterised in that the said means comprise locking means carried by the intermediate member or by the said one rotary clutch part and baulking means carried by the said one rotary clutch part or by the intermediate member, with means mounting said locking means and said baulking means whereby said locking means and said baulking means are capable, when the coacting clutch teeth are at least partially interengaged, of relative rotational movement about the clutch axis between a baulking condition in which disengagement of the clutch teeth is prevented owing to the said baulking means being in axial baulking relationship with said locking means and a non-baulking condition in which disengagement of the clutch teeth is permitted owing to the said baulking means being out of axial baulking relationship with said locking means.

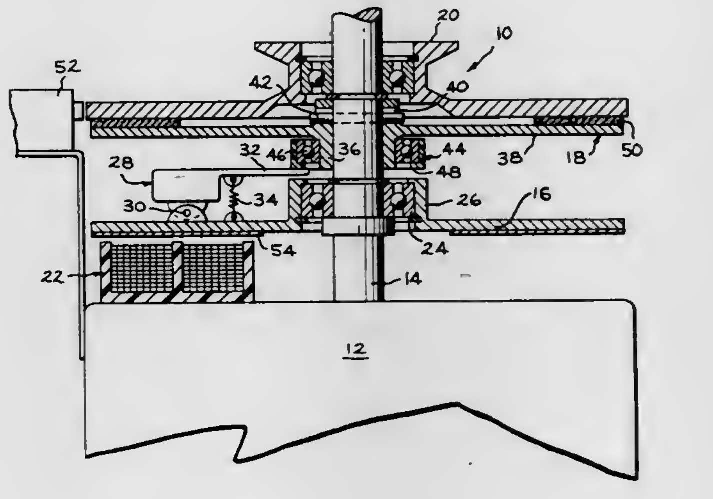
3,868,005
FRICTION CLUTCH WITH CENTRIFUGAL AND MAGNETIC SPEED CONTROL

Stephen L. McMillan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 14, 1973, Ser. No. 341,029

Int. Cl. F16d *43/06*

U.S. Cl. 192—105 CS **3 Claims**



1. An electro-mechanical clutch mechanism comprising:

an electric motor having a rotatable shaft;

a carrier plate mounted in a fixed axial location around said shaft for rotation relative thereto;

an output member mounted around said shaft for rotation relative thereto;

an input member mounted for rotation with said shaft and arranged for movement axially on said shaft for engagement with said output member;

centrifugal responsive means mounted on said carrier plate to axially move one of said members relative to the other of said member as said carrier plate accelerates to motor speed;

electromagnetic coil means spaced from said carrier plate to form an air gap so that said electromagnetic coil induces an eddy current in said carrier plate, for altering the speed at which said carrier plate rotates relative to said shaft and thereby controlling the movement of the centrifugal responsive means and the resultant clutch torque between said input and output members.

3,868,006
SELF-ADJUSTING RELEASE MECHANISM FOR FRICTION CLUTCHES

Donald F. Linn, Manlius, and George L. Wishart, Syracuse, both of N.Y., assignors to Lipe-Rollway Corporation, Syracuse, N.Y.

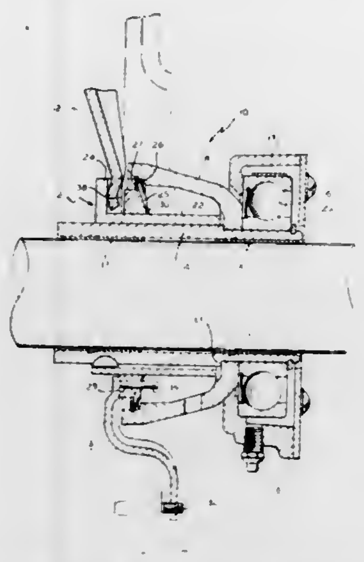
Filed May 3, 1973, Ser. No. 356,723

Int. Cl. F16d *11/02, 13/75*

U.S. Cl. 192—111 A **6 Claims**

1. In a friction clutch for connecting driving and driven shafts, the clutch having means for normally effecting a driving connection between the shafts and release levers actuatable to disengage said driving connection, the improvement comprising a first sleeve member axially slidable on the driven shaft, a second sleeve member axially slidable on the first sleeve member, means on the second sleeve member engageable with the release levers for actuating same, releasable means normally connecting the first and second sleeve members together to prevent relative axial movement therebetween whereby axial movement of the first sleeve member in one direction operates to correspondingly move the second sleeve member and actuate the release levers, and independent means located adjacent the releasable sleeve connecting

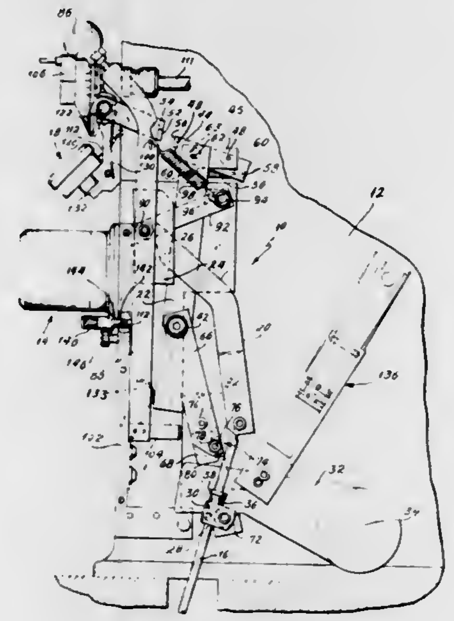
means and operable when the driving connection wears to release the sleeve member connecting means and permit



relative axial movement between the members to compensate for the wear.

3,868,007
AUTOMATIC SHUT-OFF ATTACHMENT

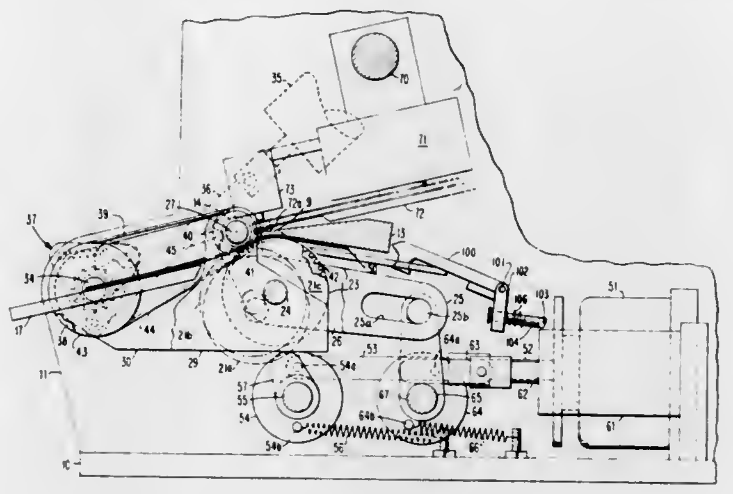
Joseph Sunnen, 400 S. Warson Rd., Ladue, Mo. 63124
Filed Jan. 8, 1973, Ser. No. 321,869
Int. Cl. F16d *71/00;* **G05g** *1/14, 1/04*
U.S. Cl. 192—125 B **5 Claims**



1. Improvements to a machine for operating on workpieces, pedal means actuatable by the machine operator to activate the machine and set the machine in operation, and means to monitor the operation of the machine including monitoring the changes being affected to the workpiece, said monitoring means including means responsive to a predetermined condition of the workpiece to terminate a machine operation, the improvements comprising latching means under control of the pedal means, said latching means including means movable to a latched condition when the pedal means are actuated to maintain the operating condition of the machine independently of the pedal means, and other means operable to delatch the latching means when the predetermined condition is sensed by the monitor means, said last named means including a first member operatively connected to the monitoring means and a second member engageable with the first member when the latching means are in their latched condition, said first member moving relative to the second member during a machine operation under control of the monitoring means, said first and second members becoming disengaged from each other when the monitoring means sense the predetermined condition of the workpiece.

3,868,008
PRINTING STATION APPARATUS FOR A BANK PASSBOOK TYPE DOCUMENT

Philip A. Brumbaugh, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 13, 1973, Ser. No. 369,623
Int. Cl. B41j *13/00*
U.S. Cl. 197—127 R **6 Claims**

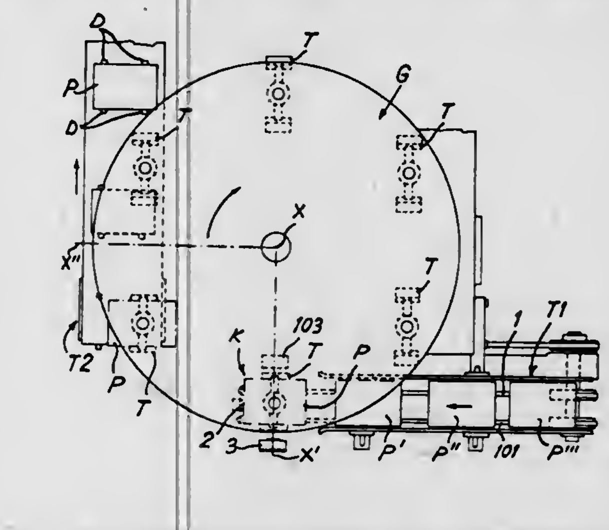


1. A print station apparatus for feeding and printing on a passbook type document comprising, in combination:
a. a main frame including a base plate and at least a pair of side frames,
b. a rotatable document drive rod mounted between the side frames,
c. a rotatable platen of resilient deformable material having a plurality of annular grooves and rings alternately disposed axially thereof, said annular grooves each having a cross-section so dimensioned and configurated as to provide a lateral expansion area for respectively adjoining annular ring portions, whereby each of said annular ring portions may undergo resilient lateral expansion to accommodate document thickness variations,
d. pivotal means within said side frames for supporting the platen and wherein the platen is normally positioned in spaced apart parallel relationship to the document drive rod,
e. means for incrementally driving the document drive rod and platen in movable relation,
f. a wedge-shaped bar mounted in fixed relationship to the document drive rod and which functions to assist in visually aligning the printing line of a document,
g. a first means coupled with said pivotal means and operable to move the platen toward the document drive rod for engaging and feeding a document inserted therebetween to a predetermined position, and
h. a second means coupled with said pivotal means and operable to move the platen to a printing position.

3,868,009
TRANSFERRING DEVICE

Agostino Billi, and Angelo Palmieri, both of Bologna, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy
Filed Mar. 29, 1973, Ser. No. 345,974
Int. Cl. B65g *47/32*
U.S. Cl. 198—25 **8 Claims**

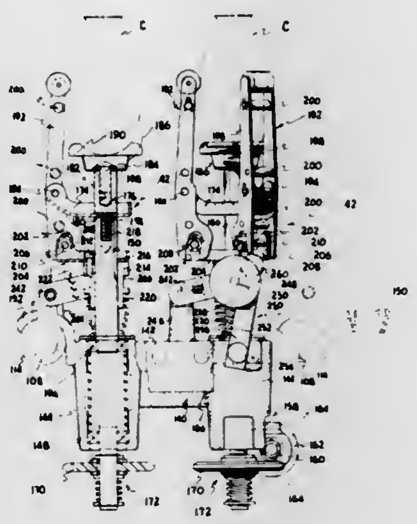
1. Apparatus for feeding workpieces, comprising
a. a supply conveyor to which workpieces are delivered at random;
b. a discharge conveyor arranged to receive workpieces and to move them in predetermined spaced relation;
c. a turntable conveyor located a predetermined distance above said supply and discharge conveyors;
d. means for rotating said turntable conveyor in synchronism with the movement of the discharge conveyor;
e. a stop movable into and out of the path of a workpiece at the output end of the supply conveyor;
f. a plurality of tong-like workpiece grippers mounted beneath the turntable conveyor and equidistantly spaced around a pitch circle common thereto, each said tong-like gripper being arranged to be raised and lowered relatively to the turntable conveyor;
g. control means operable to lower a gripper and to cause it to grip a workpiece arrested by said stop and to raise the gripper workpiece for movement by the turntable conveyor into position over the discharge conveyor, to lower the gripper and to deposit the workpiece gripped thereby onto the discharge conveyor, to release the gripper from the workpiece, and to raise the released gripper;
h. means operable to effect rotation of a gripper relative to the turntable conveyor at least during movement of said gripper from the workpiece gripping position thereof relative to the supply conveyor to a position at which it is lowered relative to the discharge conveyor to deposit a workpiece thereon, the said means comprising a planet gear coaxial with each gripper and rotatable therewith, a stationary sun gear coaxial with the axis of rotation of the turntable conveyor, said planet gear being rotatable through the intermediary of said stationary sun gear;
i. each said gripper comprising a vertical tubular gripper body which is mounted for longitudinal sliding movement in the turntable conveyor, is operatively connected to said control means, and at its lower end has two gripper jaws pivotally mounted thereon for movement towards and away from one another; and
j. an operating rod extending through said tubular gripper body for opening and closing said gripper jaws, said operating rod being slidable lengthwise of the gripper body, the lower end of the operating rod being formed as a double-sided rack which meshes with two opposite toothed segments one each of which is connected to a gripper jaw, and the upper end of the operating rod projecting out of the gripper body and being operatively connected to said control means.



3,868,010
HANDLING APPARATUS FOR A HOLLOW GLASS ARTICLE

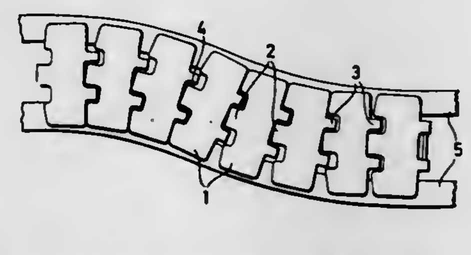
John D. Banyas, Toledo, and Edward A. Ross, Waterville, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 77,425, Oct. 2, 1970, Pat. No. 3,726,559. This application Aug. 30, 1972, Ser. No. 284,700
Int. Cl. B65g *15/00*
U.S. Cl. 198—179 **7 Claims**

1. Container handling apparatus comprising a frame, horizontally extending upper and lower track means mounted on said frame in vertical alignment with each other, first curved track means mounted on said frame to connect one end of said upper track means to one end of said lower track means, second curved track means mounted on said frame connecting the respective other ends of said upper and lower track means to each other, an endless conveyor chain having a plurality of uniformly spaced transversely extending link pin means, roller means on said link pin means engaged with said track means to support and guide said chain along an endless path established by the interconnected track means, drive means for driving said chain in movement along said endless path, a plurality of container chuck assemblies mounted in uniformly spaced relationship upon said link pin means for movement with said chain along said endless path, and means for minimizing the centripetal acceleration imparted to said chuck assemblies as the chuck assemblies move to and from said curved track means.



3,868,011
LINK CONVEYOR

Wolfgang Janzen, Wilnsdorf-Obersdorf, and Alfred Bald, Eiserfeld, both of Germany, assignors to Amsted-Siemag Kette GmbH, Betzdorf/Sieg, Germany
Filed June 5, 1973, Ser. No. 367,221
Claims priority, application Germany, July 31, 1972, 2237600
Int. Cl. B65g *17/06*
U.S. Cl. 198—195 **9 Claims**



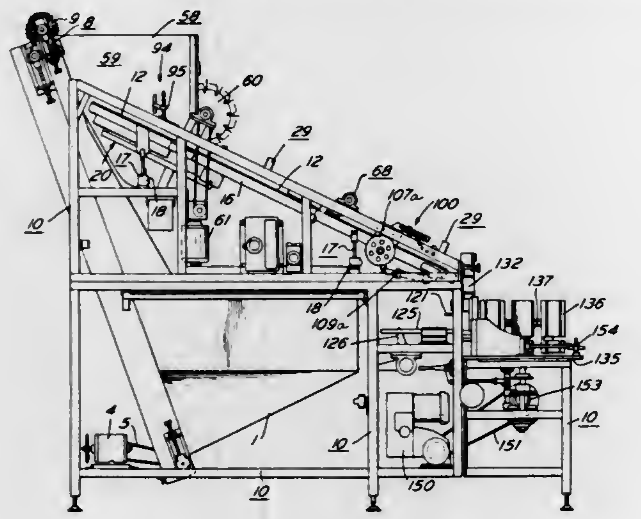
1. A link conveyor including a series of metal plate links, hinge eyelets projecting from opposite edges of each of said links, said hinge eyelets projecting from adjacent edges of adjacent links interengaging with each other, hinge pins extending through said interengaging hinge eyelets to hinge adjacent plate links to each other, a guide member formed integrally with each of said plate links, said guide members comprising flanges projecting substantially at right angles from the underside of said link, webs extending parallel to the underside of each of said plate links, said webs joining said flanges integrally to said hinge eyelets projecting from one of said opposite edges of said link, each of said plate links and guide members being formed of sheet metal, and said guide member being operative to guide said links along guide rails.

3,868,012
CONTAINER ORIENTING APPARATUS

Lewis H. Kinsley, New Britain, Pa., assignor to Kinsley Corporation, Trevose, Pa.
Filed Mar. 30, 1973, Ser. No. 346,674
Int. Cl. B65g *47/24*
U.S. Cl. 198—276 **17 Claims**

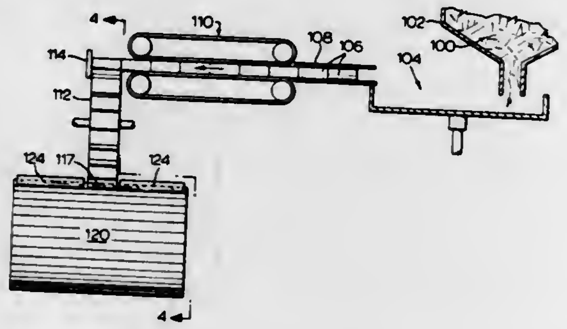
1. A machine for arranging randomly oriented containers of elongated shape having an open end and closed end compris-

ing, a storage bin for holding a plurality of said containers in random orientation, an inclined chute having an entrance end and a discharge end, dividers located above said chute for defining a plurality of channels, conveyor means for transporting containers from said bin to the entrance end of said chute, said containers falling into said channels and moving by gravity from said entrance end toward said discharge end, drum means rotatable in a direction counter to the direction of movement of said containers along said chute for permitting said containers to pass only when arranged in end-to-end relationship in said channels with either their closed ends or open ends forward, escapement means for releasing groups of said containers equal to the number of said channels at preselected intervals, closed-end-forward orienting means for operating on said groups to insure forward movement of each container down the chute only with its closed end forward, reciprocating means located adjacent said discharge end of said chute for pushing each group of containers forwardly in unison at preselected intervals, collection means including U-shaped receiving pockets and means for continuously moving said pockets in front of said reciprocating means with the open ends of said U-shaped pockets facing said reciprocating means, and means for timing the operation of said escapement means, said closed-end-forward orienting means and said reciprocating means in order to push each group of said containers in unison into unfilled pockets on said collection means.



3,868,013
CIGARETTE FILTER FEED

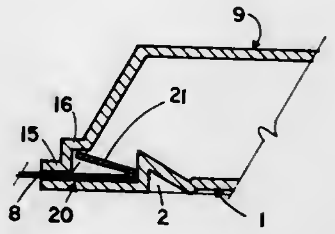
Warren A. Brackmann, Cooksville, and Daniel Dicianni, Toronto, Ontario, Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Division of Ser. No. 201,411, Nov. 23, 1971, Pat. No. 3,743,075. This application Apr. 9, 1973, Ser. No. 348,884
Int. Cl. B65g *47/24*
U.S. Cl. 198—287 **2 Claims**



1. A cigarette filter applying apparatus including feed means for feeding to a first station a stream of cigarette filter elements having a length approximately twice that ultimately required, and means for feeding individual elements of said stream from said first station to a filter applying station, said feed means comprising a hopper to receive and store a plurality of cigarette filter elements, a shallow bowl of substantially circular cross-section in feed communication with said hopper whereby filter elements may be fed from said hopper to said bowl, said bowl being mounted for rotation about a substantially vertical axis and consisting of a right cylindrical wall having an inner periphery and a bottom closure located in a substantially horizontal plane, said bottom closure having a groove of part-circular cross section of diameter substantially that of the filter elements, said groove being formed therein adjacent said wall for receiving filter elements therein, said bowl further including a circular cover means spaced from said bottom closure a distance at least the diameter of said filter elements, said cover means having an opening to feed filter elements from said hopper to said bowl, said cover means having an outer periphery spaced from the inner periphery of said right cylindrical wall and curved downwardly towards said groove, the degree of curvature of said periphery of said cover means being sufficient to cam into said groove filter elements oriented substantially longitudinally of the groove and located adjacent thereto and being sufficient to prevent radially aligned filter element from movement towards said inner periphery of said right cylindrical wall a distance greater than half the width of said groove, drive means drivably engaging said bowl and adapted to rotate said bowl about said vertical axis above a predetermined minimum speed of rotation whereby filter elements in said bowl are subjected to centrifugal forces and form a stream of filter elements located in said groove in frictional engagement therewith, the filter elements in said stream being in substantially end-to-end alignment, and conduit means extending from said first station to said bowl and located in said bowl in the path of said stream, whereby filter elements are removed from said stream by the action of said centrifugal forces and passed as a stream to said first station.

3,868,014
CARTON DOUBLE-WALL BASE AND CONTAINER UTILIZING SAME

John W. Clarke, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Oct. 16, 1973, Ser. No. 406,999
Int. Cl. B65d *5/50, 45/00*
U.S. Cl. 206—45.19 **16 Claims**

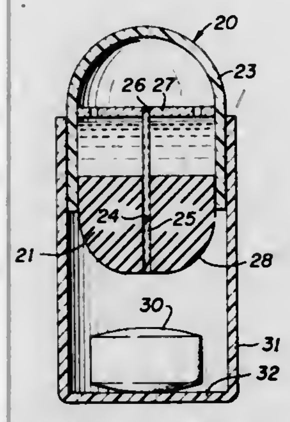


1. A carton double-wall base adapted for cooperative engagement with a carton cover comprising:

1. An independently formed top wall having one or a plurality of integrally formed raised lands along a segment of the edge on one or on each of two opposing sides, and an integrally formed locking notch laterally coextensive with and positioned inboard from each land, said locking notch comprising a groove in the inside surface of said top wall immediately adjacent to said land;
2. An independently formed bottom wall having integrally formed therein, and disposed to cooperate with said locking notches in said top wall, internal ribs equal in number to the number of said locking notches in said top wall, said internal ribs positioned inboard from the edge of said bottom wall and rising upwardly from the inside surface of said bottom wall with the outboard side of such ribs essentially parallel to said edge and making essentially a right angle with said surface; said top and bottom walls being vertically aligned in a position wherein each locking notch in said top wall is in longitudinal alignment with an internal rib in said bottom wall, and an entrance passage defined between the inside surface of each raised land in said top wall and the inside surface of said bottom wall, said entrance passage being in longitudinal alignment with said locking notch and said internal rib; and
3. said so-aligned top and bottom walls being sealed together around the perimeter edge, exclusive of the segment of said edge whereat there is an entrance passage, forming said base.

3,868,015
INSECT BITE KIT

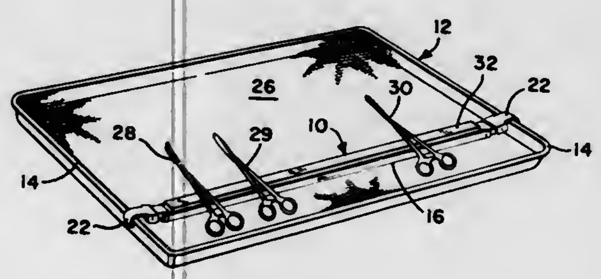
Larry G. Thompson, 524 Fifth St., Traverse City, Mich. 49684
Filed Sept. 14, 1973, Ser. No. 397,322
Int. Cl. B65d *85/54;* **A61l** *5/32*
U.S. Cl. 206—229 **5 Claims**



1. An intra-dermal injection assembly comprising
an imperforate housing member having a perforate partition therein and an open end,
a plunger slidably and sealably mounted in said open end and having a hole therethrough,
a hollow injection needle secured at one end over an opening through said partition and sealably and slidably extending into said hole.

3,868,016
MAGNETIZED SURGICAL INSTRUMENT TRAY RESTRAINT

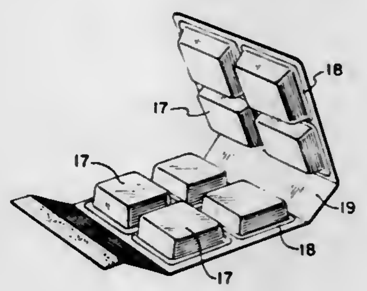
Roman Szpur, and Robert K. Finley, Jr., both of Dayton, Ohio, assignors to Medicotech Company, Dayton, Ohio
Filed Mar. 5, 1973, Ser. No. 337,836
Int. Cl. B65d *1/34*
U.S. Cl. 206—350 **7 Claims**



1. A magnetized surgical instrument tray restraint comprising:
a U-shaped channel,
a flexible magnetized bar retained within said channel, said bar having sufficient magnetic force to securely yet releasably hold metallic surgical instruments onto said bar, and
tension clamps extensibly joined to each end of said U-shaped channel by rubber connectors and adapted to fit over the edges of an instrument tray so as to hold the magnetized restraint in place on said tray.

3,868,017
FOOD CONTAINER

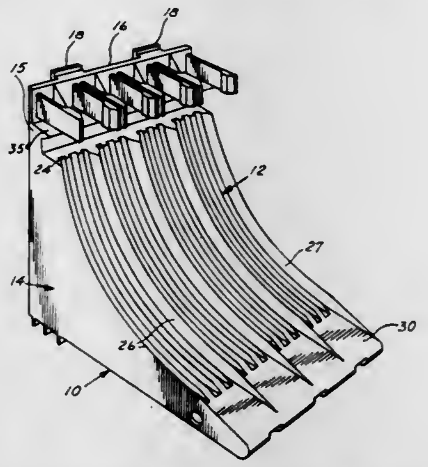
Peter C. Carveth, Chicago, Ill., assignor to The Quaker Oats Company, Chicago, Ill.
Filed June 4, 1973, Ser. No. 366,985
Int. Cl. B65d *73/00*
U.S. Cl. 206—491 **1 Claim**



1. A container for packaging food products or the like, said container comprising a rigid wrap-around support with a plurality of semi-rigid bowls hermetically sealed thereto with the wrap-around support enclosing the bowls to force the bottom of one to press upon the bottom of another for support thereof, the wrap-around support being sealed upon itself to provide a protective support around the bowls, and the wrap-around support having weakened lines between the bowls to provide separation of the bowls into individual units with access thereto.

3,868,018
TAPE REEL CARTRIDGE STORAGE CELL

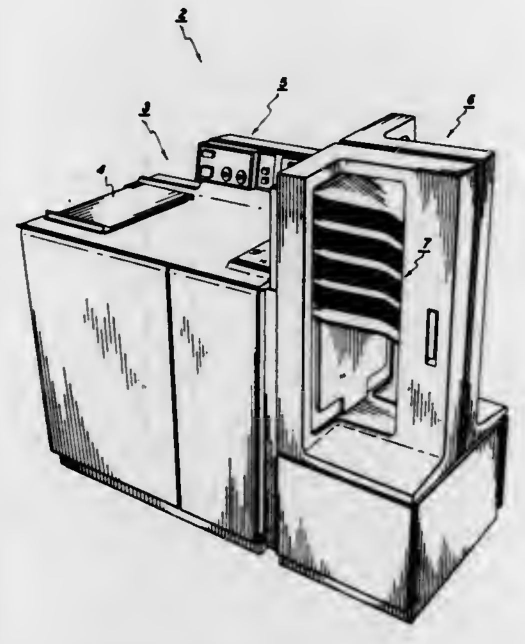
Joel O. Thies, Boulder, Colo., assignor to Xytex Corporation, Boulder, Colo.
Filed Oct. 27, 1972, Ser. No. 301,434
Int. Cl. A47b *81/06;* **A65h** *75/00*
U.S. Cl. 211—40 **12 Claims**



1. A reel storage cell adapted for releasable retention of a plurality of tape reel cartridges and the like wherein each cartridge is characterized by having an outer, generally circular peripheral edge portion, said storage cell comprising:
a body portion having a plurality of forwardly directed, arcuate grooves curving downwardly and forwardly in closely-spaced parallel relation to one another over an arc of substantially 90°, the curvature of each groove conforming to that of the outer peripheral edge of the cartridge, and a downwardly and forwardly divergent guide surface at the front, lower end of each groove; and latching fingers disposed adjacent to the upper rearwardmost point on opposite sides of each groove and extending forwardly for a limited distance, said fingers being possessed of limited resiliency and the spacing between each set of fingers on opposite sides of a groove normally being slightly less than the width of the groove so that each set of fingers will spread when a cartridge is pressed edgewise therebetween whereby to yieldingly engage the cartridge and releasably retain same in an associated groove.

3,868,019
TRAY APPARATUS

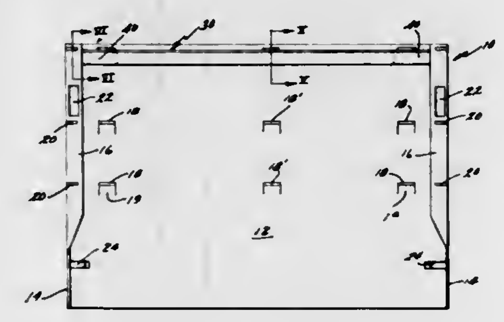
Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 29, 1972, Ser. No. 319,839
Int. Cl. B65h *31/24*
U.S. Cl. 211—126 **2 Claims**



1. Tray apparatus comprising
a frame
an array of closely spaced tray members supported by said frame in vertical alignment,
each of said tray members having a first wall portion extending in a direction inclined to the horizontal plane, and a second wall portion extending in a direction inclined to the vertical plane from said first wall portion at right angles thereto, said wall portions in vertical alignment defining a nested relationship,
wherein each of said tray members includes a third wall portion extending in the horizontal plane,
wherein each of said tray members has mounting means connected thereto, said mounting means including a resilient member to enable movement of said tray members relative to said frame,
wherein said mounting means includes cam follower means which guide said tray members in a generally vertical path.

3,868,020
STATIONERY TRAY

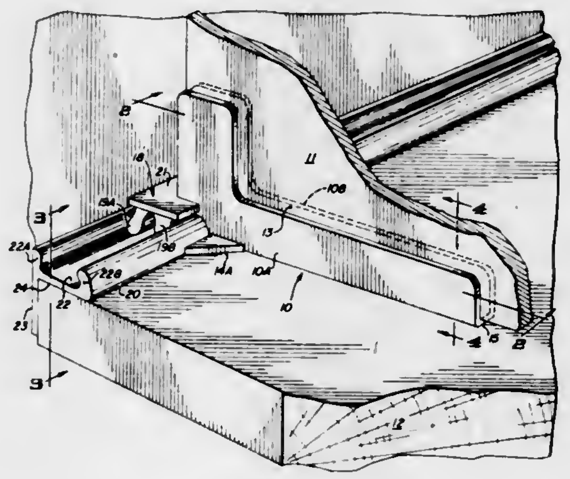
Roger C. Bruins, Jenison Township, Ottawa County, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Oct. 12, 1973, Ser. No. 406,006
Int. Cl. A47f *3/14;* **B65d** *1/24*
U.S. Cl. 211—126 **8 Claims**



1. In a stationery tray comprising a bottom wall and an upwardly projecting side wall at each side thereof, and a movable paperstop for said tray, said movable paperstop including releasable securing means for cooperating with said tray whereby said paperstop can be positioned in said tray at various positions along the length thereof, thereby making it possible to adjust the depth of said tray, the improvement comprising: said paperstop being defined by an elongated wall member, said wall member having a cross section generally in the shape of a 7, the base leg of the 7 forming a back wall for said paper tray and the top thereof forming a flange; said wall member including a cutaway portion at each end thereof between said base leg and said flange to thereby form resilient fingers at the ends of said flange; said releasable securing means being formed on each said resilient finger at each end of said paperstop; said tray including a pair of lips extending inwardly from said side walls thereof, said securing means on said resilient finger cooperating with said lips to thereby hold said paperstop in place; said resilient fingers resiliently biasing said securing means upwardly into engagement with said lips from the underside of said lips to thereby secure said paperstop in said tray.

3,868,021
SEPARATOR PANEL HOLDER FOR DISPLAY SHELVES

Wilhelm Heinrich, D-3441, Oberhone, Germany
Filed Oct. 9, 1973, Ser. No. 404,249
Int. Cl. E05d *13/02*
U.S. Cl. 211—184 **7 Claims**

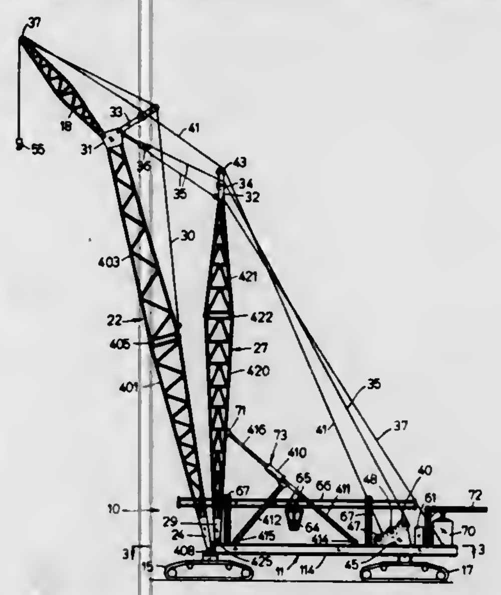


1. A clamping means for detachably mounting and holding partition panels on a shelf comprising:
an L-shaped clamping member grooved along its length to provide a pair of parallelly arranged spaced legs for receiving therebetween a partition panel,
a clamping means arranged at the outside peripheral corner of the intersection of the legs for detachably fitting into a clamping strip, and
a clamping strip comprising an elongated channel for positioning laterally of the longitudinal axis of said L-shaped clamping member,
said clamping means being insertable into said channel for detachable connection therewith,
said clamping strip comprising a right angular configuration presenting its channel along the outer surface along one edge thereof and a flat planar surface along the other edge,
said right angular configuration fitting over the top edge of the shelf being partitioned.

3,868,022
SELF-PROPELLED HEAVY DUTY MOBILE CRANE

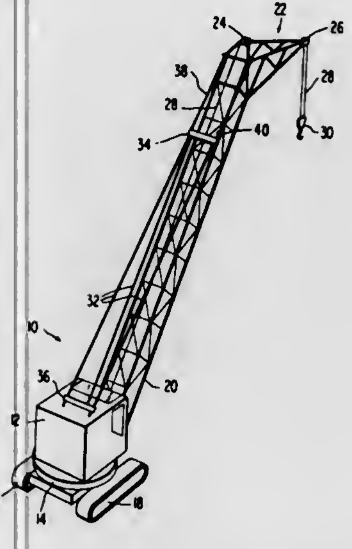
Roy Greenlay, Greenfield, and George S. Allin, Jr., Brookfield, both of Wis., assignors to Harnischfeger Corporation, Milwaukee, Wis.
Filed Nov. 23, 1973, Ser. No. 418,679
Int. Cl. B66c *23/36*
U.S. Cl. 212—8 R **11 Claims**

1. A self-propelled mobile crane comprising: a substantially triangular support frame having one end wider than an opposite end; spaced apart drivable and steerable first bogie means connected at spaced apart bogie connection points near said one end of said support frame; second drivable and steerable second bogie means connected near an opposite end of said support frame; driving means and steering means for said first and second bogie means; a vertically swingable room having a pair of spaced apart lower ends mounted for vertical swinging movement on said support frame, each boom end being pivotally attached to said support frame at a boom attachment point adjacent one of said bogie connection points; and a boom support mast having a pair of spaced apart lower ends mounted for vertical swinging movement on said support frame, each mast end being attached to said support frame at a mast attachment point adjacent one of said bogie connection points, said boom and mast attachment points being located substantially directly above said connection points of said frist bogies.



3,868,023
CRANE WITH BOOM ATTACHMENT

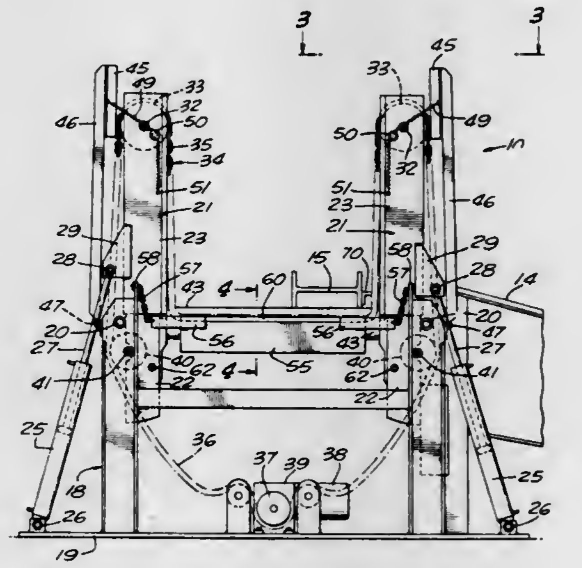
John H. Willingham, 1280 Estate Dr., Memphis, Tenn.
Continuation of Ser. No. 264,523, June 20, 1972, , which is a continuation of Ser. No. 29,517, April 17, 1970,. This application Mar. 13, 1973, Ser. No. 340,813
Int. Cl. B66c *23/66*
U.S. Cl. 212—46 R **6 Claims**



1. A hoisting crane for handling wide loads comprising a movable undercarriage, a control cab mounted on said undercarriage, a crane boom pivoted at its lower end to said undercarriage and extending upwardly and outwardly from said cab, the upper end of said boom having a substantially rectangular cross section, a bridle, gantry cables coupled to said cab and said bridle for raising and lowering said boom, an attachment for said boom comprising a framework including a boom connecting section, a laterally extending section, and a crown section surmounting and substantially laterally coextensive with said boom connecting and laterally extending sections, said boom connecting section having a substantially rectangular end, means for securing the rectangular ends of said boom and said connecting section one to the other such that said connecting section forms an axial extension of said boom, a first hoist cable sheave mounted on the end of said laterally extending section remote from said boom connecting section, a second hoist cable sheave mounted on said crown on the side of the boom axis remote from said first sheave, said second sheave constituting the highest point of said crane, the distance between the boom end and said second sheave extending along a line parallel to the boom axis being less than the generally horizontal distance between said first sheave and the boom axis at the boom end, a transverse support mounted at the upper end of said connection section, a pair of stabilizing cables, and means securing said stabilizing cables to the opposite ends of said transverse support and to said bridle.

3,868,024
APPARATUS FOR MOVING AND ROTATING LONG WORKPIECES SUCH AS STRUCTURAL STEEL

Jack C. Lee, 940 Orange Grove Ave., Arcadia, Calif. 91006
Filed Feb. 22, 1974, Ser. No. 444,717
Int. Cl. B65g *47/32*
U.S. Cl. 214—1 QC **24 Claims**



12. Apparatus for rotating and moving a long workpiece relative to a work station comprising in combination a long power driven conveyor having a workpiece work station thereadjacent, a plurality of workpiece handling and rotating means astride said conveyor at spaced apart points therealong each comprising: a pair of elongated bracket means having the lower end portion of one bracket means pivoted to one side of said conveyor and the end portion of the other pivoted to the other side of the conveyor, slider means reciprocable along each bracket and supporting idler sprocket means at the outer end thereof, motor means operable to shift each slider means lengthwise of the associated bracket means and operable in the retracted position of said slider means to pivot said associated bracket and slider means to different positions including a generally upright position and a generally horizontal position laterally of the side of said conveyor, loop belt means having the upper run thereof trained over said idler sprocket means and beneath the workpiece support surface of said conveyor, reversible drive means operatively connected to said loop belt means to drive said belt in either direction, and said pair of workpiece handling and rotating means being selectively operable in unison with one another to lift a workpiece off said conveyor and to rotate the workpiece about the longitudinal axis thereof and to shift the same laterally of said conveyor at the option of the operator.

3,868,025
CONCRETE MOULD POSITIONER

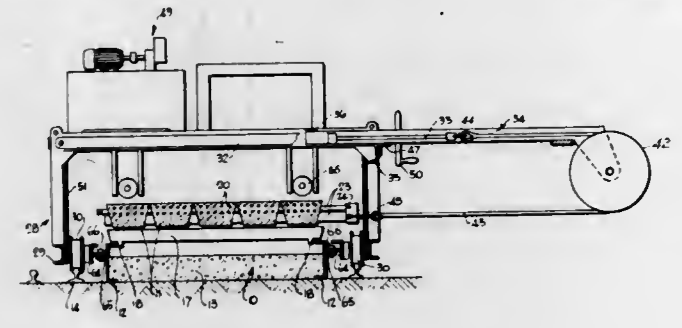
Robert Lyndon Bratchell, Seacliff, Australia, assignor to Concrete Industries (Monier) Limited, Seacliff, Australia

Filed June 5, 1973, Ser. No. 367,128

Claims priority, application Australia, June 13, 1972, 9300/72

Int. Cl. B60p *3/00*

U.S. Cl. 214—1 R **8 Claims**



1. A positioner for positioning a series of aligned moulds used for the moulding of prestressed concrete ties on a base which has a moulding bed and a pair of rails positioned one on each side of the bed, comprising a vehicle having a frame, rail engaging wheels engageable on said rails and supporting the frame, locking means on the frame engageable with cooperating locking means on the base to lock said vehicle against movement along the rails, a pressure actuated mould positioning cylinder carried by the frame, and mould engaging means on the piston rod of said mould positioning cylinder, so constructed and arranged that, when said piston rod is engaged with a mould of said series, the vehicle is locked against said movement, and fluid at pressure is introduced into said cylinder, operation of said cylinder effects movement of said series over the base.

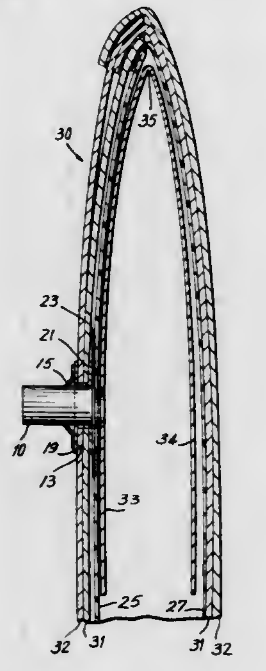
3,868,026
DUNNAGE BAG

Robert O. Baxter, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 264,410, June 20, 1972,. This application Dec. 14, 1973, Ser. No. 424,796

Int. Cl. B60p *7/14*

U.S. Cl. 214—10.5 D **13 Claims**



13. In a dunnage bag having a substantially air tight bladder encased within at least one reinforcing sheet and including an inflating valve operatively mounted in one wall of said bag, the improvement which comprises a sheet of flexible material disposed within said bladder between said valve and the wall of said bladder opposite thereto, said sheet of flexible material being secured to said bladder so as to flutter while said bag is being inflated through said valve whereby the fluttering of said sheet of flexible material dissipates the energy of the inflating air stream and thereby protects said bladder from the destructive force of an inflating air stream.

3,868,027
AUTOMOTIVE VEHICLE STORING APPARATUS FOR PARKING

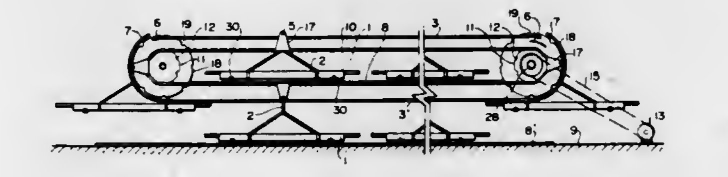
Takashi Matsurra, 28-4 Izumi 2-Chome, Tokyo, Japan

Filed Mar. 5, 1974, Ser. No. 448,433

Claims priority, application Japan, Mar. 24, 1973, 48-33866

Int. Cl. E04h *6/06*

U.S. Cl. 214—16.1 B **4 Claims**



1. An automotive vehicle storing apparatus for parking comprising two pairs of upper and lower parallel horizontal rails, two pairs of driving wheels arranged at end portions of and between the upper and lower rails, two endless chains mounted on the pairs of driving wheels, rollers with a shaft thereon; and a plurality of pallets travelling on said rails by means of said rollers, each of the pallets hanging rotatably from the shaft of the roller, characterized in that it comprises two pairs of wheels each fixed to each of the driving wheels and having a larger diameter than that of the driving wheel, and a plurality of link bodies each linking one side rail and endless chain and belonging to each of the pallets, the wheels and the driving wheels have the same number of angularly equally spaced notches on their peripheries, each of the link bodies is coupled to the shaft of the roller and fixed to the endless chain, the latter fixation being made by means of at least one pin, and the notches of the wheel engage with the shafts of the rollers and, at the same time, the notches of the driving wheel engage with the pins of the link bodies when the driving wheels are driven, whereby the pallets travel on the upper and lower pairs of rails alternately and circulatingly.

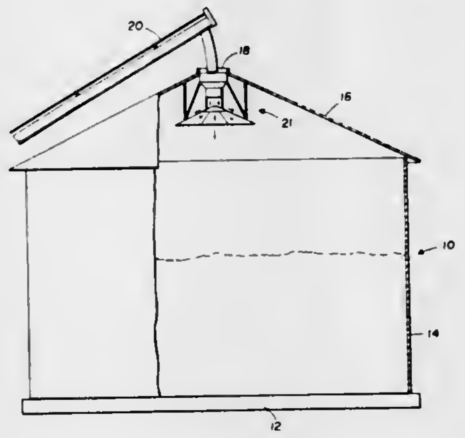
3,868,028
GRAIN DISTRIBUTOR

Robert Mausser, Walker, Iowa 52352

Filed Jan. 19, 1973, Ser. No. 325,207

Int. Cl. B65g *65/30*

U.S. Cl. 214—17 C **4 Claims**



1. A distribution device for granular material such as grain and the like that is to be stored in a bin having a side wall and a roof with a fill opening providing an enclosed space, said distribution device comprising a hollow upper portion having an inlet opening and a discharge opening beneath said inlet opening, said upper portion providing a flow path for grain between said inlet opening and said discharge opening, a lower portion positioned beneath the discharge opening of the upper portion and having a distribution surface that directs grain discharged from the upper portion outwardly in all directions, said lower portion including a plurality of separate sections, said sections being movable relative to each other to vary the angle of the said distribution surface thereby changing the pattern of distribution of the granular material, said distribution surface of said lower portion having an opening directly beneath the discharge opening of the upper portion, and means mounting said upper portion and said lower portion in a fixed position relative to each other with the distribution surface of the lower portion spaced from the discharge opening of the upper portion.

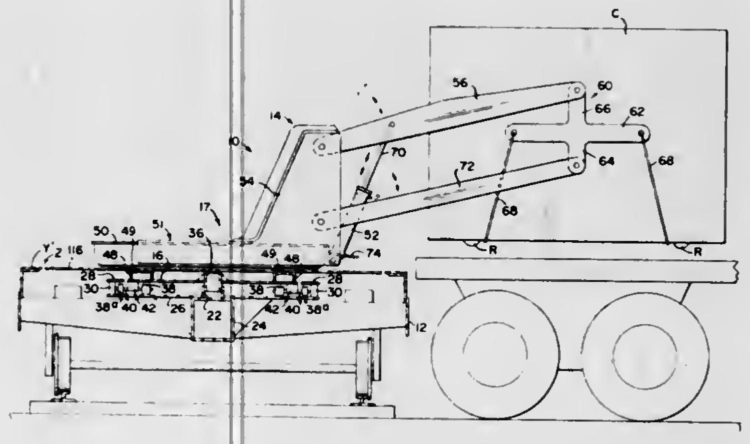
3,868,029
LOADING APPARATUS FOR RAILROAD FLAT CARS

Stephen Goby, 10308 Wilbur Ave., Cleveland, Ohio 44106

Filed Oct. 10, 1972, Ser. No. 296,313

Int. Cl. B60p *1/48*

U.S. Cl. 214—77 R **4 Claims**



1. In combination with a railroad flat car having a flat support surface defining a plane,

a support plate means positioned on the flat car for arcuate movement, said support plate means having a surface coplanar with said car support surface,

complementary mating arcuate surfaces being provided between said support plate means and support surface to permit arcuate movement of said support plate means,

a pair of frame means on spaced portions of said support plate means,

a pair of side members for container load support,

lever means mounted on said frame means operatively connecting to said side members for raising and lowering said side members and any load engaged thereby, whereby said side members are used to raise and lower a load to transfer the load between the support surface or the support plate means and an exterior surface,

a powered means connecting said lever means to said frame means for controlled movement of said lever means, an equalizer arm pivotally extending between and connecting said frame means to said side members, said equalizer arms being parallel to said lever means, a pair of lever means and equalizer arm units being provided, said equalizer arms and said lever means being pivotally connected to vertically aligned center portions of said side members to provide vertical load lift and support stabilization action, and

said support plate means including an upper revolve section and a lower revolve section of less diameter than said upper revolve section, a roller bearing support means for said lower revolve section which is of smaller diameter than the width of the car, and

said frame means being positioned parallel to each other and extending longitudinally of the flat car beyond said upper revolve section.

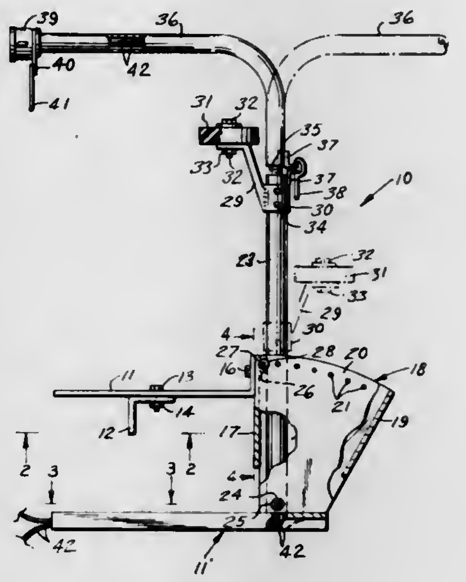
3,868,030
BOAT GUIDE DEVICE

Larry E. Bell, 2881 33 Ave., Sacramento, Calif. 95824

Filed Apr. 18, 1973, Ser. No. 352,119

Int. Cl. B60p *3/10;* **B62d** *33/08*

U.S. Cl. 214—84 **5 Claims**



1. A boat guide device for boat trailers, comprising a pair of boat guides, one for each side of a trailer, each said boat guide including a quadrant member, a vertically extending pipe pivotally connected at its lower end to a lower portion of the quadrant, a plurality of apertures spaced along the upper edge of said quadrant, a loop carried by said pipe for selectively angularly securing said pipe along the upper edge by a bolt fastener means engageable with said loop and one of said apertures, a wheel bracket and sleeve carried by said pipe and having rubber wheel means for guiding and protecting the sides of the boat, an L-shaped pipe member having a horizontal pipe portion pivotally carried by said pipe and including stop-light means and a license plate supporting bracket at the free end of said pipe portion; means for mounting said boat guide to the trailer including an L-shaped bar member and a channel member, each said member secured to said quadrant in vertically spaced relation with each other, L-shaped bracket means adjustably carried by said bar member, means on said bar and channel members for adjustably sucuring said quadrant to the boat trailer, nipple means interconnecting said pipe and L-shaped pipe member together and an angle clip means with wire pin means for selectively securing said pipe and pipe member together against relative movement.

3,868,031
GLASS BATCH FEEDING METHOD

John Earl Frazier, and Clifford F. Crouse, both of Washington, Pa., assignors to Frazier-Simplex, Inc., Washington, Pa.

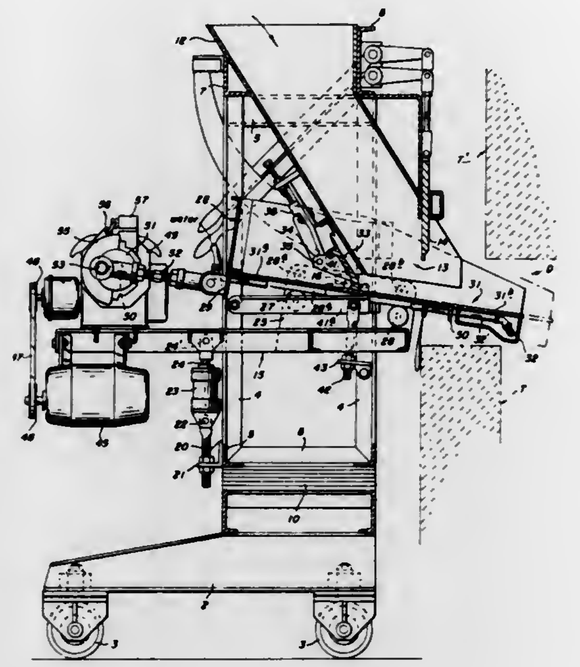
Division of Ser. No. 197,007, Nov. 9, 1971, Pat. No. 3,780,889. This application Sept. 17, 1973, Ser. No. 397,948

Int. Cl. C03b *3/00*

U.S. Cl. 214—152 **3 Claims**

1. The method of supplying batch material to the charging end of a glass melting furnace which comprises transferring the batch material from a hopper to said charge-receiving end of the furnace on a reciprocable charger plate having a forward and return stroke and having a depending water-cooled lip at its forward end, lowering the slope of the charger plate with respect to the furnace near the end of each forward

stroke of the charger plate and returning it to its initial slope before the next forward stroke ,and discharging the batch material from the charger plate into the furnace on the return stroke.



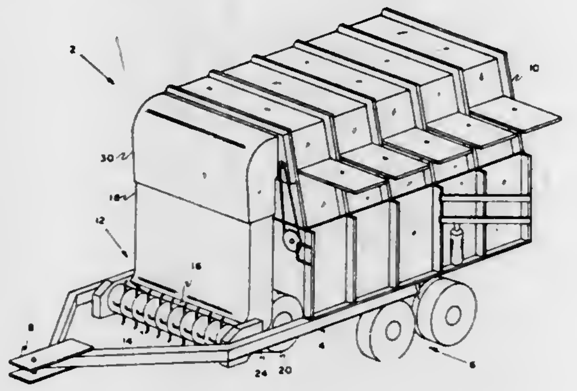
3,868,032
AIR DELIVERY SYSTEM

Ezra Cordell Lundahl, Idaho Falls, Idaho, assignor to Ezra C. Lundahl Inc.,, Logan, Utah

Division of Ser. No. 195,549, Nov. 4, 1971, Pat. No. 3,734,568. This application Mar. 21, 1973, Ser. No. 343,325The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.

Int. Cl. B60p *1/21*

U.S. Cl. 214—522 **1 Claim**



1. A wagon for loosely receiving a crop comprising:
a crop-receiving body;
the body comprising a lower portion and an upper compacting portion;
power means for reciprocating the upper compacting portion of the body generally down into and up from within the lower portion of the body to compact the crop within the body;
apparatus disposed to blow the crop received from a field into the body;
the apparatus comprising a generally vertically extending air influent duct comprised of at least two telescopically interrelated sections, one section being reciprocated with the upper section of the body toward the other section thereby substantially reducing the combined end-to-end length of the duct during compaction the duct being provided with a discharge opening communicating to said body and the other section being stationary.

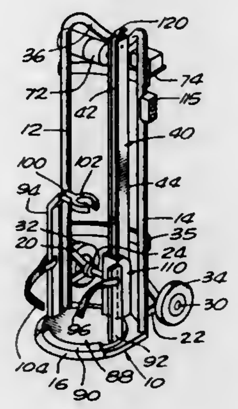
3,868,033
LIFTING TRUCK, PARTICULARLY ADAPTED FOR CYLINDRICAL CONTAINERS

Henry Antoine Le Duff, 4411 Eleventh Ave., Los Angeles, Calif. 90043

Filed June 14, 1973, Ser. No. 369,794

Int. Cl. B65g *65/04*

U.S. Cl. 214—707 **9 Claims**



1. As an article of manufacture, a lifting truck, particularly adapted for lilfting cylindrical containers comprising, in combination:
a frame having a base platform and upright side column members and a further upright member for guiding an endless chain, the platform and upright side members being configurated to receive a cylindrical container;
an endless chain associated with and guided by the upright guide member;
a container lifting platform carrying a shoe member having hinged attachment to the endless chain by pivotal attachment of the shoe member to the chain at a point spaced from the platform whereby at the upper end of travel of the chain the shoe and lifting platform will tilt the container laterally to facilitate its removal and repositioning; cushioning means supported at the top of said upright member positioned to have the container rested thereon when tilted sideways during removal from the truck;
stabilizing means carried by said lifting platform for holding the container in position while being lifted, said stabilizing means including means adapted for engaging and holding a narrow neck of a bottle type container, said means for engaging and holding the bottle neck being an arm pivotally mounted on said lifting platform in position to be lowered after the bottle is in place on the lifting platform into a position for engagement with the neck of the bottle, said arm having an opening defined therein for engaging the neck of the bottle and into which the neck of the bottle may be inserted; and
controllable drive means for the endless chain whereby the lifting platform supporting the container may be lifted to a position at the upper ends of the upright side column members at which position the container can be tilted sideways and positioned for dispensing therefrom.

3,868,034
INDUSTRIAL LIFT TRUCKS

Cecil Goodacre, and Peter Alfred Leggett, both of Basingstoke, England, assignors to Lansing Bagnall Limited, Hampshire, England

Filed May 4, 1973, Ser. No. 357,383

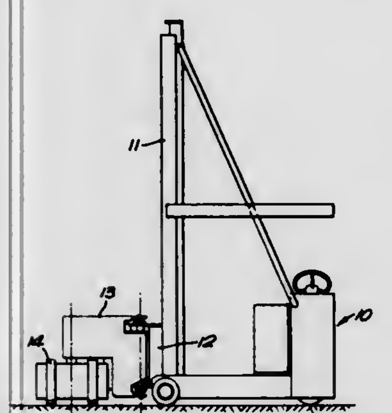
Claims priority, application Great Britain, May 8, 1972, 21443/72

Int. Cl. B66f *9/14*

U.S. Cl. 214—730 **4 Claims**

1. An industrial lift truck comprising:
a mast structure;
a load lifting carriage movable up and down said mast structure;

a turret head mounted on said load lifting carriage for sideways movement relative thereto;
a load supporting structure mounted on said turret head for rotation relative thereto about an upright axis;
an electric motor mounted on said turret head;
a switch controlling the operation of said motor;
a reversible transmission, said motor being drivably connected to said load supporting structure for rotating same through said reversible transmission;
a releasable frictional brake assembly comprising a pair of brake callipers, and spring means for biasing said callipers into braking engagement with a cylindrical member which is rotatable with said transmission so as to restrain it against movement; and



means for releasing said brake assembly when said motor is operated, said means comprising an electrically operated solenoid, and a switch controlling the operation of said solenoid, said switch being coupled for simultaneous operation with said first-mentioned switch controlling said motor, so that operation of said solenoid produces movement of said callipers out of braking engagement with said member against the action of said spring means when said motor is operated, whereby the brake assembly is selectively operable to hold said load supporting structure in any desired position, including three working positions whereat said load supporting structure is directed forwardly or to either side, further said brake callipers serving as an overload device to permit frictional rotation of said cylindrical member if sufficient external force is applied to said cylindrical member.

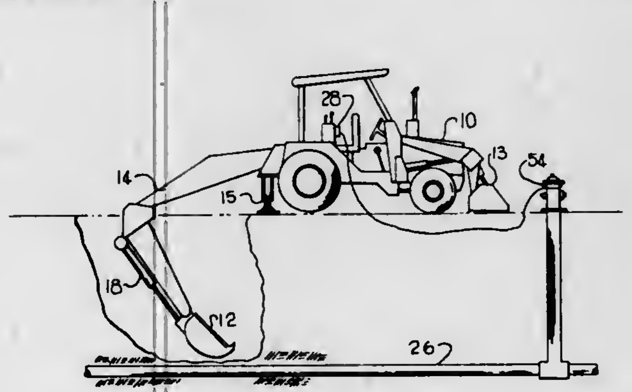
3,868,035
EARTH WORKING MACHINE PROTECTOR

Johnny Lee Broyles, McKinney, Tex., assignor to Tripple "I" Products, Inc., McKinney, Tex.

Filed Sept. 21, 1973, Ser. No. 399,551

Int. Cl. E02f *9/24*

U.S. Cl. 214—762 **3 Claims**



1. In an earth working machine having
a. a vehicle,
b. an earth working tool connected to the vehicle by
c. movable structure,
d. a hydraulic pump mounted on the vehicle,
e. hydraulic hoses connecting said pump to at least one
f. hydraulic motor attached to the movable structure whereby the earth working tool is manipulated,
g. said hoses including a high pressure line from the pump to the motor, and
h. detecting means for detecting that the tool is proximate an obstruction,
j. the improved structure comprising:
k. a bleed valve attached to the high pressure line,
m. said valve connecting the high pressure line to a low pressure point,
n. an electric solenoid controllingly attached to said valve,
o. said valve open unless the solenoid is energized, and
p. a key operated switch electrically connected to said solenoid,
q. said switch forming means for de-energizing said solenoid responsive to operation of said switch.

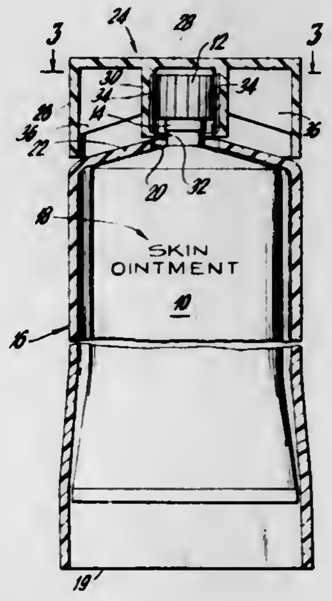
3,868,036
SAFETY PACKAGE FOR COLLAPSIBLE TUBES

John C. Wittwer, Armonk Rd., Mount Kisco, N.Y.

Filed Dec. 13, 1972, Ser. No. 314,815

Int. Cl. B65d *11/16, 55/02*

U.S. Cl. 215—12 **5 Claims**



1. A safety package for use in combination with a flexible squeeze tube of the type made of a material that can be broken by a child to enable the child to reach the contents of the tube and having a discharge opening formed in a reduced-diameter neck that extends from the tube, a closure cap being removably secured to the neck to cover the discharge opening when the tube is not in use to dispense material therefrom, said safety package comprising a sleeve member made of a flexible material that cannot be broken by a child, said sleeve member being shaped and dimensioned so as to enclose the squeeze tube, a permanently sealed lower end portion for receiving and retaining the lower end of the squeeze tube, and a tapered upper end portion having an opening therein of a diameter greater than that of the tube neck portion through which the neck portion passes, said tapered end portion enclosing the upper end of the squeeze tube and providing, along with said sealed lower end, means for permanently retaining the squeeze tube within said package.

3,868,037
CONTAINER AND SAFETY CLOSURE THEREFOR

Milton J. Grossman, Whittier, Calif., assignor to J. Carroll Baisch, Whittier, Calif., a part interest

Filed Oct. 2, 1972, Ser. No. 294,007

Int. Cl. B65d *55/02*

U.S. Cl. 215—216 **12 Claims**

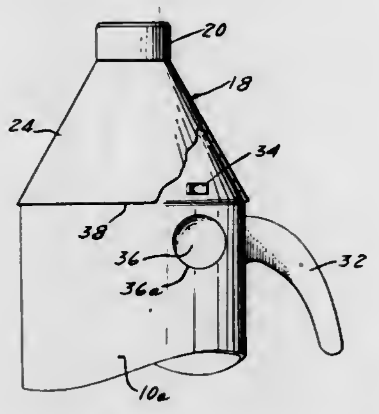
1. The combination of:
a container of resilient material, said container having a tapered upper portion terminating in a pouring neck, said

container having at least one locking part on said tapered portion;

and a closure device for said container, said closure device comprising:

a hollow closure portion for attachment to the neck of the container, said closure portion being closed by a wall at one end and is open at the other end;

a frusto-conical skirt flaring from the open end of the closure portion, said skirt being open at its free end which is opposite said closure portion;



at least one complementary locking part for the skirt adjacent the free end thereof, said locking part of the skirt being for releasable interlocking engagement with the locking part of the container when the closure device is in sealing position on the neck of the container, said locking parts being released by inward pressure on a place on the container adjacent the locking parts.

3,868,038
CLOSURES FOR CONTAINERS

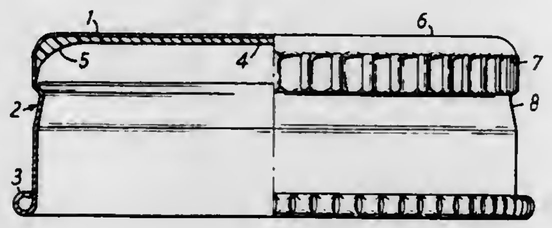
William Henry Hadley, Lichfield, England, assignor to Metal Closures Limited, West Bromwich, England

Filed Mar. 13, 1972, Ser. No. 234,084

Claims priority, application Great Britain, Mar. 15, 1971, 6888/71

Int. Cl. B65d *41/04*

U.S. Cl. 215—305 **4 Claims**



1. A closure blank for application to a screw-threaded bottle by a thread rolling operation wherein the bottle has a cylindrical seal surface above the threads, said blank comprising a single piece cup-shaped metal shell having a top and a skirt, joined together at and continuous with a radiused corner, formed with an outwardly directed bead at its lower margin; and a layer of gasket material bonded to the inner surface of the top and extending around said radiused corner to form an annular seal the invention comprising said shell being formed with an upper band of outwardly pressed knurling at the upper margin of the skirt adjacent said radiused corner radially outwardly of and overlapping at least in part said annular seal and a lower band of knurling in said bead, said outwardly pressed knurling having outwardly extending ribs and the metal therebetween having a diameter approximating that of the lower portion of said skirt the positioning of said annular seal radially inwardly of said outwardly pressed knurling and the knurling on the lower bead permitting material economy by permitting minimum overall closure height consistant with forming a side seal between said gasket material and the cylindrical sealing surface of the bottle while also providing sufficient purchase to allow removal of said closure from the bottle by hand.

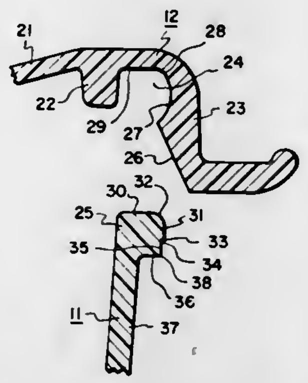
3,868,039
VACUUM SEALED FLUID COLLECTION BOTTLE

Legrand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

Filed Oct. 17, 1973, Ser. No. 407,232

Int. Cl. B65d *47/00*

U.S. Cl. 215—309 **7 Claims**



7. In combination, a container having opposite, wall surfaces and forming a radially outwardly extending lip said lip having a central annular planner edge, and an annular planar lower edge, and a resilient cover having an annular, outer flange portion and a mutually spaced, interior depending bead, said outer flange portion and bead engaging said opposite wall surfaces and thereby mutually receiving said lip of said container whereby said exterior edges sealingly penetrate the exterior of said flange of said cover.

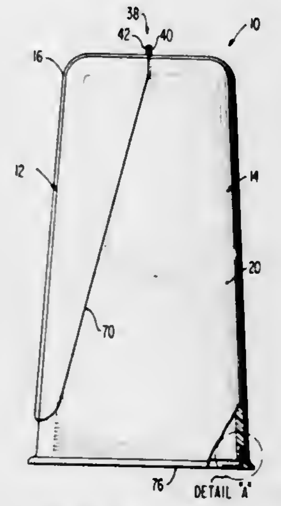
3,868,040
EQUIPMENT COVERING

Holger C. Langmack; Jr., Chancellor Point Rd., Trappe, and James B. Spear, Eveland Rd., Ridgley, both of Md.

Filed Oct. 30, 1973, Ser. No. 410,996

Int. Cl. E04h *5/04;* **E04b** *1/32*

U.S. Cl. 220—18 **8 Claims**



1. In assembly, a covering for electrical equipment and the like, comprising a shell structure fabricated in two pieces of moldable plastic with one of said pieces being mounted to the other of said pieces for pivotal movement relative thereto, said other of said pieces including means for mounting said shell in fixed relation to the electrical equipment being covered, both said pieces including cooperating means utilized to secure said pieces to each other, whereby when said pieces are assembled, said shell structure includes front and rear walls, side walls, a top wall and a terminal surface defining an open end, wherein said one of said pieces defines a portion of said front wall, portions of said side walls and a portion of said top wall, while the other of said pieces defines the remaining portion of said front wall, said rear wall, the remaining portions of said side walls, the remaining portion of said top wall and said terminal surface.

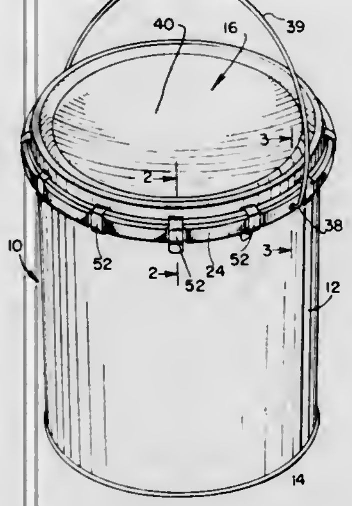
3,868,041
CAN OR CONTAINER WITH RESEALABLE LID

Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 341,861

Int. Cl. B65d *45/32*

U.S. Cl. 220—324 **9 Claims**



1. A can or container having a body with a closed bottom and an open top, with said body having a top edge, a removable cover for closing the open top, a rim formed separately from the body of the container and extending around the exterior of the body and adjacent the top edge of said body, said rim being shaped to provide upper and lower vertically extending wall portions positioned contiguous to the exterior of said container body with said vertically extending exteriorly spaced wall portion comprising an offset intermediate portion extending between said upper and lower vertically extending wall portions, with said vertical wall portions connected to the vertically offset intermediate portion of the rim by laterally extending connecting walls at the top and at the bottom, said cover having an inverted U-shaped peripheral portion which seats over the top edge of said body for sealing engagement therewith to permit the cover to be repeatedly removed and reapplied to close said container opening, said cover having an outer peripheral bead which is in engagement with the top connecting wall portion of the rim to limit the downward movement of said cover when on said container, and a clip detachably engaging said rim and said cover for securing said cover to said container, said clip adapted to be removed to permit removal of said cover.

3,868,042
BULK CARGO HANDLING SYSTEM

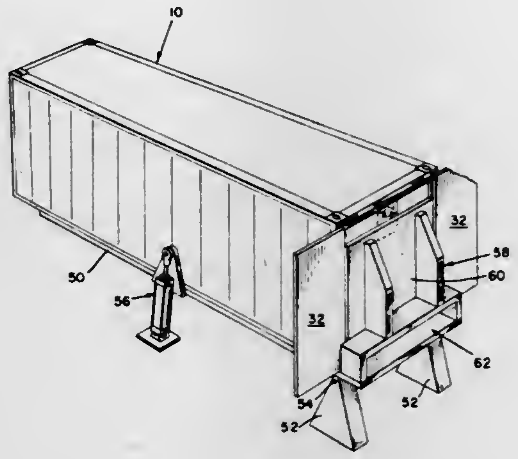
Bert A. Bodenheimer, Stamford, Conn., assignor to Sea-Land Service, Inc., Elizabeth, N.J.

Division of Ser. No. 83,952, Oct. 26, 1970, Pat. No. 3,696,952, which is a continuation-in-part of Ser. No. 21,966, March 23, 1970, Pat. No. 3,610,479. This application Feb. 9, 1972, Ser. No. 224,759

Int. Cl. B65d *25/14*

U.S. Cl. 220—63 R **16 Claims**

1. A liner for positioning within a conventional freight container having walls defining an opening normally closed by door means, and adapted for receiving, transporting and discharging bulk cargo comprising: an elongated, lightweight, flexible, bag member having at least one open end and having a configuration conforming generally to the interior length and width of a freight container; lightweight, flexible bulkhead means adjacent at least the open end of said elongated, flexible bag member; said flexible bulkhead means being yieldable to transmit forces applied by bulk cargo within the liner directly to the container door means; means retaining a substantial portion of said elongated bag to said yieldable bulkhead means for substantially closing said flexible bag member, said yieldable bulkhead means defining first opening means for loading bulk cargo and second opening means spaced from said first opening means for unloading bulk cargo; and means



normally sealing said second opening means until bulk cargo is to be unloaded from the liner.

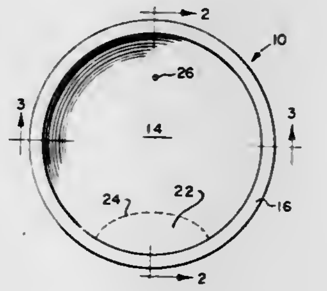
3,868,043
NO-SPILL HOT CUP LID

Howard R. Freemyer, P.O. Box 21, Jayton, Tex. 79528

Filed Sept. 14, 1973, Ser. No. 397,266

Int. Cl. A47g *19/22*

U.S. Cl. 220—90.4 **10 Claims**



1. A no-spill cup lid adapted to fit over a cup filled with hot liquid such as coffee comprising:

a. a circular circumferential flange adapted to snugly fit over the rim of the cup,
b. a cover panel extending within the confines of the flange to cover the cup,
c. a drinking section of the lid at an edge of the panel,
d. the section perforated along its boundary,
e. said perforated boundary extending over less than one-third the circumference of the lid at the edge of the lid,
f. said section extending across the lid less than one third the diameter of the lid, and
g. the panel sloped downward from the edge to the drinking section.

3,868,044
SHEET-HOLDING DEVICE IN SHEET-DISPENSING MACHINE

Masahiro Abe, and Hiroshi Terada, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-Ken, Japan

Filed Nov. 29, 1972, Ser. No. 310,552

Claims priority, application Japan, Nov. 29, 1971, 46-97164; Nov. 30, 1971, 46-112710; Nov. 30, 1971, 46-96664

Int. Cl. B65h *3/44*

U.S. Cl. 221—6 **2 Claims**

1. A sheet-dispensing machine for dispensing sheets selected from a plurality of groups of sheets of different kinds

such as a plurality of groups of monetary sheets of different monetary kinds and comprising:

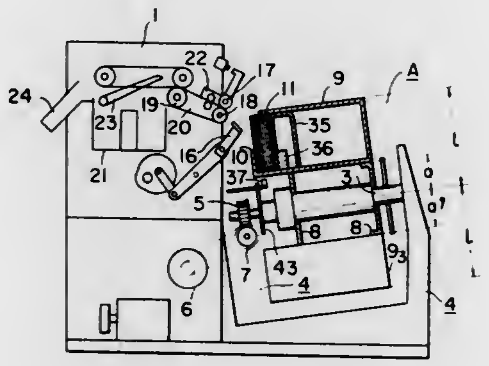
a plurality of sheet-containers each for containing sheets of a specific monetary kind and having a sheet-dispensing end from which the sheets contained therein may be dispensed up to a pre-determined limited quantity, said sheet-containers having dimensions corresponding to the dimension of the sheet of a respective monetary kind to be contained therein;

holding means operatively disposed in each container for continuously holding the sheets contained therein in a closely contacting parallelly-arranged stack and being adapted to follow the movements of said stack in a direction toward the dispensing ends of each container as sheets are successively dispensed therefrom to a completion position when said predetermined limited quantity of dispensed sheets has been attained;

support means for supporting said sheet-containers in a substantially angular array so that successive containers in the array contain sheets having a monetary value of a pre-selected sequence of monetary values;

rotatable driving means for rotating said support means so as to bring the sheet-dispensing ends of sequentially selected ones of said sheet-containers to a sheet-dispensing position where a desired number of sheets container therein can be dispensed;

detecting means for detecting the decrease in the number of sheets contained in each of said sheet-containers as sheets are successively dispensed therefrom, said detecting means including magnetic means operatively associated with each of said sheet-containers and being adapted to move in accordance with the following movements of said holding means disposed therein, and switch means operatively associated with each of said containers so that as said holding-means completes a following movement to said completion position consequent upon the decrease of number of sheets contained in their respective one of said containers position that a sheet-dispensing position, said magnetic means is brought into operative association with said switch means and actuates the same to generate a signal representative of the fact that said predetermined limited quantity has been attained;



adjustable support means for supporting said switch means and operatively associated with said rotatable driving means, whereby said switch means is automatically adjusted in response to the different dimensions of said sheet-containers so that said signal may be correctly generated irrespective of which one of said containers is disposed adjacent said sheet-removing position;

sheet-dispensing means operatively associated with said sheet-containers for dispensing sheets from respective sequentially selected ones of said sheet-containers when the sheet-dispensing ends thereof are brought to said sheet-dispensing positions; and

sheet-receiving means for receiving the sheets dispensed from said sheet-dispensing means.

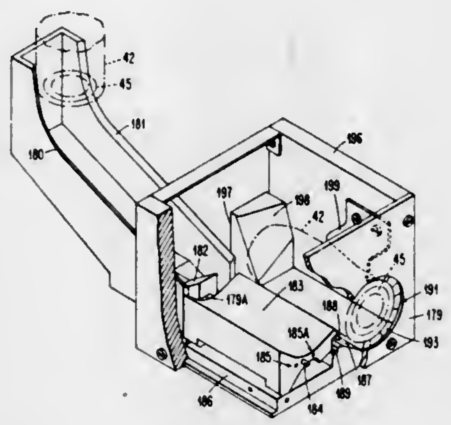
3,868,045
ARTICLE CONVEYING

Spencer A. Snell, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,609

Int. Cl. B65g *11/20*

U.S. Cl. 221—194 **10 Claims**



1. Article handling apparatus having an upwardly opening input port and a side opening output port, and adapted to handle an elongated cylindrical article,

the improvement including in combination:

a concave arcuate slide extending downwardly from adjacent said input port and having an approximate horizontal end portion remote from said input port;

a horizontally pivoted, horizontally elongated cradle having one end adjacent said slide for receiving articles therefrom, said cradle including a counter weight portion along a first elongated side, a pivot member pivotally supporting said cradle closer to a second elongated side than said first elongated side such that the cradle is horizontal when empty and pivots downwardly toward said second side when an article is thereon;

a spring-loaded interposer at said horizontal end portion positioned to yield to an article on said slide but nonyieldable to an article on said cradle, and

a planar ramp extending downwardly from said second elongated side to said output port.

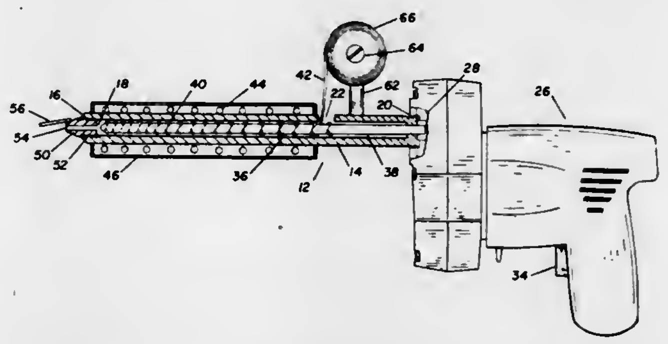
3,868,046
EXTRUDER

John Maddalena, Ringoes, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,810

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HE **3 Claims**



1. Portable apparatus for applying a sealant to a surface comprising:

a portable extruder which can be hand held and moved and operated by hand, said extruder having

a. an elongated barrel,

b. an extruding screw coaxially and rotatively mounted within the barrel,

c. a feed port for sealant toward one end of the barrel and which extends through the side of the barrel and communicates with the interior thereof adjacent the extruding screw,

d. a sealant extrusion orifice located toward the end of the barrel opposite the end at which the feed port is located,

e. means for heating the barrel,

f. a power head attached to the screw and whereupon applying power to the head the extrusion screw is rotated and a sealant can be drawn into the barrel, conveyed along the length thereof and then discharged through the extrusion orifice by rotation of the extrusion screw,

B. hand grip means on said extruder for holding, moving and thus guiding the extrusion orifice by hand over a surface onto which the sealant is applied, and

C. a reel rotatively mounted on the extruder and a sealant rope wound upon the reel and extending from the reel to said feed port, said rope being drawn from said reel and into the extruder barrel upon rotation of said extruding screw in the barrel.

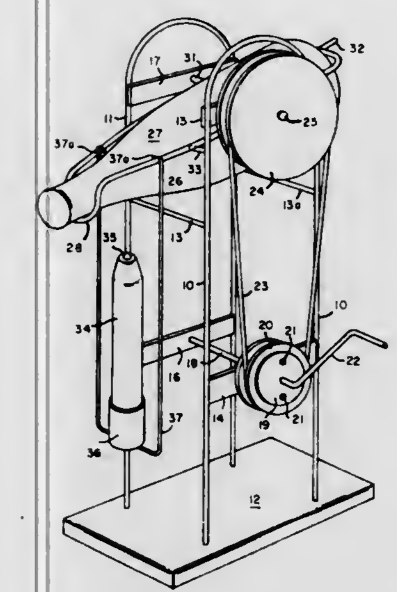
3,868,047
WINE DECANTER

Donald Bersano, 15350 Winchester Blvd., Los Gatos, Calif. 95030

Filed June 25, 1973, Ser. No. 373,519

Int. Cl. B67d *5/64*

U.S. Cl. 222—166 **1 Claim**



1. In apparatus for decanting wine and the like the combination comprising a main frame, means comprising a cradle-shaped frame for supporting a bottle with wine therein, stub shafts attached to opposite sides of said cradle-shaped frame journaled on said main frame for pivotally supporting said cradle-shaped frame on said main frame, means for gradually tilting said supporting means to bring said bottle into its wine pouring position, a light source, means attached to one of said frames for supporting said light source under the neck of said bottle, said light source projecting rays of light through the neck of said bottle to illuminate the wine as said wine is poured from said bottle to render any solid matter flowing out of said bottle with said wine visible.

3,868,048
APPARATUS FOR DEPOSITING A FIRST FOOD SUBSTANCE UPON A SECOND FOOD PRODUCT

Arnold Soodalter, University Park Apartments Apt. M-1, Holyoke, Mass. 01040

Filed Jan. 14, 1974, Ser. No. 432,961

Int. Cl. B67d *5/48*

U.S. Cl. 222—380 **2 Claims**

1. Apparatus for transferring measured increments of a first food substance with respect to and in timed relation with the stop and go operating cycle of a second food substance handling machine dispensing increments of a second food substance comprising:

a. a container for containing a quota of the first food substance;

b. a dispensing head for dispensing increments of the first food substance with respect to dispensed increments of the second food substance;

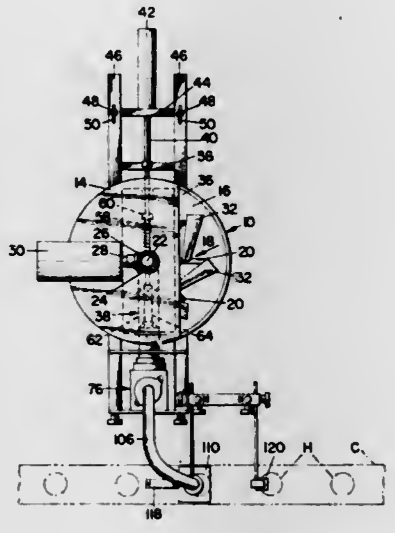
c. a transfer housing intermediate and communicating with the container and dispensing head;

d. a piston reciprocally receivable within the container for transferring the first food substance from the container through the transfer housing to the dispensing head;

e. an air cylinder for loading the piston and imparting thereto a feeding stroke in one direction and a non-feeding stroke in counter direction;

f. control means for alternately controlling the actuation of the air cylinder in feeding and non-feeding strokes responsively to the stop and go movements of the second food substance handling machine;

g. a first pressure-operable by-pass valve disposed between the dispensing head and transfer housing and operative by a spring of relatively great tension and being in a normally-closed position with respect to communication between the transfer housing and dispensing head;



h. a second pressure-operable by-pass valve disposed between the container and transfer housing and operative by a spring of relatively small tension and being in a normally-closed position with respect to communication between the transfer housing and container;

i. the second by-pass valve on the retrograde stroke of the piston being opened by the pressure of the first food substance for permitting the passage thereof into the transfer housing with the first by-pass valve being closed by the spring of relatively great tension;

j. the second by-pass valve on the pressure stroke of the piston being opened and the first by-pass valve being opened by the pressure of the first food substance for permitting the passage thereof from the transfer housing to and through the dispensing head and onto the second food substance; and

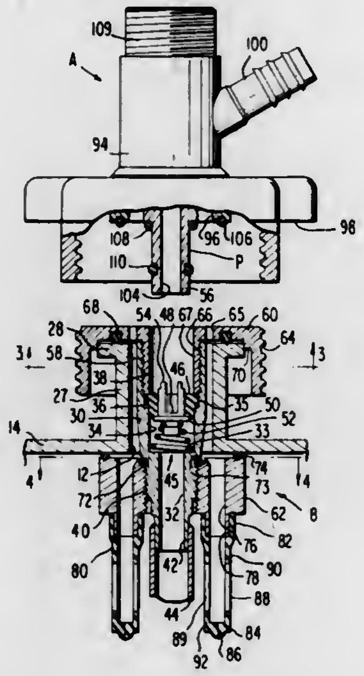
k. means for exerting continual pressure upon the first food substance within the container for moving the first food substance into the path of the piston comprising a cluster of vanes rotatably mounted and vertically reciprocable within the container.

3,868,049
KEG TAPPING DEVICE

Mack S. Johnston, 26 Hitching Post Dr., Rolling Hills, Calif. Continuation of Ser. No. 83,675, Oct. 23, 1970, , which is a continuation of Ser. No. 782,204, Dec. 9, 1968,. This application Nov. 28, 1972, Ser. No. 310,039

Int. Cl. B65d *83/00*

U.S. Cl. 222—400.7 **7 Claims**



1. A liquid dispensing apparatus comprising a keg, said keg having top, bottom and side walls with an opening in one wall, said one keg wall having an outwardly projecting substantially cylindrical portion about the keg opening, a keg adapter including a member receivable within the opening in the one keg wall and having a fluid outlet passage therethrough for the transfer of fluid from the inside to the outside of the keg, a normally closed valve in said fluid outlet passage, means for retaining said member within the keg wall opening, means comprising at least a portion of said member defining a fluid inlet passage through the keg opening for the transfer of fluid from the outside to the inside of the keg, a pair of discrete check vlaves, each of said check valves including a closed flexible envelope in communication with said inlet passage and having spaced side walls and an end wall with an elongated slit in at least one of said walls, said fluid inlet passage means including a part having a lateral dimension greater than the diameter of the keg opening and a pair of passageways through said part forming a portion of said fluid inlet passage, said check valves lying in communication with said passageways, and sealing means engaging between said part and a keg wall portion about the opening, said member comprising a reduced diameter sleeve, said fluid inlet passage including a substantially annular passage formed between said member and said cylindrical keg wall portion, said retaining means including a ring coupled to said member and having a plurality of openings in communication with said annular passage and a seal disposed between said ring outwardly of its associated openings and the cylindrical wall portion of said keg, said sealing means engaging between said part and an interior portion of said keg wall.

3,868,050
VALVE ASSEMBLY FOR SEMI-FROZEN COMMODITY

Carl Gorychka, Beloit, Wis., and Richard M. Keyes, Rockford, Ill., assignors to Beatrice Foods Company, Chicago, Ill.

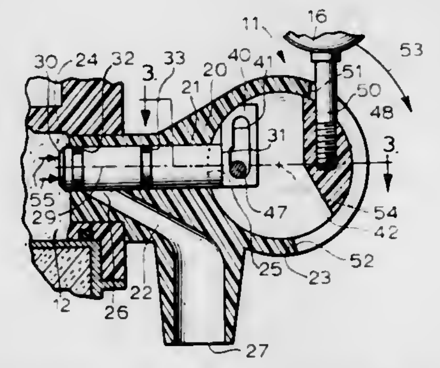
Filed Oct. 29, 1973, Ser. No. 410,901

Int. Cl. B67d *5/06*

U.S. Cl. 222—509 **4 Claims**

1. In a semi-frozen commodity confection machine of the type which operates under positive pressure, a valve assembly for dispensing a semi-frozen commodity comprising:

- a block member comprising a first passage having a receiving port communicating with the machine for receiving semi-frozen commodity and a rear port, a second passage having a first port communicating with said first passage and a dispensing port for dispensing the commodity, said second passage being inclined relative to said first passage, and a ring portion having an inner area communicating with said rear port;
- a piston movably positioned within said first passage and having first and second ends;
- a piston block member coupled to said second end of said piston and having an elongated slot therein;
- a bifurcated disc comprising two arms within said ring, said disc being free to rotate therein, and having a slot in each said arm, said slots being aligned with each other;
- said piston block member positioned in between said bifurcated disc arms and said block member slot being aligned with said aligned arm slots;
- a pin extending through said piston block member slot and said aligned arm slots; and



- means for rotating said disc to cause said pin to travel in a circular path and ride within said piston block member slot for imparting linear travel to said piston within said first passage between first and second travel positions, said piston being in a closed valve position within said first passage at said first travel position to preclude transfer of the commodity from the machine to said first passage, and in an open valve position at said second travel position to allow the commodity to be transferred under positive pressure from the machine, through said first passage, and through said second passage to be dispensed therefrom whereby,
- said piston travels linearally within said first passage, and after closing of said valve, the residual frozen commodity within said second passage melts and runs down said inclined passage precluding blockage of said valve.

3,868,051
DRIPLESS PLASTIC POUR SPOUT INSERT

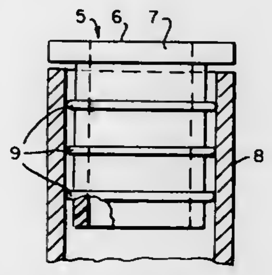
Sven Karl Lennart Goof, 236 A Gammel Strandrej, 3050 Humlebaek, Denmark

Filed Feb. 16, 1972, Ser. No. 226,956

Claims priority, application Denmark, Feb. 18, 1971, 736/71

Int. Cl. B67d *5/74*

U.S. Cl. 222—571 **13 Claims**



1. A liner for use in the outlet end opening of a container having a pouring spout, and for use in pouring of aqueous liquid, said liner covering a terminal end of said spout and being located such that at the terminal end of the spout said liquid when poured terminally contacts only the liner, the improvement wherein at least the surface of that part of said liner which said liquid by pouring terminally is in contact with consists essentially of polytetrafluoroethylene.

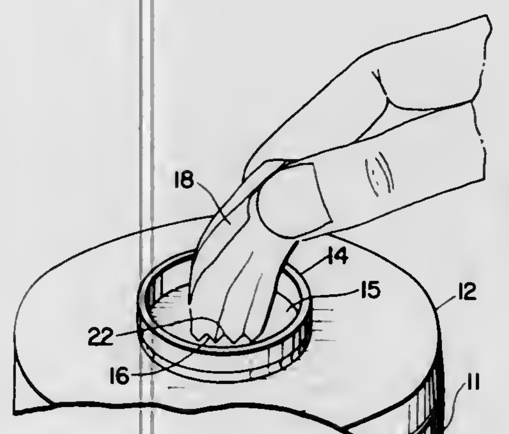
3,868,052
MOIST TISSUE DISPENSING

Winston G. Rockefeller, c/o Colgate-Palmolive Company, 300 Park Ave., Woodcliffe Lake, N.J. 10022

Filed Feb. 26, 1973, Ser. No. 336,057

Int. Cl. B26f *3/02*

U.S. Cl. 225—106 **2 Claims**



1. A sheet material dispensing package comprising a container enclosing a supply of premoistened liquid absorbent fibrous or equivalent flexible material such as paper in the form of successive sheets of predetermined size separated by weakened regions such as transverse perforations or scores, characterized by a wall of said container having during dispensing sa relatively narrow normally open aperture through which the leading sheet of said supply extends to be manually grapsed for full withdrawal by a consumer, the length of said aperture being materially less than a sheet of said material and the opposite edges of said aperture being spaced apart a distance materially greater than the thickness of said material at least over their major coextensive lengths, and said side edges being formed with laterally aligned relatively stiff sharp edged free projections extending into the aperture and terminating short of pressure engagement with each other but being adapted to operatively engage a weakened region of said supply with a tear force producing coaction during withdrawal of the leading sheet whereby separation of each leading sheet may be positive and reliable.

3,868,053
TRANSPORT DEVICE FOR WEB MATERIAL

Sieghard Arnold, Hildrizhausen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

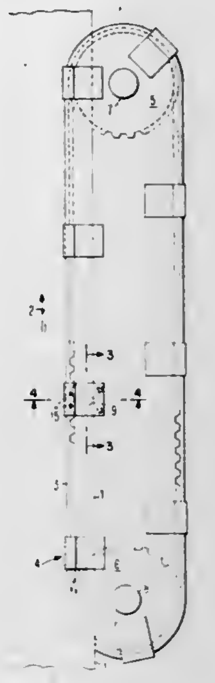
Filed Oct. 15, 1973, Ser. No. 406,757

Claims priority, application Germany, Dec. 1, 1972, 2258802

Int. Cl. B65h *17/34*

U.S. Cl. 226—173 **5 Claims**

1. Transport device for web-like material, particularly for paper webs in high-speed printers of data processing systems, where an endless belt driven over pulleys is used, characterized in that the axles (7,8) of the pulleys (5,6) are substantially vertical to the plane of the web (1), and that on the belt (3) ball or roll clamping devices (4) acting in transport direction (2) are provided and arranged in such a manner that during its working cycle the belt (3) travels a greater distance



(3′) than the clamping points (9′) of the ball or roll clamping devices (4) with the web (1).

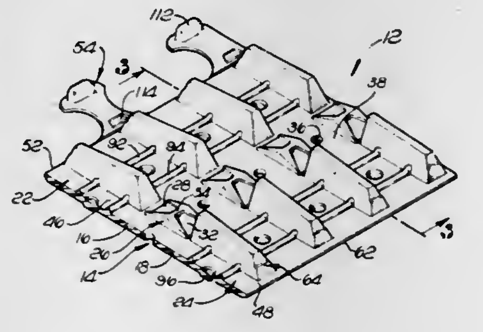
3,868,054
CONTAINER

Wayne Congleton, Whittier, Calif., assignor to Dolco Packaging Corporation, Burbank, Calif.

Continuation of Ser. No. 273,558, July 20, 1972, Pat. No. 3,834,609. This application Mar. 21, 1973, Ser. No. 343,605

Int. Cl. B65d *1/00*

U.S. Cl. 229—2.5 **13 Claims**



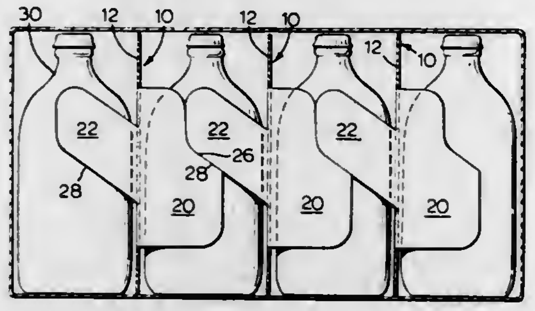
1. An improved container assembly, comprising:

- a member which when unassembled is in a generally planar configuration and has first and second side edges;
- a plurality of hinge lines formed in said member each along the axis of said container from said first side edge to said second side edge for enabling said member to be folded into a predetermined shape and for dividing the member into a first section, a second section and a central section, said central section interconnecting said first and second sections;
- each of said section being formed with a plurality of hollow ribs formed by indentations therein spaced inwardly from the side edges and spaced one from another along the axis of said container, said ribs interacting when said member is folded along said hinge lines so as to form a structure of generally U-shaped cross-sectional configuration having a pair of free edges spacced one from the other which define the ends of said U-shaped configuration, and to divide said container into a plurality of discrete compartments; said

a tab member having a first end integrally formed with one of said edges and a free end adapted to be positioned adjacent the other of said edges for retaining said assembly in said U-shaped cross-sectional configuration.

3,868,055
CARTON DIVIDER

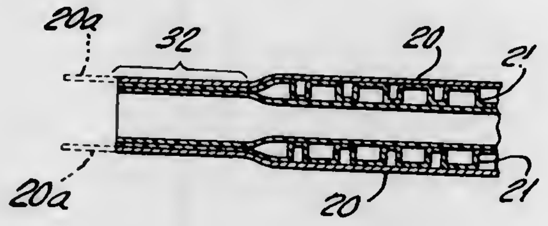
Marinus J. M. Langen, 21 Chilcot Ave., and Jacobus J. Langen, 10 Ringway Cres., both of Rexdale, Ontario, Canada
Filed Mar. 26, 1973, Ser. No. 344,908
Int. Cl. B65d *5/48*
U.S. Cl. 229—15 **1 Claim**



1. A lay flat cardboard divider blank, comprising:
a main body panel,
a series of similar single ply sub-divider panels cut from said panel,
each of said sub-divider panels being connected to said main body panel about a hinge axis and having a first portion on one side of its hinge axis and a second portion on the other side of its hinge axis and being swingable about its hinge axis to locate said first portion thereof on one side of said main body panel and said second portion thereof on the other side of said main body panel,
adjacent sub-divider panels in said series of sub-divider panels in the lay flat condition being disposed with a first portion of one sub-divider panel in close relation to a second portion of the other sub-divider panel and with the upper edge of at least the outer end of said first portion below the lower edge of said second portion whereby said first portion of each of said sub-divider panels is above the second portion thereof when said sub-divider panels are swung about their hinge axis to locate the first portion thereof on one side of said main panel and a second portion thereof on the other side of said main panel.

3,868,056
PROTECTIVE CONTAINERS AND METHODS OF MAKING THE SAME

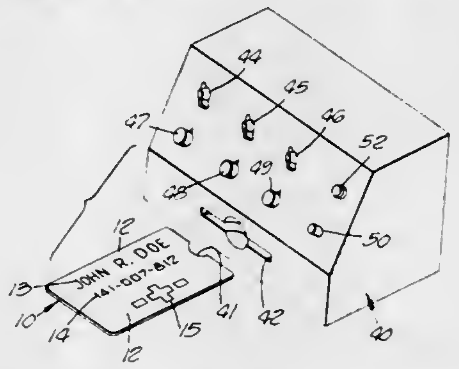
Eitan Keren, Bronx, N.Y., assignor to Sealed Air Corporation, Fair Lawn, N.J.
Continuation of Ser. No. 120,896, March 4, 1971, abandoned. This application May 21, 1973, Ser. No. 362,169
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 **1 Claim**



1. A protective container comprising an outer covering folded upon itself to form two layers disposed in overlying relationship and a seamless edge, a sheet of cellular material adhered to the inner facing surfaces of said outer covering, said cellular material having a first plastic sheet including a plurality of closely spaced embossments extending from one side thereof and a second plastic sheet secured to the other side of said first sheet, at least two opposing, substantially parallel marginal hermetically sealed edge zones and at least one open edge zone, the cellular material disposed within said marginal hermetically sealed edge zones and said open edge zone being crushed to collapse the cells in said cellular material and said hermetically sealed edge zones being folded and sealed to the adjoining surfaces of the container whereby said hermetically sealed edge zones impart a relatively high degree of stiffness to said container and thereby enhance the protective qualities thereof.

3,868,057
CREDIT CARD AND IDENTITY VERIFICATION SYSTEM

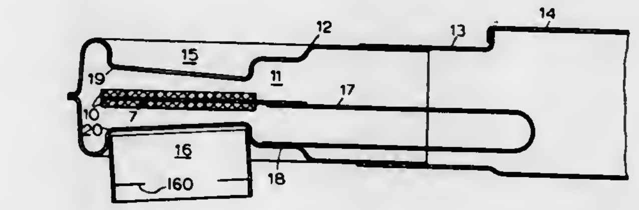
Robert C. Chavez, 1764 Industrial Rd., Las Vegas, Nev. 89102
Continuation-in-part of Ser. No. 157,928, June 29, 1971, abandoned. This application June 4, 1973, Ser. No. 366,762
Int. Cl. G06k *5/00, 7/06, 19/06*
U.S. Cl. 235—61.7 B **19 Claims**



1. An improved identity verification system, comprising:
a card, a plurality of contact points situated upon said card, first and second circuit means embedded within said card, three or more of said contact points being coupled to said first circuit means and providing a unique set of contact points, the remainder of said contact points being coupled to said second circuit means;
card reader means comprising contact means for establishing electrical contact with each of the contact points of said card, third circuit means in said reader means, a plurality of selector means electrically coupled between said contact means and said third circuit means for selectively coupling individual ones of said contact means to said third circuit means; and
indicator means coupled to said first and third circuit means, said indicator means providing an output signal when said first and third circuit means are coupled together.

3,868,058
AIR INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINES

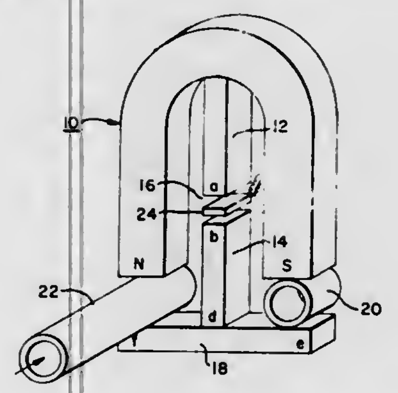
Terrence Graham Hoare, 82 Doversley Rd., Birmingham, England
Filed Oct. 5, 1971, Ser. No. 186,379
Int. Cl. G05d *23/13*
U.S. Cl. 236—13 **3 Claims**



1. An air intake temperature control device for internal combustion engines which comprises:
a. a housing having two apertures therein disposed opposite and facing each other and adapted to serve as air inlets for respective heated and unheated air flows, and an aperture adapted to serve as an air outlet for the mixed air flows,
b. a cantilever-like bi-metallic strip mounted at one end thereof in the housing and disposed in the path of the mixed air flows,
c. a valve-like vane rigidly mounted on the other end of the bi-metallic strip and disposed between the two opposed and facing air inlet apertures such as to control the relative flows of heated and unheated air according to the result temperature of the mixed air flows, said vane movable towards and away from said air inlets, said vane being sandwiched between discs of elastomeric material, the discs being each at least as large as its respective aperture,
d. the heated air inlet aperture presenting a greater resistance to air flow than the unheated air inlet aperture, whereby during acceleration a pressure difference is generated across said vane, and in which the bi-metallic strip is resilient, whereby the said pressure difference deflects the strip and causes the valve to increase the ratio of unheated air during acceleration.

3,868,059
MAGNETIC BRIDGE-TYPE METER FOR MAGNETICALLY PERMEABLE PARTICULATE MATTER

William M. Hickam, Pittsburgh, and Robert G. Charles, Allison Park, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 7, 1974, Ser. No. 431,587
Int. Cl. F23n *1/02*
U.S. Cl. 236—15 E **8 Claims**

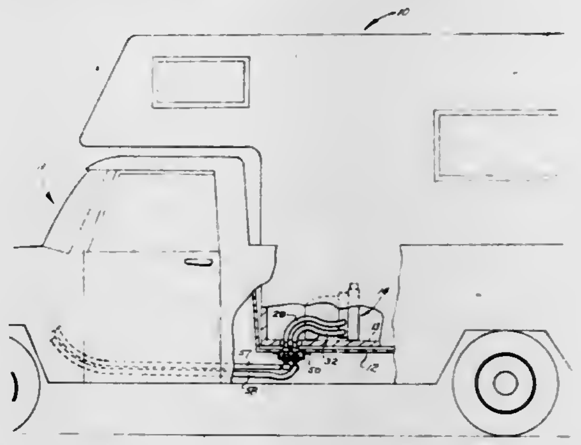


1. Apparatus for quantitatively analyzing the content of magnetically permeable particulate material in a fluid stream, comprising a magnetic bridge circuit having two magnetic loops each including a common magnetic flux path and leg portions connecting opposite ends of the commmon path, air gaps in the respective leg portions, means for conducting a fluid stream having said particulate material entrained therein through one of said air gaps, and means in said common path for sensing unbalance of the bridge circuit and for producing an electrical signal which varies as a function of the degree of unbalance, the arrangement being such that as the particulate material passes through the air gap, the bridge will become unbalanced and said electrical signal will be a measure of the amount of magnetically permeable material passing through the air gap.

3,868,060
CAMPER HEATING SYSTEM

John C. Mitchell, 2572 Elysium Ave., Eugene, Oreg. 97401
Filed Sept. 19, 1973, Ser. No. 398,647
Int. Cl. B60h *1/04*
U.S. Cl. 237—12.3 B **1 Claim**

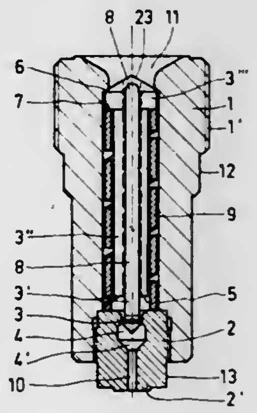
1. A heating system for a truck mounted camper unit of the type removably mounted within the truck box, said system comprising,
a portable fluid to air heat exchanger including fan means, an enclosure for said fan means, inlet and outlet fittings, flexible inlet and outlet conduit segments serving the heat exchanger, valve means for regulating fluid flow through said segments and the heat exchanger,
quick-release coupling members of the self-sealing type,
means mounting said quick-release coupling members in a recessed manner below the camper supporting surface of the truck bed and serviced by hoses in communication with the trucks engine cooling system.



additional quick-release coupling members carried by said flexible inlet and outlet conduit segments for coupling with said mounted coupling members through an opening in a camper wall whereby the heat exchanger may be put into fluid circuit with the trucks cooling system subsequent to installation of the camper in the truck box or alternately uncoupled and removed from the camper without loss of engine coolant.

3,868,061
INJECTOR NOZZLE WITH SHUTOFF VALVE FOR INJECTION MOLDING MACHINE

Karl Hehl, Siedlung 183, Lossburg/Wuerttemberg, Germany
Filed Feb. 21, 1973, Ser. No. 334,419
Claims priority, application Germany, Feb. 21, 1972, 2208014; July 12, 1972, 2234156
Int. Cl. B05b *1/30*
U.S. Cl. 239—571 **15 Claims**



1. An injector nozzle with a pressure-responsive shutoff valve for injection molding machines and the like, comprising in combination:
a nozzle body assembly, including an elongated nozzle body having an inlet end and a discharge end, a central nozzle bore extending axially therethrough, and an inlet for pressurized flowing material into said bore;
an elongated valve plunger movably arranged inside the nozzle bore, the plunger including a plunger body, and at the discharge end thereof a plunger head having a substantially cylindrical seating portion, a plunger neck of a smaller diameter linking the plunger head to the plunger body;
a substantially cylindrical valve bore near the discharge end of the nozzle body assembly, the valve bore communicating with the nozzle bore and serving as a valve seat coop-

erating with said seating portion of the plunger head, the latter having an outer diameter for sliding contact inside said valve bore, the length of the valve bore being shorter than the length of the plunger neck so that the valve bore and the plunger neck define an annular flow channel, when the plunger is advanced toward the discharge end of the body to an open position in which the plunger head is disengaged from the valve bore;

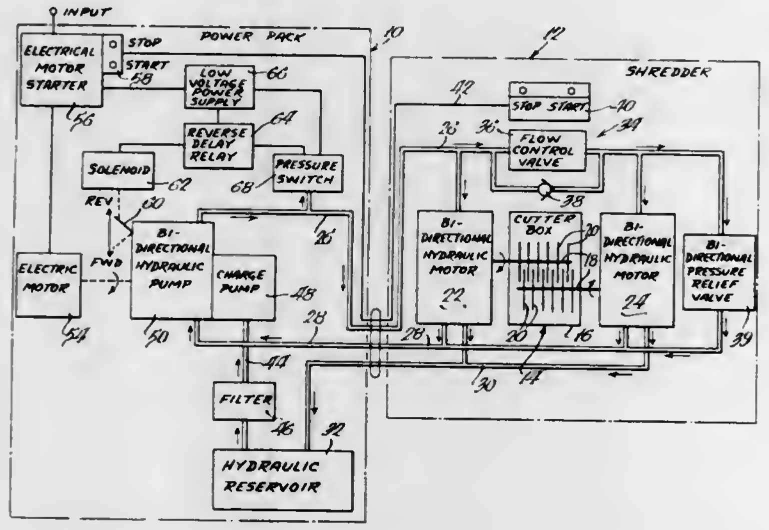
means for guiding the valve plunger in its axial motion; and a spring engaging the valve plunger and biasing it from its open position toward its retracted position in which the plunger head is seated inside the cylindrical valve bore.

3,868,062
TIRE SHREDDING MACHINE

Charles L. Cunningham, Nashville, and Jimmie L. Holladay, Antioch, both of Tenn., assignors to The Coats Company, Inc., LaVergne, Tenn.

Filed Mar. 25, 1974, Ser. No. 454,066
Int. Cl. B02c *13/30*

U.S. Cl. 241—36 **4 Claims**



1. A shredding machine comprising: a cutting head including a pair of generally parallel, rotatable shafts each having cutting and feeding means thereon; a pair of bidirectional, rotational output, hydraulic motors, one for each shaft, for rotating the shafts in opposite directions; a hydraulic pump; means for driving said pump; conduit means connecting said pump to said motors in parallel and defining a closed loop; means associated with one of said pump and said conduit means operable to reverse the direction of flow of hydraulic fluid in said conduit means to thereby reverse the direction of rotation of said hydraulic motors; and pressure responsive means associated with said conduit means for sensing when the pressure therein exceeds a predetermined value for operating said reversing means for a predetermined period of time.

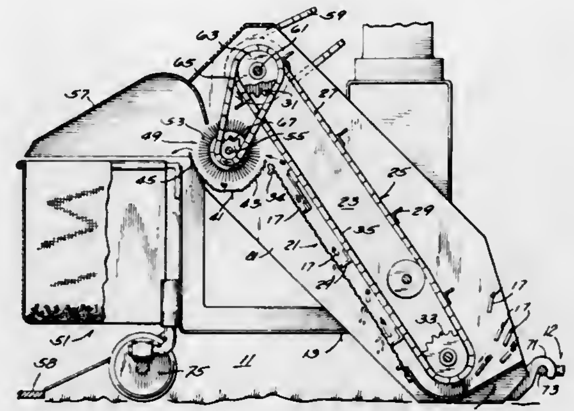
3,868,063
CORE PROCESSING MACHINE

Frank A. Slaker, New Brighton, Minn., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 16, 1973, Ser. No. 416,373
Int. Cl. B02c *21/02*

U.S. Cl. 241—101.7 **14 Claims**

1. A machine for processing soil cores which include soil and vegetable matter and which are produced in a core-producing machine, said core processing machine including a frame, a hopper supported by said frame in position to receive the soil cores from the core-producing machine, means for supporting said frame for travel over the ground with said hopper out of engagement with the ground under normal operating conditions, a first wall mounted on said frame and extending outwardly from said hopper and including an outer end and perforations between said hopper and said outer end, and first conveyor means for conveying soil cores in the direction from said hopper and along said first wall, whereby to facilitate partial break-up of the soil cores and passage of soil from the cores through said perforations in said first wall.

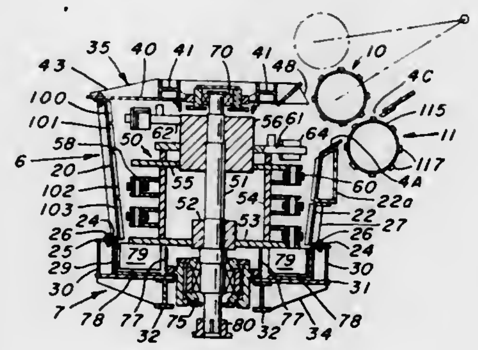


3,868,064
APPARATUS FOR REDUCING AUTOMOBILE BODIES AND OTHER WASTE TO USABLE SCRAP

Stanley M. Coulter, Wexford, and Raymond P. Lombardi, Pittsburgh, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 23, 1973, Ser. No. 335,001
Int. Cl. B02c *13/16*

U.S. Cl. 241—186.4 **16 Claims**



1. Apparatus for reducing automobile bodies to fragments for metallurgical use with a mill comprising:

a. a shell of downwardly decreasing diameter with an internal liner,

b. a single rotor substantially centered in the shell having a pair of diametrically opposed knocker arms thereon, one below the other, and means below the arms providing a plurality of ring hammer units arranged around the rotor below the arms in a descending succession of levels, there being a downwardly decreasing clearance between the exterior of the rotor and the liner in the shell and at the bottom of the rotor there is a minimum clearance space for the discharge of fragments to a receiving means below the rotor,

c. the rotor having a depending shaft extending below the shell and having drive means for rotating the rotor at the lower end of the shaft,

d. an inclined chute of a width to receive an automobile endwise extending upwardly and outwardly from the shell and having a lower terminal portion passing through the shell and terminating therein in such position that the forward end of an automobile body upon reaching the lower end of the chute will be in the plane of rotation of said knocker arms, and

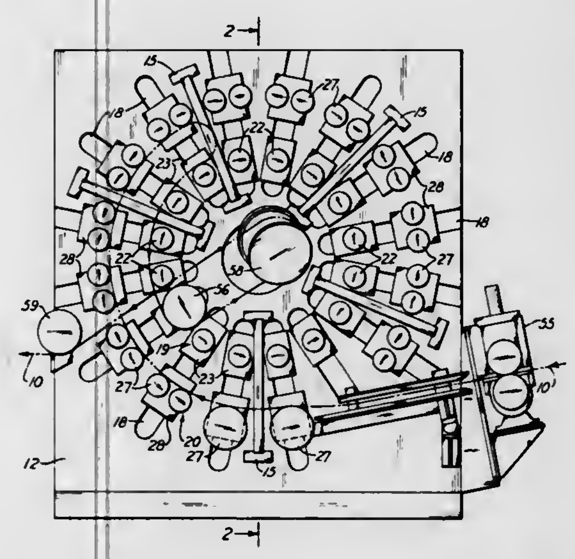
e. feed means comprising cooperating upper and lower power-driven rollers extending crosswise of the chute, said upper roller being movable vertically and being weighted to yieldably bias it downwardly toward the lower one.

3,868,065
ROTARY STRIP ACCUMULATOR

Wlodzimierz W. Maruszcak, c/o Henry C. Westin Esq., c/o Wean United Inc., 948 Fort Duquesne Rd., Pittsburgh, Pa. 15222

Filed Sept. 20, 1972, Ser. No. 290,690
Int. Cl. B65h *17/48*

U.S. Cl. 242—55 **3 Claims**



1. An accumulator for weblike material having a first series of rollers arranged to form a circular inner roller basket and a second series of rollers arranged to form a circular outer roller basket,

said two baskets being arranged relative to each other so that a number of convolutions of material can be wound into two distinct coils separated from each other by a reversible loop of material,

a frame for supporting said first and second baskets in a manner that the coils are formed with their major axes in an horizontal plane,

said frame includes a member arranged in a plane normal to the planes containing the axes of rotation of said rollers,

said member having a number of guide slots located radially to the axes of the formed coils,

means for rotatably supporting said rollers,

said roller supporting means received in said guide slots,

separate spider elements common to the rollers of a different one of said baskets for moving their respective baskets in said guide slots,

said frame including a central supporting means for carrying said spider elements in tandem fashion and in a manner that the elements are free to move parallel to the axes of the formed coils,

links for connecting said spider elements to their associated rollers so that on movement of the spider elements over said central supporting means their associated rollers will move radially in unison,

a piston cylinder assembly for each spider element for moving their respective baskets, and

said member of said frame arranged on one side of said frame for connecting said rollers of said first and second baskets to the frame in a manner that the rollers are cantileverly mounted relative to said frame and project away from said frame so that said rollers are open and unobstructed from said one side of said frame.

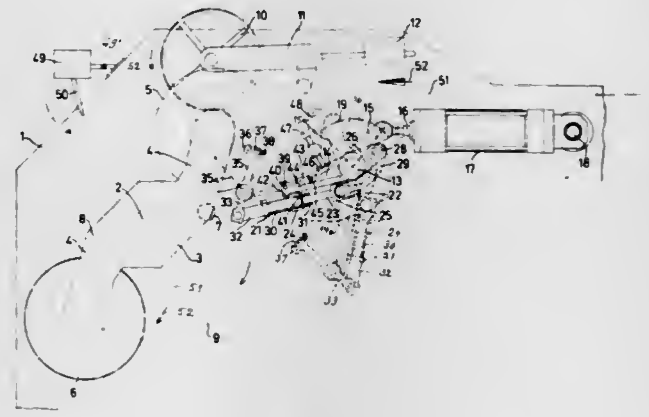
3,868,066
WINDING DEVICE FOR MAGNETIC TAPES

Horst Baumer, Auf dem Pol II, 5222 Lichtenberg, Germany

Filed Oct. 15, 1973, Ser. No. 406,447
Int. Cl. B65h *19/26*

U.S. Cl. 242—56 A **11 Claims**

1. A winding device for magnetic tapes and the like, comprising, in combination: a turret mounted for at least pivotal movement; at least a pair of flanged reels removable supported in a symmetrical arrangement on said turret, some of said reels being coaxially stacked on said turret at a winding position; means for guiding a narrow recording tape and the like to at least one of said reels and for winding the tape thereon; means for laying the tape onto said one reel, and for severing the tape when said one reel is almost full; means for transferring the winding from said one reel to another reel, previously disposed on said turret at a location spaced apart from said winding position and constituting an exchanging position; said means jointly including a table pivoted at one end to a stationary member and movable toward and away from said one reel; the free end of said table protruding into the area of the flanges of said one reel when said means are brought into said winding position; said free end being swingable out of said area in a withdrawn, stand-by position of said means; a push rod carried on said table; a slide block slidably supported by said push rod; at least one striking and severing lever pivotably associated with said slide block, through the intermediary of control levers attached to said slide block; a pre-stressed pawl on said table for arresting said slide block; a plurality of severing arms, corresponding in number to that of said coaxially stacked reels at said winding position; a tensioning block slidably supported by said push rod; at least one rocker linking said stationary member to said tensioning block; and control and drive means for selectively operating in a coordinated manner said guiding means, said laying means and said transferring means, for at least partial rotation of said turret, driving of at least one of said reels, and pivoting of said table.



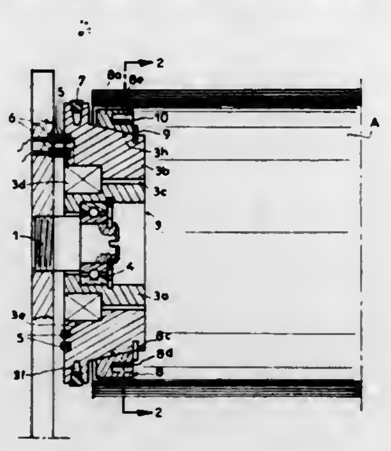
3,868,067
APPARATUS FOR DRIVING AND RELEASING A SUPPORT ON WHICH A BAND OR FILAMENT OF MATERIAL IS TO BE WOUND

Michel Cadillon, 83 rue Paul Verlaine, Villeurbanne/Rhone, France

Filed Oct. 15, 1973, Ser. No. 406,399
Claims priority, application France, Feb. 26, 1973, 73.07230; June 8, 1973, 73.21577
Int. Cl. B65h *17/02*

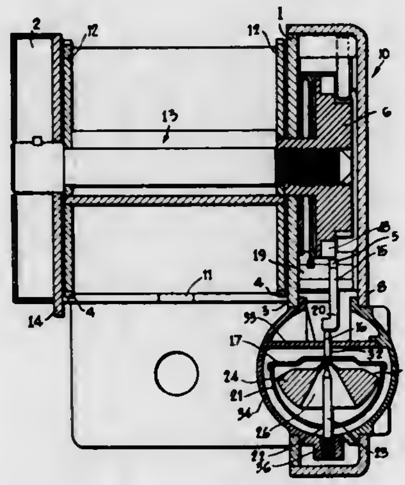
U.S. Cl. 242—68.2 **14 Claims**

1. Apparatus for drivingly engaging and disengaging a hollow support on which is wound a band or filament of material, said apparatus comprising a fixed arm member, a rotatable member mounted on the fixed member, means for driving the rotatable member in rotation, a ring member mounted on said rotatable member and positionable within the hollow support, and electromagnetic means supported by one of said members and active on another of said members for (a) engaging the ring member in driving relation with the rotatable member and with the support to establish a drive connection for said support and (b) decoupling the ring member from the rotatable member and disengaging said ring member from the support.



3,868,068
SEAT BELT RETRACTOR

Robert Boyson Heath, St. Marys, South Australia, Australia, assignor to Kangol Magnet Limited, Carlisle, England
Filed Feb. 21, 1973, Ser. No. 334,199
Claims priority, application Australia, Feb. 22, 1972, 8040/72
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **7 Claims**

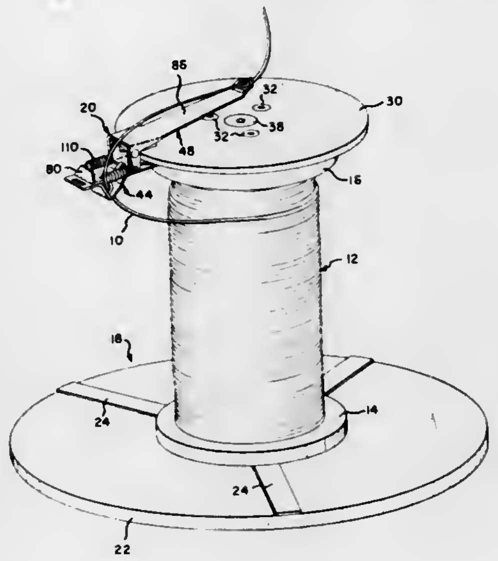


1. A seat belt retractor having an inertia sensing device which comprises a pin extending upwardly from means secured relative to a seat belt retractor frame, a weight having a central hollow in its under surface and supported by the upper end of the pin engaging the surface of the weight which defines said central hollow, an actuator plate positioned above the weight and arranged to engage the upper surface of the weight upon tilting of the weight on the pin, and a pair of spaced guide means co-operable with the actuator plate guiding the plate for movement in a direction co-axial with the pin, one of the guide means being above and the other being below the weight.

3,868,069
DEREELING APPARATUS

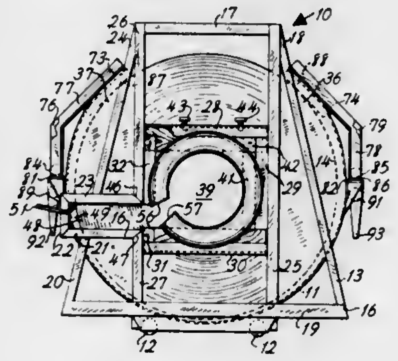
William J. Schulz, West Cornwall, Conn., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 6, 1974, Ser. No. 440,226
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 **9 Claims**

1. A device for dereeling filamentary material from a stationary spool, said device comprising:
  a base assembly including a weighted base plate, a spindle projecting centrally of said base plate, and at least one friction pad fixed to said base plate, and
  a spinner assembly adapted to be mounted on the free end of said spindle, said spinner assembly including a disc fixedly mounted on and normal to said spindle, and an orbital caliper assembly adapted to coact with said disc, said caliper assembly comprising a first rotor arm rotatably mounted on said spindle, a second standoff arm mounted on a free end of said first arm, and a third caliper arm pivotally attached to said free end of said first arm, each said first and said third arm having a bore in the free end thereof and brake pads fixed to adjacent surfaces thereof to act on opposing surfaces of said disc, whereby tensioning of the filamentary material fed successively through the bores of said stand-off arm and said caliper arm disengages said brake pads from said disc allowing rotation of said spinner assembly.



3,868,070
HEAVY COIL PAY-OFF

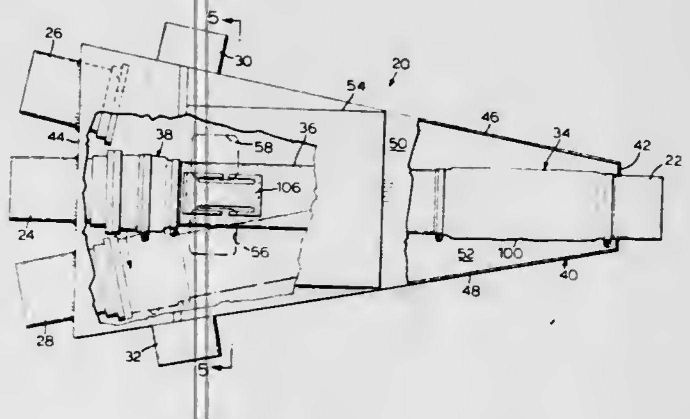
John R. Goodzey, Flora, Ill., and Robin L. Johnson, Jonesboro, Ind., assignors to The Anaconda Company, New York, N.Y.
Filed Sept. 21, 1973, Ser. No. 399,563
Int. Cl. B65h *49/00*
U.S. Cl. 242—129 **8 Claims**



1. Apparatus for supporting and continuously paying off a plurality of heavy coils of metal rod comprising helical layers of inner and outer turns, comprising:
  A. first and second means horizontally supporting said coils on the outer turns thereof,
  B. first and second vertical restraining means comprising a continuous outer periphery encompassing the area of said coils uprightly fixed to said support means, said restraining means being mounted side by side and each comprising a central opening for the forward passage of said rod and a flat area corresponding to an area of said coils and restraining said coils from forward movement,
  C. walls defining a passage in said area of at least one of said restraining means, said passage communicating with said opening of said one of said restraining means and extending to a point radially beyond said outer turns, whereby a continuous length of rod passing from an outer turn of one of said coils, through said passage externally of said coil, and through said opening in the other of said restraining means joins an inner turn in another of said coils.

3,868,071
LINE SELECTOR FOR PNEUMATIC SYSTEMS

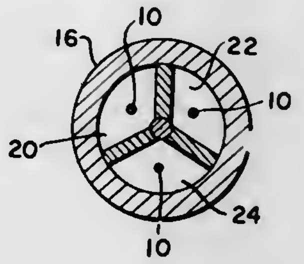
Peter Brinkerhoff Weaver, 5 Brushwood Ct., Don Mills, Ontario, Canada
Filed Jan. 30, 1973, Ser. No. 328,111
Claims priority, application Canada, Feb. 2, 1972, 133737
Int. Cl. B65g *51/18, 51/24*
U.S. Cl. 243—31 **18 Claims**



1. A line selector for use in pneumatic tube systems of the type used to transport carriers from station to station, the line selector comprising:
  a main housing;
  an inlet through which the carrier enters the main housing; a main outlet and a branch outlet through which the carrier selectively leaves the line selector;
  a flexible coupling located within the housing and attached at a first end thereof to the inlet the flexible coupling comprising a tubular coupling piece having an angled face at one end thereof; the inlet defining an end face adjacent said angled face and the angled face being removed from said end face when the seal assembly is in engagement with the main outlet and substantially in engagement with said end face when the seal assembly is in engagement with the branch outlets; a rolled spring in snug engagement with the outer surfaces of the coupling piece and the inlet for biasing the coupling piece into axial alignment with the inlet, the spring being resiliently deformed when the seal assembly is in engagement with said branch outlet; a shoe attached to an inner surface of the spring; the inlet and the coupling piece defining a pair of adjacent and aligned axial slots with the slot in the coupling piece being located at a part of the angled face most remote from the inlet end face when the seal assembly is in engagement with the main outlet; and said shoe located in said slots to guide a carrier passing through the flexible coupling so that the carrier does not snag on the angled face of the coupling piece;
  a seal assembly coupled to the other end of the flexible coupling for receiving the carrier after the carrier leaves the flexible coupling;
  the seal assembly and outlets defining means for locating the seal assembly selectively against each one of the outlets and further including means for pneumatically sealing the seal assembly to the selected outlet; and
  a switching mechanism coupled to the main housing and operable to move the seal assembly out of engagement with one of the outlets and into engagement with another of the outlets.

3,868,072
ORBITAL ENGINE

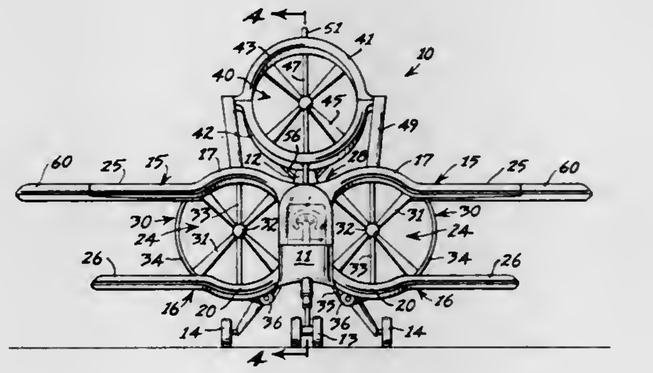
Charles P. Fogarty, Box 254, Commack, N.Y. 11725
Continuation-in-part of Ser. No. 664,463, Aug. 30, 1967, abandoned. This application Sept. 28, 1971, Ser. No. 184,414
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS **30 Claims**



1. A method of driving an engine in space, comprising:
  providing an artificial system in a space environment including a smaller mass associated by a tether to a larger mass; revolving said smaller mass about said larger mass;
  causing the angular momentum of the revolving smaller mass to rotate the larger mass; and
  the rotational energy of said rotating larger mass as a driving means of said system functioning as said engine.

3,868,073
PROPULSION SYSTEM FOR AIRCRAFT

Myron L. King, c/o Lyzon Art Galleries, 411 Thompson Ln., Nashville, Tenn. 37211
Filed Jan. 30, 1974, Ser. No. 438,025
Int. Cl. B64c *3/10*
U.S. Cl. 244—34 A **9 Claims**



1. A propulsion system for aircraft comprising:
  a. a fuselage having a front-to-rear longitudinal axis,
  b. an upper air foil fixed to said fuselage and having a leading edge and a trailing edge,
  c. said upper air foil extending arcuately, convex upward, transversely of said fuselage,
  d. a lower air foil fixed to said fuselage, having a leading edge and a trailing edge, and spaced substantially vertically below said upper air foil,
  e. said lower air foil extending arcuately, convex downward, transversely of said fuselage, so that the opposed, spaced, concave surfaces of said air foils generally form an air duct,
  f. a rotary propeller having blade tips,
  g. means rotatably mounting said propeller behind said duct and adjacent the trailing edges of said air foils so that the rotary path of said propeller tips is above the trailing edge of said upper foil, but not below the trailing edge of said lower air foil, and
  h. means for driving said propeller.

3,868,074

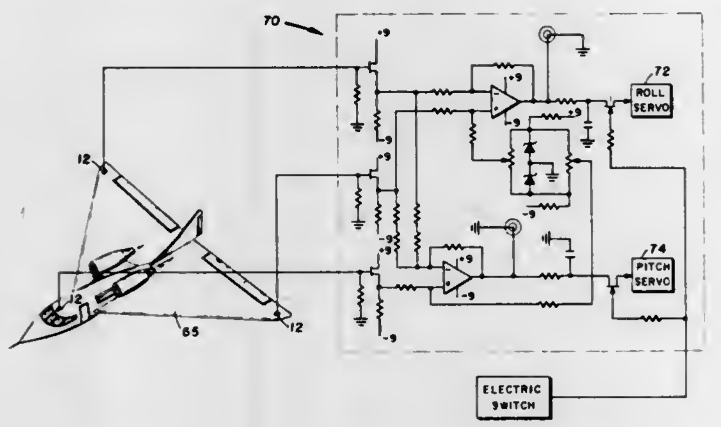
METHOD AND APPARATUS FOR ATTITUDE DETECTION AND STABILIZATION OF AN AIRBORNE VEHICLE USING THE ELECTROSTATIC FIELD IN THE EARTH'S ATMOSPHERE

Maynard L. Hill, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Oct. 27, 1972, Ser. No. 301,363

Int. Cl. B64c *13/18*

U.S. Cl. 244—77 R **40 Claims**



5. A method for stabilization of at least one axis of an airborne vehicle operating in the static electric field existing in the earth's atmosphere, comprising the steps of:

defining an equipotential line existing in the static electric field present in the earth's atmosphere; and,

aligning the axis of the airborne vehicle with the equipotential line.

9. Apparatus for stabilization about at least one axis of an airborne vehicle operating in the electric field existing in the earth's atmosphere, comprising:

at least two static voltage sensing probes disposed on the airborne vehicle;

means electrically connected to the probes for receiving the potentials sensed by said probes and for producing an output signal proportional to the difference in sensed potential between the probes; and,

means for adjusting the position of at least one of the probes to cause the output signal to be zero, the line joining the probes thereby being aligned along an equipotential line.

3,868,075

JOINTLESS CODED TRACK CIRCUITS FOR RAILROAD SIGNAL SYSTEMS

Frank V. Blazek, and Thomas C. Vaughn, both of Allegheny, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Continuation-in-part of Ser. No. 276,066, July 28, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 398,250

Int. Cl. B61l *3/10*

U.S. Cl. 246—34 CT **12 Claims**

1. A track circuit arrangement for a stretch of railroad track having electrically continuous rails, comprising in combination,

a. a low alternating current impedance cross bond connected across the rails at selected locations for dividing said stretch into a series of track sections,

b. a track current transmitter means at each location coupled to the corresponding cross bond and operable for supplying track current to the section in each direction from the associated bond,

1. each section current having a different preselected frequency and different from the preselected frequencies of a prefixed number of successive sections in each direction from that particular location,

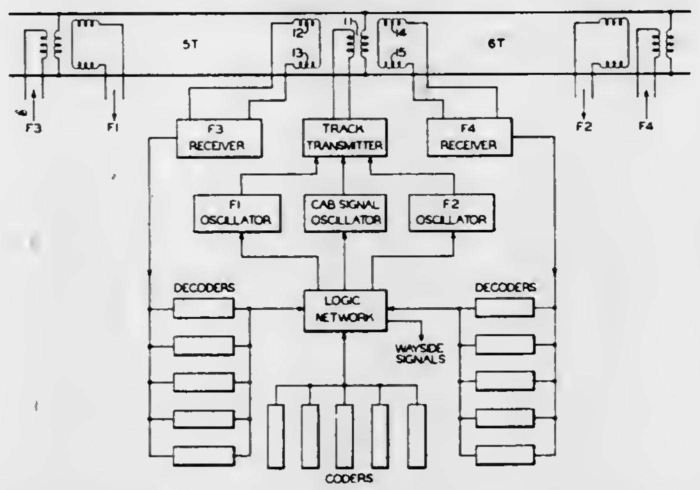
c. a frequency determining means at each location coupled to the associated transmitter means for establishing the preselected frequency of the track current supplied to each section adjoining that location,

d. a separate tuned track receiver coupled to the rails on each side of the cross bond connections at each location and responsive only to track current from the transmitter means at the other end of the corresponding section for producing an output signal,

e. a single logic network means at each location connected to receive the output signal of each track receiver and responsive thereto for registering a nonoccupied indication of the corresponding section when the signal is present and an occupied indication when the signal is absent,

f. a plurality of traffic condition signal generators at each location, each producing a distinct signal representing a predetermined advance traffic condition along the stretch of track, and

g. a plurality of decoder units, one for each advance trafffic condition signal, associated at each location with each track receiver and coupled to said logic network means,



h. said signal generators selectively coupled by said logic network means to said frequency determining means for separately modulating the track current supplied to each adjoining track section in accordance with the detected advance traffic condition in the corresponding direction along said stretch,

i. each track receiver further operable for demodulating the received track current to which it is responsive to produce a traffic condition output signal corresponding to the modulating signal selected at the next adjacent location in that direction,

j. each plurality of decoder units connected for receiving the output signal from the associated track receiver and responsive thereto for actuating said logic network means to selectively couple a signal generator to modulate the track current supplied to the other track section in accordance with the detected advance traffic condition.

3,868,076

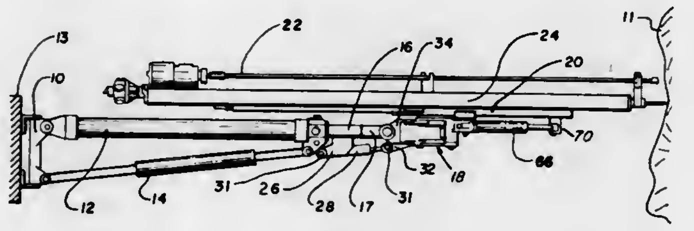
FEED TRAVERSE MECHANISM

Michael A. Beagan, Jr., Harwood Ln., Claremont, N.H. 03743

Filed Oct. 17, 1973, Ser. No. 407,329

Int. Cl. E21c *11/00*; F16m *13/00*

U.S. Cl. 248—16 **8 Claims**



1. A drill mounting comprising: an elongated boom assembly; guide frame supporting and traversing means pivotally carried by said boom assembly adjacent one end portion thereof for limited rotation about a first pivot axis extending in a direction substantially normal to the longitudinal axis of said boom; said traversing means having a serial plurality of link elements each pivotally connected to the adjacent link elements to form a closed polygon with the pivot axes of said link elements being located at the respective apexes of said polygon, being parallel to each other, and extending in a direction substantially normal to the longitudinal axis of said boom and said first pivot axis; an elongated drill guide frame assembly pivotally carried by at least one of said link elements for rotation about a second pivot axis; and selectively operable means pivotally carried by at least one of said link elements and cooperable with said traversing means to selectively move said second pivot axis generally transversely to either side of said longitudinal axis.

3,868,077

CONNECTOR FOR A LAMP HOLDER OF A LAMP STARTER HOLDER

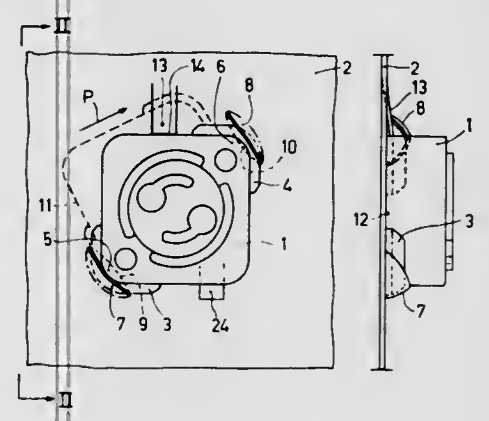
Cornelius Hendrikus Josephus Van Tiel, and Gerhardus Johannus Berns, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,125

Claims priority, application Netherlands, Oct. 11, 1972, 7213713

Int. Cl. G12b *9/00*

U.S. Cl. 248—27 **3 Claims**



1. A connector for a holder for a lamp or lamp starter comprising a plate having a resilient lug and only two holding lugs formed integrally from the plate by a force-through operation, each holding lug so arranged as to engage a respective projection on said holder when said holder is assembled to the plate, wherein said holding lugs are first and second holding lugs so disposed that said holder can be assembled to the plate only by inserting one projection under the first holding lug and then rotating said holder to an assembled position so as to insert another projection under the second holding lug, said resilient lug being so located as to be biased to a depressed position by said holder while a projection has been inserted only under the first holding lug and said resilient lug being in a locking position when said holder is in said assembled position, said holder being detachable by forcing said resilient lug to its depressed position, rotating said holder about said first holding lug in a reverse direction, and then removing the respective projection from under said first lug.

3,868,078

COLLAPSIBLE PROJECTION SCREEN STRUCTURE

Robert W. Zinn, Addison, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.

Filed May 18, 1973, Ser. No. 361,854

Int. Cl. G03b *21/56*

U.S. Cl. 248—171 **15 Claims**

1. A projection screen structure, comprising,

a. an elongate standard,

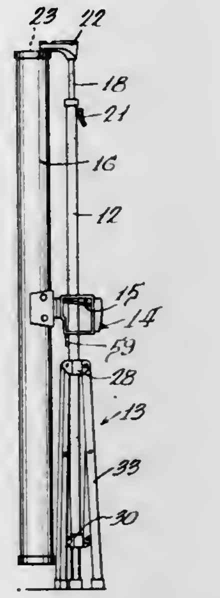
b. a screen support adjustable along an intermediate portion of the standard,

c. a screen casing mounted on the screen support,

d. a rolled screen in the casing,

e. a hanger on the upper end of the standard,

f. means cooperating with the standard and the screen support for holding the support in adjusted positions on the standard,



g. stop means on the standard normally engageable with the support for limiting downward movement of the support at a storage position on the standard, and

h. means mounting the support on the standard for bypassing the stop means to selectively lower the support below the stop means.

3,868,079

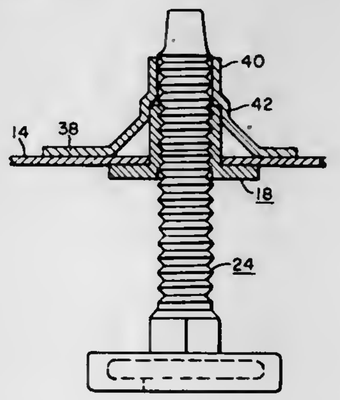
LEVELING FOOT ASSEMBLY FOR A LAUNDRY APPLIANCE

Leslie Johnson, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 9, 1973, Ser. No. 377,845

Int. Cl. A47b *91/06*

U.S. Cl. 248—188.4 **1 Claim**



1. An adjustable leveling foot assembly for a laundry appliance having a housing including a bottom panel, said assembly comprising;

a nut having a flanged head attached to said panel in facing engagement with the underside of said panel and an integral internally threaded stem extending upwardly through an appropriately sized aperture in said panel;

a footbolt having a weight-bearing head and a threaded shank portion, said shank portion being threadably received within said stem for adjustable extension from said nut by turning said footbolt;

sleeve means engaging the stem end of said nut adjacent said upper end, said sleeve having a flat flange area in engagement with said panel on the side opposite said flanged head of said nut, said flanged area extending along said panel a greater dimension than said head and said sleeve interferingly engaging the portion of said footbolt extending from said upper end of said nut to prevent vibrationally induced turning of said bolt.

3,868,080

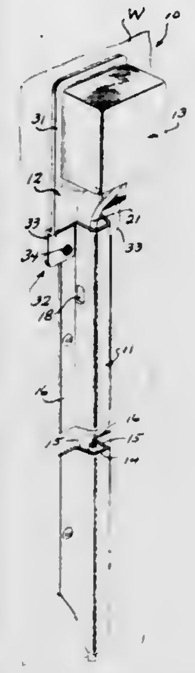
PROTECTED TELEPHONE SERVICE INSTALLATION

John B. Olson, Milwaukee, Wis., assignor to Utility Products Co., Milwaukee, Wis.

Filed Nov. 2, 1973, Ser. No. 412,197

Int. Cl. H02g *3/02*

U.S. Cl. 248—205 R **2 Claims**



1. A mounting device for mounting a telephone circuit protector at an exterior wall of a building to which telephone service is to be supplied via a buried cable, characterized by:

A. an upright plate member having flat front and rear surfaces, and having a vertically elongated slot;

B. captive nuts slidably secured in said slot and providing for the reception of screws for mounting the circuit protector on the front surface of the plate member;

C. an elongated upright stake member having front and rear surfaces and a rearwardly opening groove therein which extends along the entire length of the stake member to receive that end portion of a service cable which is brought up out of the ground for connection to a circuit protector on the plate member.

said stake member having a lower end portion which is adapted to be driven into the ground closely adjacent to an exterior wall of a building with its groove facing the same, whereby the stake member can cooperate with said wall in protectively enclosing that portion of a service cable extending from the ground to the circuit breaker; and

D. means rigidly securing said plate and stake members together comprising an offset attaching portion on one of said members engaging the other thereof to locate the plate member in a plane forwardly of the rear surface of the stake member a distance such that said nuts will not interfere with positioning of the stake member closely adjacent to the exterior of a building wall in front of which the mounting device is to be located.

3,868,081

BRACKETS

David L. Morgan, 6, Church Row, Hampstead, London, N.W. 3, and Peter Sampson, 20, Kingswood Rd., London, S.W. 19, both of England

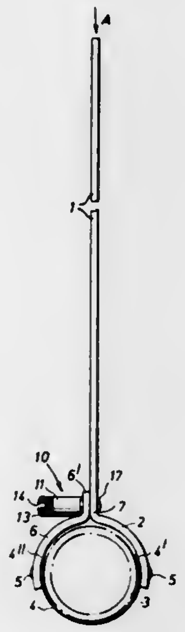
Filed Feb. 23, 1973, Ser. No. 335,052

Claims priority, application Great Britain, Feb. 28, 1972, 9011/72

Int. Cl. A47b *47/00*, *3/06;* **A47g** *29/02*

U.S. Cl. 248—245 **9 Claims**

1. A bracket for supporting a shelf or the like from an upright cylindrical support, said bracket comprising an elongate arm upon which a shelf or the like is supported horizontally in use of the bracket and a clamping head arranged at one end of said arm for attaching the bracket to the said upright cylindrical support, wherein said clamping head comprises a part-cylindrical portion attached to said arm and adapted to lie against part of the circumference of the cylindrical support, a leaf spring member permanently having a natural curvature which is substantially the same as that of said part-cylindrical portion, means for permanently attaching one end of said leaf spring member to said part-cylindrical portion forming a substantially continuous internal cylindrical surface which lies against the surface of the cylindrical support in use of the bracket, a part-cylindrical member, means for permanently attaching the part-cylindrical member to the other end of said leaf spring member, said part-cylindrical member having a curvature substantially the same as that of said part-cylindrical portion, the natural resilience of said spring strip and the length of the latter being such that when said part-cylindrical portion lies against part of the circumference of the cylindrical support the spring strip brings the part-cylindrical member into juxtaposition with another part of the circumference of said support while the spring strip itself lies against an intermediate part of the circumference of said support so that the head surrounds said support, said part-cylindrical member having a straight portion which lies adjacent part of said arm when the leaf spring member embraces the support, and securing means for releasably connecting said straight portion and said adjacent part of the arm to clamp the head to the support.



3,868,082

DEVICE IN A MICROTOME FOR DAMPING OF VIBRATIONS

Anton Soderqvist, Vallingby, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

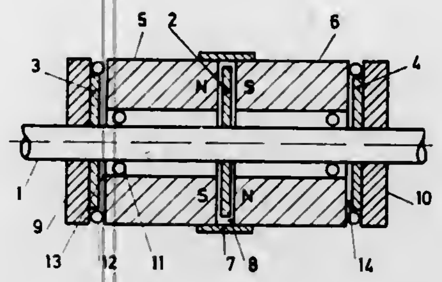
Filed July 16, 1974, Ser. No. 488,947

Claims priority, application Sweden, July 16, 1973, 7309095

Int. Cl. F16f *7/10;* **H02k** *41/02;* **F16f** *15/12*

U.S. Cl. 248—358 R **2 Claims**

1. Device in a microtome for damping of vibrations of the specimen arm of the microtome, characterized in that it comprises an axis, consisting of a non-magnetic material and rigidly connected to the specimen arm, said axis being provided with a flange, consisting of a material having low resistivity, and two U-magnetized toroid cores, embracing the axis and resiliently suspended in relation to the axis, said U-magnetized toroid cores being affixed relative to each other in order that a constant air gap is at hand between said cores through which air gap the toroid cores are forcing a magnetic field, said U-magnetized toroid cores being arranged in such a way that said flange is surrounded by said air gap.



3,868,083

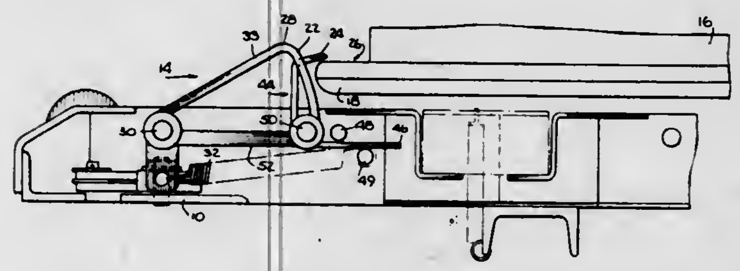
TRAILER BED

Alan Titcombe, Broomfield, Colo., assignor to Irvin Industries, Inc., Greenwich, Conn.

Filed Oct. 26, 1973, Ser. No. 410,022

Int. Cl. B65j *1/22*

U.S. Cl. 105—366 B **4 Claims**



1. On the bed of a baggage cart, the container stop and hold down mechanism improvement comprising:

a first element rotatably mounted on said bed and having a first end position extending above the surface of said bed and a second end position entirely below the surface of said bed,

a spring connected between said element and said bed to bias said element into said first end position,

said first element having a shoulder extending up from said bed in a substantially vertical direction when said element is in said first end position,

a second element rotatably mounted on said first element and having a first end position extending above the surface of said bed and a second end position entirely below the surface of said bed,

said second element including a tongue portion positioned to extend over the lip of a container abutting against said shoulder when said first element and said second element are both in their said first end positions,

constraint means engaging said second element to force said second element into its said first end position when said first element is in its said first end position and to force said second element into its said second end position when said second element is in its said second position.

3,868,084

SWIVEL PEDESTAL FOR SEATS

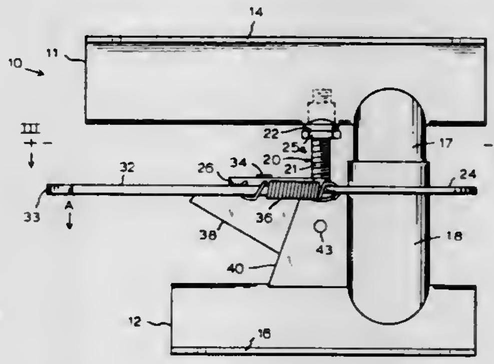
Howard M. Quakenbush, Monona Village, Wis., assignor to Flexsteel Industries, Inc., Dubuque, Iowa

Filed July 20, 1973, Ser. No. 381,157

Int. Cl. A47c *1/00;* **F16m** *11/08*

U.S. Cl. 248—418 **5 Claims**

1. In a swivel pedestal for seats, base means, seat support means, means journalling said seat support means on said base means for rotation of said seat support means about a vertical axis, locking means for locking said seat support means against rotation relative to said base means and comprising a first element projecting downwardly from said seat support means, a second element supported for movement relative to said base means, spring means urging said second element into locking engagement with said first element, and an actuating arm connected to said second element and projecting generally radially outwardly with respect to said axis to an end portion, said end portion being movable downwardly to move said second element away from locking engagement with said first element to allow rotation of said seat support means, said second element being rigidly secured to an inner end portion of said actuating arm, and pivotal connection means between said arm and said base means, said pivotal connection means being arranged for moving said second element radially outwardly away from said vertical axis in response to downward movement of said outer end portion of said arm, said pivotal connection means comprising a pivotal member journalled on said base means for pivotal movement about a first horizontal axis spaced from said vertical axis and below said second element, and lever means connected to said actuating arm and journalled on said pivotal member for pivotal movement relative thereto about a second horizontal axis spaced downwardly from said first horizontal axis, said lever means including a portion engagable with said base means at a point below said second horizontal axis.



3,868,085

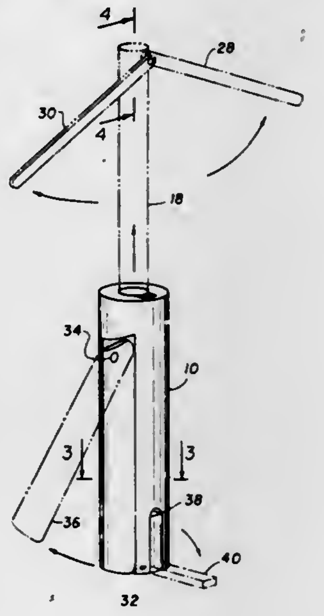
BOOK PAGE HOLDER

Arch N. Bentley, Fullerton, Calif., assignor to The Raymond Lee Organization, New York, N.Y.

Filed May 6, 1974, Ser. No. 466,951

Int. Cl. A47b *97/04*

U.S. Cl. 248—452 **3 Claims**



1. A book page holder comprising:

a vertical cylinder provided with first and second contiguous vertical bores which share a common vertical port extending along the common contiguous length;

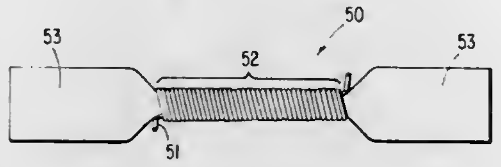
an elongated vertical member slidable in the first bore;

a pair of adjacent thin elongated arms having corresponding ends pivotally secured to the member adjacent its top ends, said arms when disposed vertically and parallel being slidable in the second bore, the arms being pivotable in vertical planes;

a first elongated support element pivotally secured at one end to the cylinder at a point intermediate the ends of the cylinder, the first element having a vertical position when not in use and being swung to a position extending outward and downward when in use, the first element being pivotable in vertical plane.

3,868,086
WALL HANGER

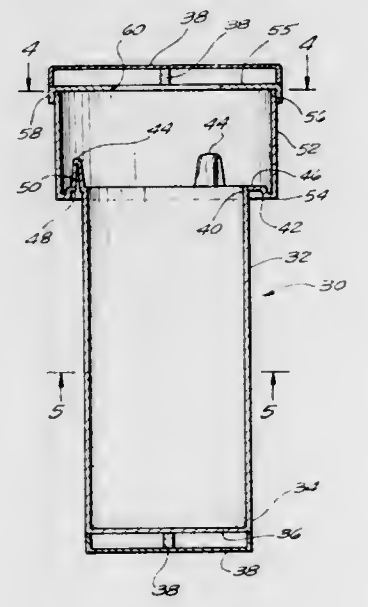
Robert Kanof Tendler, Buckridge Dr., Amherst, N.H. 03031
Continuation-in-part of Ser. No. 235,174, March 16, 1972, Pat. No. 3,788,558. This application Sept. 25, 1973, Ser. No. 400,662
Int. Cl. A47g *1/24;* **A47f** *7/14*
U.S. Cl. 248—467 22 Claims



1. A wall hanger comprising: a strip of tape narrowed on itself in an elongated central region thereof to form a generally cylindrical structure, flexible means overlying said generally cylindrical structure for maintaining the cylindrical shape thereof and to facilitate centering said tape having generally flat portions on either side of said central region adapted to be adhesively affixed to a structure to be mounted on said wall, said central portion being free of said structure and adapted to be engaged at different points along the length thereof by a protrusion from said wall to facilitate the hanging of said structure and adjustment of said structure on said wall.

3,868,087
MOLD FOR FORMING DISPENSING CONTAINERS

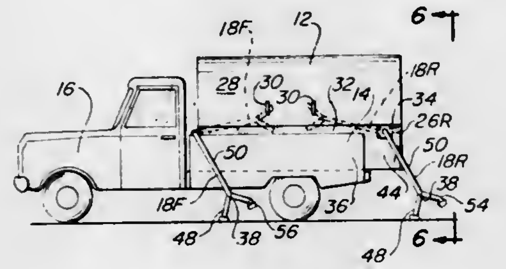
Henry Rothschild, Cherry Hill, N.J., assignor to Caddy Corporation of America, Pitman, N.J.
Filed May 7, 1973, Ser. No. 357,934
Int. Cl. B29c *5/04*
U.S. Cl. 249—137 8 Claims



1. A mold for use in a rotational molding process comprising a hollow tubular mold member having first and second longitudinally spaced end portions, said first end portion of the mold member being closed and said second end portion being open and including a peripheral flange extending outwardly from said tubular member, said flange having a plurality of independent peripherally spaced hollow projections extending outwardly therefrom and away from said open end along lines extending generally parallel to the longitudinal axis of said tubular member; said hollow projections being open to the atmosphere through said flange on the side thereof opposite the projections whereby the interior of said projections open towards the closed end of said tubular member on the outside thereof.

3,868,088
APPARATUS FOR MOUNTING CAMPER BODIES AND THE LIKE

Charles F. Reeves, 1200 S. Monaco Pky., Denver, Colo. 80222
Filed Feb. 15, 1974, Ser. No. 442,774
Int. Cl. B66f *7/26*
U.S. Cl. 254—49 1 Claim

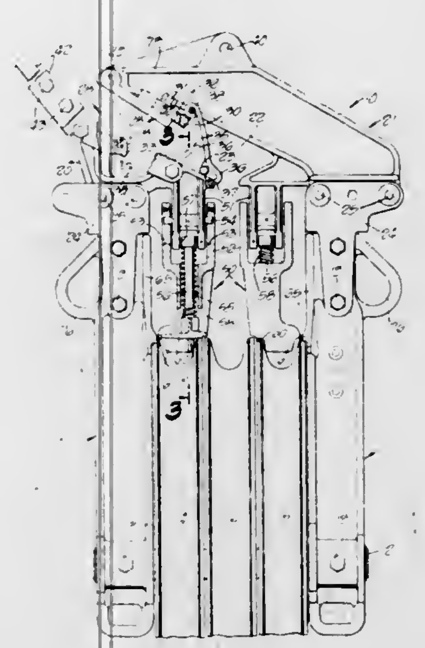


1. The tilt-up jack assembly which comprises: four rigid stanchions each including a stem portion terminating at its lower end in divergent arms defining a bifurcated foot, and bracket means connectable to the upper end of the stem portion of each stanchion and to the load to be supported upon the latter, said bracket means when so connected being operative to mount said stanchions for relative independent pendulum-type pivotal movement in a vertically disposed plane extending alongside said load, the feet of the stanchions cooperating with one another upon placement of the stem portions thereof in an upright position to maintain said load in a stable freestanding condition, and the stem portions of each stanchion including an outer tubular element and an inner tubular element telescoped into the latter, a fixed abutment on the upper end of the inner tubular element, a movable abutment within the upper end of the outer tubular element operative upon actuation to limit and vary the penetration of the inner tubular element therein, and means comprising a compression spring interposed between the fixed and movable elements operative to form a shock-absorbing coupling therebetween.

3,868,089
HELICOPTER THREADABLE STRINGING BLOCK ASSEMBLY FOR POWER CONDUCTORS

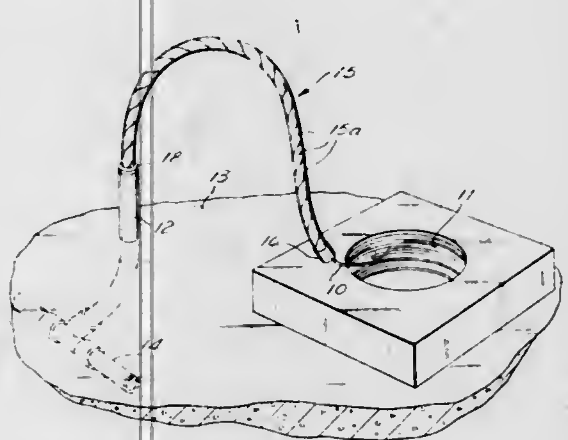
Keith E. Lindsey, 110 El Nido, Apt. 29, and L. E. Lindsey, 2262 E. Mountain Ave., both of Pasadena, Calif. 91107
Continuation-in-part of Ser. No. 282,430, Aug. 21, 1972,. This application Sept. 20, 1973, Ser. No. 398,952
Int. Cl. B66d *1/36*
U.S. Cl. 254—134.3 PA 40 Claims

36. A stringing block assembly having a hauling line threading passage adapted to be threaded by aircraft, gate means movably supported crosswise of said threading passage and normally closed to prevent escape therepast of a hauling line previously threaded through said passage, means for normally biasing said gate means to the closed position thereof, and holding means for holding said gate means open and engageable by a hauling line passing along said threading passage effective to dislodge said holding means thereby permitting said biasing means to close said gate means as an incident to the passing of the hauling line therepast.



3,868,090
WIRE GUIDING ARRANGEMENT

Benjamin F. Peirce, Jr., 1040 S.W. 67th Ter., Plantation, Fla. 33317
Filed Feb. 19, 1974, Ser. No. 443,342
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 R 2 Claims



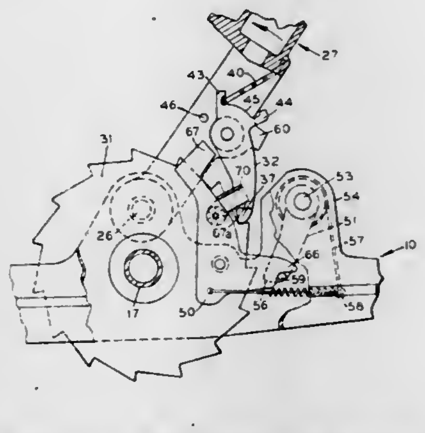
1. A line guide for feeding a wire or cable into a conduit having an open end of a predetermined inside diameter comprising:

an elongated preformed hollow, tubular guide member having successive helically wound longitudinally flat turns of insulating plastic preformed to normally abut endwise against one another in succession and form a tube, said guide member being manually bendable by the separation of its successive turns from abutting relationship with each other at the outside of the bend, and the pitch of said turns being greater than the outside diameter of said tube; a retainer fixed around the outside of each end of said guide member to hold said turns together;

and a plug on the outside of said guide member near one end for snug reception in said open end of the conduit into which the wire or cable is to be fed.

3,868,091
PORTABLE WINCH

David B. Hoffman, 2135 Haviland Rd., Columbus, Ohio 43220
Filed Mar. 29, 1974, Ser. No. 456,022
Int. Cl. A63b *61/04*
U.S. Cl. 254—164 7 Claims



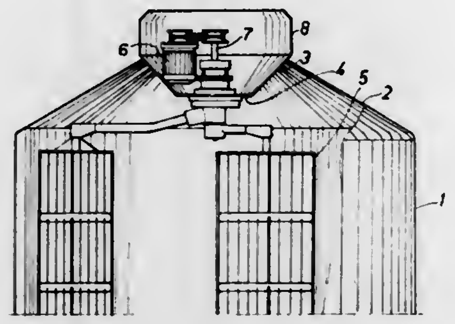
1. A winch of the type described comprising a rotatable drum having ratchet means associated therewith, a lever oscillatable to actuate said ratchet means to rotate the drum, said ratchet means comprising a ratchet wheel fixed to the drum, a feed pawl carried by the lever, means for adjusting the feed pawl on the lever to an advancing position where it engages the teeth of the ratchet wheel so that oscillation of the lever will rotate the drum in a forward direction or to a reversing position where it is spaced from the ratchet teeth so that oscillation of the lever will not rotate the drum in a forward direction but will permit reversal thereof, a stop pawl engaging the teeth of the ratchet wheel to prevent reverse rotation of the drum as it is advanced in a forward direction, fixed cam means adjacent the path of movement of the lever for engaging the feed pawl upon swinging of the lever in a forward direction only when the feed pawl is set at reversing position to engage the feed pawl with the ratchet teeth to cause it to function as a stop pawl for the reversing movement of the drum, and a cam movably mounted adjacent the ratchet wheel and positively engaged by said feed pawl upon the camming thereof by said fixed cam upon further swinging of the lever in said forward direction to positively move the movable cam into engagement with the stop pawl to thereby release the stop pawl from the ratchet teeth to permit such reversing movement under control of the lever and positively engaged by the feed pawl upon moving of the lever in a reverse direction to thereby return it to its original position, said movable cam having fixed cam portions spaced in the direction of swinging of said lever with which the feed pawl engages respectively in its forward and reverse movement, and a cam portion adjustably mounted on said movable cam intermediate said fixed cam portions for movement between an inoperative position where it will not be engaged by said feed pawl and an operative position where it will be engaged by the feed pawl upon reverse movement of the lever.

3,868,092
CHEESE KETTLE OR EQUIVALENT

Roland Gabriel-Robez, Helsinki, Finland, assignor to MKT-tehtaat Oy, Helsinki, Finland
Filed Jan. 5, 1973, Ser. No. 321,256
Claims priority, application Finland, Nov. 29, 1972, 3369/72
Int. Cl. B01f *7/30*
U.S. Cl. 259—120 3 Claims

1. An improvement in a cheese kettle or other equivalent upright enclosed tank comprising stirrers, an upwardly arranged conically shaped cover, drive means for the stirrers including a drive shaft passing through the cover and connected to said stirrers, wherein the improvement comprises that said cover includes a first truncated cone terminating in a mouth at its upper end and a second truncated cone tapering inwardly in the downward direction and having a bottom

plate, said second truncated cone connected to and extending downwardly from said mouth within said first truncated cone, said drive means mounted within said second truncated cone

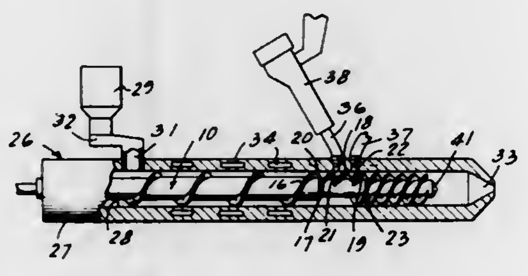


on said bottom plate, and said first truncated cone having a height approximately twice that of said second truncated cone and a larger apex angle than said second truncated cone.

3,868,093
MIXING SCREW AND USE THEREOF

Nickolas N. Sokolow, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed July 31, 1973, Ser. No. 384,235
Int. Cl. B29b *1/10;* **B29f** *3/02*
U.S. Cl. 259—191 **6 Claims**



1. A screw for an extruder comprising

A. an elongated cylindrical shank having, in axially adjacent relationship, a mid-section, and a terminal section,

B. said mid-section and said terminal section having an integral, primary, radially projecting, continuous helical flight extending axially therealong,

C. said erminal section having a smaller diameter than said mid-section whereby when the screw is incorporated in an extruder barrel the extruder will be capable of accommodating a larger volume of material at the terminal section,

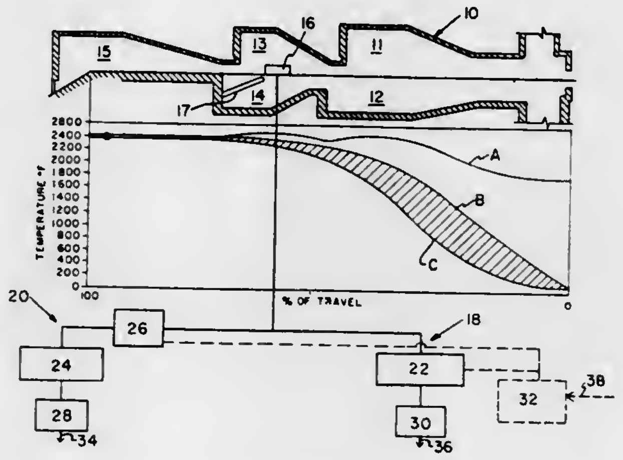
D. at least one additional integral, secondary, radially projecting, continuous helical flight on said shank in axially spaced relationship to said primary flight, such secondary flight(s) commencing in said mid-section adjacent said terminal section and extending axially along said terminal section,

E. said primary and said secondary flights when in functional combination with a given extruder barrel being adapted to minimize cross flow between axially adjacent flights, and being further adapted to mix to some predetermined extent within channels between axially adjacent such flights, of an extrudate being moved between said barrel and said shank by such flights.

3,868,094
FURNACE CONTROL SYSTEMS

James E. Hovis, Jefferson Township, Allegheny County, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed June 15, 1973, Ser. No. 370,288
Int. Cl. C21d *1/00*
U.S. Cl. 266—5 T **3 Claims**



1. In a process for hot rolling workpieces in a rolling mill and controlling the zone temperature of a multiple zone metallurgical reheating furnace in which there are top and bottom zones and in which workpieces pass through the furnace intermediate the top and bottom zones prior to rolling, the improvement comprising utilizing a direct workpiece temperature measurement as the sole primary control by:

A. directly measuring the surface temperature of the workpiece in one of the top or bottom zones;

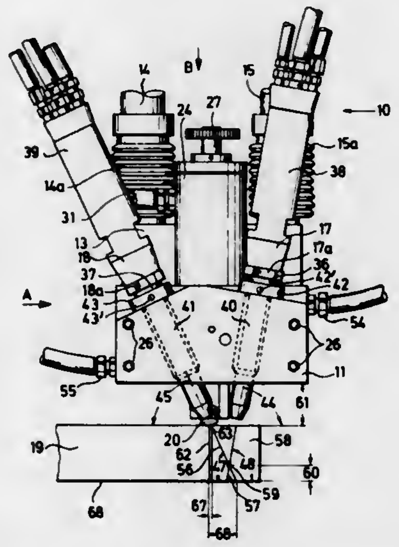
B. simultaneously transmitting a signal from the direct workpiece measurement to a top zone controller and to a bottom zone controller, each of which has a desired preset temperature; and

C. actuating a top zone motor and a bottom zone motor through the respective top and bottom zone controllers so as to drive furnace burners to maintain the desired preset temperatures.

3,868,095
TORCH CUTTING APPARATUS

Helmut Bauer, Frankfurt/Main, and Rudolf Stanzel, Ranbenberg, both of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Germany

Filed July 17, 1973, Ser. No. 379,959
Claims priority, application Germany, July 27, 1972, 2236821
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 K **8 Claims**

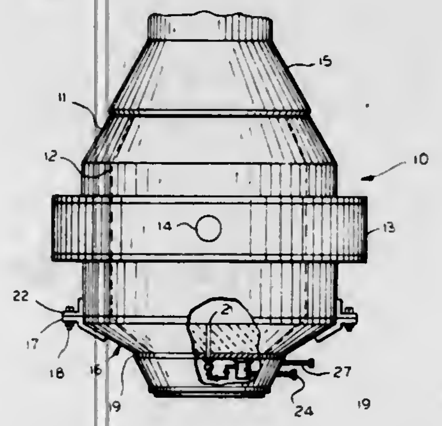


1. In a torch cutting apparatus, the combination of at least two cutting burner means including each a cutting nozzle device, and means for supporting and mounting said cutting nozzle, devices at an angle with respect to each other and with respect to an upper surface of a workpiece and thereby adapting said cutting nozzle devices for bevel cutting an edge of said workpiece, wherein said supporting means comprises a nozzle block including at least two receiving bores arranged at a fixed predetermined angle in said nozzle block.

3,868,096
TUYERE SUPPORT MEANS FOR METALLURGICAL VESSELS

Eberhard G. Schempp, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed June 21, 1973, Ser. No. 372,329
Int. Cl. C21c *5/48*
U.S. Cl. 266—35 **1 Claim**

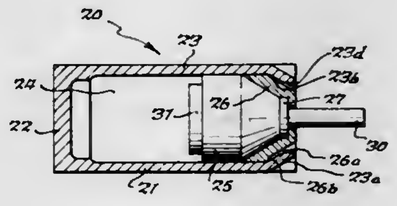


1. A refractory lined metallurgical vessel having at least one tuyere means for conducting fluidic materials into said vessel, said tuyere means comprising a first pipe and a second pipe extending through said first pipe and in spaced relationship therewith, said pipes extending from the exterior to the interior of said vessel, said first pipe having first flange means extending therefrom in proximity with said vessel and second flange means extending therefrom more remote from said vessel, tuyere support means fastened to said vessel and having an aperture through which said first pipe means extend and having radially extending flange means adjacent said first flange means on said first pipe, said second pipe having flange means adjacent said second flange means on said first pipe, clamping means for respectively clamping said first flange means to said tuyere support flange means and said second flange means on said first pipe to said flange means on said second pipe, said clamping means comprising arcuate members having means for engaging each other at corresponding ends, means at corresponding opposed ends of said members for selectively forcing said members toward each other, said members having a base for surrounding the periphery of said flange means and axially spaced apart oppositely divergent radially inwardly extending surfaces to enable engaging only the peripheral edges of adjacent flange means to wedge said adjacent means toward each other, means coupled with said first pipe for conducting fluidic material to the space between said first and second pipes and feed pipe means coupled with said second pipe for conducting fluidic material into it, said feed pipe means comprising flange means adjacent said flange means on said second pipe, one of said clamping means simultaneously engaging said second flange means on said first pipe, said flange means on said second pipe and said flange means on said feed pipe, and means for providing access to the interior of said second tuyere pipe, said last named means comprising a tubular member mounted on said feed pipe means and providing an opening that is substantially aligned with the interior of said second tuyere pipe, apertured flange means on said tubular member and having axially spaced apart surfaces in substantial parallelism with each other and extending radially from said tubular member, enclosure plate means having a surface for interfacing with one of said surfaces on the tubular member flange means and another surface in parallelism therewith, all of said parallel surfaces lying in planes that are perpendicular to the axis of said tubular member, and additional clamping means for pressing said last named flange means and the interfacing surface of said closure plate toward each other, said clamping means including pivotally connected arcuate members which in cross section comprise a base for surrounding the peripheries of said tubular member flange means and said another surface and oppositely divergent radially inwardly extending surfaces for wedging said flange means and said another surface toward each other, and means clamping said arcuate members together.

3,868,097
LIQUID SPRING

Paul Hollis Taylor, 38 E. River Rd., Grand Island, N.Y. 14072

Filed Sept. 25, 1968, Ser. No. 763,495The portion of the term of this patent subsequent to Apr. 25, 1990, has been disclaimed.
Int. Cl. F16f *9/36*
U.S. Cl. 267—124 **9 Claims**

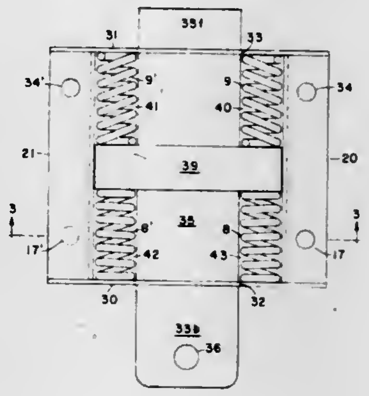


1. In a shock absorber having a housing, a piston means slidably disposed within said housing, seal means for said housing and piston means and end closure means associated with said piston, housing and seal means, the improvement comprising means for restraining longitudinal movement between said housing and said end closure means including a formed crimped section acting as a reinforced structure for said housing and a reduced section on said end closure means wherein the reinforced structure acts as a lever against the reduced section to prevent relative longitudinal movement of said housing and closure means.

3,868,098
SHOCK ABSORBING TRAILER HITCH

Harold B. Coombs, 510 S. Sixth St., Kenedy, Tex. 78119

Filed Oct. 2, 1973, Ser. No. 402,784
Int. Cl. F16g *7/10*
U.S. Cl. 267—138 **8 Claims**



1. A trailer hitch comprising:

a substantially closed housing consisting of a closed bottom wall and opposite side walls having opposite end walls, said end walls having aligned openings therein;

a tongue axially extending through said aligned openings and reciprocable therein;

a cross member secured to said tongue intermediate said end walls;

resilient means extending axially between said cross member and said end walls whereby loads imposed at said tongue are dampened; and said housing having a closed cover plate removably secured thereto.

3,868,099
ANNULARLY RESILIENT, CONICALLY SHAPED COMPONENT

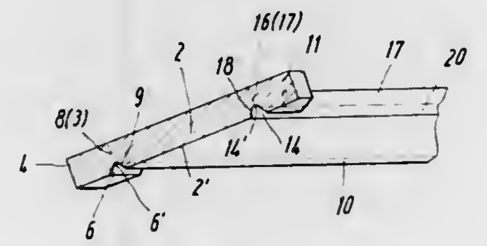
Paul Maucher, Sasbach, and Fritz Lob, Buhl, Baden, both of Germany, assignors to LuK Lamellen und Kupplungsbau G.m.b.H., Buhl, Baden, Germany

Filed Sept. 25, 1972, Ser. No. 292,070

Claims priority, application Germany, Sept. 25, 1971, 2148043

Int. Cl. F16f *1/34*

U.S. Cl. 267—161 **15 Claims**



1. An annular resilient component comprising an annular body member having an inner and an outer wall surface of conical configuration and an annular inner and outer rim, and tab means extending from at least one of said rims of said body member, said tab means and said body member defining therebetween a transitional region having a conical inner wall surface portion wherein a chamfer extending transversely to said tab means is formed, said one of said rims defining part of said chamfer.

3,868,100
SPRING ELEMENT

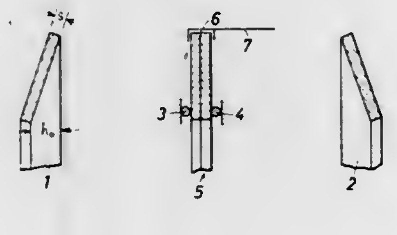
Paul Maucher, Sasbach, Germany, assignor to Luk Lumellen und Kupplungsbau GmbH, Buhl/Baden, Germany

Filed June 20, 1973, Ser. No. 371,761

Claims priority, application Germany, June 24, 1972, 2231035

Int. Cl. F16f *1/34*

U.S. Cl. 267—162 **3 Claims**



1. Spring element comprising in combination at least two conically formed cup springs, the characteristic curve of which has a rising segment and a falling segment, and a pair of seat means engaging the cup springs on both sides thereof at the same diameter for clamping said cup springs together at least substantially parallel to each other and with oppositely extending conicity, said cup springs being tippable together and in substantially parallel relationship with each other in two contrary directions about said pair of seat means.

3,868,101
WELDING POSITIONER

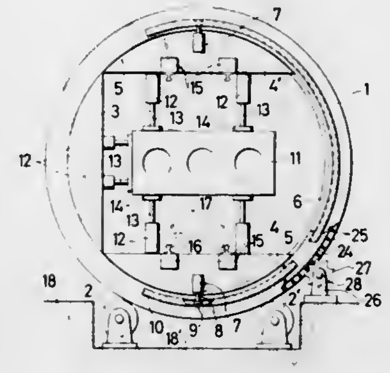
Terumichi Nozaki; Hideo Kobayashi; Sigeyuki Ohno, and Yu Imaoka, all of Okayama, Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Chuoku, Tokyo, Japan

Filed Aug. 8, 1973, Ser. No. 386,581

Claims priority, application Japan, Aug. 10, 1972, 47-80569

Int. Cl. B23k *37/04*; **B25b** *1/20, 1/22*

U.S. Cl. 269—25 **3 Claims**



1. A welding positioner for clamping an object to be welded, comprising:

a pair of rings, and rollers mounting said rings for rotation; a stationary supporting bed secured to each ring;

movable supporting beds in each of said rings

hydraulic cylinder means provided on each movable supporting bed engageable with said ring to secure said each movable supporting bed to said ring;

additional hydraulic cylinder means provided on each supporting bed for clamping the object to be welded;

rails mounted on each movable supporting beds in said two rings, and adapted to receive a carriage carrying said object and to transfer said carriage to and from other rails positioned adjacent said rings;

lifting means adjacent said rings adapted to engage said bed-supported rails for removing said movable supporting beds from contact with said rings; and

means for rotating said rings.

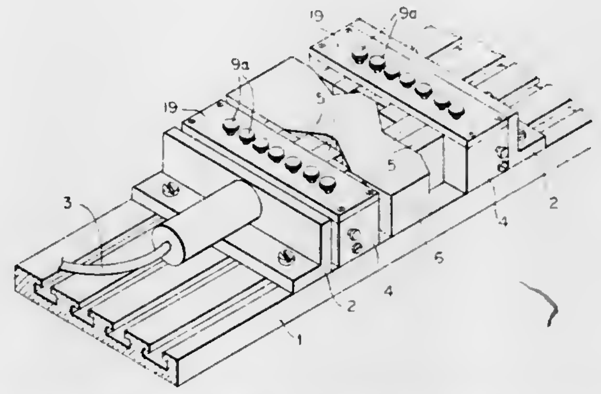
3,868,102
CONTOUR-CONFORMING CLAMPING DEVICE

Maxwell Pevar, 551 Shoemaker Rd., Elkins Park, Pa. 19117

Continuation-in-part of Ser. No. 237,111, April 27, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,710

Int. Cl. B23q *3/00*

U.S. Cl. 269—26 **10 Claims**



1. A contour-conforming clamping device for applying uniformly distributed clamping engagement with contoured objects, said device comprising a housing base provided with a plurality of pressure fluid supply passages, a plurality of tubular arbors affixed to the housing base and having their interior tubular spaces separately in fluid connection with said supply passages, a plurality of closely adjacent vise jaw members having outwardly-closed inwardly-open bores slidably receiving said tubular arbors interiorly thereof, said tubular arbors and the bores of said jaw members having sealing means therebetween, and openings in the arbors beyond said sealing means for supplying fluid within the bores of said vise jaw members in chambers of variable length between the ends of said arbors and the ends of said bores to urge the jaw members outward, and means for retaining said vise jaw members in sliding operative position on said tubular arbors.

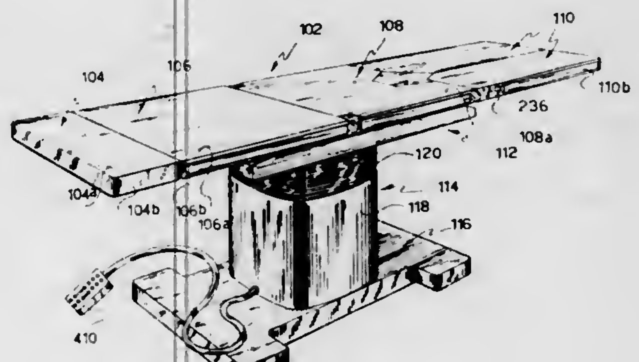
3,868,103
SURGICAL AND EXAMINATION TABLE STRUCTURE

Jacques Pageot, Laval, Quebec; Yvon Roy, Saint Leonard, Quebec, and Cesar Purkhardt, Ste-Foy, Quebec, all of Canada, assignors to Millet Roux & Cie., Ltee., Laval, Quebec, Canada

Filed Apr. 24, 1973, Ser. No. 354,111

Int. Cl. A61g *13/00*

U.S. Cl. 269—325 **13 Claims**



1. A surgical and examination table structure capable of longitudinal displacement in opposite directions comprising: a base; vertical supporting frame means fixed at one end thereof to said base; carrier means slidably mounted to said supporting frame means at the other end thereof; platform means mounted to said carrier means for supporting a patient and including a head panel, a back panel, a trunk panel connected to said carrier means along the side edges of said trunk panel and at least one leg panel, said panels being serially connected; hydraulic drive means including at least one hydraulic cylinder fixedly mounted on the vertical supporting frame means at said other end thereof and having a piston member connected to said carrier means for slidably displacing in the longitudinal direction said carrier means relative to said supporting frame means; the longitudinal displacement of the carrier means being such that all points on the platform means have at one time or another a vertical axis which clears the vertical supporting frame means thereby permitting an examination of a patient positioned on said platform means without moving the patient during the examination and tilting means in said carrier means for pivotably moving said platform means relative to said carrier means.

3,868,104
CONTACTLESS FLUID SEAL

Robert E. Hunt, Andover; John Delahanty, Boston, and Bruce M. Lane, Bedford, all of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed July 26, 1973, Ser. No. 382,684

Int. Cl. F16k *41/00*; **F16j** *15/14*

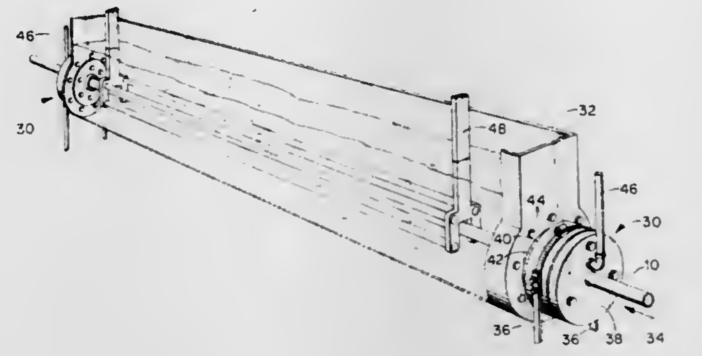
U.S. Cl. 277—30 **9 Claims**

1. A liquid seal for preventing liquid in a tank from flowing out of said tank wherein an elongate member is moved through at least one wall of said tank, without contact between said member and said wall and said seal structure, said liquid seal comprising:

diverging venturi means adapted for mounting to a wall of said tank and having a larger end directly communicating with the inside of said tank and a smaller end for receiving a liquid and said elongate member for movement into said tank.

means for applying a liquid under pressure to said venturi means;

means for directing said liquid under pressure to said venturi means and including nozzle means coupled to the smaller end of said venturi means and through which said liquid under pressure is applied to said venturi means such that said liquid is caused to flow substantially in a direction from the smaller to the larger end of said venturi means and directly into said tank to provide venturi action and thereby prevent liquid from flowing along said elongate member out of said tank.



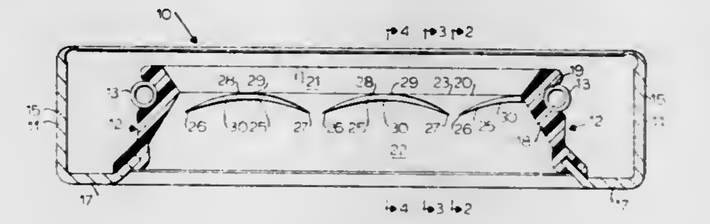
3,868,105
BIDIRECTIONAL HYDRODYNAMIC SHAFT SEAL

Gustavus A. Bentley, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Oct. 10, 1972, Ser. No. 296,077

Int. Cl. F16j *15/32*

U.S. Cl. 277—134 **5 Claims**



1. A bidirectional hydrodynamic shaft seal of the type having a rigid bore-contacting case and an elastomeric sealing element with a sealing lip wherein two frustoconical surfaces converge to a circular lip edge for providing a static rotary seal with a rotating shaft, said lip having an air side and an oil side, characterized by

the frustoconical air side of said lip having a plurality of crescent-shaped projections, the inner radial surface of each said crescent-shaped projection forming a cylindrical segment having the same radius as said lip edge, said surface segment converging axially toward said lip edge from both horns of the crescent and meeting said lip edge tangentially from both directions, said crescent surface when the seal is in contact with a shaft providing a footprint that, where it meets the lip, is axially wider that is the footprint of said lip edge during actual running conditions, the two points of convergence being apart from each other by a distance substantially greater than the width of said lip edge during actual running conditions.

3,868,106

VACUUM CHAMBER SEAL

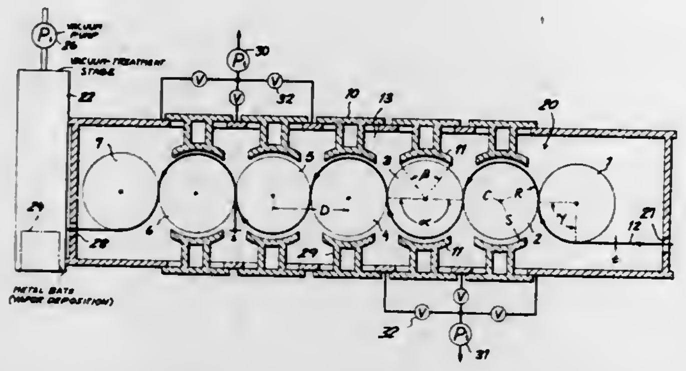
George H. Donckel, Dudelange, Luxembourg, and Dominique Th.F.L.J.M. Streel, Cointe-Sclessin, Belgium, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourgh, Luxembourgh and Cockerill-Cugree-Providence S.A., Seraing, Belgium

Filed Dec. 8, 1972, Ser. No. 315,898

Claims priority, application Luxembourg, Dec. 14, 1971, 64454

Int. Cl. C23c *13/08;* **B23k** *31/02*

U.S. Cl. 277—237 R **6 Claims**



1. A gate for a metal-strip treatment chamber maintained at a particular non-ambient pressure, comprising

a housing defining a gate chamber communicating with said treatment chamber;

at least three guide rolls all having their axes in a common plane mounted in said gate chamber for rotation and spaced apart by a distance of the order of the thickness of a metal strip to be processed in said treatment chamber, said metal strip passing along alternate sides of said rolls and extending therefrom into said treatment chamber, said strip alternatingly overshooting and undershooting said guide rolls of said array and contacting each guide roll of said array over an arc of substantially 180°; and

respective shoes juxtaposed with each of said guide rolls at diametrically opposite sides thereof and having arcuate faces closely spaced from said guide rolls and subdividing said chamber into a plurality of compartments, each of said shoes subtending an arc of substantially 90° to 120° of the respective guide roll.

3,868,107

SIMULATED VIEWING APPARATUS

Taketoshi Ichida, 11, 3-chome Oogimachi, Chikusa-ku, Nagoya, Japan

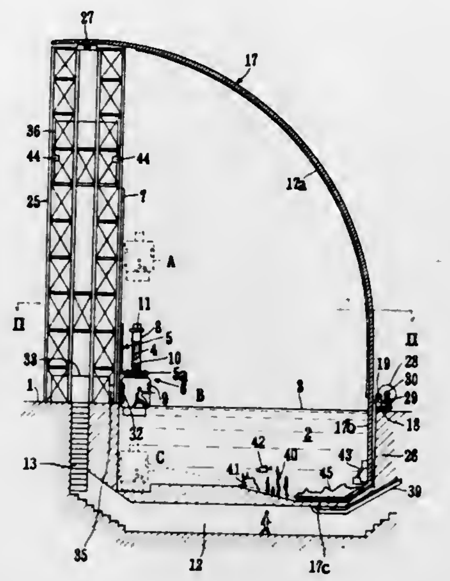
Filed Feb. 26, 1973, Ser. No. 335,886

Claims priority, application Japan, Feb. 28, 1972, 47-20415

Int. Cl. A63g *31/16*

U.S. Cl. 272—18 **1 Claim**

1. A simulated viewing apparatus comprising means defining a circular pool, said pool containing water therein, a tower arranged at the center of said pool, a semi-spherical dome disposed over said circular pool, annular guide means supporting said dome over said pool, supporting wheels mounted on the exterior of said dome and rotatable in said annular guide means, motor means operatively connected to at least one of said supporting wheels for driving the latter to thereby effect rotation of said dome relative to said pool, a lift means movable vertically along said tower, a horizontal shaft mounted on said lift means, a capsule, means for suspending said capsule from said horizontal shaft, supply and exhaust pipe means between the interior and exterior of said capsule, said supply and exhaust pipe means having a flexible tube portion, means for maintaining an upper portion of said supply and exhaust pipe means above the surface of the water is said pool, said dome having means thereon below the level of the water in the pool providing a three-dimensional effect and means above the level of the water in the pool providing a cinematographic panorama effect, pump means for circulating water in said pool, and movable resistant and adjusting plate means for effecting changes in the water flow in said pool, whereby real events are simulated to a viewer in the capsule as the latter is moved up and down to positions above and below the surface of the water in said pool.



3,868,108

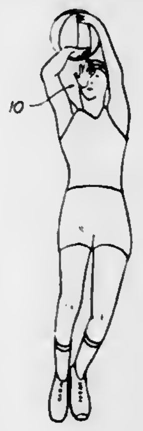
ATHLETIC TRAINING DEVICE

Robert L. Kirchner, 544 Kling Dr., Dayton, Ohio 45419

Filed Dec. 4, 1972, Ser. No. 311,944

Int. Cl. A63b *71/02*

U.S. Cl. 273—1.5 A **8 Claims**



1. Athletic training device for training athletes to become accustomed to their field of view being partially obstructed comprising sight obstructing means having non-transparent portions, said sight obstructing means comprising a representation of a hand with spread apart fingers, and mounting means for removably supporting said sight obstructing means on the head of a user with said non-transparent portions in the field of view of the user's eyes.

3,868,109

GOLFER'S PRACTICE MAT

Joe J. Fowler, 2961 Castle Dr., San Jose, Calif. 95125

Filed June 6, 1973, Ser. No. 367,635

Int. Cl. A63b *69/36*

U.S. Cl. 273—187 A **3 Claims**

1. A golf swing practice mat upon which a golfer may stand in a golf club swinging stance, said mat comprising:

a unitary base of generally rectangular shape and uniform thickness, and having a planar top surface, said base being defined by first and second parallel ends and first and second parallel sides;

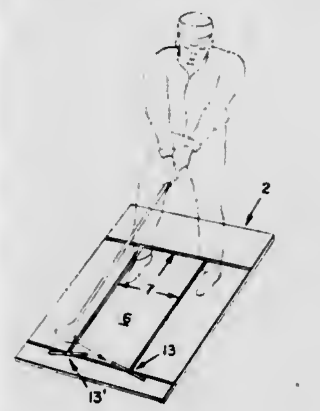
a first guide slot recessed in said planar top surface and extending transversely across said base adjacent said first end, and a second guide slot recessed in said planar top surface and extending longitudinally of said base adjacent said first side from a first interception with said first guide slot, said first and second guide slots prescribing a first stance guide whereby a golfer may stand on said mat at a position dictated by said first interception of said first and second slots;

a third guide slot recessed in said planar top surface and extending transversely across said base adjacent said second end, said second guide slot terminating at a second interception with said third guide slot, said third guide slot prescribing a line of flight indicator and defining the intended line of flight of a ball struck by a golf club swung by a golfer standing on said base at said position dictated by said first interception;

a fourth guide slot recessed in said planar top to a depth greater than said first, second and third slots, said fourth guide slot being angularly disposed with respect to said second and third slots, intersecting said second and third slots at said second interception, and extending on opposite sides of said third slot and prescribing a swing path indicator for showing the proper swing path of a golf club head to drive a golf ball in the direction indicated by said line of flight indicator;

a first aperture in said base, an upwardly extending ball support in said aperture, said first aperture being located at said second interception; and

upwardly extending integral cleats in said fourth guide slot, the thickness of said cleats being such that the upper surfaces thereof are positioned below said planar top surface of said mat at a depth substantially equal to the depth of said first, second and third slots, said cleats further being of a color contrasting from that of the remainder of said mat whereby said cleats serve to visually differentiate said fourth guide slot from said first, second and third guide slots.



3,868,110

TENNIS RACKET GRIP

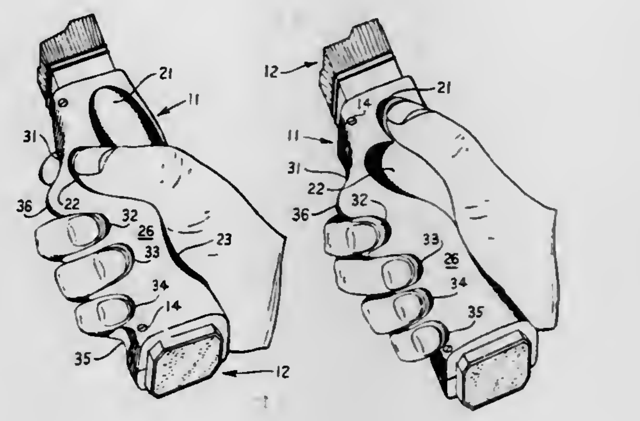
Bill J. Jones, 1911 Hannibal Dr., Lafayette, Calif. 94549

Filed Nov. 7, 1972, Ser. No. 304,348

Int. Cl. A63b *49/08*

U.S. Cl. 273—75 **3 Claims**

1. As a novel article of manufacture, a tennis training aid comprising the combination of a tennis racket and an elongated hollow grip therefor, having a central opening adapted to enclose the tennis racket handle, said opening being defined by a pair of wide sides and a pair of narrow sides; and means for detachably securing said grip to said handle, said grip being provided with indentations for positioning the four fingers and thumb of a user's hand in either a forehand stroke position or a backhand stroke position, said indentations including: a first thumb indentation adapted to locate said user's thumb along one of said wide sides when said user's hand is in a backhand stroke position; a second thumb indentation adapted to locate said user's thumb across said one wide side when said user's hand is in a forehand stroke position, said first and second thumb indentations overlapping at a location intermediate the length of said first wide side; an upper finger indentation adapted to locate the index finger of said user's hand in a forehand stroke position, said upper finger indentation being formed in the other of said wide sides in general alignment with said second thumb indentation; a lower finger indentation adapted to locate the little finger of said user's hand across the other of said wide sides in a backhand stroke position; a plurality of three finger indentations extending across the other of said wide sides and adapted for positioning various of said user's fingers around said grip, said indentations defining the location of the index, middle and ring fingers when said user's hand is in a forehand stroke position and further defining the location of said middle, ring and little fingers when said user's hand is in the backhand stroke position; a heel indentation extending rearwardly of the handle from the joinder of said first and second thumb indentations and adapted to locate the heel of said user's hand when in either said forehand or backhand stroke position; a protuberance extending longitudinally along said grip from adjacent said first thumb indentation with a decreasing width and increasing height to a juncture of said first thumb indentation and said heel indentation to fit between the user's thumb and index finger.



3,868,111

PLATFORM MINIATURE GOLF GAME

Edgar Allan Schuelke, 18 W. 775 72nd St., Downers Grove, Ill. 60515

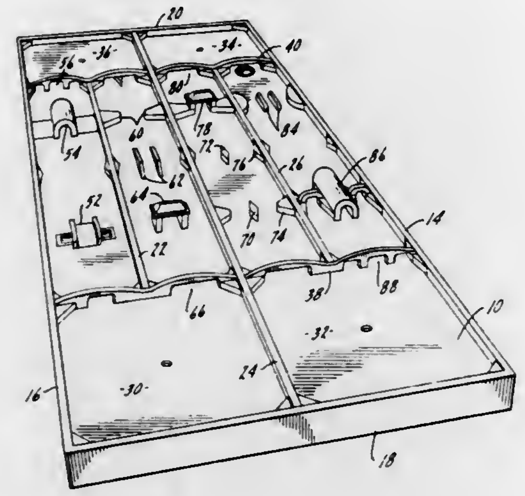
Filed Sept. 10, 1973, Ser. No. 395,644

Int. Cl. A63f *7/06*

U.S. Cl. 273—87 C **5 Claims**

1. A platform miniature golf game comprising a generally flat platform having side and end walls extending completely about said platform, a plurality of spaced apart longitudinally extending walls intermediate said side walls dividing said platform into a plurality of simulated fairways between said side walls and longitudinally extending walls, said fairways being separated from each other only by said longitudinally extending walls, additional transversely extending walls spaced from said end walls adjacent each end of said platform providing at least one green at each end of said fairways, a recessed cup in each said green, said transversely extending walls separating said greens from said fairways, and openings in said transversely extending walls providing passageways

from at least two of said fairways to each green at each end of said fairways, whereby during use of said game a ball may be caused to pass through said openings from at least two of said fairways to each green at each end of said fairways.



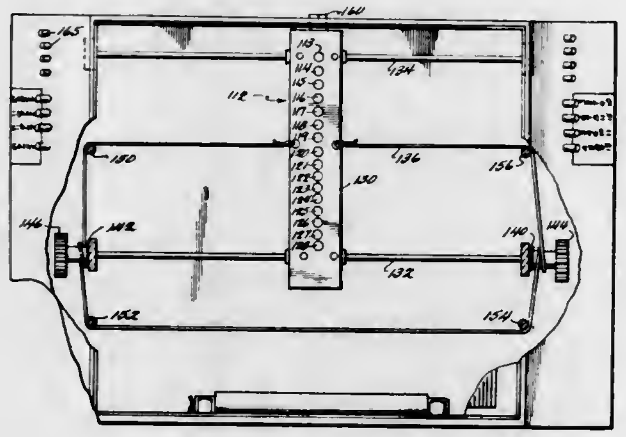
3,868,112
ELECTRICAL GAME

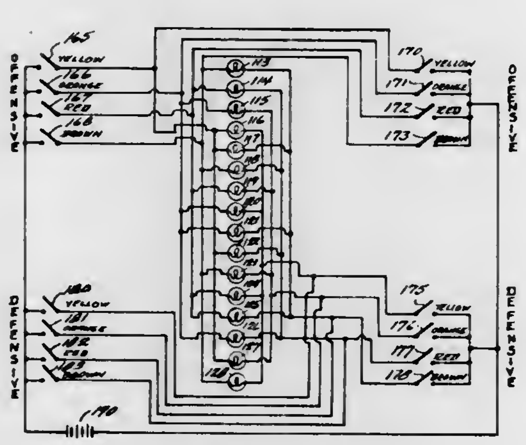
Charles W. Avera, Winston-Salem, N.C., assignor to Electronic Data Controls Corp., Winston-Salem, N.C.

Continuation-in-part of Ser. No. 755,052, Aug. 26, 1968, abandoned, and a continuation-in-part of Ser. No. 789,806, Jan. 8, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,545

Int. Cl. A63f *9/00*

U.S. Cl. 273—94 R **8 Claims**





1. A game comprising:

support means,

grid means mounted on said support means for representing a plurality of results of a plurality of acts on an athletic playing area and having a plurality of result areas each having indicia disclosing a result, the location of each said result area being defined by a first coordinate representing one of a plurality of alternative acts and by a second coordinate representing one of a plurality of alternative results to said one act,

a plurality of light sources including a plurality of bulbs,

means mounting all of said bulbs in a straight line beneath said grid means, said mounting means being movably oriented beneath said grid means so that said mounting means and said sources are selectively movable along a path such that said sources pass beneath each of said result areas having said second coordinate so that an act can be chosen by moving all of said light producing sources beneath the result areas having the first coordinate representing that act, said mounting means including a frame for holding said bulbs, first and second substantially parallel fixed rods attached to said frame so that said frame can move along said rods with each bulb moving along a path roughly beneath said grid such that the result areas beneath which each said bulb move have the same second coordinate, first and second knobs connected to opposite ends of one of said rods for rotating that rod and each extending out of said housing for manual rotation, and a cord connected at both ends to opposite sides of said frame and looped about each of said knobs so that rotation of either of said knobs causes said frame to move along said robs, and

play result selection means connected to said plurality of light sources for causing, in response to manual operation, one of said light sources to produce light and cause the result area above it to appear different from the other result area so that the indicia on that result area indicate the result of the chosen art.

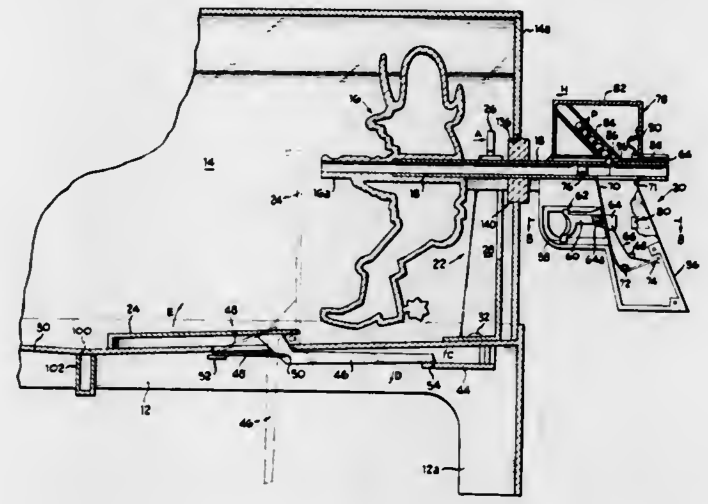
3,868,113
PROJECTOR, TARGET AND TARGET BLOCKING APPARATUS

Marvin I. Glass, Chicago, and Robert S. McKay, Morton Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Division of Ser. No. 230,585, March 1, 1972, Pat. No. 3,787,052. This application Nov. 5, 1973, Ser. No. 412,583

Int. Cl. A63b *65/12*

U.S. Cl. 273—101 **9 Claims**



1. A skill type game comprising: a framework having two opposing launching areas, target means at each of said opposing launching areas, selectively operable launching devices at each launching area for propelling objects therefrom through the air toward the target means at the opposite launching area, and immobilizing means operatively associated with said target means to effectively block the propelling of objects from said launching devices in response to the respective target means in the same launching area being struck by one of said objects.

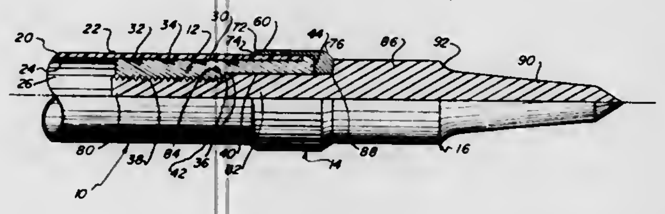
3,868,114
ARCHERY ARROW WITH SHAFT SUPPORTING ARROW HEAD ASSEMBLY

Norman A. Groner, Kalkaska, Mich., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed Aug. 13, 1974, Ser. No. 496,946

Int. Cl. F41b *5/02*

U.S. Cl. 273—106.5 B **5 Claims**



1. An archery arrow comprising:

an arrow shaft member having an end for mounting an arrow head;

a cylindrical chamber in said end of said arrow shaft member defined by a relatively thin cylindrical wall providing an outer cylindrical peripheral surface and an inner cylindrical peripheral surface terminated by a transverse end surface;

an arrow attachment member supportively mounted in said cylindrical chamber, an outer cylindrical surface on said attachment member in supportive abutting engagement with said inner cylindrical peripheral surface of said arrow shaft, a radially outwardly extending flange portion on one end of said attachment member, a first abutment side surface on said flange portion abuttingly engaging said transverse end surface of said arrow shaft, a second abutment side surface on said flange portion spaced axially outwardly of said first abutment side surface;

a sleeve member mounted on said end of said arrow shaft member, a cylindrical inner peripheral surface in supportive abutting engagement with said outer cylindrical peripheral surface of said arrow shaft member, a first radially extending side surface in abutting engagement with said second abutment side surface on said flange portion of said attachment member,

a second radially extending side surface on said sleeve member spaced axially outwardly of said first radially extending side surface; and

an arrow head member supportively mounted in said arrow attachment member, a radially extending abutment surface on said arrow head member abuttingly engaging said second radially extending side surface on said sleeve member and holding said sleeve member in fixed abutting relationship with said attachment member and said end portion of said shaft member.

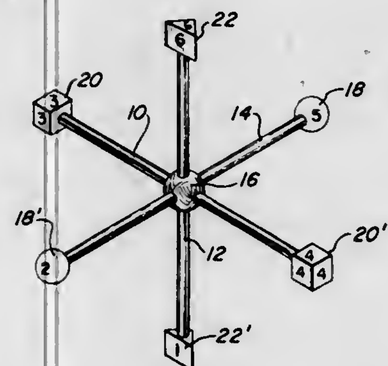
3,868,115
DIE FOR USE IN PLAYING DICE GAMES

Owen J. Faiferlick, 1300 Fairfax, Denver, Colo. 80220

Filed Aug. 3, 1973, Ser. No. 385,544

Int. Cl. A63f *9/04*

U.S. Cl. 273—146 **1 Claim**



1. A die comprising three like elongate shaft members fixedly secured at their midpoints to each other in mutually perpendicular relationship, a block-like element at each end of each shaft with at least the block-like elements on any one shaft being of a different configuration than the block-like elements on any of the other two shafts, and each block-like element having distinctive indicia thereon different from the indicia on each of the other blocklike elements.

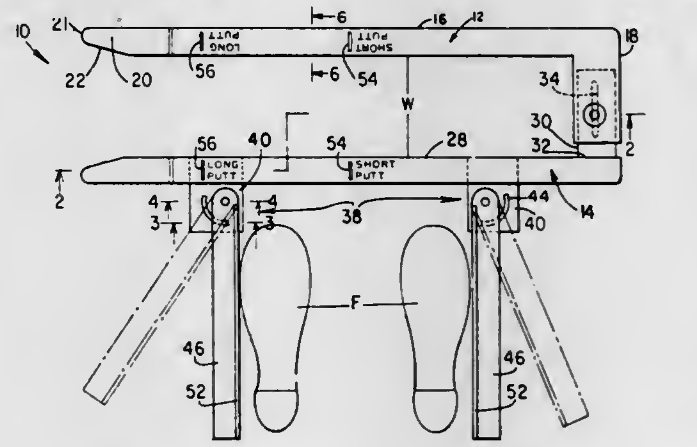
3,868,116
GOLF PRACTICE DEVICE

Douglas M. Ford, 3 Hartman Pl., Tuckahoe, N.Y. 10707, and Richard C. Schluter, 2420 Newton St., Vienna, Va. 22180

Filed Dec. 10, 1973, Ser. No. 423,231

Int. Cl. A63b *69/36*

U.S. Cl. 273—186 C **10 Claims**



1. A golf practice device comprising a pair of members, each of said members having a longitudinally extending guide portion and a continuing inwardly turned end portion substantially at right angles to the longitudinal guide portion and at the rear end of said longitudinal guide portion, said guide portion and continuing end portion being of a generally inverted U-shaped configuration in cross-section with the bottom portion open and with one end portion of a smaller dimension than the other end portion so that the smaller dimensioned end portion telescopes into the other end portion, and means including fastening elements connected to said end portions for adjustably connecting said end portions so that said longitudinal guide portions are parallel to each other and are adjustably spaced to accommodate golf club heads of varying sizes.

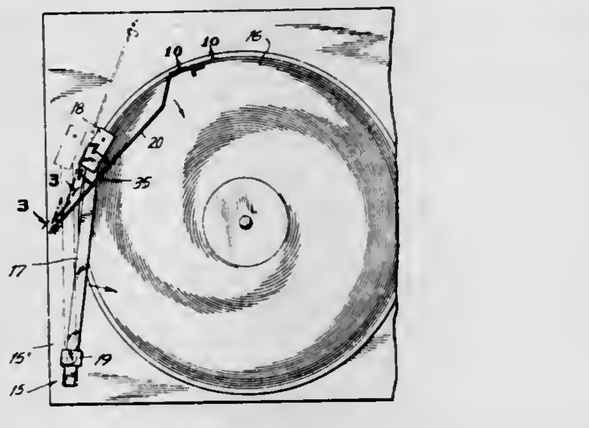
3,868,117
RECORD CLEANING MECHANISM

Lawrence R. Kaplan, 56 Carver Ter., Yonkers, N.Y. 10710

Filed Aug. 10, 1973, Ser. No. 387,394

Int. Cl. G11b *3/58*

U.S. Cl. 274—47 **10 Claims**



1. A record cleaning mechanism for use in combination with a record playing device and tonearm comprising a cleaning arm, means for mounting said cleaning arm on said record playing device for pivotal movement in planes parallel and perpendicular to the plane of rotation of a record when carried by the record playing device; record cleaning means carried by said cleaning arm, said mounting means and cleaning arm defining an assembly, cueing means carried by said

cleaning arm for positioning said record cleaning means in operative engagement with a record at the start of record play and retrieval means carried by said assembly between said mounting means and cueing means for returning said cleaning arm to a non-operative position when record play is terminated at any position of the tonearm after the start of record play by the return of said tonearm to a non-operative position.

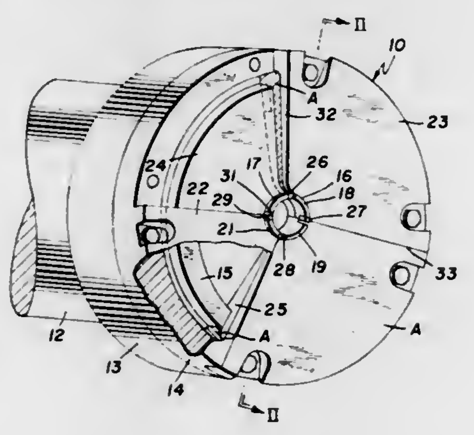
3,868,118
MAGNETIC WORK HOLDER

Henry E. Hirvi, Paxton, and Leon J. Gloshinski, Northboro, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Continuation of Ser. No. 196,547, Nov. 8, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,448

Int. Cl. B23g *3/152*

U.S. Cl. 279—1 M **4 Claims**



1. A magnetic work holder for use in a machine tool having a rotatable spindle, comprising:

- a. an annular electro-magnetic coil adapted to be mounted adjacent the spindle,
- b. a first ring mounted on the coil to receive an electromagnetic field of one polarity,
- c. a second ring mounted on the coil concentrically of the first ring to receive a field of the opposite polarity,
- d. an annular lip located around the axis of the rings in a plane substantially spaced axially therefrom, the lip consisting of at least four parts subtending substantial angles, each part of the lip being closely associated with a hardened metal insert for engagement with the surface of a workpiece, and each insert being separated by a substantial gap from the next adjacent part of the lip other than the one with which it is associated,
- e. connectors joining the first ring to diametrically opposite parts of the lip, and
- f. connectors joining the second ring to the remaining parts of the lip, the rings, lip, and connectors being formed of a magnetic material and the spaces between the connectors and rings being filled with a non-magnetic material, each connector being defined by two axial planes extending at a substantial angle radially from the axis of the rings and lips and by two conical surfaces having their vertices on the said axis in the neighborhood of the lip and the generatrices of the conical surfaces of a given connector lying at a substantial acute angle, the outer conical surface of the connectors joining the second ring to the lip subtends an angle somewhat less than that subtended by the inner conical surface of the connectors joining the first ring to the lip, the connectors and parts of the lip associated with the first ring being electrically insulated by the non-magnetic material from the connectors and parts of the lip associated with the second ring.

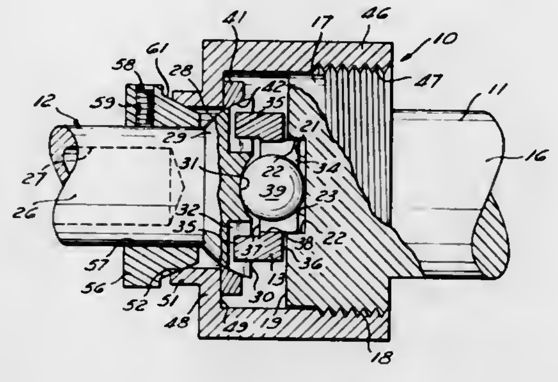
3,868,119
ADJUSTABLE UNIVERSAL COUPLING

Theodore E. Frisco, 7503 Dearborn Ave., Cleveland, Ohio 44102

Filed July 18, 1973, Ser. No. 380,509

Int. Cl. B23b *31/04*

U.S. Cl. 279—16 **1 Claim**



1. In a tool holder including a shank member and a holder member each defining an axis of rotation, a hollow housing axially threaded on the exterior of the shank and including a portion extending axially away from the shank member, said holder member axially terminating in the housing portion spaced from said shank member, coupler drive means within said housing, said coupler means including lug portions engageable with cooperating means on each of said members to transfer torque and to allow lateral misalignment between said members, said holder member having an elongated arcuate groove along the end face received within the housing, said coupler means having an elongated slotted portion transverse to the groove in said holder member, ball means received in said slotted portion and engageable with the arcuate groove in said holder member and an end face of said shank member to transmit axial forces and to allow angular and lateral misalignment between said members, circular retaining means within said housing, a radial shoulder including an inner radial surface on said housing opposing said circular retaining means, said housing adjustable retaining said holder against said ball means according to its axial position on said shank, a stop collar on the exterior of the holder, said stop collar including a conical outer surface concentric with the axis of the holder, said radial shoulder including a conical stop surface concentric with the axis of the shank, said stop collar being axially adjustable on said holder such that said collar aligns the axes of said members when it is set at a first position where it is uniformly circumferentially seated against said conical stop surface and it allows misalignment between said members in an increasing manner as its axial distance from said conical stop surface is increased, and locking means to retain said collar at a desired axial position on said holder.

3,868,120
CHUCK

Hans Blattry, Meerbusch, and Johann Lindemann, Hilden, both of Germany, assignors to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany

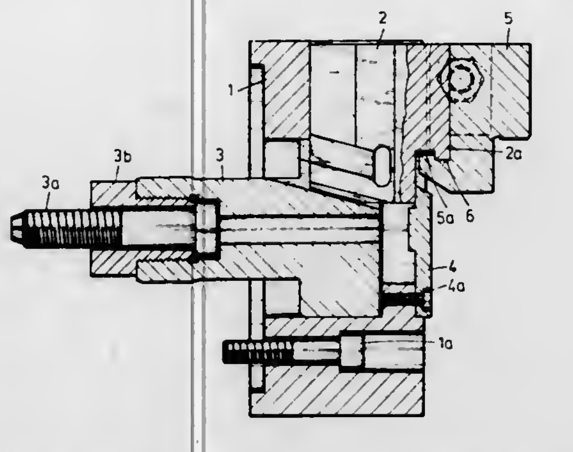
Filed Oct. 2, 1973, Ser. No. 402,744

Claims priority, application Germany, Oct. 3, 1972, 2248403

Int. Cl. B23b *31/16*

U.S. Cl. 279—123 **15 Claims**

1. A chuck comprising a chuck body, a plurality of base raws radially movable in said body, means operatively connected to said jaws and movable in an axial direction of said chuck for radially adjusting said jaws, an auxillary jaw detachably received in a radial channel in each of said base jaws, hook-shaped holding means for holding the auxillary jaw on each of the base jaws and for preventing outward radial movement of said auxillary jaw relative to each of the base jaws, spring means connected to each of the base jaws for clamping the auxillary jaw to each of the base jaws and for preventing the auxillary jaw from undesired movement in the axial direction.



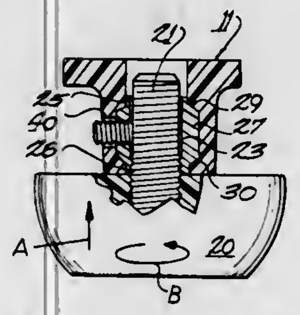
3,868,121
PLASTIC SKATE SOLE PLATE WITH ADJUSTABLE TOE-STOP MOUNT

Gordon K. Ware, St. Charles, Ill., assignor to Chicago Roller Skate Company, Cook, Ill.

Filed Dec. 21, 1973, Ser. No. 427,320

Int. Cl. A63c *17/14*

U.S. Cl. 280—11.2 **5 Claims**



1. A roller skate structure comprising a relatively soft sole plate, a toe stop projecting from the sole plate, a toe stop mounting pin rigidly connected to the toe stop, and a relatively hard bushing rigidly embedded in the sole plate and adapted to receive the toe stop mounting pin, the bushing including relatively small diameter end portions and a relatively large diameter mid-portion intermediate the end portion adapted to immobilize the bushing from movement within the sole plate, a set screw threadably engaging the bushing mid-portion and engaging the mounting pin to immoblize the mounting pin in the bushing, the sole plate being counterbored to prevent contact between the set screw and the adjacent sole plate material and thereby prohibit transmission of force from the set screw directly to the sole plate.

3,868,122
AUXILIARY SKI FOR PHYSICALLY HANDICAPPED PERSONS

Takafusa Negi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

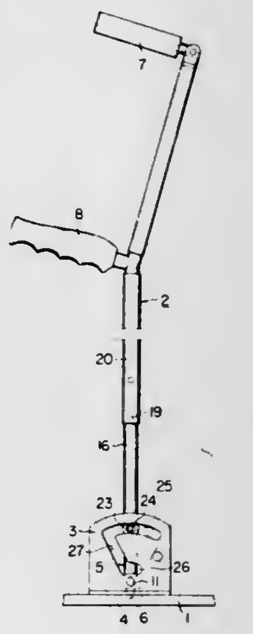
Filed June 21, 1973, Ser. No. 372,179

Claims priority, application Japan, June 26, 1972, 47-63867

Int. Cl. A63c *11/22*

U.S. Cl. 280—11.37 B **10 Claims**

1. A ski composing; a ski runner having a through hole therein; a guide member erected from said ski runner; a pole next to and tiltably supported with respect to said guide plate member and said pole being movable in its lengthwise direction with respect to said ski runner, said guide plate member having a pair of pole locking slots formed at two different positions in the lengthwise direction of said pole and further having a guiding slot interconnecting said pair of pole locking slots; and guiding means fixed to said pole and movable along said pole locking slots and guiding slot, said guiding means being lockable within said pole locking slots, locking of said guiding means within one of said pole locking slots permitting said pole to be retained in one of its movable positions in the lengthwise direction thereof, locking of said guiding means within the other of said pole locking slots permitting said pole to be retained in another of its movable positions in the lengthwise direction thereof; said tiltable supporting of said pole is effected by rotatably pivoting said pole with respect to the guide plate member about a pivot, and said one of said pole locking slots is located more distant from said pivot of said pole than the other of said pole locking slots, and is elongated and curvedly shaped to define an arc of a circle having a center at said pivot of said pole.



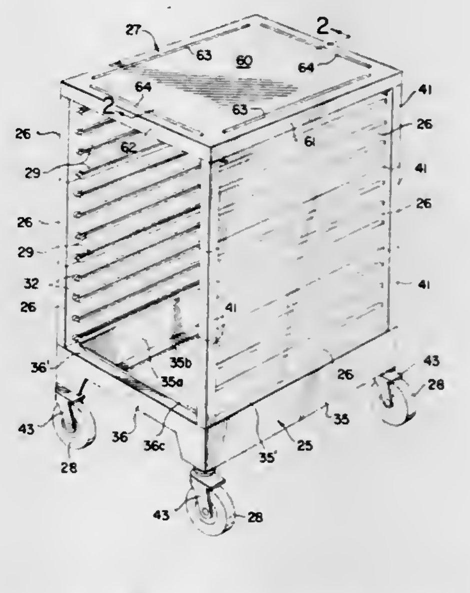
3,868,123
FOOD SERVICE STORAGE VEHICLE

Donald P. Berg, Shaker Heights; Carl E. Bochmann, Brecksville, both of Ohio, and Anthony J. Brescia, Winchester, Va., assignors to Rubbermaid Commercial Products, Inc., Winchester, Va.

Filed Dec. 10, 1973, Ser. No. 423,263

Int. Cl. B62b *5/00*

U.S. Cl. 280—79.2 **17 Claims**



1. A food service storage and transport vehicle having a rectangular molded plastic base, casters supporting the corners of said base, vertical posts having their bottom portions inserted in said corners, insert means rigidly connecting said bottom portions within said base to said casters, stacked side wall sections of molded plastic supported on said base and

having tubular end portions telescopically fitting said posts, a rectangular top section of molded plastic fitting over the tops of said posts, and latch means mounted in said top section wedgably engaging said posts.

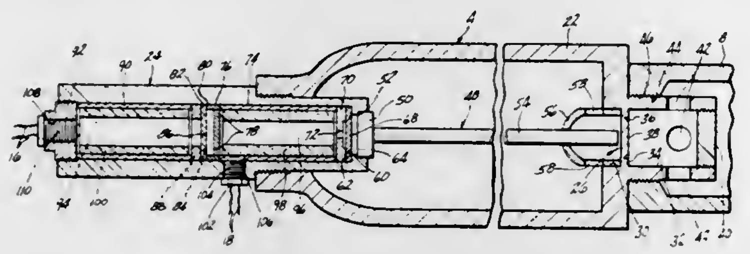
3,868,124
INFLATING DEVICE FOR USE WITH VEHICLE SAFETY SYSTEMS

James T. Johnson, Herrin, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 5, 1972, Ser. No. 286,482

Int. Cl. B60r ***21/08***

U.S. Cl. 280—150 AB **3 Claims**



1. An apparatus for use in connection with safety systems of the type including an inflatable member, a stored fluid under pressure, and a propellant for the generation of hot gas, said apparatus including:
- a. storage means for storing a fluid under pressure and including a closed outlet;
- b. propellant storage means for storing at least two distinct propellant charges in separate propellant chambers;
- c. a propellant charge in each of said propellant chambers;
- d. means for igniting only one of said propellant charges in response to the sensing of a condition wherein slow deployment of the system can be used, and for causing the ignition of all of said propellant charges in response to the sensing of a condition wherein fast deployment of the system is required;
- e. means providing communication between each of said propellant chamber and said storage means if the propellant charge therein is ignited; and
- f. means operable when the system is actuated to open the outlet and permit the propellant gas and stored fluid to escape from said storage means.

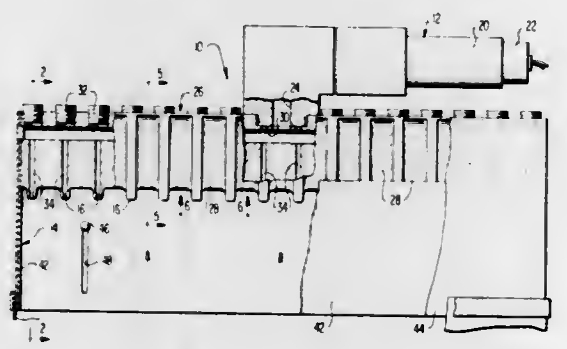
3,868,125
INFLATION SYSTEM FOR VEHICLE CRASH BAG

Philip D. Fisher, Fairfax, and William H. Sargent, Annandale, both of Va., assignors to Atlantic Research Corporation, Fairfax County, Va.

Filed Apr. 9, 1973, Ser. No. 349,433

Int. Cl. B60r ***21/10***

U.S. Cl. 280—150 AB **9 Claims**



1. A system for inflating a crash bag in a vehicle, comprising:

an aspirator assembly mounted within the vehicle, said aspirator assembly including:
- a. a housing for storing the bag, said housing comprising a first section having an opening therein for admitting ambient air into the housing, and a second section movable relative to said first section for movement between a first position covering said opening and a second position exposing said opening and elongating said housing, said bag being secured to said second housing section,
- b. a nozzle assembly mounted within said housing, and
- c. gas generating means connected to said nozzle assembly,

whereby when said generating means is activated, generated gas flows through said nozzle assembly into said housing to effect initial inflation of said bag and to cause said second housing section to move from said first position to said second position to enable ambient air to enter said housing through said opening, the elongated housing permitting optimum expansion of the gas and inducing rapid flow of ambient air into said housing.

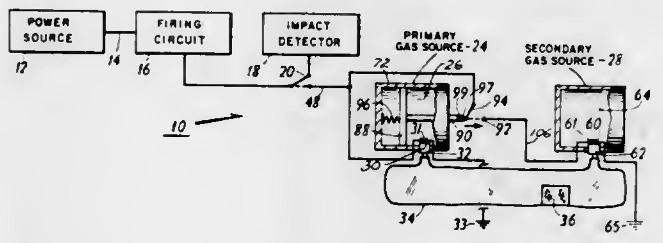
3,868,126
PLURAL INFLATION FOR SAFETY DEVICE

Donald G. Radke, and Donald J. Lewis, both of Troy, Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,971

Int. Cl. B60r ***21/08***

U.S. Cl. 280—150 AB **28 Claims**



1. Apparatus for successively inflating a bag with gas from a plurality of gas sources disposed in a vehicle subject to a plurality of collisions, comprising:
- a. a power source for supplying an electrical current;
- b. circuit means connected to the power source, said circuit means including impact detecting means for causing the current to flow through the circuit means upon each impact of the vehicle;
- c. a primary gas source including pressurized gas;
- d. a secondary gas source for supplying a gas selected from the group consisting of pressurized gas, gas developed by combustion of gas generating material, and mixtures thereof;
- e. a first gas releasing means connected to the primary gas source and to the bag, and a second gas releasing means connected to the secondary gas source and to the bag, said first and second gas releasing means respectively permitting gas from the primary and secondary gas source to flow into the bag upon receipt of the electrical current; and
- f. a pressure sensitive control means, electrically connected to the circuit means, said pressure sensitive control means being in communication with said pressurized gas of said primary gas source so as to be continuously and directly responsive to the pressure of gas within the primary gas source, whereby said pressure sensitive control means electrically connects the first gas releasing means to the circuit means whenever the pressure of gas within the primary gas source is at least a preselected minimum pressure, and electrically connects the second gas releasing means to the circuit means only if and whenever the pressure of gas within the primary gas source is less than the preselected minimum pressure.

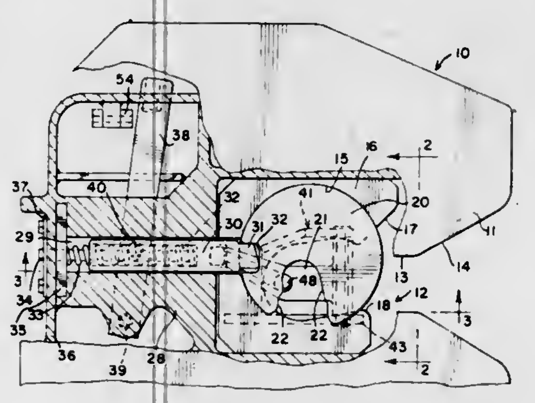
3,868,127
ENGAGED KINGPIN DETECTOR ASSEMBLY FOR FIFTH WHEEL PLATE

Walter J. Marulic, Gary, Ind., and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 26, 1974, Ser. No. 492,296

Int. Cl. B62d ***53/08***

U.S. Cl. 280—434 **5 Claims**



1. A fifth wheel plate assembly for connection with the kingpin of a trailer, comprising a plate having a substantially circular opening and an entry slot communicating with said opening,
- a coupler jaw supported for turning movement within said opening,
- said coupler jaw having an open end slot in one position adapted to communicate with said entry slot to receive a kingpin,
- said coupler jaw during rotating movement from said one position to a locked position locking said kingpin to said plate,
- locking means on said coupler jaw,
- a locking element movable into engagement with said locking means to releasably lock said coupler jaw against rotation in said locked position, said locking element including a spring biased plunger normally urged into engagement with said locking element, said plunger having indicator means positionable to indicate locked and unlocked positions of said plunger, the improvement comprising;
  - an engaged kingpin detector assembly connected to and positioned below said plate,
  - said assembly including an arm,
  - a stop on said arm,
  - said arm being normally biased into engagement with said locking element whereby said stop prevents movement of said locking element into engagement with said locking means,
  - and means on said arm engageable by the kingpin in the closed position only when said kingpin is in a proper vertical position relative to said arm whereby a downward force of the kingpin on said arm moves the same and said stop out of engagement with the locking element permitting said locking element to engage said locking means.

3,868,128
DRAW BAR FOR TOWING AIRCRAFT

Yves Mahieu, Arleux, France, assignor to Societe Anonyme dite: Ateliers Mecaniques du Douaisis, Douai, France

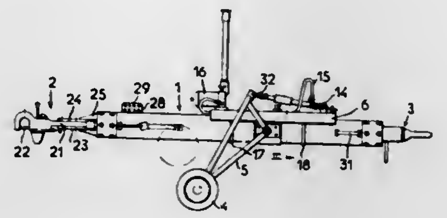
Filed Sept. 12, 1973, Ser. No. 396,433

Claims priority, application France, Sept. 15, 1972, 72.33382

Int. Cl. B60d ***3/00***

U.S. Cl. 280—453 **6 Claims**

1. A draw bar for towing aircraft, comprising a tube, a first head on one end of the tube for attachment to an aircraft, a second head on the other end of the tube for attachment to a tractor, a wheel-support frame, means mounting the tube on said wheel-support frame for movement about its longitudinal axis, and means mounting said frame and tube for pivoting about a transverse axis.



3,868,129
VEHICLE SUSPENSIONS

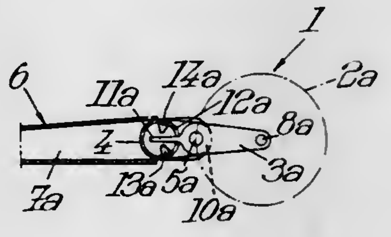
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobile Citroen, Paris, France

Filed May 22, 1973, Ser. No. 362,667

Claims priority, application France, June 1, 1972, 72.19739

Int. Cl. B60g ***11/60***

U.S. Cl. 280—106.5 R **11 Claims**



1. Wheel suspension means for a vehicle having a rigid structure, comprising
- a rigid hollow element connected with the vehicle structure, said hollow element including a wall portion containing an opening;
- a pivot axle connected in parallel laterally spaced relation relative to said hollow element and opposite said opening; a wheel arm pivotally connected with said axle, said wheel arm being adapted to rotatably support at a location remote from said pivot axle a wheel of the vehicle; a first rigid projection connected with said wheel arm and extending radially relative to said pivot axle into said opening; and
- a pair of elastic stop members mounted within said rigid hollow element on opposite sides of said rigid projection, respectively, said stop members being contained in a plane normal to the plane of said pivot axle, whereby upon pivotal movement of said wheel arm, said rigid projection is brought into contact with at least one of said elastic stop members.

3,868,130
ADJUSTABLE REUSABLE TUBING END FITTING

Gary T. Schwertner, and Russell W. Zajaczkowski, both of Cleveland, Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

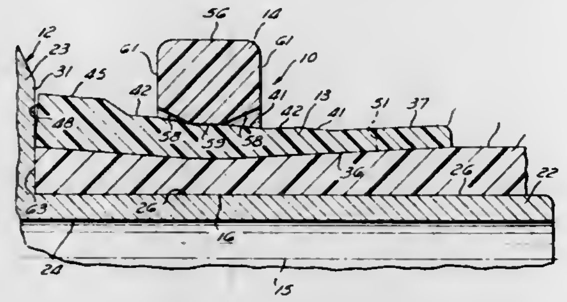
Filed Aug. 16, 1971, Ser. No. 172,036

Int. Cl. F16l ***33/00***

U.S. Cl. 285—243 **9 Claims**

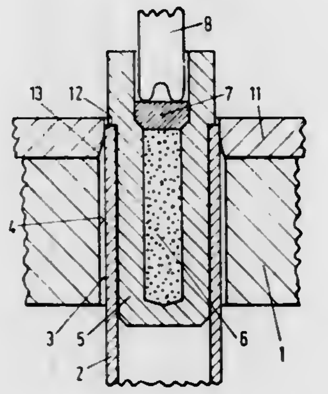
1. A fitting assembly for a flexible hose comprising a tubular insert having an elongated portion of generally circular cross section, a flexible hose having substantially uniform inside and outside diameters at one of its ends, the outer surface of said insert portion defining a diameter substantially equal to the inside diameter of the end of

said hose, said insert portion being positioned within the end of said hose to internally support it, a resiliently deformable tubular collar defining a first clamping member, said collar having an inner diameter substantially equal to the outer diameter of the hose and outer peripheral surface means, said collar being positioned over the end of said hose with at least a portion of the collar forming said surface means within an axial zone of said hose supported by said insert portion, a ring element defining a second clamping member, said ring element having an aperture therethrough at least large enough to permit said hose to extend therethrough, said ring element having internal surface means adapted to cooperate with said collar surface means, the surface means of one of said clamping members including axially separate zones, a first of said zones being axially tapered outwardly in a forward direction towards said hose end, a second of said zones adjacent said first zone having less outward taper in said forward direction than said first zone, said first zone causing said collar to radially constrict when said ring element is pushed axially forward onto said collar to thereby grip said hose and lockingly compress the hose onto said insert portion, said ring being releasably retained on said collar by frictional engagement of said second zone with the surface means of the other of said clamping members, said surface means of said members permitting removal of said ring element from said collar and release of said hose from said insert when said ring element is pulled rearwardly off of said collar.



3,868,131
METHODS AND DEVICE FOR WELDING A METAL PIPE TO A METAL BODY BY MEANS OF AN EXPLOSIVE CHARGE

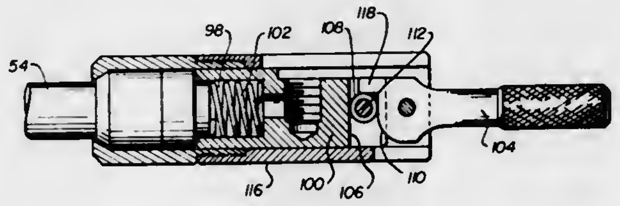
Nicolaas Abraham Zondag, Roosendaal, Netherlands, assignor to Ultracentrifuge Nederland N.V., The Hague, Netherlands
Filed Nov. 30, 1973, Ser. No. 420,690
Int. Cl. F16l *13/02*
U.S. Cl. 285—286 **13 Claims**



1. A method for welding to a metal body having a throughgoing boring a metal pipe extending through said boring and having an outer diameter which is smaller than that of said boring, said welding being effected with the aid of an explosive charge extending within said pipe in the region of said boring and adapted to be fired from the outside, said method comprising the steps of placing a shielding plate having a boring with its boring in coaxial register with the boring of the body against a surface of the body, the boring of the shielding plate having a diameter which is equal to the outer diameter of the pipe so that the pipe fits the boring and being so rounded off at its edge adjacent to the body as to have in the surface facing the body a diameter which is at least equal to that of the boring of the body, passing said pipe with an end thereof through the boring of the body and at least inserting said pipe with that end into the fitting portion of the boring of the shielding plate, inserting before or after the insertion of the pipe into the body and the shielding plate an explosive charge having a composition, of which the velocity of detonation is substantially equal to the velocity of sound in the material of the pipe, into the pipe end portion extending in the body and the shielding plate and firing said charge from its end lying nearest to the shielding plate.

3,868,132
QUICK MOUNT FITTING

William H. Racine, P.O. Box 378, Lakeside, Mich. 49116
Continuation-in-part of Ser. No. 229,754, Feb. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 141,480, May 10, 1971, Pat. No. 3,738,688. This application June 21, 1973, Ser. No. 371,977
Int. Cl. F16l *37/18*
U.S. Cl. 285—312 **4 Claims**



1. A fitting for outside diameter sealing of a smooth walled tube end including:

a body, a passage in such body,

an entry for said tube end in such body, an inwardly continuous tapered area at said body entry,

an annular elastomeric seal within said body, said seal having a dimension greater than said body entry,

a ram element within the body, the end of said ram element having a torquing face, a passageway in said ram element communicating with said body passage, a socket in said ram element having a bottom wall,

a split collet element positioned between said seal and said body entry,

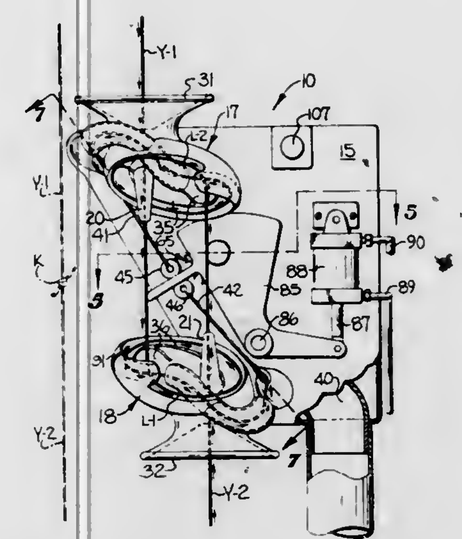
an elongated cam element pivotally mounted to said body and movable against the ram element within said body against said seal to distend same in sealing action against said tube end and to force the split collet into engagement with said body entry and said tube end, said cam element having a cam surface,

a spring in said ram socket, one end of said spring bearing against said bottom wall and the other end of said spring bearing against the end of the tube inserted into the fitting, thereby preventing the tube from bottoming in the ram socket whereby movement of the ram element compresses the spring but does not push the tube out of the fitting and

a wear resistant element interposed between the cam surface of the elongated cam element and the torquing face of the ram element, said wear resistant element providing reduced frictional force between the torquing face and the cam surface.

3,868,133
PNEUMATIC YARN KNOTTER MECHANISM

Gustav Franzen, Krefeld, Germany, assignor to Palitex Project-Company GmbH, Krefeld, Germany
Filed June 18, 1974, Ser. No. 480,573
Claims priority, application Germany, June 18, 1973, 2330997
Int. Cl. B65h *69/04*
U.S. Cl. 289—2 **10 Claims**



1. A pneumatic yarn knotter mechanism for use alone and especially for use on a yarn processing machine, such as a twister, spinning frame or the like, for knotting together broken or otherwise separated ends of yarn being processed thereby and being characterized by a purely pneumatic knot tying operation which eliminates moving parts acting directly on the yarns; said yarn knotter mechanism comprising:

a frame;

a pair of knot tying housings carried by said frame in longitudinally-spaced, mirror-image relation to each other and having inside faces facing each other and outside faces facing away from each other;

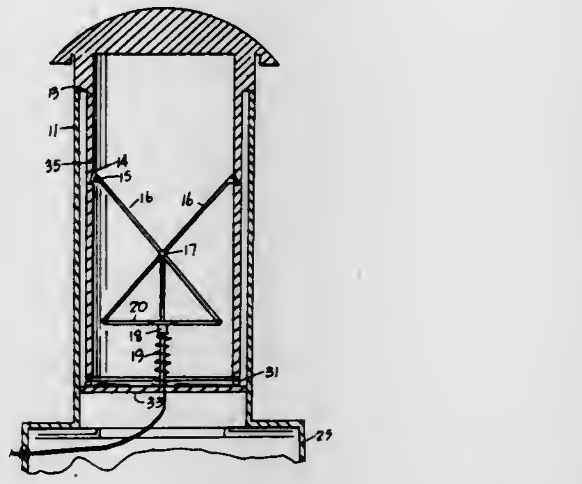
an injector nozzle means formed in and extending longitudinally through each of said housings to define opposing, longitudinally-extending, axially-offset, parallel, yarn passageways from said housing outside faces to said inside faces, said nozzle means each including a thin, radially and longitudinally-extending slot therethrough, each of said nozzle means including means for supplying air under pressure thereto for creating opposing air streams therethrough from said housing outside faces to said inside faces, whereby yarn ends positioned at said housing outside faces will be sucked in and carried through said nozzle passageways and impinged upon said opposite housing inside faces;

recessed, open-sided, curved, continuous, knot tying, guide surfaces formed on said housing inside faces around said nozzle means and each defining an interlooped, yarn passageway on each of said housing inside faces having an entrance and an exit and being generally in the shape of a loosely tied knot loop and being positioned for receiving at said entrance thereof the yarn end and air stream from said opposite housing nozzle and passing the yarn end and air stream around the other yarn end being carried through the same housing nozzle and out of said exit thereof for the tying of a knot of each of said yarn ends around the other of said yarn ends; and

suction conduit means contained in said frame and opening. adjacent said exits of said knot tying passageways for receiving and sucking in the loose ends of yarn from said exits after the knot tying operation and for pulling the loosely tied knot and yarn out of said knot tying housings through the open sides of said guide surfaces and through said slots in said nozzle means and for tightening the tied knot.

3,868,134
REMOTE CONTROLLED GAS CAP LOCK

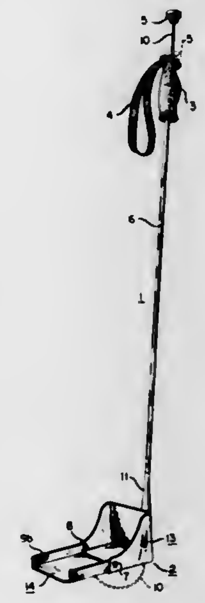
Holger Jorgensen, 610 Alliance Ave., Toronto, 334 Ontario, Canada
Filed Sept. 4, 1973, Ser. No. 394,158
Int. Cl. B65d *55/14*
U.S. Cl. 292—28 **1 Claim**



1. A latching mechanism for fastening a cap of a fuel tank of an automobile to the tank filler tube, with said latching mechanism controlled by a flexible cable which is operated from a remote position, in which the cap of the fuel tank is fitted with a tubular projection that extends into the tube of the fuel tank filler tube, in the closed position, said tubular projection formed with a recess on its internal wall, and said latching mechanism mounted inside the fuel tank filler tube, shaped to engage in the closed position the recess in the wall of the tubular projection of the cap, with said flexible cable fastened through a sleeve joint in the fuel tank wall to the latching mechanism.

3,868,135
DEVICE FOR REMOVING ANIMAL DROPPINGS

Luke P. Magliaro, 79 Passaic Ave., Berkeley Heights, N.J.
Filed Apr. 23, 1973, Ser. No. 353,695
Int. Cl. A01k *23/00, 29/00*
U.S. Cl. 294—1 R **6 Claims**



1. A device for removing animal droppings which comprises in combination:

a receptacle constructed to operate from closed to open position,

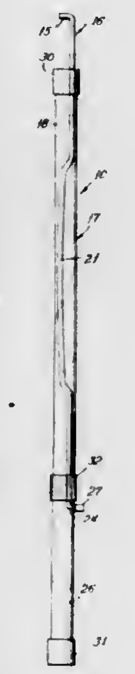
said receptacle comprising a partial enclosure including a flat base member partially closed on three sides by a back wall between two side walls, and open at the top and along one edge,

- a hinged closure pivotally connected along said one edge, said hinged closure forming in open-faced position an extension in substantially the same plane as said base member,
- a long hollow shaft rigidly fastened externally to the back of said partial enclosure, and positioned to extend upwardly when said base member is seated horizontally,
- a mechanism for opening and closing said receptacle comprising an elongated lever on the under side of said base member extended in a direction substantially normal to said open edge and having one end fixed externally to the extension of said base member in a position substantially midway between said side walls, and having the other end free,
- a cable connected at one terminal to the free end of said lever and passing slidably through said shaft,
- said cable terminating at its other end in a handle adjacent the top of said shaft for slidably manipulating said cable in said shaft to move said closure from closed to open position, and vice versa, and
- means for accommodating and holding one flap of a disposable container in place on the face of said hinged extension.

3,868,136
TOOL FOR MANUAL MANIPULATION OF DEVICES FOR APPLICATION TO AND REMOVAL FROM HIGH VOLTAGE CONDUCTORS

Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60062

Filed Mar. 25, 1974, Ser. No. 454,474
Int. Cl. B25b *27/00*
U.S. Cl. 294—19 R **5 Claims**

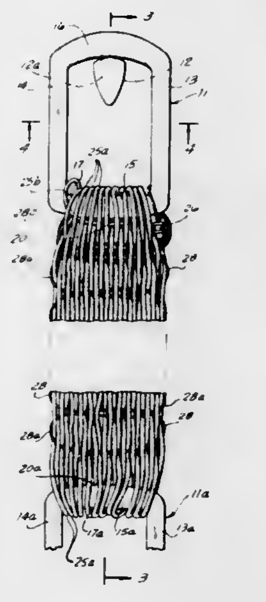


1. A tool for applying and removing an electrical measuring device having an apertured support bracket to and from a high voltage electrical conductor comprising, in combination, a tubular insulating housing having a lengthwise extending slot near one end, and an insulated operating rod movable endwise within said housing and out of the other end thereof; said operating rod at its inner end having a handle extending through and slidable in said slot for manual manipulation of said operating rod, and said operating rod at its outer end having a finger for entering the aperture in said support bracket to draw the same into said other end of said housing on movement of said handle toward the one end of said slot adjacent said one end of said housing, said operating rod being bowed intermediate its ends to provide frictional resistance between it and the inner surface of said housing to relative longitudinal movement thereof.

3,868,137
CARGO SLING AND FEED-THROUGH LINK THEREFOR

John William Friend, 3000 Nassau Dr., Vero Beach, Fla. 32960

Filed Sept. 4, 1973, Ser. No. 394,182
Int. Cl. B66c *1/18*
U.S. Cl. 294—74 **17 Claims**

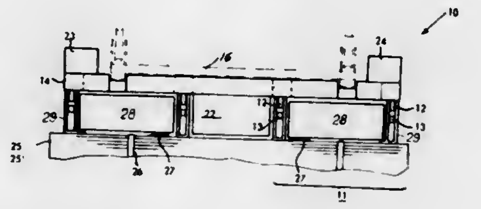


1. A link for cargo slings comprising a unitary, generally rectangular-shaped member having parallel sides of uniform cross-section; a bottom cross member to which a cargo sling is secured, said bottom member being perpendicularly disposed between said parallel sides and having a rounded upper face tapering toward a rounded, slightly outwardly curved lower face and providing a generally triangular cross-section for said bottom member in a direction longitudinally of said link; and, an outwardly curved top cross member having a rounded inner surface tapering toward a rounded outer surface and providing a generally triangular cross-section for said top cross member in a direction longitudinally of said link, the overall length and overall width of said link being such that a first link can be passed through a second, identical link when said first link is oriented so that its width is substantially in the same plane as the diagonal of said second link.

3,868,138
HOISTING MEANS FOR HANDLING AND LIFTING OBJECTS, SUCH AS TIMER STACKED TO FORM LOAD UNITS

Per Albin Strombeck, Lindome, Sweden, assignor to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed Nov. 12, 1973, Ser. No. 414,962
Claims priority, application Sweden, Nov. 21, 1972, 15088/72
Int. Cl. B66c *1/62*
U.S. Cl. 294—74 **10 Claims**

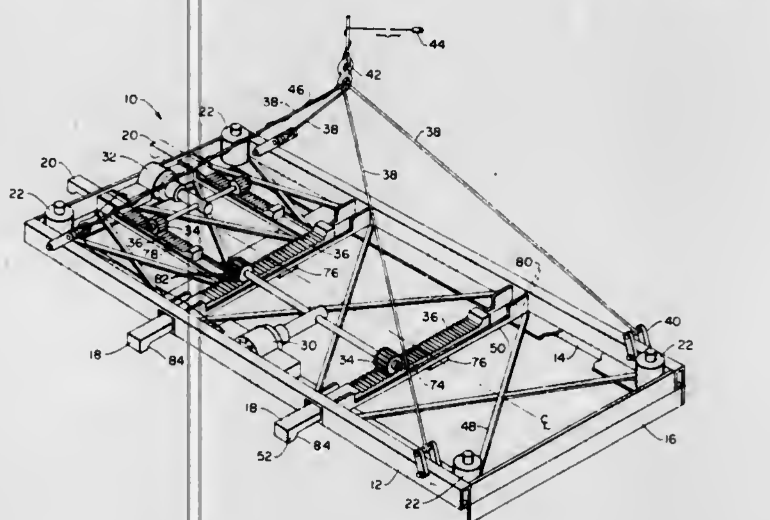


1. Hoisting means for use with hoisting cranes or the like for handling and lifting objects in the form of load units (25) of the type which is held together by two separate wirings (26), said means comprising a support unit (14) adapted to be carried by the crane and having gripping members (27), said support unit (14) being provided with at least four lifting heads (28,28′) arranged in pairs, each lifting head being provided with a single gripping member (27), means mounting said gripping members for movement in the longitudinal and transverse directions of the support unit to cause said gripping members, when the load is gripped, to slide against the load in opposite directions in the longitudinal direction of the support unit in order to grip in pairs under one wiring end, and means thereafter to move the gripping members in pairs outwardly away from each other in the transverse direction of the support unit towards the sides of the load.

3,868,139
CONTAINER HANDLING SPREADER BAR

Joseph A. Drelicharz, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1974, Ser. No. 446,855
Int. Cl. B66c *1/66*
U.S. Cl. 294—81 SF **8 Claims**



1. A container handling spreader bar comprised of:

- a. a rectangular frame;
- b. a skirt attached to the frame and extending downward along one side and the adjacent end;
- c. first and second pairs of substantially parallel, spaced apart, movable arms mounted in the frame and extendable from the side and end opposite the skirt;
- d. downward projections on the ends of said arms for drawing the spreader bar into alignment with the top of a container after placement;
- e. means for extending and retracting the movable arms;
- f. means for automatically energizing the arm retracting means when the spreader bar is placed on top of a container;
- g. four self-locking retractable dogs attached to each inside corner of the frame;
- h. means for retracting the dogs;
- i. means for keeping the dogs retracted during positioning of the spreader bar; and
- j. means for automatically releasing the dogs when the spreader bar is aligned with the top of a container.

3,868,140
CONTAINER CARRIER

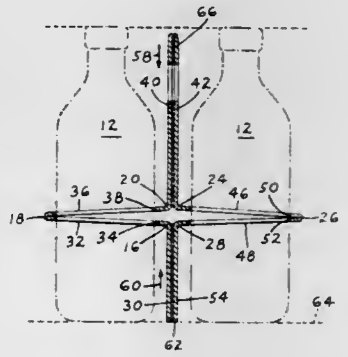
Robert L. Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,710
Int. Cl. B65d *71/00*
U.S. Cl. 294—87.2 **8 Claims**

1. A collapsible carrier for containers having parallel body walls, said carrier being formed from a rectangular blank of material and adapted to carry at least two containers, said carrier in its erected container carrying condition comprising,

a downwardly extending container separator section,

- an upwardly extending handle section upwardly movable with respect to said separator section,
- and a container receiving section on each side of and intermediate said separator and handle sections,
- each of said container receiving sections comprising an upper and a lower transverse panel, each of said upper panels being foldable along a first score line with respect to said handle section and each of said lower panels being foldable along a second score line with respect to said separator section, said upper transverse panel being adapted to be placed in substantially parallel relationship with respect to said lower transverse panel,
- each of said lower transverse panels having an inner end, the inner end of one of said lower transverse panels being joined to the inner end of the other of said lower transverse panel at said second score line,
- each of said upper and lower transverse panels having a container receiving opening formed therein,
- each of said openings being of substantially equal size and of a shape substantially the same as the shape of a transverse cross section of said parallel body-walled container, the opening in said upper transverse panel being in register with the opening in said lower transverse panel when said upper transverse panel is placed in said substantially parallel relationship with respect to said lower transverse panel,
- each of said openings in register being adapted to receive the body of a container, said downwardly extending separator section being sufficiently long as to extend downwardly to a plane formed by the bottom of said containers when said transverse panels are placed in said substantially parallel relationship whereby said container receiving sections are located at a predetermined position with respect to the parallel body walls of said containers and the upper edge of said upwardly extending handle section is substantially aligned with the top of said containers when said separator section extends to said plane formed by the bottom of the containers,
- and the edges of said openings being adapted to grip the parallel walls of the body of said container when said handle section is raised with respect to said container separator section to move said upper and lower transverse panels out of said parallel relationship.



3,868,141
VEHICULAR SAFETY DEVICE

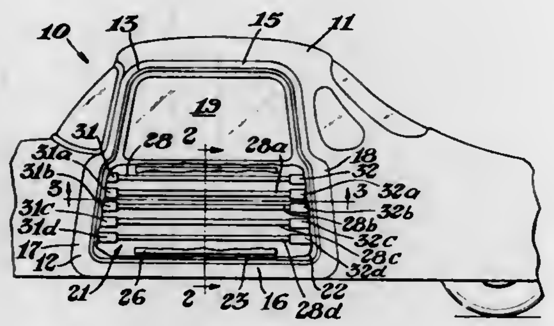
John E. Johnson, Madison, Wis., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 370,243, June 15, 1973, abandoned. This application July 27, 1973, Ser. No. 383,430
Int. Cl. B60r *21/02*
U.S. Cl. 296—28 R **11 Claims**

1. A vehicle member, the vehicle member comprising

a supporting frame, the supporting frame enclosing therein a region of probable impact, and first and

second frame portions generally oppositely disposed and having therebetween the region of the probable impact, at least one resilient deflectable generally bar shaped member having a major axis, the member being disposed between opposed frame portions and supported by and slidably affixed to said frame portions, the member being slidable in the direction of the major axis whereby an impact in the region of probable impact and deflection of the member, relatively little force is exerted which would serve to draw frame member portions together.



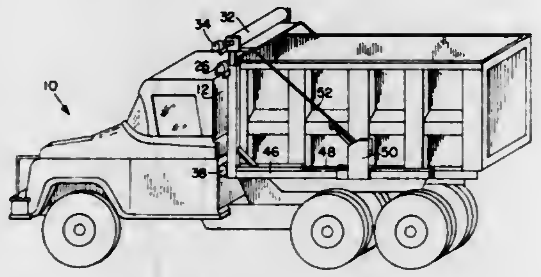
3,868,142
ADJUSTABLE TRUCK COVER

Ernest C. Bachand, Millbury, and Frederick G. J. Grise, Wilbraham, both of Mass., assignors to Pioneer Coveralls Inc., North Oxford, Mass.

Filed May 31, 1973, Ser. No. 365,469

Int. Cl. B60j *11/00*

U.S. Cl. 296—98 **7 Claims**



1. The combination of a truck having a frame with an extensible flexible cover for the truck contends and means to adjust the position of the cover,

wherein said means comprises a standard, means to generally vertically adjust the standard,

a rail, a bracket being slidable thereon, and means to slide the bracket along the rail generally longitudinally of the frame,

means to support the cover on the standard and the frame, the means to support the cover on the bracket comprising a member movable generally fore and aft with respect to the bracket,

said member being elongated, and including means on the bracket to swingingly mount the member at one end, said member having an end portion of the cover connected thereto at the opposite end, extending the cover as the member moves aft, and means to retract and roll up the cover.

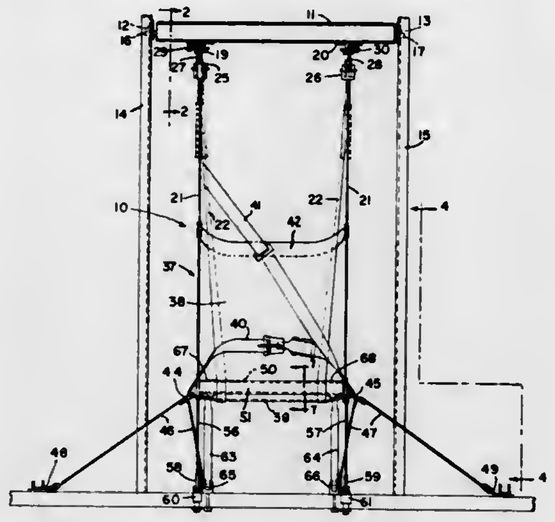
3,868,143
CRASH LOAD ATTENUATING TROOP SEAT

Mason J. Reilly, Media, Pa., assignor to The Unites States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1973, Ser. No. 354,425

Int. Cl. B60r *21/10*

U.S. Cl. 297—216 **9 Claims**



1. A collapsible safety seat for a vehicle comprising:

a beam formed to be pivotally supported by the vehicle structure along the length thereof;

a pair of rigid struts formed at respective one ends thereof to be pivotally attached to the vehicle floor at a spaced interval beneath said beam;

a rigid member connected between the other ends of said struts;

a pair of flexible suspenders connected between the respective ends of said beam and said member;

a webbing attached at each end intermediate the ends of respective ones of said suspenders;

a flexible sling having upper and lower portions for supporting the back and buttocks, respectively, of an occupant, said upper portion being attached to said webbing and said lower portion being attached to said member;

a pair of tie-down straps formed to be attached at respective one ends thereof to the vehicle floor in a vicinity beneath said member and at respective other ends thereof to the vehicle floor outwardly from the ends of said member; and

a lap belt formed to encompass said lower sling portion and attached at respective sides thereof to said tie-down straps adjacent to the sides of said lower sling portion.

3,868,144
SPRING MECHANISM FOR A TILTABLE MEMBER OF A TILTING CHAIR

Finn Lie, 2391 Moelv, Norway

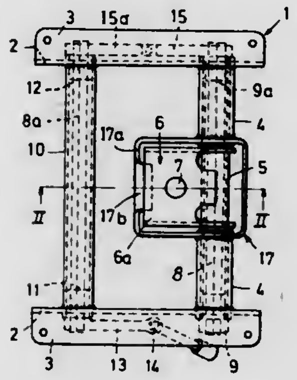
Filed Feb. 12, 1973, Ser. No. 331,704

Claims priority, application Norway, May 31, 1972, 1926/72

Int. Cl. A47c *7/00*

U.S. Cl. 297—304 **7 Claims**

1. A spring mechanism for a tiltable member of a tilting chair having a base, said spring mechanism comprising a support member mountable on the base, a frame including side pieces, means connecting the frame to the support member for pivotal movement about a horizontal tranverse tilting axis, the latter said means comprising first and second torsion bars extending transversely of the side pieces of the frame, said first torsion bar extending in horizontal alignment with said transverse tilting axis, said second torsion bar being spaced rearwardly thereof, a first tube-shaped member secured to the support member, tube-shaped bearing sleeves secured to said side pieces of the frame and rotatably receiving said first tube-shaped member, a second tube-shaped member spaced rearwardly from said first tube-shaped member and secured to said side pieces of the frame, said first torsion bar extending longitudinally within said first tube-shaped member, said second torsion bar extending longitudinally and freely rotatably within the second tube-shaped member, means at one of the side pieces of the frame connecting one end of said first torsion bar non-rotatably to the first tube-shaped member, further means at said one side piece of the frame connecting one end of said second torsion bar non-rotatably to said one side piece, means at the other side piece of the frame operatively interconnecting the other of the ends of the first and second torsion bars so that as the frame is tilted both torsion bars will twist simultaneously and exert a combined resilient restraining force in opposition to the tilting movement of said frame, said means which operatively interconnects said other ends of the torsion bars comprising levers respectively fixed to said other ends of the torsion bars and extending towards one another, said levers having free ends freely overlapping one another, and contact means carried by one of said levers at said free end thereof and freely bearing against the free end of the other of said levers to provide a substantially point contact between said levers when they are moved relative to one another in one direction while permitting unhindered relative movement in the other direction, and stop means operatively cooperating between said frame and said support member for limiting the tilting movement of said frame relative to said support member in a direction opposite the normal direction of tilting of said frame.



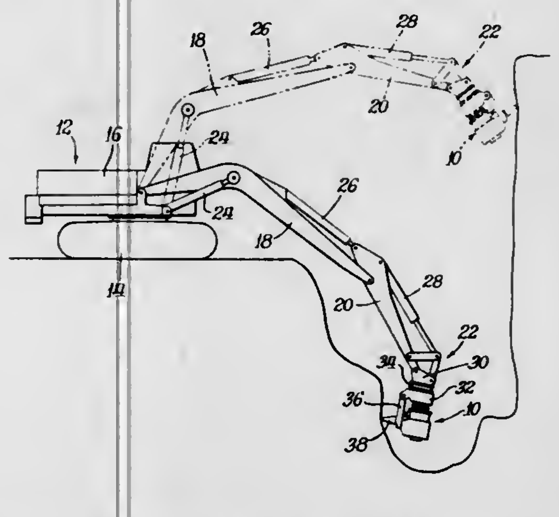
3,868,145
ECCENTRIC RING IMPACTING MECHANISM FOR IN-SITU ROCK BREAKERS

Delwin Earl Cobb; Jerry Dale Fidler, both of Peoria; Nathan Gutman, Washington; Richard Edward Livesay, Peoria, and Orrin Arthur Stemler, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 23, 1973, Ser. No. 390,911

Int. Cl. E21c *27/28*

U.S. Cl. 299—37 **14 Claims**



1. An impact mechanism for delivering intermittent impact blows to a rock fracturing shank comprising:

a housing;

a drive shaft having an eccentric journal rotatably mounted in said housing;

a fracturing shank reciprocably mounted adjacent said housing and having an impact receiving member extending into said housing and a fracturing tip extending away from the impact receiving member;

an annular impact member having a plurality of impact faces rotatably mounted in said housing on said eccentric journal and driven by said shaft in orbital path for intermittent engagement of said impact faces with said impact receiving member; and,

means for constraining said impact member to rotate about its axis in a direction opposite the direction of rotation of said driven shaft when driven in said orbital path.

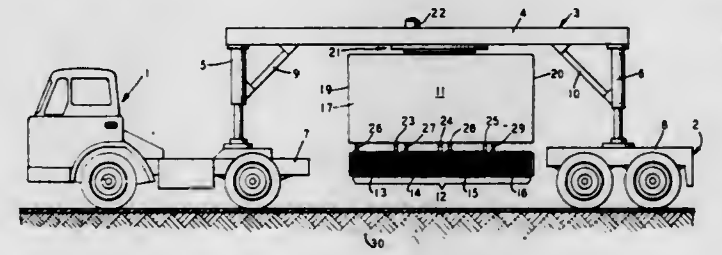
3,868,146
PAVEMENT GROOVING MACHINE

Stafford M. Ellis, Bearsted, England, assignor to Super-Cut, Inc., Chicago, Ill.

Filed June 9, 1972, Ser. No. 261,360

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **1 Claim**



1. A pavement grooving machine comprising a truck means and trailer means, an upright yoke connected between the truck means and trailer means, a bank of rotary cutting blades, horizontally rotatable support means for the bank of cutting blades rotatably dependingly mounted on the yoke between the truck means and trailer means, the bank of blades being dependingly mounted on the rotatable support means, the rotatable support means being sufficiently rotatable to provide the bank of blades with selective first and second cutting positions disposed at least 90° apart, the yoke including a substantially horizontally disposed beam carrying the rotatable support means, and a plurality of legs substantially at opposite ends of the beam, each leg being mounted on one of the truck and trailer means, said legs being vertically adjustable for selective raising and lowering of the beam.

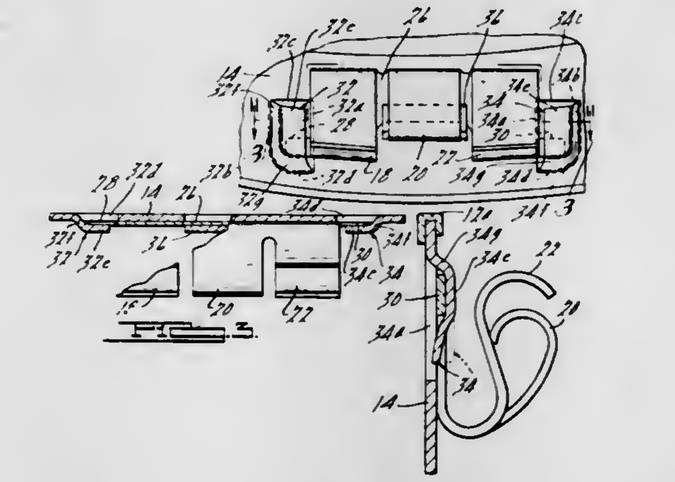
3,868,147
WHEEL TRIM

Hans R. Beisch, Amherstburg, Ontario, Canada, assignor to Norris Industries, Inc., Ypsilanti, Mich.

Filed Apr. 4, 1974, Ser. No. 457,814

Int. Cl. B60b *3/00*

U.S. Cl. 301—37 C **20 Claims**



20. A wheel trim assembly for disposition on the axially outer face of a vehicle wheel having a wheel flange, said wheel trim assembly comprising: an annular retention band member; a spring retention clip member disposed on said retention

band member and engageable with the wheel flange for mounting the wheel trim assembly on the wheel; and means for securing said spring retention clip member to said retention band member comprising a pair of spaced retention tabs on one of said members and a pair of projecting tabs on the other of said members, each of said retention tabs extending away from said one member across one of said projecting tabs and back toward said one member to rigidly affix said two members together.

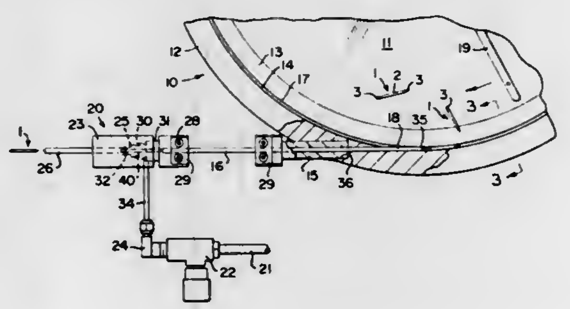
3,868,148
TRUNNION BEARING FEEDER

George E. Schultz, Clearwater, Fla., assignor to Tangen Drives, Inc., Clearwater, Fla.

Filed Apr. 23, 1973, Ser. No. 353,299

Int. Cl. B65g *51/02*

U.S. Cl. 302—2 R 3 Claims



1. A trunnion bearing feeder comprising in combination,
- — a feeder having a side wall,
- — the interior of said feeder having nesting means at its periphery cooperating with said side wall for aligning trunnion bearings in end to end single file orientation, said feeder having means for imparting movement to said trunnion bearings positioned therein to advance said trunnion bearings for further conveying from said periphery,
- — pick-up tube means tangentially aligned along a portion of the periphery of said feeder and in communication with said nesting means,
- — an adapter bracket provided in the side wall of said feeder having clamping means for securing said pick-up tube means in longitudinal relationship with said feeder and with said nesting means,
- — said pick-up tube means extending outwardly from said adapter bracket,
- — a venturi provided downstream of said pick-up tube means and in closed communication therewith to provide negative pressure within said pick-up tube means and positive pressure downstream of said pick-up tube means, — said venturi operationally functioning to introduce the trunnion bearings into said pick-up tube means in single and spaced relation one to the other and to draw the same into and through said venturi and to accelerate the same under positive pressure further downstream of said pick-up tube means in a continuous and uninterupted flow path.

3,868,149
MATERIAL DISTRIBUTING APPARATUS FOR A SILO

Curtis C. Weaver, 901 S. Congress St., Polo, Ill. 61064, and Robert E. Kirkpatrick, 506 N. Taft St., Humboldt, Iowa 50548

Filed Mar. 21, 1974, Ser. No. 453,273

Int. Cl. B65g *53/40;* **A01f** *25/16*

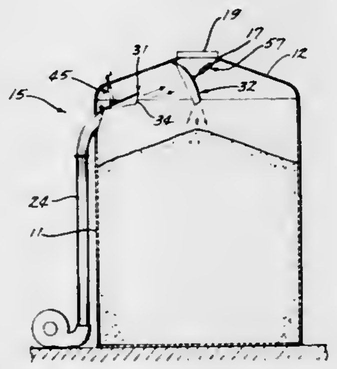
U.S. Cl. 302—60 5 Claims

1. An apparatus comprising a silo having a circular side wall, a roof and a material conveyor tube having a delivery end open to said silo through an upper portion of the silo and a material distributing apparatus comprising:

a. a pair of material deflector members,

b. means pivotally supporting one of said deflector members adjacent the top side of the delivery end of said conveyor tube for up and down pivotal movement in a path longitudinally of the silo,

c. means pivotally suspending the second one of said deflector members from a central portion of said roof for pivotal swinging movement in a path transversely of said silo, and



d. means for relatively adjusting said first and second deflector members such that during filling of the silo material from said conveyor tube discharged against said first deflector member is directed against said second deflector member for discharge from said second deflector member in a direction axially and downwardly of said silo.

3,868,150
BRAKE CONTROL APPARATUS FOR A BLENDING BRAKING SYSTEM TO REDUCE EFFECTS OF RELATIVE BRAKING RESPONSE TIMES

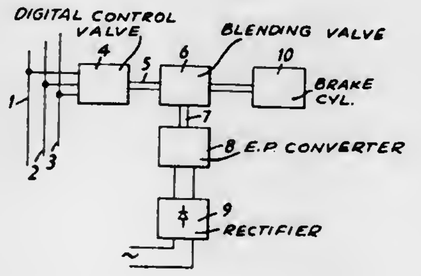
Arthur Maskery, London, England, assignor to Westinghouse Brake & Signal Company Limited, London, England

Filed June 11, 1973, Ser. No. 368,727

Claims priority, application Great Britain, June 21, 1972, 29177/72; Sept. 21, 1972, 43743/72

Int. Cl. B60t *13/74*

U.S. Cl. 303—20 4 Claims



1. For a blending braking system having electric braking means and additional braking means, braking control apparatus including blending means responsive to a braking command signal and a signal indicative of electric braking for producing a control signal for the additional braking means for causing the additional braking means to make up for a deficiency between the electric braking and the braking called for by the command signal, and means responsive to a signal indicative of a changing electric braking effect for causing said control signal to change by an amount appropriate to a greater change of electric braking.

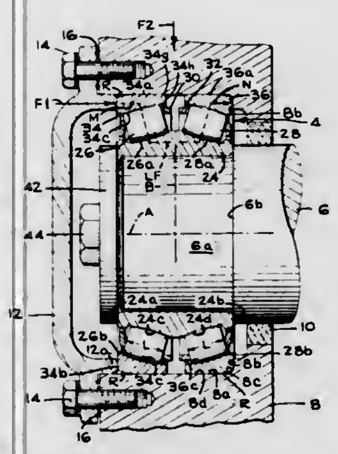
3,868,151
ROLLER BEARING WITH TAPERED OUTER RACE RING

William J. Derner, Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed May 4, 1973, Ser. No. 357,282

Int. Cl. F16c *13/00*

U.S. Cl. 308—207 6 Claims



1. A roller bearing for mounting in a member, said bearing having an inner race, a circle of canted rollers, and a wedge shaped outer race, the outer surface of said outer race having a central cylindrical portion for receipt in said member, the improvement comprising a relieved portion on the outer surface of said outer race with a diameter gradually and progressively diminishing from said central cylindrical portion to the end of the race to permit cocking of the outer race to equalize the distribution of the load on the rollers and relieve excessive load on the edges of the rollers.

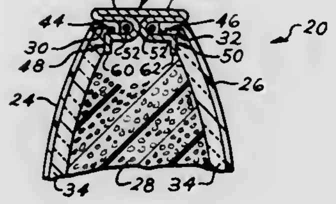
3,868,152
REFRIGERATOR CABINET CONSTRUCTION

Farris E. Dixon, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 12, 1974, Ser. No. 460,345

Int. Cl. F25d *23/06*

U.S. Cl. 312—214 5 Claims



1. In a household refrigerator having opposed walls and first and second compartments separated by a partition, said partition having an edge first and second spaced-apart walls forming a cavity therebetween, a first material within the cavity and substantially covering the first and second walls, a face element extending from within the cavity to a location overlying at least a portion of the walls along said partition edge, heating means positioned between the walls along the partition edge, and foam insulation material within the cavity between and adhering to the first material of the first and second walls, the improvement comprising:

each of said first and second walls having a flange portion extending along the length of the partition edge and being directed generally toward and spaced from one another in the assembled position;

said face element having opposed end portions and being enfolded to form a planar face, first and second opposed channels, and first and second outwardly extending flanges, said first and second channels having an associated wall flange nested therein, the heating means nested in one of the channels between the face element and the associated wall flange, and said first and second outwardly extending flanges contacting the first material and adhering to the foam insulating material; and

means for connecting opposed ends of the face channel to opposed walls of the refrigerator.

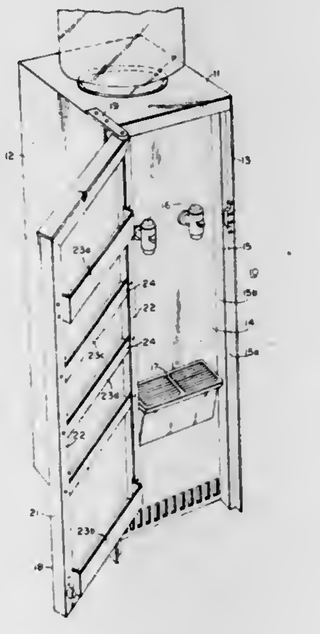
3,868,153
CABINET FOR A WATER COOLER

Carl E. Sholtes, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 5, 1973, Ser. No. 321,404

Int. Cl. A47b *77/08*

U.S. Cl. 312—236 10 Claims



1. Cabinet construction for a water cooler apparatus including a housing having a front panel and liquid dispensing faucet extending forwardly of said front panel, said front panel supporting a drip trough directly below said faucet for catching and retaining liquid dripping from said faucet, a door structure hingedly supported for movement between an open position permitting access to said faucet and a closed position generally covering said front panel and concealing said faucet, said door structure having an inner face with a plurality of shelves supported thereon and extending generally horizontally toward said front panel when said door is in a closed position, at least one of said plurality of shelves disposed so as to be at an intermediate height relative to said faucet and said drip trough, and of said shelves disposed at said intermediate height being of sufficiently limited depth in a front to rear direction so as not to interfere with the normal drip path from said faucet to said trough so that any drippage occurring when said door is closed does not contact any of said shelves.

3,868,154
CART FOR DIALYSIS MACHINE

Francis X. MacDonald, Canton, and Paul M. MacDonald, Scituate, both of Mass., assignors to P. X. Industries, Inc., Rockland, Mass.

Filed Oct. 9, 1973, Ser. No. 404,349

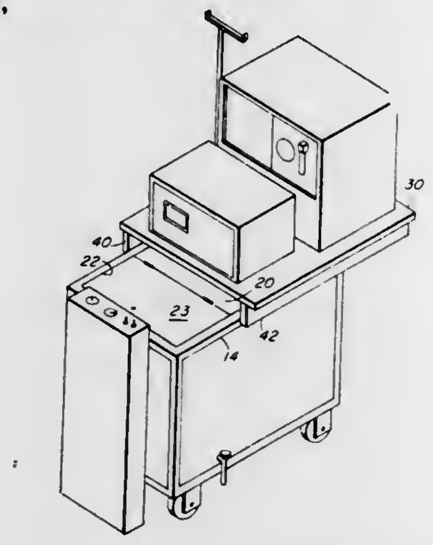
Int. Cl. A47b *91/00, 81/00*

U.S. Cl. 312—250 3 Claims

1. A cart for use in a mobile kidney dialysis station, comprising

(a) a frame including horizontally disposed top and bottom members of rectangular outline and vertical members connecting said top and bottom members,

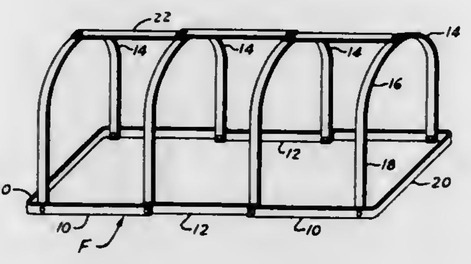
(b) a waterproof tank generally corresponding in size and shape to said frame mounted within said frame,
(c) said tank being formed with an opening at the top thereof adjacent one end thereof,
(d) roller means mounted to the bottom of said frame and supporting said cart for free rolling movement, and
(e) a flat horizontally disposed tray substantially coextensive with said top frame member and mounted to said top member for limited sliding movement relative thereto,
(f) said tray being adapted to support kidney dialysis equipment and in one position said tray covering said tank opening and in another position said tray exposing said tank opening,



(g) said top frame member including a pair of parallel rails, one fixed horizontally along each side of said top member and said tray includes a plurality of wheels mounted to said tray and engaging said rails,
(h) said tray including a pair of parallel depending panels extending longitudinally along each side thereof and supporting said wheels, and,
(i) a plurality of inwardly extending stop members mounted to said panel projecting under said rails and engageable with said vertical frame members at either extreme position of said tray, said stop members being spaced apart to limit the travel of said tray from a closed position fully over said top frame member to an open position exposing said tank opening.

3,868,155
FOLDABLE AND STORABLE ENCLOSURE

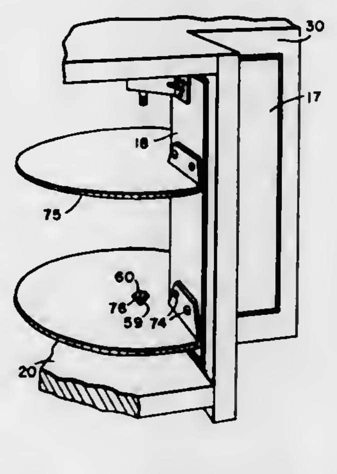
Albert E. Cherubini, 766 Radian Dr., Heath, Ohio 43055
Filed Dec. 13, 1973, Ser. No. 424,293
Int. Cl. A47g *19/30*
U.S. Cl. 312—284 **8 Claims**



1. A foldable frame for a table cover and the like comprising: left and right generally U-shaped base sections positioned with their legs extending toward and spaced from each other; front and rear center base bars with respective ends of each center bar pivotally connected to the ends of respective front and rear legs of said left and right U-shaped base sections; first, second, third and fourth inverted bows with the lower ends of the first bow being pinned to respective legs of said left U-shaped base section, with the lower ends of said fourth bow being pinned to respective legs of said right U-shaped base section, and with the front and rear lower ends of said second and third bows being pivotally connected to said base members adjacent said pivotal connections at the left and right ends of respective front and rear center frame bars; and whereby said frame can be folded to occupy a minimum of space by folding said first and fourth hoops inwardly, said second and third hoops outwardly, and said base into a collapsed Z-shape with the left and right end frame sections closely adjacent each other.

3,868,156
ROTARY CABINET ASSEMBLY

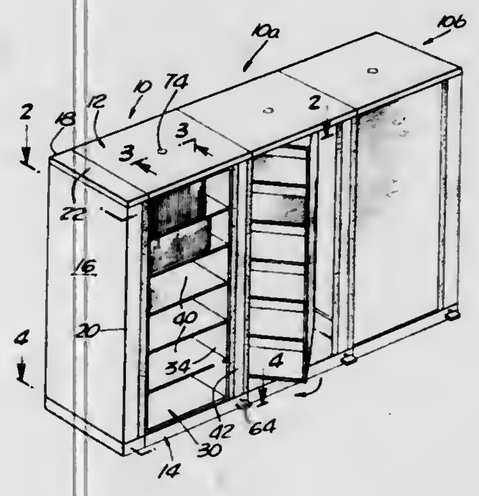
Robert J. Vander Ley, Jenison, Mich., assignor to Lescoa, Inc., Grand Rapids, Mich.
Filed Apr. 30, 1973, Ser. No. 355,964
Int. Cl. A47b *49/00*
U.S. Cl. 312—238 **1 Claim**



1. A rotary shelf and closure panel assembly for use in a corner structure having top and bottom panels and means defining two vertical faces of said structure extending between said upper and lower panels and at right angles to one another, each of said faces having an opening extending from the line of intersection of said faces and said means including upper and lower frontal components extending, respectively, across the upper and lower edges of said openings and projecting, respectively, below said top panel and above said bottom panel, comprising:
a pair of closure panels secured to each other along one edge and extending at right angles to one another, said panels substantially filling said openings;
a journal bracket secured to said closure panels adjacent the upper edges thereof and projecting therefrom along the bisector of the angle formed by said closure panels;
a first pin slidably carried by said journal bracket and projecting upwardly therefrom;
spring means biasing said first pin upwardly;
an upper bearing bracket having a base portion adapted for flush engagement with the underside of said top panel, one edge of said base portion being provided with a V-notch for engagement with said upper frontal components whereby said upper bearing bracket is precisely located relative to said openings, said upper bearing bracket also having a downwardly projecting truncated concial portion the lower end of which has a hole for receiving the upper end of said first pin and providing a bearing therefor;
a shelf assembly secured to said closure panels adjacent the lower edges thereof, said shelf assembly including upper and lower plates secured to one another at the edges thereof and spaced from one another at their center portions, the center portion of the lower one of said plates having an opening therein in vertical alignment with the axis of said fisrt pin, said lower plate having a pair of upturned flanges bearing against said closure panels, said upper plate having a pair of upturned flanges overlying said flanges of said lower plate, said shelf assembly including fastener means securing said flanges to one another and to said closure panels;
a lower bearing bracket having a base portion adapted for flush engagement with the upper surface of said lower panel of said cabinet structure, one edge of said base portion being provided with a V-notch for engagement with said lower frontal components whereby said lower bearing bracket is precisely located relative to said opening, said lower bearing bracket also including a bearing block projecting upwardly from said base portion and having a vertically extending hole aligned with the vertical axis of said first pin when said bearing brackets are in their mounted positions and a camming surface on the upper end thereof;
a second pin having a lower portion of a first diameter adapted for sliding and rotating engagement with said hole in said bearing block, an intermediate portion of enlarged diameter, the lower surface of which includes a camming portion cooperating with camming surface of said bearing block and an upper surface engaging the underside of the center portion of said lower plate of said shelf assembly, and an upper portion of lesser diameter than that of said intermediate portion, said upper portion extending through said hole in said lower plate of said shelf assembly and engaging the underside of said upper plate of said shelf assembly; and
means to secure said second pin in non-rotating relation to said shelf assembly.

3,868,157
ROTARY FILING CABINET

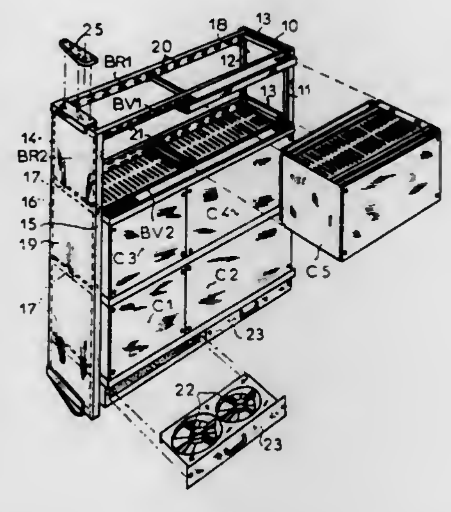
Gerard A. Robinson, 1928 Galerita Dr., San Pedro, Calif. 90732
Continuation-in-part of Ser. No. 186,124, Oct. 4, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,909
Int. Cl. A47b *46/00*
U.S. Cl. 312—305 **12 Claims**



8. A file apparatus comprising a cabinet having a rotor including support platform shelf means, latch means for the rotor comprising a foot operated member and a latch member, said latch member being resiliently mounted mechanism comprising spring means positioned to be actuatable by movement of the latch member in one direction to compress the spring means and by movement of the latch member in the opposite direction, to compress the spring means.

3,868,158
MODULE RACK FOR CONNECTION BOXES OF PRINTED-CIRCUIT CARDS

Bernard Andre Laboue, Paris, France, assignor to Societe Honeywell Bull (Societe Anonyme), Paris, France
Filed May 14, 1973, Ser. No. 360,221
Claims priority, application France, May 17, 1972, 72.17609
Int. Cl. A47f *5/10;* **A47b** *87/02*
U.S. Cl. 312—350 **6 Claims**



1. An improved module rack for mounting a plurality of connection boxes that may be of non-uniform widths, and that may have lower lateral edges which protrude below the lower faces of the boxes, comprising:
two vertical side plates which are disposed parallel to but spaced from each other, each of the vertical side plates having a front edge and a rear edge;
a set of front bars, each of which having a length equal to the distance between the two vertical side plates and which extend between the two vertical side plates, with the ends of each of the front bars being fastened to the front edges of the two vertical side plates such that the front bars are substantially parallel to each other and are substantially perpendicular to the two vertical side plates;
a set of rear bars, each of which having a length equal to the distance between the two vertical side plates and which extends between the two vertical side plates, with the ends of each of the rear bars being fastened to the rear edges of the two vertical side plates such that the rear bars are substantially parallel to each other and are substantially perpendicular to the two vertical side plates and with the number of rear bars in the set of rear bars being equal to the number of front bars in the set of front bars, each of the front bars being associated with one of the rear bars so as to form a pair of bars and so that the planes defined by these pairs of front and rear bars are substantially perpendicular to the two vertical side plates and are substantially parallel to the horizontal;
a plurality of slideways, each adapted to be removably mounted between front and rear bars of a pair of bars, each having a front end, a rear end and body portion which extends between the front and rear ends and each having a length substantially equal to the distance between the front and rear bars of a pair of bars; each slideway also including a groove which extends parallel to the longitudinal axis of the slideway and which has a width slightly larger than twice of the thickness of the lower lateral edge of the connection boxes so that the adjoining lower lateral edges of two adjacent connection boxes can fit within the groove when the two connection boxes are placed side by side in the module rack;
means for mounting the slideways to and between the front and rear bars of a pair of bars, the mounting means including: a first series of identical, first openings formed in the front and rear bars and regularly spaced along lines parallel to the longitudinal axes of the front and rear bars;

at least one second opening formed in each of the front ends of the slideways; at least one second opening formed in each of the rear ends of the slideways, with the second openings in the front ends of the slideways being identical to the second openings in the rear ends of the slideways; and fastening means adapted to cooperate with aligned first and second openings in an adjacent bar and end of a slideway so as to prevent relative movement therebetween, one of the first and second openings having an oblong shape, with the major axes of these oblong shaped openings being parallel to the longitudinal axes of the front and rear bars of a pair of bars and the other of the openings having a circular shape, the first openings being spaced along the bars so that regardless of the position of the ends of a slideway along the bars, a first opening and a second opening will always be aligned so that a fastening means can cooperate with these aligned first and second openings to prevent relative movement therebetween.

3,868,159

METHOD OF MANUFACTURING AN ELECTRIC INCANDESCENT LAMP HAVING A LONGER LIFETIME AND/OR A HIGHER LIGHT OUTPUT

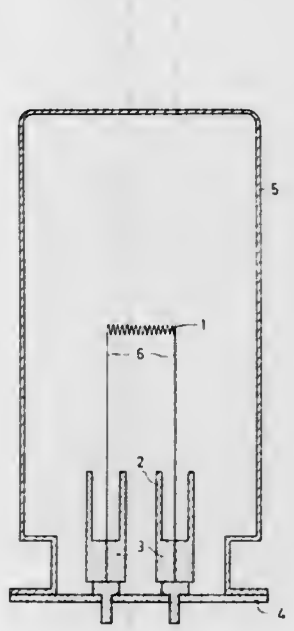
Erhard Kauer; Johann Schroder, both of Aachen, and Horst Horster, Roetgen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 13, 1973, Ser. No. 369,552

Claims priority, application Germany, June 28, 1972, 2231520

Int. Cl. H01j *9/00*

U.S. Cl. 316—1 **7 Claims**



1. A method of manufacturing a gas-filled electric incandescent lamp, particularly a low-voltage incandescent lamp in which the wire diameter of the filament body consisting of a coiled tungsten wire varies in different axial sections of said coil, said diameter being reduced at the end turns and increased in the middle with the aid of a chemical cycle process either before or after mounting in the lamp so as to reduce the temperature differences between the turns in the middle and at the end of the filament during operation of the lamp at the prescribed operating voltage, said method comprises mounting said filament and in an atmosphere comprising a gas which is reactive with respect to tungsten and pre-operating said filament until the temperature T_1 of the end turns of the filament is 20 to 120°K lower than the temperature T_2 of the central turns.

3,868,160

PROTECTIVE ELECTRIC COUPLING

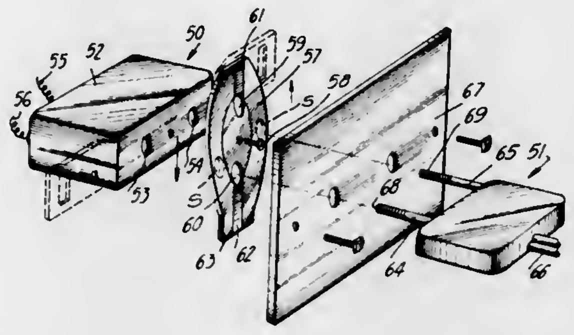
Jorge Eduardo Kersman, 1160 L.M. Campos St., Buenos Aires, Argentina

Filed Sept. 25, 1972, Ser. No. 292,163

Claims priority, application Argentina, Oct. 14, 1971, 238478; Jan. 26, 1972, 240237

Int. Cl. H01r *13/44*

U.S. Cl. 339—12 R **9 Claims**



1. A protective electric coupling comprising:

a first coupler provided with at least one concealed first electrical connector adapted to be tied to a source of electrical energy;

a second coupler complementary to said first coupler provided with a second electrical connector adapted to be tied to a load, said second connector being matingly engageable with said first connector through an access opening in said first coupler upon operative interengagement of said couplers;

safety means in said first coupler for preventing the energization of an extraneous object other than said second connector introduced through said access opening into contact with said first connector; and

coacting first and second magnetic means on said first and second couplers for deactivating said safety means upon incipient interengagement of said couplers to facilitate energization of the load via said connectors, said safety means including mechanism effective prior to deactivation thereof for inhibiting full operative interengagement of said couplers.

3,868,161

ELECTRICAL COMPONENT

Robert Houston Frantz, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 1, 1973, Ser. No. 402,549

Int. Cl. H01r *3/06, 9/06*

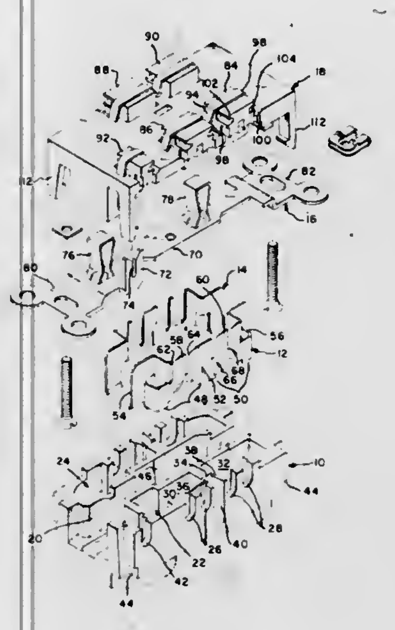
U.S. Cl. 339—14 R **15 Claims**

1. An improved electrical component comprising:

a housing of insulating material having at least one cavity therein;

at least one contact member received in said cavity of said housing and having at least one pair of spaced tines defining a wire engaging slot therebetween;

a back cover including means detachably securing said back cover to said housing, at least one wire carrying member integrally connected to said back cover by flexible straps, said wire carrying member having therein at least one bore and a transverse groove intersecting said bore, whereby wire inserted in said bore is carried into engagement with said tines as said wire carrying member is moved towards said cavity with respect to said back cover.



3,868,162

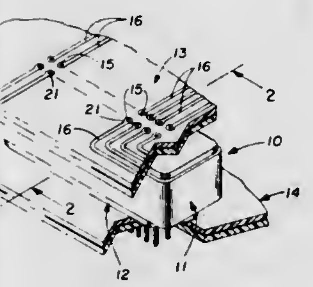
ELECTRICAL CONNECTOR

John Preston Ammon, Dallas, Tex., assignor to Elfab Corporation, Dallas, Tex.

Filed Sept. 4, 1973, Ser. No. 393,787

Int. Cl. H05k *1/07;* **H01r** *13/64*

U.S. Cl. 339—17 M **13 Claims**



1. An electrical connector including interengagable receptacle and plug members, comprising:

first and second substrates having aligned contact receiving hole arrays therein, each of said hole arrays lying along a linear path;

a plurality of contacts press fitted into the holes in each of said substrates, said contacts each including a contactor portion resilient in a direction transverse to said linear paths lying along said hole arrays;

an insulative receptacle housing placed down over to substantially enclose the press fitted contacts on the first substrate, said receptacle housing having bottom openings of sufficient size to receive the contactor portions of said contacts and a top opening to receive a plug member, said receptacle housing having substantially planar inner wall surfaces extending parallel to said linear paths lying along said hole arrays and spaced from any engagement with the rear portions of said receptacle contacts; and

an insulative plug housing placed down over to substantially enclose the press fitted contacts on the second substrate, said plug housing having bottom openings of sufficient size to receive the contactor portions of said contacts, and a top opening surrounding a central rib, said central rib having substantially planar inner wall surfaces extending parallel to said linear paths lying along said hole arrays and spaced from any engagement with the rear portions of said plug contacts, said plug and receptacle members being interengagable by inserting the central rib of said plug into the top opening of said receptacle to receive the receptacle housing into the top opening of said plug housing and bring the respective plug and receptacle contacts into generally parallel, facing electrical engagement along a line parallel to said linear hole arrays and spaced from the inner wall surfaces of both said plug and said receptacle housings with the forces of engagement between contacts being in a direction perpendicular to said line of engagement.

2. An electrical connector including interengagable receptacle and plug members so set forth in claim 1 wherein:

the contacts are press fitted into the first substrate in two parallel rows along said linear paths with the contactor portions of adjacent receptacle contacts in different rows, forming contact pairs, facing toward one another and spaced from the inner wall surfaces of said receptacle housing;

the contacts are press fitted into the second substrate in two parallel rows along said linear paths with the contactor portions of adjacent plug contacts in different rows forming contact pairs, facing away from one another and being separated by the central rib of said plug housing and spaced from the inner wall surfaces of said central rib; and

the contactor portions of said plug and receptacle contacts electrically connect one another when said plug and receptacle members are interengaged along a line parallel to said linear paths with forces of engagement being perpendicular to said paths.

3. An electrical connector including interengagable receptacle and plug members as set forth in claim 2 wherein:

each of said receptacle contacts are preloaded to exert a force toward the adjacent contacts in said pairs; and

each of said plug contacts are preloaded to exert a force away from the adjacent contacts in said pairs.

4. An electrical connector including interengagable receptacle and plug members as set forth in claim 3 wherein:

said contacts each include a flange portion at the upper end thereof;

said receptacle housing includes a pair of lip portions parallel to said linear paths lying along said hole arrays and spaced from one another on opposite sides of the top opening, said contact flanges engaging said lip portions to preload said receptacle contacts with forces acting in a direction perpendicular to said linear paths; and

said plug housing including a pair of lip portions extending on opposite sides of said central rib to engage the contact flanges and preload said plug contacts with forces acting in a direction perpendicular to said linear paths.

3,868,163

BUS BAR

Gordon G. Jarosek, Westminster, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Continuation of Ser. No. 221,905, Jan. 31, 1972, abandoned. This application July 23, 1973, Ser. No. 381,578

Claims priority, application Belgium, Jan. 31, 1972, 1127130; Denmark, Jan. 30, 1973, 491/73; Great Britain, Jan. 18, 1973, 2664/73; France, Jan. 31, 1973, 73.03353; Germany, Jan. 25, 1973, 2303537; Netherlands, Jan. 22, 1973, 7300894

Int. Cl. H01r *31/08*

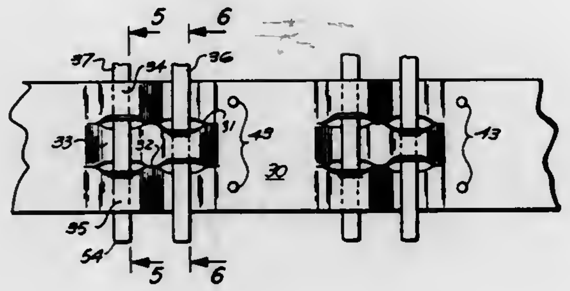
U.S. Cl. 339—19 **10 Claims**

1. A strip of conductive material for interconnecting one pair of terminal pins to other pairs of terminal pins spaced given distances apart comprising:

at least one longitudinal slit at each location of a pair of terminal pins, all slits at each location being separated from all slits at each adjacent location and having a length determined by the selected size of the terminal pins to be interconnected,

the slits at each location being separated from the slits at each adjacent location and dividing the strip at each location into one more section than there are slits at each location, alternate sections at each location being deformed to form a first generally S-shaped bend,

the remaining sections at each location being deformed to form a second generally S-shaped bend oppositely directed from the first bend,



the first and second bends being so positioned relative to each other to define together a pair of cooperating passages capable of receiving a pair of terminal pins of the given size and wherein the insertion of a pin of the given size causes a decrease in the adjacent opening of the pair of passages, and the slits being of a selected length to provide a force fit for each terminal pin of the pair when both terminal pins are inserted.

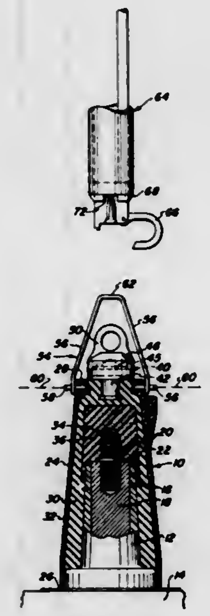
3,868,164
INSULATING RECEPTACLE WITH TEST POINT

Timothy A. Lisk, Washington, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed Jan. 23, 1974, Ser. No. 435,741

Int. Cl. H01r *11/18*

U.S. Cl. 339—59 R **10 Claims**



1. In a receptacle for installation on a high voltage bushing, the receptacle having a longitudinally extending body, a bail, a test point and a test point cap covering the test point, which receptacle is installed and removed by means of a hot-stick having a hook at one end thereof, the improvement comprising:

laterally extending pivot means affixed to the body and the bail such that the bail may be moved about a lateral axis provided by the pivot means;

the test point cap having hook-receiving means positioned relative to the bail such that the hook-receiving means and the bail will be captured simultaneously by the hot-stick hook to thereby enable the test point cap to be removed and pivoted away from the test point to permit an electrical measurement to be made at the test point.

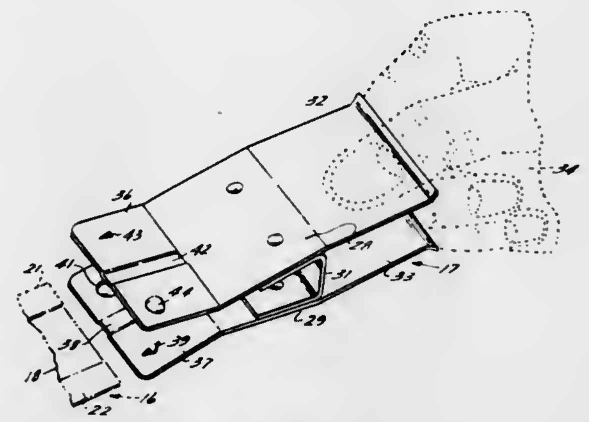
3,868,165
CLAMP FOR A PASSIVE ELECTRODE

Donald I. Gonser, c/o F. & F. Koenigkramer Co. 96 Caldwell Dr., Forest Park, Ohio 45216

Division of Ser. No. 310,175, Nov. 28, 1972, Pat. No. 3,817,253. This application Feb. 21, 1974, Ser. No. 444,314

Int. Cl. H01r *11/20*

U.S. Cl. 339—97 R **2 Claims**



1. A clamp for a passive electrode which comprises a pair of clamping arms, means for urging end portions of said arms together, spaced electrode holding prongs on sections of said arms and adapted to perforate reinforcing strips of a passive electrode to hold the clamp on the passive electrode, a socket opposed to each prong in the end portion opposed thereto for receiving the prong, and contact sections on the arms spaced between the prong carrying sections, sections of the clamping arms surrounding the sockets being further spaced from the sections of the clamping arms surrounding opposed prongs than the contact sections are spaced when the clamping arms are closed on the passive electrode, whereby the contact sections are adapted to grip a metal foil section of the electrode between the reinforcing strips to make an electrical connection therewith.

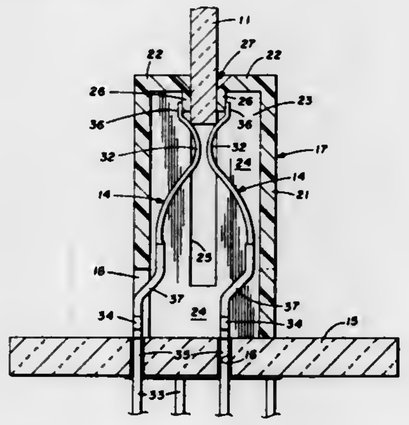
3,868,166
PRINTED CIRCUIT BOARD CONNECTOR HAVING CONTACTS ARRANGED IN A STAGGERED GRID ARRAY

John Preston Ammon, Dallas, Tex., assignor to Elfab Corporation, Dallas, Tex.

Filed July 16, 1973, Ser. No. 379,640

Int. Cl. H05k *1/07*

U.S. Cl. 339—176 MP **8 Claims**



1. An edge connector for a printed circuit card which comprises:

a planar substrate formed with a plurality of apertures therethrough, said apertures being arranged in pairs in staggered alignment along said substrate;

a plurality of contact terminals supported within said apertures, each of said contacts including a bowed portion resilient in a direction transverse to the axis of the associated aperture and spaced therefrom by an offset portion, said contacts associated with each pair of apertures being arranged with the bowed portions thereof in closely spaced facing relationship; and

an insulative housing substantially enclosing said contacts and including a pair of parallel, longitudinal sidewalls, each formed with a plurality of recesses for receiving the offset portions of selected ones of said contacts and a plurality of transversely extending wall sections separating each contact pair, adjacent ones of said wall sections being frictionally engageable with selected others of said contacts for frictionally retaining said housing in enclosing relationship with said contacts.

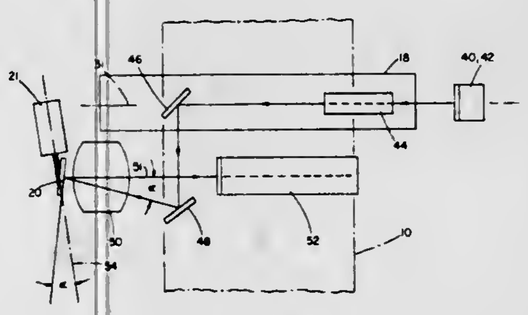
3,868,167
ELECTRO-OPTICAL COMMUNICATION OF VISUAL IMAGES

William F. Schreiber, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 15, 1973, Ser. No. 323,757

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **12 Claims**



1. In transmitting or receiving apparatus for use in electro-optical communication of visual images such as photographs, documents, or the like, said apparatus including a light source, circuitry for carrying electric signals corresponding to the modulation of said light source, means defining a field to be scanned, and an optical system for causing a light beam from said source to focus upon and scan said field, said optical system including a substantially flat reflector movable about a scanning axis to effect said scanning, the focus of beam positions of light reflected from said reflector upon movement about said axis defining a scanning surface having an intersection with said field to define a scan line, that improvement comprising

arrangement of said source and said optical system so that said light beam is incident upon said reflector along a path forming an acute angle with said scanning surface, and

arrangement of said reflector and said means defining said field so that said axis is tilted with respect to the surface of said reflector and toward said scanning surface from the side thereof on which said beam is incident upon said reflector, said axis being so tilted at an angle relative to said reflector surface substantially equal to said acute angle, said axis thereby forming an angle of less than 90° with said scanning surface, said arrangement producing a predetermined approximation of planarity of said scanning surface and a corresponding predetermined approximation of straightness of said scan line independent of the angle through which said reflector is moved about said scanning axis.

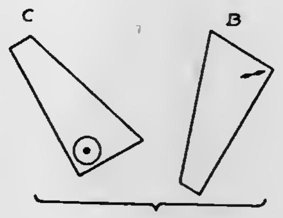
3,868,168
COMBINATION OF BIREFRINGENT ELEMENTS FOR POLARIZING INTERFERENTIAL SYSTEMS

Johannes D. De Veer, Harvard, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Jan. 16, 1973, Ser. No. 324,456

Int. Cl. G02b *21/06*

U.S. Cl. 350—12 **9 Claims**



1. In a polarizing interferential system having a light source, a polarizer, a compensator element, an object, a beam splitter element and an analyzer, all in alignment along a center line, the improvement comprising said compensator element being a single birefringent crystalline first wedge having two converging planar surfaces intersecting the center line, said wedge having an optic axis, said beam splitter being a single birefringent crystalline second wedge having two converging planar surfaces intersecting the center line, said second wedge having an optic axis, and said wedges being arranged to have at least three of the combination of said planar surfaces and optic axes oblique to the center line.

3,868,169
OBSERVATION PERISCOPE WHICH CAN BE COMBINED WITH A LASER DEVICE

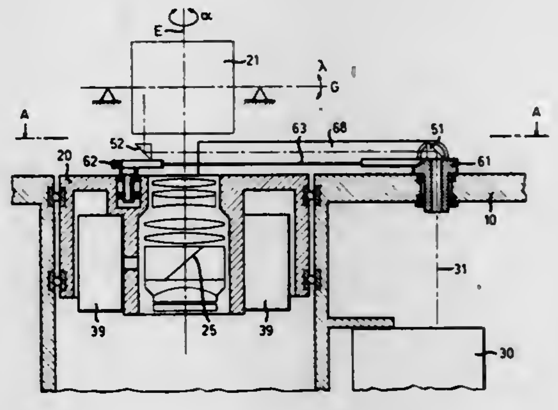
Heinz Pfenninger, Rumlang, and Waldemar Strietzel, St. Gallen, both of Switzerland, assignors to Contraves AG, Zurich, Switzerland

Filed Feb. 9, 1973, Ser. No. 330,991

Claims priority, application Switzerland, Feb. 28, 1972, 2766/72

Int. Cl. G02b *23/08*

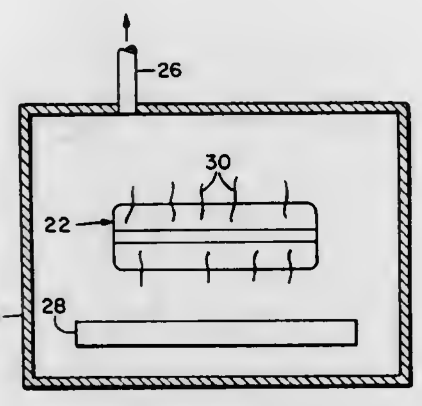
U.S. Cl. 350—26 **8 Claims**



1. An observation periscope arrangement equipped with a periscope objective and capable of being combined with a laser distance-measuring device, comprising a periscope objective having an optical axis, a periscope support for mounting said periscope objective, mirror means having an elevational axis and disposed forwardly of the periscope objective, means mounting at least said mirror means to be rotatable about the optical axis of the periscope objective and relative to the periscope support and pivotable about said elevational axis of said mirror means, two mirrors cooperating with said mirror means, and means for aligning said two mirrors relative to one another for introducing a laser beam between the periscope objective and the forwardly arranged mirror means and into the latter.

3,868,170
METHOD OF REMOVING ENTRAPPED GAS AND/OR RESIDUAL WATER FROM GLASS

Robert D. DeLuca, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,746
Int. Cl. G02g *5/14*; C03c *15/00*
U.S. Cl. 350—96 WG 24 Claims

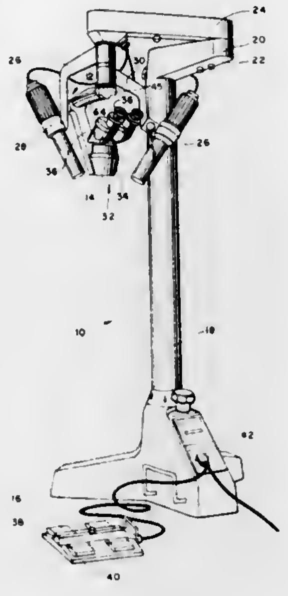


1. The method of forming an article comprising the steps of providing a suitable starting member,
- forming glass soot by flame hydrolysis,
- depositing a quantity of said glass soot on said starting member to form a porous body thereof,
- disposing said porous body in a controlled environment,
- maintaining a predetermined desired concentration of gases in said environment,
- heating said porous body to a temperature below the sintering temperature of said glass to permit entrapped gas to escape therefrom,
- maintaining said temperature until an equilibrium is reached between the partial pressure of the entrapped gas in said body and the partial pressure of the same gas in said environment, thereafter
- heating said porous body to at least the sintering temperature of said glass to sinter said soot particles and form a consolidated dense member,
- forming said member to a desired shape, and
- removing the article so formed from said environment.

3,868,171
SURGICAL MICROSCOPE

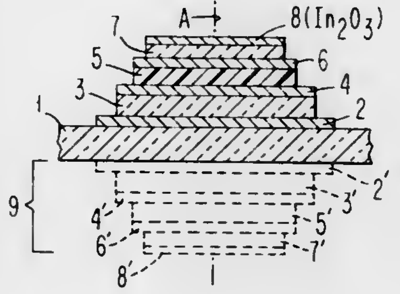
Josef K. Hoppl, Bavaria, Germany, assignor to J. K. Hoppl Corporation, North Amityville, Long Island, N.Y.
Filed Mar. 9, 1973, Ser. No. 339,812
Int. Cl. G02b *21/20*
U.S. Cl. 350—85 11 Claims

1. In a surgical microscope of the type comprising a base member, a cantilever arm mounted on said base member, and objective and eyepiece lens means, a mount to tiltably connect said objective and eyepiece lens means to said cantilever arm which comprises, track means connected to said cantilever arm, follower means slidably received in said track means, said objective and eyepiece lens means connected to said follower means, and means to move said follower means with respect to said track means, said track means and said follower means cooperating such that a field of view of the objective lens means remains in focus throughout the entire range of movement of the follower means.



3,868,172
MULTI-LAYER FERROELECTRIC APPARATUS

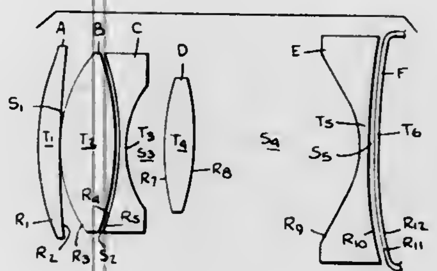
Lawrence B. Ii, and David C. T. Shang, both of Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 18, 1973, Ser. No. 371,224
Int. Cl. G0?f *1/26*
U.S. Cl. 350—150 8 Claims



1. Ferroelectric optical apparatus adapted to transmit incident polarized light therethrough in a given direction, said apparatus comprising:
- a plurality of superimposed ferroelectric layers, each of said ferroelectric layers having first and second planar opposing sides transverse to said direction,
- at least one conductive member means disposed on each said first and second sides of each said ferroelectric layer, and
- means coupled to said conductive member means for selectively energizing said ferroelectric layers to provide said apparatus with a selectable and variable spectral bandpass characteristic.

3,868,173
OBJECTIVE LENS ASSEMBLY FOR PROJECTION TELEVISION

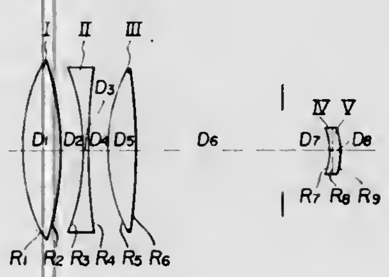
John R. Miles, and Grant M. Miles, both of Glenview, Ill., assignors to Maris Ambatis; Thomas D. Shannon and Walter J. DeMaria, New York, N.Y.
Filed Jan. 18, 1973, Ser. No. 324,845
Int. Cl. G02b *9/60*
U.S. Cl. 350—215 6 Claims



1. A high-speed objective lens assembly adapted to project the image appearing on the screen of a television display tube onto a remote screen, said assembly comprising at least five lens elements formed of transparent thermoplastic material having a high order of light permeability, wherein the first lens element is concave-convex, the second lens element is double convex, the third lens element is double concave, the fourth lens element is double convex, and the fifth lens element which is adjacent said screen is double concave, said assembly having a speed of at least f: 1.5, the air space between the fourth and fifth lens elements being more than twice as great as the air space between the third and fourth lens elements.

3,868,174
TELEPHOTO TYPE OBJECTIVE OF LARGE RELATIVE APERTURE RATIO

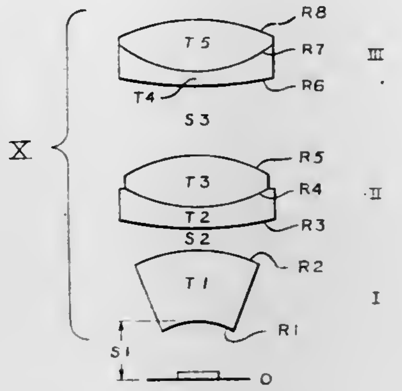
Hideo Yakota, Tokyo, Japan, assignor to Canon Kobushiki Kaisha, Tokyo, Japan
Filed July 24, 1973, Ser. No. 382,284
Claims priority, application Japan, Aug. 3, 1972, 47-77308
Int. Cl. G02b *9/60*, *1/00*, *9/34*
U.S. Cl. 350—216 3 Claims



1. A telephoto type objective lens, having a large relative aperture ratio, comprising a front lens group of positive refractive power and a rear lens group of negative refractive power; said front lens group including, in sequence from front to rear and in spaced relation to each other, a biconvex single lens, a biconcave single lens and a positive single lens; said biconvex single lens being a fluorspar; said rear lens group including in sequence and in alternation a negative lens and a positive lens.

3,868,175
FORTY POWER MICROSCOPE OBJECTIVE

Arthur H. Shoemaker, East Aurora, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed July 9, 1973, Ser. No. 377,870
Int. Cl. G02b *9/12*
U.S. Cl. 350—225 2 Claims



1. A three component microscope objective comprising a positive concavo-convex lens as the first component (I), a double convex positive doublet (II) as the second component and a double convex positive doublet (III) as the third component having a magnification of 40× and a numerical aperture of approximately 0.66 wherein the parameters of radii (R), lens thicknesses (T), axial spaces along lens element and object plane (S), refractive indices (ND), and Abbe Numbers (ν), are determined by the following relationship:

		Radius R	Thickness T	Space S	Refractive Index ND	Abbe Number ν
				S_1= .1566F		
	$_1$=	− .6155F			ND_1=1.69669	ν_1=56.13
I			T_1=.7637F			
	R_2=	− .6604F				
				S_2= .0467F		
	$_3$=	4.3553F				
II			T_2=.3273F		ND_2=1.78446	ν_2=25.75
	R_4=	1.2850F				
			T_3=.6546F		ND_3=1.69669	ν_3=56.13
	R_5=	−1.7914F				
				S_3=1.2152F		
	R_6=	9.2148F				
III			T_4=.3273F		ND_4=1.78161	ν_4=37.08
	$_7$=	1.3725F				
			T_5=.6546F		ND_5=1.50129	ν_5=56.39
	R_8=	−3.3821F				

wherein scalar values are given in millimeters.

3,868,176
POWERED ADJUSTABLE REAR VIEW MIRROR FOR A TRUCK TRAILER

David E. Young, Rt. 2, Box 133, South Point, Ohio 45680
Filed Dec. 5, 1973, Ser. No. 421,768
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 1 Claim

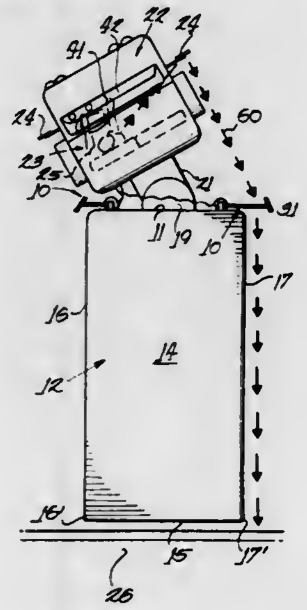
1. A truck mirror intended for attachment to the front end of a trailer body to provide rear view vision to a driver seated in a compartment of a tractor cab pulling the trailer so as to be able to see along the otherwise hidden side of the trailer to the back end of the trailer while backing the trailer and without having to leave the tractor cab, the truck mirror comprising:
- a pair of vertically spaced apart brackets adapted to be mounted to the front end of a trailer body adjacent a side edge thereof, each bracket being of a U-shaped configuration having a flat base member adapted to be mounted to the front end wall of said trailer, and a pair of vertically spaced apart horizontally outwardly projecting arm portions;

a U-shaped supporting structure including a vertically disposed rod shaped bight forming base member and a pair of depending horizontally disposed leg members;

pivot means pivotally connecting the free terminal end of each leg member to an associated one of said brackets between said bracket arms for swinging movement relative thereto, each terminal end of each leg member being pivotally attached to said associated bracket intermediate said bracket arms by a vertically extending pivot pin interconnecting said arms and extending through a suitable opening in said terminal end of said associated leg member;

a mirror adjustably mounted to said base member for adjustable rotative movement thereabout;

a gear member having the terminal end portion of one of said legs diametrically secured in juxtaposition thereto for movement therewith, said gear pivotally mounted by said pivot means for rotative movement about its axis, said gear having gear teeth disposed about the peripheral circumference thereof;



an electrically powered direct current motor having a toothed gear wheel mounted concentric on the motor shaft with its teeth in driving engagement with the teeth of the first mentioned gear to effect the selective rotation of said gear in opposite directions about its axis to effect the simultaneous movement of the mirror support member between an inoperative storage position inwardly of the trailer front end and an operative position wherein the mirror projects outwardly of the associated side of the trailer;

electrical wiring means to interconnect said motor to a source of electrical energy;

switch control means in the form of a double pole double throw toggle actuated switch interposed intermediate said motor and said source of electrical energy and adapted to selectively control both the energization and deenergization of said motor as well as controlling the direction of rotation of said motor; and

said source of electrical energy is in the form of a direct current battery such that the control switch effects the reversal of battery polarity as applied to the motor for controlling the reversing operations of the motor.

3,868,177
CAMPING SET

Marvin I. Glass, Chicago, and Palmer J. Schoenfield, Evanston, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 333,745

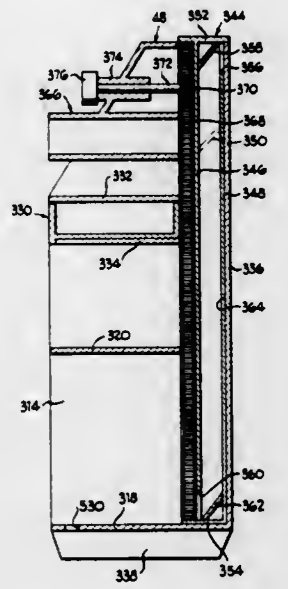
Int. Cl. G02b ***5/08***

U.S. Cl. 350—301 **3 Claims**

1. A combination toy camping pack and observation device, comprising:

a pack construction having at least one compartment for receiving supplies or the like, and a support frame for the pack; and

an elongated periscope device mounted on said frame for reciprocal movement relative thereto, said periscope device including a one-piece tube having an upper observation window and a lower observation window, said tube being movable between a lowered vision blocking retracted position substantially co-extensive with said pack and a raised upper position wherein said tube protrudes above the pack permitting visual observation through the lower observation window.



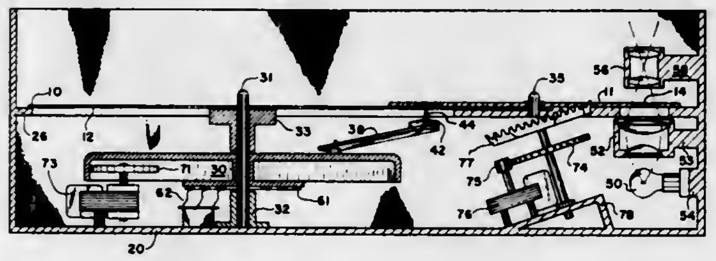
3,868,178
AUDIOVISUAL SYSTEM

Panayotis C. Dimitracopoulos, Lyford Cay, P.O. Box N-7776, Nassau, Bahamas

Filed Oct. 11, 1973, Ser. No. 405,700

Int. Cl. G03b ***31/06, 23/10, 21/00***

U.S. Cl. 353—19 **29 Claims**



1. An audiovisual information device comprising at least two distinct recording media, including one sound-record and one image-disc, said sound-record having a spiral sound track thereon and said image-disc having a series of projectable images disposed substantially within an annular region substantially coaxial to the center of said image-disc, means mounting said image disc on said sound-record for rotational movement about said center of said image disc, said center of said image-disc and the center of said spiral being radially spaced-apart a distance which causes said image-disc and said spiral track to overlap.

13. An audiovisual apparatus accepting for audiovisual reproduction an audiovisual information device comprising one sound record having a spiral sound track and, at a distance radially away from the center of said spiral, bearingly supporting for rotation thereon, an image-disc having a series of projectable images disposed within an annular region coaxial to its center of rotation; said apparatus including:

a. a rotating transducer which engages and follows said track in a sound-scanning relationship;

b. optical projection means directed onto at least one of said images to optically scan and retrieve therefrom the imaging information contained therein;

c. spindle means, whose axis is at a distance away from the center of rotation of said transducer, engaging said image-disc at its said center of rotation;

d. record-supporting means supporting said sound record but leaving said track exposed to said rotating transducer.

3,868,179
MICROFORM POSITIONING APPARATUS

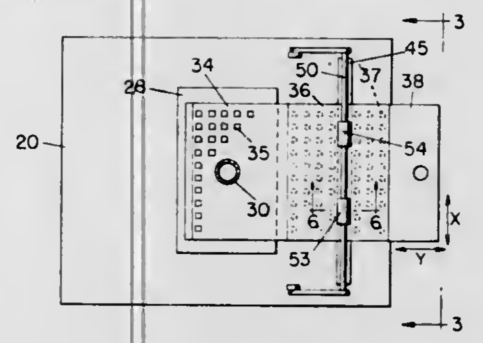
Heinz Zeutschel, Tubingen, Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 2, 1973, Ser. No. 347,337

Claims priority, application Germany, Aug. 14, 1972, 2234052

Int. Cl. G03b ***21/11, 23/08***

U.S. Cl. 353—27 **6 Claims**



1. Apparatus for positioning a microform in a reader, comprising a

plate member connected with and carrying said microform in planar extended relationship thereto, said plate member including a plurality of embossed projections in an arrangement corresponding to images on the microform, and an

elongated member secured to said reader and having a groove therealong operably associated to receive a plurality of said projections for arresting movement of said plate member in one direction and for permitting sliding movement in the other direction.

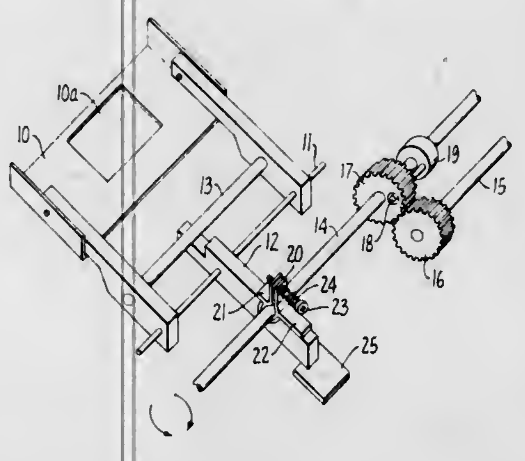
3,868,180
TAPE CLAMP MECHANISM FOR MICROFILM READER

Lyle Gilbert Priest, Palo Alto, Calif., assignor to Information Design, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 268,094, June 30, 1972, abandoned. This application Aug. 9, 1972, Ser. No. 279,243

Int. Cl. G03b ***1/48***

U.S. Cl. 353—95 **5 Claims**



1. A clamp mechanism for microfilm readers and the like having a film gate, a film drive, and means responsive to operation of the film drive for actuating the film gate to clamp or release a film strip, comprising: a pivoted rocker arm engagable with the film gate, a spindle, means drivingly connecting said spindle to said film drive with lost motion, and contact means frictionally engaged with said spindle for pivoting said pivoted rocker arm upon rotation of said spindle in either clockwise or counterclockwise directions, said contact means being positioned to contact said pivoted rocker arm and apply a pivotal force at two points of leverage on said rocker arm, one point of leverage being made by a clockwise rotation and the other point of leverage being made by a counterclockwise rotation, whereby rotation of said spindle pivots said pivoted rocker arm to actuate said film gate.

3,868,181
APPARATUS FOR DRIVING PHOTOSENSITIVE ELEMENT IN ELECTROPHOTOGRAPHIC COPIER OF IMAGE TRANSFER TYPE

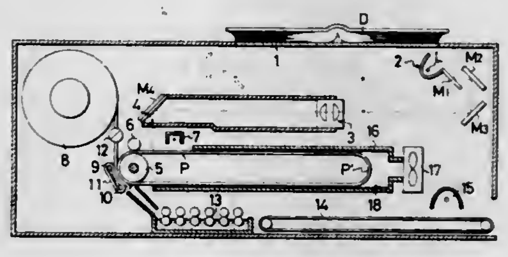
Susumu Tanaka, Sakai; Yuji Enoguchi, Higashi-Osaka, and Takao Fujiwara, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 22, 1973, Ser. No. 334,532

Claims priority, application Japan, Mar. 7, 1972, 47-27584

Int. Cl. G03g ***15/00***

U.S. Cl. 355—15 **6 Claims**



1. In an electrophotographic copier of the image transfer type, a drive roller rotatable about a transverse axis, a suction box extending longitudinally relative to said drive roller and having in an end thereof proximate said drive roller an opening longitudinally spaced from and facing said drive roller, exhaust means communicating with said suction box at a point in said box spaced longitudinally inwardly of said end opening, and an endless belt having a photosensitive outer face and constrained to move in a path having longitudinal forward and return runs joined at opposite ends by respective first and second longitudinally spaced transverse end runs, said first transverse end run extending around said drive roller and said second transverse end run and a part of said longitudinal forward and return runs being disposed in said suction box so that the belt is tensioned under the influence of the reduced pressure therein, said suction box including opposite walls extending along the outer faces of said belt longitudinal runs and said walls having their inside faces lined with relatively soft webs engaging said belt outer faces in said suction box.

3,868,182
LAMP ASSEMBLY

Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 29, 1973, Ser. No. 364,446

Int. Cl. G03b ***27/54***

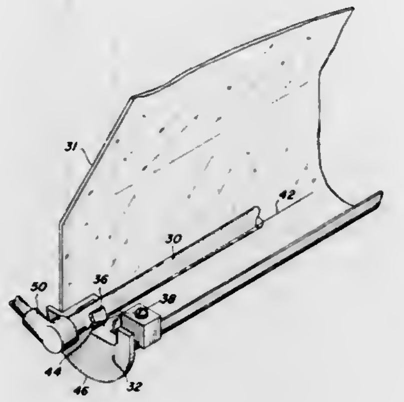
U.S. Cl. 355—67 **3 Claims**

1. A lamp assembly for flash illuminating a document to be reproduced on a xerographic machine comprising:

a reflector;

dielectric clamp means provided at each end of said reflector for engagement therewith, said clamp means including resilient lamp tube retaining means,

a tubular lamp, having electrical contact surfaces at each end thereof said tubular lamp being retained in said clamp means, in a predetermined position relative to said reflector by said resilient means, the ends of said lamp extending beyond said clamp means, said lamp being adapted for connection at each end thereof to a source of electrical power, the electrical contact surfaces of said lamp being spaced from said clamp means and said reflector to prevent arcing therebetween; and,



a trigger wire positioned along side said lamp parallel to the axis thereof, said wire being located and retained against said tubular lamp between said resilient means and said lamp.

3,868,183

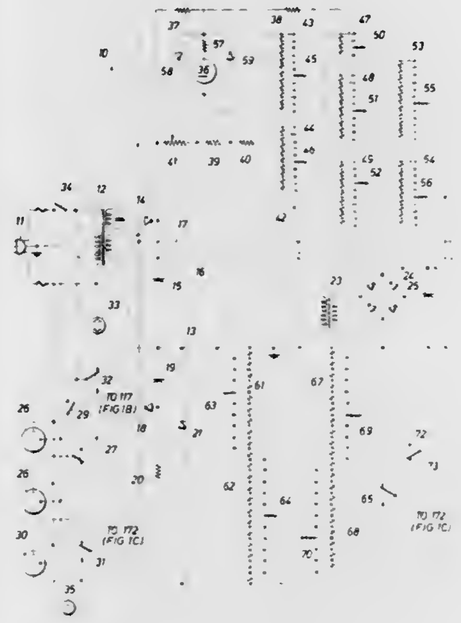
EXPOSURE CONTROL SYSTEM

Warren Childers, Houston, Tex., assignor to Graphic Arts Manufacturing Co., Inc., Houston, Tex.

Filed July 16, 1973, Ser. No. 379,608

Int. Cl. G03b *27/76*

U.S. Cl. 355—68 **16 Claims**



1. An apparatus for controlling the exposure of a photographic medium to accept an image source which has shadow tones and highlight density values which differ from one another through the use of a screen having a given screen range, comprising:

computing means for receiving multiple inputs representative of at least two of three variables which are highlight density, shadow tone density, and screen range, said means determining the remaining of said variables from the two variables input thereto and relating an exposure time to the value of the variables; and,

first means connected to said computing means for controlling the integral of light exposure of a photographic medium in response to the variables supplied thereto.

3,868,184

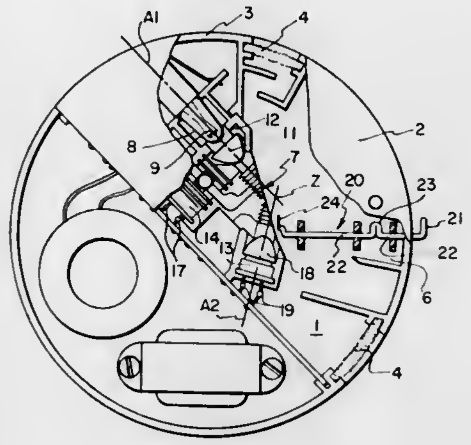
OPTICAL SMOKE DETECTOR WITH LIGHT SCATTERING TEST DEVICE

Angelo August Marsocci, West Warwick, R.I., assignor to Electro Signal Lab, Inc., Rockland, Mass.

Filed July 25, 1973, Ser. No. 382,521

Int. Cl. G01n *21/00, 21/12*

U.S. Cl. 356—103 **5 Claims**



1. An opticle particle detector comprising:

a housing enclosing a dark chamber;

a lamp mounted on the housing and means to direct light on a confined path into the chamber;

a photosensitive device on the housing viewing the light path and responsive to light scattered by particles in the light path; and

a particle simulating member having a light scattering surface of predetermined width and of extent at least substantially as great as the cross section of the light beam, the member being mounted on the housing for continuous, unobstructed movement through positions in the light beam to and through a position of predetermined light scatter without selection of the position by the operator, so that during such movement a calibrated intensity of light will be scattered to the device.

3,868,185

ASYMMETRIC MICHELSON INTERFEROMETER FOR SOLID STATE INFRA-RED SPECTROSCOPY

Ludwig Genzel, Freiburg, and Jurgen Gast, Lahr, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenshaften e.V., Gottingen, Germany

Filed Oct. 18, 1973, Ser. No. 407,503

Claims priority, application Germany, Oct. 18, 1972, 2251080

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 R **8 Claims**

1. An asymmetric Michelson interferometer comprising:

a radiation source for producing measurement beam;

a beam splitter on which said measurement beam is arranged to fall to be divided into a sample beam and a reference beam;

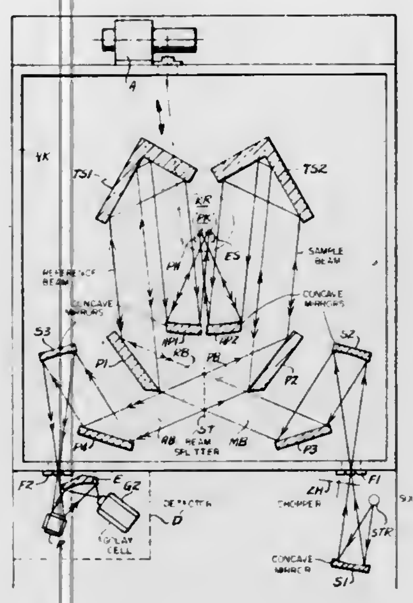
a sample holder for holding a sample from which said sample beam is reflected back to said beam splitter;

an end mirror from which said reference beam is reflected back to said beam splitter;

an adjustment arrangement for varying the optical length of the reference beam path relative to that of the sample beam path;

at least two concave mirrors of short focal length, each disposed in said reference beam path and said sample beam path respectively, and where said sample holder and said end mirror are close to one another and disposed at the focal points of each of said concave mirrors;

at least two reflector arrangements disposed between said beam splitter and said concave mirrors, for reflecting the reference and sample beams parallel but laterally transposed and wherein said adjustment arrangement is capable of displacing at least one of said two reflectors in a direction parallel to said parallel beams.



3,868,186

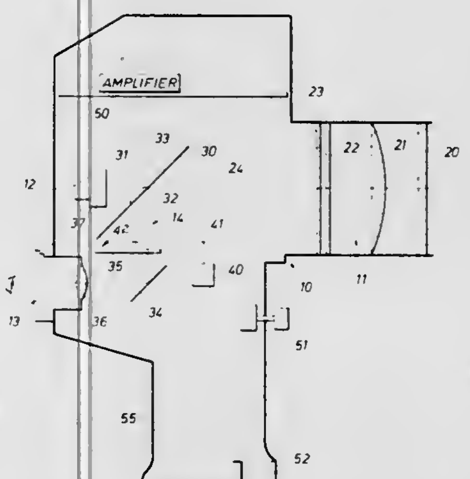
OPACITY METER

Thomas T. Paukert, Berkeley, and Eugene J. Rosa, El Cerrito, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 182,494, Sept. 21, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,623

Int. Cl. G01n *21/12, 21/20*

U.S. Cl. 356—207 **6 Claims**



1. A hand held opacity for measuring the light transmitted through a stack plume, said meter comprising:

a housing having grip means disposed to permit an observer to simultaneously hold and operate said opacity meter;

a lens system mounted in the housing to form a light transmission path having a first axis and disposed to limit the field of view of said opacity meter to less than 3°;

a fixed filter means mounted in the housing and disposed in the light transmission path on said first axis, said fixed filter being disposed to produce a spectrum of light that approximates that observed by the human eye;

a variable filter means mounted in the housing and disposed in the light transmission path on said first axis, said variable filter being manually adjustable to adjust the quantity of light transmitted along said transmission path to a predetermined value;

a light sensitive detector mounted in the housing and disposed in the light transmission path on said first axis, said detector being sized and positioned in said light transmission path to supply an output signal proportional to the light transmitted through the plume;

meter means coupled to said detector for displaying the magnitude of the detected signal; and

optical means mounted in the housing and disposed to permit an observer to simultaneously observe along a second axis parallel to said first axis and spaced therefrom said meter means and the stack plume through said lens system.

3,868,187

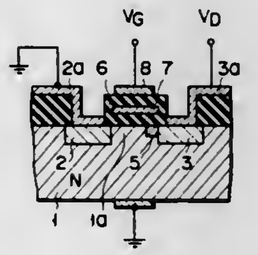
AVALANCHE INJECTION TYPE MOS MEMORY

Fujio Masuoka, Ebina, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Aug. 31, 1972, Ser. No. 285,225

Int. Cl. H01l *11/14*

U.S. Cl. 357—23 **5 Claims**



1. An avalanche injection type metal oxide semiconductor memory comprising:

a semiconductor substrate of one conductivity type and an electrode thereof;

source and drain regions spatially formed on one side of said semiconductor substrate with the opposite conductivity type to that of said semiconductor substrate and electrodes thereof;

a floating gate provided between said source and drain regions, said floating gate being surrounded by an insulating layer;

at least one auxiliary semiconductor region formed in the channel region of said semiconductor substrate so as to abut against only one of said source and drain regions with the same conductivity type as, but with higher concentrations of impurities than, said semiconductor substrate so as not to extend over the whole channel region; and

an external electrode impressed with voltage of different polarities at the time of write-in and erasure.

3,868,188

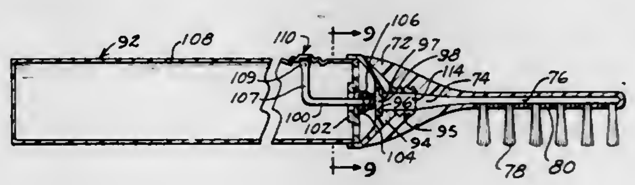
BRUSH WITH MATERIAL SUPPLY

Joseph A. Velardi, 8301 Arlington Blvd., Fairfax, Va. 22030

Filed June 15, 1973, Ser. No. 370,383

Int. Cl. A46b *11/02*

U.S. Cl. 401—190 **7 Claims**



1. A pressurized container for dispensing a viscous material through passages of a brush head to the region of bristles of the head comprising, in combination

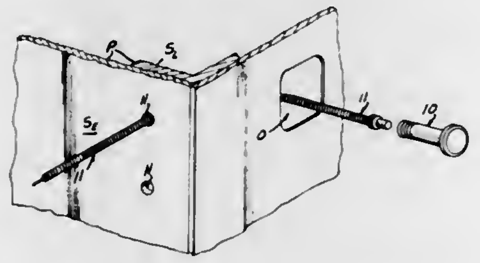
wall means defining a sealed container having means defining a dispensing opening;

connector means for securing a brush head to the container in sealed relation to the dispensing opening;

- a valve between the dispensing opening and a pressurized region of the container, the valve normally closing the dispensing opening;
- a flexible section in a defined region of the wall means; and an actuator operably associated with said valve and extending to a location adjacent the flexible wall section,
- the actuator being movable in response to manual movement of the resilient wall section to open the valve to permit controlled dispensing of material from the container to the dispensing opening and the bristles of a brush head secured to the container,
- the resilient wall section including bellows means in the resilient wall section defining a manually operable button.

3,868,189
FASTENER ASSEMBLY

John O. King, Jr., 399 N. Ivy Rd., Atlanta, Ga. 30342
Continuation-in-part of Ser. No. 268,478, July 3, 1972,. This application Jan. 11, 1973, Ser. No. 322,799
Int. Cl. F16b *5/02, 29/00*
U.S. Cl. 403—12 **11 Claims**



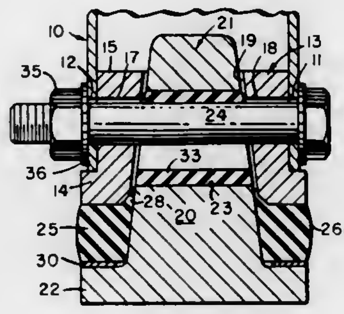
1. An assembly for fastening together work pieces having aligned holes therethrough of a first prescribed diameter with one side of the work pieces having limited accessibility while the opposite side is easily accessible including:

- a fastener having a head at one end, a support shank of a second prescribed diameter smaller than the first prescribed diameter and an engagement portion on the projecting end of said shank;
- an elongate flexible guide member receivable through the holes and attachable to said fastener to be used to pull said fastener into said holes, engagement portion first, from the side of limited accessibility;
- a sleeve member receivable over said support shank of said fastener and within the holes from the easily accessible side of the work pieces, said sleeve member dimensioned to fill the holes about said support shank; and,
- an enlarged diameter section on said shank adjacent said head of a diameter substantially equal to said first prescribed diameter and a length substantially less than the total thickness of the work pieces to concentrically locate said smaller diameter portion of said shank within the holes when fastener is pulled into and seated within the holes.

3,868,190
MOUNTING ASSEMBLY FOR VEHICLE ROLLOVER PROTECTIVE SYSTEMS WITH PRELOADED CUSHIONING MEMBER

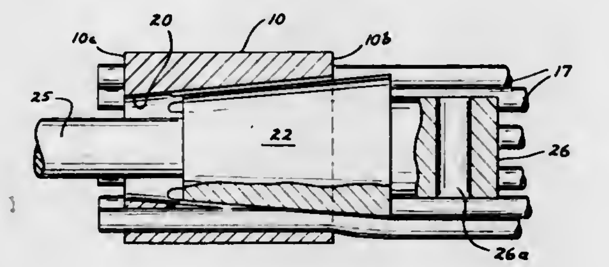
James C. Moore, Clackamas, Oreg., assignor to Portland Wire & Iron Works, Portland, Oreg.
Filed Oct. 16, 1972, Ser. No. 297,743
Int. Cl. F16b *9/02*
U.S. Cl. 403—189 **2 Claims**

1. A mounting assembly for securing a tubular frame member or column of a rollover protective system to a construction vehicle comprising: means at the base of said column providing a transverse aperture; a mount having a base welded to said vehicle, said mount and said column having a male-female interconnection with the male portion being an upright pedestal defining a transverse slot adapted to be aligned with said transverse aperture in said column; a sleeve received in the open bottom of said frame member and providing an interior bearing surface corresponding to and spaced at a clearance distance from the side surface of said pedestal and adapted to engage said pedestal to achieve metal-to-metal contact during rollover conditions; a resilient cushioning member with a central aperture adapted to surround said pedestal and being interposed between the base of said mount and the base of said frame member when in assembled relation therewith; a bolt received in said aligned apertures; a resilient liner interposed between said bolt and said pedestal; preload means for inducing an adjustable amount of preload on said resilient cushion member by reaction of said bolt against the pedestal; said assembly being characterized in that said resilient cushioning member is preloaded to be compressed at least about one-eighth inch when said column is assembled to said pedestal.



3,868,191
MULTIPLE PIPE PULLING DEVICE

Lloyd H. King, Sr., 311 Blake Rd., Hopkins, Minn. 55343
Filed Nov. 19, 1973, Ser. No. 417,061
Int. Cl. F16g *11/04*
U.S. Cl. 403—216 **5 Claims**

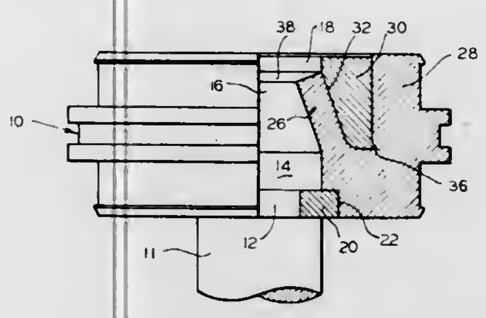


1. A multiple pipe pulling device having in combination

- a cylindrical housing,
- a plurality of bores extending axially through said housing spaced circularly about the axis thereof,
- a through bore extending through said housing, said bore being frusto-conical in form and intersecting said bores to gradually expose increasing portions of each of said bores from a point spaced inwardly of one end of said housing, a wedge member disposed in said through bore,
- a plurality of pipes respectively disposed through said bores, and
- said wedge member engaging said pipes at the exposed portions of said bores.

3,868,192
METHOD AND MEANS FOR ASSEMBLING PISTON AND PISTON ROD

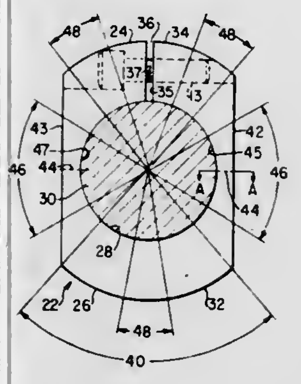
Harold W. Pennington, Battle Creek, and William H. Ward, Athens, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 5, 1972, Ser. No. 295,399
Int. Cl. F16d *1/06*
U.S. Cl. 403—263 **7 Claims**



1. A piston assembly comprising a piston rod, a piston head securable to the piston rod, an elongated inwardly tapered groove formed in the piston rod having a circumferential surface forming an obtuse angle with the peripheral surface of the rod, said piston head including an inner axially projecting flange and an outer axially projecting flange forming with the inner flange a relatively deep internal annular groove, and independent swaging means longer in axial extent than said elongated groove insertable forcibly into said annular groove for bending inwardly of the piston rod said inner flange so that it becomes disposed along and in secure surface engagement with the said circumferential surface of the tapered groove, said swaging means becoming an integral part of the piston head following insertion thereof in said internal annular groove so as to overlap one end of said elongated groove.

3,868,193
COLLAR

Donald E. Schott, Emerson, N.J., assignor to Thomas C. Wilson, Inc., Long Island City, N.Y.
Filed June 13, 1972, Ser. No. 262,373
Int. Cl. F16d *1/06*
U.S. Cl. 403—344 **8 Claims**

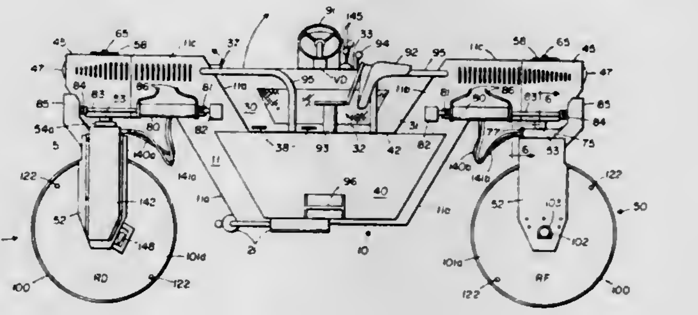


1. In a clamping collar providing a flange defining a substantially cylindrical-shaped inner surface so as to define an axial opening configured to receive a longitudinal cylindrical member of lesser diameter therein on which the collar is to be clamped, the improvement in said flange comprising:

- a. a first pair of opposed sections of substantially equal width and cross-sectional area and of a material capable of flexing when sufficient bending forces are applied thereto, each having a substantially cylindrical inner surface portion and an outer surface portion substantially concentric with the inner surface portion of said section;
- b. a radial extending gap dividing at least one of said sections at its center and extending over the entire width of the collar to define at least two segments having opposed end faces of the collar;
- c. a second pair of intermediate opposed sections of said flange connecting said first opposed sections, said intermediate sections having substantially cylindrical inner surface portions of equal diameter to the inner surface portions of the first sections and contiguous thereto to define said substantially cylindrical inner surface, said second intermediate opposed sections each being of a material capable of flexing when sufficient bending forces are applied thereto, and having a lesser cross-sectional area than said first pair of opposed sections and each having a bending flexibility which is greater than the bending flexibility of the first pair of opposed sections due to the lesser crossSectional area; and
- d. at least one fastening means interconnecting said segments of said divided section, said fastening means extending from within the circumferential boundary of one segment of the divided section into a portion of and within the circumferential boundary of the other segment of the divided section and being threadedly engaged therweith so as to adapt it to produce movement of the segments toward each other to provide substantial clamping engagement of the collar around the cylindrical member when the segments are moved toward each other, and relaxing of the clamping engagement when the segments are allowed to move away from each other, such that the improved bending flexibility of said flange portions of lesser cross-sectional area facilitates improved uniform bending of said flange and increased clamping engagement contact between the substantially cylindrical inner surface of the collar and the longitudinal cylindrical member and the clamping forces of the collar are sufficient to transmit substantial axial forces between the collar and the cylindrical member independent of rotational forces transmitted thereby providing improved surface to surface clamping of said collar on the cylindrical member.

3,868,194
EXPANDABLE ARTICULATED TANDEM ROLLER

Edgar J. Ferguson; Harry J. Vonderheide, both of Sacramento, and John L. Ferguson, Carmichael, all of Calif., assignors to Iowa Manufacturing Company, Cedar Rapids, Iowa
Filed Feb. 6, 1974, Ser. No. 440,044
Int. Cl. E01c *19/26*
U.S. Cl. 404—126 **30 Claims**



1. A self-propelled roller comprising: a body assembly; a ground engaging roller assembly disposed at each of two spaced locations on and supporting the body assembly, both of the roller assemblies being articulated at said locations with respect to the body assembly for dirigible movement effective to determine the direction of travel of the roller, each of the roller assemblies including at least one pair of rotable, axially aligned rolls disposed on respective opposite sides of an axis of the body assembly through said locations and drive means for propelling said roller assembly along the ground, the drive means of the two roller assemblies being respectively operable upon one pair of diagonally opposite rolls thereof with respect to said axis, another pair of diagonally opposite rolls of the two roller assemblies with respect to said axis being undriven and rotable independently of the first pair; and means for control-

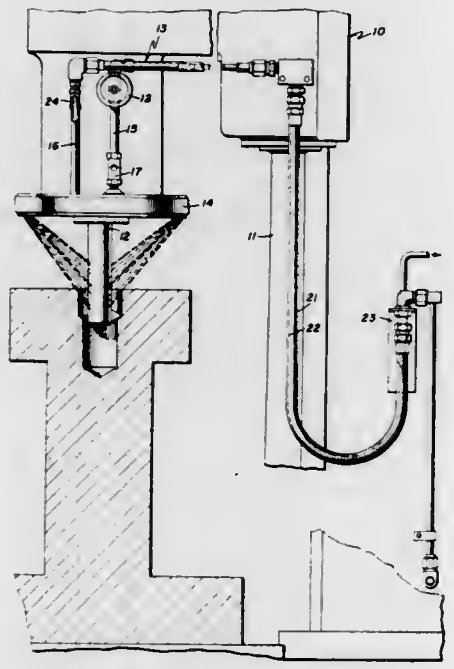
ling the dirigible movement of each roller assembly with respect to the body assembly effective to provide selective adjustment of the two roller assemblies between tandem and echelon positions with respect to each other and the direction of travel of the roller.

3,868,195
COOLANT SYSTEM FOR MACHINE TOOL

Fred A. Anderson, Holden, and Robert F. Newton, Worcester, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Sept. 14, 1973, Ser. No. 397,293
Int. Cl. B23b *51/06*

U.S. Cl. 408—61 3 Claims



1. A machine tool, comprising:
a. a housing,
b. a spindle mounted in the housing for rotation about an axis and adapted to carry a tool, and
c. a coolant system mounted on the housing, the system forming the coolant into a generally conical pattern of streams of coolant which streams converge on the said axis, wherein the coolant system includes a hollow ring concentric with the said axis and a pipe connected to the ring and to a source of coolant, and wherein the hollow ring is provided with a radial wall which divides the ring into a first and second axially spaced chambers, wherein the wall is provided with primary orifices, wherein the first chamber is provided with air under pressure, wherein the second chamber is provided with liquid coolant, and wherein the second chamber is provided with secondary orifices leading to the exterior of the ring in general alignment with the primary orifices in the said wall, so that air flows from the said first chamber through the primary orifices in the said wall, passes through the liquid coolant in the said second chamber, and leaves in a stream through the secondary orifices.

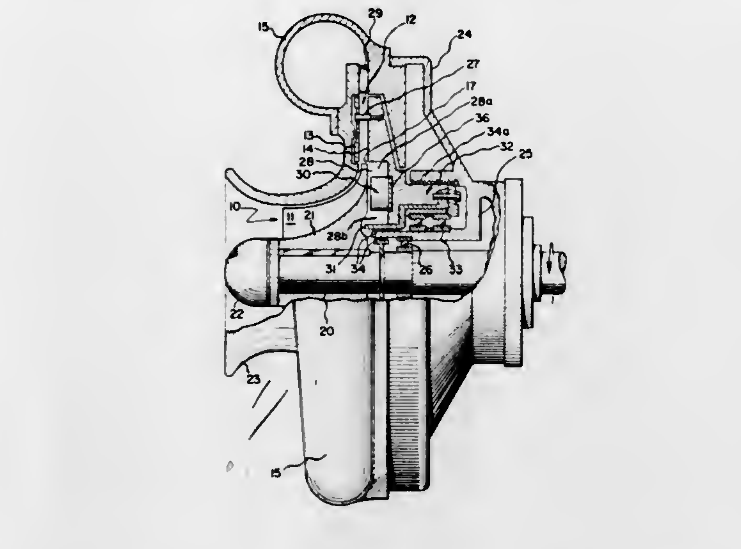
3,868,196
CENTRIFUGAL COMPRESSOR WITH ROTATING VANELESS DIFFUSER POWERED BY LEAKAGE FLOW

Harold Lown, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,129
Int. Cl. F04d *29/44, 29/46*

U.S. Cl. 415—146 9 Claims

1. A centrifugal compressor comprising
a rotating impeller, a concentric rotating vaneless diffuser comprising substantially parallel front and back wall members wherein said back wall member extends radially inward and is mounted for rotation separated from said impeller by a clearance space, and means for coupling high pressure fluid flow exiting from said diffuser to an outlet,
said impeller accelerating low pressure inlet fluid to a high velocity fluid with a substantial tangential velocity which is discharged into said diffuser to establish a vortex flow and partially escapes through said clearance space as leakage flow, and
a leakage flow powering device carried by said back wall member which derives torque from said leakage flow for causing rotation of said rotating vaneless diffuser.

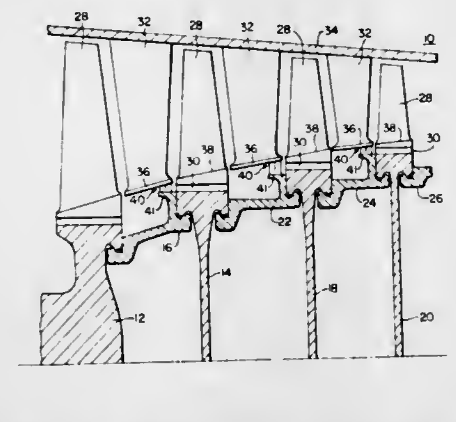


3,868,197
SPACER RINGS FOR A GAS TURBINE ROTOR

Birger O. Hugoson, Wallingford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1973, Ser. No. 410,131
Int. Cl. F01d *1/02, 1/04*

U.S. Cl. 415—199 R 2 Claims



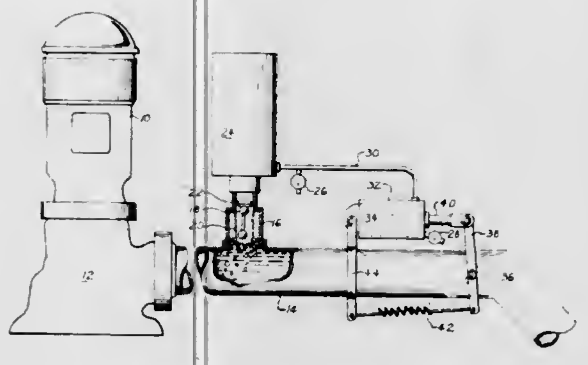
1. A spacer ring structure for a multi-stage turbomachine comprising an outer casing, at least two axially spaced-apart rotor discs, an annular array of radially directed rotor blades spaced on the periphery of each rotor disc, at least one annular array of stationary blades disposed between the arrays of the blades on the rotor periphery, each rotor having an axially directed flange member extending off at least one side thereof toward the adjacent disc, and at least one spacer ring shrunk fit into frictional engagement with and disposed between adjacent rotor discs, each of said axially extending flanges having a radially inwardly extending circumferential lip on their edges, each of said spacer rings having a radially outwardly directed circumferential groove on each edge, said radially outwardly directed circumferential groove on said spacer ring being in constricting frictional engagement with said radially inwardly directed circumferential lips on said flanges of said rotor discs, said shrunk fit spacer ring having an array of serrations on its outwardly extending groove to frictionally engage a portion of said flange adjacent said lip on said rotor disc.

3,868,198
SURGE CONTROL

Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic Inc., Brownfield, Tex.

Continuation-in-part of Ser. No. 311,706, Dec. 7, 1972,. This application June 4, 1973, Ser. No. 366,871
Int. Cl. F04b *49/00*

U.S. Cl. 417—53 17 Claims



1. In a liquid pumping system having
a. a pump with
i. an inlet and
ii. an outlet pipe,
b. said inlet submerged in a liquid reservoir, and
c. an air trap on the outlet pipe;
d. THE IMPROVED STRUCTURE COMPRISING:
e. a bleed tube with
f. a bleed tube outlet at the submerged pump inlet,
g. said bleed tube extending upward from said pump inlet,
h. a plurality of spaced apart holes in the bleed tube,
j. an air tube from the air trap on the outlet to
k. an air motor, and
m. control means attached to said air motor for controlling the fluid flow.

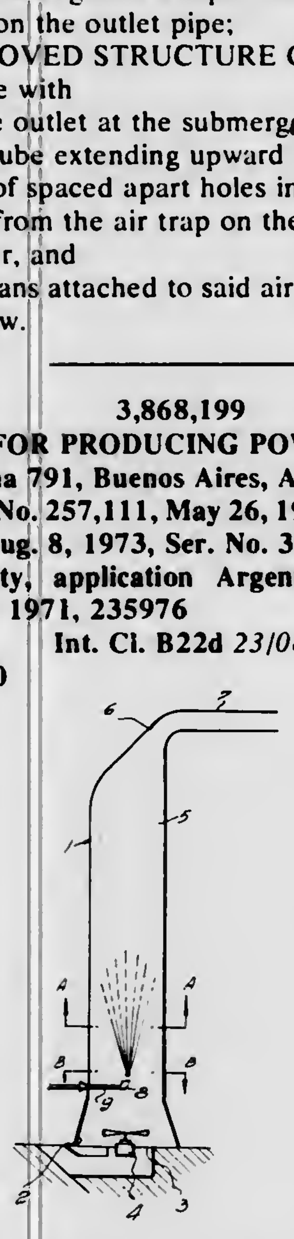
3,868,199
APPARATUS FOR PRODUCING POWERED PARAFFIN

Jose Fera, Parana 791, Buenos Aires, Argentina

Division of Ser. No. 257,111, May 26, 1972,. This application Aug. 8, 1973, Ser. No. 386,665

Claims priority, application Argentina, June 4, 1971, 235975; June 4, 1971, 235976
Int. Cl. B22d *23/08*

U.S. Cl. 425—10 2 Claims



1. Apparatus for producing powdered paraffin wax, comprising a tower consisting of a first frusto-conical portion extending 10% to 15% of the overall height of the tower with its larger diameter at the base of the tower, a second cylindrical portion extending 60% to 70% of the height of the tower joined to the smaller diameter of the first portion, and a third nose-shaped portion extending the remaining height of the tower and connected to an outlet conduit, means for spraying liquid paraffin wax droplets into the lower end of the cylindrical portion and means in the frusto-conical portion for blowing inert cooling gas upwardly through the tower to produce a flow of powdered paraffin wax as solidified droplets.

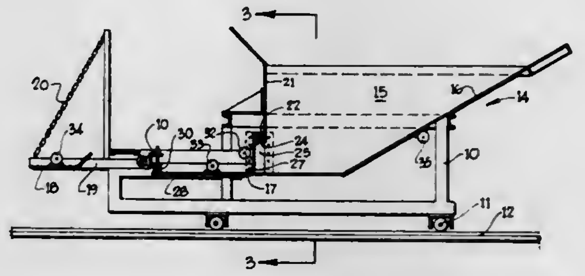
3,868,200
CONCRETE SCREED MEANS FOR ALIGNED MOULDS

Robert Lyndon Bratchell, Ottoway, South Australia, Australia, assignor to Concrete-Industries (Monier) Limited, Ottoway, South Australia, Australia

Filed Oct. 10, 1972, Ser. No. 295,995

Claims priority, application Australia, Nov. 11, 1971, 6967/71
Int. Cl. B28b *13/02*

U.S. Cl. 425—64 5 Claims



1. Concrete screed means for the discharging and screeding of wet mix concrete into a series of aligned moulds each of shape for the moulding of concrete sleepers and each positioned between the rails of a pair of guide rails extending along respective sides of the series of moulds,
said screed means comprising:
a frame,
support wheels supporting the frame,
a hopper on the frame having a front wall which slopes downwardly and rearwardly, two side walls and a rear wall but no base,
a rearwardly extending flow guide plate, and resilient means interconnecting the flow guide plate and the hopper rear wall,
at least one vibrator mounted directly on said front wall for the vibration thereof and at least one vibrator on said flow guide plate for the vibration thereof,
so constructed and arranged that when the wheels engage the guide rails they are guided thereby to guide the hopper for movement over the moulds so that when the hopper is thus moved concrete is discharged therefrom into the moulds; when the vibrators are operated they are so operated as to vibrate only that concrete in their immediate respective vicinities, so that the lower portion of the concrete discharged from the locality of the front wall is densified by vibration thereof and the upper portion of the concrete is densified by vibration of the flow guide plate,
said flow guide plate having a front vertical portion, a rearwardly curved portion and a trailing portion, there being two said vibrators, one on each of the front vertical and trailing portions, the front portion of said flow guide plate being solely supported on said hopper.

3,868,201
POWDERED METAL PRESS

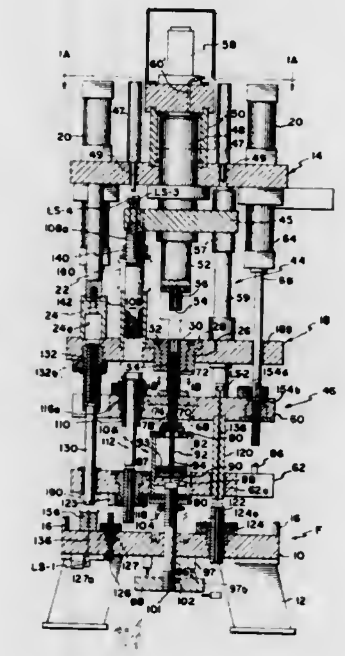
Roland A. Jacobson, Deerfield, and Billy F. Janes, Buffalo Grove, both of Ill., assignors to The Wickes Corporation, Saginaw, Mich.

Filed Apr. 17, 1973, Ser. No. 352,055
Int. Cl. B30b *11/02*

U.S. Cl. 425—78 5 Claims

1. In a powdered metal press having a frame, a die table having an open-ended die cavity mounted on said frame for vertical reciprocation, upper ram means and first and second lower ram means mounted on said frame in vertical alignment with each other and said die table for vertical reciprocation relative to each other and said die table, and control means for

driving said table and said ram means in vertical movement relative to said frame to compress a charge of powdered metal within said cavity between said upper and lower ram means and to subsequently eject the compressed metal from said cavity; the improvement comprising a first vertical sizing bar mounted upon said upper ram means and projecting downwardly therefrom, said die table having an opening therethrough slidably receiving said first sizing bar, a second vertical sizing bar mounted on the lowermost of said lower ram means and projecting upwardly therefrom in vertical alignment with said first sizing bar, the uppermost of said lower ram means having an opening therethrough receiving said second sizing bar, a collar in the last mentioned opening slidably receiving said second sizing bar and projecting upwardly from said uppermost lower ram means, said collar being engageable with said first sizing bar to establish a minimum spacing between said upper ram means and said uppermost lower ram means and said first sizing bar being engageable with said second sizing bar to establish a minimum space between said upper ram means and said lowermost lower ram means, and stop means on said upper ram means engageable with cooperating means on said die table to establish a minimum spacing between said table and said upper ram means.

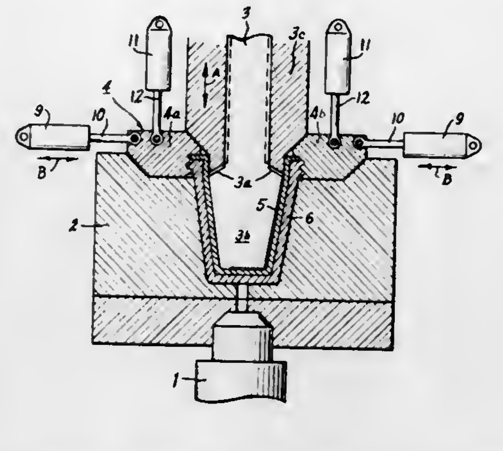


3,868,202

APPARATUS FOR THE PRODUCTION OF COMPOSITE CONTAINERS

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471
Continuation-in-part of Ser. No. 211,898, Dec. 27, 1971, Pat. No. 3,816,580. This application Aug. 23, 1973, Ser. No. 390,725
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 B **12 Claims**

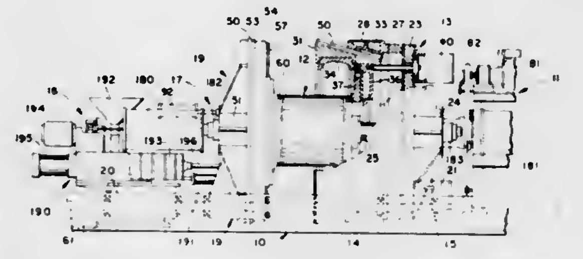
1. Apparatus for blow molding composite plastic articles comprising a parison mold, a core on which a parison is molded in said mold, a spacer adapted to carry a liner and means causing relative movement of said core, spacer and parison mold in a molding cycle for molding the parison, means applying a preformed liner to said spacer, means for axially aligning said spacer carrying said liner with the parison mold while maintaining said liner spaced in proximity from said core, means to contact said core with said liner, means placing said core, and said liner in contact with said parison mold into molding position, and means introducing plastic into said parison mold to form a composite parison.



3,868,203

TIRE MOLDING MACHINE

Leonard G. Turk, Akron, Ohio, assignor to NRM Corporation, Akron, Ohio
Division of Ser. No. 143,847, May 17, 1971, Pat. No. 3,782,871. This application Dec. 26, 1973, Ser. No. 428,140
Int. Cl. B29h *3/08, 5/02, 17/00;* **B29f** *1/00*
U.S. Cl. 425—242 **5 Claims**



1. A tire making machine comprising a cylindrical core, side wall mold sections movable axially of said core, said core projecting axially in cantilever fashion from one of said side wall mold sections and being separable from the other of said side wall mold sections to permit the placement of tire components over said core, each side wall mold section including toe rings projecting axially inwardly thereof adapted to support tire components such as bead rings, means operative to expand said core radially from a diameter less than that of said toe rings to a diameter greater than that of said toe rings while maintaining its cylindrical shape to form a shoulder on the ends of said drum adapted to cooperate with said toe rings to retain such bead rings thereon, means operative to convert said core from such cylindrical shape to tire shape to form the interior of a tire cavity when said side wall mold sections have moved axially thereagainst, an elastic yet substantially rigid surface on said core in both the cylindrical and tire shape thereof, and injection means operative to fill the cavity remaining after placement of such components with an elastomeric material.

3,868,204

APPARATUS FOR CURING ELONGATE WORKPIECES

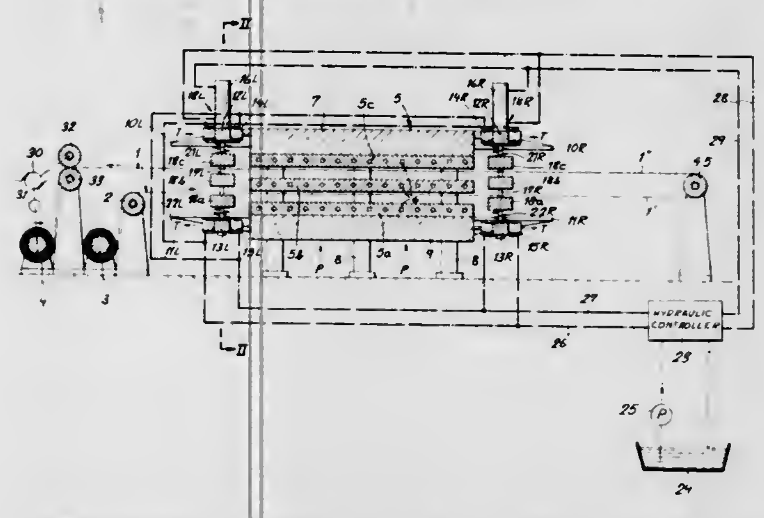
Hendrikus-Johannes Bongers, Huls Bei Krefeld, Germany, assignor to G. Siempelkamp & Co., Krefeld, Germany
Filed Feb. 14, 1974, Ser. No. 442,347
Claims priority, application Germany, Feb. 14, 1973, 2307103
Int. Cl. B29c *17/02*
U.S. Cl. 425—338 **8 Claims**

1. An apparatus for curing a web of polymeric material, comprising:

a press with a stack of heated platens, including a top platen, a bottom platen and at least one intermediate platen forming a plurality of superposed curing stages between them;

stationary deflecting means positioned alongside said stack between the levels of successive stages for engagement by a web led in several passes through said stages;

a pair of clamps movably disposed at opposite sides of said stack, each clamp being provided with a top jaw, a bottom jaw and at least one intermediate jaw substantially aligned with said platens for bracketing the passes of said web entering and leaving said stages;



intermittently operable actuating means for closing first said jaws and thereafter said platens on the interposed passes of said web;

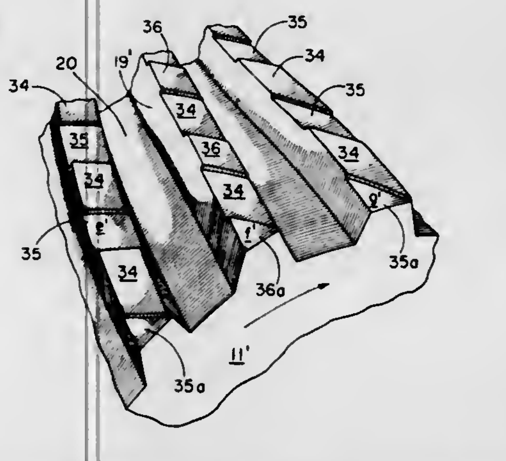
mechanism synchronized with said actuating means for moving said clamps apart in a position of closure of said jaws but prior to closure of said platens with consequent stretching of said passes preparatorily to application of heat and pressure to sections of the stretched web for curing same; and

feed means operative upon a reopening of said jaws and said platens to advance said web for positioning previously uncured sections between platens.

3,868,205

EMBOSSED PAPER TOWELING AND METHOD OF PRODUCTION

Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 15, 1973, Ser. No. 341,464
Int. Cl. B44b *5/00*
U.S. Cl. 425—363 **5 Claims**

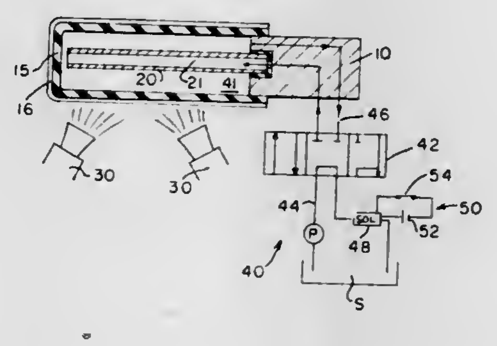


1. In embossing apparatus, a pair of cooperable embossing rolls each having a series of ribs and grooves extending continuously lengthwise of the rolls, the ribs being spaced apart circumferentially by the said grooves disposed about the roll periphery, the ribs of one roll each having a plurality of surface land areas also extending longitudinally on the ribs and projections of these ribs extending above the land areas and separated longitudinally by the land areas and peripherally from projections of adjacent ribs by the said grooves, the ribs of the other roll having surface land areas extending longitudinally on the ribs and recesses of the ribs lying below and separated by these latter mentioned land areas for mating with the said projections, and the projections of the one said roll in the rotation of the cooperable embossing rolls being receivable in the mating recesses of the other said roll, the said recesses being shallow relative to the depth of the ribs.

3,868,206

APPARATUS FOR MANUFACTURE OF HIGHLY ORIENTED POLYMERIC CONTAINERS

Paul M. Erlandson, and Edmund H. Merz, both of Palos Park, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Division of Ser. No. 199,788, Nov. 17, 1971, abandoned. This application July 19, 1973, Ser. No. 380,788
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 B **3 Claims**



1. An apparatus having a plurality of of elements adapted to operate in sequence to produce a biaxial oriented container, said apparatus comprising:

a. a support;

b. elastomeric means on said support for carrying a parison of a homogeneous mass of a thermoplastic material which undergoes orientation when stretched just above its glass transition temperature;

c. means adjacent the elastomeric means for depositing particles of the thermoplastic material upon the elastomeric means;

d. means carried within the elastomeric means for heating and fusing the thermoplastic particles into a homogeneous mass in the form of a parison;

e. an expansion mold for receiving the elastomeric means carrying the fused parison, and for shaping the parison upon expansion thereof and

f. a liquid system connected to said elastomeric means for directing substantially incompressible liquids through said elastomeric means for cooling the fused parison to a temperature just above the glass transition temperature of the material and for subsequently expanding the cooled parison.

3,868,207

APPARATUS FOR PRODUCING PRECAST CONCRETE MEMBERS

Tadao Otsuki; Tokishige Tsuboi; Masashi Sudo, and Hidefumi Matsuda, all of Tokyo, Japan, assignors to The Shimizu Construction Co., Ltd., Tokyo, Japan
Filed Jan. 11, 1973, Ser. No. 322,717
Claims priority, application Japan, Jan. 13, 1972, 47-5525
Int. Cl. B28b *11/00*
U.S. Cl. 425—404 **10 Claims**

1. Apparatus for producing precast concrete members, comprising:

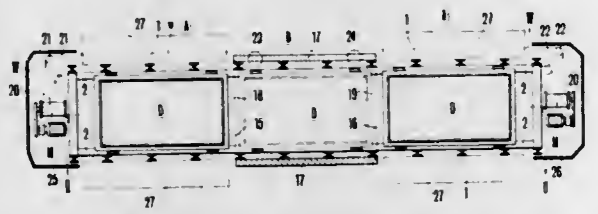
a curing chamber in which concrete is to be cured; concrete curing means in said curing chamber; said curing chamber having a first side facing toward a concrete placing section; and a second side facing toward a second concrete placing section;

a first concrete placing section in which work for concrete placing is performed; said first concrete placing section having a first side facing toward said curing chamber first side;

a second concrete placing section in which work for concrete placing is performed and which has a respective second side facing toward said curing chamber second side;

a first plurality of precast concrete form members for receiving and shaping concrete;

first horizontal transfer means for said first form members; said first form members being connected to said first horizontal transfer means so that each said first form member is individually movable by its said first transfer means; said first horizontal transfer means extending into and between said curing chamber and said first concrete placing section; said first form members being reciprocally movable between said first concrete placing section and said curing chamber; said first horizontal transfer means being adapted for enabling such reciprocal movement of said first form members;



a second plurality of precast concrete form members for receiving and shaping concrete;

second horizontal transfer means for said second form members; said second form members being connected to said second horizontal transfer means so that each said second form member is individually movable by said second transfer means; said second horizontal transfer means extending into and between said curing chamber and said second concrete placing section; said second form members being reciprocally movable between said second concrete placing section and said curing chamber; said second horizontal transfer means being adapted for enabling such reciprocal movement of said second plurality of form members;

said first and second horizontal transfer means and the respective said form members connected thereto are arranged in two respective pluralities of vertically stacked, spaced apart layers; said layers of the said first horizontal transfer means and their respective said form members alternate in the vertical stacking with said layers of said second horizontal transfer means and their respective said form members.

9. Apparatus for producing precast concrete members, comprising:

a curing chamber in which concrete is to be cured; concrete curing means in said curing chamber; said curing chamber having a side facing toward a concrete placing section;

a concrete placing section in which work for concrete placing is performed; said concrete placing section having a side facing toward said curing chamber side;

a plurality of precast form members for receiving and shaping concrete;

horizontal transfer means for said form members; said form members being connected to said horizontal transfer means so that each said form member is individually movable by said transfer means; said horizontal transfer means extending into and between said curing chamber and said concrete placing section; said form members being reciprocally movable between said concrete placing section and said curing chamber; said horizontal transfer means being adapted for enabling such reciprocal movement of said form members;

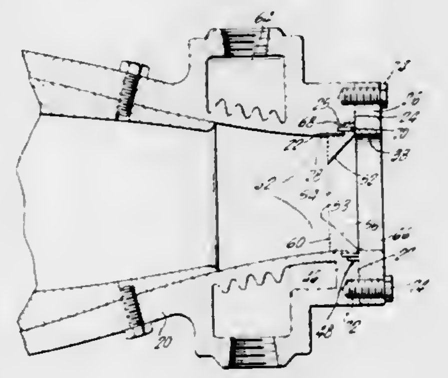
said horizontal transfer means comprises horizontal rails which are engaged by said trucks and along which said trucks are movable;

said form members each comprise a movable truck; said trucks having engaging means which engage the respective said horizontal rails;

each said horizontal rail is defined as one of the two flanges of a channel shaped, elongated rail element, which flanges are arranged one above the other, whereby each channel shaped rail element defines two vertically stacked, relatively closely spaced said rails; on each said rail is a respective said truck.

3,868,208
SOAP PLODDER NOZZLE PLATE ASSEMBLY

Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 308,954, Nov. 24, 1972,. This application Mar. 19, 1973, Ser. No. 342,775
Int. Cl. B29f *3/04*
U.S. Cl. 425—467 **4 Claims**



1. A nozzle plate assembly for a soap plodder for producing striated soap extrusions that includes a housing having a discharge end provided with an outlet, said nozzle plate assembly comprising,

a. a nozzle plate adjacent said outlet having an inner and outer face,

b. said nozzle plate having an extrusion opening extending between said inner and outer face and communicating with said housing,

c. said extrusion opening being larger in dimensions at said outer face than at said inner face and being defined by walls that are axially diverging from said inner surface to said outer face at an angle from about 30° to about 60° and,

d. securing means for fastening said nozzle plate to said housing,

e. the area of said extrusion opening at said outer face being at least twice the area of said extrusion opening at said inner face.

3,868,209
TWIN SHEET THERMOFORMER

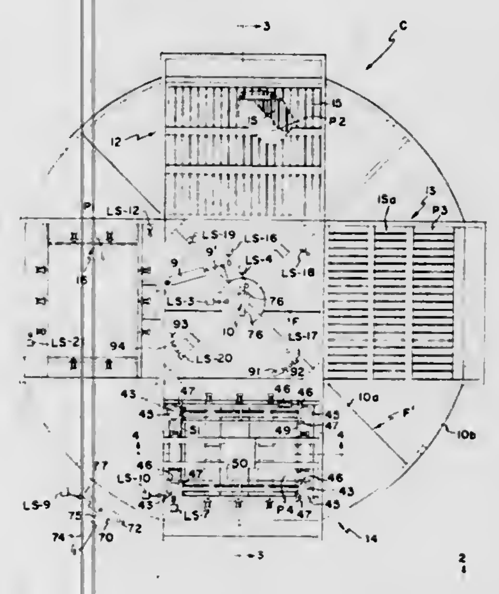
George H. Howell, Birmingham, Mich., assignor to Koehring Company, Milwaukee, Wis.
Filed Feb. 22, 1973, Ser. No. 334,841
Int. Cl. B29c *17/04*
U.S. Cl. 425—504 **6 Claims**

1. Apparatus for forming hollow thermoplastic objects from first and second thermoplastic sheets comprising:

a first and a second carriage means for releasably clamping respective first and second thermoplastic sheets thereon, indexing means supporting each of said first and second carriage means for step-by-step movement to a series of successive work stations disposed along an endless path with said first carriage means maintained one step of movement in advance of said second carriage means, said work stations including a sheet transfer station, at least one heating station and a forming station,

a pair of opposed mold members mounted on opposite sides of said endless path at said forming station for movement between a normally maintained spaced apart mold open position and a clampingly engaged mold closed position, means creating a sheet molding differential pressure in at least one of said mold members,

first means operable upon the arrival of said first carriage means at said forming station for releasing a first sheet carried by said first carriage means from said first carriage means and transferring it to one of said mold members, and for actuating said indexing means to advance said first carriage means from said forming station while simultaneously advancing said second carriage means with a second sheet thereon to said forming station,

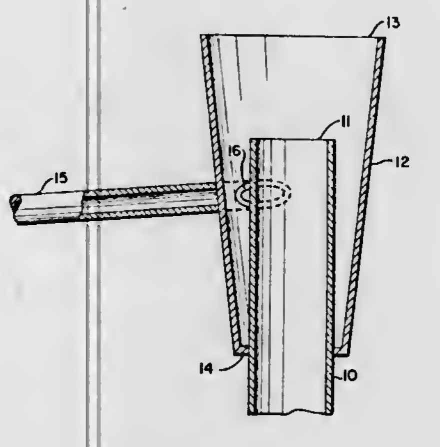


second means operable upon the arrival of said second carriage means at said forming station to shift said mold members to said closed position to fuse said sheets and thereby form said object while said second sheet is retained by said second carriage means,

and third means operable upon the formation of said object to restore said mold members to said open position and to actuate said indexing means to advance said second carriage means from said forming station with the formed object supported thereon.

3,868,210
SAFETY FLARE

Samuel W. Simpson, Florissant, Mo., and Thomas E. Innocenzi, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Continuation of Ser. No. 101,229, Dec. 24, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,474
Int. Cl. F23j *7/00*
U.S. Cl. 431—4 **1 Claim**



1. A process for flaring combustible gas into the air which comprises:

a. passing combustible gas upwardly through an open-topped cylindrical stack and into an enlarged coaxial housing extending above the top of the stack;

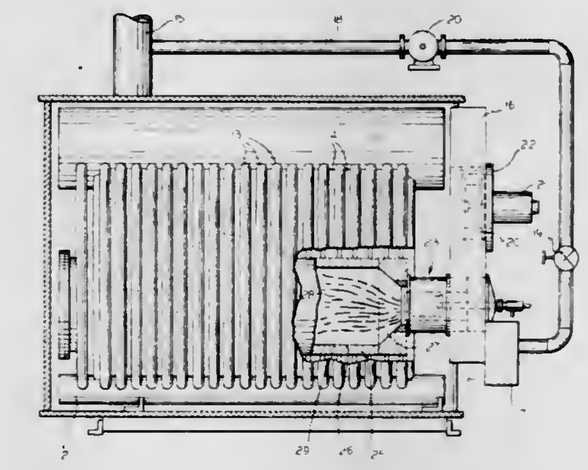
b. passing steam into the housing in a manner to produce a swirling mixture of combustible gas and steam and creating a low-pressure vortex into which air is drawn;

c. igniting the resultant swirling mixture with resultant improved combustion and reduced noise level and

d. discharging the resultant burning gas mixture into the atmosphere.

3,868,211
POLLUTANT REDUCTION WITH SELECTIVE GAS STACK RECIRCULATION

Paul G. La Haye; John W. Bjerklie, both of Cape Elizabeth, Maine, and Aqua-Chem, Inc., Milwaukee, Wis.
Filed Jan. 11, 1974, Ser. No. 432,623
Int. Cl. F23l *9/00*
U.S. Cl. 431—10 **33 Claims**



1. A method of burning fuel comprised substantially of hydrocarbon to obtain low levels of nitrogen oxides, carbon monoxide, carbon and other particulates in the exhaust gases therefrom, comprising:

a. projecting concurrently into a combustion zone finely divided fuel and a quantity of air which is substantially less than required for complete combustion of the fuel and a quantity of exhaust gases containing carbon dioxide to produce a flame core having sufficiently low temperature to suppress oxygen from the air from reacting in substantial amount with available nitrogen but to permit said oxygen to react with the hydrocarbons to produce carbon for reacting with said carbon dioxide in said exhaust gases to produce carbon monoxide,

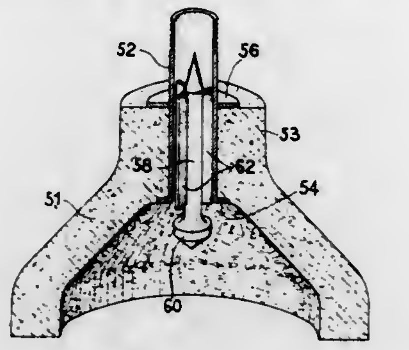
b. introducing further combustion supporting air in such manner as to diffuse and mix with the combustion products of said core progressively downstream after said core has yielded some heat to thereby oxidize residual carbon and carbon monoxide therein to carbon dioxide at temperature which suppress the reaction between nitrogen and oxygen.

3,868,212
RADIANT BURNER AND FURNACE FOR TREATING AT HIGH TEMPERATURE

Bernard J. Lemaire, Faumont, France, assignor to Ressorts du Nord S.A., Paris, France
Continuation of Ser. No. 275,293, July 26, 1972, Pat. No. 3,801,080. This application Oct. 16, 1973, Ser. No. 406,849
Claims priority, application France, Aug. 3, 1971, 71.28372; Apr. 4, 1972, 72.11736
Int. Cl. F23m *9/00*
U.S. Cl. 431—171 **7 Claims**

1. A burner for heating by the effect of radiation, comprising a body of felt of refractory fibres defining a wall, a metal sleeve which extends through the body and is in interference fit in the felt for receiving a combustible mixture, an outlet orifice defined by the sleeve inside the body, a diffuser in

alignment with said outlet for guiding the ignited combustible mixture in the direction of the wall of the body, and an inner surface layer on the felt wall which is vitrified by first high temperature heating and constitutes a radiant non porous thin skin.



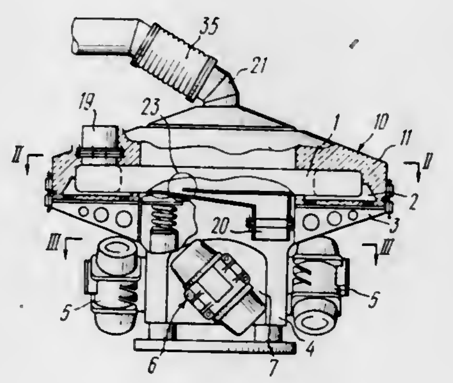
3,868,213
VIBRATION FURNACE

Valery Petrovich Shulika, Moskvorechie 49, kv. 10; Jury Nikolaevich Khazhinsky, Festivalnaya ulitsa, 3, kv. 80; Jury Fedorovich Yakimenko, Novo-Alexeevskaya ulitsa, 3, kv. 16, and Anatoly Vladimirovich Savchenko, ulitsa Vavilova 56, korpus 1, kv. 19, all of Moscow, U.S.S.R.

Filed Oct. 25, 1973, Ser. No. 409,444
Int. Cl. F27b *9/16, 5/16*

U.S. Cl. 432—134 **5 Claims**

1. A vibration furnace for loose materials, comprising: a vertical bearing pipe with supports; a chute concentric with the vertical bearing pipe and attached to said supports of the vertical bearing pipe by means of brackets radially movable under thermal expansion of said chute; said chute being electrically insulated from said supports of the vertical bearing pipe by means of insulators and resistance heated upon connecting the chute in an electric circuit a loading device communicating with the chute for ensuring the supply of loose materials onto said chute; an unloading device communicating with the chute for providing the discharge of treated loose materials from the chute; and a plurality of vibrators mounted in the lower section of the vertical bearing pipe and imparting helical oscillations to the chute.

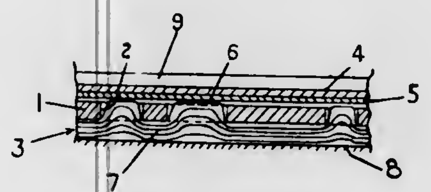


3,868,214
PROCESS FOR PRODUCING DECORATED FABRICS

Alan Lomas Shackleton, Mansfield, England, assignor to Ashfield Dyeing & Finishing Company Limited, Ashfield, England

Filed May 4, 1972, Ser. No. 250,136
Int. Cl. D06p *7/00*

U.S. Cl. 8—2.5 **6 Claims**



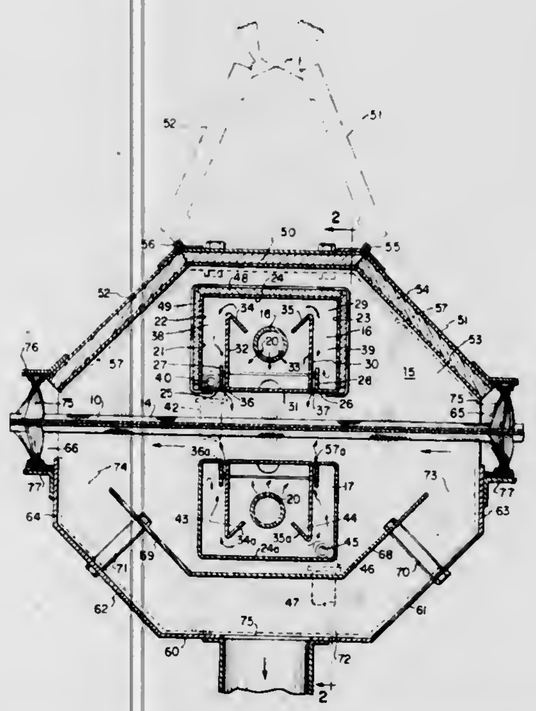
1. A process for decorating a fabric with a three-dimensional pattern which comprises applying a compressing force to portions of a resilient flat fabric disposed in the pattern of the depressed portion of a chosen embossment pattern by pressing against the fabric a stencil having cut out portions shaped as the chosen embossment pattern, said stencil being a sheet with an open-work pattern the openings of said patterns being sufficiently large to permit the fabric to project therethrough upon said compression, exposing the uncompressed portions projecting through said openings to the surface of a vaporixable dyestuff-coated transfer sheet, setting the conditions to cause the dyestuff to transfer to the uncompressed portions of the fabric exposed through the cut out portions of the stencil and to set the pattern of embossment, removing the stencil to leave a fabric having a permanently embossed pattern of a different color from the depressed portions.

3,868,215
METHOD OF STEAM PROCESSING TUBULAR KNIT FABRIC OR THE LIKE

Robert Frezza, Carle Place, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 348,068, April 5, 1973,. This application Apr. 30, 1973, Ser. No. 355,401
Int. Cl. D06c *1/10, 3/00*

U.S. Cl. 8—149.3 **4 Claims**



1. The method of steam processing tubular knitted fabric or the like, which comprises

a. spreading the fabric to generally flat form and conveying it along a predetermined, generally horizontal processing plane,
b. directing opposed jets of processing steam at high velocity toward, and at a large angle to the principal flat surfaces of the fabric from opposite sides, across its width,
c. said processing steam being directed into contact with said fabric in the form of high velocity jets which are effectively continuous across the width of the fabric,
d. at least temporarily confining the steam thus ejected to limited upper and lower regions immediately adjacent to the fabric on opposite sides, and thereafter
e. withdrawing downwardly steam from the said limited regions at a rate sufficient to prevent substantial condensation of steam within said upper region in areas directly above the fabric,
f. steam from said upper region being withdrawn downwardly through said fabric.

3,868,216
PROCESS OF MAKING ACTIVATED, RECURABLE, DURABLE-PRESS FABRICS AND THE PRODUCT

William E. Franklin; Stanley P. Rowland, and John P. Madacsi, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 29, 1972, Ser. No. 293,744
Int. Cl. D06m *3/00*

U.S. Cl. 8—182 **4 Claims**

1. An improvement in the process for imparting durable press properties and permanent configurations to crosslinked cellulosic textiles obtained via impregnation of the cellulosic textile with a solution containing a polycarboxylic acid and a methylolated crosslinking reagent and subsequently drying, curing, and washing the cellulosic textile, which improvement consists of:

a. impregnating the cured and washed textile with a solution of a latent acid catalyst,
b. drying the impregnated textile from (a), and
c. thermally reforming, with restraint, the dried textile from (b) at a temperature of from about 100℃ to about 220℃ for a period of from about 15 seconds to about 300 seconds.

3,868,217
CORROSION INHIBITION

William Robert Hollingshad, Bethel Park, Pa., assignor to Calgon Corporation, Robinson Township, Pa.

Continuation-in-part of Ser. No. 347,009, April 2, 1973, abandoned. This application May 9, 1974, Ser. No. 468,347
Int. Cl. C23f *11/14, 11/16*

U.S. Cl. 21—2.7 A **4 Claims**

1. A method of inhibiting the corrosion of metals in a water system which comprises maintaining in the water of said system at least about 10 mg/l of a phosphoric acid ester of triethanol amine.

3,868,218
METHODS AND DEVICES FOR AUTOMATICALLY ACTIVATING A CHEMICAL PROCESS AT A GiVEN TEMPERATURE

Sven Ivan Arvid Tornmarck, Malmo, and Per Olof Andersson, Staffanstorp, both of Sweden, assignors to Food Control AB, Malmo, Sweden

Filed Feb. 17, 1972, Ser. No. 227,028
Claims priority, application Sweden, Feb. 18, 1971, 2082/71
Int. Cl. G01n *31/00;* **G01k** *1/02*

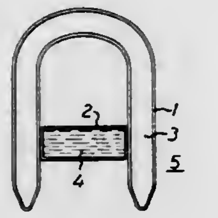
U.S. Cl. 23—230 R **10 Claims**

1. A method of automatically combining chemical substances at a given temperature, one of said substances being

disposed in a first container and the other being disposed outside of said container so that said substances are separated by a fragile wall of said container, comprising the steps of,

providing an activator of a different substance than said two substances which at said given temperature undergoes a phase transition thereby increasing its volume, which activator is encapsulated in a second container located in proximity to said fragile wall of said first container and being at least partly elastic so as to be expandible without breaking,

and subjecting said activator to said given temperature whereby it undergoes said increasing volume change and breaks said wall of said first container so that the two chemical substances are immediately brought into contact with each other.



3,868,219
DETERMINATION OF HCG GLUCOSE AND GALACTOSE IN BODY FLUIDS WITH CHROMOGENIC INDICATORS

Bernard Hurenkamp, Oss, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed May 30, 1973, Ser. No. 365,393

Claims priority, application Netherlands, June 14, 1972, 7208092

Int. Cl. G01n *21/06, 33/16*

U.S. Cl. 23—230 B **5 Claims**

1. In a process for the detection and determination of a member of the group consisting of human chorionic gonadotrophin, glucose, and galactose present in a fluid sample, the detection and determination being based upon a visual color change produced by the oxidation of an oxidizable chromogenic compound as a component in a test reaction system including other test reaction components, the improvement which comprises inactivating any undesired substances which may be present in said fluid sample by first contacting the sample with a purified cellulose which has been further subjected to treatment with an oxidizing agent, and then contacting the sample with said chromogenic compound.

3,868,220
PROCESS FOR EXTRACTING PROCAINAMIDE FROM BLOOD

Harry Klinger, Summit, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Aug. 13, 1973, Ser. No. 387,546

Int. Cl. B01d *11/00;* **G01n** *31/02, 33/16*

U.S. Cl. 23—230 B **11 Claims**

1. A process for extracting procainamide from blood that comprises:

(i) mixing a blood sample with alcoholic alkali;

(ii) adding to the mixture of (i) a water-immiscible solvent which will dissolve the procainamide in the blood;

(iii) adding a water-soluble colloid to the mixture of blood sample, alcoholic alkali, and water-immiscible solvent; and

(iv) separating the solvent from the blood residue.

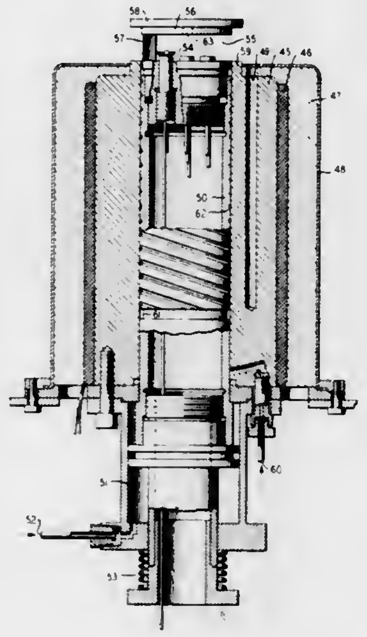
3,868,221
METHOD AND APPARATUS FOR DEGRADATION TESTING OF STABILIZED POLYMERS

John Benedict Howard, Summit, and Robert Franklin Westover, Princeton, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Aug. 31, 1973, Ser. No. 393,597

Int. Cl. G01n *25/00, 33/44*

U.S. Cl. 23—230 R **11 Claims**



1. Apparatus for the testing of polymeric materials containing at least one additive for protection against exothermal degradation, comprising an oven, which oven contains thermal sensors each of which can produce an electrical output signal, and signal processing means for accepting at least one of the electrical output signals and producing at least time interval information characterized in that

a. the thermal sensors include at least one reference sensor and a plurality of sample sensors;

b. the oven includes sample insertion means for inserting a plurality of samples of at least one polymeric material into the oven, the thermal mass of which insertion means is at most 10 percent of the thermal mass of the oven, each inserted sample being brought into thermal contact with one sample sensor;

c. the signal processing means includes means for comparing the output of each sample sensor with the output of one reference sensor and producing a difference signal;

d. the signal processing means includes means for indicating the time, relative to an initial time, at which the difference signal derived from each sample sensor, meets a preset condition.

3,868,222
HIGH RESOLUTION GEOCHEMICAL PROSPECTING METHOD AND APPARATUS

Anthony Rene Barringer, Willowdale, Ontario, Canada, assignor to Barringer Research Limited, Rexdale, Ontario, Canada

Filed Jan. 9, 1974, Ser. No. 431,962

Claims priority, application Canada, Mar. 19, 1973, 166975

Int. Cl. G01n *1/22, 31/12, 33/24*

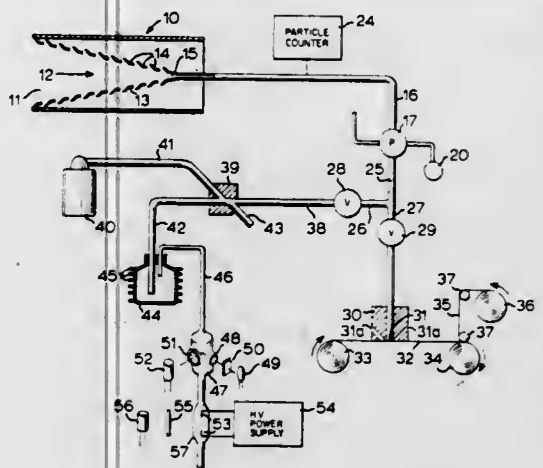
U.S. Cl. 23—230 EP **17 Claims**

1. A method of performing a rapid geochemical survey of an area of the earth from a moving vehicle comprising:

a. receiving, at known locations in said area, an air stream containing atmospheric particulates, the rate of flow of said air stream being at least about 10 cubic meters per minute;

b. concentrating said particulates as they are moving in said air stream, and forming a stream of concentrated particles;

c. successively analyzing said concentrated particles for predetermined elements or compounds, which successive analyses are respectively made of particles which were received during period of not more than 15 seconds each; and



d. correlating said analyzed particles with said known locations to thereby determine the location in said area of the source of said particles.

3,868,223
MEASURING DEVICE FOR MEASURING THE OXYGEN CONSUMPTION OF BIOLOGICAL SUBSTANCES

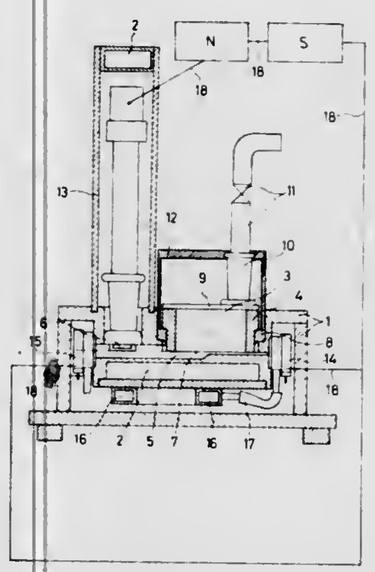
Klaus Robock; Ullrich Teichert, both of Essen, and Paul Gerhard Munder, Emmendingen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Feb. 16, 1973, Ser. No. 333,150

Claims priority, application Germany, Feb. 18, 1972, 2207615

Int. Cl. G01n *27/46, 33/16*

U.S. Cl. 23—253 R **10 Claims**



1. A measuring device for measuring the oxygen consumption of biological substances, comprising wall means defining a first chamber adapted to contain an oxygen-consuming substance, and a second chamber for containing gaseous oxygen and communicating with said first chamber; a gas-permeable membrane separating said chambers from one another so as to permit passage of gas between them; an oxygen measuring electrode which is at least in part exposed at the interior of said second chamber for measuring the oxygen content therein and providing electric signals indicative of the oxygen content; and means connected with said electrode for controlling the oxygen content in said second chamber as a function of the electrical signals received from said electrode.

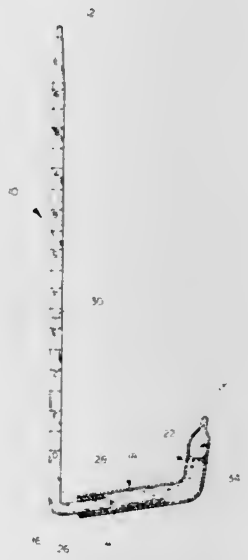
3,868,224
DISPOSABLE GAS MEASURING PIPET

Stuart M. Davis, and Dennis R. Tichendorf, both of Madison, Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 1, 1973, Ser. No. 411,643

Int. Cl. G01n *7/18;* **B01l** *5/02*

U.S. Cl. 23—259 **3 Claims**



1. A disposable gas measuring apparatus comprising:

a. a hollow tubular pipet having calibrations thereon and having constricted openings at the opposite ends thereof, one end portion of the pipet being bent through an angle greater than 90° with respect to the longitudinal axis of the pipet;

b. a hollow reaction tube having an opening at one end thereof and being sealed at the opposite end thereof, the end portion of the reaction tube that is sealed being bent through an angle of approximately 90° with respect to the longitudinal axis of the reaction tube, the said one bent end portion of the pipet being disposed within the opening at the said one open end of the reaction tube; and

c. a seal located between the pipet and the reaction tube at the zone of their assembly.

3,868,225
SODIUM CHLORATE OXYGEN PRODUCING APPARATUS

Arthus H. Tidd, Hollywood, Fla., assignor to Safety Laboratories, Inc., Miami, Fla.

Filed May 25, 1973, Ser. No. 363,932

Int. Cl. B01j *7/00*

U.S. Cl. 23—281 **13 Claims**

1. A sodium chlorate oxygen producing apparatus comprising:

a sodium chlorate candle container,

a sodium chlorate candle of generally elongate cylindrical form housed and supported within the candle container,

a gas permeable thermally insulating material disposed around the candle and supporting the candle in spaced relationship with the walls of the candle container,

an ignition device attached to the candle container and adapted, upon operation, to ignite the sodium chlorate candle,

an outlet passage means for permitting exit of oxygen from the candle container, and

means disposed in the path of oxygen generated by the sodium chlorate candle following ignition to eliminate substantially all carbon monoxide and carbon dioxide from that oxygen,

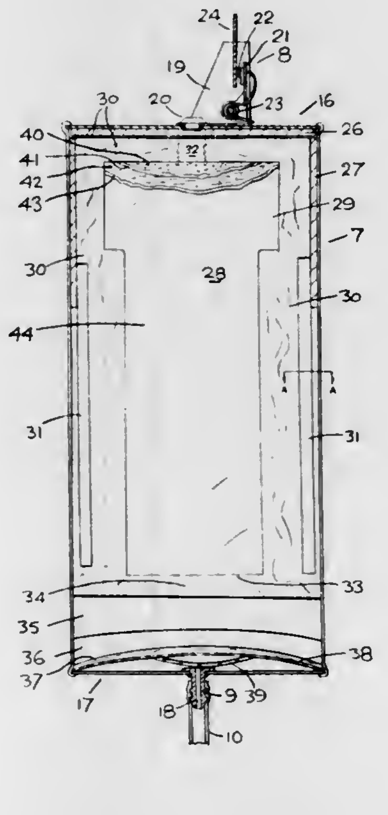
the sodium chlorate candle comprising first, second, third, fourth and fifth different compositions arranged in order longitudinally along the candle from the point of ignition by the ignition means,

said first composition being a rapidly burning flash composition having constituents given as % by weight as follows;
about 69½ to 70½ $NaClO_3$
about 9½ to 10½ Fe
about 9½ to 10½ BaO_2
9½ to 10½ Boron;

said second composition being a slower burning booster composition having constituents given as % by weight as follows;
about 45 to 55 Fe
about 45 to 55 BaO_2;

said third composition being a more slowly burning cone composition having constituents given as % by weight as follows;

an intermediate composition having
about 36½ to 37½ $NaClO_3$



about 36½ to 37½ Fe
about 3½ to 4½ BaO_2
about 21½ to 22½ inert filler

into which is mixed as a % by weight of said intermediate composition about 5¾% to 6¾% of said flash composition;

said fourth composition being an even more slowly burning booster composition having constituents given as % by weight as follows;
about 64 to 65 $NaClO_3$
about 18 to 19 Fe
about 16 to 17 BaO_2
about ¼to 1¼ inert filler; and

said fifth composition being the slowest burning of the five compositions, forming the main body and having constituents given as % by weight as follows;
about 90 to 91 $NaClO_3$
about 4 to 5 Fe
about 4 to 5 BaO_2
about 0 to 1 inert filler.

3,868,226

REACTION VESSELS

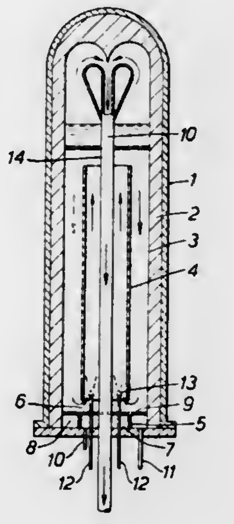
Brian Hoyle Thompson, Harpenden, England, assignor to The Gas Council, London, England

Filed May 25, 1972, Ser. No. 256,834

Claims priority, application Great Britain, June 4, 1971, 19014/71

Int. Cl. B01j *1/00;* **C10g** *13/18*

U.S. Cl. 23—284 **3 Claims**



1. An apparatus for performing a chemical reaction between a reactant gas and a fluid material to produce a gaseous product comprising an elongated thermally insulated reaction vessel in a vertical position and when in use containing a fluidised bed, having mounted within it at least one dividing member which is shorter than the internal length of the vessel and which divides the interior of the vessel into at least two regions, at least one to act as a riser for the fluidised bed and a region surrounding the riser or risers to act as a downcomer therefor, all the regions being in communication with each other beyond the ends of the dividing member or members, separate means for supplying the reactant gas at the lower end of the reaction vessel so as to maintain a zone of ascending particles in the fluidised state in the riser or risers and a zone of descending particles in the fluidised state in the downcomer, at least one nozzle associated with each riser within the reaction vessel for injecting the fluid material into the reactant gas and an outlet for a gaseous reaction product at the upper end of the reaction vessel, said outlet comprising a duct which opens at a point substantially above said fluidised bed to prevent entry of particles therein and extends downwardly through the reaction vessel to exit through the base thereof.

3,868,227

AGGLOMERATING FINE ALKALI METAL SILICATE PARTICLES TO FORM HYDRATED, AMORPHOUS, GRANULES

Clarence H. Gericke, Wayne, and Richard H. Pierce, Broomall, both of Pa., assignors to Philadelphia Quartz Company, Philadelphia, Pa.

Filed Apr. 5, 1972, Ser. No. 241,393

Int. Cl. B01j *2/00;* **C01b** *33/32*

U.S. Cl. 23—313 **10 Claims**

1. A process for preparing hydrated, amorphous, granular alkali metal silicates having an SiO_2/M_2O mole ratio of 1.2/1.0 to 4.0/1.0 comprising:

a. mixing fine, amorphous alkali metal silicate particles selected from the group consisting of sodium silicate, potassium silicate and sodium-potassium silicate and an agglomerating liquid which is an alkali metal silicate solution selected from the group consisting sodium silicate, potassium silicate and sodium-potassium silicate, said mixture containing between 23 and 33% moisture;

b. energetically mixing and heating the mixture to temperatures between 120° and 230°F. until it granulates, becomes flowable and the moisture content is between 20 and 27;

c. charging the granulated mixture to a rotary dryer; and

d. conducting air through the dryer with an inlet temperature of above 240°F and an outlet temperature above 130°F to dry the agglomerated material to form a hydrated, amorphous, granular alkali metal silicate product having a moisture content between 15 and 25%.

3,868,228

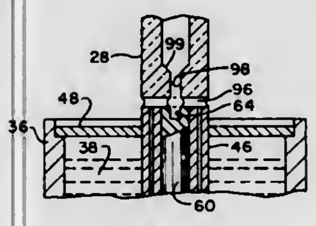
METHOD OF GROWING CRYSTALLINE BODIES FROM THE MELT

Abraham I. Mlavsky, Lincoln, and Nicholas A. Pandiscio, Wayland, both of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Division of Ser. No. 148,589, June 1, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 386,175

Int. Cl. B01j *17/18*

U.S. Cl. 23—301 SP **12 Claims**



1. Method of growing a crystalline body of a selected material from a melt thereof comprising establishing a molten film of said material overlying and covering a first substantially horizontal surface of predetermined configuration, growing and pulling a crystalline body from said film, moving a second substantially horizontal surface into contiguous and edge-aligned relation with said first surface after said body has grown to a selected length, spreading said film so that it overlies both said surfaces, growing and pulling said body from the film overlying both said surfaces, and continuously replenishing said film as said body is being grown and pulled.

3,868,229

DECORATIVE ELECTROPLATES FOR PLASTICS

John L. Hurley, Mahwah, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed June 10, 1974, Ser. No. 477,964

Int. Cl. B23p *3/00;* **C23b** *5/60, 5/06*

U.S. Cl. 29—195 **10 Claims**

1. In the process of decorating plating plastics wherein the plastic is first caused to become electrically conductive at least on the surface and thereafter metal is electrodeposited thereupon, the improvement comprising initially electrodepositing on the electrically conductive plastic surface nickel having a tensile strength less than about 105,000 pounds per square inch, as measured in deposits at least about 1 mil thick, subsequently electrodepositing prior to a non-continuous outer layer of chromium a layer of sulfur-containing nickel having the capability of levelling the surface to a surface roughness of less than about 4 microinches, the sulfur content of said sulfur containing nickel being about 800 to about 1,800 parts per million and the ratio of thickness of said first mentioned nickel deposit to said second mentioned nickel deposit being at least about 2 whereby is produced a decorative plated plastic having good resistance to the deleterious effects of thermal cycling.

3,868,230

TUNGSTEN SUBSTRATE FOR HIGH-STRENGTH HIGH-MODULUS FILAMENT

Val J. Krukonis, Lexington, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Sept. 15, 1972, Ser. No. 289,747

Int. Cl. B23p *3/00*

U.S. Cl. 29—198 **3 Claims**

2. A high-strength, high-modulus composite filament comprising:

a tungsten filament substrate formed from lamp grade tungsten that is free of silicon; and

a coating on the tungsten filament of a high-strength, high-modulus material taken from the class consisting essentially of boron and silicon carbide.

3,868,231

FUEL COMPOSITION

Eduard J. Van De Kraats; Arnold A. Buitelaar, and Thomas Schreuder, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,355

Claims priority, application Netherlands, Dec. 27, 1971, 7117866

Int. Cl. C10l *1/14*

U.S. Cl. 44—62 **2 Claims**

1. A residual fuel having improved low - temperature properties wherein at least about 8% by weight of fuel consists of waxes having a melting point greater than about 35°C and a boiling point greater than about 350°C, said fuel having incorporated therein from about 0.01 to about 0.05% by weight of a copolymer of (1) a C_{18} to C_{26} alkyl ester of acrylic acid and (2) 4-vinylpyridine, the copolymer having a number average molecular weight between 3,000 and 100,000 and a molar ratio of units from (1) to units from (2) of 2-5:1.

3,868,232

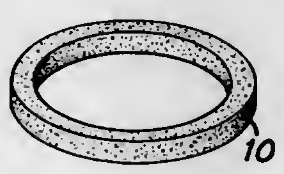
RESIN-BONDED ABRASIVE TOOLS WITH MOLYBDENUM METAL FILLER AND MOLYBDENUM DISULFIDE LUBRICANT

Richard H. Sioui, Holden, and Harvey M. Cohen, Randolph, both of Mass., assignors to Norton Company, Worcester, Mass.

Division of Ser. No. 163,976, July 19, 1971, Pat. No. 3,779,727, which is a continuation-in-part of Ser. No. 61,905, Aug. 7, 1970, abandoned. This application Apr. 25, 1973, Ser. No. 354,460

Int. Cl. C08g *51/12*

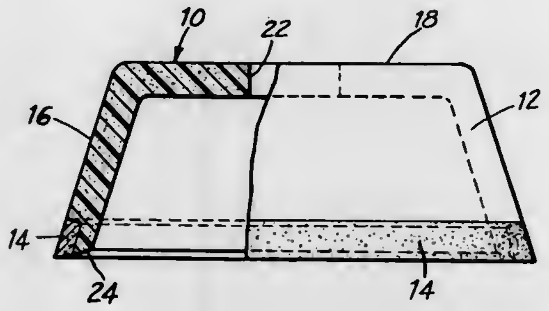
U.S. Cl. 51—298 **1 Claim**



1. An abrasive tool comprising particles selected from the group consisting of metal clad diamond or metal clad cubic boron nitride bonded at at least one surface thereof, the bonding material being a synthetic resin binder but characterized in that it contains from 10 to 60 percent by volume, of molybdenum metal filler and from 10 to 30 percent, by volume, of molybdenum disulfide.

3,868,233
GRINDING WHEEL CORE

Edgar B. Carver, Sutton, and Richard H. Sioui, Holden, both of Mass., assignors to Norton Company, Worcester, Mass.
Continuation-in-part of Ser. No. 340,578, March 12, 1973, abandoned. This application July 2, 1973, Ser. No. 375,766
Int. Cl. C08g *51/12*
U.S. Cl. 51—298 **4 Claims**



1. In a grinding wheel with a peripheral abrasive section, a core comprising a particulate first metallic component, a particulate second metallic component, and a particulate synthetic thermosetting resin, all bonded together, wherein
   the first metallic component comprises from 40 to 90 core volume percent of a metal selected from the group consisting of aluminum and copper and a mixture thereof,
   the second metallic component comprises from 2 to 35 core volume percent of a metal selected from the group consisting of tin and an alloy of tin with a melting point at or less than 350°C, and
   the resin comprises from 5 to 30 core volume percent.

3,868,234
METAL-BONDED CUBIC BORON NITRIDE CRYSTAL BODY

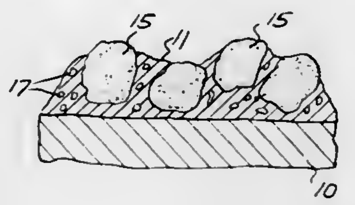
Ethel L. Fontanella, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Continuation-in-part of Ser. No. 158,991, July 1, 1971, abandoned. This application Nov. 1, 1972, Ser. No. 302,821
Int. Cl. B24d *3/06;* **C04b** *31/16*
U.S. Cl. 51—309 **6 Claims**

1. An abrasive body consisting essentially of cubic boron nitride crystals and an alloy matrix, the alloy matrix comprising a first metal selected from the group consisting of aluminum, silicon, vanadium, niobium, lanthanum and other rare earth metals and together therewith any metal that, when molten, will wet said first metal and form an alloy therewith that exhibits finite, limited reactivity with cubic boron nitride and is homogeneous on solidification, said alloy having a melting point below about 1500°C and each component of said alloy consisting of at least 1 percent by weight of said alloy and said alloy matrix constituting at least 30% of volume of said abrasive body.

3,868,235
PROCESS FOR APPLYING HARD CARBIDE PARTICLES UPON A SUBSTRATE

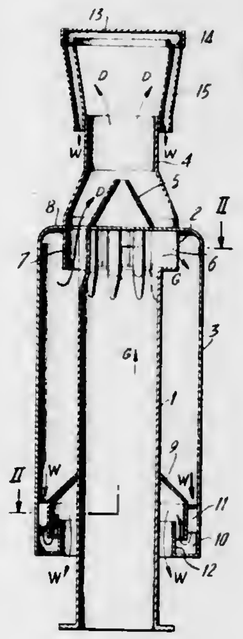
Gerhard R. Held, Mt. Clemens, Mich.
Continuation-in-part of Ser. No. 155,299, June 21, 1971, abandoned, which is a continuation-in-part of Ser. No. 804,511, March 5, 1969, abandoned. This application July 19, 1973, Ser. No. 380,779
Int. Cl. C04b *31/16*
U.S. Cl. 51—309 **7 Claims**

1. A process for applying cemented hard carbide particles to the surface of a metal substrate comprising:
   applying metal matrix bonding layer essentially free of copper, in a molten form, upon the said metal substrate, the matrix being characterized by having a melting point around 2,000°F. and below the melting point of both the carbide particles and the metal substrate;
next applying a layer of a non-metallic tacky organic adhesive material that is essentially volatalizable in a non-oxidizing furnace, upon the surface of the said matrix;
then, loosely sprinkling the particles upon the layer of adhesive to form a layer of carbide particles held in place by the tacky adhesive;
next, baking the layered substrate in a furnace having a non-oxidizing atmosphere at a temperature below the melting point of the substrate, but high enough to essentially volatalize said adhesive and to melt the matrix to bond to the particles and to fuse the matrix to the substrate, and
finally cooling the particle coated substrate.



3,868,236
CENTRIFUGAL GAS-LIQUID SEPARATOR

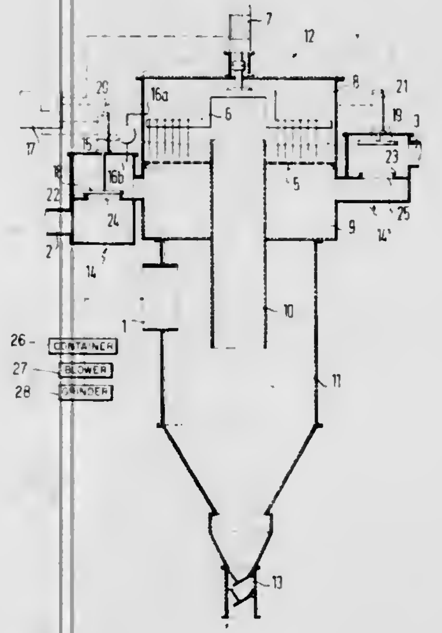
Franz Meier, Oberhausen-Sterkrade; Erich Ossendorf, Bochum, and Hubert Wolfgarten, Oberhausen-Sterkrade, all of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen-Sterkrade, Germany
Continuation-in-part of Ser. No. 195,924, Nov. 5, 1971, abandoned. This application Jan. 24, 1974, Ser. No. 436,206
Claims priority, application Germany, Nov. 17, 1970, 2056388
Int. Cl. B01d *45/12, 53/24*
U.S. Cl. 55—203 **8 Claims**



1. A centrifugal gas-liquid separator comprising riser means for conducting a gas-liquid mixture into said separator, annular bladed means in flow communication with said riser means, outer jacket means circumferentially surrounding said annular bladed means and defining an enclosure extending about said bladed means from proximately above said bladed means and depending downwardly therefrom, gas discharge means disposed above said bladed means to extend upwardly therefrom, said bladed means comprising blades defining a plurality of laterally directed channels closed at their upper and lower extremities for discharging said gas-liquid mixture radially outwardly from said bladed means into said jacket means and blades defining a plurality of vertically directed gas channels for discharging gas upwardly into said gas discharge means, said gas and liquid channels being circumferentially juxtaposed about said annular bladed means, means located below said annular bladed means for narrowing the liquid discharge flow path within said jacket means, and fins located proximate said narrowing means within said jacket means for deflecting the flow direction of said liquid.

3,868,237
DUST FILTER

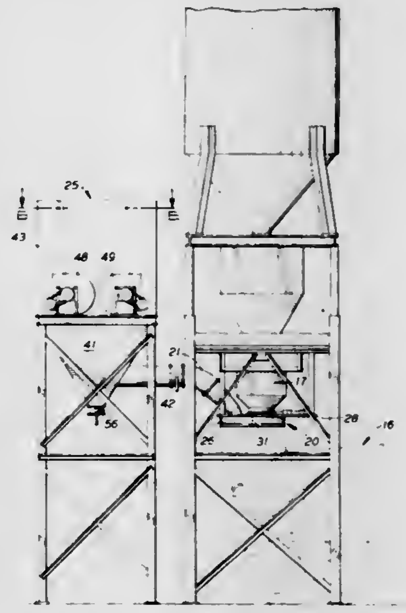
Wolfgang Berz, Mauerkircherstrasse 13, Munich, Germany
Filed Apr. 30, 1973, Ser. No. 355,917
Claims priority, application Germany, May 5, 1972, 2222170
Int. Cl. B01d *53/30*
U.S. Cl. 55—270 **11 Claims**



1. In a filter arrangement for purifying a gas of particulate solid material with which said gas is contaminated, said arrangement including a filter chamber, first inlet means for admitting contaminated gas to said chamber, first outlet means for releasing purified gas from said chamber, second inlet means for admitting a purging gas to said chamber and second outlet means for discharging said purging gas from said chamber, a layer of particulate filter medium in said chamber, said first inlet means and said first outlet means defining a first path of gas flow through said chamber, said first path passing through said layer in one direction from said first inlet means to said first outlet means, said second inlet means and said second outlet means defining a second path of gas flow through said chamber, said second path extending from said second inlet means toward said second outlet means and passing through said layer in a direction opposite to said one direction, first valve means in said first path movable between a path opening and a path blocking position, second valve means in said second path movable between a path opening and a path blocking position, the improvement which comprises:
   a. first and second valve operating means respectively associated with said first and second valve means for moving the associated valve means between said positions thereof; and
   b. valve control means operatively connected to said valve operating means for causing operation of said valve means in cycles of sequential stages, each cycle including
      1. a first stage wherein said first valve means is in the path opening position and said second valve means is in the path blocking position,
      2. a second stage wherein said first valve means is being moved to the path blocking position while said second valve means remains in the path blocking position,
      3. a third stage wherein said second valve means is being moved to the path opening position while said first valve means remains in the path blocking position,
      4. a fourth stage wherein said second valve means is being moved to the path blocking position while said first valve means remains near the path blocking position, and
      5. a fifth stage wherein said first valve means is being moved into the path opening position while said second valve means remains in the path blocking position.

3,868,238
DUST CONTROL SYSTEM FOR BATCH PLANT CHARGING OF TRANSIT MIXERS

Albert A. Mills, Jr., Columbus, and Norman H. Koerner, Sr., Granville, both of Ohio, assignors to The Columbus Bin Company, Inc., Columbus, Ohio
Filed Mar. 29, 1974, Ser. No. 456,202
Int. Cl. B01d *46/04*
U.S. Cl. 55—273 **8 Claims**

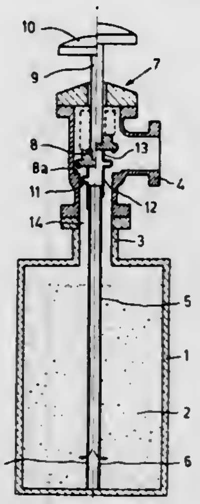


1. In combination with a batch plant for dry-mix material having a discharge outlet through which the material is discharged into the receptacle inlet of a transit vehicle adapted to be positioned in cooperation therewith, a dust-collector shroud connected to the said discharge outlet and adapted to be connected to said receptacle inlet, a filtering unit, and means connecting said shroud to said filtering unit;
   said filtering unit including a housing divided into first and second separate and independent filter chambers, said chambers having inlets and outlets and filtering means disposed therebetween;
   first and second electrically-driven exhaust fans mounted in cooperation with the respective outlets of the first and second filter chambers;
   a common inlet housing chamber connected to said inlets of both filter chambers;
   said means connecting said shroud to said filtering unit comprising an inlet conduit connected to said shroud and to said inlet housing chamber and having an electrically-actuated inlet valve for controlling flow of dust-laden air therethrough from said shroud to said inlet chamber; and control means connected to said inlet valve and said fans comprising an electric circuit including means for sequentially driving both of said fans and opening said valve to collect dust from the shroud during discharge of material and alternately driving one of said fans and closing said valve to clean the filter material in the chamber in

which the fan is not driven by reversing air flow from the outlet of said chamber into said inlet housing chamber.

3,868,239
SORPTION PUMP

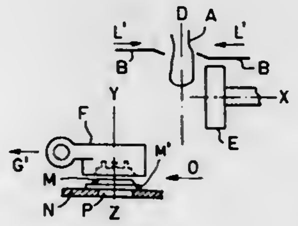
Jan Visser, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 19, 1973, Ser. No. 352,583
Claims priority, application Netherlands, Jan. 29, 1973, 7301204
Int. Cl. B01d *53/04*
U.S. Cl. 55—389 **4 Claims**



1. In a sorption pumping device for connection to a space to be evacuated, including a housing defining therein a reservoir including an inlet passage connectible to said space, and a quantity of sorption material in said reservoir, the improvement in combination therewith wherein said material is situated at at least two relatively different levels, said device further comprising duct means extending through said reservoir and into the material and having spaced ports material for communication with said material at said different levels, and valve means in said inlet passage connected to said duct means for selectively interconnecting said space successively and directly with said different ports in said duct means and said material at said different levels.

3,868,240
METHOD OF GLASS CHARGE SHAPING AND FORMING INTO A GLASS ARTICLE

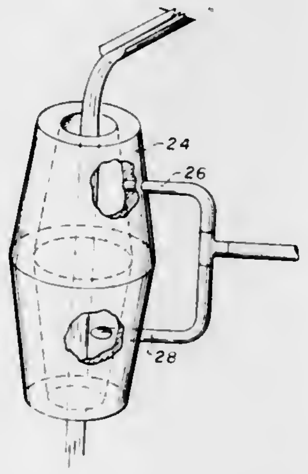
Herman Buurman, and Hendrik Romberg, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 3, 1973, Ser. No. 403,099
Claims priority, application Netherlands, Apr. 11, 1973, 7305030
Int. Cl. C03b *5/26*
U.S. Cl. 65—127 **3 Claims**



1. A method of manufacturing hollow glass articles comprising the steps of:
severing glass charges from a stream of molten glass;
seizing said severed charges in their free fall and shaping them into blanks;
successively transferring said blanks onto the supporting surface of carriers which are traveling in a closed path and which are provided with an orifice, the blanks being transferred during said transferring step exclusively according to a two-dimensional movement pattern which extends partly parallel to the supporting surface of the carrier;
subsequently forming the blanks into hollow articles by the sagging of their central portion through the orifice of the carriers;
subjecting the sagged portion to a forming operation to produce formed articles; and
removing the articles thus obtained from the carriers.

3,868,241
MANUFACTURE OF FUSED CAST REFRACTORY WITH STREAMS OF OXYGEN

Frank Thomas Felice, Norristown, Pa.; Robert Earl Fisher, Downers Grove, and Louis John Jacobs, Chicago, both of Ill., assignors to Combustion Engineering Inc., Windsor, Conn.
Filed June 12, 1973, Ser. No. 369,343
Int. Cl. C03b *5/16;* **C04b** *35/02*
U.S. Cl. 65—134 **2 Claims**

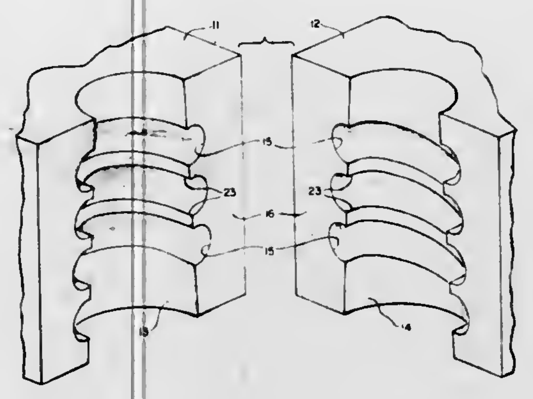


1. A method of producing a molten refractory material for use in forming fused cast refractories comprising the steps of:
a. providing refractory raw materials consisting essentially of alumina, zirconia and silica for producing fused cast refractories;
b. melting said refractory raw materials in an electric arc furnace having carbon electrodes whereby some of said carbon is transferred to said molten refractory;
c. flowing said molten refractory from said electric arc furnace; and
d. directing a stream of oxygen onto said molten refractory material as it is being poured.

3,868,242
MOLD FOR ELECTRIC DISCHARGE LAMP

Harald L. Witting, Burnt Hills, and John O. Fielding, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed May 1, 1974, Ser. No. 465,904
Int. Cl. C03b *9/34*
U.S. Cl. 65—360 **2 Claims**

1. A mold for making a tapered cylindrically-shaped envelope of glass, said mold comprising
first and second mold halves of a glass-molding material, said mold halves defining a mold parting plane therebetween with each of said mold halves having one half of a tapered cylindrical portion with a plurality of substantially parallel grooves formed therein, said grooves forming a helically-shaped channel of nonuniform pitch circumferentially winding around said tapered cylindrical portions, said channel of nonuniform pitch further characterized by a pitch of substantially zero degrees where said channel intersects said mold parting plane and reaches a maximum pitch at approximately 90 degrees to said mold parting plane, thereby enabling easy release of a glass envelope from said mold.



3,868,243
METHOD OF MAKING GRANULAR TRIPLE SUPERPHOSPHATE FERTILIZER

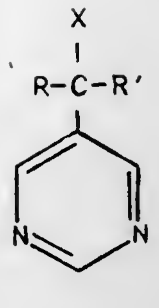
Robert A. MacDonald, Byram, Conn., assignor to Ferguson Industries, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 214,375, Dec. 30, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,253
Int. Cl. C05b *1/00*
U.S. Cl. 71—41 **6 Claims**

1. The method of making granular triple superphosphate comprising the steps of
a. placing a predetermined amount of phosphoric acid in a reactor,
b. maintaining the temperature in said reactor between about 175°F and about 260°F,
c. adding sufficient comminuted phosphate rock to said reactor to form a fluid slurry which will remain fluid at said temperature between about 175°F and about 260°F but which will solidify if the temperature thereof is lowered substantially below said temperature between about 175°F and about 260°F,
d. placing a predetermined quantity of comminuted phosphate rock in an agitating mixer, at least about 85% of said comminuted phosphate rock being of a particle size small enough to pass through a 200 mesh screen, and
e. adding a sufficient amount of said slurry to said mixer to convert said predetermined quantity of phosphate rock to triple superphosphate.

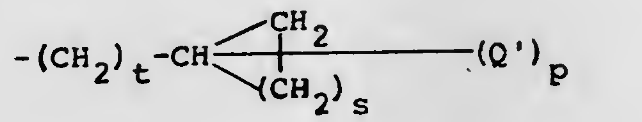
3,868,244
PLANT GROWTH REGULATION

Harold M. Taylor; James D. Davenport, both of Indianapolis, and Ronald E. Hackler, Greenfield, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Continuation-in-part of Ser. No. 234,338, March 13, 1972, abandoned, which is a continuation-in-part of Ser. No. 888,949, Dec. 29, 1969, abandoned, which is a continuation-n-part of Ser. No. 829,844, May 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 685,315, Nov. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 634,074, April 27, 1967, abandoned. This application Jan. 30, 1974, Ser. No. 438,110
Int. Cl. A01n *9/22*
U.S. Cl. 71—76 **29 Claims**

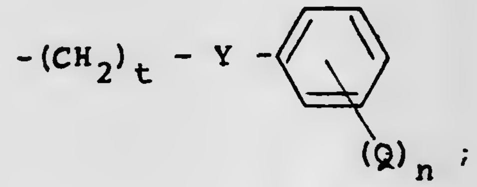
1. A method of inhibiting the intermodal growth of plants which comprises contacting the plants with an effective amount of a compound of the formula



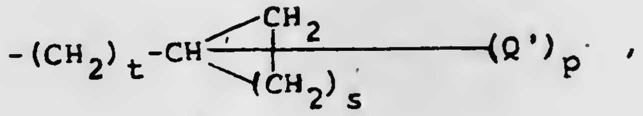
wherein
X is hydrogen, hydroxy, $N(R'')_2$, C_1–C_3 alkoxy, halo, cyano, anilino, or imidazolylthio; R is C_2–C_{11} alkyl, C_2–C_{11} alkenyl,

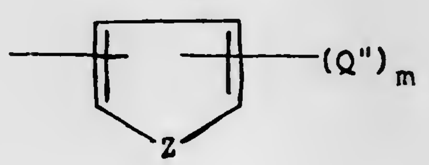


, or



R′ is C_3–C_{11} alkyl, C_2–C_{11} alkenyl, norbornen-2-yl, 2-norbornyl, adamantyl,





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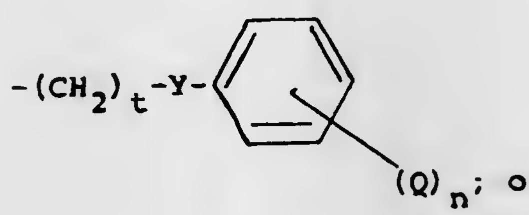
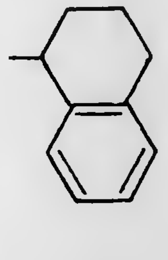
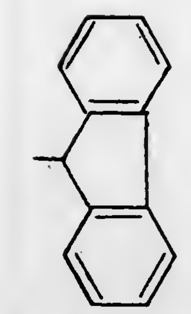


when
X is hydrogen or hydroxy, R and R′ taken together with the carbon atom to which they are attached form a ring of the fomula





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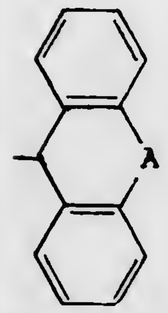


Q is C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, halo, hydroxy, trifluoromethyl, C_1–C_4 alkylsulfonyl, nitro, or di(C_1–C_4 alkyl)amino, or two Q's attached to adjacent carbon atoms of a benzene ring form a methylenedioxy group;

Q′ is C_1–C_4 alkyl or methoxy;
Q″ is C_1–C_4 alkyl;
Y is oxygen, sulfur, or a carbon to carbon bond;
Z is oxygen or sulfur;
A is oxygen, sulfur, CH_2, or CH_2–CH_2;
R″ is hydrogen or C_1–C_4 alkyl;
n is 0 to 5;
m is 0 to 2;
p is 0 to 3;
s is 1 to 6; and
t is 0 to 5,

and the nonphytotoxic acid addition salts thereof.

3,868,245
SELECTIVE HERBICIDE MIXTURES OF SUBSTITUTED PHENOXYALKANOIC COMPOUNDS AND 3-ALKYL-2,1,3-BENZOTHIAZINONE-(4)-2,2-DIOXIDES AND PROCESSES

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Continuation-in-part of Ser. No. 55,277, July 15, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,190

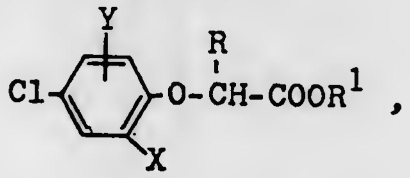
Claims priority, application Germany, July 24, 1969, 1937551

Int. Cl. A01n *9/12*

U.S. Cl. 71—91 **8 Claims**

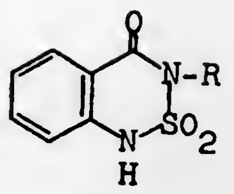
1. A selective herbicide composition containing a herbicidally effective amount of a mixture of

a. a compound having the formula



where X denotes chlorine or methyl, Y denotes chlorine or hydrogen, R denotes hydrogen or methyl, R^1 denotes hydrogen, an alkyl radical or an alkoxy alkyl radical, or a carboxylic acid salt thereof and

b. a compound having the formula



where R denotes methyl, ethyl, propyl or isopropyl, or a salt thereof in a weight ratio of 1:5 to 5:1.

3,868,246
PELLET PRODUCTION PROCESS

Karl Heinz Boss, Bad Homburg, Germany, assignor to Dravo Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 165,284, July 22, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,919

Int. Cl. F26b *3/22;* **C21b** *1/02*

U.S. Cl. 75—3 **6 Claims**

1. In the method of heat indurating green pellets comprising the steps of depositing green pellets on a traveling grate and thereafter drying, calcining and cooling said pellets, an improved drying method comprising:

a. depositing a predetermined portion of a total charge of green pellets on the receiving end of a traveling grate;

b. moving said pellets through a first downdraft drying zone wherein heated gases are passed downwardly through the pellets, said heated gases being at a sufficient temperature to drive-off entrained moisture from said pellets but at a temperature insufficient to calcine said pellets;

c. depositing additional green pellets on top of the first-dried pellets; and

d. subjecting the bed to a downdraft flow of heated gases at the said temperature before the first-dried pellets have cooled to the level of the dew point of the moisture-laden gases that have contacted the pellets last deposited on the bed.

3,868,247
STEEL PRODUCTION IN AN UPRIGHT ROTATING VESSEL

Aldo Ramacciotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Continuation of Ser. No. 199,024, Nov. 15, 1971, abandoned. This application May 28, 1974, Ser. No. 474,088

Claims priority, application Italy, Dec. 5, 1970, 55212/70

Int. Cl. C21c *7/00*

U.S. Cl. 75—60 **1 Claim**

1. A process for the production of steel by melting and refining of a metallic charge containing a variable percentage of carbon in a vertical converter having a vertical axis, comprising establishing a charge of solid ferrous metal and coke in said vertical converter, rotating the converter about said vertical axis, introducing and burning hydrocarbon fuel with primary oxygen in the vicinity of the charge to ignite the coke, then decreasing the flow rate of said primary oxygen to create a reducing atmosphere in a reducing zone immediately above and in contact with the charge and introducing secondary oxygen into the converter remote from the charge to maintain an oxidizing atmosphere in an oxidizing zone above said reducing zone and out of contact with said charge and to complete the combustion of gases from said reducing atmosphere in order to supply heat to the charge until the charge is melted and the combustion of the coke is over, and then adjusting the flow rate of said primary oxygen to reduce the carbon content of the melted charge to produce steel.

3,868,248
DEOXIDISING MOLTEN NON-FERROUS METALS

Max Gerhard Neu, Nechells, England, assignor to Foseco International Limited, Birmingham, England

Filed Oct. 2, 1972, Ser. No. 294,071

Claims priority, application Great Britain, Oct. 6, 1971, 46500/71

Int. Cl. C22b *15/00*

U.S. Cl. 75—76 **2 Claims**

1. In the refining of copper wherein air optionally enriched with oxygen is blown into molten copper or matte, the improvement which comprises continuing to blow air optionally enriched with oxygen into the molten copper or matte until the residual oxygen content of the molten copper reaches a value of not more than 0.3 percent by weight, and thereafter adding to the molten copper a treatment agent in the form of a body of porous coke impregnated with sodium, potassium, calcium, magnesium or an alloy containing at least 20 percent of one or more of these.

3,868,249
ALLOY FOR ELECTRICAL LEADS

Guy Darrell Hufford, Jr., Thousand Oaks, and John Leland Teets, Westlake Village, both of Calif., assignors to Wilkinson Dental Manufacturing Co., Inc., Westlake Village, Calif.

Filed Mar. 14, 1974, Ser. No. 451,001

Int. Cl. C22c *5/00*

U.S. Cl. 75—134 N **2 Claims**

1. An alloy for electrical leads for securement in a ceramic base structure and subject to firing of the ceramic base comprising by weight, from 44 percent to 54 percent gold 11 percent to 21 percent silver, 27.2 percent to 37.2 percent palladium, and 0.8 percent to 2.8 percent ruthenium.

3,868,250
HEAT RESISTANT ALLOYS

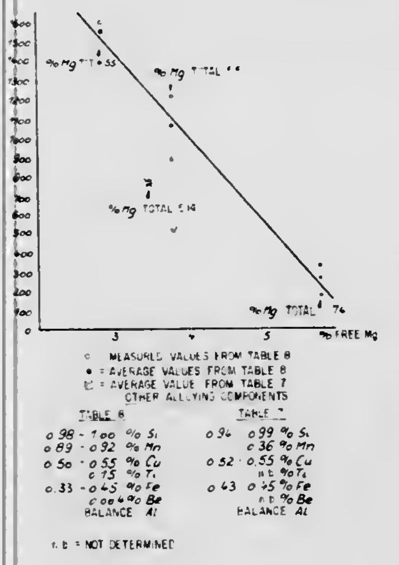
Paul Zimmermann, Grimmlinghausen, Germany, assignor to Honsel-Werke AG, Meschede-Ruhr, Germany

Filed June 7, 1972, Ser. No. 260,556

Claims priority, application Germany, June 14, 1971, 2129352

Int. Cl. C22c *21/04;* **C22f** *1/04;* **F02f** *1/24*

U.S. Cl. 75—147 **9 Claims**



1. A high-strength manganese-containing Al-Mg-Si alloy having a free magnesium content of 1.5 to 4%, said alloy consisting essentially of 0.6 to 1.8% manganese, 2 to 7% magnesium, 0.6 to 2.5% silicon, 0.1 to 0.3% titanium, and having been subjected to one of the following steps (a) and (b):

a. a solution treatment up to 565° C maximum;

b. a corresponding solution treatment with subsequent age-hardening at temperatures not exceeding the hardness maximum.

3,868,251
ORGANIC PHOTOCONDUCTIVE COMPOSITION CONTAINING CHLORINATED PARAFFIN

Shoichi Matsumoto, and Kazuyoshi Saito, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 23, 1973, Ser. No. 381,746

Claims priority, application Japan, July 28, 1972, 47-75131

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **5 Claims**

1. A photoconductive composition for use in electrophotography comprising 100 parts by weight of an organic photoconductor and 20 to 50 parts by weight of chlorinated paraffin wherein said chlorinated paraffin contains 40 to 65% by weight of chlorine and wherein said chlorinated paraffin contains eight to 18 carbon atoms.

3,868,252
PHOTOGRAPHIC ELEMENTS CONTAINING POLYMERIC OXIDANTS

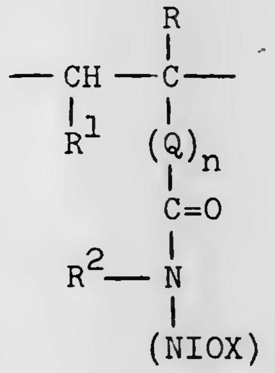
Gerald A. Campbell; Hyman L. Cohen; Hans G. Ling, and Ignazio S. Ponticello, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1973, Ser. No. 412,081

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **19 Claims**

1. A photographic element comprising a support having thereon at least one photosensitive silver salt emulsion layer and at least one layer containing a water-soluble polymer comprising at least 40 mole percent of a recurring unit having the formula:



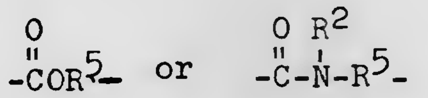
wherein

n is an integer having a value of 0 or 1;

Q represents a bivalent linking group of the formula:

$$—R^3—(L)_m—(R^4)_p—$$

in which R^3 and R^4 each represent an alkylene group, an arylene group or an alkarylene group, and R^3 can also represent a group of the formula:



$$-\overset{O}{\overset{\|}{C}}OR^5- \quad \text{or} \quad -\overset{O}{\overset{\|}{C}}-\overset{R^2}{\overset{|}{N}}-R^5-$$

in which R^5 has the same definition as R^4 and in which the carbonyl moiety is attached directly to the polymeric backbone:

m and *p* each represent an integer having a value of 0 or 1; and

L represents an onium salt group;

R represents a hydrogen atom or an alkyl group;

R^1 represents a hydrogen atom, a carboxy group or when taken together with R^2 represents a linking carbonyl group;

R^2 represents a hydrogen atom, an alkyl group, or when taken together with R^1, R^2 represents a carbonyl group; and

(NIOX) represents a stable free nitroxyl radical;
said polymer further comprising at least 5 mole percent of a recurring unit having appended therefrom a water solubilizing group.

3,868,253

PROCESS FOR THE RAPID PROCESSING OF SILVER DYE BLEACH MATERIAL

Max Marthaler, Marly-le-Petit, and Ulrich Frauchiger, Marly, both of Switzerland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Feb. 16, 1973, Ser. No. 333,249

Claims priority, application Switzerland, Feb. 28, 1972, 2770/72

Int. Cl. G03c *7/00, 5/32, 5/38*

U.S. Cl. 96—53 **13 Claims**

1. Process for the rapid processing of silver dye bleach materials which comprises using the bath sequence (1) silver developing bath, (2) dye bleach bath, (3) bleach-fixing bath, (4) silver halide fixing bath and (5) soaking bath, with both the silver developing bath (1) and the dye bleach bath (2) containing a dye bleach catalyst and the silver dye bleach material to be processed passing from a silver developing bath (1) directly into a dye bleach bath (2), the entire processing, from entry into the first bath (1) to leaving the last bath (5) lasting at most 6 minutes at temperatures of 20° to 50°C and the dwell time in the individual baths being at most 2 minutes.

3,868,254

POSITIVE WORKING QUINONE DIAZIDE LITHOGRAPHIC PLATE COMPOSITIONS AND ARTICLES HAVING NON-IONIC SURFACTANTS

Anton Wemmers, Den Hoorn, Netherlands, assignor to GAF Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,326

Int. Cl. G03f *7/08;* **G03c** *1/54*

U.S. Cl. 96—75 **6 Claims**

1. In a positive working, photosensitive lithographic composition, for use as a coating on a hydrophilic substrate, said composition having a quinone diazide sensitizing agent and a novolak resin binder, the improvement comprising: the employment of a non-ionic surfactant as a developing additive in said composition to impart enhanced developability characteristics, said non-ionic surfactant being a reaction product of ethylene oxide and a compound selected from the group consisting of alkyl phenols and dialkyl phenols.

6. A light sensitive, positive working, lithographic printing plate comprising: a hydrophilic support coated with the composition as defined in claim 1.

3,868,255

DIAZONIUM SALTS AND DIAZOTYPE MATERIALS

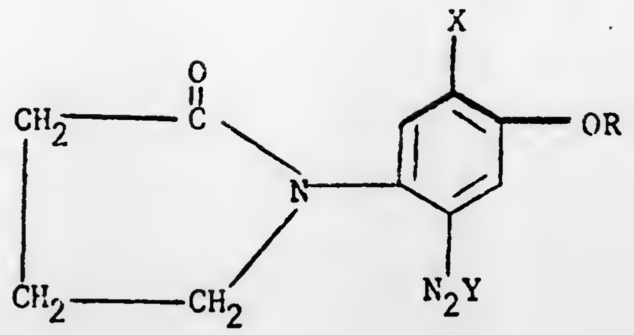
Sidney George Garnish, and Rafiqul Islam, both of London, England, assignors to GAF Corporation, New York, N.Y. Continuation of Ser. No. 56,732, July 20, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,854

Claims priority, application Great Britain, July 23, 1969, 37095/67

Int. Cl. G03g *1/54;* **C07c** *113/04*

U.S. Cl. 96—91 R **10 Claims**

1. Diazonium compounds of the general formula:



wherein R is selected from the group consisting of alkyl, hydroxyalkyl, aryl, or aralkyl, Y is an anion, and X is a radical selected from the group consisting of pyrrolidino, morpholino, piperidino and piperazino.

2. Diazotype materials comprising a support having a light-sensitive acid stabilized layer containing an azo coupler a light-sensitive diazonium compound taken from the group of compounds claimed in claim 1.

3,868,256

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING A CYANINE DYE HAVING A PYRAZOLE[5, 1B]QUINAZOLONE NUCLEUS

Akira Sato; Akira Ogawa; Keisuke Shiba, and Masanao Hinata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 16, 1973, Ser. No. 379,887

Claims priority, application Japan, July 14, 1972, 47-70499

Int. Cl. G03c *1/28, 1/08*

U.S. Cl. 96—100 **11 Claims**

1. A silver halide emulsion for direct positive use comprising fogged silver halide grains and containing at least one cyanine dye in which the 3-position carbon atom in the pyrazole [5, 1-b] quinazolone nucleus thereof and the 1-, 2-, 3-, or 4-position of the cyanine heterocyclic nucleus thereof is directly linked or linked by way of a methine chain with 2 or 4 methine groups, with the proviso that the linking at the 4-position being only when the cyanine heterocyclic nucleus is a quinoline or a pyridine nucleus, and the linking at the 1- and 3-position being only when the cyanine heterocyclic nucleus is an isoquinoline nucleus.

3,868,257

HARDENERS FOR PHOTOGRAPHIC GELATIN

Shoichi Horii; Shoji Yamada; Kiyoshi Futaki; Akira Tanaka; Mamoru Sekido, and Sadayuki Miyazawa, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

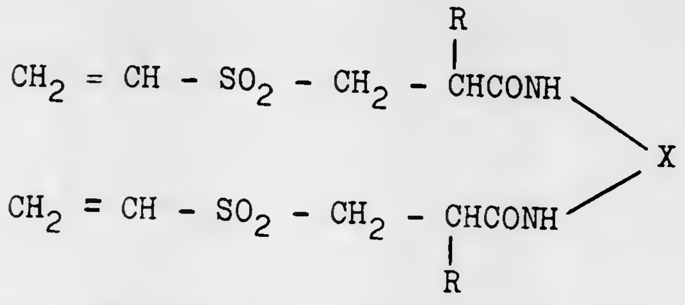
Filed Dec. 27, 1972, Ser. No. 319,025

Claims priority, application Japan, Dec. 30, 1971, 47-2346

Int. Cl. G03c *1/30*

U.S. Cl. 96—111 **7 Claims**

1. A composition of matter comprising gelatin and a hardener of the formula:



(Wherein R is a member selected from the group consisting of hydrogen and methyl group and X is a lower alkylene group 1 to 6 carbon atoms).

3,868,258

FIREPROOFING COMPOSITION AND METHOD

Masami Tomikawa; Yutaka Mugino; Akiji Tsunoda; Hideo Ohkawa, and Kazuhisa Kaneda, all of Chiba-ken, Japan, assignors to Idemitsu, Kosar Kabushiki-Kaisha (Idemitsu Kosan Co., Ltd.), Tokyo, Japan

Filed May 31, 1973, Ser. No. 365,480

Int. Cl. C09d *1/02, 5/18*

U.S. Cl. 106—15 FP **7 Claims**

1. A fireproof composition comprising the hardened reaction product of a homogeneous mixture consisting essentially of calcium sulfite and water glass.

3,868,259

DENTURE ADHESIVE PREPARATION

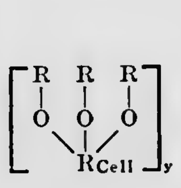
James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J. Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,623

Int. Cl. C08b *21/32*

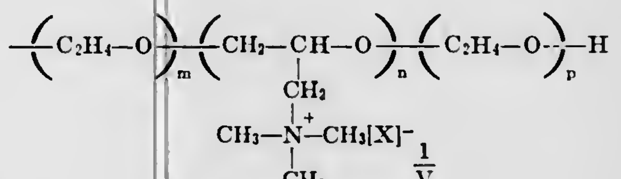
U.S. Cl. 106—35 **8 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0% to about 80% by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material having the formula:



wherein R_{Cell} is the residue of an anhydroglucose unit, y is an integer having a value of from about 1,000 to about 5,000, and each R individually represents a substituent group of the general formula:



wherein:

m is an integer having a value of from zero to 10;
n is an integer having a value of from zero to 3;
p is an integer having a value of from zero to 10;
X is an anion; V is an integer which is equal to the valence of X; the average value of n anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value of $m+p$ per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 20% to about 99% by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of carboxymethylcellulose gum and cellulose sulfate gum.

3,868,260

DENTURE ADHESIVE PREPARATION

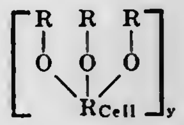
James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J. Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,624

Int. Cl. C08b *21/32*

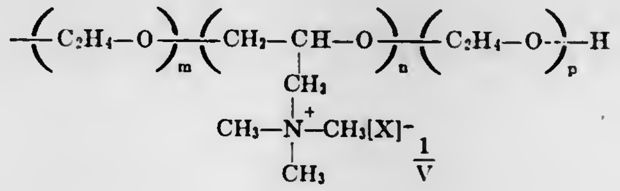
U.S. Cl. 106—35 **8 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0 to about 80 percent by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material having the formula:



wherein R_{Cell} is the residue of an anhydroglucose unit, y is an integer having a value of from about 1,000 to about 5,000, and each R individually represents a substituent group of the general formula:



wherein:

m is an integer having a value of from zero to 10;
n is an integer having a value of from zero to 3;
p is an integer having a value of from zero to 10;
X is an anion; V is an integer which is equal to the valence of X; the average value of n per anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value of m+p per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 20 to about 99 percent by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of gum karaya, gum arabic, gum Shiraz, gum tragacanth, pectin, pectinates, algin and alginates.

3,868,261

REFRACTORY MOTOR

Nicholas Cassens, Jr., Pleasanton, and Joseph E. Neely, Los Gatos, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 15, 1973, Ser. No. 416,090

Int. Cl. C04b *35/42*

U.S. Cl. 106—59 **14 Claims**

1. A heat setting refractory mortar composition consisting essentially of: (1) from 85 to 99.4% prereacted magnesia-chrome grain containing from 40% to 80% MgO, said grain being substantially all finer than 35 mesh and containing from 25 to 75% −325 mesh material; (2) up to 13% Cr_2O_3, substantially all of which passes a 325 mesh screen; (3) from 0.5 to 1.5% dextrin; and (4) from 0.1 to 0.5% methyl cellulose; the amount of Cr_2O_3 and the percentage of prereacted grain finer than 325 mesh being such that the linear shrinkage of the mortar upon heating to 1650°C is not over 5%; all percentages of the materials in the composition being by weight and based on the total weight of the composition.

3,868,262

METHODS IN THE PRODUCTION OF PLANT-MIXED ASPHALT CONCRETE

Karl Gunnar Ohlson, Vikingaleden 28, Hassleholm, Sweden
Continuation-in-part of Ser. No. 193,205, Oct. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 137,701, April 26, 1971, abandoned. This application July 20, 1973, Ser. No. 381,130
Int. Cl. C08h *13/00, 17/04*
U.S. Cl. 106—281 R **4 Claims**

1. In a method for the production of stable homogeneous a plant-mixed asphalt mix for paving purposes by mixing a batch of bituminous binder and a batch of mineral aggregate in a mixer at a temperature at which said binder has a viscosity of at least 150 cSt, said batch of mineral aggregate containing both particles above 2 mm and particles within the range of 2–0.5 mm and also smaller particles, said batch of mineral aggregate being divided into a first and a second part, said first part being first mixed in the mixer with said batch of binder whereafter said second part is introduced into the mixer and the mixing is continued until mixing is completed, the improvement comprising dividing said batch of mineral aggregate into said first and second parts in such a way that said second part contains particles of said mineral aggregate batch within the range 2–0.5 mm and smaller, whereby said bituminous binder and mineral aggregate produce a mixture having high homogeneity without separations in the mineral aggregate composition and without agglomeration of particle sizes within the range 2–0.5mm.

3,868,263

METHOD OF MAKING A PAVING COMPOSITION

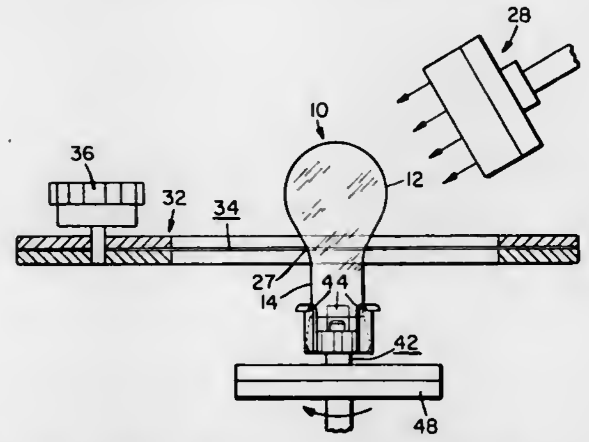
Kenneth E. McConnaughay, P.O. Box 1457, Lafayette, Ind. 46202
Filed June 22, 1970, Ser. No. 48,512
Int. Cl. C08h *13/00, 17/02, 17/22*
U.S. Cl. 106—281 **4 Claims**

1. A method of making a paving composition, comprising the steps of mixing with an aggregate a primary bituminous binder to produce a premix of binder-coated aggregate, said primary binder consisting of a bituminous material selected from the class consisting of asphalt, tar, pitch, emulsified and cut back forms thereof, and combinations thereof, and from about **0.05** percent to about **10** percent of an adhesion promoter based upon the weight of the nondistillable solids in said bituminous material, said premix containing from about 1 percent to about 3.5 percent of nondistillable solids from said primary binder based upon the weight of said aggregate, said adhesion promoter being selected from the class consisting of the primary, secondary, tertiary, and quartenary amines and imidazolines; amines and imidazolines reacted with hydrochloric, sulfuric, acetic and fatty acids; metal soaps; rosins, fatty acids and pitches reacted with aluminum sulfate, sodium chromate, potassium chromate, chromic acid, hydrated lime, ammonia, or the hydroxides and halides of the alkali metals and alkaline metal earths; and the like, allowing said primary binder to cure for at least 24 hours on the aggregate in said premix and adhere to said aggregate, and then mixing with said premix a secondary bituminous binder to form said paving composition, said paving composition containing from about 2 percent to about 7 percent of nondistillable solids from said secondary binder based upon the weight of said aggregate, said primary binder having a kinematic viscosity at 140° F. of from about 20 cSt. to about 6,000 cSt. and said secondary binder having an absolute viscosity at 140° F. of from about 200 poises to about 4,000 poises.

3,868,264

METHOD OF APPLYING LIGHT DIFFUSING COATING TO INTERIOR OF INCANDESCENT LAMP ENVELOPE

Howard E. Kellberg, Corning, and Dale F. Maynard, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Mar. 21, 1973, Ser. No. 343,468
Int. Cl. B44d *1/46;* **B05c** *11/00*
U.S. Cl. 117—10 **4 Claims**

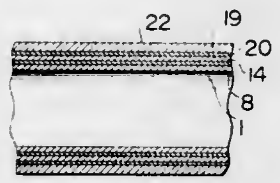


1. A process for providing selected portions only of the interior surface of a glass lamp envelope with a light-diffusing coating comprising the steps of:
- a. applying an aqueous slurry coating consisting essentially of clay and a high majority by weight of water, to the entire interior surface of a glass incandescent envelope having an upper, closed bulbous portion and a lower open end neck portion adjacent said closed bulbous portion;
- b. maintaining said envelope in an upright, vertical open-end-down position;
- c. placing a condensing means below said bulbous portion and in close proximity to an area corresponding to an annular surface band on the inner surface of the upper end of said neck portion;
- d. applying heat solely to said closed bulbous portion to vaporize water from said slurry coating on the interior surface of said closed bulbous portion to dry said slurry coating on said closed portion; and
- e. condensing on said annular surface band of said neck portion the water vaporized from said slurry coating on said closed bulbous portion at a rate sufficient to cause the vaporized water to run down said open end neck portion and substantially remove the slurry coating from said open end neck portion inner surface blow said condensing means.

3,868,265

METHOD OF MANUFACTURING COATED STEEL PIPES

Tomoharu Sakai, Toyonaka, and Kaname Matsui, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan
Filed Sept. 6, 1972, Ser. No. 286,825
Claims priority, application Japan, Sept. 6, 1971, 46-69112; Sept. 18, 1971, 46-72821
Int. Cl. B44c *1/094, 1/114*
U.S. Cl. 117—18 **3 Claims**

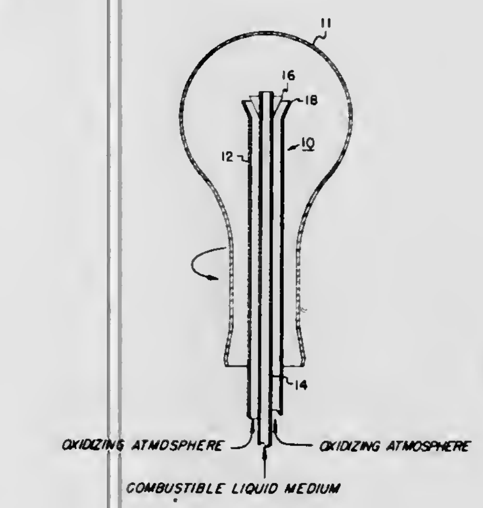


1. A method of producing coated steel pipes, comprising the steps of: preheating a steel pipe to a predetermined temperature; spraying a powdery modified thermoplastic synthetic resin over the outer surface of such preheated steel pipe, so as to form a sticky thin film having a thickness of 0.1–0.3mm; forming an inner layer on such steel pipe by coating a non-rigid synthetic resin in a sticky state onto the sticky thin film by the use of a first extruding head; forming an outer layer on such steel pipe by coating a rigid synthetic resin in a sticky state and of a chemically similar type of material as that of the non-rigid synthetic resin onto the inner layer by use of a second extruding head, thereby forming a blended intermediate layer between the inner and outer layers; and, forcibly pressing the inner and outer layers onto the entire surface of such steel pipe by the use of a plurality of press rollers made of a heat-resisting rubber with a hardness of 30 to 70.

3,868,266

ALUMINA COATINGS FOR AN ELECTRIC LAMP

David C. Henderson, Chagrin Falls, and Kenneth M. Maloney, Shaker Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed June 21, 1973, Ser. No. 372,132
Int. Cl. C03c *17/06*
U.S. Cl. 117—18 **9 Claims**



1. A method of depositing a light-diffusion coating upon the internal surface of a lamp glass envelope which comprises:
- a. forming a combustible liquid medium with a liquid organic aluminum compound or by dissolving a solid organic aluminum compound in an organic liquid solvent
- b. burning said combustible liquid medium within the lamp glass envelope utilizing an oxygen containing atmosphere to form a moving gas stream having spherical alumina particles with an individual particle size range from approximately **400** A to **5,000** A in diameter being suspended in said gas stream, and
- c. controlling the flow rate of the moving gas stream within the lamp glass envelope to uniformly deposit the alumina particles upon the untreated internal surface of the lamp glass envelope.

3,868,267

METHOD OF MAKING GRADIENT CERAMIC-METAL MATERIAL

George E. Gazza, Sudbury, Mass., and Michael W. Lindley, Holton Heath, England, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 9, 1972, Ser. No. 305,047
Int. Cl. C03c *17/06*
U.S. Cl. 117—22 **7 Claims**

1. A method for the fabrication of a ceramic-metal material comprising the steps of:
- a. selecting two separate volumes of a ceramic material said separate volumes having different particle sizes,
- b. placing said separate volumes of a ceramic material adjacent and abutting each other,
- c. cold compressing said separate volumes together to form a porous gradient ceramic compact having an interface at the points of abuttment of said separate volumes,
- d. contacting the first of said separate volumes of said ceramic compact with a first metal powder,
- e. heating in a vacuum said first separate volume in contact with a first metal powder above the melting point of said first metal powder so that the molten said first metal powder impregnates the said first separate volume by infiltration,
- f. contacting second said separate volume of said ceramic compact with a second metal powder having a lower melting point than the said first metal powder, and
- g. heating in a vacuum said second metal powder in contact with said second separate volume above the melting point of said second metal powder but below the melting point of said first metal powder so that the molten said second metal powder impregnates the second said separate volume by infiltration.

5. A method for the fabrication of a ceramic-metal material comprising the steps of:
- a. selecting two separate volumes of a ceramic material said separate volumes being different ceramic materials,

Al B_{12} – Si – Al (13X)

- b. placing said separate volumes of a ceramic material adjacent and abutting each other,
- c. cold compressing said separate volumes together to form a porous ceramic compact having an interface at the points of abuttment of said separate volumes of different ceramic materials,
- d. contacting the first of said separate volumes of said ceramic compact with a first metal powder,
- e. heating in a vacuum first of said separate volume in contact with a first metal powder above the melting point of said first metal powder so that the molten said first metal powder impregnates the said first separate volume by infiltration,
- f. contacting the second of said separate volume of said ceramic compact with a second metal powder having a lower melting point than the said first metal powder, and
- g. heating in a vacuum said second separate volume of said ceramic compact in contact with said second metal powder above the melting point of said second metal powder but below the melting point of said first metal powder so that the molten said second metal powder impregnates the said second separate volume by infiltration.

3,868,268

UNDER-WATER SPRAYING

Nicholas Norbert Tusch, London; Robert Ian Watson, Blackburn, and Jack Taylor, Accrington, all of England, assignors to Colebrand Limited, London, England
Division of Ser. No. 174,445, Aug. 24, 1971, Pat. No. 3,788,273. This application Aug. 27, 1973, Ser. No. 391,714
Int. Cl. B05c *5/02*
U.S. Cl. 117—104 R **14 Claims**

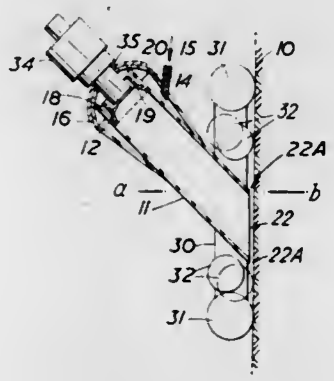
1. Method of coating a submerged surface by spraying with a liquid, comprising the steps of;
- passing over the surface the margin of an opening which is of relatively short dimension in the direction of such

passage and of relatively long dimension in the direction across such passage,

maintaining the margin so that at least its trailing edge of longer dimension in relation to the sense of direction of passage is spaced from the surface by a gap which leads from the opening of an otherwise water-tight hollow shield,

supplying into the shield compressed air through its inlet at a sufficient pressure and rate to keep the interior of the shield purged of water whilst escaping through the gap,

and projecting the liquid to the surface from a source which is inside the shield and spaced from the surface as a spray of droplets in a sheet-like pattern corresponding in short and long dimensions to the opening but smaller, the spray of droplets being assisted in its passage toward the opening by the compressed air,



the velocity of projection of the droplets and their mass being such that at least a majority of them penetrate the volume of intervening air maintained within the shield and such film of water as there may be on the surface so as to reach the surface and form thereon a continuous film, the gap between the surface and the margin of the opening being maintained so as to prevent water from entering the shield by the flow of compressed air passing through the gap from the shield.

3,868,269
FLAME RESISTANT ORGANIC TEXTILE THROUGH TREATMENT WITH HALOGEN CONTAINING SOLUBLE METHYLOL PHOSPHINE ADDUCTS

Donald J. Daigle, New Orleans; Wilson A. Reeves, and George L. Drake, Jr, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 141,447, May 7, 1971, Pat. No. 3,745,191. This application Dec. 15, 1972, Ser. No. 315,738

Int. Cl. C09d *5/18*

U.S. Cl. 117—136 **3 Claims**

1. A process for producing flame-resistant textiles, said process comprising:

a. impregnating a textile with a solution containing an acid-producing catalyst, an amine or amide nitrogenous compound having at least two members of the group consisting of hydrogen atoms and methylol radicals attached to trivalent nitrogen atoms, and an adduct made by reacting tris(hydroxymethyl)phosphine with an essentially mmonomeric, halogen-containing phenolic compound having at least one hydrogen atom attached to a ring carbon atom at a position ortho or para to the phenolic hydroxyl group by heating and agitating a solution containing at least an equimolar to a molar excess of said tris(hydroxymethyl)phosphine relative to said phenolic compound so that the number of methylol phosphorus radicals is greater than the number of hydrogen atoms attached to ring carbon atoms ortho or para to the phenolic hydroxyl group thereby providing an excess of methylol phosphorus radicals (PCH_2OH) in the resulting adduct; and

b. heating the impregnated textile for from about 90° to 170°C until the adduct and nitrogenous compound have reacted to produce an insoluble product.

3,868,270
FIBERS WITH FINISH CONTAINING ORGANIC PHOSPHATES AND SULPHATES

Thomas Jefferson Proffitt, Jr., Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 4, 1972, Ser. No. 311,778

Int. Cl. C08j *1/44*

U.S. Cl. 117—139.5 CQ **3 Claims**

1. A fiber coated with a finish composition consisting essentially of, by weight, from 60 to 70 percent of diethanolamine salts of a mixture of monoalkyl and dialkyl orthophosphates wherein the alkyl groups contain 8 to 14 carbon atoms, and from 40 to 30 percent of a mixture of alkyltrimethylammonium methosulfates wherein the alkyl groups contain at least 8 carbon atoms.

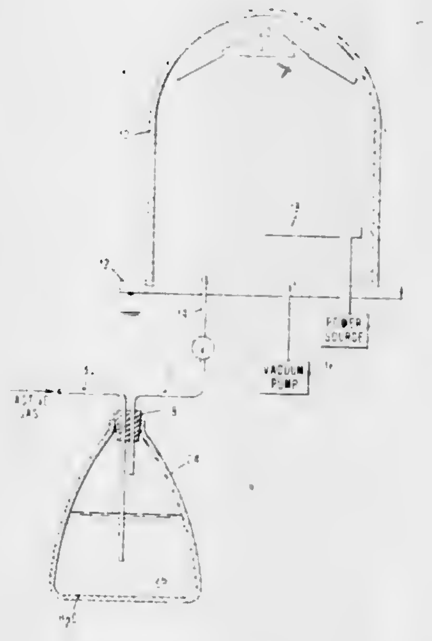
3,868,271
METHOD OF CLEANING A GLASS SUBSTRATE BY IONIC BOMBARDMENT IN A WET ACTIVE GAS

Neil M. Poley, and Howard L. Whitaker, both of Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 13, 1973, Ser. No. 369,620

Int. Cl. B08b *3/00;* **C03c** *23/00*

U.S. Cl. 134—1 **8 Claims**



1. In a method for cleaning a glass substrate, the steps of:

placing said substrate within an ionic bombardment apparatus;

substantially filling said apparatus with a wet active gas under low pressure, said wet active gas being substantially saturated with water at 22°C; and

applying an electrical potential between an anode and a cathode within said apparatus to cause ionic bombardment of said substrate in said wet active gas.

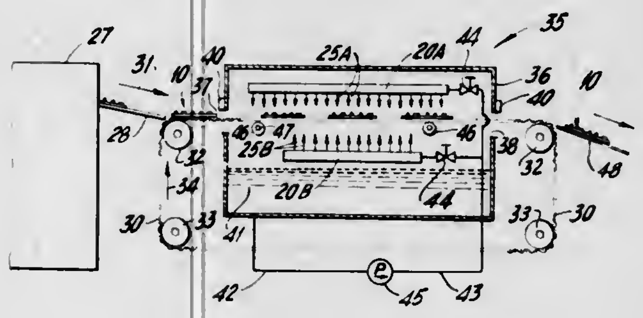
3,868,272
CLEANING OF PRINTED CIRCUIT BOARDS BY SOLID AND COHERENT JETS OF CLEANING LIQUID

Louis V. Tardoskegyi, Montreal, Quebec, Canada, assignor to Electrovert Manufacturing Co. Ltd., Montreal, Quebec, Canada

Filed Mar. 5, 1973, Ser. No. 337,922

Int. Cl. B08b *3/02*

U.S. Cl. 134—26 **12 Claims**



1. A method of cleaning printed circuit boards having components mounted on their upper surfaces, and which have been fluxed and soldered and have had leads of the components connected to the printed circuitry thereof by fluxing and soldering, said method comprising the steps of supporting each printed circuit board directly on a perforated support on which the printed circuit board is held initially solely by gravity; while the printed circuit board is thus supported, directing a multiplicity of closely laterally spaced, high velocity first solid and coherent jets of cleaning liquid, having a substantially continuously uniform small cross-section, perpendicularly against the entire upper surface of the printed circuit board and against the components thereon, to impact the board at high velocity to penetrate the overlying liquid residue, resulting from the fluxing and soldering, on the upper surface of the printed circuit board and to be deflected laterally over the board surface to sweep the liquid off the printed circuit board to clean the upper surface of the printed circuit board, and to impinge laterally against the components and the component leads to clean the same; and while the printed circuit board is pressed against the perforated support by the first solid and coherent high velocity liquid jets, directing a multiplicity of closely laterally spaced, high velocity second solid and coherent jets of cleaning liquid, having a substantially continuously uniform small cross-section, perpendicularly against the entire bottom surface of the printed circuit board, to impact the board at high velocity to penetrate the liquid residue, resulting from the fluxing and soldering, on the bottom surface of the printed circuit board and to be deflected laterally over the board surface to sweep the liquid off the printed circuit board to clean the bottom surface thereof; the perforated support being moved along a path of travel intersecting the first and second solid coherent jets to bring the printed circuit boards into operative association with the jets and to move the printed circuit boards out of operative association with the jets; the solid coherent jets being arranged in closely uniformly laterally spaced relation in successive rows extending laterally of the path of travel, with each successive row being progressively laterally offset through a small distance relative to the immediately preceding row whereby substantially every discrete area on the board surfaces is impacted by at least one jet.

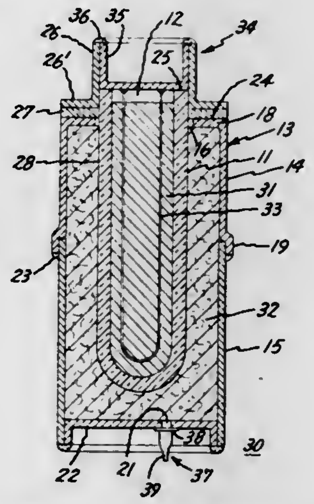
3,868,273
BATTERY CASING AND SEALED PRIMARY SODIUM-HALOGEN BATTERY

Fritz G. Will, Scotia, and Robert R. Dubin, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,419

Int. Cl. H01m *23/00*

U.S. Cl. 136—83 R **3 Claims**



1. A sealed primary sodium-halogen battery comprising an inner casing of a solid sodium ion-conductive material with one open end, an electronic conductor within the interior surface of the inner casing and extending outwardly through the open end of the inner casing, an outer metallic casing comprising an upper portion and a lower portion, the upper portion with opposite open ends, an inwardly extending flange affixed to the upper portion at its first open end, the lower portion with an open end and a closed end, the upper and lower portions joined together at their associated open ends, the outer metallic casing surrounding the inner casing with the exterior surface of the flange on a lower plane than the surface of the open end of the inner casing and spaced from the inner casing, a metallic closure consisting of an insert portion and of a cap portion, the insert portion sealing the open end of the inner casing, the cap portion with a flange positioned adjacent the flange of the upper portion of the outer metallic casing, a low single temperature melting glass seal sealing together the adjacent flanges of the upper portion of the outer metallic casing and of the cap portion of the insert and sealing the flanges to the outer wall of the inner casing adjacent its open end, the electronic conductor within the inner casing and extending outwardly through the open end of the inner casing affixed to the insert portion, an anode selected from the class consisting of sodium, sodium as an amalgam, and sodium in a nonaqueous electrolyte in one of the casings, and a cathode in the other casing, the cathode comprising a mixture of bromine and a mixture of bromine and iodine with from 5 to 60 weight percent iodine in electrically conductive material and with dissolved small amounts of additives.

3,868,274
METHOD FOR FABRICATING MOS DEVICES WITH A MULTIPLICITY OF THRESHOLDS ON A SINGLE SEMICONDUCTOR SUBSTRATE

Robert J. Hubar, Bountiful; Kent F. Smith, Salt Lake City; James N. Fordemwalt, Salt Lake City, and John W. Hanson, Salt Lake City, all of Utah, assignors to General Instrument Corporation, Newark, N.J.

Filed Jan. 2, 1974, Ser. No. 430,025

Int. Cl. H01l *7/00*

U.S. Cl. 148—1.5 **19 Claims**

1. A process for forming metal oxide semiconductor devices having a multiplicity of threshold voltages on a single semiconductor substrate comprising the steps of doping selected portions of the exposed substrate with a dopant of conductivity-determining type opposite the conductivity type of the substrate to form source and drain regions for a plurality of semiconductor devices, introducing a first conductivity-

determining type impurity into the substrate at the surface thereof in regions corresponding to first selected devices and not in regions corresponding to second selected devices, and introducing a second conductivity type determining impurity into the substrate at the surface thereof in regions corresponding to said second selected devices, and forming the source, drain and gate electrodes for each device.

3,868,275

MANUFACTURE OF SILVER-CADMIUM OXIDE WIRE

Loren Godfrey, Morristown, and Krishnamurthy Vaithinathan, Edison, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed June 12, 1973, Ser. No. 369,317

Int. Cl. C23c *11/00*; C21d ; C22c *5/00*

U.S. Cl. 148—6.3 **22 Claims**

1. A method for the manufacture of silver-cadmium oxide wire having the diameter D_f which comprises forming from silver-cadmium alloy wire having the diameter from about 1.5 to about 3 D_f, subjecting the resulting formed wire to a first stage oxidation at a temperature in the range from about 1,450° to about 1,550°F. in contact with air or oxygen-enriched air or oxygen for a period of time to effect oxidation of the wire to about 15–30% of the matrix area thereof, drawing the resulting first stage oxidized wire to a diameter in the range from about 1.2 to about 2 D_f, subjecting the thus-drawn first stage oxidized wire to a second stage oxidation at a temperature in the range 1,450°–1,550°F. in contact with air or oxygen-enriched air or oxygen for a period of time sufficient to effect oxidation of about 30–50% of the matrix area thereof, drawing the wire resulting from the second stage oxidation to a diameter in the range 1.1–1.5 D_f, subjecting the thus-drawn second stage oxidized wire to a third stage oxidation at a temperature in the range 1,450°–1,550°F. in contact with air or oxygen-enriched air or oxygen until 100% of the matrix area of the wire has been oxidized, subjecting the resulting third stage oxidized wire to drawing to about D_f.

3,868,276

PROCESS FOR TREATING METAL ARTICLES

Malcolm H. Shatz, Williamsville, N.Y., and Edward Leon, Parkersburg, W. Va., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 12, 1973, Ser. No. 323,176

Int. Cl. C23f *7/08*

U.S. Cl. 148—6.15 R **8 Claims**

1. A process for treating surfaces of zinc, aluminum, ferrous metal and alloys of these to render them corrosion-resistant, paint-receptive and paint-retentive which comprises

a. applying to said surface a non-aqueous phosphatizing composition which consists essentially of 0.1 to 2.0 percent by weight phosphoric acid, 3 to 10 percent by weight of a novolac phenol-formaldehyde resin having a molecular weight of from about 300 to 5000 and a non-aqueous solvent for said phosphoric acid and said resin, said phosphatizing composition being applied in an amount sufficient to provide on said surface a resin coating weight of from about 4 to 400 milligrams per square foot and

b. thereafter, heating the thus-treated surface at a temperature of at least about 190°C in the presence of an oxygen-containing atmosphere for a period of from about 15 seconds to 5 minutes.

3,868,277

METHOD OF PRODUCING A STEEL PRODUCT HAVING AN OXIDATION-RESISTANT COATING

Vincent Marguerite Leroy, Liege, and Roland Cesar Amand Liesenborghs, Sclessin, both of Belgium, assignors to Societe Anonyme Cockerill-Ougree-Providence et esperance-Longdoz en Abrege Cockerill, Seraing, Belgium

Filed Jan. 30, 1974, Ser. No. 437,916

Claims priority, application Belgium, Jan. 30, 1973, 79475

Int. Cl. C23c *13/02*

U.S. Cl. 148—12.1 **8 Claims**

1. A method of producing a steel product having a decarburized oxidation-resistant coating, comprising the steps of depositing on a mild steel substrate a coating of at least one oxidation-resistant material selected from the group consisting of the metals Cr, Ni, Co, and Mo, alloys of at least two of these metals with each other, and alloys of at least one of these metals with iron or other elements; and then subjecting the coated substrate to heat treatment to cause diffusion of constituents of the substrate and coating, the heat treatment comprising the following three stages in sequence;

a. a preliminary diffusion stage in a dry hydrogen atmosphere;

b. a decarburization stage in a decarburizing atmosphere; and

c. a final diffusion stage in a dry hydrogen atmosphere.

3,868,278

DOUBLY ORIENTED COBALT IRON ALLOYS

Karl Foster, and Donald R. Thornburg, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 228,070, Feb. 22, 1972, abandoned. This application Sept. 28, 1973, Ser. No. 401,766

Int. Cl. C04b *35/00*

U.S. Cl. 148—31.55 **4 Claims**

1. An alloy member which exhibits improved permeabilities at low field strengths resulting from crystallographic orientation compared to unoriented magnetic material of the same chemical composition consisting essentially of from about 5 percent to about 35 percent cobalt, less than 0.3 percent chromium, up to 0.3 percent manganese, up to 3 percent silicon, less than 0.03 percent carbon and the balance iron with incidental impurities, said alloy having a primary recrystallized microstructure in which a major proportion of the grains exhibit a (100) texture within 10° of the surface of the alloy and in which a major proportion of the oriented grains have cube or edges of their crystal lattices aligned within 10° of the rolling direction.

3,868,279

HIGH DAMPING COPPER-MANGANESE-ALUMINUM ALLOY

Joseph F. Nachman, and Alvin N. Hammer, both of San Diego, Calif., assignors to International Copper Research Association Inc., New York, N.Y.

Division of Ser. No. 187,811, Oct. 8, 1971, abandoned. This application Nov. 17, 1972, Ser. No. 307,363

Int. Cl. C22c *9/00*; C22f *1/08*

U.S. Cl. 148—160 **4 Claims**

3. The method of increasing the mechanical damping properties of an alloy consisting essentially of 32 to 42 percent by weight manganese, 2 to 4 percent by weight aluminum, and the balance copper which comprises annealing the alloy at a temperature in the range from 1200°F to 1400°F., then quenching the alloy to room temperature, then reheating the alloy to a temperature in the range from 400°F. to 550°F for a period of time from 12 to 20 hours, then further aging at a temperature in the range from 800 to 900°F for a period of time from 1½ hours to 4 hours, and then cooling to room temperature.

3,868,280

METHOD OF FORMING ELECTRIC INSULATING FILMS ORIENTED SILICON STEEL

Takaaki Yamamoto, 1420-5 Hattanda, Oaza Ohura, Yawata-ku; Kaneo Akanuma, 2406 Oaza Hikino, Yawata-ku, and Osamu Tanaka, 1103 Shimo-Kojiyaku, Yawata-ku, all of Kitakyushu, Japan

Continuation of Ser. No. 207,524, Dec. 13, 1971, abandoned, which is a division of Ser. No. 781,963, Dec. 6, 1968, Pat. No. 3,627,524. This application Aug. 16, 1973, Ser. No. 388,790

Claims priority, application Japan, Dec. 12, 1967, 42-79243

Int. Cl. Holf *1/04*

U.S. Cl. 148—113 **6 Claims**

1. A method for producing an electrical insulation film on an oriented cold-rolled silicon steel sheet containing 0.01 to 0.09 wt percent sol. Al, consisting essentially of the steps of first subjecting the silicon steel sheet to a heat-treatment at a temperature of 700° to 900°C in a reducing atmosphere of either hydrogen or an atmosphere containing dissociated ammonia having a dew point of 55° to 70°C for at least one minute; applying to the surface of the steel sheet an aqueous slurry of a mixture of (1) 2 to 40 parts by weight of at least one compound selected from the group consisting of an oxide of Ti and a hydroxide of Ti, and (2) 100 parts of by weight of a compound selected from the groups consisting of an oxide of Mg and a hydroxide of Mg; drying the steel sheet coated with the slurry, and annealing the said steel sheet in a hydrogen-containing atmosphere at a temperature above 1,100°C.

3,868,281

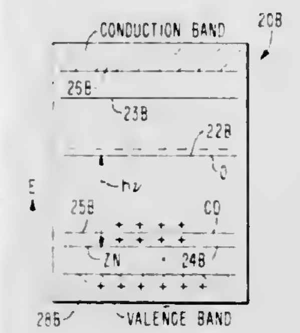
LUMINESCENT DEVICE AND METHOD THEREFOR

Thomas Nolen Morgan, Carmel, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 742,817, July 5, 1968, abandoned. This application May 24, 1973, Ser. No. 363,679

Int. Cl. H05b *33/00*

U.S. Cl. 148—190 **2 Claims**



1. Method of controlling the efficiency of emitted recombination radiation from a luminescent device comprising a semiconductor GaP crystalline region having a deep level dopant impurity oxygen of one conductivity type in a concentration of approximately 10^{16} to 10^{17} atoms/cc^3 and being susceptible of storing recombination energy in electron-hole pairs, said device having substantially only one predominant peak of emitted recombination radiation corresponding to zinc-oxygen pairs of atoms comprising the steps of:

doping said crystalline region of said luminescent device with one shallow level dopant impurity zinc of opposite conductivity type in a concentration approximately 10 times said concentration of oxygen for controlling radiative transitions of said recombination energy;

doping said crystalline region of said luminescent device with another shallow level dopant impurity of said one conductivity type for compensating said one dopant impurity zinc of said opposite conductivity type, said another shallow level dopant impurity being selected from the group consisting of sulphur, selenium, tellurium and silicon;

doping said crystalline region of said luminescent device with another shallow level dopant impurity cadmium of said opposite conductivity type in a concentration approximately equal to said concentration of oxygen for controlling nonradiative transitions of said recombination energy;

heating said crystalline region to disassociate both zinc-oxygen pairs of atoms and cadmium-oxygen pairs of atoms in said crystalline region; and

annealing said crystalline region to enhance the concentration of associated zinc-oxygen pairs of atoms therein relative to the concentration of associated cadmium-oxygen pairs of atoms therein;

whereby said output recombination from said luminescent device has said one predominant peak due to said associated zinc-oxygen pairs of atoms therein and has efficiency due to isolated cadmium atoms therein.

3,868,282

DOUBLE-BASE PROPELLANT CONTAINING A UREIDE AND A RESORCYLATE

Joseph W. Lavitt, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 7, 1967, Ser. No. 645,565

Int. Cl. C06b *5/04*

U.S. Cl. 149—98 **18 Claims**

1. In a smokeless double-base propellant containing nitrocellulose and nitroglycerin, the improvement consisting of the incorporation in said propellant of the sodium salt of a ureide and a lead resorcylate to produce the synergistic effects of cleaner exhaust, a burning rate of over about 0.25 inches per second, and an operating pressure of over about 1000 pounds per square inch.

3,868,283

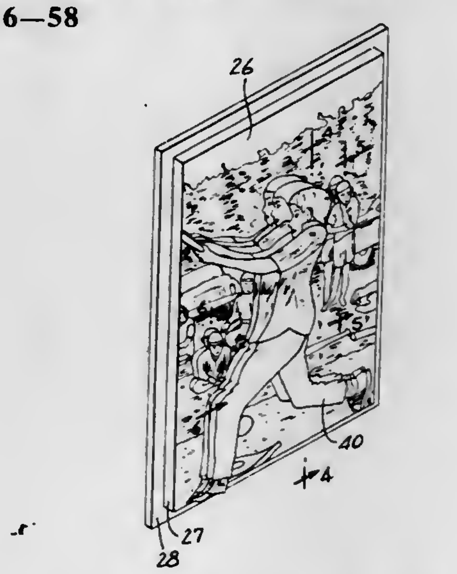
METHOD OF MAKING COMPOSITE THREE DIMENSIONAL PICTURE

Stuart R. Scheyer, Glencoe, Ill., assignor to Condecor Incorporated, Mundelein, Ill.

Filed Nov. 17, 1972, Ser. No. 307,476

Int. Cl. B44c *3/02*; G09f *1/12*

U.S. Cl. 156—58 **3 Claims**



1. A method for making a composite pictorial representation having a three dimensional effect, comprising the steps of: providing multiple copies of a picture for which the three dimensional effect is to be achieved;

attaching a first one of said pictures to a backing material; cutting away everything but the middle ground portions of a second one of said pictures and attaching said middle ground portion to said first one of said pictures in spaced relation to thereby emphasize said middle ground portion of said second one of said pictures;

cutting away everything but certain foreground portions from a third one of said pictures and attaching it in spaced relation overlying said attached second middle ground portion to thereby emphasize said foreground portion of said third picture;

individually bending selected ones of said middle and foreground portions of said picture to slopingly converge horizontally and vertically upon sub-adjacent portions to simulate natural continuity of the subject matter of the picture to produce a composite pictorial representation having the background, middle ground and foreground of said picture appearing in successively forwardly spaced layers and provide a visual three dimensional effect of the subject matter in said picture.

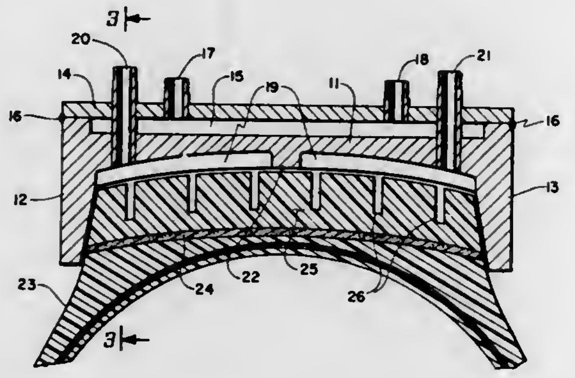
3,868,284
TIRE RETREADING APPARATUS AND METHOD

Bernard E. Hogan, Sr., and John P. Hogan, both of 358 Carol Ct., Mankato, Minn. 56001

Filed Oct. 9, 1973, Ser. No. 404,192

Int. Cl. B29h *5/04*, *5/16*

U.S. Cl. 156—96 **8 Claims**



1. Apparatus for bonding a precured tread to a tire carcass without application of heat to the tire carcass sidewalls comprising a cylindrical band assembly having a substantially smooth interior surface, spaced parallel flange members in heat conducting relationship with and extending inwardly from and around said interior surface to define a precured tread aligning and engaging cavity adapted to be occupied by a precured tread, said inner surface having a plurality of spaced transverse slots positioned therein, port means in fluid communication with said slots for injection of fluid into said cavity for applying fluid pressure to the tread surface of said precured tread, and means for heating said band assembly so that heat and pressure are applied from said assembly through said precured tread to bond said tread to an underlying tire carcass.

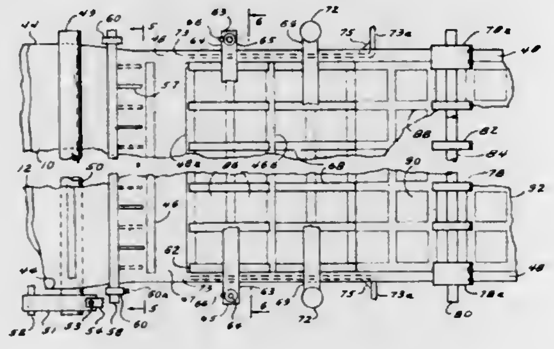
3,868,285
METHODS AND APPARATUS FOR THE MANUFACTURE OF CELLULAR CUSHIONING MATERIALS

Constantine T. Troy, 1330 Cleveland Ave., Wyomissing, Pa. 19610

Filed July 18, 1973, Ser. No. 380,303

Int. Cl. A63b *41/00*; B32b *31/00*

U.S. Cl. 156—147 **14 Claims**



1. A method for the manufacture of a closed-cell cushioning material from a prefab, said prefab comprising longitudinally-extending flat sheets of thermoplastic films with said sheets in superposed relationship to one another and defining exposed outer faces, said prefab having longitudinal marginal seals and transversely-extending spaced cross seals terminating relatively adjacent to but spaced from said marginal seals, the method comprising maintaining longitudinal tension on said sheets, longitudinally advancing said sheets while maintaining said marginal seals in predetermined relationship to each other, introducing a gas under pressure into the unsealed spaces between said sheets during said advancement to inflate the same and simultaneously limiting said inflation to a predetermined extent along spaced longitudinal lines of said sheets, and thereafter forming long seals by sealing said sheets together along said spaced longitudinal lines.

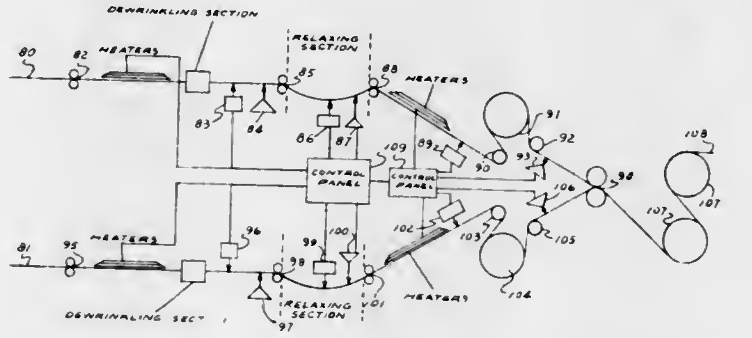
3,868,286
PROCESS FOR PREPARING A POLYVINYL BUTYRAL COMPOSITE INTERLAYER FOR LAMINATED SAFETY GLASS

Robert H. Fariss, Amherst, and Andrew D. Skibo, Monson, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1973, Ser. No. 355,120

Int. Cl. B32b *27/42*

U.S. Cl. 156—163 **4 Claims**



1. A process for preparing a composite interlayer for laminated safety glass which comprises:

- A. 1. passing a first continuous sheet of plasticized polyvinyl butyral between a first set of nip rolls to impart machine direction sheet tension and drawdown into the sheet;
  - 2. adjusting the temperature of the first sheet to a temperature in the range of from 90° to 180°F. while removing any wrinkles in the sheet;
  - 3. allowing the first sheet to droop in a catenary loop between a second and third set of nip rolls to obtain a shrink level of less than 4 percent;
  - 4. adjusting the temperature of the first sheet to a temperature in the range of from 90° to 180°F.; and simultaneous with steps 1 to 4 above;
- B. 1. passing a second continuous sheet of plasticized polyvinyl butyral which is printed on one side with a color gradient, between a second set of nip rolls to impart machine direction sheet tension and drawdown into the sheet; and
  - 2. adjusting the temperature of the second sheet to a temperature in the range of 90° to 180°F. while removing any wrinkles in the sheet;
  - 3. allowing the second sheet to droop in a catenary loop between the nip rolls to obtain a shrink level of less than 4 percent;
  - 4. adjusting the temperature of the second sheet to a temperature in the range of from 90° to 180°F.; and
- C. 1. passing the first and second sheets into a combining nip where they are combined wherein the printed surface of the second sheet of polyvinyl butyral is combined to the first sheet so as to provide a composite wherein the bond strength between the first and second sheet is at least 2 lbs./inch;
  - 2. cooling the resulting composite;

wherein the process steps outlined in A and B above are controlled to provide substantially the same line speed, sheet tension and temperature in each of the first and second sheets of plasticized polyvinyl butyral being fed into the combining nip.

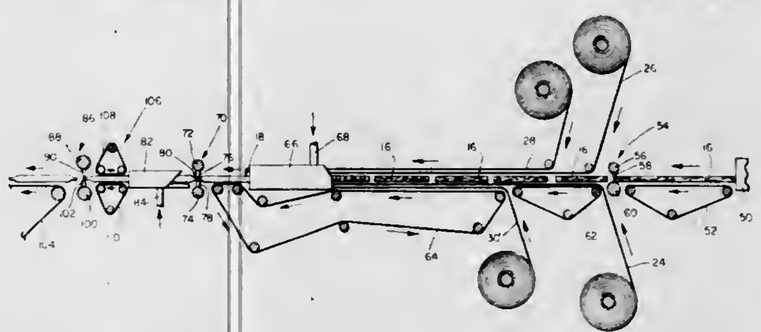
3,868,287
ABSORBENT PAD AND METHOD FOR MAKING SAME

Roman Lewyckyj, Philadelphia, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Division of Ser. No. 137,839, April 27, 1971, abandoned. This application May 30, 1973, Ser. No. 365,205

Int. Cl. B31f *1/00*; B32b *31/10*, *31/20*

U.S. Cl. 156—201 **6 Claims**



1. A method for continuously manufacturing elongate, disposable absorbent pads comprising the steps of:

- a. continuously forming discrete, elongate, absorbent fluff batts of cellulosic fibers;
- b. feeding said fluff batts in their direction of elongation in spaced relation to each other, said fluff batts being spaced from each other in said direction of elongation;
- c. disposing said fluff batts within a fibrous envelope as said fluff batts are fed in their direction of elongation to form a continuous composite structure comprising said spaced fluff batts disposed within said fibrous envelope;
- d. maintaining sufficient tension on said fibrous envelope in the direction of feed to prevent undesirable movement of said continuous composite structure in a direction transverse to said feed direction;
- e. transversely closing and sealing said fibrous envelope in regions intermediate adjacent fluff batts by:
  - 1. forming a transversely extending seal band having a seal row of transversely adjacent ridges and valleys interconnected by lateral walls on each of the opposed surfaces of said fibrous envelope, and
  - 2. transversely compressing the lateral walls of said seal row to form weakened seal regions only in said lateral walls, said weakened seal regions, in the plane of said composite structure, being disposed only in the direction of feed of the composite structure, said weakened seal regions being characterized by interlocked fibers of said fibrous envelope for maintaining the seal band in a closed condition; and
- f. transversely severing said continuous composite structure within the confines of said transversely extending seal band to form individual elongate absorbent pads having sealed end margins.

3,868,288
PRODUCING AN APPLIQUE THERMOPLASTIC ARTICLE

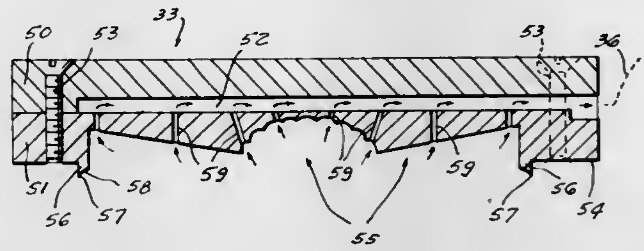
Andrew Ercolano, 30 Haywood St., Bound Brook, N.J. 08805

Filed July 3, 1972, Ser. No. 268,636

Int. Cl. B32b *31/00*, *3/00*

U.S. Cl. 156—248 **4 Claims**

1. Method of producing an applique article, comprising the steps of placing a layer of thermoplastic sheet material into a substrate so that a surface of said layer is exposed; heating and softening said layer of thermoplastic sheet material; pressing the softened thermoplastic sheet material at selected portions of said surface against and bonding it to said substrate, one of said selected portions being a circumferentially complete annular bonding zone; subjecting the remaining portions of said surface of the layer of said heated thermoplastic sheet material, while said selected portions are bonded to said substrate, to a suction requisite, for lifting said remaining portions off said substrate; vacuum-forming a three-dimensional pattern in said remaining portions of the softened thermoplastic sheet material concomitantly with the step of lifting said remaining portions by suction; and cutting through at least said layer outwardly adjacent and along said annular bonding zone, at least said pressing step, said suction step, said forming step and said cutting step being carried out simultaneously.



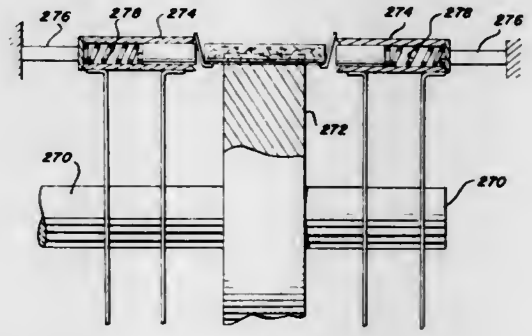
3,868,289
APPARATUS AND METHOD FOR MANUFACTURING JET IMPINGEMENT TYPE FILTERS FOR SMOKING ARTICLES

Hoyt S. Beard; Leslie E. Payne, and Colin S. McArthur, all of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 171,448, Aug. 13, 1971, Pat. No. 3,779,849. This application June 26, 1973, Ser. No. 373,863

Int. Cl. B31f *1/00*

U.S. Cl. 156—443 **3 Claims**



1. An apparatus for preparing a smoking article having a filter plug which comprises:

- a. female die means disposed to receive elongated rods of smoke pervious filter material having ends which are substantially perpendicular to the axis of the rod;
- b. means for successively feeding tabs of normally substantially air impervious sheet material having a plurality of smoke-passing perforations therein and successively adhesively securing a minor peripheral portion thereof to the longitudinal surface of elongated rods of smoke pervious filter material adjacent an end thereof with a major portion of the tab extending beyond said end and generally parallel to the axis of said rod;
- c. means for successively aligning the elongated rods of smoke pervious filter material with the opening of said female die means;
- d. folding means for folding said major portion athwart the end of said rod so as to be disposed substantially perpendicular to the axis of said rod with peripheral areas extending radially outwardly from the longitudinal surface; and
- e. means for effecting relative reciprocal movement between successive aligned elongated rods and said female die means after said major portion is folded athwart the end of the rod whereby successive elongated rods are inserted into and thereafter retracted from said female die means and thereby serve as male dies and cup the tab over the rod end.

3,868,290
DEVICE FOR STACKING BAGS

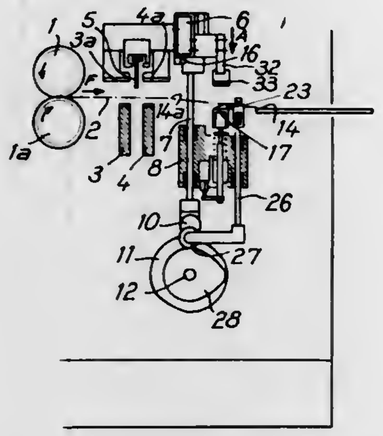
Georges Lagain, 14, rue de Seine, 95 Argenteuil, France

Filed July 18, 1973, Ser. No. 380,340

Claims priority, application France, July 28, 1972, 72.27437

Int. Cl. B32b *31/00;* **B30b** *15/34*

U.S. Cl. 156—510 **6 Claims**



1. In apparatus for forming stacks of bags from weldable film or tubing, comprising a frame, mobile welding jaw means movably mounted on said frame, further jaw means mounted on said frame in the path of movement of said movable jaw means and cooperating with said mobile jaw means, means for advancing film or tubing along a path extending between said movable jaw means and said further jaw means, means carried by said mobile jaw means for cutting said tubing or film transversely of the direction of movement thereof, drive means connected to said mobile jaw means for moving said mobile jaw means toward and away from said further jaw means, supporting means downstream of said further jaw means for receiving and supporting said film or tubing and holding means connected to and operable by said drive means for movement toward and away from said supporting means for contacting one side of and holding said film or tubing against said supporting means during the welding of said film or tubing by said mobile jaw means, the combination therewith of at least one pair of pinching finger means, one finger means at one side of the path of movement of said film or tubing and the other finger means at the other side of said last-mentioned path and both said finger means extending in the direction transverse to the direction of advance of said film or tubing by an amount less than the dimension of said film or tubing in said transverse direction and normally being intermediate said path and said supporting means for contacting said film or tubing at the side thereof opposite from the side thereof engageable by said holding means prior to contact of said holding means with said film or tubing, one of said supporting means and said pair of finger means being movable toward and away from the other thereof to permit relative movement between said film or tubing and said finger means when said holding means contacts said film or tubing thereby to cause the latter and said pair of finger means to move relative to each other and to cause said pair of finger means to transfer its contact with said film or tubing to the side of said film or tubing contacted by said holding means.

3,868,291
WELDING TOOL FOR FORMING SYNTHETIC-RESIN PACKAGES

Gottlieb Benz, and August Matzinger, both of c/o Maschinenfabrik Flums AG, 8890 Flums, Switzerland

Filed Feb. 16, 1973, Ser. No. 333,306

Int. Cl. B32b *31/18, 31/20*

U.S. Cl. 156—515 **9 Claims**

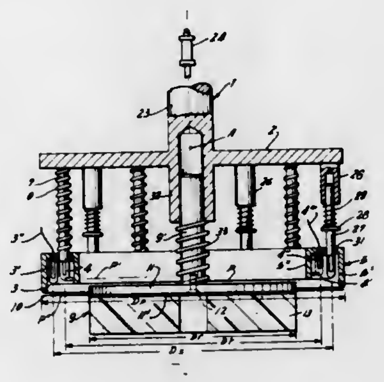
1. An apparatus for welding together a pair of thermoplastic sheets, comprising:

a support displaceable toward and away from said sheets;

an annular welding element on said support engageable with said sheets;

an annular cutting element on said support adjacent said welding element;

a flat flexible and annular polytetrafluoroethylene foil having an inner periphery and an outer periphery and lying between said elements and said sheets, said elements and said foil being generally concentric;



means for releasably securing one of said peripheries to said support while leaving the other periphery free for deflection of said annular foil toward and away from said sheets;

means for heating said welding element to fuse said sheets together with said welding element pressing on said sheets through said foil; and

means for heating said cutting element to a temperature above that of said welding element for severing of said sheets.

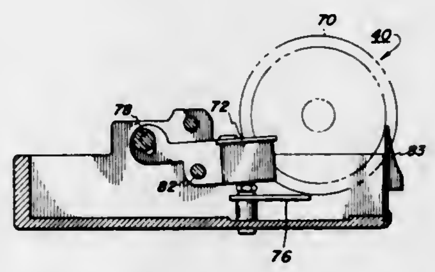
3,868,292
LABELING APPARATUS AND UN-METERED GLUING MECHANISM THEREFOR

Richard J. Ernst, Palatine, and Trygve R. Rod, Mundelein, both of Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,563

Int. Cl. B65c *9/00;* **B05c** *1/00*

U.S. Cl. 156—568 **6 Claims**



1. A glue applicator suitable for use with labeling apparatus including a feed mechanism for transporting articles to be labeled, an addressing head with a rotating transfer wheel for carrying an individual label from a source of printed labels to the glue applicator and subsequently to an area where the label is transferred to the article to be addressed, the glue applicator comprising:

a glue container for holding a quantity of glue material;

a glue applying member rotatably supported by said container, said glue member comprising:

a base portion having at least one radially extending member having side walls and a peripheral portion partially immersed in glue in said container,

a scraper member having at least one slot delineated by a pair of side walls and a bottom wall through which said at least one radially extending member passes whereby the side walls delineating said slot remove excess glue from the side walls, said peripheral portion being spaced from said bottom wall;

means for rotating the glue applying member; and

a pre-scraper coupled to the glue container and biased against the peripheral portion for continuously removing hardened glue therefrom when the glue applying member is rotated, whereby the relative velocity between wet glue on the peripheral portion on the glue applying member and the periphery of the transfer wheel is not affected by hardened glue.

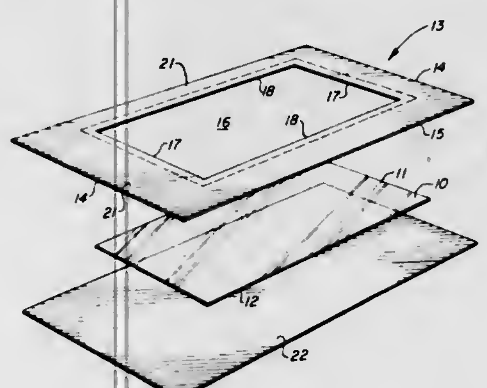
3,868,293
REUSABLE GLARE ELIMINATOR PATCH

Kristin Mills Selph, P.O. Box 227, Ranchos De Taos, N. Mex. 87557

Continuation-in-part of Ser. No. 236,065, April 27, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,536

Int. Cl. B60j *3/06;* **B32b** *3/10, 3/16*

U.S. Cl. 161—1 **3 Claims**



1. In a reusable glare eliminator patch,

a. a thin cast rectangular panel of polarized cellulose acetate of a thickness ranging from .005 inch to .015 inch, and having marginal portions defined by end and side edges;

b. a rectangular plastic frame of cellulose acetate having one face coated with a pressure-sensitive adhesive material and similar in shape to said panel, said frame being formed with a central rectangular cutout similar in shape to said panel but of a size smaller than that of said panel;

c. said frame having end and side edges longer than the corresponding edges of said panel, the face of said frame with the pressure-sensitive adhesive material being adhered to said panel such that said panel fully covers said cutout, the end and side portions of said frame extending beyond the corresponding edges of said panel, and

d. a flexible carrier sheet, having sufficient rigidity to prevent wrinkling of said panel when the latter is carried thereby through the medium of said frame, of the same size and shape as said frame presenting end and side edges and a continuous uninterrupted body between said carrier sheet edges, said carrier sheet being applied to said frame with its edges accurately conforming to the edges of said frame, with the extended portions of said frame adhesively but releasably secured to said carrier sheet.

3,868,294
REFLECTIVE MARKERS

Robert Gayle, Wilton, Conn., assignor to National Patent Development Corporation, New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,129

Int. Cl. B44f *1/02*

U.S. Cl. 161—4 **9 Claims**

1. A substrate having adhered thereto a plurality of thin, short, individual fibers, said fibers each having an inner end which is adhered to said substrate and having an opposite and exposed outer end, said fibers each comprising a central, clear transparent portion which extends longitudinally from said inner end to the outer end of the fiber, and an external, longitudinally extending from said inner end to said outer end, mirror coating on said transparent portion forming a reflective surface to the inner side thereof, whereby when light is impinged on said fibers it is reflected back toward its source.

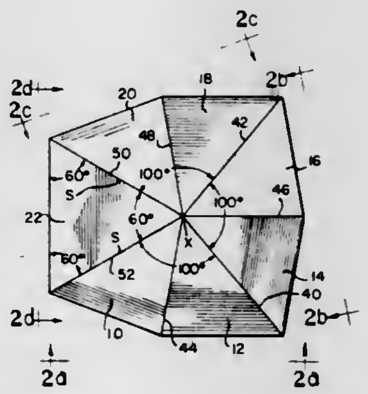
3,868,295
GEOMETRIC BUILDING MODULE

Garret J. Boone, Jr., 820 Hidden Valley Ln., Richmond, Ind. 47374

Filed Apr. 1, 1974, Ser. No. 457,106

Int. Cl. E04b *7/02*

U.S. Cl. 161—15 **4 Claims**



1. A geometric building module comprising seven equal sized equilateral triangles joined together so that one corner point of each triangle meets at a common center point with corner points of the other six triangles, each triangle having two sides extending outwardly from said center point and a base connecting and distal ends of its two sides, each side of each triangle coinciding with the adjacent side of the adjacent triangle, one of said triangles defining a common plane including said common center point, each of said other triangles having one of its sides lying in said common plane and the other of its sides inclining away from one side of said common plane.

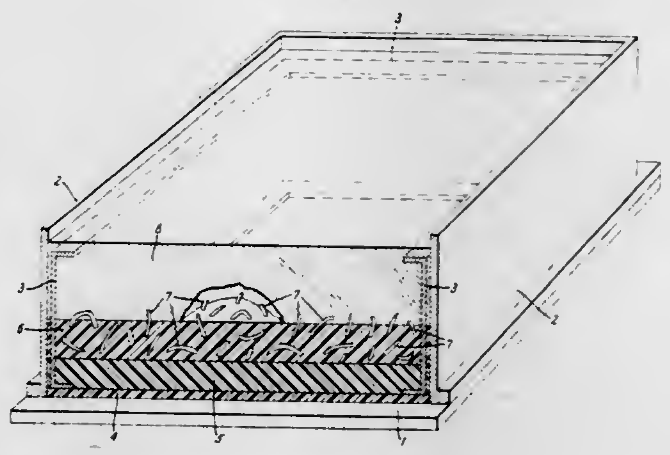
3,868,296
PLASTIC WALL CONSTRUCTION AS A WALL UNIT

Thomas F. McKeon, Jr., King of Prussia, and George D. Meier, Phoenixville, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Apr. 27, 1973, Ser. No. 355,195

Int. Cl. B32g *13/02;* **E04f** *13/04;* **E04c** *1/04;* **E04b** *2/04*

U.S. Cl. 161—43 **2 Claims**

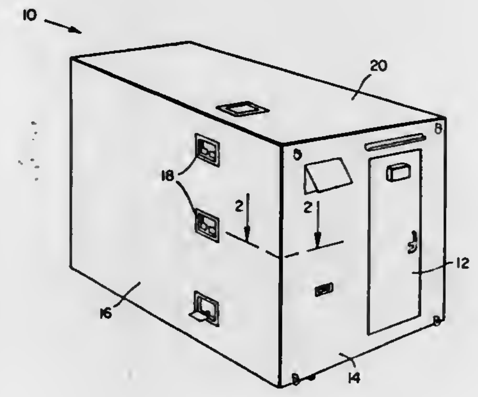


1. A structural unit of general nature of a wall panel comprising:

a. a first exposed layer of water-resistant organic resin;
b. a second layer of glass-fiber reinforced organic resin having one face adhered to said exposed first layer of water-resistant organic resin;
c. a third layer of organic resin having one face adhered to said layer of glass-fiber reinforced organic resin, and containing inclusions of wood chips protruding from a face remote from said adhered face to provide an irregular surface configuration;
d. a fourth layer of plaster having one face adjacent to said third layer of organic resin intimately surrounding said protruding wood chips, and having a mechanical bond between said fourth layer of plaster and said protruding wood chips.

3,868,297
A STRUCTURAL PANEL INCLUDING A HONEYCOMB CORE AND A FOAMED POLYMER COMPOSITION

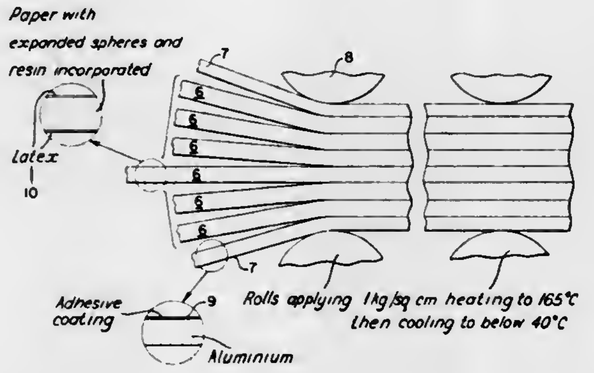
John W. Jamison, Costa Mesa; Robert R. Black, Jr., Lehabre, and Roy E. Denner, Placentia, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 235,893, March 20, 1972, abandoned. This application Feb. 16, 1973, Ser. No. 333,109
Int. Cl. B32b *3/12;* **E04c** *2/32;* **B32b** *5/18, 27/40*
U.S. Cl. 161—68 **5 Claims**



1. A structural panel consisting of:
a first, continuous outer skin;
a second, continuous divider skin;
a third, continuous inner skin;
a rigid foamed synthetic polymer composition material core adhesively secured between said first and second skins;
an uncrushed hexagonal honeycomb core positioned between said second and third skins and attached thereto with its cells substantially normal to one of said second and third skins, so that said foamed core provides low thermal conductivity between said first and third skins of said panel and said honeycomb core provides mechanical strength to said panel.

3,868,298
COMPOUND PANEL

Jean Schrade, Zurich, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland
Filed May 18, 1972, Ser. No. 254,675
Claims priority, application Switzerland, May 19, 1971, 7368/71
Int. Cl. B32b *5/16*
U.S. Cl. 161—161 **5 Claims**


Paper with expanded spheres and resin incorporated
Latex
10
7
8
6
6
6
6
6
6
7
Adhesive coating
9
Aluminium
Rolls applying 1kg/sq cm heating to 165°C then cooling to below 40°C

1. A laminated panel comprising two facing layers each of metal and between the facing layers a core layer, said core layer consisting essentially of more than one inorganic fibrous sheet impregnated with an organic resinous binder and containing hollow particles of the closed-cell type.

3,868,299
INSULATING GLASS UNIT CONTAINING ABSORBENT MIXTURE

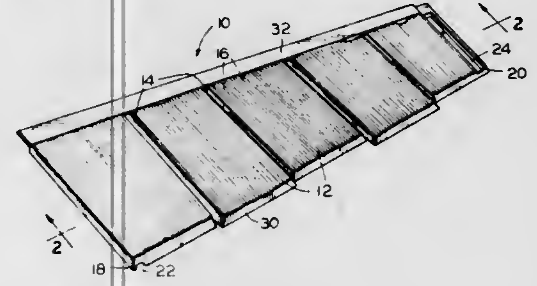
Gunter Ulisch, Leverkusen-Kueppersteg, and Gerhard Heinze, Schildgen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Division of Ser. No. 65,709, Aug. 20, 1970, abandoned. This application May 16, 1972, Ser. No. 253,757
Claims priority, application Germany, Sept. 4, 1969, 1944912
Int. Cl. B32b *5/18*
U.S. Cl. 161—162 **3 Claims**

1. In an insulating glass unit comprising two layers of glass, means spacing said layers from one another and forming an enclosed space therebetween, and vapor-adsorbing granules disposed in and filling only a portion of said space, the improvement which comprises employing as said granules so as simultaneously to adsorb vapors of water and solvent homogeneous granules comprising, by weight, at least about 60% of at least one narrow-pored zeolite having a pore width of up to 5 Angstroms, at least about 10% by weight of at least one wide-pored adsorbent having a pore width in excess of 5 Angstroms, and about 15 to 20% of at least one binder selected from the group consisting of kaolin, attapulgite, bentonite, waterglass and silica.

3,868,300
METHOD OF MAKING A COMPOSITE PANEL LAMINATE HAVING DEEP INDENTATIONS

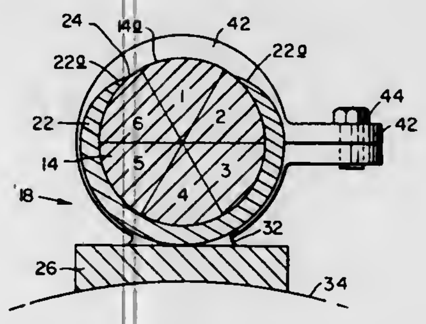
Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.
Filed Nov. 15, 1972, Ser. No. 306,692
Int. Cl. D21f *13/00*
U.S. Cl. 162—124 **3 Claims**

1. The method of making a composite panel laminate having a pattern including relatively deep indentations on one side, the minimum thickness of said panel at said indentations being less than one-half the thickness of the unindented areas of said panel, the depth of said indentations being of the order of one-half inch or more, the method comprising,
a. preparing a suction box having a matrix side of foraminous material with an outer surface defining a pattern of conforming at least with the major raised and indented areas of the pattern of said one side of said panel,
b. immersing said suction box in a tank of cellulosic fibrous pulp slurry and building up by suction through said matrix surface a first web of cellulosic pulp fibers having generally the same contour and configuration as said one side of said panel,
c. transferring said first web while still moist to a metal mold platen having a matrix surface complementary in conformation to said one side of said panel and with the contour of said preformed web fitting over the contour of the mold platen matrix surface,
d. building up a core layer of loose relatively coarse fibrous wood waste material over said first web positioned on said mold platen to a depth several times greater than the maximum thickness of said panel,
e. placing a second moist pulp web over the top of said core layer,
f. curing the sandwich thus formed by heat and pressure in a hot press to form the finished panel laminate.



3,868,301
CYLINDRICAL SLEEVE SUPPORT STRUCTURE FOR ADJUSTMENT OF WEB CONTACTING SURFACE OF PICK-UP BAR IN A PAPERMAKING MACHINE

Joseph V. Cloutier, 110 Park St., Berlin, N.H. 03570
Filed Oct. 25, 1973, Ser. No. 409,685
Int. Cl. D21f *2/00*
U.S. Cl. 162—358 **7 Claims**

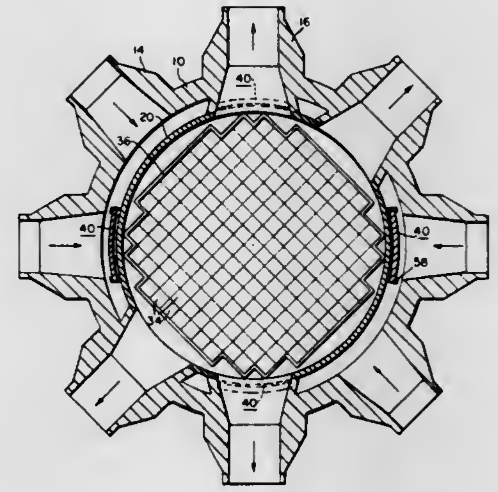


1. An improved pick-up bar for use in a paper making machine comprising a cylindrical shaft, a cylindrical sleeve snugly engaging around the shaft along its entire length, said sleeve being slit along its length to expose a length-wise segment of the shaft surface, means for supporting the sleeve along its entire length so that the shaft is disposed horizontally and means for preventing rotational and axial movements of the shaft relative to the sleeve.

3,868,302
THERMAL SHIELD OF A NUCLEAR REACTOR

Norman R. Singleton, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 12, 1971, Ser. No. 142,581
Int. Cl. G21c *11/08*
U.S. Cl. 176—87 **7 Claims**

1. A nuclear reactor including, in combination:
an elongated upstanding pressure vessel;
an elongated upstanding nuclear core within said pressure vessel comprising a plurality of fuel assemblies, said fuel assemblies being situated in side-by-side relationship such that the core has a generally rectangular configuration in plan view with some portions of the core closer to the inner side wall of the pressure vessel than other portions;
supportive and shielding structures being interposed between the nuclear core and the pressure vessel and coextending at least in part with the longitudinal dimension of said elongated core, the coextending parts of said interposed structures having an increased thickness adjacent said some portions.



3,868,303
METHOD OF PRODUCING ENZYME AND ITS UTILIZATION THEREOF

Nobuzo Tsumura, Tokyo; Shoji Yanai, Funabashi, and Masako Ishikawa, Yokohama, all of Japan, assignors to Director of National Food Research Institute, Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 304,205
Int. Cl. C12d *13/10*
U.S. Cl. 195—2 **18 Claims**

1. A method for producing lytic enzyme to dissolve living and dead cells of various kinds of microorganisms and also their constituents which comprises; cultivating a new strain *Achromobacter lunatus* to produce the enzyme in the cultured broth and/or in the living cells and harvesting the enzyme.

17. Process of dissolving cells and constituents thereof which comprises: introducing the enzyme produced from the cultivation of *Achromobacter lunatus* into a suspension containing cells of microorganisms to be dissolved, and continuing the reaction in said suspension for a time sufficient to produce an adequate lysis of cells.

3,868,304
METHOD OF MAKING FRUCTOSE WITH IMMOBILIZED GLUCOSE ISOMERASE

Ralph A. Messing, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Feb. 16, 1973, Ser. No. 332,739
Int. Cl. C12d *13/00*
U.S. Cl. 195—31 F **17 Claims**

1. A method of making fructose which comprises incubating a glucose solution with an immobilized enzyme composite comprising glucose isomerase adsorbed on the inner surfaces and within the pores of a porous alumina body having an average pore diameter between about 140A and 220A.

3,868,305
PROCESS FOR PRODUCING ETHANOL-ASSIMILATING YEAST

Yoshiro Masuda; Kenji Kato; Yoshihiro Takayama; Kenji Kida, and Meiseki Nakanishi, all of Ami-machi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1973, Ser. No. 410,979

Claims priority, application Japan, Nov. 17, 1972, 47-115270

Int. Cl. C12c *11/00*

U.S. Cl. 195—49 **9 Claims**

1. A process for culturing yeast cells which comprises cultivating a strain selected from the group consisting of *Candida ethanothermophilum* and *Candida acidothermophilum* belonging to the genus Candida in a culture medium containing ethanol under aerobic conditions.

3,868,306
METHOD FOR PREPARING 3(S OR R)-HYDROXY-1-IODO-1-TRANS-OCTENE

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 12, 1973, Ser. No. 411,773

Int. Cl. C12d *1/00*

U.S. Cl. 195—51 R **4 Claims**

1. A process for producing 3(S or R)-hydroxy-1-iodo-1-trans-octene which comprises subjecting 3-oxo-1-iodo-1-trans-octene to the fermentative enzymatic action of a microorganism selected from the classes Ascomycetes, Phycomycetes and Fungi Imperfecti.

3,868,307
PRODUCTION OF DISTILLERS YEAST

James M. Van Lanen, deceased, late of Peoria, Ill.; Merritt B. Smith, and Weldon F. Maisch, both of Peoria, Ill., assignors to Hiram Walker & Sons, Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 189,678, Oct. 15, 1971, abandoned. This application Aug. 15, 1973, Ser. No. 388,359

Int. Cl. C12c *11/00*

U.S. Cl. 195—82 **6 Claims**

1. A method of propagating distillers yeast comprising the steps of:

preparing a cooked mash of ground cereal grain in water with the cereal grain comprising at least 95% by weight of a member selected from the group consisting of corn, milo, and mixtures thereof;

adding to the mash glucamylase ferment produced by the submerged, aerobic fermentation of a cereal grain mash with a glucamylase producing mold strain selected from the group consisting of *A. niger; A. foetidus; A. awamori*; and *A. oryzae* with about 1,000–20,000 units of glucamylase ferment per bushel of grain being used to treat the cereal grain mash;

incubating the resulting mixture of mash and glucamylase ferment at a temperature of about 120°–140°F. for about 4–6 hours;

sterilizing the mash;

cooling the resulting sterilized mash to about 80°F.;

inoculating the resulting cooled sterilized mash with distillers yeast;

incubating the inoculated mash until the Balling of the mash has dropped about 4°–5°;

cooling the resulting yeast culture to a temperature of no more than about 60°F;

maintaining the yeast culture in the mash in which it was propagated at a temperature of no more than about 60°F.; and

storing the yeast at said temperature of no more than about 60°F. in the mash in which it was propagated for at least about 72 hours and during storage withdrawing portions of yeast periodically to inoculate distillery grain mashes for alcohol production.

3,868,308
MULTIEFFECT EVAPORATOR

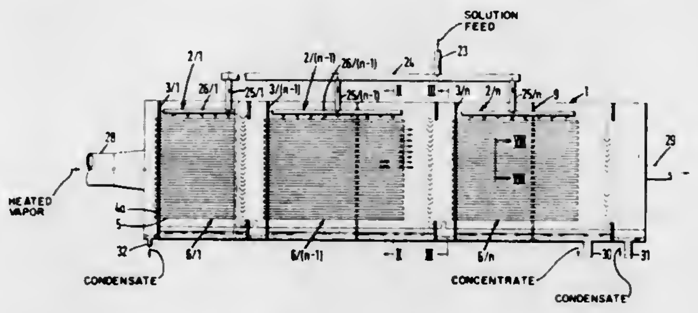
Amitzur Ze'ev Barak, Tel-Aviv; Joseph Michael Weinberg, Nethanya, and Moshe Pachter, Tel-Aviv, all of Israel, assignors to Israel Desalination Engineering (Zarchin Process) Ltd., Tel-Baruch, Tel-Aviv, Israel

Filed Jan. 25, 1972, Ser. No. 220,650

Claims priority, application Israel, July 5, 1971, 37225

Int. Cl. B01d *1/22*

U.S. Cl. 202—174 **16 Claims**



1. A multiple effect evaporator, comprising:

a housing;

a plurality of substantially vertical parallel tube sheets connected to the interior of said housing;

a plurality of effects in said housing each effect defined between a pair of said tube sheets the effects being substantially aligned;

a plurality of substantially aligned bundles of substantially horizontally extending condenser tubes, one of said bundles being located in each of said effects, the constituent tubes of each said bundle being supported adjacent one set of open ends thereof by one of said tube sheets through which said ends extend;

a plurality of openwork grids connected to the interior of said housing through each of which the tubes of one of said bundles extend;

sealing means for sealing said sets of open ends to said tube sheets;

non-condensible gas discharge vents with restricted diameter compared with the inner diameter of said tubes, connected to the ends of said tubes opposite the tube sheet ends;

solution introducing means for introducing solution into the upper portions of each effect in such a manner that it flows downwardly under gravity in film form over and around said tubes;

heated vapor introducing means for introducing heated vapors into the open ends of the tubes of the first and hottest effect to undergo heat exchange with the downflowing solution in said effect, as a result of which a portion of the solution vaporizes and at least a portion of the vapors condenses in said tubes;

vapor passing means for passing the vapors from one effect into the tubes of a subsequent effect, in such a manner that vapor flow in each effect is in a direction substantially parallel to the tubes in that effect and the passage of vapors throughout all the effects involving substantially no changes in flow direction; and

collecting means for respectively collecting and removing condensate and concentrate products.

3,868,309
HOT COKE TRANSFER SYSTEM

John D. Sustarsic, McKees Rocks; Raymond C. Kinzler, Carnegie, and William D. Edgar, Allison Park, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 31, 1972, Ser. No. 285,427

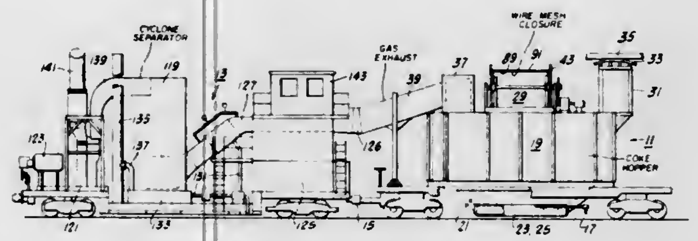
Int. Cl. C10b *35/00, 27/04*

U.S. Cl. 202—262 **14 Claims**

1. A system for receiving and transferring hot coke pushed from a coke oven comprising:

a. a first vehicle that is movable along one side of said coke oven and that has a hopper thereon for receiving and holding said hot coke when pushed from a chamber of said coke oven, said hopper being lined with refractory material;

b. a hood on said hopper having an opening through which said hot coke passes;



c. a wire mesh screen that is movable into one position to close said opening in said hopper and that is movable into another position to open said hood;

d. means for conducting gases arising from said coke away from said hopper; and

e. a second vehicle couples to said first vehicle and supporting means for scrubbing and cleaning said gases.

3,868,310
SELECTIVE SOLVENT EXTRACTION PROCESS

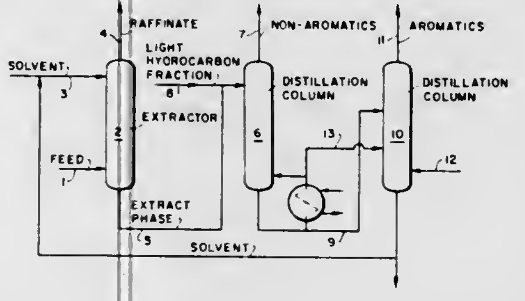
Alfred L. Van Kleef; Derk Roffel, and Frits W. Van Vollenhoven, all of The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,192

Claims priority, application Netherlands, Sept. 26, 1969, 6914611

Int. Cl. B01d *3/34*

U.S. Cl. 203—58 **6 Claims**



1. A process for separating aromatic hydrocarbons from a mixture of aromatic and non-aromatic hydrocarbons boiling in the C_5 to C_{15} range which comprises (1) splitting said mixture by distillation into a higher boiling, C_9 to C_{15} hydrocarbon fraction and a lower boiling C_5 to C_8 hydrocarbon fraction, (2) subjecting said higher boiling fraction to a liquid-liquid extraction with a solvent selective for aromatics to obtain an extract phase enriched in aromatic hydrocarbons and an raffinate phase enriched in non-aromatic hydrocarbons, (3) subjecting said extract phase to distillation in a first distillation zone into which said lower boiling hydrocarbon fraction and additional amounts of said selective solvent are simultaneously introduced, (4) withdrawing a stream further enriched in aromatic hydrocarbons from said first distillation zone and passing said stream into a second distillation zone wherein said selective solvent is separated from said aromatic hydrocarbons, and a high purity aromatic hydrocarbon stream is recovered therefrom.

3,868,311
METHODS FOR THE FORMATION ON A WALL EXPOSED TO FRICTIONAL FORCES AND BELONGING TO A LIGHT ALLOY ELEMENT, OF A WEAR-RESISTANT COMPOSITE COATING METALLIC

Michel Durin, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Nov. 8, 1972, Ser. No. 304,842

Claims priority, application France, Nov. 9, 1971, 71.40153

Int. Cl. C23b *5/50, 5/62*

U.S. Cl. 204—33 **22 Claims**

1. Method for the formation of a metallic wear-resistant coating, comprising primarily nickel containing a dispersed phase of hard fine particles, on a wall to be exposed in service to frictional forces, said wall comprising a light metallic alloy, said method including: forming by chemical means a thin layer of zinc on said wall, then depositing electrolytically a composite layer of nickel containing hard particles in a dispersed phase; said method being characterized in initially subjecting the bare wall to a shot-blasting treatment.

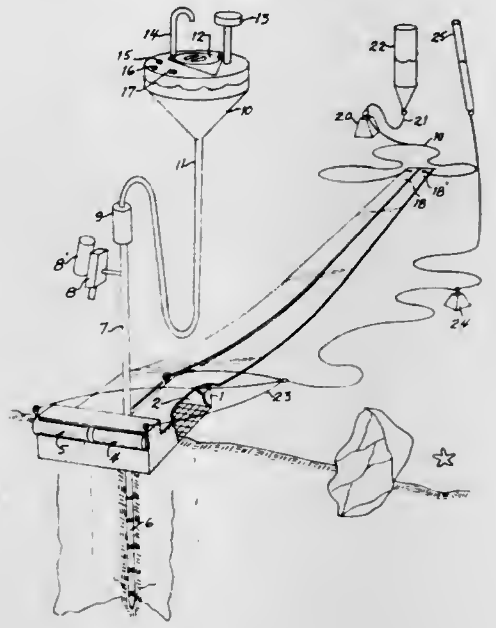
3,868,312
DEEP SEA MINING SYSTEM

Frederick Wheelock Wanzenberg, and Fritz Walter Wanzenberg, both of 9 Campbell Ln., Larchmont, N.Y. 10538

Division of Ser. No. 700,470, Jan. 25, 1968, Pat. No. 3,748,248, which is a continuation-in-part of Ser. No. 526,970, Feb. 10, 1966, abandoned. This application Oct. 12, 1970, Ser. No. 80,015

Int. Cl. C22d *1/12, 1/02*

U.S. Cl. 204—109 **17 Claims**

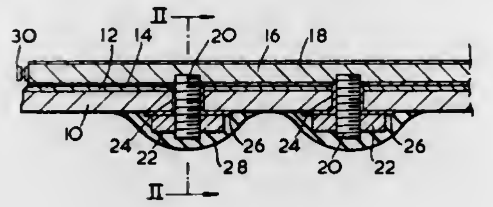


1. A method for recovering metals and metal compounds from material which has been collected from mineral deposit areas formed under water which comprises separating from the collected material desirable mineral bearing ore materials so as to segregate said mineral bearing ore materials from sand, shells and other undesired waste material, discarding the undesired waste material, treating the separated mineral bearing ore material in a processing area including oxidizing insoluble metal compounds in said material to convert the same to soluble metal ions and radicals, separating the resultant products from the gangue and collecting and removing by electrolysis the resultant products to obtain the desired metals and/or metal compounds.

3,868,313

CATHODIC PROTECTION

Philip James Gay, 91 Newland Park, Hull, Yorkshire, England
Filed Feb. 21, 1973, Ser. No. 334,317
Claims priority, application Great Britain, Feb. 25, 1972, 8771/72
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **10 Claims**



1. A cathodic protection system comprising a metal to be protected, an electrically non-conductive coating applied in fluid form over the metal, an electrically conductive coating applied in fluid form over the non-conductive coating, said conductive coating being rendered electrically conductive by the incorporation of elemental carbon therein, such that the metal and electrically conductive coating are electrically insulated one from the other, a source of D.C. voltage being connected between the metal and the electrically conductive coating such that the electrically conductive coating is anodic with respect to the metal.

3,868,314

ION EXCHANGE MEMBRANES

Yukio Mizutani, Tokuyama; Koshi Kusumoto, Shinnanyo, and Yosinori Mizumoto, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan
Division of Ser. No. 307,852, Nov. 20, 1972, Pat. No. 3,821,127. This application Feb. 15, 1974, Ser. No. 442,843
Claims priority, application Japan, Nov. 26, 1971, 46-94513
U.S. Cl. 204—296 **3 Claims**

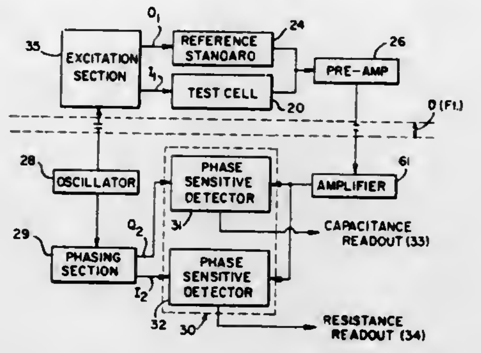
1. An ion exchange membrane containing both cation exchange groups and anion exchange groups, said cation exchange groups being sulfonic acid groups which are present on the surface, or its vicinity, of the ion exchange membrane, the density of the sulfonic acid groups progressively decreasing from the surface of the membrane towards its interior, the amount of the sulfonic acid groups being 0.05 to 20 equivalent percent based on the total amount of the ion exchange groups, the amount of said anion exchange groups being 80 to 99.5 equivalent percent based on the total amount of the ion exchange groups, and said ion exchange membrane having a ratio of direct membrane current resistance to alternate current membrane resistance of not more than the limiting resistance ratio.

3,868,315

ELECTRONIC MEASUREMENT OF END POINT OF ASPHALT OXIDATION

Eric O. Forster, Scotch Plains; Alan D. Goldshine, West Orange, and Albert Gathman, Belmar, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.
Division of Ser. No. 271,036, July 12, 1972, Pat. No. 3,779,892, which is a continuation of Ser. No. 9,486, Feb. 9, 1970, abandoned. This application July 26, 1973, Ser. No. 382,677
Int. Cl. C10g *1/00*
U.S. Cl. 208—6 **7 Claims**

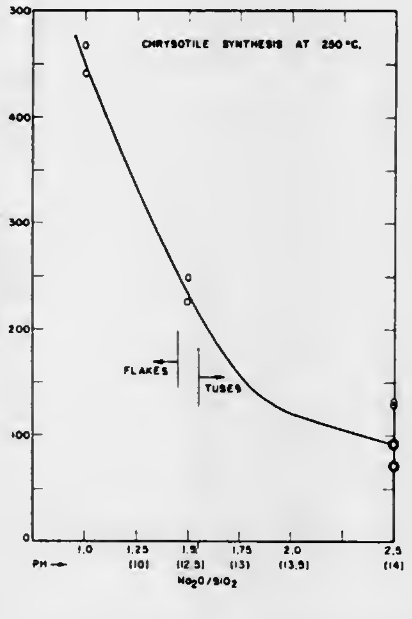
1. A method for determining the end point of an air blowing process employed in the manufacture of asphalt, comprising the steps of (1) electrically simulating at a preselected first frequency at least the desired viscosity of the final asphalt, (2) continuously electrically measuring the electrical property characteristic of the viscosity of the asphalt undergoing manufacture at said first frequency by contacting said asphalt undergoing manufacture with electrical sensor means, (3) comparing electrically the electrically simulated viscosity with the actual measured electrical property characteristic of said viscosity resulting from step (2), and (4) determining the difference between the electrically simulated and the actual measured electrical property characteristic of said viscosity, thereby to provide an indication as to when the end point of said air blowing process has been obtained.



3,868,316

PROCESS FOR CRACKING HYDROCARBONS WITH CHRYSOTILE CATALYST COMPOSITIONS

Harry E. Robson, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Linden, N.J.
Division of Ser. No. 233,368, March 9, 1972, Pat. No. 3,804,741, which is a division of Ser. No. 68,324, Aug. 31, 1970, Pat. No. 3,729,429. This application Aug. 24, 1973, Ser. No. 391,356
Int. Cl. B01j *9/70*; **C10g** *11/18*
U.S. Cl. 208—119 **29 Claims**



1. A process for the cracking of hydrocarbon feeds which comprises contacting said feed at hydrocarbon cracking conditions with a catalyst comprising a layered complex metal silicate composition characterized as having repeating units defined by the following structural formula:

$$[(1-x)M^{(a)}+xM^{(b)}]_n\,(OH)_4Si_2O_5\cdot wH_2O$$

where *M* and *M* are selected from monovalent and multivalent metal cations selected from Groups I, II, III, IVB, VB, VIB, VIIB and VIII metals, of the Periodic Table of the Elements, having an effective ionic radius ranging from about 0.5 to about 1 A, x is a number ranging from 0 to 1 which expresses the atomic fraction of the metals *M* and *M*, a is the valence of *M*, b is the valence of *M*, n is a number equal in value to that defined by the ratio $6/]a(1-x)+bx]$, w is a number ranging from 0 to 4, and

where $x = 0$, and M is magnesium, the surface area of the composition ranges above about 110 m²/g,

where $x = 0$, and M is nickel, the surface area of the composition ranges above about 125 m²/g, and

where $x = 0$, where M is cobalt, the surface area of the composition ranges above about 190 m²/g.

3,868,317

PROCESS FOR CONVERSION OF HYDROCARBONS

Takuji Itoh; Ikuo Akitsuki; Tadashi Miura, all of Ohi-Machi, and Kohei Kubota, Kasukabe, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha
Filed Jan. 31, 1973, Ser. No. 328,847
Claims priority, application Japan, Feb. 5, 1972, 47-13024
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 **3 Claims**

1. A process for the catalytic reforming of a naphtha fraction, which comprises contacting said naphtha fraction in the presence of hydrogen at a temperature of about 300° to 600°C. under a pressure of about 1 to 70 Kg/cm² with a catalyst composition comprising a refractory oxide as a carrier, and about 0.01 to 6 percent by weight of a metal of the platinum group, about 0.01 to 6 percent by weight of cadmium, about 0.01 to 6 percent by weight of tin and about 0.1 to 5 percent by weight of a halogen, based on the catalyst.

3,868,318

SEPARATION OF FINE SOLIDS WITH ADSORBING BODIES

Norman Owen Clark, Par, Cornwall, and William Windle, Anstell, Cornwall, both of England, assignors to English Clays Lovering Pochin & Company Limited, Cornwall, England
Continuation of Ser. No. 133,387, April 12, 1971, abandoned. This application Oct. 30, 1973, Ser. No. 411,152
Claims priority, application Great Britain, Apr. 15, 1970, 18067/70; Jan. 8, 1971, 1112/71
Int. Cl. B03b *1/04*
U.S. Cl. 209—9 **16 Claims**

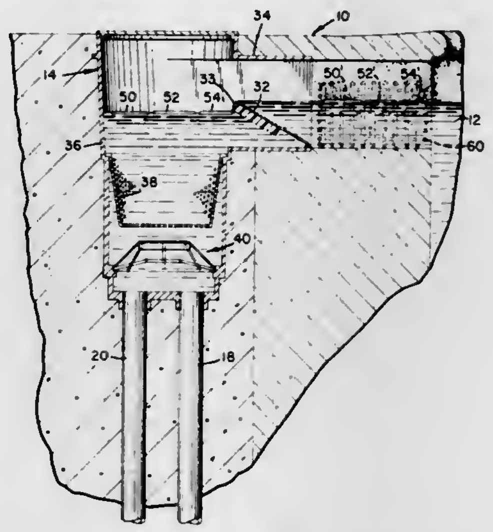
1. A method of separating fine particles having a gravitational settling velocity in a fully deflocculated aqueous suspension of not more than 1 millimetre/hour at 20°C, of one mineral from coarser particles of the same mineral, which method comprises (i) forming a deflocculated aqueous suspension of the particles, the aqueous suspension including a cationic surface active agent; (ii) causing the particles in said deflocculated aqueous suspension to come into contact with solid bodies having a mean diameter which is at least 10 microns and not more than 1 cm., the bodies being (a) chemically different from said one mineral, (b) capable of adsorbing said cationic surface active agent to produce a positively charged surface coating thereon, and (c) selected from the group consisting of coarse, granular particles; short cellulosic fibres having a length of from 1 to 2 mm; and short asbestos fibres having a length of from 1 to 2 mm, whereby said fine particles are preferentially adsorbed on the positively charged surfaces of the solid bodies; (iii) separating the solid bodies holding the adsorbed fine particles from the remainder of the suspension; and (iv) separating said fine particles from said solid bodies by agitating the solid bodies in an alkaline solution.

3,868,319

METHOD AND APPARATUS FOR REMOVING OIL FROM SWIMMING POOLS

Gerall A. Black, 7532 Oakland Ave. South, Minneapolis, Minn. 55423, and Edward C. Straub, 9007 W. 70th St., Merriam, Kans. 66204
Filed Oct. 23, 1973, Ser. No. 408,860
Int. Cl. B01d *15/00*
U.S. Cl. 210—40 **4 Claims**

3. The method of removing oil from the surface of a body of water in a pool having a recirculating filter system including an entrance passage thereinto, a pump, and a strainer basket between said passage and said pump, said method comprising the step of locating pads preferentially absorptive of oil and floatable upon the surface of water within the entrance passage on the side of the basket waay from the pump, whereby oil floating on the surface of the water flowing through the passage is absorbed by said pads.



3,868,320

TREATMENT OF PAPER BOX PLANT EFFLUENTS

Shibley A. Hider, Toledo, Ohio; John K. Rogers, Valdosta, Ga., and Colbert W. Wilkins, Toledo, Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio
Filed July 30, 1973, Ser. No. 383,574
Int. Cl. B01d *21/01*
U.S. Cl. 210—53 **7 Claims**

1. A method of clarifying an aqueous, starch adhesive effluent from a paper box plant which comprises combining therewith an aqueous flexographic ink effluent containing about 40–50 percent by weight maleic or acrylic vehicle, and 15–40 percent by weight pigment to form a mixture containing about 8–12 parts starch solids to 1 part ink solids, flocculating the resulting mixture with a multivalent metal compound selected from the group consisting of calcium oxide, calcium hydroxide, calcium chloride, magnesium oxide, magnesium hydroxide, aluminum sulfate or ferrous sulfate, said compound added in a weight ratio of 0.1–1 parts compound to 1 part ink-starch solids and separating the flocculated solids thus formed.

3,868,321

LIQUID SEPARATORS

Dick Valentine Gough, 1 Knights Bank Rd., Hill Head, Fareham, England
Filed Apr. 16, 1973, Ser. No. 351,275
Claims priority, application Great Britain, Apr. 19, 1972, 18249/72
Int. Cl. B01d *21/26*
U.S. Cl. 210—86 **8 Claims**

1. A device for separating denser and lighter constituents of a mixture of liquids or a solid material and a liquid, comprising, in combination,

i. a container,

ii. a drain outlet in a lower region of the container,

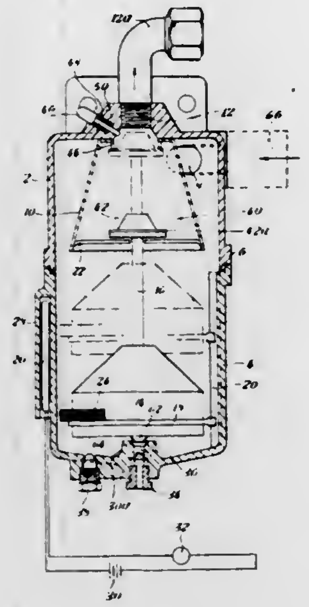
iii. a barrier in an upper region of the container dividing said upper region into an inner space and an outer space surrounding said inner space,

iv. an inlet for the mixture into the container opening into said upper region outer space,

v. an outlet from the chamber being disposed in an upper part of said inner space,

vi. said inlet being directed obliquely to the barrier to impart to the entering mixture a circulatory motion around the barrier whereby centrifugal separation of the mixture is initiated as it flows to the lower limit of the barrier, the arrangement being such that the denser constituent settles in said lower region and the lighter constituent flows to said outlet by way of said inner space,

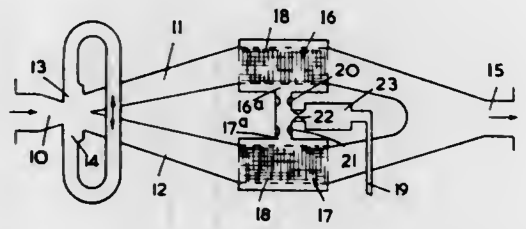
vii. a float in said lower region being displaceable upwardly by buoyancy forces as the denser constituent accumulates there,
viii. an electrical proximity switch disposed on or adjacent a side of the container below said upper region to be laterally offset from the float,
ix. a mounting for said switch maintaining the switch in a space sealed from the container interior,
x. a magnet mounted on a lateral region of the float adjacent said switch for operation of the switch as the float rises,
xi. external means being actuated by the operation of the proximity switch for indication of the rising of the float and/or for opening said drain outlet, whereby the settled denser constituent can be drained from the container through said outlet,



xii. a shut-off valve disposed in the container above the float to be closed by the float when the float has risen above a position at which said external means are to be operated,
xiii. said shut-off valve comprising a valve seating in said inner space in the path of the flow through said space and a valve body upwardly displaceable by said rising of the float to engage with the seating and stop the outflow of the separated lighter constituent from the container after said position is passed,
xiv. an externally operable device being provided for displacement of the shut-off valve body from its seating to permit said outflow to restart when the float descends again after closure of the valve.

3,868,322
APPARATUS FOR PROVIDING A SUPPLY OF A FILTERED FLUID

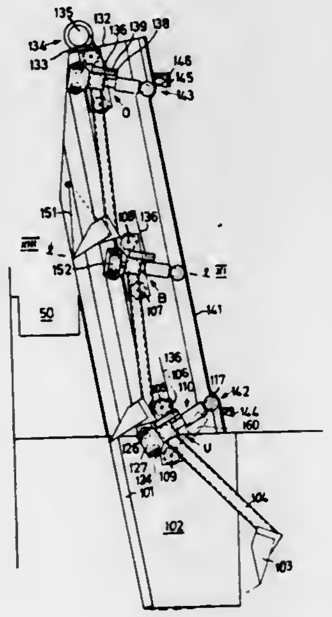
George Orloff, 16 Heaton Rd., Solihull, Warwickshire, England
Filed July 23, 1973, Ser. No. 381,590
Claims priority, application Great Britain, July 21, 1972, 34167/72
Int. Cl. B01d *35/12*
U.S. Cl. 210—108 **4 Claims**



1. An apparatus for providing a supply of filtered liquid, comprising a fluidic oscillator which includes a bistable wall attachment effect device having a pair of outlet passages and a pair of control ports, said control ports being interconnected so as to cause the bistable device to switch periodically between its two stable states at a rate determined by the fluid throughput, a pair of chambers in said outlet passages respectively, a common outlet to which said chambers are connected, each of said chambers having an auxiliary outlet, a pair of filter elements separating said auxiliary outlets from said chambers but permitting unimpeded flow of fluid from the outlet passages to the common outlet, a flow restrictor network interconnecting said auxiliary outlets, and a filtered fluid outlet communicating with said restrictor network, whereby, when the bistable device is in one stable state, a proportion of the fluid flowing into one chamber is tapped off from said auxiliary outlet and flows partially to the other chamber and partially to said filtered fluid outlet, and when the bistable device is in its other stable state a proportion of the fluid flowing through the other chamber is tapped off and flows partially to said one chamber and partially to said filtered fluid outlet, so that both filter elements are cleaned periodically and a continuous supply of filtered fluid is available at the filtered fluid outlet.

3,868,323
APPARATUS FOR REMOVAL OF SETTLED OR STRAINED SOLIDS FROM SURROUNDING LIQUID

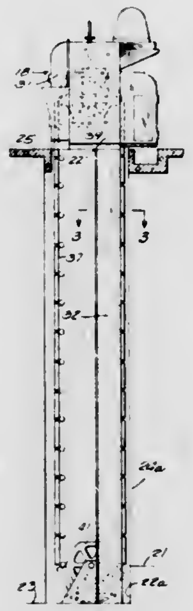
Kamil Fux, Schmerikon, Switzerland, assignor tc Prometall Uznach AG, Uznach, Switzerland
Filed Sept. 6, 1973, Ser. No. 394,931
Claims priority, application Switzerland, Sept. 6, 1972, 13102/72; Nov. 28, 1972, 17329/72; Jan. 18, 1973, 725/73; Mar. 9, 1973, 3547/73
Int. Cl. B01d *35/16*
U.S. Cl. 210—154 **15 Claims**



1. A solids removal apparatus for removal of solids from below the surface of a body of liquid comprising, in combination:
a carriage mounted for back-and-forth movement in a linear path above the surface of the liquid from which solids are to be removed and provided with drive means for producing back-and-forth movement thereof;
at lest one primary depending arm pivoted on a shaft supported by said carriage for swinging in the directions of travel of said carriage;
solids moving means carried on the lower extremity of said primary arm or arms;
a secondary arm at a fixed angle to a least one of said primary arms;
positioning means for said secondary arm, including an adjustable spring biased extension carrying a follower and a guide track therefor disposed longitudinally of the path of movement of said carrier, said follower being pressed against said guide track and so arranged that each said primary arm has a forward solids removing movement in a first position of said primary arm when said carriage moves in one direction, and a backward idle movement in a second position of said primary arm when said carriage moves in the other direction, said positioning means operating to power the shift of position of said primary and secondary arms from the motion imparted to said carriage by said drive means.

3,868,324
WATER INTAKE AND FISH RETURN SYSTEM

Robert F. Taylor, Milwaukee; Donald A. Strow, Hales Corners, and Hosein Mansouri, New Berlin, all of Wis., assignors to Envirex Inc., Waukesha, Wis.
Filed Dec. 22, 1972, Ser. No. 317,587
Int. Cl. Fo2b *8/08*; **B01d** *33/02*
U.S. Cl. 210—158 **4 Claims**

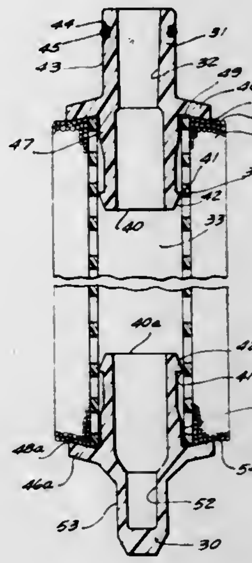


1. A water intake structure comprising side walls forming a channel and spaced, rigid columns within the channel, a series of travelling water screen units supported by and between said columns, the forward faces of the screens of each unit being flush with the faces of the intermediate columns, said faces being arranged in a straight line extending at an angle across the channel and respecting the direction of flow approaching the screens, an opening in one channel wall where said line of screens meets said one wall at said angle, said angle being in the order of 30° so that the fish swimming away from the screens may be carried sideward by the flow in the one direction only which is toward said opening through which they may leave the channel, each screen having a rectangular frame, the frames of the screens of each unit being pivotally interconnected in an endless series, each travelling water screen unit further comprising a rotating drive means over which the series operates and from which the frames are suspended in the water intake channel and means for flushing debris from the upward run of the screens emerging from the channel;, the screen of each said unit comprising a series of laterally spaced vertical bars.

3,868,325
FILTER TUBE ADAPTERS

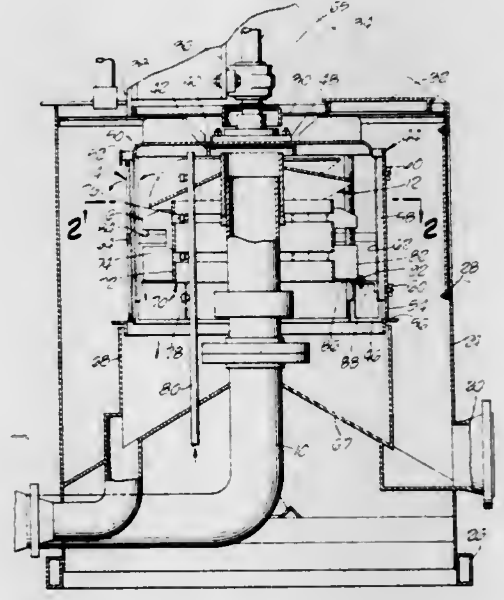
Walter Otto, Wantagh, N.Y., assignor to Sethco Manufacturing Corp., Freeport, N.Y.
Filed Aug. 24, 1973, Ser. No. 391,440
Int. Cl. B01d *27/00*
U.S. Cl. 210—232 **8 Claims**

1. In combination with a filter tube having a hollow cylindrical flexible mesh core supporting fibrous filtering material on its outer surface, a pair of adapters for insertion into the ends of said core, said adapters each including:
a. a frusto-conical end presenting a sharp circular edge facing away from that end of the adapter, the diameter of said edge being slightly larger than the internal diameter of the filter tube core, and
b. an outwardly projecting circular flange having sharp edge means for pressing into the end of the filtering material closest to the end of said core into which said frusto-conical end is inserted, the diameter of said flange edge means being larger than the external diameter of the filter tube core but smaller than the external diameter of the filtering material on the core,
whereby when said adapters are inserted into the ends of the filter tube core said flange edge means are pressed into the ends of the filtering material and said frusto-conical end edge bites into the internal surface of the core to prevent inadvertent movement of the adapters in a direction out of the core.



3,868,326
DISTRIBUTOR FOR CENTRIFUGAL SCREEN SEPARATOR

Walter J. Talley, Jr., Brentwood Park, Calif., assignor to Sweco Inc., Los Angeles, Calif.
Filed Mar. 12, 1973, Ser. No. 340,087
Int. Cl. B01d *33/02*
U.S. Cl. 210—377 **10 Claims**



1. A device for distributing solids-containing liquid to a rotary screen edge in a centrifugal screen separator comprising

primary distribution means positioned within the rotary screen cage for distributing solids-containing liquid influent to the inner side of the rotary screen cage; and

secondary distribution means positioned within the rotary screen cage below said first distribution means for receiving solids-containing liquid influent rebounded from the rotary screen cage and returning that rebounded influent to the rotary screen cage, said secondary distribution means including a body extending to substantially prevent solids containing liquid influent from passing interior thereof, vertical plates radially disposed and extending from said body and fixed thereto, said secondary distribution means being fixed to rotate with the rotary screen cage.

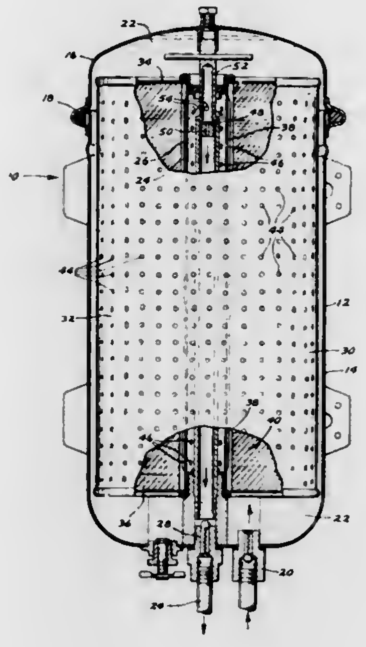
3,868,327
FILTER UNIT FOR FLUID CLEANER

James F. Van Gilder, Addison, Tex., and Donald R. Schmidt, Worthington, Minn., assignors to Skyway Sales Corporation, Lake Perry, Kans.

Filed Mar. 12, 1973, Ser. No. 339,992

Int. Cl. B01d *25/04*

U.S. Cl. 210—457 **9 Claims**



1. The method of making a filter unit including the steps of:

A. stacking a plurality of identically sized, flat sheets of toilet paper grade filter paper one on the other in face to face relationship to each other;

B. placing impervious end plates of substantially the same shape as the individual sheets of filter paper in sealing relation to the end sheets of the stack;

C. exerting a pressure on the outer surfaces of said plates to achieve a desired, predetermined pressure between adjacent filter paper sheets; and

D. fastening these end plates with respect to each other to maintain the desired pressure between the filter paper sheets.

3,868,328
FRICTION REDUCING COMPOUNDS FOR USE IN HYDRAULIC FRACTURING FLUIDS

Jerry Emile Boothe, Pittsburgh; Fred David Martin, and Andrew Jackson Sharpe, Jr., both of McMurray, all of Pa., assignors to Calgon Corporation, Robinson Township, Pa.

Continuation-in-part of Ser. No. 233,345, March 9, 1972, abandoned. This application Jan. 15, 1973, Ser. No. 323,546

Int. Cl. C09k *3/00*

U.S. Cl. 252—8.55 C **3 Claims**

1. An improved method for hydraulically fracturing an earth formation penetrated by a well comprising injecting an aqueous fracturing fluid down the well into the earth formation under pressure to cause fracturing of the earth formation wherein the improvement comprises treating the aqueous fracturing fluid prior to injection with an effective amount of a random, linear, water-soluble polymer consisting essentially of from about 1.0 to 100 percent by weight (3-acrylamido-3-methyl) butyl trimethyl ammonium chloride and from 0 to about 99 weight percent acrylamide.

3,868,329
GREASE COMPOSITION

Stuart Houston Brown, San Rafael, and Richard E. Crocker, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 348,399, April 5, 1973,. This application May 29, 1973, Ser. No. 364,853

Int. Cl. C10m *5/20, 7/32, 7/30*

U.S. Cl. 252—17 **12 Claims**

1. A grease composition comprising a major portion of an oil of lubricating viscosity, (1) from 0.5 to 20 weight percent of a water and oil-insoluble mono or polyurea thickening agent having at least one ureido group and having a molecular weight between about 350 and 2,500, (2) from 3 to 30 weight percent of an alkaline earth metal aliphatic monocarboxylate having from 1 to 3 carbons, and (3) from 0.1 to 10 weight percent of a Mannich Base prepared by reacting phenol with formaldehyde and an amine selected from the class consisting of diethanolamine, N,N-diethanol alkylenediamine and diethylamine, the molar ratio of formaldehyde to amine to phenol being between about 0.5 and 5:0.5 and 5:1.

3,868,330
LUBRICANTS AND FUEL CONTAINING HIGH MOLECULAR WEIGHT CARBOXYLIC ACID ACYLATING AGENTS AND THEIR DERIVATIVES

Norman A. Meinhardt, Lyndhurst, Ohio, and Charles Wesley Adams, Greenville, S.C., assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 80,500, Oct. 13, 1970, Pat. No. 3,755,169. This application May 16, 1973, Ser. No. 360,991

Int. Cl. C10m *1/24, 1/30*

U.S. Cl. 252—33.6 **20 Claims**

1. A lubricant or fuel composition comprising, respectively, a major amount of a lubricating oil or a normally liquid fuel and 0.0001% to 20% by weight of at least one oil-soluble high molecular weight carboxylic acid acylating agent prepared by a process comprising intimately contacting chlorine with a reaction mixture at a temperature of at least 140°C. and up to the decomposition temperature, said reaction mixture being selected from the group consisting of:

I. A first reactant which is at least one (A) monocarboxylic acid acylating agent containing an average of at least about 50 aliphatic carbon atoms in the acyl moiety exclusive of the carboxyl functions and at least one (B) low molecular weight carboxylic acid reactant which is an ethylenically unsaturated mono- or polycarboxylic acid acylating agent containing a total of up to about twenty carbon atoms in the acyl moiety, the mole ratio of (A) to (B) being such that there is at least 0.5 mole of (B) for each mole of (A) with the proviso that (B) provides a minimum of one equivalent of carboxylic acid reactant in the reaction mixture per mole of (A); or

II. at least one (C) ethylenically unsaturated aliphatic hydrocarbon or substituted aliphatic hydrocarbon reactant containing an average of at least about 50 aliphatic carbon atoms, at least one (D) low molecular weight monocarboxylic acid reactant which is an ethylenically unsaturated monocarboxylic acid acylating agent containing up to about 20 carbon atoms in the acyl moiety, and at least one (E) low molecular weight polycarboxylic acid reactant which is an ethylenically unsaturated polycarboxylic acid acylating agent containing up to about 20 carbon atoms in the acyl moiety, the mole ratio of (C): (D): (E) being such that there is at least about 0.5 mole of each of (D) and (E) per mole of (C) with the proviso that the combined amount of (D) and (E) provides a minimum of at least two equivalents of low molecular weight mono- and polycarboxylic acid reactants per mole of (C),

the total amount of chlorine employed in said process being sufficient to provide at least about 0.8 mole of chlorine per mole of (B) or at least about 0.8 mole of chlorine per the total number of moles of (D) and (E), respectively.

3,868,331
PROCESS FOR THE PARTIAL COMBUSTION OF HYDROCARBONACEOUS FUELS TO PRODUCE SUBSTANTIALLY SOOT-FREE GASES

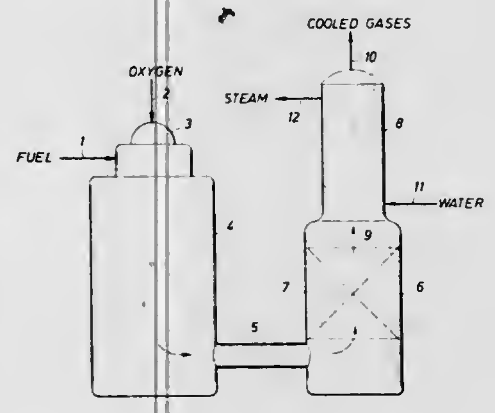
Nicolaas Van Lookeren Campagne, Rotterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed June 18, 1973, Ser. No. 370,996

Claims priority, application Great Britain, June 26, 1972, 29768/72

Int. Cl. C01b *2/14*

U.S. Cl. 252—373 **10 Claims**



1. In a process for the generation of a hydrogen and carbon monoxide-containing gas mixture by the partial combustion of a hydrocarbonaceous fuel with an oxygen-containing gas in the presence of steam in a partial combustion zone at a temperature of from about 1,000° to about 1,600°C and a pressure from 1 to 300 atmospheres whereby a crude hydrogen, steam, carbon dioxide and carbon-monoxide containing gas mixture containing contaminating amounts of soot in particulate form is obtained, the improvement which comprises substantially reducing the soot content of the crude gas mixture by passing the gas mixture into a soot-conversion zone which contains at least one bed of ceramic material and is maintained at substantially the same elevated temperature and pressure as that of the partial combustion zone, and retarding the passage of the soot particles through said soot-conversion zone for at least 5 seconds by adherence of said soot particles to said ceramic material whereby the soot particles are converted to carbon monoxide by reaction of the soot particles with combined stoichiometric amounts of steam and carbon dioxide in the crude gas mixture, reducing the soot content of the crude gas mixture to less than 1 percent by weight.

3,868,332
MASSIVE NICKEL CATALYSTS

James L. Carter, Chatham, N.J., and Wayne G. Custead, Elnora, N.Y., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 84,163, Oct. 26, 1970, Pat. No. 3,697,445, which is a continuation-in-part of Ser. No. 877,001, Nov. 14, 1969, abandoned. This application July 10, 1972, Ser. No. 270,165

Int. Cl. B01j *11/22, 11/34*

U.S. Cl. 252—452 **10 Claims**

6. A process for preparing a nickel-silica catalyst which comprises:

a. preparing an aqueous solution containing below about 30 g/l of silicate anion;

b. slurrying porous silica particles in a solution prepared in step (a);

c. preparing an aqueous solution containing less than 60 g/l of nickel ions;

d. adding the solution prepared in step (c) to the slurry prepared in step (b) at a substantially uniform rate; and

e. calcining the recovered solids.

3,868,333
TECHNETIUM CATALYST FOR HYDROCARBON REFORMING

Angus U. Blackham, and James L. Palmer, both of Provo, Utah, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 123,447, March 11, 1971,. This application Nov. 20, 1973, Ser. No. 417,651

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 **5 Claims**

1. A process for making a technetium catlyst comprising preparing an aqueous solution of a technetium salt, mixing a substrate material with said solution to form a slurry, adding ammonium sulfide to the slurry whereby technetium heptasulfide is precipitated on the substrate, partially drying said substrate and precipitate and heating said partially dried substrate and precipitate in the presence of hydrogen whereby the technetium heptasulfide is reduced to technetium on said substrate, thereby forming the technetium catalyst.

3,868,334
RESISTIVE GLAZE AND PASTE COMPOSITIONS

Paul R. Van Loan, Placentia, Calif., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 82,161, Oct. 19, 1970, Pat. No. 3,682,840. This application Apr. 21, 1972, Ser. No. 246,348

Int. Cl. H01b *1/08;* **C03c** *3/08, 3/10*

U.S. Cl. 252—520 **13 Claims**

1. A composition for firing into a resistive glaze, comprising in admixture:

as a conductant, finely divided RuO_2;

a glass frit consisting by weight of 55 to 75% PbO, 2 to 10% ZnO, 2 to 10% MnO, 5 to 20% SiO_2, 5 to 20% B_2O_3, and 0 to 5% ZrO_2; and

a temporary liquid binder for said conductant and frit components.

3,868,335

SETTLER FOR LIQUID-LIQUID EXTRACTORS

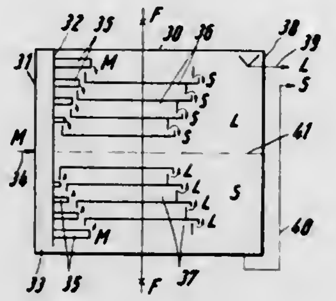
Hans-Martin Stonner, Frankfurt/Main; Ulrich Von Knoppe, Neu-Isenburg; Paul Weisner; Erhard Kraus, both of Obering, and Fritz Zigelsky, Mulheim, all of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Germany

Continuation of Ser. No. 314,041, Dec. 11, 1972, abandoned, which is a continuation of Ser. No. 108,860, April 25, 1970, abandoned. This application Feb. 27, 1974, Ser. No. 446,451

Claims priority, application Germany, Apr. 25, 1970, 2020305

Int. Cl. B01d *11/04*

U.S. Cl. 210—522 **9 Claims**



1. Phase separator for liquid-liquid extractors having a mixer and a settler which comprises a separator housing having inlet means for a mixture of liquid phases, outlet means for the separated pure light and heavy phases and internal means which promote the separation of said liquid phases consisting of a plurality of substantially horizontally extending, flat boxes, disposed one over the other, having an open top and closed bottom when positioned in the zone in which the light phase is separated and an open bottom and closed top when positioned in the zone in which the heavy phase is separated, each of said boxes having four sidewalls, one of said walls having inlet means for separately delivering to each box the mixture of phases to be separated, another of said walls being opposite said wall having inlet means and being spaced from the bottom of the open topped boxes and from the top of the open bottom boxes so as to define an edge of an outlet opening for separated pure phase, each of said outlet openings having a weir adjacent thereto for discharging separated pure phase into the surround zone in which the boxes are positioned, said wall defining the edge of said outlet opening extending vertically to the next adjacent box.

3,868,336

PROCESS FOR IMPROVING FLOWABILITY OF DETERGENTS

Louis R. Mazzola, Mahwah, and Paul Ferreri, Allendale, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 123,313, March 11, 1971, abandoned. This application Aug. 6, 1973, Ser. No. 385,785

Int. Cl. C11d *3/066*

U.S. Cl. 252—527 **7 Claims**

1. A process for improving the flowability of a particulate anionic or nonionic built detergent composition containing an oily detergent-improving additive comprising:

- i. preparing a spray-dried particulate detergent composition comprising about 0.5% to about 35% of an anionic detergent or nonionic detergent selected from the group consisting of (1) water-soluble ethylene oxide condensates of a base formed by condensing propylene oxide with propylene glycol, (2) compounds formed by the simultaneous polymerization of propylene oxide and ethylene oxide, and (3) ethoxylates of primary or secondary alcohols, said nonionic having detergent properties, and about 25% to about 80% of a detergent builder,
- ii. intimately blending with said detergent composition about 0.5% to about 15% by weight, whole composition basis, of a particulate water-soluble siliceous flow-promoting agent selected from the group consisting of silica aerogels, silica xerogels, diatomaceous earth, sodium silico aluminate, calcium alumino silicate, magnesium silicate, and mixtures thereof, said water-insoluble siliceous substances having a pore volume of at least 2 milliliters per gram,
- iii. blending with said oleophilic mixture about 1% to about 35% by weight, whole composition basis, and sufficient to improve the detergent characteristics of the detergent, of a detergency improver comprising a non-aqueous oily liquid substance selected from the group consisting of:
- a. condensates of ethylene oxide and monohydric primary or secondary alcohols having about 8 to 16 carbon atoms and having an ethylene oxide content of about 10% to about 51%,
- b. polymers of propylene oxide having a molecular weight of about 1,500 to about 1,800,
- c. condensates of ethylene oxide and polymers of propylene oxide and polymers of propylene oxide having a molecular weight of about 1500 to about 1800, said condensates having from about 10% to about 20% ethylene oxide by weight in the molecule,
- d. dialkyl phathates wherein the alkyl group has from 1–9 carbon atoms;

said particles of flow-promoting agent having absorbed thereon said oily detergency improver, and said detergency improver and said flow-promoting agent being external to the particles of said particulate detergent base composition.

3,868,337

VINYLIDENE FLUORIDE/HEXAFLUOROPROPYLENE COPOLYMER FOAMS

Paul Gros, Loches, France, assignor to Society Superflexit, Courbevoie, France

Filed Aug. 16, 1972, Ser. No. 281,151

Claims priority, application Great Britain, Aug. 19, 1971, 39036/71

Int. Cl. C08f *47/10;* **B29d** *27/04*

U.S. Cl. 260—2.5 R **13 Claims**

1. Process for the preparation of a closed-cell foam from a vinylidene fluoride/hexafluoropropylene copolymer of low viscosity, which comprises moulding a mixture comprising 80 to 120 parts by weight of the milled copolymer, 4 to 8 parts by weight of an azodicarbonamide blowing agent, 9 to 11 parts by weight of carbon black, 8 to 12 parts by weight of at least one vulcanising agent selected from the oxides and hydroxides of lead and calcium, mixtures of the oxides and hydroxides of lead or calcium with a salt selected from the inorganic and organic salts of lead and zinc, a mixture of ZnO and $PbCl_2$, and a mixture of MgO and zinc stearate, 1.8 to 2.2 parts by weight of an activator for the blowing agent, and 0.7 to 0.9 part by weight of a vulcanisation accelerator; the moulding being effected by a temperature of approximately from 140°C to 200°C, under a pressure of from 60 to 100 kg/cm^2, for a minimum period of about 30 minutes.

3,868,338

THERMOSETTING POLYESTER POWDER COATING COMPOSITIONS

Theron E. Parsons, III, and Francis J. Sheme, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,871

Int. Cl. C08b *21/08;* **C08g** *37/32*

U.S. Cl. 260—15 **7 Claims**

1. A thermosetting coating composition in the form of a powder having an average particle size range of from about 10 to about 300 microns comprising

- a. from about 50% to about 90% by weight of a polyester derived from a dicarboxylic acid component, at least 50 mol percent of which is isophthalic acid, a glycol component, at least 50 mol percent of which is 2,2,4-trimethylpentane-1,3-diol and from about 3 to about 10 mol percent of a polyol containing from two to 16 carbon atoms and having at least three primary hydroxyl groups,
- b. from about 5% to about 45% by weight of cellulose acetate butyrate having a butyryl content of from about 30 to about 55% by weight, a hydroxyl content of from about 0.1 to about 5%, an acetyl content of from about 0.5 to about 15% by weight and a viscosity of between about 0.1 and 30 seconds,
- c. from about 2% to about 15% by weight to a melamine crosslinking agent, and
- d. from about 0.1% to about 3% by weight of the reaction product of an acid and a compound containing oxirane groups,

said powder being free of appreciable crosslinking.

3,868,339

DENTURE ADHESIVE PREPARATION

James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

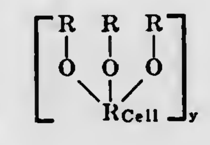
Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,742

Int. Cl. C08b *21/32;* **C08f** *29/36*

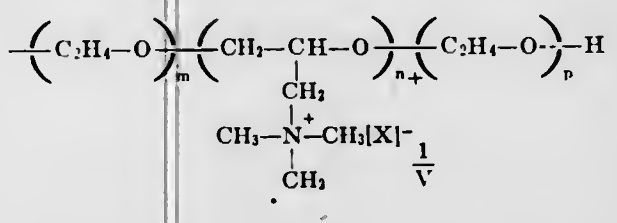
U.S. Cl. 260—17 R **7 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0 to about 80 percent by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material having the formula:



wherein R_{Cell} is the residue of an anhydroglucose unit, *y* is an integer having a value of from about 1,000 to about 5,000, and each R individually represents a substituent group of the general formula:



$$-\left(C_2H_4-O\right)_m-\left(\underset{\substack{|\\ CH_2\\ |+\\ CH_3-N-CH_3[X]^{-}\frac{1}{V}\\ |\\ CH_3}}{CH_2-CH}-O\right)_{n+}\left(C_2H_4-O\right)_p-H$$

wherein:

m is an integer having a value of from zero to 10;

n is an integer having a value of from zero to 3;

p is an integer having a value of from zero to 10;

X is an anion; V is an integer which is equal to the valence of X; the average value of n per anhydroglucose unit of said cellulose ether is from about 0.01 to about 1; and the average value of *m+p* per anhydroglucose unit of said cellulose ether is from about 0.01 to about 4; and

B. from about 20 to about 99 percent by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of copolymers of maleic acid with vinyl-lower alkyl-ether wherein the alkyl group has from one to five carbon atoms.

3,868,340

DENTURE ADHESIVE PREPARATION

James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plaines, N.J.

Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,622

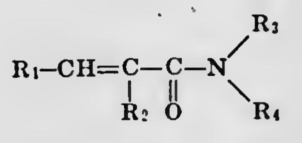
Int. Cl. C08f *29/00, 33/08*

U.S. Cl. 260—17.4 ST **9 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0% to about 80% by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material selected from the group consisting of:

1. a copolymer of an acrylamide having the formula:



(I)

wherein R_1 is methyl or hydrogen; and R_2, R_3, and R_4 are each hydrogen or 1 to 7 carbon lower alkyl, with a vinyl quaternary ammonium salt selected from the group consisting of trialkylaminoalkyl acrylate salts, trialkylaminoalkyl methacrylate salts, and vinyloxyalkyltrialkylammonium salts, wherein the alkyl group contains from 1 to 7 carbon atoms; and

2. a copolymer of an acrylamide having the formula (I) above with a vinyl or alkyl-substituted vinyl pyridinum salt, wherein the alkyl group is 1 to 7 carbon lower alkyl; and

B. from about 20% to about 99% by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of gum karaya, gum arabic, gum Shiraz, gum tragacanth, pectin, pectinates, algin and alginates.

3,868,341

CLEAR FLAME RETARDANT COMPOSITION

Earl Salvator Sauer, Perry Hall, and William Charles Vesperman, Baltimore, both of Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 2, 1972, Ser. No. 258,964

Int. Cl. C08f *19/14, 21/04*

U.S. Cl. 260—23 XA **14 Claims**

1. A clear flame-retardant composition, which includes a polymeric material consisting essentially of at least 80 percent, by weight, of polyvinyl chloride; 10 to 55 parts, by weight, per 100 parts, by weight, of the polymeric material of a phthalate plasticizer selected from the group consisting of di(N-octyl-n-decyl) phthalate, di(N-hexyl-n-decyl) phthalate, a di-isodecyl phthalate, a di-iso-octyl phthalate, a di-iso-nonyl phthalate, a di-tri-decyl phthalate and a tridecyl phthalate; 3 to 50 parts, by weight, per 100 parts, by weight, of the polymeric material of a phosphate plasticizer selected from the group consisting of triaryl phosphate and cresyl diphenyl phosphate; 2 to 5 parts, by weight, per 100 parts, by weight, of the polymeric material of a metallic stabilizer selected from the group consisting of a phosphite chelator, a barium stearate, a cadmium stearate, a barium ethyl hexoate, a barium-cadmium laurate, and a barium-cadmium myristate; 0.25 to 1.0 parts, by weight, per 100 parts, by weight, of the polymeric material of a lubricant selected from the group consisting of metallic stearate and stearic acid; 0.25 to 1.0 parts, by weight, per 100 parts, by weight, of the polymeric material of an ultraviolet absorber selected from the group consisting of substituted benzophenones and substituted acryonitriles; 1 to 4 parts, by weight, per 100 parts, by weight, of the polymeric material of an epoxy resin; and, 1 to 8 parts, by weight, per

100 parts, by weight, of the polymeric material of an epoxy plasticizer.

3,868,342

PROCESS FOR THE PREPARATION OF CONDENSATION PRODUCTS OF SILICON-CONTAINING AMINES WITH EPOXIDE COMPOUNDS

Robert Magne, Sainte-Foy-les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 24, 1971, Ser. No. 201,965

Claims priority, application France, Nov. 26, 1970, 70.42483

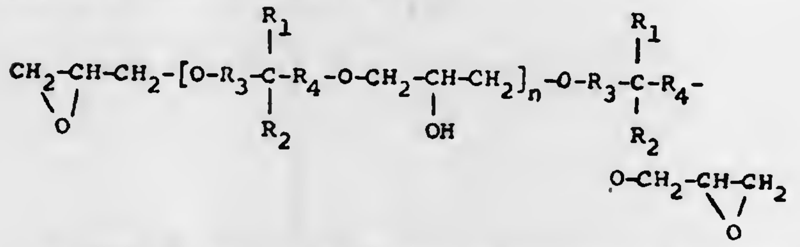
Int. Cl. C08g *53/18, 31/10*

U.S. Cl. 260—29.2 M **8 Claims**

1. An aqueous emulsion comprising an alkylhydrogenopolysiloxane and 2–15% by weight based on the weight of the alkylhydrogenopolysiloxane of a condensate having free amine groups, obtained by reaction of a silicon-containing amine of general formula

$(R'O)_3Si\ R - NH - R - NH_2$

in which the symbols R′ which may be identical or different, each represent an alkyl radical and the symbols R, which may be identical or different, each represent an alkylene radical, with an epoxide of general formula



$$\underset{\diagdown O \diagup}{CH_2-CH}-CH_2-[O-R_3-\overset{R_1}{\underset{R_2}{C}}-R_4-O-CH_2-\underset{OH}{CH}-CH_2]_n-O-R_3-\overset{R_1}{\underset{R_2}{C}}-R_4-O-CH_2-\underset{\diagdown O \diagup}{CH-CH_2}$$

in which R_1 and R_2, which may be identical or different, each is an alkyl radical or hydrogen, R_3 and R_4 which may be identical or different each are substituted or unsubstituted para-phenylene radicals and n is an integer of at least 1, or, when R_1 and R_2 each represent methyl and R_3 and R_4 each represent p-phenylene, *n* is 0; the weight ratio of the silicon-containing amine to the epoxide being at least 0.5:1.

3,868,343

COATED PLASTIC SUBSTRATES FOR COATING COMPOSITIONS

Edward J. Stengle, and James J. Tillman, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 12, 1973, Ser. No. 340,071

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.4 R **12 Claims**

1. A method for making a coating solution composition having prolonged shelf-life and which is rapidly convertible to a hard, strongly adhered, abrasion-resistant, mar-resistant, chemical-resistant, and acetone-resistant coating which comprises:

1. heating methyltrialkoxysilane, wherein the alkoxy group contains between 1 to 6 carbon atoms, with between about 1.5 to about 10 moles of water per mole of total silane, in the presence of an effective catalyzing amount of a acid hydrolysis catalyst, between about 40°C. up to and including the reflux temperature for a period of about 1–10 hours so as to produce a substantially gel-free solution which contains a dissolved, hydrolyzed and partially condensed organopolysiloxane,
2. concentrating the solution containing said dissolved, hydrolyzed and partially condensed organopolysiloxane by heating to remove some but not all volatile material, including alkanol by-product and some water, so as to obtain a solution of a hydrolyzed and further partially condensed organopolysiloxane,
3. adding to said solution containing said hydrolyzed and further partially condensed organopolysiloxane in an amount of between about 3% to about 15% by weight based on organopolysiloxane solids an alkylated melamine formaldehyde partial condensate resin which is soluble in said solution wherein alkylation is effected with methanol and a C_2–C_4 alkanol in a mole ratio of methanol to said alkanol of at least about 1:1.

3,868,344

OIL EXTENDED MOLECULAR WEIGHT CONTROLLED ALFIN GUMS

Raymond G. Newberg, Wyoming, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 116,597, Feb. 18, 1971, abandoned, which is a continuation of Ser. No. 4,447, Jan. 20, 1970, abandoned, which is a continuation of Ser. No. 601,266, Nov. 14, 1966, abandoned. This application Mar. 16, 1973, Ser. No. 341,803

Int. Cl. C08c *11/18, 11/22*

U.S. Cl. 260—33.6 AQ **11 Claims**

1. A workable rubber composition having a Mooney viscosity ML1+4 (100° C.) of 24 to less than about 60 which comprises

an alfin catalyzed, molecular weight controlled polymer containing a conjugated diolefin having no more than 12 carbon atoms and having a Mooney viscosity ML1+4 (100° C.) of about 30 to about 80 and a molecular weight of about 200,000 to 750,000,

at least 30 parts up to 150 parts per 100 parts of said polymer of an oily liquid hydrocarbon having a boiling point above about 232° C., and from about 50 to 150 parts of carbon black per 100 parts of said polymer.

3,868,345

ELASTOMERS MADE FROM HARDENABLE MASSES BASED ON DIORGANOPOLYSILOXANES

Gunter Kratel, Sankt Mang; Gunter Stohr, Kempten; Georg Vogt, Sankt Mang, and Wolfgang Hechtl, Burhausen, all of Germany, assignors to Elektroschemelzwerk Kempten GmbH, Munich, Germany

Filed Mar. 8, 1973, Ser. No. 339,261

Claims priority, application Germany, Mar. 9, 1972, 2211377

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **9 Claims**

1. In elastomers made from masses hardenable at room temperature or slightly higher temperatures, said masses being based on diorganopolysiloxanes and containing reinforcing fillers of SiO_2 having a surface area of at least 50 m^2/g reacted with organosilicon compounds in amounts of 3–25 percent by weight, the improvement that the organosilicon compounds used have the general formula

$$(R_3Si)_aZ$$

wherein R stands for the same or different monovalent hydrocarbon radicals, *a* is 1 or 2, Z represents a member of the group consisting of halogen, hydrogen and a radical of the formula —OH, —OR, —NRX, $—ONR_2$, —SR, —OOCR, —O—, —N(X)— and —S—, wherein R is as defined above, and X stands for hydrogen or the same radicals as R, said reaction being carried out under mechanical impact to increase the bulk weight of the resulting SiO_2 to 150–320 grams per liter.

3,868,346

HEAT RESISTANT POLYMERIC COMPOSITIONS

Edward W. Merrill, Cambridge, Mass., assignor to High Voltage Engineering Corporation, Burlington, Mass.

Continuation-in-part of Ser. Nos. 107,570, Jan. 18, 1971, abandoned, and Ser. No. 233,935, March 3, 1972, Pat. No. 3,774,623, which is a division of Ser. No. 888,505, Dec. 29, 1969, Pat. No. 3,679,625. This application Dec. 14, 1972, Ser. No. 315,102

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **8 Claims**

1. A heat resistant composition comprising a silicone polymer which polymer does not evolve a toxic gas or vapor when oxidized at elevated temperatures and an alkali metal borate hydrate intimately admixed, with the borate retained within said silicone, said borate having a melting point below the temperature wherein substantial thermal decomposition of the silicone occurs and being reactive with silica to form a borosilicate glass, the concentration of said borate being sufficient to render the composition fire retardant and being between about 50 and 80 percent by weight of said composition.

3,868,347

PROCESS FOR THE PRODUCTION OF POLYVINYL CHLORIDE-COATED SILICATE-CONTAINING MATERIALS

Alex Sabel, and Walter Popp, both of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Oct. 17, 1973, Ser. No. 407,177

Claims priority, application Germany, Oct. 17, 1972, 2250868

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.15 **7 Claims**

1. A method for the production of a polyvinyl chloride-coated silicate-containing material consisting essentially of suspending a water-insoluble silicate-containing material in an aqueous solution containing a catalytic amount of a water-soluble persulfate, by agitation, heating said suspension to a temperature of from 30°C to 80°C, introducing a monomer mixture of (1) vinyl chloride containing up to 30 percent by weight based on said vinyl chloride of monomers copolymerizable with vinyl chloride having only carbon, hydrogen and oxygen atoms and (2) from 0.5 percent to 30 percent by weight of vinyl chlorosilane, based on the monomer mixture with vinyl chloride at such a rate whereby the pressure is maintained below the saturation vapor pressure of vinyl chloride for a time sufficient to effect polymerization and recovering said polyvinyl chloride-coated silicate-containing material.

3,868,348

THERMOSTABLE HETEROCYCLIC POLYMERS OF AROMATIZED BIS ADDUCTS OF DIELS-ALDER REACTION BETWEEN MALEIC ANHYDRIDE AND BISFURANIC COMPOUNDS

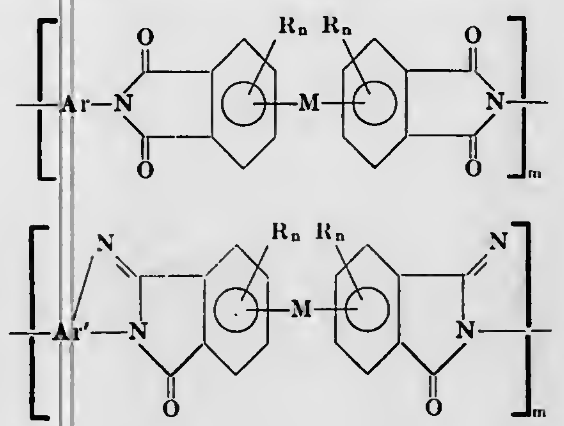
Alfred Anisimovich Berlin, Lenisky prospekt, 57, kv. 9; Boris Izrailevich Liogonky, ulitsa 26 bakinskikh komissarov, 7, korpus 4, kv. 45, and Boris Isaakovich Zapadinsky, prospekt Vernadskogo, 11/19, kv. 221, all of Moscow, U.S.S.R.

Continuation of Ser. No. 102,910, Dec. 30, 1970, abandoned. This application May 14, 1973, Ser. No. 359,890

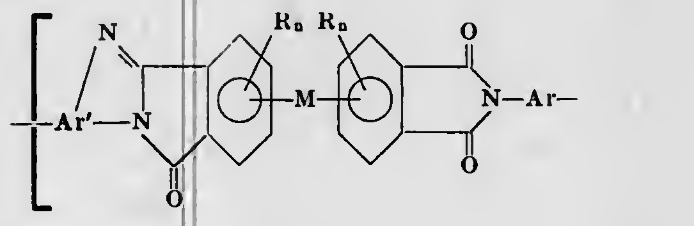
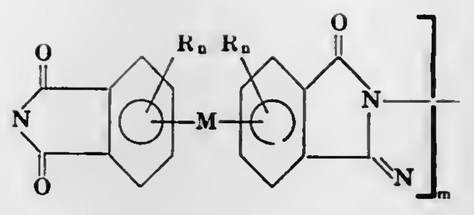
Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP **18 Claims**

1. Thermostable heterocyclic polymers selected from the group consisting of polyimide, polyimidazopyrrolone, and a copolymer of an imide and imidazopyrrolonic structure and consisting substantially of units of the general formulae:

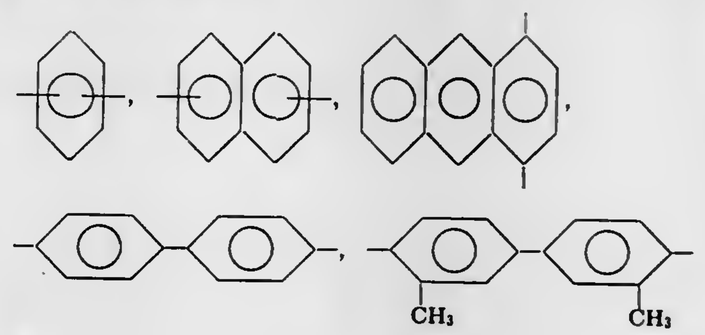


and

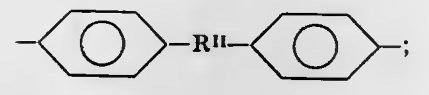



where M stands for:

a. —CH=N—R^1—N=CH—; R^1 is arylene selected from the group consisting of

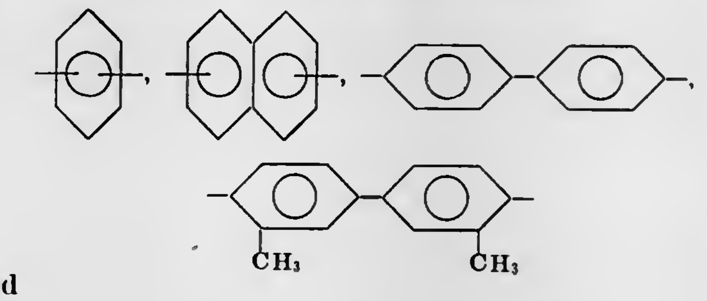


and

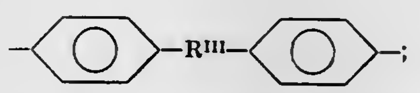


R′′ is selected from the group consisting of Ch_2, O, SO_2, S and NH;

b. arylene selected from the group consisting of

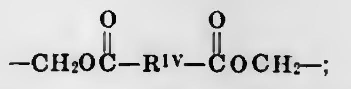


and



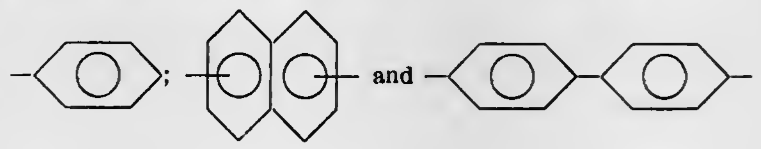
R′′′ is selected from the group consisting of CH_2, O and SO_2;

c.

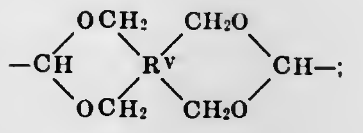


$$-CH_2O\overset{O}{\overset{\|}{C}}-R^{IV}-\overset{O}{\overset{\|}{C}}OCH_2-;$$

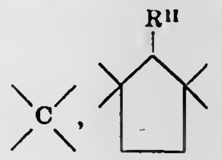
R′ᵛ is arylene selected from the group consisting of

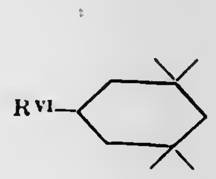


or d.

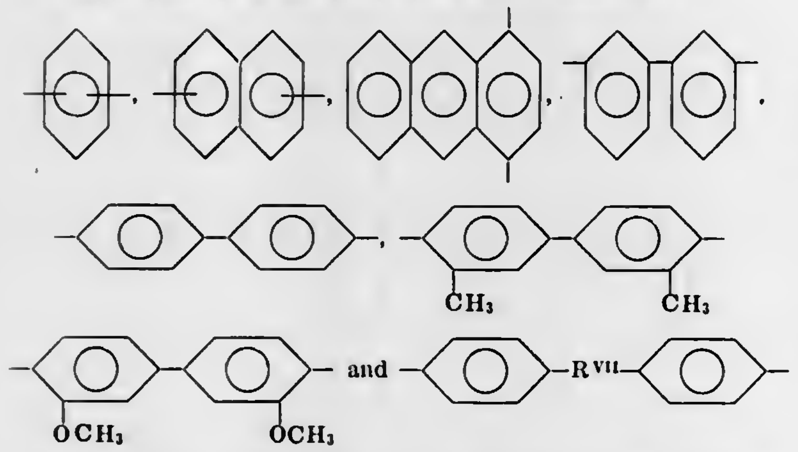


R′ᵛ is selected from the group consisting of

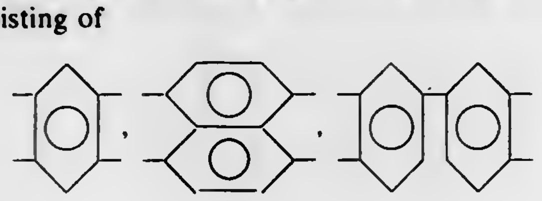




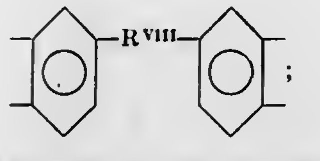
R^{VI} is selected from the group consisting of H, HO and =O;
R is selected from the group consisting of an H atom, phenyl and naphthyl;
n is a number including 1 and 2;
Ar is arylene selected from the group consisting of



R^{VIII} is selected from the group consisting of CH_2, O, SO_2, S and NH;
Ar′ is a tetravalent aromatic radical selected from the group consisting of



and



R^{VIII} is selected from the group consisting of CH_2 and O, and *m* is a number sufficient for provision of an intrinsic viscosity of the polymers in a solution of sulphuric acid of at least 0.06 at 25°C.

3,868,349
PERMANENT PRESS FABRIC RESIN AND PROCESSES THEREFOR

Thomas M. Powanda, Middlesex; Lawrence B. Holzman, West Orange, and James E. Tracy, Bernardsville, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 135,778, April 20, 1971, Pat. No. 3,753,648. This application May 3, 1973, Ser. No. 357,048

Int. Cl. C08g *9/26*

U.S. Cl. 260—67.7 **9 Claims**

1. A method which comprises reacting 2,7-dioxo-4,5-dimethyl-decahydro-pyrimido-[4,5-d]-pyrimidine (A) with glyoxal in a hydroxylic medium to form a dihydroxyethylene-substituted adduct (B), and reacting adduct (B) with between about 1.0 and about 3.0 molar proportions of formaldehyde, the resulting methylolated derivative composition (C) being useful as an aminoplast material for imparting permanent press properties to fabrics.

3,868,350
THERMOPLASTIC POLYURETHANE POLYUREA POWDERS

Helmut Reiff, Cologne; Harro Witt, Dormagen, and Dieter Dieterich, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1973, Ser. No. 364,180

Claims priority, application Germany, May 31, 1972, 2226526

Int. Cl. C08g *22/00, 22/00*

U.S. Cl. 260—77.5 Q **17 Claims**

1. A process for the production of thermoplastic polyurethane-polyurea powders having an average particle diameter of from 10 to 1,000 μ said process comprising stirring and reacting:

- a. polyurethanes containing free NCO groups and ionic groups, said ionic groups being present in the polyurethanes in an amount such that the end products have an ionic group capable of salt formation in a content of from 0.01 to 0.15 milliequivalents per gram, with
- b. primary and/or secondary diamines having aliphatic amino groups and/or dicarboxylic acid-bis-hydrazides

at an NH to NCO ratio of from between 0.1 to 0.95 and in the presence of water until said powder is formed and recovering said powder.

3,868,351
SOLUTION PROCESS FOR THE PREPARATION OF POLYIMDIES FROM DIAMINES AND ANHYDRIDES

John D. Hand, and Wendell G. Whitehouse, both of Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 94,529, Dec. 2, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,631

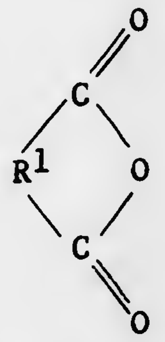
Int. Cl. C08g *20/20*

U.S. Cl. 260—78 UA **12 Claims**

1. A process for the preparation of a solid polyimide prepolymer consisting essentially of

a. dissolving a difunctional amine having the formula
$H_2N — R — NH_2$

where R consists of two arylene groups joined through an alkylene group of from 1 to 3 carbon atoms; and an anhydride of an aliphatically unsaturated dicarboxylic acid having the formula



where R^1 is a divalent group containing up to about 30 carbon atoms and has at least one carbon-to-carbon double bond in an inert solvent to form a solution containing from about 2 to about 3 moles of anhydride for each mole of amine;

- b. heating said solution at a temperature not in excess of about 75°C to form a condensation product in which the amine groups have been substantially completely reacted;
- c. adding said difunctional amine as above to the reaction mixture from step (b) to provide a solution containing from about 2 to about 3 moles of condensation product for each mole of amine; and
- d. heating the solution of step (c) at a temperature not in excess of about 75°C until formation of said prepolymer is substantially complete.

3,868,352
PROCESS FOR THE CONTINUOUS POLYMERISATION OF POLYAMIDES

John Theodore Rich, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1973, Ser. No. 391,259

Claims priority, application Great Britain, Sept. 7, 1972, 41488/72

Int. Cl. C08G *20/00;* C08f *1/98*

U.S. Cl. 260—78 R **2 Claims**

1. A continuous process for the manufacture of high molecular weight linear polyamides by condensation polymerisation comprising passing an aqueous solution of a polyamide-forming monomer under conditions of elevated temperature and super-atmospheric pressure through elongate reaction zone defined by the following conditions;

I *d* increases gradually and/or in one or more stages, but never decreases, as v increases.
II V has a value from 1600Q to 10000Q,
III $\log d_{max} = 1.00 + 0.143 \tan^{-1}[(0.1\ v/Q)—40] + 0.36 \log Q.$
IV $\log d_{min} = 0.67 + 0.250 \tan^{-1}[(0.002\ v/Q)—2] + 0.36 \log Q.$
Q = rate of output of polyamide (throughput) in kilograms per hour
V = total volume of the reaction zone in cubic centimetres
v = volume of the reaction zone from its inlet end up to a given point along its length in cubic centimetres.
d = diameter of reaction zone at any given point along its length in millimetres
d_{max} = maximum diameter of reaction zone at any given point along its length in millimetres
d_{min} = the minimum value of the above diameter, at least the inner surface of said elongate reaction zone comprising metallic titanium.

3,868,353
HALF AMIDE-HALF AMMONIUM SLATS OR ALPHA-OLEFIN-MALEIC ANHYDRIDE COPOLYMERS

Earle E. Allen, Jr., 4750 South Kenwood, Chicago, Ill. 60615; James A. Smit, 3917 South Washington, Country Club Hills, Ill. 60559; Robert R. Walter, 17695 South Hillcrest Dr., Westmont, Ill. 60477, and Roger H. Jansma, 261 Juniper, Park Forest, Ill. 60466

Division of Ser. No. 277,643, Aug. 3, 1972,. This application July 18, 1974, Ser. No. 489,593

Int. Cl. C08g *20/00*

U.S. Cl. 260—78 UA **5 Claims**

1. A water dispersible half amide-half ammonium salt of a copolymer of maleic anhydride and an alpha olefine containing 4 to 6 carbon atoms.

3,868,354
NEW CATALYST FOR HYDROGENATION OF ELASTOMERS AND THE PROCESS OF HYDROGENATION

Adel Farhan Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Dec. 13, 1973, Ser. No. 424,263

Int. Cl. C08d *5/00*

U.S. Cl. 260—94.7 H **3 Claims**

1. The process of hydrogenating an unsaturated elastomer which comprises hydrogenating the same in solution in an aliphatic solvent in the presence of 0.02 mM to 1.0 mM per gram of elastomer of a reduced cobaltous bis-lactam catalyst, which lactam having the formula

$$CH_2\cdot(CH_2)_n\cdot CO\cdot NH$$

in which n=0 to 20 and which reducing agent is a trialkyl or triaryl aluminum or a dialkyl or diaryl aluminum hydride at a temperature of 250° to 500° C. and a pressure of 25 to 1,000 psig.

3,868,355
FOAM SEPARATION OF GLUTEN AND STARCH

Nelson E. Rodgers, Deephaven, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Dec. 26, 1972, Ser. No. 318,145

Int. Cl. A23j *1/12*

U.S. Cl. 260—112 G **22 Claims**

1. A process of separating starch and gluten components of wheat endosperm obtained by a hydroprocessing method wherein the normal cellular structure of the endosperm is substantially completely disrupted and during which the endosperm is dispersed in an aqueous medium, the starch granules are maintained in a substantially intact and ungelatinized form and the gluten protein is dispersed and wherein the husks are removed from said product; the endosperm comprising wheat starch granules which are substantially intact, ungelatinized and unoccluded by gluten protein; homogeneous, smoothly contoured gluten protein particles containing only minor amounts of occluded starch, said gluten protein being substantially undenatured with respect to doughing function; said process comprising the steps of:

- a. providing an aqueous dispersion comprising said wheat starch granules, said gluten protein particles and wheat solubles having a pH between 3.8 and 6.5;
- b. incorporating gas into said aqueous dispersion to create a gas emulsion wherein the gas bubbles are spherical and are predominantly less than 1,000 microns in diameter;
- c. allowing said gas emulsion to consolidate into a top layer of foam, comprising particles of gluten protein and some starch granules entrapped in the interstices of compacted spherical bubbles, and a bottom layer, comprising starch granules suspended in an aqueous solution of wheat solubles; and,
- d. separating said foam layer containing gluten protein from said dispersion of starch and solubles.

3,868,356
N-ACYLATED, O-SUBSTITUTED INSULIN DERIVATIVES

Derek George Smyth, London, England, assignor to National Research Development Corporation, London, England

Filed Jan. 26, 1972, Ser. No. 221,059

Claims priority, application Great Britain, Jan. 28, 1971, 3388/71

Int. Cl. C07c *103/52;* C07g *7/00;* A61k *17/04*

U.S. Cl. 260—112.7 **22 Claims**

1. A substituted insulin in which the substituents are located on one or more of the amino groups of the A_1(glycine), B_1(phenylalanine), and B_{29}(lysine) amino acid units and on one or more of the tyrosine hydroxyl groups, at least one of said amino groups is monoacylated with the monobasic acyl residue of a dicarboxylic acid containing no more than eight carbon atoms, and at least one of the tyrosine hydroxyl groups is blocked by an O-substituent selected from the group consisting of acetyl, glutaryl, cyclopropanecarbonyl, cyclobutanecarbonyl and carbamyl.

3,868,357
ALKANEDIOIC ACID DERIVATIVES OF INSULIN

Derek George Smyth, and Arthur Sai Chun Ko, both of London, England, assignors to National Research Development Corporation, London, England

Filed Jan. 26, 1972, Ser. No. 221,060

Claims priority, application Great Britain, Jan. 28, 1971, 3387/71

Int. Cl. C07c *103/52;* C07g *7/00;* A61k *17/02*

U.S. Cl. 260—112.7 **18 Claims**

1. A mono-, di- or trisubstituted insulin in which the substituents are located on one or more of the amino groups of the A_1 (glycine), B_1 (phenylalanine) and B_{29} (lysine) amino acid units, at least one of said groups being monoacylated with the monobasic acyl residue of a dicarboxylic acid selected from the group consisting of succinic acid and glutaric acid.

3,868,358
PROTAMINE-INSULIN PRODUCT

Richard L. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 139,120, April 30, 1971, Pat. No. 3,758,683. This application Mar. 2, 1973, Ser. No. 337,511. The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.

Int. Cl. C07c *103/52;* C07g *7/00;* A61k *17/02*

U.S. Cl. 260—112.7 **2 Claims**

1. A stable hypoglycemic composition comprising a protamine-insulin salt complex containing from about 0.2 mg. to

about 1.5 mg. of protamine for each 100 units of insulin and an insulin salt having less than about 0.05 percent zinc selected from the group consisting of an alkali metal salt of insulin and an ammonium salt of insulin.

3,868,359

SYMMETRICAL TRISAZO SEQUENTIAL FREE RADICAL INITIATORS HAVING TWO DIFFERENT AZO FUNCTIONS

Chester Stephen Sheppard, 726 Parkhurst Blvd., Tonawanda, N.Y. 14150, and Ronald Edward MacLeay, 10 Mahogany Dr., Williamsville, N.Y. 14221

Division of Ser. No. 752,752, Aug. 15, 1968, Pat. No. 3,649,614. This application Feb. 22, 1972, Ser. No. 228,242

Int. Cl. C07c *107/02, 107/04;* C08f *19/10*

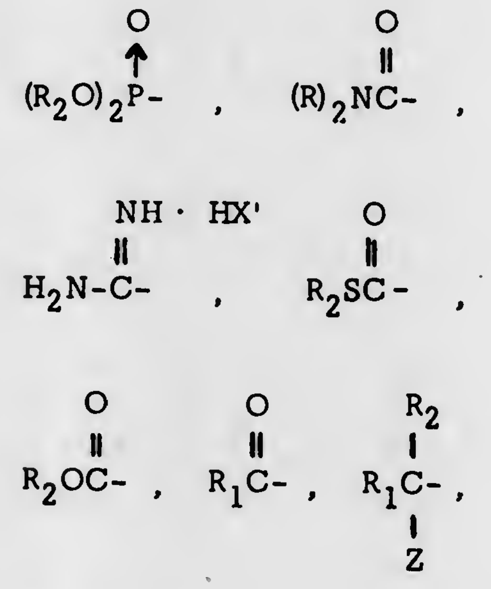
U.S. Cl. 260—173 **5 Claims**

1. An azo compound of the formula:

$$(C-N=N-A-B-A'-N\!\!=\!\!)_2$$

where:

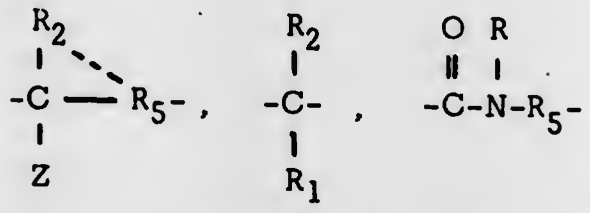
a. C is selected from



$(R_2O)_2\overset{\overset{O}{\uparrow}}{P}-$, $(R)_2N\overset{\overset{O}{\|}}{C}-$, $H_2N-\overset{\overset{NH\cdot HX'}{\|}}{C}-$, $R_2S\overset{\overset{O}{\|}}{C}-$, $R_2O\overset{\overset{O}{\|}}{C}-$, $R_1\overset{\overset{O}{\|}}{C}-$, $R_1\underset{\underset{Z}{|}}{\overset{\overset{R_2}{|}}{C}}-$,

and aryl of 6–12 carbons;

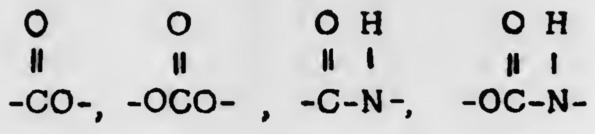
b. A and A′ are the same, when A and C are different, or are different, when A and C are the same or different, and are selected from



$-\underset{\underset{Z}{|}}{\overset{\overset{R_2}{|}}{C}}-R_5-$, $-\underset{\underset{R_1}{|}}{\overset{\overset{R_2}{|}}{C}}-$, $-\overset{\overset{O}{\|}}{C}-\overset{\overset{R}{|}}{N}-R_5-$ and

and —C(=O)OR₅—, the "C" in each group being directly attached to an azo group;

c. B is selected from

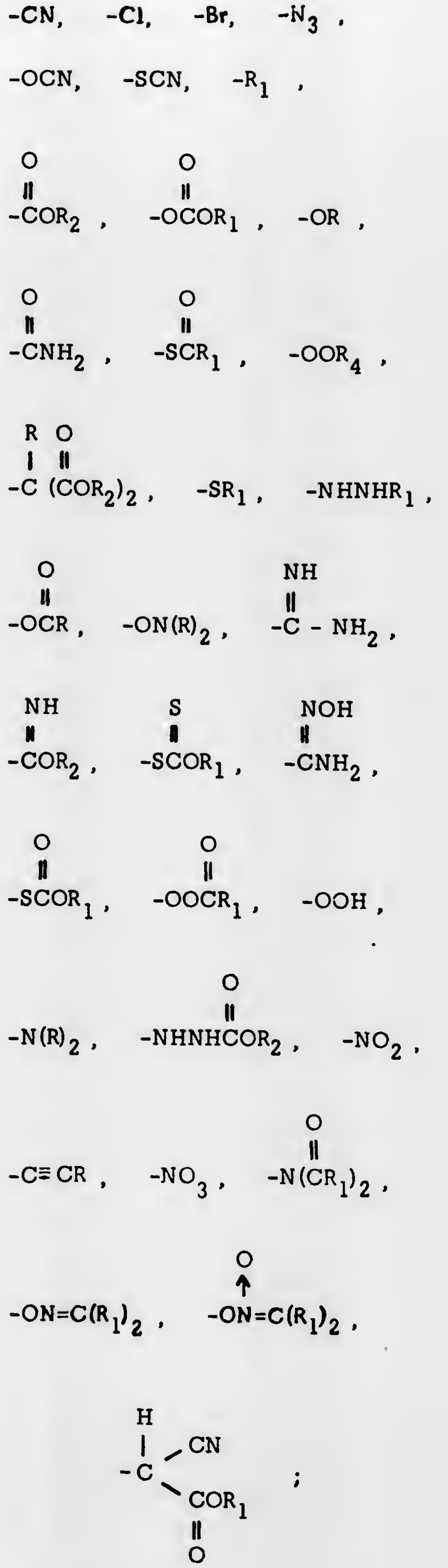


$-\overset{\overset{O}{\|}}{C}O-$, $-O\overset{\overset{O}{\|}}{C}O-$, $-\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-$, $-O\overset{\overset{O}{\|}}{C}-\overset{\overset{H}{|}}{N}-$

and a direct bond;

d. X′ is an inorganic anion;

e. the Zs are separately selected from



$-CN$, $-Cl$, $-Br$, $-N_3$,

$-OCN$, $-SCN$, $-R_1$,

$-\overset{\overset{O}{\|}}{C}OR_2$, $-O\overset{\overset{O}{\|}}{C}OR_1$, $-OR$,

$-\overset{\overset{O}{\|}}{C}NH_2$, $-S\overset{\overset{O}{\|}}{C}R_1$, $-OOR_4$,

$-\overset{\overset{R}{|}}{C}(\overset{\overset{O}{\|}}{C}OR_2)_2$, $-SR_1$, $-NHNHR_1$,

$-O\overset{\overset{O}{\|}}{C}R$, $-ON(R)_2$, $-\overset{\overset{NH}{\|}}{C}-NH_2$,

$-\overset{\overset{NH}{\|}}{C}OR_2$, $-S\overset{\overset{S}{\|}}{C}OR_1$, $-\overset{\overset{NOH}{\|}}{C}NH_2$,

$-S\overset{\overset{O}{\|}}{C}OR_1$, $-OO\overset{\overset{O}{\|}}{C}R_1$, $-OOH$,

$-N(R)_2$, $-NHNH\overset{\overset{O}{\|}}{C}OR_2$, $-NO_2$,

$-C\equiv CR$, $-NO_3$, $-N(\overset{\overset{O}{\|}}{C}R_1)_2$,

$-ON{=}C(R_1)_2$, $-\overset{\overset{O}{\uparrow}}{N}O{=}C(R_1)_2$,

$-\overset{\overset{H}{|}}{C}\begin{matrix}\diagup CN \\ \diagdown \underset{\underset{O}{\|}}{C}OR_1\end{matrix}$;

f. the Rs are separately selected from hydrogen, lower alkyl of 1–6 carbons, and aryl of 6–12 carbons;

g. The R₁s are separately selected from lower alkyl of 1–6 carbons or aryl of 6–12 carbons;

h. The R₂s are separately selected from lower alkyl of 1–6 carbons;

i. R₄ is t-alkyl of 4–12 carbons;

j. R₅ is alkylene of 1–12 carbons; and

k. R₂ and R₅, when taken together with the tertiary carbon linked to Z, form cycloalkyl of 5–8 carbons.

3,868,360

PROCESS FOR PREPARING 2-DEROXY-3-DESAMINO-2,3-EPIMINO-AMINOGLYCOSIDES AND INTERMEDIATES USEFUL THEREIN

Peter J. L. Daniels, Cedar Grove, and Jay Weinstein, Bloomfield, both of N.J., assignors to Shering Corporation, Bloomfield, N.J.

Filed Oct. 24, 1972, Ser. No. 299,983

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 AB **14 Claims**

1. In the process for preparing a 2″-deoxy-3″-desamino-2″,3″-epimino-4,6-di-(aminoglycosyl)-2-deoxystreptamine wherein an antibacterially active 4,6-di- (aminoglycosyl) -2-deoxystreptamine having a 2″-hydroxy function and a 3″-primary or secondary amino function, the primary and secondary amino groups of which are protected by carbobenzyloxy groups, and primary and secondary hydroxyl groups of which are converted to a triphenylmethyl ether of a primary hydroxyl group or a cyclic ketal or acetal of protectable neighboring hydroxyl groups, is treated with a hydrocarbonsulfonyl halide in a tertiary amine, the thereby formed 2″-O-hydrocarbonsulfonyl-per-N-carbobenzyloxy 4,6-di-(aminoglycosyl)-2-deoxystreptamine is treated with hydrogen in the presence of a catalyst, or with an alkali metal in liquid ammonia, whereby the N-carbobenzyloxy groups are removed; and the resulting 2″-O-hydrocarbonsulfonyl 4,6-di-(aminoglycosyl)-2-deoxystreptamine is converted to a 2″-deoxy-3″-desamino-2″,3″-epimino 4,6-di-(aminoglycosyl)-2-deoxystreptamine by spontaneous transformation or by heating in a lower alkanol alone or together with an alkali metal salt of said alkanol;

the improvement which comprises protecting primary amino groups and secondary amino groups capable of oxazolidine formation with an aldehyde and a neighboring hydroxyl group in said antibacterial active 4,6-di-(aminoglycosyl)-2-deoxystreptamine by Schiff base-oxazolidine condensation products with an aldehyde devoid of hydroxyl groups; and, after preparation of the 2″-O-hydrocarbonsulfonyl ester thereof, treating the resulting 2″-O-hydrocarbonsulfonyl 4,6-di-(aminoglycosyl)-2-deoxystreptamine having N-protecting-Schiff base -oxazolidine groups with dilute aqueous acid to a pH in the range of from about 1 to about 5, whereby said N-protecting Schiff base-oxazolidine groups are removed.

3,868,361

S-TRIAZOLO[2,3-A] PRYIMIDINE NUCLEOSIDES

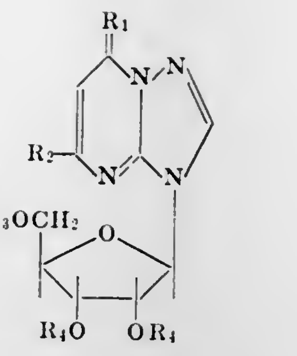
Richard L. Tolman, 18253 Bayberry Way, Irvine, Calif. 92664, and Ganapathi R. Revankar, 20312 Santa Ana Ave., No. 8, Santa Ana, Calif. 92707

Filed Mar. 12, 1973, Ser. No. 340,224

Int. Cl. C07d *51/50*

U.S. Cl. 260—211.5 R **17 Claims**

1. A compound of the structure:



wherein R₁ is O or NH; R₂ is Cl, H, NH₂, NHCH₃, N(CH₃)2, NHNH₂, CH₃, SH, or OH; R₃ is H, acetyl, or H₂PO₃; and R₄ is H or acetyl.

3,868,362

OXAZOLOBENZODIAZEPINES

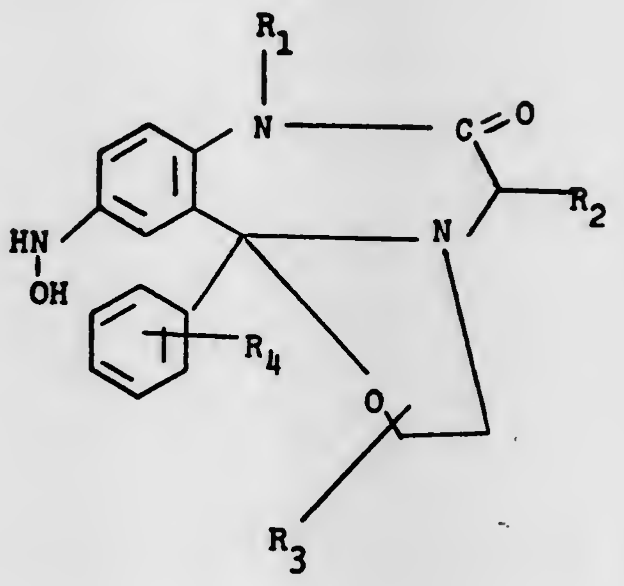
Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, both of N.J., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Nov. 29, 1973, Ser. No. 420,119

Int. Cl. C07d *85/48, 53/06*

U.S. Cl. 260—239.3 T **2 Claims**

1. A compound of the formula



wherein

R₁ signifies hydrogen, lower alkyl, C_4-C_{10} cycloalkyl-lower alkyl, lower alkoxy-lower alkyl, hydroxy-lower alkyl, or di-lower alkylamino-lower alkyl;

R₂ signifies hydrogen or lower alkyl,

R₃ signifies hydrogen or lower alkyl;

R₄ signifies hydrogen or halogen

and the pharmaceutically acceptable acid addition salts thereof.

3,868,363

1H-5-PHENYL-1,4-BENZODIAZEPINES

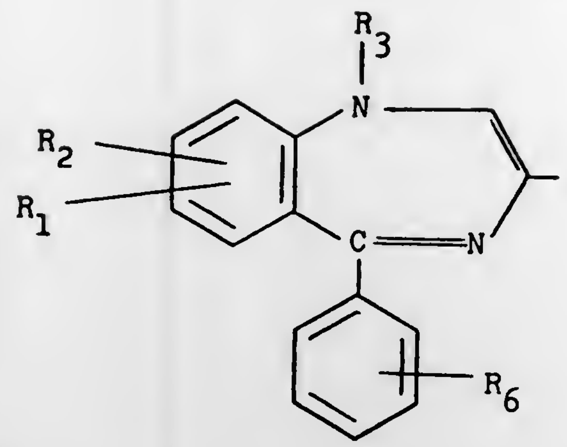
James Valentine Earley, Cedar Grove; Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed June 5, 1974, Ser. No. 476,353

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 BD **2 Claims**

1. A compound of formula



wherein

R₁ and R₂ are each selected from the group consisting of hydrogen, halogen, trifluoromethyl and nitro;

R₃ is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl-lower alkyl, and di-lower alkylamino-lower alkyl;

R₅ is hydrogen or lower alkyl;

R₆ is selected from the group consisting of hydrogen and halogen,

and the pharmaceutically acceptable acid addition salts thereof.

3,868,364

IMPROVED PROCESS FOR PRODUCING PENICILLIN COMPOUND

Toshiyasu Ishimaru, Osaka, and Yutaka Kodama, Tokyo, both of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

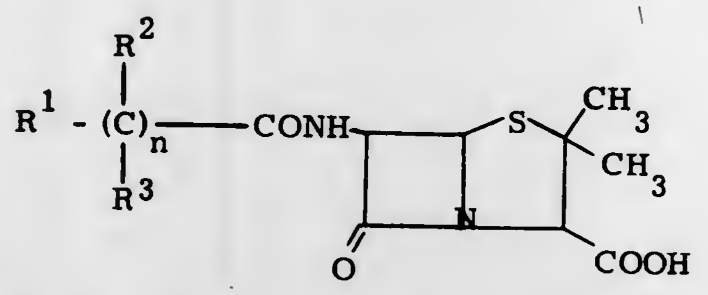
Filed Sept. 29, 1971, Ser. No. 184,921

Claims priority, application Japan, Oct. 17, 1970, 45-90971

Int. Cl. C07d *99/16*

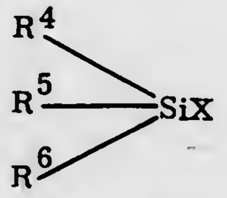
U.S. Cl. 260—239.1 **8 Claims**

1. In a process for producing a penicillin of the formula:

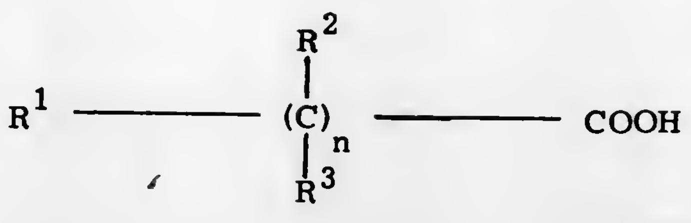


wherein R^1 and R^2 signify a hydrogen atom or a lower alkyl, phenyl, phenoxy, 3-phenyl-5-methyl-4-isoxazolyl, or 3-(halo-substituted phenyl)-5-methyl-4-isoxazolyl group; R^3 signifies a hydrogen atom, or an amino group and n signifies the numeral 0 or 1, the improvement which comprises:

reacting at a temperature below 60°C a triloweralkylamine, N-methyl-piperidine or N-methylmorpholine salt of 6-aminopenicillanic acid with a silylhalide having the formula:



wherein R^4 signifies loweralkyl, loweralkoxy, benzyloxy, phenyl, phenoxy or haloloweralkyl; R^5 signifies loweralkoxy or halogen; R^6 signifies lower-alkoxy, phenoxy, benzyloxy or β-haloethoxy and X signifies halogen to protect the carbonyl group of the 6-aminopenicillanic acid by forming a mixed acid anhydride grouping; reacting the above obtained product in the presence of an acid-binding agent selected from the group consisting of triloweralkylamine, N,N-diloweralkylaniline, pyridine, quinoline, N-loweralkylmorpholine, N-loweralkylpiperdine, picoline and lutidine, with a reactive derivative of a carboxylic acid having the formula:



$$R^1 - \underset{R^3}{\overset{R^2}{(C)_n}} - COOH$$

wherein R^1, R^2, R^3 and n are the same as indicated above, and then solvolyzing the product with water or loweraliphatic alcohol to remove the protecting group of the carboxyl group.

3,868,365

METHOD FOR PREPARING 6-SUBSTITUTED PENICILLINS BY REPLACEMENT OF OXYGEN CONTAINING GROUPS

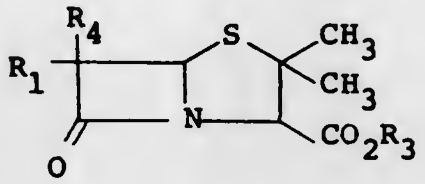
Joseph Edward Dolfini, Princeton, N.J.; William A. Slusarchyk, Belle Mead, N.J., and William Henry Koster, Lawrenceville, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 6, 1972, Ser. No. 312,470

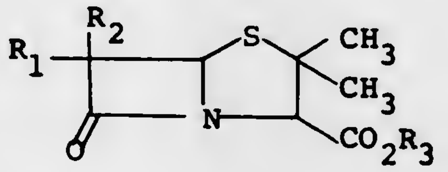
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **4 Claims**

1. A process for the preparation of compounds of the formula:



wherein R_1 is selected from the group consisting of benzalimino, p-nitrobenzalimino, p-methoxybenzalimino, thienylacetamido, α-aminophenylacetamido, α-amino-1,4-cyclohexadienylacetamido, phenylacetamido, and phenoxyacetamido; R_4 is selected from the group consisting of lower alkoxy, lower alkanoyloxy, phenoxy, and azido; and R_3 is selected from the group consisting of hydrogen, methyl, t-butyl, trichloroethyl, trimethylsilyl, p-methoxybenzyl, and a cation; which comprises reacting a compound of formula:



wherein R_1 and R_3 are as defined above and R_2 is lower alkanoyloxy; with a compound selected from the group consisting of lower alkyl alcohols, phenol, lower alkanoic acid or its heavy metal salt, sodium azide and potassium azide at a temperature of from about −10° to about 110°C in the presence of a catalyst selected from the group consisting of mercuric acetate, mercuric chloride, silver acetate, silver tetrafluorborate, thallium acetate, and dimethoxy mercury.

3,868,366

PROCESSES FOR THE PREPARATION OF 5BETA-H-6-KETO STEROIDS

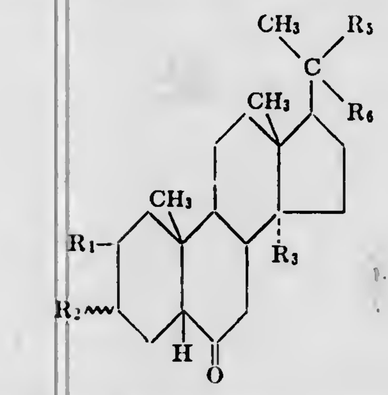
Andor Furst; Andre Furlenmeier, both of Basel; Albert Langemann, Binningen; Guy Waldvogel, Riehen, all of Switzerland; Peter Hocks, Berlin, Germany; Ulrich Kerb, Berlin, Germany, and Rudolf Wiechert, Berlin, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 197,928, Nov. 11, 1971, abandoned, which is a division of Ser. No. 42,595, June 1, 1970, Pat. No. 3,655,650, which is a division of Ser. No. 709,238, Feb. 29, 1968, Pat. No. 3,557,097, which is a division of Ser. No. 571,187, Aug. 9, 1966, abandoned. This application Mar. 1, 1973, Ser. No. 337,040

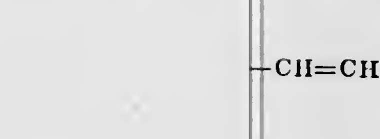
Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 R **6 Claims**

1. The process for producing a compound of the formula:

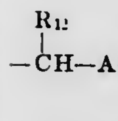


wherein R_1 and R_2 are independently members selected from the group consisting of hydroxy, a radical derived from an aliphatic carboxylic acid of up to 11 carbons by removal of the hydrogen of the carboxyl group and lower alkoxy; $R_1$and R_2 when taken together and R_2 is in the β-orientation are lower alkylenedioxy; R_3 is hydrogen or hydroxy; R_5 when taken along is hydrogen; R_6 when taken alone is a member selected from the group consisting of $-CO_2Z$, $-CHO$, $-CH-(O\text{-lower alkyl})_2$,



$$-CH=CH-\overset{CH_3}{C}-\underset{CH_3}{CH}-CH_3$$

and



$$-\overset{R_{12}}{CH}-A-\underset{CH_3}{\overset{R_{13}}{C}}-CH_3;$$

A is $-CH_2-CH_2$ or $-C \quad C-$; and R_{12} and R_{13} are hydrogen, hydroxy, a radical derived from an aliphatic carboxylic acid of from 2 to 11 carbon atoms by removal of the hydrogen of the carboxyl group or tetrahydropyranyloxy; $R_5$and R_6 when taken together are oxo; Z is a member selected from the group consisting of hydrogen and lower alkyl

which comprises isomerizing the corresponding 5,6-oxido steroid with an acid catalyst selectd from the group consisting of sulfuric acid, perchloric acid, selenous acid, p-toluene sulfonic acid, boron trifluoride, magnesium bromide, mercury chloride and aluminium chloride.

3,868,367

4-HYDROXY-3-(5-ISOXAZOLYLCARBAMOYL)-2H-1,2-BENZOTHIAZINE 1,1-DIOXIDES

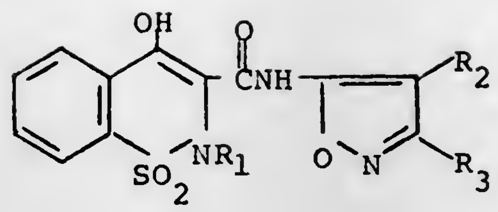
Harold Zinnes, Rockaway; Martin L. Schwartz, Gillette; Neil A. Lindo, Chatham, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 11, 1974, Ser. No. 460,266

Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **3 Claims**

1. A compound of the formula:



wherein R_1, R_2 and R_3 are hydrogen or alkyl of 1 to 7 carbon atoms and nontoxic pharmaceutically acceptable salts thereof.

3,868,368

PROCESS FOR PREPARING A 7-AMINOCEPHALOSPORIN ESTER

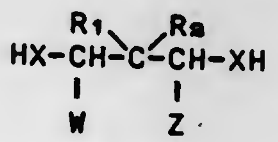
Lowell D. Hatfield, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 30, 1971, Ser. No. 203,398

Int. Cl. C07d *99/24*

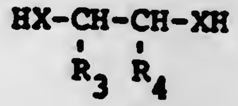
U.S. Cl. 260—243 C **7 Claims**

1. A process for preparing solid, crystalline p-nitrobenzyl 7-amino-3-methyl-3-cephem-4-carboxylate hydrochloride which comprises reacting the imino chloride of a p-nitrobenzyl 7-acylamido-3-methyl-3-cephem-4-carboxylate with from 2 to 3 moles of a diol selected from the group consisting of (a) a beta diol of the formula



$$HX-\underset{W}{CH}-\overset{R_1\ R_a}{C}-\underset{Z}{CH}-XH$$

wherein each X is oxygen or sulfur, each of W and Z is hydrogen or C_1 to C_2-alkyl and each of R_1 and R_2 is hydrogen or a hydrocarbon moiety such that the 1,3-diol has from 3 to 15 carbon atoms; or (b) an alpha diol of the formula



$$HX-\underset{R_3}{CH}-\underset{R_4}{CH}-XH$$

wherein each X is oxygen or sulfur, and each of R_3 and R_4 is hydrogen or alkyl such that the molecule has from 2 to 12 carbon atoms, in an inert, organic liquid solvent in the presence of hydrogen halide.

3,868,369

3-HETEROCYCLICTHIOMETHYLCEPHALOSPORINS

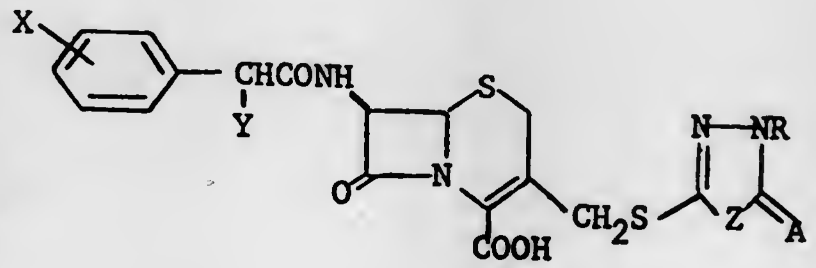
David Alan Berges, Audubon, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Nov. 14, 1972, Ser. No. 306,507

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

1. A compound of the formula



where

X is H, CH_2OH, SR, or OR;

Y is NH_2 or OH;
A is O or S;
Z is NR; and
R is hydrogen or C_1–C_4 alkyl
or a nontoxic pharmaceutically acceptable salt thereof.

3,868,370
PROCESS FOR MAKING 4-BUTYROLACTONE

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,195
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **5 Claims**

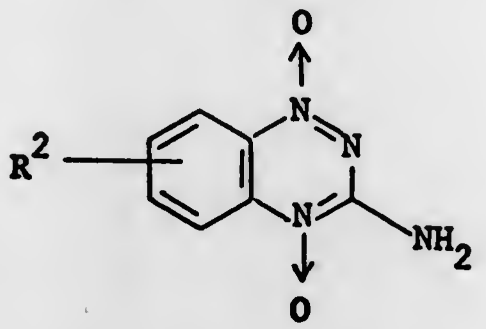
1. The process for making 4-butyrolactone which comprises the step of heating 4-acetoxybutanoic acid in the presence of an acidic cyclization catalyst selected from the class consisting of nitric acid, phosphoric acid, sulfuric acid, polyphosphoric acid, phosphorous pentoxide, hydrogen chloride, toluene sulfonic acid, methane sulfonic acid, trichloroacetic acid, and finely divided alumina.

3,868,371
3-AMINO-1,2,4-BENZOTRIAZINE-1,4-DI-N-OXIDES AND PROCESSES FOR THEIR PREPARATION

Kurt Ley, Odenthal-Glofbusch; Florin Seng, Schildgen, and Karl George Metzger, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 24, 1973, Ser. No. 326,389
Claims priority, application Germany, Feb. 1, 1972, 2204574
Int. Cl. C07d *55/10*
U.S. Cl. 260—249.5 **31 Claims**

1. An isomeric mixture of a compound of the formula:



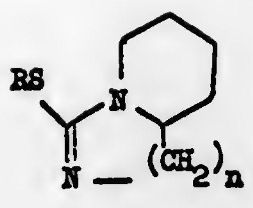
wherein R^2 is in the 6- or 7-position and is selected from the group consisting of bromo, fluoro, ethyl, dichloromethyl, dichlorofluoromethyl, pentafluoroethyl, carboxy, carbonamido or sulphonamido, the R^2 radicals in the mixture being identical.

3,868,372
ORGANOMERCAPTO-SUBSTITUTED POLYHYDRO IMIDAZO[1,5-A]PYRIDENES AND PYRIDE[1,2-C]PYRIMIDINES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 161,302, July 9, 1971, Pat. No. 3,772,230, which is a division of Ser. No. 835,289, May 28, 1969, Pat. No. 3,631,046. This application Aug. 13, 1973, Ser. No. 387,751
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A **9 Claims**

1. A compound of the formula:



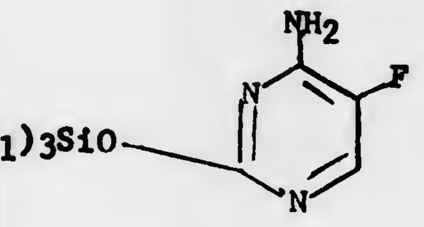
wherein
R is either lower alkyl or benzyl; and
n is 1 or 2,
or an acid addition salt thereof.

3,868,373
4-AMINO-5-FLUORO-2-TRI(LOWER ALKYL) SILYLOXYPYRIMIDINES

Max Hoffer, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 6,289, Jan. 27, 1970, Pat. No. 3,721,664, which is a continuation-in-part of Ser. No. 811,666, March 28, 1969, abandoned. This application Dec. 21, 1972, Ser. No. 317,467
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 E **2 Claims**

1. A compound of the formula



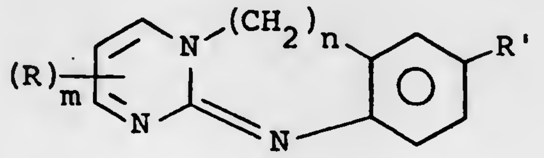
wherein R_1 is lower alkyl.

3,868,374
THERAPEUTIC COMPOUNDS AND INTERMEDIATES THEREFOR

Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed July 26, 1973, Ser. No. 382,804
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 F **3 Claims**

1. A compound of the formula



wherein *m* is 1 or 2; when *m* is 1, R occupies either the 4- or 5-positions of the starting 2-aminopyrimidine, but when R is halogen it occupies only position-5; when *m* is 2, the two R-substituents occupy the 4- and 5-positions of the starting 2-aminopyrimidine, but only one of the two R-substituents can be halogen and it must occupy the 5-position.

R is the same or different and is hydrogen, F, Cl, Br, alkyl of from 1 to 4 carbons, benzyl, phenyl, or mono-substituted phenyl wherein the substituent is F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, or trifluoromethyl; provided that when R is halogen, and m is 1, R occupies only the 5-position in the starting 2-aminopyrimidine with the proviso that R may not be adjacent tertiary alkyl;

R' is hydrogen, F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, alkylthio of from 1 to 4 carbons, alkylsulfonyl wherein the alkyl radical has from 1 to 4 carbons, phenyl, phenyloxy, sulfamoyl, dialkylamidosulfonyl wherein each alkyl radical has from 1 to 4 carbons, trifluoromethyl, mono-substituted phenyl or mono-substituted phenyloxy wherein the substituent is F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons or trifluoromethyl; *n* is 2 or 3,

and pharmaceutically acceptable acid addition salts thereof.

3,868,375
PROCESS FOR SEPARATING METHYLTEREPHTHALIC ACID AND 4-METHYLISOPHTHALIC ACID FROM MIXTURES OF THE TWO, AT EACH HIGHER CONCENTRATIONS

Gentaro Yamashita; Takeshi Fujii; Noritsugu Saiki, all of Iwakunl; Kiyoshi Nawata, and Takanori Shinoki, both of Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 4, 1971, Ser. No. 140,213
Claims priority, application Japan, May 7, 1970, 45-38831; May 7, 1970, 45-38832
Int. Cl. C07c *51/42;* **C07d** *51/64*
U.S. Cl. 260—268 R **38 Claims**

1. Process for separating and recovering salts of methylterephthalic acid at higher concentrations from mixtures of methylterephthalic acid and 4-methylisophthalic acid, which comprises dissolving a mixture of methylterephthalic acid and 4-methylisophthalic acid in water, in the form of the mixture of salts with at least one base selected from the group consisting of:

a. ammonia,
b. aliphatic, straight chain ω,ω'-diamines of an even number of carbon atoms within the range of 2 – 12,
c. diamines of the formula,

$$H_2N-(CH_2)_n-\phi-(CH_2)_n-NH_2$$

in which n is a positive integer of 1 – 3, and ϕ is p-phenylene group or p-cyclohexylene groups,
d. bis-(p-aminocyclohexyl) methane, and
e. piperazine,

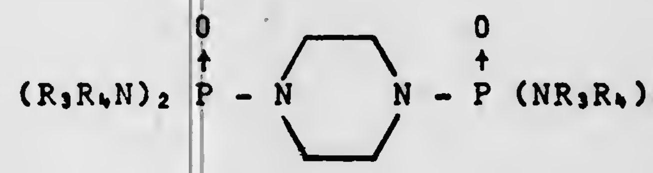
to form an aqueous solution of the salts of said acid mixture, concentrating the solution to cause precipitation of the methylterephthalic acid salt or salt mixture composed mainly of methylterephthalic acid salt, and separating the so precipitated salt or salt mixture.

3,868,376
BIS N,N PIPERAZINE PHOSPHORAMIDES AND THEIR PREPARATION

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 278,850, Aug. 7, 1972, Pat. No. 3,795,613. This application Aug. 25, 1972, Ser. No. 284,012
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 K **6 Claims**

1. A compound having the formula:



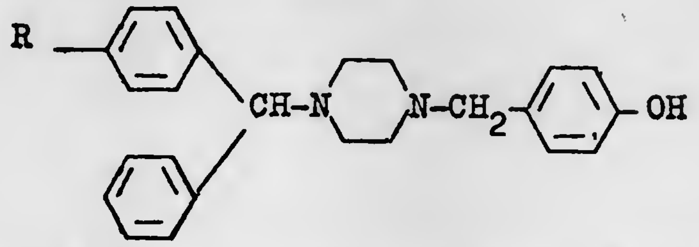
wherein
R_3 is hydrogen or an alkyl having from 2 to 20 carbons; and
R_4 is an alkyl having from 2 to 20 carbons.

3,868,377
N-BENZHYDRYL-N'-p-HYDROXYBENZYL-PIPERAZINES AND PROCESSES FOR THEIR MANUFACTURE

Thomas Raabe, Heusenstamm; Josef Scholtholt, Frankfurt; Eckhard Schraven, Frankfurt-Fechenheim, and Rolf-Eberhard Nitz, Bergen-Enkheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

Filed May 29, 1973, Ser. No. 364,764
Claims priority, application Germany, June 2, 1972, 2226767; Mar. 12, 1973, 2312212
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BZ **3 Claims**

1. A compound of the formula



wherein R denotes a substituent selected from the group consisting of chlorine and hydrogen, or the non-toxic acid addition salts thereof

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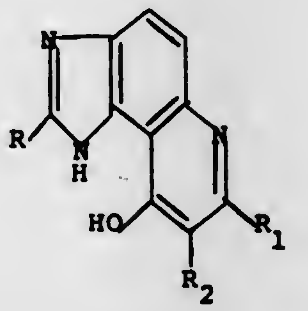
3,868,378
IMIDAZO [4,5-F] QUINOLIN-9-OLS

Claude F. Spencer, and Robert J. Alaimo, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed June 6, 1973, Ser. No. 367,499
Int. Cl. C07d *33/50*
U.S. Cl. 260—289 R **8 Claims**

1. A compound of the formula



wherein R is phenyl, 2-furyl, p-tolyl, or o-chlorophenyl; R_1 is methyl or phenyl; R_2 is hydrogen or methyl and R_1 and R_2 taken together supply the atoms necessary to form the cyclopentyl ring.

3,868,379
HETEROCYCLIC AMIDES OF 4-HYDROXY-2H-1-BENZOTHIOPYRAN-3-CARBOXYLIC ACID 1,1-DIOXIDE

Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 248,509, April 28, 1972, Pat. No. 3,769,292. This application June 21, 1973, Ser. No. 372,440The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 C **2 Claims**

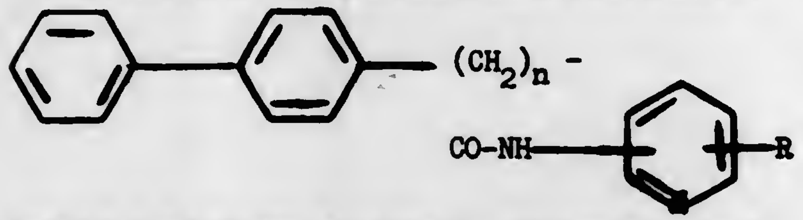
1. 4-hydroxy-6-methyl-N-(2-pyridyl)-2H-1-benzothiopyran-3-carboxamide-1,1-dioxide.

2. 6-chloro-4-hydroxy-N-(2-pyridyl)-2H-1-benzothiopyran-3-carboxamide-1,1-dioxide.

3,868,380
DIPHENYLYL-AL KANOYLAMINOPYRIDINES AND SALTS THEREOF

Luigi Molteni, Corso di Porta Romana Nr. 69; Franco Tenconi, Via Palestrina Nr. 20, Monza, and Renato Tagliabue, Via V. Veneto 4, Bovisio, all of Milan, Italy
Filed May 22, 1973, Ser. No. 362,759
Claims priority, application Italy, May 23, 1972, 24732/72
Int. Cl. C07d ***31/44***
U.S. Cl. 260—295 AM 6 Claims

1. A diphenyl yl-alkanoylaminopyridine of the formula:



in which R is hydrogen or a linear $C_{1\text{-}4}$ alkyl group and *n* is 1, 2 or 3, and a pharmaceutically acceptable acid addition salt thereof.

3,868,381
MANUFACTURE OF 1,1-DISUBSTITUTED-4,4 -BIPYRIDYLIUM

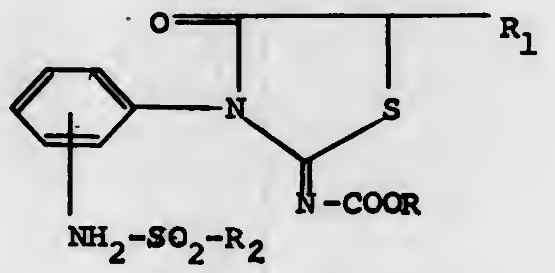
John Gerard Carey, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation-in-part of Ser. No. 126,903, March 22, 1971, abandoned. This application May 30, 1973, Ser. No. 365,250
Claims priority, application Great Britain, Apr. 3, 1970, 15960/70
Int. Cl. C07d ***31/44***
U.S. Cl. 260—295 AM 8 Claims

1. A process for the manufacture of a 1,1′-disubstituted-4,4′-bipyridylium salt wherein each of the substituents is selected from the group consisting of lower alkyl, carbamido lower alkyl and hydroxy lower alkyl groups containing up to 10 carbon atoms which consists essentially of reacting the corresponding N-substituted pyridinium salt with hydrogen cyanide in a medium consisting essentially of substantially anhydrous liquid ammonia under a non-oxidising atmosphere at a temperature of from −70°C. to no more than 150°C, and subsequently oxidising the resulting interaction product by means of an oxidising agent having a redox potential in water more positive than −0.50 volt as compared with the saturated calomel electrode.

3,868,382
THIAZOLIDINE DERIVATIVES

Raymond Giraudon, Lesigny, Seine-et-Marne, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Dec. 29, 1972, Ser. No. 319,877
Claims priority, application France, Jan. 12, 1972, 72.00947
Int. Cl. C07d ***91/16***
U.S. Cl. 260—306.7 T 14 Claims

1. Thiazolidine derivatives of the formula:

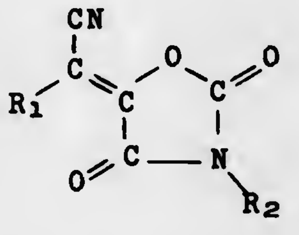


wherein R represents alkyl of 1 to 4 carbon atoms, R_1 represents hydrogen, alkyl of 1 to 4 carbon atoms or phenyl, and R_2 represents alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms substituted by halogen, phenyl or phenyl carrying one, two or three substituents selected from the class consisting of halogen and alkyl, alkoxy and alkanoylamino radicals, or a naphthyl radical, the said alkyl, alkoxy and alkanoylamino radicals having 1 through 4 carbon atoms.

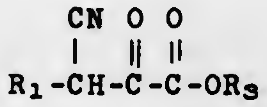
3,868,383
PROCESS FOR PREPARING 5-(α-CYANOBENZYLIDENE) OXAZOLIDINE-2, 4-DIONES

Ronald E. Hackler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 23, 1973, Ser. No. 353,928
Int. Cl. C07d ***85/34***
U.S. Cl. 260—307 B 8 Claims

1. A process for the preparation of 5-(α-cyanobenzylidene)oxazolidine-2,4-diones of the formula,



which process comprises the step of reacting a substituted cyanopyruvic acid ester of the formula,



$$R_1-\overset{\overset{CN}{|}}{C}H-\overset{\overset{O}{\|}}{C}-\overset{\overset{O}{\|}}{C}-OR_3$$

with an isocyanate of the formula,

$$R_2NCO$$

in a solvent or solvent mixture having no active hydrogen atoms; wherein R_1 is a monovalent organic group selected from the group consisting of phenyl, p-chlorophenyl, and p-fluorophenyl; R_2 is a monovalent organic group selected from the group consisting of phenyl, p-chlorophenyl, 1-naphthyl, and C_1–C_{18} alkyl, with the limitations that when R_2 is naphthyl, R_1 is phenyl, and when R_1 is p-fluorophenyl, R_2 is C_1–C_{18} alkyl; and R_3 is monovalent C_1–C_6 alkyl.

3,868,384
PERFLUOROALKYL DERIVATIVES

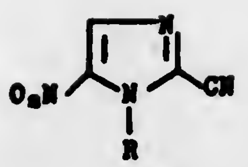
Stephen S. Szinai, Workingham, Berkshire, England; George Crank, Kensington, New South Wales, Australia, and David R. K. Harding, London, Ontario, Canada, assignors to Lilly Industries, Ltd., London, England
Division of Ser. No. 84,462, Oct. 27, 1970, abandoned. This application Dec. 19, 1972, Ser. No. 316,616
Claims priority, application Great Britain, Oct. 28, 1969, 52837/69
Int. Cl. C07d ***85/36***
U.S. Cl. 260—307 F 1 Claim

1. 2-Trifluoromethyl oxazolidine.

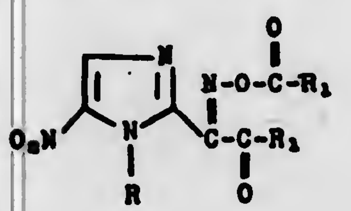
3,868,385
PREPARATION OF 2-CYANO-1-SUBSTITUTED-5-NITROIMIDAZOLES

William Henry Gastrock, Hightstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 167,492, July 29, 1971, Pat. No. 3,770,760, which is a division of Ser. No. 864,861, Oct. 8, 1969, Pat. No. 3,634,447. This application July 12, 1973, Ser. No. 378,465
Int. Cl. C07d ***49/36***
U.S. Cl. 260—309 1 Claim

1. A method for the preparation of a compound of the formula:



where R is a member selected from the group consisting of loweralkyl, loweralkanoyloxyloweralkyl and aroyloxyloweralkyl where aroyl is selected from the group consisting of benzoyl, monohalobenzoyl, dihalobenzoyl, loweralkylbenzoyl, diloweralkylbenzoyl, 4-nitrobenzoyl, methoxybenzoyl and naphthoyl, comprising treating a compound of the formula:



where R is as described above and R_1 is phenyl, monohalophenyl, dihalophenyl, loweralkylphenyl, diloweralkylphenyl, 4-nitrophenyl, methoxyphenyl or naphthyl, with from about 0.5 to 1.0 mole equivalent of a strong base selected from the group consisting of alkali metal hydroxides, alkali metal cyanides and alkali metal alkoxides at a temperature between about 0°C. and 100°C. in the presence of an alkanol of 1 to 6 carbon atoms and recovering the thus formed product from the reaction mixture.

3,868,386
PROCESS FOR THE PREPARATION OF 4-CARBOXAMIDO-5-CYANO-2-IMIDAZOLONE

Robert A. Sanchez, 867 Riqueza Ave., Encinitas, Calif. 92024, and William D. Fuller, 4126 Seri St., San Diego, Calif. 92117
Filed Mar. 14, 1973, Ser. No. 341,227
Int. Cl. C07d ***49/34***
U.S. Cl. 260—309.6 6 Claims

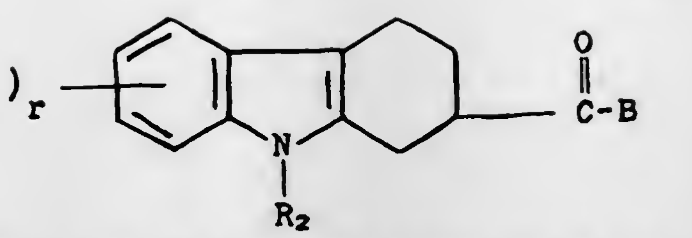
1. A process for the production of 4-carboxamido-5-cyano-2-imidazolone which comprises the steps of:

reacting a water-soluble bicarbonate salt with a member of the group selected from hydrogen cyanide and diaminomaleonitrile, in aqueous alkaline media having a pH of between about 7 to about 9 and a temperature of between about 10°–40°C to form 4-carboxamido-5-cyano-2-imidazolone.

3,868,387
1,2,3,4-TETRAHYDROCARBAZOLE-2-CARBOXYLIC ACIDS AND THEIR DERIVATIVES

Leo Berger, Montclair, and Alfred John Corraz, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 133,738, April 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 40,443, May 25, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,764
Int. Cl. C07d ***27/68***
U.S. Cl. 260—315 15 Claims

1. A compound of the formula



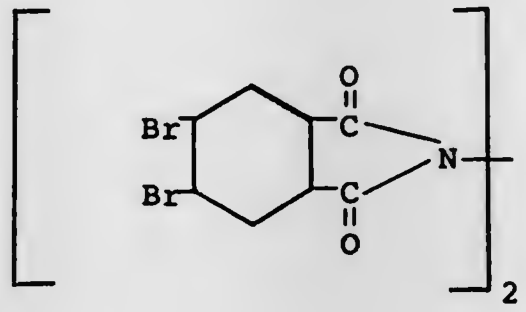
wherein *r* is 1 or 2; R_1 is halogen or lower alkyl of 1 to 7 carbon atoms; R_2 is hydrogen or lower alkyl; and B is selected from the group consisting of hydroxy, lower alkoxy, amino-lower alkoxy, monolower alkylamino-lower alkoxy and di-lower alkylamino-lower alkoxy,

its enantiomers, or when B is hydroxy, salts thereof with pharmaceutically acceptable bases, and when B is amino-lower alkoxy, mono-lower alkylamino-lower alkoxy or di-lower alkylamino-lower alkoxy, addition salts thereof with pharmaceutically acceptable acids.

3,868,388
FLAME-RETARDANT COMPOSITION

Anderson Dotson, Jr., Somerset, and F. T. Wadsworth, Trenton, both of N.J., assignors to Cities Service Company, New York, N.Y.
Filed Oct. 20, 1972, Ser. No. 299,507
Int. Cl. C07d ***27/52***
U.S. Cl. 260—326 N 2 Claims

1. The compound corresponding to the formula:



3,868,389
METHOD FOR MAKING N-SUBSTITUTED NITROPHTHALIMIDES

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company
Filed June 22, 1973, Ser. No. 372,744
Int. Cl. C07d ***27/00, 27/52***
U.S. Cl. 260—326 N 7 Claims

1. A method for making N-substituted nitrophthalimides which comprises

1. effecting reaction between a nitrophthalic anhydride and organic isocyanate in a non-polar organic solvent in the presence of an effective amount of an alkali carbonate, and
2. recovering the N-substituted nitrophthalimide from the mixture of (1).

3,868,390
SPIRO DIBENZOCYCLOHEPTENE ISOINDOLINE

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
Continuation-in-part of Ser. No. 188,860, Oct. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 122,092, March 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 54,597, July 13, 1970, abandoned. This application Jan. 19, 1973, Ser. No. 325,076
Int. Cl. C07d ***27/48***
U.S. Cl. 260—326.1 2 Claims

1. Spiro[10,11-dihydro-5H-dibenzo[a,d]cycloheptene-5,1′-N-methyl isoindoline].

3,868,391

α-(CYCLIC TERT, AMINOPHENYL)-ALIPHATIC ACIDS

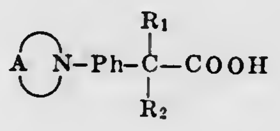
Richard William James Carney, New Providence, and George deStevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 40,436, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 8,406, Feb. 3, 1970, abandoned, which is a continuation-in-part of Ser. No. 856,154, Sept. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 843,244, July 18, 1969, Pat. No. 3,641,040, which is a continuation-in-part of Ser. No. 808,343, March 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 790,863, Jan. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 757,136, Sept. 3, 1968, Pat. No. 3,657,230, which is a continuation-in-part of Ser. No. 716,347, March 27, 1968, abandoned. This application Dec. 26, 1972, Ser. No. 318,158

Int. Cl. C07d *27/14*

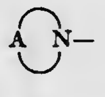
U.S. Cl. 260—326.41 **9 Claims**

1. An α-(cyclic tert. aminophenyl)-aliphatic acid of the formula



$$A\,N{-}Ph{-}\overset{R_1}{\underset{R_2}{C}}{-}COOH$$

in which R_1 is hydrogen or lower alkyl, R_2 is hydrogen, lower alkyl, lower alkenyl, 3 to 7 ring-membered cycloalkyl, cycloalkenyl, cycloalkyl-lower alkyl or cycloalkenyl-lower alkyl, Ph is unsubstituted phenylene or phenylene substituted by one or two halogen atoms or one member selected from the group consisting of lower alkyl, lower alkoxy, trifluoromethyl, nitro, amino or di-lower alkylamino, and



is monocyclic 5 to 7 ring membered 2- or 3-alkenyleneimino, or a lower alkyl ester, the amide, a mono- or di-lower alkylamide, the N-oxide, or a therapeutically acceptable alkali metal or alkaline earth metal salt or acid addition salt thereof in which compounds "lower" defines such groups with up to 4 carbon atoms.

3,868,392

METHOD AND APPARATUS FOR THE PRODUCTION OF PEROXIDE DERIVATIVES OF HIGH PURITY OZONIDES, BY OZONIZATION OF THE CORRESPONDING OLEFINS, AND SUBSEQUENT TREATMENTS

Francesco Siclari, Barlassina, and Pietro Paolo Rossi, Garlasco, both of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

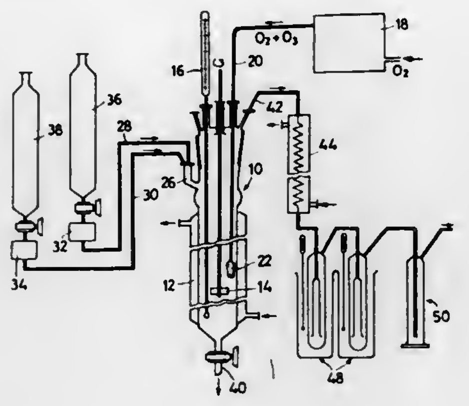
Filed Feb. 17, 1972, Ser. No. 227,203

Claims priority, application Italy, Feb. 19, 1971, 20802/71

Int. Cl. C07c *75/00*

U.S. Cl. 260—340.3 **13 Claims**

1. A method for the production of peroxide derivatives of ozonides, by ozonization of the corresponding olefins, comprising feeding into a confined environment defining a space having a first part and a second part, a composite solution comprising the olefin, a nonpolar solvent which is inert with respect to the olefin, and a polar solvent, capable of reactively dissolving the olefin when ozonized and of forming a peroxide derivative therewith, and simultaneously supplying a gas including ozone into said environment and causing such gas to flow solely through the first part of said space to promote ozonization of the olefin and form an ozonide which, while being reactively dissolved by said polar solvent, forms a heavy phase containing said peroxide derivative, and effecting transfer of said peroxide derivative from the part in which the ozonization takes place into said second part of said space from which it is withdrawn to avoid superoxidation and polymerization.



3,868,393

MANUFACTURE OF CARBOXYLIC ACIDS OF THEIR ANHYDRIDES

Peter Reuter, Bad Duerkheim, and Wilhelm Friedrichsen, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Apr. 14, 1972, Ser. No. 244,228

Claims priority, application Germany, Apr. 19, 1971, 2118871

Int. Cl. C07c *63/18, 57/14*

U.S. Cl. 260—346.4 **10 Claims**

1. In a process for the manufacture of a carboxylic acid or a carboxylic acid anhydride by the oxidation of an aromatic or an unsaturated aliphatic hydrocarbon with oxygen or air in the presence of a vanadium-pentoxide fixedbed catalyst at a temperature of from 350° to 600°C. in the gas phase in a tube reactor containing the fixed-bed catalyst, the improvement which comprises:

carrying out the gas phase oxidation in contact with a catalytic coating which covers at least one-half up to not more than two-thirds of the total area of the inside wall of the tube to a thickness of from 0.01 to 0.5 mm, so that from one-third to one-half of the total length of the tube, measured from the gas inlet end, is free of siad catalytic coating on the internal surface of the tube, said coating consisting essentially of at least one oxide selected from the class consisting of titanium dioxide and zirconium dioxide, in admixture with up to 50 percent by weight (based on the mixture) of vanadium pentoxide.

3,868,394

METHOD OF PRODUCING HYDROCHLORIDE OF ASPARTIC ANHYDRIDE

Fumihide Tamura; Yoichi Ozawa, and Asao Nakamura, all of Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,741

Claims priority, application Japan, Mar. 30, 1970, 45-26699

Int. Cl. C07c *57/02*

U.S. Cl. 260—346.8 R **4 Claims**

1. A method of preparing the hydrochloride of aspartic anhydride having the formula $C_4H_6NO_3Cl$ which comprises:

a. suspending aspartic acid in an amount of a liquid organic solvent medium insufficient to dissolve said aspartic acid, said medium essentially consisting of an ether, a hydrocarbon, a chlorinated hydrocarbon, a nitrile, or an ester of a carboxylic acid;

b. introducing phosgene into the suspension so formed at a temperature between room temperature and 60°C until a clear solution is formed;

c. precipitating said hydrochloride in crystalline form from said solution; and

d. separating the crystalline hydrochloride from said solution,

1. said medium being inert to said aspartic acid, to said phosgene, and to said hydrochloride at said temperature, and being capable of dissolving said hydrochloride,
2. said medium prior to said introducing being free of acids stronger than aspartic acid.

3,868,395

PRODUCTION OF PURE 1-NITROANTHRAQUINONE

Karl-Heinz Bantel, Ludwigshafen, and Heinz Eilingsfeld, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed June 25, 1973, Ser. No. 373,131

Claims priority, application Germany, July 1, 1972, 2232446

Int. Cl. C09b *1/00*

U.S. Cl. 260—369 **13 Claims**

1. A process for the production of pure 1-nitroanthraquinone from a crude mixture of mono- and dinitroanthraquinones which comprises treating said crude mixture in an aprotic organic solvent with an aliphatic, cycloaliphatic, araliphatic or saturated heterocyclic primary or secondary amine or mixtures thereof, using said amine or amine mixture in an amount of from 0.7 to 4 moles per mole of dinitro compounds in the crude mixture and carrying out the treatment at a temperature of about 40°C. to 250°C.

3,868,396

PREPARATION OF 25-HYDROXYCHOLESTEROL AND ESTERS THEREOF

Nobuo Ikekawa; Masuo Morisaki, and Julieta Rubio Lightbourn, all of Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1974, Ser. No. 441,830

Claims priority, application Japan, Feb. 16, 1973, 48-18305

Int. Cl. C07c *169/60, 167/20*

U.S. Cl. 260—397.2 **6 Claims**

1. A process for the preparation of 25-hydroxycholesterol and 3-esters thereof, comprising reacting desmosterol or 3-ester thereof with a mercuric salt of organic or inorganic acid and reducing the resulting reaction product with an alkali metal borohydride.

3,868,397

PROCESS FOR PREPARATION OF CHLORENDIC ANHYDRIDE

Jay A. Cull, Williamsville, and Walter M. Zimberg, Tonawanda, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 1, 1972, Ser. No. 249,036

Int. Cl. C07c *61/28, 61/26*

U.S. Cl. 260—346.6 **6 Claims**

1. The process of preparing chlorendic anhydride which comprises:

a. reacting a mixture of ultra-high purity hexachlorocyclopentadiene containing at least about 98 percent by weight of hexachlorocyclopentadiene and maleic anhydride, the latter being present in an amount which is about 1 to about 10 mol percent excess, said mixture containing less than about 10 percent by weight of liquid chlorinated benzene boiling between about 110° and about 180° centigrade,

b. heating said mixture at a temperature of from about 110° to about 180° centigrade until substantially complete reaction has taken place,

c. drying the reaction mixture at an elevated temperature and under subatmospheric pressure, and

d. separating the resultant chlorendic anhydride product in a form substantially free from unreacted hexachlorocyclopentadiene and liquid chlorinated benzene.

3,868,398

ORGANO METAL COMPLEXES

Wolfram R. Kroll, Somerville, and Robert B. Long, Atlantic Highlands, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 21, 1970, Ser. No. 65,957

Int. Cl. C07f *1/08*

U.S. Cl. 260—438.1 **12 Claims**

1. A complex cuprous organometallic composition having the general formula $CuMRX_3{\cdot}n(L)$ wherein M is selected from the group consisting of aluminum and boron atoms, X is selected from the group consisting of chlorine, bromine and fluorine atoms, R is an organic radical selected from the group consisting of a C_1 to C_4 alkyl radical, a phenyl radical, a C_7 to C_{10} alkylaryl radical and halogen substituted C_1 to C_4 alkyl, phenyl and C_7 to C_{10} alkylaryl radicals, n varies from about 0.3 to 2.0 and L is a complexible ligand, said ligand selected from the group consisting of carbon monoxide, C_2 to C_{20} open chain monoolefins, C_5 to C_{10} cyclic monoolefins and C_2 to C_6 acetylenes.

3,868,399

CHLORINATED ALKOXYPHENYLISOCYANATES

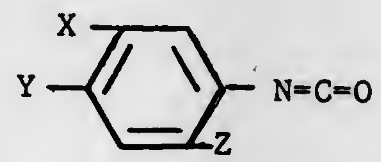
Joseph V. Karabinos, Orange, Conn., assignor to Carbolabs, Inc., Bethany, Conn.

Filed Dec. 20, 1972, Ser. No. 317,006

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 AR **3 Claims**

1. A composition of matter having the following formula



wherein X is selected from the group consisting of chlorine and hydrogen, Y is selected from the group consisting of chlorine and hydrogen and Z is methoxy, provided that when X is hydrogen Y must be chlorine and when X is chlorine Y must be hydrogen.

3,868,400

PROCESS FOR VAPOR PHASE AMMOXIDATION

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Marcus Hook, Pa.

Filed May 4, 1973, Ser. No. 357,145

Int. Cl. C07c *121/02*

U.S. Cl. 260—464 **11 Claims**

1. In a process for the preparation of nitriles by ammoxidation the improvement which comprises passing as a reactant stream a mixture of vapors comprised of (1) an organic reactant consisting essentially of a lower alkyl-substituted aromatic hydrocarbon selected from the group of benzene, naphthalene and anthracene, a lower alkyl-substituted alicyclic hydrocarbon containing from about five to about ten carbon atoms in the ring, a lower alkyl-substituted monohydroxy benzene or monohydroxy naphthalene, (2) ammonia, (3) oxygen, and (4) carbon monoxide over an ammoxidation catalyst at a temperature of about 300° to about 600°C, the mole ratio of reactants per mole of hydrocarbon or monohydroxy compound based on one alkyl group being converted to a nitrile group, being as follows: ammonia, 1.5:1 to 10:1; oxygen, 1.5:1 to 10:1, and carbon monoxide, 0.5:1 to 15:1,

whereby burn loss of ammonia and organic reactant is reduced and the conversion to nitrile is significantly increased.

3,868,401
ASYMMETRIC SYNTHESIS OF ALKYL CHRYSANTHEMATES

Tadatoshi Aratani, and Shuzo Nakamura, both of Takatsuki, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Aug. 1, 1972, Ser. No. 276,946

Claims priority, application Japan, Aug. 16, 1971, 46-62411

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 H **14 Claims**

1. A process for preparing an optically active alkyl chrysanthemate which comprises reacting 2,5-dimethyl-2,4-hexadiene with an alkyl diazoacetate in the presence of a copper catalyst coordinated with a chiral ligand capable of complexing with copper.

3,868,402
NOVEL CYCLOPENTANONE-2-CARBOXYLATES

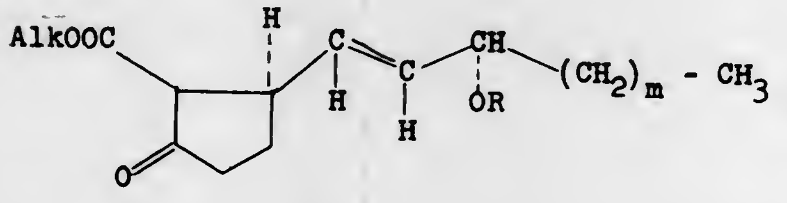
Jacques Martel, Bondy, and E 'mond Toromanoff, Paris, both of France, assignors to Roussel UCLAF, Paris, France

Division of Ser. No. 138,274, April 28, 1971, Pat. No. 3,736,319. This application Nov. 15, 1972, Ser. No. 306,796

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 K **4 Claims**

1. A 3-(3′-OR-trans 1′-alkenyl)cyclopentanone2-carboxylate of the formula



wherein Alk is alkyl of 1 to 7 carbon atoms, R is hydrogen and *m* is 3, 4 or 5.

3,868,403
PROCESS FOR THE PRODUCTION OF HALOGEN-SUBSTITUTED AROMATIC AMINES

Hans-Joachim Becker; Helmut Dierichs, and Walter Schmidt, all of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 19, 1971, Ser. No. 163,679

Claims priority, application Germany, July 22, 1970, 2036313

Int. Cl. C07c *101/54*

U.S. Cl. 260—471 R **7 Claims**

1. In a process for preparing halogen substituted aromatic amines from the corresponding nitro compounds by hydrogen reduction in the presence of a noble metal catalyst the improvement which consists essentially of carrying out said reduction at a pH of from 7–12 in the presence of a noble metal catalyst having a metal content of from 0.1 to 5% by weight and a predetermined level of activity through having been previously used at least once in a catalytic hydrogenation reaction, said previously used catalyst producing said halogen substituted aromatic amines in substantially quantitative yield with substantially no dehalogenation and the formation of substantially no secondary products as compared to the same fresh noble metal catalyst.

3,868,404
SUBSTITUTED METHYL ETHERS OF 2-BRANCHED-ALKYL-4,6-DINITROPHENOLS

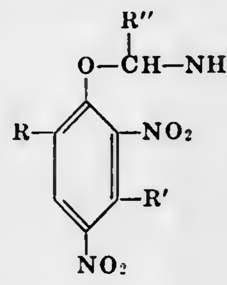
Gerhard Zumach; Ingeborg Hammann, both of Cologne; Gunter Unterstenhofer, Opladen, and Richard Wegler, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 31,784, April 24, 1970, Pat. No. 3,683,031. This application Jan. 14, 1972, Ser. No. 217,932

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **3 Claims**

1. Substituted methyl ethers of 2-branched alkyl 4,6-dinitrophenol of the formula:



in which

R represents a branched alkyl radical with 3-12 carbon atoms,

R′ represents hydrogen or methyl,

R″ represents hydrogen, or an alkyl, chloroalkyl or bromoalkyl radical containing up to 3 carbon atoms, and

R‴ represents an optionally chloro- or fluoro-substituted acetyl radical, an optionally chloro-, fluoro- or nitro-substituted benzoyl radical, an optionally chloro- or fluoro-substituted alkyl oxycarbonyl radical, or a chloro-, fluoro-, alkyl-, chloroalkyl- or fluoroalkyl-substituted phenyl oxycarbonyl residue wherein the alkyl radical consists of 1 to 12 carbon atoms.

3,868,405
NAPHTHYLENE DERIVATIVES

Edward George Brain, Leigh; John Christopher Hanson, Newdigate, and Minoo Dossabhoy Mehta, Wimbledon, all of England, assignors to Beecham Group Limited, Brentford, Middlesex, England

Continuation of Ser. No. 639,023, May 17, 1967, abandoned. This application July 1, 1971, Ser. No. 159,037

Int. Cl. C07c *69/88*

U.S. Cl. 260—473 F **3 Claims**

2. 3-(6′-Methoxy-2′-naphthyl)-2-methylcyclopentanone-2-acetic acid or its methyl ester.

3,868,406
P-ALKENYLOXYBENZOIC ACID ESTERS USEFUL FOR THE CONTROL OF INSECTS

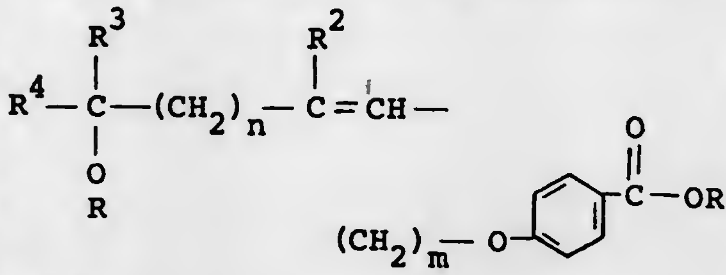
John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 60,636, Aug. 3, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 311,572

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R **8 Claims**

1. A compound selected from those of the formula:



(I)

wherein,

R is hydrogen or lower alkyl of one to three carbon atoms; each of R^2, R^3 and R^4 is lower alkyl;

R^7 is lower alkyl;
m is one or two; and
m is one or two; and
n is three or four.

3,868,407
CARBOXYALKYL ESTERS OF N-PHOSPHONOMETHYL GLYCINE

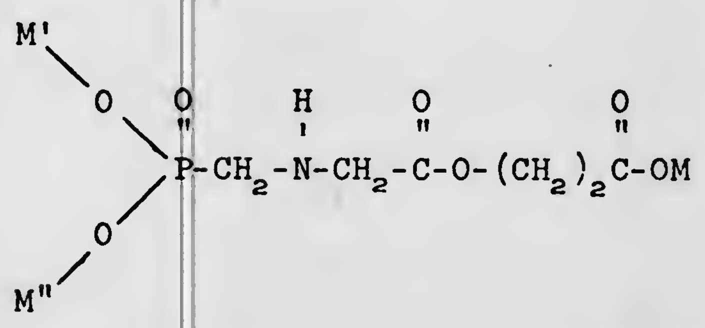
John E. Franz, Crestwood, and Hans L. Nufer, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 21, 1973, Ser. No. 417,858

Int. Cl. C07c *101/12*

U.S. Cl. 260—482 R **3 Claims**

1. A compound of the formula



wherein N is hydrogen, alkali metal, alkaline earth metal, ammonium or primary, secondary or tertiary amine, and M″ are hydrogen, alkali metal, alkaline earth metal, ammonium or primary, secondary or tertiary amine.

3,868,408
ETHYLENICALLY UNSATURATED DICARBOXYLIC ACID ESTERS OF α, α-DIHYDROPERFLUORO ALCOHOLS

Dewey George Holland, Allentown, and Burton David Beitchman, Springfield, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sept. 27, 1971, Ser. No. 184,264

Int. Cl. C07c *69/52, 69/60*

U.S. Cl. 260—485 F **10 Claims**

1. A diester having the formula:

$$[R_fCH_2]_2R$$

where R_f is $C_nF_{2n+1}[C_6F_{10}]$;
C_6F_{10} is a perfluorocyclohexane ring
where *n* is an integer of from 0 to 4;
and where R is
$[\text{-}O_2CCH{:}CHCO_2\text{-}]$, $[\text{-}O_2CCH{:}C(CH_3)CO_2\text{-}]$ or $[\text{-}O_2CC(CH_2)CH_2CO_2\text{-}]$.

3,868,409
ACRYLIC ACID ESTERS

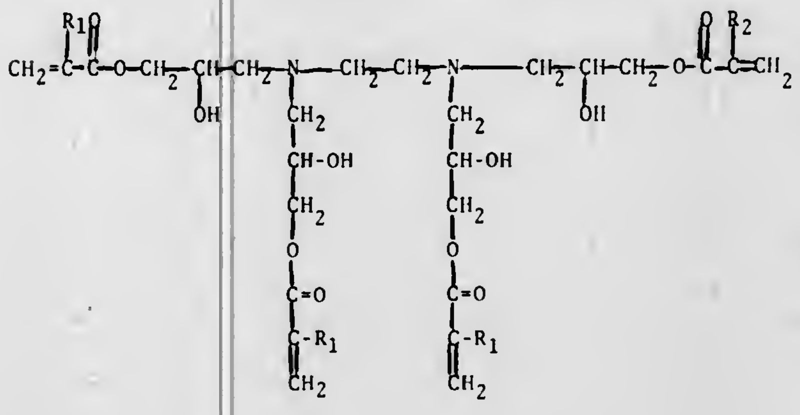
Kazuo Manaka, Broadview, Ill., assignor to Broadview Chemical Corporation, Broadview, Ill.

Filed Sept. 24, 1969, Ser. No. 860,786

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **3 Claims**

1. A monomer characterized by the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl.

3,868,410
CONVERSION OF OLIGOMERIC ACRYLATES TO ACRYLATE MONOMERS

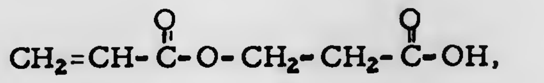
Theodore Horlenko; Gene J. Fisher, and Adolfo Aguilo, all of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,532

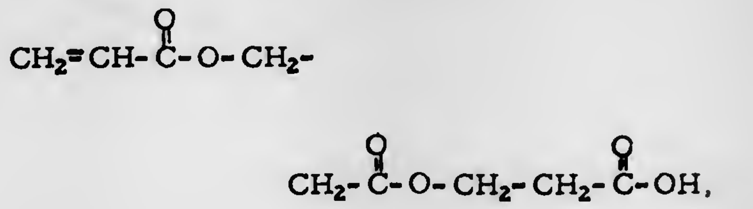
Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **14 Claims**

1. In an esterification process wherein acrylic acid is esterified with an alkanol of from 1 to about 10 carbon atoms to form an ester of acrylic acid with said alkanol, said process being characterized by the formation of oligomeric byproducts comprising at least one member of the group consisting of:

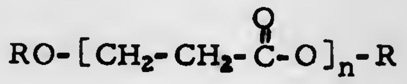
I 

$$CH_2{=}CH\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}CH_2\text{-}CH_2\text{-}\overset{O}{\overset{\|}{C}}\text{-}OH,$$

II 

$$CH_2{=}CH\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}CH_2\text{-}$$
$$CH_2\text{-}\overset{O}{\overset{\|}{C}}\text{-}O\text{-}CH_2\text{-}CH_2\text{-}\overset{O}{\overset{\|}{C}}\text{-}OH,$$

III. Esters of (I) and of (II) with said alkanol, and

IV 

$$RO\text{-}[CH_2\text{-}CH_2\text{-}\overset{O}{\overset{\|}{C}}\text{-}O]_n\text{-}R$$

wherein R is an alkyl group corresponding to said alkanol and n is an integer from 1 to 10, the improvement which comprises:

converting said oligomeric by-products to a product comprising at least one member of the monomer group consisting of acrylic acid, said alkanol, and the monomeric acrylate of said alkanol by a method which comprises heating said oligomeric by-products in a liquid phase containing an effective amount of an inhibitor against vinyl-type polymerization, to a temperature of at least about 180°C.

3,868,411
ISOBUTYL CYCLOHEXENYL COMPOUNDS ALPHA (P-ISOBUTYL-CYCLOHEXENYL) ALKANOIC ACIDS

Michel Vincent, Bagneux; Georges Remond, Paris, and Pierre Desnoyers, Fontenay-Aux, Roses, all of France, assignors to Societe en nom collectif Science Union Et Cie, Societe Francaise De Recherche, Medicale-Suresnes, France

Filed July 15, 1970, Ser. No. 55,292

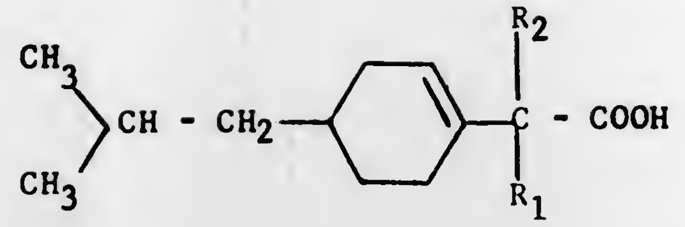
Claims priority, application Great Britain, July 22, 1969, 36734/69

Int. Cl. C07c *61/22*

U.S. Cl. 260—514 L **7 Claims**

1. A compound selected from the group consisting of:

A. isobutyl cyclohexenyl compounds of the formula:



wherein:

R_1 is selected from the group consisting of hydrogen and lower-alkyl of 1 to 5 carbon atoms, inclusive;

R_2 is lower-alkyl of 1–5 carbon atoms, inclusive; and

(B) physiologically tolerable salts with bases of alkali or alkaline earth metals.

3,868,412

9,15-DIOXO-5-CIS-PROSTENOIC ACID

Charles Hsu, Skokie; James Jiu, and Seth Setsuo Mizuba, both of Morton Grove, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 295,209, Oct. 5, 1972, Pat. No. 3,788,947. This application June 25, 1973, Ser. No. 373,427

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D **1 Claim**

1. 9,15-Dioxo-5-cis-prostenoic acid.

3,868,413

2-(4-HYDROXY-1-ALKYNYL)-5-OXOCYCLOPENT-1-ENEALKANOIC ACIDS, 3-HYDROXY CONGENERS CORRESPONDING AND DERIVATIVES THEREOF

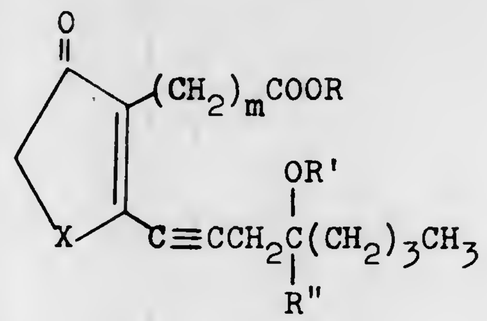
Raphael Pappo, Skokie, and Paul W. Collins, Deerfield, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 43,577, June 4, 1970, Pat. No. 3,770,776. This application Nov. 2, 1973, Ser. No. 412,428

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—514 D **9 Claims**

1. A compound of the formula



wherein X is a methylene, hydroxymethylene or (lower alkanoyl)oxymethylene radical, R is hydrogen or a lower alkyl radical, R′ is hydrogen or a lower alkanoyl radical, R″ is hydrogen or a lower alkyl radical and *m* is an integer greater than 5 and less than 8.

3,868,414

TETRAHYDROFLUORENE CARBOXYLIC ACIDS AND RELATED COMPOUNDS

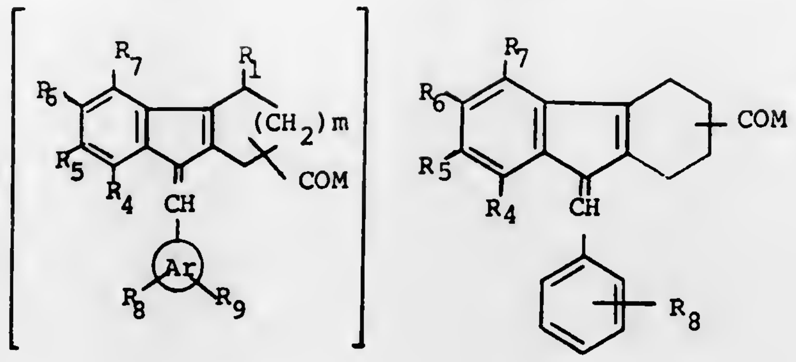
Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 22, 1973, Ser. No. 325,298

Int. Cl. C07c *63/44, 69/76, 147/00*

U.S. Cl. 260—515 A **9 Claims**

1. A compound of the formula:



where

R_4, R_5, R_6 and R_7 are each hydrogen, halo, C_{1-5} loweralkyl, halo C_{1-5} loweralkyl, C_{1-5} loweralkoxy, cyano, amino, C_{1-5} loweralkylamino, C_{1-5} diloweralkylamino, hydroxy, C_{2-5} loweralkenyloxy or trifluoromethyl;

R_8 maybe hydrogen, halo, C_{1-5} loweralkylthio, C_{1-5} loweralkyl, C_{1-5} loweralkylsulfonyl, C_{1-5} loweralkylsulfinyl, nitro or C_{1-5} loweralkoxy; and

M is hydroxy, hydroxy C_{1-5} lower alkoxy, C_{1-5} loweralkoxy, C_{1-5} loweralkoxyalkoxy, C_{1-5} loweralkoxyalkoxyalkoxy, benzyloxy or phenoxy.

5. The compound of claim 4 wherein

R_6 is fluoro;

R_4, R_5, R_7 and R_9 are each hydrogen; and

R_8 is methylsulfinyl.

3,868,415

PREPARATION OF 5-FLUORO-2-METHYL-1-(P-METHYL-SULFINYLBENZYLIDENE)-INDENYL-3-ACETIC ACID

Howard Jones, Holmdel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 3, 1973, Ser. No. 402,941

Int. Cl. C07c *147/00*

U.S. Cl. 260—515 A **4 Claims**

1. A process for preparing 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-3-indenyl acetic acid which comprises the steps of:

a. reacting 5-fluoro-2-methyl-indane-1,3-dione with a malonic acid ester in the presence of a strong base to form an arylidene malonic acid diester and hydrolyzing said diester to form the diacid;

b. decarboxylating said arylidene malonic acid diacid to form 5-fluoro-2-methyl-ind-2-ene-1-one-3-acetic acid by heating;

c. esterifying said 3-acetic acid to form the corresponding 3-acetate compound;

d. reacting said 3-acetate with a p-methylsulfinylbenzyl magnesium halide followed by dehydration using an acid or with a p-methylsulfinylbenzylidenetriphenylphosphorane to form an ester of 5-fluoro-2-methyl-1-(p-methylsulfinylbenzylidene)-indenyl-3-acetate; and

e. hydrolyzing said indenyl-3-acetate to form the desired product.

3,868,416

HYPOLIPIDEMIC 4-(MONOALKYLAMINO)BENZOIC ACID DERIVATIVES

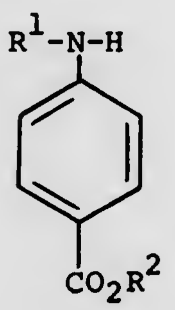
Jay Donald Albright, Nanuet; Stephen Joseph Riggi, Suffern, and Robert Gordon Shepherd, South Nyack, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 1, 1973, Ser. No. 402,212

Int. Cl. C07c *101/60*

U.S. Cl. 260—518 R **7 Claims**

1. 4-(Monoalkylamino)benzoic acid derivatives of the formula:



wherein R^1 is an unbranched or branched alkyl group, C_nH_{2n+1} wherein *n* is 8 to 19; and R^2 is hydrogen, lower alkyl, benzyl, dilower alkylaminoethyl, or lower alkoxyethyl; and the pharmaceutically acceptable salts thereof.

3,868,417

SEPARATION OF ACRYLIC ACID FROM THE REACTION GASES FROM PROPYLENE OR ACROLEIN OXIDATION

Gerd Duembgen, Dannstadt; Heinz Engelbach, Limburgerhof; Walter Frey, Mannheim; Richard Krabetz, Kirchheim; Ulrich Lebert, Ludwigshafen; Fritz Triessen, Ludwigshafen, and Carl-Heinz Willersinn, Ludwigshafen, all of Germany, assignors to Badische Anilin Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Aug. 23, 1973, Ser. No. 391,012

Claims priority, application Germany, Aug. 24, 1972, 2241714

Int. Cl. C07c *57/04*

U.S. Cl. 260—526 N **3 Claims**

1. A process for the separation of acrylic acid from reaction gases from the oxidation of propylene or acrolein by countercurrent absorption with carboxylic esters of melting point less than 30°C and boiling point under normal pressure of from 160° to 360°C at temperatures of 50° to 80°C and pressures of 0.5 to 5 bars, from 10 to 20 parts by weight of carboxylic ester being used per part by weight of acrylic acid in the reaction gas, wherein the dissolved acetic acid and the dissolved water are substantially completely expelled from the resulting absorption solution at 90° to 140°C and 0.5 to 5 bars by means of inert gases, the loaded inert gases are passed to the countercurrent absorption for the recovery of the acrylic acid contained in them and the acrylic acid is distilled off from the water-free and acetic acid-free carboxylic ester solution at 0.04 to 0.1 bar.

3,868,418

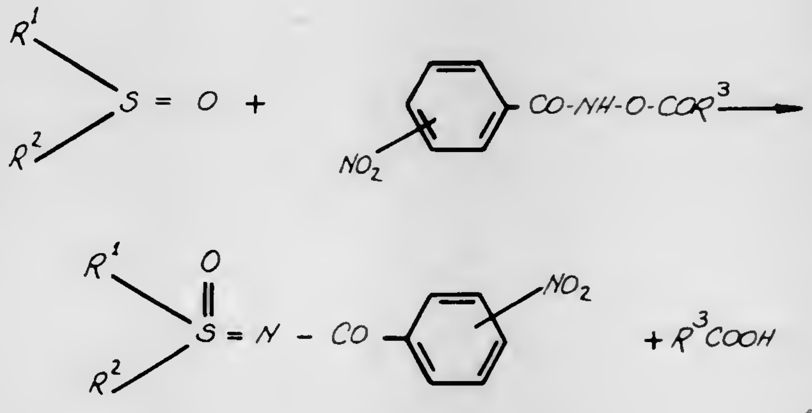
NOVEL N-(ORTHO- AND PARA-NITROBENZOYL)-SULFOXIMINE INTERMEDIATES AND PROCESS FOR THEIR PRODUCTION

Wolfgang Dieter Herrmann, Denzlingen; Peter Johannes Stoss, Wildtal, and Gerhard Saltzinger, Denzlingen, all of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

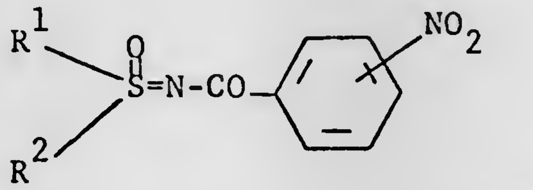
Filed Apr. 13, 1973, Ser. No. 351,112

Int. Cl. C07c *103/30*

U.S. Cl. 260—558 S **7 Claims**



1. A compound of the formula I:



I

wherein R^1 and R^2 each represent an alkyl radical having from 1 to 3 carbon atoms, a phenyl radical or a para-methoxy phenyl radical.

3,868,419

BIOCIDAL N-CHLORO-AMIDINES

Jean-Claude Petitpierre, Kaiseraugst, and Claus Weis, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

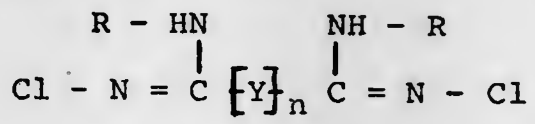
Division of Ser. No. 279,409, Aug. 10, 1972, Pat. No. 3,822,304. This application Apr. 25, 1974, Ser. No. 464,271

Claims priority, application Switzerland, Sept. 3, 1971, 12945/71; July 11, 1972, 10361/72

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R **7 Claims**

1. A compound of the formula



$$\mathrm{Cl-N=}\overset{\mathrm{R-HN}}{\mathrm{C}}\left[\mathrm{Y}\right]_n\overset{\mathrm{NH-R}}{\mathrm{C}}\mathrm{=N-Cl}$$

wherein R represents hydrogen, alkyl of from 1 to 4 carbon atoms or cycloalkyl of from 3 to 6 carbon atoms; Y represents $—CCl_2—$; and *n* is 0 or 1.

3,868,420
NUCLEAR ALKYLATION OF ANILINS

Frank Evans, Pratteln, Basel-Land; Walter Frey, Muttenz, Basel-Land; Joerg Staeheli, Basel, and Istvan Toth, Bottmingen, Basel-land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Aug. 14, 1972, Ser. No. 280,353

Claims priority, application Switzerland, Aug. 20, 1971, 12299/71; Oct. 14, 1971, 15119/71

Int. Cl. C07c *39/06*

U.S. Cl. 260—578 **8 Claims**

1. A process for the production of phenylamine alkylated in the ortho and/or para positions by alkyl groups of 1 to 4 carbon atoms and unsubstituted on the amino group, which comprises the step of reacting a phenylamine having an ortho and/or para position available for alkylation with an alkanol of 1 to 4 carbon atoms in the vapour phase and with heating to a temperature of from 350° to 450°C, in the presence of aluminum oxide/molybdenum oxide mixed catalyst in which the amount of molybdenum oxide is approximately from 0.01 to 20 percent by weight, which catalyst has a minimum surface area of $50 m^2/g$.

3,868,421
9-(3 OXO-1-PROPENYL)-9,10-ETHANO-ANTHRACENES

Dieter Beck, Basel; Raymond Bernasconi, Oberwil, Basel-Land; Karl Schenker, Binningen, and Max Wilhelm, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

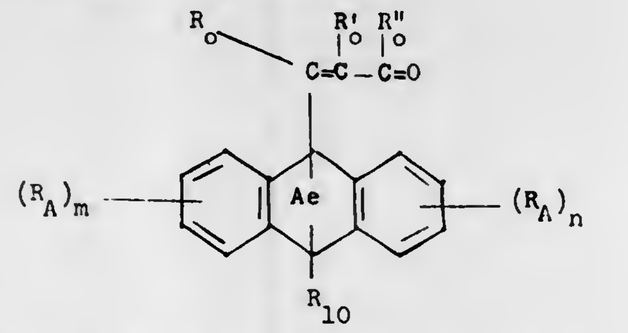
Filed Feb. 11, 1972, Ser. No. 225,614

Claims priority, application Switzerland, Feb. 23, 1971, 2576/71; Jan. 17, 1972, 667/72

Int. Cl. C07c *47/52, 49/76, 49/80*

U.S. Cl. 260—599 **5 Claims**

1. A compound of the formula



(Ia)

in which *n* and *m* denote integers such that (*n* + *m*) is not greater than 3; R_A, which may be the same or differnet, represents a member selected from the group consisting of lower alkyl, lower alkoxy, nitro, amino, trifluoromethyl and halogen, R_{10} denotes hydrogen, halogen or lower alkyl, the symbols, R_o, R_o' and R_o'' each are hydrogen or one of them is methyl, and Ae denotes 1,2-ethylene which is substituted in the 1- or 2-position by lower alkyl, or is unsubstituted.

3,868,422
MULTISTAGE HYDROFORMYLATION PROCESS

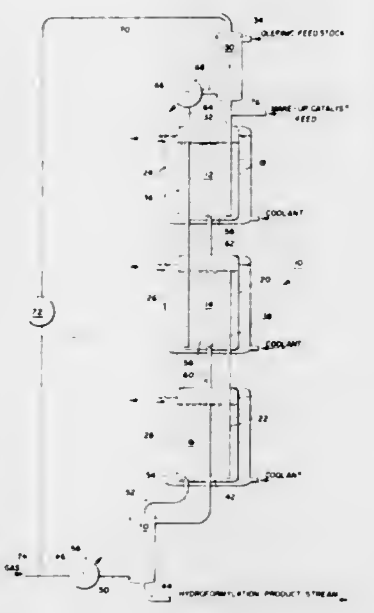
Wallace F. Hart; Hugh J. Hagemeyer, Jr., and William R. Park, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,610

Int. Cl. C07c *45/02*

U.S. Cl. 260—604 HF **11 Claims**

1. In a continuous hydroformylation reaction wherein liquid olefinic carbon compounds are contacted with synthesis gas comprising hydrogen and carbon monoxide, in the presence of a hydroformylation catalyst at elevated temperatures and pressures within a multistage reactor having at least three reaction zones connected in series to produce aldehydes and wherein a solution comprising said aldehyde and dissolved hydroformylation catalyst is removed from said multistage reactor, an improved process for retaining hydroformylation catalysts selected from the group consisting of cobalt carbonyls and cobalt hydrocarbonyls, in said multistage reactor while simultaneously improving the distribution of the reaction within said multistage reactor and preventing the temperature variation between adjacent reaction zones from exceeding about 4°C. and the temperature variation within said multistage reactor from exceeding about 10°C. which comprises passing the liquid olefinic carbon compounds through an absorber zone removing exit gas from the first stage of said multistage reactor, passing said exit gas through said absorber zone countercurrent to the flow of said liquid olefinic carbon compounds, whereby any hydroformylation catalyst present in said exit gas is absorbed by said olefinic carbon compounds feeding said olefinic carbon compounds to the first stage of said multistage reactor, recycling the gaseous effluent from said absorber zone to the last stage of said multistage reactor, removing said solution comprising said aldehyde product and dissolved hydroformylation catalyst from the last stage of said multistage reactor, passing said solution comprising said aldehyde product and dissolved hydroformylation catalyst through a scrubbing zone, passing at least a portion of the synthesis gas through said scrubbing zone countercurrent to said solution whereby any volatile hydroformylation catalyst present in said solution is intrained in said synthesis gas, passing said synthesis gas to the last stage of said multistage reactor, and withdrawing an aldehyde product substantially depleted of volatile hydroformylation catalyst from said scrubbing zone.



3,868,423
PROCESS FOR PREPARING BETA,BETA'-BIS-(3,5-DIBROMO-4-HYDROXY-PHENYL)-PROPANE

Fernando Montanari; Benedetto Calcagno, both of Milan, and Luciano Conti, Grizzana, all of Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed Dec. 22, 1971, Ser. No. 211,120

Claims priority, application Italy, Dec. 23, 1970, 33466/70

Int. Cl. C07c *39/24, 37/00*

U.S. Cl. 260—619 A **6 Claims**

1. A process for the manufacture of beta, beta'-bis-(3,5-dibromo-4-hydroxyphenyl)-propane by the bromination of beta, beta'-bis-(4-hydroxyphenyl)-propane which comprises the steps of (a) supplying liquid bromine and gaseous chlorine to a solution of beta, beta'-bis-(4-hydroxyphenyl)-propane dissolved in methanol at a rate such that the total quantity of bromine added is maintained in large excess of the total quantity of chlorine added; (b) terminating the supplying of bromine; (c) continuing the supplying of chlorine until the total molar quantity of chlorine added is in moderate excess to the total molar quantity of bromine added; and (d) recovering beta, beta'-bis-(3,5-dibromo-4-hydroxyphenyl(-propane from the products of the reaction, wherein in steps (a), (b) and (c) the temperature is maintained at levels not exceeding 30°C.

3,868,424
PROCESS FOR THE PREPARATION OF ORTHO-HYDROXYBENZYL ALCOHOLS

Emile Mourier, Villeurbanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 23, 1970, Ser. No. 92,312

Claims priority, application France, Nov. 24, 1969, 69.40394

Int. Cl. C07c *27/00, 37/00*

U.S. Cl. 260—621 **6 Claims**

1. In a process for the preparation of an ortho-hydroxybenzyl alcohol from a phenol having at least one hydrogen atom in the ortho position to the hydroxyl radical, wherein the phenol is reacted with a boric acid or boron trioxide, the resulting reaction product treated with formaldehyde and the resulting ortho hydroxybenzyl meta-borate ester hydrolysed, the improvement which comprises hydrolyzing the orthohydroxybenzyl meta-borate ester by contacting said ester with a mixture consisting essentially of water and an ether selected from the group consisting of dipropyl ether, diisopropyl ether, dibutyl ether, diisobutyl ether, a diether or polyether of ethylene glycol, a diether or polyether of triethylene glycol, diphenyl ether, anisole and phenetole.

3,868,425
STABILIZED VINYLIDENE BROMIDE

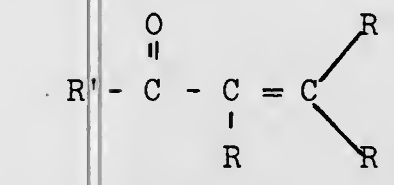
Joseph P. Kleiman, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 23, 1973, Ser. No. 363,072

Int. Cl. C07c *17/40*

U.S. Cl. 260—652.5 P **2 Claims**

1. Vinylidene bromide stabilized with a stabilizing amount of less than 20 weight % of a ketone having up to about 12 carbon atoms and the formula



$$R'-\overset{\overset{O}{\|}}{C}-\underset{\underset{R}{|}}{C}=C\langle^{R}_{R}$$

wherein R is selected from the class consisting of hydrogen and lower alkyl of up to five carbons, and R' is lower alkyl of up to about five carbons.

3,868,426
STABILIZED VINYLIDENE BROMIDE

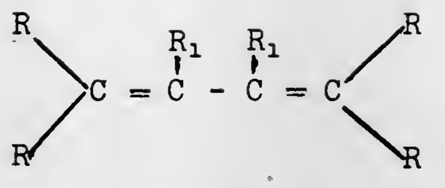
Joseph P. Kleiman, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 23, 1973, Ser. No. 363,071

Int. Cl. C07c *17/40*

U.S. Cl. 260—652.5 P **3 Claims**

1. Vinylidene bromide stabilized with a stabilizing amount of less than 20 weight % of a conjugated butadiene of from four to about 12 carbon atoms having the formula



$$^{R}_{R}\rangle C=\overset{R_1}{\overset{|}{C}}-\overset{R_1}{\overset{|}{C}}=C\langle^{R}_{R}$$

wherein R is selected from the class consisting of hydrogen and lower alkyl of up to eight carbons, and R_1 is selected from the class consisting of hydrogen, chlorine, bromine, and alkyl radicals of up to about eight carbon atoms, such that no more than one R_1 is halogen.

3,868,427
DEHYDROCOUPLING PROCESS

Raymond A. Franz, Baton Rouge, La., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 19, 1973, Ser. No. 408,232

Int. Cl. C07c *15/14*

U.S. Cl. 260—668 C **11 Claims**

1. The method of preparing 1,2-diphenylethylene and derivatives thereof which comprises contacting in the vapor phase at a temperature in the range of about 500° C. to about 750° C., a phenylmethane and oxygen in a molar ratio of about 0.1 to about 1.0 mol of oxygen per mol of the phenylmethane and at least one halogen in a molar ratio of up to 0.015 mol of halogen per mol of the phenylmethane in the presence of alpha alumina coated with 1 to 25 monolayers of a palladium oxide.

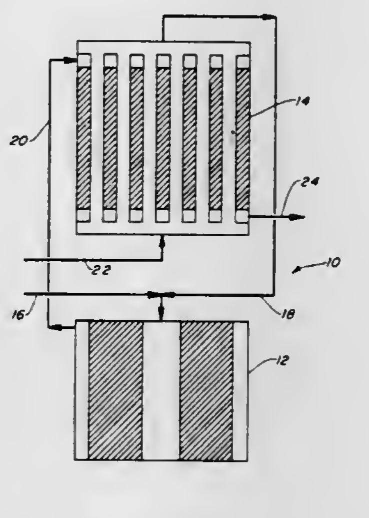
3,868,428
PROCESS AND APPARATUS FOR THE DEHYDROGENATION OF ALKYLATED AROMATIC HYDROCARBONS

Robert P. Cox, Wyckoff, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Apr. 12, 1973, Ser. No. 350,529

Int. Cl. C07c *15/10*

U.S. Cl. 260—669 R **7 Claims**



1. A process for effecting the catalytic dehydrogenation of an alkylated hydrocarbon, which comprises:

a. passing an alkylated hydrocarbon and a diluent gas through a catalytic adiabatic reaction zone operated at an inlet temperature from about 900°F. to about 1,500°F.;

b. withdrawing an effluent from said adiabatic reaction zone, said effluent being at a temperature less than said inlet temperature;

c. passing said effluent through a catalytic non-adiabatic reaction zone, said effluent being heated, by indirect heat transfer, during passage therethrough to effect a temperature rise through said non-adiabatic reaction zone at least about equal to the temperature decrease through said adiabatic reaction zone.

3,868,429
SEPARATION OF XYLENES

William Donald Faulkner, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburg, Pa.
Filed Nov. 1, 1972, Ser. No. 302,833
Int. Cl. C07c *7/12*
U.S. Cl. 260—674 SA **3 Claims**

1. Method of separating a mixture of xylene isomers into a raffinate and a paraxylene-enriched product by preferential adsorption of paraxylene comprising contacting the mixture of xylene isomers with molecular sieve activated carbon having generally rectangular pore openings whose dimensions are from 3.3 to about 7.0 angstroms by from 6.7 to about 7.0 angstroms, to adsorb a paraxylene-enriched adsorbate, and recovering the adsorbate from the said molecular sieve activated carbon.

3,868,430
PROCESS FOR THE SEPARATION OF ETHYLBENZENE FROM XYLENES

Michele Giangaspero, Monfalcone; Giorgio Tlustos, Trieste; Marino Bose, Trieste, and Domenico Corsi, Trieste, all of Italy, assignors to Aquila S.p.A., Trieste-Via Dante, Italy
Filed Jan. 2, 1974, Ser. No. 429,825
Claims priority, application Italy, Dec. 29, 1972, 33783/72
Int. Cl. C07c *7/02, 15/08*
U.S. Cl. 260—674 A **25 Claims**

1. In a process for separation of ethylbenzene from a mixture comprising essentially ethylbenzene and xylenes comprising the successive steps of:

separating the mixture into a fraction containing essentially the ortho-xylene present in the mixture, a fraction containing essentially the para-xylene and a fraction containing ethylbenzene,

catalytically hydrogenating the fraction containing ethylbenzene to form a mixture containing ethylcyclohexane separating, by distillation, the ethylcyclohexane from the hydrogenation mixture, and

catalytically dehydrogenating the ethylcyclohexane into ethylbenzene,

the improvement which comprises the steps of

carrying out the catalytic hydrogenation partially and selectively until the conversion of ethylbenzene into ethylcyclohexane is between 50 and 99% of the ethylbenzene subjected to hydrogenation, the conversion of xylenes being between 10 and 50% of the xylenes subjected to hydrogenation,

separating the non-hydrogenated xylenes from the partially hydrogenated mixtures and

separating the ethylcyclohexane and the non-hydrogenated ethylbenzene from the remainder of the hydrogenated mixture.

3,868,431
ELASTOMER PRODUCTION

Francis Gowland Hutchinson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Apr. 19, 1973, Ser. No. 352,690. The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 R **10 Claims**

1. In a process for the production of an elastomeric material from a homogeneous composition comprising from 50% to 95% by weight of the precursors of a cross-linked polyurethane which, when reacted alone in the absence of ethylenically unsaturated material, are capable of forming an elastomeric polyurethane having a glass-rubber transition temperature of 25° C or less, and from 50% to 5% by weight of at least one polymerisable ethylenically unsaturated material, in which process the reaction of the polyurethane precursors is substantially completed before polymerisation of the ethylenically unsaturated material is allowed to proceed to the extent that the polymer so produced forms a separate phase and in which polymerisation of the ethylenically unsaturated material is thereafter completed, the improvement which comprises using in the process an ethylenically unsaturated material which contains at least one polyfunctional ethylenically unsaturated material and is selected so as to produce, after polymerisation, a cross-linked polymer having on average a molecular weight between cross-links of not greater than 2,500.

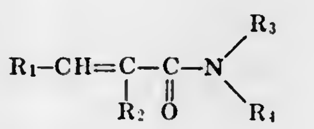
3,868,432
DENTURE ADHESIVE PREPARATION

James J. Keegan, Bloomfield; Howard Rubin, Rockaway, both of N.J., and Ram N. Gidwani, Edmonton, Alberta, Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.
Continuation-in-part of Ser. No. 243,816, April 13, 1972, Pat. No. 3,833,518. This application June 5, 1974, Ser. No. 476,637
Int. Cl. C08f *29/36, 33/08*
U.S. Cl. 260—874 **8 Claims**

1. A denture adhesive comprising a substantially anhydrous mixture of:

A. from about 1.0 to about 80 percent by weight, based on the total weight of the denture adhesive, of at least one cationic polymeric material selected from the group consisting of:

1. a copolymer of an acrylamide having the formula:



$$R_1{-}CH{=}\underset{\displaystyle R_2}{\underset{|}{C}}{-}\underset{\displaystyle O}{\underset{\|}{C}}{-}N\begin{cases}R_3\\R_4\end{cases} \qquad (I)$$

wherein R_1 is methyl or hydrogen; and R_2, R_3, and R_4 are each hydrogen or one to seven carbon lower alkyl, with a vinyl quaternary ammonium salt selected from the group consisting of trialkylaminoalkyl acrylate salts, trialkylaminoalkyl methacrylate salts, and vinyloxyalkyltrialkylammonium salts, wherein the alkyl group contains from one to seven carbon atoms; and

2. a copolymer of an acrylamide having the formula (I) above with a vinyl or alkyl-substituted vinyl pyridinum salt, wherein the alkyl group is one to seven carbon lower alkyl; and

B. from about 20 to about 99 percent by weight, based on the total weight of the denture adhesive, of at least one anionic gum selected from the group consisting of copolymers of maleic acid with vinyl-lower alkyl-ether wherein the alkyl group has from one to five carbon atoms.

3,868,433
THERMOPLASTIC ADHESIVE COMPOSITIONS

Kenneth W. Bartz, Baytown, Tex.; John J. Higgins, Westfield; Anthony J. Berejka, Cranford, both of N.J., and Amerigo J. Di Cresce, Houston, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.
Filed Apr. 3, 1972, Ser. No. 240,502
Int. Cl. C08f *29/12*
U.S. Cl. 260—876 R **16 Claims**

1. A hot melt adhesive composition comprising a mixture of:

a. 5 to 95 weight percent of a conventional hot melt polyolefin thermoplastic base component,

b. 95 to 5 weight percent of a 10 to 300 MFR, C_2 to C_8 polyolefin polymer grafted with from 0.1 to 50 weight percent of a monomer in an extruder reaction wherein said grafted polymer has a MFR at least 25% higher than said polymer before grafting and wherein said monomer is selected from a group consisting of (a) a C_3 to C_{10} unsaturated monocarboxylic acid, (b) unsaturated polycarboxylic acids, (c) metal salt and glycidyl derivatives of the foregoing, and (d) mixtures of the foregoing, and

whereby said polymer comprises 60 to 40 weight percent of an elastomer, selected from the group consisting of:

i. ethylene/propylene copolymers and ethylene/propylene diene monomer elastomers,
ii. polyisobutylene elastomers,
iii. butyl rubber elastomers,
iv. chlorobutyl elastomers,
v. combinations of the foregoing.

3,868,434
POLYMER COMPOSITION AND PROCESS

Richard C. Westphal, Leominster, and Paul Heinig, Bolton, both of Mass., assignors to Foster Grant Co., Inc., Leominster, Mass.
Continuation-in-part of Ser. No. 457,794, May 21, 1965, abandoned, which is a continuation-in-part of Ser. No. 155,200, Nov. 27, 1961, abandoned, which is a continuation-n-part of Ser. No. 759,145, Sept. 5, 1958, abandoned. This application May 23, 1967, Ser. No. 640,478
Int. Cl. C08f *1/60, 29/08, 29/34*
U.S. Cl. 260—880 R **17 Claims**

1. A moldable monovinyl aromatic polymer composition formed by the polymerization of (a) at least onbe monovinyl aromatic monomer, (b) 0 to about 30 percent by weight of the total monomer weight of a copolymerizable monomer of the group consisting of esters of acrylic and methacrylic acids, acrylonitrile, and esters of itaconic acid, and (c) a rubbery 1,4-polybutadiene, (1) by dissolving said rubbery 1,4-polybutadiene in said monomers and (2) by polymerizing said monomers under free-radical polymerization conditions until the polymerization of said monomers is substantially completed, said polymerization carried out employing mass polymerization techniques under agitation conditions to provide a dispersed and substantially uniform composition; said 1,4-polybutadiene being present in an amount of from 1 percent to about 20 percent, based on the total final polymer composition weight, said amount of 1,4 polybutadiene being effective in substantially enhancing the impact value of said polymer composition, and said 1,4-polybutadiene characterized by having a cis butadiene content of at least 25 percent and a 1,2-addition butadiene content of not more than about 10 percent based on the weight of said 1,4-polybutadiene.

3,868,435
PROCESS FOR MAKING MOLDED SILICON BODIES

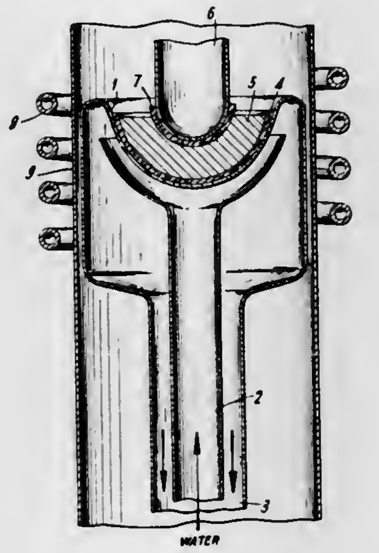
Hilmar Daxer, Munich, Germany; Wolfgang Dietz, Palos Verdes Peninsula, Calif.; Hans Herrmann, Burghausen, Germany, and Manfred Vogerl, Santa Monica, Calif., assignors to Consortium fur Elecktrochemische Industrie GmbH, Munich, Germany
Continuation-in-part of Ser. No. 118,821, Feb. 25, 1971, abandoned. This application Dec. 6, 1972, Ser. No. 312,584
Claims priority, application Germany, Feb. 28, 1970, 2009459
Int. Cl. B29c *1/04;* **B29d** *11/00*
U.S. Cl. 264—1 **3 Claims**

1. Process for making molded silicon bodies by melting pure silicon by inductive heating in a mold capable of being cooled, which comprises the steps of:

a. placing against the inner surface of said mold a liner consisting of a solid body of pressure-sintered finely structured quartz made of quartz wool having a fiber diameter between about 8 and 10 micron, and a fiber length not less than about 1 mm, having substantially the same configuration as the interior portion of said mold, said quartz liner having been sintered at a temperature between about 1,300° and about 1,600°C. under pressure between about 0.05 and about 1 kg/cm² for a period of time between about 10 and about 60 minutes;

b. introducing into said lined mold highly purified silicon having a grain size between about 5 and about 20 mm;

c. melting said silicon grains in an atmosphere of a gas inert thereto to form a body of molten silicon;

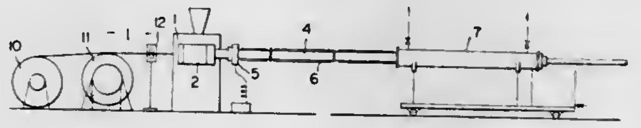


d. cooling said body of molten silicon at a high temperature gradient with the use of water as coolant until the body has solidified; and

e. separating the solidified silicon melt from said liner.

3,868,436
PRODUCTION OF ELECTRICAL CONDUCTORS COVERED WITH CROSSLINKED MATERIAL

Masaaki Ootsuji, Osaka; Masatake Matsui, Amagasaki; Masaru Fuwa, and Kiyoshi Takahashi, both of Ami-Machi, all of Japan, assignors to Mitsubishi Petrochemical Co. Ltd., Tokyo-to and Dainichi Nihon Densen Kabushiki Kaisha, Amagaski-shi-Hyogo-ken, Japan, part interest to each
Filed Dec. 15, 1972, Ser. No. 315,556
Claims priority, application Japan, Dec. 17, 1971, 46-101858
Int. Cl. B29f *3/10*
U.S. Cl. 264—40 **5 Claims**



1. In a process for producing a cable covered with a cross-linked material, comprising extruding a cross-linkable material onto a conductor which is continuously passed through a long-land portion of an extruding die unit and subsequently through a cooling device directly connected to the exit of said extruding die unit, forming and vulcanizing said cross-linkable material through said long-land portion, and cooling said vulcanized material on said conductor by pressurized cooling fluid under a pressure P of 1–30 Kg/cm² in said cooling device, which pressure exerts an irregular pulling force along the length of said cable the improvement comprising applying a braking force T(kg) to a portion of said conductor and in the direction opposite to the moving direction of said conductor prior to said conductor entering the extruder-crosshead; said braking force T being determined from the following relationship:

$$\pi(D_o^2 - d^2)/4 \cdot P + T_{min} < T < \pi(D_o^2 - d^2)/4 \cdot P + T_{max}$$

wherein D_o (cm) is the inner diameter of the delivery end of the land portion; D (cm) is the maximum delivered outer diameter of the material covering the conductor; d (cm) is the outer diameter of the conductor; p (kg/cm²) is the pressure of said cooling fluid; T_{min} (kg) is the braking force in the case where $D = 0.95\ D_o + 0.05\ d$ and $P = 0$ and T_{max} (kg) is the braking force in the case where $D = 1.2\ D_o - 2\ d$ and $P = 0$ whereby the irregularity of said pulling force is eliminated by the application of said braking force.

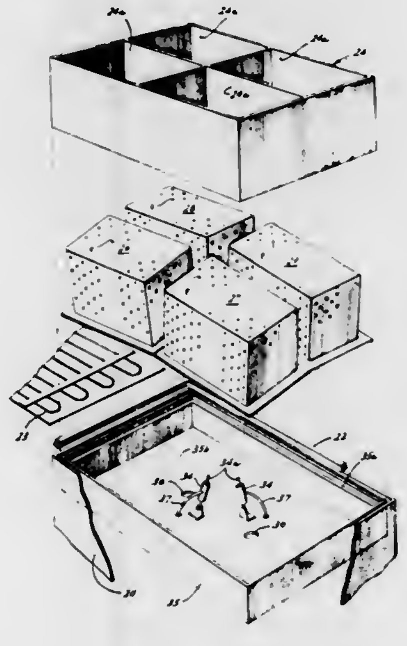
3,868,437
METHOD FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

Norman F. Houghton, Connersville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Oct. 19, 1973, Ser. No. 408,108. The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. B29c *17/04*

U.S. Cl. 264—92 **4 Claims**



1. In a method of forming a unitary article, comprising at least a pair of adjacent walled structures having unidirectionally presented openings, from a unitary sheet of thermoplastic material, utilizing at least a pair of substantially unidirectionally presented molds shaped in correspondence to the structures to be formed and so associated as to be pivotable both about an edge of its base and in the plane of its base between one position in which confronting walls therof are closely spaced in accordance with the spacing of the structures to be formed and another position in which said confronting walls are spaced apart a substantially greater distance than in said one position, the steps which comprise: causing a heat softened unitary sheet of thermoplastic material to extend over, and central portions thereof to occupy space between, such molds when the latter are in the mentioned other position in which the confronting walls of said molds are substantially spaced; utilizing an assist plug structure to move said central portion of said sheet of material into the regions between said molds; pivoting said molds in the recited two directions to said one position in which they are closely spaced; and utilizing differential fluid pressure to cause said sheet to conform to surfaces of said molds in said one, closely spaced position.

3,868,438
METHOD FOR PROCESSING SPECTACLE FRAMES

Vigilio Fedon, and Frazione Di Vallesella, both of Belluno, Italy, assignors to Salottica S.r.l., Brescia, Italy

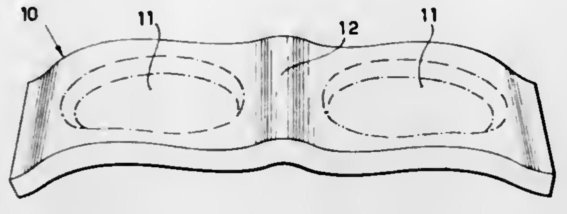
Filed June 8, 1973, Ser. No. 368,121

Claims priority, application Italy, June 13, 1972, 25614/72

Int. Cl. B29d *11/00*

U.S. Cl. 264—156 **2 Claims**

1. A method for fabricating spectacle frames having curved lens areas comprising the steps of: preparing a planar slab of thermoplastic material; hot-working said planar slab of thermoplastic material to pre-shape it with partially curved lens areas; milling said lens areas of said pre-shaped slab to provide apertures for the lenses; milling in a plane the internal sides of the lens rims surrounding said apertures to provide coplanar grooves for engaging the lenses; hot-working the pre-shaped and milled slab to meniscus-shape the lens rims and the grooves therein.



3,868,439
METHOD OF INCREASING COPPER PRODUCTION

Milton E. Wadsworth, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Feb. 9, 1973, Ser. No. 331,140

Int. Cl. C22b *15/08*

U.S. Cl. 423—41 **2 Claims**

1. In a method of enhancing recovery of copper values from an ore material having relatively low copper values; the method comprising sequentially:

preparing the ore material for a subsequent leaching by first wetting the ore material with a first solution consisting essentially of aqueous sulfuric acid having a pH within the range on the order of about 1.0 to 2.0, the wetting step comprising applying sufficient aqueous sulfuric acid to the ore material to at least acidify pellicular water in the ore material without causing a significant amount of the sulfuric acid to percolate from the ore material;

exposing the ore material to the atmosphere until aeration occurs; and

conducting a leaching step for extracting copper values from the ore material by percolating a second solution comprising a solution of sulfuric acid and iron ions through the ore material and collecting the second solution for processing to recover copper values therefrom.

3,868,440
RECOVERY OF METAL VALUES FROM COPPER SLAG

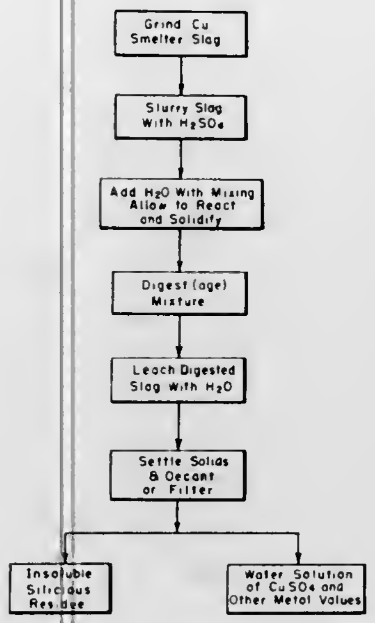
Kenneth O. Lindblad, and Ralph E. Dufresne, both of Deer Lodge, Mont., assignors to The Anaconda Company, Butte, Mont.

Filed May 30, 1973, Ser. No. 365,243

Int. Cl. C01g *1/10;* **C22b** *15/08*

U.S. Cl. 423—41 **7 Claims**

7. A process for recovery of metal values from copper smelter slag material which comprises mixing with about one part by weight of the slag material up to one parat of water, adding with agitation about one part of concentrated sulfuric acid and up to about one part of water to form a mixture which contains a total slag-to-water ratio of about 1:1 thereby to produce a substantially dry, solid material, allowing the resulting dry, solid material to react for a time sufficient to insure maximum conversion of metal values to water-soluble form, and leaching the resulting dry, solid reaction product with water to recover in the leach solution metal values originally present in the slag.


Grind Cu Smelter Slag
Slurry Slag With H₂SO₄
Add H₂O With Mixing Allow to React and Solidify
Digest (age) Mixture
Leach Digested Slag With H₂O
Settle Solids & Decant or Filter
Insoluble Silicious Residee
Water Solution of CuSO₄ and Other Metal Values

3,868,441
PROCESS FOR REDUCING TRIVALENT TITANIUM CONTENT IN SLAG

Robert B. Agee, Baker, and Manuel Rodriguez, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 2, 1973, Ser. No. 356,433

Int. Cl. C04g *23/00;* **C01g** *23/04*

U.S. Cl. 423—69 **6 Claims**

1. A process for reducing the content of trivalent titanium in trivalent titanium-containing solid titaniferous slag which comprises:

a. applying heat to the titaniferous slag in the presence of oxygen until the exothermic oxidation of the trivalent titanium is initiated, that is at a slag temperature of about 150°C, and discontinuing the application of heat at that initiation point so that the temperature of the titaniferous slag continues to rise due to the heat generated by the exothermic oxidation of the trivalent titanium; and

b. reapplying heat to the titaniferous slag after the temperature of the slag reaches a maximum, whereby the temperature of the titaniferous slag is maintained within a range of from about 300°C to about 450°C until the desired reduction of the trivalent titanium contents is achieved.

3,868,442
ALUMINA EXTRACTION

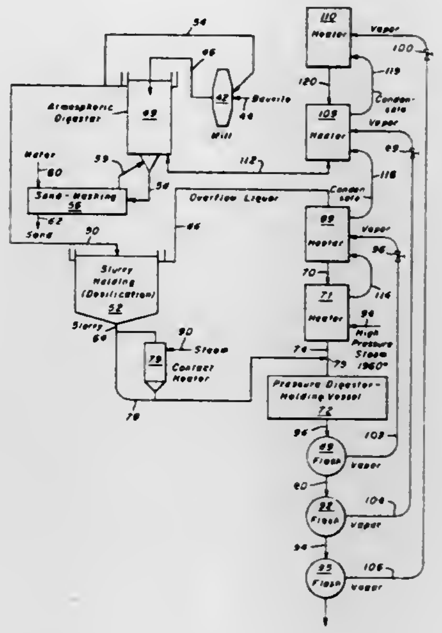
William M. Fish, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 6, 1972, Ser. No. 286,813. The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.

Int. Cl. C01f *7/06*

U.S. Cl. 423—121 **8 Claims**

1. In a process for preparation of sodium aluminate liquor by formation of a caustic slurry of bauxite at atmospheric pressure with subsequent high-pressure digestion thereof, the improvement which comprises, after said formation of said caustic slurry, and prior to pressure digestion forming a desilication product in a holding zone containing said slurry by combination of dissolved silica with alumina and caustic to form an insoluble sodium aluminum silicate, separating said slurry into a high-solids coarse portion comprising material more than 200 mesh in size and a low-solids fines portion comprising material less than 200 mesh in size, conducting said low-solids fines portion through at least one indirect heat exchanger, whereby said low-solids fines portion is heated, and thereafter reuniting said high-solids coarse portion with said low-solids fines portion for subsequent high-pressure digestion.



3,868,443
PROCESS FOR THE MANUFACTURE OF NITRIC ACID

Erich Scheibler, and Hans-Joachim Volker, both of Dortmund, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Filed Sept. 25, 1972, Ser. No. 292,000

Claims priority, application Germany, Sept. 28, 1971, 2148329

Int. Cl. C01b *21/40*

U.S. Cl. 423—392 **1 Claim**

1. A process for the simultaneous manufacture of nitric acid of medium (50 to 70% by weight) and high concentration (80 to 100% by weight) from a nitrogen monoxide containing gas stream issuing from the combustion of a gas mixture of ammonia and air with a content of 12 to 13% of ammonia in the presence of catalysts, the process comprising

a. oxidizing the nitrogen monoxide in the gas stream to a higher state of oxidation by countercurrent flow of nitric acid of a concentration of 50 to 70% by weight.

b. cooling the gas stream to a temperature of approximately 60°C.,

c. compressing the gas stream to approximately 10 atm,

d. mixing the gas stream with the first degassing effluent of nitric acid of 50 to 70% by weight concentration,

e. cooling this mixed gas stream in a first step to approximately 30°C. and in a second step to about 20°C. and separating the condensate from residual gases;

f. reacting the residual gases from the second cooling step with compressed air, water, nitrogen oxide bearing gas of the following absorption step for nitric acid of high concentration and the drained aqueous nitric acid from the oxidation step of nitrogen monoxide in an absorption step to form nitric acid of a concentration of 50 to 70% by weight,

g. degassing the nitric acid of medium concentration once and using part of it to oxidize the nitrogen monoxide,

h. reacting the condensate from the two cooling steps of (e) with the bottom product of about azeotropic concentration of the distillation step (i) for nitric acid of high concentration up to 90% by weight, and

i. distilling the effluent from the absorption step (h) in nitric acid of high concentration (more than 90% by weight) and in a bottom product of about azeotropic concentration.

3,868,444
PROCESS FOR THE PREPARATION OF POROUS SODIUM BICARBONATE

Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1969, Ser. No. 880,424

Int. Cl. C01d *7/10*

U.S. Cl. 423—422 **12 Claims**

1. A process which comprises:

a. reacting ammonium bicarbonate with a soluble sodium salt in aqueous solution, wherein the concentration of sodium ion is greater than about 2.5 gram ions per liter and the bicarbonate ion concentration is greater than about 0.04 gram ions per liter, in the presence of carbon dioxide in sufficient quantity to create a partial pressure of from 15 to 40 psig while agitating the solution with sufficient vigor to form crystals of sodium bicarbonate having longest dimensions which vary from 1 to 10 microns;

b. separating the sodium bicarbonate crystals from the solution and compacting them; and

c. drying the crystals at a temperature of from about 20° to about 75° C.

3,868,445
DOSAGE UNIT CONTAINING A SUBSTANCE SHOWING A TOPICAL EFFECT ON THE EYE, AND A METHOD OF PREPARING SAME

Emma Marta Ryde, and Jan Erik Ekstedt, both of Uppsala, Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Filed Nov. 16, 1973, Ser. No. 416,717

Claims priority, application Sweden, Nov. 30, 1972, 15652/72

Int. Cl. A61k *27/12*

U.S. Cl. 424—14 **4 Claims**

1. The method of medicating the eye with ophthalmic medication the improvement which includes the step of placing beneath one eyelid a solid shaped body having a largest dimension between the limits of 2 – 20 mm and remaining dimensions within the range of 0.5 – 10 mm, with softly rounded corners so as not to cause eye irritation, the body being either planar or suitably molded to obtain the shape of a lens capable of fitting into the space between the eye and the surrounding tissue with a surface facing toward the eye, said solid shaped body as a result of its plasticity forming itself to the shape of the eye cavity when inserted into the eye, said body comprising a mixture of:

a. 5 – 90% of at least one lipophilic substance having a melting point of 37°–75°C and being selected from the group consisting of paraffin, bees wax and glycerol esters of 8 – 22 carbon atom fatty acids having melting points within the aforementioned range,

b. 0 – 40% of at least one water-soluble or water-swellable polymer selected from the group consisting of dextran, lower hydroxy-alkyl dextran, carboxy-methyl dextran, lower hydroxy-alkyl cellulose, lower alkyl-cellulose, carboxymethyl cellulose, polyvinyl alcohol, dextrin, starch, polyvinyl pyrollidone and polyalkylene glycols, in solid finely-divided form having a particle size less than approximately 150 microns,

c. 0.05 – 30% of at least one drug showing a topical effect on the eye with a particle size less than approximately 150 microns, and

d. 0.2 – 20% of at least one water-insoluble lipophilic polymer having a softening temperature exceeding 70°C and having a melting point exceeding 85°C and which is soluble in the lipophilic substance or substances in molten form to serve as stabilizer for the mixture, said polymer being selected from the group consisting of polyvinyl acetate, ethylenevinylacetate-copolymer, polybutyl methacrylate, polyethylene, polypropylene, ethylene-propylene-copolymer and mixtures thereof, the percentages relating to percent by weight calculated on the total weight of the mixture.

3,868,446
THICKENED PHOSPHORUS ESTERS

Leonard Cohen; Philip B. Coulter, and Bernard M. Zeffert, all of Baltimore, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1963, Ser. No. 259,486

Int. Cl. A01n *23/00*

U.S. Cl. 424—81 **6 Claims**

1. A composition of matter comprising a compound of the formula:

$$X = P\,(R)\,(Q)\,(R_1)$$

where R is selected from the group of alkyl and dialkylamino radicals,

R_1 is selected from the group consisting of alkoxy and cyclohexyloxy radicals,

Q is selected from the group consisting of fluoro, cyano and $— X — CH_2 — CH_2 — N\,(alkyl)_2$ groups,

X is selected from the group consisting of sulfur and oxygen, wherein the alkyl and alkyloxy groups are of 1–4 carbon atoms,

thickened with 0.1 to 2.0% by weight of a polymer selected from the group consisting of polyisobutylmethacrylate, nitrocellulose,

polymethylmethacrylate, polystyrene, and poly n-butyl methacrylate.

3,868,447
HEMA PASTE

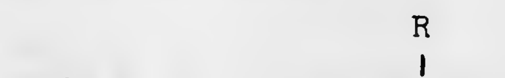
Karel Kliment, Princeton, N.J., assignor to National Patent Development Corporation, New York, N.Y.

Filed Feb. 2, 1972, Ser. No. 223,002

Int. Cl. A61k *5/00*

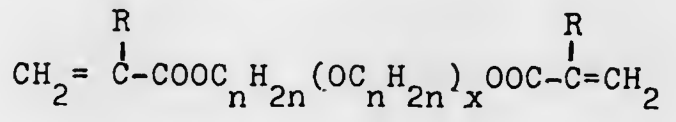
U.S. Cl. 424—81 **18 Claims**

1. A paste consisting essentially of (1) 0.2 to 6.5% of a non cross-linked, organic solvent soluble, hydrophilic copolymer of a monoester having the formula:



$$HO(C_nH_{2n}O)_xC_nH_{2n}OOC-\overset{R}{\overset{|}{C}}=CH_2$$

with 0.01 to 50% of a diester of the formula



$$CH_2=\overset{R}{\overset{|}{C}}-COOC_nH_{2n}(OC_nH_{2n})_xOOC-\overset{R}{\overset{|}{C}}=CH_2$$

where R is hydrogen or methyl, *n* is 2 or 3 and *x* is zero, 1 or 2, (2) 5 to 10.8% of a finely divided activated inorganic filler selected from the group consisting of activated carbon, silica, alumina and diatomaceous earth, and (3) the balance an organic solvent for the copolymer, said paste having incorporated therein a biologically active drug material.

3,868,448
METHOD FOR BLOAT CONTROL

Peter A. Hahn, Grosse Point Park, Mich.; Frank J. Hartdegen, Columbia, and Marlin A. Espenshade, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,709

Int. Cl. A61k *19/00*

U.S. Cl. 424—94 **8 Claims**

1. The method of controlling bloat in a ruminant that comprises administering to the ruminant an effective amount of the enzyme obtained by culturing *Streptomyces griseus* NRRL 5747 in a fermentation medium until said enzyme has the following characteristics:

a. 1 g. of enzyme represents about 500 units, 1 unit being that amount of enzyme which when dissolved in 1 ml. of water reduces the viscosity of 1 ml. of prepared gastric mucin by 50% in 2 hours at 39° C.;

b. said enzyme is insoluble in acidic acetone;

c. centrifuged broth from the fermentation medium contains 0.3–1.0 units of enzyme/mg. broth;

d. storage of the dry enzyme at 109° F. for 28 weeks or at 122° F. for 8 weeks results in less than 10% activity decrease.

3,868,449
INSECTICIDAL O,S-DIHYDROCARBYL-N-ACYLPHOSPHOROAMIDOTHIOATES AND S,S-DIHYDROCARBYL-N-ACYLPHOSPHOROAMIDODITHIOATES

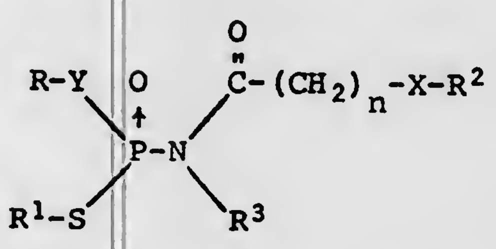
Philip S. Magee, Ignatia, Calif.

Division of Ser. No. 317,315, Dec. 21, 1972, Pat. No. 3,801,680, a continuation-in-part of Ser. No. 13,846, Feb. 24, 1970, Pat. No. 3,716,600, which is a continuation-in-part of Ser. No. 810,383, March 25, 1969, abandoned. This application Jan. 14, 1974, Ser. No. 432,929

Int. Cl. A01n *9/36*

U.S. Cl. 424—217 **20 Claims**

1. An insecticidal composition comprising an insecticidally effective amount of a compound of the formula



wherein R and R^1 individually are alkyl, alkenyl or alkynyl of up to 6 carbon atoms, Y and X individually are oxygen or sulfur, n is a whole number of from 1 to 6, R^2 is alkyl of 1 to 6 carbon atoms, aryl of up to 10 carbon atoms substituted with up to 2 fluorine, chlorine or bromine atoms, and R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, in a biologically inert carrier.

3,868,450
PROCESS FOR PRODUCING AN ANTI-VIRUS SUBSTANCE FOR PLANTS

Yujiro Harada, Tokyo; Kiyoshi Kumabe, Funabash; Tsuneo Sato, Yokohama; Yoshinobu Miyamura, Ube; Fumio Kato, Sunto, and Mikio Tanimoto, Kofu, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 90,084, Nov. 16, 1970, abandoned, Continuation-in-part of Ser. No. 843,343, July 22, 1969, abandoned. This application Apr. 19, 1972, Ser. No. 245,642

Int. Cl. H61k *21/00*

U.S. Cl. 424—115 **3 Claims**

1. A process for producing a substance 84-B-3 capable of inhibiting plant disease virus, which comprises cultivating in a medium containing an assimilable carbon source and nitrogen source and inorganic substance a microorganism belonging to Streptomyces selected from the group consisting of *Streptromyces Rameus* (ATCC21273) and Streptomyces S.P. No. 290 (ATCC 21274) until a sufficient amount of the 84-B-3 is accumulated therein, and recovering the accumulated 84-B-3 therefrom.

3,868,451
ADENOSINE-5'-ESTERS IN TREATING ANGINA PECTORIS

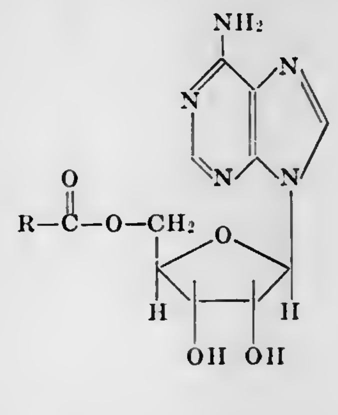
Herman Hal Stein, Skokie, Ill., and Thomas Dillard Darby, Milford Court, Ky., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of Ser. No. 129,606, March 30, 1971, abandoned, and a continuation-in-part of Ser. No. 28,916, April 15, 1970, abandoned. This application May 2, 1973, Ser. No. 356,530

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **4 Claims**

1. The method of increasing the supply of coronary sinus oxygen in a mammalian patient in need of said coronary oxygen increase comprising orally administering to said patient a therapeutically effective amount of a compound of the formula



wherein R is C_1–C_3 alkyl.

3,868,452
17ALPHA-ETHYNYLESTRIOL 3-CYCLOPENTYL ETHER

Russell J. Kraay, and Eugene Farkas, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 136,671, April 23, 1971, Pat. No. 3,790,605, which is a continuation-in-part of Ser. No. 127,690, March 24, 1971, abandoned. This application Nov. 1, 1973, Ser. No. 411,988

Int. Cl. A61k *17/06*

U.S. Cl. 424—238 **2 Claims**

1. The method of treating estrogen deficiency symptoms in mammals which comprises administering an average of from 5 to 500 μg. per day of 17α-ethynylestriol 3-cyclopentyl ether to a mammal suffering from estrogen deficiency.

3,868,453
16-METHYLENE-9/BETA, 10ALPHA-STEROID COMPOUNDS, PHARMACEUTICAL PREPARATIONS WHICH CONTAIN THE NOVEL COMPOUNDS AS ACTIVE INGREDIENTS AND METHODS OF PRODUCING THE SAID COMPOUNDS AND PREPARATIONS

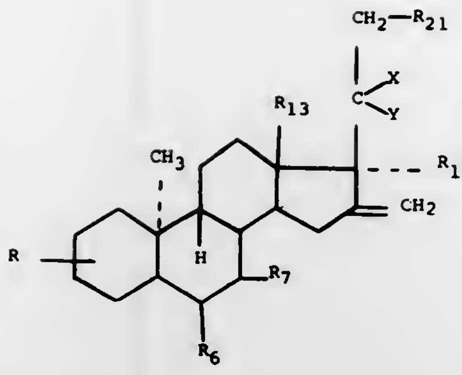
Harmen Van Kamp, and Anna Maria De Wachter, both of Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,506

Int. Cl. A61k *17/06*

U.S. Cl. 424—243 **21 Claims**

1. A pharmaceutical preparation comprising, an endocrinologically effective amount of a compound of the formula



where

R is a 3-keto-4-dehydro,
  1,2-methylene-3-keto-4-dehydro,
  3-keto-1,4-bisdehydro,
  3-keto-4,6-bisdehydro,
  1,2-methylene-3-keto-4,6-bisdehydro,
  3-keto-1,4,6-trisdehydro,
  3OR-4,6-bisdehydro,
  1,2-methylene-3-OR-4,6-bisdehydro,
  3-OR-3,5-bisdehydro,
  1,2-methylene-3-OR-3,5-bisdehydro or
  3-OR'-1,4,6-trisdehydro group, where OR represents an etherified or esterified hdyroxy group and

OR' represents an esterified hydroxy group, R_6 is a hydrogen atom, a chlorine atom, a fluorine atom, a 6,6-difluoro group, a 6,6-dichloro group or a methyl group, while, if R_6 is a hydrogen atom, R_7 is a 6,7-methylene group, R_7 is a hydrogen atom or a 6,7-methylene group, while, if R_7 is a 6,7-methylene group,

R_6 represents a hydrogen atom, a chlorine atom or a fluorine atom,

R_{17} is an etherified hydroxy group containing from one to five carbon atoms or an esterified hydroxy group containing from one to seven carbon atoms,

R_{21} is a hydrogen atom, a fluorine atom, a hydroxy group or an esterified hydroxy group,

R_{13} is a methyl or ethyl group, and X and Y either together represent a double-bonded oxygen atom or X is a hydrogen atom and Y is a hydroxy or esterified hydroxy group and a finely divided pharmaceutically acceptable carrier therefore.

3,868,454

PSORIASIS TREATMENT WITH MYCOPHENOLIC ACID DERIVATIVES

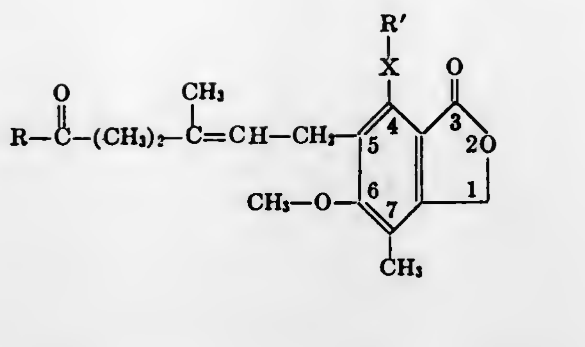
Irving S. Johnson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 280,626, Aug. 14, 1972, Pat. No. 3,777,020, which is a continuation-in-part of Ser. No. 191,824, Oct. 22, 1971, abandoned, which is a continuation-in-part of Ser. No. 93,432, Nov. 27, 1970, abandoned. This application Sept. 10, 1973, Ser. No. 396,027The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.

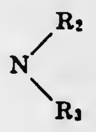
Int. Cl. A61k ***27/00***

U.S. Cl. 424—248 **2 Claims**

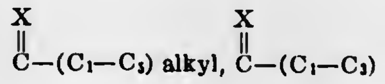
1. A method of treating psoriasis comprising the administration to a human suffering from psoriasis either orally or topically of an effective amount for treating psoriasis of a compound of the formula



wherein R is M, O-(C_1-C_5) alkyl, O-(C_3-C_5) alkenyl or

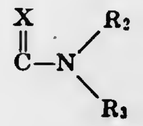


wherein R' is H,



$\overset{X}{\overset{\|}{C}}$—($C_1$—$C_3$) alkyl, $\overset{X}{\overset{\|}{C}}$—($C_1$—$C_3$)

haloalkyl or



wherein R^2 is H or (C_1–C_5) alkyl, R^3 is H, (C_1–C_5) alkyl or (C_3–C_8) cycloalkyl, and R^2 and R^3 taken together are $(CH_2)_{4-5}$ or $(CH_2)_2$-O-$(CH_2)_2$

wherein X is S or O and M is OH, OK, ONa or ONH_4 with the provision that R' cannot be H if R is M.

3,868,455

CERTAIN BENZYL PURINES IN COMBINATION WITH CERTAIN BENZOYLACRYLANILIDES AS COCCIDIOSTATS

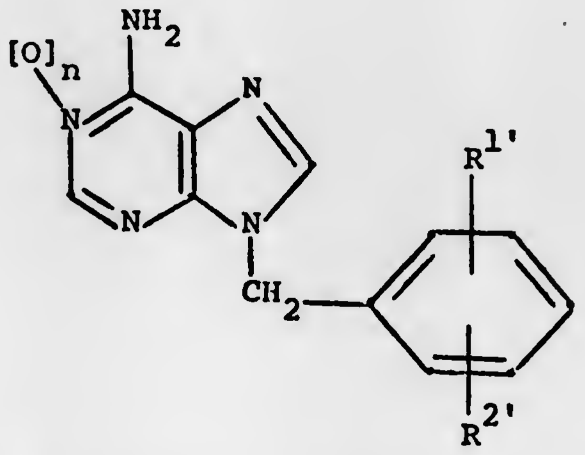
Brinton M. Miller, Middletown, and Edward C. McManus, Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 15, 1973, Ser. No. 416,335

Int. Cl. A61k ***27/00***

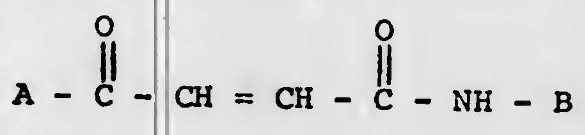
U.S. Cl. 424—253 **13 Claims**

1. A composition for combatting coccidiosis which comprises a poultry ration containing from about 0.001 to 0.008 percent by weight of a 6-amino-(substituted benzyl)purine or an N'-oxide thereof of the formula:



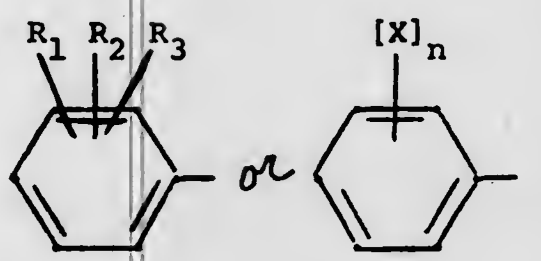
wherein *n* is the integer 0 or 1, R^1 and R^2 are independently selected from the group consisting of hydrogen, halogen, nitro and trihalomethyl, provided that at least one of such substituents is other than hydrogen and no more than one of such substituents is nitro or trihalomethyl, and R^1 and R^2

are located in the 2 and 6 positions on the carbocyclic portion of the compound except when R^1 and R^2 are both methyl the groups are located in the 3 and 4 positions on the carbocyclic ring; in combination with from 0.002 to 0.1 percent parts by weight of a benzoylacrylanilide of the formula:

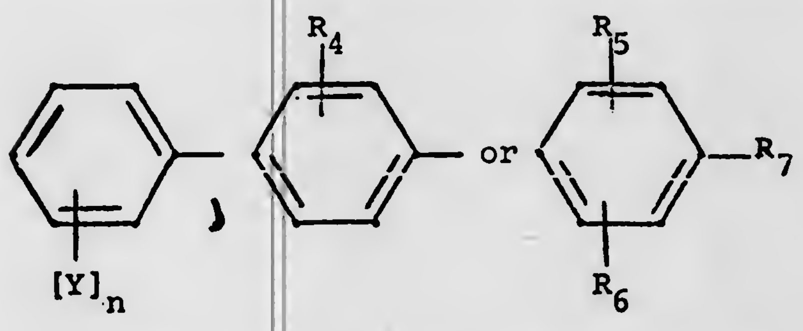


$$A - \overset{O}{\overset{\|}{C}} - CH = CH - \overset{O}{\overset{\|}{C}} - NH - B$$

where A is



where R_1, R_2 and R_3 are independently hydrogen, halo, nitro, loweralkylsulfide, loweralkylsulfonyl, loweralkyl, loweralkoxy, loweralkanoylamino, trihaloloweralkyl, cyano, or hydroxyl; provided that at least one of R_1, R_2 and R_3 is other than nitro; X is halo; and n is an integer of 4 or 5; and where B is



where Y is halo, and n is as previously defined; R_4 is cyano, halo, nitro, loweralkyl, loweralkoxy, loweralkylsulfide, trihaloloweralkyl, or hydroxyl; R_5 and R_6 are independently loweralkyl, or halo; and R_7 is halo, nitro, or hydrogen.

3,868,456

CERTAIN HYDANTOINS HAVING ANIMAL GROWTH STIMULATING ACTIVITY

Remo Faustini; Angelo Tardani, and Raffaele Del Monte, all of Milano, Italy, assignors to Societa' Farmaceutici Italia, Milan, Italy

Filed May 12, 1972, Ser. No. 252,852

Claims priority, application Italy, May 15, 1971, 24578/71

Int. Cl. A61k ***27/00***

U.S. Cl. 424—273 **2 Claims**

1. A method of promoting the growth of domestic animals comprising feeding to a domestic animal a growth promoting amount of 1-n-propyl-3-(5'-nitrofurfurylidenamino) hydantoin.

3,868,457

METHOD OF INHIBITING HISTAMINE ACTIVITY WITH GUANIDINE COMPOUNDS

James Whyte Black, Hemel Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmeti, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Garden City, England

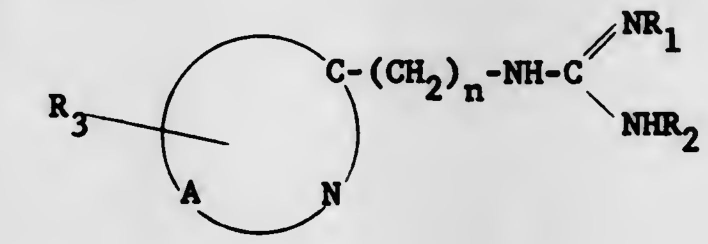
Continuation-in-part of Ser. No. 80,795, Oct. 14, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,302

Claims priority, application Great Britain, Oct. 29, 1969, 52891/69

Int. Cl. A61k ***27/00***

U.S. Cl. 424—273 **6 Claims**

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering internally to an animal requiring inhibition of said H-2 histamine receptors in an amount sufficient to inhibit said H-2 histamine receptors a compound of the formula:



in which:

n is 2 to 5;

A taken together with the carbon and nitrogen atoms to which it is attached forms an imidazolyl ring;

R_1 is hydrogen, alkyl having one to four carbon atoms or benzyl;

R_2 is hydrogen, alkyl having one to four carbon atoms, benzyl, imidazolylethyl or amino or R_1 and R_2 together form an ethylene bridge and

R_3 is hydrogen, alkyl having one to four carbon atoms, alkylthio having one to four carbon atoms or amino or pharmaceutically acceptable acid addition salts thereof.

3,868,458

INSECTICIDAL COMPOSITIONS AND METHODS OF USE FOR COMBATING INSECTS USING SUBSTITUTED IMIDAZOLES

Maurice W. Baker; John C. Kerry; Kenneth J. Nichol; John R. Marshall; David M. Weighton, and Antonin Kozlik, all of Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

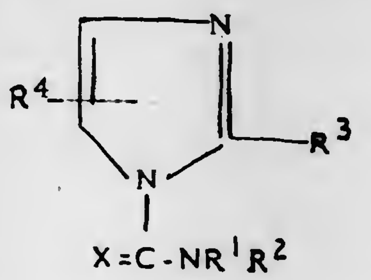
Filed Nov. 30, 1972, Ser. No. 311,009

Claims priority, application Great Britain, Dec. 7, 1971, 56781/71; July 26, 1972, 34981/72

Int. Cl. A01n ***9/22***

U.S. Cl. 424—273 **10 Claims**

1. An insecticidal composition which comprises an insecticidally effective amount of a compound of the formula



in which X is selected from the group consisting of oxygen and sulphur, R^3 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, R^4 is selected from the group consisting of alkyl of 1 to 10 carbon atoms and cycloalkyl of 3 to 10 carbon atoms and R^1 and R^2 are selected from the group consisting of (a) R^1 and R^2 are each selected from the group consisting of alkyl of 1 to 7 carbon atoms and alkenyl of 2 to 4 carbon atoms, and (b) R^1 is alkyl of 1 to 4 carbon atoms and R^2 is selected from the group consisting of alkoxyalkyl of 3 to 6 carbon atoms and haloalkyl of 1 to 6 carbon atoms, together with a suitable carrier.

3,868,459

METHOD OF KILLING NEMATODES USING CERTAIN HALOMETHYL OXATHIENES

Christian Esclamadon, Billere, France, assignor to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

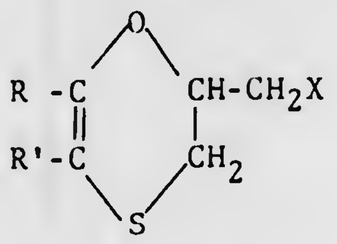
Continuation-in-part of Ser. No. 172,287, Aug. 16, 1971, , which is a continuation of Ser. No. 825,937, May 17, 1969, abandoned. This application Sept. 21, 1972, Ser. No. 290,869

Claims priority, application France, May 21, 1968, 68.152542

Int. Cl. A01n *9/12*

U.S. Cl. 424—276 **4 Claims**

1. A method of controlling nematodes which comprises applying thereto an effective nematocidal amount of a halomethyl oxathiene compound of the formula



wherein X is chlorine, R is methyl, and R' is hydrogen or methyl, or wherein R and R' together form a tetramethylene group.

3,868,460

THERAPEUTIC COMPOSITIONS AND METHOD

Herbert Koppe, Ingelheim, Rhein; Albrecht Engelhardt, Mainz, Rhein, and Karl Zeile, Ingelheim, Rhine, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim, Rhine, Germany

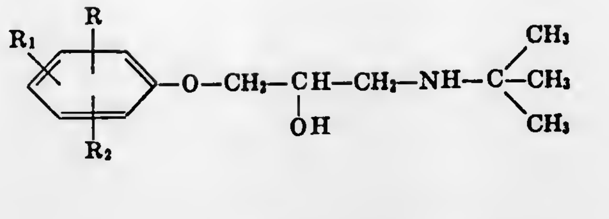
Division of Ser. No. 294,226, Oct. 2, 1972, , which is a division of Ser. No. 36,676, May 12, 1970, Pat. No. 3,740,444, which is a continuation-in-part of Ser. No. 700,376, Jan. 25, 1968, Pat. No. 3,541,130. This application Oct. 23, 1973, Ser. No. 408,743

Claims priority, application Germany, July 25, 1967, 93645; Great Britain, June 15, 1967, 27645/67; Germany, Feb. 6, 1967, 91070; June 15, 1967, 93025

Int. Cl. A61k *27/00*

U.S. Cl. 424—304 **13 Claims**

1. A composition having bradycardia and isoproterenol antagonistic activity comprising a small but effective amount of at least one active compound selected from the group consisting of racemates of 1-phenoxy -2-hydroxy-3-tert.-butylamino propanes of the formula



wherein R is cyano; R_1 is hydrogen and R_2 is selected from the group consisting of hydrogen, chlorine and alkyl and alkoxy of one to four carbon atoms, their optically active isomers and their non-toxic, pharmaceutically acceptable acid addition salts of said racemates and said optically active isomers and a major amount of a pharmaceutical carrier.

3,868,461

ESTER OF 3,4-DIHYDROXY-ALPHA (ISOPROPYLAMINO) METHYL BENZYL ALCOHOL, COMPOSITION AND ANTI-ASTHMA USE THEREOF

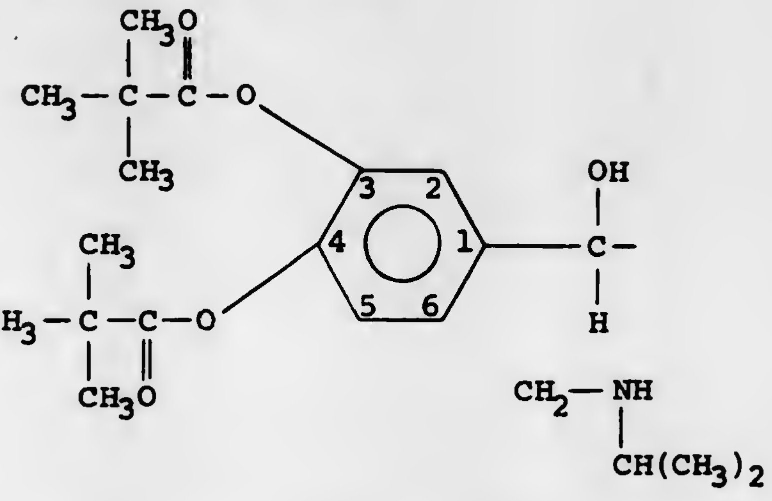
Anwar A. Hussain, and James E. Truelove, both of Lawrence, Kans., assignors to Interx Corporation, Lawrence, Kans.

Filed Nov. 22, 1972, Ser. No. 308,771

Int. Cl. A61k *27/00*; **C07c** *93/26*

U.S. Cl. 424—311 **8 Claims**

1. A compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

3,868,462

THIOPSEUDOURONIUM COMPOUNDS FOR TREATING GASTROINTESTINAL HYPERACIDITY AND ULCERATION

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.

Division of Ser. No. 142,038, May 10, 1971,. This application Dec. 22, 1972, Ser. No. 317,575

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **2 Claims**

1. A method for the treatment of gastrointestinal hyperacidity and ulceration in humans and mammals which comprises the oral or parenteral administration thereto of between about 0.1–50 mg/kg per day of at least one compound selected from the group consisting of:

1,3-dicylohexyl-2-(o-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(m-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(p-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,3-dichlorobenzyl)-2-thiopsuedouronium chloride,

1,3-dicyclohexyl-2-(2,4-chlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,5-dichlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(3,4-dichlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(3,5-dichlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,3,4-dichlorobenzyl)-2-thiopsuedouronium chloride,

1,3-dicyclohexyl-2-(2,3,5-dichlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,3,6-dichlorobenzyl)-2-thiopseudouronium chloride,

1,3-dicyclohexyl-2-(2,4,5-dichlorobenzyl)-2-thiopsuedouronium chloride,

1,3-dicyclohexyl-2-(2,4,6-dichlorobenzyl)-2-thiopseudouronium chloride and

1,3-dicyclohexyl-2-(3,4,5-dichlorobenzyl)-2-thiopsuedouronium chloride

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3,868,463

METHOD OF TREATING ARRHYTHMIA

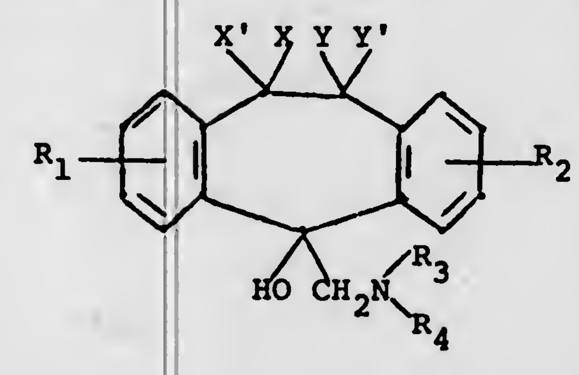
David C. Remy, 607 Jenkins Ln., North Wales, Pa. 19454

Continuation-in-part of Ser. No. 786,763, Dec. 24, 1968, abandoned. This application Feb. 26, 1973, Ser. No. 335,632

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **8 Claims**

1. A method for treating cardiac arrhythmia in animals which comprises administering to an afflicted animal an antiarrhythmia dose of an active compound having the formula



wherein

X and Y together represent

1. an additional carbon-to-carbon double bond, in which case
   - X' is hydrogen and
   - Y' represents a substituent selected from the group consisting of hydrogen, chlorine, bromine, fluorine, and a lower alkyl substituent;
2. X and Y together represent a methylene substituent, and
   - X' and Y' are each hydrogen; and
3. X, X', Y and Y' each represent hydrogen;

R_1 and R_2 are each a member selected from the group consisting of hydrogen, lower alkyl, chlorine, bromine, fluorine, trifluoromethyl, alkoxy, and a loweralkylsulfonyl; and

R_3 and R_4 are each a member selected from the group consisting of hydrogen and lower alkyl and the non-toxic pharmacologically acceptable acid addition salts of said compound.

3,868,464

PRODUCTION OF MALTOSE WITH AMYLASES PRODUCED BY STREPTOMYCES

Yoshihisa Koaze; Yutaka Nakajima, both of Tokyo; Hidemasa Hidaka, Yokohama; Tomizo Niwa, Kawasaki; Takashi Adachi, Yokosuka; Kenji Yoshida, Kawasaki; Jiro Ito; Taro Niida; Takashi Shomura, all of Yokohama, and Masahiro Ueda, Kawasaki, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Division of Ser. No. 190,962, Oct. 20, 1971, Pat. No. 3,804,717. This application July 26, 1973, Ser. No. 382,752

Claims priority, application Japan, Oct. 27, 1970, 45-93951; Dec. 25, 1970, 45-11775; July 5, 1971, 46-48772

Int. Cl. C13k *7/00*

U.S. Cl. 426—48 **6 Claims**

1. A process for the preparation of saccharification products of starch mainly composed of maltose which is useful as a diet and natural sweetening material, which comprises liquefying and saccharifying a starch material including an amylose in aqueous dispersion by reacting therewith an amylase produced by cultivating a strain of *Streptomyces albus*, *Streptomyces aureofaciens*, *Streptomyces hygroscopicus*, *Streptomyces hygroscopicus var. augustomyceticus*, *Streptomyces viridochromogenes*, *Streptomyces flavus* and *Streptomyces tosaensis* under aerobic conditions in a culture medium containing known carbon sources and nitrogen sources to produce and accumulate in the culture medium an amylase having such enzymatic activities and characteristics that the pH of the optimum activity is in the range of 4.5 – 5.0, the limit in the hydrolysis of starch by this amylase is no less than 75% of the theoretical maltose and the ratio of glucose to maltose produced from starch by the action of this amylase is no more than 0.06:1 by weight, until there is formed an aqueous solution of the saccharification products of starch containing at least 70% of maltose on the dry weight basis.

3,868,465

LOW CALORIE, COLD WATER SOLUBLE QUICK SET GELATIN DESSERT

Ivan Furda, 410 Benedict Ave., Tarrytown, N.Y. 10591; Jacob Richard Feldman, 26 Susan Dr., New City, N.Y. 10956, and Donato Malizia, 4 Ashburton Pl., Yonkers, N.Y. 10701

Filed Feb. 2, 1973, Ser. No. 329,246

Int. Cl. A23l *1/04*; **A23g** *3/00*

U.S. Cl. 426—168 **19 Claims**

1. A method of producing a low-calorie, cold water soluble, quick-setting gelatin comprising preparing a solution of polyglucose and gelatin, the proportion of gelatin to polyglucose being in the range of about 1:10 to about 1:5, and co-drying the solution, in order to derive a gelatin product of enhanced gel strength and reduced tendency to maturation.

3,868,466

DEHYDRATED CITRUS PEEL PRODUCT

Horton E. Swisher, Upland, Calif., assignor to Sunkist Growers, Inc., Sherman Oaks, Calif.

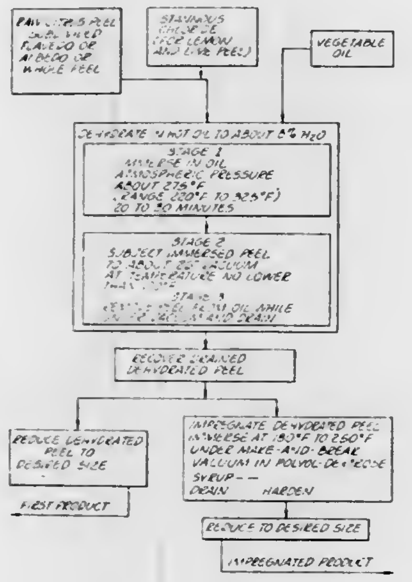
Division of Ser. No. 119,334, Feb. 26, 1971, Pat. No. 3,821,449, which is a continuation-in-part of Ser. No. 689,908, Dec. 12, 1967, abandoned. This application Sept. 4, 1973, Ser. No. 394,044

Int. Cl. A23b *7/02*

U.S. Cl. 426—199 **3 Claims**

1. A dehydrated citrus peel product produced according to the method which includes the steps of immersing fresh, raw, unfrozen citrus peel in a hot vegetable oil at a temperature of from about 220° to about 400° F for a time sufficient to boil out the major portion of the natural water content and to replace it with the hot oil, subjecting the hot oil containing the

citrus peel to vacuum to further reduce the water to less than about 15 percent, and thereafter breaking the vacuum and


RAW CITRUS PEEL SUBDIVIDED FLAVEDO OR ALBEDO OR WHOLE PEEL
STANNOUS CHLORIDE (FOR LEMON AND LIME PEEL)
VEGETABLE OIL
DEHYDRATE IN HOT OIL TO ABOUT 5% H2O
STAGE 1 IMMERSE IN OIL ATMOSPHERIC PRESSURE ABOUT 275°F (RANGE 220°F TO 325°F) 20 TO 30 MINUTES
STAGE 2 SUBJECT IMMERSED PEEL TO ABOUT 28" VACUUM AT TEMPERATURE NO LOWER THAN
STAGE 3
RECOVER DRAINED DEHYDRATED PEEL
REDUCE DEHYDRATED PEEL TO DESIRED SIZE
FIRST PRODUCT
IMPREGNATE DEHYDRATED PEEL IMMERSE AT 130°F TO 250°F UNDER MAKE-AND-BREAK VACUUM IN POLYOL-DEXTROSE SYRUP— DRAIN HARDEN
REDUCE TO DESIRED SIZE
IMPREGNATED PRODUCT

separating the hot oil in any order, and recovering the dehydrated peel.

3,868,467
PRESTARTER COMPOSITIONS

Eldred Olson, Colfax, Ill., assignor to Vi-Amino Feeds, Inc., Colfax, Ill.

Filed Jan. 2, 1973, Ser. No. 320,309
Int. Cl. A23k *1/00*

U.S. Cl. 426—208 **13 Claims**

1. A feed composition, including

a total protein ratio not in excess of about 18%,

high lysine corn having a lysine content of at least about 0.3% by weight of the corn, and present in a range of more then about 25% and less than about 65% by weight of the total composition,

wheat germ meal in a range of about 10% to about 40% by weight of the total composition,

a total lysine content of at least 1% by weight of the total composition, and

said high lysine corn and wheat germ meal ingredients having relative proportions so that one ingredient is accordingly increased as the other is reduced to substantially maintain the total protein ratio within said prescribed maximum level of less than about 18%.

3,868,468
PREPARATION OF A SHELF STABLE PRE-COOKED BACON PRODUCT

Robert B. Tompkin, La Grange, and Francis G. Connick, Downers Grove, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 311,960
Int. Cl. A22c *18/00*

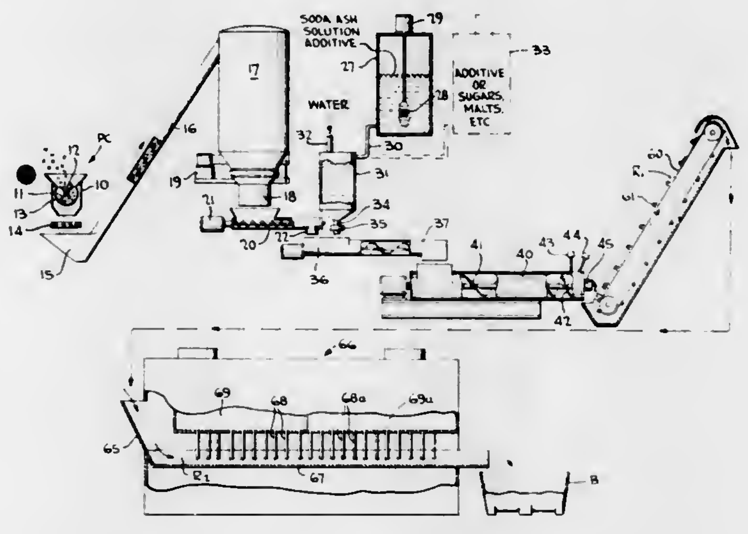
U.S. Cl. 426—243 **6 Claims**

1. An improved process for producing a pre-cooked sliced bacon product that is shelf stable at ambient temperature yet has only a palatable level of sodium chloride throughout each slice of said product, said method comprising: cooking bacon slices, sliced from at least one bacon slab cured and prepared in a conventional manner, to a constant percent weight yield of between about 30–40%, whence only some of said slices from each slab have a water activity of .86, and less, and a percent brine level of at least 13%; selecting an equal plurality of the cooked bacon slices from each flank, center, center and butt quadrant of at least one bacon slab; and packing and sealing the selected slices in a container in the absence of air so as to inhibit mold growth, and whereby after a holding period of time sufficient to reach an equilibrium all of the resultant containerized product slices exhibit a water activity of less than about .86 maximum and a percent brine level of at least 13%, each of the bacon slices of said product having below about 4%, by weight, sodium chloride.

3,868,469
METHOD OF DUTCHING COCOA

Manuel L. Chalin, 68 Kingsley Rd., Kendall Park, N.J. 08824
Continuation-in-part of Ser. No. 253,839, May 16, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,517
Int. Cl. A23g *1/100*

U.S. Cl. 426—262 **10 Claims**



1. The method of continuous dutching and drying of cocoa so as to attain a rich color and other favorable parameters in the end product, comprising the steps of:

pulverizing a press cake or nibs of cocoa material into a free-flowing powder state;

forming an aqueous alkaline solution having a concentration of about 3 to 12 weight percent wherein the alkaline solution is formed from ammonia gas or a hydroxide, oxide, carbonate or bicarbonate of an alkali metal, ammonium or an alkaline earth metal or mixtures thereof;

combining said aqueous alkaline solution with said pulverized material and additional water of dilution to form a product mixture in the form of a damp mass having an initial moisture content of about 20 to 35 percent and a maximum of up to about 6 weight percent alkaline equivalent to potassium carbonate and subjecting the resultant product mixture to thorough mixing to form a homogeneous product mixture;

cooking the product mixture at a temperature of about 150°–230° F. for a residence period of about 2½ to 5 minutes while continuing mixing and while progressively increasing the pressure to a final stage of pressurization of about 500–1,300 pounds per square inch to form a heated and pressurized mass, wherein cooking is performed by feeding the product mixture into a chamber containing means to form the product mixture into a working mass corresponding to said chamber, providing progressively greater pressure on said working mass as the mixture moves from the entrance end of the chamber to the exit end, controlling the heating in said chamber to raise the temperature of the product mixture to cooking temperature;

extruding the resultant heated and pressurized mass through die means to form a product rod, wherein the step of extruding the product mass is carried out at the exit end of the elongated chamber immediately after pressurized cooking of the product mixture by passing the product mass through an extruding die having at least one restricted opening to form the product rod;

dividing the product rod into lengths to form product pellets, said pellets at this stage containing about 85–97 percent of the initial moisture content; and

drying said product pellets on a fluidized bed as the pellets continuously move along said bed by contact with a heated inert gas at a temperature of about 350°–450° F. for 2.5 to 3 minutes and then rapidly cooling the pellets with filtered air to approximately ambient temperature, wherein said pellets have a moisture content of about 4 percent; whereby dutching is carried out in a controlled fashion with interruption.

3,868,470
SEASONING INDIVIDUALLY QUICK FROZEN VEGETABLES

William M. Fallon, Tarrytown; Frank Paris, Ossining, both of N.Y., and Louis Bartenbach, Thornwood, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,245
Int. Cl. A23b *7/04, 1/06*

U.S. Cl. 426—302 **5 Claims**

1. The process of applying a seasoning sauce having a hydrocolloid therein in the form of an aqueous suspension to discretely frozen food products and mixtures thereof which comprises individually quick-freezing the food to a temperature below 10°F. in a free-flowing discrete form, charging the individually frozen food in said form to a moving open food carton to fill the contents thereof, introducing the moving filled food carton while at said reduced temperature to a sauce application zone, and applying the sauce from an extruding source that moves at a rate comparable to the rate of movement of the carton in said zone, said sauce being in the form of a flowable cohesive extruded plug at a temperature below 40°F. and above the freezing point thereof at a quantity and viscosity of 1,,000 to 17,000 cps such that the sauce upon contact commences to freeze and migrates slowly to produce a centrally located sauce charge on said food, the sauce composition having a freezing point of 15°–26° F., the sauce as applied freezing in a period less than 10 minutes and upon interception contact with the discrete food product charge undergoing such heat transfer as to migrate gradually thereover in place and centrally of the charge in the carton.

3,868,471
PROCESS FOR PREPARING CLUSTERED, MIXED READY TO EAT CEREAL PRODUCTS

George A. Decelles, and Violet M. Larson, both of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Apr. 9, 1973, Ser. No. 349,340
Int. Cl. A23l *1/10*

U.S. Cl. 426—303 **3 Claims**

1. A process for forming double coated clustered, ready-to-eat mixed cereal product comprising:

a. providing flattened raw grain base cereal comprising a member selected from the group consisting of wheat, rye and oats,

b. admixing additional cereal grains or parts,

c. forming a first layer of a double coating on the grain resulting from (a) and (b) by impregnating at least the surfaces of the base cereal with an edible fat by applying the the fat in a liquid condition to the surfaces of the base cereal to provide a substantially continuous layer of fat impregnation at the surface thereof,

d. thereafter applying a second layer of the double coating comprising sugar syrup to the surfaces of the product and simultaneously agitating the mass to distribute the sugar syrup over the surfaces of the cereal and form clusters, said syrup being substantially fat free,

e. the fat impregnated into the surface of the cereal causing the sugar syrup to remain on the surfaces of the cereal and the syrup being thereby distributed as a substantially continuous film of syrup over said surfaces to promote crispiness of the product and to shield the fat from oxidative rancidity and,

f. thereafter roasting said clusters at a temperature between about 300° and 450°F. for sufficient time to provide a cooked color and flavor and to dry the clusters to a moisture content of less than 5 percent, said syrup adhering the cereal pieces together at their points of contact to form the clusters, whereby the finished product has an F test value of at least 100 hours keeping time.

3,868,472
METHOD OF PRODUCING FAST DISSOLVING DIPEPTIDE SWEETNER FOR SWEET/SOUR SYSTEMS

Jeffrey H. Berg, New York, and Jerome Trumbetas, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,094
Int. Cl. A23l *1/26*

U.S. Cl. 426—342 **8 Claims**

1. A process for improving the rate of solubility of dipeptide sweeteners which comprise co-grinding the dipeptide with a dry acid in a volatile organic solvent, the dipeptide and acid being in proportion to each other in the range of 1:2 to 1:4 by weight of the dipeptide to the acid and ground for a period of time sufficient to effect at least a partial coating of the dipeptide with the acid, and evaporating off the organic solvent to afford an intimate mixture of dipeptide and acid.

3,868,473

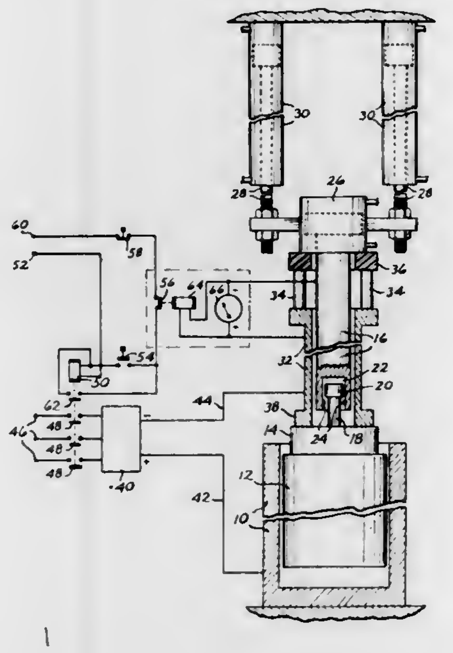
METHOD AND APPARATUS FOR MONITORING THE ELECTRODE SUPPORT OF AN ARC FURNACE

Royal H. Dimick, Albany, Oreg., assignor to Teledyne Wah Chang Albany, Albany, Oreg.

Filed Dec. 20, 1973, Ser. No. 426,552

Int. Cl. H05b *7/12*

U.S. Cl. 13—13 **7 Claims**



4. In an arc furnace having an electrode support stub and stinger relatively movable into mutual pressure contact and a source of high current connected releasably across the stinger and an electrode-containing crucible, apparatus for controlling automatically the application of said high current across the stinger and crucible, comprising switch means in the electric circuit of said source of high current, and switch actuating means connected across the stub and stinger and operable in response to a predetermined magnitude of voltage drop across said stub and stinger to effect opening of the switch means.

3,868,474

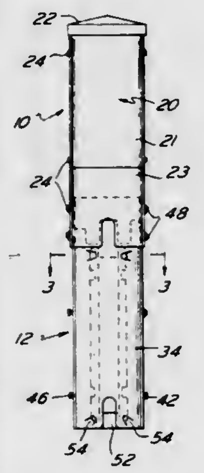
TERMINAL ENCLOSURE AND EXTENSION THEREFOR

Theodore M. Bunten, Rydal, Pa., assignor to Repco Products Corporation, Philadelphia, Pa.

Filed Oct. 19, 1973, Ser. No. 408,206

Int. Cl. H02g *9/02*

U.S. Cl. 174—38 **7 Claims**



1. Apparatus comprising an extension for a terminal enclosure, said extension being open at each end, said extension including a rear member cooperating with a front member to form a hollow housing, said rear member being longer than said front member, flange means on said rear member removably supporting said front member, a channel member juxtaposed to the inner surface of said front member and cooperating therewith to define an enclosed channel, means removably securing said channel member to said front member, and means adjacent one end of said rear member for facilitating attachment of said rear member to a mating portion of a terminal enclosure.

6. Apparatus comprising a terminal enclosure adapted to contain wires, said enclosure including a rear member having side flanges and a front member removably supported by said flanges, said enclosure being closed at its top end and open at its bottom end, said enclosure having mounting means including at least one hole adjacent the bottom end thereof for removably attaching the enclosure to support structure, a detachable extension for extending the length of and for removably supporting said enclosure, said extension including a rear member having side flanges and a front member removably supported by said last mentioned flanges, said extension being open at each end, the top end of said extension being telescoped with respect to the bottom end of said enclosure, means removably attaching the top end of said extension rear member to the bottom end of said enclosure rear member, said attaching means including at least one hole in said extension rear member aligned with a mating hole of said enclosure mounting means and a removable securing means extending through the aligned holes, a mounting means adjacent the bottom end of said extension for removably attaching said extension to support structure, whereby said enclosure is selectively mounted directly on support structure or indirectly mounted on support structure by way of said extension.

3,868,475

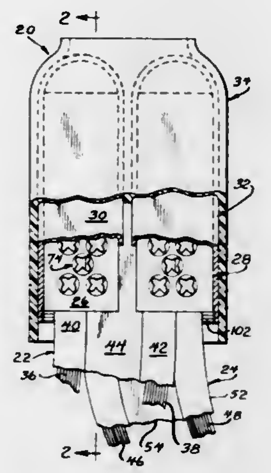
ELECTRICAL CONNECTOR

Kenneth C. Allison, 1546 S. Shore Dr., Crystal Lake, Ill. 60014

Filed Aug. 31, 1973, Ser. No. 393,599

Int. Cl. H01r *11/08, 11/20*

U.S. Cl. 174—87 **10 Claims**



1. An electrical connector adapted for mechanically holding two electrical wires, each wire having two electrical conductors, and for electrically connecting insulated ends of each of the electrical conductors of one wire to an electrical conductor of the other wire, including; a pair of electrically conductive penetrator sleeves, a plurality of penetrator locks formed integral in each of the penetrator sleeves, each of said penetrator locks including a plurality of penetrator prongs extending inwardly of its respective sleeve for penetration through an insulating material on a wire and into engagement with an electrical conductor of the wire to provide electrical connection to the electrical conductor, each of said sleeves having an open side, a pair of permanently deformable sheaths mateably and slideably receiving each of said electrically conductive penetrator sleeves, each of said sheaths having an open side alignable with the open side of its respective sleeve, and an insulator tube receiving said sheaths and holding the sheaths with the open sides of the sheaths facing each other, said insulator tube having a separator positionable between the sheaths to insulate electrically the sheaths from one another.

3,868,476

SYSTEM FOR LOCATING AND TRANSMITTING SELECTED IMAGES

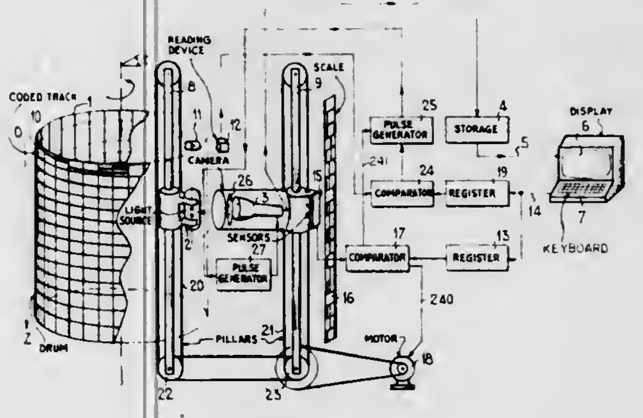
Jacques Laplume, Le Plessis Robinson, France, assignor to Societe D'Etudes Techniques Et D'Entreprises Generales (Sodeteg), Le Plessis Robinson, France

Filed Feb. 7, 1973, Ser. No. 330,262

Claims priority, application France, Feb. 18, 1972, 72-005509

Int. Cl. G03b *23/08*

U.S. Cl. 178—6 **18 Claims**



1. A system for locating and transmitting selected images from a number of image frames of uniform dimensions, comprising:

- a carrier rotatable about an axis, said carrier having mounted thereon a multiplicity of image frames in an orthogonal array with rows transverse and files parallel to said axis, each image frame being identifiable by a first coordinate counting the number of rows from a predetermined reference row and a second coordinate counting the number of files from a predetermined reference file; stationary support means extending parallel to said axis; at least one television camera provided with pick-up means axially movable along said support means;
- drive means coupled with said pick-up means for axially moving same along said support means;
- display means remote from said camera operatively coupled thereto for reproducing an image confronting said pick-up means;
- selector means adjacent said display means for generating a first and a second identifying code respectively marking said first and said second coordinate of an image to be reproduced;
- first sensing means coupled with said pick-up means for generating a first counting code marking the axial position of said pick-up means;
- second sensing means coacting with said carrier for generating a second counting code marking the rotary position of said carrier relative to a predetermined reference position;
- first comparision means connected to said selector means and to said first sensing means for receiving therefrom said first identifying and counting codes and for generating a control signal for said drive means to move said camera into an axial position in which said first counting code matches said first identifying code, said first comparison means emitting an unblocking signal in the presence of such a match while arresting said drive means;
- second comparison means connected to said selector means and to said second sensing means for receiving therefrom said second identifying and counting codes and for generating a trigger signal upon detecting a match thereof; and
- activating means for said camera connected to both said first and said second comparison means for operation in the presence of said unblocking signal and in response to said trigger signal to reproduce on said receiver an image confronting said pick-up means.

3,868,477

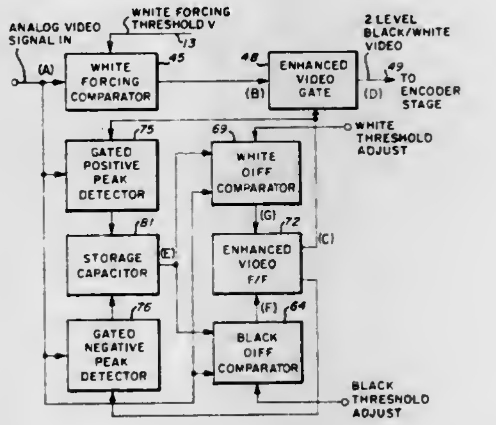
FACSIMILE SYSTEM CONTRAST ENHANCEMENT

Howard Katzman, Santa Clara, Calif., assignor to Dacom, Inc., Sunnyvale, Calif.

Filed June 20, 1973, Ser. No. 371,748

Int. Cl. H04n *1/38*

U.S. Cl. 178—6 **10 Claims**



1. Apparatus for producing a binary signal output responsive to an analog signal input, said binary signal output in a first state serving as a black level decision output and in a second state serving as a white level decision output, comprising

- means for producing a threshold level,
- means for comparing the level of said analog signal input with said threshold level to produce one of said binary output states when said analog signal level is on one side of said threshold level and produce the other of said binary output states when said analog signal level is on the other side of said threshold level,
- and means operative when said binary output is in one of said two different states for detecting a preselected change in the level of the analog input and for changing the binary output to the other of said two different states in response to said preselected change.

3,868,478

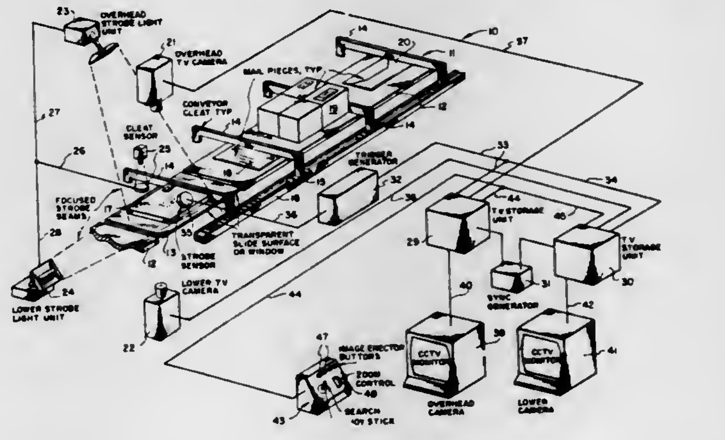
APPARATUS AND METHOD FOR SCANNING AND STORING INFORMATION LOCATED ON RAPIDLY MOVING ARTICLES

Michael N. Zeenkov, Potomac, Md., assignor to Fairchild Industries Inc., Germantown, Md.

Filed Aug. 24, 1973, Ser. No. 391,364

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **14 Claims**



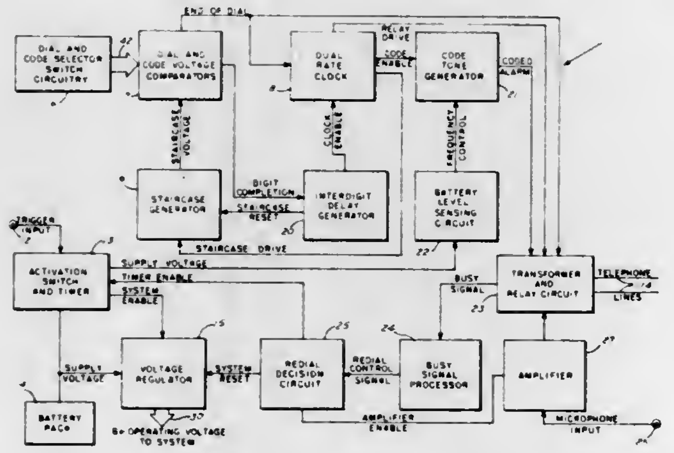
1. Apparatus for scanning and storing information located on rapidly moving articles to be viewed comprising:

means for detecting the presence of a rapidly moving article to be viewed;
means activated by said detecting means for illuminating the rapidly moving article with a short duration flash of light;
a television camera having a vidicon tube for viewing and for temporarily storing an image of the illuminating article;
separate storage means for receiving and storing the image of the illuminated article which has been temporarily stored by the vidicon tube of said television camera, said separate storage means having means for enhancing the imaging received from said television camera while not enhancing random noise associated with the image; and
monitoring means having a screen for displaying the enhanced image stored in said separate storage means.

3,868,479
TELEPHONIC ALARM REPORTING APPARATUS

John C. Schweitzer, and Terry E. Tuttle, both of Grand Junction, Colo., assignors to Delta Products, Inc., Grand Junction, Colo.

Filed Oct. 30, 1972, Ser. No. 301,717
Int. Cl. H04m *11/04*
U.S. Cl. 179—5 R **15 Claims**

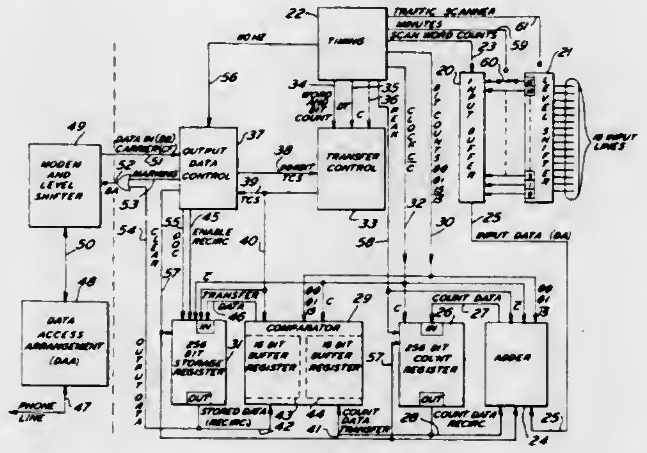


1. Apparatus for telephonically reporting the occurrence of a selected event, such as an alarm condition, comprising:
input terminal means for receiving a trigger signal representing the occurrence of said selected event;
output terminal means for connection to a set of telephone lines;
means for supply operating voltage, said voltage supply means being responsive to and enabled by said trigger signal to supply operating voltage, said voltage supply means comprising battery means for supplying the operating voltage and including means for sensing the level of the operating voltage supplied and generating a frequency control signal whenever the operating voltage falls below a predetermined level;
means connected to said output terminal means for dialing when activated a selected telephone number by generating dial pulses on a set of telephone lines connected to said output terminal means, said dialing means receiving its operating voltage from said voltage supply means to activate when said voltage supply means enables, said dialing means being operable to generate an end of dial signal to indicate that said telephone number has been dialed; and
means connected to said output terminal means for generating in response to said end of dial signal and audio alarm signal on a set of telephone lines connected to said output terminal means, said alarm signal generating means also being responsive to said frequency control signal indicating the fall of the operating voltage below said predetermined level to noticeably shift the tone of the audio alarm signal generated to indicate when said battery means are weak.

3,868,480
EVENT MONITORING TRANSCEIVER

Joseph M. Murgio, Clifton; Lawrence J. Pincus, Englishtown, and Guenter J. Boehm, Cherry Hill, all of N.J., assignors to Telesciences, Inc., Moorestown, N.J.

Filed Jan. 24, 1974, Ser. No. 436,082
Int. Cl. H04m *15/22*
U.S. Cl. 179—8 A **31 Claims**

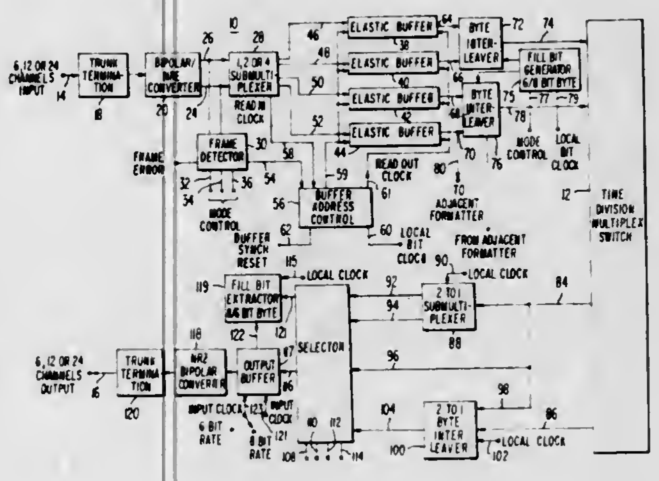


1. Event monitoring transceiver apparatus comprising in combination
a. parallel to serial electrical signal input multiplexer means having an output circuit and a plurality of independent input circuits each cyclically selectively singly sequentially operatively coupled to said output circuit for a predetermined time interval to thereby deliver to said output circuit a sequence of electrical signals corresponding to the signal condition at each of said input circuits during the time interval that the particular selected input circuit is coupled to the said output circuit,
b. adder means and count register means, said adder means being operatively coupled to said count register means and to said multiplexer to receive the multiplexed output data from the latter and operative to increment the event data count in said count register for each multiplexer input circuit when the adder detects the occurrence of a valid event at the input circuit then selected,
c. comparator means and storage register means, said comparator means being operatively coupled to said count register and to said storage register for receiving and comparing the event count data in each for each of said input circuits and thereafter transmitting the event count data of larger magnitude to said storage register means,
d. output control circuit means and output means operatively coupled to each other and to said storage register means, said output control circuit means being adapted for coupling to and for receiving transmission control signals from an output data transmission circuit and being adapted in response to the receipt of such transmission control signals to generate and transmit output control signals to said storage register effective to shift said event count data out of said storage register means and through said output means under control of said output control circuit means, said output means having an output circuit adapted for coupling to said output transmission circuit,
e. timing control means continuously generating timing control signals and operatively coupled to and sending timing control signals to all of said input multiplexer, adder, count register, comparator, storage register and output control circuit.

3,868,481
TRUNK FORMATTER

Bernard Eugene Patrusky, Dresher, Pa., and Alfred Mack, Camden, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,616
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 BV **11 Claims**



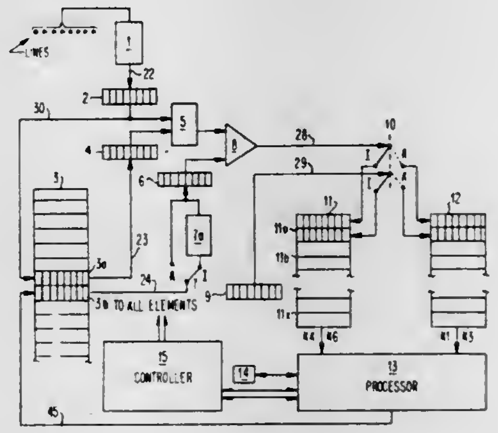
1. A system for providing incoming digital signals to a time division multiplex switch from a trunk time division highway having said incoming digital signals in any one of a plurality of channel groupings and bit rates, said system comprising:
digital signal processing means connected between said trunk time division highway and said switch for grouping any one of said plurality of time division multiplexed channel groupings into a standard grouping compatible with said time division switch; and wherein
said digital signal processing means further comprises a digital storage means wherein said incoming digital signals are read into said storage means at times derived from the incoming digital signals and read out of said storage means at times derived from timing associated with said switch, said digital storage means comprising a plurality of elastic buffer delay units providing an initial predetermined buffer delay between read-in and read-out of said digital signals through said elastic buffer units and means for selectively resetting said initial predetermined buffer delay;
whereby said switch is provided with digital signals at said standard time division channel groupings and at a standard bit rate.

3,868,482
LINE SCANNING SYSTEM IN AN EXCHANGE CENTER

Jean Daniel Colas, Vence, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,449
Claims priority, application France, Dec. 29, 1971, 71.47912
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 FF **8 Claims**

1. A method for collecting and processing information relating to the change of states of the lines provided in an exchange center, characterized in that:
the lines are classifeid in two classes (active lines and idle lines), a change of class being possible during the processing operation;
the lines are scanned and tested for state change in active lines in scanning phases recurrent at regular intervals, and the lines are scanned and tested for state change in idle lines in scanning periods recurrent at regular intervals;
the state change information waiting for processing and relating to the active lines and the state change information relating to the idle lines are stored into two different assemblies of memory positions, one said assembly defining a queue of active lines and the other defining a queue of idle lines, scanning periods being terminated without completion when said queue of idle lines is full,
at least said assembly for active lines having capability to buffer more than one change indication for the same line, and
the information is processed in accordance with rules giving priority to the information stored in the queue of the active lines,
whereby unprocessed information derived from a plurality of scans can be buffered and processed in an orderly manner.



3,868,483
SELF-LATCHING SECURITY DEVICE FOR PUBLIC COIN-OPERATED TELEPHONES

Paul A. Trimmer, Berkeley Heights, and Fred M. Cirule, Parsippany, both of N.J., assignors to Amerace Corporation, New York, N.Y.

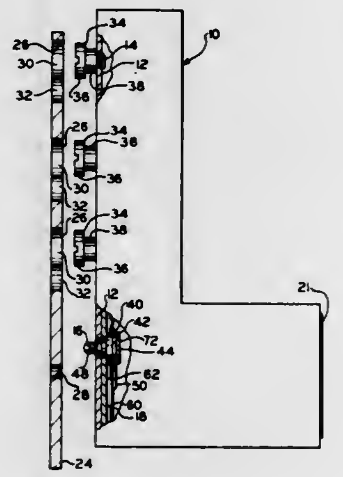
Filed June 20, 1973, Ser. No. 371,617
Int. Cl. H04m *1/04*
U.S. Cl. 179—146 R **10 Claims**

1. In a public, coin-operated telephone installation system wherein a telephone housing, having at least one aperture therein communicating with the interior and exterior thereof at a predetermined location in the housing and a coin compartment therein which is lockable to close-off access to said aperture through the interior of the housing, is secured to a mounting board by fasteners which are affixed to the housing, extend longitudinally to enter the mounting board, and secure the housing thereto upon relative lateral movement between the housing and the mounting board, said mounting board having an opening at a position corresponding to the location of the aperture in the housing when the housing is secured by

the fasteners to the mounting board, a self-latching security device comprising:

at least one latch pin; and

means for mounting the latch pin within the aperture of the housing for resilient deflection between an advanced position wherein the latch pin extends longitudinally from the housing for entering the corresponding opening in the mounting board, and a retracted position wherein the latch pin is retracted from said opening, with said mounting means resiliently biasing the latch pin toward the advanced position whereby the latch pin will be deflected to the retracted position by contact with the mounting board until relative lateral movement between the housing and the mounting board aligns the aperture with the opening to permit advancement of the latch pin to the advanced position and concomitant locking of the housing against further lateral movement relative to the mounting board.



3,868,484
POWER FEED ARRANGEMENT FOR COMMUNICATION SYSTEMS

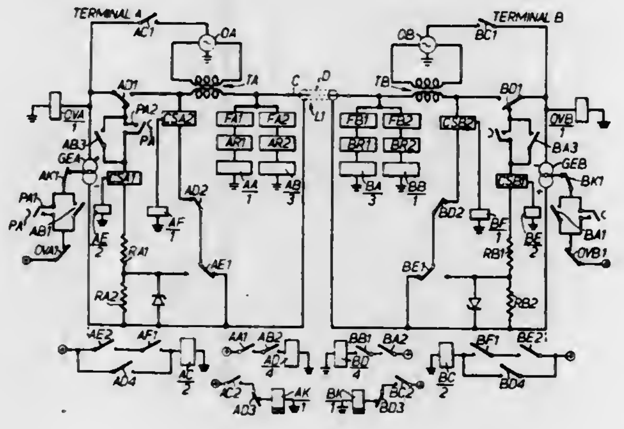
Leslie John Bolton, Kent, and Brian Hall, Copthorne, both of England, assignors to The Post Office, London, England

Filed Dec. 11, 1972, Ser. No. 313,677

Claims priority, application Great Britain, Dec. 15, 1971, 58244/71

Int. Cl. H04b *3/44*

U.S. Cl. 179—170 J **17 Claims**



1. A power feed arrangement for a communications system which includes two terminal stations; a transmission path connecting the terminal stations to transmit information signals from one of the stations to the other; a respective energizing current supply source at each station, and information signal repeating means connected in the transmission path and energizable by current supplied along the transmission path from the energizing current supply sources, said power feed arrangement including, at each station:

a monitoring signal generator operable to apply, to the transmission path, a monitoring signal which is to be transmitted to the other station,

a first detector connected to the transmission path to receive the monitoring signal transmitted to that station from the other station, said first detector being operable, in response to a failure to receive a monitoring signal from the other station, to disconnect the energizing current supply sources from the transmission path, and

a second detector connected to the transmission path to receive the monitoring signal applied to the transmission path at that station, the second detector being operable, in response to a failure to receive the monitoring signal applied at that station, to disconnect the energizing current supply sources from the transmission path.

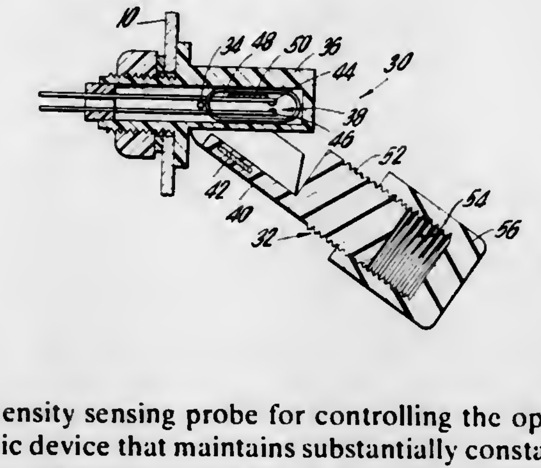
3,868,485
DENSITY SENSING PROBE SWITCH WITH ADJUSTABLE FLOAT

Donald J. Sykes, Upper Saddle River; Elias Papaconstantinou, Fort Lee, and Kenneth Murski, West Milford, all of N.J., assignors to Philip A. Hunt, Palisades, N.J.

Filed Sept. 7, 1972, Ser. No. 287,054

Int. Cl. H01h *36/02*

U.S. Cl. 200—61.2 **6 Claims**



1. A density sensing probe for controlling the operation of an electric device that maintains substantially constant density of a body of liquid the level of which is substantially constant, said probe comprising a support adapted to be at least partially disposed in the body of liquid, a body largely disposed below said support and in said liquid, means connecting said body to said support for guiding said body and its movement relative to said support, means to selectively adjust movement of the body in response to a change in the density of the liquid, said adjusting means being disposed on the periphery of the body, said periphery and said adjusting means including complimentary threaded portions, switch means responsive to a change in position of said body, an electrical device associated with said liquid the actuation of which reduces the density of the liquid, and circuit means connecting the switch means to the electrical device to actuate the electrical device when the body of liquid experiences an increase in density so as to lower the density and maintain the density substantially constant.

3,868,486
PUSH-BUTTON SWITCH HAVING IMPROVED LOCKING STRUCTURE TO INHIBIT WITHDRAWAL OF A SLIDABLE SWITCH BODY FROM ITS ASSOCIATED CASING

Kiyotaka Nakaya, Isezaki, Japan, assignor to Tokyo Hoshiden Kabushiki Kaisha, Gumma-ken, Japan

Filed Sept. 26, 1973, Ser. No. 401,009

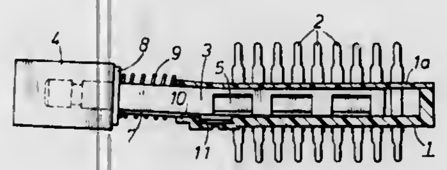
Claims priority, application Japan, Sept. 29, 1972, 47-113575

Int. Cl. H01h *13/04*

U.S. Cl. 200—159 R **8 Claims**

1. A push-button switch comprising a casing, a body inserted into the casing and biased in a direction to be withdrawn therefrom, contacts carried by that portion of the body which is located within the casing, a plurality of terminals

mounted within the casing for switching contact with the contacts upon movement of the body against said bias, a stop integrally formed with the body as a projection therefrom at a position forwardly of the terminals, a recess formed in the inner surface of the casing and in which the stop is receivedly engaged to prevent withdrawal of the body from the casing, a rib integrally formed on one surface of the body and extending lengthwise thereof, and a guide groove formed in the inner surface of the casing and extending from the forward end thereof for receivedly guiding the rib, said stop being formed on both lateral sides of the rib, and part of the guide groove being laterally extended to provide said recess.



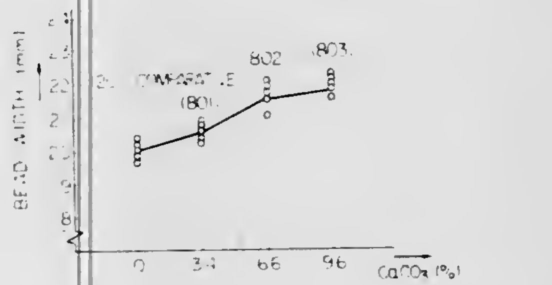
3,868,487
SUBMERGED ARC WELDING METHOD AND FLUX CORED WIRE FOR USE IN SAME

Yoshinori Ito, Nishinomiya, and Mutsuo Nakanishi, Amagasaki, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 5, 1974, Ser. No. 440,128

Int. Cl. B23k *9/18*

U.S. Cl. 219—73 **7 Claims**



1. A flux cored wire for submerged arc welding which comprises in combination, a sheath formed of carbon steel or low alloy steel, and a flux filled within the sheath, said flux consisting essentially of 25–98%CaF_2, 0.1–25%Al, 0.8–15%Ti, 0.02–0.5%B, 0.8–15%Mo, 0–25%Ni, 0–15%Mn, and 0–70%Fe, all percentages by weight, the percentage of total weight of flux to weight of sheath material being 12–30%.

3,868,488
DEVICE FOR CONNECTING MINUTE DISTRIBUTING CIRCUIT ELEMENTS AND MINUTE CONNECTING WIRE ELEMENTS

Toshihiko Kobayashi, Tokyo; Tetsusaburo Kamibayashi, Shinza; Satoshi Ichioka, Toda; Yukinori Matsushima, Tokyo; Norio Mitsumoto, Toda; Hirohisa Ono, and Kazuo Onishi, both of Tokyo, all of Japan, assignors to Mishima Kiesan Co., Ltd., Fukouka Prefecture, Japan

Filed Dec. 29, 1972, Ser. No. 319,713

Claims priority, application Japan, Dec. 31, 1971, 47-825

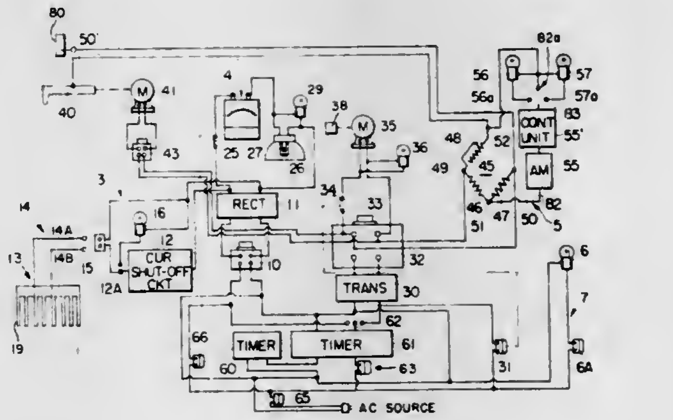
Int. Cl. B23k *1/02*

U.S. Cl. 219—85 **1 Claim**

1. A device for connecting minute distributing circuit elements with minute connecting wire elements, comprising:

an insulation confirmation means comprised of a detection head, two lead wires and a signal means, said detection head being coupled to said signal means by said lead wires, said detection head having a plurality of electrodes arranged in parallel and spaced to correspond to the spacing between circuit elements, said plurality of electrodes being alternatively coupled to said lead wires, said signal means adapted to be actuated when a short circuit between lead wires is detected;

a connecting means for connecting the elements after testing by said insulation confirmation means and comprised of a heat radiation source for heating solder used to connect the elements, a vertically movable pressing plate for pressing the wire elements to the circuit elements, said pressing plate being positioned adjacent said heat radiation source and being heat transparent, and means coupled to said heat source for moving said heat source along the elements being connected for proper heating; and an inspection means for inspection after said elements have been connected by said connecting means and comprised of a bridge circuit having two open terminals, a contact member connected with one open terminal of said bridge circuit and adapted to electrically contact all of said circuit elements via said pressing plate, a scanning member coupled to the other of said open terminals and adapted to sequentially scan the other ends of said circuit elements through said wire elements, and indication means coupled to said bridge circuit for indicating faultily connected wire elements, in response to the value of resistance between said terminals.



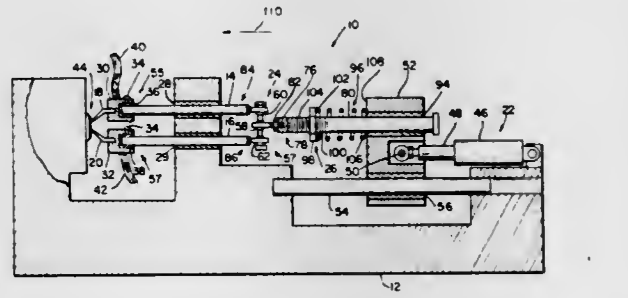
3,868,489
RESISTANCE WELDER

Clifton E. Ayers, New Whiteland, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Nov. 9, 1973, Ser. No. 414,315

Int. Cl. B23k *9/28*

U.S. Cl. 219—86 **5 Claims**



1. In an electric resistance welding apparatus of the type having a housing, two shanks axially movable along guides in said housing, welding electrodes connected to said shanks, and drive means for axially moving said shanks to advance said electrodes into contact with workpieces to be welded, the improvement which includes a universal force-equalizing means for dividing a force exerted by said drive means into two equal forces exerted on said shanks comprising

a. three ball joints;
b. a ball shaft passing through said ball joints, and
c. retention means retaining said ball joints on said ball shaft;
d. the centermost of said ball joints coupled to said drive means, and the outermost two of said ball housings connected to said shanks.

3,868,490
METHOD AND DEVICE FOR FIXING A WATCH BALANCE SPRING TO A COLLET

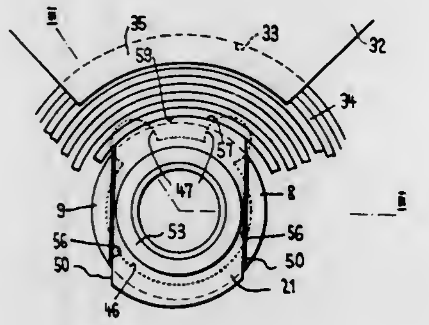
Jean-Philippe Aeschlimann, Lausanne; Pierre Moniier, Neuveville, and Jean Zaech, Bienne, all of Switzerland, assignors to Omega Louis Brandt & Frere S.A., Bienne and Alcyon Electronique et Physique S.A., Renens Canton of Biene, both of, Switzerland

Filed June 19, 1973, Ser. No. 371,413

Claims priority, application Switzerland, July 11, 1972, 10348/72

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 L **9 Claims**



1. A method for fixing a watch-balance spring to its collet, comprising the steps of positioning the balance spring on the collet, partly pressing the coils of the balance spring in radial direction against a part of the collet for substantially uniformly engaging the area of a part of the end of a coil of the balance spring with a surface of the collet, welding by laser said part of the end of a coil to said collet with at least one welding spot, and releasing the balance spring from said radial pressure.

3,868,491
SUBMERGED ARC WELDING METHOD AND FLUX CORED WIRE FOR USE IN SAME

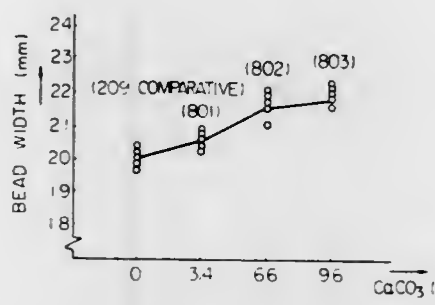
Yoshinori Ito; Nobuyuki Yamauchi, and Sadac Tanaka, all of Nishinomiya, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 5, 1974, Ser. No. 440,127

Claims priority, application Japan, Feb. 8, 1973, 48-15201

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **2 Claims**



1. A flux cored wire for submerged arc welding which comprises in combination, a sheath formed of carbon steel or low alloy steel, and a flux filled within the sheath said flux consisting essentially of 25–95% CaF_2, 0.1–2.5%Al, 0.8–15%Ti, 0.02–0.5%B, 0.8–15%Mo, 0–25%Ni, 0–25%Se, 0–10%CeO_2 or CeF_3, 2–20%$CaCo_3$, and the balance Fe, all percentages by weight, the percentages of total weight of flux to weight of sheath material being 12–30 percent.

3,868,492
HEATED WINDOWS IN ROAD VEHICLES

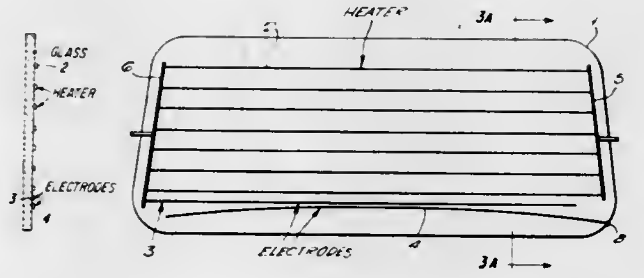
John Crawshaw Taylor, Buxton, England, assignor to Tarka Controls Ltd., Derbyshire, England

Filed May 15, 1973, Ser. No. 360,434

Claims priority, application Great Britain, May 18, 1972, 23541/72; Feb. 6, 1973, 5736/73

Int. Cl. H05b *1/02;* **E06b** *7/12;* **Ho5b** *3/06*

U.S. Cl. 219—203 **7 Claims**



1. In a road vehicle having a window, an arrangement for reducing condensation upon the interior surface of said window including: a pair of extended linear electrodes arranged to extend across said window so as to be bridged resistively by condensation upon said surface, the electrodes being spaced from one another differently at different points along their length with the spacing being least in the region of the center of the window; a heating element comprising a plurality of generally parallel electrical resistance heating elements arranged for heating said surface; and an electronic switching circuit responsive to the resistance between said electrodes for energizing the heating element for so long as the resistance between said electrodes is lower than that characterizing a predetermined degree of condensation upon said surface; the differential spacing of the electrodes providing the arrangement with a differential sensitivity to condensation on different areas of the window surface.

3,868,493
METHODS OF INSTALLING AN ELONGATED, FLEXIBLE, ELECTRIC HEATER INTO A MATERIAL STORAGE TANK, AND HEATER CONSTRUCTION FOR THE SAME

Steven J. Caroleo, Coraopolis, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Division of Ser. No. 206,666, Dec. 10, 1971, Pat. No. 3,745,640. This application Mar. 16, 1973, Ser. No. 341,968

Int. Cl. H05b *1/00*

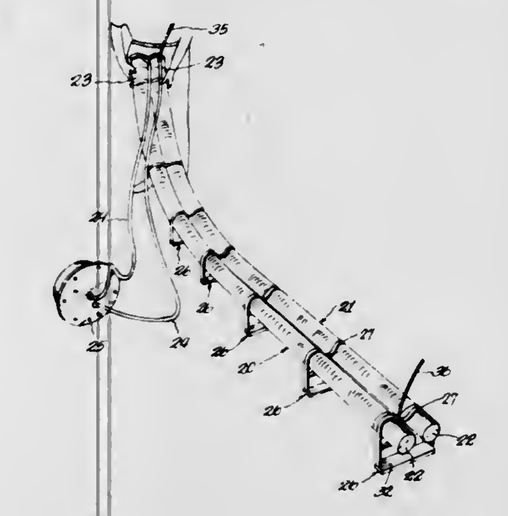
U.S. Cl. 219—318 **1 Claim**

1. An elongated electric heater adapted to be disposed within a large fluid storage tank through an opening in an upper portion of the tank and when so disposed having no mechanical connection with said tank, comprising:

a plurality of elongated metal sheaths disposed in side-by-side relation, each sheath being formed of flexible tubing, such as corrugated metal tubing, so that said sheath may be freely bent through its longitudinal length whereby it may be manipulated for insertion through said tank opening to the interior of said tank,

an elongated flexible electric heating element positioned lengthwise within each of said sheaths, said heating element being electrically insulated from its sheath but permitted to flex therewith,

a plurality of supports connected to said metal sheaths at longitudinally spaced places, each support comprising a bracket portion connected to said sheaths and a foot portion spaced from said sheaths, each foot portion being adapted to rest on an interior lower wall surface of said tank to space said sheaths therefrom,



each bracket portion spanning said sheaths and providing pockets for receiving respective sheaths for holding them in predetermined spaced relation, a cross bar for each bracket portion, said cross bar spanning said sheaths for holding the same in said pockets, a bolt extending between a bracket portion and cross bar of at least one of said supports, and a flexible cable having one end anchored to said bolt,

each foot portion being weighted and said foot portions combining to act as weights to overcome any floating action of said heater within fluid in said tank and to cause said heater to gravitate to and remain on said lower interior wall surface of said tank.

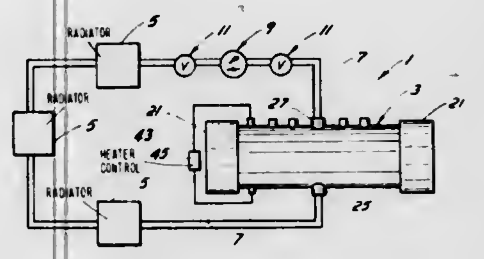
3,868,494
ELECTRIC SPACE HEATING SYSTEM

Armand Pepin, 14 Tutras Blvd., East Victoriaville, Canada

Filed Dec. 4, 1973, Ser. No. 421,677

Int. Cl. H05b *1/00;* **F24h** *3/06, 1/22*

U.S. Cl. 219—341 **2 Claims**



1. In a heating system including a heating tank, at least one radiator, conduit means connecting the tank and the radiator in a closed circuit, heat transfer liquid within the system, a pump in the conduit means to circulate the liquid through the closed circuit, said tank being elongated horizontally, at least one pair of elongated electrical resistance elements extending within the tank substantially at the same level above the bottom of the tank and terminating within the tank at substantially equal distances from the ends of the tank, the latter having a liquid inlet means at the bottom and a liquid outlet means at the top connected to the conduit means, the inlet and outlet means being located substantially midway between the ends of the tank and being substantially in vertical register, and first and second baffles located in the tank opposite and spaced from said inlet and outlet means, respectively, intermediate the same and said electrical resistance elements, said first baffle directing the liquid towards the ends of the tank and the second baffle preventing the liquid in the center zone of the tank from flowing directly towards said outlet means, said first and second baffles consisting of elongated plates terminating at substantially equal distances from the ends of the tank, whereby said liquid is caused to circulate in substantially two sets of symmetrical paths on both sides of the central zone of said tank between said inlet and said outlet means and at substantially uniform velocity over the length of said electrical resistance elements, thus preventing localized overheating of the liquid.

3,868,495
ELECTRIC HAIR DRYING DEVICE

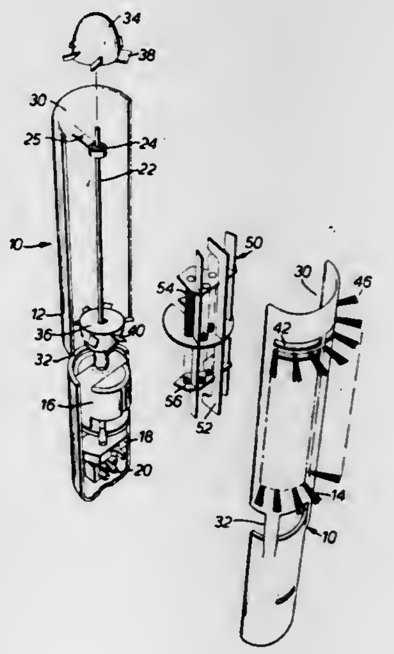
Hugh E. T. Dyer, Dorset, England, assignor to Firth Cleveland Limited, London, England

Filed Dec. 3, 1973, Ser. No. 421,112

Claims priority, application Great Britain, Dec. 2, 1972, 55789/72

Int. Cl. H05b *1/00;* **A45d** *20/10*

U.S. Cl. 219—368 **2 Claims**



2. In a blower device,
an elongate hollow casing comprising
  a first substantially semi-cylindrical shell, and,
  a second substantially semi-cylindrical shell,
  said shells mating at their longitudinal edges,
  a first fan impeller located adjacent one end of the casing and carried by said first shell independently of said second shell,
  a second fan impeller spaced axially of the casing from the first fan impeller and carried by said one shell independently of said second shell,
  the first and second fan impellers being arranged to produce opposed air flows within the casing,
  said casing defining a first air inlet at one end, and
  a second air inlet intermediate the length of the casing,
  driving means for the impellers carried by said one shell independently of said second shell, and
  said casing having an outlet for air flows produced by said fan impellers between the inlets.

3,868,496

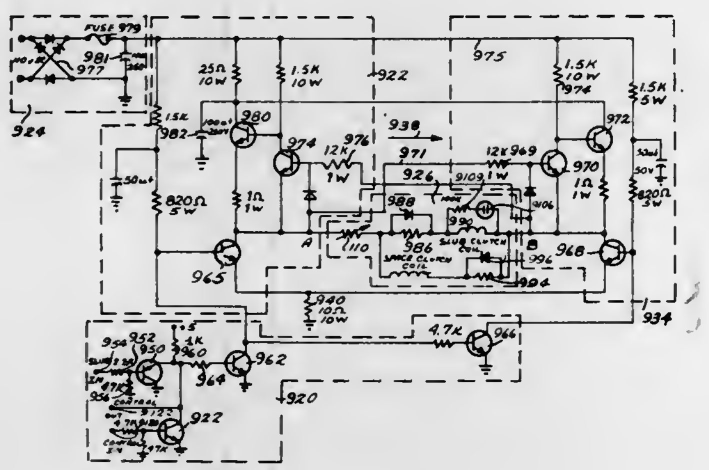
CONTROL MECHANISM FOR PRODUCING RANDOM-LIKE EFFECTS ON TEXTILE MATERIALS

Charles D. Pugh, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Division of Ser. No. 158,961, July 1, 1971, Pat. No. 3,748,648. This application May 15, 1973, Ser. No. 360,468

Int. Cl. H03k *21/36*

U.S. Cl. 235—92 PE **2 Claims**



1. A counting circuit comprising:

first counter means for providing at an output a first output signal upon each receipt of a given number of input signals,

second counter means connected to the output of said first counter means for receiving successive first output signals from said first counter means and providing, when an enabling input signal is provided at an enabling input, a second output signal at an output upon each receipt of a given number of said first output signals,

third counter means connected to the output of said first counter means for receiving successive first output signals from said first counter means and providing, when an enabling input signal is provided at an enabling input, a third output signal at an output upon each receipt of a predetermined number of said first output signals from said first counter means,

flip-flop means connected to the output of said second counter means and to said enabling inputs of said second and third counters for shifting from a first to a second output condition, whenever said second output signal is provided by said second counter means and said flip-flop means is in said first condition, to provide an enabling input signal to said third counter means and no input enabling signal to said second counter means

means connected to said flip-flop means for providing a signal for shifting said flip-flop means from said second to said first condition to provide an enabling input signal to said second counter means and no input enabling signal to said third counter means,

first switch means connected to said second counter means for manually varying said given number of received first output signals upon receipt of which said second counter means provides one of said second output signals,

second switch means connected to said third counter means for manually varying said predetermined number of received first output signals upon receipt of which said third counter means provides one of said third output signals,

third switch means connected to said first counter means for manually varying said given number of input signals upon receipt of which said first counter means provides one of said first output signals, said third switch means having a plurality of positions and

logic means connecting said third switch means to said first counter means and connected to said flip-flop means having, when enabled, a first condition, when said flip-flop means is in said first condition and said third switch means is set in a given position enabling said logic means, said first condition of said logic means causing said first counter means to produce said first output signal upon a first given number and a second condition, when said flip-flop means is in said second condition and said third switch means is set in that given position, and second condition of said logic means causing said first counter means to produce said first output signal upon a second given number different from said first given number.

3,868,497

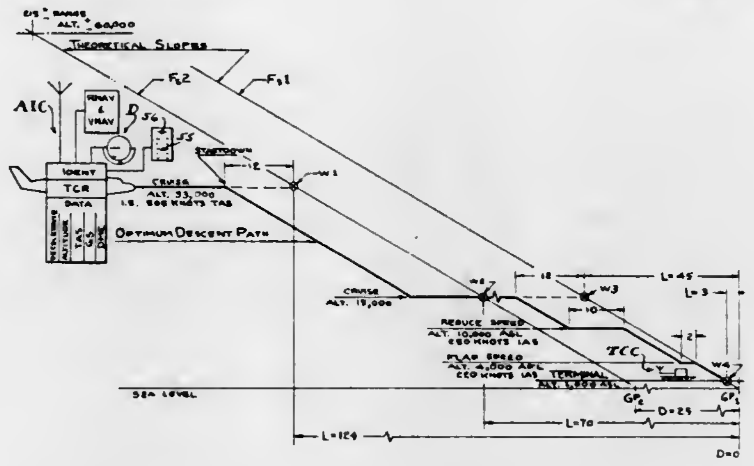
TERMINAL AIRWAYS TRAFFIC CONTROL SYSTEM

Carl W. Vietor, 2116 Linda Flora Dr., Los Angeles, Calif. 90024

Continuation of Ser. No. 139,370, May 3, 1971, Pat. No. 3,758,765. This application Aug. 13, 1973, Ser. No. 387,930

Int. Cl. G06f *15/50*

U.S. Cl. 235—150.27 **23 Claims**



1. In combination: aircraft borne instrumentation comprising, means generating an altitude signal, means generating a waypoint altitude signal, and telemetering means transmitting said aforementioned signals as in-flight navigational data; and a remote based computer comprising, telemetering means receiving said aforementioned signals, and position computer means relating said aforementioned signals and processing the same each according to its effect into a computed distance to said waypoint signal.

3,868,498

METHOD AND APPARATUS FOR DETERMINING ERRORS DURING COUNTING OF PARTICLES

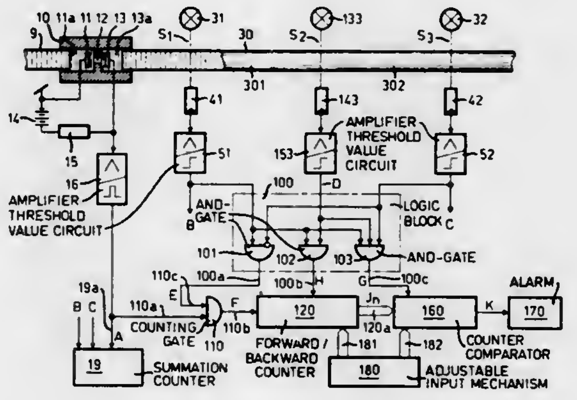
Walter Guggenbuhl, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Mar. 12, 1973, Ser. No. 340,468

Claims priority, application Switzerland, Mar. 29, 1972, 4739/72

Int. Cl. G06m *11/00*; **G06f** *11/00*

U.S. Cl. 235—151.3 **11 Claims**



7. An apparatus for determining errors during counting of particles, comprising a particle detecting device for producing electrical pulses to be counted during throughpassage of the particles, a summation counter for counting said electrical pulses, time transmitter means with switch-in and switch-out signal transmitter means for limiting the measuring time, a further switching signal transmitter means for dividing the measuring time into two parts, a differential control counter connected in circuit with the switch-in and switch-out signal transmitter means in such a manner that the switch-in signal transmitter means, apart from placing into operation the summation counter, also starts the differential control counter, said further switching signal transmitter means controlling the differential control counter to count backwards and the switch-out signal transmitter means switching off both said counters.

3,868,499

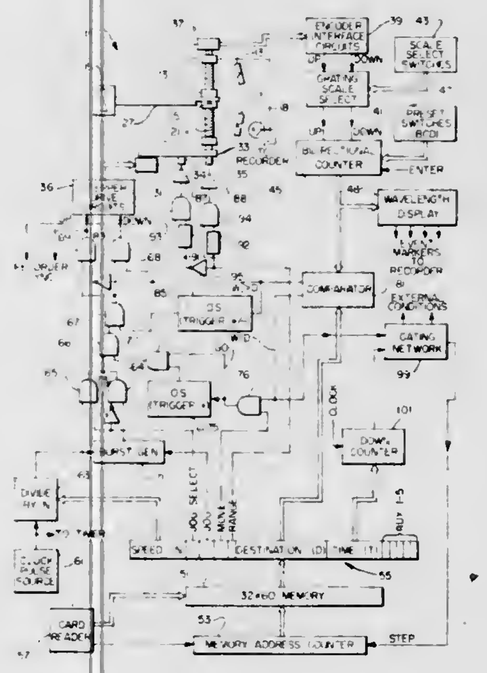
SPECTROMETRIC APPARATUS

Charles D. Aaronson, Acton; John F. Rendina, Boxborough, and Robert D. Fancy, Oakdale, all of Mass., assignors to GCA Corporation, Bedford, Mass.

Filed Mar. 25, 1974, Ser. No. 454,589

Int. Cl. G01j *3/06*; **G06f** *1/00*

U.S. Cl. 235—151.35 **9 Claims**



1. Spectrometric apparatus comprising:

means for analyzing radiation as a function of wavelength including stepping motor means for varying the wavelength, said analyzing means having means for providing up/down pulses corresponding to changes in the setting of said analyzing means;

an up/down counter responsive to said up/down pulses for varying the count held by said counter in correspondence with changes in the wavelength setting of said analyzing means;

addressable memory adapted to hold a plurality of multi-bit digital words;

a destination register which can be loaded from said memory;

a comparator interconnected with said counter and said destination register and operative to provide a coincidence signal when the values in said counter and destination register are equal and a direction signal indicating which of said values is larger if they are not equal;

a rate register which can be loaded from said memory;

a source of clock pulses at a predetermined frequency;

a divider circuit interconnected with said rate register and driven from said clock pulse source for providing driving pulses at a rate which is related to said predetermined frequency by a factor corresponding to the value held in said rate register; gating means interconnected with said comparator means for applying said driving pulses to said stepping motor in a sense controlled by said direction signal, the application of driving pulses being terminated when the values held in said counter and said destination register are equal; and

means for loading said registers with values determined by respective portions of a word held in said memory, the words in the memory being sequentially addressed thereby to direct said analyzing means in the performance of a sequence of scanning operations.

3,868,500

SELF-LEVELLING LAMPS

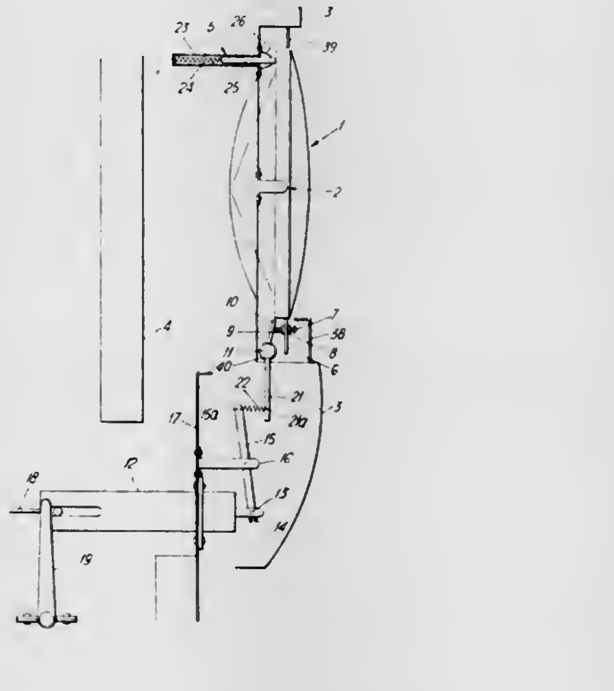
Frederick Raymond Patrick Martin, 19 Hope Park, Bromley, Kent, England

Continuation of Ser. No. 51,139, June 30, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 328,057

Claims priority, application Great Britain, July 1, 1969, 33293/69; Apr. 22, 1970, 19361/70

Int. Cl. B60g *1/10*

U.S. Cl. 240—7.1 LJ **7 Claims**



1. In a lamp self-levelling system comprising front and rear vehicle body angle signal generating means, and a lamp tilting linkage connected to at least one lamp to be levelled; signal mixing means operably connected to said vehicle body angle signal generating means and said lamp tilting linkage; a pair of springs in said mixing means operably connecting the lamp tilting linkage with respective ones of the front and rear body angle signal generating means; adjuster means in at least one of said front and rear body angle signal generating means for initially prestressing said springs; and indicator means responsive to the strain of said springs for indicating when the prestressing of said springs by said adjustor means has attained a strain value equivalent to a predetermined operating stress value.

3,868,501

LIGHT BOXES WITH FRESNEL LENSES

Roberto Barbour, Roslyn Harbor, N.Y., assignor to Cryton Optics, Inc., Roslyn, N.Y.

Filed May 16, 1973, Ser. No. 360,688

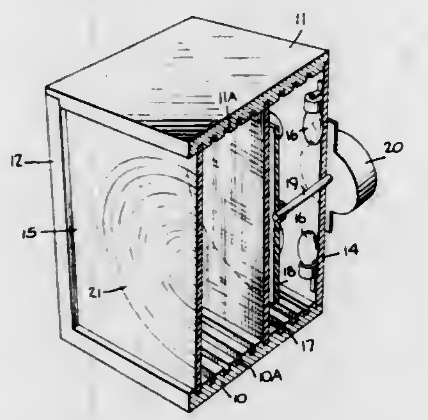
Int. Cl. F21p *5/04*

U.S. Cl. 240—10.1 **3 Claims**

1. A light box adapted to produce continuously changing decorative patterns on a viewing screen, said box comprising:

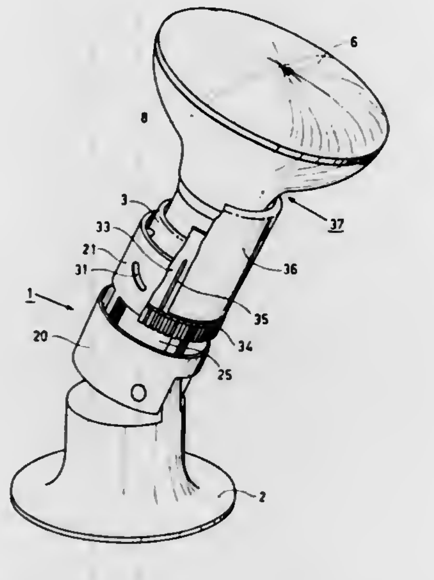
A. An enclosure having a front panel fabricated of clear plastic material having a series of concentric prismatic grooves formed on one face thereof to define a Fresnel lens serving as a viewing screen;

B. A light source disposed within said enclosure to produce rays directed toward said front panel, and;
C. a light modifying element interposed between said source and said screen, said Fresnel lens screen functioning to condense and magnify the modified light rays passing through said element whereby the resultant pattern presented on the screen and directly viewable thereon represents the interaction of said light modifying element and said lens and is brilliantly illuminated, said light modifying element including a rotating disc of transparent material which is formed to disperse light passing therethrough and a panel intermediate said disc and said front panel, said intermediate panel having a pebble-like surface defining a multitude of miniature lenses to disperse light.



3,868,502
LUMINAIRE

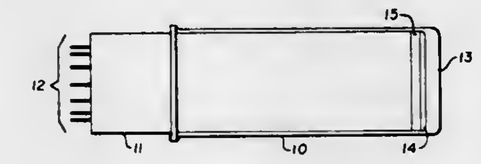
Aloysius Jacobus Maria Beeren, and Henricus Karel Jozef Stoffelen, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 5, 1973, Ser. No. 412,705
Claims priority, application Netherlands, Nov. 29, 1972, 7216165
Int. Cl. F21v *7/00*
U.S. Cl. 240—44.1 **1 Claim**



1. A luminaire comprising:
a cylindrical tub having walls a longitudinal axis, and an end wall, said end wall having a vent opening therethrough;
a member secured interiorly of the tub, having a central portion on which a lampholder is mounted, said member comprising a cylindrical side wall having vent holes therein, said side wall being coaxial with the tub;
a base having a first portion for attachment to a structure and a second portion connected to said first portion for pivotal movement of less than approximately 360° about a base axis;
hinge means for pivotal connection of said tub to said second portion, said hinge having a pivotal hinge axis, said hinge means being so disposed between said end wall and said base that, at a first pivotal position, said tub axis and said base axis are coaxial, said hinge axis being displaced radially from said tub and base axes; and
external socket means surrounding a portion of the side wall of said member and mounted thereon for axial movement along said member, for supporting and positioning focusing devices and protective shields on the luminaire.

3,868,503
MONOCHROMATIC DETECTOR

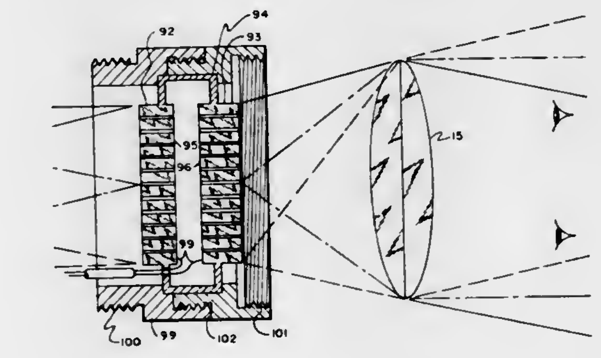
Myer Geller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 26, 1973, Ser. No. 354,716
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 R **6 Claims**



1. A monochromatic detector comprising:
a layer of non-thermal, photo-responsive material positioned to receive the radiant energy to be detected,
said photo-responsive material having a sharp-cut-off sensitivity characterized by rapidly decreasing response to light energy relative to wavelength at the upper limit of a preselected spectral region; and
a layer of insulating semiconductor material positioned to intercept said radiant energy before its reception by said photo-responsive material,
said semiconductor material having a sharp turn-on transmissivity characterized by rapidly increasing transmission of light energy relative to wavelength at the lower limit of said preselected spectral region, defining a narrow band pass of substantially monochromatic wavelengths between said cut-off sensitivity and said turn-on transmissivity of said preselected spectral region.

3,868,504
MODULAR BIOCULAR EYEPIECE FOR THERMAL IMAGE SYSTEMS

David K. Anderson, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 20, 1973, Ser. No. 399,016
Int. Cl. H01j *29/18, 31/26, 31/50*
U.S. Cl. 250—213 VT **5 Claims**

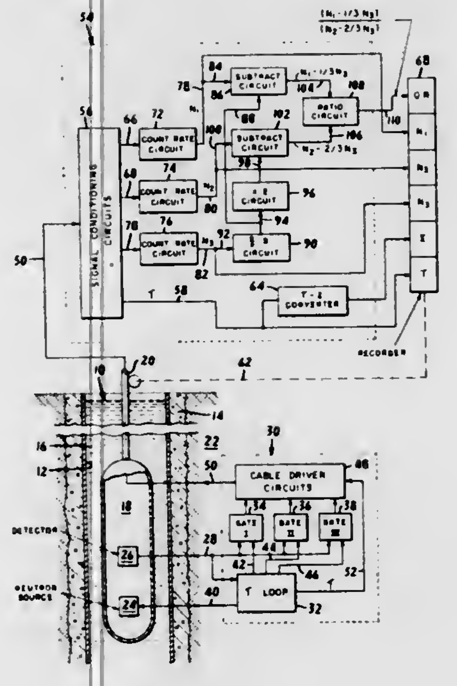


1. A low gain image intensifier comprising:
a pair of thin transparent backing plates disposed in parallel with first and second opposed surfaces spaced apart less than one millimeter;

a photocathode and covering to said first surface;
an electro-luminescent phosphor screen and covering to said second surface first and second thin conductive layer means attached to and covering said screen and said photocathode to reflect light and provide a barrier to ions incident thereon;
a closure member sealed to the entire perimeter of each plate as the sole means of support and separation of said plates whereby only a hard vacuum is maintained between said plates; and
a pair of electrodes insulated from one another attached to said first and second thin conductive layers, respectively, and sealed through said closure member.

3,868,505
METHOD AND APPARATUS FOR INVESTIGATING THE QUALITY OF WELL LOGGING DATA

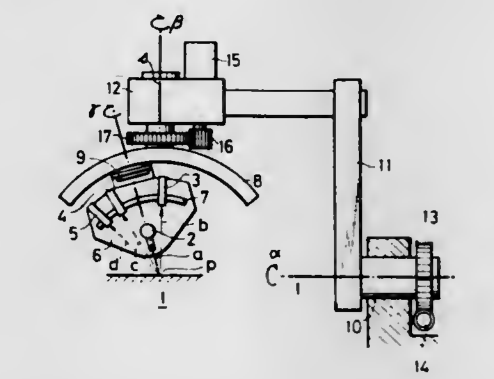
Larry A. Jacobson, Houston; Warren B. Wall, Pasadena, and Charles Wilkin Johnstone, Houston, all of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 31, 1973, Ser. No. 411,189
Int. Cl. G01v *5/00*
U.S. Cl. 250—269 **21 Claims**



1. A method of investigating earth formations traversed by a borehole, comprising:
moving through the borehole a well tool of the type including a neutron source for repetitively irradiating an earth formation with pulses of neutrons and at least one radiation detector spaced from the neutron source for generating signals representative of the resulting neutron populations between pulses in the formation opposite said one detector;
deriving a measurement in the well tool of a characteristic of the formation from said one radiation detector signals; transmitting to the earth's surface a signal representative of said formation characteristic measurement and signals representative of at least selected portions of said one radiation detector signals; and
deriving a representation at the earth's surface from representations of said transmitted detector-related signals which is functionally related to at least one of the quality of said formation characteristic measurement and the quality of transmission of said detector-related signals.

3,868,506
X-RAY DIFFRACTION INSTRUMENT

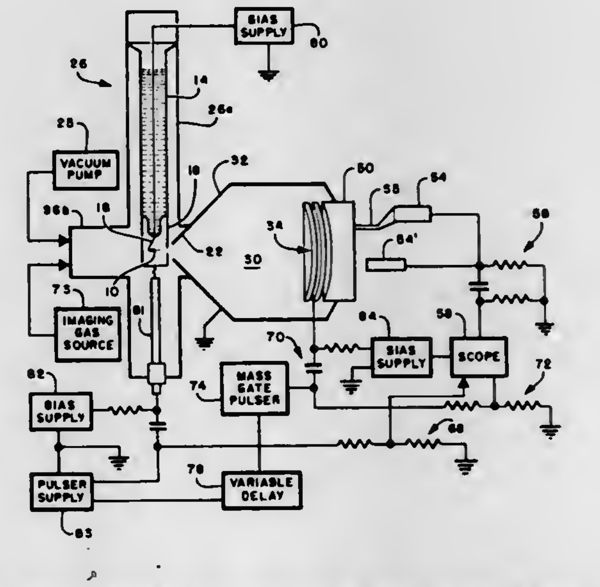
Katsuhiko Ogiso, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Tokyo, Japan
Filed July 30, 1973, Ser. No. 383,611
Claims priority, application Japan, Feb. 20, 1973, 48/19,797
Int. Cl. G01n *23/20*
U.S. Cl. 250—278 **3 Claims**



1. An x-ray diffraction instrument comprising a mount for an x-ray source; an x-ray source constructed and arranged on said mount; a first circular guide rail constructed and arranged on said mount; said first circular guide rail having its center aligned with a point where an x-ray from said source is incident on a specimen; a plurality of detectors for detecting diffracted x-ray arranged on said first circular guide rail; a second circular guide rail having its center aligned with said x-ray incident point; a support for supporting said mount to rotate said mount around an axis aligned with the direction of x-ray incident onto the specimen, said support being movable along said second circular guide rail; means for holding said circular guide rail to rotate said second rail around an axis formed by a vertical straight line passing through said x-ray incident point; and a shaft for carrying said means to rotate said holder around an axis formed by a horizontal straight line intersecting said vertical straight line at said x-ray incident point.

3,868,507
FIELD DESORPTION SPECTROMETER

John A. Panitz, Edgewood, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Dec. 5, 1973, Ser. No. 422,048
Int. Cl. H01j *39/34*
U.S. Cl. 250—287 **12 Claims**



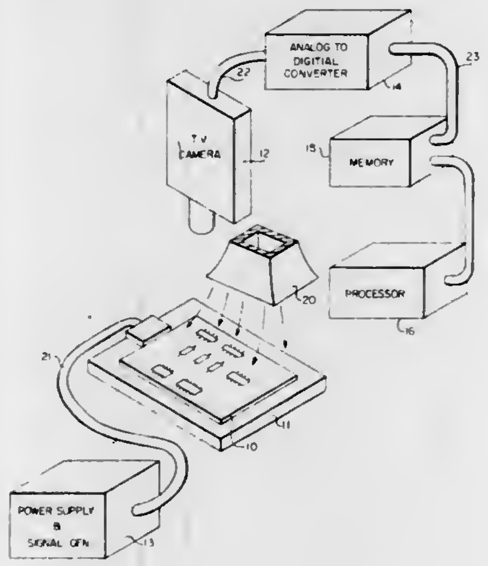
1. A spectrometer for detecting and indentifying ions in a diverging generally conical ion beam field desorbed from a specimen surface, comprising a vacuum chamber having electrically conductive walls surrounding an ion source section and a detector section; said ion source section including means for supporting said specimen, means for coupling a

constant voltage to said specimen through said supporting means, an electrode adjacent said specimen having an aperture aligned therewith for emission and conical definition of ions from said specimen, and means for coupling an ion desorption field to said specimen through said electrode opposite in polarity from said constant voltage for thus providing a beam of ions from said specimen surface diverging in a cone-shape through said aperture; an electrically conductive wall portion intermediate said ion source section and said detector section and spaced from said electrode, said conductive wall portion having an aperture aligned with said specimen and said first mentioned aperture of size no less than that of said first mentioned aperture and no greater than outer margins of said ion beam as defined by said first mentioned aperture; said detector section including a channel electron multiplier array means disposed in registry with each of said apertures and said ion beam as defined thereby and impervious to direct passage of ions in said ion beam for producing and multiplying electrons in response to said ions at locations where said ions strike said array, said array means being spaced equidistant from said specimen for all paths of travel of ions in said ion beam, phosphor means for sensing means multiplied electrons adjacent said locations, said array means having sufficient gain to detect ions from said specimen surface, and means responsive to said sensing means for identifying ion species in said ion beam; means for coupling said chamber to a vacuum pump; and means for connecting said chamber walls and said electrically conductive wall portion to ground potential to provide shielding for said ions and an ion drift region between said electrically conductive wall portion and said channel electron multiplier array means.

3,868,508
CONTACTLESS INFRARED DIAGNOSTIC TEST SYSTEM

Raymond A. Lloyd, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1973, Ser. No. 411,110
Int. Cl. G01j *5/10*
U.S. Cl. 250—330 9 Claims



1. A method for inspecting a member of a class of related device to determine its operational status, comprising the steps of:

a. scanning the infrared pattern generated by a reference member of said class of related devices with an infrared detector to generate a reference signal indicative of the infrared radiation emitted by said reference member;

b. scanning the infrared pattern generated by the member to be inspected with an infrared detector to generate a test signal indicative of the infrared radiation emitted by said member;

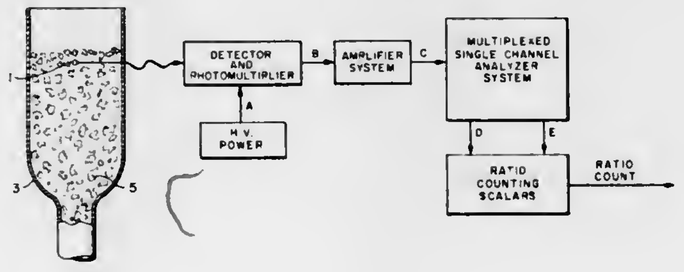
c. comparing said reference and test signals to identify difference therebetween;

d. statistically analyzing said difference to determine if said member to be inspected in operating within prescribed limits.

3,868,509
METHOD OF STABILIZING SINGLE CHANNEL ANALYZERS

George E. Fasching, and George H. Patton, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior

Filed Dec. 5, 1973, Ser. No. 422,052
Int. Cl. G01t *1/20*
U.S. Cl. 250—336 8 Claims


1
3
5
DETECTOR AND PHOTOMULTIPLIER
A
H.V. POWER
B
AMPLIFIER SYSTEM
C
MULTIPLEXED SINGLE CHANNEL ANALYZER SYSTEM
D
E
RATIO COUNTING SCALARS
RATIO COUNT

1. A method for stabilizing the analog output signals from two single channel analyzers that are to be fed to a comparator comprising the steps of:

detecting an analog signal representative of some physical phenomenon;

amplifying said representative signal and transmitting the result to a multiplexer system;

splitting said amplified signal in the multiplexer system into two analog signals and sending each signal to one of two separate single channel analyzers that output fixed pulses and normally operate between different specific output ranges;

switching and gating the outputs from said single channel analyzers so that each analyzer alternately operates at one of two outputs with the same specific range output signals always appearing at the same gate output; and

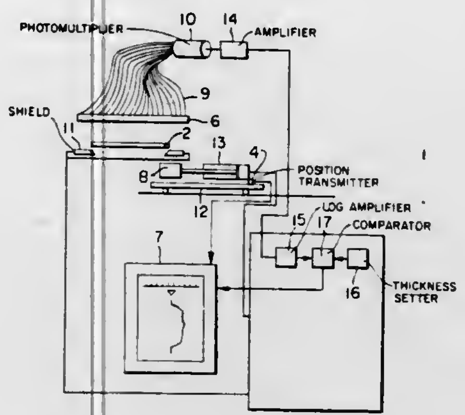
comparing the outputs from the gating circuitry after switching and gating takes place to obtain the desired results.

3,868,510
METHOD FOR SENSING PROFILE OF SHEET OR PLATE MATERIALS

Yuuji Murata; Yoshinori Mashiko; Yukio Uchida, and Mitsuru Matsumoto, all of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,992
Claims priority, application Japan, Dec. 29, 1971, 47-2935
Int. Cl. G01t *1/20*
U.S. Cl. 250—366 5 Claims

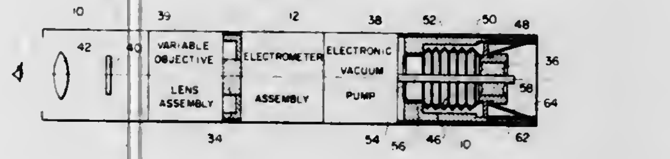
1. A method for sensing the profile of sheet material wherein the thickness of said sheet material is measured by measuring the penetration damping of an amount of radiation being emitted from radiation generating means located on one side of said sheet material with the decrease in radiation due to penetration within the sheet material being sensed by radiation detecting means located on the opposite side of said sheet material, said method comprising the steps of moving said radiation generating means at a relatively high speed to rapidly scan said sheet material in a crosswise direction of the material and simultaneously maintaining said radiation detecting means stationary in a position wherein said detecting means extends for the entire width of the sheet material being scanned by said radiation generating means thereby to sense the profile of said material.



3,868,511
DOSIMETER LATCH

Michael J. Basso, West Allenhurst, and Stanley Kronemberg, Skillman, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 4, 1974, Ser. No. 457,870
Int. Cl. G01t *1/14*
U.S. Cl. 250—376 3 Claims



1. In combination with a pen size dosimeter in a cylindrical barrel of the type that has an electrometer designed for response to neutron and gamma radiation and that is included in an hermetically sealed assembly that has a light path that extends through the electrometer, the sealed assembly being closed by a window at each end, the dosimeter including a calibrated reticle adjacent one window in line with the light path enabling one to read radiation dose, the hermetically sealed assembly also including longitudinally displaceable conductor means sealed into and projecting through the other window for coupling a charging source to the electrometer, said other window being in a frame that is yieldably supported in a bellows that is part of the sealed assembly and that is spring biased to expand and carries the conductor means out of coupling engagement with the electrometer, the improvement which comprises latching means for preventing longitudinal displacement of the conductor means when the dosimeter is not being charged.

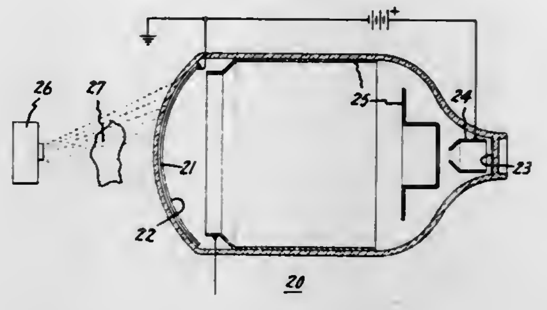
3,868,512
COMPOSITE INPUT SCREEN FOR X-RAY IMAGING DEVICES

Jerome S. Prener, and Stanley J. Lubowski, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 4, 1973, Ser. No. 393,960
Int. Cl. H01j *1/62*
U.S. Cl. 250—483 9 Claims

1. An improved screen for x-ray imaging devices comprising:

a wafer comprising a high density, high conversion efficiency phosphor powder bonded together with doped CsI;

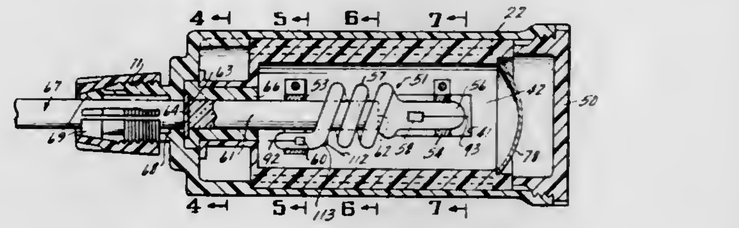


said doped CsI forming approximately 60-80 percent by volume.

3,868,513
ULTRAVIOLET RADIATION PROJECTOR

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research and Development Corporation, Milford, Del.

Filed Dec. 26, 1972, Ser. No. 318,251
Int. Cl. H01j *37/00*
U.S. Cl. 250—504 5 Claims



1. An ultraviolet radiation projector comprising a radiation collecting rod, a gas discharge tube including a first section aligned and substantially coaxial with the radiation collecting rod and a section diverging from the first section, wherein the diverging section is helically wound around the collecting rod, a cathode of the gas discharge tube being mounted in the first section, there being a window in the gas discharge tube at the juncture between the sections extending transversely of and adjacent to an end of the radiation collecting rod, said end of the radiation collecting rod extending transversely of the axis thereof, a radiation piping rod means receiving radiation from the radiation collecting rod, radiation discharge means on the radiation piping means, and means for energizing the gas discharge tube to cause projection of ultraviolet radiation through the window into the radiation collecting rod to be discharged through the radiation discharge means.

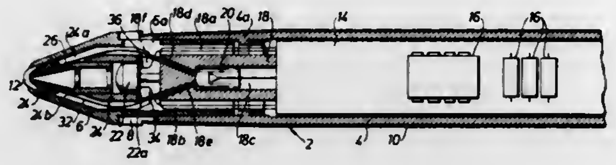
3,868,514
HANDHELD READING DEVICE

Rolf B. E. Israelsson, Solna, Sweden, assignor to Svenska Dataregister AB, Solna, Sweden

Filed Sept. 24, 1973, Ser. No. 399,971
Claims priority, application Sweden, Oct. 19, 1972, 13501/72
Int. Cl. G01n *21/30*; G02b *5/14*; G06k *7/00*
U.S. Cl. 250—566 11 Claims

1. Handheld reading device for optical reading of markings on a data record, comprising a light-proof casing having an opening therein facing the data record, light from light source means within or outside the casing being transmitted to the data record through said opening and light reflected from the data record being transmitted back through said opening to light receiving means within said casing, characterized in that between said opening and said light receiving means there are at least two apertures a first of which being arranged adjacent to said opening and having a size which is less than the open-

ing, and a second of which being arranged between the first aperture and the light receiving means and having a size which exceeds the size of the first aperture, but is less than the sectional area limited by the inner surfaces of the walls surrounding the apertures at least at some location between the apertures, and that the light beam remains unrefracted from said first aperture to said light receiving means.



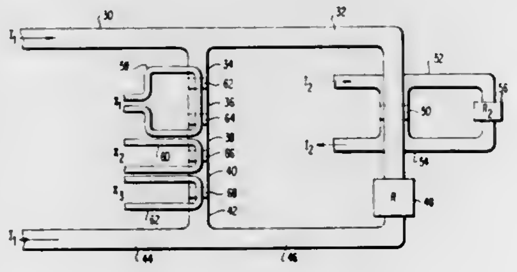
3,868,515
JOSEPHSON DEVICE THRESHOLD GATES

Bernard S. Landman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,811

Int. Cl. H03k *19/02, 19/20, 3/38*

U.S. Cl. 307—212 **6 Claims**



1. A threshold logic gate of the type having n inputs, weighting means for each of said inputs, summing means and threshold means, the improvement comprising:

a. a plurality of series connected Josephson devices of the type which have zero voltage there-across when the current therethrough is below a critical current and a finite well-defined voltage, Δ, there-across, when the current equals or exceeds the critical current,

b. input control lines each associated with specific ones of said series connected Josephson devices and positioned to provide a magnetic field to change the critical current of said specific ones of said devices,

c. means for applying a gating current to said series connected Josephson devices, said gating current having a Josephson between the critical current values which would be established by first and second current values applies to any of said input control lines, wherein each said input control line is adapted to carry a logic 0 current of value I_c and a logic 1 current of value I_c, where I_c I_c, and wherein said currents I_c and I_c cause the specific Josephson devices associated with said control lines to have critical currents of I_m and I_m, respectively, I_m I_m, and wherein said gating current applied to said series connected Josephson devices has a value I_1 which is less than I_m and equal to or greater than I_m, wherein the voltage across said series connected Josephson devices equals $m\Delta$, *where Δ is the voltage across an individual Josephson device which has been switched from* $V=0$ to V 0, and where m is the number of said series connected Josephson devices associated with input control lines carrying currents of value I_c.

d. a resistance, R, connected in a current path in parallel with said series connected devices,

e. a further Josephson device positioned to be influenced by the magnetic field caused by current flowing in said parallel current path,

f. means for applying a gating current to said further Josephson device whereby the switching of said further Josephson device from a zero voltage depends upon the current value in said alternate path, and

g. means electromagnetically coupled to said further Josephson device for varying the threshold of said threshold logic gate and thereby altering the logic function carried out by said threshold logic gate.

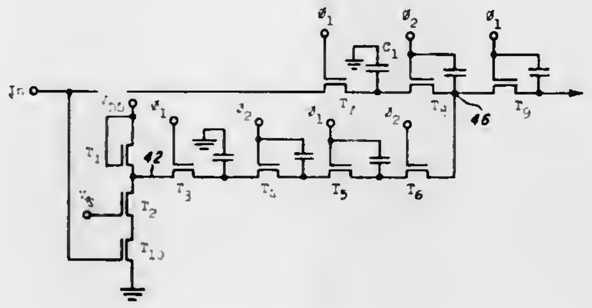
3,868,516
DISPERSION COMPENSATED CIRCUITRY FOR ANALOG CHARGED SYSTEMS

Dennis Darcy Buss, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,347

Int. Cl. G11c *19/00*

U.S. Cl. 307—221 R **3 Claims**



1. A charge transfer device analog matched filter comprising:

an analog shift register having a plurality of storage nodes, said shift register characterized by a determinable charge transfer dispersion;

means for simultaneously detecting the signal at each of said storage nodes, said signal characterized by charge transfer dispersion components;

dispersion correction means including first signal weighting means connected to said detection means, said filter signal weighting means effective to substantially cancel said charge transfer dispersion components of said detected signals to provide substantially dispersion free signals;

second signal amplitude weighting means connected to said dispersion filter for selectively weighting the signal amplitudes of said dispersion free signals to define a preselected filter function; and

means for summing said dispersion free weighted signals to provide a correlated output signal substantially free from dispersion.

3,868,517
LOW HYSTERESIS THRESHOLD DETECTOR HAVING CONTROLLED OUTPUT SLEW RATE

John A. Schoeff, Mesa, Ariz., assignor to M torola, Inc., Chicago, Ill.

Filed June 15, 1973, Ser. No. 370,517

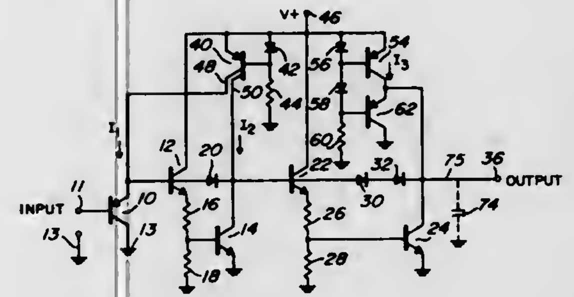
Int. Cl. H03k *5/153, 5/08, 3/295*

U.S. Cl. 307—235 R **21 Claims**

21. A magnitude responsive circuit providing an output signal at an output terminal thereof having one magnitude in response to the magnitude of an input signal applied to an input terminal thereof passing through a threshold level in a first direction and an output signal at said output terminal thereof having another magnitude in response to said input signal applied to said input terminal passing through said threshold level in a second direction, the magnitude responsive circuit sinking a substantially constant amount of current regardless of the magnitude or direction of the input signal and including in combination:

first current supply means adapted to supply a constant current at an output terminal thereof;

first current sinking means havng a control electrode connected to the input terminal of the magnitude responsive circuit, a first electrode connected to the output terminal of said first current supply means and a second electrode, said first current sinking means being responsive to the magnitude of the input signal passing through said threshold level in one of the first and second directions to be rendered conductive to sink said current from said first current supply means, said first current sinking means being responsive to the magnitude of the input signal passing through the threshold level in the other of the first and second directions to be rendered nonconductive;



second current sinking means having a control electrode connected to said output terminal of said first current supply means and a first electrode, said second current sinking means being rendered nonconductive in response to said first current sinking means being conductive, said second current sinking means being rendered conductive in response to said first current sinking means being rendered nonconductive to sink said constant current from said first current supply means;

second current supply means adapted to supply a constant current at an output terminal thereof;

third current sinking means having a control electrode coupled to said first electrode of said second current sinking means, a first electrode and a second electrode connected to said output terminal of said second current supply means, said third current sinking means being rendered conductive in response to said second current sinking means being conductive, said third current sinking means being rendered nonconductive in response to said second current sinking means being rendered nonconductive to sink said constant current from said second current supply means;

fourth current sinking means having a control electrode connected to said second electrode of said third current sinking means, a first electrode and a second electrode, said fourth current sinking means being rendered conductive in response to said third current sinking means being rendered nonconductive to sink said constant current of said second current supply means and said fourth current sinking means being rendered nonconductive in response to said third current sinking means being rendered conductive;

third current supply means adapted to supply a constant current at an output terminal thereof;

fifth current sinking means having a control electrode coupled to said first electrode of said fourth current sinking means, a first electrode and a second electrode connected to said output terminal of said third current supply means, said fifth current sinking means being rendered conductive in response to said fourth current sinking means being rendered conductive to sink said constant current from said third current supply means, said fifth current sinking means being rendered nonconductive in response to said fourth current sinking means being rendered nonconductive;

power supply means having a reference electrode coupled to said second electrode of said first current sinking means and to said first electrode of said second, third, fourth and fifth current sinking means and having an output terminal;

sixth current sinking means having a control electrode coupled to said output terminal of said power supply means, a second electrode connected to said second electrode of said fifth current sinking means and a first electrode connected to said reference terminal of said power supply means, said sixth current sinking means being rendered nonconductive in response to said fifth current sinking means being rendered conductive, said sixth current sinking means being rendered conductive in response to said fifth current sinking means being rendered nonconductive to sink said constant current from said third current supply means; and

an output terminal of said magnitude responsive circuit connected to said second electrode of said fifth current sinking means.

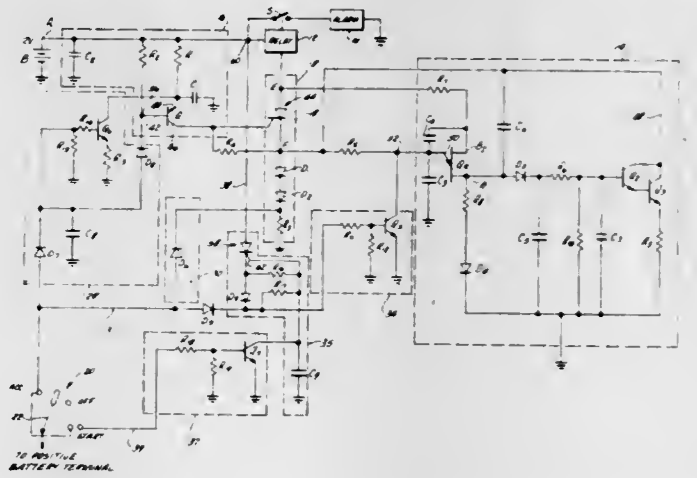
3,868,518
AUTOMOBILE THEFT ALARM WITH IGNITION CONTROLLED AUTOMATIC ARMING MEANS

Rudor M. Teich, 6040 Blvd. East, West New York, N.J. 07093

Division of Ser. No. 217,181, Jan. 12, 1972, Pat. No. 3,740,713, which is a continuation-in-part of Ser. No. 86,222, Nov. 2, 1970, Pat. No. 3,671,934. This application Dec. 4, 1972, Ser. No. 311,938

Int. Cl. H03k *5/153*

U.S. Cl. 307—268 **17 Claims**



1. A pulse generator having an initial time delay and adapted to provide, following said time delay, a pulsating switching action to provide pulsed actuation of an electrical element, comprising a voltage source, first switch means operatively connected in series with said electrical element between said voltage source and a reference voltage node, second switch means connected in series with said electrical element between said voltage source and ground, said second switch means having a control terminal, first and second resistors, a first junction node connected to said reference voltage node through said first resistor, a second junction node connected to said electrical element and said second switch means at the series connection therebetween through said second resistor, a first capacitor operatively connected between said first and second junction nodes and capacitively coupling same, a second capacitor operatively connected between said first junction node and ground, third switch means responsive to the voltage at said first junction node and adapted, upon increase of the voltage thereat to a predetermined level, to conductively connect said first and second junction nodes to the control terminal of said second switch means, thereby to render said second switch means conductive, whereby upon the closing of said first switch means said first junction node is charged through said first resistor to said predetermined voltage level during a first time interval defining said initial delay, at which time said third switch means operatively connects said control terminal of said second

switch means to said voltage source to actuate same, thereby producing a large current through said electrical element and shunting said first resistor, whereupon the voltage at said first junction node falls below said predetermined level and said third switch means is rendered nonconductive disconnecting the control terminal of said second switch means from said voltage source to render said second switch means nonconductive thereby terminating said large current and beginning a new cycle, said first junction node thereafter being rapidly charged to said pedetermined level, at least in part by the capacitive coupling of said first capacitor.

3,868,519
DATA TRANSMISSION SYSTEMS AND COMPONENTS THEREFOR

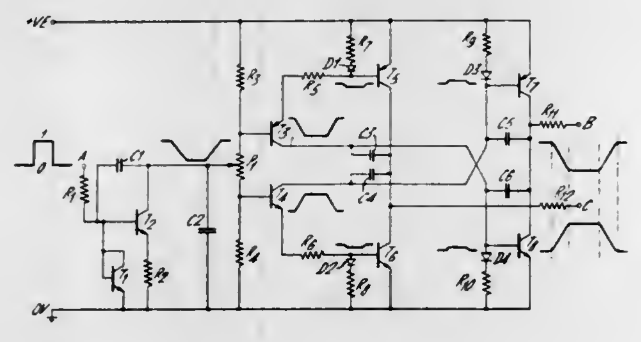
Douglas Green, 33 Wansheck Ave., North Shields, England

Filed May 9, 1973, Ser. No. 358,805

Claims priority, application Great Britain, May 11, 1972, 22174/72

Int. Cl. H03k *1/12, 4/50*

U.S. Cl. 307—270 **8 Claims**



1. A data transmission system comprising:
- a. a source of binary data signals of substantially rectangular waveform;
- b. a line driver circuit having a single input to which the output of the signal source is connected and having first and second outputs at which complementary output signals of trapezoidal waveform are developed in response to a signal of substantially rectangular waveform at said input;
- c. a balanced pair transmission line having a pair of inputs respectively connected to said first and second outputs of said line driver circuit, and having a pair of outputs; and
- d. a line receiver circuit having first and second inputs respectively connected to said pair of outputs of said transmission line; and having an output at which a signal of substantially rectangular waveform is developed in response to signals of trapezoidal waveform at said first and second inputs.

3,868,520
TURBINE-GENERATOR WATER-COOLED ROTOR SHAFT LINER RESTRAINT

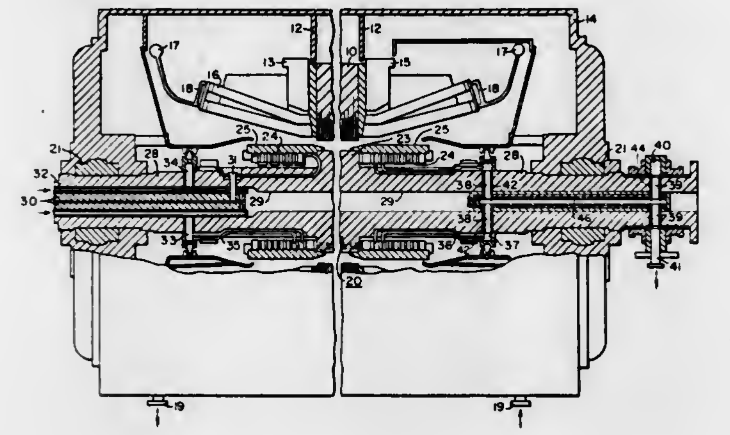
Little P. Curtis, Monroeville, and Paul R. Heller, Murryville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 18, 1974, Ser. No. 434,755

Int. Cl. H02k *1/32*

U.S. Cl. 310—61 **10 Claims**

1. A rotor for a dynamoelectric machine comprising:
- a body portion having windings thereon, said windings having passages for circulation of a fluid coolant therethrough;
- a shaft portion having a central axial bore extending therethrough, said shaft having a coolant collection chamber and a coolant discharge chamber thereon, said coolant discharge chamber being axially spaced from said coolant collection chamber,
- said shaft having a radial passage therein, said radial passage connecting said coolant collection chamber to said axial bore, said radial passage having a corrosion resistant liner extending therethrough,
- said shaft having a radial conduit therein, said radial conduit connecting said coolant discharge chamber to said axial bore, said radial conduit having a corrosion resistant liner extending therethrough;
- means for connecting said windings passages to said coolant collection chamber;



- a corrosion resistant bore liner extending through said axial bore, said corrosion resistant liner being closed at both ends thereof and connected to and communicating with said corrosion resistant liners extending through said radial passage and said radial conduit;
- a bracing member axially surrounding said bore liner; and, means for pre-stressing said bore liner against said bracing member.

3,868,521
TACHOMETER GENERATOR

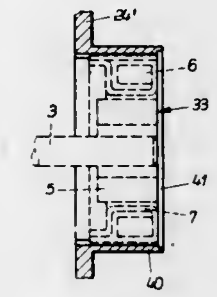
Volker Schlicker, St. Georgen, and Gunter Wrobel, Villingen, both of Germany, assignors to Papst-Motoren KG, St. Georgen im Schwarzwald, Germany

Filed Sept. 25, 1972, Ser. No. 292,246

Claims priority, application Germany, Sept. 25, 1971, 2147982

Int. Cl. H02k *1/12*

U.S. Cl. 310—257 **12 Claims**



1. In a tachometer generator, particularly for controlling the motor of an electric fan, a combination comprising a rotor mounted for rotation about a predetermined axis; and a claw-pole stator comprised of two discrete stator sections consisting of ferromagnetic material and substantially mirror symmetrical to each other with reference to a plane located between said sections, each stator section being comprised of a substantially disk-shaped central portion oriented normal to said axis, and each stator section being furthermore comprised of stator claw poles integral with the respective central portion and extending in direction parallel to said axis, said two stator sections being arranged adjacent each other in direction parallel to said axis with the claw poles of said two stator sections being interdigitated and defining an annular cage, and said stator sections being angularly offset relative to each other by a distance corresponding to half the distance between the centers of neighboring claw poles of a stator section, and said claw-pole stator further including a stator winding wound in said annular cage, wherein each of said disk-shaped portions is provided with a plurality of pairs of holes having their centers located at a predetermined distance from the axis of the respective section, one hole of each pair of holes in one of said disk-shaped portions being in register with the other hole of a pair of holes in the other disk-shaped portion, said stator further comprising fastener means extending through the registering holes of said disk-shaped portions to secure said sections to each other.

3,868,522
SUPERCONDUCTING CYCLOTRON

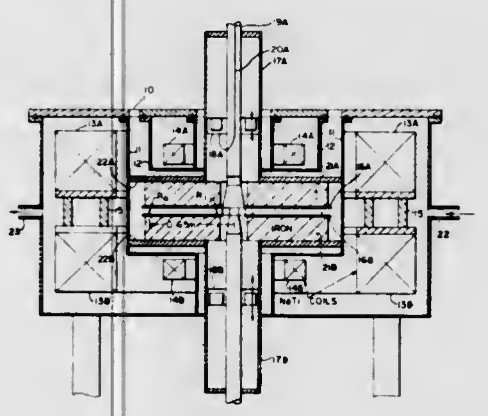
Clifford B. Bigham, and Harvey R. Schneider, both of Deep River, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Nov. 26, 1973, Ser. No. 419,034

Claims priority, application Canada, June 19, 1973, 174422

Int. Cl. H05h *13/00*

U.S. Cl. 313—62 **7 Claims**



1. An isochronous cyclotron for heavy or light ions comprising:
- a. a superconducting coil system for producing a strong magnetic field in the air core centrally of the coils,
- b. an even number of pairs, at least four in number, of generally flat sectoral conducting plates, alternate pairs of which are at low or ground potential and the other pairs are connected to an RF voltage supply, mounted on tunable quarter wavelength resonator structures and defining an annular orbital region between the plates in the pairs and ion accelerating gaps between the edges of the pairs of plates and positioned in and generally orthogonal to the magnetic field in the central air core region,
- c. means for energizing said plates with an RF voltage such that orbiting ions will be accelerated between the gaps,
- d. means for injecting the ions to be accelerated into an inner position in the orbital region,
- e. means for extracting the accelerated ions at an orbit location adjacent the periphery of the orbital region, and
- f. means for varying the magnetic field in the radial direction to provide radial focussing of the orbiting ion beam.

3,868,523
SEMITRANSPARENT PHOTOCATHODE

Anton Martin Klopfer; Siegfried Garbe; Gunter Frank, and Manfred Peterek, all of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

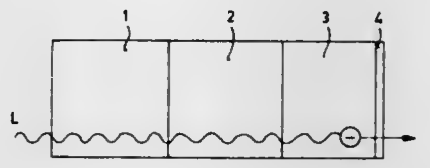
Filed Nov. 5, 1973, Ser. No. 412,704

Claims priority, application Germany, Dec. 16, 1972, 2261757

Int. Cl. H01j *39/16*

U.S. Cl. 313—94 **15 Claims**

1. A semitransparent photocathode of III-V semiconductor compounds having a substrate, an intermediate layer and an active layer, the energy gap of the active layer being smaller than that of the intermediate layer and the active and the intermediate layer being p-doped, the intermediate layer having a composition having elements which differ from those of the substrate and the active layer and a lattice constant differing from the lattice constant of the active layer by less than 0.3% and from the lattice constant of the substrate up to several per cent.



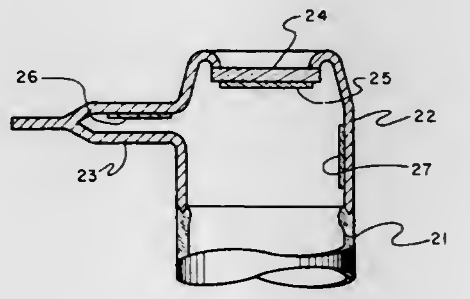
3,868,524
STABILIZATION OF SEMICONDUCTOR PHOTOCATHODES

Herbert A. Stahl, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,047

Int. Cl. H01j *39/00*

U.S. Cl. 313—94 **8 Claims**



1. In a stabilized image intensifier tube having an evacuated envelope and a photoelectric cathode consisting chiefly of a compound of elements from the III-rd and V-th columns of the Periodic System, the improvement comprising:
- at least one stain of a column V element coated on the inside of said envelope.

3,868,525
METAL HALIDE DISCHARGE LAMP HAVING A PARTICULAR RATIO OF HALOGEN ATOMS TO MERCURY ATOMS

John F. Waymouth, Marblehead, and Frederic Koury, Lexington, both of Mass., assignors to Sylvania Electric Products Inc., Danvers, Mass.

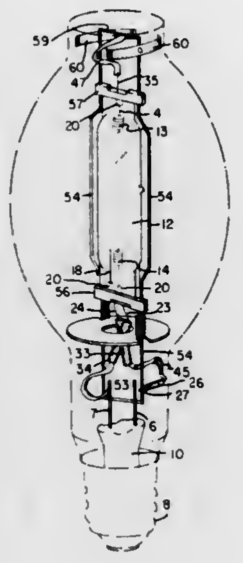
Continuation of Ser. No. 209,974, July 12, 1962, abandoned. This application Mar. 26, 1969, Ser. No. 810,490

Int. Cl. H01j *61/18*

U.S. Cl. 313—184 **12 Claims**

1. In a high pressure electric discharge device having an arc tube with electrodes sealed at each end thereof and having means to convey electrical energy to each of said electrodes and having atoms of mercury, atoms of a halogen selected from the group consisting of iodine, bromine and chlorine and atoms of a metal capable of reacting with halogen, the improvement which comprises: said halogen and mercury being contained in said arc tube in a ratio of halogen atoms to mer-

cury atoms between about 0.08 to 0.75, the visible emission of said arc tube when an arc is formed therein being a substantially complete forest of spectral lines in the emission spectrum, appearing at spacings less than about 5A apart.



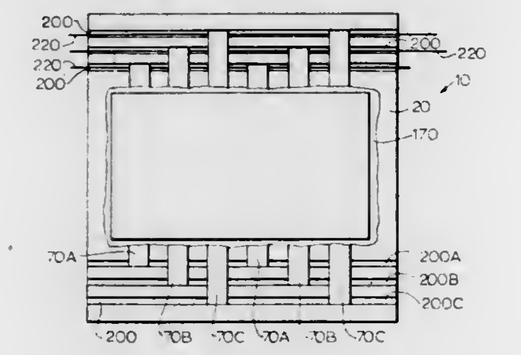
3,868,526
DISPLAY PANEL

Bernard Caras, Princeton, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 2, 1973, Ser. No. 375,762

Int. Cl. H01j *61/36*

U.S. Cl. 313—188 **24 Claims**



1. A display panel comprising
- a plurality of insulating plates, a first array of first electrodes and a second array of second electrodes, said second electrodes being positioned at an angle to said first electrodes,
- means connecting a plurality of said second electrodes in a plurality of groups so that a single source of potential can be connected to all electrodes in a group at the same time,
- said means comprising an assembly of a plurality of strips of insulating material, each strip carrying a strip of metal and having all of the electrodes of a group secured to said strip of metal by means of a conductive cement.

3,868,527
GAS DISCHARGE PICTURE DISPLAY PANEL

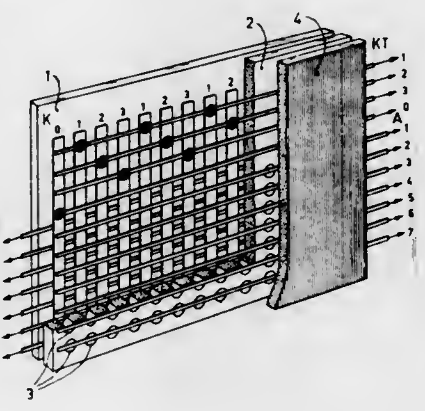
Gerhard Heinrich Friedrich De Vries; Johannes Petrus Hornman; Hendrik Kuster, and Johannes Van Esdonk, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,829

Claims priority, application Netherlands, Nov. 28, 1972, 7216085

Int. Cl. H01j *61/02*

U.S. Cl. 313—188 **6 Claims**



1. A gas discharge picture display panel comprising a pair of spaced plates defining a hermetically sealed enclosure therebetween filled with an ionizable gas, a first set of electrodes lying in a first plane within said enclosure and extending in a first direction therein, said first set of electrodes being divided into groups, a second set of electrodes within said enclosure lying in a second plane spaced from said first plane and extending in a direction forming an angle with said first direction, and a common conductor lying in a plane spaced from said first plane connecting the electrodes in each of said groups and extending hermetically through said enclosure to a source of potential.

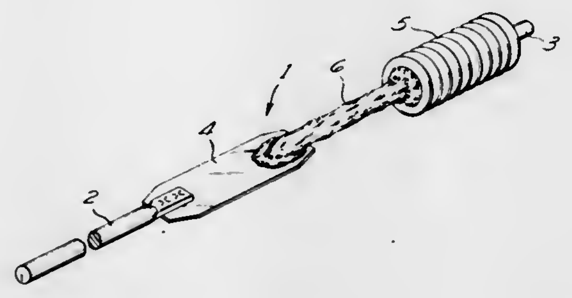
3,868,528
QUARTZ PINCHES CONTAINING SEALANT GLASS

William H. Lake, Novelty, and Gene I. Thomasson, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,045

Int. Cl. H01j *61/36*

U.S. Cl. 313—220 **10 Claims**



1. An electric lamp comprising:
- a quartz tube envelope having refractory metal inleads pinch-sealed into its ends of the kind comprising an outer terminal lead, an intermediate sealing foil, and an inner lead extending into said envelope, said inner and outer leads being connected to opposite ends of said foil,
- and a sealing glass bonded to said inner lead and filling the crevice in the quartz around said inner lead extending from said foil into said envelope, said sealing glass being substantially alkali-free and having a coefficient of expansion intermediate that of quartz and that of said inner lead.

8. The method of pinch-sealing a quartz arc tube which includes:
- making a refractory metal inlead-foil-shank assembly comprising an outer terminal lead, an intermediate sealing foil and an inner shank,
- applying to said inner shank a sheath of substantially alkali-free sealing glass having a coefficient of expansion intermediate that of quartz and that of said inner lead,
- standing said assembly upright with the glass-sheathed shank uppermost and surrounding it by the lower end of a quartz tube,
- heating the lower end of said quartz tube to plasticity while filled with inactive gas,
- and quickly compressing the tube end to collapse it and hermetically unite the quartz to said intermediate sealing foil while causing said sealing glass to flow and fill a crevice in the quartz around the inner shank.

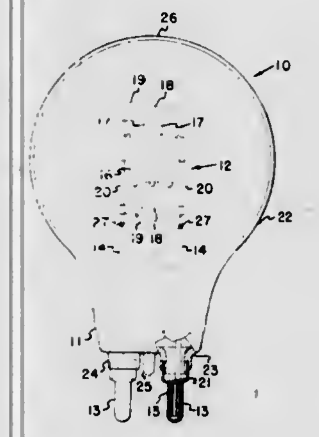
3,868,529
HALOGEN LAMP CONTAINING NICKEL-PLATED PARTS

LaVerne E. Walsh, South Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,340

Int. Cl. H01k *1/20*

U.S. Cl. 313—222 **3 Claims**



1. An incandescent lamp of the tungsten-halogen type comprising an envelope of high temperature glass, a fill gas containing a small quantity of a halogen gas, said halogen gas selected from the group consisting of iodine and bromine, nickel-plated copper posts hermetically sealed to said envelope, said nickel-plated copper posts located at a distance from the filament such that the external temperature of the posts does not exceed approximately 302°C, side channels, means for electrically connecting said nickel-plated copper posts and said side channels, a tungsten filament, and means for electrically connecting the filament and the side channels.

3,868,530
SPARK PLUG

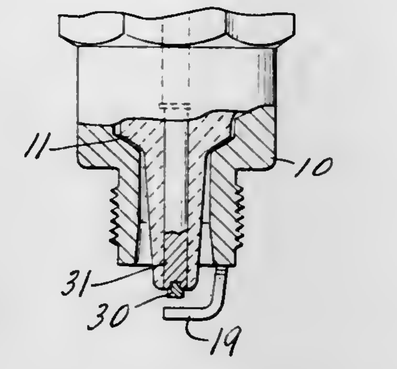
Carl J. Eaton, Toledo, and Richard S. Podiak, Maumee, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed July 5, 1973, Ser. No. 376,524

Int. Cl. H01t *13/20*

U.S. Cl. 313—141 **4 Claims**

1. In a spark plug having a grounded shell, an insulator, at least one ground electrode carried by the shell, and a center electrode extending through said insulator and terminating in sparking relationship with said ground electrode, said center electrode being formed of metal having good spark corrosion resistant properties, the improvement comprising an axial recess in the firing end of the center electrode, said recess being larger in cross section at its inner end than at its outer end, and an insert of precious metal extending into and filling the recess, said insert being firmly supported by the adjacent electrode with its end exposed at the firing end of the electrode.



3,868,531
ELECTRIC INCANDESCENT LAMP AND METHOD OF MANUFACTURING SAME

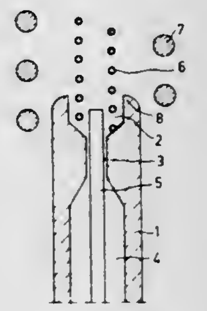
Dirk Jules Remi De Fraeye, and Jan Alfons Catharina Mewissen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

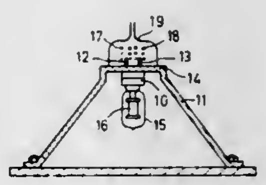
Filed Aug. 20, 1973, Ser. No. 390,166

Claims priority, application Netherlands, Sept. 13, 1972, 7212382

Int. Cl. H01j *5/48, 5/50*

U.S. Cl. 313—318 **4 Claims**





1. An electric incandescent lamp having an envelope which comprises a lamp cap manufactured from an insulating material a pair of elongated contact pins each having an axial passageway therein, said pins being carried by said lamp cap, and a current conductor extending from the lamp envelope through each passageway, each of said conductors being soldered in said passageway in which said conductor is disposed, each of said passageways comprising first, second and third axial sections, said second axial section having a cross-sectional area smaller than said first and third sections, said third section being disposed distal to the lamp envelope and being the axial extremity of said pin, said third axial section being at least partly filled with solder each of said axial sections being dimensional in closely spaced engagement with the circumference of said conductor carried therein, said closely

spaced relationship permitting the flow of molten solder therebetween and substantially limiting radial play therebetween.

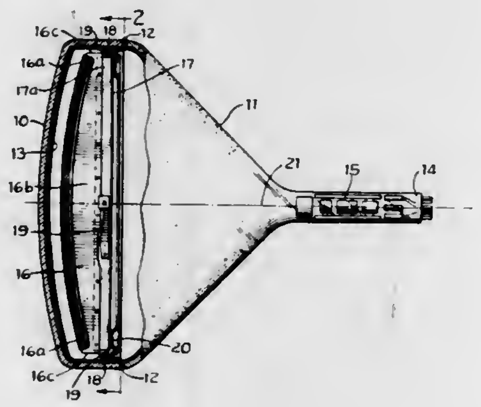
3,868,532
SHADOW MASK AND OVERSCAN SHIELD ASSEMBLY

Gerald K. Mac Lean, Hoffman Estates, and Thomas C. Minzenberger, Lake Bluff, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Continuation of Ser. No. 204,241, Dec. 2, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,893

Int. Cl. H01j *29/06, 29/08, 31/20*

U.S. Cl. 313—407 **1 Claim**



1. In a color television picture tube of the type having a glass envelope comprising a curved generally rectangular image screen panel section and a mating funnel and neck section sealed thereto, an interlaced pattern of different phosphors on the curved screen surface of said panel section, and electron gun means housed in said funnel and neck section for scanning the phosphors on said curved screen surface with electrons, an improved shadow mask and overscan shield assembly comprising:

a metal generally rectangular mask supporting frame having a peripherally continuous substantially constant cross-section and symmetrically disposed about the central axis of said envelope, said frame having a flange portion substantially parallel to said axis with a leading edge spaced from said screen surface and disposed in a single flat plane perpendicular to said axis and a ring portion, of a width substantially equal to that of said flange portion, extending inwardly from said flange portion toward said axis and substantially perpendicular thereto, and said frame being secured to said envelope with a space between said frame and the inner side walls of said envelope;

a metal shadow mask, of thinner metal stock than said frame, having a multi-apertured parallax barrier with a curvature generally conforming to that of said curved screen surface and with its apertures in spaced predetermined registration with said phosphor pattern and having an integral skirt extending from said parallax barrier parallel to said axis into surface contact with said flange portion of said frame and secured thereto;

and a metal foil electron shield member in surface contact with said ring portion of said frame and secured thereto, having a curved outwardly extending portion bridging the gap between said frame and said envelope side walls and a second portion extending inwardly from said frame toward said axis to constitute a curviform rectangular rear window with inwardly curved sides, for intercepting overscan electrons from said electron gun means and preventing their impingement upon the flange portion of the mask frame, the shadow mask skirt, or the inner side walls of the envelope.

3,868,533
CATHODE-RAY TUBE FOR IMAGE DISPLAY

Roelof Egbert Schuil, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 6, 1974, Ser. No. 448,655

Claims priority, application Netherlands, Mar. 8, 1973, 7303250

Int. Cl. C09k *1/14;* **H01j** *29/20*

U.S. Cl. 313—468 **4 Claims**

1. Cathode-ray tube for black-and-white image display, provided with a luminescent screen which contains a luminescent terbiumactivated oxysulphide of at least one of the elements yttrium, gadolinium, lanthanum and lutetium, characterized in that the oxysulphide also contains samarium as an activator and satisfies the formula $(M_{1-x-y}\ Tb_x\ Sm_y)_2\ O_2s$, where M is at least one of the elements yttrium, gadolinium, lanthanum and lutetium, and 0.003 x 0.030 and 0.0001 y 0.005, said oxysulfide exhibiting a white color emission under cathode ray excitation.

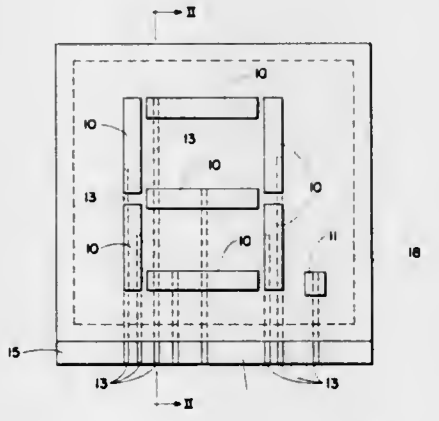
3,868,534
ELECTROCHEMILUMINESCENT DEVICE HAVING A MIXED SOLVENT

Albert Pighin, Ottawa; Robert Alvin Creswell, Carp, and Douglas Peter Malanka, Ottawa, Ontario, all of Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Nov. 29, 1972, Ser. No. 310,247

Int. Cl. H05b *33/02*

U.S. Cl. 313—483 **7 Claims**



1. An electrochemical luminescent device comprising:

a support plate; an electrode array on said support plate, said array comprising at least one electrode; electrical conductor means connected to said electrode array; a transparent cover plate spaced from said support plate and electrode array; a spacing member extending between said support plate and said cover plate to define a sealed space between said electrode array and said cover plate; a counter electrode in said sealed space; electrical conductor means connected to said counter electrode; and an electrochemical luminescent solution in said sealed space, said luminescent solution comprising a mixture of a fluorescent compound, a solvent for the fluorescent compound, and an electrolyte, the solvent being a mixture of an aprotic solvent and an aromatic solvent.

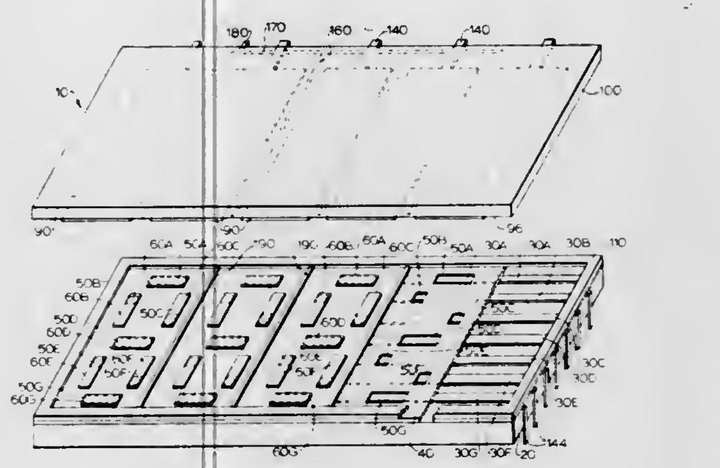
3,868,535
MULTI-POSITION CHARACTER DISPLAY PANEL

George A. Kupsky, Milford, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 173,854, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 124,373, March 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 61,642, Aug. 6, 1970, abandoned. This application Feb. 28, 1974, Ser. No. 446,832

Int. Cl. H01j *61/66*

U.S. Cl. 313—519 **31 Claims**



21. A display device comprising
a gas-filled envelope including
an insulating base plate having a top surface,
a plurality of conductive strips on said top surface of said base plate,
an insulating layer on said strips,
a plurality of spaced-apart groups of apertures in said insulating layer, each aperture in each group exposing one conductive strip, corresponding apertures in each group exposing the same conductive strip,
a conductive member in each of said apertures in direct contact with the associated conductive strip and operable as a glow cathode, there thus being a group of conductive members associated with each group of apertures,
a second apertured insulating layer seated on said first insulating layer and having a plurality of apertures, each enclosing one of said conductive members and shielding said conductive members from each other,
an anode electrode associated with each group of conductive members, and
an insulating cover plate having a viewing window through which glowing cathodes can be viewed,
said base plate and said cover plate being hermetically sealed together and forming said envelope.

3,868,536
IMAGE INTENSIFIER TUBE EMPLOYING A MICROCHANNEL ELECTRON MULTIPLIER

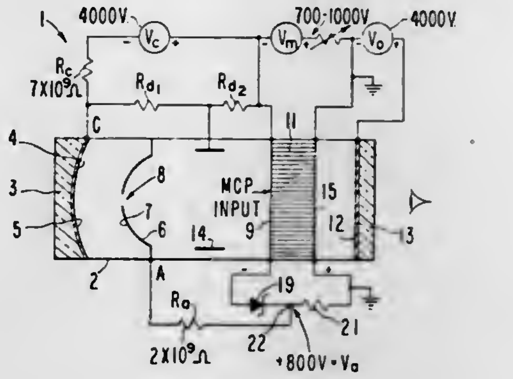
Richard S. Enck, Jr., Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Oct. 18, 1971, Ser. No. 189,864

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 **6 Claims**

1. In an image intensifier tube, a photocathode means disposed to receive a photon image for emitting into the tube an electron image corresponding to the received photon image, microchannel electron multiplier means having an input face disposed to receive the emitted electron image for multiplying the electron current of said image, an anode electrode means disposed intermediate said photocathode means and said microchannel multiplier means along the path of flow of the electron image for accelerating the electron image and for focusing same upon said electron receiving the face of said microchannel electron multiplier means, and power supply means for biasing said anode electrode means at a potential positive with respect to the operating potential of said input face of said microchannel electron multiplier means to inhibit the flow of positive ions from said microchannel multiplier means to said photocathode means, said biasing means for biasing said anode means relative to said microchannel electron multiplier means include, a series connection of a voltage



regulating means and a resistor to form a source of regulated anode bias potential connected in parallel with the potential applied across said microchannel electron multiplier means, and means for applying the regulated anode bias potential derived across said voltage regulator means to said anode means.

3,868,537
AMPLIFIER WHICH CONSUMES A SUBSTANTIALLY CONSTANT CURRENT

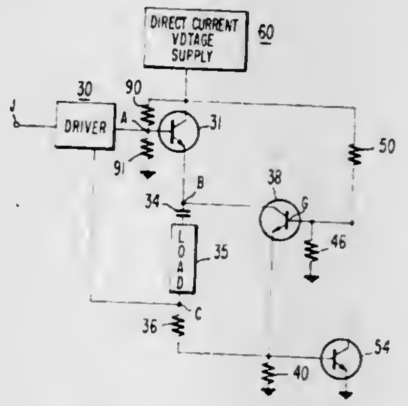
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed July 27, 1973, Ser. No. 383,207

Claims priority, application Great Britain, Feb. 5, 1973, 5613/73

Int. Cl. H01j *29/70*

U.S. Cl. 315—389 **15 Claims**



1. An amplifier which consumes a substantially constant direct current, comprising:
a source of direct current voltage;
a source of signal voltage waveforms;
a load impedance;
first active current conducting means, the main current conducting path of which is serially coupled between said source of direct current voltage and said load impedance and a control electrode of which is coupled to said source of signal voltage waveforms;
second active current conducting means, the main current conducting path of which is coupled at one terminal to the junction of the main current conducting path of said first active current conducting means and said load impedance to form a first junction of said load impedance and said main current conducting path of said second active current conducting means and at the other terminal to the terminal of said load impedance remote from said first junction to form a second junction of said load impedance and said main current conducting path of said second active current conducting means;

sensing means coupled between said second junction and a point of reference potential for sensing current flow between said second junction and reference potential; and third active current conducting means the main current conducting path of which is serially coupled between said source of direct current voltage and a point of reference potential and a control electrode of which is coupled to said sensing means and responsive to signals representative of current flow therethrough and a control electrode of said second active current conducting means is coupled to the main current conducting path of said third active current conducting means for being controlled by said signals representative of the current flow through said sensing means, thereby altering the conductivity of said second active current conducting means for rendering the sum of the current through said load impedance and the main current conducting path of said second active current conducting means substantially constant.

3,868,538

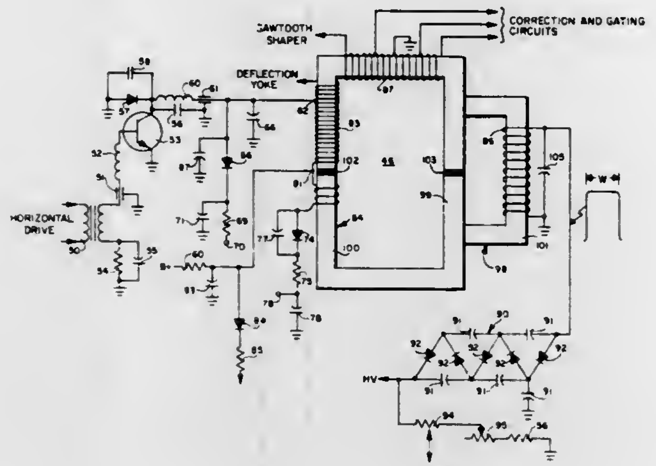
FERRO-RESONANT HIGH VOLTAGE SYSTEM

David L. Blanchard, Des Plaines, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 11, 1973, Ser. No. 359,582

Int. Cl. H01j *29/70*

U.S. Cl. 315—411 **13 Claims**



1. In a cathode ray tube high-voltage supply system in which sawtooth-shaped current pulses are developed in a first transformer winding in order to produce a scanning waveform in a deflection yoke on said cathode ray tube, in which energy developed as a result of magnetic field collapse in said deflection yoke is utilized to produce high-voltage output pulses in a second winding and in which the load coupled to said second winding requires a broad generally-square pulse shape, the improvement comprising:

a first closed magnetic circuit non-saturating in response to development of said sawtooth-shaped pulses or in the presence of said energy and including a first ferromagnetic core upon which said first winding is wound;

a second closed magnetic circuit saturating in response to said energy and including only a portion of said first core together with a second ferromagnetic core upon which said second winding is wound;

and a capacitor, included in said load, coupled across said second winding and having a value enabling current cycles in said second winding to coincide with current cycles in said first winding sufficiently that said collapse initiates saturation reversal in said second core.

3,868,539

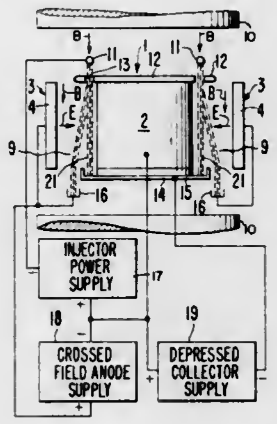
CROSS-FIELD AMPLIFIER HAVING A BEAM OF ELECTRONS FLOWING THROUGH THE INTERACTION REGION ORTHOGONALLY TO MICROWAVE POWER FLOW

George K. Farney, New Providence, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed June 28, 1966, Ser. No. 561,220

Int. Cl. H01j *25/34*

U.S. Cl. 315—39.3 **8 Claims**



1. A crossed-field microwave amplifier tube including, means forming a cathode electrode, means forming an anode electrode structure operated in use at a potential positive with respect to said cathode and including a portion spaced from said cathode electrode to define an electronic interaction region therebetween, means for applying a magnetic field to the interaction region with the applied magnetic field being directed transversely to the electric field between said anode and cathode electrodes to form a crossed-field interaction region, said anode electrode structure including a periodic slow wave circuit portion disposed adjacent said crossed-field interaction region and having an input and output terminal said circuit being directed orthogonally to both the electric field and the magnetic field in the crossed-field interaction region such that signal wave power flow on said slow wave circuit is orthogonal to the crossed electric and magnetic fields, means for injecting a stream of electrons along the direction of the applied magnetic field with a substantial component of velocity orthogonal to the diection of signal power flow on said slow wave circuit, whereby electron noise on the electron stream is not strongly coupled to said slow wave circuit, and said anode structure means including a collector electrode portion disposed at at least one in the direction of said magnetic field end of a portion of said interaction region for causing the electron stream to flow through the interaction region to said collector electrode, thereby extending the dynamic range of the crossed-field ammplifier well into the low signal regime.

3,868,540

INCANDESCENT LAMP HAVING EXTENDED LAMP LIFE

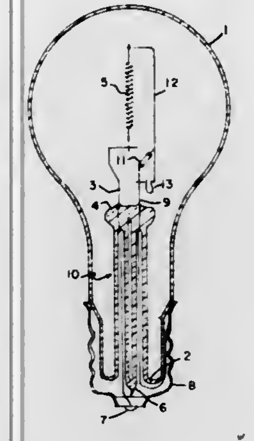
Edmund M. Passmore, Wilmington, and Eugene A. Castello, North Reading, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 29, 1973, Ser. No. 410,760

Int. Cl. H01k *1/64*

U.S. Cl. 315—73 **1 Claim**

1. An incandescent lamp comprising: a gas filled glass bulb sealed at its lower end to the flare of a stem press glass mount; a screw base, having a center contact, attached to the lower end of said bulb; two lead-in wires extended through the stem press of said mount, one of said lead-in wires being electrically connected to said center contact and the other being electrically connected to the rim of said screw base; a coiled tungsten wire filament disposed within said bulb and electrically conected between said two lead-in wires; an inrush current limiting resistor in series with said filament and a thermal switch in parallel with said resistor, said switch operative to electrically short out said resistor upon attainment thereof of a predetermined elevated temperature; and means to heat said switch to said predetermined elevated temperature, said means being coiled tungsten wire filament.



3,868,541

FILAMENT-CURRENT CONTROL UNIT IN ELECTRON-BEAM APPARATUS

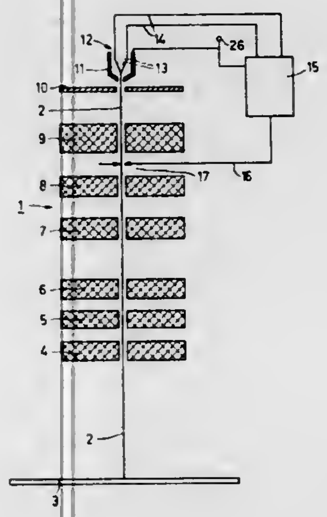
Peter Van Zuijlen, and Leendert Antonius Fontijn, both of Delft, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,549

Claims priority, application Netherlands, June 5, 1971, 7107749

Int. Cl. H01j *3/08*

U.S. Cl. 315—94 **5 Claims**



1. An electron-beam apparatus comprising a cathode for the thermal emission of an electron beam, A Wehnelt electrode in proximity to said cathode for controlling said electron beam, a filament current control unit including a variable resistance coupled between said Wehnelt electrode and said cathode for maintaining a desired emission of said electron beam, and an interception electrode for intercepting a portion of the electron beam said filament-current control unit being operable for adjusting the temperature of said cathode to a value at which minimum signals resulting from variation of said variable resistance are generated at said interception electrode.

3,868,542

FLUORESCENT DISPLAY DEVICES

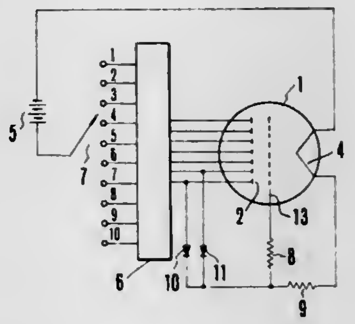
Mikiharu Tanji, Watarai-gun, Japan, assignor to Ise Electronics Corporation, Ise City, Mie Prefecture, Japan

Filed July 11, 1973, Ser. No. 378,198

Claims priority, application Japan, July 14, 1972, 47-83315[U]

Int. Cl. H05b *41/00*

U.S. Cl. 315—169 TV **4 Claims**



1. In a fluorescent display device of the type including a fluorescent display tube containing a plurality of fluorescent segment electrodes which are arranged in a predetermined pattern, a heater electrode and a control electrode disposed between said segment electrodes and said heater electrode, the improvement which comprises a source with its negative pole connected to one terminal of said heater electrode, a decoder with its output terminals connected with said segment electrodes, a pattern selection switch connected between the positive pole of said source and the input terminals of said decoder, and a diode connected between one of the output terminals of said decoder and the other terminal of said heater electrode and said control electrodes for energizing said heater electrode from said source when said one of the output terminals in energized.

3,868,543

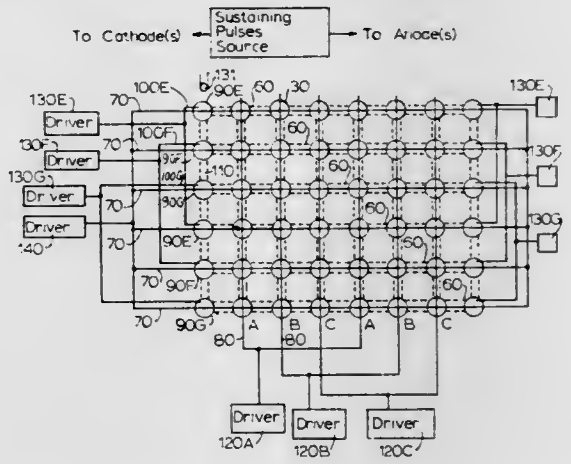
DISPLAY PANEL

George Ernest Holz, North Plainfield, and James Alexander Ogle, Neshanic Station, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 186,415, Oct. 4, 1971, Pat. No. 3,789,265, which is a continuation of Ser. No. 881,660, Dec. 3, 1969, abandoned. This application July 27, 1973, Ser. No. 383,166

Int. Cl. H05b *37/00*

U.S. Cl. 315—169 TV **4 Claims**



1. A display panel comprising

a plurality of discrete gas-filled cells formed in an insulating matrix,

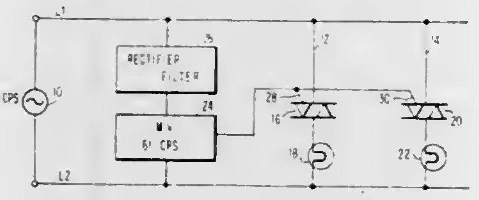
an anode and a cathode electrode coupled to each of said cells for causing the individual cells to glow, and

an auxiliary electrode in each of said cells and in contact with the gas therein,

each auxiliary electrode comprising a conductive member having an insulating coating on the surface of which an

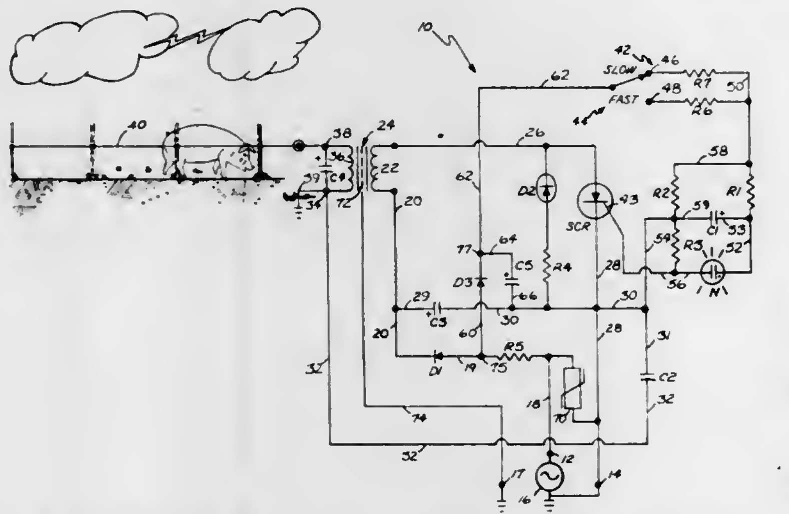
electrical charge can form when excited particles are present in the gas,
each said auxiliary electrode having its conductive member extending outside said panel whereby electrical connection can be made thereto and electrical potential can be applied thereto whereby each auxiliary electrode, carrying said electrical charge and said electrical potential, is operable in conjunction with potentials on the associated anode and cathode to operate each cell.

3,868,544
LAMP FLASHER
Donald S. Banks, 234 Lowell Rd., Wellesley, Mass. 02181
Filed Aug. 2, 1973, Ser. No. 385,924
Int. Cl. H05b *37/00*
U.S. Cl. 315—200 A **5 Claims**



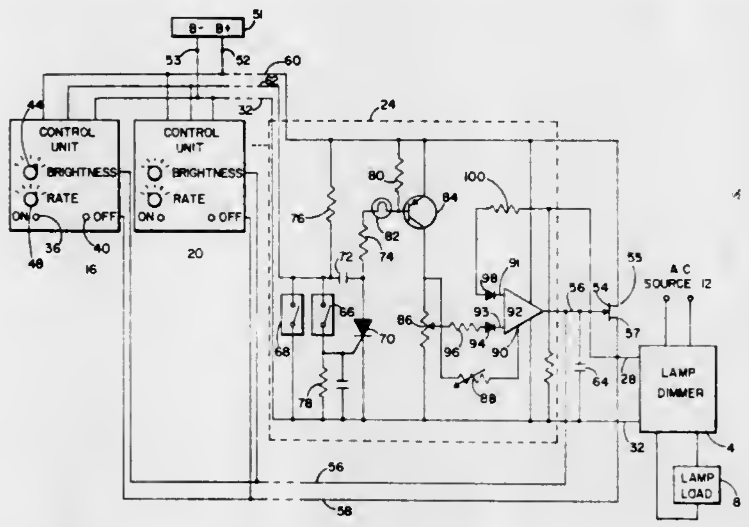
1. A power modulator for periodically modulating the power applied to a load from an A.C. power source comprising:
   a. controllable A.C. switch means adapted to be coupled between the source and the load, and
   b. control signal generator means coupled to said A.C. switch means for continuously generating control signals for controlling the time in each half-cycle of A.C. power at which the switch means is rendered conductive;
   c. the frequency at which the control signals are generated being very close to, but different from, the frequency of the A.C. power source or a harmonic thereof, so that the phase difference between successive control signals and corresponding A.C. power cycles continuously and cyclically varies, whereby the A.C. power applied to the load also continuously and cyclically varies.

3,868,545
VARIABLE FREQUENCY ELECTRIC FENCE CHARGING CIRCUIT
Thomas E. Caron, Crystal, Minn., assignor to Sta-Tite Corporation, Plymouth, Minn.
Filed Sept. 10, 1973, Ser. No. 396,076
Int. Cl. H05b *37/02, 39/04, 41/36*
U.S. Cl. 315—209 **6 Claims**



1. A variable frequency electric fence charging circuit for use with an alternating current source and a conductive fence wire for charging the fence wire to restrict movement of various types of livestock, comprising:
a firing circuit including input terminals, a silicon controlled rectifier with a gate, and a step-up transformer with primary and secondary windings, said silicon controlled rectifier electrically connected in series with said primary winding and connectable across the alternating current source, said secondary winding defining the output of said firing circuit and being electrically connectable between the fence wire and ground;
a triggering circuit, including an oscillator, said oscillator having input and output terminals and being provided with means for selectively establishing a plurality of distinct predetermined output frequencies and said frequency establishing means being substantially unaffected by impedance variations in the fence wire caused by livestock contact with the wire, the output terminals of said oscillator electrically connected to said gate of said silicon controlled rectifier to selectively bias said gate to an open condition, permitting current flow from the alternating current source to said primary winding, thereby inducing stepped up voltage in said secondary winding and charging the fence wire; and
said triggering circuit further including a diode and capacitor, said diode energizable from the alternating current source, and connected in parallel with said capacitor and in series to the input terminal of said oscillator to energize said oscillator in synchronization with the alternating current source such that said oscillator develops and delivers periodic output pulses biasing said gate of said silicon controlled rectifier to an open condition as the alternating current source nears a peak voltage magnitude to thereby apply the voltage to said primary winding of said transformer.

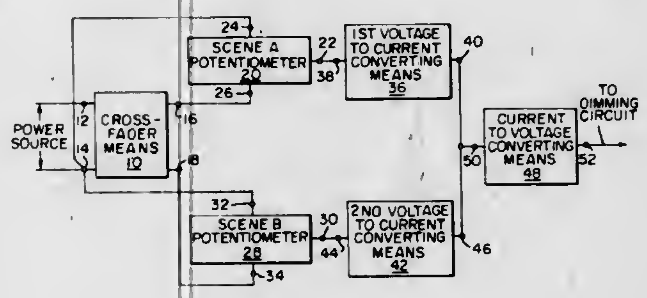
3,868,546
LIGHT DIMMING SYSTEM FOR CONTROLLING BRIGHTNESS AND RATE OF CHANGE OF BRIGHTNESS OF LIGHTS
Benjamin F. Gilbreath, Richardson, and Hou Leh Yeh, Euless, both of Tex., assignors to Hunt Electronics Company, Dallas, Tex.
Filed Mar. 26, 1973, Ser. No. 344,491
Int. Cl. H05b *37/02, 39/04*
U.S. Cl. 315—293 **13 Claims**



1. A light dimming system including
a dimmer unit responsive to a voltage signal for controlling the flow of current through a lamp load,
a capacitor coupled to said dimmer circuit for storing a charge to thereby develop thereacross said voltage signal, and
at least one control unit coupled to said capacitor for selectively charging and discharging said capacitor, said control unit comprising
  an operational transconductance amplifier for supplying current to and receiving current from said capacitor to thereby respectively charge and discharge the capacitor, said amplifier having first and second differential input terminals and a control terminal,

  first adjustable means for controlling voltage applied to said second differential input terminal, and
  second adjustable means for controlling current applied to said control terminal to thereby control the current supplied to or received from said capacitor by said amplifier.

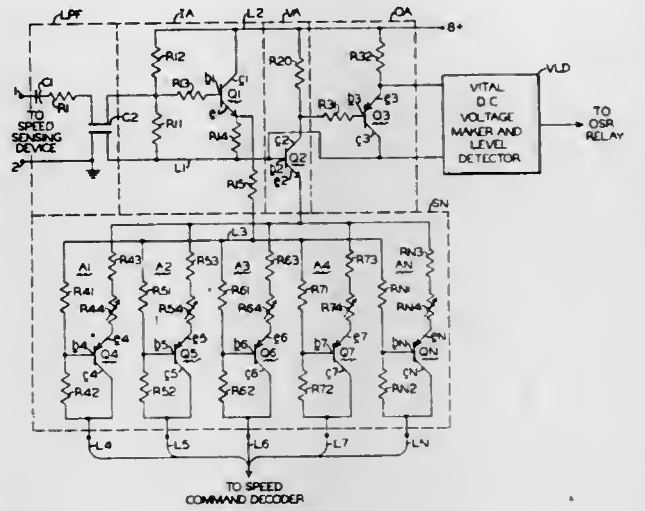
3,868,547
DIPLESS CROSS FADER WITH PILE-ON
George A. Kappenhagen, Itasca, and James B. Tabor, Wheaton, both of Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 19, 1973, Ser. No. 352,822
Int. Cl. G05f *1/10;* **H05b** *37/00*
U.S. Cl. 315—296 **10 Claims**



1. Apparatus for providing a dipless signal adapted to be connected to a stage-lighting dimmer when cross-fading between sequential lighting levels, said apparatus comprising:
   a. a current to voltage converting means having an output adapted to be connected to a dimming circuit;
   b. a first and a second voltage to current converting means with current outputs connected together to feed the sum of the currents into said current to voltage converting means;
   c. scene A and scene B potentiometers each having two end terminals and a wiper, said wiper of said scene A potentiometer being connected to feed a voltage to said first voltage to current converting means and said wiper of said scene B potentiometer being connected to feed a voltage to said second voltage to current converting means; and
   d. a cross-fader means operable to reduce the voltage across the end terminals of one scene potentiometer and simultaneously increase the voltage across the end terminals of the other scene potentiometer, whereby in normal cross-fading operation, a signal which is proportional to the sum of the voltages on the two scene potentiometers is produced, thereby avoiding dipping of the signal to the dimmer during cross-fading.

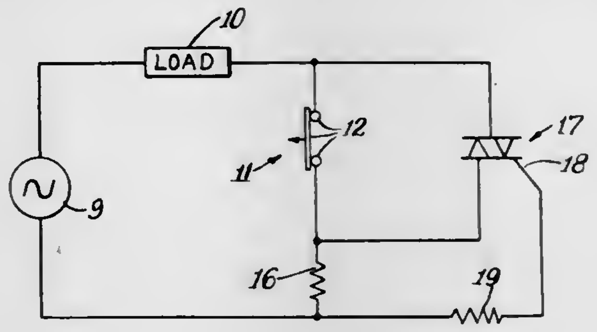
3,868,548
FAIL-SAFE TRANSISTORIZED OVERSPEED CIRCUIT ARRANGEMENT
Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Jan. 23, 1974, Ser. No. 435,689
Int. Cl. G05d *13/62*
U.S. Cl. 317—5 **11 Claims**

11. A fail-safe vehicle overspeed sensing circuit comprising, means for generating a.c. signals proportional to the actual speed of the vehicle, filter means for receiving and filtering the a.c. signals, decoding means for decoding speed commands received onboard the vehicle, selection means having a one of a plurality of control stages activated by said decoding means, input amplifying means for amplifying and supplying the filtered a.c. signals to said selection means, a variable gain amplifying means coupled by the activated one of the plurality control stage to establish a predetermined gain, and an output amplifying means coupled to said variable gain amplifying means and producing an amplified output which is coupled to a d.c. voltage maker and level detector to provide an output



signal only when the actual speed of the vehicle is below the last received authorized speed command.

3,868,549
CIRCUIT FOR PROTECTING CONTACTS AGAINST DAMAGE FROM ARCING
Edward J. Schaefer, and August L. Streater, both of Bluffton, Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.
Filed Apr. 26, 1973, Ser. No. 354,694
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 E **32 Claims**



1. In a circuit including an alternating current supply, a load, and switch contacts connected to carry load current when closed and required to open under heavy current load conditions, the improvement comprising contactless switch means adapted to be connected to form a current path which bypasses said contacts, an electrical device adapted to be connected in series with said load and said contacts, said switch means including bias means connected to respond to current flow through said device and to a potential across said contacts, said switch means being biased to conduction only when a potential exists across said contacts and current flows through said device, whereby said switch means is biased to conduction and load current is transferred to said path from the time of initiation of an arc until the next subsequent zero crossing of the alternating current.

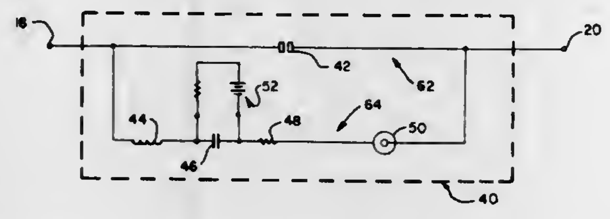
3,868,550
CIRCUIT BREAKER
Wolfgang Knauer, and Michael A. Lutz, both of Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of Ser. No. 333,434, Feb. 16, 1973, abandoned. This application Dec. 26, 1973, Ser. No. 428,636
Int. Cl. H02h *7/22*
U.S. Cl. 317—11 B **8 Claims**

1. A circuit breaker for serial connection into an electric circuit for operation at line voltage between a power supply

and a load for the breaking of the electric circuit between the power supply and the load, comprising:

an in-line branch having a controllable electrically conductive device to create electrical continuity for carrying the normal line current and for becoming nonconductive upon operation to nonconductive control condition and cessation of current therethrough to terminate electrical continuity through said in-line branch, said in-linc branch device being capable of holding off line voltage;

an interrupter branch connected in parallel to said in-one branch, said interrupter branch having therein a capacitor having a voltage holdoff rating less than line voltage and serially connected thereto a crossed-field switch device means for holding off line voltage thereto when nonconductive, for onswitching with voltage applied and for offswitching current and for holding off line voltage, said crossed-field switch device means being serially connected with said capacitor so that said capacitor can be precharged when said crossed-field switch device means is nonconductive and said capacitor can be discharged upon making such crossed-field switch device means conductive to cause cessation of current in said in-line branch to cause said in-line branch device to become nonconductive and said crossed-field device means being also for offswitching against current in said interrupter branch to offswitch current into said capacitor so that said capacitor has a lower voltage thereacross than line voltage.



3,868,551

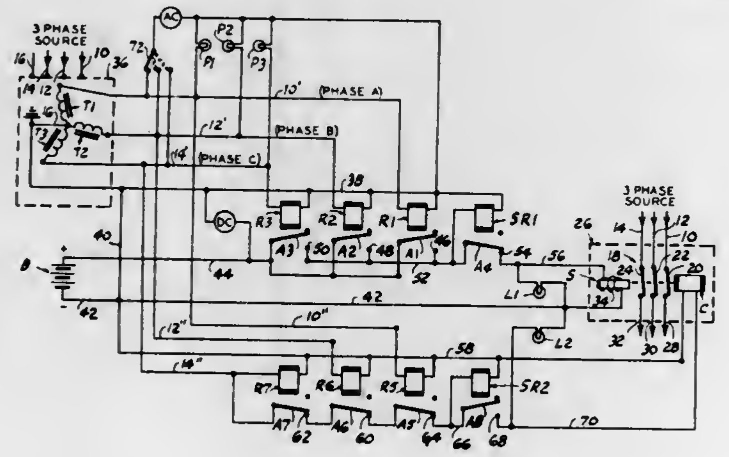
POLYPHASE CIRCUIT CONTROL SYSTEM

Wilburn W. Spary, Pond Creek, Okla., assignor to Thomas L. Bryan and Robert E. Bryan, both of Oklahoma City, Okla., part interest to each

Filed Mar. 25, 1974, Ser. No. 454,634

Int. Cl. H01h *47/18*

U.S. Cl. 317—23 **5 Claims**



1. In a polyphase current distribution control system including a plurality of phase line source and distribution conductors, a neutral line conductor, a polyphase circuit breaker having respective normally closed switch elements interposed between respective phase line source conductors and distribution line conductors, the improvement comprising:

a solenoid operable to simultaneously open said respective switch elements;

a reset coil operable to simultaneously close said respective switch elements;

a normally open control circuit connecting a source of direct current with said solenoid;

a plurality of relays respectively associated with respective phase line conductors;

relay circuit means connected to energize said plurality of relays from the voltage between said respective phase line conductors and said neutral line conductor;

a first slave relay having normally closed contacts connected in series in said solenoid control circuit; and,

a second slave relay having normally open contacts connecting said reset coil with at least one phase of said phase line source of electrical energy,

whereby a phase failure in said phase line source de-energizes at least one relay of said plurality of relays and closes said normally open control circuit for energizing said solenoid and opening said normally closed switch elements and whereby correction of said phase failure energizes said second slave relay and said reset coil for reclosing said normally closed switch elements.

3,868,552

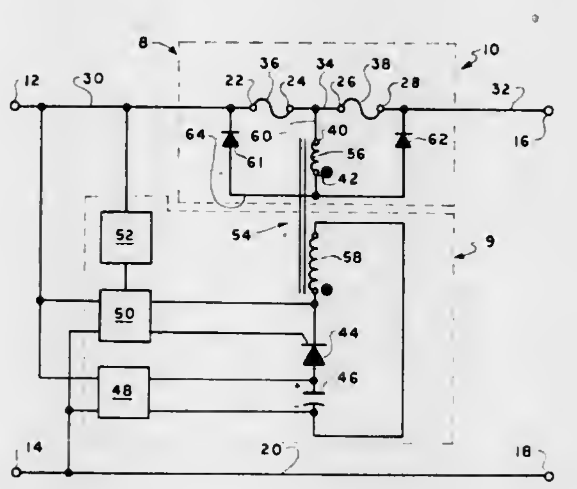
ELECTRICAL CIRCUIT AND INTERRUPTER

Arthur K. Wickson, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 5, 1973, Ser. No. 413,116

Int. Cl. H02h *5/04*

U.S. Cl. 317—40 A **14 Claims**



1. An electrical circuit interrupter for a current-carrying circuit between a power source and a load circuit comprising:

a. fuse means connected in series with said current-carrying circuit;

b. current-amplifying means having input and output connections, one of said output connections being operatively coupled to one end of said fuse means;

c. means operatively connected between the other of said output connections and said other end of said fuse means to prevent the flow of current from the power source to the load circuit after the fuse has ruptured;

d. means for sensing electrical disturbances in said current-carrying circuit to provide signal information; and,

e. means operatively coupled to said input connections for providing electrical current to said current amplifying means in response to said signal information whereby said fuse means is ruptured to interrupt the flow of current in said current-carrying circuit.

3,868,553

POLING OF FERRO-ELECTRIC SUBSTRATES

Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Division of Ser. No. 196,351, Nov. 8, 1971, Pat. No. 3,761,746. This application June 27, 1973, Ser. No. 374,213

Int. Cl. H04r *17/00, 31/00*

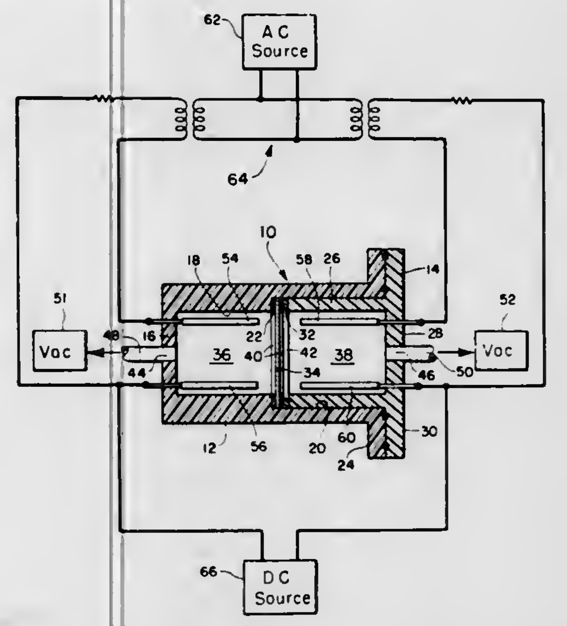
U.S. Cl. 317—262 F **2 Claims**

1. Apparatus for poling a ferro-electric body comprising:

a hollow casing assembly;

support means in said casing assembly for mounting a ferro-electric body in the interior of said casing to divide said interior into two mechanically isolated subchambers;

sealing means for electrically isolating said subchambers from each other;



ionizing means for establishing an ionization region in each of said subchambers;

and means for establishing a unidirectional electric potential difference between the ionization regions in the respective subchambers.

3,868,554

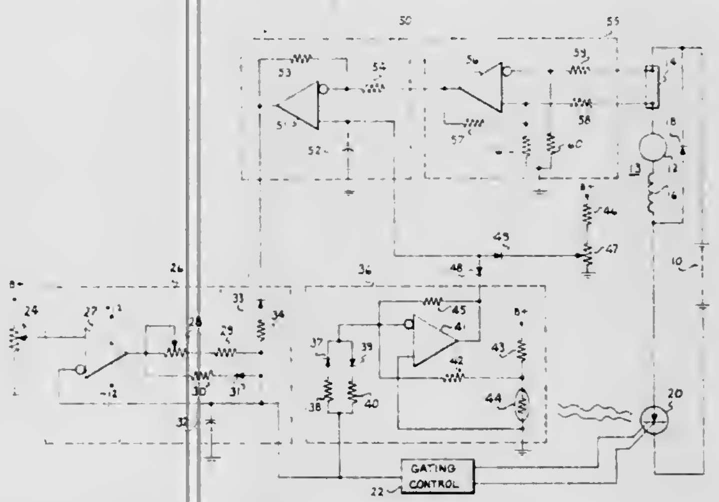
CURRENT LIMIT SYSTEM FOR DC MOTOR CONTROL

Charles Edward Konrad, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Dec. 26, 1973, Ser. No. 428,022

Int. Cl. H02p *5/00*

U.S. Cl. 318—434 **10 Claims**



1. A current limiting system for a pulse controller including solid-state switching means for metering power from a DC source to a DC load comprising:

means for sensing load current and outputting a signal representative thereof;

a gating control for controlling the mark-space ratio of the solid-state switching means as a function of an applied control signal;

a power control circuit for applying a control signal representative of a desired mark-space ratio to said gating control;

a current limit signal stage for producing a current limiting signal which varies as a function of mark-space ratio;

means coupling said power control circuit to said current limit signal stage; and

a current limit detector for receiving signals from said load current sensing means and said current limit signal stage, and for outputting a signal to said power control circuit to regulate the operation thereof.

3,868,555

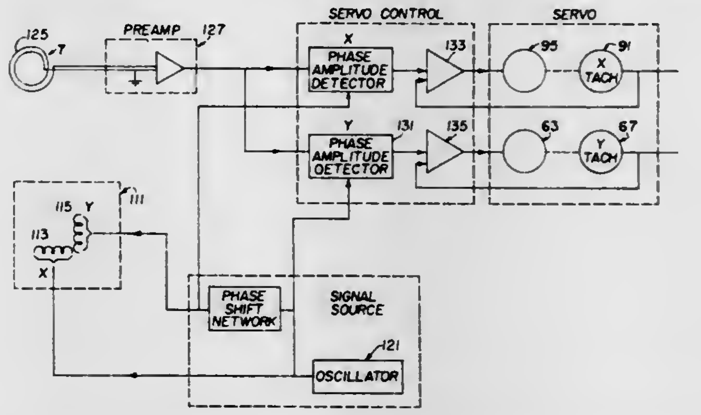
LINE TRACING APPARATUS

John E. Knowles, Stittsville, Ontario, Canada, assignor to Instronics Ltd., Stittsville, Ontario, Canada

Filed Jan. 24, 1972, Ser. No. 220,088

Int. Cl. G05b *19/36*

U.S. Cl. 318—577 **12 Claims**



1. Means adapted to provide the X and Y coordinates of selected points along a manually traced line, relative to a preselected origin and axis of reference, comprising:

a. a planar table providing a transparent support for a map or drawing, or for a sheet on which a projected image is received, lines on a surface of which map, drawing or sheet are to be traced;

a movable member positioned on the side of the transparent support remote from the said map, or drawing, or sheet;

c. light projecting means carried by the movable member and arranged to project a graticle through the support onto the said surface, the position of which graticle relative to the said movable member is fixed;

d. operator controlled means, including a free cursor index manually movable by said operator to trace said lines, by which the said movable member can be moved to cause the said graticle to follow a desired line on the said sheet;

e. X axis encoding means arranged to provide an indication of any change in position of the movable member along a predetermined X axis on the said sheet;

f. Y axis encoding means arranged to provide an indication of any change in position of the movable member along a predetermined Y axis on the said sheet; and

g. operator actuated read-out means providing when actuated an output indicative of X and Y coordinates ascertained by the two encoding means.

3,868,556

METHOD AND APPARATUS FOR CONVERTING A FORCE OR MECHANICAL MOVEMENT INTO AN ELECTRICAL QUANTITY AND SERVO-SYSTEM EMBODYING SAME

Ernest Jacques Andre Lesure, Paris, France, assignor to Exaprecis S.A., Paris, France

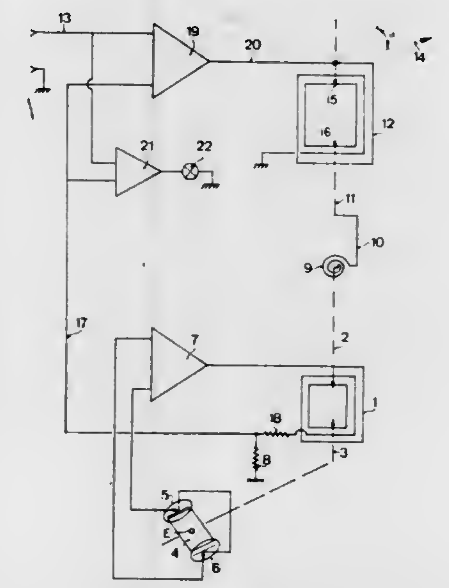
Filed Dec. 14, 1972, Ser. No. 315,022

Claims priority, application France, Dec. 15, 1971, 71.45138

U.S. Cl. 318—676 **3 Claims**

1. A servo-device comprising a first electro-magnetic assembly including a first movable frame carrying a first winding, said frame being pivotally mounted to turn about an axis, a second electro-magnetic assembly including a second movable frame carrying a second winding, said second frame being pivotally mounted to turn about an axis, a spring mechanically interconnected between said first and second movable frames, whereby the angular displacement of said second movable frame acts through said spring to tend to displace said first movable frame about its axis together with said first winding,

said first frame and winding being mechanically associated with an assemblage comprising a source of energy, a differential sensitive means responsive to that energy for producing an electrical current as a function of the energy received by said differential sensitive means, and a distributor of the energy for varying the energy received by the differential sensitive means as a function of the relative positions of the energy source, the distributor and the differential sensitive means, said first movable frame being mechanically connected to said assemblage for varying the energy received by said differential sensitive means as a function of the displacement of said first movable frame and winding, a frist differential amplifier, said differential sensitive means being electrically connected through said first differential amplifier to said first winding for feeding an electrical signal to said first winding as a function of the energy received by said differential sensitive means for creating a turning force on the first winding which tends to oppose and to balance the displacement force being exerted through said spring onto said first movable frame, a second differential amplifier adapted to receive an electrical input signal from an external source, said second differential amplifier having its output electrically connected to said second winding for producing angular displacement of said second frame as a function of the electrical input signal from said external source, and said first winding being electrically connected to the input of said second differential amplifier for feeding an electrical signal back from said first winding to said second differential amplifier for servo-controlling the angular displacement of said second movable frame.

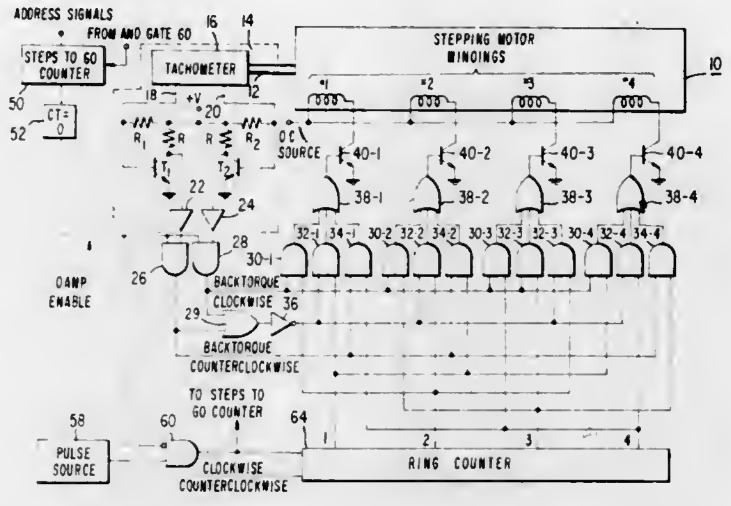


3,868,557
MOTION DAMPING APPARATUS

Philip Romeo Scott, Jr., Berlin, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Oct. 13, 1972, Ser. No. 297,384
Claims priority, application Great Britain, Mar. 29, 1972, 14682/72
Int. Cl. G05b *19/40*
U.S. Cl. 318—685 **7 Claims**

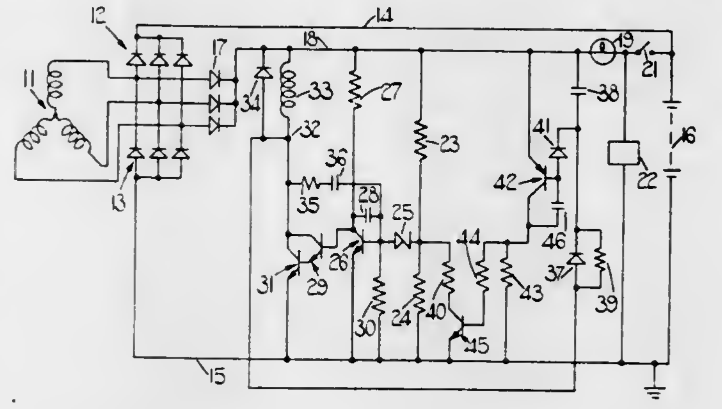
1. A control system for a stepping motor having a movable member and a plurality of phase windings comprising, in combination:

- means for providing signals sequentially to said windings for creating torque to move said movable member;
- means coupled to said movable member for producing a first signal when said movable member is in motion and a second different signal when it is stopped; and
- means responsive to an indication that said movable member is approaching its final step and to said first signal indicating said movable member is in motion for removing a signal from the phase winding which produces maximum torque to move said movable member to its final step and for applying a signal to a different phase winding to produce a reverse torque on said movable member only when said first signal is present whereby said movable member is stopped.



3,868,558
BATTERY CHARGING SYSTEMS

Albert William Winkley, Hadley, and David Gordon Williams, Birmingham, both of England, assignors to The Lucas Electrical Company Limited, Birmingham, England
Filed Oct. 11, 1973, Ser. No. 405,433
Claims priority, application Great Britain, Nov. 10, 1972, 46775/72
Int. Cl. H02j *7/14*
U.S. Cl. 320—12 **3 Claims**

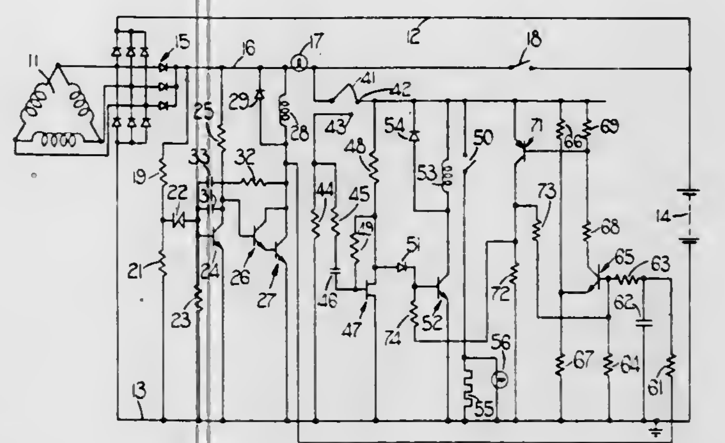


1. A battery charging system comprising in combination a generator charging the battery, said generator having a field winding, a voltage regulator coupled to the battery and controlling the output of the generator by switching the circuit to said field winding at a mark-space ratio determined by the voltage of the battery, said voltage regulator permitting charging of the battery to a first predetermined level, a sensing network serving to detect said mark-space ratio, and means whereby said sensing network serves when said mark-space ratio is infinite to increase the voltage to which the battery is charged for a predetermined period of time.

3,868,559
BATTERY CHARGING SYSTEMS

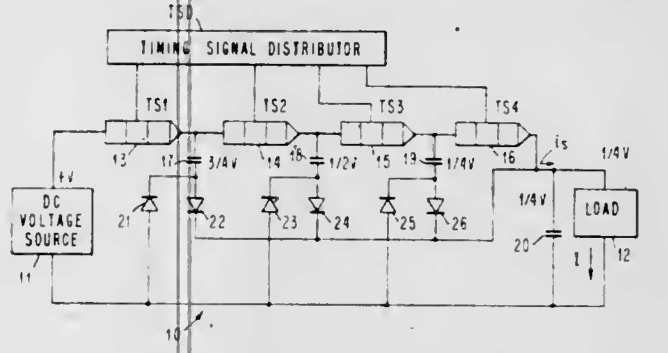
William Frank Hill, Stafford, and Albert William Winkley, Hadley, both of England, assignors to The Lucas Electrical Company, Limited, Birmingham, England
Filed Oct. 25, 1973, Ser. No. 409,448
Claims priority, application Great Britain, Nov. 21, 1972, 53840/72; Dec. 19, 1972, 58676/72
Int. Cl. B62d *63/04*; H02j *7/14*
U.S. Cl. 320—61 **9 Claims**

1. A battery charging system including a wound-field generator charging a battery, on a voltage regulator, said voltage regulator having a switching device in series with the field winding, together with means sensitive to the voltage of the battery determining the mark-space ratio of said switching device, at least one non-essential load connected across the battery, and means sensitive to the mark-space ratio of said switching device for dis-connecting said non-essential load when the output voltage of the generator falls below a predetermined value.



3,868,560
CAPACITIVE VOLTAGE REDUCER

Harry S. Hoffman, Jr., Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 17, 1973, Ser. No. 425,386
Int. Cl. H02m *3/14*
U.S. Cl. 321—2 **16 Claims**

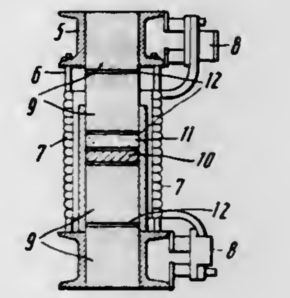


8. In a power supply for supplying a low DC voltage to a load which power is derived from a power source providing a high DC voltage, comprising:

- a plurality of stages connected to said source and load including at least one preceding stage and one succeeding stage; said preceding stage comprising:
  - First capacitor means;
  - and first circuit means including selectively actuated first switch means for connecting said first capacitor means in series with said load, said first circuit means being operative when said first switch means is actuated to supply current to said load at said low DC voltage and to charge said first capacitor means from a state of lesser charge to a state of greater charge;
- said succeeding stage comprising:
  - second capacitor means,
  - second circuit means including selectively actuated second switch means for connecting said second capacitor means in series with said first capacitor means and said load, said second circuit means being operative, when said second switch means is actuated and said first switch means is deactuated, to supply current to said load at said low DC voltage and to charge said second capacitor means with power derived from said first capacitor means, and third circuit means including selectively actuated third switch means for connecting said second capacitor means in series with said load to supply power thereto when said third switch means is actuated.

3,868,561
RESONANT CIRCUIT TRANSFORMER

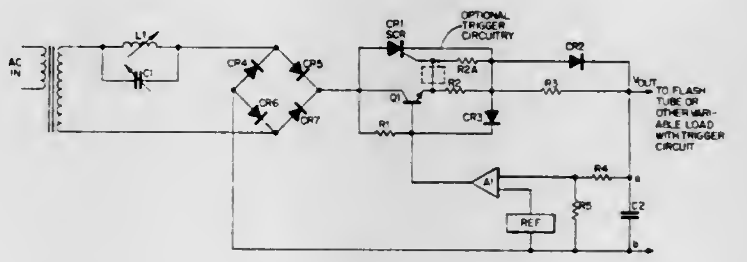
Hans Matthes, Remscheid, Germany, assignor to AEG-Elotherm G.M.B.H. Remscheid, West Germany
Filed Mar. 12, 1974, Ser. No. 450,377
Claims priority, application Germany, Mar. 30, 1973, 2315970
Int. Cl. H02m *1/14*
U.S. Cl. 321—10 **2 Claims**



1. In a parallel resonant circuit transformer of the type having a controllable rectifier element fed by an AC current supply, an inverter output circuit incorporating an inductor and a smoothing choke connecting said rectifier to said inverter circuit and including a magnetic core element having a plurality of legs, the improvement comprising a laminated magnetic core section in each leg and at least one section of ferromagnetic core material in each leg having a saturation induction lower than the saturation induction of said laminated core section.

3,868,562
ENERGY STORAGE METHOD AND APPARATUS

Duane Marshall, Lexington, Mass., assignor to United States Scientific Instruments, Inc., Watertown, Mass.
Filed Aug. 2, 1973, Ser. No. 384,964
Int. Cl. G05f *1/58*
U.S. Cl. 321—13 **13 Claims**


AC IN
L1
C1
CR4
CR5
CR6
CR7
CR1 SCR
OPTIONAL TRIGGER CIRCUITRY
CR2
R2A
R2
Q1
R1
CR3
R3
VOUT
TO FLASH TUBE OR OTHER VARIABLE LOAD WITH TRIGGER CIRCUIT
A1
R4
a
REF
CR5
C2
b

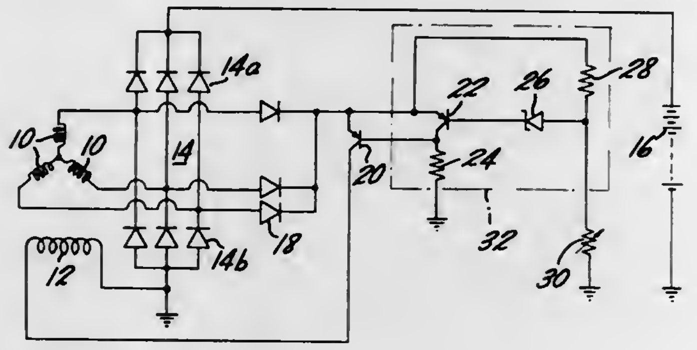
1. A method of reducing power dissipation under wide load variations in energy storage through a series pass linear path from an a.c. voltage source, that comprises, initially passing pulsating rectified a.c. current from said source through the linear path to start the energy storage; automatically responding to the initial relatively high current from said source through said linear path to by-pass said series pass linear path by a non-linear high-current path each half-cycle of the a.c. voltage repetitively until substantially full energy storage is attained; and thereupon and thereafter confining the current from said source to said series pass linear path while regulating the same to maintain the desired energy storage.

3,868,563
VOLTAGE REGULATOR FOR GENERATOR

Tsuyoshi Hirata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1968, Ser. No. 787,680
Claims priority, application Japan, Jan. 11, 1968, 43-1664
Int. Cl. H02p *9/30*
U.S. Cl. 322—28 **4 Claims**

1. A voltage regulator circuit for a generator having an exciting circuit comprising:

a. a first transistor and a second transistor, said first transistor and said second transistor each having a pair of conduction electrodes and a control electrode;
b. a first resistor;
c. means connecting a first conduction electrode of said first transistor, a first conduction electrode of said second transistor, and said first resistor to a common node;
d. a diode connected in series with said first resistor and the control electrode of said second transistor, said diode and said first resistor having a common junction therebetween;
e. a second resistor connected to the common junction of said first resistor and said diode;



f. a third resistor;
g. means connecting the control electrode of said first transistor, the second conduction electrode of said second transistor, and said third resistor to another common node;
h. means applying in use an input voltage from a generator to be regulated to the first mentioned common node;
i. means defining a circuit path from the second conduction electrode of said first transistor to an exciting circuit of the generator; and
j. means defining a common conductive path between said second resistor, said third resistor, and the exciting circuit of the generator.

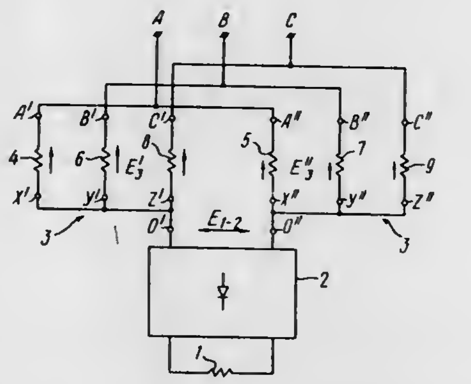
3,868,564
SYNCHRONOUS ELECTRIC MACHINE

Vladimir Semenovich Arutjunian, UL. Marxa, 8 kv. 18, and Vigen Khachaturovich Mirimanian, UL. charentsa, 9, kv. 20, both of Erevan, U.S.S.R.

Continuation-in-part of Ser. No. 260,737, June 8, 1972,. This application Jan. 10, 1974, Ser. No. 432,337

Int. Cl. H02p ***9/14***

U.S. Cl. 322—59 **2 Claims**



1. A synchronous electric machine comprising an excitation winding, a rectifier energizing said excitation winding, and a three-phase armature winding; said three-phase armature winding having at least two circuits in each phase; said two circuits of each phase being wound with different pitches; the like terminals of said circuits of each phase being interconnected to form a terminal of a respective phase of said machine; the free terminals of the circuits of all the phases with one winding pitch being interconnected to form a neutral point; the free ends of the circuits of all the phases with the other winding pitch being interconnected to form another neutral point; said rectifier being connected to said neutral points.

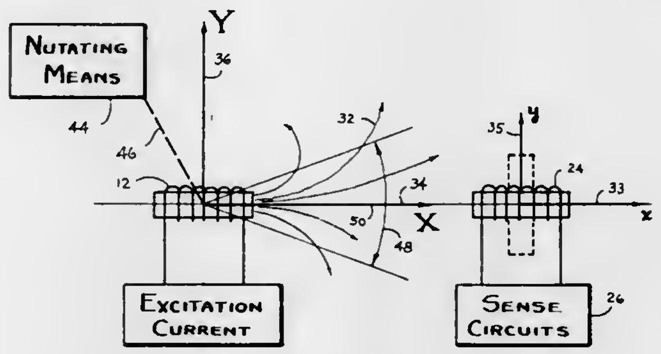
3,868,565
OBJECT TRACKING AND ORIENTATION DETERMINATION MEANS, SYSTEM AND PROCESS

Jack Kuipers, 3085 Baker Park Dr. S.E., Grand Rapids, Mich. 49508

Filed July 30, 1973, Ser. No. 383,688

Int. Cl. G01r ***33/02***

U.S. Cl. 324—34 R **22 Claims**



1. An object locating system which comprises:
a. means for radiating a directable nutating field about a pointing vector direction;
b. means located at the object to be tracked, for sensing the nutating field; and
c. means for determining the direction to the object relatiave to the coordinate frame of the radiating means.

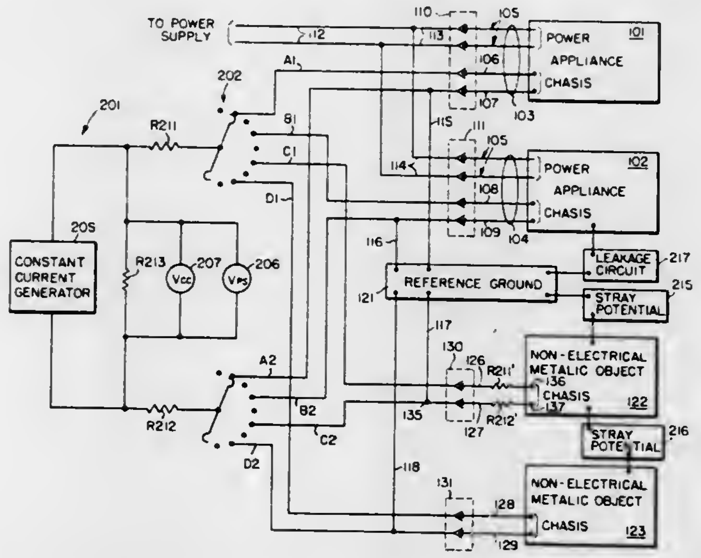
3,868,566
SYSTEM FOR MONITORING CHASSIS POTENTIAL RELATIVE TO A REFERENCE

Charles Henry Parsons, Monroe, and Jay Richard Feldman, Fairfield, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,319

Int. Cl. G01r ***31/02***

U.S. Cl. 324—51 **1 Claim**



1. A circuit for monitoring a chassis relative to a reference potential comprising in combination;
a. a reference potential;
b. a chassis;
c. a first conductor having distributed resistance coupling said reference potential and said chassis for conducting current in response to a potential difference between said chassis and said reference potential;
d. a series circuit comprising a second conductor having a distributed resistance comparable to that of said first conductor and an impedance having a resistance at least a few times greater than that of said distributed resistance and with said series circuit in parallel with said first conductor for conducting current in response to a potential difference between said chassis and said reference potential;
e. first and second frequency sensitive potential detecting means in parallel with said impedance for monitoring the potential across said impedance, said last named potential being a function of the potential between said chassis and said reference potential; and
f. a power source in parallel with said impedance and having a predetermined frequency, which differs from that of any power supply coupled to any apparatus contained within said chassis, for providing current to said first conductor and said series circuit, and wherein said first and second frequency sensitive potential detecting means respond to, and reject, respectively, signals of said predetermined frequency; whereby any potential to which said potential detecting means responds, may be identified as including, or not including, said predetermined frequency.

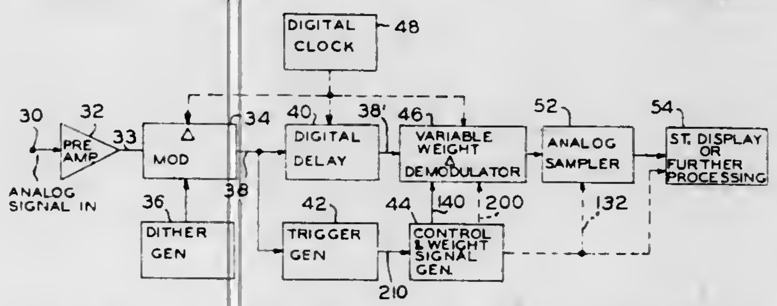
3,868,567
MEASUREMENT OF ST DEPRESSION OF ELECTROCARDIOGRAMS

Philip A. Ekstrom, Seattle, Wash., assignor to Board of Regents, University of Washington, Seattle, Wash.

Filed Nov. 26, 1973, Ser. No. 419,133

Int. Cl. G01r ***23/16***

U.S. Cl. 324—77 A **20 Claims**



1. A method for determining the average ST segment depression of an electrocardiogram (EKG) waveform relative to the PQ segment of the same EKG waveform comprising the steps of:
a. delta modulating said EKG waveform to produce a digital representation thereof;
b. delaying said digital representation;
c. delta demodulating the digital representation to directly yield said average ST depression; said delay being sufficient to allow the R portion of said EKG waveform to initiate operation of said demodulating step.

3,868,568
SPECTRUM ANALYZER

Hitoshi Ashida; Kenichiro Yasaka; Motosuke Tanabe, and Yuuji Yoshino, all of Gyoda City, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

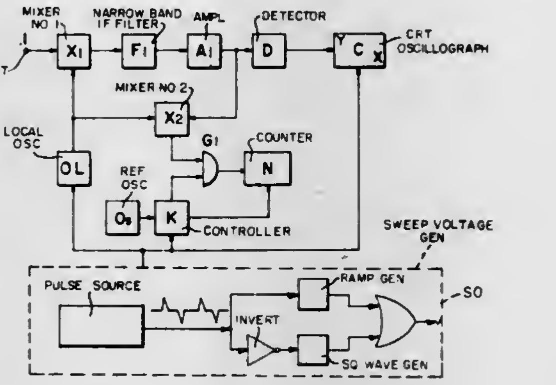
Filed June 18, 1973, Ser. No. 370,674

Claims priority, application Japan, June 20, 1972, 47-615243

Int. Cl. G01r ***23/16***

U.S. Cl. 324—77 CS **4 Claims**

1. A spectrum analyzer comprising, a local oscillator having voltage controlled frequency, first mixer means coupled to receive a spectrum of input frequencies and to mix them with said frequency from the local oscillator and produce intermediate frequencies, narrow band filter means coupled to receive said intermediate frequencies and to select substantially one frequency thereof, second mixer means connected to mix said local oscillator frequency and the output of said filter means and deliver an output frequency corresponding with a selected input frequency, counter means, timed-interval gate means operative when actuated to admit cycles of said output frequency of the second mixer means into said counter means, waveform generator means operative to generate series of waveforms including interspersed ramp waveforms and square wave forms, the output of said series of waveforms controlling said voltage controlled oscillator to sweep or fix the frequency thereof, oscillograph means having a first axis input connected to receive for display components of intermediate frequencies selected by the filter means and having a second axis input connected to receive said waveforms to sweep the oscillograph means, and said square waveform being coupled to actuate said gate means.



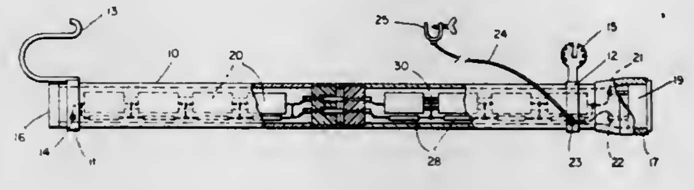
3,868,569
APPARATUS AND METHOD FOR DISTINGUISHING BETWEEN ENERGIZED AND INDUCED VOLTAGES ON HIGH VOLTAGE POWER LINES

Carl H. Faust, Berks & Morris Rd, R.D. 2, Lansdale, Pa. 19446

Filed May 8, 1973, Ser. No. 358,295

Int. Cl. G01r ***1/30, 1/06***

U.S. Cl. 324—126 **1 Claim**



1. Apparatus for distinguishing between energized and induced high voltage lines, comprising:
a. capacitance means for providing a net effective capacitance, said capacitance means comprising a plurality of capacitors in series, each such capacitor having a resistor connected in parallel therewith;
b. current reading means, in series combination with said capacitor means, for indicating current flow through said capacitance means;
c. first electrical connecting means, for connecting a first terminal of said series combination to a high voltage line;
d. second electrical connecting means, for connecting a second terminal of said series combination to a system ground reference;
e. said current reading means having a range adapted such that when said apparatus is connected between a high voltage line and system ground, there is provided a reliable indication whether or not said line is energized, said current reading means being a direct reading meter; and
f. a housing for containing said apparatus, said housing having a cap at the end thereof adjacent to said first connecting means, said cap being adapted to be easily expelled from said housing upon generation of pressure within said housing.

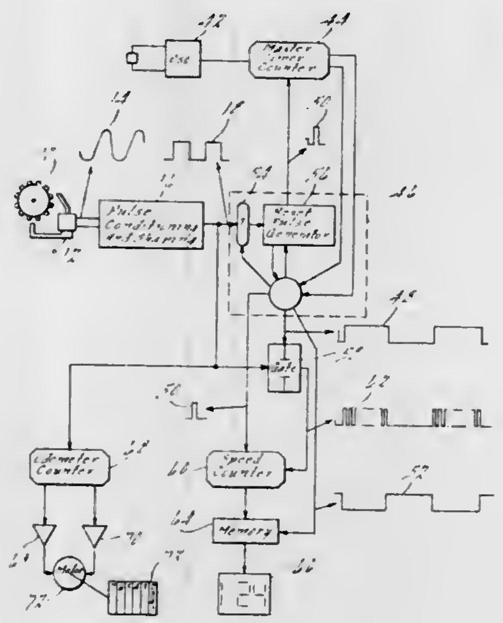
3,868,570
ELECTRONIC DIGITAL SPEEDOMETER

Joseph J. Kopera, Jr., Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 28, 1973, Ser. No. 401,745

Int. Cl. G01p *3/48*

U.S. Cl. 324—166 **4 Claims**



1. In a motor vehicle, an electronic digital speedometer comprising:

means for receiving a series of pulses representing the movement of the vehicle,

pulse shaping means electrically connected to said receiving means for shaping each of said pulses into a substantially rectangular waveshape,

timing means for generating a plurality of pulses at predetermined intervals independently of said pulses from said pulse shaping means,

control means responsive to the pulses from said timing means and the pulses from said pulse shaping means for generating a gate control signal, a counter control signal and a memory strobe signal upon the simultaneous occurrence of both of said pulses,

a counter responsive to said counter control signal for clearing said counter,

gate means responsive to said gate control signal for gating said pulses from said pulse shaping means to said counter,

memory means responsive to said counter and said memory strobe signal for retaining the count in said counter during the interval between consecutive gate control signals,

digital display means responsive to the count in said memory means for displaying the count in said memory, said count representing the speed of said motor vehicle, and

a strobe interval computer responsive to the count in said memory means and the updated count in said counter for determining the interval between succeesive displays of said display means according to the difference between each of said memory count and said updated count and generating said memory strobe signal in response to said determination.

3,868,571
CB MICROPHONE-AM/FM RADIO CONTROL WITH AM-FM RADIO CUT OFF SWITCH AND MICROPHONE HOLDER

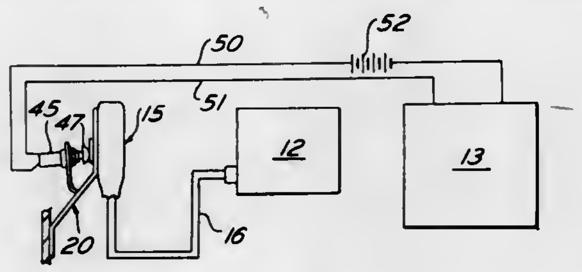
Lawrence J. Greiner, 209 West Broad St., Burlington, N.J.

Filed Nov. 12, 1973, Ser. No. 414,991

Int. Cl. H04b *1/38;* **H04m** *11/00;* **H01h** *3/16*

U.S. Cl. 325—15 **6 Claims**

1. In combination, a radio, a CB microphone including a body and a headed shank projecting from the body, and a holder for said microphone, said holder comprising a base, plate means upstanding from said base and of a thickness approximating the shank dimension between said body and head, said plate means having a generally upwardly opening slot adapted to slidably and gravitationally receive said shank with the body on one side of said plate means and the shank head on the other side of said plate means, and a resiliently biased normally open switch carried by said base and connected to said radio, and a button located in said switch for sliding engagement by said shank head when said shank is slid into said slot and configured to be shiftable by said head engagement for closing said switch, whereby said switch is open when the microphone is removed from said holder for disabling said radio.



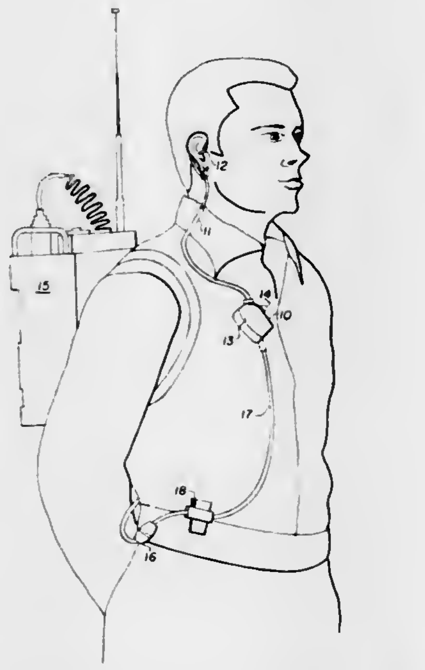
3,868,572
AUDIO TRANSMISSION AND RECEPTION ASSEMBLY

Rubin P. Kaufman, San Diego; Jack B. Rosenfeld, San Francisco, and Elaine Schiller, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1973, Ser. No. 342,104

Int. Cl. H04b *1/38*

U.S. Cl. 325—16 **4 Claims**



1. An audio transmission and reception assembly comprising:

a cable including multiple electrical conductors;

a breakaway connector at one end of said cable for connecting said multiple electrical conductors to a transmitting and receiving radio;

a waterproof enclosure at the other end of said cable for receiving said multiple electrical conductors;

an electro-audio transducer supported within said waterproof enclosure for converting signals received from said electrical conductors into audio messages;

a hollow tubular conduit connected to conduct said audio messages to the entrance of the ear canal of the user;

said conduit having a capillary portion connected adjacent said electro-audio transducer;

audio responsive means contained within said waterproof enclosure and sealed from the outside environment by a protective resilient membrane for converting audio energy received through said resilient membrane into commensurate electrical signals; and

switch means supported on said waterproof enclosure for selectively connecting the electrical signals developed by said audio responsive means to said transmitting and receiving radio through said multiple electrical connectors.

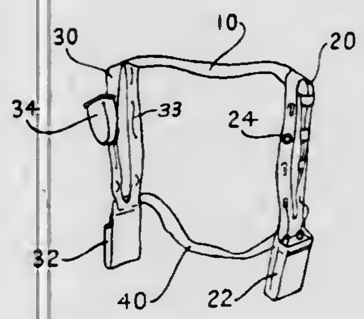
3,868,573
SHOULDER HOLSTER COMMUNICATION DEVICE

Jack N. Holcomb, and Hans D. Sylten, both of Ft. Lauderdale, Fla., assignors to Jack Holcomb, Ft. Lauderdale, Fla.

Filed Apr. 23, 1973, Ser. No. 353,556

Int. Cl. H04b *1/38*

U.S. Cl. 325—16 **2 Claims**



1. A personal communication device for providing concealed radio communications between the user and another party, comprising:

a side pouch arrangement including a downwardly depending looped strap resting upon one of the user's shoulders and through which the user's arm passes, and a pouch at the lower end of the looped strap which contains a radio transmitter, the looped strap being of such a length that the transmitter pouch will be positioned at the user's side approximately at elbow level,

a second side pouch arrangement including a downwardly depending looped strap resting upon the user's other shoulder and through which the user's other arm passes, and a pouch at the lower end of the looped strap which contains a radio receiver, the looped strap being of such a length that the receiver pouch will be positioned at the user's side approximately at elbow level,

a strap extending horizontally across the upper back of the user and connecting at each end the top portion of each of the looped straps to hold the looped straps on the user's shoulders,

a second strap extending horizontally across the lower back of the user and connecting at each end the looped straps adjacent the pouches to assist in holding the pouches in position,

a speaker on the front portion of one of the looped straps positioned approximately adjacent the shoulder and electrically connected to the receiver,

a microphone on the front portion of the other looped strap positioned approximately adjacent the shoulder and electrically connected to the transmitter,

transmitting and receiving aerials connected to their respective units and supported along their length by said looped straps, and

electrical means interconnecting the transmitter and receiver including a switch adjacent one of the pouches at normal elbow level which is activated by pressure of the user's arm for controlling operation of the radio units so that one of said transmitting and receiving units is operative while the other is inoperative.

3,868,574
ARRANGEMENT FOR THE TRANSMISSION OF INFORMATION SIGNALS BY PULSE CODE MODULATION

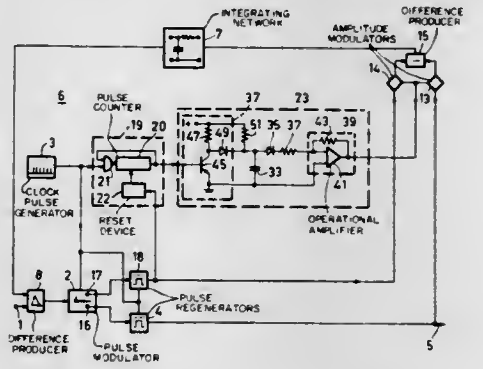
Gibert Marie Marcel Ferrieu, Bievres, France, and Johannes Wilhelmus Glasbergen, Bussum, Netherlands, assignors to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Aug. 29, 1973, Ser. No. 392,792

Claims priority, application France, Sept. 4, 1972, 72.31270

Int. Cl. H04b *1/00*

U.S. Cl. 325—38 B **19 Claims**



1. A transmitter for the transmission of information signals by pulse code modulation, comprising a pulse modulator for providing output pulses, the output pulses from said pulse modulator comprising the output of said transmitter, a clock pulse generator connected to an input of the modulator, a pulse series analyzer means connected to the output of the clock pulse generator and to the output of the pulse modulator for analyzing successively occurring pulse series from the modulator within fixed time intervals of at least three successive pulses from the clock pulse generator and for supplying a pulsatory output signal in response to a modulator output pulse series exceeding a predetermined modulation index within the fixed time intervals, a first non-linear integrating network connected to the output of the pulse series analyzer for supplying a continuously variable dynamic control signal, the first non-linear integrating network comprising a storage element and a non-linear resistance element connected to the storage element, the first non-linear integrating network having a time constant that decreases with increasing signal level, a switched supply source connected to the output of the first non-linear integrating network, means connecting the pulse modulator output to the switched supply source for switching the output of the first non-linear integrating network in the rhythm of the pulsatory output from the pulse series analyzer, the dynamic control signal being derived from the non-linear resistance element of the first non-linear integrating network, a second integrating network connected to the output of the switched supply source, a difference producer having a first input connected to the output of the second integrating network and having a second input for receiving the information signals to be transmitted, the output of the difference producer being connected to the pulse modulator.

3,868,575
LIMITED-RANGE RADIOCOMMUNICATION SYSTEM WITH DIRECTION-INDICATING SIGNALING MEANS

Jean Raymond Narbaits-Jaureguy, and Henri Billottet, both of Paris, France, assignors to Thompson-CSF, Paris, France

Filed May 24, 1973, Ser. No. 363,730

Claims priority, application France, May 26, 1972, 72.18881

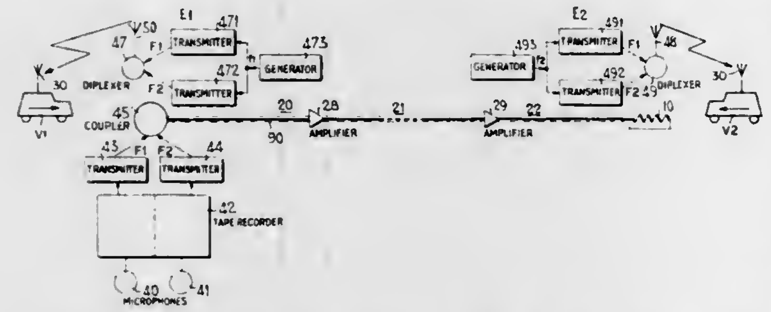
Int. Cl. H04b *1/00*

U.S. Cl. 325—51 **15 Claims**

1. In a limited-range radiocommunication system for the sending of messages from a fixed station provided with high-frequency information-transmitting means to a plurality of mobile stations provided with receiving means for high-

frequency energy, said mobile stations traveling in either of two directions along a predetermined route with a first and a second point of entry at opposite ends of said route, the improvement wherein:

- said fixed station is provided with a radiating transmission line connected to said information-transmitting means, said line extending along said route;
- said information-transmitting means comprises a source of a first and a second carrier frequency, respectively allotted to travel in a first direction from said first to said second point and to travel in a second direction from said second to said first point, individually modulated with information relevant to the corresponding direction of travel;
- further comprising—
- a first ancillary short-range transmission station proximal to said first point for radiating both said first and said second carrier frequency, modulated with a first signal frequency, directly to nearby mobile stations entering upon said route in said first direction; and



- a second ancillary short-range transmission station proximal to said second point for radiating both said first and said second carrier frequency, modulated with a second signal frequency, directly to nearby mobile stations entering upon said route in said second direction;
- each of said mobile stations including receiving means for picking up said carrier frequencies from said transmission line and from either of said ancillary transmission stations, detector means for said first and second signal frequencies connected to said receiving means, and message-reproducing means connected to said detector means, said receiving means being selectively tunable to either of said carrier frequencies in accordance with the output of said detector means.

3,868,576
DEVICE FOR AUTOMATIC EQUALIZATION

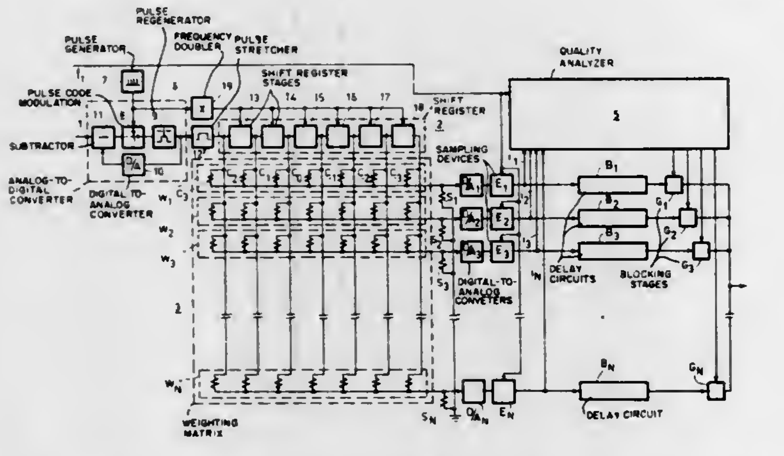
Felix Bagdasarjanz, Winterthur, and Peter Eugen Leuthold, Erlenbach, both of Switzerland

Filed Dec. 21, 1972, Ser. No. 317,167

Claims priority, application Netherlands, Dec. 30, 1971, 7118088

Int. Cl. H04b *3/04*

U.S. Cl. 325—65 **6 Claims**



1. A device for automatic equalization of the transmission characteristic formed by the amplitude-versus-frequency and the phase-versus-frequency characteristic of a transmission band associated with a transmission path for the transmission of synchronous information signals, characterized in that said device comprises analog-to-digital conversion means for converting received analog signals to digital form, a plurality of parallel equalizing networks comprising a shift register to whose input said digital signals are applied and a matrix network connected to taps of the shift register and comprising weighting elements which have values defining for each equalizing network a different transmission characteristic thereby producing a plurality of different equalized signals, said device further comprising circuit means connected to the outputs of each equalizing network, a plurality of blocking stages each associated with one of said plurality of equalizing networks and coupled to said equalizing network through said circuit means, signal quality analyzing means connected to said circuit means for evaluating the quality of each of said plurality of equalized signals, said analyzer being further connected to said blocking stages and supplying a control signal to unblock one of said stages so that an equalized signal of satisfactory quality appears at the output thereof.

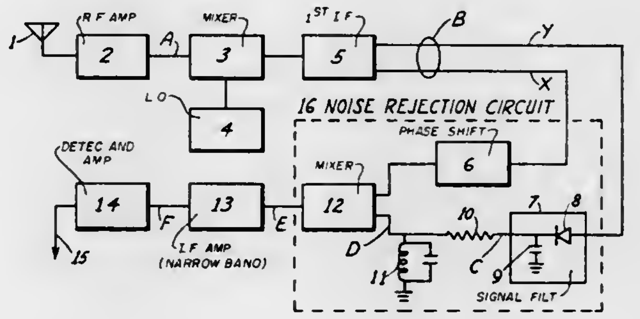
3,868,577
RADIO RECEIVER WITH IMPULSE NOISE REDUCING CIRCUIT

Arthur D. Watt, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 21, 1955, Ser. No. 542,118

Int. Cl. H04b *1/10*

U.S. Cl. 325—476 **2 Claims**



1. In a receiver, means for receiving electromagnetic energy including an intelligence signal and a noise component, means for applying said energy to a first and second terminal in such a manner that the energy on said first terminal is in phase opposition to the energy on said second terminal, a mixer, a variable phase shifter connected between said mixer and first terminal, a ringing circuit, a demodulator connected between said ringing circuit and said second terminal and means for connecting said ringing circuit to said mixer.

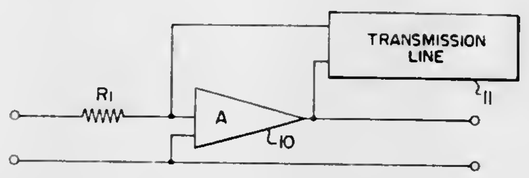
3,868,578
METHOD AND APPARATUS FOR ELECTROANALYSIS

Keith B. Oldham, Peterborough, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Oct. 2, 1972, Ser. No. 293,780

Int. Cl. G06g *7/18*

U.S. Cl. 328—127 **10 Claims**



1. An electrical circuit for providing an output signal having a mathematical operation relationship to an input signal, said operation being semi-integration, comprising a resistance element and an operational amplifier in series, the input being applied across the said resistance element and the operational amplifier input, the output being taken across the output of the operational amplifier, the said operational amplifier having a feedback path from output to input connected to the input of a long transmission line section.

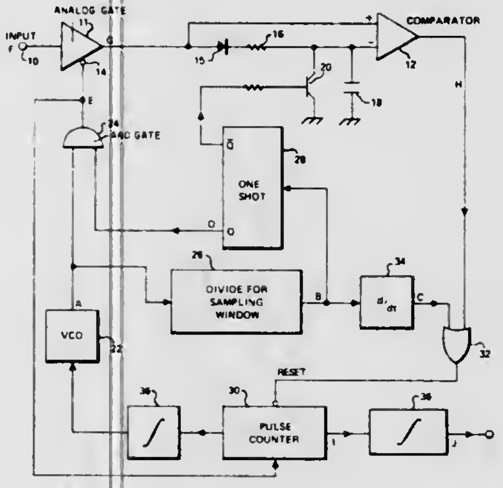
3,868,579
REGENERATIVE, SYNCHRONOUS, PULSE PHASE DEMODULATOR

Douglas M. Dilley, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1973, Ser. No. 423,026

Int. Cl. H03k *9/04*

U.S. Cl. 329—107 **3 Claims**



1. A pulse phase demodulator for demodulating pulse phase modulated signals transmitted with a pulse period constrained to an integral number of time units and without reference pulses,

a. an input terminal for receiving said pulse phase modulated signals,

b. first pulse generating means for generating a plurality of pulses,

c. second pulse generating means coupled to the output of said first pulse generating means and being responsive to a first number of predetermined pulses from said first pulse generating means for generating an output gate pulse of a predetermined width,

d. gate circuit means coupled to said first pulse generating means and to said second pulse generating means for gating a predetermined number of pulses from said first pulse generating means determined by the width of said gate pulse,

e. gating means coupled to said input terminal and to said gate circuit means for sampling said input signal at the occurrence of each of said gated pulses,

f. signal selecting circuit means coupled to said gating means for selecting the largest sampled signal occurring during said gating interval,

g. time measuring circuit means coupled to said signal selecting circuit means and to said gate circuit means for measuring the time interval between the occurrence of said largest sampled signal and the end of said sampling interval and providing an output voltage having an amplitude proportional to said time interval,

h. feedback circuit means coupled between the output of said time measuring circuit means and said first pulse generating means to provide a correction signal to adjust the sampling frequency to the mean input pulse repetition frequency.

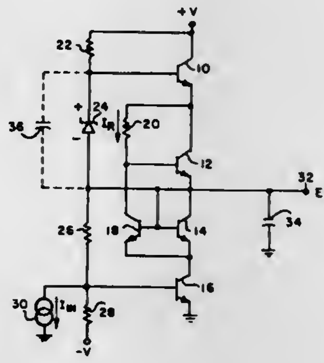
3,868,580
BOOTSTRAPPED AMPLIFIER

Carl R. Battjes, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 12, 1973, Ser. No. 332,052

Int. Cl. H03f *3/42, 1/00*

U.S. Cl. 330—18 **11 Claims**



1. An amplifier comprising first amplifying means serially disposed between a first power supply level and a second power supply level and including an output terminal therebetween to which a capacitive load is connected, both of said amplifying means comprising semiconductor means of a single conductivity type,

- wherein said first amplifying means includes at least a grounded emitter stage and negative feedback means coupled from output to input, said first amplifying means being coupled to receive input signals of opposite polarity and generate an output voltage signal in response thereto, and said second amplifying means includes at least a common collector stage being coupled by bootstrapping means connected between said output terminal and the base of said common collector stage for receiving a voltage signal which is displaced a substantially constant amount from said output voltage signal from said first amplifying means to provide drive thereto so that both of said first and second amplifying means provide a substantially continuous output waveform while being alternately responsive to said input signals, one of said amplifying means conducting current to said capacitive load in response to an input signal of one polarity and the other of said amplifying means conducting current from said capacitive load in response to an input signal of opposite polarity.

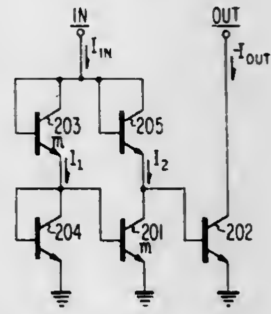
3,868,581
CURRENT AMPLIFIER

Adel Adbel Aziz Ahmed, Annandale, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,175

Int. Cl. H03f *3/42*

U.S. Cl. 330—19 **4 Claims**



1. A current amplifier comprising:

an input, a common and an output terminal;

first and second transistors operated at substantially the same absolute temperature T, each having an emitter electrode connected to said common terminal and each having a base and a collector electrode, each having a base-emitter junction between its base and emitter electrodes, said first transistor collector electrode being direct current conductively coupled to said input terminal and directly connected to said second transistor base electrode;

means for coupling said second transistor collector electrode to said output terminal, and

a direct-coupled collector-to-base degenerative feedback connection of said first transistor consisting of means responsive to the absolute temperature T to provide between a first and a second of its terminals a potential proportional to T, said first and said second terminals being respectively connected to said first transistor collector electrode and to said first transistor base electrode.

3,868,582
AF AMPLIFIER HAVING CONSTANT CURRENT CONSUMPTION

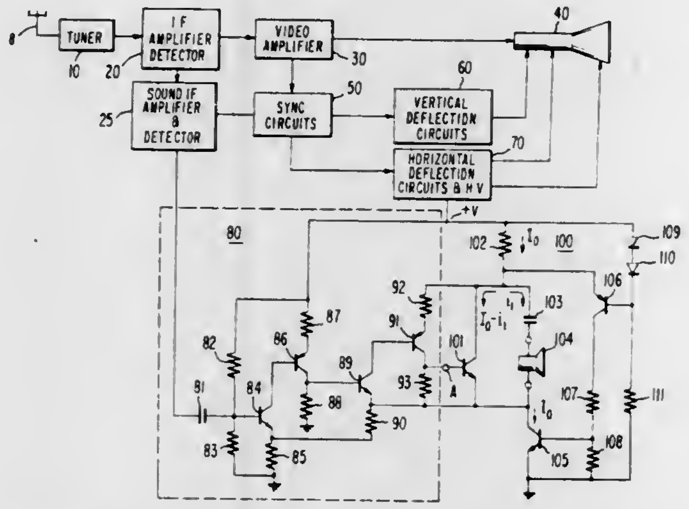
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,782

Claims priority, application Great Britain, Nov. 13, 1972, 52362/72

Int. Cl. H03f *3/04*

U.S. Cl. 330—22 **6 Claims**



1. An amplifier circuit providing substantially constant current consumption comprising:

a source of direct operating voltage having first and second terminals;

a source of signals to be amplified;

at least first and second transistors having collector-emitter paths series coupled between said first and second terminals of said source of voltage;

utilization means coupled in parallel across said first transistor;

means biasing said second transistor for providing a substantially constant current flow therein,

said biasing means including a direct current impedance series connected between said first terminal of said source of voltage and said first transistor; a third transistor having a main conduction path series coupled between the junction of said impedance and said first transistor and at least one resistor connected to said second terminal of said voltage source, said second transistor having a control electrode connected to said main conductor path of said third transistor, said third transistor having a control electrode coupled to a point of reference potential for enabling said third transistor to alter the bias of said second transistor for maintaining said current substantially constant; and

means for coupling said source of signals to said first transistor for causing current variations in said first transistor corresponding to said signals, said first transistor current variations producing substantially equal and opposite current variations corresponding to said signals in said utilization means.

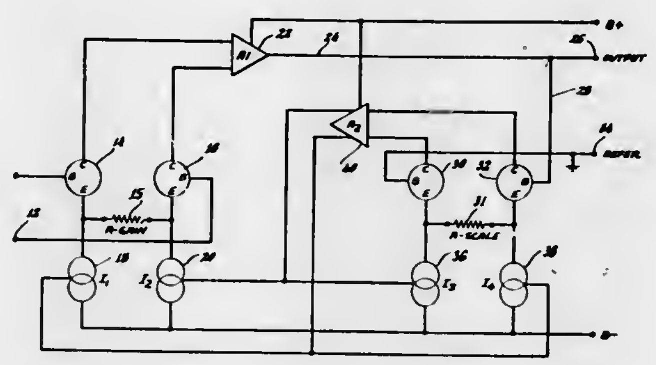
3,868,583
HIGH-PERFORMANCE SOLID-STATE AMPLIFIER SYSTEM

Heinrich F. Krabbe, San Jose, Calif., assignor to Analog Devices, Inc., Cambridge, Mass.

Continuation of Ser. No. 61,653, Aug. 6, 1970, abandoned. This application Sept. 29, 1972, Ser. No. 293,438

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **3 Claims**



1. A high-performance solid-state integrated-circuit amplifier comprising:

an input section including a first differential amplifier having first and second differentially-operable transistor amplifiers;

amplifier means responsive to the differential output of said input section to produce an output signal;

first and second differentially-operable current sources connected in series with said first and second transistor amplifiers, respectively, to supply the currents flowing therethrough, respectively;

control terminals for said first and second current sources respectively;

a negative feedback circuit responsive to the output of said amplifier means and producing a feedback signal for said control terminals so as to tend to maintain the current through said first and second transistor amplifiers constant;

said feedback circuit comprising a second differential amplifier including third and fourth differentially-operable transistor amplifiers and having its input coupled to the output of said amplifier means; and

third and fourth differentially-operable current sources having third and fourth control terminals driven by said feedback signal together with said first and second control terminals respectively, said third and fourth current sources being connected in series with said third and fourth transistor amplifiers respectively to tend to maintain constant the currents therethrough.

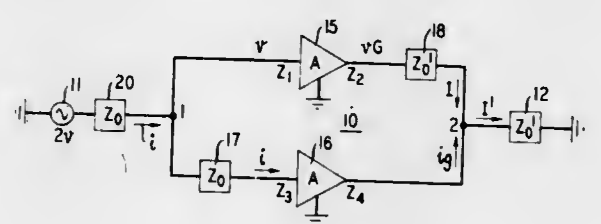
3,868,584
AMPLIFIER WITH INPUT AND OUTPUT MATCH

Henry Richard Beurrier, Chester Township, Morris County, N.J.

Filed Feb. 8, 1971, Ser. No. 113,200

Int. Cl. H03f *3/68*

U.S. Cl. 330—124 R **13 Claims**



1. An amplifier for coupling between a signal source and an output load comprising:

first and second parallel-connected active stages;

one of said stages having an input impedance that is greater than the impedance of said signal source, while the other of said stages has an input impedance that is less than the impedance of said signal source;

an input matching impedance connected in series with the input end of said lower input impedance stage;

one of said stages having an output impedance that is greater than the impedance of said load, while the other of said stages has an output impedance that is less than the impedance of said load;

and an output matching impedance in series with the output end of said lower output impedance stage.

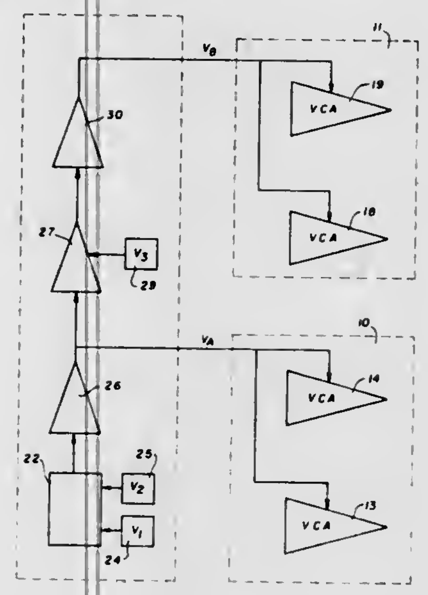
3,868,585
AUTOMATIC CROSSFADING DEVICE

Charles B. Richmond, 1234 W. 6th Ave., Vancouver 9, B.C., Canada

Filed Sept. 10, 1973, Ser. No. 395,728

Int. Cl. H03f *3/68*

U.S. Cl. 330—124 R **18 Claims**



1. Apparatus for smooth exponential cross-fading between first and second voltage controlled amplifying means comprising an exponential ramp voltage generator, said ramp voltage generator having an output and a two-position switch which, when actuated from a first position to a second position, causes the voltage at said output to ramp exponentially in one direction and, when actuated from said second position to said first position, causes the voltage at said output to ramp exponentially in the opposite direction, the output of said ramp voltage generator being fed to a control terminal of said first voltage controlled amplifying means and to an input of inverting voltage amplifying means, whereby the voltage at the output of said inverting voltage amplifying means varies inversely and equally in accordance with variations at its input, the voltage at the output of said inverting voltage amplifying means being applied to a control terminal of said second voltage controlled amplifying means.

3,868,586
DIFFERENTIAL AMPLIFIER HAVING A SHORT RESPONSE TIME

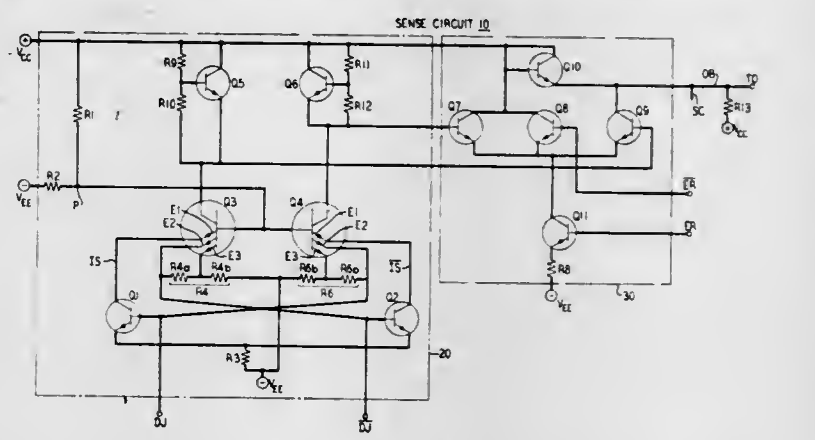
Harold Wilfred Korb, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1973, Ser. No. 418,669

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **10 Claims**

1. A differential amplifier of the type including means responsive to an input signal for generating an intermediate differential signal, characterized by output means operative in response to said input signal for generating an auxiliary signal component in phase with a selected component of said intermediate signal and for combining said auxiliary signal component with said selected intermediate signal component, said output means comprising a transistor having first and second emitters, means for controlling the current in said first emitter in accordance with said selected intermediate signal component and means operative in response to said input signal for varying the current in said second emitter in phase with the current in said first emitter to generate said auxiliary signal component.



3,868,587
CONSTANT PHASE DISTRIBUTED IMPEDANCE

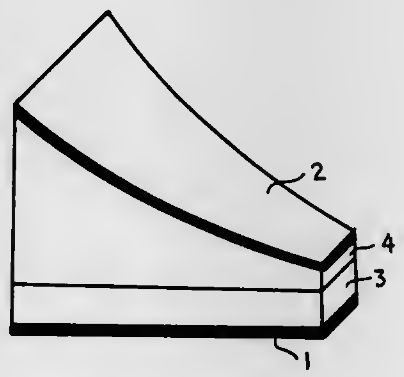
Amos Nathan, Haifa, Israel, and Reed K. Even, Middletown, N.J.

Filed Feb. 22, 1972, Ser. No. 227,715

Claims priority, application Great Britain, Oct. 19, 1971, 48502/71

Int. Cl. H03f *3/14*

U.S. Cl. 330—38 M **7 Claims**



1. An electrical device having an input impedance of substantially constant phase over a finite range of frequencies comprising:

impedance means having a first and a second surface, the maximal distance therebetween being small compared with the later dimensions thereof;

first and second electrically conductive means substantially covering and contiguous to said first and second surfaces, respectively;

one of said lateral dimensions defining length;

where (the law of) said impedance means is constituted so that its impedance per unit length (of said impedance means) is substantially given by

$z(x) = [R_o e^{-b\quad (x)} + 1/j\omega C_o e^{a\quad (x)}]/[d/dx\ \eta(x)]$,

e is the basis of natural logarithms, x is a coordinate measuring said length, C_o and R_o are predetermined non-vanishing constant capacitance and resistance, respectively, a and b are predetermined constants such that their product does not vanish, $\eta(x)$ is a predetermined non-constant function of x, $d/dx\ \eta(x)$ is the derivative of $\eta(x)$ with respect to x, j is the square root of -1, and ω is the angular frequency;

said input impedance being the impedance between said plural conductive means.

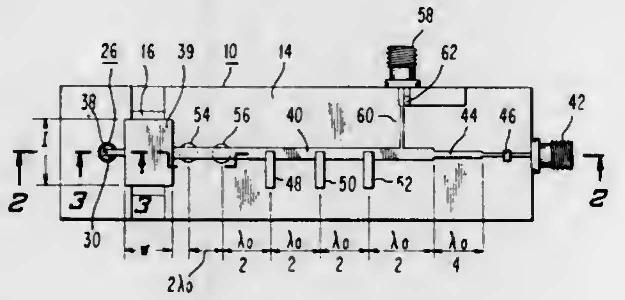
3,868,588
MICROWAVE OSCILLATOR OR AMPLIFIER USING PARAMETRIC ENHANCED TRAPATT CIRCUITS

Alfred Schwartzmann, Moorestown; Vitas Anthony Mikenas, Medford Lakes, both of N.J.; John Jerome Thomas, Levittown, Pa., and Kern Konan Chang, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,455

Int. Cl. H03b *7/14*; H03f *3/10*, *7/00*

U.S. Cl. 331—77 12 Claims



1. A microwave apparatus comprising:

a microwave transmission line;

a semiconductor element, having a known internal capacitance, capable of generating a microwave signal at a plurality of frequencies which are harmonically related, said semiconductor element having first and second electrodes;

an adjustable coupling means for coupling said semiconductor element to said transmission line so that said semiconductor element is self resonant at one of said harmonically related frequencies;

a frequency conversion means coupled to said transmission line, said frequency conversion means utilizing the said self resonance of said semiconductor element for converting energy contained in said harmonically related component frequencies of said microwave signal into energy at a single desired output frequency; and

an output means for transmitting said output frequency to a terminating load impedance, said output means having an electrical frequency resonator providing a parallel circuit coupled across said first and second electrodes, said parallel circuit being resonant at said desired output frequency.

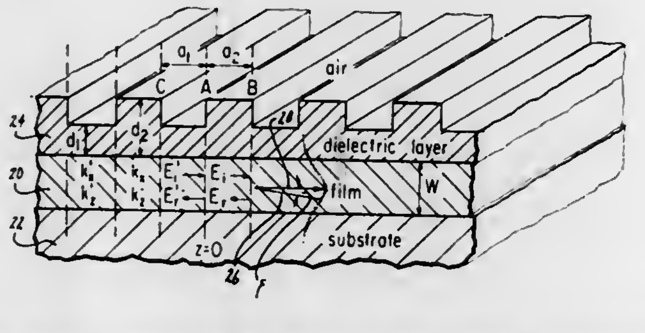
3,868,589
THIN FILM DEVICES AND LASERS

Shyh Wang, El Cerrito, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 296,178, Oct. 10, 1972, abandoned. This application Feb. 12, 1973, Ser. No. 331,675

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 30 Claims



1. A laser comprising an optical waveguide for propagating TE and TM waves of light at a predetermined frequency and guided wavelength therein, said waveguide having a predetermined optical index of refraction and being made of a material transparent to light at said predetermined frequency, means defining at least one boundary layer adjacent to said waveguide such that the propagating TE and TM waves for light at said predetermined frequency extend both within said waveguide and into said boundary layer, said boundary layer having one or more indices of refraction at least a portion of which is less than the index or refraction of said waveguide, one of said waveguide or boundary layer being a laser active material which exhibits gain with respcct to light at said predetermined frequency, means associated with said boundary layer or said boundary layer and said waveguide for forming a periodic variation of the index of refraction thereof throughout a region optically coupled to said propagating wave, said periodic variation being arranged for causing a spatial variation of said index of refraction between two values which repeat in a regular pattern and have a periodicity of *-a-* selected from one of the half-integral multiples of the guided wavelength of said light in said waveguide so that said spatial variation produces periodic reflections which progressively interact constructively to modify said propagating wave.

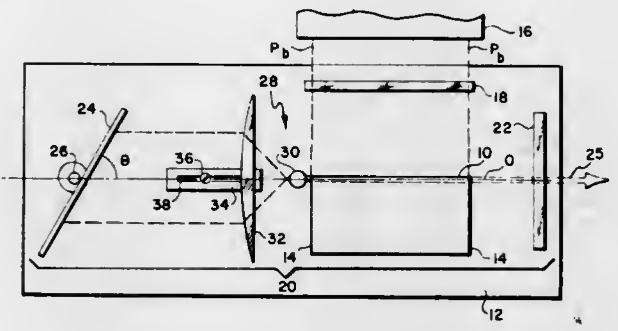
3,868,590
NARROW BANDWIDTH DYE LASER

Irving Itzkan, Boston, and Robert F. Caristi, Stoneham, both of Mass., assignors to AVCO Everett Research Laboratory, Inc., Everett, Mass.

Filed May 2, 1973, Ser. No. 356,304

Int. Cl. H01s *3/08*

U.S. Cl. 331—94.5 C 10 Claims



1. In an apparatus for producing stimulated radiation in lasable dye materials, said apparatus including a laser pumping means emitting a beam of pumping radiation generally rectangular in cross section, a cell containing lasable dye material, means for focusing said pumping radiation beam substantially to a line within said cell, and a selective wavelength reflector and a partially reflective means forming an optical cavity with a reflecting axis substantially coincident with the line of focus of said pumping radiation beam for producing a laser beam, the improvement comprising:

a lens system positioned between said cell and said selective wavelength reflector and comprising a first cylindrical lens adjacent said cell for receiving and substantially diverging said laser beam and a second spherical lens positioned between said cylindrical lens and said selective wavelength reflector for receiving and collimating said diverged laser beam to illuminate an increased area of said selective wavelength reflector whereby the bandwidth of the laser beam produced by said apparatus is substantially narrowed.

3,868,591
LASER HEAD FOR SIMULTANEOUS OPTICAL PUMPING OF SEVERAL DYE LASERS

Peter B. Mumola, and Belton T. McAlexander, both of Newport News, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

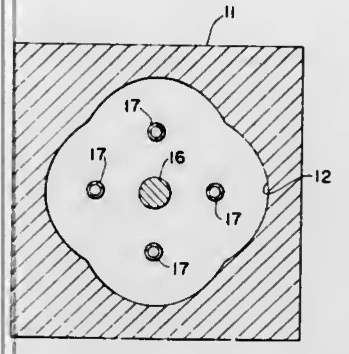
Filed June 5, 1973, Ser. No. 367,293

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 P 7 Claims

1. A laser device for providing simultaneous optical pumping of a plurality of lasers in a compact, efficient and reliable manner comprising:

an elongated multi-elliptical cavity having a common focal axis and a plurality of other focal axes spaced around said common focal axis;



a single flashlamp pumping light source located inside said multi-elliptical cavity along said common focal axis; and a different laser located along each of said plurality of other focal axes inside said multi-elliptical cavity whereby the plurality of different lasers are pumped by said single light source.

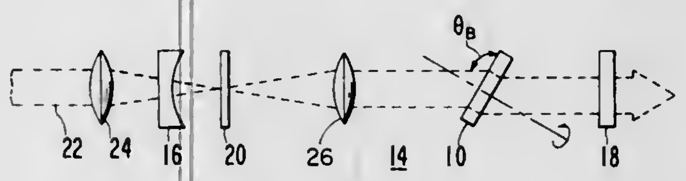
3,868,592
IMPROVED TUNING APPARATUS FOR A DYE LASER

J. Michael Yarborough, Santa Clara, and James L. Hobart, Los Altos Hills, both of Calif., assignors to Coherent Radiation, Palo Alto, Calif.

Filed May 30, 1973, Ser. No. 365,317

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 C 9 Claims



1. A method of tuning a dye laser comprising:

placing a birefringent plate within the optical cavity of the dye laser to intersect light reflected within the optical cavity; and

rotating said plate to obtain the desired output wavelength, while maintaining said birefringent plate at the same angle with respect to the reflected light.

3,868,593
HOLLOW-CATHODE LASER TUBE

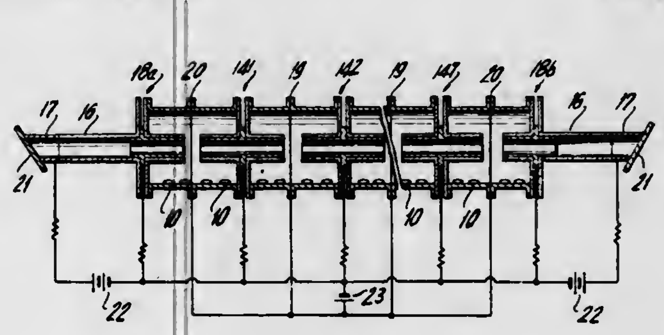
Shuichi Fukuda, and Masao Miya, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Oct. 12, 1973, Ser. No. 406,095

Claims priority, application Japan, Oct. 17, 1972, 47-104152; Dec. 5, 1972, 47-122234

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 D 4 Claims



1. A hollow-cathode metal vapor laser tube comprising a hollow cathode including a plurality of tubular cathode members aligned along a common central axis and axially spaced from one another by a predetermined interval, an anode including a plurality of tubular anode members interposed between adjacent ones of said cathode members and surrounding said cathode members with their axes aligned with said common axis, and means for electrically insulating each of said cathode member—anode member combinations from the neighboring cathode member—anode member combinations, thereby to permit the separate application of excitation power thereto.

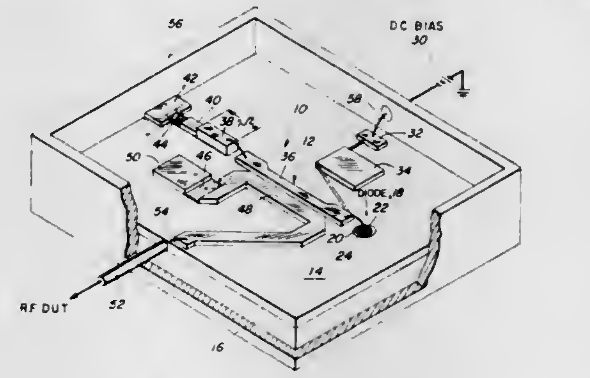
3,868,594
STRIPLINE SOLID STATE MICROWAVE OSCILLATOR WITH HALF WAVELENGTH CAPACITIVE RESONATOR

Gerald M. Cornwell, and William M. Streeton, Jr., both of Marlboro, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 7, 1974, Ser. No. 431,467

Int. Cl. H03b *7/14*

U.S. Cl. 331—99 7 Claims



1. A microwave integrated oscillator circuit comprising:

an insulating substrate;

a conductive ground plane contacting one surface of said substrate;

a microwave transmission line formed by a conducting strip bonded to the opposite surface of said substrate;

semiconductor means for generating microwave frequency energy conductively coupled to said transmission line;

resonator means to provide a substantially high impedance at a predetermined resonant frequency conductively coupled in series with said transmission line;

said resonator means comprising capacitor means having a length substantially one-half of a wavelength at said resonant frequency; and

means for coupling said energy from said line to a load.

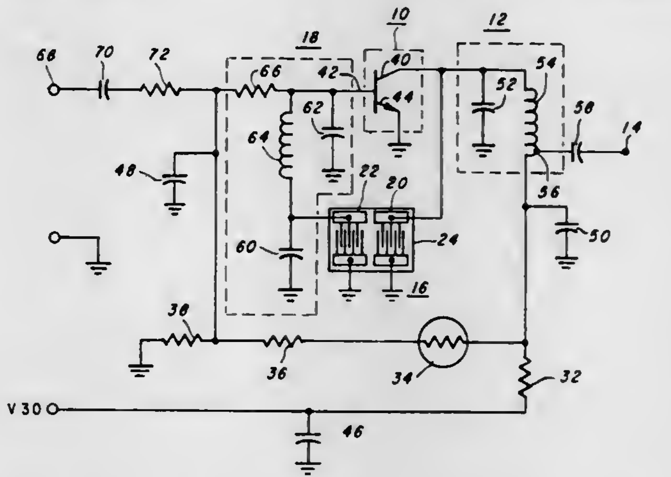
3,868,595
RF OSCILLATOR FREQUENCY CONTROL UTILIZING SURFACE WAVE DELAY LINES

Wallace A. Capps, Jr.; Lemuel D. Groom, III; Clinton S. Hartmann, and Howard G. Vollers, Jr., all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1972, Ser. No. 301,918

Int. Cl. H03b *5/14*

U.S. Cl. 331—108 4 Claims



1. A phase shift oscillator including an amplifier having a phase shift network connected between its output and input

ports, wherein the phase shift network is a surface wave delay line having an input transducer and an output transducer, said input and output transducers having a selected number of cycles at operating frequency and whose centers are selectively separated, said selected number of cycles at the operating frequency and separation of the input and output transducers operative to set the amplitude response and the phase response of said surface wave delay line at the peak frequency of the delay line amplitude response and appproximately equal to the frequency of zero phase shift around the oscillator loop, and wherein the selected number of cycles at the operating frequency and the separation of the input and output transducers are arranged to center the zero phase shift of the surface wave device phase line at approximately the maximum operating curve at the center of the resonance curve, and to permit a narrow resonance curve to prevent frequency hopping.

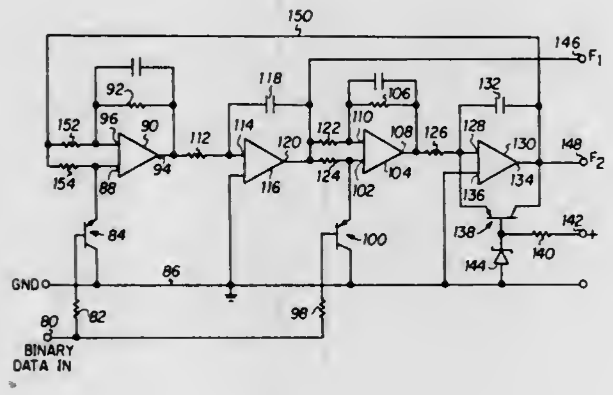
3,868,596
FSK OSCILLATOR

Jerry G. Williford, Tustin, Calif., assignor to Rockwell International Corporation, Dallas, Tex.

Division of Ser. No. 352,368, April 18, 1973, Pat. No. 3,826,999. This application Apr. 25, 1974, Ser. No. 464,002

Int. Cl. H03b *5/24*

U.S. Cl. 331—108 R **2 Claims**



1. Signal frequency generating apparatus comprising, in combination:

first and second integrating means each including input means and output means and providing a substantially 90-degree signal phase shift therethrough;

first connection means, including control input means, for connecting the output means of said first integrating means to said input means of said second integrating means and for providing phase reversal in response to a signal supplied to said control input means thereof;

second connection means, including control input means, for connecting said output means of said second integrating means to said input means of said first integrating means, said second connection means providing a signal phase reversal at a given frequency in response to a signal supplied to said control input thereof; and

switch means, connected to the control inputs of said first and second connection means for setting one or the other of said first and second connection means in the phase reversal condition in response to binary data applied to said switch means.

3,868,597
INTEGRABLE QUARTZ OSCILLATOR CIRCUIT EMPLOYING FIELD EFFECT TRANSISTORS

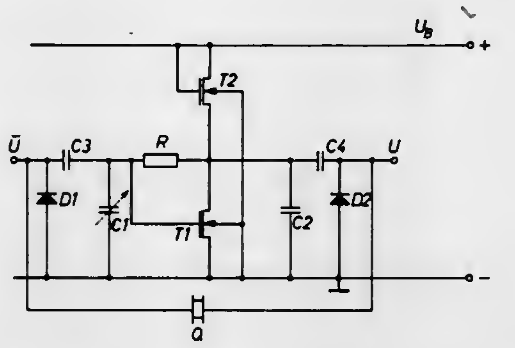
Wolfgang Gollinger, Gundelfingen, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 7, 1974, Ser. No. 467,751

Claims priority, application Germany, May 11, 1973, 2323858

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **1 Claim**



1. A monolithic integrable quartz oscillator circuit having first and second outputs employing insulated-gate field-effect transistors comprising:

a source of supply voltage;

an oscillator transistor having source, gate, and drain electrodes and a substrate terminal, said source electrode and said substrate terminal coupled to the zero point of the circuit;

a load transistor having source, gate, and drain electrodes and a substrate terminal, said gate and drain electrodes coupled to the positive pole of said source of supply voltage, said source electrode coupled to the drain electrode of said oscillator transistor, and said substrate terminal coupled to the zero point of the circuit, said load transistor having a conductivity equivalent to that of said oscillator transistor;

a resistor for fixing the D.C. operating point of the circuit having first and second terminals, said first terminal coupled to the gate electrode of said oscillator transistor and said second terminal coupled to the junction of the drain electrode of said oscillator transistor and the source electrode of said load transistor;

an adjustable capacitor for providing fine adjustment of the oscillator frequency coupled between said first terminal and the zero point of the circuit;

a first capacitor coupled between said second terminal and the zero point of the circuit;

second and third capacitors coupled in series with said resistor, said second capacitor coupled between said first output and said first terminal, and said third capacitor coupled between said second output and said second terminal;

a quartz crystal coupled between said first and second outputs; and

first and second clamping diodes each having an anode coupled to the zero point of the circuit, the cathode of said first diode coupled to said first output, and the cathode of said second diode coupled to said second output.

3,868,598
COMBINED POTENTIOMETER AND AMPLIFIER CIRCUITRY

Reinhard Falke, Boblingen, Germany, assignor to Hewlett-Packard GmbH, Boblingen, Germany

Filed May 3, 1974, Ser. No. 466,761

Claims priority, application Germany, June 7, 1973, 2329026

Int. Cl. H03g *3/22*

U.S. Cl. 330—130 **5 Claims**

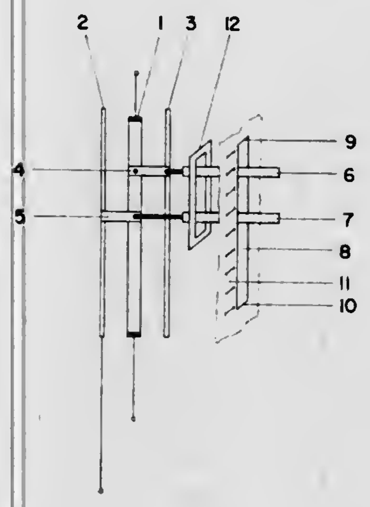
1. Circuitry for adjusting the level between two output signals of a potentiometer, including a resistive body, two

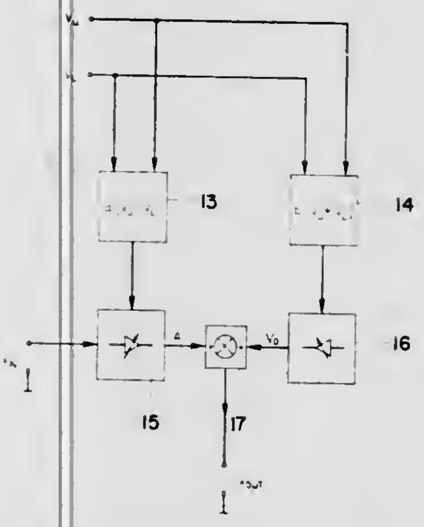
tapping elements each slidably mounted and conductively connectable to different points on the resistive body, actuating members mechanically connected to each of the tapping elements, limiter means disposed to limit the distance between extreme positions of each of the actuating members can have at a time, auxiliary limiter means disposed with respect to both actuating members and movable therewith to limit the variable actual distance between these actuating members to a selected value which determines the maximum possible level between the two output signals of the potentiometer.

5. Signal translating circuitry comprising:

a gain controlled amplifier circuit having a gain control input and another input for receiving an applied signal;

a subtraction network connected to receive two signals which determine the selected upper and lower output levels of the gain controlled amplifier, said subtraction network being connected to apply to the gain control





input a gain control signal which is proportional to the difference between these two signals which determine the selected upper and lower output levels, a summation network like wise connected to receive these two signals which determine the selected upper and lower output levels for producing an offset signal which is proportional to their sum, and circuit means connected to receive an output signal of the gain controlled amplifier as well as the offset signal for producing an amplified output signal of a waveform which, at a different scale, corresponds to the waveform of the applied signal at the input of the gain controlled amplifier and has a rise time interval substantially equal to the rise time interval of the applied signal and has upper and lower extreme values adjusted according to the two signals which determine the selected upper and lower output levels and which are applied to the subtraction and summation networks, respectively.

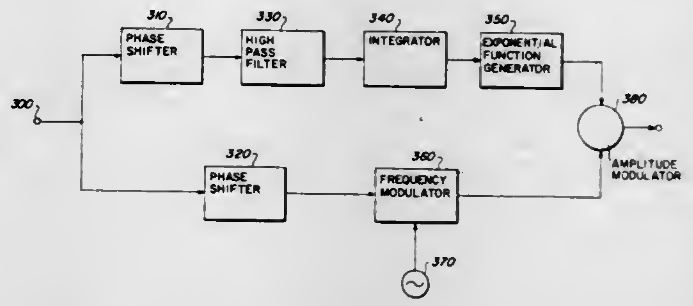
3,868,599
SINGLE SIDEBAND FREQUENCY MODULATION SYSTEM

Takashi Hirasaki, Sagamihara, and Gojiro Suga, Tokyo, both of Japan, assignors to Rank Xerox, Ltd., London, England

Filed Dec. 17, 1973, Ser. No. 425,451

Int. Cl. H03c *1/50, 3/00*

U.S. Cl. 332—17 **2 Claims**



1. Apparatus for modulating an input signal comprising means separating said input signal into a high-frequency component signal and a low-frequency component signal,

means supplying a carrier signal,

means frequency modulating said carrier signal with said low-frequency component signal,

means single sideband frequency modulating said carrier signal with said high frequency component signal, and

means combining the low-frequency modulated carrier with the high-frequency modulated carrier.

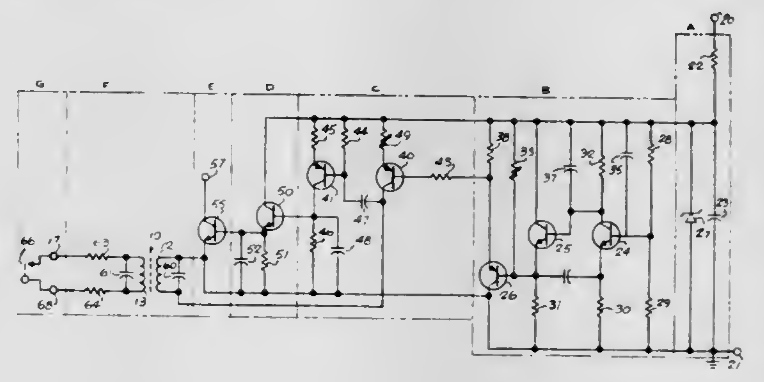
3,868,600
ELECTRICAL ISOLATION DEVICE AND METHOD

Jerry H. Polson, Boulder, Colo., assignor to Contel Corporation, Boulder, Colo.

Filed May 29, 1973, Ser. No. 364,454

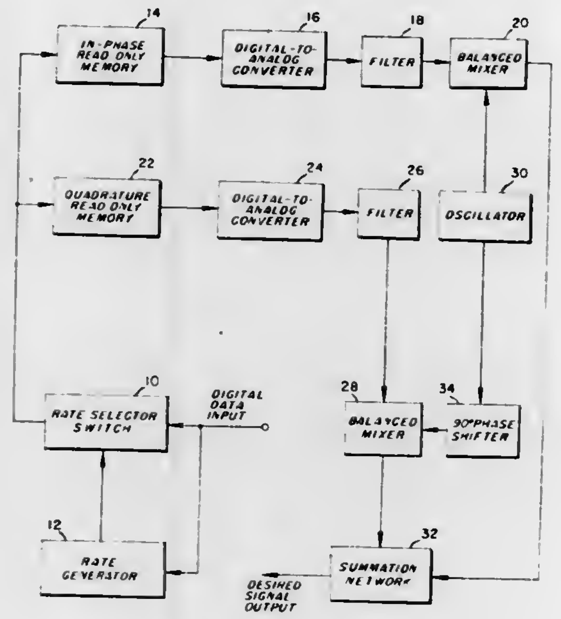
Int. Cl. H03c *1/08*; H03b *3/16*

U.S. Cl. 332—31 R **12 Claims**



1. A method of transmitting information between isolated circuits, comprising: generating a constant current oscillating signal, tuning both the primary winding circuit and secondary winding circuit of an isolation transformer to resonate at about the frequency of the oscillating signal, applying the oscillating signal to the primary winding of the isolation transformer, concurrently applying the oscillating signal to an amplifier through a direct connection thereto, varying the electrical characteristics of the circuit associated with the secondary winding of the transformer by providing an information signal thereto to vary the impedance of the circuit connected to the secondary winding, varying the strength of the oscillating signal inversely to the variation of the impedance connected to the secondary winding while maintaining the resonate condition of the transformer, and driving the amplifier in response to variation of the strength of the oscillating signal to provide an amplifier output on the primary side of the isolation transformer corresponding to the isolated information signal applied to the secondary winding side circuit of the isolation transformer.

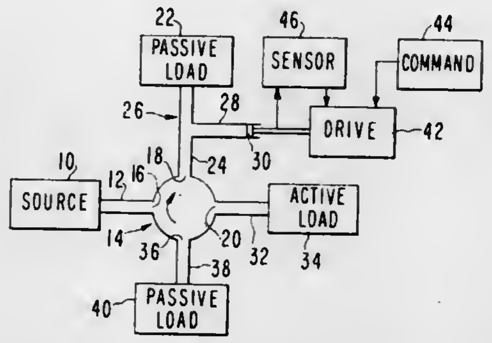
3,868,601
DIGITAL SINGLE-SIDEBAND MODULATOR
John W. MacAfee, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 18, 1973, Ser. No. 371,316
Int. Cl. H03c *1/60, 1/52*
U.S. Cl. 332—45 **4 Claims**



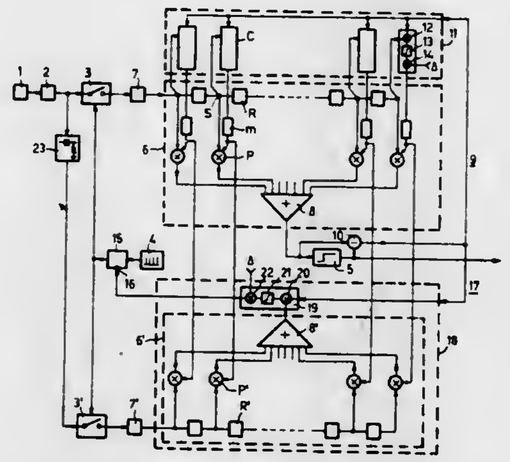
1. Modulator apparatus comprising:
input means for receiving digital data;
generator means connected to said input means and being responsive to said digital data to produce trigger pulses at a selectively predetermined rate;
in-phase read-only memory means connected to the output of said generator means and being responsive to said trigger pulses to store the binary representation thereof on a selectively predetermined waveform and wherein each binary word stored represents a distinct amplitude of said waveform;
first digital-to-analog converter means connected to the output of said in-phase read-only memory means;
quadrature read-only memory means connected to the output of said generator means and being responsive to said trigger pulses in the same manner as said in-phase read-only memory means,
second digital-to-analog converter means connected to the output of said quadrature read-only memory means;
first and second mixer means connected to the outputs of said first and second digital-to-analog converter means, respectively;
oscillator means connected at the output to said first mixer means to provide at the output thereof an in-phase carrier signal, and being further connected through a 90° phase shifter to said second mixer to provide a quadrature carrier signal; and,
summation network means connected at the input to the outputs of said first and second mixer means and being responsive to said in-phase and quadrature carrier signals to provide a single-sideband, suppressed carrier signal.

3,868,602
CONTROLLABLE MICROWAVE POWER ATTENUATOR
Gard E. Meddaugh, Mountain View, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Sept. 20, 1973, Ser. No. 399,209
Int. Cl. H01p *1/22*
U.S. Cl. 333—17 **11 Claims**

1. Apparatus for attenuating guided electromagnetic energy passing along a transmission path from a source to an active load at any frequency within the operating frequency range of said transmisson path, said apparatus comprising nonreciprocal isolation means disposed along said transmission path, said isolation means comprising a circulator having first, second and third ports, said second port being located intermediate said first and third ports along said transmission path; first passive load means disposed along said transmission path, said first passive load means being capable of absorbing a sufficient amount of said energy to provide a desired maximum attenuation of said energy; first waveguide means for coupling said energy from said source to said circulator through said first port; second waveguide means for coupling at least a portion of said energy from said circulator to said first passive load means through said second port; continuously variable control means for controlling the amount of said energy which is absorbed by said passive load means; said continuously variable control means comprising a tee structure having a variable short, said tee structure being connected to said second waveguide means; and means for coupling the greater part of said energy which is not absorbed by said first passive load means to said active load.

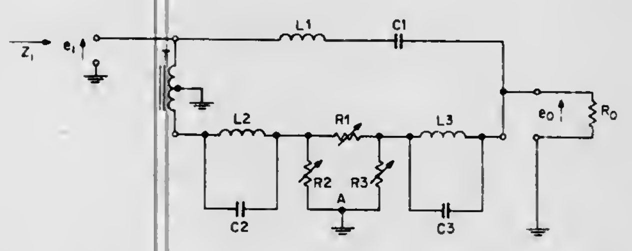


3,868,603
AUTOMATIC EQUALIZING ARRANGEMENT FOR A DATA TRANSMISSION CHANNEL
Loic Bernard Yves Guidoux, Saint Michel sur Orge, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France
Filed Mar. 8, 1974, Ser. No. 449,278
Claims priority, application France, Mar. 9, 1973, 73.08476; June 25, 1973, 73.23052
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **16 Claims**



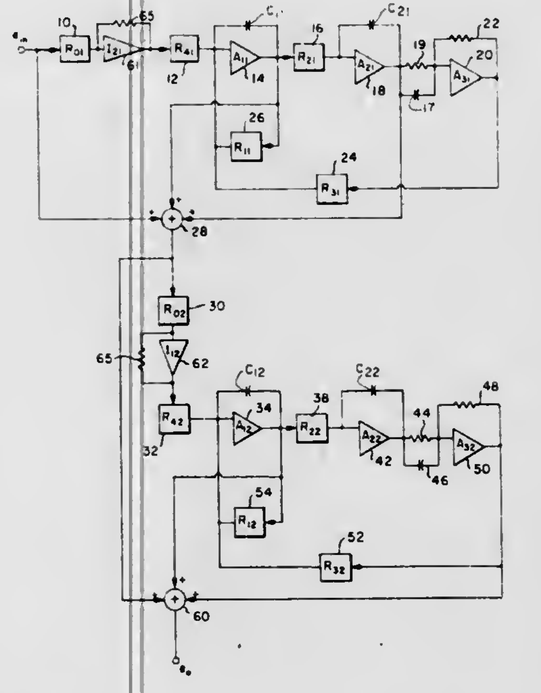
1. An automatic equalizing arrangement for a data transmission channel, including a first transversal filter coupled between a first sampler for the data signal at the output of the transmission channel and a data-restoring decision circuit, the coefficients of the first transversal filter being adjusted by a coefficient adjusting arrangement in a first control loop so as to minimize a predetermined function of an error signal originating from a difference producer connected between input and output of the decision circuit and being applied to said first control loop, characterized in that means are provided for varying the phase of the sampling instants so as to minimize said predetermined function of said error signal, said means for varying the phase of the sampling instants including a phase adjusting arrangement in a second control loop, said error signal being applied to said second control loop.

3,868,604
CONSTANT RESISTANCE ADJUSTABLE SLOPE EQUALIZER
Ben H. Tongue, West Orange, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.
Filed Apr. 8, 1974, Ser. No. 458,498
Int. Cl. H03h *7/14*
U.S. Cl. 333—28 R **6 Claims**



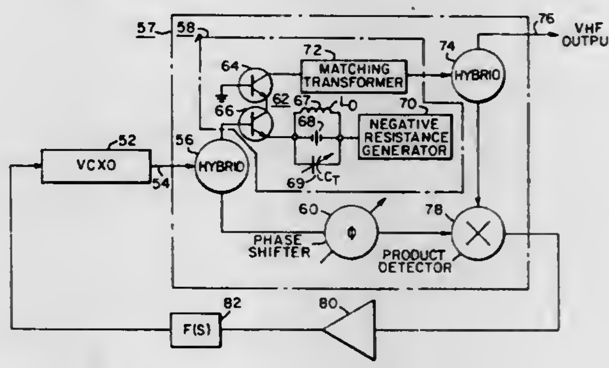
1. A constant resistance adjustable attenuation versus frequency slope equalizer having, in combination, input and output terminals have in-phase and out-of-phase paths therebetween, a resonant network connected in the in-phase path, a dual resonant network divided into a pair of equal halves separated by a constant resistance attenuator connected therebetween and in the out-of-phase path, and means for varying the constant resistance attenuator to vary its loss, the equalizer thereby producing varying attenuation versus frequency slopes with constant over-all network terminal driving point resistance.

3,868,605
ADAPTABLE NOTCH FILTER
Lynn Allen Poole, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington
Filed Nov. 15, 1973, Ser. No. 416,150
Int. Cl. H03h *7/10;* H03f *1/34*
U.S. Cl. 333—76 **5 Claims**



1. An adaptable Biquad notch filter comprising at least two identical filter sections wherein each of the sections comprises:
first resistor network means (**10**) to which an input signal is applied;
inverter means (**1**) taking an input from said first resistor network;
second resistor network means (**12**) taking an input from said inverter means;
first amplifier means (**14**) taking an input from said second resistor network;
third resistor network means (**16**) taking an input from said first amplifier means;
second amplifier means (**18**) taking an input from said third resistor network;
third amplifier means (**20**) taking an input from said second amplifier means;
fourth resistor network means (**19** and **22**) comprising two sets of resistors, said first set of resistors connected as a feedback resistor around said third amplifier means, said second set of resistors connected between the output from said second amplifier means and the input to said third amplifier means;
fifth resistor network means (**24**) taking an input from said third amplifier means and applyings its output to the input of said first amplifier means;
sixth resistor network means connected to the output from said fifth resistor network and to the output from said first amplifier means;
summer means taking as inputs the input signal, the output from said second amplifier means, and the output from said first amplifier means, said summer means of the first filter section applying its output as the input signal to an inverter means of the next filter section, said summer means of the last filter section applying its output signal as the notch filter output;
each of said resistor networks comprising:
a plurality of selectable resistors,
a switch means for effectively selecting one of said plurality of resistors as a transmission path to filter the input signal of the network in a desired manner so that notch width, notch depth, and notch center frequency may be varied.

3,868,606
Q-MULTIPLIED CRYSTAL RESONATOR FOR IMPROVED HF AND VHF SOURCE STABILIZATION
Michael M. Driscoll, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 28, 1973, Ser. No. 401,780
Int. Cl. H03h *11/00;* H03b *3/04*
U.S. Cl. 333—80 T **6 Claims**

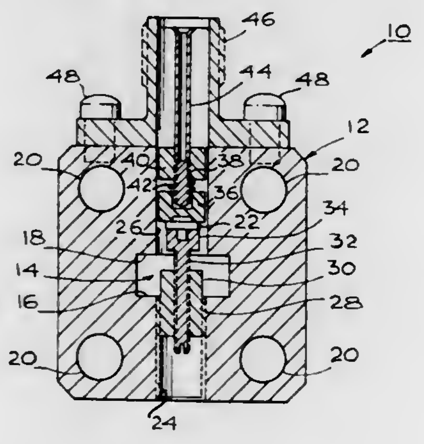


6. A Q-multiplied crystal resonator circuit for improved frequency stability having RF input and output means comprising:
a. a resonant circuit including a crystal unit,
b. amplifier means having high gain and isolation characteristics coupled to said crystal unit for amplifying an RF signal with high output power to crystal dissipation ratio, said amplifier means being adapted to receive an RF signal from said input means and said amplifier means being adapted to translate an RF signal to said output means; and
c. active negative resistance generator means coupled to said resonant circuit for providing positive feedback to

said crystal unit thereby increasing the Q of said resonant circuit for improved frequency selectivity and suppression of amplifier means noise.

3,868,607
DOUBLY ADJUSTABLE WAVEGUIDE PIN SWITCH

Garry N. Hulderman, Riverside, Calif., assignor to General Dynamics Corporation, Pomona, Calif.
Filed Oct. 15, 1973, Ser. No. 406,437
Int. Cl. H01p *1/10*
U.S. Cl. 333—98 S **4 Claims**

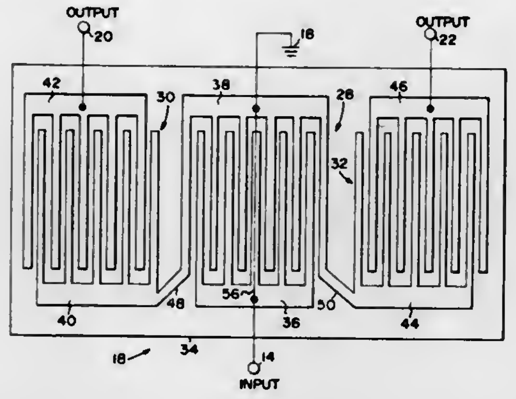


1. A millimeter wave device comprising:
a. case means defining a waveguide passageway;
b. semiconductor positioning means disposed in said case means and adjustable relative thereto along an axis substantially normal to said passageway;
c. semiconductor contacting means in said case means and disposed substantially opposite said positioning means,
said contacting means having a fixed pin portion and a movable collar portion movable on said pin portion along said axis of said positioning means at a predetermined distance from the semiconductor positioning means in cooperation therewith;
the positioning means comprising outer and inner concentric post members providing respectively a first adjustment for varying the penetration of the outer post member into the waveguide passageway and a second adjustment for establishing a predetermined distance between one end of the outer post member and the movable collar portion of the contacting means;
d. semiconductor means disposed between said positioning means and said movable collar portion of said contacting means, and communicating with said waveguide passageway; and
c. bias circuit connector means coupled to said movable collar portion of said contacting means, said connector means and positioning means being adapted for coupling to a bias circuit for supplying bias energy to said semiconductor means,
said contacting means effecting with said case means a filter for blocking radio frequency energy from said bias circuit.

3,868,608
SURFACE WAVE FILTER

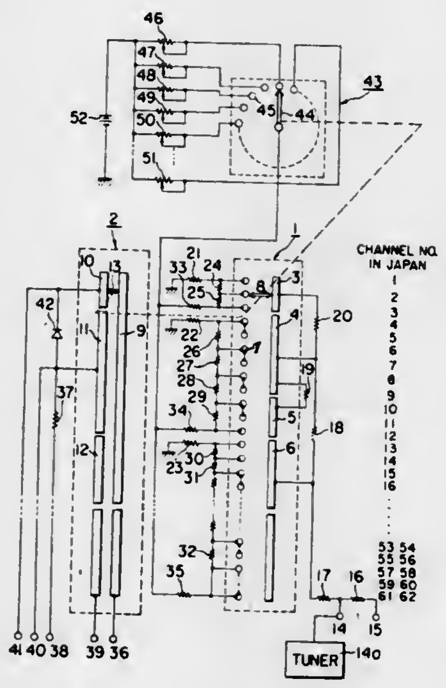
G. Norman Williams, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Apr. 1, 1974, Ser. No. 457,060
Int. Cl. H03h *9/02, 9/26, 9/30*
U.S. Cl. 333—72 **7 Claims**

1. A surface wave filter comprising:
a substrate of piezoelectric material;
an input transducer deposited on said substrate and having an input comb of electrodes and a common comb of electrodes with mirror image symmetry about a center line; and
first and second output transducers deposited on said substrate on opposite sides of said input transducer and each having a common comb of electrodes and an output comb of electrodes with mirror image symmetry about a line displaced an integral number of wavelengths plus or minus one-fourth wavelength from said center line.



3,868,609
CHANNEL SELECTOR

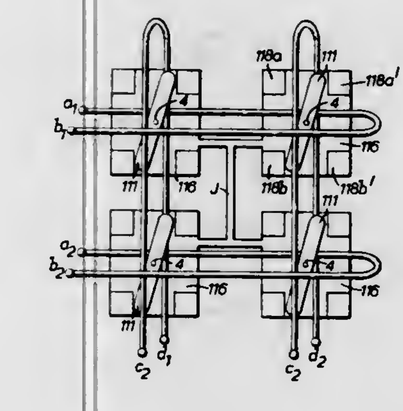
Yukio Koyangi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Filed Oct. 18, 1972, Ser. No. 298,493
Claims priority, application Japan, Oct. 19, 1971, 46-83186
Int. Cl. H03j *3/04, 3/06*
U.S. Cl. 334—11 **8 Claims**



1. A channel selector comprising an electronic tuner utilizing a voltage-variable capacity element; means for generating a plural number of channel selecting voltages corresponding to the receiving channels; switch means having a plurality of groups of first terminals and a plurality of second terminals for connecting selected terminals of said first groups of terminals to selected ones of said second terminal, each of said second terminals thereby being associated with a group of said first terminal for receiving AFC voltages; means for connecting each of said generated channel selecting voltages to a separate terminal of said plurality of groups of first terminals; an AFC compensation resistance network having a plurality of taps and exhibiting different resistance values at each of said taps; means connecting each of said taps of said AFC compensation resistance network to separate ones of said second plurality of terminals of said switch means; means for connecting said AFC compensation resistance network to said tuner, and means connected to said AFC voltage receiving terminal and to said AFC compensation resistance network for superimposing said AFC voltages on said selected channel selection voltage.

3,868,610
SELECTIVE ELECTRICAL SWITCHING MEANS

Hassan Paddy Abdel Salam, London, England, assignor to Universal Telewriters (UK) Limited, London, England
Filed Nov. 29, 1973, Ser. No. 420,306
Claims priority, application Great Britain, Dec. 8, 1972, 56794/72; Mar. 30, 1973, 15524/73
Int. Cl. H01h *67/30*
U.S. Cl. 335—112 **9 Claims**

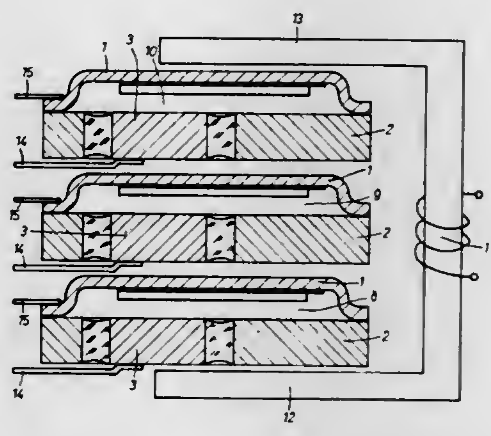


1. In a coordinate switching device comprising a plurality of selectively operable switching elements disposed in an array comprising rows and columns, each said switching element having an armature of magnetizable material, first and second spaced apart pole members of magnetizable material, a first gap defined between said armature and said first pole member and a second gap defined between said armature and said second pole member, means mounting said armature on the one hand and said first and second pole members on the other hand for relative movement therebetween whereby as the reluctance of said first gap increases with said relative movement that of said second gap diminishes and vice versa, and contact means operated by said relative movement, the improvement wherein there is provided:
a respective first electric circuit associated with each of said rows of switching elements;
means selectively energizing each said first electric circuit thereby to develop similarly directed magnetic fields in said first gap and in said second gap of each of the elements in the associated row;
a respective second electric circuit associated with each of said columns of switching elements; and
means selectively energizing each said second electric circuit thereby to develop oppositely directed magnetic fields in said first gap and in said second gap of each of the elements in the associated column;
whereby said selective energization of one of said first and one of said second circuits produces selective operation of one only of said switching elements.

3,868,611
MAGNETICALLY ACTUATED SEALED CONTACT

Wolfgang Mecklenburg, Asperg; Alfred Leicht, Stuttgart; Walter Hoffmann, Munklingen; Hans Dieter Pfeil, Mainz; Ingo Rudiger Isert, Bietigheim; Helmut Buttel, Leonberg-Etlingen; Richard Braunschweig, Stuttgart, and Philip John Smith, Kornwestheim, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 21, 1973, Ser. No. 417,984
Claims priority, application Germany, Dec. 1, 1972, 2258922
Int. Cl. H01h *47/00*
U.S. Cl. 335—196 **7 Claims**

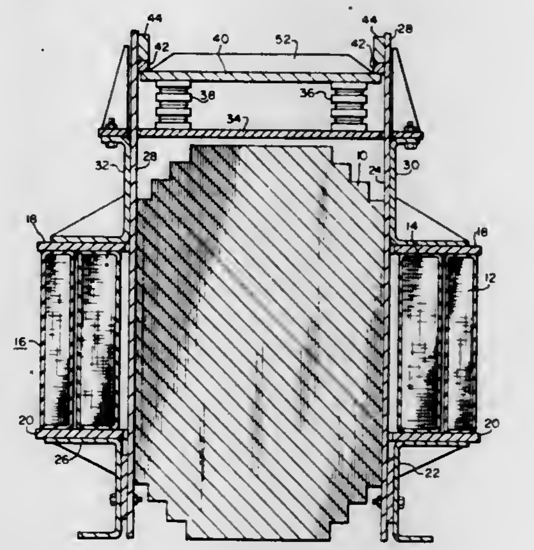
3. A sealed contact capable of magnetic actuation comprising:
a base plate having a flat disc-shaped non-magnetically conductive outer part and a flat disc-shaped magnetically conductive inner part, said inner and outer parts being arranged eccentrically within the same geometric plane and sealed to each other by means of a glass ring;
a hood-shaped non-magnetically conductive cover having a flange-like projection for sealing to said outer part by means of an annular weld;
an armature-holding spring attached to the inner surface of said cover at a point opposite said outer part; and



an armature attached to said spring opposite said inner part, said armature having a spherical configuration on one surface thereof for providing electrical contact with said inner part, whereby a plurality of said contacts are capable of being arranged in a stack such that the base plate of each contact in the stack is opposite the cover of the next lowest contact therewithin said stack.

3,868,612
POWER TRANSFORMER HAVING A SPRING-COMPRESSED WINDING STRUCTURE

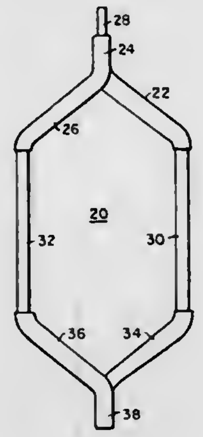
Francis D. Kaiser, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 7, 1974, Ser. No. 448,867
Int. Cl. H01f *27/30*
U.S. Cl. 336—197 **1 Claim**



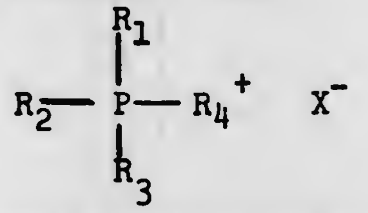
1. Electrical inductive apparatus comprising:
a magnetic core having at least one leg;
a winding structure having upper and lower ends and being disposed around said leg;
a first washer-shaped pressure plate which is positioned adjacent to the lower end of the winding structure;
a first end frame member positioned to push the first pressure plate against the winding structure;
a lock plate which is rigidly attached to the first end frame member and which extends above the upper end of the winding structure;
a structural brace coupled to said lock plate;
a second washer shaped pressure plate which is positioned adjacent to the upper end of the winding structure;
a second end frame member positioned to push the second pressure plate against the winding structure;
a lock plate guide member which is attached to the second end frame member for guiding the lock plate; and,

at least one ring spring disposed in compressed relationship between the structural brace and the lock plate guide member to force the pressure plates together;
said ring spring including a plurality of rings stacked in axial alignment with each other, with adjacent rings telescoping with respect to each other when the ring spring is compressed.

3,868,613
SOLVENTLESS EPOXY RESIN COMPOSITION AND AN ELECTRICAL MEMBER IMPREGNATED THEREWITH
Dow A. Rogers, Jr., Pittsburgh, and James D. B. Smith, Turtle Creek, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 189,382, Oct. 14, 1971, Pat. No. 3,759,866. This application May 18, 1973, Ser. No. 361,753
Int. Cl. H01f *27/32;* **B32b** *19/00*
U.S. Cl. 336—206 14 Claims



1. An insulated electrical member for use in high voltage equipment and a cured body of resinous insulation applied to the member, the high voltage capability insulation comprising the cured resinous reaction product of a composition consisting essentially of, by weight:
A. about 85 to 115 parts of a glycidyl ether epoxy resin selected from the group consisting of bisphenol A epoxy resins, novolac epoxy resins and mixtures thereof;
B. about 100 to 155 parts of an organic acid anhydride;
C. about 25 to 95 parts of diglycidyl ether of neopentyl glycol acting as a reactive diluent; and
D. an effective amount up to about 0.25 parts per 100 parts glycidyl ether epoxy resin of a quaternary organic phosphonium salt acting as a latent catalyst for the epoxy resin and having the structural formula:

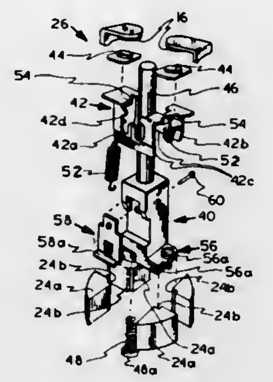


$$R_2-\underset{R_3}{\overset{R_1}{P}}-R_4{}^{+} \quad X^{-}$$

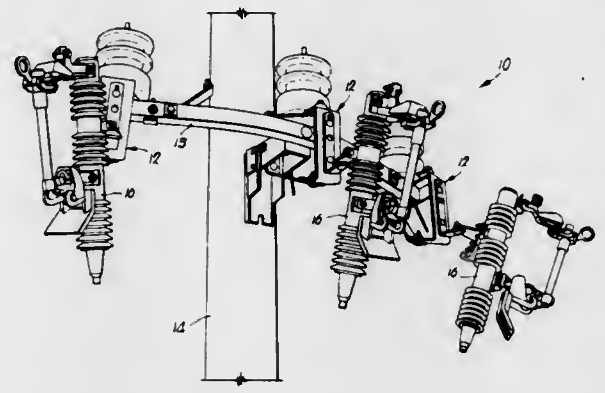
where R_1, R_2, R_3 and R_4 are selected from the group consisting of aryl and alkyl radicals and X is selected from the group consisting of propionate, acetate, butyrate, isobutyrate and dimethyl phosphate radicals.

3,868,614
IMPROVED CIRCUIT BREAKER TRIP MECHANISM
William P. Riendeau, Leonardtown, Md., assignor to Aiken Industries, Incorporated, New York, N.Y.
Division of Ser. No. 159,930, July 6, 1971, Pat. No. 3,771,087. This application Aug. 8, 1973, Ser. No. 386,588
Int. Cl. H01h *71/16*
U.S. Cl. 337—66 6 Claims

1. In a circuit breaking trip mechanism of the type having a plunger for resetting the mechanism after tripping, a current sensing device movable relative to said plunger, means anchored to the plunger for biasing said current sensing device relative to said plunger for tripping movement, and latching means arranged to arrest said tripping movement until said current sensing device senses a current tripping condition; the improvement comprising stop shoulder means on said plunger selectively located relative to the anchor place of the biasing means to engage and seat said current sensing device during its tripping movement after escape of said current sensing device from said latching means, said stop shoulder means further being located on the plunger to maintain said trip spring under tension when the current sensing device is in the current tripped position to inhibit spring disassembly.

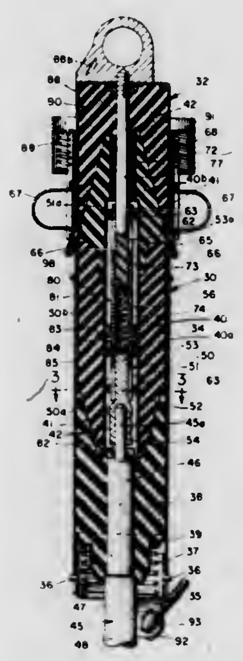


3,868,615
CURRENT SENSITIVE INTERRUPTING TERMINATOR ASSEMBLY
Harold Dennis Haubein, and Lloyd R. Beard, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed Nov. 12, 1973, Ser. No. 414,637
Int. Cl. H01h *71/10*
U.S. Cl. 337—169 36 Claims



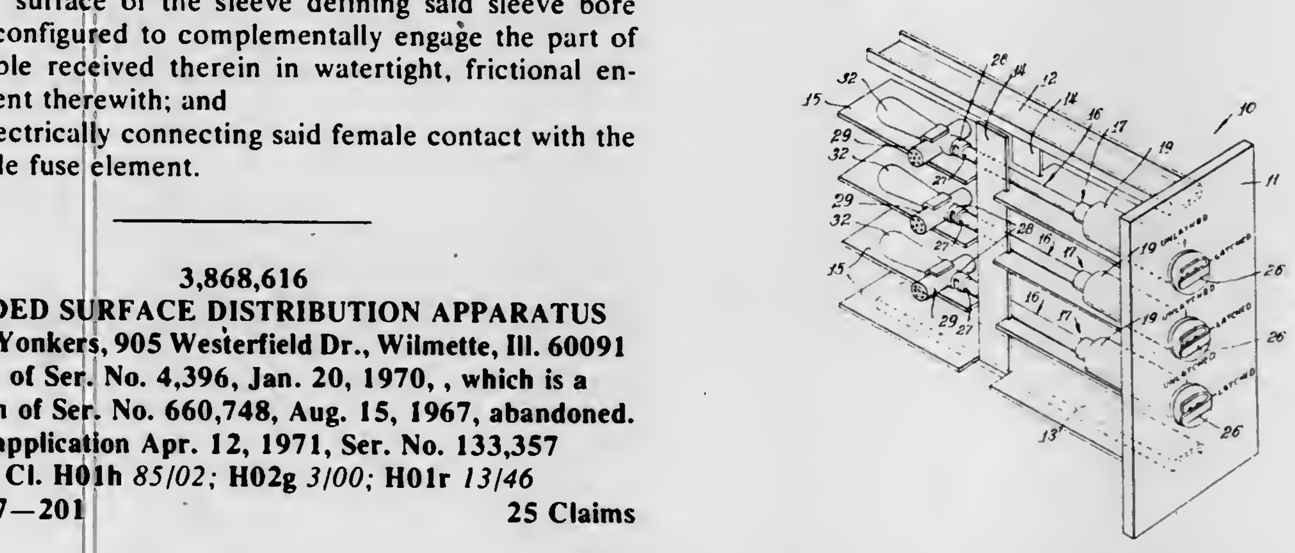
1. A current sensitive interrupting terminator assembly for joining ends of an overhead conductor and an underground cable having a conductor therein terminated by a male contact, said assembly comprising:
an elongated, relatively rigid support member of insulative material adapted to be disposed in an upright position;
current interrupting means including
an open-ended fuse tube of lesser length than said support member, a meltable fuse element in the tube, an upper terminal adapted to be connected to said end of the overhead conductor, means mounting the fuse tube for pivoting movement from a location with the fuse element in electrically connected relationship to the upper terminal, to a position out of electrical connection therewith, and means engaging the fuse tube and operated by the meltable element for shifting the fuse tube out of said location in response to melting of the element;
means mounting said current interrupting means on the upper portion of said support member in disposition with the fuse tube located to face downwardly when the support member is in said upright position thereof,
said support member being provided with an elongated, normally downwardly opening bore therein;
a bored flexible sleeve of insulative material telescoped into said bore, affixed to said support member and projecting downwardly from the lower end thereof is generally axial alignment with the longitudinal length of the support member;
a female contact within said sleeve and located to be engaged by the male contact on said conductor of the cable when the latter is inserted into said sleeve bore,
the inner surface of the sleeve defining said sleeve bore being configured to complementally engage the part of the cable received therein in watertight, frictional engagement therewith; and
means electrically connecting said female contact with the meltable fuse element.

3,868,616
GROUNDED SURFACE DISTRIBUTION APPARATUS
Edward H. Yonkers, 905 Westerfield Dr., Wilmette, Ill. 60091
Division of Ser. No. 4,396, Jan. 20, 1970, , which is a continuation of Ser. No. 660,748, Aug. 15, 1967, abandoned. This application Apr. 12, 1971, Ser. No. 133,357
Int. Cl. H01h *85/02;* **H02g** *3/00;* **H01r** *13/46*
U.S. Cl. 337—201 25 Claims



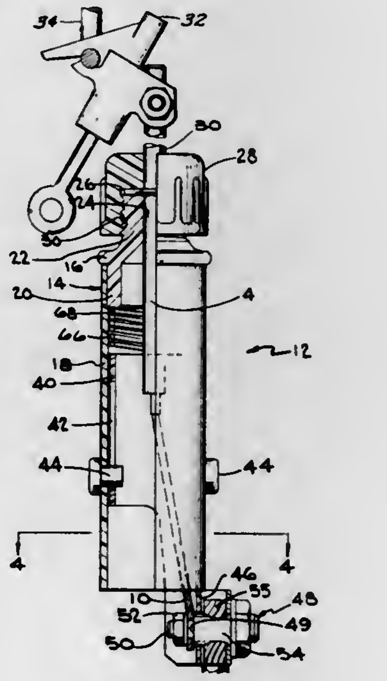
1. An accessory for high voltage electric power conductor terminations of the type having first and second conductor terminations with respective end surfaces comprising
a module releasably positioned between the respective end surfaces of said first and second terminations,
insulated electrically conductive means in said module,
means for electrically connecting the respective conductor terminals in said termination to said conductive means whereby a current carrying circuit is completed between said terminals through said module,
means for forming water-tight uniform voltage grading seals between the ends of said module and the respective terminations when said current carrying circuit is completed,
and current interrupting means mounted within said module for interrupting the current carrying circuit between said terminals.

3,868,617
LATCH COUPLED FUSE AND EXHAUST CONTROL DEVICE
James W. Dragon, and Gerald Sakats, both of Arlington Heights, Ill., assignors to S & C Electric Company, Chicago, Ill.
Filed Oct. 10, 1972, Ser. No. 295,825
Int. Cl. H01h *39/00*
U.S. Cl. 337—203 18 Claims



1. A circuit interrupter comprising an expulsion fuse having a longitudinal axis and having an exhaust terminal at one end, an exhaust control device at said one end of said expulsion fuse, and a latch means for mechanically interconnecting said exhaust terminal and said exhaust control device, and for disconnecting said exhaust terminal and said exhaust control device in response to pivotal movement of said fuse about its longitudinal axis by an angle of less than 360°.

3,868,618
FUSE HOLDER HAVING INDICATOR MEANS
Frank Peter Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 18, 1974, Ser. No. 434,730
Int. Cl. H01h *85/30*
U.S. Cl. 337—206 6 Claims



1. A fuse holder adapted for use with a current limiting fuse, said fuse being cylindrical and having a radially extending collar at one end thereof, a conductive contact area centrally located with respect to said collar, and a flexible conductor extending from the other end thereof, said fuse holder comprising:

- a generally cylindrical housing having a closed end and an open end, said closed end having a flat external surface and an axially extending opening extending therethrough and communicating with the interior of said housing,
- a cap member removably mounted on said closed end, said cap member having a cap member conductor extending axially therethrough,
- an indicator sleeve concentrically and slidably mounted on said housing, said indicator sleeve having a first end which is proximate to said closed end of said housing and having a second end which is remote from said closed end, said sleeve being movable between a retracted position, in which said second end thereof is adjacent to said open end of said housing, and an extended position, in which said second end is remote from said open end and portions of said sleeve extend substantially beyond said housing,
- means for securing said flexible conductor to said sleeve and for securing an external conductor to said sleeve, and compressible resilient means interposed between said first end of said sleeve and said closed end of said housing whereby,

upon inserting said fuse through said opening and locating said collar on said surface, assembling said cap member to said housing, moving said sleeve to said retracted position, and securing said flexible conductor to said sleeve, said sleeve will be retained in said retracted position by said fuse, and if said fuse should fail, said sleeve will be moved to said extended position under the influence of said resilient means thereby to provide a visual indication of the failure of said fuse.

3,868,619

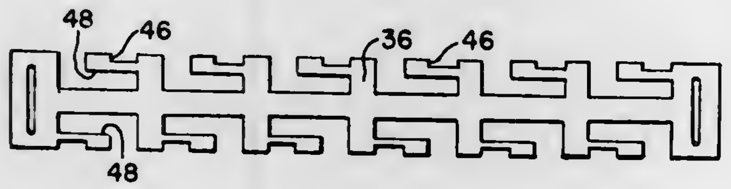
CORE CONSTRUCTION FOR CURRENT-LIMITING FUSE

Donald D. Blewitt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 17, 1973, Ser. No. 407,336

Int. Cl. H01h *85/04*

U.S. Cl. 337—295 **7 Claims**



1. A fuse structure comprising a generally tubular, electrically insulating casing, terminal means disposed adjacent to each of the opposite ends of said casing, an axially-extending, electrically insulating support member disposed in said casing with the ends disposed adjacent to the respective terminal means, the support member comprising longitudinal portions and transverse intersupporting portions therefor, a fusible element disposed in a helical path on and around said longitudinal portions and connected between said terminal means, and the insulating support member comprising opening means at least a portion of which extends longitudinally of the member for a distance equal to at least one-half of a helical cycle of the fusible element.

3,868,620

LEVEL SENSOR AND METHOD OF MAKING THE SAME

Lyle E. McBride, Jr., Norton; William W. Bowman, North Easton, both of Mass.; Hans A. Stoeckler, Woonsocket, R.I.; Harold A. Hanson, Pawtucket, R.I., and Joseph J. Gibola, Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1973, Ser. No. 426,872

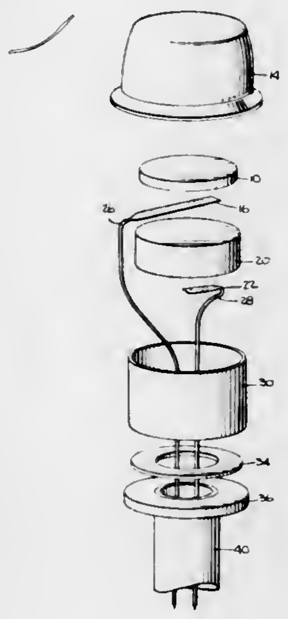
Int. Cl. H01c *7/00*

U.S. Cl. 338—28 **19 Claims**

1. A liquid level sensor adapted for connection to an electrical circuit comprising

- a bulbous-shaped housing having one open end and having therein
  - an electrical isolator soldered on one side to an inside surface of the housing, a temperature sensor pill having a low electrical resistance mode and a high electrical resistance mode, the switch-over between the two modes occuring at temperatures above a predetermined anomaly temperature, a pair of leads soldered at one end to opposite sides of the sensor pill, one side of the sensor pill being soldered to the other side of the electrical isolator away from the side which is adhered to the inside surface of the housing, sandwiching the end of one lead therebetween, and
- cover means hermetically sealing the open end of the housing and having the other ends of the leads extending therethrough and adapted for connection to the circuit

whereby when the level sensor is immersed in one ambient it is cooled thereby and operates in one resistance mode and when the level sensor is exposed to another ambient it self-heats to temperatures above the anomaly temperature and operates in the other resistance mode.



3,868,621

VARIABLE RESISTOR DEVICE

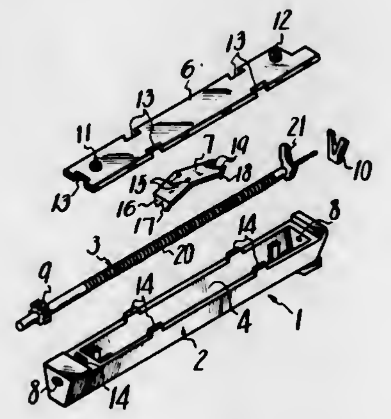
Nobuo Kitamura, Sagamihara, and Miroshi Fukagawa, Tokonama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 1, 1973, Ser. No. 402,008

Claims priority, application Japan, Oct. 4, 1972, 47-115216

Int. Cl. H01c *9/02*

U.S. Cl. 338—180 **3 Claims**



1. A variable resistor device, comprising:

- a housing formed of walls including end walls, one of said walls being detachable and being provided with resistive material on the inner surface thereof, said one wall further being provided with at least one electrical terminal connected to said resistive material;
- a screw shaft longitudinally mounted in said housing and rotatably supported by said end walls, said screw shaft having threads and being made of conductive material;
- a second electrical terminal disposed at one end of said screw shaft and in electrical contact therewith, said second electrical terminal extending externally of said housing; and
- a movable contact element positioned on said screw shaft and bidirectionally advanced along said screw shaft in accordance with the rotation thereof, said contact element being formed of a resilient conductive plate bent between end portions thereof to thereby form a contact portion which is resiliently urged into physical contact with said resistive material, one end of said movable contact element being bent into engagement with said screw shaft at an inclination in accordance with the thread angle of said screw threads and being formed of a V-shaped cutout, and the other end of said movable contact element having a pair of guiding portions formed integrally therewith which extend outwardly along said screw shaft so as to not engage with the screw threads but to be supported by said screw shaft by abutment therebetween.

3,868,622

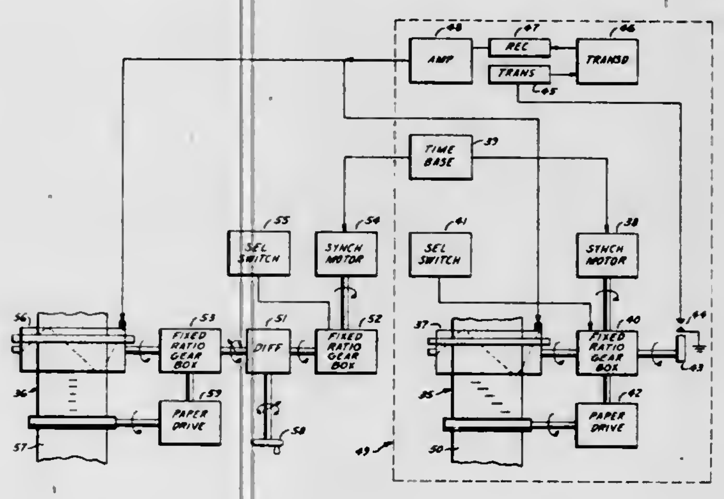
RANGE RATE COMPENSATION SYSTEM

Sydney T. Knott, Barnstable, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1960, Ser. No. 75,040

Int. Cl. G01s *9/68, 7/60*

U.S. Cl. 340—3 R **7 Claims**



1. In a sonar system of the type wherein search pulses are periodically transmitted by a transducer and echo pulses produced by reflecting targets in the propagation path of said search pulses subsequently detected by said transducer, a first recorder having a moving strip of paper, means for registering each search pulse adjacent one reference edge of said moving paper and echo pulses derived therefrom variable horizontal distances away in accordance with the range to the reflected target producing these echo pulses, a second recorder having a moving strip of paper and means for simultaneously registering successive echo pulses from the same target the same distance away from a corresponding reference edge of said last-mentioned strip of paper whereby the range of said targets can be determined from an examination of said first recorder and changes in the appearance of the echo pulses from the same target can be observed on the second recorder.

3,868,623

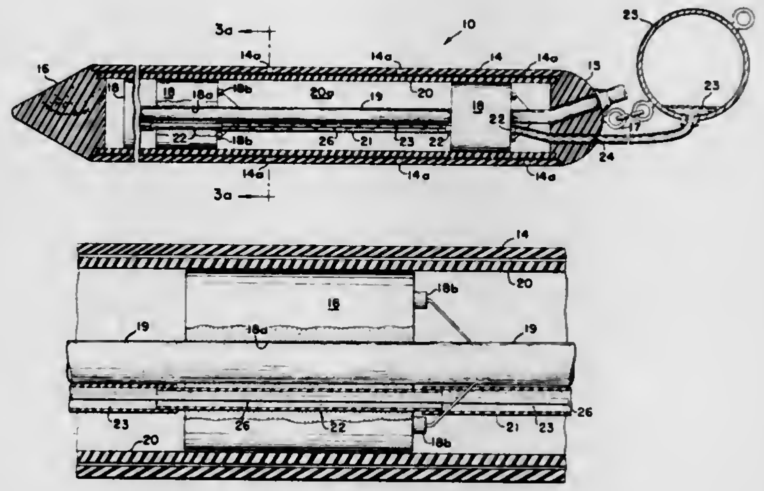
TOWABLE SONAR ARRAY WITH DEPTH COMPENSATION

Frank R. Abbott, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,198

Int. Cl. G01v *1/16*

U.S. Cl. 340—7 PC **8 Claims**



1. An essentially neutrally buoyant transducer of acoustic energy comprising:

- means for compliantly enclosing a gas-filled space;
- at least one transducer element carried in the compliantly enclosing means having a hollow interior in communication with said gas-filled space;
- means disposed in the compliantly enclosing means for resiliently containing a fluid having a density greater than the surrounding medium, said fluid present in quantities sufficient to counteract the buoyancy provided by said gas-filled space; and
- means disposed in the medium being connected to the compliantly enclosing means and coupled to the resiliently containing means for maintaining said fluid in said quantities as the compliantly enclosing means and the resiliently containing means are simultaneously compressed and expanded in response to ambient pressure changes, the gas in said gas-filled space is concurrently fed to and evacuated from said hollow interior in response to the compression and expansion of the compliantly enclosing means and the resiliently containing means thereby pressure compensating each said transducer element.

3,868,624

APPARATUS FOR MAPPING ACOUSTIC FIELDS

Harper John Whitehouse, and Tibor G. Horwath, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 29, 1972, Ser. No. 319,124

Int. Cl. H04b *13/00*

U.S. Cl. 340—8 R **2 Claims**

1. Apparatus useful for mapping acoustic pressure fields in the range of 10 Hz to 2 MHz, comprising:

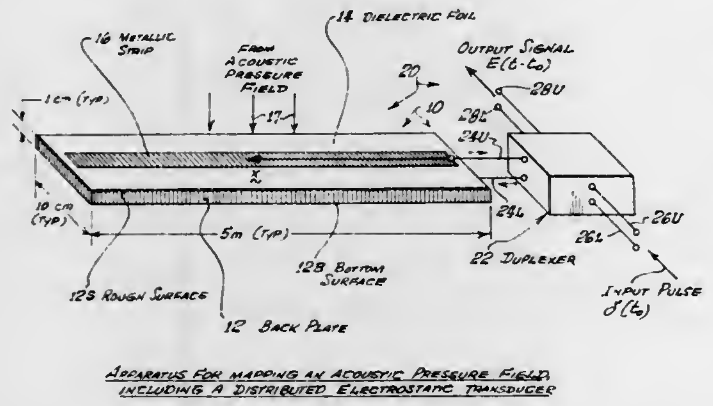
- a distributed electrostatic transducer, functioning as a strip transmission line, which includes:
- a flat, substantially rectangular, metal plate, one surface of which is rough, the plate having a length generally in the range of 10 to 100 wavelengths of the acoustic frequency at which the mapping is to be done, and a width and thickness in the range of 0.01λ to 0.05λ;
- a rectangular strip of dielectric foil disposed under surface tension on the rough surface of substantially the entire

metal plate so that the foil touches only the most protruding parts of the surface; and

a long, narrow, rectangular, metallic strip disposed on and attached to the dielectric foil, the strip being exposed to, and therefore defining, an acoustic pressure field; and

a duplexer, electrically connected to the metallic strip and to the flat plate, connectable to a source of electrical input signals, and having output terminals at which an output electrical signal may be measured;

with the result that, when an electromagnetic delta function $\delta(t_0)$ is applied at the input to the duplexer, electromagnetic waves travel in both directions along the strip transmission line, the duplexer having the function of separating the signal reaching the output terminals of the duplexer from the applied signal $[E(t-t_0)]\ \delta(t_0)$ which is interrogating the line, the returning signal containing two groups of frequencies:



1. low frequency components w_n identical to those present in the acoustic pressure field, and
2. high-frequency components containing wave vectors k_n, also present in the acoustic pressure field, the two components being readily separable, because of the great differences in their frequencies, and hence any specific pressure field $P(k, w)$ may be reconstructed.

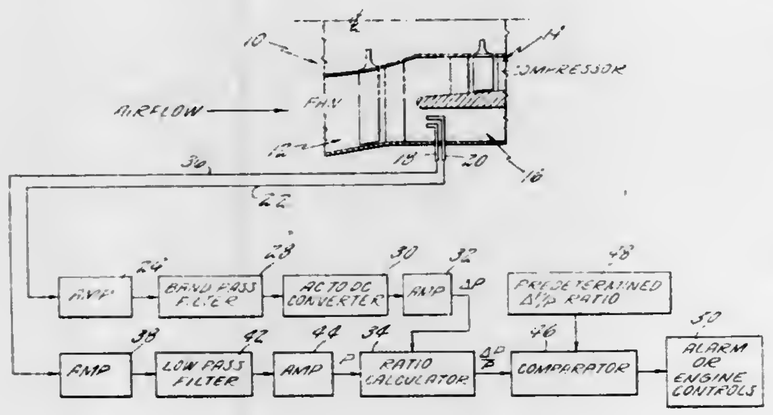
3,868,625
SURGE INDICATOR FOR TURBINE ENGINES

Jack D. Speigner, Lake Park, and Frank B. Thompson, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 316,941, Dec. 20, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,307

Int. Cl. G01m *15/00*

U.S. Cl. 340—27 SS **14 Claims**



1. An indicator for a turbine engine comprising

pressure sensing means positioned in a flow path of said engine and producing signals which are a function of the gas pressure oscillations therein,

a band pass filter connected to receive said signals and passing therethrough only the high frequency signal components characteristic of engine surge,

a low pass filter connected to receive said signals and passing therethrough only the low frequency signal components indicative of the steady-state pressure,

a ratio calculator receiving said high frequency signal components and said low frequency signal components and producing a ratio signal which is a function of the ratio of the amplitudes of the high frequency signal components to the low frequency signal components,

a reference signal, and

comparator means for comparing the ratio signal with said reference signal and producing an output signal when said ratio signal exceeds said reference signal.

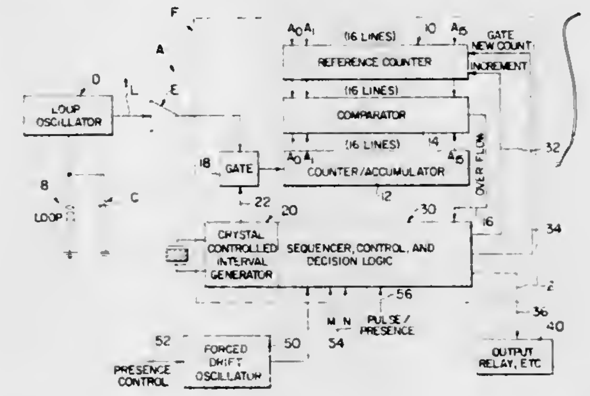
3,868,626
DIGITAL LOOP DETECTOR SYSTEM

Dale P. Masher, Los Altos, Calif., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed July 9, 1973, Ser. No. 377,544

Int. Cl. G08g *1/01*

U.S. Cl. 340—38 L **62 Claims**



1. A digital detecting system for generating an output signal when an electrically conductive mass comes within the field of effect of a loop, said system comprising: means for creating a pulse train, the number of pulses in said train being controlled primarily by the presence of said mass in the field of effect of said loop; means for generating a first signal representative of the average of the number of pulses in said pulse train; means for generating a second signal representative of a reference count; means for comparing said first and second signals; and, means for creating an output signal when said first signal differs from said second signal.

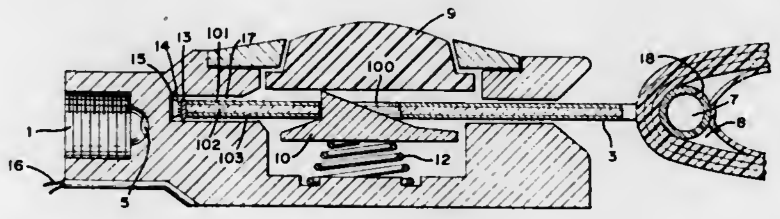
3,868,627
LAMINATED TONGUE FOR VEHICLE SEAT BELT BUCKLE SYSTEM

Ronald C. Lawwill, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,653

Int. Cl. B60r *21/10*

U.S. Cl. 340—52 E **3 Claims**



1. A switch comprising a buckle and tongue, said buckle having a latch bar mounted therein for locking the tongue in the buckle, said buckle further including a spring biased contact mounted therein contacting an end of the tongue when the tongue is locked in the buckle, said tongue being a unitary structure and including laminated electrically conductive portions separated by an insulating portion, said portions of the unitary tongue structure comprised of alternating laminations of electrically conductive and non-conductive material through its thickness, and said contact contacting said electrically conductive portions when the tongue is locked in the buckle, with an electrical circuit completed when the tongue is locked in the buckle through the electrically conductive portions of the tongue and the contact in the buckle.

3,868,628
DEVICE FOR INDICATING DISCONNECTION OF AUTOMOBILE LAMPS

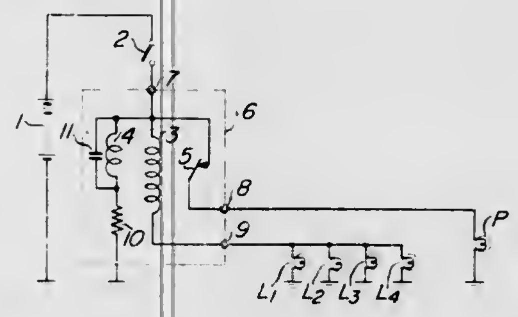
Yasuhiko Sakurai, Kariya, Japan, assignor to Nippondenso Co. Ltd., Aichi-kens, Japan

Continuation of Ser. No. 175,518, Aug. 27, 1971,. This application Nov. 21, 1973, Ser. No. 417,938

Claims priority, application Japan, Aug. 28, 1970, 45-86297[U]; Aug. 28, 1970, 45-86298[U]; Aug. 28, 1970, 45-86299[U]

Int. Cl. B60q *1/38*

U.S. Cl. 340—80 **2 Claims**



1. A system for indicating disconnection of automotive lamps comprising an electric source having a predetermined nominal voltage output, a plurality of more than two automotive lamps connected in parallel with each other, disconnection indicating means, a relay having a current winding connected between said electric source and said more than two automotive lamps, for generating a magnetomotive force; said relay having a voltage winding, connected in parallel with the combination of said current winding and said more than two automotive lamps for generating an opposite magnetomotive force to that of said current winding; said voltage winding being connected in series with a resistor and in parallel with a capacitor; said relay further having a relay contact, connected between the junction point of said two windings and said disconnection indicating means, for interrupting the electric current through said disconnection indicating means when the net magnetomotive force of said two windings becomes above a predetermined value; said current and voltage windings of said relay being designed so that the opposite magnetomotive force generated by said voltage winding is a predetermined amount less than the magnetomotive force generated by said current winding when all of said more than two automotive lamps are connected with the net magnetomotive force consisting of said magnetomotive force less said opposite magnetomotive force being sufficient to actuate said relay contact to interrupt current flow, said predetermined amount by which said opposite magnetomotive force is less than said magnetomotive force being determined by requiring the change in net magnetomotive force caused by current reduction through said current coil due to disconnection of one of said more than two automotive lamps to be greater than changes in net magnetomotive force due to a decrease in voltage output of said electric source of predetermined amount from its nominal value or to an increase in voltage output of said electric source a predetermined amount from its nominal value whereby changes in voltage output of said electric source within the predetermined limits which increase the net magnetomotive force are insufficient to increase said net magnetomotive force to a value which would actuate said relay contact if one of said more than two automotive lamps is disconnected and changes in voltage output of said electric source within the predetermined limits which decrease the net magnetomotive force are insufficient to decrease said net magnetomotive force to a value which would prevent actuation of said relay contact when all of said more than two automotive lamps are connected.

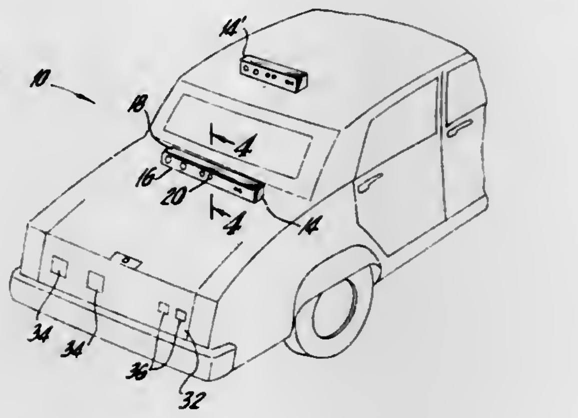
3,868,629
VISUAL COLLISION AVOIDANCE WARNING DEVICE

Harold A. Caine, 484 Kent Ct., Oceanside, N.Y. 11572

Filed Dec. 3, 1973, Ser. No. 420,952

Int. Cl. B60q *1/00*

U.S. Cl. 340—104 **18 Claims**



1. Apparatus for installation in a first vehicle for providing to the operator of a second vehicle spaced from said vehicle, a visual indication concerning the distance between the two vehicles, said apparatus comprising:

a. housing means positioned with respect to said first vehicle;

b. illumination means situated within said housing means; and

c. screen means impervious to light from said illumination means disposed on at least one side thereof, said screen means being provided with a plurality of pairs of windows, lying in a single plane the windows constituting each pair being substantially identical and separated from each other by a spacing which corresponds to the resolving power of the eye at a predetermined distance, wherein the illumination from the windows of each pair is substantially equal and sufficient to be seen at said predetermined distance, each pair being spaced from adjacent pairs by an amount greater than the spacing between the windows constituting that pair, and wherein the windows constituting a pair which are separated from each other by a greater spacing, has a greater size than the windows constituting a pair which are separated by a smaller spacing.

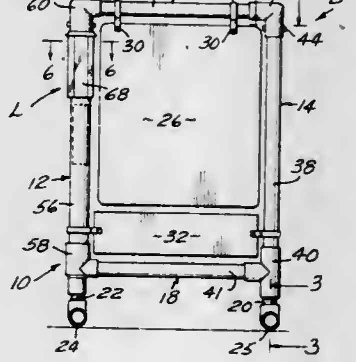
3,868,630
PORTABLE TRAFFIC BARRICADE

William V. Lesondak, 12741 Third St., Yucaipa, Calif. 92399

Filed Apr. 16, 1973, Ser. No. 351,473

Int. Cl. E01f *9/00*

U.S. Cl. 340—119 **6 Claims**



1. Skeletal structure means of generally tubular plastic construction particularly adaptable for use as a portable traf-

fice barricade having, in its normal service capacity, a generally flat upright part defining a frame of generally rectangular shape for the display of at least one informational panel and having, also, two legs; said skeletal structure means including, additionally, two elongate feet, each of said feet being threadedly engaged with the lower end of a separate one of said legs in such a way as to extend substantially perpendicularly outwardly, in opposite directions, from the axis of the leg, and each foot being rotatably adjustable between a first position normal to the plane of axial disposition of said flat upright part of said skeletal structure means, in which it serves as stable support means for the standing upright part, and a second position at right angles to said first position, to permit substantial flattening of the structure for convenient handling and storage thereof, the rotational adjustment of said foot between said first position and said second position being achieved by turning it in threaded engagement with said leg;

said frame for the display of at least one informational panel having a first jamb with built-in flasher light means, said flasher light means having a tubular lens forming a structural part of said first jamb, disposed in axial alignment with the remaining part of the jamb, and a light source laterally enclosed by the lens, and said tubular lens serving to direct light rays from said light source laterally outwardly through its wall in such manner as to render the light visible in a substantially complete circle therearound.

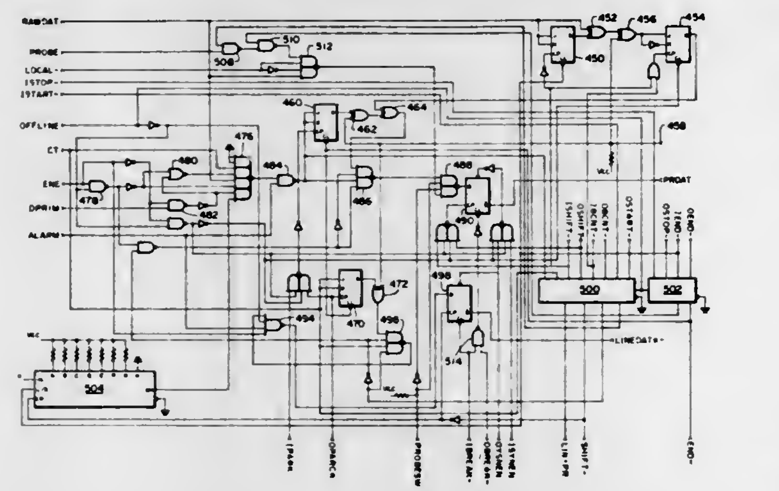
3,868,631
DIGITAL CRYPTOGRAPHIC SYSTEM AND METHOD

Barrie O. Morgan; Kenneth M. Branscome, both of Dallas; George E. Goode, Richardson, and John Q. Atchley, Dallas, all of Tex., assignors to Datotek, Inc., Dallas, Tex.

Division of Ser. No. 299,387, Oct. 20, 1972. This application Aug. 10, 1973, Ser. No. 387,362

Int. Cl. G06f *11/10*

U.S. Cl. 340—146.1 AG **3 Claims**



1. In a cryptographic system, a parity check system comprising:

- means for transmitting enciphered digital data having a parity bit,
- means for receiving said enciphered digital data from said transmitting means and for detecting said parity bit,
- means for checking the parity of preselected bits of said enciphered digital data and for storing an indication of whether or not the checked parity matches said parity bit, means connected to said receiving means for deciphering said enciphered digital data to generate clear digital data, and
- means responsive to said detecting and checking means for regenerating a parity bit for said clear digital data such that the parity of said clear digital data corresponds with the detected parity of said enciphered digital data, in order to prevent the generation of incorrect parity indications for the clear digital data due to deciphering of said data.

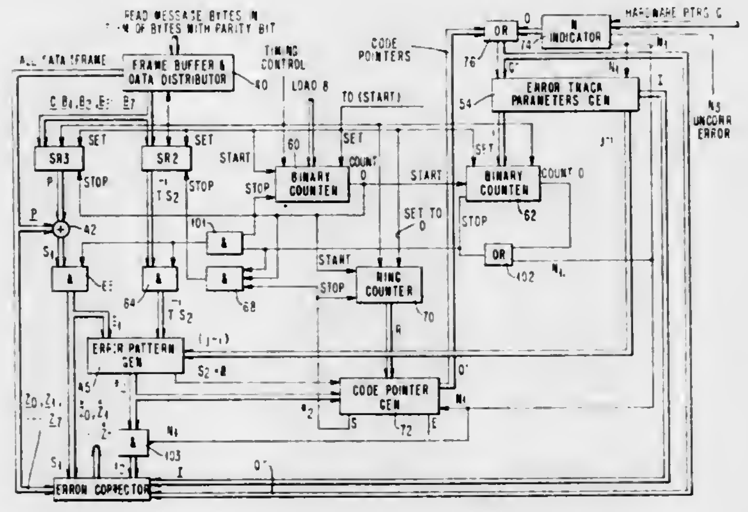
3,868,632
PLURAL CHANNEL ERROR CORRECTING APPARATUS AND METHODS

Se J. Hong, Poughkeepsie, N.Y., and Arvind M. Patel, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 306,975, Nov. 15, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 390,136

Int. Cl. G06f *11/12*

U.S. Cl. 340—146.1 AL **46 Claims**



1. An error correcting system for correcting up to two channels in error in a multiparallel channel data handling system comprising:

- an encoding system including cyclic check bit generating means for generating an orthogonally symmetrical check bit for each of said parallel channels, said check bits being entered into said respective channels and being grouped to form a cross-channel check byte;
- said encoding system further including parity bit generating means for generating parity bits for information bytes formed in a cross-channel direction, means for entering said parity bits into one of said parallel channels;
- means for decoding said data by means of said parity bits and information bytes formed in the cross-channel direction to detect errors; and
- means for correcting errors in all the bytes extending along any one or more channels including cyclic means generating a cyclic syndrome vector simultaneously to a parity syndrome vector based on the errors detected in the decoding utilizing only said cross-track bytes.

3,868,633
BLOCK CODED COMMUNICATION SYSTEM

Carlos Nuese, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1973, Ser. No. 425,580

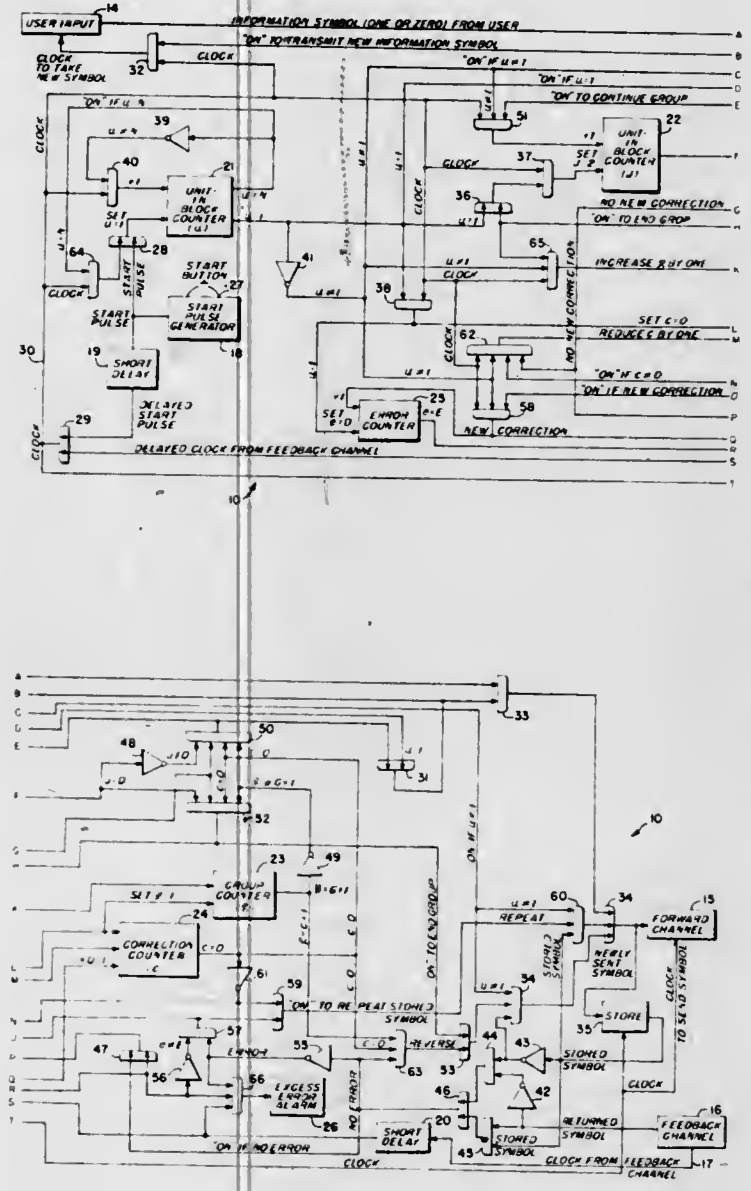
Int. Cl. H04l *1/14;* **G08c** *25/02*

U.S. Cl. 340—146.1 BA **7 Claims**

1. Communication apparatus comprising:

- a sending station;
- a remote receiving station;
- said stations being connected to each other by a noisy forward communication channel and by a noiseless feedback communication channel;
- said sending station comprising means for accepting input data symbols and for converting K of said data symbols into G groups,
- means for inserting a separator symbol after each of said groups,
- means for transmitting said G groups of information symbols, said separator symbols, correction symbols and reversal symbols to form a block comprising N total symbols to said receiving station by means of said forward channel;

- said receiving station comprising means for returning each received symbol, as received, to said sending station by means of said feedback channel;
- said sending station further including means for comparing each returned symbol of said block with the original corresponding symbol transmitted and for producing an error indication each time a difference is detected, up to a maximum of E errors,
- means responsive to each error indication to provide Q of said correction symbols,
- means for interrupting the transmission of said G groups and separator symbols after each error is detected and for transmitting said Q correction symbols to said receiving station during each interruption thereof and immediately following each error,



- means further responsive to the total number of errors, e, occurring in each block for providing $(E - e)$ Q of said reversal symbols if $e < E$,
- means for interrupting the transmission of said G groups, separator symbols, and correction symbols and for transmitting said reversal symbols to said receiving station by means of said forward channel, to complete the N symbols of each block and wherein $N = K + G + EQ$;
- said receiving station further including means responsive to said received blocks to determine if Q successive symbols have the same value thereby indicating the occurrence of an error during transmission,
- means for replacing each $(Q + 1)$ symbols in which the earliest symbol has one value and the successively received Q symbols have the opposite value with a single value equal to the Q identically-valued symbols, and
- means for removing said separator symbols from each block thereafter to provide error-free information symbols.

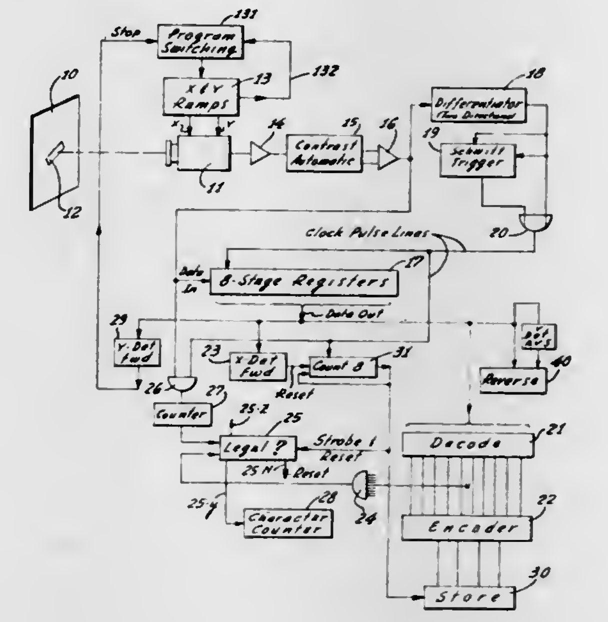
3,868,634
READING OF CONTRASTING DATA BY MEANS OF CONTINUOUSLY ATTEMPTING TO DECODE READ SIGNALS

Volker Dolch, Neu Isenburg, Germany, assignor to Scanner, Inc., Houston, Tex.

Filed Nov. 3, 1972, Ser. No. 303,507

Int. Cl. G06k *7/10*

U.S. Cl. 340—146.3 D **15 Claims**



7. In an apparatus for detecting and reading information characters in printed form and having contrasting bars extending parallel to each other and along a data field and having means for scanning a particular area by a line scan raster, wherein the lines of the raster field extend in a particular direction on the area, and including means for developing a scanning information signal representing the contrast along the scanning line in any instant, further having means for changing the direction, so that the lines of sequential raster fields extend in different directions; and signal means connected to receive the signal and processing the signal to obtain a train of data bits; the improvement comprising:

- a clock generator included in the signal means and producing a clock pulse for each contrast edge encountered, and another clock pulse a predetermined period thereafter equivalent to the width of a data bar, said clock pulses defining the bit rate in said train.
- first means connected for processing the data bits of the train and searching for particular characteristics in the bit pattern of sequential groups of bits pertaining to one scanning line of any of the raster fields, each of the groups having predetermined length;
- second means connected to the first means for decoding the groups of bits in accordance with a particular code conversion rule, and on basis of a plurality of particular patterns; and
- third means connected to the second means for assembling the converted codes of plural sequential successful decodings as a group of characters in a data field.

3,868,635
FEATURE ENHANCEMENT CHARACTER RECOGNITION SYSTEM

Mahendra B. Shah, Annandale, Va.; Donald W. Russell, Potomac, Md., and Harold L. Bowman, Vienna, Va., assignors to Optical Recognition Systems, Reston, Va.

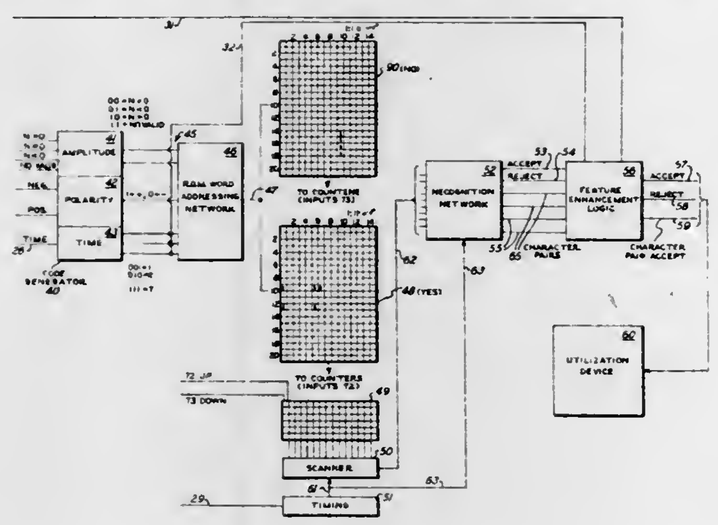
Filed Dec. 15, 1972, Ser. No. 315,766

Int. Cl. G06k *9/06*

U.S. Cl. 340—146.3 MA **7 Claims**

1. A character recognition system for recognizing the characters of a character font, each character being comprised of a unique configuration of predetermined features comprising; means for exposing each of said characters to a transducer,

means for generating at least a signal representative of each character, means responsive to said at least a signal for sequentially generating a plurality of feature signals for each character corresponding to the features of that character, a memory means comprised of a matrix of bistable elements for storing information bits, the rows of which correspond to features and the columns of which correspond to the said characters, said memory having information bits stored in each feature row at the character columns corresponding to



the characters which include that feature, the matrix positions at which said bits are stored in said memory means being alterable, a counting means associated with each character, and means for reading out the bits in each feature row when the corresponding feature signal is generated to activate the counting means associated with the character columns in which said bits are stored, means responsive to the outputs of said counting means for generating a recognition signal corresponding to one of said characters.

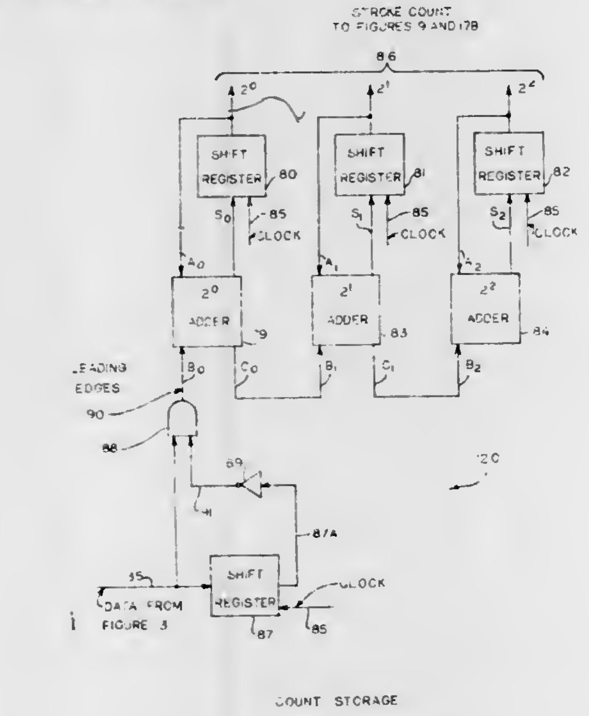
3,868,636
OPTICAL CHARACTER READER HAVING FEATURE RECOGNITION CAPABILITY

Arthur Schlang, Woodbury, N.Y., assignor to Isotec Incorporated, Plainview, N.Y.

Filed June 18, 1973, Ser. No. 371,163

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 J 15 Claims



1. An optical character reader for optically reading characters of a font of two dimensional plane characters based on an ideal regular plane matrix of two mutually perpendicular sets of linear strokes comprising:

a plurality of electro-optical sensor means arranged consecutively in an array, which is disposed to scan said characters one at a time while said characters are moved relative to said array in a direction of movement perpendicular to said array in the plane of said matrix and parallel to one of said sets of strokes and, to produce electrical signals corresponding to configurations of said characters,

sensor processing means in circuit with said sensor means and arranged to amplify said signals, quantize said amplified signals, and correlate said quantized signals to reduce effects of optical noise,

a feature generator means connected to said sensor processing means and arranged to apply several predetermined tests to determine the absence or presence of certain specified features:

said feature generator means comprising:

a first circuit means for determining the height of said characters;

a logic circuit means for counting the number of times each of said electro-optical sensor means detects one or more of the strokes parallel to said array of said characters as said characters longitudinally traverse said sensor means; and

a count sequence circuit means connected to said first circuit means and said logic circuit means for determining the consecutive number of said electro-optical sensing means which have counted the same number of strokes, parallel to said array of said characters; and

an algorithm circuit in circuit with said feature generator means for applying predetermined criteria to data communicated therefrom, to ascertain the identity of said characters being read.

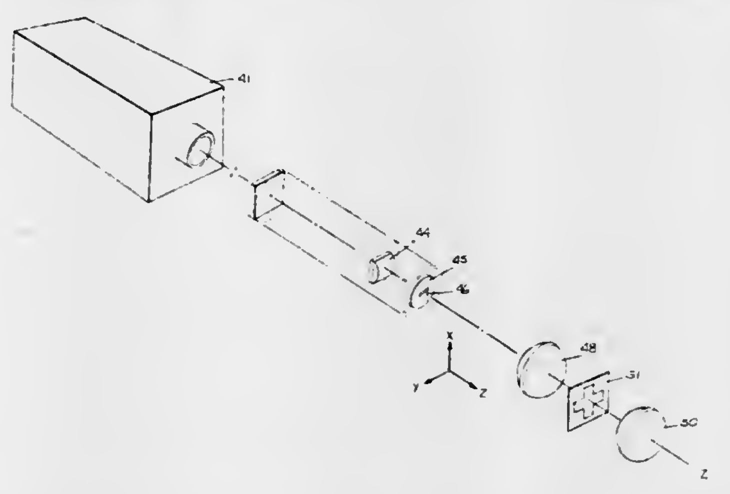
3,868,637
DOCUMENT RETRIEVAL SYSTEM

Michael S. Schiller, 4585 Fieldston Rd., Riverdale, N.Y. 10005

Division of Ser. No. 185,066, Sept. 30, 1971,. This application Sept. 19, 1973, Ser. No. 398,855

Int. Cl. G06k *9/13*

U.S. Cl. 340—146.3 F 8 Claims



1. In an automatic document retrieval system for reading a film at a predetermined plane, the interrogating light beam generating apparatus comprising:

light source means to provide a beam of spatially coherent light circular in cross-section and having a first cross-sectional area,

first and second cylindrical lenses optically downstream from said light source means to convert said circular light beam into a collimated eliptical light beam having a second cross-sectional area less than said first cross-sectional area,

a plate having an opening of a desired reading window configuration at the back focal plane of the optically downstream one of said cylindrical lenses,

first and second spherical lenses downstream from said plate to process and transmit the diffracted light beam from said opening,

said opening being at the front focal plane of said first spherical lens, the back focal plane of said first spherical lens being substantially coincident with the front focal plane of said second spherical lens,

the back focal point of said second lens being coincident with the predetermined plane of the film at which the information to be read is located,

the sole image created at said predetermined plane being an image of the light transmitted through said opening in said plate.

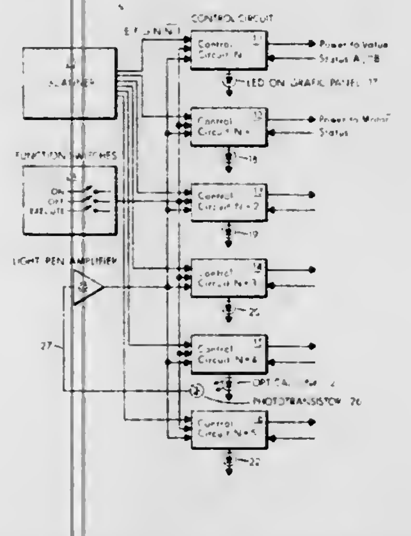
3,868,638
SIGNAL LIGHT-PHOTO SENSITIVE PROBE CONTROL SYSTEM

Irvin D. Johnson, Englewood, Colo., assignor to Marathon Oil Company, Findley, Ohio

Filed July 12, 1973, Ser. No. 378,724

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 R 10 Claims



1. In a remote control system for operating various elements located some distance away from a control panel, the improvement comprising in combination

a. a control circuit means for controlling each of said elements,

b. a light source corresponding to each of said elements to be controlled, said light source being switched on by said control means when said element is in a first status and switched off when said element is in a second status,

c. a light sensitive probe adapted for being placed in proximity with any of said light sources,

d. an electrical system which successively sweeps each of said light sources in synchronization with a distinctive period of time measured from the beginning of each sweep, whereby the time as measured from the start of each sweep, at which said light probe receives a signal from one of said light sources is indicative of which of said light sources is then being energized.

3,868,639
REMOTE CONTROL RECEIVER RESPONSIVE TO SOUND

Hisao Okada, Yokohama, and Tadashi Sato, Tokyo, both of Japan, assignors to Sony Corporation, Shinogawa-ku, Tokyo, both of, Japan

Filed Oct. 17, 1972, Ser. No. 298,383

Claims priority, application Japan, Oct. 18, 1971, 46-82292

Int. Cl. H04q *1/18, 1/45*

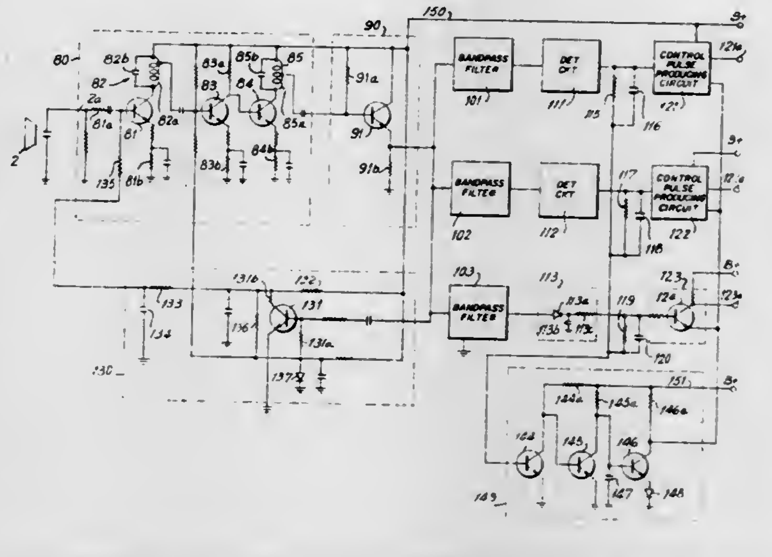
U.S. Cl. 340—148 7 Claims

1. A circuit for discriminating between sound signals, which are generated by a transmitter and which have at least one predetermined frequency, and noise signals, said circuit comprising:

A. electro-acoustic transducer means for converting the transmitted sound and the noise signals into electrical signals;

B. variable gain means for amplifying the electrical signals;

C. control means responsive to the amplified electrical signals for producing a controlling signal in response to the amplified signals, said control means being connected to said amplifying means to control the gain of the variable gain amplifying means, said control means comprising a time constant circuit having a shorter time constant and a slow discharge time constant;



D. means for converting the amplified electrical signals into corresponding direct current pulse signals whose durations are representative of the length of time that the amplitude of the amplified electrical signals is above a first predetermined voltage level;

E. means responsive to the integrated direct current pulse signals for producing output control signals representative of each integrated direct current pulse signal whose amplitude exceeds a second predetermined voltage level.

3,868,640
INTERROGATION OF REMOTE STATIONS VIA AUTOMATIC DIALLER

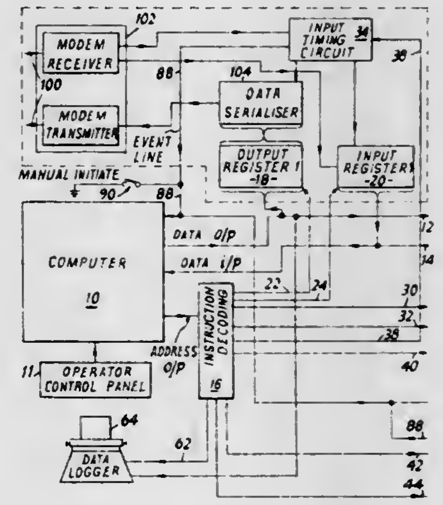
Alexander Joseph Binnie, Luton; Kenneth Bowdell, Shefford, and Philip James Clark, Luton, all of England, assignors to George Kent Limited, Luton, Bedfordshire, England

Filed May 8, 1972, Ser. No. 251,203

Claims priority, application Great Britain, May 13, 1971, 14638/71

Int. Cl. H04g *9/00*

U.S. Cl. 340—151 38 Claims

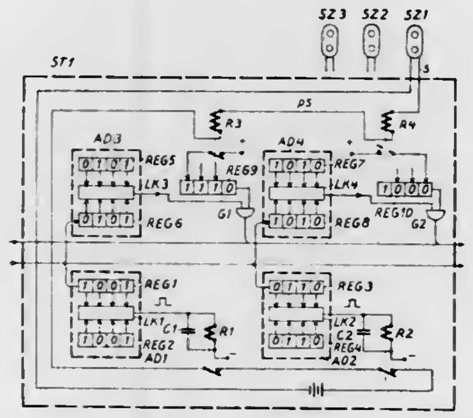


1. Apparatus for the interrogation of a plurality of remote stations, comprising a digital computer, automatic calling means connected to the computer and responsive to an instruction signal from the computer to generate a dialing signal for application to switching circuits, thereby to establish telephonic contact with a predetermined one of the remote stations via an associated line from the switching circuits; output means connected to the computer and responsive to an instruction signal from the computer to generate and transmit to the predetermined remote station via the switching circuits a coded interrogation signal arranged to promote the transmis-

sion of an information-carrying response signal from the remote station, the output means including means for selectively coding the interrogation signal according to the computer instruction with a code representative of a predetermined one of a plurality of sources of information available at the predetermined remote station, whereby a response signal including information from the said predetermined source is transmitted from the predetermined remote station, and input means connected to the computer and operative to receive the response signal.

3,868,641
CONTROL SYSTEM PARTICULARLY FOR INTERLOCKING INSTALLATIONS FOR RAILWAY OPERATION

Gunnar Johannes Hagelin, Skarholmen, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden
Filed Jan. 11, 1974, Ser. No. 432,681
Claims priority, application Sweden, Jan. 29, 1973, 7301177
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **1 Claim**



1. A control system particularly for interlocking installations for railway operation including controlled means, condition indicating means and a central control unit comprising a computer, means for receiving condition information from said condition indicating means in said control unit, and means for sending orders to said controlled means from said control unit, an instruction memory in the computer containing two instruction sequencies causing identical result in treating each of the controlled and indicating means, and a data memory having two separate memory fields for the two respective instruction sequencies to be carried out, a definite logical relation existing between at least one of the following parameters:

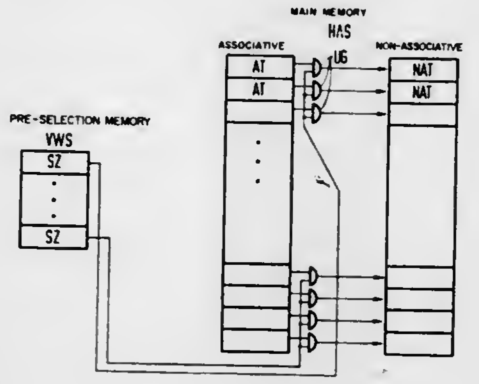
a. the addresses of the respective memory fields,
b. the bit significance in the respective memory words,
c. the bit representation in the respective memory words,

said controlled means comprising receiver means for receiving control orders each computed according to one of said instruction sequencies and operating upon agreement between said two control orders, and information sending means in said indicating means for sending two separate condition information data having a logical relation to each other defined by the logical relation of the content in the memory fields.

3,868,642
HIERRARCHIAL ASSOCIATIVE MEMORY SYSTEM

Harold Sachs, Faistenhaar, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Aug. 21, 1972, Ser. No. 282,382
Claims priority, application Germany, Aug. 25, 1971, 2142634
Int. Cl. G06f *13/00;* **G11c** *15/00, 17/00*
U.S. Cl. 340—172.5 **4 Claims**

1. Associative memory apparatus in which a non-associative portion stores data words which are respectively accessed when an offered address coincides with the corresponding data address stored in an associative portion, comprising: a main memory including storage cells each having a non-associative portion and an associative portion, said non-associative portions of said cells storing data words and said associative portions of said cells storing the low value address of digits of said data words; an associative pre-selection memory connected to said main memory and including storage cells storing the higher-value address digits of said data words, said preselection memory and said associative portions of said main memory receiving an input address and including means providing coincidence signals when the high and low-value address digits of said data words correspond to said input address, said non-associative portions of said main memory responsive to and accessed by said coincidence signals, a plurality of AND gates, each gate connected between the associative and non-associative portions of a storage cell of said main memory and having an input connected to said associative portion, an output connected to said non-associative portion, and an input connected to a storage cell of said pre-selection memory, the AND gates associated with storage cells of said non-associative portions which have the same higher-value address digits stored in said pre-selection memory being combined in a group and having a common input connected to the corresponding storage cell of said pre-selection memory and operated to access the non-associative portions connected thereto in response to a coincidence signal from said pre-selection memory and a coincidence signal from one of the associative portions connected thereto.



3,868,643
CONVEYOR MEMORY SYSTEM

Kenneth W. Bullivant, Turnersville, N.J., assignor to K-Tron Corporation, Glassboro, N.J.
Filed Mar. 26, 1973, Ser. No. 345,039
Int. Cl. G06f *15/20;* **B65g** *43/00;* **G01g** *19/00*
U.S. Cl. 340—172.5 **17 Claims**

1. Apparatus for compensating for the effects of the characteristics of a conveyor means at a predetermined measuring point, as the conveyor means traverses said measuring point, comprising:

means for detecting a predetermined point on said conveyor means;

means for generating a marker pulse in response to the detection of said point, said marker pulse indicating a complete cycle of movement of said conveyor means;

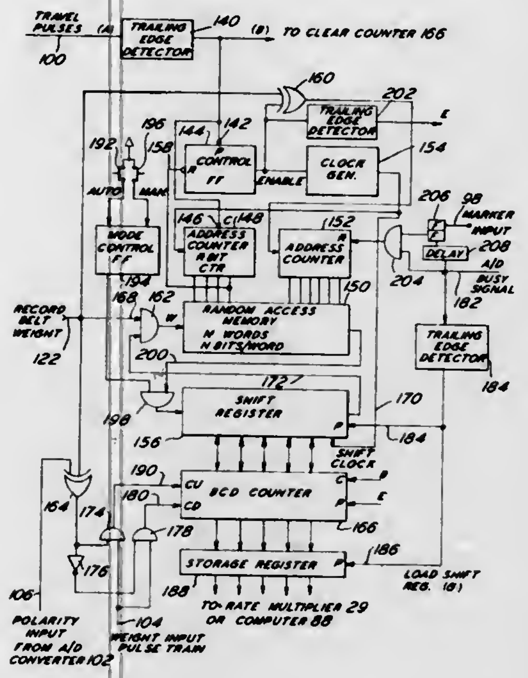
means for generating travel pulses in response to movement of said conveyor means, said travel pulses indicating the movement of segments of said conveyor means past said measuring point;

means for generating a first signal representing said effects when the conveyor means is not loaded;

means for generating a second signal representing said effects of the conveyor means when it is loaded;

means for storing said first signal representing said effects of said conveyor means in an address location determined by said marker and travel pulses;

means for reading out of said storing means said stored signal in response to said marker and travel pulses; and



means for compensating said second signal by said stored signal

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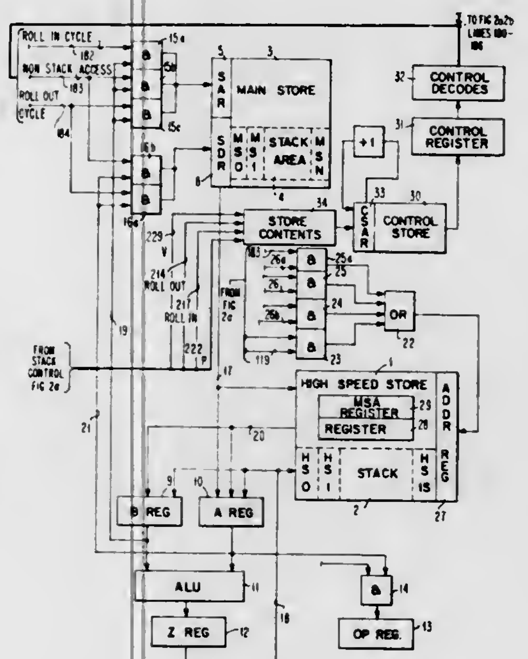
3,868,644
STACK MECHANISM FOR A DATA PROCESSOR

Robert A. Healey, Endicott, and Everett M. Shimp, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 26, 1973, Ser. No. 373,847.
Int. Cl. G06f *13/06*
U.S. Cl. 340—172.5 **7 Claims**



1. In a system having means including a stack and a slower speed store for directly executing algorithmic type problem programs of the type

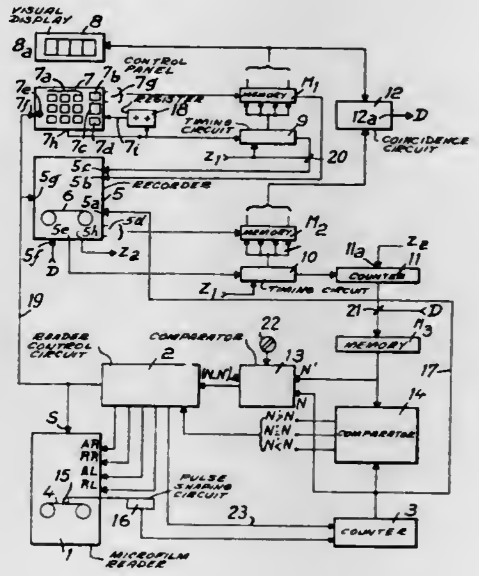
in which means transfers data entries into and removes entries from the stack for processing in a last-in-first-out order and

in which means roll overflow entries out to the slower speed store when the stack is full and roll overflow entries into the stack when the stack is empty,

the combination with the stack and slower speed store of means including pointer registers for permitting the removal of each entry in the stack from the stack for processing after a copy of said entry has been rolled out to the slower speed store but not rolled back to the stack.

3,868,645
APPARATUS FOR AUTOMATICALLY FINDING MICRODOCUMENTS ON A FILM

Jean Delplanque, Vayres-sur-Essone, and Jacques Foursy, Villejuif, both of France
Filed July 10, 1972, Ser. No. 270,258
Claims priority, application France, Sept. 13, 1971, 7132965
Int. Cl. G06f *7/22;* **G03b** *23/12*
U.S. Cl. 340—172.5 **23 Claims**



1. Apparatus for locating frames of a film, the apparatus comprising:

a film reader having means for driving a film;

sensing means for sensing the position of said frames of said film as said film is driven;

a magnetic recording reader operable independent of said film reader and adapted to receive a magnetic recording medium; said medium having recorded thereon a plurality of words corresponding to respective ones of said frames to be located and position data associated with each said word defining the position of said frames identified by said words, said position data also being recorded on said medium;

searching means operably connected to said magnetic recording reader for searching said medium in said magnetic recording reader to find a word corresponding to a frame to be located;

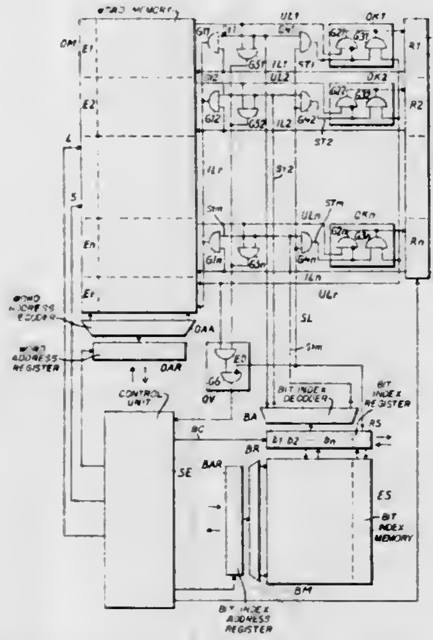
comparison means operably connected to said searching means and said sensing means for comparing position data read from said medium which corresponds to said word found by said searching means with the frame position as sensed by said sensing means and for providing a signal representative of the conditions compared; and

means for controlling the film driving means in said film reader, said controlling means being connected to said film reader and said comparison means and acting to terminate film displacement in said film reader upon the occurence of a signal representing a favorable comparison when said sensing means senses a position corresponding to the position data associated with said word found on said medium of said magnetic recording reader.

3,868,646
MEMORY DEVICE WITH STANDBY MEMORY ELEMENTS

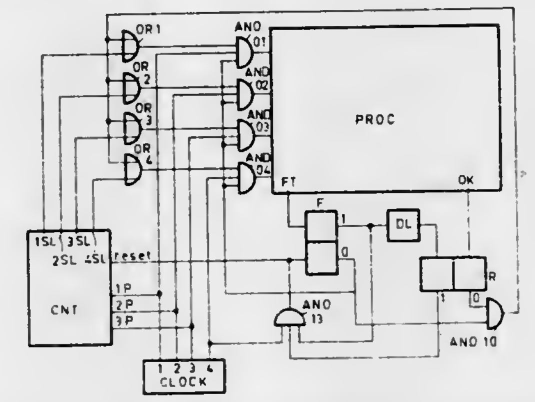
Ruben Gustav Bergman, Alvsjo, Sweden, assignor to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden
Filed May 4, 1973, Ser. No. 357,118
Claims priority, application Sweden, June 9, 1972, 7605/72
Int. Cl. G06f *11/00*; **G11c** *7/00, 13/00*
U.S. Cl. 340—172.5 **5 Claims**

1. In combination with a computer which has a memory having memory elements for storing words wherein each word is a coded combination of bits in bit positional index order and each word is stored in an addressable word group of the memory elements, each memory element storing a particular positional bit of a word, a word register for receiving a word from an addressed word group of the memory or transferring a word to an addressed word group of the memory, a word address register for receiving the address of the word group, a source of word addresses, a transfer means for transferring word addresses from the source of word addresses to the word address register, and a control unit for controlling the transfer means, and the control unit including means for transmitting control signals to the memory for indicating the direction of transfer of a word between the word register and the word group indicated by the contents of the word address register, standby memory apparatus comprising a plurality of input channel means and a plurality of output channel means, means for connecting each of said input and output channel means between a bit position of the word register and a corresponding bit position element of an addressed word group, at least one standby memory element for at least some of the word groups of the memory, a plurality of controllable writing gate means each having a control input, an information input connected to one of said input channel means and an information output connected to said standby memory element of an addressed word group, each of said controllable writing gate means connecting its information input to its information output upon receipt of a control signal at its control input, a plurality of reversing switch means, each of said reversing switch means being interposed in one of said output channels, each of said reversing switch means having a first information bit input connected to receive a particular positional bit from an addressed word group, a second information bit input for receiving the bit stored in the standby memory element of the addressed word group, an information bit output connected to the associated bit position of the word register, and a reversing control input means for receiving a control signal, each of said reversing switch means including means operative in the absence of such control signal at said reversing control input means for connecting said first information bit input to said information bit output and in the presence of such control signal for connecting said second information bit input to said information bit output, a bit index storage means for transmitting a control signal to the associated control input of the controllable writing gate means and the associated control input means of the reversing switch means in accordance with the bit position stored therein, and said control unit including means for transferring to said bit index storage means a representation of the desired bit position.



3,868,647
ELIMINATION OF TRANSIENT ERRORS IN A DATA PROCESSING SYSTEM BY CLOCK CONTROL

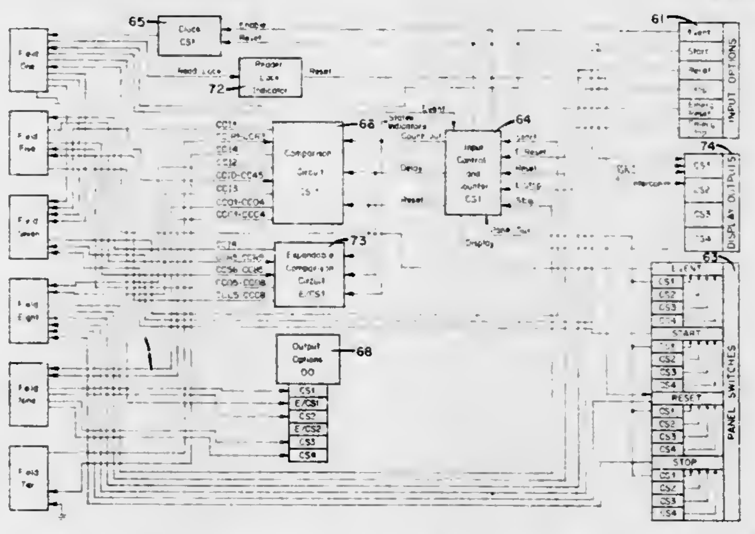
Frederik Zandveld, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 16, 1973, Ser. No. 360,833
Claims priority, application Netherlands, May 27, 1972, 7207216
Int. Cl. G06f *1/04*
U.S. Cl. 340—172.5 **6 Claims**



1. In a data processing system having a control unit, a clock for generating clock pulses and a data processor which is controlled by said clock pulses and wherein the data processor also comprises an error detector for detecting processing errors, said system also including means to reset the control unit to a prior operational position by control of an error signal generated by the error detector and means internal to the control unit to restart the data processor by an appropriate restart signal, the improvement comprising means responsive to the error signal for generating an intermediate signal in addition to the restart signal, and means responsive to said intermediate signal and responsive to the clock for generating clock pulses having a repetition time which exceeds that of the clock pulses provided prior to the appearance of the error signal, whereby the processor may be operated at the faster clock rate so that transient processing errors may be avoided.

3,868,648
PROGRAMMABLE PROCESS AND PRODUCTION CONTROL SYSTEMS

Herman Levin, Fort Collins, Colo., assignor to Industrial Dynamics, Inc., Fort Collins, Colo.
Filed July 5, 1973, Ser. No. 376,827
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5 **13 Claims**



1. A programmable process and production control center for operating a system which system yields process and production status signals, said control center being subject to the receipt of command signals from source means external to said control center, with said control center comprising:

comparison means for developing an output signal in response to a first combination of input signals and to governing signals;

means for producing said governing signals to govern the operation of said comparison means in response to a second combination of input signals;

and selectively-fixed totally-and-simultaneously-accessed passive self-decoding read-only memory means responsive to a plurality of incoming signals for defining and determining the development of said first and second combinations of input signals,

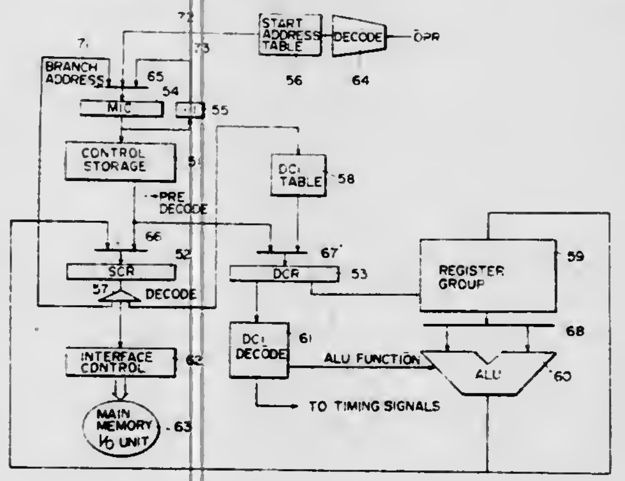
said incoming signals being a combination of those present of said status signals, of said command signals, of signals representing a time interval, of signals representing a number of events and of signals, including said governing signals and said output signal, representing said governing operation,

said memory means including a medium in which is defined an array of signal path locations that define and represent a program and also including a reader for said medium to accept and translate array-defined ones of said incoming signals as input signals of said first combination to which said comparison means responds and to accept and translate array-defined ones of said incoming signals as inputs signals of said second combination to which said producing means responds with said second combination of input signals including signals representing the magnitude of at least one of said time interval and said number of events, the program defined and represented by said array determining which of said incoming signals are translated as input signals and also determining at least in part which of said incoming signals are included in each of said first and second combinations of input signals,

and said read-only-memory means exhibiting a self-contained capability of responding directly to all possible combinations of said incoming signals in definition and determination of said development.

3,868,649
MICROPROGRAM CONTROL SYSTEM

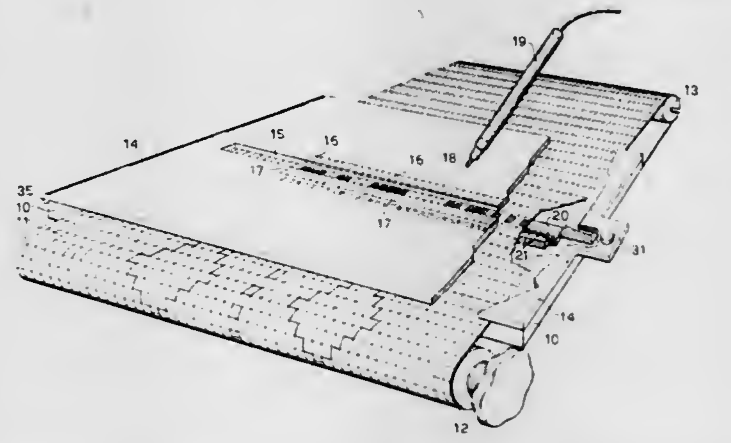
Kiyosumi Sato, Kawasaki; Takashi Aoki, Yokohama, and Yasuyoshi Asagi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed June 26, 1973, Ser. No. 373,793
Claims priority, application Japan, June 28, 1972, 47-64831; July 20, 1972, 47-72748
Int. Cl. G06f *9/06*
U.S. Cl. 340—172.5 **9 Claims**



1. A microprogram control system comprising control storage means for storing micro instructions and including means for dividing the micro instructions into a first set of micro instructions for controlling a data path and a second set of micro instructions for memory access control; sequence control means for reading out from said storage means in accordance with a microprogram the first and second sets of instructions independently of each other; and first and second registers for receiving respectively the first and second sets of instructions read out from said control storage means.

3,868,650
READOUT DEVICE FOR FABRIC PATTERNS FOR THE FORMATION OF CORRESPONDING ELECTRIC PULSES, ON HOSIERY MACHINES

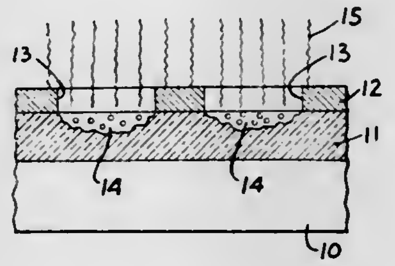
Mario Piro, Genova, Italy, assignor to Nuova San Giorgio S.p.A., Genova-Sestri, Italy
Filed Jan. 11, 1974, Ser. No. 432,584
Claims priority, application Italy, Jan. 11, 1973, 19165/73
Int. Cl. H01r *13/50*
U.S. Cl. 340—173 R **5 Claims**



1. A readout device for a fabric pattern and formation of the corresponding pulses, comprising a guideway which slidably supports the pattern sheet in which a row of meshes is represented by a row of reference symbols, a plate which can be superposed to said guideway, two pluralities of contact elements arranged on parallel rows perpendicular to said guideways and between which a window is opened which permits the readout of said pattern, a plurality of light sources, each arranged in the vicinity of a pair of confronting elements in the two rows: means of manual actuation of each of said contact elements, the one and the other element of a couple of confronting elements controlling a bistable circuit to actuate or deactivate, respectively, the emission of an energizing signal for the corresponding light source, a storage member for the delivered signals being further provided.

3,868,651
METHOD AND APPARATUS FOR STORING AND READING DATA IN A MEMORY HAVING CATALYTIC MATERIAL TO INITIATE AMORPHOUS TO CRYSTALLINE CHANGE IN MEMORY STRUCTURE

Stanford R. Ovshinsky, Bloomfield Hills, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.
Continuation-in-part of Ser. No. 63,404, Aug. 13, 1970, abandoned. This application July 9, 1971, Ser. No. 161,219
Int. Cl. G11c *11/34*
U.S. Cl. 340—173 LS **56 Claims**



1. The method of recording and retrieving information comprising the steps of: providing a layer of substantially disordered and generally amorphous memory material which has one structural condition which is substantially disordered and generally amorphous and having one detectable charac-

teristic, which is capable of having discrete portions thereof physically changed to another structural condition having another detectable characteristic, which has internal biasing forces toward said other structural condition, and which has internal inhibitions against the action of said biasing forces; providing said layer with a catalytic material which is catalytically capable of relatively increasing said biasing forces and decreasing said inhibitions against the action of said biasing forces of the memory material; selectively, at selected desired discrete portions of the layer of memory material in accordance with a desired pattern of useful information, activating the catalytic material at said selected desired discrete portions of the layer and physically changing said layer at said selected desired discrete portions from said one detectable structural condition which is substantially disordered and generally amorphous to said other detectable structural condition to record the desired pattern of useful information in said layer; and detecting the structural condition of said selected desired discrete portions of said layer of memory material as to whether said desired discrete portions are in said one detectable structural condition which is substantially disordered and generally amorphous or in said other detectable structural condition to retrieve the information recorded in said layer.

3,868,652

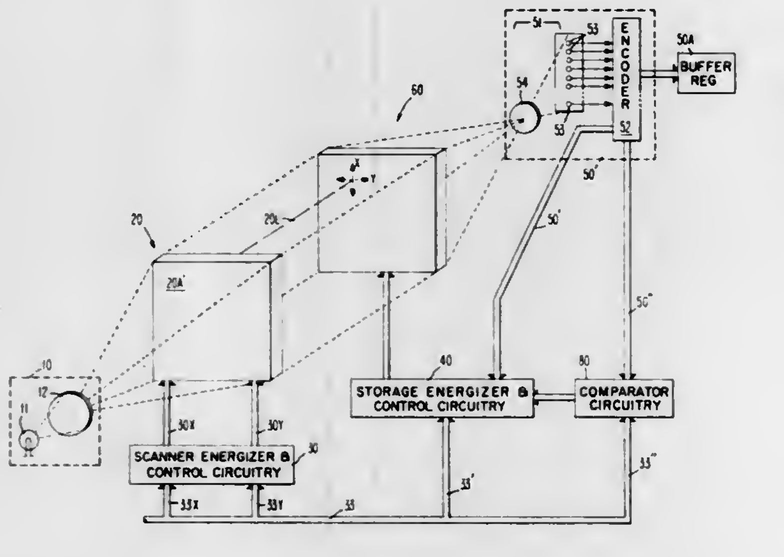
MULTI-LAYER FERROELECTRIC OPTICAL MEMORY SYSTEM

Lawrence Cooper, Endwell; Lawrence B. Ii, and David C. T. Shang, both of, Apalachin, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1973, Ser. No. 371,227

Int. Cl. G11c *11/42*

U.S. Cl. 340—173 LM **8 Claims**


ENCODER
BUFFER REG
STORAGE ENERGIZER & CONTROL CIRCUITRY
COMPARATOR CIRCUITRY
SCANNER ENERGIZER & CONTROL CIRCUITRY

1. Optical memory system apparatus comprising in combination:

optical storage means having plural storage locations for storing digital information therein, said storage means including a plurality of spaced conductive members and a plurality of ferroelectric member means interleaved therebetween, each of said storage locations including a mutually exclusive discrete region in each of said ferroelectric member means, and each storage location having said regions thereof in a predetermined optical coupling relationship with each other;

means for selectively setting the birefringent level in the storage regions of each ferroelectric member means, the birefringent levels set for the regions of each particular storage location providing a spectral characteristic indicative of digital information to be stored in the particular storage location;

and detecting means for optically detecting the spectral characteristic of the regions associated with each storage location to determine the digital information stored therein.

3,868,653

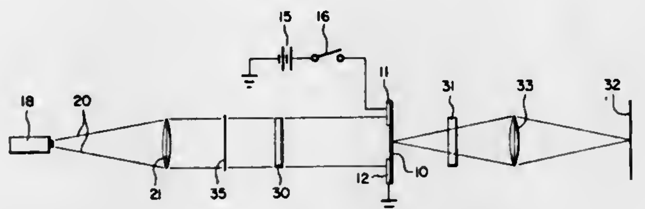
ERASABLE OPTICAL MEMORY

Donald C. Winter, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 1, 1973, Ser. No. 402,660

Int. Cl. G11b

U.S. Cl. 340—173 LS **13 Claims**



1. An erasable optical memory comprising:

a. a polycrystalline material having electro-optical properties and a birefringence inducible by an electric field and by photons, and said material being transparent to light within a predetermined wavelength region;

b. means for generating and projecting an intense light beam onto said material; and

c. means interposed into the path of said light beam for modulating the intensity of said light beam in accordance with the data to be stored, whereby a substantially permanent birefringence is induced in said material representative of the data.

3,868,654

MEMORY CELL WITH HIGH THRESHOLD WRITING TRANSISTOR

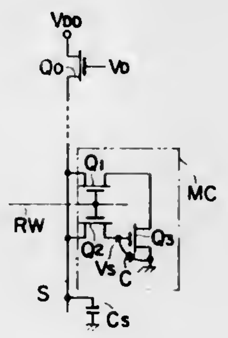
Kiyoo Itoh, Kodaira; Katsuhiro Shimohigashi, Kokubunji, and Keisuke Hashizume, Hachioji, all of Japan, assignors to Hitachi, Ltd., Chryoda-ku, Tokyo, Japan

Filed Oct. 23, 1973, Ser. No. 408,742

Claims priority, application Japan, Oct. 20, 1972, 47-104452; Sept. 17, 1973, 48-103848

Int. Cl. G11c *11/24, 7/00, 11/40*

U.S. Cl. 340—173 CA **4 Claims**



1. In a semiconductor memory including:

at least one memory cell having a reading transistor, a writing transistor, and an information storage transistor, each transistor having an input electrode, an output electrode, and a control electrode, the output electrodes of said reading transistor and writing transistor being respectively connected to the output electrode and control electrode of said information storage transistor;

a sense-digit line connected to the input electrodes of each of said reading and writing transistors;

a select-line connected to the control electrodes of each of said reading and writing transistors; and

a terminal for coupling a source of reference potential to the input electrode of said information storage transistor; and

the improvement wherein the threshold voltage of said writing transistor, at which threshold voltage a current conductive path is established between the input and output electrodes of said writing transistor, is fixedly larger than the threshold voltage of said reading and information storage transistors.

3,868,655

THREE DIMENSIONAL OPTICAL ASSOCIATIVE MEMORY

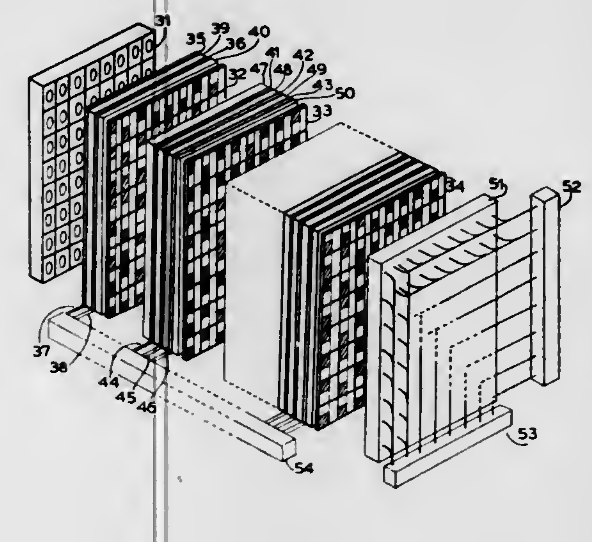
Franco Filippazzi, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Nov. 1, 1973, Ser. No. 411,950

Claims priority, application Italy, Nov. 29, 1972, 32200/72

Int. Cl. G11c *15/00, 13/02*

U.S. Cl. 340—173 AM **8 Claims**



1. An associative optical memory system for storing in memory locations binary information arranged in words composed of a plurality of bits and for retrieving the locations containing words matching at least in part with an interrogating word composed of a plurality of bits, comprising:

a plurality of optical recording supports, each for recording one bit of each of said words, each support comprising a plurality of bit recording regions, each region comprising a first bit area and a second bit area, each bit being recorded in said first area in either opaque or transparent form according to its value and being recorded in said second bit area in opposite form with respect to said first area, said recording supports being arranged in a stack with bit recording regions of each word in alignment;

radiation means for supplying at least a radiation beam for illuminating one of said bit areas of all the bit recording regions of a word;

a plurality of electrooptical beam shifting devices for transversely shifting said beam in response to shift control signals, each said beam shifting device being interposed between two subsequent recording supports and between said radiation means and a first of said recording supports;

shift control signal generating means coupled to said shifting device for generating signals according to an interrogating word and for shifting said beam in alignment with a predetermined one of said first or second bit area of each bit recording region of the same word, depending on the value of each bit of the interrogating word; and

detecting means for detecting the beam emerging from said stack, when said beam is shifted to cross transparent areas in all the bit recording regions of said word.

3,868,656

REGENERATING CIRCUIT FOR BINARY SIGNALS IN THE FORM OF A KEYED FLIP-FLOP

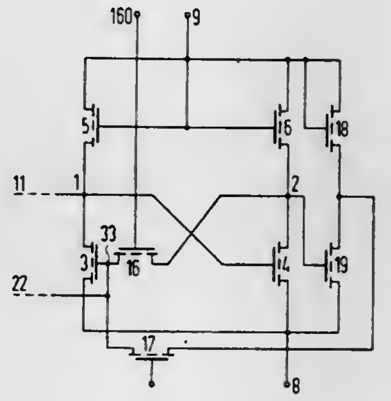
Karl-Ulrich Stein, and Karl Goser, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 19, 1973, Ser. No. 426,036

Claims priority, application Germany, Dec. 19, 1972, 2262171

Int. Cl. G11c *7/00*

U.S. Cl. 340—173 DR **7 Claims**



1. In a regenerating circuit for binary signals, in the form of a keyed flip-flop having one labile and two stable points, and with at least two inverting amplifier stages each including a switching transistor and a load transistor, in particular for stored signals and for the read-out of integrated single transistor storage elements which form a storage field in which the storage elements of the storage field are connected by way of a digit line to the regenerating circuit, the improvement therein comprising means for adjusting the inverting amplifier stages into the region of the labile point of the regenerating circuit, including a feedback circuit which comprises an odd number of inverter stages.

3,868,657

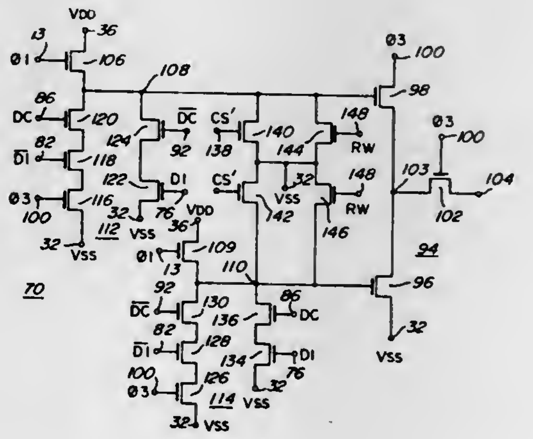
PERIPHERAL CIRCUITRY FOR DYNAMIC MOS RAMS

Charles Robert Hoffman, Tempe, Ariz., and Donald H. Kube, San Jose, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 284,183, Aug. 28, 1972, Pat. No. 3,796,893. This application Nov. 19, 1973, Ser. No. 417,151

Int. Cl. G11c *7/00, 11/40*

U.S. Cl. 340—173 R **8 Claims**



1. In a monolithic dynamic random access memory connected to first, second and third clock signals, a read-write signal, a data input signal, first and second power supplies and a chip select signal, and generating therein a data control signal and a data control complement signal, a write circuit for producing voltage levels representative of binary information provided by the data input signal on an output node, the write circuit including a push-pull driver circuit having a pull-up

field-effect transistor and a pull-down field-effect transistor, the improvement comprising:

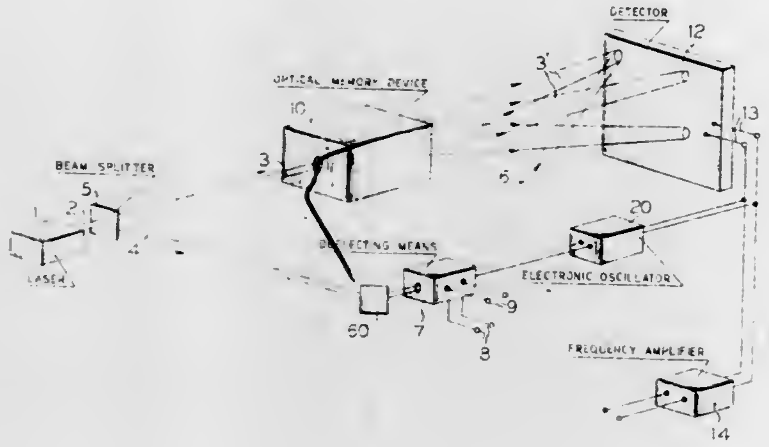
a first discharge circuit connected to the gate of the pull-up field-effect transistor for producing a logical exclusive OR function of the data control signal and the data input signal;

a second discharge circuit connected to the gate of the pull-down field-effect transistor for producing a logical exclusive NOR function of the data control signal and the data input signal, and;

a data input inverter connected to the first and second discharge circuits for providing a data input complement signal thereto.

3,868,658
DEVICE FOR OPTICAL SUPERHETERODYNE INFORMATION READING

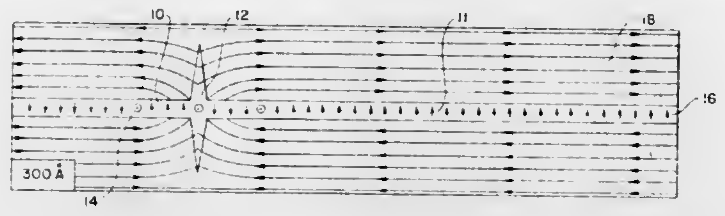
Horst Kiemle, Munich, Germany, assignor to Siemens Aktiengesellshaft, Berlin and Munich, Germany
Filed Sept. 20, 1972, Ser. No. 290,501
Claims priority, application Germany, Sept. 27, 1971, 2148173
Int. Cl. G11c *13.02;* **G02b** *27/00*
U.S. Cl. 340—173 LT **7 Claims**



1. In a device for optically reading information having a light source for directing a beam of light onto a portion of an optical memory which memory imposes information on the beam, a beam splitter disposed in the path of light between the source and the optical memory to separate a partial beam from the beam of light prior to striking the optical memory, means for guiding the partial beam of light through a frequency shifter and onto a detector which has a heterodyne reception of the partial beam and the beam having the information imposed thereon to transform light beams into electrical signals which are received by an intermediate frequency amplifier, the improvement comprising the frequency shifter being an acousto-optical light deflector which causes a direction-dependent frequency shifting of the partial beam which causes the electrical signal of the detector to be a variable intermediate frequency signal and an electronic oscillator providing a variable frequency output which is mixed with the variable intermediate frequency signal of the detector prior to the signal being received by the intermediate frequency amplifier, said oscillator being synchronized with the acousto-optical light deflector so that the signal received by the amplifier is a constant frequency signal.

3,868,659
SERIAL ACCESS MEMORY USING THIN MAGNETIC FILMS

Leonard J. Schwee, Colesville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 10, 1973, Ser. No. 349,871
Int. Cl. G11c *11/14, 11/42*
U.S. Cl. 340—174 TF **6 Claims**



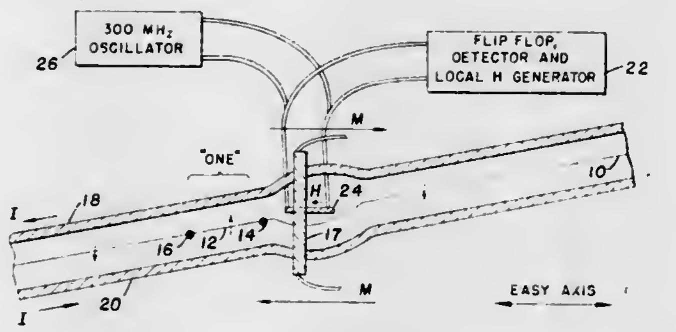
1. A magnetic propagation arrangement comprising:

a stationary domain wall containing Bloch lines, cross-ties, and Neel walls wherein digital information is stored in said Neel walls;

means external to said domain wall for creating a field pattern on said domain wall whereby said digital information is propagated along said domain wall.

3,868,660
DETECTOR FOR CROSS-TIE MEMORY

Leonard J. Schwee, Colesville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 10, 1973, Ser. No. 349,897
Int. Cl. G11c *11/14, 21/00*
U.S. Cl. 340—174 TF **5 Claims**



1. Apparatus for detecting magnetic digital information comprising:

a stationary magnetic domain wall containing Bloch lines, cross ties and Neel wall segments propagating therein;

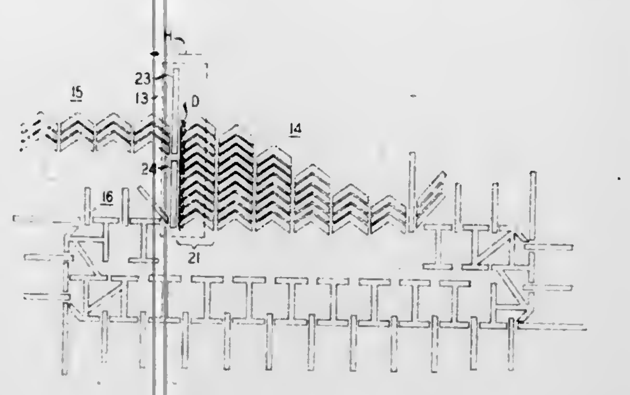
probe means above said domain wall; and

means for introducing a localized field at said probe, whereby said domain wall undergoes wall reversal motion to be sensed by a change of magnetization by said probe.

3,868,661
MAGNETIC BUBBLE PASSIVE REPLICATOR

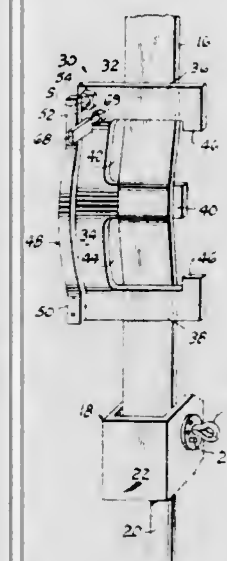
Peter Istvan Bonyhard, Edison; Yu-Ssu Chen, New Providence, and James Lanson Smith, Bedminster, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Oct. 15, 1973, Ser. No. 406,639
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **8 Claims**

1. Magnetic apparatus comprising a layer of material in which single wall domains can be moved, a multistage pattern of elements coupled to said layer operative responsive to a magnetic field reorienting in the plane of said layer to move domains from stage to stage along a path, said pattern defining in a reference stage a linear array of attracting poles for enlarging said domain laterally with respect to said path, said pattern also including an additional element arrangement between said reference stage and a next subsequent stage to produce first and second relatively strong attracting poles spaced apart laterally with respect to said path in response to said field, said additional element arrangement being of geometries and being disposed with respect to said elements of said reference stage in a manner to generate intermediate repelling poles for cutting a domain moved from said reference stage to a next subsequent stage.



3,868,662
MOBILE HOME ANCHOR STRAND TENSION INDICATOR

Levi Russell, Jr., P. O. Box 461, Ballinger, Tex. 76821
Filed Mar. 25, 1974, Ser. No. 454,636
Int. Cl. G08b *23/00*
U.S. Cl. 340—213 R **6 Claims**



1. A tension sensing means for a flexible linearly adjustable anchor strand connecting an object to be anchored to the surface of the earth, comprising:

an elongated plate-like body having longitudinally spaced eyelets for threadedly receiving longitudinally an intermediate portion of said anchor strand,

said body having a transverse intermediate portion laterally off-set with respect to the plane defined by its respective end portions;

an indicator arm connected at one end portion with one end portion of said body and projecting at its opposite free end portion toward the other end portion of said body in overlying spaced relation with respect to the adjacent surface of said body;

normally closed switch means connected with said other end portion of said body,

said switch means being maintained open by contact with the free end portion of said arm;

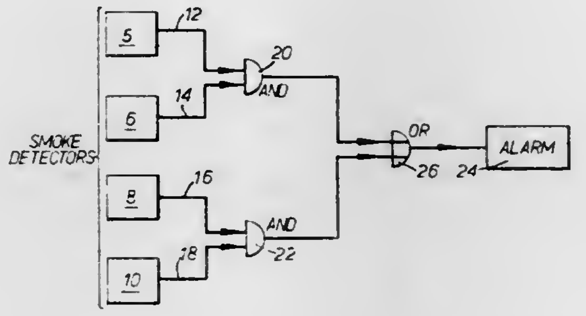
warning signal means; and,

wiring connecting a source of electrical energy with said warning signal means through said switch means,

whereby displacement of said intermediate off-set body portion toward or away from the plane defined by the body end portions closes said switch means.

3,868,663
SMOKE DETECTING APPARATUS WITH MULTIPLE DETECTORS CONNECTED TO COINCIDENCE CIRCUIT

Brian Ray, Burnham, England, assignor to Wilkinson Sword Limited, High Wycombe, Buckinghamshire, England
Filed July 18, 1973, Ser. No. 380,148
Claims priority, application Great Britain, July 27, 1972, 35073/72
Int. Cl. G08b *17/10*
U.S. Cl. 340—237 S **6 Claims**



1. A smoke detecting system, comprising

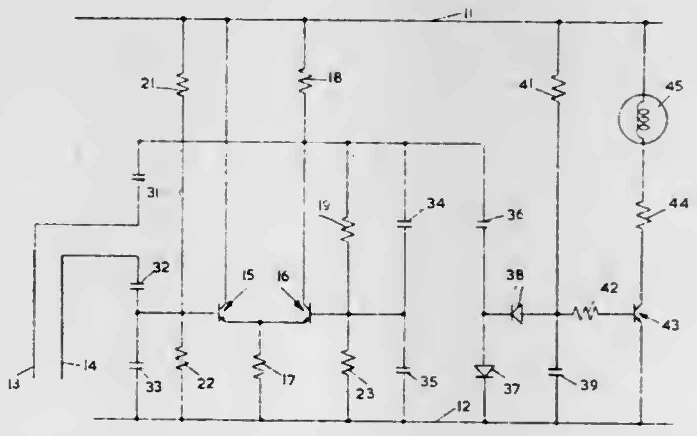
a plurality of smoke detectors of the ionisation chamber type having respective outputs at which are produced electrical warning signals in the presence of smoke,

coincidence means having the same number of inputs as the number of said detectors, the said inputs being respectively connected to the outputs of the detectors, the coincidence means having an output at which is produced an output signal only when the plurality of its inputs simultaneously receive said warning signals, and

output means connected to the output of the coincidence means to produce an alarm indication in response to the said output signal.

3,868,664
LIQUID LEVEL DETECTING CIRCUITS

William Frank Hill, Stafford, England, assignor to The Lucas Electrical Company, Birmingham, England
Filed June 28, 1973, Ser. No. 374,385
Claims priority, application Great Britain, July 1, 1972, 30918/72
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 E **1 Claim**



1. A liquid level detecting circuit for giving an indication when the level of liquid in either of two containers falls below a predetermined minimum, comprising a first pair of electrodes in one of said containers, a second pair of electrodes in the other of said containers, an amplifier incorporating a regenerative feedback path and a degenerative feedback path, the amplifier oscillating when the degree of regeneration exceeds the degree of degeneration, one of said feedback paths including the first pair of electrodes and the second pair of electrodes connected in series, whereby oscillation of the amplifier is controlled in accordance with the liquid level in both containers, and means for detecting oscillation of the

amplifier, whereby the liquid level in both reservoirs is detected.

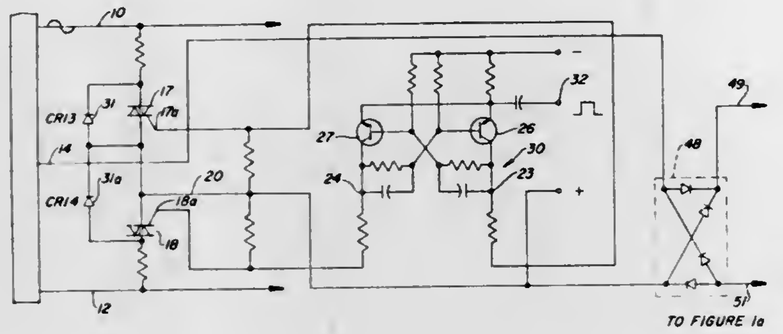
3,868,665
GROUND FAULT CURRENT DETECTOR

Edward M. Treglown, Martinsville, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Feb. 8, 1974, Ser. No. 440,833

Int. Cl. G08b *21/00*

U.S. Cl. 340—255 **8 Claims**



1. A detector for sensing ground currents above a predetermined magnitude in either of a pair of isolated power lines and for limiting said ground current, said detector comprising,
- means providing a variable impedance path to ground for said ground currents, said variable impedance means providing a low impedance path at low values of ground current and increasing with increasing magnitude of ground current to a maximum at values of ground current slightly above said predetermined magnitude,
- alarm means responsive to values of ground current in said variable impedance path above said predetermined magnitude for providing an alarm indicating excessive ground current,
- switch means between each of said power lines and said variable impedance path, and
- bistable means synchronized to the frequency of said power lines for providing signals to trigger said switch means alternately into conduction on alternate cycles of the power line frequency,
- whereby said power lines are connected alternately on alternate cycles of the power line frequency to said variable impedance means to cause ground currents from either power line above said predetermined magnitude to be detected and limited.

3,868,666
METHOD AND ARRANGEMENT FOR HANDLING SHEET GOODS

Karl Hartwig, Unterhaching, and Gunther Maurischat, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

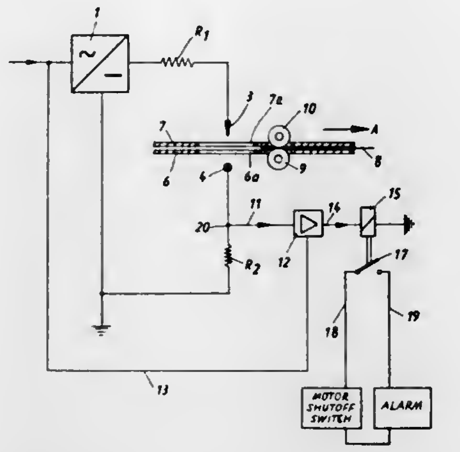
Filed Aug. 29, 1973, Ser. No. 392,808

Claims priority, application Germany, Aug. 31, 1972, 2242948

Int. Cl. G08b *21/00*

U.S. Cl. 340—259 **10 Claims**

1. In an arrangement for handling sheet goods, in combination, a corona discharge electrode having a pointed end; an elongated collector electrode spaced from said corona discharge electrode to form therewith an air gap; means for establishing a flow of ionic current across said air gap from said corona discharge electrode to said elongated collector electrode; transporting means for transporting sheet goods along a predetermined path passing through said air gap in direction transverse to the direction of elongation of said elongated collector electrode and so oriented that sheet goods travelling along said predetermined path and through said air gap do not physically contact said electrodes; and monitoring means operative for determining whether or not an article of sheet goods is located in said air gap by monitoring the magnitude of said ionic current.



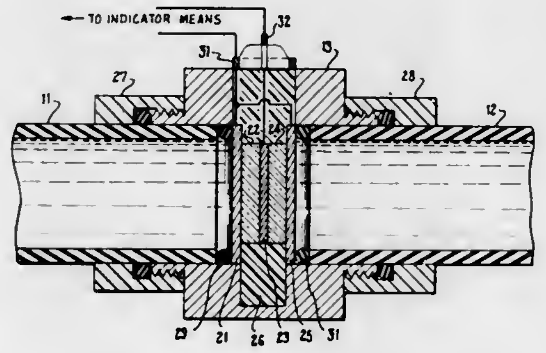
3,868,667
INTRUDER DETECTION SYSTEM EMBODYING A BIMORPH TRANSDUCER

Romans Skujins, Jr., Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1972, Ser. No. 241,646

Int. Cl. G08b *13/20;* H01h *35/34*

U.S. Cl. 340—272 **6 Claims**



1. A system for detecting penetration of a restricted area by an intruder comprising:
- first and second substantially identical fluid-filled elongated tubular chambers adapted for ground burial, said elongated chambers adapted to generate representative internal pressures in response to external pressures of the variety produced by movement of intruders in the vicinity of said elongated chambers when buried:
- piezoelectric transducer means having first and second pressure sensitive inputs and a single electrical signal output, said piezoelectric transducer means being a planar dual crystal element bimorph structure wherein said first and second pressure sensitive inputs incorporate substantially identical planar crystal elements adapted for like flexure action, said bimorph structure adapted to produce an output signal potential when one crystal expands and the other contracts in response to an instantaneous pressure differential at said first and second pressure sensitive inputs; said first and second tubular chambers mechanically and hydraulically connected to said first and second pressure sensitive inputs such that the full surface area of one side of each respective planar crystal element is subject to said representative internal pressures within its respective tubular chamber;
- an indicator means electrically connected to said electrical signal output of said piezoelectric transducer means and adapted to produce an indication in response to said instantaneous pressure differential.

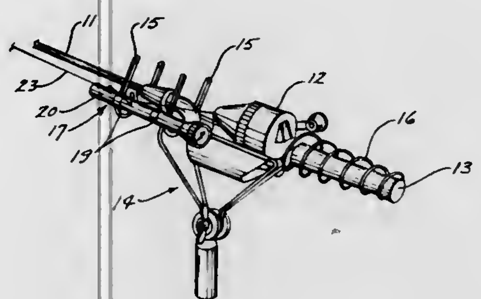
3,868,668
SIGNAL LIGHT FOR FISHING

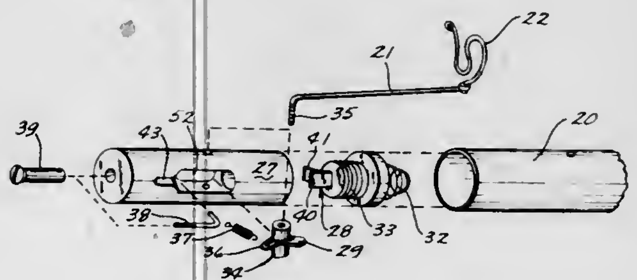
Luther A. Woodbury, 1340 Garden Ave., Waterloo, Iowa 50701

Filed Aug. 6, 1973, Ser. No. 386,091

Int. Cl. A01k *93/00*

U.S. Cl. 340—279 **7 Claims**





1. A signal light for a rod comprising: a housing for said signal light adapted to be secured with respect to a rod, a switch assembly, a cell and a bulb within said housing, said switch assembly having a rotary contact and a fixed contact, said contacts, said cell and said bulb being connected in a series circuit, said switch assembly having an actuator arm with one end attached to said rotary contact, spring biasing means for urging said rotary contact in an open position where it is not in engagement with said fixed contact and to position said arm in an outwardly slanting direction with respect to rod to which said signal light is attached, an eye through which a line can slip attached to the other end of said actuator arm, and said switch assembly operated to close said rotary and fixed contacts in response to a line through said eye being drawn taut along the rod to which said signal light is attached, said fixed contact comprising two leaf springs in a side to side relationship, one of said leaf springs being significantly shorter than the other leaf spring whereby the force required to move the rotary contact past the two leaf springs is greater in one rotary direction that in the other rotary direction.

3,868,669
REDUCTION OF FALSE ALARMS IN ELECTRONIC THEFT DETECTION SYSTEMS

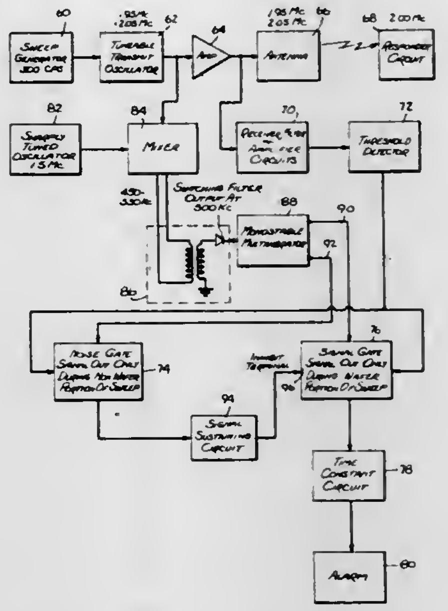
Arthur J. Minasy, Woodbury, N.Y., assignor to Knogo Corporation, Westbury, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,019

Int. Cl. G08b *13/18*

U.S. Cl. 340—280 **11 Claims**

1. A method for reducing the occurrence of false alarms in an electronic theft detection system of the type wherein an interrogation signal is varied in frequency and wherein predetermined changes in the electromagnetic field in the vicinity of a checkpoint are produced by the passage therethrough of protected articles carrying special electronic circuits whenever said interrogation signal passes through a given frequency range, and wherein an alarm indication is produced in response to said predetermined changes, said method comprising the steps of monitoring the interrogation signal frequency and preventing alarm indications when said interrogation signal frequency is outside said given range.


60
SWEEP GENERATOR 300 CPS
1.95 Mc 2.05 Mc
62
TUNEABLE TRANSMIT OSCILLATOR
64
AMP
1.95 Mc 2.05 Mc
66
ANTENNA
68
2.00 Mc
RESPONDER CIRCUIT
82
SHARPLY TUNED OSCILLATOR 1.5 Mc
84
MIXER
70
RECEIVER & AMPLIFIER CIRCUITS
72
THRESHOLD DETECTOR
450-550 Kc
SWITCHING FILTER OUTPUT AT 500 Kc
88
MONOSTABLE MULTIVIBRATOR
90
92
86
NOISE GATE SIGNAL OUT ONLY DURING NON WAFER PORTION OF SWEEP
74
INHIBIT TERMINAL
96
76
SIGNAL GATE SIGNAL OUT ONLY DURING WAFER PORTION OF SWEEP
94
SIGNAL SUSTAINING CIRCUIT
TIME CONSTANT CIRCUIT
78
ALARM
80

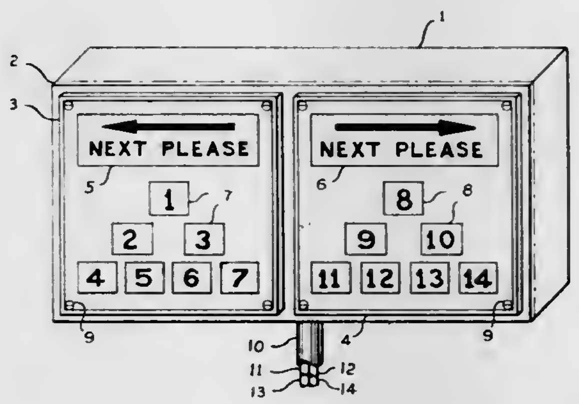
3,868,670
CUSTOMER SERVICE DISPLAY

Joseph O'Nory, 6121 Woodman Ave., Van Nuys, Calif. 91401, and Richard A. Reister, Yucca Valley, Calif., assignors to said O'Nory, by said Reister

Continuation-in-part of Ser. No. 337,762, March 2, 1973, abandoned. This application Feb. 4, 1974, Ser. No. 439,560

Int. Cl. G08b *5/36*

U.S. Cl. 340—286 **5 Claims**

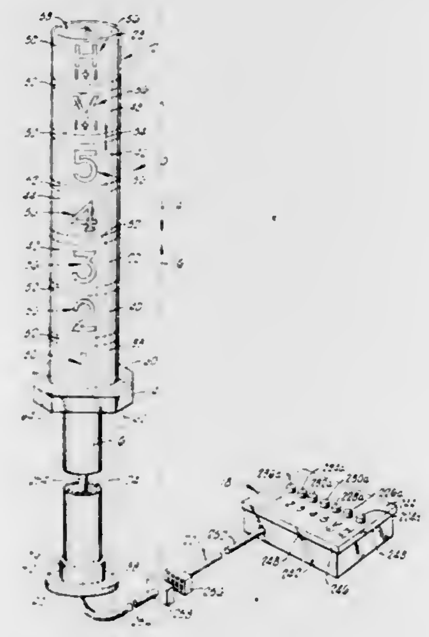


1. A customer service display apparatus for use with a series of customer service stations, comprising, in combination:
- a. a public display panel including a series of station indicating means for respectively indicating, when operating, the availability of each of the customer service stations for service to the awaiting public, said public display panel being placed in convenient view of the awaiting public;
- b. an operation personnel displaay panel including a series of on-duty indicating means respectively indicating, when operated, whether or not each of said customer service stations has a clerk on duty, said operation personnel display panel being placed in convenient view of operation personnel only;
- c. customer sensing switch means at each of said customer service stations connected to said public display panel for operating a corresponding station indicating means in response to a customer leaving a customer service station to thereby indicate on said public display panel the particular customer service station that is available to serve the next customer, the customer sensing switch means ren-

dering inoperative the corresponding station indicating means in response to a customer arriving at the customer service station to thereby indicate that said station is no longer available for service to a next customer while the customer is still present at the station; and,

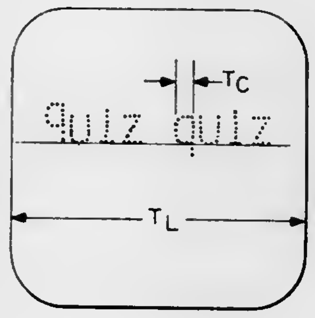
d. clerk operated switch means at each customer service station connected to said public display panel and to said operation personnel display panel for overriding the customer sensing switch means at the respective customer sensing station whereby operation of said clerk operated switch means renders the correspondingg station indicating means inoperative and simultaneously renders the corresponding on-duty indicating means inoperative to thereby advise operation personnel that the clerk at the particular customer service station has left or is not available for service.

3,868,671
BASKETBALL FOUL INDICIA DISPLAY APPARATUS
Hugh F. Maguire, 2211 N.W. 41, Oklahoma City, Okla. 73112, and William J. Miller, 1824 N.W. 56 Ter., Oklahoma City, Okla. 73118
Filed June 7, 1973, Ser. No. 367,798
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **11 Claims**



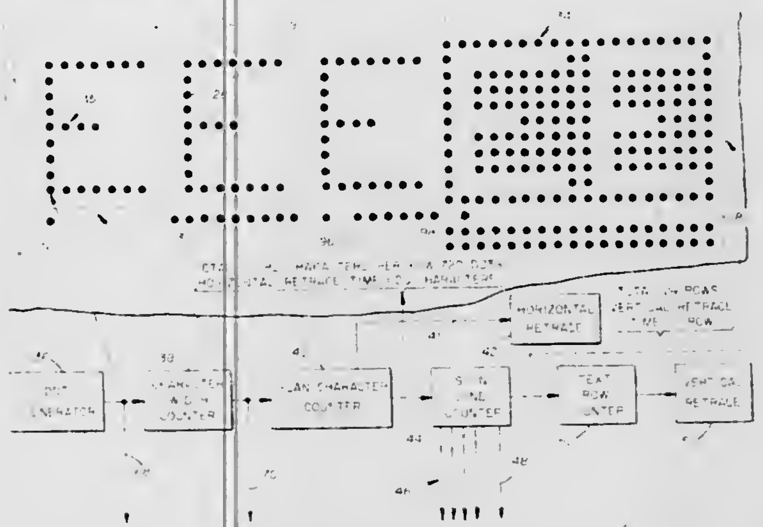
1. An indicia display apparatus, comprising:
a base;
support means connected to the base having portions forming a plurality of spaced compartments;
illumination means disposed in each of the spaced compartments, each illumination means providing light in an illuminated on position thereof;
control means connected to each of the illumination means having a portion selectively positioning each of the illumination means in the illuminated on position in one position thereof; and
a housing constructed of a translucent material, having an upper end, a lower end and a plurality of spaced, opaque indicia formed thereon, the housing having an opening formed through a portion intersecting the lower end thereof forming a receiving opening, the lower end of the housing engaging the base, the housing being movable in a direction generally toward the base disposing the support means within a portion of the housing opening and in a direction generally away from the base removing the support from within the housing opening; and the predetermined indicia disposed adjacent predetermined compartments in an assembled position of the support means and the housing on the base, the illumination means illuminating the translucent portions of the housing disposed adjacent thereto accenting the opaque indicia in an illuminated on position of the illumination means.

3,868,672
CATHODE RAY TUBE CONTROL APPARATUS FOR DISPLAYING UPPER AND LOWER CASE CHARACTERS USING A SINGLE MATRIX
Robert B. Johnson, Billerica, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 2, 1973, Ser. No. 320,039
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **18 Claims**



1. A cathode ray tube display system including a cathode ray tube, keyboard entry and storage means coupled to said tube, said keyboard entry and storage means including means for generating predetermined binary coded signals designating which character included in a set of characters is to be displayed along a horizontal line starting from a normal line position, said tube having major and minor vertical deflection generation means operative to generate major and minor positioning waveforms respectively for conditioning major and minor driver circuits for driving major and minor vertical coils in a vertical direction, said minor vertical deflection driver circuit means being operative to generate a high frequency pulse waveform for producing a predetermined number of character writing strokes for each of the characters to be written along said line, each of said strokes having a height corresponding to a number of spaces, said system further including improved positioning apparatus, coupled to said vertical deflection driver circuit means, said positioning apparatus comprising:
decoder circuit means coupled to said keyboard entry and storage means, said decoding circuit means including logic circuit means for generating a control signal in response to any one of a predetermined number of characters comprising a special group of characters within said set which have a similar characteristic; and,
amplifier circuit means including input means and output means, said input means being coupled to said logic circuit means and to said major vertical generation circuit means, and said output means being coupled to said vertical deflection driver circuit means, said amplifier circuit means being responsive to the joint application of said control signal and said positioning waveform to said input means to condition said amplifier circuit output means to apply an output signal to said deflection driver circuit means which produces an incremental vertical shift in said one of said predetermined number of characters from said normal line position.

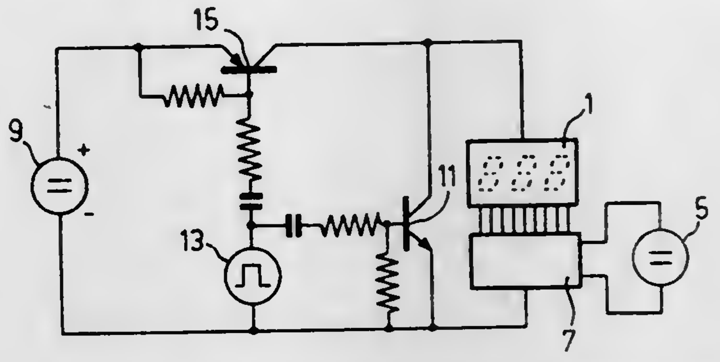
3,868,673
DISPLAY APPARATUS INCLUDING CHARACTER ENHANCEMENT
Theodore J. Mau, Jr., and John L. Peterson, both of Chicago, Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Aug. 14, 1973, Ser. No. 388,286
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 AD **14 Claims**



1. An apparatus for enhancing the presentation of selected characters displayed upon the screen of a cathode-ray tube comprising:
readout means providing a plurality of coded signal outputs, at least one of said outputs providing a multilevel character signal determining the character to be displayed upon the cathode-ray tube screen;
means for selectively controlling the cathode-ray tube beam in accordance with said character signal so as to generate a dot matrix forming the encoded character;
said readout means providing an underline enhancement signal corresponding to an enhancement characteristic of the character being displayed;
a selectively actuated inverter receiving said character signal from said readout means for controlling the intensity of the cathode-ray tube electron beam;
a scan line counter providing an output signal related to the writing of a selected scan line on the display screen;
first control means actuated by said scan line signal in the presence of said underline enhancement signal for generating a first control signal; and
said readout means providing a cursor enhancement signal indicating a cursor location, gating means serving to couple said first control signal and said cursor enhancement signal to said selectively actuated inverter thereby displaying an inverted, underlined character on the display screen.

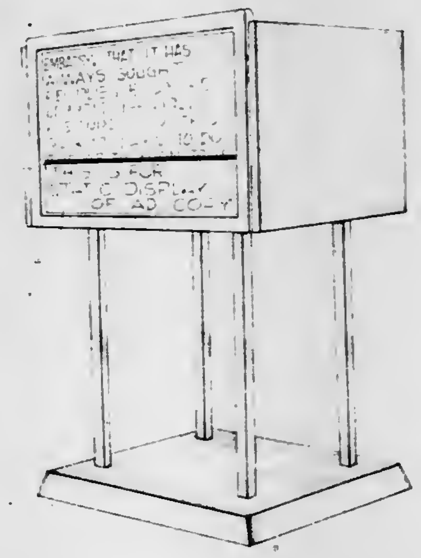
3,868,674
VISUAL DISPLAY APPARATUS INCLUDING A LIQUID CRYSTAL DISPLAY PANEL
Jean Hubertus Josef Lorteije, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 310,173, Nov. 28, 1972, abandoned. This application June 20, 1974, Ser. No. 481,343
Claims priority, application Netherlands, Dec. 9, 1971, 7116844
Int. Cl. G09f *9/32;* **G02f** *1/18*
U.S. Cl. 340—324 M **7 Claims**

1. Visual display apparatus comprising:
A. a liquid crystal display panel;
B. direct voltage supply means comprising first and second terminals;
C. controllable semiconductor impedance means connected to form a parallel circuit with said display panel;
D. a pulse voltage source connected to said semiconductor means to cause said semiconductor means to be alternately conductive and nonconductive; and
E. means for rapidly reducing said pulse voltage to substantially zero by short circuiting said direct voltage supply means comprising an impedance connected in series with said source of direct voltage and said parallel circuit



whereby the voltage across means for controlling said display is reduced substantially to zero when said semiconductor means is conductive.

3,868,675
DISPLAY SYSTEM WITH COMBINED DYNAMIC AND STATIC DISPLAY
James H. Firmin, Lake San Marcos, Calif., assignor to Capsule Communications, Inc., San Marcus, Calif.
Filed Sept. 4, 1973, Ser. No. 393,720
Int. Cl. G08b *5/36*
U.S. Cl. 340—334 **6 Claims**



1. A display system for combined display of news-service information and advertising messages, the system comprising: an input to the system for serially receiving from an external news-service line digital data signals representing characters forming incoming news-service information;
first and second memory means;
means responsive to the serially received signals for accumulating in the first memory means a plurality of items of line data, each item of line data comprising a plurality of groups of signals, each group being encoded to represent a character of the incoming news-service information;
means for storing into the second memory means signals representing a plurality of advertising messages;
a display board;
display apparatus supported by the display board and comprising first display means responsive to signals obtained from the first memory means to display a dynamic representation of a plurality of items of line data and second display means responsive to signals obtained in a cyclical sequence from the second memory means to display in a corresponding sequence static representations of a plurality of selected advertising messages; and
means for obtaining the signals from the first memory means to couple them to the first display means and multiplexing means for obtaining the signals from the second memory means to couple them to the second

display means so as to display simultaneously the news-service information and an advertising message.

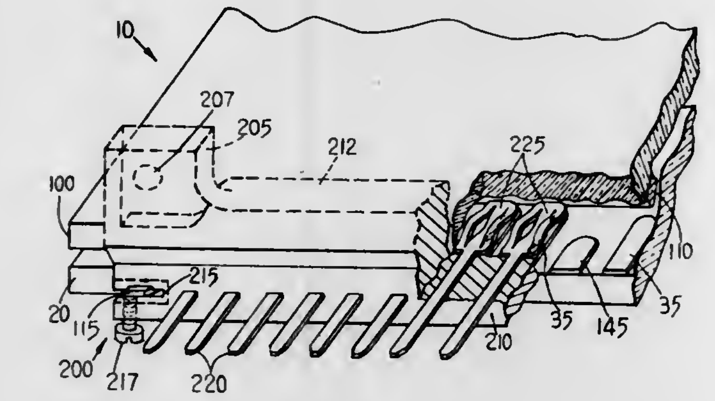
3,868,676
DISPLAY PANEL ELECTRODE TERMINATION

William Michael Hennessey, Somerville, and Ronald Owen Wescott, Edison, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 201,655, Nov. 24, 1971, abandoned. This application June 18, 1973, Ser. No. 370,786

Int. Cl. G09f *9/32*

U.S. Cl. 340—336 **56 Claims**



1. A display device comprising
an envelope including a pair of flat, insulating plates which are parallel to each other and spaced apart to define a gas-filled electric discharge region between them,
a plurality of cathode electrodes seated on one of the plates and a plurality of different electrical conductors connected to them and terminating along an edge of this first plate,
at least one anode electrode seated on the other of said plates in association with selected ones of the cathode electrodes and having a lead terminating along an edge of this other plate, which edge is parallel to an adjacent edge of the first plate,
the terminals of the cathode connectors and of the anode lead(s) being on opposing surfaces of the respective plates for receivably mating with external connecting means between the plates, and
means for sealing the gas discharge region between the plates along a predetermined perimeter and leaving the cathode and anode terminals exposed for receiving the connecting means.

3,868,677
PHASE-LOCKED VOLTAGE-TO-DIGITAL CONVERTER

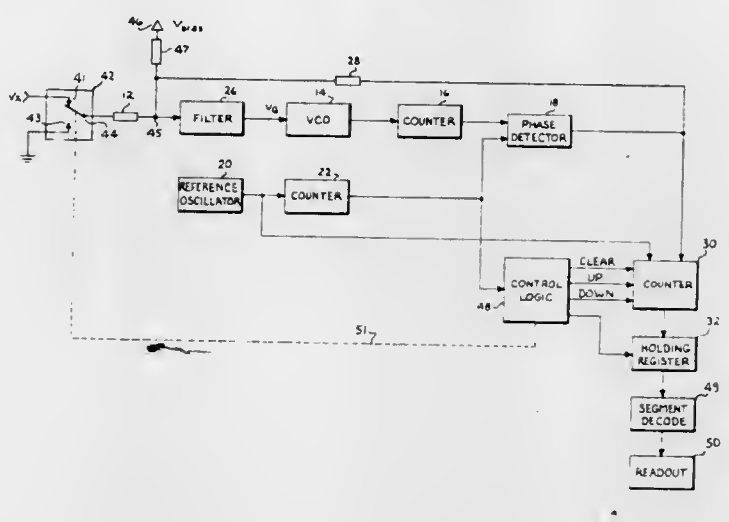
Marshall C. Kidd, Wayland, Mass., assignor to General Electric Company, Lynn, Mass.

Continuation-in-part of Ser. No. 264,733, June 21, 1972,. This application June 11, 1973, Ser. No. 368,592

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 AD **24 Claims**

1. A voltage conversion circuit comprising:
a. first circuit means having an input responsive to a voltage for generating an output signal having a frequency that is a function of the voltage at its input, said output signal frequency being substantially equal to the frequency of a first reference signal when a quiescent voltage is present at the first circuit means input;
b. second circuit means responsive to the first reference signal and to the first circuit means output signal for generating a signal having a first time duration proportional to the phase difference between the first reference signal and the first circuit means output signal and a second time duration inversely proportional to said phase difference;
c. input impedances means for coupling an unknown input voltage to the first circuit means input;
d. feedback impedance means for negatively feeding back the output signal of the second circuit means to the input of the first circuit means, whereby said phase difference is made a function of the unknown input voltage when the first circuit means input has the quiescent voltage thereat; and



e. output counter means responsive to the first time duration of the second circuit means output signal and to the frequency of a second reference signal for counting the number of cycles of said second reference signal that occur during said first time duration whereby the counter generates a digital number that is a function of the unknown input voltage.

3,868,678
ANALOGUE-TO-DIGITAL CONVERTORS

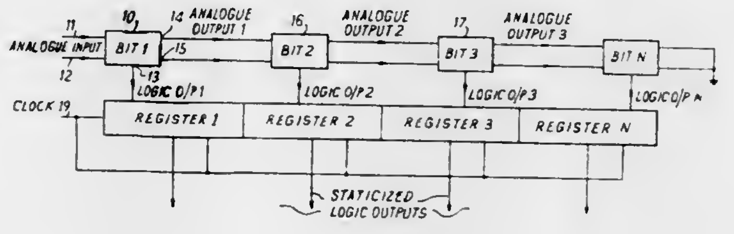
Peter Colin Michael, Newbury, England, assignor to Micro Consultants Limited, Newbury, England

Filed Aug. 7, 1973, Ser. No. 386,341

Claims priority, application Great Britain, Aug. 10, 1974, 37390/72

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **7 Claims**



5. A method of converting an analogue signal into digital form comprising the steps of
a. feeding the analogue signal to a first encoder bit,
b. providing a digital output from the encoder bit indicative of the magnitude of the analogue signal and providing an analogue signal output from said encoder bit,
c. feeding the analogue output successively via at least one additional encoder bit functioning similarly to the first encoder bit,
d. feeding the digital output of each encoder bit to a respective storage element external of said encoder bits, and
e. triggering the storage elements to effect storage of progressively delayed signals from respective digital outputs of the encoder bits to compensate for propagation delay in the encoder bits, said signals being indicative of the instantaneous level of the analog signal.

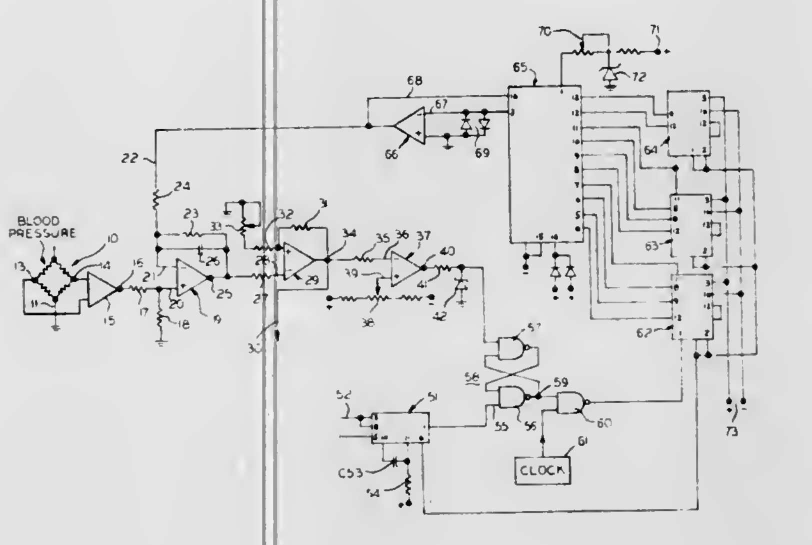
3,868,679
BLOOD PRESSURE AMPLIFIER WITH ZERO BALANCING MEANS

Harold N. Arneson, Oak Creek, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,165

Int. Cl. H03k *13/17*

U.S. Cl. 340—347 AD **2 Claims**



1. Means for correcting a device that responds to signals from a blood pressure transducer for the offset signal of the transducer, comprising:
a. summing amplifier means having an output and respective inputs for a correction signal and a signal from said transducer,
b. comparator means having an output and also having at least two inputs one of which is coupled with said amplifier means output, the output of said comparator means changing state in response to a correction signal and reference voltage signal to said summing means inputs becoming substantially equal, and means for supplying a reference voltage signal to an input to said comparator means,
c. a source of pulses having a constant repetition rate,
d. pulse counting means coupled with said source, said counting means being constructed and arranged for producing a digital signal corresponding in magnitude with the number of pulses counted and which signal increases in magnitude at a substantially constant rate,
e. means for activating said counting means when production of a correction signal is desired,
f. means for converting said digital signal representative of the count by said counting means to an analog signal and means for storing said analog signal which constitutes said correction signal,
g. means for coupling said correction signal to its summing means input,
h. means for deactivating said counting means in response to said comparator means output changing state,
i. gate means interposed between said pulse source and said counting means,
j. switch means for controlling said gate means,
k. one-shot multivibrator means for controlling said switch means and for clearing said counting means, said counting means being cleared when said multivibrator means is being switched to enable gating of pulses through said gate means when said multivibrator is in another of its states,
l. said switch means also responding to said comparator means changing state by disabling said gate means from providing pulses to said counting means to thereby effect said deactivating of said counting means.

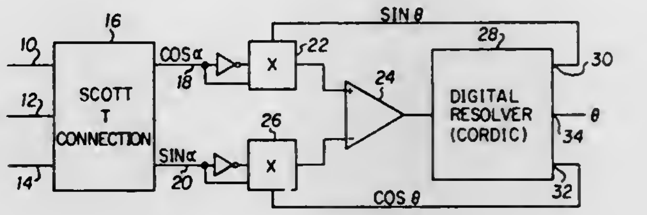
3,868,680
ANALOG-TO-DIGITAL CONVERTER APPARATUS

Melvin H. Rhodes, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Dallas, Tex.

Filed Feb. 4, 1974, Ser. No. 439,185

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 SY **4 Claims**



1. Converting apparatus comprising, in combination:
first and second signal supplying means for supplying analog signals indicative respectively of sine and cosine to be converted to a digital indication where α is an angle the trigonometric functions of which are to be converted;
first multiplying means including first and second inputs and an output;
means connecting said first signal supplying means to said first input of said first multiplying means;
second multiplying means including first and second inputs and an output;
means connecting said second signal supplying means to said first input of said second multiplying means;
comparator means, including input and output means, connected to receive signals from said outputs of said first and second multiplying means, said comparator means providing an analog output indicative of which of said first and second multiplying means is supplying the largest magnitude output;
CORDIC type resolver means, including input means and first and second output means, said resolver means supplying outputs of sin θ and cos θ at said first and second output means respectively, wherein the values of the signals at said outputs thereof change as a function of signals supplied to the input thereof and θ is an approximation of the angle α, said resolver operating over a predetermined plurality of digital word times comprising a frame of words, the cofunction sin and cos digital output signals changing on each succeeding word of a frame as a function of the polarity of the signal received from the comparator means, as a function of the word time in a frame and as a function of the value of the cofunction digital output signal in the preceding word time;
means connecting said output means of said comparator means to said input means of said resolver means;
means connecting said first output means of said resolver means to said second input of said first multiplying means; and
means connecting second output means of said resolver means to said second input of said second multiplying means.

3,868,681
CHARACTER INPUT EQUIPMENT

Chishio Ohyama; Makoto Tachibana, and Takeshi Takada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Sept. 21, 1972, Ser. No. 290,981

Claims priority, application Japan, Oct. 4, 1971, 46-77021

Int. Cl. G08c *1/00*

U.S. Cl. 340—365 **1 Claim**

1. A character input equipment comprising:
a character plate having a plurality of characters arranged in rows and columns in a matrix form;

a plurality of pairs of spaced parallel current drive lines disposed corresponding to each row direction beneath said character plate;

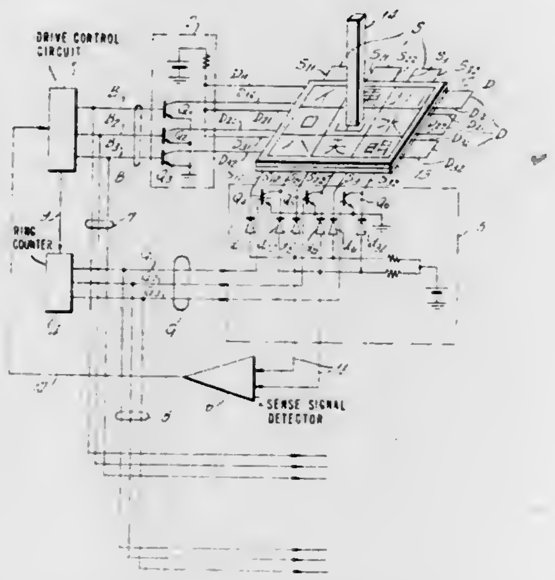
a drive means having a plurality of current drive circuits for sequentially supplying a drive current pulse to said pairs of current drive lines one pair at a time;

a plurality of pairs of spaced parallel sense lines disposed corresponding to each column under the plate and perpendicularly intersecting the plurality of current drive lines whereby the four intersections formed by each pair of drive and sense lines underlies one of said characters;

a sense signal detection circuit;

sense means coupled to said drive means and having sense line selection circuits for sequentially coupling one of said sense line pairs to said detection circuit said sense means being advanced after all of said drive lines have received a drive current pulse;

a single indication bar adapted to be positioned in close proximity to the character plate and at any location along the surface thereof for selecting a desired character on the plate and for electromagnetically coupling a pair of current drive lines with a pair of sense lines corresponding to the character associated therewith;



said sense signal detection circuit having means for detecting current changes in the sense line pair connected thereto and caused by bringing the bar close to a desired character on said plate when one of the drive line pairs is pulsed, said current being supplied to the current drive line corresponding to the desired character in the row position on the character plate;

means coupled to said detection circuit for halting the stepping of said drive line circuits when said detection means is activated;

and means coupled to said drive circuits and said sense line circuits for transferring the binary outputs thereof and relating to the selected character to utilization means whereby the binary signals correspond to the character on the character plate upon which said bar is positioned.

3,868,682
LIGHT COLUMN HAVING STACKED ELEMENTS

Joseph Simon, Colombes; Raymond Ingrain, Chatou, and Charles Jourdan, Louveciennes, all of France, assignors to La Telemecanique Electrique, Nanterres, France

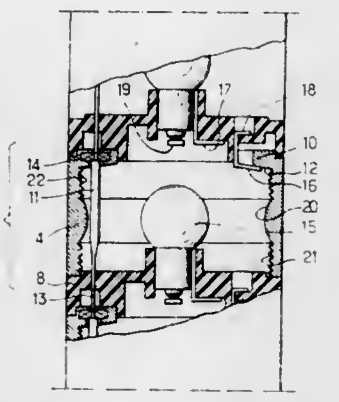
Filed Mar. 6, 1972, Ser. No. 231,950

Claims priority, application France, Mar. 10, 1971, 71.08407

Int. Cl. G08b *5/36*

U.S. Cl. 340—366 R **5 Claims**

1. A light column made up of at least partly transparent signalling units held together only by engaging one on top of the other an electric bulb being fitted in each of the units so as to light up one of them when the leads which feed it are energized, the various leads coming from a base which supports the device, characterized in that each signalling unit comprises, inside a transparent glass casing of cylindrical shape, fixed conductors which pass through it, the number of said conductors corresponding to the maximum number of signalling units that can be accomodated plus one return conductor common for all signalling units, each of these units being closed at one end by an opaque solid partition comprising support means for the said electric bulb and fastening means of a first type, while the other end comprises an annular partitioning portion which gives access to the electric bulb and includes fastening means of a second type whose shape enables them to engage with said fastening means of the first type, when the two adjoining signalling units are in one particular relative position, obtained by partial relative rotation of the said two adjoining units.



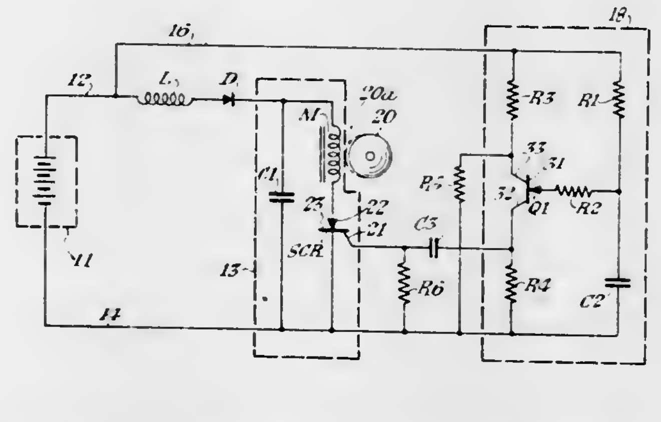
3,868,683
SOLID STATE BELL RINGING SYSTEM

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Aug. 11, 1971, Ser. No. 170,927

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 R **6 Claims**



1. A solid state bell ringing arrangement comprising in combination,

- a. an elastically deformable bell device responsive when repeatedly deformed by a pulsating magnetic force for producing an audible ringing sound,
- b. an electromagnet placed adjacent said bell device for deforming said bell device when the magnet is energized by an energy pulse,
- c. a source of direct current energy,
- d. an energy storage arrangement comprising a capacitor, an inductor, and a diode connected in series across said energy source for efficiently charging said capacitor when discharged,
- e. a normally non-conducting silicon controlled rectifier having a gating electrode and with its conduction path connected in series with said electromagnet across said capacitor, and
- f. a relaxation oscillator circuit arrangement having an output terminal coupled to said gating electrode of said controlled rectifier for periodically actuating said rectifier to conduction to discharge said capacitor through said electromagnet.

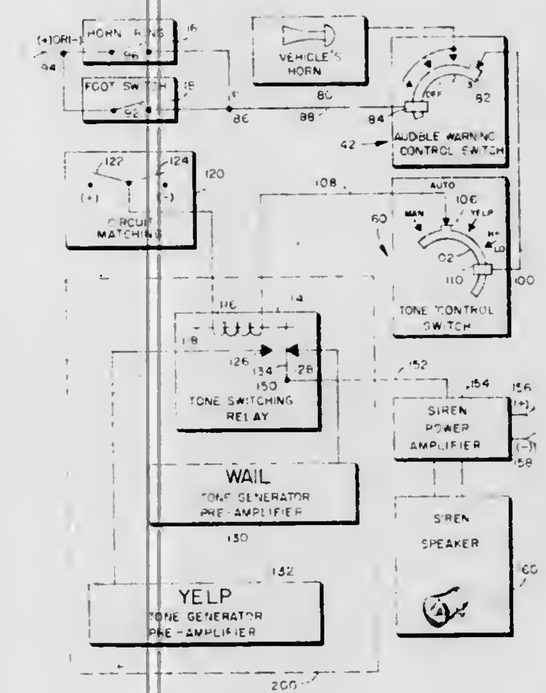
3,868,684
EMERGENCY VEHICLE SIREN SWITCHING APPARATUS

Ewing D. Nunn, Jr., 2430 Terraza Pl., Fullerton, Calif.

Filed Jan. 7, 1972, Ser. No. 216,002

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 E **6 Claims**



1. The combination of a vehicle and an audible warning system which comprises:

An electronic circuit having a given electrical capacitance for generating an electrical signal to provide a siren tone having a relatively moderate frequency of rise and fall between its high and low tones in the form of a wail tone: a siren speaker;

electrical circuit means to decrease the capacitance of said electrical circuit for electrically altering said electronic circuit to provide a second signal effecting a second siren tone having a greater frequency of rise and fall between its high and low tones in the form of a yelp tone;

switch means to selectively connect said electrical circuit means for causing said yelp tone to be generated in lieu of said wail tone; and,

an electromotive force of a suitable potential to power the electronic circuits for providing said tones.

3,868,685
RADAR DIGITAL DETECTOR AND BEAM SPLITTER

Richard D. Wilmont, Yorba Linda, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 20, 1970, Ser. No. 91,449

Int. Cl. G01s *9/04*

U.S. Cl. 343—5 DP **13 Claims**

1. A system for detecting a statistical target over a plurality of range intervals and within a predetermined azimuth angle in response to transmitting pulses of energy to a target as a radar beam scanning over said target and for receiving target signals while said beam is illuminating said target comprising a source of quantized amplitude video data, of a plurality of bits for each target signal,

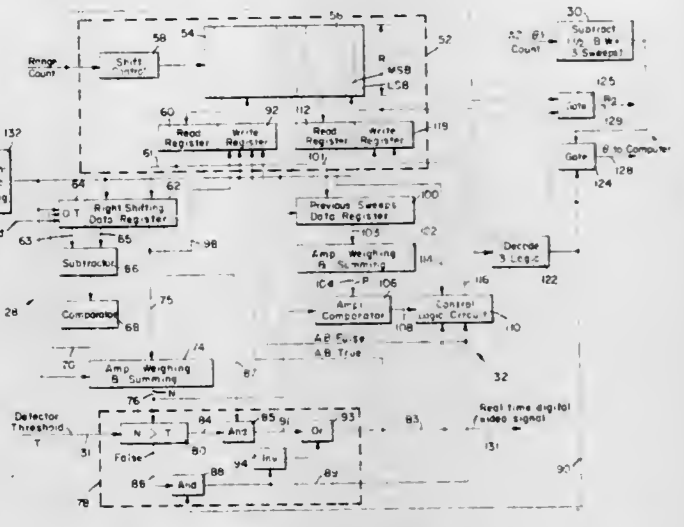
memory means responsive to said source for storing target data quantized from target signals received over an azimuth beam width for each of a plurality of range bins,

register means responsive to said memory means and to said source for receiving a present beam width of data,

weighting means coupled to said register means for providing an impulse response of a predetermined beam shape,

summing means coupled to said weighting means for providing a weighted sum of the present sweep,

and comparator means for comparing the weighted sum with a threshold value to indicate a statistical target.



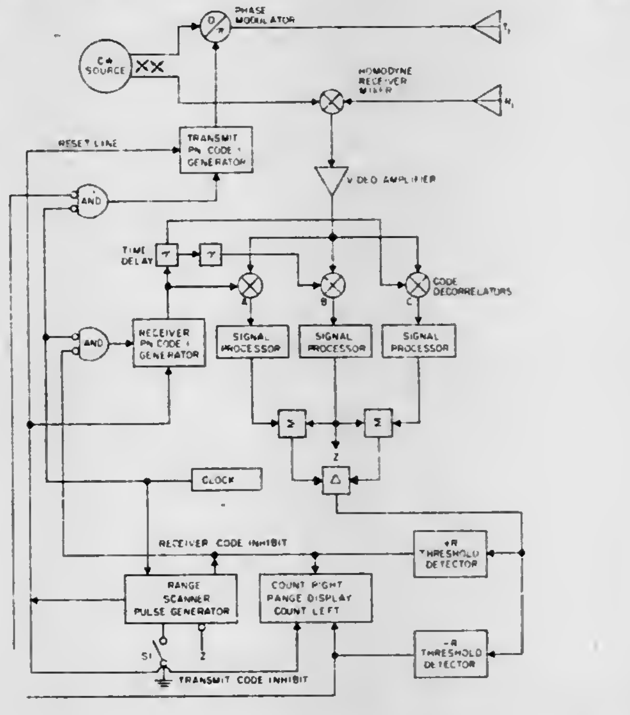
3,868,686
RANGE TRACKING DEVICE FOR A PORTABLE ATTACK WARNING RADAR

William Ray Magorian, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1973, Ser. No. 351,726

Int. Cl. G01s *9/28*

U.S. Cl. 343—7 A **3 Claims**



1. A portable attack warning radar range tracking system comprising:

radio frequency carrier means for generating a carrier at a predetermined frequency;

first generating means for supplying a voltage output that varies from a maximum to a minimum voltage to form a pulsed repetitive code;

phase modulating means coupled to electrically receive an output from said first generating means and an output from said radio frequency carrier means for supplying an output signal to shift the phase of the carrier in response to the pulsed repetitive code voltage output of said first generating means;

antenna means for transmitting the output of said phase modulating means and receiving an echo return signal from a target;

second generating means for supplying a voltage output that varies from a maximum to a minimum voltage to form a pulsed repetitive code that is identical to the pulsed repetitive code output of said first generating means;

clock means coupled to said first generating means via a first gate and coupled to said second generating means via a second gate for clocking said first and second generating means in time sequence;

receiver mixer coupled to said antenna means and said radio frequency carrier means for providing an output signal representative of the target echo signal;

code decorrelator means coupled to said receiver mixer and said second generating means;

summing means coupled to said code decorrelator means for supplying a voltage output that represents the time difference between the pulsed repetitive code output of said second generating means and the pulsed repetitive code of the target echo signal coupled from said receiver mixer; and

inhibit pulse generating means coupled to receive the output from said summing means for supplying inhibit signals to said first gate and to said second gate;

whereby the time difference between the pulsed repetitive code output of the second generating means and the pulsed repetitive code output from the receiver mixer is reduced to a minimum by inhibit signals to the first and the second gating means for allowing a moving target to be tracked as its range to a radar location increases and decreases.

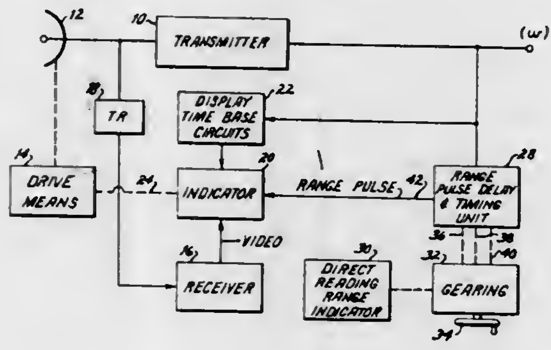
3,868,687
TIME MEASURING SYSTEM

Leman Goldman, Jr., Pennsauken, N.J., and Ted E. Dunn, Levittown, Pa., assignors to Radio Corporation of America, Princeton, N.J.

Filed Oct. 31, 1955, Ser. No. 543,836

Int. Cl. G01s ***9/16, 9/06***

U.S. Cl. 343—13 R **14 Claims**



14. In a radar ranging system, in combination, a stable source of sinusoidal oscillations; means for deriving from said source a series of first pulses spaced fixed intervals from one another; a source of randomly occurring pulses; selector means connected to receive said randomly recurring pulses and said first pulses for selecting certain ones of said first pulses at a randomly recurring rate; phase shifting means for shifting the phase of said sinusoidal oscillations; means for deriving from said phase shifted sinusoidal oscillations a series of second pulses; a step-down counter circuit; cyclic means operatively associated with said phase shifting means and receptive of said selected pulses for rendering said step-down counter operative beginning at a time in coincidence with a given one of said second pulses, the output of said step-down counter comprising a series of third pulses spaced a given plurality of times said fixed intervals from one another; selector means receptive of said third pulses for selecting a given one of said third pulses; and means including said cyclic gate means responsive to a shift in phase between said series of first pulses and said series of second pulses an amount approximately equal to one period of said series of third pulses for rendering said step-down counter responsive to the one of said second pulses spaced from said given second pulse an amount equal to one period of said series of third pulses in the direction opposite to that of said phase shift.

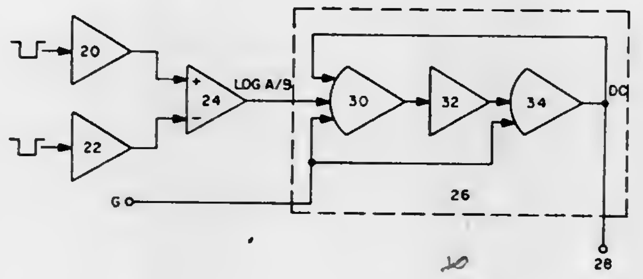
3,868,688
HIGH SPEED VIDEO TRACK LOOP

Richard Smith Hughes, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 21, 1973, Ser. No. 372,441

Int. Cl. G01s ***9/22***

U.S. Cl. 343—16 M **7 Claims**



1. A monopulse, direction finding system, comprising:

means for receiving radar frequency information and converting said information into first and second electrical pulses wherein said first pulse appears in the sum channel, and the second pulse appears in the difference channel, of said monopulse system;

means coupled to said receiving and converting means for logarithmically amplifying said electrical pulses;

means coupled to said amplifying means for combining said logarithmically amplified pulses;

means coupled to said combining means for comparing the combination to a variable voltage level;

means coupled to said comparing means for averaging the result of said comparison in time and providing the system output, which output is fed back to said comparing means as said variable voltage level; and

electrical pulse providing means coupled to said comparing means and said averaging means for selectively gating both said means simultaneously.

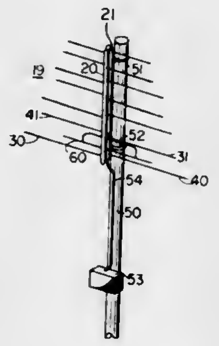
3,868,689
LOG PERIODIC POLE MOUNTED MARKER BEACON ANTENNA

Charles C. Liu, Dallas, and Dean A. Hofer, Richardson, both of Tex., assignors to Texas-Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,736

Int. Cl. G01s ***1/68***

U.S. Cl. 343—101 **13 Claims**



1. An ILS marker beacon antenna which comprises:

a. an antenna having a pair of spaced parallel conductors forming a balanced transmission line and a plurality of radiators of graded lengths extending from said pair of spaced parallel conductors to form a log periodic array,

b. an unbalanced RF transmission line connected to feed said antenna at the apex, and

c. a dipole monitor antenna structure mounted parallel to said radiators and including structure electrically to terminate said antenna by a short circuit near the bottom of said log periodic antenna to monitor the antenna field while minimizing back radiation thereof.

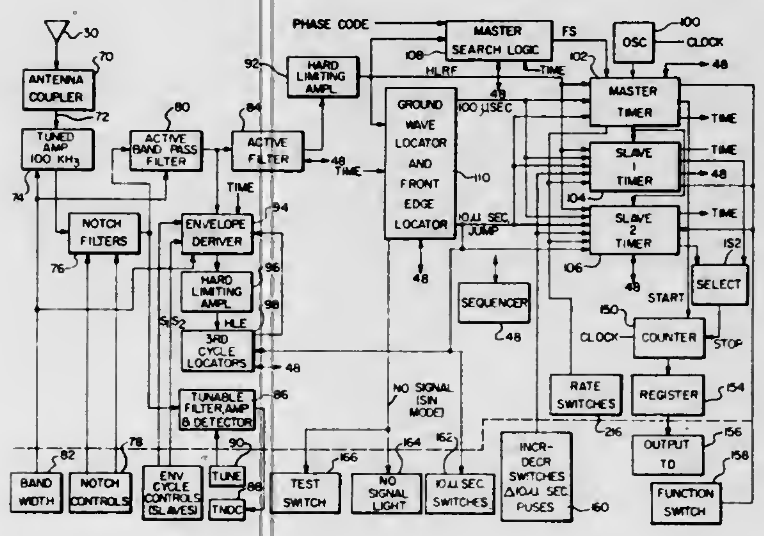
3,868,690
LORAN RECEIVER ENVELOPE-CYCLE DISCREPANCY COMPENSATION

Herbert E. Miller, Brookline, Mass., assignor to Epsco, Incorporated, Westwood, Mass.

Filed Apr. 13, 1973, Ser. No. 350,996

Int. Cl. G01g ***1/26***

U.S. Cl. 343—103 **16 Claims**



1. For use with Loran receiver, apparatus for limiting the effect of the envelope-cycle discrepancy of received Loran transmissions comprising:

means for receiving Loran signals corresponding to Loran pulse transmissions:

means responsive to received Loran signals for identifying a point on the pulse envelope;

means operative in response to a control for adjusting the identified point on the envelope for received signals from at least one Loran slave stations;

means responsive to the identified point and responsive to carrier cycles in the received Loran signals for identifying a predetermined carrier cycle point which bears a predetermined relationship to the identified envelope points; and

means for indicating an adjustment in the control for the identified envelope point in response to known position with respect to the location of the Loran stations whose transmissions are being received.

3,868,691
LORAN RECEIVER AUTOMATED MASTER SEARCH

Herbert E. Miller, Brookline, and Michael Harry Myers, Framingham, both of Mass., assignors to Epsco, Incorporated, Westwood, Mass.

Filed Apr. 13, 1973, Ser. No. 350,995

Int. Cl. G01s ***1/26***

U.S. Cl. 343—103 **15 Claims**

13. In a Loran receiver, a method for automatically synchronizing the time of reception of Loran signals to receiver time comprising the steps of:

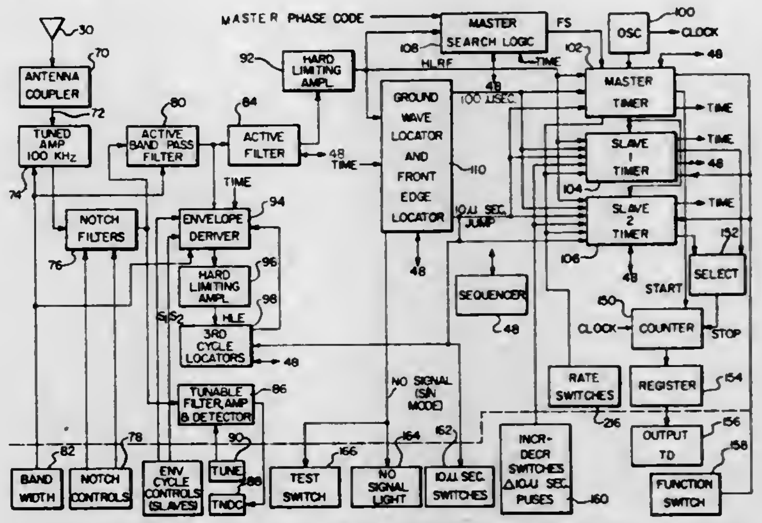
receiving Loran signals from a set of Loran station transmissions;

comparing the carrier phase of successive pulse of received signals with a preset phase code corresponding to the phase code for the particular Loran station set;

said comparing step continuing for an interval of at least the period of repetition of the phase code in said received signal;

indicating when the compared phase code and received signal carrier phase correlate; and

verifying the correlation of said compared phase code and received signal carrier phase during a plurality of said intervals.



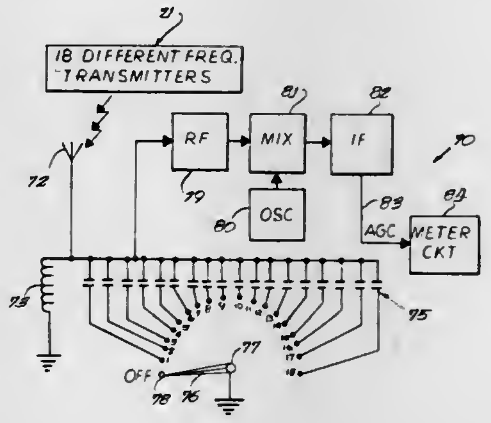
3,868,692
GOLF YARDAGE FINDER

Roland L. Woodard, 1308 National Ave., New Bern, N.C. 28560, and Patrick L. Hughes, 4338 W. Rose Lane, Glendale, Ariz. 85301

Filed Sept. 13, 1973, Ser. No. 396,731

Int. Cl. G01s ***3/02***

U.S. Cl. 343—112 D **3 Claims**



1. A golf yardage distance measuring system to provide a visual read-out of the distance between a golfer and a green on a golf course, comprising in combination:

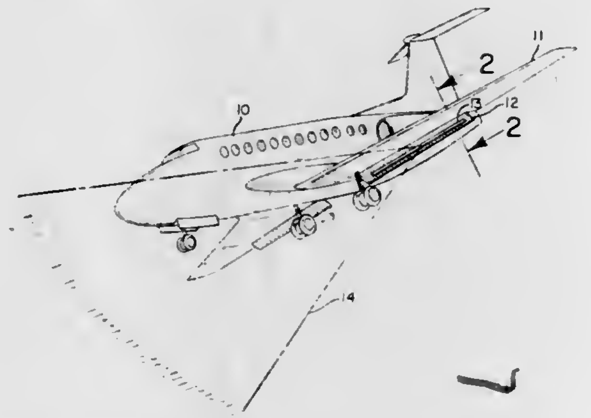
a plurality of transmitter units to be located at the green of each hole of a particular golf course, each transmitter adapted to radiate an RF signal outwardly from the green and over the approach fairway leading up to said green, a receiver unit to be carried by a golfer who is playing on said particular golf course, said receiver unit includes a meter read-out device and an RF signal strength detecting circuit coupled thereto to be responsive to one of said plurality of transmitter units, said read-out device being calibrated in a distance measurement corresponding to the distance measurement common to said particular golf course, said receiver unit includes an automatic gain control circuit responsive to the reception of RF signal energy transmitted from a selected one of said plurality of transmitter units, said automatic gain control circuit producing an output voltage having a value indicative of the distance between said transmitter unit and said receiver unit, said automatic gain control circuit including a calibrated meter for indicating the relative range of distances to be measured in the order of about between 0 and 200 yards; whereby

said receiver unit is activated by a selected one of said plurality of transmitter units to provide direct indication of said read-out device of the distance of said golfer and said selected one of said plurality of trasmitter units thereby allowing the golfer to know exactly which golf club to use for the approach shot to the green.

3,868,693
FLAP ANTENNA

David W. Young, 627 No. Beachwood Drive, Burbank, Calif. 91506

Filed Apr. 27, 1973, Ser. No. 355,065
Int. Cl. H01q *1/28, 13/00, 19/10*
U.S. Cl. 343—708 **5 Claims**



1. In combination:

a. an elongated horizontally disposed wave guide antenna having an elongated horizontal aperture providing a general narrow fan-shaped beam in a vertical plane;

b. an aircraft having a wing trailing edge landing flap control defining a long straight surface at least as long as said elongated aperture and visible to line of sight viewing from the horizon in front of the aircraft along the center line of the aircraft when the landing flap is moved to a lowered position during an approach for a landing;

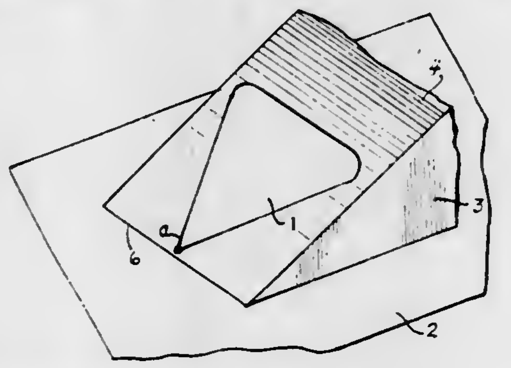
c. means mounting said antenna in said landing flap in such a position that said beam pattern from said antenna is directed forwardly generally towards the horizon and downwardly from the horizon only when the long straight surface of the flap is in its lowered position during a landing approach to expose completely said elongated aperture to line of sight viewing from the horizon along the center line of the aircraft;

d. means for passing electromagnetic energy into the wave guide antenna when the flap is lowered during a landing approach, whereby the antenna can be easily installed, replaced, or serviced by simply removing the flap from the remaining portion of the aircraft wing.

3,868,694
DIELECTRIC DIRECTIONAL ANTENNA

Hans H. Meinke, Gauting Bavaria, Germany, assignor to United States of America as represented by the Secretary of the Air Force

Filed Aug. 9, 1973, Ser. No. 386,924
Int. Cl. H01q *19/06*
U.S. Cl. 343—753 **8 Claims**



1. A directional antenna comprising:

a. a wedge-shaped dielectric member having a pair of surfaces inclined to each other and joined at an intersection line;

b. a first conducting surface mounted on one of the pair of dielectric surfaces and having the general shape of a triangle;

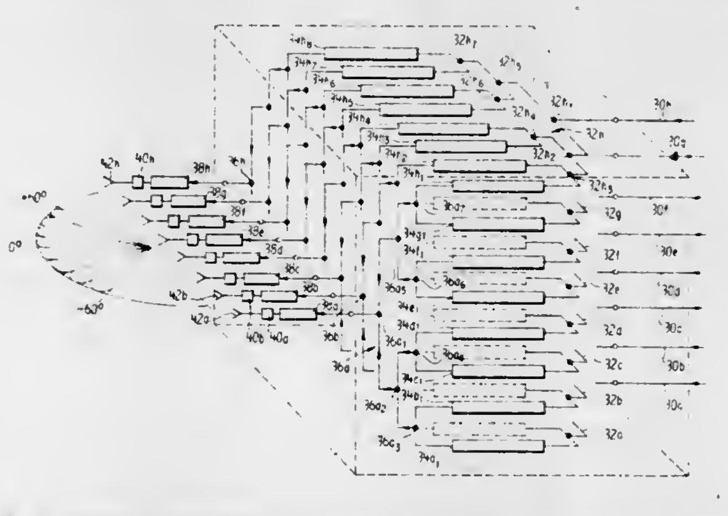
c. a second conducting surface mounted on and extending beyond the other of the pair of dielectric surfaces with the first and second conducting surfaces forming a line of constant characteristic impedance; and

d. means for feeding the antenna, the feeding means being connected to the apex of the triangle of the first conducting surface and on the second conducting surface in the immediate vicinity of the intersection line.

3,868,695
CONFORMAL ARRAY BEAM FORMING NETWORK

Eugene H. Kadak, Pasadena, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed July 18, 1973, Ser. No. 380,305
Int. Cl. H01q *13/00*
U.S. Cl. 343—778 **16 Claims**



1. A matrix network for intercoupling a plurality of terminals and a plurality of antenna elements disposed in an antenna array having any suitable axis, said matrix network comprising:

a. a plurality of sets of fixed time delay means;

b. a first set of signal interconnecting means including a plurality of power dividers forming a first corporate feed, each for interconnecting one of the said terminals and each of said delay means of one of said sets; and

c. a second set of signal interconnecting means including a plurality of power dividers forming a second corporate feed, each for interconnecting at least one delay means of each set of said plurality of sets and one of said antenna elements, whereby a signal present at one of said terminals corresponds to signals at each of said antenna elements;

d. each delay means imparting a time delay to a signal passing therethrough, selected such that a beam oriented in a selected direction with respect to said axis of said antenna array is associated with one of said terminals.

3,868,696
ROTATABLE RECORDER SCALE ARRANGEMENT

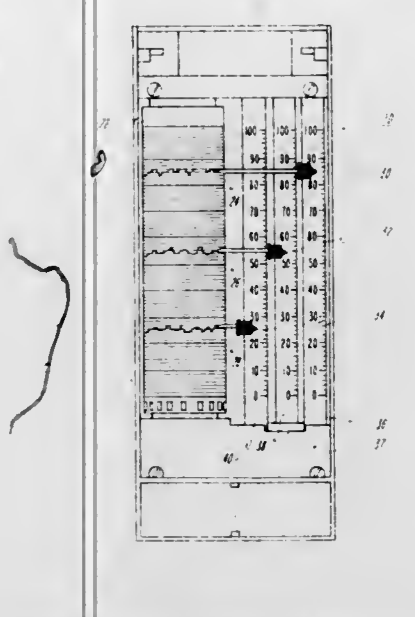
Melvin J. Post, and James L. McCarthy, both of Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,050
Int. Cl. G01d *13/04*
U.S. Cl. 346—17 **14 Claims**

1. In a strip chart recorder including at least one writing element, a scale mechanism for the writing element comprising:

a plurality of elongated generally rectangular shaped thin strips, wherein the width of the strips is substantially less than the length, and the thickness of the strips is substantially less than the width, and wherein the length and width of the strips define a surface adapted for receiving scale graduations for indicating the positions said writing element;

means for pivotally mounting said plurality of strips for rotation along an axis that extends along the length of the strip, and

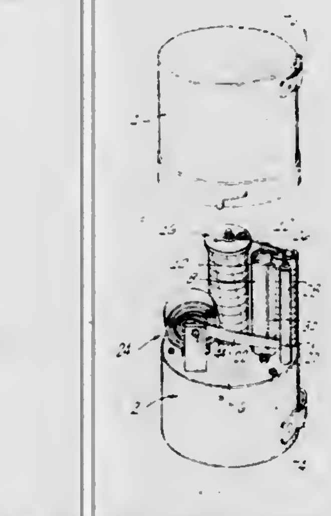


means for simultaneously rotating each of said plurality of strips from a position wherein said surfaces face the front of the instrument to a position wherein the surfaces are generally normal to the front of the instrument.

3,868,697
TEMPERATURE RECORDER

Harry Schefe, Pacific Palisades, Calif., assignor to Caltemp Instrument Inc., Pacific Palisades, Calif.

Filed Dec. 6, 1973, Ser. No. 422,184
Int. Cl. G01k *5/70;* **G01d** *15/28*
U.S. Cl. 346—68 **6 Claims**



1. A recorder for recording a sensed condition on a flexible elongate strip of recording medium over an elapsed period of time, the recorder comprising:

a housing;

support means connected to said housing for releasably supporting a coiled portion of the strip for rotation relative to said housing with the strip having one end remote from the coiled portion;

take-up means rotatably connected with said housing, said take-up means connected to the one end of the strip for unwinding the strip and for rewinding portions of the strip onto said take-up means;

said support means and said take-up means supporting the strip for releasing motion in a direction outwardly from said housing and perpendicular to the direction of travel of the strip between said support and take-up means;

a timing mechanism connected with said take-up means for continuous rotation thereof at a predetermined rate thereby causing the strip to travel continuously in a direction lengthwise of the strip along a predetermined path extending between said support means and said take-up means;

sensing means positioned along said predetermined path in contact with the strip for producing thereon a trace which varies in amplitude in a direction generally transverse of the strip in response to variation in the sensed condition;

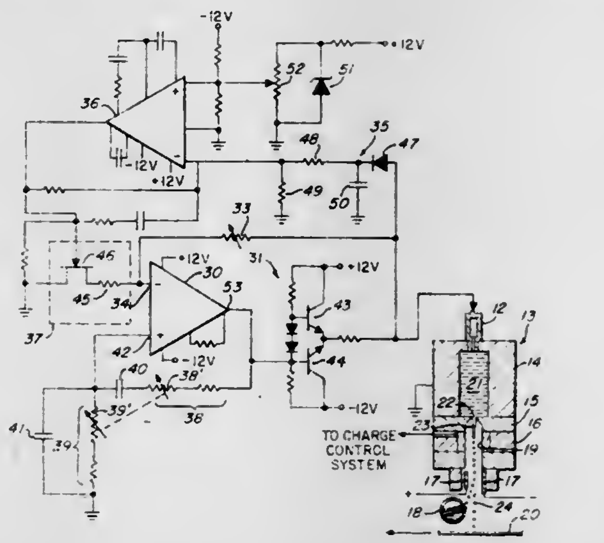
an arm connected with said housing for swinging motion between an operative position in which portions of said arm are in overlapping relation to an edge portion of the strip remote from said housing to prevent releasing motion thereof, and an inoperative position in which said arm is spaced away from the strip during releasing motion thereof; and

disengaging means connected with said detent means for moving said sensing means out of contact with the strip whenever said arm is moved to the inoperative position.

3,868,698
STIMULATION CONTROL APPARATUS FOR AN INK JET RECORDER

John L. Dressler, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 24, 1973, Ser. No. 409,132
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **16 Claims**

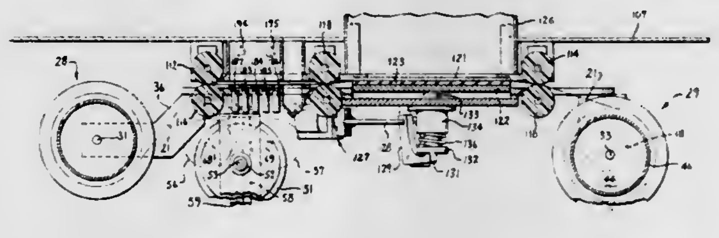


1. Apparatus for stimulating a filament of recording fluid to break up into uniformly sized and regularly spaced drops comprising electically driven vibrating means having a naturally resonant frequency near the natural frequency of said filament, an amplifier for supplying an electrical driving signal for said vibrating means, and positive and negative feedback means for causing oscillation of said amplifier; said negative feedback means comprising means for generating a negative feedback signal corresponding to the impedance of said vibrating means and causing oscillation of said amplifier to occur at a frequency which minimizes said impedance.

3,868,699
PRINTING MACHINE

Christina B. Gardner, 725 Cherry St., Santa Rosa, Calif. 95404, and Bruce A. Odelberg, 151 Overhill Rd., Orinda, Calif. 94563

Filed Jan. 12, 1973, Ser. No. 323,058
Int. Cl. B41b *17/38*
U.S. Cl. 354—12 **4 Claims**



1. In a printing machine having an elongated first member mounted for lengthwise movement and providing a series of longitudinally spaced image defining areas of different widths, and an elongated image receiving second member mounted

for lengthwise movement perpendicuarly to and transversing said first member, and means for moving said members for juxtaposing any of said image areas and a succession of image receiving areas on said second member, and means effecting image transfer from said first member to said second member, said first named means comprising a plurality of width codes on said first member correlated with said image defining areas, and a motor drive and multiple ratio transmission connected to advance said second member by distances determined by said width codes, the improvement comprising:

a motor driven disc having a drive face, and a driven wheel mounted for rotation about an axis parallel to said face; a carriage supporting said disc and being mounted for reciprocation along said axis;

an electric motor mounted on said carriage and being connected to and driving said disc;

means moving said wheel and face into and out of engagement and being connected to and controlled by said width code reading means;

manually operable means connected to said carriage and effecting reciprocation thereof for controlling the drive ratio of said drive transmission and establishing a selectable spacing constant multiplier for said width codes; and an indicator showing the relative drive ratio between said wheel and disc.

3,868,700
ELECTRIC EXPOSURE CONTROL CAMERA

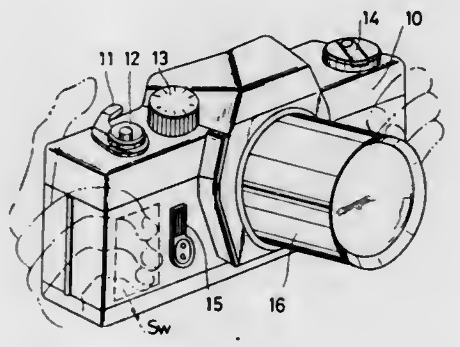
Yoshio Kuramoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 9, 1973, Ser. No. 331,131

Claims priority, application Japan, Feb. 12, 1972, 47-14982

Int. Cl. G03b *7/08*

U.S. Cl. 354—23 **9 Claims**



1. In a photographic camera including a camera casing, a light detecting circuit for detecting light from an object to be photographed, an indication means for indicating exposure value corresponding to the output of said light detecting circuit, an electric shutter circuit for controlling an exposure in accordance with the output of said light detecting circuit, a current source for energizing at least said light detecting circuit, a normally open switch arranged between said current source and said light detecting circuit, a switch operating member for closing said normally open switch, and a shutter release member for initiating shutter mechanism, the improvement wherein said switch operating member comprises a sensor plate responsive to pressure thereon to close said switch, said sensor plate arranged on and extending over said camera casing at an area where the tip of any finger or thumb of a hand which holds the camera casing naturally put when a person who operates the camera holds the casing for photographing by means of one hand with the other hand permitted to move for the operation of said shutter release member, said sensor plate being disposed on a wall of said camera different from that of said shutter release member.

3,868,701
AUTOMATIC FLASH CONTROL SYSTEM FOR CAMERAS

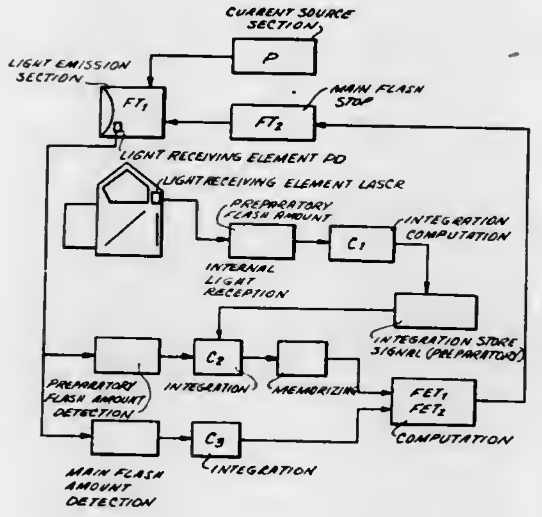
Masahiro Kawasaki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 19, 1973, Ser. No. 398,808

Claims priority, application Japan, Sept. 22, 1972, 47-95276

Int. Cl. G03b *7/08, 15/05*

U.S. Cl. 354—33 **12 Claims**



1. In a camera having an objective, flash means having a preparatory flash operation prior to a main flash operation for providing a given amount of preparatory flash illumination during said preparatory flash operation, internal photosensitive means situated within the camera for receiving light which has travelled through the objective during the preparatory flash operation and for determining when a predetermined amount of light is internally received, external photosensitive means situated with respect to said flash means for receiving light during said preparatory flash operation, and preparatory electrical circuit means electrically connected with said external means and said internal means for integrating the amount of light received by said external means during said preparatory flash operation, said internal means terminating the integration of said preparatory electrical circuit means without terminating the preparatory flash illumination from said flash means when said predetermined amount of light is received by said internal means, the integrated value achieved at the termination of integration being retained for subsequent use during the main flash illumination.

3,868,702
MIRROR REFLEX CAMERA

Karl-Peter Strauss, Volkmarode, and Richard Weiss, Braunschweig, both of Germany, assignors to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Nov. 16, 1973, Ser. No. 416,355

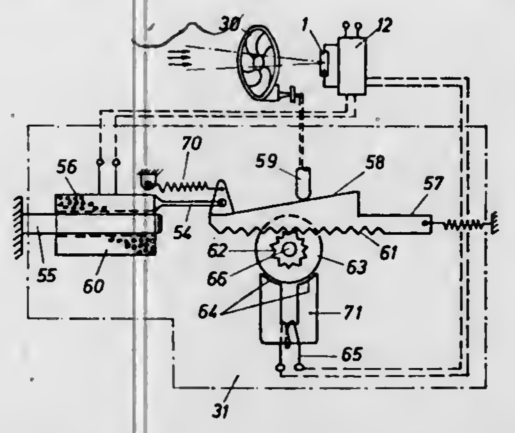
Claims priority, application Germany, Nov. 24, 1972, 2257608

Int. Cl. G03b *9/02*

U.S. Cl. 354—42 **9 Claims**

1. A mirror reflex camera of the type having a lens, a diaphragm of adjustable aperture, a photocell receiving light through said lens and diaphragm, drive means for varying the aperture of the diaphragm, and means for arresting movement of said drive means when a desired aperture size is reached during operation of said drive means, characterized by the fact that a ferro magnetic disk is coupled to said drive means to move therewith, and that an electro-magnet has a pole piece normally located close to said disk with a small clearance, and means for magnetizing said electro-magnet when said drive means is to be arrested, to cause said electro-magnet to act as a brake to stop movement of said disk and thereby to arrest movement of said drive means.

7. Braking mechanism for stopping adjusting movement of a diaphragm aperture adjusting drive, comprising a shaft coupled to said drive to turn while the aperture of the diaphragm is changing, a ferro-magnetic disk mounted on said shaft to turn therewith, an electro-magnet having a pole piece close to a portion of said disk with a slight air gap between the pole piece and the disk so long as the adjusting drive is intended to perform adjusting movement, and a coil for magnetizing said electro-magnet when it is desired to stop the adjusting movement of said drive, said disk and magnet being so arranged that when said electro-magnet is magnetized, it will draw said disk into contact with said pole piece to produce a braking action stopping rotation of said disk.



3,868,703
LIGHT MEASURING DEVICE FOR SHUTTER CONTROL MECHANISM

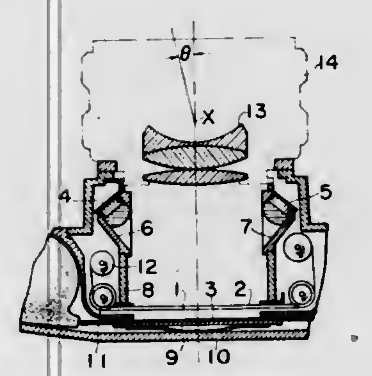
Hiroshi Ueda, Nara, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 145,311, May 30, 1971, abandoned. This application May 14, 1973, Ser. No. 360,308.

Claims priority, application Japan, May 20, 1970, 45-43567

Int. Cl. G03b *7/08*

U.S. Cl. 354—49 **7 Claims**



1. In a photographic camera of the type including an objective lens and a light sensitive member, light shielding means movably disposed in front of and adjacent said light sensitive member, said light shielding means including a front shutter curtain movable from a cocked position to a rest position thereof to initiate exposure of said light sensitive member, and further including a rear shutter curtain movable from a cocked position to a rest position thereof to terminate the exposure, an electric circuit means for timing the actuation of said rear curtain, the improvement comprising:

said front shutter curtain including a surface facing said objective lens and having a light scattering layer thereon with substantially the same reflecting power and scattering property as that of said light sensitive member;

photoelectric means connected in said circuit means and mounted within said camera for receiving light passing through said objective lens and reflected from said light scattering layer when said front shutter curtain is in front of light sensitive member, from said light scattering layer and said light sensitive surface when said light sensitive member is being uncovered, and from said light sensitive member when said light sensitive member is uncovered.

2. The camera according to claim 1 wherein said surface of said front shutter curtain facing said objective lens has a film of thin transparent material coated thereon, said material having dispersed therein particles having a refractive index different from that of said material, thereby imparting to said front shutter curtain the scattering property which is substantially the same as that of said light sensitive member.

3,868,704
CONTROL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

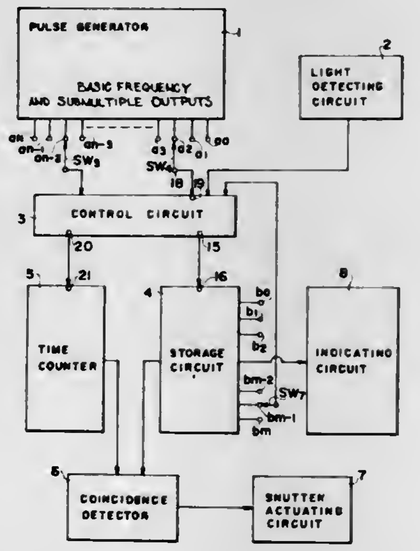
Seiji Yamada, and Kotaro Yata, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Aug. 28, 1972, Ser. No. 284,105

Claims priority, application Japan, Aug. 27, 1971, 46-65175

Int. Cl. G03b *9/12, 7/08*

U.S. Cl. 354—50 **5 Claims**



1. An exposure control system for a single lens reflex camera having a shutter mechanism comprising:

a time base unit for generating a plurality of pulse trains at respective submultiple frequencies of a basic frequency and having a plurality of first output terminals for respectively providing a pulse train at said basic frequency and each of said submultiple frequencies;

a detecting circuit for generating an electrical signal in response to operation of a shutter release member with a delay determined in accordance with scene light;

a first switching means for selecting one of said first output terminals;

a second switching means for selecting one of said first output terminals;

a storage circuit for storing pulses from said output terminal selected by said first switching means, said storage circuit including a plurality of first flip-flop circuits connected in series said storage circuit having an input terminal, and a plurality of second and third output terminals each respectively connected to corresponding outputs of each of said first flip-flop circuits;

a pulse counter circuit for counting pulses from said output terminal selected by said second switching means;

a control circuit including a gate circuit closed in response to the operation of a shutter release member for initiating storage of pulses within said storage circuit and opened in response to said electrical signal for terminating storage of said pulses and means for initiating operation of said pulse counter in conjunction with opening of the shutter mechanism for initiating an exposure;

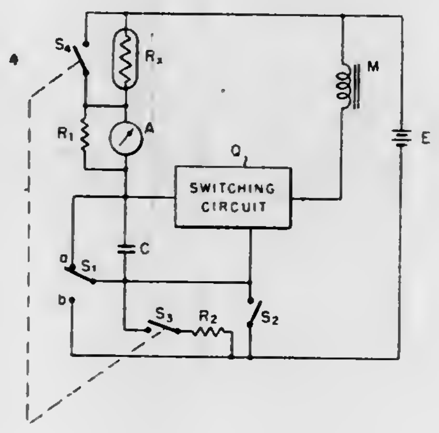
means for generating a signal to close the shutter mechanism to terminate exposure in response to the coincidence between the number of pulses in said storage circuit and said pulse counter circuit;

means for manually setting the exposure time;
a third switching means for selecting one of said second output terminals in conjunction with the operation of said means for manually setting the exposure; and
a feedback circuit connected between said third switching means and said gate circuit for feeding the change of output from said manually selected second output terminal connected to the output of a corresponding one of said first flip-flop circuits to said gate circuit to open said gate circuit for terminating said storage of pulses within said storage circuit when the change of the output of said corresponding flip-flop occurs because of said storage of pulses.

3,868,705
CONTROL CIRCUIT FOR ELECTRONIC SHUTTER FOR ELECTRONIC SHUTTER HAVING BATTERY-CHECKING CIRCUIT

Kiyoshi Katai, Tokyo, Japan, assignor to Seiko Koki Kabushiki Kaisha

Filed July 16, 1973, Ser. No. 379,777
Claims priority, application Japan, July 14, 1972, 47-82526
Int. Cl. G03b *17/18, 7/08*
U.S. Cl. 354—51 2 Claims

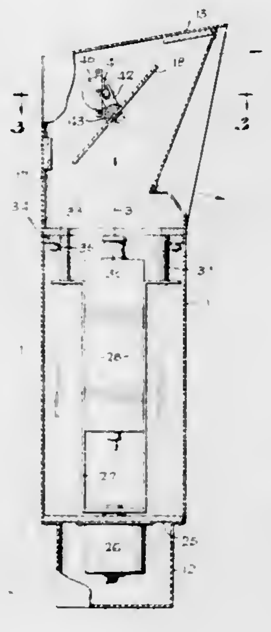


1. An electronic shutter control circuit for a camera shutter electronically controlled comprising, means comprising, a light-responsive element sensing light received from a scene to be photographed for controlling exposure time as a function of the intensity of light received, a switching circuit connected to said means to control the closing of a shutter, a light-intensity indicating circuit having an ammeter for indicating visually the intensity of the light at said scene, a power source for selectively energizing the light-responsive element, a power source checking circuit for checking the current delivered from said power source to determine its adequacy, switch means to independently control exposure time when taking an exposure, taking a light intensity reading on said ammeter and a reading on said ammeter of the current available from said power source, the first-mentioned means including a capacitor connected to said light responsive element defining an RC time constant circuit therewith, for controlling said exposure time, means connecting said ammeter and light-responsive element in series between a terminal of said power source and an input of said switching circuit, and said switch means including a change-over switch normally short-circuiting the capacitor.

3,868,706
TELEVISION CAMERA MOUNT

Harold Steingold, 407 16 St., Santa Monica, Calif. 90402
Filed Oct. 12, 1973, Ser. No. 406,025
Int. Cl. G03b *37/02*
U.S. Cl. 354—95 4 Claims

1. An integral pan/tilt camera apparatus comprising the combination of:
a stationary housing;
a turret movably mounted on said housing for horizontal rotation;
a mirror pivotally carried on said turret for vertical rotation; a camera having a center of gravity carried on said housing and mounted for rotation in conjunction with said turret, said camera center of gravity being critically located at the center of rotation so that said camera is in static-balance during said rotational movements;
motor means for driving said camera and said turret in horizontal rotation about a vertical axis and for driving said mirror in vertical rotation about a horizontal axis;

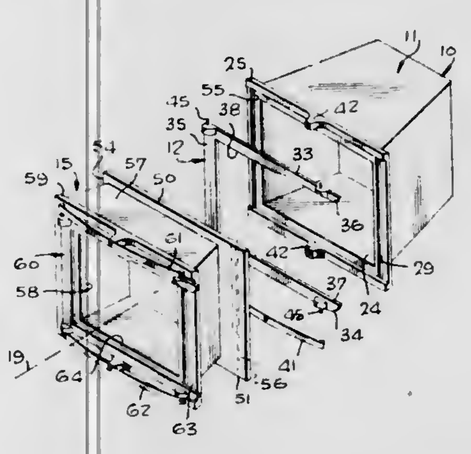


an opaque support bracket rotatably mounting said camera in said housing so that its optical axis is directed towards said mirror;
a bearing means rotatably supporting said bracket and said camera on said housing;
said bearing means includes a central aperture through which said camera optical axis passes to said mirror;
a drive motor secured to said housing having a drive shaft operably coupled to said camera support bracket;
a tilt drive motor carried on said turret operably coupled to said mirror; and
an eccentric drive train interconnecting said tilt drive motor with said mirror.

3,868,707
FILM HOLDING STRUCTURES FOR CAMERAS

Gerhard I. W. Bahnsen, Box 1297, South Lake Tahoe, Calif. 95705
Filed Mar. 22, 1974; Ser. No. 452,246
Int. Cl. G03b *19/02*
U.S. Cl. 354—202 11 Claims

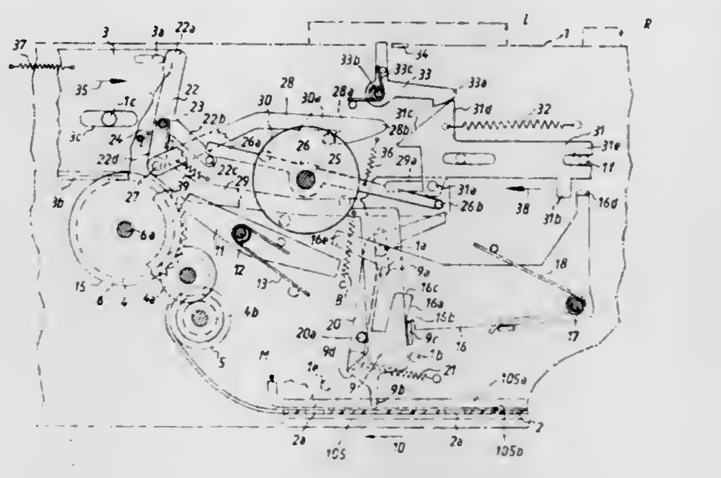
1. An assembly comprising a camera body having an opening at its rear side with a rearwardly facing shoulder extending at least partially about said opening; a lens mounted to said body at a location to focus an image of a photographic subject rearwardly through said opening; a retainer mounted movably to the rear of said body and yieldingly urged forwardly relative to said shoulder and adapted to yieldingly urge forwardly against said shoulder a film holder containing film onto which an image may br focused by said lens; said retainer being generally U-shaped to form two generally parallel spaced arms extending essentially along two opposite sides of said opening and a cross-piece interconnecting first ends of said arms and extending essentially along a third side of said opening, so that said arms and cross-piece define and extend about a cutaway region in said retainer which is opposite said opening in the body to pass light rays from said lens rearwardly through said opening and then through said cutaway region when a film holder is not present between said shoulder and retainer; and a focal adapter detachably connectible to the rear of said camera body in lieu of said film holder to locate a film a predetermined distance rearwardly of the position in which a film is held by said holder when the latter is held against said shoulder by said retainer, to thereby effect a change in the subject-to-camera distance at which an image is in focus on a film, said focal adapter including a flange which is slidable transversely of the axis of said lens from a position in which it is detached from the camera body into a space between said shoulder and said retainer and to an active position in which said flange is yieldingly urged forwardly against said shoulder by said retainer; said focal adapter having a hollow portion which is carried by said flange and projects rearwardly therefrom through said cutaway region of said U-shaped retainer to a location rearwardly beyond the retainer and contains a passage through which light rays from the lens can pass; said arms of said U-shaped retainer having second ends at a side of said adapter opposite that at which said cross piece is located and which second ends are spaced apart and free of interconnection to define therebetween an entrance throat through which said hollow rearwardly projecting portion of the adapter is movable transversely of said lens axis into said cutaway region of the U-shaped retainer as said flange slides transversely into said space between said shoulder and said retainer; said adapter including film retaining means at the rear of said rearwardly projecting portion thereof defining a generally transverse guideway into which a film holder and carried film are insertable to a position rearwardly beyond said U-shaped retainer for focusing an image through said lens, said opening in the camera body, said flange, said U-shaped retainer and said rearwardly projecting hollow portion of the adapter onto the film.



3,868,708
FILM METERING MECHANISM FOR CAMERAS

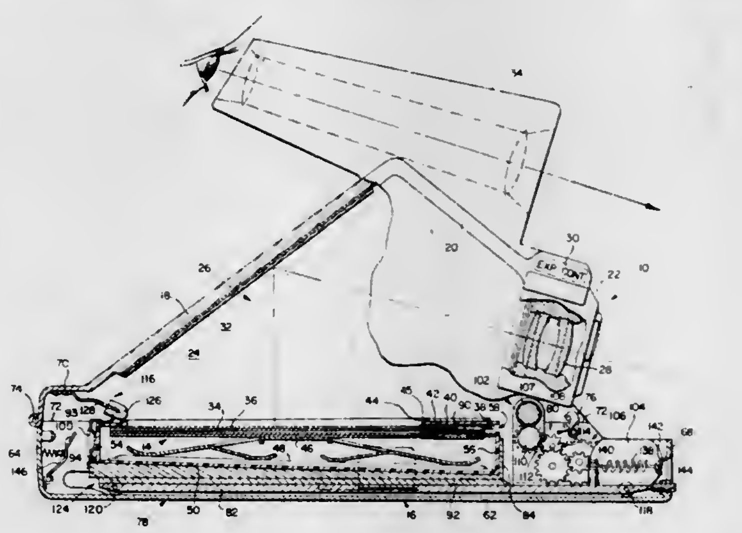
Alfred Winkler, Munich; Dieter Engelsmann, Unterhaching; Horst Karl, Munich; Rolf Schroder, Baldham, and Karl Wagner, Ottobrunn, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 12, 1973, Ser. No. 396,454
Claims priority, application Germany, Sept. 13, 1972, 2244824
Int. Cl. G03b *19/04*
U.S. Cl. 354—206 25 Claims

1. In a photographic apparatus for use with roll film having a row of perforations, one for each film frame, particularly in a still camera for use with film which is stored in a magazine and one side of which is adjacent to a web of backing paper, a combination comprising film transporting means actuatable to move the film lengthwise in a predetermined direction and along a predetermined path; input means movable from a first to a second position to thereby actuate said film transporting means, and back to said first position; a movably mounted feeler adjacent to said path in line with the row of perforations and arranged to penetrate into an oncoming perforation when the film moves lengthwise and to thereupon move from a first to a second position in response to continued lengthwise movement of film; locking means operable to deactivate said film transporting means in response to movement of said feeler to said second position; means for biasing said feeler against the film while said feeler dwells in said first position and while said film transporting means is being actuated to move a perforation toward said feeler, including a movably mounted displacing member and means for yieldably urging said displacing member against said feeler in said first position of said feeler; means for biasing said feeler to said first position upon completion of movement of said feeler to said second position, comprising a movably mounted restoring member which abuts against said feeler during actuation of said film transporting means and means for yieldably urging said restoring member against said feeler in said second position of said feeler; disengaging means actuatable by said input means and arranged to disengage said displacing member from said feeler subsequent to penetration of said feeler into an oncoming perforation; and control means for disengaging said restoring member from said feeler in said first position of said input means.



3,868,709
PHOTOGRAPHIC APPARATUS WITH FILM RECIPROCATING TRANSPORT SYSTEM

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 2, 1974, Ser. No. 429,727
Int. Cl. G03b *1/00*
U.S. Cl. 354—212 24 Claims



1. Photographic apparatus for use with a film container holding at least one film unit, the film unit being of the type comprising leading and trailing edges, a plurality of layers including photosensitive and image-receiving layers, and an integral supply of fluid processing composition adapted to be distributed between a predetermined pair of the layers, the film container being of the type including a film withdrawal slot therein through which the film unit is adapted to be advanced, leading edge first, to withdraw the film unit from the film container and an opening providing access for externally

mounted means to engage and advance the film unit, leading edge first, through the film withdrawal slot, said photographic apparatus comprising:

a housing;

carrier means for receiving and supporting such a film container holding at least one film unit;

means mounting said carrier means within said housing for movement between first and second positions;

static film advance means fixedly mounted in said housing and positioned to extend through the opening in the film container supported by said carrier means, when said carrier means is moved from said first position toward said second position, for engaging and advancing the film unit, leading edge first, through the film withdrawal slot in the film container in response to movement of said carrier means towards said second position;

processing means mounted on said carrier means for movement therewith and being located in a predetermined relationship with the film withdrawal slot in the film container supported by said carrier means for receiving the film unit advanced through the film withdrawal slot during movement of said carrier means towards said second position and for applying a compressive pressure progressively along the length of the film unit from the leading edge towards the trailing edge to distribute the fluid processing composition between the predetermined pair of layers in the film unit; and

means operable to move said carrier means between said first and second positions within said housing.

3,868,710

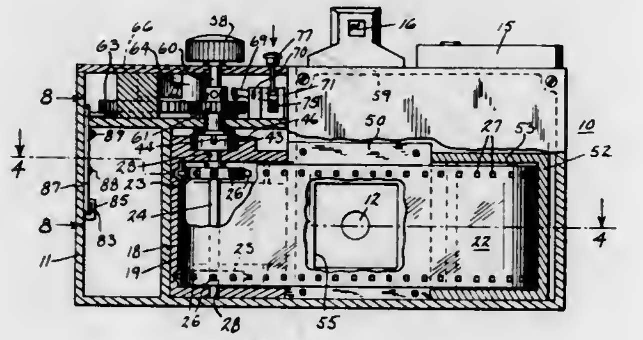
STILL CAMERA FILM METERING MECHANISM

John H. Van Osch, 3415 Honey Creek Ct., Milwaukee, Wis. 53219

Division of Ser. No. 238,696, March 27, 1972, , which is a division of Ser. No. 501,321, Oct. 22, 1965, Pat. No. 3,653,310. This application Dec. 14, 1973, Ser. No. 424,679

Int. Cl. G03b *19/04*

U.S. Cl. 354—213 **11 Claims**



1. In combination with a still camera having a housing provided with a compartment adapted to receive a film cartridge containing a rotatable film sprocket having teeth adapted to engage perforations in a photographic film and a noncircular portion exterior of the cartridge to push the film out of a light trap opening in said cartridge and in front of the camera lens, film metering means comprising

a film-actuating member rotatably mounted within said camera housing and having a noncircular portion complementary to and adapted to releasably engage said noncircular portion of said sprocket,

an indexing member operatively connected to said film actuating member and being rotatably mounted within said camera housing and carrying a plurality of arcuately spaced apart stop means corresponding to the number of picture frames to be exposed on the film,

latch means within said housing in the path of movement of said stop means as said indexing member rotates for latching each of said stop means as it passes to thereby control the length of film pushed out of said cartridge,

manually operable means on said camera housing for releasing said latch means,

a manually rotatable film winding member on said camera housing operatively connected to said indexing member and to said film-actuating member,

the spacing between the first and second of said stop means being different than that between other adjacent stop means to permit pushing a length of film equal to a leader plus one picture frame out of said light trap opening in the initial movement of said film,

said indexing member having a cartridge-loading position wherein said latch means latches the first of said stop means on said indexing member and said cartridge can be inserted into and withdrawn from said compartment, and including

means on said camera housing for preventing insertion of said cartridge into said compartment when said indexing member is away from said cartridge-loading position.

3,868,711

PHOTOGRAPHIC CAMERA HAVING A DETACHABLY MOUNTED VIEW FINDER CASING

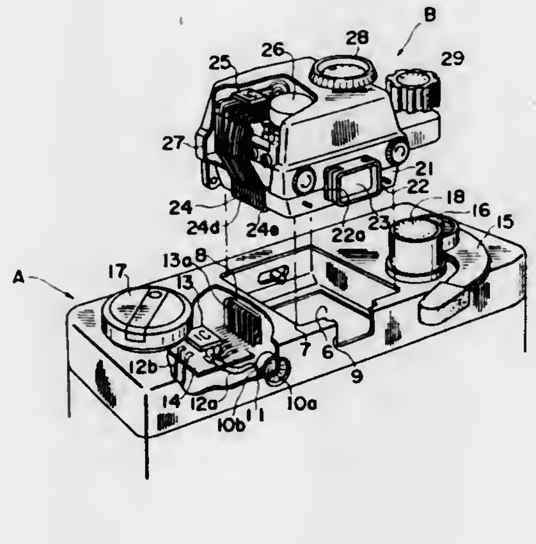
Minoru Sekida, and Masaru Ohba, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1973, Ser. No. 355,812

Claims priority, application Japan, May 10, 1972, 47-53704

Int. Cl. G03b *13/00*

U.S. Cl. 354—219 **6 Claims**



1. A photographic camera comprising:

a camera body with an electronic shutter and a view finder casing detachably mounted on the camera body;

said view finder casing including at least a light measuring circuit including a light receiving element for receiving light rays which are introduced into an optical system of the view finder from a photographic view field;

said camera body having mounted thereon a circuit connected to a power source in the form of a battery, a timing circuit operative in response to an input voltage, and a switching circuit operative to terminate the exposure by the electronic shutter;

a flexible printed circuit with a bent portion at one end thereof and with a contact portion adjacent said bent portion, said flexible printed circuit being mounted on one of said camera body and said view finder casing; and the other of said view finder casing and said camera body having connected to the circuit thereof a contact member for contacting engagement with said contact portion of said flexible printed circuit when said view finder casing is mounted in position on said camera body, thereby establishing connection between said power source and said light measuring circuit.

3,868,712

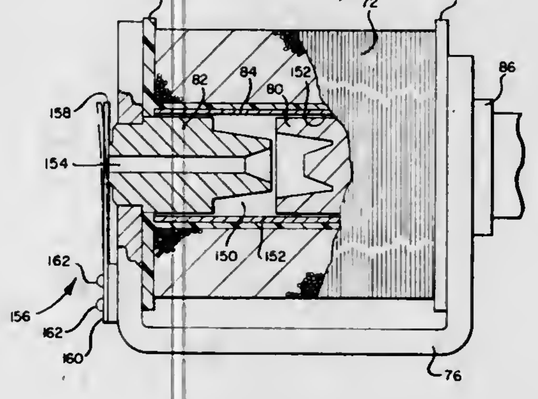
PNEUMATICALLY REACTIVE EXPOSURE CONTROL SYSTEM

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 11, 1973, Ser. No. 349,960

Int. Cl. G03b *9/14*

U.S. Cl. 354—230 **31 Claims**



1. An exposure control system comprising:

means defining a light entrance opening;

exposure mechanism means movable about said opening between a closed position blocking the passage of light therethrough and open positions, said opening movement defining a time-dependent variation of aperture values over said opening;

drive means for driving said exposure mechanism means between said positions and including a solenoid having an excitation winding and plunger means arranged in driving association with said exposure mechanism means and retractable to a given location within said excitation winding upon energization thereof, said plunger means being mounted within said solenoid so as to be pneumatically reactive during movement thereof, spring means for exerting a bias to move said plunger means from said retracted location and effect said exposure mechanism means movement toward said open positions upon de-energization of said excitation winding, said solenoid including pneumatic regulation means providing an orifice within said solenoid and being selectively configured to pneumatically regulate the rate of said biased plunger means movement so as to control the rate of said exposure mechanism means opening movement, said regulation means being configured to facilitate the rate of said plunger means movement into said retracted location when said excitation winding is energized; and

control means for selectively energizing and de-energizing said excitation winding to control the said movement of said exposure mechanism means so as to define a select exposure value.

3,868,713

PHOTOGRAPHIC EXPOSURE SETTING MEANS

Gerhard Schwarz, Schaffhauserstr. 12, Munich; Walter Lutz, Bahnhofstr. 11 B, Unterfohring, and Rudolf Lang, Birkenstr. 18, Grafing Banhof, all of Germany

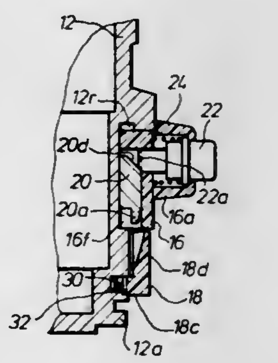
Filed Dec. 18, 1973, Ser. No. 425,927

Claims priority, application Germany, Jan. 5, 1973, 7300355

Int. Cl. G03b *9/07*

U.S. Cl. 354—231 **9 Claims**

1. Photographic apparatus comprising a mounting part having an optical axis, a diaphragm aperture setting member and an exposure time setting member both mounted on said mounting part for movement relative thereto and relative to each other, a coupling slide mounted on said diaphragm aperture setting member for movement in a direction parallel to said optical axis and transverse to the directions of movement of said setting members, coupling teeth at one end of said slide, cooperating coupling teeth on said time setting member, spring means tending to move said coupling slide in one direction, an operating member mounted on said first setting member for movement in a direction radially with respect to said optical axis, and cooperating inclined surfaces on said slide and said operating member, so formed that when said operating member is displaced radially, said slide is moved in a direction parallel to said optical axis to alter the cooperative relation of the teeth on the slide to the teeth on said second setting member, radical inward displacement of said operating member causing the teeth on said slide to engage the coupling teeth on the time setting member.



3,868,714

FILTER CHANGE-OVER DEVICE IN AN OBJECTIVE LENS FOR A SINGLE LENS REFLEX CAMERA

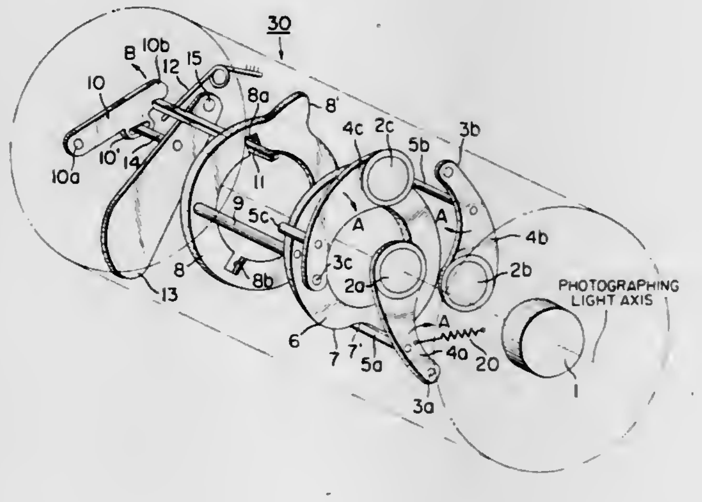
Takeshi Muryoi, Kawasaki, Japan, assignor to Nippon Kogaku, K.K., Tokyo, Japan

Filed Dec. 5, 1972, Ser. No. 312,344

Claims priority, application Japan, Dec. 17, 1971, 46-119296

Int. Cl. G03b *11/00*

U.S. Cl. 354—289 **6 Claims**



2. A filter change-over device in a tube for an objective lens, the device comprising a plurality of filter members each movable separately between a first position lying in the optical path of the objective lens and a second position lying outside the optical path; a light intercepting member movable between a first position for intercepting the optical path and a second position outside the optical path; and means connecting the filter members and the light intercepting member so that the light intercepting member is in its said second position when any one of the filter members is in its first position, the light intercepting member being in its said first position when none of the filter members are in their first position.

3,868,715

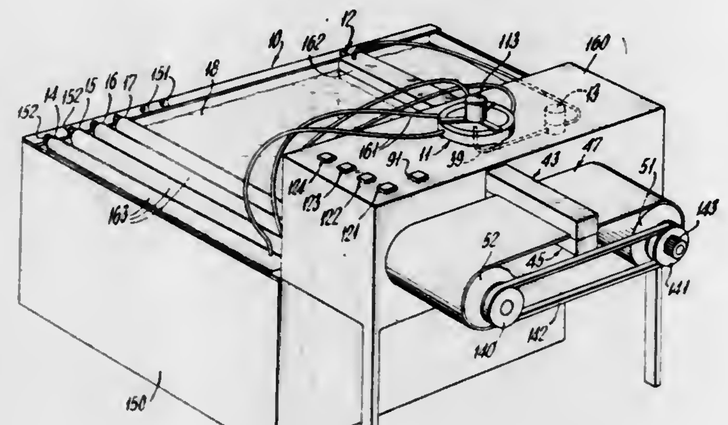
SYSTEM FOR CHEMICAL PROCESSING

James A. Slavin, New York, N.Y., assignor to Noltac Corporation, Jericho, N.Y.

Filed Sept. 10, 1973, Ser. No. 395,664

Int. Cl. G03d *13/00*

U.S. Cl. 354—298 **16 Claims**



13. A system for use in the processing of photographic film comprising a processing tank for holding said film, said tank having a flexible wall, a plurality of solution tanks for holding solutions for a given photographic process, a selector valve having a plurality of first ports and a second port selectively interconnected with said first ports, means connecting separate ones of said first ports to separate solution tanks, self-priming reversible pump means connected between said processing tank and said second port, said valve being mounted above said solution tanks and processing tank whereby fluid substantially completely drains from said selector valve and the connections to said processing tank and solution tanks upon deenergization of said pump means, and program control means for selectively operating said selector valve and pump means sequentially to empty solution in said solution tanks into said processing tank and to return solutions from said processing tank to said solution tank in accordance with a programmed sequence, said program control means comprising a pair of parallel rollers, a program belt removably mounted on said rollers, means for rotating said rollers, sensing means mounted to sense program control indicia on said belt for controlling said valve and said reversible pump, said system further comprising agitating means for agitating liquid in said processing tank, said agitating means comprising vibrator means removably affixed to said wall of said processing tank, means for selectively actuating said agitator means, and manual override means for controlling the operation of said agitator means, pump means and means for moving said rollers.

3,868,716

COMPRESSED OPEN CELL FOAM NOZZLE SEALING ASSEMBLY

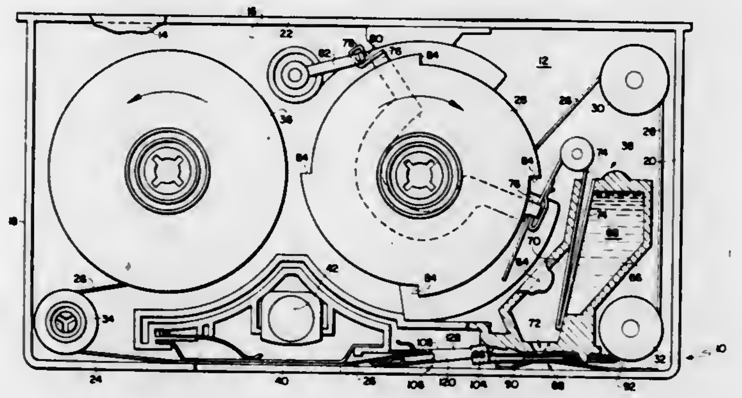
Irving S. Lippert, Lexington, and Joseph A. Stella, West Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 19, 1973, Ser. No. 416,762

Int. Cl. G03d *5/00*

U.S. Cl. 354—317 **31 Claims**

1. A film handling cassette comprising:
- a housing configured for retaining a strip of photographic film;
- processing means including a dispensing receptacle configured to retain a quantity of processing fluid to be applied to such strip of photographic film subsequent to its exposure, said dispensing receptacle having a dispensing nozzle opening formed therein through which such processing fluid is applied to such photographic film strip; and
- sealing means for substantially closing said nozzle opening following dispensing of such fluid, said sealing means including a compressed open cell foam material saturated with a coagulating chemical, said compressed open cell foam material being selectively released for expansion when said compressed open cell foam is contacted by such processing fluid and said coagulating chemical interacts with said processing fluid to coagulate the same, said foam material having an area at least in conformance with the perimeter of said nozzle opening and configured to expand into substantially sealing contact with said perimeter, said chemical coagulating engaged portions of such fluid for preventing egress of such processing fluid from said nozzle opening.



3,868,717

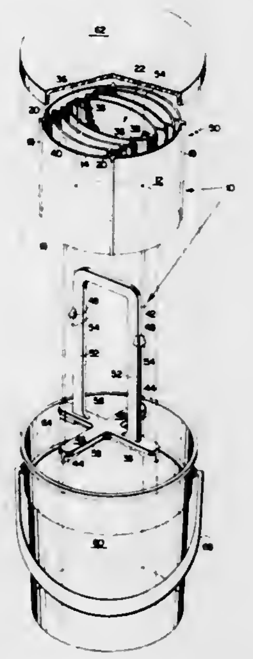
PROCESSING FILM UNITS IN SHEET FORM

Norman W. Cutler, Jr., Braintree, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 4, 1974, Ser. No. 447,570

Int. Cl. G03d *13/08*

U.S. Cl. 354—340 **10 Claims**



1. A rack for use with a container adapted to retain a supply of processing fluid therein for safe guarding and processing a plurality of individual photographic film units in sheet form, said rack comprising:
- a chamber having open upper and lower faces;
- means joined to inner walls of said chamber for receiving the plurality of film units, said receiving means including a plurality of curved walls having surfaces spaced from each other and side walls cooperating with said curved walls to provide grooves for supporting lateral edges of the film units, said curved and side walls defining a plurality of compartments adapted to retain individual film units in spaced relationship with each emulsion side of the film units exposed for free contact with the fluid; and
- carrying means coupled to said receiving means including a pedestal for elevating said open lower face of said chamber above the container's base section thereby providing a sump to receive sludge and waste particles removed from the film units.

3,868,718

FIELD EFFECT TRANSISTOR HAVING A PAIR OF GATE REGIONS

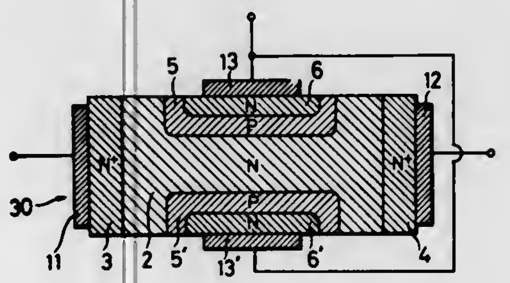
Michio Arai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 26, 1973, Ser. No. 373,731

Claims priority, application Japan, June 30, 1972, 47-66070; Jan. 10, 1973, 48-5700

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 357—22 **12 Claims**



1. A field effect transistor having a semiconductor layer of one conductivity type, source and drain regions at opposite ends of said layer, a first gate region in said layer of the opposite conductivity type defining a channel between said source and drain regions, a second gate region is said layer of said one conductivity type separated from said channel by said first gate region, there being a PN-junction between said first and second gate regions and a second PN-junction between said channel and said first gate region, whereby when said first PN-junction is reversely biased and electric charge is stored in said first gate region such that a time delay occurs in the drain current when being switched from off to on condition.

3,868,719

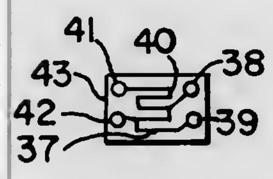
THIN RIBBON-LIKE GLASS BACKED TRANSDUCERS

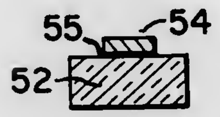
Anthony D. Kurtz, Englewood; Joseph R. Mallon, Wood Ridge; Harold Bernstein, Hillsdale, and Richard Alan Weber, Denville, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Apr. 2, 1973, Ser. No. 347,226

Int. Cl. H01l *11/00*

U.S. Cl. 357—26 **7 Claims**





1. A pressure transducer assembly comprising:
- a. a piezoresistive element fabricated from a bulk, contiguous, thin ribbon-like layer of silicon, said thin layer being of a "U" shaped configuration,
- b. a thin diaphragm fabricated from a dielectric material having a relatively smooth surface and a bond between said smooth surface of said thin diaphragm and said piezoresistive element to secure said thin layer of silicon to said thin diaphragm, to thereby form a composite pressure transducer, said bond characterized in that the same includes a glass of the type capable of conducting current at a temperature above 300°C, said bond being between 20 to 200 angstroms thick; and
- c. terminal means positioned on said diaphragm and electrically connected to said piezoresistive element, whereby pressure measurements can be monitored.

3,868,720

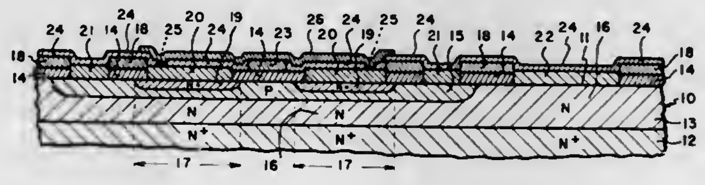
HIGH FREQUENCY BIPOLAR TRANSISTOR WITH INTEGRAL THERMALLY COMPENSATED DEGENERATIVE FEEDBACK RESISTANCE

Thorndike C. New, Scottsdale, Ariz., and Surinder Krishna, Ballston Lake, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1973, Ser. No. 425,668

Int. Cl. H01l *15/00, 11/00*

U.S. Cl. 357—34 **4 Claims**



1. A high frequency bipolar transistor with integral thermally compensated degenerative feedback resistance comprising:
- A. a semiconductor body having at least one major surface; said body having an epitaxial layer adjoining the major surface, and having substrate portion adjoining the epitaxial layer interior of the body, said substrate portion having an impurity concentration therethrough of greater than about 1×10^{18} carriers/cm³ of a given carrier-type;
- B. emitter, base and collector regions in said epitaxial layer; said emitter region adjoining the major surface of the body in at least one strip configuration and having an impurity concentration at the surface of at least about 1×10^{18} carriers/cm³ of a carrier-type the same as the carrier-type of said substrate portion; said collector region adjoining the substrate portion, adjoining the major surface spaced from the emitter region, having a thickness of less than about 10 microns at active portions thereof, and having an impurity concentration at active portions of less than about 1×10^{14} carriers/cm³ of a carrier-type the same as the carrier-type of the substrate portion; and said base region being between the emitter and collector regions, adjoining the major surface at least peripherally of the emitter region in an elongated configuration, having a thickness of less than about 2 microns at active portions thereof, having an impurity concentration at the active portions between about 5×10^{14} and 5×10^{17} carriers/cm³ of a carrier-type opposite at the carrier-type of the emitter and collector regions to form PN junctions therewith;
- C. first, second and third metal contacts of strip configurations on the major surface of the body being spaced apart and substantially parallel and making separate ohmic contact to the emitter, base and collector regions, respectively;
- D. a dielectric layer on the major surface at least adjacent said first metal contact to the emitter region;
- E. a conductor layer of strip configuration on the dielectric layer spaced from and extending substantially parallel to said first metal contact; and
- F. a degenerative resistor layer on the first metal contact, the dielectric layer, and the conductor layer extending substantially the length of the first metal contact and conductor layer and making ohmic contact to both the first metal contact and the conductor layer along the length thereof, while remaining substantially insulated

from the second and third metal contacts and the base and collector regions.

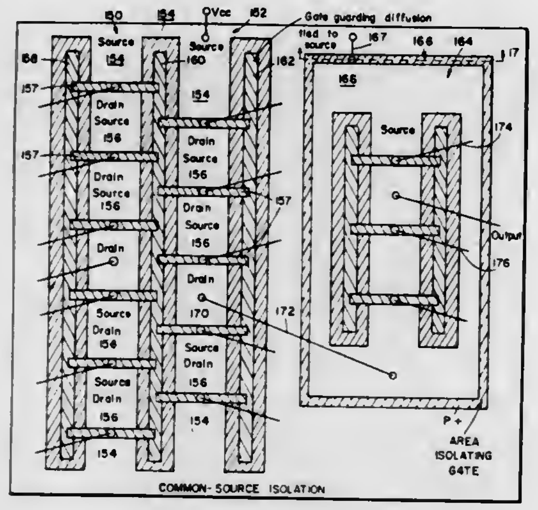
3,868,721
DIFFUSION GUARDED METAL-OXIDE-SILICON FIELD EFFECT TRANSISTORS

Uryon S. Davidsohn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 86,544, Nov. 2, 1970, abandoned. This application Dec. 7, 1970, Ser. No. 95,521

Int. Cl. H01l ***11/14***

U.S. Cl. 357—41 **14 Claims**



1. In a MOSFET integrated circuit device including at least a first region and a second region, and a surface passivating layer, the improvement comprising: a body of semiconductor material of a relatively high resistivity and first conductivity type, and having an upper surface;

first and second spaced regions of relatively low resistivity and opposite conductivity type extending from said surface into said body, and each of said first and second regions containing at least one field effect transistor;

an isolation region positioned intermediate said first region and said second region and being of relatively high resistivity and first conductivity type;

said first region extending around said isolation region;

an isolation electrode adherent to said surface and overlying said isolation region and said isolation electrode including an oxide layer of substantially uniform thickness along its length positioned over and in contact with said isolation region, and spurious current flow between the first and second region is only possible through the isolation region and under the combination of said isolation electrode and oxide layer of substantially uniform thickness along its length.

3,868,722
SEMICONDUCTOR DEVICE HAVING AT LEAST TWO TRANSISTORS AND METHOD OF MANUFACTURING SAME

Claude Jan Principe Frederic Le Can, and Walter Steinmaier, both of Nijmegen, Netherlands, assignors to U.S. Philips Corp., Briarcliff Manor, N.Y.

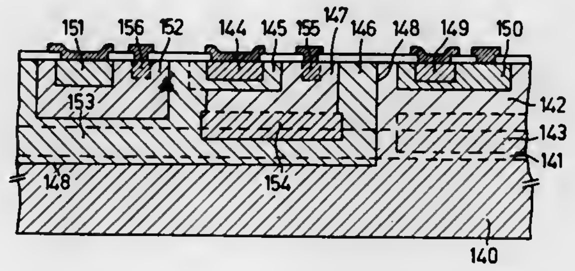
Division of Ser. No. 154,438, June 18, 1971, abandoned. This application Oct. 2, 1972, Ser. No. 294,465

Claims priority, application Netherlands, June 20, 1970, 7009088

Int. Cl. H01l ***27/02, 29/72, 27/04***

U.S. Cl. 357—44 **11 Claims**

1. A semiconductor integrated circuit device comprising a semiconductor body portion of a first type conductivity and containing at least a first and a second transistor isolated by a P-N junction, the semiconductor body portion having a substantially plane surface, the first transistor comprising a group of three successive semiconductor zones alternating in conductivity type and adjoining said surface, the second zone having a part extending to below the first zone and the third zone extending to below the second zone, the second zone of the first transistor being of a second type conductivity and comprising besides the part present intermediate the first and the third zones a cup-shaped part which coheres with said intermediate part and which entirely surrounds the said third zone in the semiconductor body except for the part adjoining the surface, the second zone cup-shaped part forming with the first type body portion a generally cup-shaped isolating P-N junction which entirely surrounds the first transistor except for the part thereof adjoining the surface, the second transistor comprising three vertically arranged successive semiconductor zones alternating in conductivity type with its second zone also being of the second type conductivity and with its third zone being constituted by a part of the body portion of the first type conductivity, said second transistor being of the same type as the first transistor but being isolated therefrom by the isolating P-N junction, the first zone of the first transistor and the first zone of the second transistor having the same depth, the second zone intermediate part of the first transistor and the second zone of the second transistor having the same depth, said zones of the same depth having been formed simultaneously.



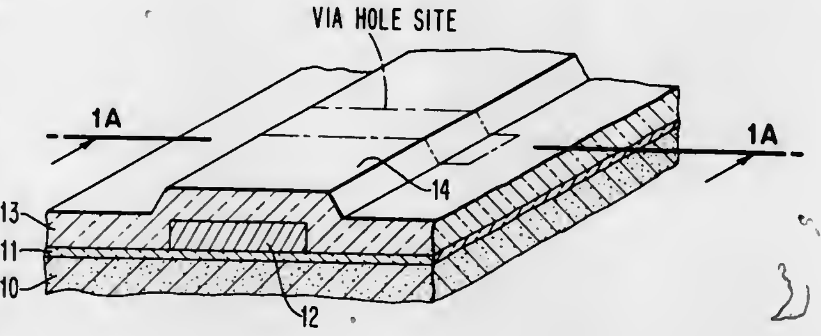
3,868,723
INTEGRATED CIRCUIT STRUCTURE ACCOMMODATING VIA HOLES

John S. Lechaton, Wappingers Falls; Leo P. Richard, Hyde Park, and Daryl C. Smith, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 375,298, June 29, 1973, Pat. No. 3,804,738. This application Dec. 13, 1973, Ser. No. 424,267

Int. Cl. H01l ***11/00, 15/00***

U.S. Cl. 357—54 **3 Claims**



1. In a planar semiconductor integrated circuit chip structure having a semiconductor member with a planar surface at which the devices in the circuit are formed and a metallization pattern selectively connected to said surface and disposed on a plurality of levels separated by layers of electrically insulative material above said surface, a via hole interconnected structure comprising

a metallization line pattern on a first level with respect to said surface having line portions narrower in width than the remainder of the pattern,

an electrically insulative layer covering said first level metallization pattern,

via holes extending through said insulative layer to said narrower width line portions, said via holes being wider than and overlapping said line portions,

a second level metallization pattern on said insulative layer, and

metal interconnectors in said via holes connecting said first and second level patterns.

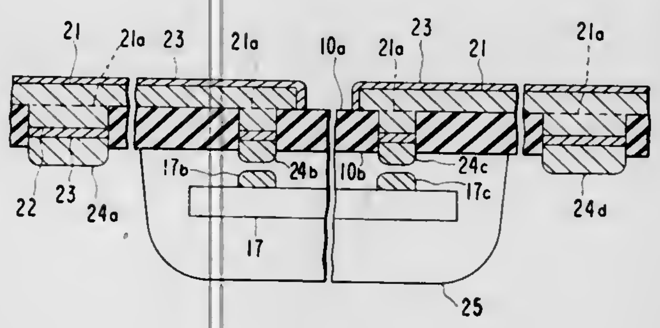
3,868,724
MULTI-LAYER CONNECTING STRUCTURES FOR PACKAGING SEMICONDUCTOR DEVICES MOUNTED ON A FLEXIBLE CARRIER

Frank A. Perrino, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Nov. 21, 1973, Ser. No. 417,999

Int. Cl. H01l ***3/00, 5/00***

U.S. Cl. 357—65 **6 Claims**



1. A connecting structure for semiconductor devices, which comprises:

a. a tape of insulating material having a plurality of holes formed in a predetermined pattern;

b. electrical conductors formed on a first surface of said tape, wherein portions of said conductors cover one or more of said holes thereby to expose said portions of said conductors through said holes; and

c. electrical contacts formed through said holes in ohmic contact with said portions of said conductors such that electrical connection can be made to said conductors, by means of said contacts, from an object adjacent the second surface of said tape, and said semiconductor devices are electrically insulated from said electrical conductors by said tape in all areas except adjacent said electrical contacts.

3,868,725
AN INTEGRATED CIRCUIT LEAD STRUCTURE

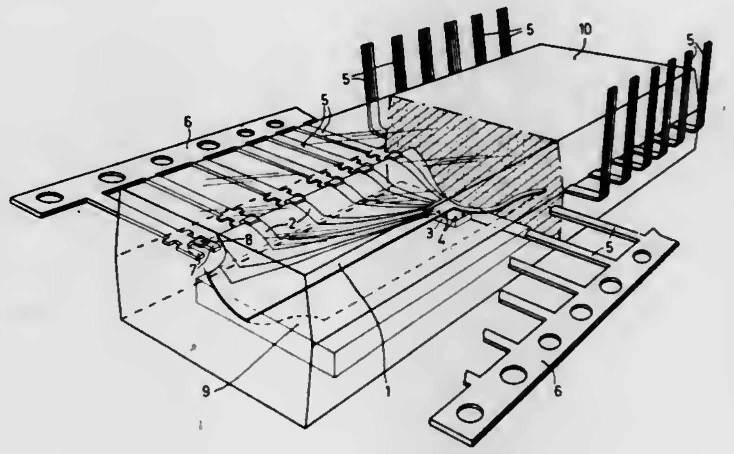
Philip Johan De Graaff, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 294,911, Oct. 4, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,387

Claims priority, application Netherlands, Oct. 14, 1971, 7114112

Int. Cl. H01l ***3/00, 5/00***

U.S. Cl. 357—68 **5 Claims**



1. An integrated circuit lead structure for providing externally available electrical access to a plurality of spaced contact areas on one surface of an integrated circuit semiconductor body while providing a heat dissipation path from an opposing surface thereof, comprising:

a flexible insulating foil having opposing edges, said foil supporting a pattern of spaced flexible conductor tracks arranged into two groups of tracks extending respectively from said opposing edges of said foil toward the center thereof;

two patterns of spaced conductor strips having first and second ends, said first ends positionally corresponding with and respectively gripping said two groups of tracks at said opposing edges of said foil, said first ends of said conductor strips being positioned in a plane spaced from said one surface of a semiconductor body, said patterns being spaced from one another by a distance less than the foil dimension therebetween, thereby allowing said foil to sag toward said semiconductor body, the centrally located ends of said tracks terminating at and being in electrical contact with said spaced contact areas on said semiconductor body;

a heat conductive plate in thermal contact with and supporting said opposing surface of said semiconductor body; and

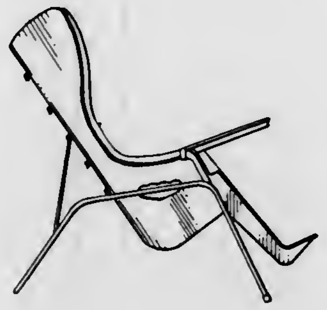
an envelope sealed to said plate to form therewith an enclosure encasing said semiconductor body and said foil, said envelope supporting said conductor strips adjacent said first ends,

whereby electrical access is provided from said second ends of said strips to said contact areas and said plate provides a heat dissipation path from said semiconductor body.

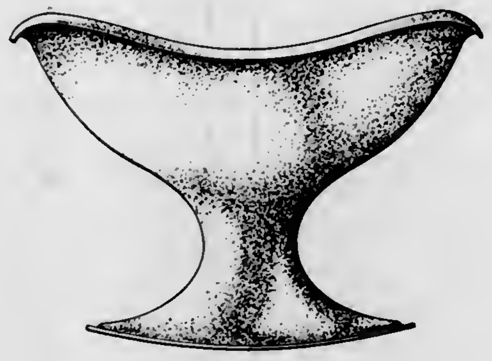
DESIGNS

GRANTED FEBRUARY 25, 1975

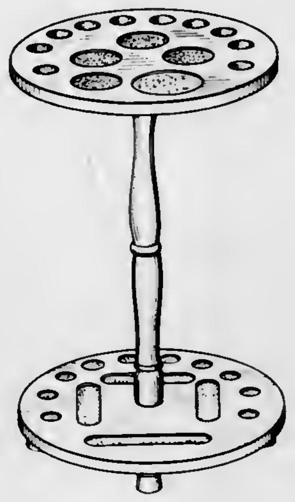
234,379
BABY SEAT
Pietro Catelli, Casnate Con Bernate, Italy
(% Novelty, Via Padova, 217—20127 Milan, Italy)
Filed Mar. 13, 1972, Ser. No. 234,458
Claims priority, application Italy Oct. 8, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



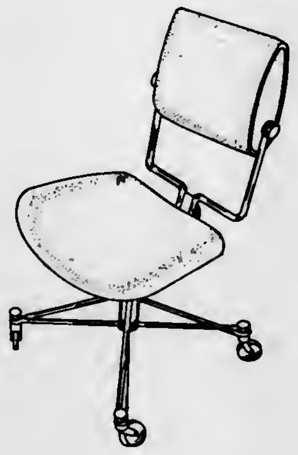
234,380
CRIB
Bruno Verlet, Mourenx, France, assignor to
S.A. Leda-France, Avon, France
Filed Sept. 6, 1973, Ser. No. 394,620
Claims priority, application France June 19, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14



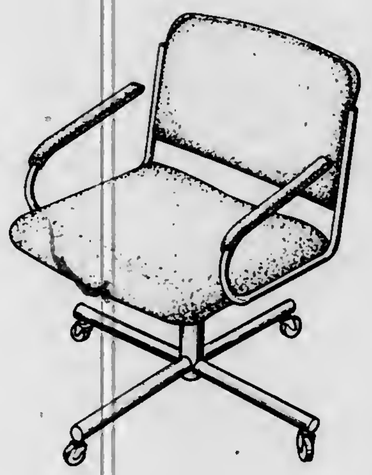
234,381
RACK FOR BILLIARD CUES
Samuel H. Berger, Skokie, Ill., assignor to Ajay
Enterprises Corporation, Delavan, Wis.
Filed Feb. 5, 1973, Ser. No. 329,664
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—27



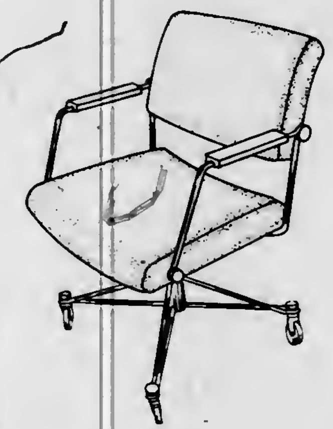
234,382
SECRETARIAL CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis
Products Limited, Cobourg, Ontario, Canada
Filed June 11, 1973, Ser. No. 369,113
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



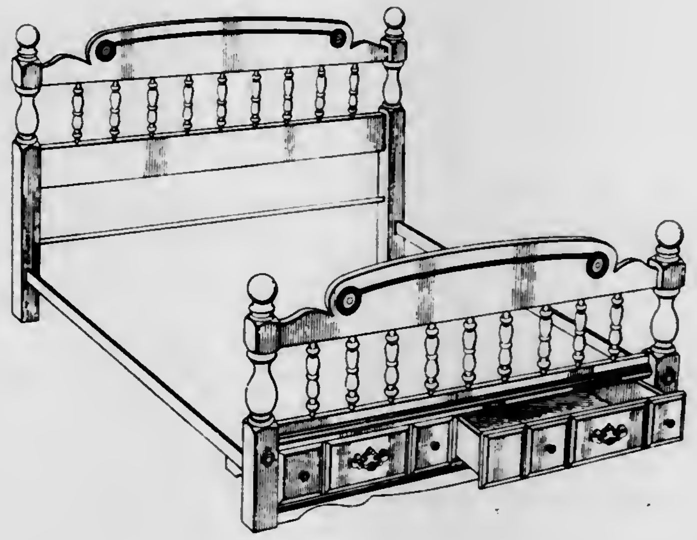
234,383
CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis
Products Limited, Cobourg, Ontario, Canada
Filed June 19, 1972, Ser. No. 263,993
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



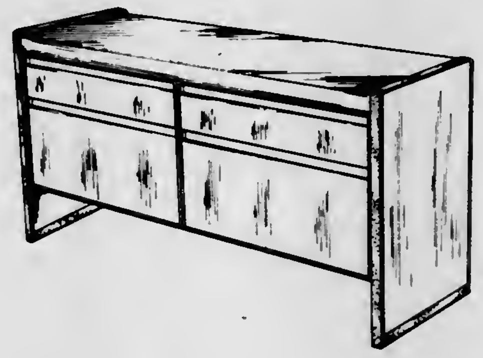
234,384
CHAIR
William H. Tacke, Wyoming, Mich., assignor to Curtis
Products Limited, Cobourg, Ontario, Canada
Filed June 11, 1973, Ser. No. 369,065
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



234,385
BED
Raymond R. Turner, Morristown, Tenn., assignor to
Ludlow Corporation, Needham Heights, Mass.
Filed Apr. 25, 1973, Ser. No. 354,333
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—80

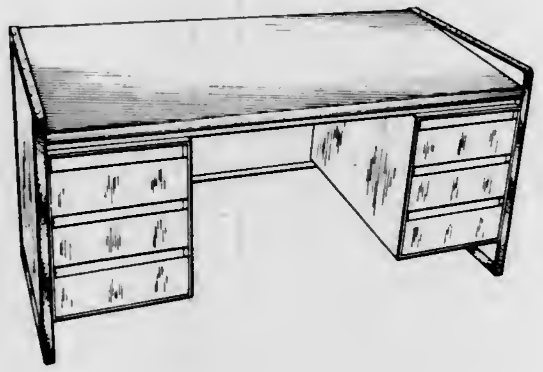


234,386
STORAGE UNIT
Ronald R. Hodges, Grandville, and Jack Hockenberry,
Grand Rapids, Mich., assignors to Steelcase Inc.,
Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,859
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—159



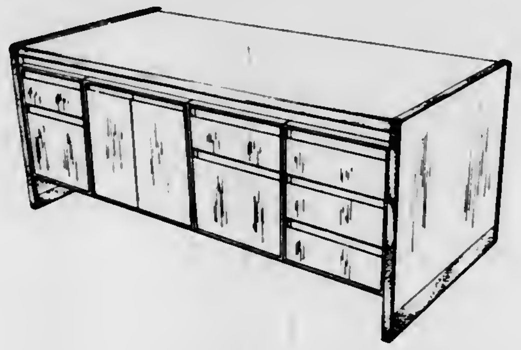
234,387
DESK

Ronald R. Hodges, Grandville, and Jack Hockenberry, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,852
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



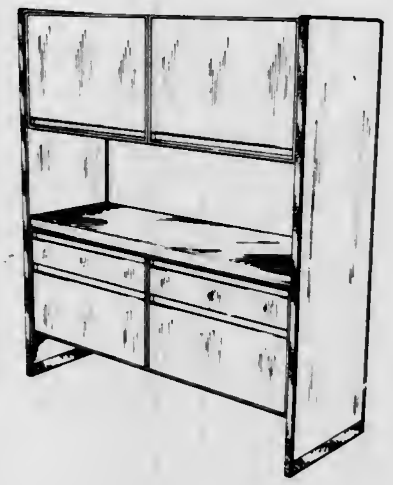
234,388
CREDENZA

Ronald R. Hodges, Grandville, and Jack Hockenberry, Grand Rapids, Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,857
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



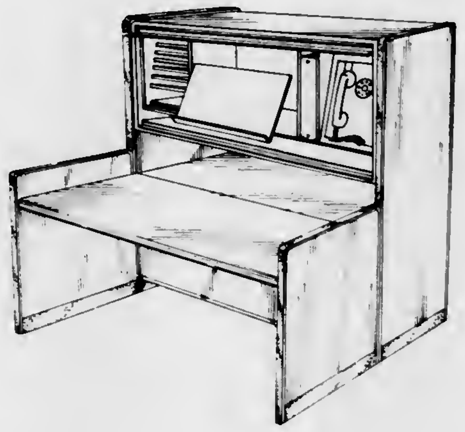
234,389
FILING UNIT

Ronald R. Hodges, Grandville, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,858
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



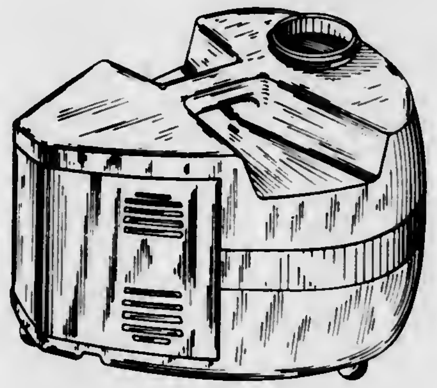
234,390
WORK STATION

Ronald R. Hodges, Grandville, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 22, 1973, Ser. No. 362,860
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



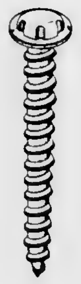
234,391
CANISTER FOR CARPET SHAMPOO MACHINE

C. Bruce Hewson, Toronto, Ontario, Canada, assignor to York Lambton Corporation Ltd., Montreal, Quebec, Canada
Filed Mar. 7, 1973, Ser. No. 338,847
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166



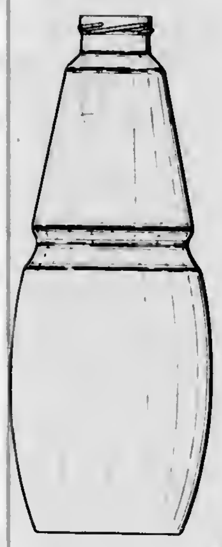
234,392
SELF TAPPING SCREW

Keiichi Yamamoto and Kozo Yamamoto, Tokyo, Japan, assignors to Yamamoto Byora Co., Ltd., Tokyo, Japan
Filed Sept. 11, 1973, Ser. No. 396,213
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267



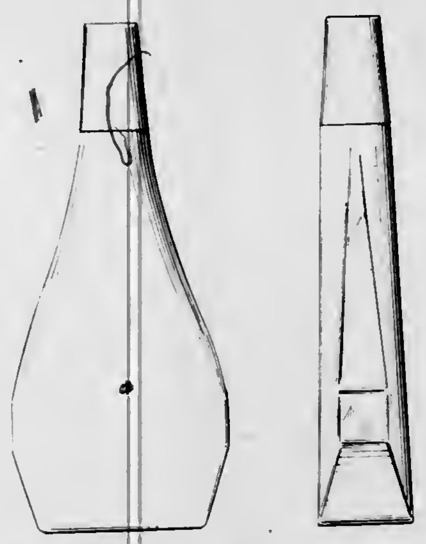
234,393
BOTTLE

Jerome Gould, Los Angeles, Calif., assignor to Stroh Brewery Company, Detroit, Mich.
Filed Mar. 26, 1973, Ser. No. 344,954
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100



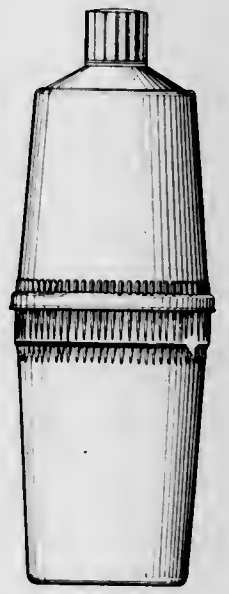
234,394
BOTTLE OR SIMILAR ARTICLE

P. Metzger, Russikon, Switzerland (% Colgate-Palmolive Co., 300 Park Ave., New York, N.Y. 10022)
Filed Sept. 27, 1972, Ser. No. 292,765
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—115



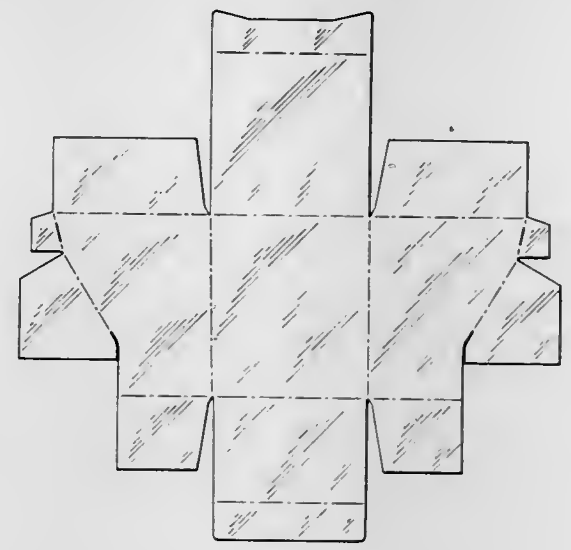
234,395
BOTTLE OR SIMILAR ARTICLE

Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of design application Ser. No. 246,517, Apr. 21, 1972. This application Sept. 28, 1972, Ser. No. 292,977
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—125

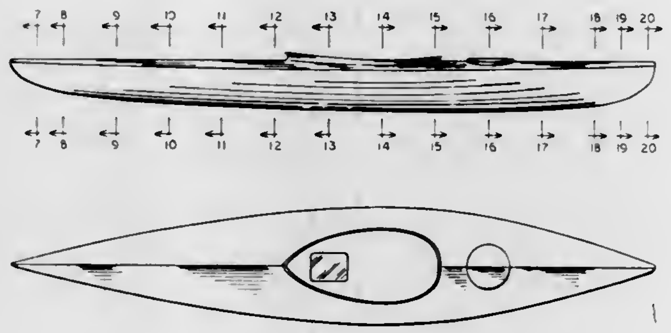


234,396
CARTON BLANK

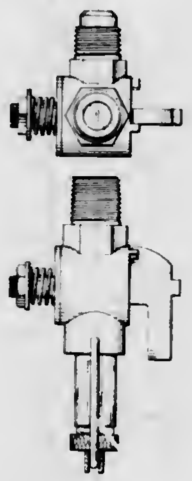
Earl J. Killy, Kankakee, Ill., assignor to Olinkraft, Inc.
Filed Mar. 14, 1973, Ser. No. 341,130
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—245



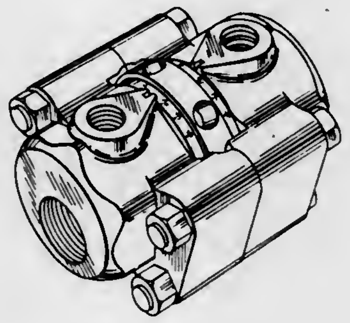
234,397
KAYAK
Willy M. Eriksen, 9710 9th Ave. NW.,
Seattle, Wash. 98117
Filed Jan. 30, 1973, Ser. No. 328,093
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63



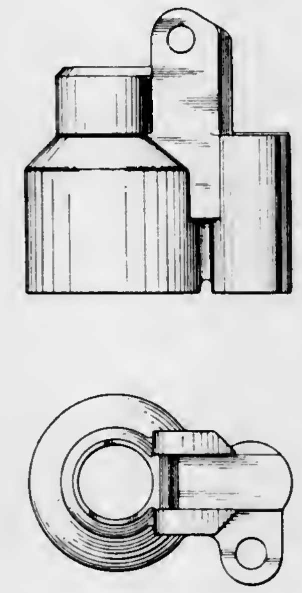
234,398
GAS LEAK DETECTOR
Eugene F. Griss, 2851 Albon St.,
Maumee, Ohio 43537
Filed Oct. 24, 1972, Ser. No. 300,142
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—1



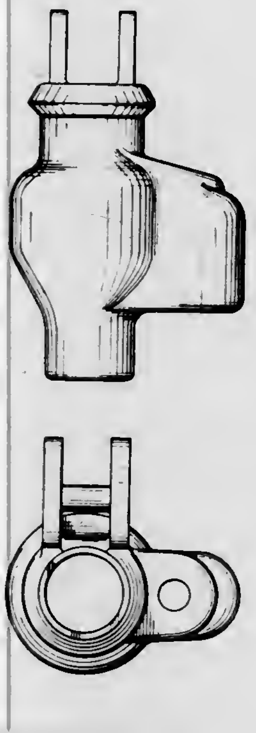
234,399
RESTRICTOR VALVE
Julian S. Taylor, 8300 SW. 8,
Oklahoma City, Okla. 73108
Filed Nov. 6, 1972, Ser. No. 304,152
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



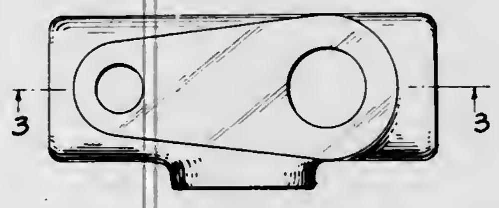
234,400
BALL COCK VALVE BODY
Henry J. Kachergis, 89 Larchmont Ave.,
Waterbury, Conn. 06708
Filed May 7, 1973, Ser. No. 358,023
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



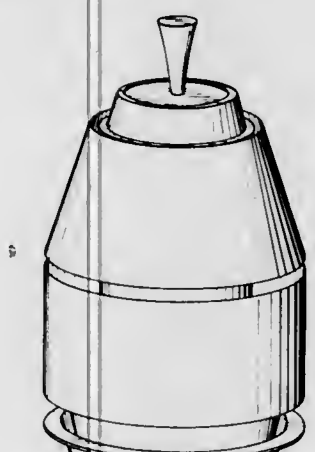
234,401
BALL COCK VALVE BODY
Henry J. Kachergis, 89 Larchmont Ave.,
Waterbury, Conn. 06708
Filed May 8, 1973, Ser. No. 358,452
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



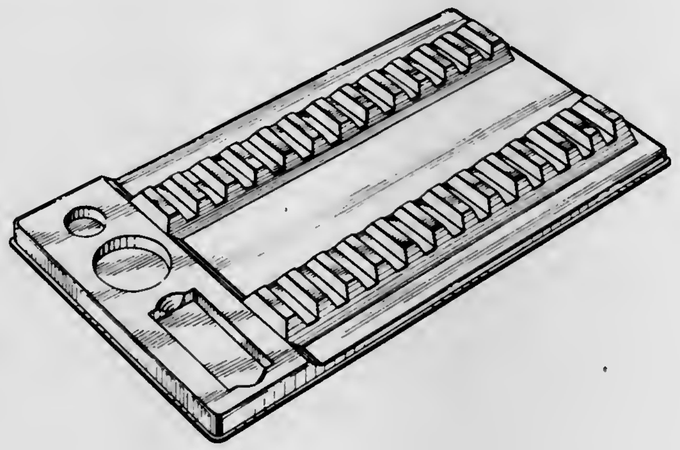
234,402
MANIFOLD FOR A HEAT TRANSFER SYSTEM
Robert A. Ogurchak, McKeesport, Pa., assignor to
Emerson Electric Co., St. Louis, Mo.
Filed May 3, 1973, Ser. No. 356,741
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



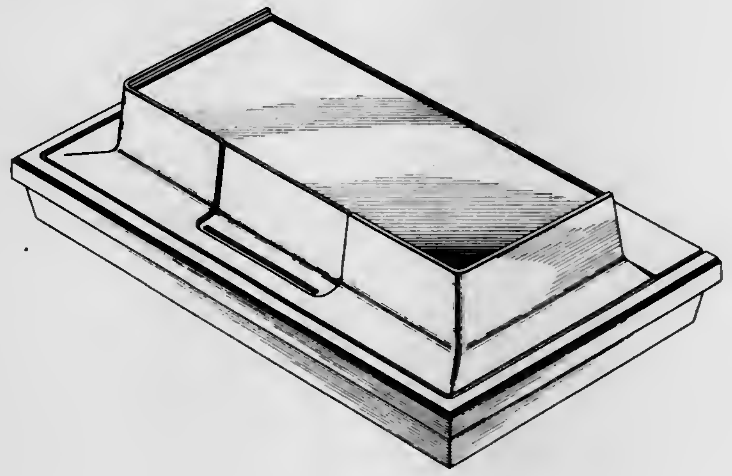
234,403
HOBBY KILN
Ronald E. Erickson, Oconomowoc, Wis., assignor to
Sybron Corporation, Rochester, N.Y.
Filed Apr. 24, 1974, Ser. No. 463,744
Term of patent 7 years
Int. Cl. D23—*03*
U.S. Cl. D23—82



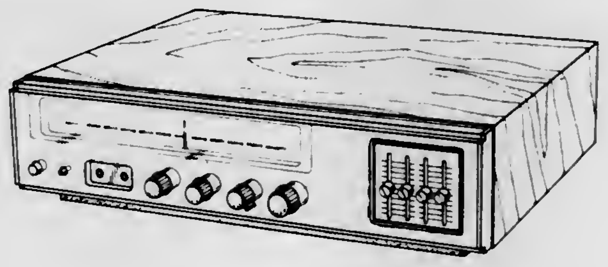
234,404
DENTAL TRAY
Kenneth E. Merrill, 8136 Juniper, Shawnee Mission, Kans. 66208, and Burton K. Cox, 6400 W. 100th, Overland Park, Kans. 66212
Filed Mar. 29, 1973, Ser. No. 346,075
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 R



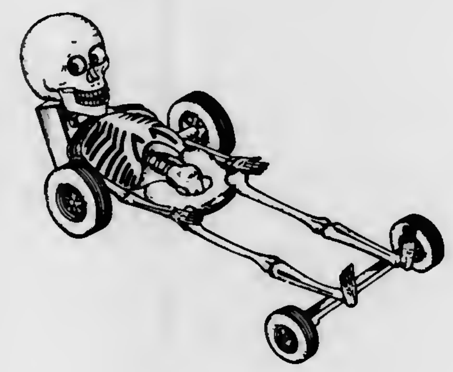
234,405
CONTROL CONSOLE FOR A TELEVISION ELECTRONIC GAME
Gary L. McMahon, Fort Wayne, Ind., and John Brooks Van Dyke, Los Angeles, Calif., assignors to The Magnavox Company, Fort Wayne, Ind.
Filed Jan. 2, 1973, Ser. No. 320,359
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 E



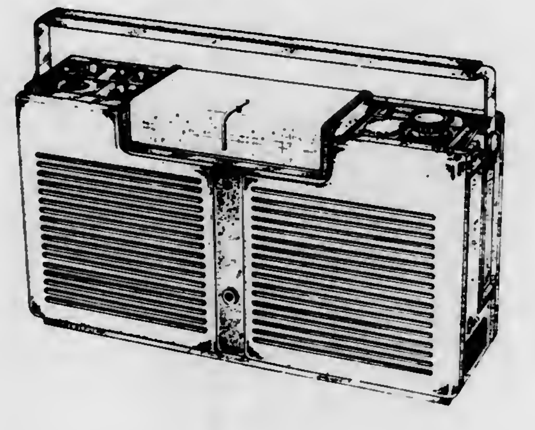
234,406
AMPLIFIER
Kunio Hoshino, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 9, 1974, Ser. No. 468,513
Claims priority, application Japan Nov. 12, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



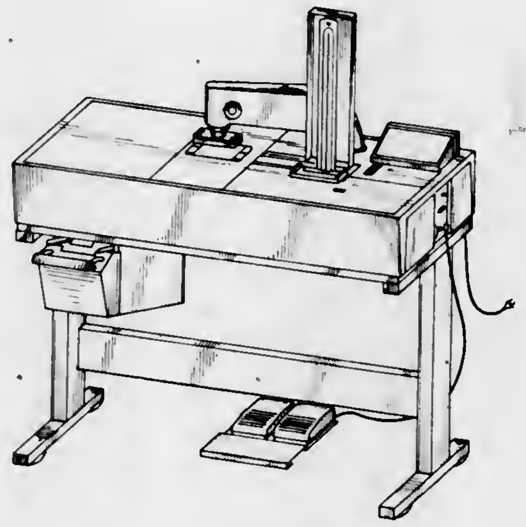
234,407
TOY MODEL CAR
George Barris, North Hollywood, Calif., assignor to Zee Toys, Inc.
Original design application Dec. 18, 1972, Ser. No. 316,411, now Patent No. 230,178, dated Jan. 29, 1974. Divided and this application Jan. 22, 1974, Ser. No. 435,597
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN



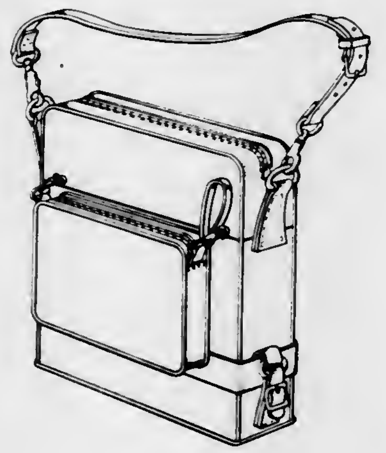
234,408
RADIO RECEIVER
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 14, 1973, Ser. No. 388,223
Claims priority, application Japan Feb. 16, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



234,409
ELECTRIC PRINTING MACHINE OR SIMILAR ARTICLE
Robert E. Schmeck, Greenwich, Conn., assignor to Adrema Pitney Bowes G.m.b.H., Heppenheim an der Bergstrasse, Germany
Filed Apr. 4, 1973, Ser. No. 347,707
Claims priority, application Germany Oct. 5, 1972
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R



234,410
LUGGAGE BAG
Julia R. Rosenblum, 6 W. 77th St., New York, N.Y. 10024
Filed June 23, 1972, Ser. No. 265,885
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



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TO WHOM
PATENTS WERE ISSUED ON THE 25TH DAY OF FEBRUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaronson, Charles D.; Rendina, John F.; and Fancy, Robert D., to GCA Corporation. Spectrometric apparatus. 3,868,499, Cl. 235-151.350.
AB Hagglund & Soner: *See*—
  Strombeck, Per Albin, 3,868,138.
Abad, Bill A. Instrument for inscribing parallel lines. 3,867,761, Cl. 33-41.00F.
Abbott, Frank R., to United States of America, Navy. Towable sonar array with depth compensation. 3,868,623, Cl. 340-7.0PC.
Abbott Laboratories: *See*—
  Stein, Herman Hal; and Darby, Thomas Dillard, 3,868,451.
Abe, Masahiro; and Terada, Hiroshi, to Glory Kogyo Kabushiki Kaisha. Sheet-holding device in sheet-dispensing machine. 3,868,044, Cl. 221-6.000.
Abrams, Macy L.: *See*—
  Schow, Harvey B.; and Abrams, Macy L., 3,867,769.
Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED: *See*—
  Donckel, George H.; and Streel, Dominique Th.F.L.J.M., 3,868,106.
Adachi, Takashi: *See*—
  Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.
Adams, Charles Wesley: *See*—
  Meinhardt, Norman A.; and Adams, Charles Wesley, 3,868,330.
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Adey, Anthony John: *See*—
  Williams, Malcolm; Brunt, Geoffrey Albert Kenyon; Jones, Christopher Robin; and Adey, Anthony John, 3,867,918.
Adler, Robert, to Zenith Radio Corporation. Poling of ferro-electric substrates. 3,868,553, Cl. 317-262.00F.
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  Reinke, Friedhelm; and Stengel, Edgar, 3,867,847.
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  Cox, Robert G., 3,867,999.
Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, to Omega Louis Brandt & Frere S.A.; and Alcyon Electronique et Physique S.A. Method and device for fixing a watch balance spring to a collet. 3,868,490, Cl. 219-121.00L.
Agee, Robert B.; and Rodriguez, Manuel, to Ethyl Corporation. Process for reducing trivalent titanium content in slag. 3,868,441, Cl. 423-69.000.
Agfa-Gevaert Aktiengesellschaft: *See*—
  Hartwig, Karl; and Maurischat, Gunther, 3,868,666.
  Winkler, Alfred; Engelsmann, Dieter; Karl, Horst; Schroder, Rolf; and Wagner, Karl, 3,868,708.
Aguilo, Adolfo: *See*—
  Horlenko, Theodore; Fisher, Gene J.; and Aguilo, Adolfo, 3,868,410.
Ahlgren, Erick L.; McMorris, Arthur H.; and Schweppe, Joseph L., to Houston Engineering Research Corporation. Apparatus for printing labels directly onto packages, containers and the like. 3,867,882, Cl. 101-35.000.
Ahmed, Adel Abdel Aziz. Current amplifier. 3,868,581, Cl. 330-19.000.
Aiken Industries, Incorporated: *See*—
  Riendeau, William P., 3,868,614.
Air Products and Chemicals, Inc.: *See*—
  Holland, Dewey George; and Beitchman, Burton David, 3,868,408.
Airco, Inc.: *See*—
  Van Loan, Paul R., 3,868,334.
Aisin Seiki Kabushiki Kaisha: *See*—
  Yokoi, Masatada, 3,868,001
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Ajinomoto Co., Inc.: *See*—
  Tamura, Fumihide; Ozawa, Yoichi; and Nakamura, Asao, 3,868,394.
Akanuma, Kaneo: *See*—
  Yamamoto, Takaaki; Akanuma, Kaneo; and Tanaka, Osamu, 3,868,280.
Akitsuki, Ikuo: *See*—
  Itoh, Takuji; Akitsuki, Ikuo; Miura, Tadashi; and Kubota, Kohei, 3,868,317.
Akkerman, James William. Animal feeder. 3,867,904, Cl. 119-51.00R.
Akwell Industries Incorporated: *See*—
  Povlacs, Lawrence J., 3,867,727.
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  Hurenkamp, Bernard, 3,868,219.
Alaimo, Robert J.: *See*—
  Spencer, Claude F.; and Alaimo, Robert J., 3,868,378.
Albright, Jay Donald; Riggi, Stephen Joseph; and Shepherd, Robert Gordon, to American Cyanamid Company. Hypolipidemic 4-(monoalkylamino)benzoic acid derivatives: 3,868,416, Cl. 260-518.00R.
Alcyon Electronique et Physique S.A.: *See*—
  Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, 3,868,490.
Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H. Half amide-half ammonium slats or alpha-olefin-maleic anhydride copolymers. 3,868,353, Cl. 260-78.0UA.
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  Lawwill, Ronald C., 3,868,627.
  Radke, Donald G.; and Lewis, Donald J., 3,868,126.
Allin, George S., Jr.: *See*—
  Greenlay, Roy; and Allin, George S., Jr., 3,868,022.
Allison, Kenneth C. Electrical connector. 3,868,475, Cl. 174-87.000.
Aluminum Company of America: *See*—
  Fish, William M., 3,868,442.
Amana Refrigeration, Inc.: *See*—
  Bourgeois, Joseph F., 3,867,880.
Ambatis, Maris: *See*—
  Miles, John R.; and Miles, Grant M., 3,868,173.
Ameigh, Robert Larry. Integral hydraulic tensioning assembly. 3,867,895, Cl. 114-109.000.
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  Lisk, Timothy A., 3,868,164.
  Trimmer, Paul A.; and Cirule, Fred M., 3,868,483.
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  Albright, Jay Donald; Riggi, Stephen Joseph; and Shepherd, Robert Gordon, 3,868,416.
  Gastrock, William Henry, 3,868,385.
American Optical Corporation: *See*—
  De Veer, Johannes D., 3,868,168.
  Shoemaker, Arthur H., 3,868,175.
Ametek, Inc.: *See*—
  Widlund, Charles R., 3,867,841.
Ammon, John Preston, to Elfab Corporation. Electrical connector. 3,868,162, Cl. 339-17.00M.
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AMP Incorporated: *See*—
  Dola, Frank Peter, 3,868,618.
  Frantz, Robert Houston, 3,868,161.
  Koch, Robert Milton; and Wion, Donald Andrew, 3,867,754.
  Schulz, William J., 3,868,069.
Amsted-Siemag Kette GmbH: *See*—
  Janzen, Wolfgang; and Bald, Alfred, 3,868,011.
Anaconda Company, The: *See*—
  Goodzey, John R.; and Johnson, Robin L., 3,868,070.
  Johnson, Daniel B., 3,867,758.
  Lindblad, Kenneth O.; and Dufresne, Ralph E., 3,868,440.
Analogy Devices, Inc.: *See*—
  Krabbe, Heinrich F., 3,868,583.
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  Joyner, Bobby L.; Yearick, Betty L.; Kaiser, Harold S.; and Anderson, James W., 3,867,929.
Anderson, Jon A.: *See*—
  Schwalm, Arthur W.; and Anderson, Jon A., 3,867,949.
Andersson, Per Olof: *See*—
  Tornmarck, Sven Ivan Arvid; and Andersson, Per Olof, 3,868,218.
Andover Medical Industries, Inc.: *See*—
  West, Roland James, 3,867,923.
Antuma, Hendrikus Jan, to U.S. Philips Corporation. Device for converting a rotary movement into a symmetrical reciprocating movement. 3,867,845, Cl. 74-25.000.
Aoki, Takashi: *See*—
  Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, 3,868,649.
Aqua-Chem, Inc.: *See*—
  Haye, Paul G. La; and Bjerklie, John W., 3,868,211.
Aquila S.p.A.: *See*—
  Giangaspero, Michele; Tlustos, Giorgio; Bose, Marino; and Corsi, Domenico, 3,868,430.
Arai, Michio, to Sony Corporation. A field effect transistor having a pair of gate regions. 3,868,718, Cl. 357-22.000.
Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, to Bridgestone Tire Company Limited. Oil fence having a limited flexibility. 3,867,817, Cl. 61-1.00F.
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- Arnold, Sieghard, to International Business Machines Corporation. Transport device for web material. 3,868,053, Cl. 226-173.000.
- Arthur D. Little, Inc.: *See—*
  - Hunt, Robert E.; Delahanty, John; and Lane, Bruce M., 3,868,104.
- Arutjunian, Vladimir Semenovich; and Mirimanian, Vigen Khachaturovich. Synchronous electric machine. 3,868,564, Cl. 322-59.000.
- Asagi, Yasuyoshi: *See—*
  - Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, 3,868,649.
- Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
  - Kawasaki, Masahiro, 3,868,701.
- Aseff, Taman M., Jr.: *See—*
  - Bellantoni, Frank A., deceased; and Tucciarone, John Walter, 3,867,942.
- Ashfield Dyeing & Finishing Company Limited: *See—*
  - Shackleton, Alan Lomas, 3,868,214.
- Ashida, Hitoshi; Yasaka, Kenichiro; Tanabe, Motosuke; and Yoshino, Yuuji. Spectrum analyzer. 3,868,568, Cl. 324-77.0CS.
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- Atchley, John Q.: *See--*
  - Morgan, Barrie O.; Branscome, Kenneth M.; Goode, George E.; and Atchley, John Q., 3,868,631.
- Atha, Richard C.: *See—*
  - Lapham, James O.; and Atha, Richard C., 3,867,775.
- Atlantic Research Corporation: *See—*
  - Fisher, Philip D.; and Sargent, William H., 3,868,125.
- Atomic Energy of Canada Limited: *See—*
  - Bigham, Clifford B.; and Schneider, Harvey R., 3,868,522.
- Austin, George Alfred Braisby. Fastenings for roof and wall sheeting. 3,867,742, Cl. 24-73.000.
- Avco Corporation: *See—*
  - Krukonis, Val J., 3,868,230.
- AVCO Everett Research Laboratory, Inc.: *See—*
  - Itzkan, Irving; and Caristi, Robert F., 3,868,590.
- Avera, Charles W., to Electronic Data Controls Corp. Electrical game. 3,868,112, Cl. 273-94.00R.
- Ayers, Clifton E., to P. R. Mallory & Co., Inc. Resistance welder. 3,868,489, Cl. 219-86.000.
- Baatz, Wilfried, to FloScan Instrument Company, Inc. Axial outlet flow transducer. 3,867,840, Cl. 73-229.000.
- Babka, Joseph A. Method for removing an orthopedic cast utilizing an embedded wire. 3,867,931, Cl. 128-91.00A.
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- Backhaus, Karl L.; and Tuschak, George, to Concast Incorporated. Roller apron for a continuous casting installation. 3,867,827, Cl. 72-251.000.
- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
  - Bantel, Karl-Heinz; and Eilingsfeld, Heinz, 3,868,395.
  - Fischer, Adolf, 3,868,245.
  - Reuter, Peter; and Friedrichsen, Wilhelm, 3,868,393.
- Bagdasarjanz, Felix; and Leuthold, Peter Eugen. Device for automatic equalisation. 3,868,576, Cl. 325-65.000.
- Bahnsen, Gerhard I. W. Film holding structures for cameras. 3,868,707, Cl. 354-202.000.
- Baisch, J. Carroll: *See—*
  - Grossman, Milton J., 3,868,037.
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- Ballard, Allan. Pulsation reducer. 3,867,963, Cl. 138-46.000.
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- Barbour, Roberto, to Cryton Optics, Inc. Light boxes with fresnel lenses. 3,868,501, Cl. 240-10.100.
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- Barringer, Anthony Rene, to Barringer Research Limited. High resolution geochemical prospecting method and apparatus. 3,868,222, Cl. 23-230.0EP.
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- Basso, Michael J.; and Kronemberg, Stanley, to United States of America, Army. Dosimeter latch. 3,868,511, Cl. 250-376.000.
- Battjes, Carl R., to Tektronix, Inc. Bootstrapped amplifier. 3,868,580, Cl. 330-18.000.
- Bauer, Helmut; and Stanzel, Rudolf, to Messer Griesheim GmbH. Torch cutting apparatus. 3,868,095, Cl. 266-23.00K.
- Baumer, Horst. Winding device for magnetic tapes. 3,868,066, Cl. 242-56.00A.
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  - Ley, Kurt; Seng, Florin; and Metzger, Karl George, 3,868,371.
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- Bellantoni, Frank A., deceased (by Bellantoni, Clare, administratrix); and Tucciarone, John Walter, to Aseff, Taman M., Jr.; and Tucciarone, John Walter, part interest to each. Motor-operated multiple hair transplant cutter tool. 3,867,942, Cl. 128-305.000.
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- Bigalke, Erhard, to Volkswagenwerk Aktiengesellschaft. Internal combustion engine ignition control system. 3,867,916, Cl. 123-117.00R.
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- Brown, John A., to Foster Wheeler Corporation. Slag prevention air slots in furnace sidewalls. 3,867,909, Cl. 122-235.00B.
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- Broyles, Johnny Lee, to Tripple "I" Products, Inc. Earth working machine protector. 3,868,035, Cl. 214-762.000.
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- Gerrard, Bruce. Beverage dispensing valve. 3,867,962, Cl. 137-635.000.
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- Gilbreath, Benjamin F.; and Yeh, Hou Leh, to Hunt Electronics Company. Light dimming system for controlling brightness and rate of change of brightness of lights. 3,868,546, Cl. 315-293.000.
- Giraudon, Raymond, to Rhone-Poulenc S.A. Thiazolidine derivatives. 3,868,382, Cl. 260-306.70T.
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- Glass, Marvin I.; and McKay, Robert S., to Marvin Glass & Associates. Projector, target and target blocking apparatus. 3,868,113, Cl. 273-101.000.
- Glass, Marvin I.; and Schoenfield, Palmer J., to Marvin Glass & Associates. Camping set. 3,868,177, Cl. 350-301.000.
- Glory Kogyo Kabushiki Kaisha: *See—*
  - Abe, Masahiro; and Terada, Hiroshi, 3,868,044.
- Gloshinski, Leon J.: *See—*
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- Goby, Stephen. Loading apparatus for railroad flat cars. 3,868,029, Cl. 214-77.00R.
- Godfrey, Loren; and Vaithinathan, Krisnamurthy, to Engelhard Minerals & Chemicals Corporation. Manufacture of silver-cadmium oxide wire. 3,868,275, Cl. 148-6.300.
- Goff, James R. Abrasive blasting machine. 3,867,791, Cl. 51-9.00R.
- Goldman, Leman, Jr.; and Dunn, Ted E., to RCA Corporation. Time measuring system. 3,868,687, Cl. 343-13.00R.
- Goldshine, Alan D.: *See—*
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- Gollinger, Wolfgang, to ITT Industries, Inc. Integrable quartz oscillator circuit employing field effect transistors. 3,868,597, Cl. 331-116.00R.
- Gomes, Robert: *See—*
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- Gonser, Donald I. Clamp for a passive electrode. 3,868,165, Cl. 339-97.00R.
- Gonser, Donald I., to Dentsply Research and Development Corporation. Ultraviolet radiation projector. 3,868,513, Cl. 250-504.000.
- Gonzalez, Cesar Fernandez Veraud. Nuts and locknuts helicoidally coupled in one single unit for tightening at a controlled torsion. 3,867,972, Cl. 151-15.000.
- Goodacre, Cecil; and Leggett, Peter Alfred, to Lansing Bagnall Limited. Industrial lift trucks. 3,868,034, Cl. 214-730.000.
- Goode, George E.: *See—*
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- Goodzey, John R.; and Johnson, Robin L., to Anaconda Company, The. Heavy coil pay-off. 3,868,070, Cl. 242-129.000.
- Goof, Sven Karl Lennart. Dripless plastic pour spout insert. 3,868,051, Cl. 222-571.000.
- Gordon, Robert L., to International Paper Company. Container carrier. 3,868,140, Cl. 294-87.200.
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- Gorychka, Carl; and Keyes, Richard M., to Beatrice Foods Company. Valve assembly for semi-frozen commodity. 3,868,050, Cl. 222-509.000.
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- Gott, Hans: *See—*
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- Gough, Dick Valentine. Liquid separators. 3,868,321, Cl. 210-86.000.
- Grabher, Gerhard, to Oehler AG. Multi-needle double chain-stitch quilting machine. 3,867,891, Cl. 112-166.000.
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- Green, Douglas. Data transmission systems and components therefor. 3,868,519, Cl. 307-270.000.
- Greenblatt, Abe, to Tseng, Peter. Magnetically-controlled animated toy. 3,867,786, Cl. 46-236.000.
- Greenlay, Roy; and Allin, George S., Jr., to Harnischfeger Corporation. Self-propelled heavy duty mobile crane. 3,868,022, Cl. 212-8.00R.
- Gregory, Lawrence; Murphy, Lloyd; and Hagen, Donald H., to Hagen International Inc. Radially expansible sprocket with rotatable teeth segments. 3,867,851, Cl. 74-244.000.

- Greiller, Jack F., to Eastman Kodak Company. Apparatus for production of photographic elements. 3,867,901, Cl. 118-50.000.
- Greiner, Lawrence J. CB microphone-AM/FM radio control with AM-FM radio cut off switch and microphone holder. 3,868,571, Cl. 325-15.000.
- Grenier, Emile P.; and Muller, George H., to Ford Motor Company. Anti-dieseling control. 3,867,919, Cl. 123-198.00D.
- Grise, Frederick G. J.: *See—*
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- Gros, Paul, to Society Superflexit. Vinylidene fluoride/hexafluoropropylene copolymer foams. 3,868,337, Cl. 260-2.50R.
- Grosseau, Albert, to Societe Anonyme Automobile Citroen. Vehicle suspensions. 3,868,129, Cl. 280-106.50R.
- Grossman, Milton J., to Baisch, J. Carroll, a part interest. Container and safety closure therefor. 3,868,037, Cl. 215-216.000.
- Grundy, Reed H., to Westinghouse Air Brake Company. Fail-safe transistorized overspeed circuit arrangement. 3,868,548, Cl. 317-5.000.
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  - Williams, G. Norman, 3,868,608.
- Guggenbuhl, Walter, to Contraves AG. Method and apparatus for determining errors during counting of particles. 3,868,498, Cl. 235-151.300.
- Guidoux, Loic Bernard Yves, to Telecommunications Radioelectriques et Telephoniques T.R.T. Automatic equalizing arrangement for a data transmission channel. 3,868,603, Cl. 333-18.000.
- Gulf & Western Industries, Inc.: *See—*
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- Gunderson, Ralph R. Adjustable deflector for snow removal machine. 3,867,773, Cl. 37-43.00R.
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- Hadley, William Henry, to Metal Closures Limited. Closures for containers. 3,868,038, Cl. 215-305.000.
- Haferl, Peter Eduard, to RCA Corporation. Amplifier which consumes a substantially constant current. 3,868,537, Cl. 315-389.000.
- Haferl, Peter Eduard, to RCA Corporation. AF amplifier having constant current consumption. 3,868,582, Cl. 330-22.000.
- Hagelin, Gunnar Johannes, to Telefonaktiebolaget L M Ericsson. Control system particularly for interlocking installations for railway operation. 3,868,641, Cl. 340-163.000.
- Hagemeyer, Hugh J., Jr.: *See—*
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- Hagen International Inc.: *See—*
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- Halasa, Adel Farhan, to Firestone Tire & Rubber Company, The. New catalyst for hydrogenation of elastomers and the process of hydrogenation. 3,868,354, Cl. 260-94.70H.
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- Hamilton, Lillie; and McCrey, Lorretta. Method of stitching a corded seam. 3,867,890, Cl. 112-139.000.
- Hamisch, Paul H., Sr., to Monarch Marking Systems, Inc. Selective drive connection for a cutting apparatus. 3,867,861, Cl. 83-571.000.
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- Hand, John D.; and Whitehouse, Wendell G., to General Electric Company. Solution process for the preparation of polyimdies from diamines and anhydrides. 3,868,351, Cl. 260-78.0UA.
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- Hanson, James E., to Trend Development Corporation. Loom. 3,867,965, Cl. 139-33.000.
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- Hanson, John W.: *See—*
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- Harada, Yujiro; Kumabe, Kiyoshi; Sato, Tsuneo; Miyamura, Yoshinobu; Kato, Fumio; and Tanimoto, Mikio, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing an anti-virus substance for plants. 3,868,450, Cl. 424-115.000.
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- Hartmann, Clinton S.: *See—*
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- Haubein, Harold Dennis; and Beard, Lloyd R. Current sensitive interrupting terminator assembly. 3,868,615, Cl. 337-169.000.
- Haug, Werner, to Frama A.G. Device for cutting open letter envelopes. 3,867,860, Cl. 83-368.000.
- Haye, Paul G. La; and Bjerklie, John W., to Aqua-Chem, Inc. Pollutant reduction with selective gas stack recirculation. 3,868,211, Cl. 431-10.000.
- Hazan, Isaac, to Trissa Industries, Inc. Combination handbag and toy, container and figurine, or the like. 3,867,971, Cl. 150-28.00R.
- Healey, Robert A.; and Shimp, Everett M., to International Business Machines Corporation. Stack mechanism for a data processor. 3,868,644, Cl. 340-172.500.
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- Hennessey, William Michael; and Wescott, Ronald Owen, to Burroughs Corporation. Display panel electrode termination. 3,868,676, Cl. 340-336.000.
- Hergott, Patrick F. Tongue blade sucker. 3,867,927, Cl. 128-15.000.
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- Herzl, Peter J., to Fischer & Porter Company. Vortex-type flowmeter having strain gauge sensor in an elastic suspension. 3,867,839, Cl. 73-194.00B.
- Hesselein, Robert J., to Lipe-Rollway Corporation. Machine noise reduction method. 3,867,875, Cl. 93-36.00M.
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- Hider, Shibley A.; Rogers, John K.; and Wilkins, Colbert W., to Owens-Illinois, Inc. Treatment of paper box plant effluents. 3,868,320, Cl. 210-53.000.
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- Hill, William Frank; and Winkley, Albert William. Battery charging systems. 3,868,559, Cl. 320-61.000.
- Hill, William Frank, to Lucas Electrical Company, The. Liquid level detecting circuits. 3,868,664, Cl. 340-244.00E.
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- Hirasaki, Takashi; and Suga, Gojiro, to Rank Xerox, Ltd. Single sideband frequency modulation system. 3,868,599, Cl. 332-17.000.
- Hirata, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Voltage regulator for generator. 3,868,563, Cl. 322-28.000.
- Hirons, John L. Machine for forming indicia for sand blasting. 3,867,859, Cl. 83-284.000.
- Hirvi, Henry E.; and Gloshinski, Leon J., to Cincinnati Milacron-Heald Corporation. Magnetic work holder. 3,868,118, Cl. 279-1.00M.
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- Hoffman, Charles Robert; and Kube, Donald H., to Motorola, Inc. Peripheral circuitry for dynamic MOS rams. 3,868,657, Cl. 340-173.00R.
- Hoffman, David B. Portable winch. 3,868,091, Cl. 254-164.000.
- Hoffman, Harry S., Jr., to International Business Machines Corporation. Capacitive voltage reducer. 3,868,560, Cl. 321-2.000.
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- Hollingshad, William Robert, to Calgon Corporation. Corrosion inhibition. 3,868,217, Cl. 21-2.70A.
- Holz, George Ernest; and Ogle, James Alexander, to Burroughs Corporation. Display panel. 3,868,543, Cl. 315-169.0TV.
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- Horecky, Stanley V.; and McDonough, Cletus, to Molex Products Company. Printed circuit board lead wire receptacle. 3,867,760, Cl. 29-628.000.
- Horii, Shoichi; Yamada, Shoji; Futaki, Kiyoshi; Tanaka, Akira; Sekido, Mamoru; and Miyazawa, Sadayuki, to Mitsubishi Paper Mills, Ltd. Hardeners for photographic gelatin. 3,868,257, Cl. 96-111.000.
- Horlenko, Theodore; Fisher, Gene J.; and Aguilo, Adolfo, to Celanese Corporation. Conversion of oligomeric acrylates to acrylate monomers. 3,868,410, Cl. 260-486.00R.
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- Hotten, Bruce W., to Chevron Research Company. Bis N,N piperazine phosphoramides and their preparation. 3,868,376, Cl. 260-268.00K.
- Houghton, Norman F., to Philco-Ford Corporation. Method for forming articles from plastic sheet material. 3,868,437, Cl. 264-92.000.
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- Hovis, James E., to Bloom Engineering Company, Inc. Furnace control systems. 3,868,094, Cl. 266-5.00T.
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- Huffman, James Earle. Apparatus for applying protective coating to picker sticks. 3,867,902, Cl. 118-423.000.
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- Hughes, Richard Smith, to United States of America, Navy. High speed video track loop. 3,868,688, Cl. 343-16.00M.
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- Hulderman, Garry N., to General Dynamics Corporation. Doubly adjustable waveguide pin switch. 3,868,607, Cl. 333-98.00S.
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- Jamin, Guillaume Ward, to Imperial Chemical Industries Limited. Seal. 3,867,768, Cl. 34-242.000.
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Kitrilakis, Sotiris, to Tecna Corporation. Intrauterine device and process of making the same. 3,867,933, Cl. 128-129.000.
Kleiman, Joseph P., to Ethyl Corporation. Stabilized vinylidene bromide. 3,868,425, Cl. 260-652.50P.
Kleiman, Joseph P., to Ethyl Corporation. Stabilized vinylidene bromide. 3,868,426, Cl. 260-652.50P.
Kleinewefers Industrie-Companie Gesellschaft mit beschrankter Haftung: *See—*
  Schlunke, Jurgen; and Boixen, Heinz, 3,867,879.
Kliment, Karel, to National Patent Development Corporation. Hema paste. 3,868,447, Cl. 424-81.000.
Klinger, Harry, to E. R. Squibb & Sons, Inc. Process for extracting procainamide from blood. 3,868,220, Cl. 23-230.00B.
Klockner-Humboldt-Deutz AG: *See—*
  Keylwert, Johann, 3,867,911.
Klomp, Cornelis Johannes: *See—*
  Van Osterhout, Gerard Willem; Lemmen, Vhendrikus Johannes; and Klomp, Cornelis Johannes, 3,867,900.
Klopfer, Anton Martin; Garbe, Siegfried; Frank, Gunter; and Peterek, Manfred, to U.S. Philips Corporation. Semitransparent photocathode. 3,868,523, Cl. 313-94.000.
Knauer, Wolfgang; and Lutz, Michael A., to Hughes Aircraft Company. Circuit breaker. 3,868,550, Cl. 317-11.00B.
Knize, Elmer J., to Lippy Can Co., Ltd. Can or container with resealable lid. 3,868,041, Cl. 220-55.0AN.
Knogo Corporation: *See—*
  Minasy, Arthur J., 3,868,669.
Knohl, Friedrich Karl, to Illinois Tool Works, Inc. Anchor device. 3,867,864, Cl. 85-21.000.
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Knott, Sydney T., to United States of America, Navy. Range rate compensation system. 3,868,622, Cl. 340-3.00R.
Knowles, John E., to Instronics Ltd. Line tracing apparatus. 3,868,555, Cl. 318-577.000.
Ko, Arthur Sai Chun: *See—*
  Smyth, Derek George; and Ko, Arthur Sai Chun, 3,868,357.
Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, to Meiji Seika Kaisha, Ltd. Production of maltose with amylases produced by streptomyces. 3,868,464, Cl. 426-48.000.
Kobayashi, Hideo: *See—*
  Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, 3,868,101.
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Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, to Mishima Kiesan Co., Ltd. Device for connecting minute distributing circuit elements and minute connecting wire elements. 3,868,488, Cl. 219-85.000.
Koch, Hans Joachim; and Schaefer, Wolfgang, to Werkzeumaschinenfabrik Gildemeister & Comp. A.G. Arrangement for changing tool-supporting tool holders on a machine tool assembly. 3,867,756, Cl. 29-568.000.
Koch, Robert Milton; and Wion, Donald Andrew, to AMP Incorporated. Stripper crimper machine. 3,867,754, Cl. 29-203.0DS.
Kodama, Yutaka: *See—*
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Koehler, Heinrich P., to Rockwell International Corporation. Power tools. 3,867,988, Cl. 173-48.000.
Koehring Company: *See—*
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Konishi, Hideo: *See—*
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Konrad, Charles Edward, to General Electric Company. Current limit system for DC motor control. 3,868,554, Cl. 318-434.000.
Kopera, Joseph J., Jr. Electronic digital speedometer. 3,868,570, Cl. 324-166.000.
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, to Boehringer Ingelheim G.m.b.H. Therapeutic compositions and method. 3,868,460, Cl. 424-304.000.
Koppers Company, Inc.: *See—*
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  Sustarsic, John D.; Kinzler, Raymond C.; and Edgar, William D., 3,868,309.
Korb, Harold Wilfred, to Bell Telephone Laboratories, Incorporated. Differential amplifier having a short response time. 3,868,586, Cl. 330-30.00D.
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Kraay, Russell J.; and Farkas, Eugene, to Eli Lilly and Company. 17Alpha-ethynylestriol 3-Cyclopentyl ether. 3,868,452, Cl. 424-238.000.
Krabbe, Heinrich F., to Analogy Devices, Inc. High-performance solid-state amplifier system. 3,868,583, Cl. 330-30.00D.
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Kroll, Wolfram R.; and Long, Robert B., to Exxon Research and Engineering Company. Organo metal complexes. 3,868,398, Cl. 260-438.100.
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Krukonis, Val J., to Avco Corporation. Tungsten substrate for high-strength high-modulus filament. 3,868,230, Cl. 29-198.000.
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Kubota, Kohei: *See—*
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Kuipers, Jack. Object tracking and orientation determination means, system and process. 3,868,565, Cl. 324-34.00R.
Kulite Semiconductor Products, Inc.: *See—*
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Kumabe, Kiyoshi: *See—*
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Kupsky, George A., to Burroughs Corporation. Multi-position character display panel. 3,868,535, Cl. 313-519.000.
Kuramoto, Yoshio, to Minolta Camera Kabushiki Kaisha. Electric exposure control camera. 3,868,700, Cl. 354-23.000.
Kurtz, Anthony D.; Mallon, Joseph R.; Bernstein, Harold; and Weber, Richard Alan, to Kulite Semiconductor Products, Inc. Thin ribbon-like glass backed transducers. 3,868,719, Cl. 357-26.000.
Kuster, Hendrik: *See—*
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Laboue, Bernard Andre, to Societe Honeywell Bull (Societe Anonyme). Module rack for connection boxes of printed-circuit cards. 3,868,158, Cl. 312-350.000.
Lagain, Georges. Device for stacking bags. 3,868,290, Cl. 156-510.000.

Lakamp, Ernest A. Detachably mountable visual proximity and alignment indicator for connectable vehicles. 3,867,898, Cl. 116-28.00R.
Lake, William H.; and Thomasson, Gene I., to General Electric Company. Quartz pinches containing sealant glass. 3,868,528, Cl. 313-220.000.
Lancaster, Patrick R., III; and Lancaster, William G., to Lantech, Inc. Process of making a stretched-wrapped package. 3,867,806, Cl. 53-27.000.
Lancaster, William G.: *See—*
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Landman, Bernard S., to International Business Machines Corporation. Josephson device threshold gates. 3,868,515, Cl. 307-212.000.
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Lang, Rudolf: *See—*
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Lange, Helmut. Toy brick and combination of toy bricks. 3,867,784, Cl. 46-25.000.
Langemann, Albert: *See—*
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Langen, Marinus J. M.; and Langen, Jacobus J. Carton divider. 3,868,055, Cl. 229-15.000.
Langmack, Holger C., Jr.; and Spear, James B. Equipment covering. 3,868,040, Cl. 220-18.000.
Langrish-Smith, Michael Anthony; and Steele, Daniel, to Imperial Chemical Industries Limited. Explosive fuse-cord. 3,867,884, Cl. 102-27.00R.
Lansing Bagnall Limited: *See—*
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Lapham, James O.; and Atha, Richard C., to Lapham, James O. Flagman signal device. 3,867,775, Cl. 40-125.00H.
Lapham, James O: *See—*
  Lapham, James O.; and Atha, Richard C., 3,867,775.
Lapine, Robert L.; and Brower, Bernard C., to Harry H. Bell & Sons, Inc. Method and apparatus for processing shrimp. 3,867,740, Cl. 17-72.000.
Laplume, Jacques, to Societe d'Etudes Techniques et d'Entreprises Generales (Sodeteg). System for locating and transmitting selected images. 3,868,476, Cl. 178-6.000.
Larson, Violet M.: *See—*
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Lavitt, Joseph W., to United States of America, Army. Double-base propellant containing a ureide and a resorcylate. 3,868,282, Cl. 149-98.000.
Lawless, John, to Cooper Industries, Inc. Chainsaw file holder. 3,867,853, Cl. 76-36.000.
Lawrence Peska Associates, Inc.: *See—*
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Lawwill, Ronald C., to Allied Chemical Corporation. Laminated tongue for vehicle seat belt buckle system. 3,868,627, Cl. 340-52.00E.
Lear Siegler, Inc.: *See—*
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Le Can, Claude Jan Principe Frederic; and Steinmaier, Walter, to U.S. Philips Corporation. Semiconductor device having at least two transistors and method of manufacturing same. 3,868,722, Cl. 357-44.000.
Lechaton, John S.; Richard, Leo P.; and Smith, Daryl C., to International Business Machines Corporation. Integrated circuit structure accommodating via holes. 3,868,723, Cl. 357-54.000.
Le Duff, Henry Antoine. Lifting truck, particularly adapted for cylindrical containers. 3,868,033, Cl. 214-707.000.
Lee, Jack C. Apparatus for moving and rotating long workpieces such as structural steel. 3,868,024, Cl. 214-1.0QC.
Lee, Robert E. Power driven file. 3,867,747, Cl. 29-76.00A.
Leggett, Peter Alfred: *See—*
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Leibach, Heinrich, to Motoren- und Turbinen-Union Munchen GmbH. Turbojet engine for vertical or short take-off and landing airplanes. 3,867,813, Cl. 60-225.000.
Leicht, Alfred: *See—*
  Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.
Lemaire, Bernard J., to Ressorts du Nord S.A. Radiant burner and furnace for treating at high temperature. 3,868,212, Cl. 431-171.000.
Lemmen, Vhendrikus Johannes: *See—*
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Leroy, Vincent Marguerite; and Liesenborghs, Roland Cesar Amand, to Societe Anonyme Cockerill-Ougree-Providence et esperance-Longdoz en Abrege Cockerill. Method of producing a steel product having an oxidation-resistant coating. 3,868,277, Cl. 148-12.100.
Lescoa, Inc.: *See—*
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Lesniak, John M.: *See—*
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Lesondak, William V. Portable traffic barricade. 3,868,630, Cl. 340-119.000.
Lesure, Ernest Jacques Andre. Method and apparatus for converting a force or mechanical movement into an electrical quantity and servo-system embodying same. 3,868,556, Cl. 318-676.000.
Leuthold, Peter Eugen: *See—*
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Levin, Herman, to Industrial Dynamics, Inc. Programmable process and production control systems. 3,868,648, Cl. 340-172.500.
Levine, Beth. Resilient retainer for heel strap of a shoe. 3,867,771, Cl. 36-11.500.
Lewis, Donald J.: *See—*
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Lewyckyj, Roman, to Scott Paper Company. Absorbent pad and method for making same. 3,868,287, Cl. 156-201.000.
Ley, Kurt; Seng, Florin; and Metzger, Karl George, to Bayer Aktiengesellschaft. 3-Amino-1,2,4-benzotriazine-1,4-di-N-oxides and processes for their preparation. 3,868,371, Cl. 260-249.500.
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Lie, Finn. Spring mechanism for a tiltable member of a tilting chair. 3,868,144, Cl. 297-304.000.
Liesenborghs, Roland Cesar Amand: *See—*
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Linde Aktiengesellschaft: *See—*
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Lindemann, Hans Joachim. Insufflation apparatus for introducing limited quantities of carbon dioxide into the human body for operative purposes. 3,867,941, Cl. 128-303.000.
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  Zinnes, Harold; and Lindo, Neil A., 3,868,379.
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Ling, Hans G.: *See—*
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Linn, Donald F.; and Wishart, George L., to Lipe-Rollway Corporation. Self-adjusting release mechanism for friction clutches. 3,868,006, Cl. 192-111.00A.
Liogonky, Boris Izrailevich: *See—*
  Berlin, Alfred Anisimovich; Liogonky, Boris Izrailevich; and Zapadinsky, Isaakovich, 3,868,348.
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Litzinger, Charles H. Slow troll fishing lure. 3,867,780, Cl. 43-42.500.
Liu, Charles C.; and Hofer, Dean A., to Texas Instruments Incorporated. Log periodic pole mounted marker beacon antenna. 3,868,689, Cl. 343-101.000.

- Livesay, Richard Edward: *See—*
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- LKB-Produkter AB: *See—*
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- Long, Wendell M. Catheter stylets. 3,867,945, Cl. 128-349.00R.
- Lorteije, Jean Hubertus Josef, to U.S. Philips Corporation. Visual display apparatus including a liquid crystal display panel. 3,868,674, Cl. 340-324.00M.
- Lou, Nils, to Modular Sound Systems, Inc. Speaker enclosure. 3,867,996, Cl. 181-148.000.
- LoVecchio, Paul: *See—*
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- Lown, Harold, to General Electric Company. Centrifugal compressor with rotating vaneless diffuser powered by leakage flow. 3,868,196, Cl. 415-146.000.
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- Lundahl, Ezra Cordell, to Ezra C. Lundahl Inc. Air delivery system. 3,868,032, Cl. 214-522.000.
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- Lutz, Walter: *See—*
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- MacAfee, John W., to United States of America, Navy. Digital single-sideband modulator. 3,868,601, Cl. 332-45.000.
- MacDonald, Francis X.; and MacDonald, Paul K., to P. X. Industries, Inc. Cart for dialysis machine. 3,868,154, Cl. 312-250.000.
- MacDonald, Paul K.: *See—*
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- MacDonald, Robert A., to Ferguson Industries, Inc. Method of making granular triple superphosphate fertilizer. 3,868,243, Cl. 71-41.000.
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- Mac Lean, Gerald K.; and Minzenberger, Thomas C., to Zenith Radio Corporation. Shadow mask and overscan shield assembly. 3,868,532, Cl. 313-407.000.
- MacLeay, Ronald Edward: *See—*
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- MacLeod, Ivan R., to Raymond Lee Organization, Inc., The, a part interest. Electrical bottle opener. 3,867,854, Cl. 81-3.200.
- Madacsi, John P.: *See—*
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- MADAG Maschinen- und Apparatebau Dietikon AG: *See—*
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- Maddalena, John, to Cities Service Company. Extruder. 3,868,046, Cl. 222-146.0HE.
- Magee, Philip S. Insecticidal O,S-dihydrocarbyl-N-acylphosphoroamidothioates and S,S-dihydrocarbyl-N-acylphosphoroamidodithioates. 3,868,449, Cl. 424-217.000.
- Magliaro, Luke P. Device for removing animal droppings. 3,868,135, Cl. 294-1.00R.
- Magne, Robert, to Rhone-Poulenc S.A. Process for the preparation of condensation products of silicon-containing amines with epoxide compounds. 3,868,342, Cl. 260-29.20M.
- Magorian, William Ray, to United States of America, Navy. Range tracking device for a portable attack warning radar. 3,868,686, Cl. 343-7.00A.
- Maguire, Hugh F.; and Miller, William J. Basketball foul indicia display apparatus. 3,868,671, Cl. 340-323.000.
- Mahieu, Yves, to Societe Anonyme dite: Ateliers Mecaniques du Douaisis. Draw bar for towing aircraft. 3,868,128, Cl. 280-453.000.
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- Maki, Naoki, to Hitachi, Ltd. Apparatus for levitating and stabilizing a vehicle driven by a linear motor. 3,867,886, Cl. 104-148.0SS.
- Malanka, Douglas Peter: *See—*
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- Malin, Eugene F. Moisture detection. 3,867,837, Cl. 73-73.000.
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- Mallon, Joseph R.: *See—*
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- Martin, Frederick Raymond Patrick. Self-levelling lamps. 3,868,500, Cl. 240-7.1LJ.
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- Maruszczak, Wlodzimierz W. Rotary strip accumulator. 3,868,065, Cl. 242-55.000.
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- Masuoka, Fujio, to Tokyo Shibaura Electric Co., Ltd. Avalanche injection type mos memory. 3,868,187, Cl. 357-23.000.
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- Nakaya, Kiyotaka, to Tokyo Hoshiden Kabushiki Kaisha. Push-button switch having improved locking structure to inhibit withdrawal of a slidable switch body from its associated casing. 3,868,486, Cl. 200-159.00R.
- Narbaits-Jaureguy, Jean Raymond; and Billottet, Henri. Limited-range radiocommunication system with direction-indicating signaling means. 3,868,575, Cl. 325-51.000.
- Nathan, Amos; and Even, Reed K. Constant phase distributed impedance. 3,868,587, Cl. 330-38.00M.
- National Distillers and Chemical Corporation: *See—*
  - Newberg, Raymond G.; and Morgan, Fred K., 3,868,344.
- National Patent Development Corporation: *See—*
  - Gayle, Robert, 3,868,294.
  - Kliment, Karel, 3,868,447.
- National Research Development Corporation: *See—*
  - Smyth, Derek George, 3,868,356.
  - Smyth, Derek George; and Ko, Arthur Sai Chun, 3,868,357.
- Natkai, Lajos; and Lenkefi, Janos, to Orszagos Koolaj- es Gazipari Troszt. Apparatus for the machining of cycloidal surfaces. 3,867,868, Cl. 90-20.000.
- Nawata, Kiyoshi: *See—*
  - Yamashita, Gentaro; Fujii, Takeshi; Saiki, Noritsugu; Nawata, Kiyoshi; and Shinoki, Takanori, 3,868,375.
- NCR Corporation: *See—*
  - Zeutschel, Heinz, 3,868,179.
- Neal, William C. Kick-over tool. 3,867,983, Cl. 166-117.500.
- Neely, Joseph E.: *See—*
  - Cassens, Nicholas, Jr.; and Neely, Joseph E., 3,868,261.

- Negi, Takafusa, to Nippon Gakki Seizo Kabushiki Kaisha. Auxiliary ski for physically handicapped persons. 3,868,122, Cl. 280-11.37B.
- Nelson, Donald J.: *See—*
  - Cruz, Ramon C.; Light, Clyde L.; and Nelson, Donald J., 3,867,977.
- Neu, Max Gerhard, to Foseco International Limited. Deoxidising molten non-ferrous metals. 3,868,248, Cl. 75-76.000.
- New, Thorndike C.; and Krishna, Surinder, to Westinghouse Electric Corporation. High frequency bipolar transistor with integral thermally compensated degenerative feedback resistance. 3,868,720, Cl. 357-34.000.
- Newberg, Raymond G.; and Morgan, Fred K., to National Distillers and Chemical Corporation. Oil extended molecular weight controlled alfin gums. 3,868,344, Cl. 260-33.6AQ.
- Newcomb, Paul: *See—*
  - West, Roland James, 3,867,923.
- Newton, Robert F.: *See—*
  - Anderson, Fred A.; and Newton, Robert F., 3,868,195.
- Nichol, Kenneth J.: *See—*
  - Baker, Maurice W.; Kerry, John C.; Nichol, Kenneth J.; Marshall, John R.; Weighton, David M.; and Kozlik, Antonin, 3,868,458.
- Nielsen, Anker J., Jr.: *See—*
  - Morse, Lynn H.; and Nielsen, Anker J., Jr., 3,867,822.
- Niida, Taro: *See—*
  - Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.
- Nippon Electric Company, Limited: *See—*
  - Fukuda, Shuichi; and Miya, Masao, 3,868,593.
  - Ohyama, Chishio; Tachibana, Makoto; and Takada, Takeshi, 3,868,681.
- Nippon Gakki Seizo Kabushiki Kaisha: *See—*
  - Negi, Takafusa, 3,868,122.
- Nippon Kogaku, K.K.: *See—*
  - Muryoi, Takeshi, 3,868,714.
- Nippon Steel Corporation: *See—*
  - Murata, Yuuji; Mashiko, Yoshinori; Uchida, Yukio; and Matsumoto, Mitsuru, 3,868,510.
- Nitz, Rolf-Eberhard: *See—*
  - Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, 3,868,377.
- Niwa, Tomizo: *See—*
  - Koaze, Yoshihisa; Nakajima, Yutaka; Hidaka, Hidemasa; Niwa, Tomizo; Adachi, Takashi; Yoshida, Kenji; Ito, Jiro; Niida, Taro; Shomura, Takashi; and Ueda, Masahiro, 3,868,464.
- Noe, Oskar, to BWG Bergwerke-und Walzwerk Maschinenbau G.m.b.H. Stretcher for continuously moving strip. 3,867,826, Cl. 72-205.000.
- Noltac Corporation: *See—*
  - Slavin, James A., 3,868,715.
- Nordin, Harald, to Edward Weck & Company, Inc. Surgical drill with detachable hand-piece. 3,867,943, Cl. 128-305.000.
- Norris Industries, Inc.: *See—*
  - Beisch, Hans R., 3,868,147.
- Norton Company: *See—*
  - Carver, Edgar B.; and Sioui, Richard H., 3,868,233.
  - Howard, William C., 3,867,795.
  - Sioui, Richard H.; and Cohen, Harvey M., 3,868,232.
- Norton, Richard V., to Sun Research and Development Co. Process for vapor phase ammoxidation. 3,868,400, Cl. 260-464.000.
- Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, to Mitsui Shipbuilding & Engineering Co., Ltd. Welding positioner. 3,868,101, Cl. 269-25.000.
- NRM Corporation: *See—*
  - Turk, Leonard G., 3,868,203.
- Nuese, Carlos, to United States of America, Navy. Block coded communication system. 3,868,633, Cl. 340-146.1BA.
- Nufer, Hans L.: *See—*
  - Franz, John E.; and Nufer, Hans L., 3,868,407.
- Nunn, Ewing D., Jr. Emergency vehicle siren switching apparatus. 3,868,684, Cl. 340-384.00E.
- Nuova San Giorgio S.p.A.: *See—*
  - Piro, Mario, 3,868,650.
- Nyffeler, Ernst; and Pfenicher, Peter, to BBC Brown, Boveri & Co. Stationary guide blade structure for axial-flow type turbo-machine. 3,867,869, Cl. 90-11.00C.
- Nystrand, Lrnst Daniel, to Paper Converting Machine Company. Ply-bonded, embossed product and apparatus. 3,867,872, Cl. 93-1.100.
- Odelberg, Bruce A.: *See—*
  - Gardner, Christina B.; and Odelberg, Bruce A., 3,868,699.
- Oehler AG: *See—*
  - Grabher, Gerhard, 3,867,891.
- Ogawa, Akira: *See—*
  - Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, 3,868,256.
- Ogiso, Katsuhiko, to Rigaku Denki Company Limited. X-ray diffraction instrument. 3,868,506, Cl. 250-278.000.
- Ogle, James Alexander: *See—*
  - Holz, George Ernest; and Ogle, James Alexander, 3,868,543.
- Ohata, Satoru: *See—*
  - Sakurai, Yoshitoshi; and Ohata, Satoru, 3,867,915.
- Ohba, Masaru: *See—*
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- Ohkawa, Hideo: *See—*
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- Ohlson, Karl Gunnar. Methods in the production of plant-mixed asphalt concrete. 3,868,262, Cl. 106-281.00R.
- Ohno, Sigeyuki: *See—*
  - Nozaki, Terumichi; Kobayashi, Hideo; Ohno, Sigeyuki; and Imaoka, Yu, 3,868,101.
- Ohyama, Chishio; Tachibana, Makoto; and Takada, Takeshi, to Nippon Electric Company, Limited. Character input equipment. 3,868,681, Cl. 340-365.000.
- Okada, Hisao; and Sato, Tadashi, to Sony Corporation; and Sony Corporation. Remote control receiver responsive to sound. 3,868,639, Cl. 340-148.000.
- Oldham, Keith B., to Canadian Patents and Development Limited. Method and apparatus for electroanalysis. 3,868,578, Cl. 328-127.000.
- Olin Corporation: *See—*
  - Johnson, James T., 3,868,124.
  - Pryor, Michael J.; and Popplewell, James M., 3,867,799.
- Ollivier, Louis A., to Veriflo Corporation. Pressure monitor for a lung ventilator. 3,867,934, Cl. 128-145.800.
- Olson, Eldred, to Vi-Amino Feeds, Inc. Prestarter compositions. 3,868,467, Cl. 426-208.000.
- Olson, John B., to Utility Products Co. Protected telephone service installation. 3,868,080, Cl. 248-205.00R.
- Omega Louis Brandt & Frere S.A.: *See—*
  - Aeschlimann, Jean-Philippe; Moniier, Pierre; and Zaech, Jean, 3,868,490.
- O'Neil, Joseph H. Method for making padded envelope. 3,867,874, Cl. 93-61.00R.
- Onishi, Kazuo: *See—*
  - Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.
- Ono, Hirohisa: *See—*
  - Kobayashi, Toshihiko; Kamibayashi, Tetsusaburo; Ichioka, Satoshi; Matsushima, Yukinori; Mitsumoto, Norio; Ono, Hirohisa; and Onishi, Kazuo, 3,868,488.
- Onoda, Toshiaki; and Ito, Yoshimasa, to Tokico Ltd. Revolution movement driving apparatus. 3,867,849, Cl. 74-109.000.
- O'Nory, Joseph; and Reister, Richard A., to said O'Nory, by said Reister. Customer service display. 3,868,670, Cl. 340-286.000.
- O'Nory, Joseph: *See—*
  - O'Nory, Joseph; and Reister, Richard A. (assors. to said O'Nory, by said Reister), 3,868,670.
- Ootsuji, Masaaki; Matsui, Masatake; Fuwa, Masaru; and Takahashi, Kiyoshi, to Mitsubishi Petrochemical Co., Ltd.; and Dainichi Nihon Densen Kabushiki Kaisha, part interest to each. Production of electrical conductors covered with crosslinked material. 3,868,436, Cl. 264-40.000.
- Optical Recognition Systems: *See—*
  - Shah, Mahendra B.; Russell, Donald W.; and Bowman, Harold L., 3,868,635.
- Orloff, George. Apparatus for providing a supply of a filtered fluid. 3,868,322, Cl. 210-108.000.
- Orszagos Koolaj- es Gazipari Troszt: *See—*
  - Natkai, Lajos; and Lenkefi, Janos, 3,867,868.
- Ortiz, Nilson V. Crab trap. 3,867,782, Cl. 43-105.000.
- Ossendorf, Erich: *See—*
  - Meier, Franz; Ossendorf, Erich; and Wolfgarten, Hubert, 3,868,236.
- Ota, Takeshi, to Toyoda Koki Kabushiki Kaisha. Tail stock. 3,867,856, Cl. 82-31.000.
- Otsuki, Tadao; Tsuboi, Tokishige; Sudo, Masashi; and Matsuda, Hidefumi, to Shimizu Construction Co., Ltd., The. Apparatus for producing precast concrete members. 3,868,207, Cl. 425-404.000.
- Otto, Walter, to Sethco Manufacturing Corporation. Filter tube adapters. 3,868,325, Cl. 210-232.000.
- Outboard Marine Corporation: *See—*
  - Slaker, Frank A., 3,868,063.
- Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Method and apparatus for storing and reading data in a memory having catalytic material to initiate amorphous to crystalline change in memory structure. 3,868,651, Cl. 340-173.0LS.
- Owens-Corning Fiberglas Corporation: *See—*
  - Benson, Gustav E.; and Taylor, Everett W., 3,867,746.
- Owens-Illinois, Inc.: *See—*
  - Banyas, John D.; and Ross, Edward A., 3,868,010.
  - Doucette, Eugene F., 3,867,807.
  - Hider, Shibley A.; Rogers, John K.; and Wilkins, Colbert W., 3,868,320.
  - Stengle, Edward J.; and Tillman, James J., 3,868,343.
- Owl, Laurance J.; Cody, Jimmy H.; and Kelley, Bill, to Becton, Dickinson and Company. Shoulder guard. 3,867,726, Cl. 2-2.000.
- Ozawa, Yoichi: *See—*
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- P. R. Mallory & Co., Inc.: *See—*
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- Pachter, Moshe: *See—*
  - Barak, Amitzur Ze'ev; Weinberg, Joseph Michael; and Pachter, Moshe, 3,868,308.
- Pageot, Jacques; Roy, Yvon; and Purkhardt, Cesar, to Millet Roux & Cie., Ltee. Surgical and examination table structure. 3,868,103, Cl. 269-325.000.

Palitex Project-Company GmbH: *See—*
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Palmer, James L.: *See—*
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Palmieri, Angelo: *See—*
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Pandiscio, Nicholas A.: *See—*
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Papaconstantinou, Elias: *See—*
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Pappo, Raphael; and Collins, Paul W., to G. D. Searle & Co. 2-(4-Hydroxy-1-alkynyl)-5-oxocyclopent-1-enealkanoic acids, 3-hydroxy congeners corresponding and derivatives thereof. 3,868,413, Cl. 260-514.00D.
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Paris, Frank: *See—*
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Park, William R.: *See—*
  Hart, Wallace F.; Hagemeyer, Hugh J., Jr.; and Park, William R., 3,868,422.
Parr, Edward L.; and Straza, George T., to Straza Enterprises Ltd. Rotary engine. 3,867,912, Cl. 123-8.410.
Parsons, Charles Henry; and Feldman, Jay Richard, to General Signal Corporation. System for monitoring chassis potential relative to a reference. 3,868,566, Cl. 324-51.000.
Parsons, Theron E., III; and Sheme, Francis J., to Eastman Kodak Company. Thermosetting polyester powder coating compositions. 3,868,338, Cl. 260-15.000.
Passmore, Edmund M.; and Castello, Eugene A., to GTE Sylvania Incorporated. Incandescent lamp having extended lamp life. 3,868,540, Cl. 315-73.000.
Patel, Arvind M.: *See—*
  Hong, Se J.; and Patel, Arvind M., 3,868,632.
Patrusky, Bernard Eugene; and Mack, Alfred, to RCA Corporation. Trunk formatter. 3,868,481, Cl. 179-15.0BV
Patton, George H.: *See—*
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Paukert, Thomas T.; and Rosa, Eugene J., to Shell Oil Company. Opacity meter. 3,868,186, Cl. 356-207.000.
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Payne, Leslie E.: *See—*
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Peirce, Benjamin F., Jr. Wire guiding arrangement. 3,868,090, Cl. 254-134.30R.
Pelletier, Guy, to Rockland Industries Ltd. Apparatus for buffing worn tires. 3,867,792, Cl. 51-33.00W.
Pennington, Harold W.; and Ward, William H., to Clark Equipment Company. Method and means for assembling piston and piston rod. 3,868,192, Cl. 403-263.000.
Pennsylvania Engineering Corporation: *See—*
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Pepin, Armand. Electric space heating system. 3,868,494, Cl. 219-341.000.
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Pertsev, Viktor Vladimirovich: *See—*
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Petitpierre, Jean-Claude; and Weis, Claus, to Ciba-Geigy Corporation. Biocidal N-chloro-amidines. 3,868,419, Cl. 260-564.00R.
Pevar, Maxwell. Contour-conforming clamping device. 3,868,102, Cl. 269-26.000.
Pfeil, Hans Dieter: *See—*
  Mecklenburg, Wolfgang; Leicht, Alfred; Hoffmann, Walter; Pfeil, Hans Dieter; Isert, Ingo Rudiger; Buttel, Helmut; Braunschweig, Richard; and Smith, Philip John, 3,868,611.
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Pfenninger, Heinz; and Strietzel, Waldemar, to Contraves AG. Observation periscope which can be combined with a laser device. 3,868,169, Cl. 350-26.000.
Pharmacia Aktiebolag: *See—*
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  Gericke, Clarence H.; and Pierce, Richard H., 3,868,227.
Pierlot, Michel Eugene, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Fuel feed devices for internal combustion engines. 3,867,913, Cl. 123-32.0EA.
Pighin, Albert; Creswell, Robert Alvin; and Malanka, Douglas Peter, to Bell Canada-Northern Electric Research Limited. Electrochemiluminescent device having a mixed solvent. 3,868,534, Cl. 313-483.000.
Pillsbury Company, The: *See—*
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  Rodgers, Nelson E., 3,868,355.
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Piro, Mario, to Nuova San Giorgio S.p.A. Readout device for fabric patterns for the formation of corresponding electric pulses, on hosiery machines. 3,868,650, Cl. 340-173.00R.
Platt, Bruce W., to Richardson Lumber Company. Flat joist truss with rounded load-transfer surfaces. 3,867,803, Cl. 52-693.000.
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  Douglas, Lawrence M., 3,868,709.
  Lippert, Irving S.; and Stella, Joseph A., 3,868,716.
Poley, Neil M.; and Whitaker, Howard L., to International Business Machines Corporation. Method of cleaning a glass substrate by ionic bombardment in a wet active gas. 3,868,271, Cl. 134-1.000.
Politzer, Eugene Jim. Spring type ball throwing device. 3,867,921, Cl. 124-26.000.
Polson, Jerry H., to Contel Corporation. Electrical isolation device and method. 3,868,600, Cl. 332-31.00R.
Polumbus, Gary M.: *See—*
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Ponticello, Ignazio S.: *See—*
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Potter, Douglas John. Identification tag for animals and/or an applicator for identification tags. 3,867,777, Cl. 40-301.000.
Povlacs, Lawrence J., to Akwell Industries Incorporated. Surgeon's glove. 3,867,727, Cl. 2-167.000.
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., to Celanese Corporation. Permanent press fabric resin and processes therefor. 3,868,349, Cl. 260-67.700.
Preda, Giuliano; and Marchi, Romolo. Automatic choke for hunting rifles. 3,867,778, Cl. 42-79.000.
Prener, Jerome S.; and Lubowski, Stanley J., to General Electric Company. Composite input screen for X-ray imaging devices. 3,868,512, Cl. 250-483.000.
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Priest, Lyle Gilbert, to Information Design, Inc. Tape clamp mechanism for microfilm reader. 3,868,180, Cl. 353-95.000.
Proffitt, Thomas Jefferson, Jr., to du Pont de Nemours, E. I., and Company. Fibers with finish containing organic phosphates and sulphates. 3,868,270, Cl. 117-139.5CQ.
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Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Architectural products formed of glass or ceramic-to-metal composites. 3,867,799, Cl. 52-235.000.
Pugh, Charles D., to Burlington Industries, Inc. Control mechanism for producing random-like effects on textile materials. 3,868,496, Cl. 235-92.0PE.
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Purkhardt, Cesar: *See—*
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Quakenbush, Howard M., to Flexsteel Industries, Inc. Swivel pedestal for seats. 3,868,084, Cl. 248-418.000.
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Raabe, Thomas; Scholtholt, Josef; Schraven, Eckhard; and Nitz, Rolf-Eberhard, to Cassella Farbwerke Mainkur Aktiengesellschaft. N-benzhydryl-N'-p-hydroxybenzyl-piperazines and processes for their manufacture. 3,868,377, Cl. 260-268.0BZ.
Racine, William H. Quick mount fitting. 3,868,132, Cl. 285-312.000.
Radcliffe, Remington, to Schick Incorporated. Hygienic syringe. 3,867,938, Cl. 128-225.000.
Radke, Donald G.; and Lewis, Donald J., to Allied Chemical Corporation. Plural inflation for safety device. 3,868,126, Cl. 280-150.0AB.
Ramacciotti, Aldo, to Centro Sperimentale Metallurgico S.p.A. Steel production in an upright rotating vessel. 3,868,247, Cl. 75-60.000.
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Ray, Brian, to Wilkinson Sword Limited. Smoke detecting apparatus with multiple detectors connected to coincidence circuit. 3,868,663, Cl. 340-237.00S.
Raymond Lee Organization, Inc., The: *See—*
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  Schwartzmann, Alfred; Mikenas, Vitas Anthony; Thomas, John Jerome; and Chang, Kern Konan, 3,868,588.
  Scott, Philip Romeo, Jr., 3,868,557.
Reeves, Charles F. Apparatus for mounting camper bodies and the like. 3,868,088, Cl. 254-49.000.
Reeves, Wilson A.: *See—*
  Daigle, Donald J.; Reeves, Wilson A.; and Drake, George L., Jr, 3,868,269.
Reiff, Helmut; Witt, Harro; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Thermoplastic polyurethane polyurea powders. 3,868,350, Cl. 260-77.50Q.
Reilly, Mason J., to United States of America, Navy. Crash load attenuating troop seat. 3,868,143, Cl. 297-216.000.
Reinke, Friedhelm; and Stengel, Edgar, to AEG-Elotherm GmbH. Arrangement for raising and lowering or retaining the inductor in its upper most position in equipment. 3,867,847, Cl. 74-55.000.
Reiser, Alfred A. Unbalance detector. 3,867,842, Cl. 73-480.000.
Reister, Richard A.: *See—*
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Remond, Georges: *See—*
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Remy, David C. Method of treating arrhythmia. 3,868,463, Cl. 424-330.000.
Rendina, John F.: *See—*
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Repco Products Corporation: *See—*
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Revankar, Ganapathi R.: *See—*
  Tolman, Richard L.; and Revankar, Ganapathi R., 3,868,361.
Rhodes, Melvin H., to Rockwell International Corporation. Analog-to-digital converter apparatus. 3,868,680, Cl. 340-347.0SY.
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Rich, John Theodore, to Imperial Chemical Industries Limited. Process for the continuous polymerisation of polyamides. 3,868,352, Cl. 260-78.00R.
Richard, Leo P.: *See—*
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Richardson Lumber Company: *See—*
  Platt, Bruce W., 3,867,803.
Richmond, Charles B. Automatic crossfading device. 3,868,585, Cl. 330-124.00R.
Riendeau, William P., to Aiken Industries, Incorporated. Improved circuit breaker trip mechanism. 3,868,614, Cl. 337-66.000.
Rigaku Denki Company Limited: *See—*
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Riggi, Stephen Joseph: *See—*
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Ritter, Klaus; and Gott, Hans, to Evg Enlwick-lungs-u Verwertungsgesellschaft, Firma. Apparatus for binding mesh mats in stacks. 3,867,968, Cl. 140-93.00D.
Robbins & Myers, Inc.: *See—*
  Monroe, Thomas D., 3,867,981.
Roberts, James Earl: *See—*
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Robillard, Edward G., to Cincinnati Milacron-Heald Corporation. Grinding machine. 3,867,794, Cl. 51-165.770.
Robinson, Gerard A. Rotary filing cabinet. 3,868,157, Cl. 312-305.000.
Robock, Klaus; Teichert, Ullrich; and Munder, Paul Gerhard, to Bergwerksverband GmbH. Measuring device for measuring the oxygen consumption of biological substances. 3,868,223, Cl. 23-253.00R.
Robra, Helmut; and Schmoll, Heinz, to Schloemann Aktiengesellschaft. Forging press having adjustable column guides. 3,867,834, Cl. 72-456.000.
Robson, Harry E., to Exxon Research and Engineering Company. Process for cracking hydrocarbons with chrysotile catalyst compositions. 3,868,316, Cl. 208-119.000.
Rocchia, Peter A.; and Steffy, Robert M., to Wicker Works, The. Method of furniture manufacture. 3,867,967, Cl. 139-424.000.
Rock Fall Company Limited: *See—*
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Rockefeller, Winston G. Moist tissue dispensing. 3,868,052, Cl. 225-106.000.
Rockland Industries Ltd.: *See—*
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  Williford, Jerry G., 3,868,596.
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Rogers, Dow A., Jr.; and Smith, James D. B., to Westinghouse Electric Corporation. Solventless epoxy resin composition and an electrical member impregnated therewith. 3,868,613, Cl. 336-206.000.
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Rudelick, John, to Calgon Corporation. Control valve for water conditioners. 3,867,961, Cl. 137-625.290.
Russell, Donald W.: *See—*
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Rut, Tadeusz. Method of forging of various shaped elements on elongated bars and a device for the use of this method. 3,867,832, Cl. 72-399.000.
Ryan, John W.; Kennedy, Melvin R.; and Marshall, James E., to Mattel, Inc. Object identifying doll. 3,867,785, Cl. 46-117.000.
Ryde, Emma Marta; and Ekstedt, Jan Erik, to Pharmacia Aktiebolag. Dosage unit containing a substance showing a topical effect on the eye, and a method of preparing same. 3,868,445, Cl. 424-14.000.
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Sabel, Alex; and Popp, Walter, to Wacker-Chemie GmbH. Process for the production of polyvinyl chloride-coated silicate-containing materials. 3,868,347, Cl. 260-42.150.
Sachs, Harold, to Siemens Aktiengesellschaft. Hierrarchial associative memory system. 3,868,642, Cl. 340-172.500.
Safety Laboratories, Inc.: *See—*
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Saidel, William R. Pallet structure and method of forming the same. 3,867,887, Cl. 108-55.000.
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Sakurai, Yasuhiko. Device for indicating disconnection of automobile lamps. 3,868,628, Cl. 340-80.000.
Sakurai, Yoshitoshi; and Ohata, Satoru, to Honda Giken Kogyo Kabushiki Kaisha. Heated induction system for internal combustion engines. 3,867,915, Cl. 123-75.00B.
Salam, Hassan Paddy Abdel, to Universal Telewriters (UK) Limited. Selective electrical switching means. 3,868,610, Cl. 335-112.000.
Salottica S.r.l.: *See—*
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Sanchez, Robert A.; and Fuller, William D. Process for the preparation of 4-carboxamido-5-cyano-2-imidazolone. 3,868,386, Cl. 260-309.600.
Sanders, Guy J., to Fair Company. High density sound transmission loss system. 3,867,995, Cl. 181-33.00G.
Sandoz Ltd.: *See—*
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Sato, Akira; Ogawa, Akira; Shiba, Keisuke; and Hinata, Masanao, to Fuji Photo Film Co., Ltd. Fogged, direct-positive silver halide emulsion containing a cyanine dye having a pyrazole[5,1b quinazolone nucleus. 3,868,256, Cl. 96-100.000.
Sato, Kiyosumi; Aoki, Takashi; and Asagi, Yasuyoshi, to Fujitsu Limited. Microprogram control system. 3,868,649, Cl. 340-172.500.
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Schefe, Harry. Temperature recorder. 3,868,697, Cl. 346-68.000.
Scheibler, Erich; and Volker, Hans-Joachim, to Friedrich Uhde GmbH. Process for the manufacture of nitric acid. 3,868,443, Cl. 423-392.000.
Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Tuyere support means for metallurgical vessels. 3,868,096, Cl. 266-35.000.
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Schiller, Michael S. Document retrieval system. 3,868,637, Cl. 340-146.30F.
Schlang, Arthur, to Isotec Incorporated. Optical character reader having feature recognition capability. 3,868,636, Cl. 340-146.30J.
Schlicker, Volker; and Wrobel, Gunter, to Papst-Motoren KG. Tachometer generator. 3,868,521, Cl. 310-257.000.
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Schoeff, John A., to Motorola, Inc. Low hysteresis threshold detector having controlled output slew rate. 3,868,517, Cl. 307-235.00R.
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Schopf, Hans-Joachim, to Daimler-Benz Aktiengesellschaft. Fixed or rotatable structural part consisting of an inner and of an outer part. 3,867,852, Cl. 74-446.000.
Schott, Donald E., to Thomas C. Wilson, Inc. Collar. 3,868,193, Cl. 403-344.000.
Schow, Harvey B.; and Abrams, Macy L. Arc welding simulator trainer. 3,867,769, Cl. 35-13.000.
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Schulz, William J., to AMP Incorporated. Dereeling apparatus. 3,868,069, Cl. 242-128.000.

Schwalm, Arthur W.; and Anderson, Jon A., to Cardiac Pacemakers, Inc. Cardiac pacer with voltage doubler output circuit. 3,867,949, Cl. 128-419.00P.
Schwartz, Boris. Flexible protective sheath for catheter. 3,867,937, Cl. 128-221.000.
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Schwarz, Gerhard; Lutz, Walter; and Lang, Rudolf. Photographic exposure setting means. 3,868,713, Cl. 354-231.000.
Schwee, Leonard J., to United States of America, Navy. Serial access memory using thin magnetic films. 3,868,659, Cl. 340-174.0TF.
Schwee, Leonard J., to United States of America, Navy. Detector for cross-tie memory. 3,868,660, Cl. 340-174.0TF.
Schweitzer, Edmund O., Jr. Tool for manual manipulation of devices for application to and removal from high voltage conductors. 3,868,136, Cl. 294-19.00R.
Schweitzer, John C.; and Tuttle, Terry E., to Delta Products, Inc. Telephonic alarm reporting apparatus. 3,868,479, Cl. 179-5.00R.
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Scott, Ian John; and Tessier, Froie Edwin, to Gilbarco Aust. Ltd. Air and/or vapour separation device. 3,867,955, Cl. 137-179.000.
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Shimoura, Yoshiyuki; Konishi, Hideo; and Sonoda, Hirotetsu, to Jidosha Kiki Co., Ltd. Control valve reaction device for a power steering system. 3,867,870, Cl. 91-372.000.
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Sholtes, Carl E., to Westinghouse Electric Corporation. Cabinet for a water cooler. 3,868,153, Cl. 312-236.000.
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- Smith, Philip John: *See—*
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- Societe Anonyme dite: Ateliers Mecaniques du Douaisis: *See—*
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- Sonnenberg, Darwin D. Propelling means for floor finishing machines. 3,867,796, Cl. 51-176.000.
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- Stein, Karl-Ulrich; and Goser, Karl, to Siemens Aktiengesellschaft. Regenerating circuit for binary signals in the form of a keyed flip-flop. 3,868,656, Cl. 340-173.0DR.
- Steingold, Harold. Television camera mount. 3,868,706, Cl. 354-95.000.
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- Suarez, Francis Sardovia; Mankins, William Lawrence; and Roberts, James Earl, to International Nickel Company, Inc., The. Electroflux melting method and apparatus. 3,867,976, Cl. 164-52.000.
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- Thomas C. Wilson, Inc.: *See—*
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- Thomas, Gordon D., to Kimberly-Clark Corporation. Embossed paper toweling and method of production. 3,868,205, Cl. 425-363.000.
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- Thompson, Brian Hoyle, to Gas Council, The. Reaction vessels. 3,868,226, Cl. 23-284.000.
- Thompson, Frank B.: *See—*
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- Thompson, Larry G. Insect bite kit. 3,868,015, Cl. 206-229.000.
- Thornburg, Donald R.: *See—*
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- Tillman, James J.: *See—*
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- Tolman, Richard L.; and Revankar, Ganapathi R. s-Triazolo[2,3-A] pryimidine nucleosides. 3,868,361, Cl. 260-211.50R.
- Tomikawa, Masami; Mugino, Yutaka; Tsunoda, Akiji; Ohkawa, Hideo; and Kaneda, Kazuhisa, to Idemitsu, Kosar Kabushiki-Kaisha (Idemitsu Kosan Co., Ltd.). Fireproofing composition and method. 3,868,258, Cl. 106-15.0FP.
- Tominaga, Hiroshi, to Tokyu Sharye Seizo Kaisha. Material cutting device. 3,867,857, Cl. 83-9.000.
- Tompkin, Robert B.; and Connick, Francis G., to Swift & Company. Preparation of a shelf stable pre-cooked bacon product. 3,868,468, Cl. 426-243.000.
- Tongue, Ben H., to Blonder-Tongue Laboratories, Inc. Constant resistance adjustable slope equalizer. 3,868,604, Cl. 333-28.00R.
- Tornay, Edmund George, to Conch International Methane Limited. Method and apparatus for cryogenic tank warm-up. 3,867,818, Cl. 62-52.000.
- Tornmarck, Sven Ivan Arvid; and Andersson, Per Olof, to Food Control AB. Methods and devices for automatically activating a chemical process at a given temperature. 3,868,218, Cl. 23-230.00R.
- Toromanoff, Edmond: *See—*
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- Traver, Darwin G., to Carrier Corporation. Air conditioning system. 3,867,980, Cl. 165-54.000.
- Treglown, Edward M., to Midland-Ross Corporation. Ground fault current detector. 3,868,665, Cl. 340-255.000.
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- Tsuchiya, Takuzo; Valentas, Kenneth J.; and Morse, Donald W., to Gorton Corporation, The. Frozen fish cutter. 3,867,858, Cl. 83-113.000.
- Tsumura, Nobuzo; Yanai, Shoji; and Ishikawa, Masako, to Director of National Food Research Institute. Method of producing enzyme and its utilization thereof. 3,868,303, Cl. 195-2.000.
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- Tupper, Earl Silas, to Tup! (Panama) S.A. Via Espana. Massage device. 3,867,928, Cl. 128-24.100.
- Turk, Leonard G., to NRM Corporation. Tire molding machine. 3,868,203, Cl. 425-242.000.
- Turnwald, Ernst, to Linde Aktiengesellschaft. Cryogenic valve. 3,867,958, Cl. 137-375.000.
- Tusch, Nicholas Norbert; Watson, Robert Ian; and Taylor, Jack, to Colebrand Limited. Under-water spraying. 3,868,268, Cl. 117-104.00R.
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- Van Kamp, Harmen; and De Wachter, Anna Maria, to U.S. Philips Corporation. 16-Methylene-9/beta, 10alpha-steroid compounds, pharmaceutical preparations which contain the novel compounds as active ingredients and methods of producing the said compounds and preparations. 3,868,453, Cl. 424-243.000.
- Van Kleef, Alfred L.; Roffel, Derk; and Van Vollenhoven, Frits W., to Shell Oil Company. Selective solvent extraction process. 3,868,310, Cl. 203-58.000.
- Van Lanen, James M., deceased; Smith, Merritt B.; and Maisch, Weldon F., to Hiram Walker & Sons, Inc. Production of distillers yeast. 3,868,307, Cl. 195-82.000.
- Van Loan, Paul R., to Airco, Inc. Resistive glaze and paste compositions. 3,868,334, Cl. 252-520.000.
- Van Lookeren Campagne, Nicolaas, to Shell Oil Company. Process for the partial combustion of hydrocarbonaceous fuels to produce substantially soot-free gases. 3,868,331, Cl. 252-373.000.
- Van Osch, John H. Still camera film metering mechanism. 3,868,710, Cl. 354-213.000.
- Van Osterhout, Gerard Willem; Lemmen, Vhendrikus Johannes; and Klomp, Cornelis Johannes, to U.S. Philips Corporation. Device for coating a synthetic resin base with a layer of lacquer. 3,867,900, Cl. 118-33.000.
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ISSUED FEBRUARY 25, 1975

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CLASS 2	
2	3,867,726
167	3,867,727
CLASS 3	
1	3,867,728
CLASS 4	
131	3,867,729
CLASS 5	
37C	3,867,730
348WB	3,867,731
349	3,867,732
CLASS 7	
8.1R	3,867,733
CLASS 8	
2.5	3,868,214
149.3	3,868,215
182	3,868,216
CLASS 9	
309	3,867,734
CLASS 13	
13	3,868,473
CLASS 15	
21D	3,867,735
250.32	3,867,736
250.42	3,867,737
CLASS 16	
114	3,867,738
190	3,867,739
CLASS 17	
72	3,867,740
CLASS 19	
106R	3,867,741
CLASS 21	
2.7A	3,868,217
CLASS 23	
230EP	3,868,222
230B	3,868,219
	3,868,220
230R	3,868,218
	3,868,221
253R	3,868,223
259	3,868,224
281	3,868,225
284	3,868,226
301SP	3,868,228
313	3,868,227
CLASS 24	
73	3,867,742
153BP	3,867,743
CLASS 26	
54	3,867,744
CLASS 28	
72SP	3,867,746
72.5	3,867,745
CLASS 29	
76A	3,867,747
115	3,867,748
121R	3,867,749
148.3	3,867,750
148.4R	3,867,751
195	3,868,229
198	3,868,230
202R	3,867,752
203DS	3,867,754
203H	3,867,753
408	3,867,755
568	3,867,756
574	3,867,757
605	3,867,758
628	3,867,759
	3,867,760
CLASS 33	
41F	3,867,761
77	3,867,762
185R	3,867,763
241	3,867,764
344	Re.28,349
CLASS 34	
13.8	3,867,765
95	3,867,766
155	3,867,767
242	3,867,768
CLASS 35	
13	3,867,769
35R	3,867,770
CLASS 36	
11.5	3,867,771
CLASS 37	
43R	3,867,773
195	3,867,772
CLASS 40	
125H	3,867,775
155	3,867,774
209	3,867,776
301	3,867,777
CLASS 42	
79	3,867,778
CLASS 43	
15	3,867,779
42.09	3,867,781
42.5	3,867,780
44.91	3,867,783
105	3,867,782
CLASS 44	
62	3,868,231
CLASS 46	
25	3,867,784
100	3,867,787
117	3,867,785
236	3,867,786
CLASS 47	
35	3,867,788
41.12	3,867,789
CLASS 49	
381	3,867,790
CLASS 51	
9R	3,867,791
33W	3,867,792
97R	3,867,793
165.77	3,867,794
176	3,867,796
209R	3,867,795
216A	3,867,797
284	3,867,798
298	3,868,232
	3,868,233
309	3,868,234
	3,868,235
CLASS 52	
235	3,867,799
347	3,867,800
475	3,867,801
483	3,867,802
693	3,867,803
699	3,867,804
744	3,867,805
CLASS 53	
27	3,867,806
48	3,867,807
CLASS 55	
203	3,868,236
270	3,868,237
273	3,868,238
389	3,868,239
CLASS 56	
14.1	3,867,808
CLASS 57	
58.52	3,867,809
142	3,867,810
CLASS 60	
39.03	3,867,811
39.15	3,867,812
225	3,867,813
413	3,867,814
682	3,867,815
	3,867,816
CLASS 61	
1F	3,867,817
CLASS 62	
52	3,867,818
293	3,867,819
CLASS 65	
127	3,868,240
134	3,868,241
360	3,868,242
CLASS 66	
154A	3,867,820
CLASS 68	
184	3,867,821
CLASS 70	
164	3,867,822
456B	3,867,823
CLASS 71	
41	3,868,243
76	3,868,244
91	3,868,245
CLASS 72	
118	3,867,824
161	3,867,825
205	3,867,826
251	3,867,827
263	3,867,828
321	3,867,829
361	3,867,830
367	3,867,831
399	3,867,832
407	3,867,833
456	3,867,834
CLASS 73	
1D	3,867,835
67.5R	3,867,836
73	3,867,837
133R	3,867,838
194B	3,867,839
229	3,867,840
432A	3,867,841
480	3,867,842
490	3,867,843
517R	3,867,844
CLASS 74	
25	3,867,845
41	3,867,846
55	3,867,847
70	3,867,848
109	3,867,849
142	3,867,850
244	3,867,851
446	3,867,852
CLASS 75	
3	3,868,246
60	3,868,247
76	3,868,248
134N	3,868,249
147	3,868,250
CLASS 76	
36	3,867,853
CLASS 81	
3.2	3,867,854
63.1	3,867,855
CLASS 82	
31	3,867,856
CLASS 83	
9	3,867,857
113	3,867,858
157	Re.28,345
284	3,867,859
368	3,867,860
571	3,867,861
CLASS 84	
1.19	3,867,862
420	3,867,863
473	3,867,866
CLASS 85	
21	3,867,864
62	3,867,865
CLASS 86	
20C	3,867,867
CLASS 90	
11C	3,867,869
20	3,867,868
CLASS 91	
372	3,867,870
CLASS 92	
258	3,867,871
CLASS 93	
1.1	3,867,872
33H	3,867,873
36M	3,867,875
61R	3,867,874
93DP	3,867,876
CLASS 96	
1.5	3,868,251
3	3,868,252
53	3,868,253
75	3,868,254
91R	3,868,255
100	3,868,256
111	3,868,257
CLASS 99	
402	3,867,877
CLASS 100	
2	3,867,878
162	3,867,879
226	3,867,880
CLASS 101	
7	3,867,881
35	3,867,882
125	3,867,883
CLASS 102	
27R	3,867,884
28R	3,867,885
CLASS 104	
148SS	3,867,886
CLASS 105	
366B	3,868,083
CLASS 106	
15FP	3,868,258
35	3,868,259
	3,868,260
59	3,868,261
281R	3,868,262
281	3,868,263
CLASS 108	
55	3,867,887
CLASS 112	
80	3,867,888
121.11	3,867,889
139	3,867,890
166	3,867,891
252	3,867,892
CLASS 114	
20R	3,867,893
102	3,867,894
109	3,867,895
	3,867,896
167	3,867,897
CLASS 116	
28R	3,867,898
CLASS 117	
10	3,868,264
18	3,868,265
	3,868,266
22	3,868,267
104R	3,868,268
136	3,868,269
139.5CQ	3,868,270
CLASS 118	
6	3,867,899
33	3,867,900
50	3,867,901
423	3,867,902
CLASS 119	
17	3,867,903
51R	3,867,904
109	3,867,905
158	3,867,906
CLASS 122	
32	3,867,908
34	3,867,907
235B	3,867,909
CLASS 123	
8.13	3,867,910
8.15	3,867,911
8.41	3,867,912
32EA	3,867,913
75B	3,867,914
	3,867,915
117R	3,867,916
119R	3,867,917
139E	3,867,918
198D	3,867,919
CLASS 124	
24R	3,867,920
26	3,867,921
CLASS 126	
274	3,867,922
CLASS 128	
2F	3,867,923
	3,867,924
2.05M	3,867,926
2.05S	3,867,925
15	3,867,927
24.1	3,867,928
66	3,867,929
83	3,867,930
91A	3,867,931
92E	3,867,932
129	3,867,933
145.8	3,867,934
156	3,867,935
188	3,867,936
221	3,867,937
225	3,867,938
254	3,867,939
287	3,867,940
303	3,867,941
305	3,867,942
	3,867,943
325	3,867,944
349R	3,867,945
351	3,867,946
361	3,867,947
395	3,867,948
419P	3,867,949
	3,867,950
CLASS 131	
2	3,867,951
262B	3,867,952
CLASS 132	
39	3,867,953
CLASS 134	
1	3,868,271
26	3,868,272
CLASS 136	
83R	3,868,273
CLASS 137	
1	3,867,954
179	3,867,955
269	3,867,956
360	3,867,957
375	3,867,958
602	3,867,959
625.29	3,867,961
625.6	3,867,960
635	3,867,962
CLASS 138	
46	3,867,963
89	3,867,964
CLASS 139	
33	3,867,965
55	3,867,966
424	3,867,967
CLASS 140	
93D	3,867,968
CLASS 141	
59	3,867,969
67	3,867,970
CLASS 148	
1.5	3,868,274
6.15R	3,868,276
6.3	3,868,275
12.1	3,868,277
31.55	3,868,278
113	3,868,280
160	3,868,279
190	3,868,281
CLASS 149	
98	3,868,282
CLASS 150	
28R	3,867,971
CLASS 151	
15	3,867,972
CLASS 152	
153	3,867,973
213R	3,867,974
CLASS 156	
58	3,868,283
96	3,868,284
147	3,868,285
163	3,868,286
201	3,868,287
248	3,868,288
443	3,868,289
510	3,868,290
515	3,868,291
568	3,868,292
CLASS 157	
1.2	3,867,975
CLASS 161	
1	3,868,293
4	3,868,294
15	3,868,295
43	3,868,296
68	3,868,297
161	3,868,298
162	3,868,299
CLASS 162	
124	3,868,300
358	3,868,301
CLASS 164	
52	3,867,976
72	3,867,977
82	3,867,978
CLASS 165	
19	Re.28,343
29	3,867,979
54	3,867,980
55	3,867,981
107	3,867,982
CLASS 166	
117.5	3,867,983
188	3,867,984
224A	3,867,985
276	3,867,986
CLASS 172	
40	3,867,987
CLASS 173	
48	3,867,988
147	3,867,989
CLASS 174	
38	3,868,474
87	3,868,475
CLASS 176	
	3,868,302
CLASS 177	
137	3,867,990
CLASS 178	
6	3,868,476
	3,868,477
6.8	3,868,478
CLASS 179	
5R	3,868,479
8A	3,868,480
15BV	3,868,481
18FF	3,868,482
146R	3,868,483
170J	3,868,484
CLASS 180	
5R	3,867,991
14B	3,867,992
19R	3,867,993
118	3,867,994
CLASS 181	
33G	3,867,995
148	3,867,996
CLASS 182	
113	3,867,997
221	3,867,998
CLASS 184	
1.5	3,867,999
CLASS 187	
52	3,868,000
CLASS 188	
73.1	3,868,002
345	3,868,001
CLASS 192	
4B	3,868,003
67A	3,868,004

CLASSIFICATION OF PATENTS

105CS	3,868,005
111A	3,868,006
125B	3,868,007
CLASS 195	
2	3,868,303
31F	3,868,304
49	3,868,305
51R	3,868,306
82	3,868,307
CLASS 197	
127P	3,868,008
CLASS 198	
25	3,868,009
179	3,868,010
195	3,868,011
276	3,868,012
287	3,868,013
CLASS 200	
61.2	3,868,485
159R	3,868,486
CLASS 202	
174	3,868,308
262	3,868,309
CLASS 203	
58	3,868,310
CLASS 204	
33	3,868,311
109	3,868,312
196	3,868,313
296	3,868,314
CLASS 206	
45.19	3,868,014
229	3,868,015
350	3,868,016
491	3,868,017
CLASS 208	
6	3,868,315
119	3,868,316
139	3,868,317
CLASS 209	
9	3,868,318
CLASS 210	
40	3,868,319
53	3,868,320
86	3,868,321
108	3,868,322
154	3,868,323
158	3,868,324
232	3,868,325
377	3,868,326
457	3,868,327
522	3,868,335
CLASS 211	
40	3,868,018
126	3,868,019
	3,868,020
184	3,868,021
CLASS 212	
8R	3,868,022
46R	3,868,023
CLASS 214	
1QC	3,868,024
1R	3,868,025
10.5D	3,868,026
16.1B	3,868,027
17C	3,868,028
77R	3,868,029
84	3,868,030
152	3,868,031
522	3,868,032
707	3,868,033
730	3,868,034
762	3,868,035
CLASS 215	
12	3,868,036
216	3,868,037
305	3,868,038
309	3,868,039
CLASS 219	
73	3,868,487
85	3,868,488
86	3,868,489
121L	3,868,490
146	3,868,491
203	3,868,492
318	3,868,493
341	3,868,494
368	3,868,495
CLASS 220	
18	3,868,040
63R	3,868,042
90.4	3,868,043
324	3,868,041
CLASS 221	
6	3,868,044
194	3,868,045
CLASS 222	
146HE	3,868,046
166	3,868,047
380	3,868,048
400.7	3,868,049
509	3,868,050
571	3,868,051
CLASS 225	
106	3,868,052
CLASS 226	
173	3,868,053
CLASS 229	
2.5	3,868,054
15	3,868,055
55	3,868,056
CLASS 235	
61.7B	3,868,057
92PE	3,868,496
150.27	3,868,497
151.3	3,868,498
151.35	3,868,499
CLASS 236	
13	3,868,058
15E	3,868,059
CLASS 237	
12.3B	3,868,060
CLASS 239	
571	3,868,061
CLASS 240	
7.1LJ	3,868,500
10.1	3,868,501
44.1	3,868,502
CLASS 241	
36	3,868,062
101.7	3,868,063
186.4	3,868,064
CLASS 242	
55	3,868,065
56A	3,868,066
68.2	3,868,067
107.4	3,868,068
128	3,868,069
129	3,868,070
CLASS 243	
31	3,868,071
CLASS 244	
1SS	3,868,072
34A	3,868,073
77R	3,868,074
CLASS 246	
34CT	3,868,075
CLASS 248	
16	3,868,076
27	3,868,077
171	3,868,078
188.4	3,868,079
205R	3,868,080
245	3,868,081
358R	3,868,082
418	3,868,084
452	3,868,085
467	3,868,086
CLASS 249	
137	3,868,087
CLASS 250	
213VT	3,868,504
213R	3,868,503
269	3,868,505
278	3,868,506
287	3,868,507
330	3,868,508
336	3,868,509
366	3,868,510
376	3,868,511
483	3,868,512
504	3,868,513
562	Re.28,347
566	3,868,514
CLASS 252	
8.55C	3,868,328
17	3,868,329
33.6	3,868,330
373	3,868,331
452	3,868,332
463	3,868,333
520	3,868,334
527	3,868,336
CLASS 254	
49	3,868,088
134.3PA	3,868,089
134.3R	3,868,090
164	3,868,091
CLASS 259	
120	3,868,092
191	3,868,093
CLASS 260	
2.5R	3,868,337
15	3,868,338
17R	3,868,339
17.4ST	3,868,340
23XA	3,868,341
29.2M	3,868,342
29.4R	3,868,343
33.6AQ	3,868,344
37SB	3,868,345
	3,868,346
42.15	3,868,347
47CP	3,868,348
67.7	3,868,349
77.5Q	3,868,350
78UA	3,868,351
	3,868,353
78R	3,868,352
94.7H	3,868,354
112G	3,868,355
112.7	3,868,356
	3,868,357
	3,868,358
173	3,868,359
210AB	3,868,360
211.5R	3,868,361
239BD	3,868,363
239.1	3,868,364
	3,868,365
239.3T	3,868,362
239.55R	3,868,366
243C	3,868,368
	3,868,369
243R	3,868,367
249.5	3,868,371
251A	3,868,372
256.4E	3,868,373
256.4F	3,868,374
268BZ	3,868,377
268K	3,868,376
268R	3,868,375
289R	3,868,378
294.8C	3,868,379
295AM	3,868,380
	3,868,381
306.7T	3,868,382
307B	3,868,383
307F	3,868,384
309	3,868,385
309.6	3,868,386
315	3,868,387
326N	3,868,388
	3,868,389
326.1	3,868,390
326.41	3,868,391
340.3	3,868,392
343.6	3,868,370
346.4	3,868,393
346.6	3,868,397
346.8R	3,868,394
369	3,868,395
397.2	3,868,396
438.1	3,868,398
453AR	3,868,399
464	3,868,400
468H	3,868,401
468K	3,868,402
471C	3,868,404
471R	3,868,403
473F	3,868,405
473R	3,868,406
482R	3,868,407
485F	3,868,408
486R	3,868,409
	3,868,410
514D	3,868,412
	3,868,413
514L	3,868,411
515A	3,868,414
	3,868,415
518R	3,868,416
526N	3,868,417
558S	3,868,418
564R	3,868,419
578	3,868,420
599	3,868,421
604HF	3,868,422
619A	3,868,423
621	3,868,424
652.5P	3,868,425
	3,868,426
668C	3,868,427
669R	3,868,428
674SA	3,868,429
674A	3,868,430
859R	3,868,431
874	3,868,432
876R	3,868,433
880R	3,868,434
CLASS 264	
1	3,868,435
40	3,868,436
92	3,868,437
156	3,868,438
CLASS 266	
5T	3,868,094
23K	3,868,095
35	3,868,096
CLASS 267	
124	3,868,097
138	3,868,098
161	3,868,099
162	3,868,100
CLASS 269	
25	3,868,101
26	3,868,102
325	3,868,103
CLASS 272	
18	3,868,107
CLASS 273	
1.5A	3,868,108
75	3,868,110
87C	3,868,111
94R	3,868,112
101	3,868,113
106.5B	3,868,114
146	3,868,115
186C	3,868,116
187A	3,868,109
CLASS 274	
47	3,868,117
CLASS 277	
30	3,868,104
134	3,868,105
237R	3,868,106
CLASS 279	
1M	3,868,118
16	3,868,119
123	3,868,120
CLASS 280	
11.2	3,868,121
11.37B	3,868,122
79.2	3,868,123
106.5R	3,868,129
150AB	3,868,124
	3,868,125
	3,868,126
434	3,868,127
453	3,868,128
CLASS 285	
243	3,868,130
286	3,868,131
312	3,868,132
CLASS 289	
2	3,868,133
CLASS 292	
28	3,868,134
CLASS 294	
1R	3,868,135
19R	3,868,136
74	3,868,137
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OFFICIAL GAZETTE
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VOL. 931

FEBRUARY
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